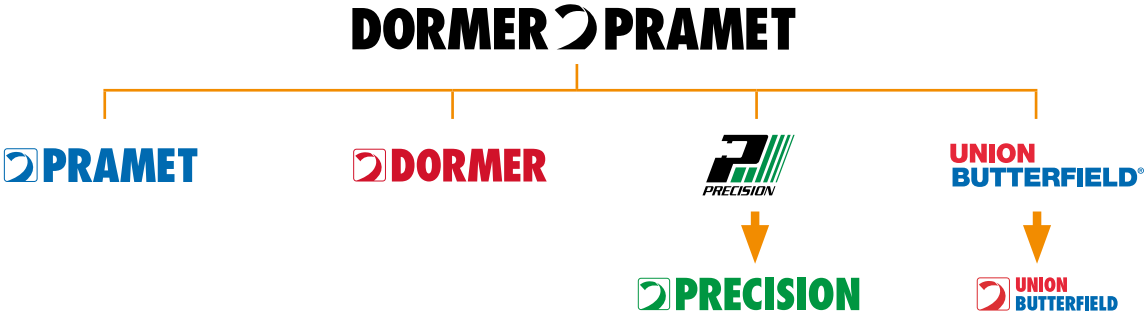
DORMER PRAMET

CATALOG
CATÁLOGO
CATALOGUE



PRAMET

2020 VISION: CLARITY IN BRAND ALIGNMENT



We acknowledge a unified appearance of our product logos will show that Dormer Pramet manufactures all our product brands – Precision Twist Drill, Dormer, Union Butterfield and Pramet.

In 2020, we are educating on the evolution of the Precision Twist Drill and Union Butterfield logos. Beginning in 2021, these logos will adopt the chip - our unifying symbol across the company and product brands that communicates our promise of quality manufacturing, products and logistics.

The Union Butterfield and Precision Twist Drill brands are pioneer brands for the North American marketplace. Since launching in 1885 and 1952, respectively, they represent a legacy of local support and quality tooling. Adding the chip to these logos aligns all brands visually and confirms to customers that when they add any of our tools to their shop, they add our entire team, including quality production facilities, reliable delivery and nationwide support.

FOLLOW US!



LIKE

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TWEET

COMMENT

PRAMET

CONTENT
CONTENIDO GENERAL
SOMMAIRE

GENERAL CONTENT / CONTENIDO GENERAL / SOMMAIRE

TURNING
TORNEADO
TOURNAGE

T1 – T370

MILLING
FRESADO
FRAISAGE

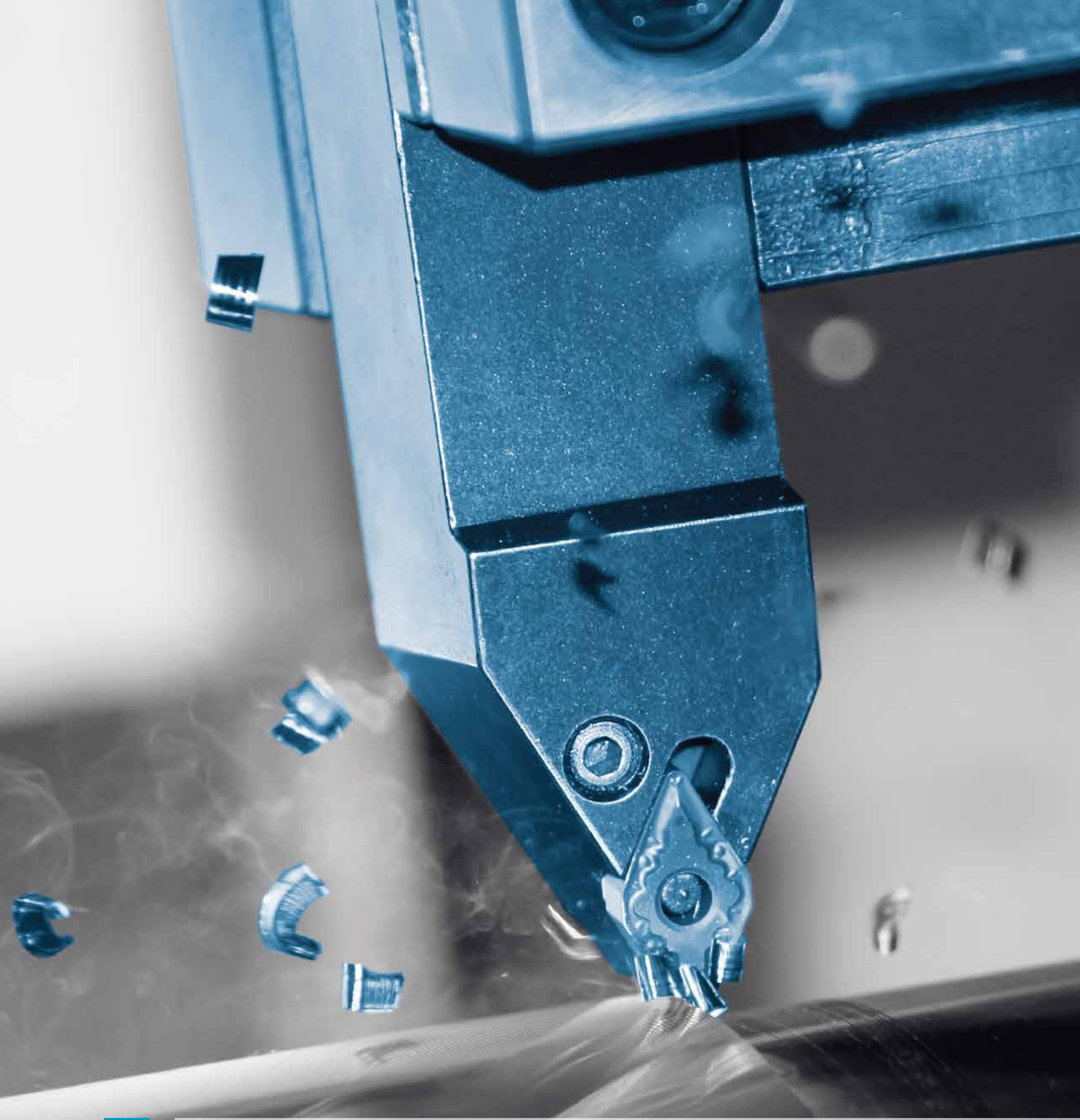
M1 – M244

HOLE-MAKING
TALADRADO
PERÇAGE – ALÉSAGE

D1 – D37

WORKPIECE MATERIALS CLASSIFICATION
CLASIFICACIÓN DE MATERIALES
CLASSIFICATION DES MATÉRIAUX À USINER

X1 – X58



TURNING
TORNEADO
TOURNAGE

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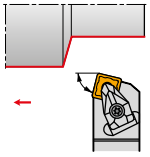
1 **DCRN(RL) EXT**

P M K N S H 2

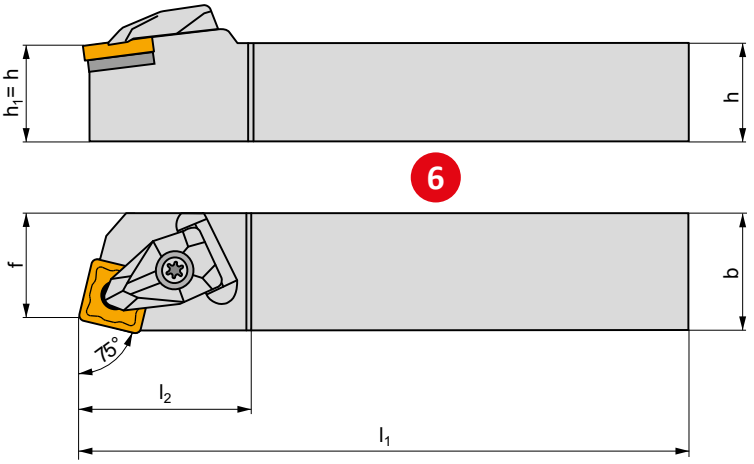
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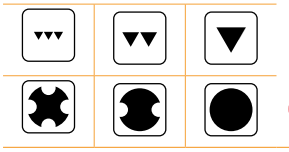


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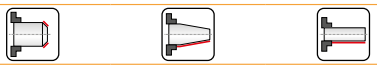


5





7 8



9

ANSI	h=h1	b	f	l1	l2	λs°	γo°	lbs			
DCRNR/L 12 4B	.750	.750	.855	4.500	1.350	-6	-6	.88	IGI005	DC12	IAT001
DCRNR/L 16 4D	1.000	1.000	1.048	6.000	1.350	-6	-6	1.54	IGI005	DC12	IAT001
DCRNR/L 20	1.250	1.250	1.292		1.350	-6	-6				
DCRNR/L 20	1.250	1.250	1.291		1.640	-6	-6				
DCRNR/L 20 6D	1.250	1.250	1.291	6.000	1.820	-6	-6	2.76	IGI007	DC19	–
DCRNR/L 24 6D	1.500	1.500	1.697	6.000	1.820	-6	-6	4.96	IGI007	DC19	–

10 11 12 13 14 15

IGI005	CN.. 43.
IGI006	CN.. 54.
IGI007	CN.. 64.

16

		Nm			
DC12	DCS 12	3.9	DCS 234-01	US 2002-T15P	FLAG T15P/3.5
DC16	DCS 16	6.4	DCS 234-03	US 2007-T20P	–
DC19	DCS 19	6.4	DCS 236-01	US 2007-T20P	–

17

IAT001	CN.. 45.	–	DCS 234-02
IAT005	CN.. 55.	–	DCS 234-04
IAT001	CER CN.N 43.	DCS 12C4	–
IAT001	CER CN.A 43.	DCS 12C2	–
IAT005	CER CN.N 54.	DCS 16C4	–
IAT005	CER CN.A 54.	DCS 16C2	–

18

Typical page with turning holder displayed - specific page details will differ.
Típica página con un portaherramientas de torneado mostrado - Los detalles específicos en cada página son diferentes.
Page typique illustrant un porte-outil de tournage - La page finale peut varier avec des détails spécifiques.

PAGE OVERVIEW - TURNING HOLDERS
VISIÓN GENERAL - PORTAHERRAMIENTAS DE TORNEADO
VUE D'ENSEMBLE - PORTE-OUTILS

1	Designation of turning holder Designación Désignation du porte-outil
2	Material group recommendations Gupos de material Groupes de matériaux pour lesquels l'outil est indiqué
3	Clamping system of insert Sistema de fijación de la plaquita Système de fixation de la plaquette
4	Illustrative picture [1] Esquema Ilustrativo [1] Image pour illustration [1]
5	Workpiece profile Formas de pieza posibles Formes possibles de la pièce
6	Schematic drawing of tool Esquema de la herramienta Dessin schématique de l'outil
7	Achievable quality of surface Calidad superficial alcanzable État de surface pouvant être atteint
8	Character of cut/working conditions Condiciones de corte/trabajo Caractère de la coupe/conditions de travail
9	Possible applications Posibilidades tecnológicas de la herramienta Possibilités technologiques de l'outil
10	ANSI code of holder Codificación ANSI para portaherramientas Code ANSI de l'outil
11	Dimensions [in] and angles [2] [°] of holder Dimensiones [in] y ángulos [2] [°] de portaherramientas Dimensions [in] et angles [2] [°] de l'outil
12	Weight [lbs] Peso [lbs] Poids [lbs]
13	Group of compatible inserts [3] Grupo de plaquitas compatibles [3] Groupe de plaquettes compatibles [3]
14	Group of spare parts [3, 4] Grupo de repuestos [3, 4] Groupe de pièces de rechange [3, 4]
15	Group of accessories [3, 4] Grupo de accesorios especiales [3, 4] Groupe d'accessoires spéciaux [3, 4]
16	Compatible inserts Plaquitas Plaquettes compatibles
17	Spare parts Repuestos Pièces de rechange
18	Special accessories Accesorios especiales Accessoires spéciaux

[1] Turning holder is primarily displayed in its right design (R)

[2] γ_o = orthogonal rake angle (see technical pages)
λ_s = inclination angle of main cutting edge (see technical pages)

[3] Code of Group of compatible inserts, spare parts and special accessories is used only for purposes of this catalogue. It cannot be used for orders.

[4] Spare parts and special accessories icons are designed schematically for ease of understanding. They aren't included in list of icons. Screws are, in some cases, completed with info on torque value in Nm, length of screw and size of thread.

[1] Los portaherramientas mostrados son de diseño a derecha (R)

[2] γ_o = ángulo ortogonal (ver sección técnica)
λ_s = ángulo de desprendimiento del filo de corte (ver sección técnica)

[3] El código del grupo de plaquitas compatibles, repuestos y accesorios especiales se utiliza sólo para el uso de este catálogo. No puede ser utilizado para pedidos.

[4] Los iconos de los repuestos y accesorios especiales estan diseñados esquemáticamente para su fácil comprensión. No estan incluidos en la lista de iconos. En algunos casos, la información de los tornillos se completa con el par de apriete en Nm, longitud y tamaño de rosca.

[1] L'illustration représente principalement un outil à droite (R)

[2] γ_o = angle de coupe orthogonal (voir partie technique)
λ_s = angle d'inclinaison de l'arête de coupe principale (voir partie technique)

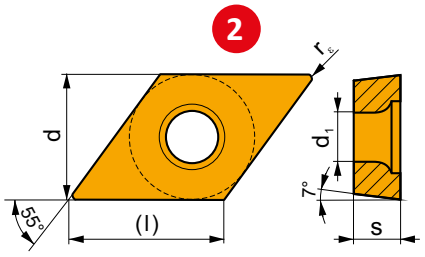
[3] Le code du groupe de plaquettes compatibles, des pièces de rechange et des accessoires spéciaux n'est utilisable que pour naviquer dans ce catalogue. Il ne peut pas être utilisé pour des commandes.

[4] Les icônes des pièces de rechange et des accessoires spéciaux sont schématisées pour une compréhension simple. Elles ne sont pas incluses dans la liste des icônes. Les vis, dans certains cas, sont complétées avec l'information du couple de serrage (Nm), de la longueur de vis et du diamètre du filetage.

1 DCMW

	d	d_1	l	s
21.5	.250	.110	.307	.094
32.5	.375	.173	.457	.156

3



	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	DCMW 21.50.5	**T5305**	☐		■			◪	●	+	.008	.002	.004	.008	.079
		T5315	◪	☐	■			☐	●	+	.008	.002	.004	.008	.079
		T6310	◪	☐	◪			◪	●	+	.008	.002	.004	.008	.079
	DCMW 6 **1**	**T5** 7	☐		■			◪	●	+	.008	.002	.004	.008	.079
		T5 7	◪	☐	■ 8			☐	● 9	+ 10	.008 11	.002	.004	.008 12	.016 .079
		T6310	◪	☐	◪			◪	●	+	.016	.002	.008	.016	.079
	DCMW 32.51	**T5305**	☐		■			◪	●	+	.016	.004	.009	.016	.114
		T5315	◪	☐	■			☐	●	+	.016	.004	.009	.016	.114
		T6310	◪	☐	◪			◪	●	+	.016	.002	.009	.016	.114
	DCMW 32.52	**T5305**	☐		■			◪	●	+	.031	.004	.014	.031	.114
		T5315	◪	☐	■			☐	●	+	.031	.004	.014	.031	.114
		T6310	◪	☐	◪			◪	●	+	.031	.002	.014	.031	.114

4 5

E

1	Designation of insert Designación Désignation de la plaquette
2	Schematic drawing of insert Esquema de la plaquita Dessin schématique de la plaquette
3	Table with insert sizes [in] Tabla con tamaños de plaquita [in] Tableau des tailles de plaquettes [in]
4	Icons - specific features, cutting edge type and picture of representative insert Iconos - características específicas, tipo de filo de corte y foto representativa de la plaquita Icônes - caractéristiques spécifiques, type d'arête de coupe et photo d'une plaquette représentative
5	Profile of main cutting edge Perfil del filo de corte Profil de l'arête de coupe principale
6	ANSI code of insert Codificación ANSI de plaquitas Code ANSI de la plaquette
7	Grade Calidad Nuance
8	Application area of insert Área de aplicación Domaine d'application de la plaquette
9	Suitability of insert use with respect to specific working conditions Uso de plaquitas en función de las condiciones de trabajo Possibilité d'utilisation de la plaquette en fonction des conditions de travail spécifiques
10	Influence of use of cutting fluids in continual cut Influencia del uso de fluidos de corte en corte contínuo Influence de l'usage du fluide en coupe continue
11	Insert radii [in] Radio de plaquita [in] Rayon de plaquette [in]
12	Maximum range of cutting depth [in] and feed [in/rev] Gama máxima de profundidad de corte [in] y avance [in/rot] Plage de profondeurs de passe [in] et d'avances [in/tr]

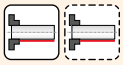
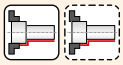
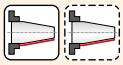
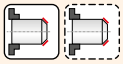
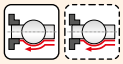
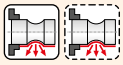
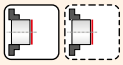
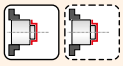
ICONS AND SYMBOLS - TURNING
ICONOS Y SÍMBOLOS - TORNEADO
ICÔNES ET SYMBOLES - TOURNAGE

Priority use
Uso prioritario
Utilisation prioritaire

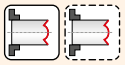
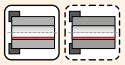
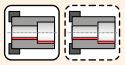
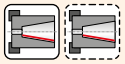
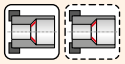
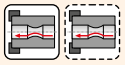
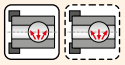
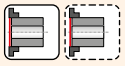
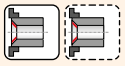
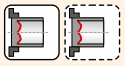
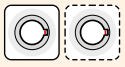
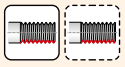
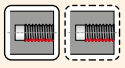
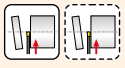
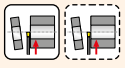
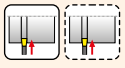
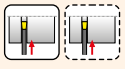
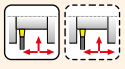
Possible use
Uso posible
Utilisation possible

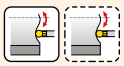
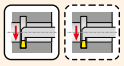
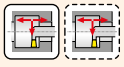
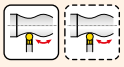
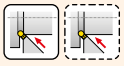
Icon absence - tool is not recommended for specific operation or group of materials or it does not have specific feature
Ausencia de icono - la herramienta no se recomienda para la operación específica, grupo de materiales o no tiene ninguna característica específica
Absence d'icône - outil non recommandé pour l'opération spécifique ou pour le groupe de matériaux ou parce qu'il ne possède pas de caractéristiques spécifiques

Icons - turning holders / Iconos - portaherramientas de torneado
Icônes - Porte-outils

General features of tools / Características generales de las herramientas Caractéristiques principales des outils			
	Material groups	Grupos de materiales	Groupe de matériaux
	Finishing – very good surface quality	Acabado - calidad superficial muy buena	Finition – très bonne qualité de surface
	Medium machining – good surface quality	Mecanizado medio - calidad superficial buena	Usinage moyen – bonne qualité de surface
	Roughing – unlimited surface roughness	Desbaste - rugosidad superficial ilimitada	Ébauche – Rugosité de surface non limitée
	Stable working conditions	Condiciones estables	Conditions de travail stables
	Unstable working conditions	Condiciones inestables	Conditions de travail instables
	Very unstable working conditions	Condiciones muy inestables	Conditions de travail très instables
Possible applications / Posibilidades tecnológicas de la herramienta Possibilités technologiques des outils			
	Longitudinal turning without shoulder - external	Torneado longitudinal sin escuadra - exterior	Tournage longitudinal sans épaulement - extérieur
	Longitudinal turning with shoulder - external	Torneado longitudinal con escuadra - exterior	Tournage longitudinal avec épaulement - extérieur
	Cone turning - external	Torneado cónico - exterior	Tournage conique - extérieur
	Chamfering (bevelling)	Achaflanado (beveling)	Chanfreinage (biseautage)
	One directional copy turning - external	Torneado en copia unidireccional - exterior	Tournage en copiage unidirectionnel - extérieur
	Multi directional copy turning - external	Torneado en copia multidireccional - exterior	Tournage en copiage multidirectionnel - extérieur
	Face turning without shoulder	Refrentado sin escuadra	Tournage de face sans épaulement
	Face turning with shoulder	Refrentado con escuadra	Tournage de face avec épaulement

ICONS AND SYMBOLS - TURNING
ICONOS Y SÍMBOLOS - TORNEADO
ICÔNES ET SYMBOLES - TOURNAGE

	Face copy turning	Refrentado en copia	Tournage de face en copiage
	Longitudinal turning without shoulder - internal	Torneado longitudinal sin escuadra - interior	Tournage longitudinal sans épaulement - intérieur
	Longitudinal turning with shoulder - internal	Torneado longitudinal con escuadra - interior	Tournage longitudinal sans épaulement - intérieur
	Cone turning - internal	Torneado cónico - interior	Tournage conique - intérieur
	Chamfering (bevelling) in hole	Achaflanado (beveling) en interior	Chanfreinage (biseautage) dans un trou
	One directional copy turning - internal	Torneado en copia unidireccional - interior	Tournage en copiage unidirectionnel - intérieur
	Multi directional copy turning - internal	Torneado en copia multidireccional - interior	Tournage en copiage multidirectionnel - intérieur
	Machining the rear face (shoulder) from the back	Refrentado trasero	Usinage de la face arrière (épaulement) en tirant
	Chamfering (bevelling) from the back	Achaflanado (beveling) trasero	Chanfreinage (biseautage) en tirant
	Face copy turning in hole	Refrentado en copia interior	Tournage de face en copiage dans un trou
	Internal shaping	Chavetero interior	Mortaisage intérieur
	Thread turning - external	Torneado de roscas - exterior	Tournage de filets - extérieur
	Thread turning - internal	Torneado de roscas - interior	Tournage de filets - intérieur
	Scarfing	Scarfing	Raclage
	Parting off	Tronzado	Tronçonnage
	Tube parting off	Tronzado de tubos	Tronçonnage de tubes
	Shallow radial groove	Ranurado radial poco profundo	Gorge radiale peu profonde
	Deep radial groove	Ranurado radial profundo	Gorge radiale profonde
	Wide radial groove (with following expansion)	Ranurado radial ancho (con torneado axial)	Large gorge radiale (avec élargissements successifs)
	Shallow axial groove	Ranurado axial poco profundo	Gorge axiale peu profonde
	Shallow and wide axial groove (with following expansion)	Ranurado axial poco profundo y ancho (con torneado radial)	Gorge axiale peu profonde et large (avec élargissements successifs)

	Deep axial groove	Ranurado axial profundo	Gorge axiale profonde
	Deep and wide axial groove (with following expansion)	Ranurado axial profundo y ancho (con torneado radial)	Gorge axiale profonde et large (avec élargissements successifs)
	Face copy turning	Refrentado en copia	Tournage de face en copiage
	Internal grooving	Ranurado interior	Gorge intérieure
	Internal grooving (with following expansion)	Ranurado interior ancho (con torneado axial)	Gorge intérieure (avec élargissements successifs)
	Copy turning (multi directional machining)	Torneado en copia (mecanizado multidireccional)	Tournage en copiage (usinage multidirectionnel)
	Undercut turning	Torneado de desahogos	Tournage de dégagements
Others / Otros Outros / Autres			
	Internal supply of coolant	Refrfigeración interior	Alimentation interne de liquide de refroidissement
	Group of railway cassettes	Grupo de cassettes para ferrocarril	Groupe de cassettes ferroviaires
	Group of heads for roughing	Grupo de cabezas para desbaste	Groupe de têtes d'ébauche
	Group of blades	Grupo de lamas	Groupe de lames
	Clamping torque of screw [Nm]	Par de apriete de tornillos [Nm]	Couple de serrage de la vis [Nm]

Icons and symbols - inserts / Iconos y símbolos - plaquitas
Ícones e símbolos - pastilhas / Icônes et symboles - Plaquettes

Features / Características Características / Caractéristiques			
	First choice	Primera elección	Premier choix
	Universal wide range option	Gama comleta universal	Large gamme de solutions universelles
	Thin-walled and slim workpieces	Piezas delgadas y de paredes delgadas	Paroies fines et pièces minces
	Heavy working conditions	Condiciones de trabajo pesadas	Conditions de travail très difficiles
	Large overhang	Gran voladizo	Long porte-à-faux
	High Feed Cutting	Alto avance	Usinage grande avance

ICONS AND SYMBOLS - TURNING
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HSC	High Speed Cutting	Alta velocidad	Usinage grande vitesse
W	Insert with wiper geometry	Plaquita con geometría rascadora (wiper)	Plaquette avec géométrie wiper
	For short chipping materials	Para materiales de viruta corta	Pour matériaux à copeaux courts
	For tough materials (long chipping)	Para materiales difíciles (viruta larga)	Pour matériaux tenaces (copeaux longs)
	Railway wheel machining	Mecanizado de ruedas de ferrocarril	Usinage de roues ferroviaires
F	Sharp edge	Filo vivo	Arête vive
E	Rounded edge	Filo redondeado	Arête arrondie
T	Edge with facet	Filo con faceta	Arête avec listel
S	Rounded edge with facet	Filo redondeado con faceta	Arête arrondie avec listel
K	Edge with double facet	Filo con doble faceta	Arête avec double listel
P	Rounded edge with double facet	Filo redondeado con doble faceta	Arête arrondie avec double listel

Conditions of use / Condiciones de uso
Condições de utilização / Conditions d'utilisation

■	Main application	Aplicación principal	Apllication principale
◪	Secondary application	Aplicación secundaria	Application secondaire
□	Supplementary application	Aplicación suplementaria	Application supplémentaire
●	Stable working conditions	Condiciones estables	Conditions de travail stables
	Unstable working conditions	Condiciones inestables	Conditions de travail instables
	Very unstable working conditions	Condiciones muy inestables	Conditions de travail très instables
- - -	Very negative effect on tool life – cooling is not recommended	Efecto muy negativo en la vida de filo - no se recomienda refrigerante	Effet très négatif sur la durée de vie de l'outil - L'arrosage n'est pas recommandé

ICONS AND SYMBOLS - TURNING
ICONOS Y SÍMBOLOS - TORNEADO
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- -	Negative effect on tool life – cooling is not recommended	Efecto negativo en la vida de filo - no se recomienda refrigerante	Effet négatif sur la durée de vie de l'outil - L'arrosage n'est pas recommandé
-	Slightly negative effect on tool life	Efecto ligeramente negativo en la vida de filo	Effet légèrement négatif sur la durée de vie de l'outil
+ / -	Influence of cooling may be both positive and negative – decisive factor is specific working conditions	La influencia del refrigerante puede ser positiva o negativa - depende de las condiciones de trabajo	L'influence de l'arrosage peut être positive ou négative - les conditions spécifiques de travail sont le facteur décisif
+	Slightly positive effect on tool life	Efecto ligeramente positivo en la vida de filo	Effet légèrement positif sur la durée de vie de l'outil
+ +	Positive effect on tool life – cooling is recommended	Efecto positivo en la vida de filo - se recomienda refrigerante	Effet positif sur la durée de vie de l'outil - L'arrosage est recommandé
+ + +	Very positive effect on tool life – cooling is recommended	Efecto muy positivo en la vida de filo - se recomienda refrigerante	Effet très positif sur la durée de vie de l'outil - L'arrosage est recommandé
	Others / Otros Outros / Autres		
	Thread pitch [mm]	Paso de rodca [mm]	Pas du filet [mm]
	Threads per in	Hilos por pulgada	Filets au pouce

Icons - technical pages / Iconos - sección técnica
Íconos - secção técnica / Icônes - Pages techniques

	Fine finishing	Acabado fino	Finition fine
	Finishing	Acabado	Finition
	Medium machining	Mecanizado medio	Usinage moyen
	Roughing	Desbaste	Ébauche
	Heavy roughing	Desbaste pesado	Ébauche lourde
	Parting Off and Grooving	Tronzado y Ranurado	Tronçonnage et gorges
	Threading	Roscado	Filetage
	Depth of cut [in]	Profundidad de corte [in]	Profondeur de coupe [in]

ICONS AND SYMBOLS - TURNING
ICONOS Y SÍMBOLOS - TORNEADO
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	Feed [in/rev]	Avance [in/rev]	Avance [in/rev]
	Durability [min]	Durabilidad [min]	Durabilité [min]
	Grade	Calidad	Nuance
	Coating	Recubrimiento	Revêtement
	Cutting speed	Velocidad de corte	Vitesse de coupe
	Cutting edge profile	Perfil del filo de corte	Profil de l'arête de coupe
	Cooling	Refrigerante	Arrosage
 01 - 05	Very high cutting speed, excellent system rigidity (stable working conditions)	Velocidad de corte muy alta (condiciones estables)	Vitesse de coupe très élevée, excellente rigidité du système (conditions de travail stables)
 05 - 10	High cutting speed, high system rigidity (stable working conditions)	Velocidad de corte alta, alta rigidez del sistema (condiciones estables)	Vitesse de coupe élevée, bonne rigidité du système (conditions de travail stables)
 10 - 20	High cutting speed, system rigidity slightly limited (depth of cut changing)	Alta velocidad de corte, rigidez del sistema ligeramente limitada (profundidad de corte variable)	Vitesse de coupe élevée, rigidité du système légèrement limitée (variation de la profondeur de coupe)
 20 - 30	Medium cutting speed, system rigidity limited (slightly interrupted cut)	Velocidad de corte media, rigidez del sistema limitada (corte ligeramente interrumpido)	Vitesse de coupe moyenne, rigidité du système limitée (coupe légèrement interrompue)
 30 - 40	Low cutting speed, low system rigidity (interrupted cut)	Velocidad de corte baja, rigidez del sistema baja (corte interrumpido)	Vitesse de coupe faible, mauvaise rigidité du système (coupe interrompue)
 40 - 50	Very low cutting speed, very low system rigidity (very unstable working conditions)	Velocidad de corte muy baja, rigidez del sistema muy baja (condiciones muy inestables)	Vitesse de coupe très faible, très mauvaise rigidité du système (conditions de travail très instables)

CCGT



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CCMT



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CCMW



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CNGG



T44

CNMA



T44

CNMG



T45

CNMM



T54

DCGT



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DCMT



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DCMW



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DNMA



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DNMG



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DNMM



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ECGT



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ECMT



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ECMW



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EPMT



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KNUX



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NAVIGATOR - INSERTS
NAVEGADOR - PLAQUITAS
NAVIGATEUR - PLAQUETTES

RCGT  T74

RCMH  T75

RCMT  T76

RCMW  T78

RCMX  T78

RNMG  T80

SCGT  T81

SCMT  T82

SCMW  T84

SNMA  T85

SNMG  T86

SNMM  T91

SPMR  T94

SPU  T95

TCGT  T96

TCMT  T97

TCMW  T99

TNMA  T100

TNMG  T101

TNMM  T106

TPMR  T107

TPU  T108

VBMT



T108

VCGT



T111

VCGW



T113

VCGX



T114

VCMT



T115

VCMW



T116

VNMG



T116

WCGT



T119

WCMT



T120

WNMA



T121

WNMG



T121

WNMM



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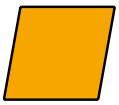
NAVIGATOR - CERAMIC INSERTS
NAVEGADOR - CERÁMICA
NAVIGATEUR - PLAQUETTES CÉRAMIQUE

CNGA CER



T130

CNGN CER



T130

CNGX CER



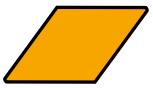
T131

DNGA CER



T131

DNGN CER



T132

RCGX CER



T133

RNGN CER



T133

SNGA CER



T134

SNGN CER



T134

SNGX CER



T135

SPGN CER



T135

TNGA CER



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TNGN CER



T136

TPGN CER



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VNGA CER



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WNGA CER



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NAVIGATOR - CBN INSERTS
NAVEGADOR - CBN
NAVIGATEUR - PLAQUETTES CBN

CCGW CBN

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CNGA CBN

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DCGW CBN

T140

DNGA CBN

T140

TCGW CBN

T141

TNGA CBN

T142

VBGW CBN

T142

VNGA CBN

T143

WNGA CBN

T143

NAVIGATOR - PCD INSERTS
NAVEGADOR - PCD
NAVIGATEUR - PLAQUETTES PCD

DCGW PCD

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DCMW PCD

T145

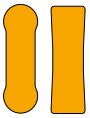
VCMW PCD

T146

NAVIGATOR - INSERTS FOR PARTING AND GROOVING
NAVEGADOR - TRONZADO Y RANURADO
NAVIGATEUR - PLAQUETTES POUR TRONÇONNAGE ET GORGES

GL. D

T148

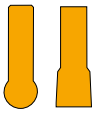
LCMF 13

T149

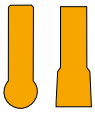
LCMF 16, LCMF 30

T150

LCMF 20

T152

LCMR 13

T153

LCMR 16, LCMR 30

T153

LFMX

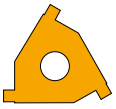
T154

TN R EXT

T157

TN R INT

T157

TN ZZ EXT

T158

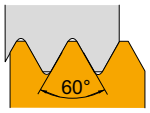
TN ZZ INT

T159

M

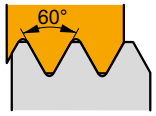
Full profile
Perfil completo
Perfil completo
Profil complet

TN M EXT



T160

TN M INT

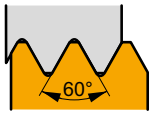


T161

M

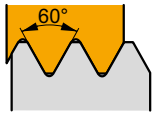
Partial profile
Perfil parcial
Perfil parcial
Profil partiel

TN 60° PP EXT



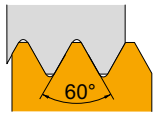
T164

TN 60° PP INT



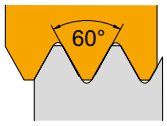
T164

TN 60°-S PP EXT



T165

TN 60°-S PP INT

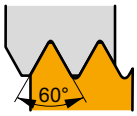


T165

UN

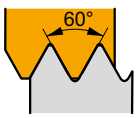
Full profile
Perfil completo
Perfil completo
Profil complet

TN UN EXT



T166

TN UN INT

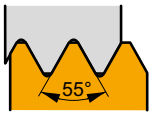


T167

W

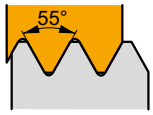
Full profile
Perfil completo
Perfil completo
Profil complet

TN W EXT



T169

TN W INT

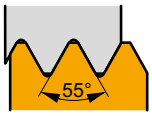


T170

W

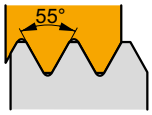
Partial profile
Perfil parcial
Perfil parcial
Profil partiel

TN 55° PP EXT



T171

TN 55° PP INT

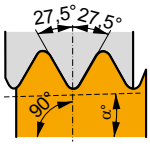


T172

BSPT

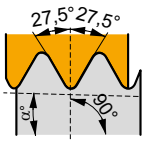
Full profile
Perfil completo
Perfil completo
Profil complet

TN BSPT EXT



T172

TN BSPT INT

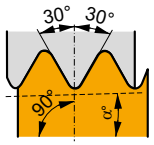


T173

NPT

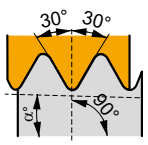
Full profile
Perfil completo
Perfil completo
Profil complet

TN NPT EXT



T173

TN NPT INT

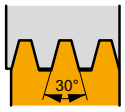


T174

TR

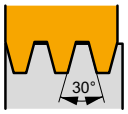
Full profile
Perfil completo
Perfil completo
Profil complet

TN TR EXT



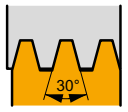
T174

TN TR INT



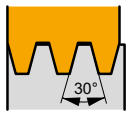
T175

TN TR-S EXT



T175

TN TR-S INT

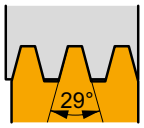


T176

ACME

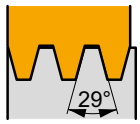
Full profile
Perfil completo
Perfil completo
Profil complet

TN ACME EXT



T176

TN ACME INT

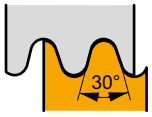


T177

RD

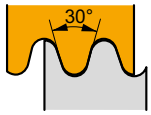
Full profile
Perfil completo
Perfil completo
Profil complet

TN RD EXT



T179

TN RD INT

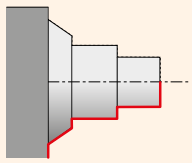


T180

TURNING – EXTERNAL
SHORT AND STABLE COMPONENTS
(negative inserts)

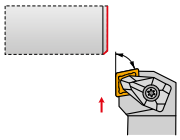
TORNEADO - EXTERIOR
PIEZAS CORTAS Y ESTABLES
(plaquitas negativas)

TOURNAGE – EXTÉRIEUR
COMPOSANTS COURTS ET STABLES
(plaquettes négatives)



DCKN(RL) EXT

75°

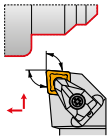


CN..
.500
.625
1.000x1.000

T184 | T44 - T56

DCLN(RL) EXT

95°

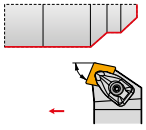


CN..
.375
.500
.625
.750
.625x.625 — 1.500x1.500

T185 | T44 - T56

DCRN(RL) EXT

75°

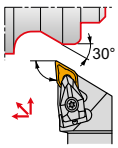


CN..
.500
.625
.750
.750x.750 — 1.500x1.500

T187 | T44 - T56

DDJN(RL) EXT

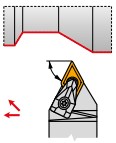
93°



DN..
.375
.500
.750x.750 — 1.250x1.250

T188 | T62 - T70

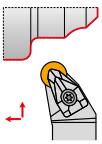
DDPNN EXT



DN..
.375
.500
.750x.750 — 1.000x1.000

T189 | T62 - T70

DRSNR EXT

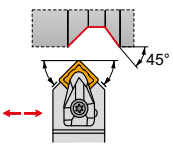


RN..
.500
1.000x1.000

T190 | T80

DSDNN EXT

45°

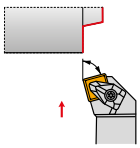


SN..
.500
.625
.750
1.000
.750x.750 — 1.500x1.500

T191 | T85 - T94

DSKN(RL) EXT

75°

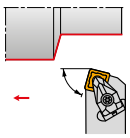


SN..
.500
.625
1.000x1.000 — 1.250x1.250

T192 | T85 - T94

DSRN(RL) EXT

75°

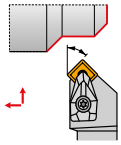


SN..
.500
.625
.750
.750x.750 — 1.500x1.500

T193 | T85 - T94

DSSN(RL) EXT

45°

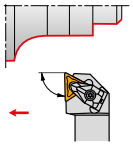


SN..
.500
.625
.750
.750x.750 — 1.500x1.500

T195 | T85 - T94

DTGN(RL) EXT

90°

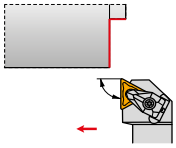


TN..
.375
.500
.750x.750 — 1.500x1.500

T196 | T100-T107

DTJN(RL) EXT

93°



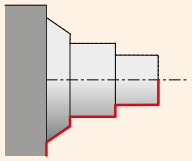
TN..
3
4
.750x.750 — 1.250x1.250

T197 | T100-T107

TURNING – EXTERNAL
SHORT AND STABLE COMPONENTS
(negative inserts)

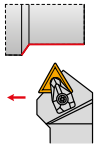
TORNEADO - EXTERIOR
PIEZAS CORTAS Y ESTABLES
(plaquitas negativas)

TOURNAGE – EXTÉRIEUR
COMPOSANTS COURTS ET STABLES
(plaquettes négatives)



DTTN(RL) EXT

60°



TN..



3
4

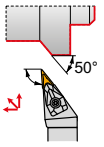
■ .750x.750 ––– 1.000x1.000

T198

T100-T107

DVJN(RL) EXT

93°



VN..



.375

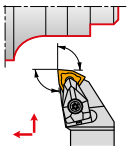
■ .750x.750 ––– 1.250x1.250

T199

T116-T118

DWLN(RL) EXT

95°



WN..



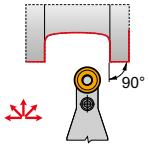
.375
.500

■ .625x.625 ––– 1.250x1.250

T200

T121-T128

PRDCN EXT



RC..



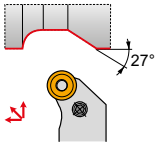
.625
.750
1.000
1.250

■ 1.260x.984 ––– 1.575x1.575

T201

T74 - T80

PRSC(RL) EXT



RC..



.625
.750
1.000

■ 1.260x.984 ––– 1.575x1.575

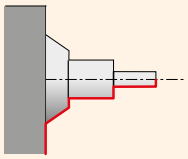
T202

T74 - T80

TURNING – EXTERNAL
LONG AND UNSTABLE COMPONENTS
(Positive inserts)

TORNEADO - EXTERIOR
PIEZAS LARGAS E INESTABLES
(plaquitas positivas)

TOURNAGE – EXTÉRIEUR
COMPOSANTS LONGS ET INSTABLES
(plaquettes positives)

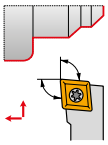


SCLC(RL) EXT

95°

CC..

.250
.312
.375
.500



.375x.375
1.000x1.000

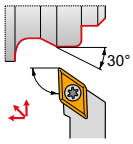
T203 | T36 - T43

SDJC(RL) EXT

93°

DC..

.250
.375
.625



.375x.375
1.000x1.000

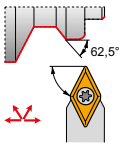
T204 | T57- T61

SDPCN EXT

62°30'

DC..

2
3



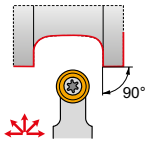
.375x.375
1.000x1.000

T205 | T57- T61

SRDCN EXT

RC..

.250
.312
.375
.500
.625



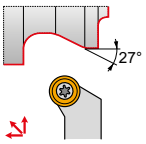
.472x.472
1.260x.984

T206 | T74 - T80

SRSC(RL) EXT

RC..

.250
.312
.375
.500
.625



.630x.630
1.260x.984

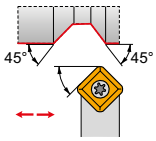
T207 | T74 - T80

SSDCN EXT

45°

SC..

09
12



12x12
25x25

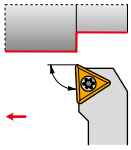
T208 | T81 - T84

STGC(RL) EXT

93°

TN..

2
3



.500x.500
1.000x1.000

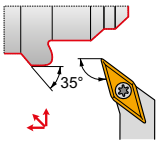
T209 | T100-T107

SVHB(C)(RL) EXT

107°30'

VB, VC..

.3125



.7500x.7500
1.000x1.000

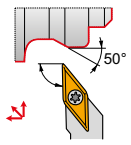
T210 | T108-T116

SVJB(C)(RL) EXT

93°

VB, VC..

.3125



.625x.625
1.250x1.250

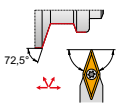
T211 | T108-T116

SVVB(C)N EXT

72°30'

VB, VC..

.3125



.500x.500
1.250x1.250

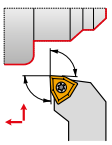
T212 | T108-T116

SWLC(RL) EXT

95°

WC..

.375
.500



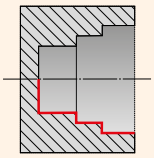
.750x.750
1.000x1.000

T213 | T119-T120

TURNING – INTERNAL
SHORT AND STABLE COMPONENTS
(negative inserts)

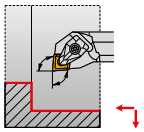
TORNEADO - INTERIOR
PIEZAS CORTAS Y ESTABLES
(plaquitas negativas)

TOURNAGE – INTÉRIEUR
COMPOSANTS COURTS ET STABLES
(plaquettes négatives)



DCLN(RL) INT

95°



CN..



.375
.500



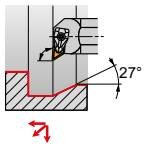
.750
1.500

T215

T44 - T56

DDUN(RL) INT

93°



DN..



.375
.625



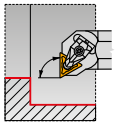
1.000
1.500

T216

T62 - T70

DTFN(RL) INT

90°



TN..



.375
.500



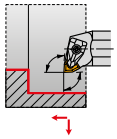
1.000
1.500

T217

T100-T107

DWLN(RL) INT

95°



WN..



.375
.500



1.000
1.500

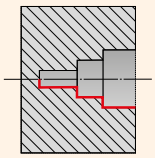
T218

T121-T128

TURNING – INTERNAL
LONG AND UNSTABLE COMPONENTS
(positive inserts)

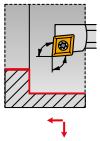
TORNEADO - INTERIOR
PIEZAS LARGAS E INESTABLES
(plaquitas positivas)

TOURNAGE – INTÉRIEUR
COMPOSANTS LONGS ET INSTABLES
(plaquettes positives)



SCLC(RL) INT

95°



CC..

.250
.375
.500

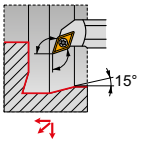
ØDmin: .375 — 1.250

T219

T36 - T43

SDQC(RL) INT

107°30´



DC..

.250
.375

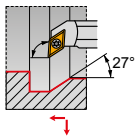
ØDmin: .375 — 1.000

T220

T57- T61

SDUC(RL) INT

93°



DC..

.250
.375

ØDmin: .375 — 1.250

T221

T57- T61

SDUC(RL)-E INT

93°



DC..

.250
.375

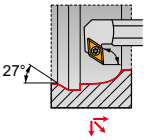
ØDmin: .375 — .625

T222

T57- T61

SDZC(RL) INT

93°



DC..

.250
.375

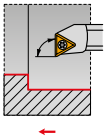
ØDmin: 1.250

T223

T57- T61

STFC(RL) INT

90°



TC..

.156
.187
.250
.375

ØDmin: .500 — 1.000

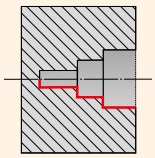
T224

T96 - T99

TURNING – INTERNAL
LONG AND UNSTABLE COMPONENTS
(positive inserts)

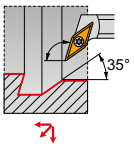
TORNEADO - INTERIOR
PIEZAS LARGAS E INESTABLES
(plaquitas positivas)

TOURNAGE – INTÉRIEUR
COMPOSANTS LONGS ET INSTABLES
(plaquettes positives)



SVQB(C)(RL) INT

107°30´





1.000 —— 1.500

VB, VC..



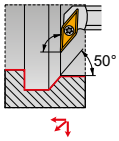
.250

T225

T108-T116

SVUB(C)(RL) INT

93°





.625 —— 1.500

VB, VC..



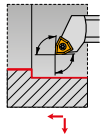
.250

T226

T108-T116

SWLC(RL) INT

95°





.750

WC..



.375
.500

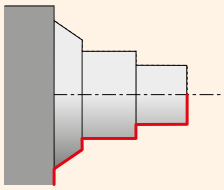
T227

T119-T120

TURNING – HEAVY ROUGHING – EXTERNAL
FIXED TOOL HOLDERS

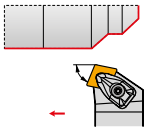
TORNEADO - DESBASTE PESADO - EXTERIOR
PORTAHERRAMIENTAS FIJOS

TOURNAGE – ÉBAUCHE LOURDE - EXTÉRIEUR
PORTE-OUTILS FIXES



DCRN(RL) EXT

75°

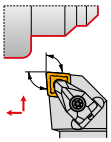


CN..
.750
1.250x1.250 ——— 1.500x1.500

T187 T44 - T56

DCLN(RL) EXT

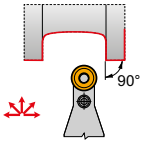
95°



CN..
.750
1.250x1.250 ——— 1.500x1.500

T185 T44 - T56

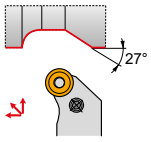
PRDCN EXT



RC..
.750 1.000 1.250
1.260x1.260 ——— 1.575x1.575

T201 T74 - T80

PRSC(RL) EXT

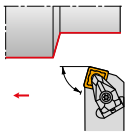


RC..
.750 1.000
1.260x1.260 ——— 1.575x1.575

T202 T74 - T80

DSRN(RL) EXT

75°

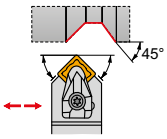


SN..
.750 1.000
1.250x1.250 ——— 1.500x1.500

T193 T85 - T94

DSDNN EXT

45°

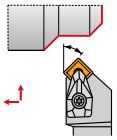


SN..
1.000
1.250x1.250 ——— 1.500x1.500

T191 T85 - T94

DSSN(RL) EXT

45°



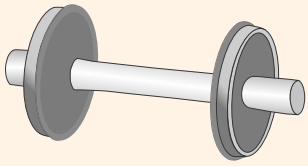
SN..
.750
1.260x1.260 ——— 1.500x1.500

T195 T85 - T94

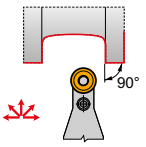
TURNING – HEAVY ROUGHING – EXTERNAL
RAILWAY WHEEL MACHINING

TORNEADO - DESBASTE PESADO - EXTERIOR
MECANIZADO DE RUEDAS DE FERROCARRIL

TOURNAGE – ÉBAUCHE LOURDE - EXTÉRIEUR
USINAGE DE ROUES FERROVIAIRES



PRDCN EXT



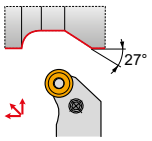
RC..
.750 1.000 1.250

1.260x1.260 1.575x1.575

T201

T74 - T80

PRSC(RL) EXT



RC..
.750 1.000

1.260x1.260 1.575x1.575

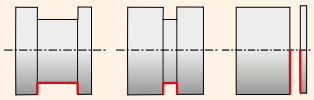
T202

T74 - T80

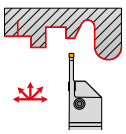
PARTING OFF AND GROOVING – EXTERNAL

TRONZADO Y RANURADO - EXTERIOR

TRONÇONNAGE ET GORGES - EXTÉRIEUR



GLSF(RL) EXT



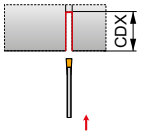
GL. D

GL2
GL3
GL4
GL5
GL6

.625x.625
1.000x1.000

T230 | T148

GLS B + DU.D



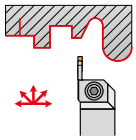
GL. D

GL2
GL3
GL4
GL5
GL6

.787x.787
1.259x1.142

T231 T248 | T148

GFK(RL) EXT



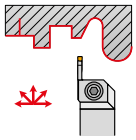
LCMF

.079

.625x.625
1.000x1.000

T232 | T149 - T152

GFI(RL) EXT



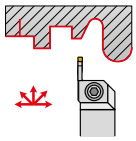
LCMF, LCMR

.118
.157
.197
.236
.315

.625x.625
1.250x1.000

T233 | T149 - T152 T153 - T154

GFM(RL) EXT



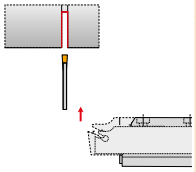
LCMF, LCMR

.118
.157
.197
.236
.315

.750x.750
1.250x1.000

T234 | T149 - T152 T153 - T154

XLCCN 25 BS + MS-EN



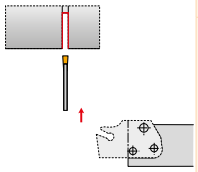
LCMF, LCMR

.118
.157
.197
.236

.500x.500
1.250x1.000

T244 T243 | T149 - T152 T153 - T154

XLCCN B + DU, D



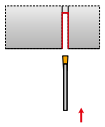
LCMF, LCMR

.118
.157
.197
.236
.315

.750x.750
1.500x1.500

T246 T248 | T149 - T152 T153 - T154

XLCF(NRL) BS + MS-EN



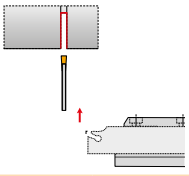
LFMX

.059
.063
.079
.087
.122
.161
.201
.250

.500x.500
1.250x1.000

T245 T243 | T154-155

XLCFN B + DU, D



LFMX

.059
.063
.079
.087
.122
.161
.201

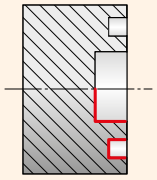
.750x.750
1.500x1.500

T247 T248 | T154-155

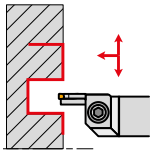
FACE GROOVING

RANURADO FRONTAL

GORGES FRONTALES

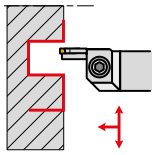


GFIL-L AXIAL



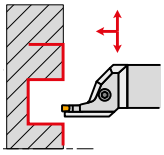
LCMF, LCMR	
.118 .157	
.670-1.180 4.330-6.690	T149 - T152 T153 - T154
T240	

GFIL-R AXIAL



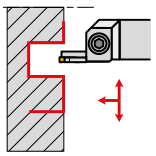
LCMF, LCMR	
.118 .157	
.670-1.180 5.510x9.060	T149 - T152 T153 - T154
T237	

GFIR-L AXIAL



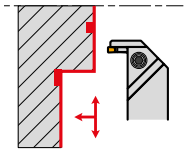
LCMF, LCMR	
.118 .157	
.670-1.180 5.510x9.060	T149 - T152 T153 - T154
T235	

GFIR-R AXIAL



LCMF, LCMR	
.118 .157	
.670-1.180 4.330-6.690	T149 - T152 T153 - T154
T239	

GGI(RL)-90 AXIAL

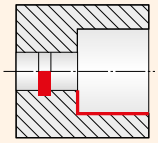


LCMF, LCMR	
.118 .157	
.670-1.180 4.330-6.690	T149 - T152 T153 - T154
T241	

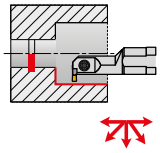
GROOVING – INTERNAL

RANURADO - INTERIOR

GORGES - INTÉRIEUR



GG.(RL) INT



LCMF, LCMR



.118
.157



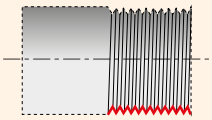
.630
1.260

T149 - T152
T153 - T154
T242

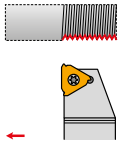
THREAD TURNING – EXTERNAL

ROSCADO - EXTERIOR

TOURNAGE DE FILETS - EXTÉRIEUR



SE(RL)



TN..

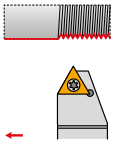
.375
.500

.750x.750
—
1.250x1.000

T250

T157 - T179

SE(RL)-S



TN..

.500

1.000x1.000
—
1.250x1.000

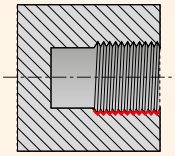
T251

T157 - T179

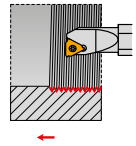
THREAD TURNING - INTERNAL

ROSCADO - INTERIOR

TOURNAGE DE FILETS - INTÉRIEUR



SI(RL)



TN..

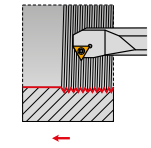
.250
.375
.500

.500
—
1.750

T252

T157 - T179

SI(RL)-S



TN..

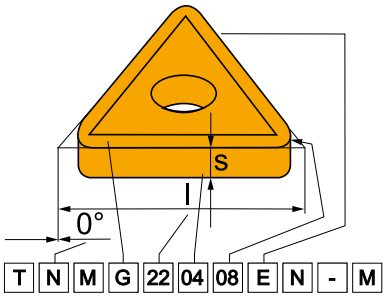
.500

1.550
—
1.800

T253

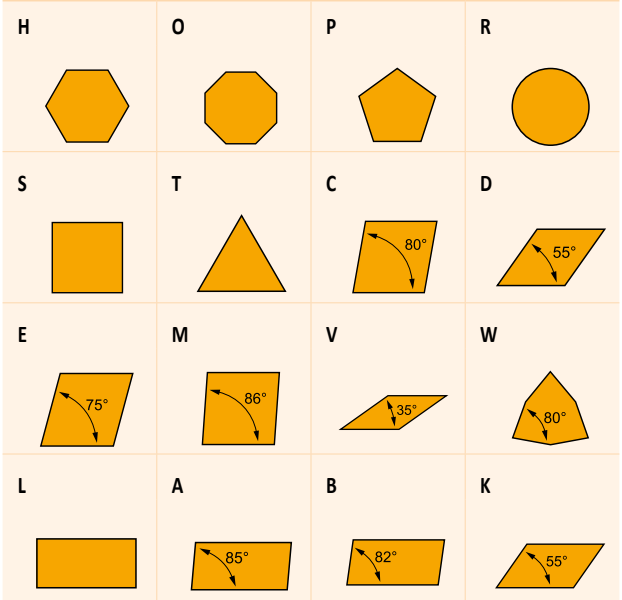
T157 - T179

ISO/ANSI CODE DESIGNATION - INSERTS
DESIGNACIÓN CÓDIGO ISO/ANSI - PLAQUITAS
CODIFICATION ISO/ANSI - PLAQUETTES

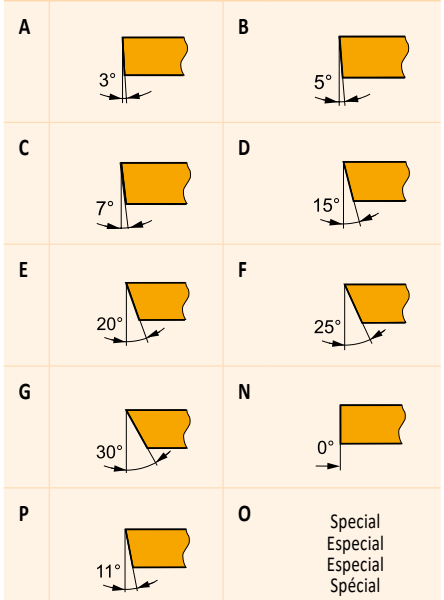


	1	2	3	4
ISO	T	N	U	N
	T	N	M	G
ANSI	T	N	U	N
	T	N	M	G

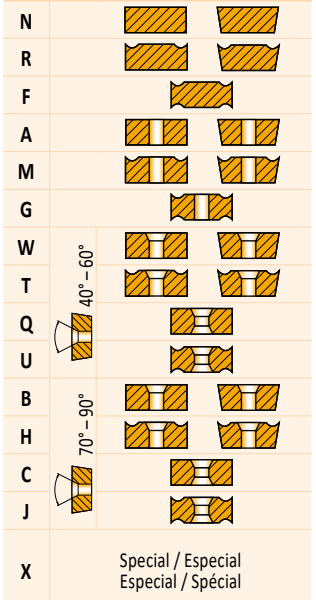
1 1 — Insert shape / Forma de plaquita / Forme de la plaquette



2 2 — Insert clearance angle / Ángulo de incidencia / Angle de dépouille de la plaquette

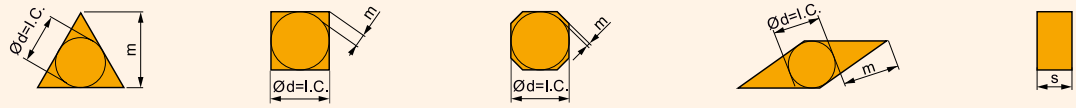


4 4 — Insert type / Tipo de plaquita / Type de plaquette



3 3 — Tolerances / Tolerancias / Tolerâncias / Tolérances

	[mm]			[in]		
	m (±)	s (±)	d = I.C. (±)	m (±)	s (±)	d = I.C. (±)
A	.005	.025	.025	.0002	.001	.0010
F	.005	.025	.013	.0002	.001	.0005
C	.013	.025	.025	.0005	.001	.0010
H	.013	.025	.013	.0005	.001	.0005
E	.025	.025	.025	.0010	.001	.0010
G	.025	.130	.025	.0010	.005	.0010
J	.005	.025	.05 ÷ .13	.0002	.001	.002 ÷ .005
K	.013	.025	.05 ÷ .13	.0005	.001	.002 ÷ .005
L	.025	.025	.05 ÷ .13	.0010	.001	.002 ÷ .005
M	.08 ÷ .18	.130	.05 ÷ .13	.003 ÷ .007	.005	.002 ÷ .005
N	.08 ÷ .18	.025	.05 ÷ .13	.003 ÷ .007	.001	.002 ÷ .005
U	.05 ÷ .38	.130	.05 ÷ .13	.005 ÷ .015	.005	.003 ÷ .010



ISO/ANSI CODE DESIGNATION - INSERTS
DESIGNACIÓN CÓDIGO ISO/ANSI - PLAQUITAS
CODIFICATION ISO/ANSI - PLAQUETTES

5	6	7		8	9		10
22	04	08					
22	04	08		E	N	-	M

5A	6A	7A		8	9		10
4	3	2					
4	3	2		E	N	-	M

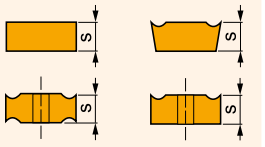
5

Insert cutting edge length (insert size)
Longitud del filo de corte (tamaño de plaquita)
Longueur de l'arête de coupe (taille de plaquette)

d = I.C.		H	O	P	S	T	C	D	E	M	V	W	R	K
[mm]	[in]													
3,97					03	06		04			06	02		
	5/32"							1.2						
4,76					04	08	04	05	04	04	08	L3		
	3/16"							1.5						
5,56					05	09	05	06	05	05	09	03		
	7/32"							1.8						
6,35		03	02	04	08	11	06	07	08	08	11	04	06	
	1/4"							2						
7,94		04	03	05	07	13	08	09	06	07	13	05	07	
	5/16"							2,5						
9,525		05	04	07	09	16	09	11	09	09	16	06	09	16
	3/8"							3						
12,7		07	05	09	12	22	12	15	13	12	22	08	12	
	1/2"							4						
15,875		09	06	11	15	27	16	19	16	15	27	10	15	
	5/8"							5						
19,05		11	07	13	19	33	19	23	19	19	33	13	19	
	3/4"							6						
25,40		14	10	18	25	44	25	31	26	25	44	17	25	
	1"							8						
31,75		18	13	23	31	54	32	38	32	31	54	21	31	
	1 1/4"							10						

6

Insert thickness
Espesor
Épaisseur de la plaquette



	s	
	[mm]	[in]
01	1,59	1/16"
T1	1,98	5/64"
02	2,38	3/32"
03	3,18	1/8"
T3	3,97	5,32"
04	4,76	3/16"
05	5,56	7/32"
06	6,35	1/4"
07	7,94	5/16"
09	9,52	3/8"

7

Insert nose radius
Radio de punta
Rayon de pointe de la plaquette

	r_ε	
	[mm]	[in]
00	0	0"
02	0,2	1/128"
04	0,4	1/64"
08	0,8	1/32"
12	1,2	3/64"
16	1,6	1/16"
24	2,4	3/32"
32	3,2	1/8"



Round inserts
Plaquitas redondas
Plaquettes rondes

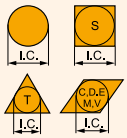
d=I.C.	
[in]	00
[mm]	MO



ANSI

5A

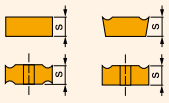
Inscribed circle
Círculo inscrito
Cercle inscrit



	d = I.C.	
	[mm]	[in]
1	3,175	1/8"
1.2	3,969	5/32"
1.5	4,763	3/16"
1.8	5,556	7/32"
2	6,350	1/4"
2.5	7,938	5/16"
3	9,525	3/8"
4	12,700	1/2"
5	15,875	5/8"
6	19,050	3/4"
7	22,225	7/8"
8	25,400	1"
10	31,750	5/4"
12	38,100	6/4"

6A

Insert thickness
Espesor
Épaisseur de la plaquette



	s	
	[mm]	[in]
1	1,588	1/16"
1.2	1,984	5/64"
1.5	2,381	3/32"
2	3,175	1/8"
2.5	3,969	5/32"
3	4,763	3/16"
3.5	5,556	7/32"
4	6,350	1/4"
5	7,938	5/16"
6	9,525	3/8"
7	11,113	7/16"
8	12,700	1/2"
9	14,288	9/16"
10	15,875	5/8"

7A

Insert nose radius
Radio de punta
Rayon de pointe de la plaquette



	r_ε	
	[mm]	[in]
0	0	0"
0.2	0,099	1/256"
0.5	0,198	1/128"
1	0,397	1/64"
2	0,794	1/32"
3	1,191	3/64"
4	1,588	1/16"
5	1,984	5/64"
6	2,381	3/32"
7	2,778	7/64"
8	3,175	1/8"
10	3,969	5/32"
12	4,763	3/16"
14	5,556	7/32"
16	6,350	1/4"

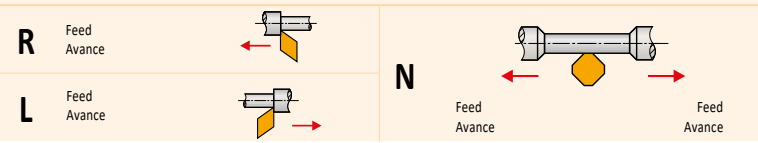
8 | 8

Insert cutting edge design / Condición del filo de corte / Configuration de l'arête de coupe

F	Sharp edges Filos vivos Arêtes vives	E	Rounded edges Filos redondeados Arêtes arrondies
T	Edges with facet Filos con faceta Arêtes avec listel	S	Rounded edges with facet Filo redondeado con faceta Arêtes arrondies avec listel
K	Edges with double facet Filos con doble faceta Arêtes avec double listel	P	Rounded edges with double facet Filos redondeados con doble faceta Arêtes arrondies avec double listel

9 | 9

Feed direction / Dirección de avance / Direction d'avance

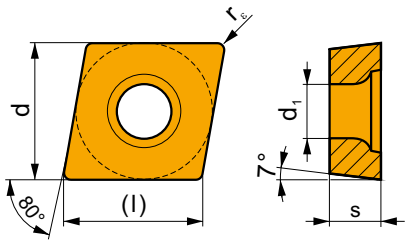


10 | 10

Chip breaker designation / Designación del rompevirutas / Désignation du brise-copeaux (géométrie)

CCGT

	d	d_1	l	s
2.52-AL	.313	.134	.319	.135
2.52-SF3	.313	.134	.319	.135
21.5	.250	.110	.252	.094
21.5-SF3	.250	.110	.252	.102
32.5	.375	.173	.382	.156
32.5-SF3	.250	.110	.252	.166
43	.500	.217	.508	.187
43-SF3	.500	.217	.508	.197



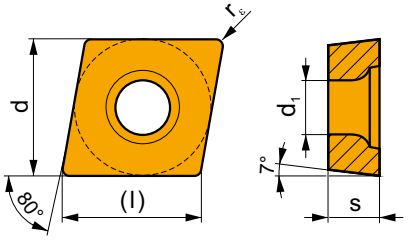
For tools see pages: T203, T219

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
F	25°	CCGT 21.50.5F-AL	T0315				■			●	+ / -	.008	.002	.006	.012	.118
			HF7				■			●	+ / -	.008	.002	.006	.012	.118
		CCGT 21.51F-AL	T0315				■			●	+	.016	.004	.012	.016	.138
			HF7				■			●	+	.016	.004	.012	.016	.138
		CCGT 2.520.5F-AL	T0315				■			●	+ / -	.008	.002	.006	.012	.098
		CCGT 2.521F-AL	T0315				■			●	+	.016	.002	.012	.016	.098
			HF7				■			●	+	.016	.002	.012	.016	.098
		CCGT 32.50.5F-AL	T0315				■			●	+ / -	.008	.004	.006	.012	.157
			HF7				■			●	+ / -	.008	.004	.006	.012	.157
		CCGT 32.51F-AL	T0315				■			●	+	.016	.004	.012	.016	.177
			HF7				■			●	+	.016	.004	.012	.016	.177
		CCGT 32.52F-AL	T0315				■			●	+	.031	.006	.024	.031	.197
			HF7				■			●	+	.031	.006	.024	.031	.197
		CCGT 431F-AL	T0315				■			●	+	.016	.004	.012	.016	.276
			HF7				■			●	+	.016	.004	.012	.016	.276
		CCGT 432F-AL	T0315				■			●	+	.031	.006	.024	.031	.276
			HF7				■			●	+	.031	.006	.024	.031	.276
E	25°	CCGT 2.520.5-AL	T8310				◪			●	+	.008	.002	.006	.012	.098
		CCGT 2.521-AL	T8310				◪			●	+	.016	.002	.012	.016	.098
U E	.021 7°	CCGT 32.50.5-FF2	T7325	◪	◪					●	+	.008	.002	.006	.006	.098
			T9325	■	◪	◪				●	+	.008	.002	.006	.006	.098
U E	.075 .035 10°	CCGT 21.51-NF1	T7325	◪	■			■		●	+	.016	.002	.008	.012	.079
			T6310	◪	■	◪		■		●	+	.016	.002	.008	.012	.079
		CCGT 21.52-NF1	T7325	◪	■			■		◆	+	.031	.004	.009	.020	.079
			T6310	◪	■	◪		■		◆	+	.031	.004	.009	.020	.079
		CCGT 32.51-NF1	T7325	◪	■			■		●	+ +	.016	.002	.010	.012	.118
			T6310	◪	■	◪		■		●	+	.016	.002	.010	.012	.118

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CCGT 32.52-NF1	**T7325**	◪	■			■		●	++	.031	.005	.012	.020	.118
	T6310	◪	■	◪		■		●	+	.031	.005	.012	.020	.118
CCGT 21.50.5-SF3	**T6310**		■		◪	■		●	+	.008	.001	.006	.008	.063
	T8315		■		◪	□		●	+/-	.008	.001	.006	.008	.063
	H07		◪		◪	■		●	+	.008	.001	.006	.008	.063
CCGT 21.51-SF3	**T6310**		■		◪	■		●	+	.016	.001	.008	.008	.079
	T8315		■		◪	□		●	+/-	.016	.001	.008	.008	.079
	H07		◪		◪	■		●	+	.016	.001	.008	.008	.079
CCGT 2.520.5-SF3	**T6310**		■		◪	■		●	+	.008	.001	.006	.008	.079
	T8315		■		◪	□		●	+/-	.008	.001	.006	.008	.079
CCGT 2.521-SF3	**T6310**		■		◪	■		●	+	.016	.001	.009	.008	.098
	T8315		■		◪	□		●	+/-	.016	.001	.009	.008	.098
	H07		◪		◪	■		●	+	.016	.001	.009	.008	.098
CCGT 32.50.5-SF3	**T6310**		■		◪	■		●	+	.008	.001	.006	.008	.079
	T8315		■		◪	□		●	+/-	.008	.001	.006	.008	.079
	H07		◪		◪	■		●	+	.008	.001	.006	.008	.079
CCGT 32.51-SF3	**T6310**		■		◪	■		●	+	.016	.001	.010	.008	.110
	T8315		■		◪	□		●	+	.016	.001	.010	.008	.110
	H07		◪		◪	■		●	+	.016	.001	.010	.008	.110
CCGT 32.52-SF3	**T6310**		■		◪	■		●	+	.031	.003	.012	.024	.126
	T8315		■		◪	□		●	+	.031	.003	.012	.024	.126
	H07		◪		◪	■		●	+	.031	.003	.012	.024	.126
CCGT 432-SF3	**T6310**		■		◪	■		●	+	.031	.004	.014	.024	.157
	T8315		■		◪	□		●	+	.031	.004	.014	.024	.157
	H07		◪		◪	■		●	+	.031	.004	.014	.024	.157
CCGT 21.50.5R-SI	**T8330**	■	■	□	□	◪		●	+	.008	.003	.006	.016	.063
CCGT 21.51R-SI	**T8315**	◪	■	□	□	□		●	+	.016	.003	.010	.020	.059
	T8330	■	■	□	□	◪		●	+	.016	.003	.010	.020	.059
CCGT 32.51R-SI	**T8315**	◪	■	□	□	□		●	+	.016	.006	.012	.031	.079
	T8330	■	■	□	□	◪		●	+	.016	.006	.012	.031	.079
CCGT 432R-SI	**T8330**	■	■	□	□	◪		●	++	.031	.009	.017	.039	.157
CCGT 21.50.5L-SI	**T8330**	■	■	□	□	◪		●	+	.008	.003	.006	.016	.063
CCGT 21.51L-SI	**T8315**	◪	■	□	□	□		●	+	.016	.003	.010	.020	.059
	T8330	■	■	□	□	◪		●	+	.016	.003	.010	.020	.059
CCGT 32.51L-SI	**T8315**	◪	■	□	□	□		●	+	.016	.006	.012	.031	.079
	T8330	■	■	□	□	◪		●	+	.016	.006	.012	.031	.079
CCGT 432L-SI	**T8330**	■	■	□	□	◪		●	++	.031	.009	.017	.039	.157

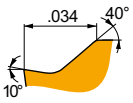
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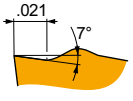
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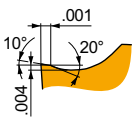
For tools see pages: T203, T219

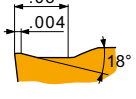
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CCMT 1.821-FM2	T9315	■		◪			□	●	++	.016	.002	.010	.012	.106
CCMT 21.50.5-FF	T8315	◪	■	◪	□	□		●	+/-	.008	.002	.006	.008	.079
	T8330	■	■	◪	□	□		●	+	.008	.002	.006	.008	.079
	T9315	■		◪				●	+	.008	.002	.006	.008	.079
CCMT 21.51-FF	T8315	◪	■	◪	□	□		●	+	.016	.002	.009	.016	.079
	T8330	■	■	◪	□	□		●	+	.016	.002	.009	.016	.079
	T9315	■		◪				●	+	.016	.002	.009	.008	.079
CCMT 32.51-FF	T8315	◪	■	◪	□	□		●	+	.016	.002	.009	.016	.079
	T8330	■	■	◪	□	□		●	+	.016	.002	.009	.016	.079
	T9315	■		◪				●	+	.016	.002	.009	.008	.079
CCMT 21.50.5-FF2	T7325	◪	◪					●	+	.008	.001	.005	.006	.059
	T9315	■		◪				●	+	.008	.001	.005	.006	.059
	T9325	■	◪	◪				●	+	.008	.001	.005	.006	.059
	T8330	■	◪	■				●	+	.008	.001	.005	.006	.059
	TT010	■	◪					●	+/-	.008	.001	.005	.006	.059
CCMT 21.51-FF2	T7325	◪	◪					●	+	.016	.002	.008	.012	.098
	T9315	■		◪				●	+	.016	.002	.008	.012	.098
	T9325	■	◪	◪				●	+	.016	.002	.008	.012	.098
	T9335	■	◪					●	++	.016	.002	.008	.012	.098
	T8330	■	◪	■				●	+	.016	.002	.008	.012	.098
	TT010	■	◪					●	+/-	.016	.002	.008	.012	.098
CCMT 2.520.5-FF2	T7325	◪	◪					●	+	.008	.002	.006	.008	.059
	T9325	■	◪	◪				●	+	.008	.002	.006	.008	.059
	T8330	■	◪	■				●	+	.008	.002	.006	.008	.059
	TT010	■	◪					●	+/-	.008	.002	.006	.008	.059
CCMT 2.521-FF2	T7325	◪	◪					●	+	.016	.002	.009	.012	.098
	T9325	■	◪	◪				●	+	.016	.002	.009	.012	.098
	T8330	■	◪	■				●	+	.016	.002	.009	.012	.098
	TT010	■	◪					●	+/-	.016	.002	.009	.012	.098
CCMT 2.522-FF2	T7325	◪	◪					●	++	.031	.003	.011	.024	.118
	T9325	■	◪	◪				●	+	.031	.003	.011	.024	.118
	T8330	■	◪	■				◗	+	.031	.003	.011	.024	.118
CCMT 32.51-FF2	T7325	◪	◪					●	++	.016	.002	.009	.012	.118
	T9315	■		◪				●	+	.016	.002	.009	.012	.118
	T9325	■	◪	◪				●	+	.016	.002	.009	.012	.118
	T9335	■	◪					●	++	.016	.002	.009	.012	.118
	T8330	■	◪	■				●	+	.016	.002	.009	.012	.118
	TT010	■	◪					●	+/-	.016	.002	.009	.012	.118
CCMT 32.52-FF2	T7325	◪	◪					●	++	.031	.003	.011	.024	.118
	T9315	■		◪				●	++	.031	.003	.011	.024	.118
	T9325	■	◪	◪				●	+	.031	.003	.011	.024	.118
	T8330	■	◪	■				◗	+	.031	.003	.011	.024	.118
	TT010	■	◪					●	+/-	.031	.003	.011	.024	.118



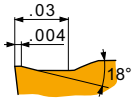


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CCMT 21.50.5-FM	**T7325**	◪	■			□		●	+	.008	.004	.006	.006	.039
	T7335	◪	■			□		●	+ +	.008	.004	.006	.006	.039
	T9315	■		◪				●	+	.008	.004	.006	.006	.039
	T9325	■	■	◪		□		●	+	.008	.004	.006	.006	.039
	T8315	◪	■	◪		□		●	+ / -	.008	.002	.006	.006	.039
	T8330	■	■	◪		□		●	+	.008	.002	.006	.006	.039
CCMT 21.51-FM	**T7325**	◪	■			□		●	+	.016	.006	.008	.012	.059
	T7335	◪	■			□		●	+ +	.016	.006	.008	.012	.059
	T9315	■		◪				●	+	.016	.006	.008	.012	.059
	T9325	■	■	◪		□		●	+	.016	.006	.008	.012	.059
	T8315	◪	■	◪		□		●	+ / -	.016	.003	.008	.012	.059
	T8330	■	■	◪		□		●	+	.016	.003	.008	.012	.059
CCMT 21.52-FM	**T7325**	◪	■			□		●	+ +	.031	.006	.012	.020	.079
	T9315	■		◪				●	+ +	.031	.006	.012	.020	.079
	T9325	■	■	◪		□		●	+	.031	.006	.012	.020	.079
	T8330	■	■	◪		□		⬢	+	.031	.005	.012	.020	.079
CCMT 32.50.5-FM	**T7325**	◪	■			□		●	+	.008	.004	.006	.008	.118
	T7335	◪	■			□		●	+ +	.008	.004	.006	.008	.118
	T9315	■		◪				●	+	.008	.004	.006	.008	.118
	T9325	■	■	◪		□		●	+	.008	.004	.006	.008	.118
	T8315	◪	■	◪		□		●	+ / -	.008	.002	.006	.008	.118
	T8330	■	■	◪		□		●	+	.008	.002	.006	.006	.118
CCMT 32.51-FM	**T7325**	◪	■			□		●	+ +	.016	.006	.012	.012	.118
	T7335	◪	■			□		●	+ +	.016	.006	.012	.012	.118
	T9315	■		◪				●	+ +	.016	.006	.012	.012	.118
	T9325	■	■	◪		□		●	+	.016	.006	.012	.012	.118
	T8315	◪	■	◪		□		●	+	.016	.004	.012	.012	.118
	T8330	■	■	◪		□		●	+	.016	.004	.012	.012	.118
CCMT 32.52-FM	**T7325**	◪	■			□		●	+ +	.031	.006	.014	.020	.118
	T7335	◪	■			□		●	+ +	.031	.006	.014	.020	.118
	T9315	■		◪				●	+ +	.031	.006	.014	.020	.118
	T9325	■	■	◪		□		●	+	.031	.006	.014	.020	.118
	T8315	◪	■	◪		□		●	+	.031	.006	.014	.020	.118
	T8330	■	■	◪		□		⬢	+	.031	.006	.014	.020	.118
CCMT 431-FM	**T7325**	◪	■			□		●	+ +	.016	.006	.012	.016	.157
	T7335	◪	■			□		●	+ +	.016	.006	.012	.016	.157
	T9315	■		◪				●	+ +	.016	.006	.012	.016	.157
	T9325	■	■	◪		□		●	+	.016	.006	.012	.016	.157
	T8315	◪	■	◪		□		●	+	.016	.004	.012	.016	.157
	T8330	■	■	◪		□		●	+	.016	.004	.012	.016	.157
CCMT 432-FM	**T7325**	◪	■			□		●	+ +	.031	.006	.014	.020	.157
	T7335	◪	■			□		●	+ +	.031	.006	.014	.020	.157
	T9315	■		◪				●	+ +	.031	.006	.014	.020	.157
	T9325	■	■	◪		□		●	+	.031	.006	.014	.020	.157
	T8315	◪	■	◪		□		●	+	.031	.006	.014	.020	.157
	T8330	■	■	◪		□		⬢	+	.031	.006	.014	.020	.157
CCMT 433-FM	**T9325**	■	■	◪		□		⬢	+ +	.047	.006	.018	.031	.157
	T8330	■	■	◪		□		⬢	+ +	.047	.006	.018	.031	.157
CCMT 2.521-FM2	**T9325**	■	◪	◪		□		●	+	.016	.002	.010	.012	.106
	T9335	■	◪			□		●	+ +	.016	.002	.010	.012	.106
	T8330	■	◪	■		□	□	●	+	.016	.002	.010	.012	.106
CCMT 2.522-FM2	**T9325**	■	◪	◪		□		⬢	+	.031	.004	.016	.024	.138
	T9335	■	◪			□		⬢	+ +	.031	.004	.016	.024	.138
	T8330	■	◪	■		□	□	⬢	+	.031	.004	.016	.024	.138
CCMT 32.51-FM2	**T9315**	■		◪			□	●	+ +	.016	.002	.010	.012	.106
	T9325	■	◪	◪		□		●	+	.016	.002	.010	.012	.106
	T6310	◪	◪	◪		□	□	●	+	.016	.002	.010	.012	.106

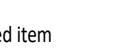




ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CCMT 32.51-FM2	T8330	■	◪	■		□	□	●	+	.016	.002	.010	.012	.106
CCMT 32.52-FM2	T7325	◪	◪			□		⬢	+ +	.031	.004	.014	.031	.138
	T9315	■		◪			□	●	+ +	.031	.004	.014	.031	.138
	T9325	■	◪	◪		□		⬢	+	.031	.004	.014	.031	.138
	T9335	■	◪			□		⬢	+ +	.031	.004	.014	.031	.138
	T6310	◪	◪	◪		□	□	⬢	+	.031	.004	.014	.031	.138
	T8330	■	◪	■		□	□	⬢	+	.031	.004	.014	.031	.138
CCMT 432-FM2	T7325	◪	◪			□		⬢	+ +	.031	.006	.014	.031	.157
	T9325	■	◪	◪		□		⬢	+	.031	.006	.014	.031	.157
	T9335	■	◪			□		⬢	+ +	.031	.006	.014	.031	.157
	T8330	■	◪	■		□	□	⬢	+	.031	.006	.014	.031	.157
CCMT 21.50.5-NF2	T7325	◪	■			■		●	+	.008	.003	.006	.008	.059
	T9325	◪	■	◪		◪		●	+	.008	.003	.006	.008	.059
	T6310	◪	■	◪		■		●	+	.008	.003	.006	.008	.059
	T8330	◪	■	◪		◪		●	+	.008	.003	.006	.008	.059
CCMT 21.51-NF2	T7325	◪	■			■		●	+	.016	.004	.008	.008	.079
	T9315	◪		◪				●	+	.016	.004	.008	.008	.079
	T9325	◪	■	◪		◪		●	+	.016	.004	.008	.008	.079
	T9335	◪	■			◪		●	+ +	.016	.004	.008	.008	.079
	T6310	◪	■	◪		■		●	+	.016	.004	.008	.008	.079
	T8330	◪	■	◪		◪		●	+	.016	.004	.008	.008	.079
	H07		◪	◪		■		●	+	.016	.004	.008	.008	.079
CCMT 2.521-NF2	T5315	◪	□	■				●	+	.016	.004	.010	.008	.142
	T7325	◪	■			■		●	+ +	.016	.004	.010	.008	.142
	T7335	◪	◪					●	+ +	.016	.004	.010	.008	.142
	T9315	◪		◪				●	+ +	.016	.004	.010	.008	.142
	T9325	◪	■	◪		◪		●	+	.016	.004	.010	.008	.142
	T9335	◪	■			◪		●	+ +	.016	.004	.010	.008	.142
CCMT 2.522-NF2	T5315	◪	□	■				●	+	.031	.005	.016	.024	.157
	T7325	◪	■			■		●	+ +	.031	.005	.016	.024	.157
	T7335	◪	◪					●	+ +	.031	.005	.016	.024	.157
	T9325	◪	■	◪		◪		●	+	.031	.005	.016	.024	.157
	H07*		◪	◪		■		●	+	.031	.005	.016	.024	.157
CCMT 32.51-NF2	T7325	◪	■			■		●	+ +	.016	.004	.010	.008	.142
	T9315	◪		◪				●	+ +	.016	.004	.010	.008	.142
	T9325	◪	■	◪		◪		●	+	.016	.004	.010	.008	.142
	T9335	◪	■			◪		●	+ +	.016	.004	.010	.008	.142
	T6310	◪	■	◪		■		●	+	.016	.004	.010	.008	.142
	T8330	◪	■	◪		◪		●	+	.016	.004	.010	.008	.142
	H07		◪	◪		■		●	+	.016	.004	.010	.008	.142
CCMT 32.52-NF2	T7325	◪	■			■		⬢	+ +	.031	.005	.014	.024	.157
	T9315	◪		◪				●	+ +	.031	.005	.014	.024	.157
	T9325	◪	■	◪		◪		⬢	+	.031	.005	.014	.024	.157
	T9335	◪	■			◪		⬢	+ +	.031	.005	.014	.024	.157
	T6310	◪	■	◪		■		⬢	+	.031	.005	.014	.024	.157
	T8330	◪	■	◪		◪		⬢	+	.031	.005	.014	.024	.157
CCMT 21.50.5-RF	T7335	◪	■					●	+ +	.008	.004	.006	.039	.118
CCMT 21.51-RF	T5315	◪	□	■				●	+	.016	.004	.012	.039	.118
	T7335	◪	■					●	+ +	.016	.006	.012	.039	.118
CCMT 32.51-RF	T7335	◪	■					●	+ +	.016	.006	.012	.031	.157
CCMT 32.52-RF	T5315	◪	□	■				●	+	.031	.004	.016	.031	.157
	T7335	◪	■					●	+ +	.031	.006	.016	.031	.157
CCMT 432-RF	T5315	◪	□	■				●	+ +	.031	.008	.024	.039	.177
	T7335	◪	■					⬢	+ +	.031	.008	.024	.039	.177



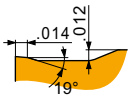


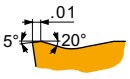


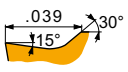
I.C.	R
.25	.039
.375	.059
.5	.098

* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CCMT 32.51-RM	**T5305**	☐		■			☐	●	+	.016	.006	.012	.039	.157
	T5315	◪	☐	■			☐	●	+	.016	.006	.012	.039	.157
	T7335	◪	■					●	++	.016	.006	.012	.039	.157
	T9315	■		◪			☐	●	++	.016	.006	.012	.039	.157
	T9325	■	■	◪		☐		●	+	.016	.006	.012	.039	.157
	T8330	■	■	■		◪	☐	●	+	.016	.006	.012	.039	.157
CCMT 32.52-RM	**T5305**	☐		■			☐	●	+	.031	.008	.016	.059	.157
	T5315	◪	☐	■			☐	⬢	+	.031	.008	.016	.059	.157
	T7335	◪	■					⬢	++	.031	.008	.016	.059	.157
	T9315	■		◪			☐	⬢	++	.031	.008	.016	.059	.157
	T9325	■	■	◪		☐		⬢	+	.031	.008	.016	.059	.157
	T8330	■	■	■		◪	☐	⬢	+	.031	.008	.016	.059	.157
CCMT 432-RM	**T5305**	☐		■			☐	●	+	.031	.008	.016	.059	.177
	T5315	◪	☐	■			☐	⬢	+	.031	.008	.016	.059	.177
	T7335	◪	■					⬢	++	.031	.008	.016	.059	.177
	T9315	■		◪			☐	⬢	++	.031	.008	.016	.059	.177
	T9325	■	■	◪		☐		⬢	+	.031	.008	.016	.059	.177
	T8330	■	■	■		◪	☐	⬢	+	.031	.008	.016	.059	.177
CCMT 433-RM	**T9315**	■		◪			☐	⬢	++	.047	.008	.020	.059	.177
	T9325	■	■	◪		☐		⬢	+	.047	.008	.020	.059	.177
	T8330	■	■	■		◪	☐	⬢	+	.047	.008	.020	.059	.177
CCMT 431-RM3	**T7325**	◪	◪					●	++	.016	.010	.012	.016	.142
	T9315	■		◪				●	++	.016	.010	.012	.016	.142
	T9325	■	◪	◪				●	+	.016	.010	.012	.016	.142
CCMT 432-RM3	**T7325**	◪	◪					⬢	++	.031	.010	.016	.031	.157
	T9315	■		◪				●	++	.031	.010	.016	.031	.157
	T9325	■	◪	◪				⬢	++	.031	.010	.016	.031	.157
	T6310	◪	◪	◪				⬢	+	.031	.010	.016	.031	.157
CCMT 433-RM3	**T7325***	◪	◪					⬢	++	.047	.010	.018	.047	.157
	T9315	■		◪				⬢	++	.047	.010	.018	.047	.157
CCMT 21.50.5-UR	**T7325**	◪	■					●	+	.008	.004	.006	.008	.079
	T7335	◪	■					●	++	.008	.004	.006	.008	.079
	T9315	■		◪				●	+	.008	.004	.006	.008	.079
	T9325	■	■	◪				●	+	.008	.004	.006	.008	.079
	T8315	◪	■	■	☐			●	+/-	.008	.003	.006	.008	.079
	T8330	■	■	■	☐			●	+	.008	.003	.006	.008	.079
	TT310	■	◪					●	+/-	.008	.003	.006	.008	.079
CCMT 21.51-UR	**T5315**	◪	☐	■				●	+	.016	.004	.012	.016	.079
	T7325	◪	■					●	++	.016	.006	.012	.016	.079
	T7335	◪	■					●	++	.016	.006	.012	.016	.079
	T9315	■		◪				●	++	.016	.006	.012	.016	.079
	T9325	■	■	◪				●	+	.016	.006	.012	.016	.079
	T8315	◪	■	■	☐			●	+	.016	.003	.012	.016	.079
	T8330	■	■	■	☐			●	+	.016	.003	.012	.016	.079
	TT310	■	◪					●	+/-	.016	.003	.012	.016	.079
CCMT 21.52-UR	**T5315**	◪	☐	■				●	+	.031	.004	.020	.031	.079
	T7325	◪	■					●	++	.031	.006	.020	.031	.079
	T9315	■		◪				●	++	.031	.006	.020	.031	.079
	T9325	■	■	◪				●	++	.031	.006	.020	.031	.079
	T8330	■	■	■	☐			⬢	+	.031	.003	.020	.031	.079
CCMT 32.50.5-UR	**TT310**	■	◪					●	+/-	.008	.003	.006	.008	.118
CCMT 32.51-UR	**T5315**	◪	☐	■				●	+	.016	.004	.012	.016	.079
	T7325	◪	■					●	++	.016	.006	.012	.016	.079
	T7335	◪	■					●	++	.016	.006	.012	.016	.079
	T9310	■		◪				●	+	.016	.006	.012	.016	.079
	T9315	■		◪				●	++	.016	.006	.012	.016	.079
	T9325	■	■	◪				●	+	.016	.006	.012	.016	.079
	T8315	◪	■	■	☐			●	+	.016	.003	.012	.016	.079

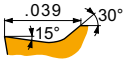


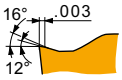


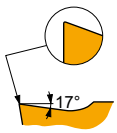


* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CCMT 32.51-UR	**T8330**	■	■	■	□			●	+	.016	.003	.012	.016	.079
	TT310	■	◪					●	+ / -	.016	.003	.012	.016	.118
CCMT 32.52-UR	**T5315**	◪	□	■				●	+	.031	.004	.020	.031	.118
	T7325	◪	■					●	+ +	.031	.006	.020	.031	.118
	T7335	◪	■					●	+ +	.031	.006	.020	.031	.118
	T9310	■		◪				●	+	.031	.006	.020	.031	.118
	T9315	■		◪				●	+ +	.031	.006	.020	.031	.118
	T9325	■	■	◪				●	+ +	.031	.006	.020	.031	.118
	T8315	◪	■	■	□			●	+	.031	.003	.020	.031	.118
	T8330	■	■	■	□			⬣	+	.031	.003	.020	.031	.118
	TT310	■	◪					●	+ / -	.031	.003	.020	.031	.118
CCMT 431-UR	**T5315**	◪	□	■				●	+	.016	.004	.012	.016	.118
	T7325	◪	■					●	+ +	.016	.006	.012	.016	.118
	T9315	■		◪				●	+ +	.016	.006	.012	.016	.118
	T9325	■	■	◪				●	+	.016	.006	.012	.016	.118
	T8330	■	■	■	□			●	+	.016	.003	.012	.016	.118
CCMT 432-UR	**T5315**	◪	□	■				●	+	.031	.004	.020	.031	.157
	T7325	◪	■					●	+ +	.031	.006	.020	.031	.157
	T7335	◪	■					●	+ +	.031	.006	.020	.031	.157
	T9315	■		◪				●	+ +	.031	.006	.020	.031	.157
	T9325	■	■	◪				●	+ +	.031	.006	.020	.031	.157
	T8330	■	■	■	□			⬣	+	.031	.003	.020	.031	.157
CCMT 433-UR	**T5315**	◪	□	■				●	+	.047	.004	.020	.047	.157
	T7325	◪	■					⬣	+ +	.047	.006	.020	.047	.157
	T9315	■		◪				●	+ +	.047	.006	.020	.047	.157
	T9325	■	■	◪				⬣	+ +	.047	.006	.020	.047	.157
CCMT 21.51W-FM	**T9315**	■		◪				●	+ +	.016	.006	.016	.012	.079
	T9325	■	■	◪		□		●	+	.016	.006	.016	.012	.079
CCMT 32.51W-FM	**T7325**	◪	■			□		●	+ +	.016	.006	.016	.012	.079
	T9315	■		◪				●	+ +	.016	.006	.016	.012	.079
	T9325	■	■	◪		□		●	+	.016	.006	.016	.012	.079
	T8330	■	■	◪		□		●	+	.016	.004	.016	.012	.079
CCMT 32.52W-FM	**T9315**	■		◪				●	+ +	.031	.006	.016	.020	.118
	T9325	■	■	◪		□		●	+	.031	.006	.016	.020	.118
	T8330	■	■	◪		□		⬣	+	.031	.006	.016	.020	.118
CCMT 21.51W-UR	**TT310**	■	◪					●	+ / -	.016	.003	.012	.016	.079
CCMT 32.52W-UR	**TT310**	■	◪					●	+ / -	.031	.003	.020	.031	.118

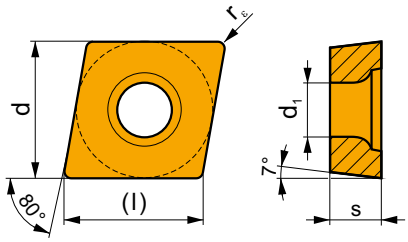






CCMW

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21.5	.250	.110	.252	.094
32.5	.375	.173	.382	.156
43	.500	.217	.508	.187

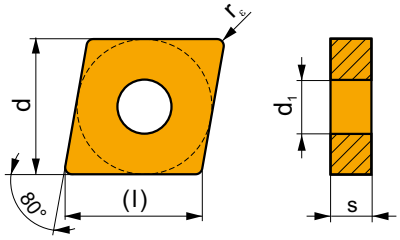


For tools see pages: T203, T219

ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CCMW 21.50.5	**T5305**	☐		■			◪	●	+ / -	.008	.004	.006	.008	.165
	T6310	◪	☐	◪			◪	●	+	.008	.002	.006	.008	.165
CCMW 21.51	**T5305**	☐		■			◪	●	+	.016	.004	.012	.016	.165
	T5315	◪	☐	■			☐	●	+	.016	.004	.012	.016	.165
	T6310	◪	☐	◪			◪	●	+	.016	.002	.012	.016	.165
CCMW 32.51	**T5305**	☐		■			◪	●	+	.016	.004	.012	.016	.248
	T5315	◪	☐	■			☐	●	+	.016	.004	.012	.016	.248
	T6310	◪	☐	◪			◪	●	+	.016	.002	.012	.016	.248
CCMW 32.52	**T5305**	☐		■			◪	●	+	.031	.004	.014	.031	.248
	T5315	◪	☐	■			☐	⬣	+	.031	.004	.014	.031	.248
	T6310	◪	☐	◪			◪	⬣	+	.031	.002	.014	.031	.248
CCMW 431	**T5305**	☐		■			◪	●	+	.016	.004	.012	.016	.331
	T5315	◪	☐	■			☐	●	+	.016	.004	.012	.016	.331
	T6310	◪	☐	◪			◪	●	+	.016	.002	.012	.016	.331
CCMW 432	**T5305**	☐		■			◪	●	+	.031	.004	.016	.031	.331
	T5315	◪	☐	■			☐	⬣	+	.031	.004	.016	.031	.331
	T6310	◪	☐	◪			◪	⬣	+	.031	.002	.016	.031	.331

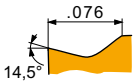
CNGG

	d	d_1	l	s
43	.500	.203	.508	.187



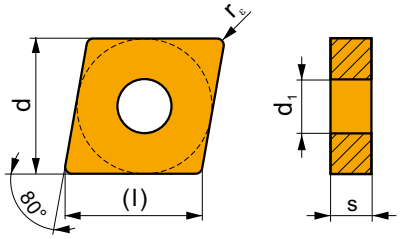
For tools see pages: T184-T185, T187, T215

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNGG 430.5-SF	**T6310**	◪	■		□	■	□	●	+	.008	.003	.006	.008	.098
	T8315	◪	■		□	□	□	●	+/-	.008	.003	.006	.008	.098
	T8330	◪	■		□	◪	□	●	+	.008	.003	.006	.008	.098
	H07		◪		□	■		●	+	.008	.003	.006	.008	.098



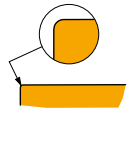
CNMA

	d	d_1	l	s
43	.500	.203	.508	.187
54	.625	.250	.634	.250
64	.750	.313	.760	.250



For tools see pages: T184-T185, T187, T215

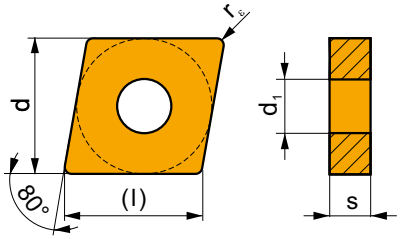
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMA 431	**T5305**	□		■			◪	●	+	.016	.004	.012	.016	.331
	T5315	◪	□	■			□	●	+	.016	.004	.012	.016	.331
CNMA 432	**T5305**	□		■			◪	●	+	.031	.004	.024	.031	.331
	T5315	◪	□	■			□	⬬	++	.031	.004	.024	.031	.331
	T6310	◪	□	◪			◪	⬬	++	.031	.002	.024	.031	.331
CNMA 433	**T5305**	□		■			◪	⬬	+	.047	.004	.024	.047	.331
	T5315	◪	□	■			□	⬬	++	.047	.004	.024	.047	.331
	T6310	◪	□	◪			◪	⬬	++	.047	.002	.024	.047	.331
CNMA 434	**T5305**	□		■			◪	⬬	+	.063	.004	.024	.063	.331
	T5315	◪	□	■			□	⬬	++	.063	.004	.024	.063	.331
CNMA 543	**T5305**	□		■			◪	⬬	+	.047	.004	.024	.047	.335
	T5315	◪	□	■			□	⬬	++	.047	.004	.024	.047	.335
	T6310	◪	□	◪			◪	⬬	++	.047	.002	.024	.047	.335
CNMA 544	**T5305**	□		■			◪	⬬	+	.063	.004	.024	.063	.335
	T5315	◪	□	■			□	⬬	++	.063	.004	.024	.063	.335
CNMA 643	**T5305**	□		■			◪	⬬	++	.047	.004	.035	.047	.500



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMA 643	**T5315**	◪	□	■			□		++	.047	.004	.035	.047	.500
	T6310	◪	□	◪			◪		++	.047	.002	.035	.047	.500
CNMA 644	**T5305**	□		■			◪		++	.063	.004	.035	.063	.500
	T5315	◪	□	■			□		++	.063	.004	.035	.063	.500
CNMA 432S	**T5305**	□		■			◪		+	.031	.004	.024	.031	.331
CNMA 433S	**T5305**	□		■			◪		+	.047	.004	.024	.063	.331
CNMA 543S	**T5305**	□		■			◪		+	.047	.004	.024	.047	.335
CNMA 644S	**T5305**	□		■			◪		++	.063	.004	.035	.063	.500

CNMG

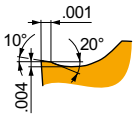
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43	.500	.203	.508	.187
54	.625	.250	.634	.250
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86	1.000	.359	.016	.375

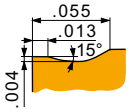


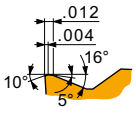
For tools see pages: T184-T185, T187, T215

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMG 431-FF	**T7325**	◪	■			□		●	+	.016	.004	.006	.016	.059
	T8315	◪	■	◪	□	□		●	+/-	.016	.002	.006	.016	.059
CNMG 432-FF	**T7325**	◪	■			□		●	+	.031	.006	.008	.031	.059
	T8315	◪	■	◪	□	□		●	+/-	.031	.003	.008	.031	.059
CNMG 321-FM	**T7325**	◪	■			□		●	++	.016	.006	.012	.020	.248
	T9315	■		◪				●	++	.016	.006	.012	.020	.248
	T9325	■	■	◪		□		●	+	.016	.006	.012	.020	.248
	T8330	■	■	◪		□		●	+	.016	.004	.012	.020	.248
CNMG 322-FM	**T7325**	◪	■			□		●	++	.031	.006	.018	.031	.118
	T9315	■		◪				●	++	.031	.006	.018	.031	.118
	T9325	■	■	◪		□		●	++	.031	.006	.018	.031	.118
	T8330	■	■	◪		□		●	++	.031	.004	.018	.031	.118
CNMG 431-FM	**T7325**	◪	■			□		●	++	.016	.006	.012	.020	.118
	T7335	◪	■			□		●	++	.016	.006	.012	.020	.118
	T9310	■		◪				●	+	.016	.006	.012	.020	.118
	T9315	■		◪				●	++	.016	.006	.012	.020	.118
	T9325	■	■	◪		□		●	+	.016	.006	.012	.020	.118
	T8315	◪	■	◪		□		●	+	.016	.004	.012	.020	.118
	T8330	■	■	◪		□		●	+	.016	.004	.012	.020	.118
	TT310	■	◪					●	+/-	.016	.004	.012	.020	.118
CNMG 432-FM	**T7325**	◪	■			□		●	++	.031	.006	.018	.031	.118
	T7335	◪	■			□		●	++	.031	.006	.018	.031	.118

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMG 432-FM	T9310	■		◪				●	+	.031	.006	.018	.031	.118
	T9315	■		◪				●	++	.031	.006	.018	.031	.118
	T9325	■	■	◪		□		●	++	.031	.006	.018	.031	.118
	T8315	◪	■	◪		□		⬢	+	.031	.006	.018	.031	.118
	T8330	■	■	◪		□		⬢	++	.031	.006	.018	.031	.118
	TT310	■	◪					●	+/-	.031	.006	.018	.031	.118
CNMG 433-FM	T7325	◪	■			□		⬢	++	.047	.006	.018	.047	.157
	T9315	■		◪				⬢	++	.047	.006	.018	.047	.157
	T9325	■	■	◪		□		⬢	++	.047	.006	.018	.047	.157
CNMG 432-KR	T5305	◪		■			□	●	++	.031	.010	.024	.031	.276
	T5315	◪	□	■			□	⬢	++	.031	.010	.024	.031	.276
CNMG 433-KR	T5305	◪		■			□	⬢	++	.047	.010	.028	.047	.276
	T5315	◪	□	■			□	⬢	++	.047	.010	.028	.047	.276
CNMG 322-M	T9315	■		◪			□	⬢	++	.031	.006	.024	.031	.157
	T9325	■	◪	◪				⬢	++	.031	.006	.024	.031	.157
	T9335	■	◪					⬢	+++	.031	.006	.024	.031	.157
CNMG 431-M	T5315	◪	□	■			□	●	+	.016	.007	.012	.031	.236
	T9310	■		◪				●	+	.016	.007	.012	.031	.236
	T9315	■		◪			□	●	++	.016	.007	.012	.031	.236
	T9325	■	◪	◪				●	+	.016	.007	.012	.031	.236
	T9335	■	◪					●	++	.016	.007	.012	.031	.236
CNMG 432-M	T5305	□		■			□	●	+	.031	.007	.024	.031	.236
	T5315	◪	□	■			□	⬢	++	.031	.007	.024	.031	.236
	T9310	■		◪				⬢	++	.031	.007	.024	.031	.236
	T9315	■		◪			□	⬢	++	.031	.007	.024	.031	.236
	T9325	■	◪	◪				⬢	++	.031	.007	.024	.031	.236
	T9335	■	◪					⬢	+++	.031	.007	.024	.031	.236
	T8330	■	◪	■			□	⬢	++	.031	.007	.024	.031	.236
CNMG 433-M	T5305	□		■			□	⬢	++	.047	.007	.031	.047	.236
	T5315	◪	□	■			□	⬢	++	.047	.007	.031	.047	.236
	T9310	■		◪				⬢	++	.047	.007	.031	.047	.236
	T9315	■		◪			□	⬢	++	.047	.007	.031	.047	.236
	T9325	■	◪	◪				⬢	++	.047	.007	.031	.047	.236
	T9335	■	◪					⬢	+++	.047	.007	.031	.047	.236
CNMG 434-M	T5305	□		■			□	⬢	++	.063	.007	.031	.063	.236
	T9325	■	◪	◪				⬢	++	.063	.007	.031	.063	.236
	T9335	■	◪					⬢	+++	.063	.007	.031	.063	.236
CNMG 542-M	T9310	■		◪				⬢	++	.031	.007	.024	.031	.276
	T9315	■		◪			□	⬢	++	.031	.007	.024	.031	.276
	T9325	■	◪	◪				⬢	++	.031	.007	.024	.031	.276
	T9335	■	◪					⬢	+++	.031	.007	.024	.031	.276
CNMG 543-M	T9315	■		◪			□	⬢	++	.047	.007	.024	.047	.276
	T9325	■	◪	◪				⬢	++	.047	.007	.024	.047	.276
	T9335	■	◪					⬢	+++	.047	.007	.024	.047	.276
CNMG 544-M	T9325	■	◪	◪				⬢	++	.063	.007	.024	.063	.276
	T9335	■	◪					⬢	+++	.063	.007	.024	.063	.276
CNMG 642-M	T9315	■		◪			□	⬢	++	.031	.007	.024	.031	.315
	T9325	■	◪	◪				⬢	++	.031	.007	.024	.031	.315
	T9335	■	◪					⬢	+++	.031	.007	.024	.031	.315
CNMG 643-M	T9310	■		◪				⬢	++	.047	.007	.031	.047	.315
	T9315	■		◪			□	⬢	++	.047	.007	.031	.047	.315
	T9325	■	◪	◪				⬢	++	.047	.007	.031	.047	.315
	T9335	■	◪					⬢	+++	.047	.007	.031	.047	.315
CNMG 644-M	T9310*	■		◪				⬢	++	.063	.007	.031	.063	.315
	T9315	■		◪			□	⬢	++	.063	.007	.031	.063	.315
	T9325	■	◪	◪				⬢	++	.063	.007	.031	.063	.315
	T9335	■	◪					⬢	+++	.063	.007	.031	.063	.315

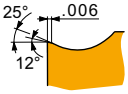


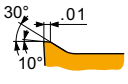


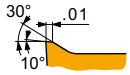


* Non-stocked item

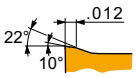
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMG 321-NF	**T7335**	◪	■			◪		●	++	.016	.004	.012	.016	.118
	T9325	■	■			◪		●	+	.016	.004	.012	.016	.118
	T6310	◪	■		□	◪		●	+	.016	.004	.012	.016	.118
	T8315	◪	■		□	□		●	+	.016	.004	.012	.016	.118
CNMG 322-NF	**T7335**	◪	■			◪		⬢	++	.031	.006	.012	.031	.118
	T9325	■	■			◪		●	+	.031	.006	.012	.031	.118
	T6310	◪	■		□	◪		⬢	+	.031	.005	.012	.031	.118
	T8330	■	■		□	◪		⬢	+	.031	.005	.012	.031	.118
CNMG 431-NF	**T7325**	◪	■			◪		●	++	.016	.006	.012	.016	.118
	T7335	◪	■			◪		●	++	.016	.006	.012	.016	.118
	T9315	■						●	++	.016	.006	.012	.016	.118
	T9325	■	■			◪		●	+	.016	.006	.012	.016	.118
	T6310	◪	■		□	◪		●	+	.016	.005	.012	.016	.118
	T8315	◪	■		□	□		●	+	.016	.005	.012	.016	.118
	T8330	■	■		□	◪		●	+	.016	.005	.012	.016	.118
	HF7		□		□	□		●	+	.016	.005	.012	.016	.118
CNMG 432-NF	**T7325**	◪	■			◪		⬢	++	.031	.006	.014	.031	.138
	T7335	◪	■			◪		⬢	++	.031	.006	.014	.031	.138
	T9315	■						●	++	.031	.006	.014	.031	.138
	T9325	■	■			◪		⬢	+	.031	.006	.014	.031	.138
	T6310	◪	■		□	◪		⬢	+	.031	.006	.014	.031	.138
	T8315	◪	■		□	□		⬢	+	.031	.006	.014	.031	.138
	T8330	■	■		□	◪		⬢	+	.031	.006	.014	.031	.138
	HF7		□		□	□		●	+	.031	.006	.014	.031	.138
CNMG 433-NF	**T7325**	◪	■			◪		⬢	++	.047	.006	.014	.047	.157
	T7335	◪	■			◪		⬢	++	.047	.006	.014	.047	.157
	T9315	■						⬢	++	.047	.006	.014	.047	.157
	T9325	■	■			◪		⬢	+	.047	.006	.014	.047	.157
	T6310	◪	■		□	◪		⬢	+	.047	.006	.014	.047	.157
	T8330	■	■		□	◪		⬢	+	.047	.006	.014	.047	.157
CNMG 431-NM	**T7325**	◪	■			■		●	++	.016	.006	.012	.020	.118
	T7335	◪	■					●	++	.016	.006	.012	.020	.118
	T9315	■		□				●	++	.016	.006	.012	.020	.118
	T9325	■	■	□		□		●	+	.016	.006	.012	.020	.118
	T8315	◪	■	□	□	□		●	+	.016	.006	.012	.020	.118
	T8330	■	■	□	□	◪		●	+	.016	.006	.012	.020	.118
CNMG 432-NM	**T7325**	◪	■			■		⬢	++	.031	.008	.016	.031	.118
	T7335	◪	■					⬢	++	.031	.008	.016	.031	.118
	T9315	■		□				⬢	++	.031	.008	.016	.031	.118
	T9325	■	■	□		□		⬢	+	.031	.008	.016	.031	.118
	T8315	◪	■	□	□	□		⬢	+	.031	.008	.016	.031	.118
	T8330	■	■	□	□	◪		⬢	+	.031	.008	.016	.031	.118
CNMG 433-NM	**T7325**	◪	■			■		⬢	++	.047	.008	.016	.047	.138
	T7335	◪	■					⬢	++	.047	.008	.016	.047	.138
	T9315	■		□				⬢	++	.047	.008	.016	.047	.138
	T9325	■	■	□		□		⬢	+	.047	.008	.016	.047	.138
	T8315	◪	■	□	□	□		⬢	+	.047	.008	.016	.047	.138
	T8330	■	■	□	□	◪		⬢	+	.047	.008	.016	.047	.138
CNMG 542-NM	**T7325**	◪	■			■		⬢	++	.031	.010	.020	.031	.197
	T7335	◪	■					⬢	++	.031	.010	.020	.031	.197
	T9325	■	■	□		□		⬢	++	.031	.010	.020	.031	.197
	T8315	◪	■	□	□	□		⬢	+	.031	.010	.020	.031	.197
	T8330	■	■	□	□	◪		⬢	++	.031	.010	.020	.031	.197
CNMG 543-NM	**T7325**	◪	■			■		⬢	++	.047	.010	.020	.047	.197
	T7335	◪	■					⬢	++	.047	.010	.020	.047	.197
	T9325	■	■	□		□		⬢	++	.047	.010	.020	.047	.197
	T8315	◪	■	□	□	□		⬢	+	.047	.010	.020	.047	.197



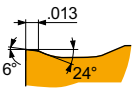


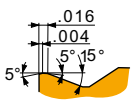



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMG 643-NM	T7325	◪	■			■		●	++	.047	.012	.020	.047	.315
	T7335	◪	■					●	++	.047	.012	.020	.047	.315
	T9325	■	■	□		□		●	++	.047	.012	.020	.047	.315
	T8315	◪	■	□	□	□		●	+	.047	.012	.020	.047	.315
	T8330	■	■	□	□	◪		●	++	.047	.012	.020	.047	.315
CNMG 322-NMR	T7325	◪	■			◪		●	++	.031	.008	.016	.031	.118
	T7335	◪	■			◪		●	++	.031	.008	.016	.031	.118
	T9325	■	■			◪		●	+	.031	.008	.016	.031	.118
CNMG 431-NMR	T6310	◪	■			◪		●	+	.016	.008	.012	.016	.157
	T7325	◪	■			◪		●	++	.016	.008	.012	.016	.157
	T7335	◪	■			◪		●	++	.016	.008	.012	.016	.157
	T9315	■						●	+	.016	.008	.012	.016	.157
	T9325	■	■			◪		●	+	.016	.008	.012	.016	.157
	T8330	■	■			◪		●	+	.016	.008	.012	.016	.157
CNMG 432-NMR	T6310	◪	■			◪		●	++	.031	.008	.022	.031	.197
	T7325	◪	■			◪		●	++	.031	.008	.022	.031	.197
	T7335	◪	■			◪		●	++	.031	.008	.022	.031	.197
	T9315	■						●	++	.031	.008	.022	.031	.197
	T9325	■	■			◪		●	++	.031	.008	.022	.031	.197
	T8330	■	■			◪		●	++	.031	.008	.022	.031	.197
CNMG 433-NMR	T6310	◪	■			◪		●	++	.047	.009	.024	.047	.217
	T7325	◪	■			◪		●	++	.047	.009	.024	.047	.217
	T7335	◪	■			◪		●	+++	.047	.009	.024	.047	.217
	T9315	■						●	++	.047	.009	.024	.047	.217
	T9325	■	■			◪		●	++	.047	.009	.024	.047	.217
	T8330	■	■			◪		✖	++	.047	.009	.024	.047	.217
CNMG 434-NMR	T7325	◪	■			◪		●	++	.063	.010	.026	.063	.217
	T7335	◪	■			◪		●	+++	.063	.010	.026	.063	.217
	T9325	■	■			◪		●	++	.063	.010	.026	.063	.217
CNMG 542-NMR	T7325	◪	■			◪		●	++	.031	.009	.022	.031	.256
	T7335	◪	■			◪		●	++	.031	.009	.022	.031	.256
	T9315	■						●	++	.031	.009	.022	.031	.256
	T9325	■	■			◪		●	++	.031	.009	.022	.031	.256
CNMG 543-NMR	T7325	◪	■			◪		●	++	.047	.009	.026	.047	.276
	T7335	◪	■			◪		●	+++	.047	.009	.026	.047	.276
	T9315	■						●	++	.047	.009	.026	.047	.276
	T9325	■	■			◪		●	++	.047	.009	.026	.047	.276
	T8330	■	■			◪		✖	++	.047	.009	.026	.047	.276
CNMG 544-NMR	T7325	◪	■			◪		✖	++	.063	.010	.028	.063	.276
	T7335	◪	■			◪		✖	+++	.063	.010	.028	.063	.276
	T9325	■	■			◪		●	++	.063	.010	.028	.063	.276
	T8330	■	■			◪		✖	++	.063	.010	.028	.063	.276
CNMG 642-NMR	T6310	◪	■			◪		●	++	.031	.008	.024	.031	.295
	T7325	◪	■			◪		●	++	.031	.008	.024	.031	.295
	T7335	◪	■			◪		●	++	.031	.008	.024	.031	.295
	T9315	■						●	++	.031	.008	.024	.031	.295
	T9325	■	■			◪		●	++	.031	.008	.024	.031	.295
CNMG 643-NMR	T6310	◪	■			◪		●	++	.047	.009	.026	.047	.315
	T7325	◪	■			◪		●	++	.047	.009	.026	.047	.315
	T7335	◪	■			◪		●	+++	.047	.009	.026	.047	.315
	T9315	■						●	++	.047	.009	.026	.047	.315
	T9325	■	■			◪		●	++	.047	.009	.026	.047	.315
	T8330	■	■			◪		✖	++	.047	.009	.026	.047	.315
CNMG 644-NMR	T7325	◪	■			◪		✖	++	.063	.010	.028	.063	.315
	T7335	◪	■			◪		✖	+++	.063	.010	.028	.063	.315
	T9315	■						●	++	.063	.010	.028	.063	.315
	T9325	■	■			◪		●	++	.063	.010	.028	.063	.315

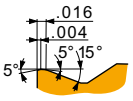



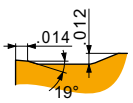
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CNMG 432-NRM	**T7325**	◪	■			□		●	+ +	.031	.009	.022	.031	.276
	T7335	◪	■			□		●	+ +	.031	.009	.022	.031	.276
	T9315	■						●	+ +	.031	.009	.022	.031	.276
CNMG 433-NRM	**T7325**	◪	■			□		●	+ +	.047	.010	.028	.047	.276
	T7335	◪	■			□		●	+++	.047	.010	.028	.047	.276
	T9315	■						●	+ +	.047	.010	.028	.047	.276
CNMG 434-NRM	**T7325**	◪	■			□		●	+ +	.063	.012	.030	.063	.276
	T7335*	◪	■			□		●	+++	.063	.012	.030	.063	.276
	T9315	■						●	+ +	.063	.012	.030	.063	.276
CNMG 542-NRM	**T7325**	◪	■			□		●	+ +	.031	.011	.024	.031	.315
	T7335*	◪	■			□		●	+++	.031	.011	.024	.031	.315
	T9315	■						●	+ +	.031	.011	.024	.031	.315
CNMG 543-NRM	**T7325**	◪	■			□		●	+ +	.047	.011	.028	.047	.315
	T7335	◪	■			□		●	+++	.047	.011	.028	.047	.315
	T9315	■						●	+ +	.047	.011	.028	.047	.315
CNMG 544-NRM	**T7325**	◪	■			□		●	+ +	.063	.012	.031	.063	.315
	T7335	◪	■			□		●	+++	.063	.012	.031	.063	.315
	T9315	■						●	+ +	.063	.012	.031	.063	.315
CNMG 642-NRM	**T7325**	◪	■			□		●	+ +	.031	.011	.024	.031	.394
	T7335*	◪	■			□		●	+++	.031	.011	.024	.031	.394
	T9315	■						●	+ +	.031	.011	.024	.031	.394
CNMG 643-NRM	**T6310**	◪	■			◪		●	+ +	.047	.009	.026	.047	.315
	T7325	◪	■			□		●	+ +	.047	.013	.028	.047	.394
	T7335	◪	■			□		●	+++	.047	.013	.028	.047	.394
	T9315	■						●	+ +	.047	.013	.028	.047	.394
CNMG 644-NRM	**T7325**	◪	■			□		●	+++	.063	.013	.031	.063	.394
	T7335	◪	■			□		●	+++	.063	.013	.031	.063	.394
	T9315	■						●	+ +	.063	.013	.031	.063	.394
CNMG 866-NRM	**T7325**	◪	■			□		✖	+++	.094	.014	.039	.079	.591
	T7335	◪	■			□		✖	+++	.094	.014	.039	.079	.591
	T9315	■						●	+++	.094	.014	.039	.079	.591
CNMG 432-R	**T5305**	□		■			□	●	+ +	.031	.010	.024	.079	.236
	T5315	◪	□	■			□	●	+ +	.031	.010	.024	.079	.236
	T9310	■		◪			□	●	+ +	.031	.010	.024	.079	.236
	T9315	■		◪			□	●	+ +	.031	.010	.024	.079	.236
	T9325	■	◪	◪				●	+ +	.031	.010	.024	.079	.236
	T9335	■	◪					●	+++	.031	.010	.024	.079	.236
CNMG 433-R	**T5305**	□		■			□	●	+ +	.047	.010	.028	.079	.236
	T5315	◪	□	■			□	●	+ +	.047	.010	.028	.079	.236
	T9315	■		◪			□	●	+ +	.047	.010	.028	.079	.236
	T9325	■	◪	◪				●	+ +	.047	.010	.028	.079	.236
	T9335	■	◪					✖	+++	.047	.010	.028	.079	.236
CNMG 434-R	**T5315**	◪	□	■			□	●	+ +	.063	.012	.031	.079	.236
	T9335	■	◪					✖	+++	.063	.012	.031	.079	.236
CNMG 542-R	**T5315**	◪	□	■			□	●	+ +	.031	.010	.024	.118	.276
CNMG 543-R	**T5305**	□		■			□	●	+ +	.047	.010	.028	.118	.276
	T5315	◪	□	■			□	●	+ +	.047	.010	.028	.118	.276
	T9310	■		◪			□	●	+ +	.047	.010	.028	.118	.276
	T9315	■		◪			□	●	+ +	.047	.010	.028	.118	.276
	T9325	■	◪	◪				●	+ +	.047	.010	.028	.118	.276
CNMG 544-R	**T5305**	□		■			□	●	+ +	.063	.010	.028	.118	.276
CNMG 642-R	**T5315**	◪	□	■			□	●	+ +	.031	.010	.024	.118	.315
CNMG 643-R	**T5305**	□		■			□	●	+ +	.047	.010	.028	.118	.315
	T5315	◪	□	■			□	●	+ +	.047	.010	.028	.118	.315
	T9315	■		◪			□	●	+ +	.047	.010	.028	.118	.315
	T9325	■	◪	◪				●	+ +	.047	.010	.028	.118	.315
	T9335	■	◪					✖	+++	.047	.010	.028	.118	.315
CNMG 644-R	**T5305**	□		■			□	●	+ +	.063	.010	.028	.079	.354





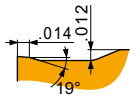
* Non-stocked item

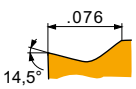




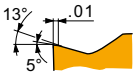
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMG 644-R	**T5315**	◪	□	■			□	●	++	.063	.010	.028	.079	.354
	T9310	■		◪			□	●	++	.063	.010	.028	.079	.354
	T9315	■		◪			□	●	++	.063	.010	.028	.079	.354
	T9325	■	◪	◪				✖	++	.063	.010	.028	.079	.354
	T9335	■	◪					✖	+++	.063	.010	.028	.079	.354
CNMG 432-RM	**T5305**	□		■			□	●	+	.031	.008	.020	.039	.276
	T5315	◪	□	■			□	●	+	.031	.008	.020	.039	.276
	T7325	◪	■			◪		●	++	.031	.008	.020	.039	.276
	T7335	◪	■			◪		●	++	.031	.008	.020	.039	.276
	T9310	■		◪				●	+	.031	.008	.020	.039	.276
	T9315	■		◪			□	●	++	.031	.008	.020	.039	.276
	T9325	■	■	◪		□		●	+	.031	.008	.020	.039	.276
	T9335	■	◪					●	++	.031	.008	.020	.039	.276
	T6310	◪	■	◪		◪	□	●	+	.031	.008	.020	.039	.276
	T8315	◪	■	■		□	□	●	+	.031	.008	.020	.039	.276
	T8330	■	■	■		◪	□	●	+	.031	.008	.020	.039	.276
CNMG 433-RM	**T5305**	□		■			□	●	++	.047	.010	.028	.059	.276
	T5315	◪	□	■			□	●	++	.047	.010	.028	.059	.276
	T7325	◪	■			◪		●	++	.047	.010	.028	.059	.276
	T7335	◪	■			◪		●	+++	.047	.010	.028	.059	.276
	T9310	■		◪				●	++	.047	.010	.028	.059	.276
	T9315	■		◪			□	●	++	.047	.010	.028	.059	.276
	T9325	■	■	◪		□		●	++	.047	.010	.028	.059	.276
	T9335	■	◪					●	+++	.047	.010	.028	.059	.276
	T6310	◪	■	◪		◪	□	●	++	.047	.010	.028	.059	.276
	T8315	◪	■	■		□	□	●	++	.047	.010	.028	.059	.276
	T8330	■	■	■		◪	□	✖	++	.047	.010	.028	.059	.276
CNMG 434-RM	**T5305**	□		■			□	●	++	.063	.012	.030	.079	.276
	T5315	◪	□	■			□	●	++	.063	.012	.030	.079	.276
	T7325	◪	■			◪		●	++	.063	.012	.030	.079	.276
	T7335	◪	■			◪		●	+++	.063	.012	.030	.079	.276
	T9310	■		◪				●	++	.063	.012	.030	.079	.276
	T9315	■		◪			□	●	++	.063	.012	.030	.079	.276
	T9325	■	■	◪		□		●	++	.063	.012	.030	.079	.276
	T9335	■	◪					●	+++	.063	.012	.030	.079	.276
	T8330	■	■	■		◪	□	✖	++	.063	.012	.030	.079	.276
CNMG 542-RM	**T5305**	□		■			□	●	+	.031	.008	.020	.039	.315
	T5315	◪	□	■			□	●	+	.031	.008	.020	.039	.315
	T9315	■		◪			□	●	++	.031	.008	.020	.039	.315
	T9325	■	■	◪		□		●	+	.031	.008	.020	.039	.315
	T9335	■	◪					●	++	.031	.008	.020	.039	.315
	T8330	■	■	■		◪	□	●	+	.031	.008	.020	.039	.315
CNMG 543-RM	**T5305**	□		■			□	●	++	.047	.010	.028	.059	.315
	T5315	◪	□	■			□	●	++	.047	.010	.028	.059	.315
	T7325	◪	■			◪		●	++	.047	.010	.028	.059	.315
	T7335	◪	■			◪		●	+++	.047	.010	.028	.059	.315
	T9310	■		◪				●	++	.047	.010	.028	.059	.315
	T9315	■		◪			□	●	++	.047	.010	.028	.059	.315
	T9325	■	■	◪		□		●	++	.047	.010	.028	.059	.315
	T9335	■	◪					●	+++	.047	.010	.028	.059	.315
	T6310	◪	■	◪		◪	□	●	++	.047	.010	.028	.059	.315
	T8330	■	■	■		◪	□	✖	++	.047	.010	.028	.059	.315
CNMG 544-RM	**T5305**	□		■			□	●	++	.063	.012	.031	.079	.315

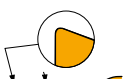
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMG 544-RM	**T5315**	◪	□	■			□	●	+ +	.063	.012	.031	.079	.315
	T7325	◪	■			◪		●	+ +	.063	.012	.031	.079	.315
	T7335	◪	■			◪		●	+++	.063	.012	.031	.079	.315
	T9310	■		◪				●	+ +	.063	.012	.031	.079	.315
	T9315	■		◪			□	●	+ +	.063	.012	.031	.079	.315
	T9325	■	■	◪		□		●	+ +	.063	.012	.031	.079	.315
	T9335	■	◪					●	+++	.063	.012	.031	.079	.315
CNMG 642-RM	**T5305**	□		■			□	●	+	.031	.008	.020	.039	.394
	T5315	◪	□	■			□	●	+	.031	.008	.020	.039	.394
	T7335	◪	■			◪		●	+ +	.031	.008	.020	.039	.394
	T9315	■		◪			□	●	+ +	.031	.008	.020	.039	.394
	T9325	■	■	◪		□		●	+	.031	.008	.020	.039	.394
	T9335	■	◪					●	+ +	.031	.008	.020	.039	.394
CNMG 643-RM	**T5305**	□		■			□	●	+ +	.047	.010	.028	.059	.394
	T5315	◪	□	■			□	●	+ +	.047	.010	.028	.059	.394
	T7325	◪	■			◪		●	+ +	.047	.010	.028	.059	.394
	T7335	◪	■			◪		●	+++	.047	.010	.028	.059	.394
	T9310	■		◪				●	+ +	.047	.010	.028	.059	.394
	T9315	■		◪			□	●	+ +	.047	.010	.028	.059	.394
	T9325	■	■	◪		□		●	+ +	.047	.010	.028	.059	.394
	T9335	■	◪					●	+++	.047	.010	.028	.059	.394
	T6310	◪	■	◪		◪	□	●	+ +	.047	.010	.028	.059	.394
	T8330	■	■	■		◪	□	✖	+ +	.047	.010	.028	.059	.394
CNMG 644-RM	**T5305**	□		■			□	●	+ +	.063	.012	.031	.079	.394
	T5315	◪	□	■			□	●	+ +	.063	.012	.031	.079	.394
	T7325	◪	■			◪		●	+ +	.063	.012	.031	.079	.394
	T7335	◪	■			◪		●	+++	.063	.012	.031	.079	.394
	T9310	■		◪				●	+ +	.063	.012	.031	.079	.394
	T9315	■		◪			□	●	+ +	.063	.012	.031	.079	.394
	T9325	■	■	◪		□		●	+ +	.063	.012	.031	.079	.394
	T9335	■	◪					●	+++	.063	.012	.031	.079	.394
	T6310	◪	■	◪		◪	□	●	+ +	.063	.012	.031	.079	.394
CNMG 866-RM	**T7335**	◪	■			◪		✖	+++	.094	.016	.039	.098	.591
	T9315	■		◪			□	●	+++	.094	.016	.039	.098	.591
	T9325	■	■	◪		□		●	+ +	.094	.016	.039	.098	.591
	T9335	■	◪					✖	+++	.094	.016	.039	.098	.591
	T9226	■	■	◪		□		●	+++	.094	.016	.039	.098	.591
CNMG 431-SF	**T7325**	◪	■			■		●	+ +	.016	.006	.012	.016	.106
	T7335	◪	■			■		●	+ +	.016	.006	.012	.016	.106
	T9315	◪					□	●	+ +	.016	.006	.012	.016	.106
	T9325	◪	■			◪		●	+	.016	.006	.012	.016	.106
	T6310	◪	■		□	■	□	●	+	.016	.004	.012	.016	.106
	T8315	◪	■		□	□	□	●	+	.016	.004	.012	.016	.106
	T8330	◪	■		□	◪	□	●	+	.016	.004	.012	.016	.106
	H07		◪		□	■		●	+	.016	.004	.012	.016	.106
CNMG 432-SF	**T7325**	◪	■			■		●	+ +	.031	.006	.012	.031	.118
	T7335	◪	■			■		●	+ +	.031	.006	.012	.031	.118
	T9315	◪					□	●	+ +	.031	.006	.012	.031	.118
	T9325	◪	■			◪		●	+	.031	.006	.012	.031	.118
	T6310	◪	■		□	■	□	●	+	.031	.005	.012	.031	.118
	T8315	◪	■		□	□	□	●	+	.031	.005	.012	.031	.118
	T8330	◪	■		□	◪	□	●	+	.031	.005	.012	.031	.118
	H07		◪		□	■		●	+	.031	.005	.012	.031	.118
CNMG 433-SF	**T7325**	◪	■			■		●	+ +	.047	.006	.014	.047	.118
	T6310	◪	■		□	■	□	●	+	.047	.006	.014	.047	.118
	T8315	◪	■		□	□	□	●	+	.047	.006	.014	.047	.118





ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMG 431-SM	**T7325**	◪	■			■		●	+ +	.016	.007	.012	.016	.157
	T7335	◪	■			■		●	+ +	.016	.007	.012	.016	.157
	T9315	■		◪			□	●	+ +	.016	.007	.012	.016	.157
	T9325	■	■	◪		◪		●	+	.016	.007	.012	.016	.157
	T6310	◪	■	◪		■	□	●	+	.016	.007	.012	.016	.157
	T8330	■	■	◪		◪	□	●	+	.016	.007	.012	.016	.157
CNMG 432-SM	**T7325**	◪	■			■		⬢	+ +	.031	.008	.018	.031	.157
	T7335	◪	■			■		⬢	+ +	.031	.008	.018	.031	.157
	T9315	■		◪			□	⬢	+ +	.031	.008	.018	.031	.157
	T9325	■	■	◪		◪		⬢	+ +	.031	.008	.018	.031	.157
	T6310	◪	■	◪		■	□	⬢	+	.031	.008	.018	.031	.157
	T8330	■	■	◪		◪	□	⬢	+ +	.031	.008	.018	.031	.157
CNMG 433-SM	**T7325**	◪	■			■		⬢	+ +	.047	.009	.018	.047	.177
	T7335	◪	■			■		⬢	+ +	.047	.009	.018	.047	.177
	T9315	■		◪			□	⬢	+ +	.047	.009	.018	.047	.177
	T9325	■	■	◪		◪		⬢	+ +	.047	.009	.018	.047	.177
	T6310	◪	■	◪		■	□	⬢	+ +	.047	.009	.018	.047	.177
	T8330	■	■	◪		◪	□	⬢	+ +	.047	.009	.018	.047	.177
CNMG 542-SM	**T7325**	◪	■			■		⬢	+ +	.031	.009	.020	.031	.197
	T7335	◪	■			■		⬢	+ +	.031	.009	.020	.031	.197
	T9325	■	■	◪		◪		⬢	+ +	.031	.009	.020	.031	.197
	T8330	■	■	◪		◪	□	⬢	+ +	.031	.009	.020	.031	.197
CNMG 543-SM	**T7325**	◪	■			■		⬢	+ +	.047	.010	.022	.047	.217
	T7335	◪	■			■		⬢	+++	.047	.010	.022	.047	.217
	T9315	■		◪			□	⬢	+ +	.047	.010	.022	.047	.217
	T9325	■	■	◪		◪		⬢	+ +	.047	.010	.022	.047	.217
	T6310	◪	■	◪		■	□	⬢	+ +	.047	.010	.022	.047	.217
CNMG 643-SM	**T7325**	◪	■			■		⬢	+ +	.047	.010	.022	.047	.236
	T7335	◪	■			■		⬢	+++	.047	.010	.022	.047	.236
	T9315	■		◪			□	⬢	+ +	.047	.010	.022	.047	.236
	T9325	■	■	◪		◪		⬢	+ +	.047	.010	.022	.047	.236
	T6310	◪	■	◪		■	□	⬢	+ +	.047	.010	.022	.047	.236
CNMG 431R-SI	**T7325**	◪	■			■		●	+ +	.016	.008	.012	.031	.197
	T7335	◪	■					●	+ +	.016	.008	.012	.031	.197
	T9325	■	■	□		□		●	+	.016	.008	.012	.031	.197
	T8330	■	■	□	□	◪		●	+	.016	.008	.012	.031	.197
CNMG 432R-SI	**T7325**	◪	■			■		⬢	+ +	.031	.008	.020	.031	.197
	T7335	◪	■					⬢	+ +	.031	.008	.020	.031	.197
	T9325	■	■	□		□		●	+	.031	.008	.020	.031	.197
	T8315	◪	■	□	□	□		⬢	+	.031	.008	.020	.031	.197
	T8330	■	■	□	□	◪		⬢	+	.031	.008	.020	.031	.197
CNMG 431L-SI	**T7325**	◪	■			■		●	+ +	.016	.008	.012	.031	.197
	T7335	◪	■					●	+ +	.016	.008	.012	.031	.197
	T9325	■	■	□		□		●	+	.016	.008	.012	.031	.197
	T8330	■	■	□	□	◪		●	+	.016	.008	.012	.031	.197
CNMG 432L-SI	**T7325**	◪	■			■		⬢	+ +	.031	.008	.020	.031	.197
	T7335	◪	■					⬢	+ +	.031	.008	.020	.031	.197
	T9325	■	■	□		□		●	+	.031	.008	.020	.031	.197
	T8315	◪	■	□	□	□		⬢	+	.031	.008	.020	.031	.197
	T8330	■	■	□	□	◪		⬢	+	.031	.008	.020	.031	.197
CNMG 433L-SI	**T9325**	■	■	□		□		⬢	+	.047	.008	.020	.047	.197



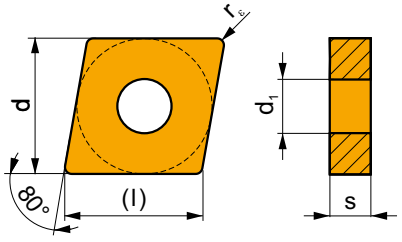




ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMG 432W-F	**T9315**	■		◪				●	+ +	.031	.006	.024	.031	.173
	T9325	■		◪				⬣	+ +	.031	.006	.024	.031	.173
CNMG 432W-M	**T5315**	◪	□	■			□	⬣	+ +	.031	.006	.024	.031	.157
	T9315	■		◪			□	⬣	+ +	.031	.006	.024	.031	.157
	T9325	■	◪	◪				⬣	+ +	.031	.006	.024	.031	.157
CNMG 433W-M	**T5315**	◪	□	■			□	⬣	+ +	.047	.008	.035	.047	.157
	T9315	■		◪			□	⬣	+ +	.047	.008	.035	.047	.157
	T9325	■	◪	◪				⬣	+ +	.047	.008	.035	.047	.157
CNMG 431W-MR	**T9315**	■		◪				●	+ +	.016	.008	.024	.020	.157
	T9325	■	■	◪				●	+ +	.016	.008	.024	.020	.157
CNMG 432W-MR	**T5315**	◪	□	■				⬣	+ +	.031	.008	.028	.031	.197
	T9310	■		◪				⬣	+ +	.031	.008	.028	.031	.197
	T9315	■		◪				⬣	+ +	.031	.008	.028	.031	.197
	T9325	■	■	◪				⬣	+ +	.031	.008	.028	.031	.197
CNMG 433W-MR	**T5315**	◪	□	■				⬣	+ +	.047	.010	.030	.047	.197
	T9310	■		◪				⬣	+ +	.047	.010	.030	.047	.197
	T9315	■		◪				⬣	+ +	.047	.010	.030	.047	.197
	T9325	■	■	◪				⬣	+ +	.047	.010	.030	.047	.197
CNMG 431W-NM	**T7325**	◪	■			■		●	+ +	.016	.006	.016	.020	.118
	T7335	◪	■					●	+ +	.016	.006	.016	.020	.118
	T9315	■		□				●	+ +	.016	.006	.016	.020	.118
	T9325	■	■	□		□		●	+	.016	.006	.016	.020	.118
CNMG 432W-NM	**T7325**	◪	■			■		⬣	+ +	.031	.008	.020	.031	.118
	T7335	◪	■					⬣	+ +	.031	.008	.020	.031	.118
	T9315	■		□				⬣	+ +	.031	.008	.020	.031	.118
	T9325	■	■	□		□		⬣	+	.031	.008	.020	.031	.118
CNMG 433W-NM	**T7325**	◪	■			■		⬣	+ +	.047	.008	.022	.047	.138
	T7335	◪	■					⬣	+ +	.047	.008	.022	.047	.138
	T9315	■		□				⬣	+ +	.047	.008	.022	.047	.138
	T9325	■	■	□		□		⬣	+ +	.047	.008	.022	.047	.138

CNMM

	d	d_1	l	s
43	.500	.203	.508	.187
54	.625	.250	.634	.250
64	.750	.313	.760	.250
86	1.000	.359	.016	.375

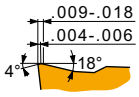


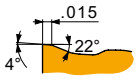
For tools see pages: T184-T185, T187, T215

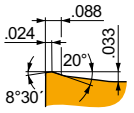
ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMM 543-DR	**T9315**	■		◪				●	.047	.012	.033	.098	.354
	T9325	■	■	◪		□		●	.047	.012	.033	.098	.354
	T9335	■	◪					●	.047	.012	.033	.098	.354
CNMM 642-DR	**T9315**	■		◪				●	.031	.012	.024	.098	.354
	T9325	■	■	◪		□		●	.031	.012	.024	.098	.354
	T9335	■	◪					●	.031	.012	.024	.098	.354
CNMM 643-DR	**T9315**	■		◪				●	.047	.012	.033	.098	.354
	T9325	■	■	◪		□		●	.047	.012	.033	.098	.354
	T9335	■	◪					●	.047	.012	.033	.098	.354
CNMM 644-DR	**T9325**	■	■	◪		□		●	.063	.012	.033	.098	.354
	T9335	■	◪					●	.063	.012	.033	.098	.354
CNMM 644-HR	**T9325**	■	◪	◪		□		●	.063	.020	.047	.197	.524
	T9335	■	◪					✖	.063	.020	.047	.197	.524
	T8345	◪	◪	◪		□		✖	.063	.020	.047	.197	.524
CNMM 646-HR	**T9315**	■		◪				●	.094	.020	.055	.197	.524
	T9325	■	◪	◪		□		●	.094	.020	.055	.197	.524
	T9335	■	◪					✖	.094	.020	.055	.197	.524
	T8345	◪	◪	◪		□		✖	.094	.020	.055	.197	.524
CNMM 866-HR	**T9315**	■		◪				●	.094	.020	.055	.197	.551
	T9325	■	◪	◪		□		✖	.094	.020	.055	.197	.551
	T9335	■	◪					✖	.094	.020	.055	.197	.551
	T8345	◪	◪	◪		□		✖	.094	.020	.055	.197	.551
CNMM 644-HR2	**T9315**	■		◪				●	.063	.020	.047	.118	.512
	T9335	■	◪			□		●	.063	.020	.047	.118	.512
	T9226	■	◪	◪		□		●	.063	.020	.047	.118	.512
CNMM 646-HR2	**T9315**	■		◪				●	.094	.020	.051	.118	.512
	T9335	■	◪			□		✖	.094	.020	.051	.118	.512
	T9226	■	◪	◪		□		●	.094	.020	.051	.118	.512
CNMM 866-HR2	**T9315**	■		◪				●	.094	.028	.055	.118	.630
	T9335	■	◪			□		✖	.094	.028	.055	.118	.630
CNMM 432-NR	**T7325**	◪	■			■		●	.031	.010	.024	.039	.331
	T7335	◪	■					●	.031	.010	.024	.039	.331
	T9315	■		□				●	.031	.010	.024	.039	.331
	T9325	■	■	□		□		●	.031	.010	.024	.039	.331
	T8330	■	■	□	□	◪		●	.031	.010	.024	.039	.331
CNMM 433-NR	**T7325**	◪	■			■		✖	.047	.010	.031	.047	.331
	T7335	◪	■					✖	.047	.010	.031	.047	.331
	T9325	■	■	□		□		●	.047	.010	.031	.047	.331

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMM 433-NR	**T8330**	■	■	□	□	◪		✖	+ +	.047	.010	.031	.047	.331
CNMM 432-NR2	**T7325**	◪	■			■		❤	+ +	.031	.010	.022	.031	.295
	T7335	◪	■					❤	+++	.031	.010	.022	.031	.295
	T9315	■		□				❤	+ +	.031	.010	.022	.031	.295
	T9325	■	■	□		□		❤	+ +	.031	.010	.022	.031	.295
	T8330	■	■	□	□	◪		❤	+ +	.031	.010	.022	.031	.295
CNMM 433-NR2	**T7335**	◪	■					✖	+++	.047	.011	.028	.047	.295
	T9315	■		□				❤	+ +	.047	.011	.028	.047	.295
	T9325	■	■	□		□		❤	+ +	.047	.011	.028	.047	.295
	T8330	■	■	□	□	◪		✖	+ +	.047	.011	.028	.047	.295
CNMM 542-NR2	**T7335**	◪	■					❤	+++	.031	.012	.024	.039	.374
	T9325	■	■	□		□		❤	+ +	.031	.012	.024	.039	.374
	T8330	■	■	□	□	◪		✖	+ +	.031	.012	.024	.039	.374
CNMM 543-NR2	**T7325**	◪	■			■		✖	+++	.047	.014	.026	.059	.374
	T7335	◪	■					✖	+++	.047	.014	.026	.059	.374
	T9315	■		□				❤	+ +	.047	.014	.026	.059	.374
	T9325	■	■	□		□		❤	+ +	.047	.014	.026	.059	.374
	T8330	■	■	□	□	◪		✖	+ +	.047	.014	.026	.059	.374
CNMM 544-NR2	**T7325**	◪	■			■		✖	+++	.063	.014	.031	.079	.374
	T7335	◪	■					✖	+++	.063	.014	.031	.079	.374
	T9325	■	■	□		□		✖	+ +	.063	.014	.031	.079	.374
CNMM 643-NR2	**T7325**	◪	■			■		✖	+++	.047	.014	.035	.059	.472
	T7335	◪	■					✖	+++	.047	.014	.035	.059	.472
	T9325	■	■	□		□		❤	+ +	.047	.014	.035	.059	.472
	T8330	■	■	□	□	◪		✖	+ +	.047	.014	.035	.059	.472
CNMM 644-NR2	**T7325**	◪	■			■		✖	+++	.063	.016	.039	.079	.472
	T7335	◪	■					✖	+++	.063	.016	.039	.079	.472
	T9315	■		□				❤	+++	.063	.016	.039	.079	.472
	T9325	■	■	□		□		✖	+ +	.063	.016	.039	.079	.472
	T8330	■	■	□	□	◪		✖	+ +	.063	.016	.039	.079	.472
CNMM 646-NR2	**T7335**	◪	■					✖	+++	.094	.016	.047	.098	.472
	T9325	■	■	□		□		✖	+ +	.094	.016	.047	.098	.472
CNMM 866-NR2	**T7325**	◪	■			■		✖	+++	.094	.020	.063	.118	.630
	T7335	◪	■					✖	+++	.094	.020	.063	.118	.630
	T9315	■		□				❤	+++	.094	.020	.063	.118	.630
	T9325	■	■	□		□		✖	+ +	.094	.020	.063	.118	.630
CNMM 866-NRM	**T7325**	◪	■			□		✖	+++	.094	.014	.039	.079	.630
	T7335	◪	■			□		✖	+++	.094	.014	.039	.079	.630
	T9315	■						❤	+++	.094	.014	.039	.079	.630

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNMM 432-OR	T9315	■		◪				●	++	.031	.010	.024	.079	.315
	T9325	■	■	◪		□		●	++	.031	.010	.024	.079	.315
	T9335	■	◪					●	+++	.031	.010	.024	.079	.315
	T8330	■	■	◪		□		✖	++	.031	.010	.024	.079	.315
CNMM 433-OR	T9315	■		◪				●	++	.047	.012	.028	.098	.315
	T9325	■	■	◪		□		✖	++	.047	.012	.028	.098	.315
	T9335	■	◪					✖	+++	.047	.012	.028	.098	.315
CNMM 434-OR	T9315	■		◪				●	+++	.063	.014	.031	.098	.315
	T9325	■	■	◪		□		✖	++	.063	.014	.031	.098	.315
	T9335	■	◪					✖	+++	.063	.014	.031	.098	.315
CNMM 542-OR	T9315	■		◪				●	++	.031	.012	.024	.118	.315
	T9325	■	■	◪		□		●	++	.031	.012	.024	.118	.315
	T9335	■	◪					●	+++	.031	.012	.024	.118	.315
CNMM 543-OR	T9315	■		◪				●	+++	.047	.014	.035	.118	.394
	T9325	■	■	◪		□		✖	++	.047	.014	.035	.118	.394
CNMM 544-OR	T9315	■		◪				●	+++	.063	.014	.039	.118	.394
	T9325	■	■	◪		□		✖	++	.063	.014	.039	.118	.394
CNMM 643-OR	T9315	■		◪				●	+++	.047	.014	.035	.118	.394
	T9325	■	■	◪		□		✖	++	.047	.014	.035	.118	.394
	T9335	■	◪					✖	+++	.047	.014	.035	.118	.394
	T8330	■	■	◪		□		✖	++	.047	.014	.035	.118	.394
CNMM 644-OR	T9315	■		◪				●	+++	.063	.015	.047	.118	.394
	T9325	■	■	◪		□		✖	++	.063	.015	.047	.118	.394
	T9335	■	◪					✖	+++	.063	.015	.047	.118	.394
	T8330	■	■	◪		□		✖	++	.063	.015	.047	.118	.394
	T8345	◪	■	◪		□		✖	++	.063	.015	.047	.118	.394
CNMM 646-OR	T9315	■		◪				✖	+++	.094	.015	.049	.118	.472
	T9325	■	■	◪		□		✖	++	.094	.015	.049	.118	.472
CNMM 866-OR	T9315	■		◪				✖	+++	.094	.018	.067	.157	.630
	T9325	■	■	◪		□		✖	+++	.094	.018	.067	.157	.630
	T9335	■	◪					✖	+++	.094	.018	.067	.157	.630
	T8330	■	■	◪		□		✖	++	.094	.018	.067	.157	.630
CNMM 644-OR1	T9325	■	■	◪		□		✖	++	.063	.012	.039	.118	.433
	T9335	■	◪					✖	+++	.063	.012	.039	.118	.433
CNMM 866-923	T9335	■	◪					✖	+++	.094	.018	.059	.118	.630
	T8330	■	◪	◪				✖	++	.094	.018	.059	.118	.630

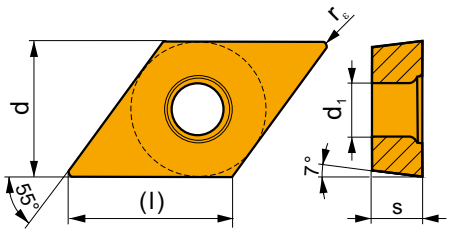






DCGT

	d	d_1	l	s
21.5	.250	.110	.307	.094
21.5-SF3	.250	.110	.307	.102
32.5	.375	.173	.457	.156
32.5-SF3	.375	.173	.457	.166



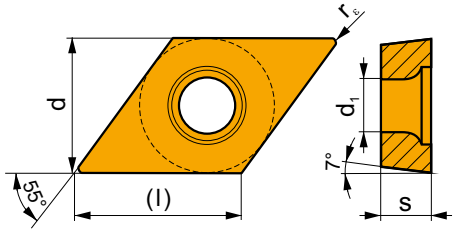
For tools see pages: T204-T205, T220-T223

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		DCGT 21.50.5F-AL	**T0315**				■			●	+	.008	.002	.005	.012	.083
			HF7				■			●	+	.008	.002	.005	.012	.083
		DCGT 21.51F-AL	**T0315**				■			●	+	.016	.004	.009	.016	.083
			HF7				■			●	+	.016	.004	.009	.016	.083
	25°	**DCGT 32.50.5F-AL**	**T0315**				■			●	+	.008	.002	.005	.012	.130
			HF7				■			●	+	.008	.002	.005	.012	.130
F		**DCGT 32.51F-AL**	**T0315**				■			●	+	.016	.004	.009	.016	.130
			HF7				■			●	+	.016	.004	.009	.016	.130
		DCGT 32.52F-AL	**T0315**				■			●	+ +	.031	.006	.019	.031	.130
			HF7				■			●	+ +	.031	.006	.019	.031	.130
U		**DCGT 32.50.5-FF2**	**T7325**	◪	◪					●	+ +	.008	.001	.005	.006	.098
			T9325	■	◪	◪				●	+	.008	.001	.005	.006	.098
	.021 7°		**T8330**	■	◪	■				●	+	.008	.001	.005	.006	.098
E			**TT010**	■	◪					●	+ / -	.008	.001	.005	.006	.098
		DCGT 32.51-NF1	**T7325**	◪	■			■		●	+ +	.016	.002	.009	.012	.118
			T6310	◪	■	◪		■		●	+	.016	.002	.009	.012	.118
U		**DCGT 32.52-NF1**	**T7325**	◪	■			■		●	+ +	.031	.005	.010	.020	.118
			T6310	◪	■	◪		■		●	+	.031	.005	.010	.020	.118
	.075 .035 10°															
E																
		DCGT 21.50.5-SF3	**T6310**		■		◪	■		●	+	.008	.002	.005	.008	.063
			T8315		■		◪	□		●	+	.008	.002	.005	.008	.063
			H07		◪		◪	■		●	+	.008	.002	.005	.008	.063
		DCGT 21.51-SF3	**T6310**		■		◪	■		●	+	.016	.002	.008	.008	.079
			T8315		■		◪	□		●	+	.016	.002	.008	.008	.079
			H07		◪		◪	■		●	+	.016	.002	.008	.008	.079
	.006 20°	**DCGT 32.50.5-SF3**	**T6310**		■		◪	■		●	+	.008	.002	.005	.008	.079
			H07		◪		◪	■		●	+	.008	.002	.005	.008	.079
E		**DCGT 32.51-SF3**	**T6310**		■		◪	■		●	+	.016	.002	.009	.008	.087
			T8315		■		◪	□		●	+	.016	.002	.009	.008	.087
			H07		◪		◪	■		●	+	.016	.002	.009	.008	.087
		DCGT 32.52-SF3	**T6310**		■		◪	■		●	+	.031	.003	.012	.024	.098
			T8315		■		◪	□		●	+	.031	.003	.012	.024	.098
			H07		◪		◪	■		●	+	.031	.003	.012	.024	.098

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DCGT 32.51R-SI	**T8330**	■	■	□	□	◪		●	+	.016	.003	.009	.016	.098
DCGT 32.52R-SI	**T8330**	■	■	□	□	◪		●	+	.031	.006	.012	.031	.098
DCGT 32.51L-SI	**T8330**	■	■	□	□	◪		●	+	.016	.003	.009	.016	.098

DCMT

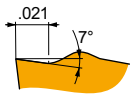
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.375	.173	.457	.156
.500	.217	.610	.187

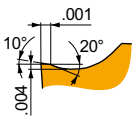


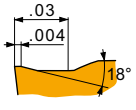
For tools see pages: T204-T205, T220-T223

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DCMT 32.50.5-FF	**T8315**	◪	■	◪	□	□		●	+	.008	.002	.005	.008	.079
	T8330	■	■	◪	□	□		●	+	.008	.002	.005	.008	.079
	T9315	■		◪				●	+ +	.008	.002	.005	.008	.079
DCMT 32.51-FF	**T8315**	◪	■	◪	□	□		●	+	.016	.002	.009	.016	.079
	T8330	■	■	◪	□	□		●	+	.016	.002	.009	.016	.079
	T9315	■		◪				●	+ +	.016	.002	.009	.008	.079
DCMT 32.52-FF	**T8315**	◪	■	◪	□	□		●	+	.031	.002	.009	.031	.079
	T8330	■	■	◪	□	□		●	+	.031	.002	.009	.031	.079
	T9315	■		◪				●	+ +	.031	.002	.009	.008	.079
DCMT 21.50.5-FF2	**T7325**	◪	◪					●	+ +	.008	.001	.005	.006	.059
	T9325	■	◪	◪				●	+	.008	.001	.005	.006	.059
	T8330	■	◪	■				●	+	.008	.001	.005	.006	.059
	TT010	■	◪					●	+ / -	.008	.001	.005	.006	.059
DCMT 21.51-FF2	**T7325**	◪	◪					●	+ +	.016	.002	.008	.012	.079
	T9315	■		◪				●	+ +	.016	.002	.008	.012	.079
	T9325	■	◪	◪				●	+	.016	.002	.008	.012	.079
	T8330	■	◪	■				●	+	.016	.002	.008	.012	.079
DCMT 21.52-FF2	**T7325**	◪	◪					●	+ +	.031	.002	.010	.024	.079
	T9315	■		◪				●	+ +	.031	.002	.010	.024	.079
	T9325	■	◪	◪				●	+	.031	.002	.010	.024	.079
	T8330	■	◪	■				●	+	.031	.002	.010	.024	.079
DCMT 32.51-FF2	**T7325**	◪	◪					●	+ +	.016	.002	.009	.012	.098
	T9315	■		◪				●	+ +	.016	.002	.009	.012	.098

ANSI		P	M	K	N	S	H	?		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DCMT 32.51-FF2	T9325	■	◪	◪				●	+	.016	.002	.009	.012	.098
	T9335	■	◪					●	++	.016	.002	.009	.012	.098
	T8330	■	◪	■				●	+	.016	.002	.009	.012	.098
	TT010	■	◪					●	+/-	.016	.002	.009	.012	.098
DCMT 32.52-FF2	T7325	◪	◪					●	++	.031	.003	.010	.024	.118
	T9315	■		◪				●	++	.031	.003	.010	.024	.118
	T9325	■	◪	◪				●	+	.031	.003	.010	.024	.118
	T8330	■	◪	■				●	+	.031	.003	.010	.024	.118
	TT010	■	◪					●	+/-	.031	.003	.010	.024	.118
DCMT 21.50.5-FM	T7325	◪	■			□		●	++	.008	.003	.005	.008	.039
	T9315	■		◪				●	++	.008	.003	.005	.008	.039
	T9325	■	■	◪		□		●	+	.008	.003	.005	.008	.039
	T8315	◪	■	◪		□		●	+	.008	.002	.005	.008	.039
	T8330	■	■	◪		□		●	+	.008	.002	.005	.008	.039
DCMT 21.51-FM	T7325	◪	■			□		●	++	.016	.006	.009	.008	.079
	T7335	◪	■			□		●	++	.016	.006	.009	.008	.079
	T9315	■		◪				●	++	.016	.006	.009	.008	.079
	T9325	■	■	◪		□		●	+	.016	.006	.009	.008	.079
	T8315	◪	■	◪		□		●	+	.016	.003	.009	.008	.079
	T8330	■	■	◪		□		●	+	.016	.003	.009	.008	.039
DCMT 32.50.5-FM	T7325	◪	■			□		●	++	.008	.003	.005	.008	.079
	T9315	■		◪				●	++	.008	.003	.005	.008	.079
	T9325	■	■	◪		□		●	+	.008	.003	.005	.008	.079
	T8315	◪	■	◪		□		●	+	.008	.003	.005	.008	.079
	T8330	■	■	◪		□		●	+	.008	.003	.005	.008	.059
DCMT 32.51-FM	T7325	◪	■			□		●	++	.016	.006	.009	.012	.118
	T7335	◪	■			□		●	++	.016	.006	.009	.012	.118
	T9315	■		◪				●	++	.016	.006	.009	.012	.118
	T9325	■	■	◪		□		●	+	.016	.006	.009	.012	.118
	T8315	◪	■	◪		□		●	+	.016	.004	.009	.012	.118
	T8330	■	■	◪		□		●	+	.016	.004	.009	.012	.118
DCMT 32.52-FM	T7325	◪	■			□		●	++	.031	.006	.012	.020	.118
	T7335	◪	■			□		●	++	.031	.006	.012	.020	.118
	T9315	■		◪				●	++	.031	.006	.012	.020	.118
	T9325	■	■	◪		□		●	+	.031	.006	.012	.020	.118
	T8315	◪	■	◪		□		●	+	.031	.004	.012	.020	.118
	T8330	■	■	◪		□		●	+	.031	.004	.012	.020	.118
DCMT 32.53-FM	T9315	■		◪				●	++	.047	.008	.016	.035	.130
	T9325	■	■	◪		□		●	++	.047	.008	.016	.035	.130
	T8330	■	■	◪		□		●	++	.047	.008	.016	.035	.130
DCMT 21.51-FM2	T7325	◪	◪			□		●	++	.016	.002	.009	.008	.083
	T9315	■		◪			□	●	++	.016	.002	.009	.008	.083
	T9325	■	◪	◪		□		●	+	.016	.002	.009	.008	.083
	T6310	◪	◪	◪		□	□	●	+	.016	.002	.009	.008	.083
	T8330	■	◪	■		□	□	●	+	.016	.002	.009	.008	.083
DCMT 32.51-FM2	T7325	◪	◪			□		●	++	.016	.002	.009	.008	.110
	T9315	■		◪			□	●	++	.016	.002	.009	.008	.110
	T9325	■	◪	◪		□		●	+	.016	.002	.009	.008	.110
	T9335	■	◪			□		●	++	.016	.002	.009	.008	.110
	T6310	◪	◪	◪		□	□	●	+	.016	.002	.009	.008	.110
	T8330	■	◪	■		□	□	●	+	.016	.002	.009	.008	.110
DCMT 32.52-FM2	T7325	◪	◪			□		●	++	.031	.004	.012	.024	.110
	T9315	■		◪			□	●	++	.031	.004	.012	.024	.110
	T9325	■	◪	◪		□		●	+	.031	.004	.012	.024	.110
	T9335	■	◪			□		●	++	.031	.004	.012	.024	.110
	T6310	◪	◪	◪		□	□	●	+	.031	.004	.012	.024	.110
	T8330	■	◪	■		□	□	●	+	.031	.004	.012	.024	.110

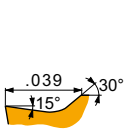






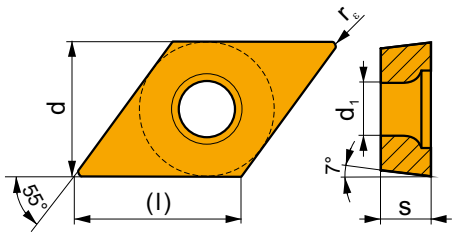
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DCMT 32.53-FM2	T9325	■	◪	◪		□		●	+	.047	.005	.012	.039	.110
DCMT 432-FM2	T9315	■		◪			□	●	++	.031	.004	.012	.024	.138
	T9325	■	◪	◪		□		●	+	.031	.004	.012	.024	.138
	T9335	■	◪			□		●	++	.031	.004	.012	.024	.138
DCMT 32.51-RF	T5315	◪	□	■				●	+	.016	.004	.009	.031	.130
	T7335	◪	■					●	++	.016	.006	.009	.031	.130
DCMT 32.52-RF	T5315	◪	□	■				●	++	.031	.004	.016	.031	.130
	T7335	◪	■					●	+++	.031	.006	.016	.031	.130
DCMT 32.51-RM	T5305	□		■			□	●	+	.016	.006	.009	.039	.130
	T5315	◪	□	■			□	●	+	.016	.006	.009	.039	.130
	T7335	◪	■					●	++	.016	.006	.009	.039	.130
	T9315	■		◪			□	●	++	.016	.006	.009	.039	.130
	T9325	■	■	◪		□		●	+	.016	.006	.009	.039	.130
	T8330	■	■	■		◪	□	●	+	.016	.006	.009	.039	.130
DCMT 32.52-RM	T5305	□		■			□	●	+	.031	.006	.016	.039	.130
	T5315	◪	□	■			□	●	++	.031	.006	.016	.039	.130
	T7335	◪	■					●	+++	.031	.006	.016	.039	.130
	T9315	■		◪			□	●	++	.031	.006	.016	.039	.130
	T9325	■	■	◪		□		●	++	.031	.006	.016	.039	.130
	T8330	■	■	■		◪	□	⬢	++	.031	.006	.016	.039	.130
DCMT 32.53-RM	T7335	◪	■					⬢	+++	.047	.006	.018	.059	.130
	T9315	■		◪			□	●	++	.047	.006	.018	.059	.130
	T9325	■	■	◪		□		⬢	++	.047	.006	.018	.059	.130
	T8330	■	■	■		◪	□	⬢	++	.047	.006	.018	.059	.130
DCMT 432-RM	T9315	■		◪			□	●	++	.031	.008	.019	.039	.177
	T9325	■	■	◪		□		●	++	.031	.008	.019	.039	.177
	T8330	■	■	■		◪	□	⬢	++	.031	.008	.019	.039	.177
DCMT 21.50.5-UR	T7325	◪	■					●	++	.008	.003	.005	.008	.039
	T9315	■		◪				●	++	.008	.003	.005	.008	.039
	T9325	■	■	◪				●	+	.008	.003	.005	.008	.039
	T8315	◪	■	■	□			●	+	.008	.002	.005	.008	.039
	T8330	■	■	■	□			●	+	.008	.002	.005	.008	.039
DCMT 21.51-UR	T7325	◪	■					●	++	.016	.006	.009	.016	.079
	T9315	■		◪				●	++	.016	.006	.009	.016	.079
	T9325	■	■	◪				●	+	.016	.006	.009	.016	.079
	T8315	◪	■	■	□			●	+	.016	.003	.009	.016	.079
	T8330	■	■	■	□			●	+	.016	.003	.009	.016	.079
	TT310	■	◪					●	+/-	.016	.002	.006	.016	.079
DCMT 32.50.5-UR	T7325	◪	■					●	++	.008	.003	.005	.008	.079
	T9315	■		◪				●	++	.008	.003	.005	.008	.079
	T9325	■	■	◪				●	+	.008	.003	.005	.008	.079
	T8330	■	■	■	□			●	+	.008	.002	.005	.008	.079
	TT310	■	◪					●	+/-	.008	.002	.005	.008	.079
DCMT 32.51-UR	T5315	◪	□	■				●	+	.016	.004	.009	.016	.079
	T7325	◪	■					●	++	.016	.006	.009	.016	.079
	T7335	◪	■					●	++	.016	.006	.009	.016	.079
	T9315	■		◪				●	++	.016	.006	.009	.016	.079
	T9325	■	■	◪				●	+	.016	.006	.009	.016	.079
	T8315	◪	■	■	□			●	+	.016	.003	.009	.016	.079
	T8330	■	■	■	□			●	+	.016	.003	.009	.016	.079
	TT310	■	◪					●	+/-	.016	.003	.009	.016	.098
DCMT 32.52-UR	T5315	◪	□	■				●	++	.031	.004	.019	.031	.079
	T7335	◪	■					●	+++	.031	.006	.019	.031	.079

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DCMT 32.52-UR	**T9315**	■		◪				●	+ +	.031	.006	.019	.031	.079
	T9325	■	■	◪				●	+ +	.031	.006	.019	.031	.079
	T8315	◪	■	■	□			●	+ +	.031	.003	.019	.031	.079
	T8330	■	■	■	□			●	+ +	.031	.003	.019	.031	.079
	TT310	■	◪					●	+ / -	.031	.003	.019	.031	.098
DCMT 32.53-UR	**T7325**	◪	■					●	+ +	.047	.006	.012	.047	.079
	T9315	■		◪				●	+ +	.047	.006	.012	.047	.079
	T9325	■	■	◪				●	+	.047	.006	.012	.047	.079
DCMX 32.51W-FM	**T7325**	◪	■			□		●	+ +	.016	.006	.016	.012	.079
	T9315	■		◪				●	+ +	.016	.006	.016	.012	.079
	T9325	■	■	◪		□		●	+ +	.016	.006	.016	.012	.079
	T8330	■	■	◪		□		●	+ +	.016	.004	.016	.012	.079
DCMX 32.52W-FM	**T7325**	◪	■			□		●	+ +	.031	.006	.016	.020	.118
	T9315	■		◪				●	+ +	.031	.006	.016	.020	.118
	T9325	■	■	◪		□		●	+ +	.031	.006	.016	.020	.118



DCMW

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21.5	.250	.110	.307	.094
32.5	.375	.173	.457	.156

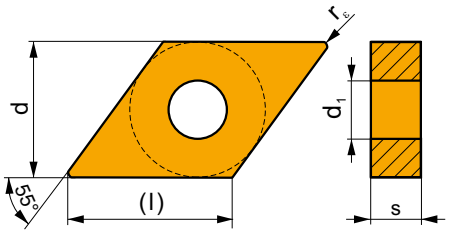


For tools see pages: T204-T205, T220-T223

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DCMW 21.50.5	**T5305**	□		■			◪	●	+	.008	.002	.004	.008	.079
	T6310	◪	□	◪			◪	●	+	.008	.002	.004	.008	.079
DCMW 21.51	**T5305**	□		■			◪	●	+	.016	.004	.008	.016	.079
	T5315	◪	□	■			□	●	+	.016	.004	.008	.016	.079
	T6310	◪	□	◪			◪	●	+	.016	.002	.008	.016	.079
DCMW 32.51	**T5305**	□		■			◪	●	+	.016	.004	.009	.016	.114
	T5315	◪	□	■			□	●	+	.016	.004	.009	.016	.114
	T6310	◪	□	◪			◪	●	+	.016	.002	.009	.016	.114
DCMW 32.52	**T5305**	□		■			◪	●	+	.031	.004	.014	.031	.114
	T5315	◪	□	■			□	●	+	.031	.004	.014	.031	.114
	T6310	◪	□	◪			◪	●	+	.031	.002	.014	.031	.114

DNMA

	d	d_1	l	s
43	.500	.203	.610	.187
44	.500	.203	.610	.250

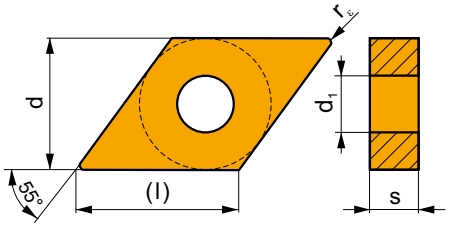


For tools see pages: T188-T189, T216

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNMA 431	**T5305**	☐		■			◪	●	+	.016	.004	.009	.016	.154
DNMA 432	**T5305**	☐		■			◪	●	++	.031	.004	.019	.031	.154
	T5315	◪	☐	■			☐	●	++	.031	.004	.019	.031	.154
DNMA 441	**T5305**	☐		■			◪	●	+	.016	.004	.009	.016	.154
	T5315	◪	☐	■			☐	●	+	.016	.004	.009	.016	.154
	T6310	◪	☐	◪			◪	●	+	.016	.002	.009	.016	.154
DNMA 442	**T5305**	☐		■			◪	●	++	.031	.004	.019	.031	.154
	T5315	◪	☐	■			☐	●	++	.031	.004	.019	.031	.154
	T6310	◪	☐	◪			◪	⬢	++	.031	.002	.019	.031	.154
DNMA 443	**T5305**	☐		■			◪	●	++	.047	.004	.028	.047	.154
	T5315	◪	☐	■			☐	⬢	++	.047	.004	.028	.047	.154

DNMG

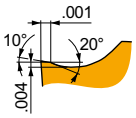
	d	d_1	l	s
33	.375	.150	.457	.187
43	.500	.203	.610	.187
44	.500	.203	.610	.250

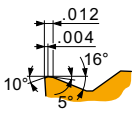


For tools see pages: T188-T189, T216

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNMG 330.5-FF	**T8315**	◪	■	◪	☐	☐		●	+	.008	.002	.005	.008	.059
DNMG 331-FF	**T8315**	◪	■	◪	☐	☐		●	+	.016	.002	.008	.016	.059
	T8330	■	■	◪	☐	☐		●	+	.016	.002	.008	.016	.059
DNMG 332-FF	**T8315**	◪	■	◪	☐	☐		●	+	.031	.003	.010	.031	.059
DNMG 431-FF	**T8315**	◪	■	◪	☐	☐		●	+	.016	.002	.008	.016	.059
DNMG 441-FF	**T7325**	◪	■			☐		●	++	.016	.006	.008	.016	.059
	T8315	◪	■	◪	☐	☐		●	+	.016	.002	.008	.016	.059
DNMG 442-FF	**T7325**	◪	■			☐		●	++	.031	.006	.010	.031	.059
	T8315	◪	■	◪	☐	☐		●	+	.031	.003	.010	.031	.059

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNMG 331-FM	**T7325**	◪	■			□		●	++	.016	.006	.009	.016	.118
	T9310	■		◪				●	+	.016	.006	.009	.016	.118
	T9315	■		◪				●	++	.016	.006	.009	.016	.118
	T9325	■	■	◪		□		●	+	.016	.006	.009	.016	.118
	T8315	◪	■	◪		□		●	+	.016	.004	.009	.016	.118
	T8330	■	■	◪		□		●	+	.016	.004	.009	.016	.118
DNMG 332-FM	**T7325**	◪	■			□		●	++	.031	.006	.014	.031	.118
	T9310	■		◪				●	+	.031	.006	.014	.031	.118
	T9315	■		◪				●	++	.031	.006	.014	.031	.118
	T9325	■	■	◪		□		●	++	.031	.006	.014	.031	.118
	T8315	◪	■	◪		□		●	+	.031	.004	.014	.031	.118
	T8330	■	■	◪		□		●	++	.031	.004	.014	.031	.118
DNMG 431-FM	**T7325**	◪	■			□		●	++	.016	.006	.009	.020	.118
	T9315	■		◪				●	++	.016	.006	.009	.020	.118
	T9325	■	■	◪		□		●	+	.016	.006	.009	.020	.118
	T8330	■	■	◪		□		●	+	.016	.004	.009	.020	.118
DNMG 432-FM	**T7325**	◪	■			□		●	++	.031	.006	.018	.031	.118
	T9315	■		◪				●	++	.031	.006	.018	.031	.118
	T9325	■	■	◪		□		●	++	.031	.006	.018	.031	.118
	T8330	■	■	◪		□		●	++	.031	.006	.018	.031	.118
DNMG 441-FM	**T7325**	◪	■			□		●	++	.016	.006	.009	.020	.118
	T7335	◪	■			□		●	++	.016	.006	.009	.020	.118
	T9310	■		◪				●	+	.016	.006	.009	.020	.118
	T9315	■		◪				●	++	.016	.006	.009	.020	.118
	T9325	■	■	◪		□		●	+	.016	.006	.009	.020	.118
	T8315	◪	■	◪		□		●	+	.016	.004	.009	.020	.118
	T8330	■	■	◪		□		●	+	.016	.004	.009	.020	.118
	TT310	■	◪					●	+/-	.016	.004	.009	.020	.118
DNMG 442-FM	**T7325**	◪	■			□		●	++	.031	.006	.018	.031	.118
	T7335	◪	■			□		●	+++	.031	.006	.018	.031	.118
	T9310	■		◪				●	++	.031	.006	.018	.031	.118
	T9315	■		◪				●	++	.031	.006	.018	.031	.118
	T9325	■	■	◪		□		●	++	.031	.006	.018	.031	.118
	T8315	◪	■	◪		□		●	++	.031	.006	.018	.031	.118
	T8330	■	■	◪		□		●	++	.031	.006	.018	.031	.118
	TT310	■	◪					●	+/-	.031	.006	.018	.031	.118
DNMG 443-FM	**T7325**	◪	■			□		●	++	.047	.006	.018	.047	.118
	T9315	■		◪				●	++	.047	.006	.018	.047	.118
	T9325	■	■	◪		□		●	++	.047	.006	.018	.047	.118
DNMG 444-FM	**T9315**	■		◪				●	++	.063	.006	.018	.063	.118
	T9325	■	■	◪		□		●	++	.063	.006	.018	.063	.118
DNMG 331-M	**T5315**	◪	□	■			□	●	+	.016	.005	.009	.031	.118
	T9315	■		◪			□	●	++	.016	.006	.009	.031	.118
	T9325	■	◪	◪				●	+	.016	.006	.009	.031	.118
	T9335	■	◪					●	++	.016	.006	.009	.031	.118
DNMG 332-M	**T5315**	◪	□	■			□	●	++	.031	.006	.019	.031	.118
	T9315	■		◪			□	●	++	.031	.006	.019	.031	.118
	T9325	■	◪	◪				●	++	.031	.006	.019	.031	.118
	T9335	■	◪					●	+++	.031	.006	.019	.031	.118
DNMG 333-M	**T9315**	■		◪			□	●	+++	.047	.007	.028	.047	.130
	T9325	■	◪	◪				●●	++	.047	.007	.028	.047	.130
	T9335	■	◪					●●	+++	.047	.007	.028	.047	.130
DNMG 431-M	**T5315**	◪	□	■			□	●	+	.016	.007	.009	.031	.118
	T9315	■		◪			□	●	++	.016	.007	.009	.031	.118
	T9325	■	◪	◪				●	+	.016	.007	.009	.031	.118
	T9335	■	◪					●	++	.016	.007	.009	.031	.118
DNMG 432-M	**T5315**	◪	□	■			□	●	++	.031	.006	.019	.031	.177
	T9315	■		◪			□	●	++	.031	.006	.019	.031	.177









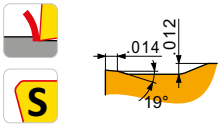
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DNMG 432-M	T9325	■	◪	◪				●	++	.031	.006	.019	.031	.177
	T9335	■	◪					●	+++	.031	.006	.019	.031	.177
DNMG 433-M	T5315	◪	□	■			□	●	++	.047	.007	.028	.047	.177
	T9315	■		◪			□	●	+++	.047	.007	.028	.047	.177
	T9325	■	◪	◪				●	++	.047	.007	.028	.047	.177
	T9335	■	◪					●	+++	.047	.007	.028	.047	.177
DNMG 441-M	T5315	◪	□	■			□	●	+	.016	.007	.009	.031	.118
	T9315	■		◪			□	●	++	.016	.007	.009	.031	.118
	T9325	■	◪	◪				●	+	.016	.007	.009	.031	.118
	T9335	■	◪					●	++	.016	.007	.009	.031	.118
DNMG 442-M	T5315	◪	□	■			□	●	++	.031	.006	.019	.031	.177
	T9310	■		◪				●	++	.031	.006	.019	.031	.177
	T9315	■		◪			□	●	++	.031	.006	.019	.031	.177
	T9325	■	◪	◪				●	++	.031	.006	.019	.031	.177
	T9335	■	◪					●	+++	.031	.006	.019	.031	.177
DNMG 443-M	T5315	◪	□	■			□	●	++	.047	.007	.028	.047	.177
	T9310	■		◪				●	++	.047	.007	.028	.047	.177
	T9315	■		◪			□	●	+++	.047	.007	.028	.047	.177
	T9325	■	◪	◪				●	++	.047	.007	.028	.047	.177
	T9335	■	◪					●	+++	.047	.007	.028	.047	.177
DNMG 331-NF	T7325	◪	■			◪		●	++	.016	.004	.009	.016	.118
	T7335	◪	■			◪		●	++	.016	.004	.009	.016	.118
	T9315	■						●	++	.016	.004	.009	.016	.118
	T9325	■	■			◪		●	+	.016	.004	.009	.016	.118
	T6310	◪	■		□	◪		●	+	.016	.004	.009	.016	.118
	T8330	■	■		□	◪		●	+	.016	.004	.009	.016	.118
DNMG 332-NF	T7325	◪	■			◪		●	++	.031	.006	.012	.031	.118
	T7335	◪	■			◪		●	++	.031	.006	.012	.031	.118
	T9315	■						●	++	.031	.006	.012	.031	.118
	T9325	■	■			◪		●	+	.031	.006	.012	.031	.118
	T6310	◪	■		□	◪		●	+	.031	.005	.012	.031	.118
	T8330	■	■		□	◪		●	+	.031	.005	.012	.031	.118
DNMG 431-NF	T7325	◪	■			◪		●	++	.016	.006	.009	.016	.118
	T7335	◪	■			◪		●	++	.016	.006	.009	.016	.118
	T9315	■						●	++	.016	.006	.009	.016	.118
	T9325	■	■			◪		●	+	.016	.006	.009	.016	.118
	T6310	◪	■		□	◪		●	+	.016	.005	.009	.016	.118
	T8330	■	■		□	◪		●	+	.016	.005	.009	.016	.118
DNMG 432-NF	T7325	◪	■			◪		●	++	.031	.006	.012	.031	.118
	T7335	◪	■			◪		●	++	.031	.006	.012	.031	.118
	T9315	■						●	++	.031	.006	.012	.031	.118
	T9325	■	■			◪		●	+	.031	.006	.012	.031	.118
	T6310	◪	■		□	◪		●	+	.031	.006	.012	.031	.118
	T8330	■	■		□	◪		●	+	.031	.006	.012	.031	.118
DNMG 441-NF	T7325	◪	■			◪		●	++	.016	.006	.009	.016	.118
	T7335	◪	■			◪		●	++	.016	.006	.009	.016	.118
	T9315	■						●	++	.016	.006	.009	.016	.118
	T9325	■	■			◪		●	+	.016	.006	.009	.016	.118
	T6310	◪	■		□	◪		●	+	.016	.005	.009	.016	.118
	T8315	◪	■		□	□		●	+	.016	.005	.009	.016	.118
	T8330	■	■		□	◪		●	+	.016	.005	.009	.016	.118
	HF7		□		□	□		●	+	.016	.005	.009	.016	.118
DNMG 442-NF	T7325	◪	■			◪		●	++	.031	.006	.012	.031	.118
	T7335	◪	■			◪		●	++	.031	.006	.012	.031	.118
	T9315	■						●	++	.031	.006	.012	.031	.118
	T9325	■	■			◪		●	+	.031	.006	.012	.031	.118
	T6310	◪	■		□	◪		●	+	.031	.006	.012	.031	.118
	T8315	◪	■		□	□		●	+	.031	.006	.012	.031	.118
	T8330	■	■		□	◪		●	+	.031	.006	.012	.031	.118

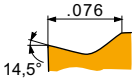
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNMG 442-NF	HF7		□		□	□		●	+	.031	.006	.012	.031	.118
DNMG 443-NF	T9325	■	■			◪		●	++	.047	.006	.014	.047	.138
	T6310	◪	■		□	◪		●	+	.047	.006	.014	.047	.138
DNMG 331-NM	T7325	◪	■			■		●	++	.016	.006	.009	.020	.118
	T7335	◪	■					●	++	.016	.006	.009	.020	.118
	T9325	■	■	□		□		●	+	.016	.006	.009	.020	.118
	T8315	◪	■	□	□	□		●	+	.016	.006	.009	.020	.118
	T8330	■	■	□	□	◪		●	+	.016	.006	.009	.020	.118
DNMG 332-NM	T7325	◪	■			■		●	++	.031	.008	.016	.031	.118
	T7335	◪	■					●	++	.031	.008	.016	.031	.118
	T9325	■	■	□		□		●	++	.031	.008	.016	.031	.118
	T8315	◪	■	□	□	□		●	+	.031	.008	.016	.031	.118
	T8330	■	■	□	□	◪		⬣	++	.031	.008	.016	.031	.118
DNMG 432-NM	T7335	◪	■					●	++	.031	.008	.016	.031	.118
	T9325	■	■	□		□		●	++	.031	.008	.016	.031	.118
	T8330	■	■	□	□	◪		⬣	++	.031	.008	.016	.031	.118
DNMG 441-NM	T7325	◪	■			■		●	++	.016	.006	.009	.020	.118
	T7335	◪	■					●	++	.016	.006	.009	.020	.118
	T9315	■		□				●	++	.016	.006	.009	.020	.118
	T9325	■	■	□		□		●	+	.016	.006	.009	.020	.118
	T8315*	◪	■	□	□	□		●	+	.016	.006	.009	.020	.118
	T8330	■	■	□	□	◪		●	+	.016	.006	.009	.020	.118
DNMG 442-NM	T7325	◪	■			■		●	++	.031	.008	.016	.031	.118
	T7335	◪	■					●	++	.031	.008	.016	.031	.118
	T9315	■		□				●	++	.031	.008	.016	.031	.118
	T9325	■	■	□		□		●	++	.031	.008	.016	.031	.118
	T8315	◪	■	□	□	□		●	+	.031	.008	.016	.031	.118
	T8330	■	■	□	□	◪		⬣	++	.031	.008	.016	.031	.118
DNMG 443-NM	T7325	◪	■			■		⬣	++	.047	.008	.016	.047	.138
	T7335	◪	■					⬣	++	.047	.008	.016	.047	.138
	T9325	■	■	□		□		⬣	++	.047	.008	.016	.047	.138
	T8315	◪	■	□	□	□		⬣	+	.047	.008	.016	.047	.138
DNMG 331-NMR	T7325	◪	■			◪		●	++	.016	.007	.009	.016	.118
	T9315	■						●	++	.016	.007	.009	.016	.118
	T9325	■	■			◪		●	+	.016	.007	.009	.016	.118
DNMG 332-NMR	T7325	◪	■			◪		⬣	++	.031	.008	.016	.031	.118
	T9315	■						●	++	.031	.008	.016	.031	.118
	T9325	■	■			◪		⬣	++	.031	.008	.016	.031	.118
DNMG 333-NMR	T7325	◪	■			◪		⬣	++	.047	.008	.020	.047	.130
	T9315	■						⬣	++	.047	.008	.020	.047	.130
	T9325*	■	■			◪		⬣	++	.047	.008	.020	.047	.130
DNMG 431-NMR	T7325	◪	■			◪		●	++	.016	.008	.009	.016	.138
	T7335	◪	■			◪		●	++	.016	.008	.009	.016	.138
	T9325	■	■			◪		●	+	.016	.008	.009	.016	.138
DNMG 432-NMR	T7325	◪	■			◪		⬣	++	.031	.008	.019	.031	.157
	T7335*	◪	■			◪		⬣	+++	.031	.008	.019	.031	.157
	T9315*	■						●	++	.031	.008	.019	.031	.157
	T9325	■	■			◪		⬣	++	.031	.008	.019	.031	.157
	T8330	■	■			◪		⬣	++	.031	.008	.019	.031	.157
DNMG 441-NMR	T7325	◪	■			◪		●	++	.016	.008	.009	.016	.138
	T7335	◪	■			◪		●	++	.016	.008	.009	.016	.138
	T9315	■						●	++	.016	.008	.009	.016	.138
	T9325	■	■			◪		●	+	.016	.008	.009	.016	.138
	T8330	■	■			◪		●	+	.016	.008	.009	.016	.138

* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNMG 442-NMR	T6310	◪	■			◪		●	+ +	.031	.008	.019	.031	.157
	T7325	◪	■			◪		●	+ +	.031	.008	.019	.031	.157
	T7335	◪	■			◪		●	+++	.031	.008	.019	.031	.157
	T9315	■						●	+ +	.031	.008	.019	.031	.157
	T9325	■	■			◪		●	+ +	.031	.008	.019	.031	.157
	T8330	■	■			◪		●	+ +	.031	.008	.019	.031	.157
DNMG 443-NMR	T7325	◪	■			◪		●	+ +	.047	.009	.022	.047	.157
	T7335	◪	■			◪		●	+++	.047	.009	.022	.047	.157
	T9315	■						●	+ +	.047	.009	.022	.047	.157
	T9325	■	■			◪		●	+ +	.047	.009	.022	.047	.157
	T8330	■	■			◪		●	+ +	.047	.009	.022	.047	.157
DNMG 150408-NRM	T7325	◪	■			□		●	+ +	.031	.009	.018	.031	.157
	T7335	◪	■			□		●	+++	.031	.009	.018	.031	.157
	T9315	■						●	+ +	.031	.009	.018	.031	.157
DNMG 150604-NRM	T7325	◪	■			□		●	+ +	.016	.006	.009	.016	.157
	T7335	◪	■			□		●	+ +	.016	.006	.009	.016	.157
	T9315	■						●	+ +	.016	.006	.009	.016	.157
DNMG 150608-NRM	T7325	◪	■			□		●	+ +	.031	.009	.018	.031	.157
	T7335	◪	■			□		●	+++	.031	.009	.018	.031	.157
	T9315	■						●	+ +	.031	.009	.018	.031	.157
DNMG 150612-NRM	T7325	◪	■			□		●	+++	.047	.010	.028	.047	.157
	T7335	◪	■			□		●	+++	.047	.010	.028	.047	.157
	T9315	■						●	+++	.047	.010	.028	.047	.157
DNMG 432-R	T5315	◪	□	■			□	●	+ +	.031	.010	.019	.079	.177
DNMG 442-R	T5305	□		■			□	●	+ +	.031	.010	.019	.079	.177
	T5315	◪	□	■			□	●	+ +	.031	.010	.019	.079	.177
	T9310	■		◪			□	●	+ +	.031	.010	.019	.079	.177
	T9315	■		◪			□	●	+ +	.031	.010	.019	.079	.177
	T9325	■	◪	◪				●	+ +	.031	.010	.019	.079	.177
DNMG 443-R	T5305	□		■			□	●	+ +	.047	.010	.028	.079	.177
	T5315	◪	□	■			□	●	+ +	.047	.010	.028	.079	.177
	T9310*	■		◪			□	●	+ +	.047	.010	.028	.079	.177
	T9315	■		◪			□	●	+++	.047	.010	.028	.079	.177
	T9325	■	◪	◪				●	+ +	.047	.010	.028	.079	.177
DNMG 444-R	T9325	■	◪	◪				●	+ +	.063	.012	.031	.079	.177
DNMG 332-RM	T9315	■		◪			□	●	+ +	.031	.008	.019	.039	.130
	T9325	■	■	◪		□		●	+ +	.031	.008	.019	.039	.130
	T9335	■	◪					●	+++	.031	.008	.019	.039	.130
DNMG 333-RM	T9315	■		◪			□	●	+++	.047	.010	.024	.059	.130
	T9325	■	■	◪		□		●	+ +	.047	.010	.024	.059	.130
	T9335	■	◪					●	+++	.047	.010	.024	.059	.130
DNMG 432-RM	T9315	■		◪			□	●	+ +	.031	.010	.019	.031	.177
	T9325	■	■	◪		□		●	+ +	.031	.010	.019	.031	.177
	T9335	■	◪					●	+++	.031	.010	.019	.031	.177
DNMG 433-RM	T7325	◪	■			◪		●	+++	.047	.010	.028	.059	.177
	T9315	■		◪			□	●	+++	.047	.010	.028	.059	.177
	T9325	■	■	◪		□		●	+ +	.047	.010	.028	.059	.177
	T9335	■	◪					●	+++	.047	.010	.028	.059	.177
DNMG 442-RM	T5305	□		■			□	●	+ +	.031	.008	.019	.039	.177
	T5315	◪	□	■			□	●	+ +	.031	.008	.019	.039	.177
	T7325	◪	■			◪		●	+ +	.031	.008	.019	.039	.177
	T7335	◪	■			◪		●	+++	.031	.008	.019	.039	.177
	T9310	■		◪				●	+ +	.031	.008	.019	.039	.177
	T9315	■		◪			□	●	+ +	.031	.008	.019	.039	.177
	T9325	■	■	◪		□		●	+ +	.031	.008	.019	.039	.177
	T9335	■	◪					●	+++	.031	.008	.019	.039	.177
	T8315	◪	■	■		□	□	●	+ +	.031	.008	.019	.039	.177
	T8330	■	■	■		◪	□	●	+ +	.031	.008	.019	.039	.177

* Non-stocked item

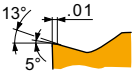


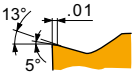


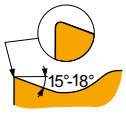
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNMG 443-RM	**T5305**	□		■			□	●	+ +	.047	.010	.028	.059	.177
	T5315	◪	□	■			□	⬢	+ +	.047	.010	.028	.059	.177
	T7325	◪	■			◪		⬢	+++	.047	.010	.028	.059	.177
	T7335	◪	■			◪		⬢	+++	.047	.010	.028	.059	.177
	T9310	■		◪				⬢	+ +	.047	.010	.028	.059	.177
	T9315	■		◪			□	⬢	+++	.047	.010	.028	.059	.177
	T9325	■	■	◪		□		⬢	+ +	.047	.010	.028	.059	.177
	T9335	■	◪					⬢	+++	.047	.010	.028	.059	.177
	T8330	■	■	■		◪	□	⬢	+ +	.047	.010	.028	.059	.177
DNMG 444-RM	**T5315**	◪	□	■			□	⬢	+ +	.063	.012	.030	.079	.177
	T9315	■		◪			□	⬢	+++	.063	.012	.030	.079	.177
	T9325	■	■	◪		□		⬢	+ +	.063	.012	.030	.079	.177
	T9335	■	◪					⬢	+++	.063	.012	.030	.079	.177
DNMG 331-SF	**T7325**	◪	■			■		●	+ +	.016	.006	.009	.016	.079
	T9315	◪					□	●	+ +	.016	.006	.009	.016	.079
	T9325	◪	■			◪		●	+	.016	.006	.009	.016	.079
	T6310	◪	■		□	■	□	●	+	.016	.004	.009	.016	.079
	T8315	◪	■		□	□	□	●	+	.016	.004	.009	.016	.079
DNMG 332-SF	**T7325**	◪	■			■		●	+ +	.031	.006	.011	.031	.098
	T7335	◪	■			■		●	+ +	.031	.006	.011	.031	.098
	T9325	◪	■			◪		●	+ +	.031	.006	.011	.031	.098
	T6310	◪	■		□	■	□	●	+	.031	.005	.011	.031	.098
	T8315*	◪	■		□	□	□	●	+	.031	.005	.011	.031	.098
DNMG 431-SF	**T9325**	◪	■			◪		●	+	.016	.006	.009	.016	.098
	T6310	◪	■		□	■	□	●	+	.016	.004	.009	.016	.098
	T8315	◪	■		□	□	□	●	+	.016	.004	.009	.016	.098
DNMG 432-SF	**T9325**	◪	■			◪		●	+	.031	.006	.012	.031	.118
	T6310	◪	■		□	■	□	●	+	.031	.005	.012	.031	.118
	T8315*	◪	■		□	□	□	●	+	.031	.005	.012	.031	.118
	T8330	◪	■		□	◪	□	●	+	.031	.005	.012	.031	.118
DNMG 441-SF	**T7325**	◪	■			■		●	+ +	.016	.006	.009	.016	.098
	T7335	◪	■			■		●	+ +	.016	.006	.009	.016	.098
	T9315	◪					□	●	+ +	.016	.006	.009	.016	.098
	T9325	◪	■			◪		●	+	.016	.006	.009	.016	.098
	T6310	◪	■		□	■	□	●	+	.016	.004	.009	.016	.098
	T8315	◪	■		□	□	□	●	+	.016	.004	.009	.016	.098
	T8330	◪	■		□	◪	□	●	+	.016	.004	.009	.016	.098
	H07		◪		□	■		●	+	.016	.004	.009	.016	.098
DNMG 442-SF	**T7325**	◪	■			■		●	+ +	.031	.006	.012	.031	.118
	T7335	◪	■			■		●	+ +	.031	.006	.012	.031	.118
	T9315	◪					□	●	+ +	.031	.006	.012	.031	.118
	T9325	◪	■			◪		●	+	.031	.006	.012	.031	.118
	T6310	◪	■		□	■	□	●	+	.031	.005	.012	.031	.118
	T8315	◪	■		□	□	□	●	+	.031	.005	.012	.031	.118
	T8330	◪	■		□	◪	□	⬢	+	.031	.005	.012	.031	.118
	H07		◪		□	■		●	+	.031	.005	.012	.031	.118
DNMG 443-SF	**T7325**	◪	■			■		⬢	+ +	.047	.006	.012	.047	.118
	T9315	◪					□	●	+ +	.047	.006	.012	.047	.118
	T6310	◪	■		□	■	□	⬢	+	.047	.006	.012	.047	.118

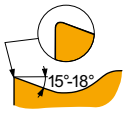
* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNMG 331-SM	T7325	◪	■			■		●	++	.016	.006	.009	.016	.118
	T7335	◪	■			■		●	++	.016	.006	.009	.016	.118
	T9325	■	■	◪		◪		●	+	.016	.006	.009	.016	.118
	T6310	◪	■	◪		■	□	●	+	.016	.006	.009	.016	.118
DNMG 332-SM	T7325	◪	■			■		●	++	.031	.007	.014	.031	.130
	T7335	◪	■			■		●	++	.031	.007	.014	.031	.130
DNMG 332-SM	T9325	■	■	◪		◪		●	++	.031	.007	.014	.031	.130
	T6310	◪	■	◪		■	□	●	+	.031	.007	.014	.031	.130
	T8330	■	■	◪		◪	□	⬢	++	.031	.007	.014	.031	.130
DNMG 431-SM	T6310	◪	■	◪		■	□	●	+	.016	.007	.009	.016	.157
DNMG 432-SM	T6310	◪	■	◪		■	□	⬢	+	.031	.008	.018	.031	.157
DNMG 441-SM	T7325	◪	■			■		●	++	.016	.007	.009	.016	.138
	T7335	◪	■			■		●	++	.016	.007	.009	.016	.138
	T9315	■		◪			□	●	++	.016	.007	.009	.016	.138
	T9325	■	■	◪		◪		●	+	.016	.007	.009	.016	.138
	T6310	◪	■	◪		■	□	●	+	.016	.007	.009	.016	.138
	T8330	■	■	◪		◪	□	●	+	.016	.007	.009	.016	.138
DNMG 442-SM	T7325	◪	■			■		●	++	.031	.008	.016	.031	.157
	T7335	◪	■			■		●	++	.031	.008	.016	.031	.157
	T9315	■		◪			□	●	++	.031	.008	.016	.031	.157
	T9325	■	■	◪		◪		●	++	.031	.008	.016	.031	.157
	T6310	◪	■	◪		■	□	●	++	.031	.008	.016	.031	.157
	T8330	■	■	◪		◪	□	⬢	++	.031	.008	.016	.031	.157
DNMG 443-SM	T7325	◪	■			■		⬢	++	.047	.009	.016	.047	.157
	T7335	◪	■			■		⬢	+++	.047	.009	.016	.047	.157
	T9315	■		◪			□	●	++	.047	.009	.016	.047	.157
	T9325	■	■	◪		◪		⬢	++	.047	.009	.016	.047	.157
	T6310	◪	■	◪		■	□	⬢	++	.047	.009	.016	.047	.157
	T8330	■	■	◪		◪	□	⬢	++	.047	.009	.016	.047	.157
DNMG 331R-SI	T7325	◪	■			■		●	++	.016	.008	.009	.031	.130
	T7335	◪	■			■		●	++	.016	.008	.009	.031	.130
	T9325	■	■	□		□		●	+	.016	.008	.009	.031	.130
	T8330	■	■	□	□	◪		●	+	.016	.008	.009	.031	.130
DNMG 332R-SI	T7335*	◪	■					●	+++	.031	.008	.019	.031	.130
	T9325	■	■	□		□		●	++	.031	.008	.019	.031	.130
	T8330	■	■	□	□	◪		●	++	.031	.008	.019	.031	.130
DNMG 431R-SI	T9325	■	■	□		□		●	+	.016	.008	.009	.016	.177
	T8330	■	■	□	□	◪		●	+	.016	.008	.009	.016	.177
DNMG 432R-SI	T9325	■	■	□		□		●	++	.031	.008	.019	.031	.177
	T8330	■	■	□	□	◪		●	++	.031	.008	.019	.031	.177
DNMG 441R-SI	T7325	◪	■			■		●	++	.016	.008	.009	.031	.177
	T7335	◪	■					●	++	.016	.008	.009	.031	.177
	T9325	■	■	□		□		●	+	.016	.008	.009	.031	.177
	T8315	◪	■	□	□	□		●	+	.016	.008	.009	.031	.177
	T8330	■	■	□	□	◪		●	+	.016	.008	.009	.031	.177
DNMG 442R-SI	T7325	◪	■			■		●	++	.031	.008	.019	.031	.177
	T7335	◪	■					●	+++	.031	.008	.019	.031	.177
	T9325	■	■	□		□		●	++	.031	.008	.019	.031	.177
	T8315	◪	■	□	□	□		●	++	.031	.008	.019	.031	.177
	T8330	■	■	□	□	◪		●	++	.031	.008	.019	.031	.177
DNMG 331L-SI	T7335	◪	■					●	++	.016	.008	.009	.031	.130
	T9325	■	■	□		□		●	+	.016	.008	.009	.031	.130
	T8330	■	■	□	□	◪		●	+	.016	.008	.009	.031	.130









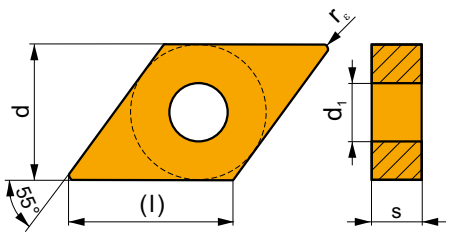
* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNMG 332L-SI	**T7325***	◪	■			■		●	++	.031	.008	.019	.031	.130
	T7335	◪	■					●	+++	.031	.008	.019	.031	.130
	T9325	■	■	□		□		●	++	.031	.008	.019	.031	.130
	T8330	■	■	□	□	◪		●	++	.031	.008	.019	.031	.130
DNMG 431L-SI	**T9325**	■	■	□		□		●	+	.016	.008	.009	.016	.177
	T8330	■	■	□	□	◪		●	+	.016	.008	.009	.016	.177
DNMG 432L-SI	**T7335**	◪	■					●	+++	.031	.008	.019	.031	.177
	T9325	■	■	□		□		●	++	.031	.008	.019	.031	.177
	T8330	■	■	□	□	◪		●	++	.031	.008	.019	.031	.177
DNMG 441L-SI	**T7325**	◪	■			■		●	++	.016	.008	.009	.031	.177
	T7335	◪	■					●	++	.016	.008	.009	.031	.177
	T9325	■	■	□		□		●	+	.016	.008	.009	.031	.177
	T8315	◪	■	□	□	□		●	+	.016	.008	.009	.031	.177
	T8330	■	■	□	□	◪		●	+	.016	.008	.009	.031	.177
DNMG 442L-SI	**T7325**	◪	■			■		●	++	.031	.008	.019	.031	.177
	T7335	◪	■					●	+++	.031	.008	.019	.031	.177
	T9325	■	■	□		□		●	++	.031	.008	.019	.031	.177
	T8315	◪	■	□	□	□		●	++	.031	.008	.019	.031	.177
	T8330	■	■	□	□	◪		●	++	.031	.008	.019	.031	.177
DNMG 442W-MR	**T5315**	◪	□	■				●	++	.031	.008	.022	.031	.157
	T9315	■		◪				●	++	.031	.008	.022	.031	.157
	T9325	■	■	◪				●	++	.031	.008	.022	.031	.157
DNMG 443W-MR	**T9310**	■		◪				●	++	.047	.008	.024	.047	.157
	T9325	■	■	◪				⬢	++	.047	.008	.024	.047	.157
DNMX 441W-NM	**T7325**	◪	■			■		●	++	.016	.006	.016	.020	.118
	T7335	◪	■					●	+++	.016	.006	.016	.020	.118
	T9315	■		□				●	++	.016	.006	.016	.020	.118
DNMX 442W-NM	**T7325**	◪	■			■		⬢	++	.031	.008	.020	.031	.118
	T7335	◪	■					⬢	+++	.031	.008	.020	.031	.118
	T9315	■		□				●	++	.031	.008	.020	.031	.118
	T9325	■	■	□		□		●	++	.031	.008	.020	.031	.118

* Non-stocked item

DNMM

	d	d_1	l	s
43	.500	.203	.610	.187
44	.500	.203	.610	.250



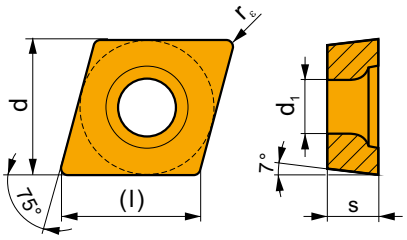
For tools see pages: T188-T189, T216

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNMM 432-NR	**T7335**	◪	■					⬢	+++	.031	.010	.019	.039	.177
	T9325	■	■	□		□		⬢	++	.031	.010	.019	.039	.177
DNMM 442-NR	**T7325**	◪	■			■		⬢	+++	.031	.010	.019	.039	.177
	T7335	◪	■					⬢	+++	.031	.010	.019	.039	.177
	T9325	■	■	□		□		⬢	++	.031	.010	.019	.039	.177
	T8330	■	■	□	□	◪		⬢	++	.031	.010	.019	.039	.177

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNMM 442-NR2	**T7335**	◪	■					●	+++	.031	.011	.019	.031	.177
	T9325	■	■	□		□		●	++	.031	.011	.019	.031	.177
DNMM 442-OR	**T9325**	■	■	◪		□		●	++	.031	.010	.019	.079	.177
	T9335	■	◪					●	+++	.031	.010	.019	.079	.177
DNMM 443-OR	**T9315**	■		◪				●	+++	.047	.012	.028	.079	.177
	T9325	■	■	◪		□		●	++	.047	.012	.028	.079	.177
	T9335	■	◪					●	+++	.047	.012	.028	.079	.177
DNMM 444-OR	**T9325**	■	■	◪		□		●	++	.063	.014	.031	.079	.177

ECGT

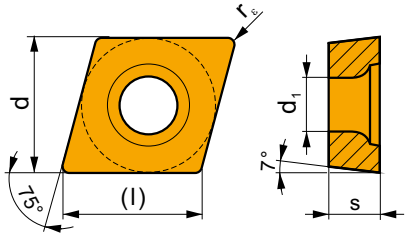
	d	d_1	l	s
2.52	.313	.134	.323	.125
2.52-SF3	.313	.134	.323	.135
21.5	.250	.110	.256	.094
21.5-SF3	.250	.110	.256	.102



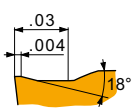
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ECGT 21.50.5-SF2	**T6310**		■		◪	■		●	+	.008	.001	.006	.004	.063
	H07		◪		◪	■		●	+	.008	.001	.006	.004	.063
ECGT 21.51-SF2	**T6310**		■		◪	■		●	+	.016	.002	.008	.008	.098
	H07		◪		◪	■		●	+	.016	.002	.008	.008	.098
ECGT 2.520.5-SF2	**T6310**		■		◪	■		●	+	.008	.001	.008	.004	.079
	H07		◪		◪	■		●	+	.008	.001	.008	.004	.079
ECGT 2.521-SF2	**T6310**		■		◪	■		●	+	.016	.002	.010	.008	.098
	H07		◪		◪	■		●	+	.016	.002	.010	.008	.098
ECGT 21.50.5-SF3	**T6310**		■		◪	■		●	+	.008	.001	.006	.008	.063
	H07		◪		◪	■		●	+	.008	.001	.006	.008	.063
ECGT 2.521-SF3	**T6310**		■		◪	■		●	+	.016	.002	.009	.008	.098
	H07		◪		◪	■		●	+	.016	.002	.009	.008	.098

ECMT

	d	d_1	l	s
2.52	.313	.134	.323	.125
21.5	.250	.110	.256	.094

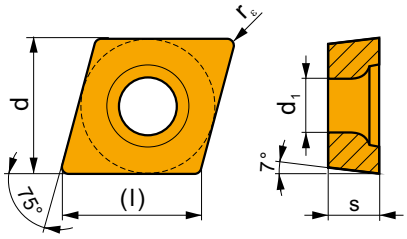


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ECMT 21.51-FM2	**T7325**	◪	◪			□		●	++	.016	.002	.010	.012	.106
	T9315	■		◪			□	●	++	.016	.002	.010	.012	.106
	T9325	■	◪	◪		□		●	+	.016	.002	.010	.012	.106
	T9335	■	◪			□		●	++	.016	.002	.010	.012	.106
	T8330	■	◪	■		□	□	●	+	.016	.002	.010	.012	.106
ECMT 2.521-FM2	**T5315**	◪	□	■			□	●	+	.016	.002	.010	.012	.106
	T7325	◪	◪			□		●	++	.016	.002	.010	.012	.106
	T9315	■		◪			□	●	++	.016	.002	.010	.012	.106
	T9325	■	◪	◪		□		●	+	.016	.002	.010	.012	.106
	T9335	■	◪			□		●	++	.016	.002	.010	.012	.106
	T8330	■	◪	■		□	□	●	+	.016	.002	.010	.012	.106
ECMT 2.522-FM2	**T7325**	◪	◪			□		⬣	++	.031	.004	.016	.024	.138
	T9315	■		◪			□	●	++	.031	.004	.016	.024	.138
	T9325	■	◪	◪		□		⬣	+	.031	.004	.016	.024	.138
	T9335	■	◪			□		⬣	++	.031	.004	.016	.024	.138
	T8330	■	◪	■		□	□	⬣	++	.031	.004	.016	.024	.138

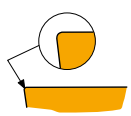


ECMW

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2.52	.313	.134	.323	.125
21.5	.250	.110	.256	.094

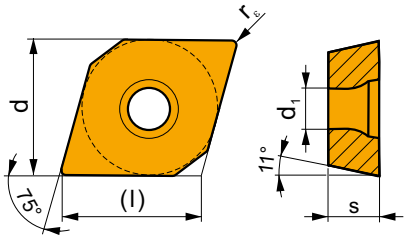


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ECMW 21.51	**H07**		□	■				●	+	.016	.002	.012	.016	.165
ECMW 2.521	**H07**		□	■				●	+	.016	.002	.012	.016	.220
ECMW 2.522	**H07**		□	■				⬣	+	.031	.002	.012	.031	.220



EPMT

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1.81.5	.219	.098	.224	.094

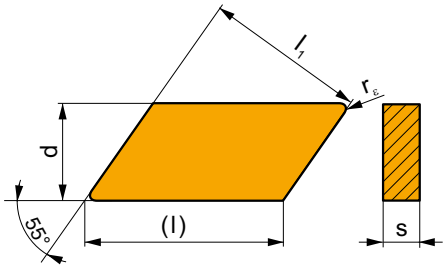


ANSI		P	M	K	N	S	H	?		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
EPMT 1.81.50.5-NF2	**T7325**	◪	◪					●	+	.008	.002	.006	.008	.098
	T7335	◪	◪					●	+ +	.008	.002	.006	.008	.098
	T9315	■		◪				●	+	.008	.002	.006	.008	.098
	T9325	■	◪	◪				●	+	.008	.002	.006	.008	.098
	T9335	◪	■			◪		●	+ +	.008	.002	.006	.008	.098
	H07		◪	◪		■		●	+	.008	.002	.006	.008	.098
	TT010	■	◪					●	+ / -	.008	.002	.006	.008	.098

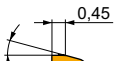


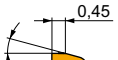
KNUX

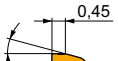
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1604	.375	.768	.636	.187

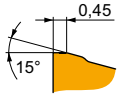
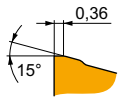
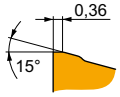
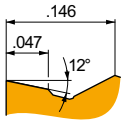
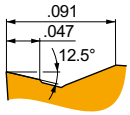
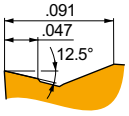
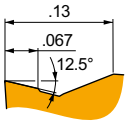
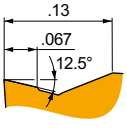


ANSI		P	M	K	N	S	H	?		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
KNUX 160405L-22	**T5315**	◪	□	■				●	+ +	.020	.009	.016	.020	.189
	T7325	◪	◪					●	+ +	.020	.009	.016	.020	.189
	T7335	◪	◪					●	+++	.020	.009	.016	.020	.189
	T9325	■	◪	◪				●	+ +	.020	.009	.016	.020	.189
	T9335	■	◪					●	+++	.020	.009	.016	.020	.189
KNUX 160405R-22	**T5315**	◪	□	■				●	+ +	.020	.009	.016	.020	.189
	T7325	◪	◪					●	+ +	.020	.009	.016	.020	.189
	T7335	◪	◪					●	+++	.020	.009	.016	.020	.189
	T9325	■	◪	◪				●	+ +	.020	.009	.016	.020	.189
	T9335	■	◪					●	+++	.020	.009	.016	.020	.189
KNUX 160410L-22	**T9335**	■	◪					●	+++	.039	.009	.022	.039	.189



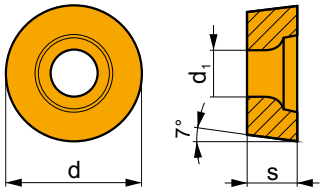




ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
KNUX 160410R-22	**T9335**	■	◪					●	+++	.039	.009	.022	.039	.189
														
KNUX 160405L-32	**T5315**	◪	□	■				●	+ +	.020	.010	.016	.020	.189
	T7325	◪	◪					●	+ +	.020	.010	.016	.020	.189
	T7335	◪	◪					●	+++	.020	.010	.016	.020	.189
	T9325	■	◪	◪				●	+ +	.020	.010	.016	.020	.189
	T9335	■	◪					●	+++	.020	.010	.016	.020	.189
KNUX 160405R-32	**T5315**	◪	□	■				●	+ +	.020	.010	.016	.020	.189
	T7325	◪	◪					●	+ +	.020	.010	.016	.020	.189
	T7335	◪	◪					●	+++	.020	.010	.016	.020	.189
	T9325	■	◪	◪				●	+ +	.020	.010	.016	.020	.189
	T9335	■	◪					●	+++	.020	.010	.016	.020	.189
														
KNUX 160410L-32	**T9325**	■	◪	◪				●	+ +	.039	.010	.024	.039	.189
	T9335	■	◪					●	+++	.039	.010	.024	.039	.189
KNUX 160410R-32	**T9325**	■	◪	◪				●	+ +	.039	.010	.024	.039	.189
	T9335	■	◪					●	+++	.039	.010	.024	.039	.189
														
KNUX 160405ER-72	**T5315**	◪	□	■				●	+	.020	.006	.009	.020	.157
	T9325	■	◪	◪				●	+	.020	.006	.009	.020	.157
	T9335	■	◪					●	+ +	.020	.006	.009	.020	.157
KNUX 160405EL-72	**T5315**	◪	□	■				●	+	.020	.006	.009	.020	.157
	T9325	■	◪	◪				●	+	.020	.006	.009	.020	.157
	T9335	■	◪					●	+ +	.020	.006	.009	.020	.157
														
KNUX 160405SR-73	**6640**	■	■	◪		□		●	+ +	.020	.008	.012	.020	.189
KNUX 160410SR-73	**T5315**	◪	□	◪				●	+ +	.039	.008	.024	.039	.189
	6640	■	■	◪		□		●	+++	.039	.008	.024	.039	.189
														
KNUX 160405SL-73	**6640**	■	■	◪		□		●	+ +	.020	.008	.012	.020	.189
KNUX 160410SL-73	**6640**	■	■	◪		□		●	+++	.039	.008	.024	.039	.189
														
KNUX 160415SR-74	**6640**	■	■	◪		□		●	+++	.059	.012	.028	.059	.189
														
KNUX 160415SL-74	**6640**	■	■	◪		□		●	+++	.059	.012	.028	.059	.189
														

RCGT

	d	d_1	s
0803	.315	.134	.125
1003	.394	.173	.125



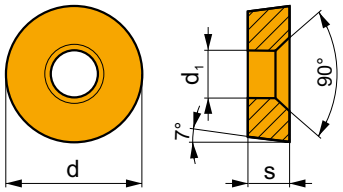
For tools see pages: T201-T202, T206-T207

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RCGT 0803MOF-AL	**T0315**				■			●	+	–	.008	.059	.031	.118
	HF7				■			●	+	–	.008	.059	.031	.118
RCGT 1003MOF-AL	**T0315**				■			●	+	–	.008	.079	.039	.157
	HF7				■			●	+	–	.008	.079	.039	.157



RCMH

	d	d_1	s
3209	1.260	.413	.375

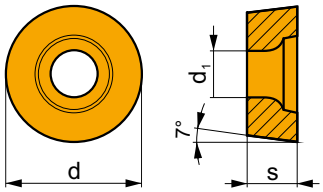


For tools see pages: T201-T202, T206-T207

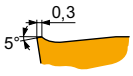
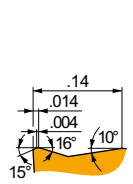
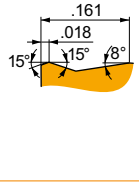
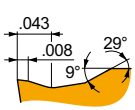
	ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	RCMH 3209MO-RM2	**T9315**	■		◪					–	.031	.051	.079	.315
	RCMH 3209MO-RR2	**T9310**	■		◪					–	.031	.059	.098	.315

RCMT

	d	d_1	s
0602	.236	.110	.094
0803	.315	.134	.125
10T3	.394	.173	.156
1204	.472	.173	.187
1606	.630	.217	.250
2006	.787	.256	.250
2507	.984	.339	.313
3009	1.181	.394	.375



For tools see pages: T201-T202, T206-T207

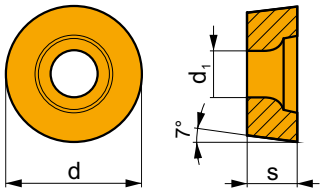
		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		**RCMT 1606MOS-37**	**T9315**	■		◪				✖	++	–	.008	.035	.039	.157
			T9325	■	□	◪				✖	+	–	.008	.035	.039	.157
		**RCMT 2006MOS-371**	**T9315**	■		◪				✖	++	–	.008	.047	.039	.197
			T9325	■	□	◪				✖	+	–	.008	.047	.039	.197
		**RCMT 2507MOS-372**	**T9325**	■	□	◪				✖	+	–	.008	.047	.039	.236
		RCMT 0602MOE-FM	**T7325**	◪	■			□		⬢	+	–	.006	.024	.012	.094
			T9315	■		◪				⬢	+	–	.006	.024	.012	.094
			T9325	■	■	◪		□		⬢	+	–	.006	.024	.012	.094
			T8330	■	■	◪		□		⬢	+	–	.004	.024	.012	.094
		RCMT 0803MOE-FM	**T7325**	◪	■			□		⬢	++	–	.006	.031	.020	.118
			T9315	■		◪				⬢	++	–	.006	.031	.020	.118
			T9325	■	■	◪		□		⬢	+	–	.006	.031	.020	.118
			**T8330**	■	■	◪		□		⬢	+	–	.006	.031	.020	.118
		RCMT 10T3MOE-FM	**T7325**	◪	■			□		⬢	++	–	.012	.039	.028	.157
			T9315	■		◪				⬢	++	–	.012	.039	.028	.157
			T9325	■	■	◪		□		⬢	+	–	.012	.039	.028	.157
			T8330	■	■	◪		□		⬢	+	–	.012	.039	.028	.157
		RCMT 1204MOE-FM	**T7325**	◪	■			□		⬢	++	–	.012	.039	.028	.189
			T9315	■		◪				⬢	++	–	.012	.039	.028	.189
			T9325	■	■	◪		□		⬢	+	–	.012	.039	.028	.189
			T8330	■	■	◪		□		⬢	+	–	.012	.039	.028	.189

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RCMT 0803MOE-RM3	**T7325**	◪	◪						+	–	.006	.024	.020	.118
	T9315	■		◪					+	–	.006	.024	.020	.118
RCMT 1204MOE-RM3	**T7325**	◪	◪						+ +	–	.010	.028	.028	.177
	T9315	■		◪					+ +	–	.010	.028	.028	.177
	T8330	■	◪	■				✖	+	–	.010	.028	.028	.177
	H07*		◪	■					+	–	.010	.028	.028	.177
RCMT 1606MOE-RM3	**T7325**	◪	◪						+ +	–	.010	.035	.039	.177
	T9315	■		◪					+ +	–	.010	.035	.039	.177
	T8330	■	◪	■				✖	+	–	.010	.035	.039	.177
RCMT 2507MOE-RM3	**H07**		◪	■					+	–	.012	.035	.079	.236
RCMT 0602MOE-UR	**T7325**	◪	■						+	–	.006	.016	.009	.059
	T9315	■		◪					+	–	.006	.016	.009	.059
	T9325	■	■	◪					+	–	.006	.016	.009	.059
	T6310	◪	■	◪	□				+ / -	–	.004	.016	.009	.059
	T8330	■	■	■	□				+	–	.004	.016	.009	.059
RCMT 0803MOE-UR	**T7325**	◪	■						+	–	.006	.020	.013	.118
	T9315	■		◪					+	–	.006	.020	.013	.118
	T9325	■	■	◪					+	–	.006	.020	.013	.118
	T6310	◪	■	◪	□				+	–	.005	.020	.013	.118
	T8330	■	■	■	□				+	–	.005	.020	.013	.118
RCMT 10T3MOE-UR	**T7325**	◪	■						+	–	.006	.024	.016	.157
	T9315	■		◪					+	–	.006	.024	.016	.157
	T9325	■	■	◪					+	–	.006	.024	.016	.157
	T6310	◪	■	◪	□				+	–	.006	.024	.016	.157
	T8330	■	■	■	□				+	–	.006	.024	.016	.157
RCMT 1204MOE-UR	**T7325***	◪	■						+ +	–	.007	.039	.019	.189
	T9315	■		◪					+ +	–	.007	.039	.019	.189
	T9325	■	■	◪					+	–	.007	.039	.019	.189
	T6310	◪	■	◪	□				+	–	.007	.039	.019	.189
	T8330	■	■	■	□				+	–	.007	.039	.019	.189
RCMT 3009MO-RR4	**T9310***	■		◪					+ +	–	.031	.059	.157	.315
	T9315*	■		◪					+ +	–	.031	.059	.157	.315
	T9316	■	□	■					+ +	–	.031	.059	.157	.315

* Non-stocked item

RCMW

	d	d_1	s
0602	.236	.110	.094
0803	.315	.134	.125
10T3	.394	.173	.156
1204	.472	.173	.187

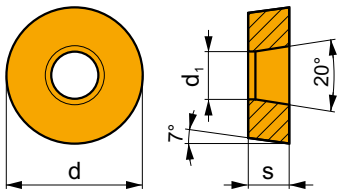


For tools see pages: T201-T202, T206-T207

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RCMW 0602MO	**T5305**	□		■			◪		+/-	–	.004	.008	.020	.059
	T5315	◪	□	■			□		+/-	–	.004	.008	.020	.059
RCMW 0803MO	**T5305**	□		■			◪		+/-	–	.004	.012	.020	.079
	T5315	◪	□	■			□		+/-	–	.004	.012	.020	.079
RCMW 10T3MO	**T5305**	□		■			◪		+/-	–	.004	.014	.020	.098
	T5315	◪	□	■			□		+/-	–	.004	.014	.020	.098
RCMW 1204MO	**T5305**	□		■			◪		+/-	–	.004	.016	.020	.118
	T5315	◪	□	■			□		+/-	–	.004	.016	.020	.118

RCMX

	d	d_1	s
1003	.394	.142	.125
1204	.472	.165	.187
1606	.630	.205	.250
2006	.787	.256	.250
2507	.984	.283	.313
3209	1.260	.374	.375



For tools see pages: T201-T202, T206-T207

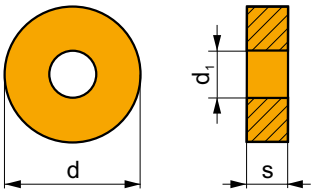
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RCMX 3209MO-RM2	**T5315**	◪	□	■					++	–	.031	.051	.079	.315
RCMX 3209MO-RM1	**T9310**	■		◪					++	–	.031	.051	.079	.315
RCMX 3209MO-RM2	**T9310**	■		◪					++	–	.031	.051	.079	.315
RCMX 3209MO-RM2	**T9315**	■		◪					++	–	.031	.051	.079	.315
RCMX 3209MO-RM1	**T9316**	■	□	■					++	–	.028	.059	.079	.315
RCMX 3209MO-RM2	**T9325**	■	□	◪					++	–	.031	.051	.079	.315
RCMX 3209MO-RM2	**T9335**	■	□						+++	–	.031	.059	.118	.315

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RCMX 1003MOS-31	**T9325**	■	◪	◪				✱	++	–	.016	.039	.059	.098
	T9335	■	◪					✱	++	–	.016	.039	.059	.098
RCMX 1606MOS-37	**T9315**	■		◪				✖	++	–	.008	.035	.039	.157
	T9325	■	□	◪				✖	+	–	.008	.035	.039	.157
RCMX 1204MOS-321	**T9315**	■		◪				✖	++	–	.016	.039	.039	.118
	T9325	■	□	◪				✖	++	–	.016	.039	.039	.118
	T9335	■	□					✖	++	–	.016	.039	.039	.118
RCMX 1606MOS-331	**T9315**	■		◪				✖	++	–	.016	.047	.039	.157
	T9325	■	□	◪				✖	++	–	.016	.047	.039	.157
	T9335	■	□					✖	++	–	.016	.047	.039	.157
RCMX 2006MO-RF1	**T5305**	□		■				✱	+	–	.018	.047	.039	.197
	T9310	■		◪				✱	++	–	.018	.047	.039	.197
	T9315	■		◪				✱	++	–	.018	.047	.039	.197
	T9316	■	□	■				✱	++	–	.018	.047	.039	.197
	T9325	■	□	◪				✖	++	–	.018	.047	.039	.197
	T9335	■	□						-	–	–	–	–	–
RCMX 2507MO-RF1	**T9310**	■		◪				✱	++	–	.024	.047	.059	.276
	T9315	■		◪				✱	++	–	.024	.047	.059	.276
	T9316	■	□	■				✱	++	–	.024	.047	.059	.276
	T9325	■	□	◪				✖	++	–	.024	.047	.059	.276
	T9335	■	□					✖	+++	–	.031	.047	.118	.276
	T8345	◪	□	◪				✖	++	–	.031	.047	.118	.276
RCMX 2006MO-RM1	**T9310**	■		◪				✱	++	–	.020	.051	.059	.197
	T9315	■		◪				✱	++	–	.020	.051	.059	.197
	T9325	■	□	◪				✖	++	–	.020	.051	.059	.197
	T9335	■	□					✖	++	–	.008	.035	.059	.197
RCMX 2507MO-RM1	**T9310**	■		◪				✱	++	–	.028	.047	.079	.276
	T9315	■		◪				✱	++	–	.028	.047	.079	.276
	T9316	■	□	■				✱	++	–	.028	.047	.079	.276
	T9325	■	□	◪				✖	++	–	.028	.047	.079	.276
	T9335	■	□					✖	+++	–	.024	.035	.079	.276

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RCMX 2507MO-RM2	**T9310**	■		◪				●	+ +	–	.031	.059	.079	.276
	T9315	■		◪				●	+ +	–	.031	.059	.079	.276
	T9316	■	□	■				●	+ +	–	.031	.059	.079	.276
	T9325	■	□	◪				✖	+ +	–	.031	.059	.079	.276
RCMX 3209MO-RR2	**T9310**	■		◪				●	+ +	–	.031	.059	.098	.315
	T9315	■		◪				●	+ +	–	.031	.059	.098	.315
	T9316	■	□	■				●	+ +	–	.031	.059	.098	.315

RNMG

	d	d_1	s
43	.500	.203	.187
54	.625	.250	.250
64	.750	.313	.250
86	1.000	.359	.375

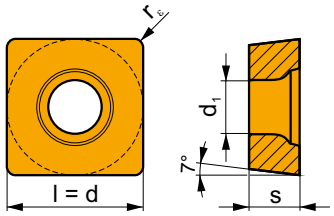


For tools see pages: T190

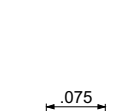
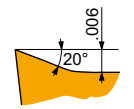
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RNMG 43-08	**T5305**	□		■			■	●	+	–	.012	.031	.039	.189
	T9315	◪		◪			◪	●	+ +	–	.012	.031	.039	.189
	T9325	◪		◪				●	+	–	.012	.031	.039	.189
RNMG 54-08	**T5305**	□		■			■	●	+	–	.012	.031	.039	.236
	T9315	◪		◪			◪	✖	+ +	–	.012	.031	.039	.236
	T9325	◪		◪				✖	+	–	.012	.031	.039	.236
RNMG 64-08	**T9315**	◪		◪			◪	●	+ +	–	.012	.031	.039	.236
	T9325	◪		◪				●	+	–	.012	.031	.039	.236
RNMG 86-081	**T9315**	■		◪				✖	+ +	–	.031	.047	.118	.276
	T9325	■	◪	◪				✖	+ +	–	.031	.047	.118	.276

SCGT

	d	d_1	l	s
32.5	.375	.173	.375	.156
32.5-SF3	.375	.173	.375	.166
43	.500	.217	.500	.187



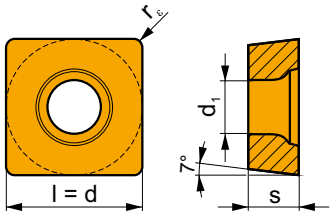
For tools see pages: T208

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		**SCGT 432F-AL**	**T0315**				■			●	+	.031	.006	.024	.031	.276
			HF7				■			●	+	.031	.006	.024	.031	.276
		**SCGT 32.52-NF1**	**T7325**	◪	■			■		●●	+	.031	.005	.012	.020	.118
			T6310	◪	■	◪		■		●●	+	.031	.005	.012	.020	.118
			H07*		◪	◪		■		●	+	.031	.005	.012	.020	.118
		SCGT 432-NF1	**T7325**	◪	■			■		●●	++	.031	.006	.014	.020	.138
			T6310	◪	■	◪		■		●●	+	.031	.006	.014	.020	.138
			H07		◪	◪		■		●	+	.031	.006	.014	.020	.138
		**SCGT 32.51-SF3**	**T6310**		■		◪	■		●	+	.016	.002	.010	.016	.118
			T8315		■		◪	□		●	+ / -	.016	.002	.010	.016	.118
			H07		◪		◪	■		●	+	.016	.002	.010	.016	.118
		SCGT 32.52-SF3	**T6310**		■		◪	■		●●	+	.031	.004	.012	.024	.126
			T8315		■		◪	□		●●	+ / -	.031	.004	.012	.024	.126

PRAMET

SCMT

	d	d_1	l	s
126	1.500	.343	1.500	.375
32.5	.375	.173	.375	.156
43	.500	.217	.500	.187
86	1.000	.343	.1000	.375



For tools see pages: T208

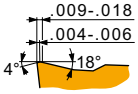
ANSI		P	M	K	N	S	H	?		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SCMT 32.51-FF2	**T9325**	■	◪	◪				●	+	.016	.002	.009	.012	.118
SCMT 32.52-FF2	**T9325**	■	◪	◪				●	+	.031	.003	.011	.024	.118
	T8330	■	◪	■				⬢	+	.031	.003	.011	.024	.118
SCMT 32.51-FM	**T7325**	◪	■			□		●	+	.016	.006	.012	.012	.118
	T7335	◪	■			□		●	++	.016	.006	.012	.012	.118
	T9315	■		◪				●	+	.016	.006	.012	.012	.118
	T9325	■	■	◪		□		●	+	.016	.006	.012	.012	.118
	T8315	◪	■	◪		□		●	+/-	.016	.004	.012	.012	.118
	T8330	■	■	◪		□		●	+	.016	.004	.012	.012	.118
SCMT 32.52-FM	**T7325**	◪	■			□		●	++	.031	.006	.014	.020	.118
	T7335	◪	■			□		●	++	.031	.006	.014	.020	.118
	T9315	■		◪				●	+	.031	.006	.014	.020	.118
	T9325	■	■	◪		□		●	+	.031	.006	.014	.020	.118
	T8315	◪	■	◪		□		●	+	.031	.006	.014	.020	.118
	T8330	■	■	◪		□		⬢	+	.031	.006	.014	.020	.118
SCMT 431-FM	**T7325**	◪	■			□		●	+	.016	.006	.012	.016	.157
	T9315	■		◪				●	+	.016	.006	.012	.016	.157
	T9325	■	■	◪		□		●	+	.016	.006	.012	.016	.157
	T8315	◪	■	◪		□		●	+/-	.016	.004	.012	.016	.157
	T8330	■	■	◪		□		●	+	.016	.004	.012	.016	.157
SCMT 432-FM	**T7325**	◪	■			□		●	++	.031	.006	.014	.020	.157
	T7335	◪	■			□		●	++	.031	.006	.014	.020	.157
	T9315	■		◪				●	+	.031	.006	.014	.020	.157
	T9325	■	■	◪		□		●	+	.031	.006	.014	.020	.157
	T8315	◪	■	◪		□		⬢	+	.031	.006	.014	.020	.157
	T8330	■	■	◪		□		⬢	+	.031	.006	.014	.020	.157
SCMT 433-FM	**T7325**	◪	■			□		⬢	++	.047	.006	.018	.031	.157
	T9315	■		◪				⬢	++	.047	.006	.018	.031	.157
	T9325	■	■	◪		□		⬢	+	.047	.006	.018	.031	.157
	T8330	■	■	◪		□		⬢	+	.047	.006	.018	.031	.157
SCMT 32.51-FM2	**T7325**	◪	◪			□		●	+	.016	.002	.010	.016	.118
	T9325	■	◪	◪		□		●	+	.016	.002	.010	.016	.118
SCMT 32.52-FM2	**T9315**	■		◪			□	●	+	.031	.004	.014	.031	.138
	T9325	■	◪	◪		□		⬢	+	.031	.004	.014	.031	.138
	T9335	■	◪			□		⬢	++	.031	.004	.014	.031	.138
	T8330	■	◪	■		□	□	⬢	+	.031	.004	.014	.031	.138

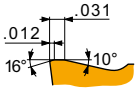
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SCMT 32.52-RF	T5315	◪	□	■				●	+	.031	.004	.016	.031	.157
	T7335*	◪	■					●	++	.031	.006	.016	.031	.157
SCMT 432-RF	T5315	◪	□	■				●	+	.031	.008	.027	.039	.177
	T7335	◪	■					⬢	++	.031	.008	.027	.039	.177
SCMT 32.52-RM	T5315	◪	□	■			□	⬢	+	.031	.008	.016	.059	.157
	T7335	◪	■					⬢	++	.031	.008	.016	.059	.157
	T9315	■		◪			□	⬢	++	.031	.008	.016	.059	.157
	T9325	■	■	◪		□		⬢	+	.031	.008	.016	.059	.157
	T8330	■	■	■		◪	□	⬢	+	.031	.008	.016	.059	.157
SCMT 432-RM	T5305	□		■			□	●	+	.031	.008	.016	.059	.177
	T5315	◪	□	■			□	⬢	+	.031	.008	.016	.059	.177
	T7335	◪	■					⬢	++	.031	.008	.016	.059	.177
	T9315	■		◪			□	⬢	++	.031	.008	.016	.059	.177
	T9325	■	■	◪		□		⬢	+	.031	.008	.016	.059	.177
	T8330	■	■	■		◪	□	⬢	+	.031	.008	.016	.059	.177
SCMT 432-RM3	T9315	■		◪				⬢	++	.031	.010	.016	.031	.157
	T9325	■	◪	◪				⬢	+	.031	.010	.016	.031	.157
	T9335	■	◪					⬢	++	.031	.010	.016	.031	.157
	T6310	◪	◪	◪				⬢	+	.031	.010	.016	.031	.157
	T8330	■	◪	■				⬢	+	.031	.010	.016	.031	.157
SCMT 433-RM3	T7325*	◪	◪					⬢	++	.047	.010	.018	.047	.157
	T9325	■	◪	◪				⬢	++	.047	.010	.018	.047	.157
SCMT 32.51-UR	T7325	◪	■					●	+	.016	.006	.012	.016	.118
	T9315	■		◪				●	+	.016	.006	.012	.016	.118
	T9325	■	■	◪				●	+	.016	.006	.012	.016	.118
	T8330	■	■	■	□			●	+	.016	.003	.012	.016	.118
SCMT 32.52-UR	T5315	◪	□	■				●	+	.031	.004	.020	.031	.118
	T7325	◪	■					●	++	.031	.006	.020	.031	.118
	T9315	■		◪				●	++	.031	.006	.020	.031	.118
	T9325	■	■	◪				●	+	.031	.006	.020	.031	.118
	T8330	■	■	■	□			⬢	+	.031	.003	.020	.031	.118
	TT310	■	◪					●	+/-	.031	.003	.020	.031	.118
SCMT 432-UR	T5315	◪	□	■				●	+	.031	.004	.020	.031	.157
	T7325	◪	■					●	++	.031	.006	.020	.031	.157
	T9315	■		◪				●	++	.031	.006	.020	.031	.157
	T9325	■	■	◪				●	+	.031	.006	.020	.031	.157
	T8330	■	■	■	□			⬢	+	.031	.003	.020	.031	.157
SCMT 433-UR	T9325	■	■	◪				⬢	+	.047	.006	.020	.047	.157
	T8330	■	■	■	□			⬢	+	.047	.003	.020	.047	.157
SCMT 1268-DR4	T9335	■	◪					⬢	+++	.126	.028	.055	.157	.709
SCMT 866-OR	T9325	■	■	◪		□		✖	++	.094	.024	.071	.118	.630
	T9335	■	◪					✖	+++	.094	.024	.071	.118	.630
	T9226	■	■	◪		□		✖	+++	.094	.024	.071	.118	.630
SCMT 1268-OR	T9315	■		◪				⬢	+++	.126	.039	.079	.157	.945
	T9325	■	■	◪		□		✖	+++	.126	.039	.079	.157	.945
	T9335	■	◪					✖	+++	.126	.039	.079	.157	.945

I.C.	R
.25	.039
.375	.059
.5	.098

* Non-stocked item

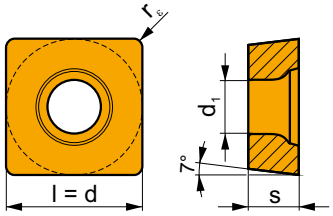
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SCMT 1268-OR	**T9226**	■	■	◪		□		✖	+++	.126	.039	.079	.157	.945
SCMT 866-SR	**T9325**	■	■	◪				✖	++	.094	.024	.071	.118	.630
	T9335	■	◪					✖	+++	.094	.024	.071	.118	.630
SCMT 1268-SR	**T9335**	■	◪					✖	+++	.126	.047	.079	.157	.945





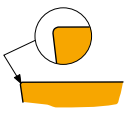
SCMW

	d	d_1	l	s
32.5	.375	.173	.375	.156
43	.500	.217	.500	.187



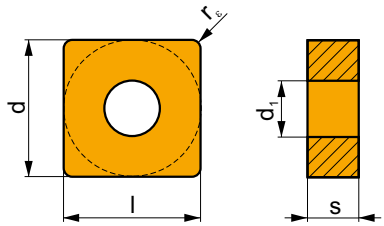
For tools see pages: T208

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SCMW 32.51	**T5305**	□		■			◪	●	+	.016	.004	.013	.016	.177
	T5315	◪	□	■			□	●	+	.016	.004	.013	.016	.177
SCMW 32.52	**T5305**	□		■			◪	●	+	.031	.004	.014	.031	.177
	T5315	◪	□	■			□	⬣	+	.031	.004	.014	.031	.177
SCMW 432	**T5305**	□		■			◪	●	+	.031	.004	.016	.031	.236
	T5315	◪	□	■			□	⬣	+	.031	.004	.016	.031	.236



SNMA

	d	d_1	l	s
43	.500	.203	.500	.187
54	.625	.250	.625	.250
64	.750	.313	.750	.250
85	1.000	.359	.1000	.313
86	1.000	.359	.1000	.375

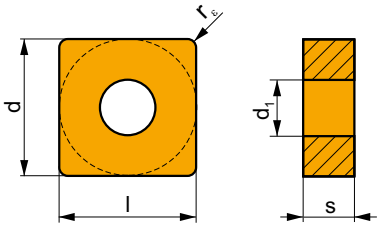


For tools see pages: T191-T193, T195

	ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	SNMA 432	**T5305**	☐		■			◪		+	.031	.004	.024	.031	.236
		T5315	◪	☐	■			☐		+	.031	.004	.024	.031	.236
		T6310	◪	☐	◪			◪		+	.031	.002	.024	.031	.236
	SNMA 433	**T5305**	☐		■			◪		+	.047	.004	.024	.047	.236
		T5315	◪	☐	■			☐		+	.047	.004	.024	.047	.236
	SNMA 543	**T5305**	☐		■			◪		+	.047	.004	.035	.047	.280
		T5315	◪	☐	■			☐		+ +	.047	.004	.035	.047	.280
	SNMA 643	**T5305**	☐		■			◪		+	.047	.004	.035	.047	.350
		T5315	◪	☐	■			☐		+ +	.047	.004	.035	.047	.350
	SNMA 644	**T5305**	☐		■			◪		+	.063	.004	.035	.063	.350
		T5315	◪	☐	■			☐		+ +	.063	.004	.035	.063	.350
	SNMA 856	**T5305**	☐		■			◪		+ +	.094	.004	.043	.094	.472
		T5315	◪	☐	■			☐		+ +	.094	.004	.043	.094	.472
	SNMA 866	**T5305**	☐		■			◪		+ +	.094	.004	.043	.094	.472
		T5315	◪	☐	■			☐		+ +	.094	.004	.043	.094	.472
	SNMA 433S	**T5305**	☐		■			◪		+	.047	.004	.024	.047	.236
	SNMA 644S	**T5305**	☐		■			◪		+	.063	.004	.035	.047	.350
	SNMA 856S	**T5305**	☐		■			◪		+ +	.094	.004	.043	.094	.472
	SNMA 866S	**T5305**	☐		■			◪		+ +	.094	.004	.043	.094	.472

SNMG

	d	d_1	l	s
43	.500	.203	.500	.187
54	.625	.250	.625	.250
64	.750	.313	.750	.250
85	1.000	.359	.1000	.313
86	1.000	.359	.1000	.375

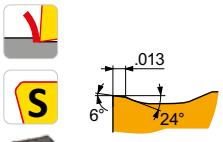


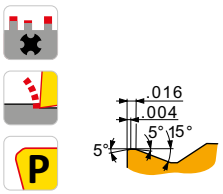
For tools see pages: T191-T193, T195

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNMG 431-FM	**T7325**	◪	■			□		●	+	.016	.006	.012	.020	.118
	T9315	■		◪				●	+	.016	.006	.012	.020	.118
	T9325	■	■	◪		□		●	+	.016	.006	.012	.020	.118
	T6310	◪	■	◪		□		●	+	.016	.004	.012	.020	.118
	T8315	◪	■	◪		□		●	+/-	.016	.004	.012	.020	.118
	T8430	■	◪	◪		◪		●	+	.016	.004	.012	.020	.118
SNMG 432-FM	**T7325**	◪	■			□		❦	++	.031	.006	.018	.031	.118
	T9310	■		◪				●	+	.031	.006	.018	.031	.118
	T9315	■		◪				●	++	.031	.006	.018	.031	.118
	T9325	■	■	◪		□		❦	+	.031	.006	.018	.031	.118
	T8315	◪	■	◪		□		❦	+	.031	.006	.018	.031	.118
	T8430	■	◪	◪		◪		❦	+	.031	.006	.018	.031	.118
SNMG 433-FM	**T9315**	■		◪				❦	++	.047	.006	.018	.047	.118
	T9325	■	■	◪		□		❦	+	.047	.006	.018	.047	.118
	T8430	■	◪	◪		◪		❦	+	.047	.006	.018	.047	.118
SNMG 434-FM	**T9315**	■		◪				❦	++	.063	.006	.018	.063	.331
	T9325	■	■	◪		□		❦	+	.063	.006	.018	.063	.331
	T8430	■	◪	◪		◪		❦	+	.063	.006	.018	.063	.331
SNMG 432-KR	**T5305**	□		■			□	❦	+	.031	.008	.020	.031	.276
	T5315	◪	□	■			□	❦	+	.031	.008	.020	.031	.276
SNMG 433-KR	**T5305**	□		■			□	❦	+	.047	.010	.028	.047	.276
	T5315	◪	□	■			□	❦	++	.047	.010	.028	.047	.276
SNMG 432-M	**T5305**	□		■			□	●	+	.031	.006	.024	.031	.236
	T5315	◪	□	■			□	❦	+	.031	.006	.024	.031	.236
	T9310	■		◪				❦	+	.031	.006	.024	.031	.236
	T9315	■		◪			□	❦	++	.031	.006	.024	.031	.236
	T9325	■	◪	◪				❦	++	.031	.006	.024	.031	.236
	T9335	■	◪					❦	++	.031	.006	.024	.031	.236
SNMG 433-M	**T9315**	■		◪			□	❦	++	.047	.007	.031	.047	.236
	T9325	■	◪	◪				❦	++	.047	.007	.031	.047	.236
	T9335	■	◪					❦	+++	.047	.007	.031	.047	.236
SNMG 434-M	**T9325**	■	◪	◪				❦	++	.063	.007	.031	.063	.236
	T9325	■	◪	◪				❦	++	.063	.007	.031	.063	.236
SNMG 543-M	**T9315**	■		◪			□	❦	++	.047	.007	.031	.047	.315
	T9325	■	◪	◪				❦	++	.047	.007	.031	.047	.315
	T9335	■	◪					❦	+++	.047	.007	.031	.047	.315
SNMG 643-M	**T9315**	■		◪			□	❦	++	.047	.007	.031	.047	.315

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNMG 643-M	T9325	■	◪	◪				●	+ +	.047	.007	.031	.047	.315
	T9335	■	◪					●	+++	.047	.007	.031	.047	.315
SNMG 644-M	T9315	■		◪			□	●	+ +	.063	.007	.031	.063	.315
	T9325	■	◪	◪				●	+ +	.063	.007	.031	.063	.315
	T9335	■	◪					●	+++	.063	.007	.031	.063	.315
SNMG 431-NF	T7325	◪	■			◪		●	+	.016	.006	.012	.016	.118
	T7335	◪	■			◪		●	+ +	.016	.006	.012	.016	.118
	T9315	■						●	+	.016	.006	.012	.016	.118
	T9325	■	■			◪		●	+	.016	.006	.012	.016	.118
	T6310	◪	■		□	◪		●	+	.016	.005	.012	.016	.118
	T8430	■	■	◪	◪	◪		●	+	.016	.005	.012	.016	.118
SNMG 432-NF	T7325	◪	■			◪		●	+ +	.031	.006	.014	.031	.138
	T7335	◪	■			◪		●	+ +	.031	.006	.014	.031	.138
	T9315	■						●	+	.031	.006	.014	.031	.138
	T9325	■	■			◪		●	+	.031	.006	.014	.031	.138
	T6310	◪	■		□	◪		●	+	.031	.006	.014	.031	.138
	T8315	◪	■		□	□		●	+	.031	.006	.014	.031	.138
	T8430	■	■	◪	◪	◪		●	+	.031	.006	.014	.031	.138
	HF7		□		□	□		●	+	.031	.006	.014	.031	.138
SNMG 432-NM	T7325	◪	■			■		●	+ +	.031	.008	.020	.031	.118
	T7335	◪	■					●	+ +	.031	.008	.020	.031	.118
	T9325	■	■	□		□		●	+	.031	.008	.020	.031	.118
	T8315	◪	■	□	□	□		●	+	.031	.008	.020	.031	.118
	T8430	■	■		◪	◪		●	+	.031	.008	.020	.031	.118
SNMG 433-NM	T7325	◪	■			■		●	+ +	.047	.008	.020	.047	.138
	T7335	◪	■					●	+ +	.047	.008	.020	.047	.138
	T9325	■	■	□		□		●	+	.047	.008	.020	.047	.138
	T8315	◪	■	□	□	□		●	+	.047	.008	.020	.047	.138
SNMG 432-NMR	T6310	◪	■			◪		●	+	.031	.008	.022	.031	.197
	T7325	◪	■			◪		●	+ +	.031	.008	.022	.031	.197
	T7335	◪	■			◪		●	+ +	.031	.008	.022	.031	.197
	T9315	■						●	+ +	.031	.008	.022	.031	.197
	T9325	■	■			◪		●	+	.031	.008	.022	.031	.197
	T8430	■	■			◪		●	+	.031	.008	.022	.031	.197
SNMG 433-NMR	T6310	◪	■			◪		●	+	.047	.009	.024	.047	.217
	T7325	◪	■			◪		●	+ +	.047	.009	.024	.047	.217
	T7335	◪	■			◪		●	+ +	.047	.009	.024	.047	.217
	T9315	■						●	+ +	.047	.009	.024	.047	.217
	T9325	■	■			◪		●	+ +	.047	.009	.024	.047	.217
SNMG 434-NMR	T7325	◪	■			◪		✖	+ +	.063	.010	.026	.063	.236
	T7335	◪	■			◪		✖	+++	.063	.010	.026	.063	.236
	T9325*	■	■			◪		●	+ +	.063	.010	.026	.063	.236
SNMG 543-NMR	T6310	◪	■			◪		✖	+ +	.047	.009	.026	.047	.236
	T7325	◪	■			◪		✖	+ +	.047	.009	.026	.047	.236
	T9315	■						●	+ +	.047	.009	.026	.047	.236
	T9325	■	■			◪		●	+ +	.047	.009	.026	.047	.236
SNMG 643-NMR	T6310	◪	■			◪		✖	+ +	.047	.009	.026	.047	.315
	T7325	◪	■			◪		✖	+ +	.047	.009	.026	.047	.315
	T7335	◪	■			◪		✖	+ +	.047	.009	.026	.047	.315
	T9315	■						●	+ +	.047	.009	.026	.047	.315
	T9325	■	■			◪		●	+ +	.047	.009	.026	.047	.315
SNMG 644-NMR	T6310	◪	■			◪		✖	+ +	.063	.010	.028	.063	.315
	T7325	◪	■			◪		✖	+ +	.063	.010	.028	.063	.315
	T7335	◪	■			◪		✖	+ +	.063	.010	.028	.063	.315
	T9315*	■						●	+ +	.063	.010	.028	.063	.315
	T9325	■	■			◪		●	+ +	.063	.010	.028	.063	.315

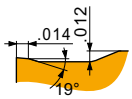
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SNMG 432-NRM	T7325	◪	■			□		●	++	.031	.009	.022	.031	.276
	T7335	◪	■			□		●	++	.031	.009	.022	.031	.276
	T9315	■						●	++	.031	.009	.022	.031	.276
SNMG 433-NRM	T7325	◪	■			□		●	++	.047	.010	.028	.047	.276
	T7335	◪	■			□		●	++	.047	.010	.028	.047	.276
	T9315	■						●	++	.047	.010	.028	.047	.276
SNMG 543-NRM	T7325	◪	■			□		●	++	.047	.011	.028	.047	.315
	T7335	◪	■			□		●	+++	.047	.011	.028	.047	.315
	T9315*	■						●	++	.047	.011	.028	.047	.315
SNMG 544-NRM	T7325	◪	■			□		●	++	.063	.012	.031	.063	.315
	T7335	◪	■			□		●	+++	.063	.012	.031	.063	.315
	T9315	■						●	++	.063	.012	.031	.063	.315
SNMG 643-NRM	T7325	◪	■			□		●	++	.047	.013	.028	.047	.394
	T7335	◪	■			□		●	+++	.047	.013	.028	.047	.394
	T9315	■						●	++	.047	.013	.028	.047	.394
SNMG 644-NRM	T7325	◪	■			□		●	++	.063	.013	.031	.063	.394
	T7335	◪	■			□		●	+++	.063	.013	.031	.063	.394
	T9315*	■						●	++	.063	.013	.031	.063	.394
SNMG 856-NRM	T7325	◪	■			□		✖	++	.094	.014	.039	.079	.551
	T7335	◪	■			□		✖	+++	.094	.014	.039	.079	.551
	T9315	■						●	++	.094	.014	.039	.079	.551
SNMG 866-NRM	T7325	◪	■			□		✖	++	.094	.014	.039	.079	.591
	T7335	◪	■			□		✖	+++	.094	.014	.039	.079	.591
	T9315	■						●	++	.094	.014	.039	.079	.591
SNMG 432-R	T5305	□		■			□	●	+	.031	.010	.024	.079	.236
	T9315	■		◪			□	●	++	.031	.010	.024	.079	.236
	T9325	■	◪	◪				●	++	.031	.010	.024	.079	.236
	T9335	■	◪					●	++	.031	.010	.024	.079	.236
SNMG 433-R	T5305	□		■			□	●	+	.047	.010	.028	.079	.236
	T9310*	■		◪			□	●	++	.047	.010	.028	.079	.236
	T9325	■	◪	◪				●	++	.047	.010	.028	.079	.236
	T9335	■	◪					✖	++	.047	.010	.028	.079	.236
SNMG 434-R	T9315	■		◪			□	●	++	.063	.012	.031	.079	.236
	T9325	■	◪	◪				✖	++	.063	.012	.031	.079	.236
SNMG 543-R	T5305	□		■			□	●	+	.047	.010	.028	.079	.276
	T5315	◪	□	■			□	●	++	.047	.010	.028	.079	.276
	T9315	■		◪			□	●	++	.047	.010	.028	.079	.276
	T9325	■	◪	◪				✖	++	.047	.010	.028	.079	.276
SNMG 544-R	T5315	◪	□	■			□	●	++	.063	.010	.028	.079	.276
	T9325	■	◪	◪				✖	++	.063	.010	.028	.079	.276
SNMG 643-R	T9310	■		◪			□	●	++	.047	.010	.028	.079	.354
	T9315	■		◪			□	●	++	.047	.010	.028	.079	.354
	T9325	■	◪	◪				✖	++	.047	.010	.028	.079	.354
SNMG 644-R	T9310	■		◪			□	●	++	.063	.012	.031	.079	.354
	T9315	■		◪			□	●	++	.063	.012	.031	.079	.354
	T9325	■	◪	◪				✖	++	.063	.012	.031	.079	.354
	T9335	■	◪					✖	+++	.063	.012	.031	.079	.354





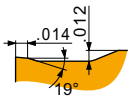
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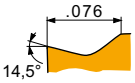
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNMG 432-RM	**T5305**	□		■			□	●●●	+	.031	.008	.020	.039	.276
	T5315	◪	□	■			□	●●●	+	.031	.008	.020	.039	.276
	T7325	◪	■			◪		●●●	+ +	.031	.008	.020	.039	.276
	T7335	◪	■			◪		●●●	+ +	.031	.008	.020	.039	.276
	T9310*	■		◪				●●●	+	.031	.008	.020	.039	.276
	T9315	■		◪			□	●●●	+ +	.031	.008	.020	.039	.276
	T9325	■	■	◪		□		●●●	+	.031	.008	.020	.039	.276
	T9335	■	◪					●●●	+ +	.031	.008	.020	.039	.276
	T6310	◪	■	◪		◪	□	●●●	+	.031	.008	.020	.039	.276
	T8315	◪	■	■		□	□	●●●	+	.031	.008	.020	.039	.276
	T8430	■	◪	◪				●●●	+	.031	.008	.020	.039	.276
SNMG 433-RM	**T5305**	□		■			□	●●●	+	.047	.010	.028	.059	.276
	T5315	◪	□	■			□	●●●	+ +	.047	.010	.028	.059	.276
	T7325	◪	■			◪		●●●	+ +	.047	.010	.028	.059	.276
	T7335	◪	■			◪		●●●	+ +	.047	.010	.028	.059	.276
	T9310	■		◪				●●●	+ +	.047	.010	.028	.059	.276
	T9315	■		◪			□	●●●	+ +	.047	.010	.028	.059	.276
	T9325	■	■	◪		□		●●●	+ +	.047	.010	.028	.059	.276
	T9335	■	◪					●●●	+ +	.047	.010	.028	.059	.276
	T6310	◪	■	◪		◪	□	●●●	+ +	.047	.010	.028	.059	.276
SNMG 434-RM	**T5305**	□		■			□	●●●	+	.063	.012	.030	.079	.276
	T5315	◪	□	■			□	●●●	+ +	.063	.012	.030	.079	.276
	T7335	◪	■			◪		●●●	+++	.063	.012	.030	.079	.276
	T9310	■		◪				●●●	+ +	.063	.012	.030	.079	.276
	T9315	■		◪			□	●●●	+ +	.063	.012	.030	.079	.276
	T9325	■	■	◪		□		●●●	+ +	.063	.012	.030	.079	.276
	T9335	■	◪					●●●	+++	.063	.012	.030	.079	.276
	T8430	■	◪	◪				✖	+ +	.063	.012	.030	.079	.276
SNMG 543-RM	**T5305**	□		■			□	●●●	+	.047	.010	.028	.059	.315
	T5315	◪	□	■			□	●●●	+ +	.047	.010	.028	.059	.315
	T7325	◪	■			◪		●●●	+ +	.047	.010	.028	.059	.315
	T7335	◪	■			◪		●●●	+ +	.047	.010	.028	.059	.315
	T9310	■		◪				●●●	+ +	.047	.010	.028	.059	.315
	T9315	■		◪			□	●●●	+ +	.047	.010	.028	.059	.315
	T9325	■	■	◪		□		●●●	+ +	.047	.010	.028	.059	.315
	T9335	■	◪					●●●	+ +	.047	.010	.028	.059	.315
	T6310	◪	■	◪		◪	□	●●●	+ +	.047	.010	.028	.059	.315
SNMG 544-RM	**T5305**	□		■			□	●●●	+ +	.063	.012	.031	.079	.315
	T5315	◪	□	■			□	●●●	+ +	.063	.012	.031	.079	.315
	T7335	◪	■			◪		●●●	+++	.063	.012	.031	.079	.315
	T9315	■		◪			□	●●●	+ +	.063	.012	.031	.079	.315
	T9325	■	■	◪		□		●●●	+ +	.063	.012	.031	.079	.315
	T9335	■	◪					●●●	+++	.063	.012	.031	.079	.315
SNMG 643-RM	**T5305**	□		■			□	●●●	+	.047	.010	.028	.059	.394
	T5315	◪	□	■			□	●●●	+ +	.047	.010	.028	.059	.394
	T7325	◪	■			◪		●●●	+ +	.047	.010	.028	.059	.394
	T7335	◪	■			◪		●●●	+ +	.047	.010	.028	.059	.394
	T9310	■		◪				●●●	+ +	.047	.010	.028	.059	.394
	T9315	■		◪			□	●●●	+ +	.047	.010	.028	.059	.394
	T9325	■	■	◪		□		●●●	+ +	.047	.010	.028	.059	.394
	T9335	■	◪					●●●	+ +	.047	.010	.028	.059	.394
SNMG 644-RM	**T5305**	□		■			□	●●●	+ +	.063	.012	.031	.079	.394
	T5315	◪	□	■			□	●●●	+ +	.063	.012	.031	.079	.394
	T7335	◪	■			◪		●●●	+++	.063	.012	.031	.079	.394
	T9310	■		◪				●●●	+ +	.063	.012	.031	.079	.394
	T9315	■		◪			□	●●●	+ +	.063	.012	.031	.079	.394

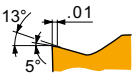


* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNMG 644-RM	**T9325**	■	■	◪		□		●	++	.063	.012	.031	.079	.394
	T9335	■	◪					●	+++	.063	.012	.031	.079	.394
	T6310	◪	■	◪		◪	□	●	++	.063	.012	.031	.079	.394
SNMG 866-RM	**T7325**	◪	■			◪		✖	+++	.094	.016	.047	.094	.591
	T7335	◪	■			◪		✖	+++	.094	.016	.047	.094	.591
	T9315	■		◪			□	●	+++	.094	.016	.047	.094	.591
	T9325	■	■	◪		□		●	++	.094	.016	.047	.094	.591
	T9335	■	◪					✖	+++	.094	.016	.047	.094	.591
	T9226	■	■	◪		□		●	+++	.094	.016	.047	.094	.591
SNMG 431-SF	**T7325**	◪	■			■		●	+	.016	.006	.012	.016	.118
	T9325	◪	■			◪		●	+	.016	.006	.012	.016	.118
SNMG 432-SF	**T7325**	◪	■			■		●	+	.031	.006	.012	.031	.118
	T7335	◪	■			■		●	++	.031	.006	.012	.031	.118
	T9325	◪	■			◪		●	+	.031	.006	.012	.031	.118
	T6310	◪	■		□	■	□	●	+	.031	.005	.012	.031	.118
	T8315	◪	■		□	□	□	●	+/-	.031	.005	.012	.031	.118
	T8430	■	■	◪	◪	◪	◪	●	+	.031	.005	.012	.031	.118
	H07		◪		□	■		●	+	.031	.005	.012	.031	.118
SNMG 433-SF	**T7325**	◪	■			■		●	++	.047	.006	.014	.047	.138
	T6310	◪	■		□	■	□	●	+	.047	.006	.014	.047	.138
	T8430	■	■	◪	◪	◪	◪	●	+	.047	.006	.014	.047	.138
SNMG 432-SM	**T7325**	◪	■			■		●	++	.031	.008	.018	.031	.177
	T7335	◪	■			■		●	++	.031	.008	.018	.031	.177
	T9315	■		◪			□	●	++	.031	.008	.018	.031	.177
	T9325	■	■	◪		◪		●	+	.031	.008	.018	.031	.177
	T6310	◪	■	◪		■	□	●	+	.031	.008	.018	.031	.177
	T8430	■	■	◪	◪	◪	◪	●	+	.031	.008	.018	.031	.177
SNMG 433-SM	**T7325**	◪	■			■		●	++	.047	.009	.020	.047	.197
	T7335	◪	■			■		●	++	.047	.009	.020	.047	.197
	T9315	■		◪			□	●	++	.047	.009	.020	.047	.197
	T9325	■	■	◪		◪		●	+	.047	.009	.020	.047	.197
SNMG 643-SM	**T7325**	◪	■			■		●	++	.047	.010	.022	.047	.217
	T7335	◪	■			■		●	++	.047	.010	.022	.047	.217
	T9325	■	■	◪		◪		●	++	.047	.010	.022	.047	.217
	T6310	◪	■	◪		■	□	●	+	.047	.010	.022	.047	.217
SNMG 644-SM	**T7325**	◪	■			■		●	++	.063	.012	.022	.063	.236
	T7335	◪	■			■		●	++	.063	.012	.022	.063	.236
	T9325	■	■	◪		◪		●	++	.063	.012	.022	.063	.236

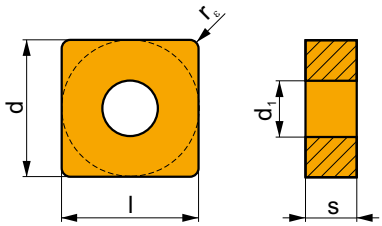






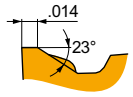
SNMM

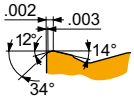
	d	d_1	l	s
43	.500	.203	.500	.187
54	.625	.250	.625	.250
64	.750	.313	.750	.250
85	1.000	.359	.1000	.313
86	1.000	.359	.1000	.375



For tools see pages: T191-T193, T195

ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNMM 433-DR	**T9315***	■		◪				●	.047	.012	.033	.098	.331
	T9325	■	■	◪		□		●	.047	.012	.033	.098	.331
	T9335	■	◪					●	.047	.012	.033	.098	.331
SNMM 543-DR	**T9335**	■	◪					●	.047	.012	.033	.098	.354
	T9335	■	◪					●	.047	.012	.033	.098	.354
SNMM 643-DR	**T9325**	■	■	◪		□		●	.047	.012	.033	.098	.354
	T9335	■	◪					●	.047	.012	.033	.098	.354
SNMM 644-DR	**T9325**	■	■	◪		□		●	.063	.012	.033	.098	.354
	T9335	■	◪					●	.063	.012	.033	.098	.354
SNMM 644-HR	**T9325**	■	◪	◪		□		●	.063	.020	.054	.197	.524
	T9335	■	◪					✖	.063	.020	.054	.197	.524
	T8345	◪	◪	◪		□		✖	.063	.020	.054	.197	.524
SNMM 646-HR	**T9315**	■		◪				●	.094	.020	.055	.197	.524
	T9325	■	◪	◪		□		✖	.094	.020	.055	.197	.524
	T9335	■	◪					✖	.094	.020	.055	.197	.524
	T8345	◪	◪	◪		□		✖	.094	.020	.055	.197	.524
SNMM 854-HR	**T9325**	■	◪	◪		□		✖	.063	.020	.054	.197	.551
	T9335	■	◪					✖	.063	.020	.054	.197	.551
	T8345	◪	◪	◪		□		✖	.063	.020	.054	.197	.551
SNMM 856-HR	**T9315**	■		◪				●	.094	.020	.055	.197	.551
	T9325	■	◪	◪		□		✖	.094	.020	.055	.197	.551
	T9335	■	◪					✖	.094	.020	.055	.197	.551
	T8345	◪	◪	◪		□		✖	.094	.020	.055	.197	.551
SNMM 858-HR	**T9325**	■	◪	◪		□		✖	.126	.024	.055	.197	.551
SNMM 866-HR	**T9315**	■		◪				●	.094	.020	.055	.197	.551
	T9325	■	◪	◪		□		✖	.094	.020	.055	.197	.551
	T9335	■	◪					✖	.094	.020	.055	.197	.551
	T8345	◪	◪	◪		□		✖	.094	.020	.055	.197	.551
SNMM 868-HR	**T9325**	■	◪	◪		□		✖	.126	.024	.055	.197	.551

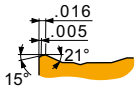




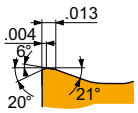
* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNMM 644-HR2	T9335	■	◪			□		✖	+++	.063	.020	.051	.118	.512
SNMM 646-HR2	T9315	■		◪				●	+++	.094	.020	.051	.118	.512
	T9335	■	◪			□		✖	+++	.094	.020	.051	.118	.512
SNMM 856-HR2	T9335	■	◪			□		✖	+++	.094	.028	.055	.118	.630
	T9226	■	◪	◪		□		✖	+++	.094	.028	.055	.118	.630
SNMM 866-HR2	T9315	■		◪				●	+++	.094	.028	.055	.118	.630
	T9335	■	◪			□		✖	+++	.094	.028	.055	.118	.630
	T9226	■	◪	◪		□		✖	+++	.094	.028	.055	.118	.630
SNMM 868-HR2	T9315	■		◪				●	+++	.126	.028	.055	.126	.630
SNMM 432-NR	T7325	◪	■			■		●	+ +	.031	.010	.027	.039	.331
	T7335	◪	■					●	+++	.031	.010	.027	.039	.331
	T9325	■	■	□		□		●	+ +	.031	.010	.027	.039	.331
	T8430	■	■	◪		◪		✖	+ +	.031	.010	.027	.039	.331
SNMM 432-NR2	T7325	◪	■			■		●	+ +	.031	.012	.022	.031	.276
	T7335	◪	■					●	+ +	.031	.012	.022	.031	.276
	T9325	■	■	□		□		●	+ +	.031	.012	.022	.031	.276
	T8430	■	■	◪		◪		✖	+	.031	.012	.022	.031	.276
SNMM 433-NR2	T7335	◪	■					✖	+++	.047	.013	.028	.047	.295
	T9325	■	■	□		□		●	+ +	.047	.013	.028	.047	.295
	T8430	■	■	◪		◪		✖	+ +	.047	.013	.028	.047	.295
SNMM 543-NR2	T7325	◪	■			■		✖	+ +	.047	.012	.028	.047	.354
	T7335	◪	■					✖	+ +	.047	.012	.028	.047	.354
	T9325	■	■	□		□		●	+ +	.047	.012	.028	.047	.354
	T8430	■	■	◪		◪		✖	+ +	.047	.012	.028	.047	.354
SNMM 544-NR2	T7335	◪	■					✖	+++	.063	.014	.035	.063	.354
	T9325	■	■	□		□		✖	+ +	.063	.014	.035	.063	.354
SNMM 643-NR2	T7325	◪	■			■		✖	+ +	.047	.013	.028	.059	.472
	T7335	◪	■					✖	+++	.047	.013	.028	.059	.472
	T9325	■	■	□		□		✖	+ +	.047	.013	.028	.059	.472
SNMM 644-NR2	T7325	◪	■			■		✖	+ +	.063	.014	.035	.063	.472
	T7335	◪	■					✖	+++	.063	.014	.035	.063	.472
	T9315	■		□				●	+ +	.063	.014	.035	.063	.472
	T9325	■	■	□		□		✖	+ +	.063	.014	.035	.063	.472
	T8430	■	■	◪		◪		✖	+ +	.063	.014	.035	.063	.472
SNMM 646-NR2	T7325	◪	■			■		✖	+++	.094	.016	.047	.098	.472
	T7335	◪	■					✖	+++	.094	.016	.047	.098	.472
	T9325	■	■	□		□		✖	+ +	.094	.016	.047	.098	.472
SNMM 856-NR2	T7335	◪	■					✖	+++	.094	.020	.055	.118	.630
	T9315	■		□				✖	+++	.094	.020	.055	.118	.630
	T9325	■	■	□		□		✖	+ +	.094	.020	.055	.118	.630
	T9226	■	■	□		□		✖	+++	.094	.020	.055	.118	.630
	T8430	■	■	◪		◪		✖	+ +	.094	.020	.055	.118	.630

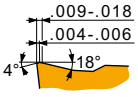












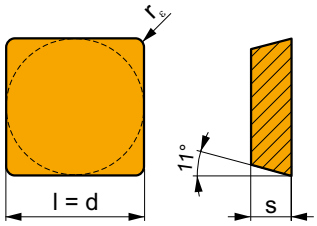
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNMM 866-NR2	**T7325**	◪	■			■		✖	+++	.094	.020	.063	.118	.630
	T7335	◪	■					✖	+++	.094	.020	.063	.118	.630
	T9315	■		□				✖	+++	.094	.020	.063	.118	.630
	T9325	■	■	□		□		✖	++	.094	.020	.063	.118	.630
	T9226	■	■	□		□		✖	+++	.094	.020	.063	.118	.630
SNMM 854-NRM	**T7325**	◪	■			□		✖	++	.063	.013	.035	.063	.551
	T7335*	◪	■			□		✖	+++	.063	.013	.035	.063	.551
	T9315*	■						●	++	.063	.013	.035	.063	.551
SNMM 856-NRM	**T7325**	◪	■			□		✖	++	.094	.014	.039	.079	.551
	T7335	◪	■			□		✖	+++	.094	.014	.039	.079	.551
	T9315	■						●	++	.094	.014	.039	.079	.551
SNMM 866-NRM	**T7325**	◪	■			□		✖	++	.094	.014	.039	.079	.630
	T7335	◪	■			□		✖	+++	.094	.014	.039	.079	.630
	T9315	■						●	++	.094	.014	.039	.079	.630
SNMM 432-OR	**T9315**	■		◪				●	++	.031	.012	.027	.059	.236
	T9325	■	■	◪		□		●	++	.031	.012	.027	.059	.236
	T9335	■	◪					●	+++	.031	.012	.027	.059	.236
SNMM 433-OR	**T9315**	■		◪				●	++	.047	.013	.028	.079	.236
	T9325	■	■	◪		□		✖	++	.047	.013	.028	.079	.236
SNMM 434-OR	**T9325**	■	■	◪		□		✖	++	.063	.014	.031	.079	.315
SNMM 542-OR	**T9315**	■		◪				●	++	.031	.014	.024	.079	.315
	T9325	■	■	◪		□		●	++	.031	.014	.024	.079	.315
	T9335	■	◪					●	+++	.031	.014	.024	.079	.315
SNMM 543-OR	**T9325**	■	■	◪		□		✖	++	.047	.014	.039	.079	.354
	T9335	■	◪					✖	+++	.047	.014	.039	.079	.354
SNMM 544-OR	**T9315**	■		◪				✖	+++	.063	.016	.039	.079	.394
	T9325	■	■	◪		□		✖	++	.063	.016	.039	.079	.394
SNMM 643-OR	**T9315**	■		◪				●	++	.047	.014	.039	.118	.394
	T9325	■	■	◪		□		✖	++	.047	.014	.039	.118	.394
	T9335	■	◪					✖	+++	.047	.014	.039	.118	.394
	T8430	■	◪	◪		◪		✖	++	.047	.014	.039	.118	.394
SNMM 644-OR	**T9315**	■		◪				✖	+++	.063	.015	.047	.079	.394
	T9325	■	■	◪		□		✖	++	.063	.015	.047	.079	.394
	T9335	■	◪					✖	+++	.063	.015	.047	.079	.394
	T8430	■	◪	◪		◪		✖	++	.063	.015	.047	.079	.394
	T8345	◪	■	◪		□		✖	++	.063	.015	.047	.079	.394
SNMM 646-OR	**T9315**	■		◪				✖	+++	.094	.018	.047	.138	.472
	T9325	■	■	◪		□		✖	++	.094	.018	.047	.138	.472
SNMM 854-OR	**T9325**	■	■	◪		□		✖	++	.063	.018	.054	.157	.630
	T9335	■	◪					✖	+++	.063	.018	.054	.157	.630
	T9226	■	■	◪		□		✖	+++	.063	.018	.054	.157	.630
SNMM 856-OR	**T9315**	■		◪				✖	+++	.094	.018	.067	.157	.630
	T9325	■	■	◪		□		✖	++	.094	.018	.067	.157	.630
	T9335	■	◪					✖	+++	.094	.018	.067	.157	.630
	T8430	■	◪	◪		◪		✖	++	.094	.018	.067	.157	.630
	T8345	◪	■	◪		□		✖	++	.094	.018	.067	.157	.630
SNMM 866-OR	**T9315**	■		◪				✖	+++	.094	.018	.067	.157	.630
	T9325	■	■	◪		□		✖	++	.094	.018	.067	.157	.630
	T9335	■	◪					✖	+++	.094	.018	.067	.157	.630
	T9226	■	■	◪		□		✖	+++	.094	.018	.067	.157	.630
	T8430	■	◪	◪		◪		✖	++	.094	.018	.067	.157	.630

* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNMM 644-OR1	**T9325**	■	■	◪		□		✖	+ +	.063	.012	.039	.118	.433
	T9335	■	◪					✖	+++	.063	.012	.039	.118	.433
SNMM 856-SR	**T9325**	■	■	◪				✖	+ +	.094	.028	.063	.197	.630
	T9335	■	◪					✖	+++	.094	.028	.063	.197	.630
SNMM 866-SR	**T9335**	■	◪					✖	+++	.094	.028	.063	.197	.630
SNMM 644-923	**T9335**	■	◪					✖	+++	.063	.018	.054	.118	.512
	T8430	■	■	◪		◪		✖	+ +	.063	.018	.054	.118	.512
	T8345	◪	◪	◪				✖	+ +	.063	.018	.054	.118	.512
SNMM 854-923	**T9335**	■	◪					✖	+++	.063	.018	.054	.118	.512
SNMM 856-923	**T9335**	■	◪					✖	+++	.094	.018	.059	.118	.512
	T8430	■	■	◪		◪		✖	+ +	.094	.018	.059	.118	.512
SNMM 866-923	**T9315**	■		◪				✖	+++	.094	.018	.059	.118	.630
	T9226	■	◪	◪				✖	+++	.094	.018	.059	.118	.630
	T9335	■	◪					✖	+++	.094	.018	.059	.118	.630
	T8430	■	■	◪		◪								
	T8345	◪	◪	◪				✖	+ +	.094	.018	.059	.118	.630
SNMM 868-923	**T9226**	■	◪	◪				✖	+++	.126	.018	.059	.126	.630

SPMR

	d	l	s
32	.375	.375	.125
42	.500	.500	.125



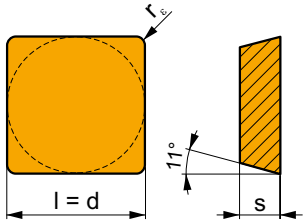
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SPMR 321-46	**T9325**	■	■	◪				●	+	.016	.006	.013	.039	.118
SPMR 322-46	**T9325**	■	■	◪				●	+	.031	.006	.016	.039	.118

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SPMR 421-48	**T9325**	■	■	◪				●	+	.016	.008	.013	.039	.315
	T9335	■	◪					●	+ +	.016	.008	.013	.039	.315
	6630	■	■	◪				●	+ +	.016	.008	.013	.039	.315
SPMR 422-48	**T9325**	■	■	◪				⬣	+ +	.031	.008	.027	.039	.315
	T9335	■	◪					⬣	+ +	.031	.008	.027	.039	.315
	6630	■	■	◪				⬣	+ +	.031	.008	.027	.039	.315
	6640	■	■	◪				⬣	+ +	.031	.008	.027	.039	.315
SPMR 423-48	**T9325**	■	■	◪				⬣	+ +	.047	.008	.028	.047	.315
	T9335	■	◪					⬣	+ +	.047	.008	.028	.047	.315



SPU

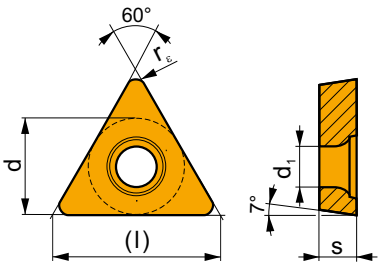
	d	l	m	s
42	.500	.500	.084	.125
53	.625	.625	.110	.187
63	.750	.750	.136	.187



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SPU 422	**6640**	◪	□	◪				⬣	+ +	.031	.004	.012	.031	.236
SPU 423	**6640**	◪	□	◪				⬣	+ +	.047	.004	.012	.047	.236
SPU 532	**6640**	◪	□	◪				⬣	+ +	.031	.004	.016	.031	.280
SPU 533	**6640**	◪	□	◪				⬣	+ +	.047	.004	.016	.047	.280
SPU 632	**6640**	◪	□	◪				⬣	+ +	.031	.004	.016	.063	.350
SPU 633	**6640**	◪	□	◪				⬣	+ +	.047	.004	.016	.047	.350
SPU 634	**6640**	◪	□	◪				⬣	+ +	.063	.004	.016	.063	.350
SPU 422	**6640**	◪	□	◪				⬣	+ +	.031	.004	.012	.031	.236
SPU 423	**6640**	◪	□	◪				⬣	+ +	.047	.004	.012	.047	.236
SPU 532	**6640**	◪	□	◪				⬣	+ +	.031	.004	.016	.031	.280
SPU 533	**6640**	◪	□	◪				⬣	+ +	.047	.004	.016	.047	.280
SPU 632	**6640**	◪	□	◪				⬣	+ +	.031	.004	.016	.063	.350
SPU 633	**6640**	◪	□	◪				⬣	+ +	.047	.004	.016	.047	.350
SPU 634	**6640**	◪	□	◪				⬣	+ +	.063	.004	.016	.063	.350

TCGT

	d	d_1	l	s
1.21.2	.156	.087	.272	.078
1.81.5	.219	.098	.378	.094
21.5	.250	.110	.433	.094
21.5-SF3	.250	.110	.433	.102
32.5	.375	.173	.650	.156
32.5-SF3	.375	.173	.650	.166



For tools see pages: T224

ANSI		P	M	K	N	S	H	?		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TCGT 1.81.50.5F-AL	**T0315**				■			●	+	.008	.002	.005	.012	.117
TCGT 1.81.51F-AL	**T0315**				■			●	+	.016	.004	.009	.016	.117
TCGT 21.50.5F-AL	**T0315**				■			●	+	.008	.002	.005	.012	.143
	HF7				■			●	+	.008	.002	.005	.012	.143
TCGT 21.51F-AL	**T0315**				■			●	+	.016	.004	.009	.016	.143
	HF7				■			●	+	.016	.004	.009	.016	.143
TCGT 21.52F-AL	**T0315**				■			●	++	.031	.006	.019	.031	.143
	HF7				■			●	++	.031	.006	.019	.031	.143
TCGT 32.51F-AL	**T0315**				■			●	+	.016	.004	.009	.016	.208
	HF7				■			●	+	.016	.004	.009	.016	.208
TCGT 32.52F-AL	**T0315**				■			●	++	.031	.006	.019	.031	.208
	HF7				■			●	++	.031	.006	.019	.031	.208
TCGT 1.21.20.5-FF2	**T8430**	■		◪				●	+	.008	.001	.005	.006	.078
	TT010	■	◪					●	+/-	.008	.001	.005	.006	.078
TCGT 1.81.50.5-FF2	**TT010**	■	◪					●	+/-	.008	.002	.005	.008	.059
TCGT 21.51-NF1	**T7325**	◪	■			■		●	++	.016	.003	.009	.012	.098
	T6310	◪	■	◪		■		●	+	.016	.003	.009	.012	.098
	H07*		◪	◪		■		●	+	.016	.003	.009	.012	.098
TCGT 21.50.5-SF3	**T6310**		■		◪	■		●	+	.008	.001	.005	.008	.063
	T8315		■		◪	□		●	+	.008	.001	.005	.008	.063
TCGT 21.51-SF3	**T6310**		■		◪	■		●	+	.016	.002	.008	.008	.079
	T8315		■		◪	□		●	+	.016	.002	.008	.008	.079
	H07		◪		◪	■		●	+	.016	.002	.008	.008	.079
TCGT 32.51-SF3	**T6310**		■		◪	■		●	+	.016	.002	.009	.008	.098
	T8315		■		◪	□		●	+	.016	.002	.009	.008	.098
	H07		◪		◪	■		●	+	.016	.002	.009	.008	.098
TCGT 32.52-SF3	**T6310**		■		◪	■		●	+	.031	.003	.012	.024	.126
	T8315		■		◪	□		●	+	.031	.003	.012	.024	.126
	H07		◪		◪	■		●	+	.031	.003	.012	.024	.126
TCGT 32.53-SF3	**T6310**		■		◪	■		●	++	.047	.004	.024	.031	.138

* Non-stocked item

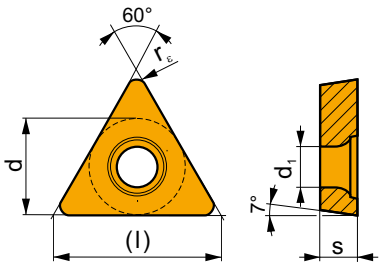
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TCGT 21.50.5R-SI	**T8315**	◪	■	□	□	□		●	+	.008	.003	.005	.016	.063
	T8430	■	■	◪		◪		●	+	.008	.003	.005	.016	.063
TCGT 21.51R-SI	**T8430**	■	■	◪		◪		●	+	.016	.003	.009	.016	.063
TCGT 21.50.5L-SI	**T8315**	◪	■	□	□	□		●	+	.008	.003	.005	.016	.063
	T8430	■	■	◪		◪		●	+	.008	.003	.005	.016	.063
TCGT 21.51L-SI	**T8315**	◪	■	□	□	□		●	+	.016	.003	.009	.016	.063
	T8430	■	■	◪		◪		●	+	.016	.003	.009	.016	.063





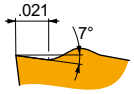
TCMT

	d	d_1	l	s
1.21.2	.156	.087	.272	.078
1.81.5	.219	.098	.378	.094
21.5	.250	.110	.433	.094
32.5	.375	.173	.650	.156



For tools see pages: T224

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TCMT 1.21.20.5-FF2	**T9315**	■		◪				●	+ +	.008	.002	.005	.008	.059
	T8430	■		◪				●	+	.008	.001	.005	.006	.078
TCMT 1.21.21-FF2	**T7325**	◪	◪					●	+ +	.016	.002	.009	.012	.078
	T9315	■		◪				●	+ +	.016	.002	.009	.012	.078
	T9325	■	◪	◪				●	+	.016	.002	.009	.012	.078
	T8430	■		◪				●	+	.016	.002	.009	.012	.078
TCMT 1.81.51-FF2	**T5315**	◪	□	■				●	+	.016	.002	.009	.012	.098
	T7325	◪	◪					●	+ +	.016	.002	.009	.012	.098
	T9315	■		◪				●	+ +	.016	.002	.009	.012	.098
	T9325	■	◪	◪				●	+	.016	.002	.009	.012	.098
	T8430	■		◪				●	+	.016	.002	.009	.012	.098
TCMT 21.51-FF2	**T7325**	◪	◪					●	+ +	.016	.002	.009	.012	.118
	T9315	■		◪				●	+ +	.016	.002	.009	.012	.118
	T9325	■	◪	◪				●	+	.016	.002	.009	.012	.118
	T9335	■	◪					●	+ +	.016	.002	.009	.012	.118
	T8430	■		◪				●	+	.016	.002	.009	.012	.118
TCMT 21.52-FF2	**T7325**	◪	◪					●	+ +	.031	.003	.011	.024	.118
	T9315	■		◪				●	+ +	.031	.003	.011	.024	.118
	T9325	■	◪	◪				●	+ +	.031	.003	.011	.024	.118
	T8430	■		◪				●	+	.031	.003	.011	.024	.118
TCMT 32.51-FF2	**T7325**	◪	◪					●	+ +	.016	.002	.009	.012	.118
	T9315	■		◪				●	+ +	.016	.002	.009	.012	.118

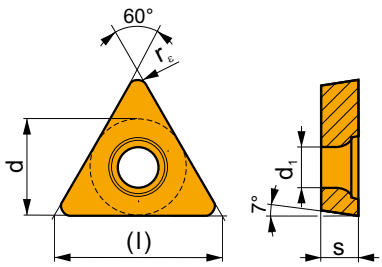


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TCMT 32.51-FF2	T9325	■	◪	◪				●	+	.016	.002	.009	.012	.118
	T9335	■	◪					●	++	.016	.002	.009	.012	.118
	T8430	■		◪				●	+	.016	.002	.009	.012	.118
	TT010	■	◪					●	+/-	.016	.002	.009	.012	.118
TCMT 32.52-FF2	T7325	◪	◪					●	++	.031	.003	.011	.024	.118
	T9315	■		◪				●	++	.031	.003	.011	.024	.118
	T9325	■	◪	◪				●	++	.031	.003	.011	.024	.118
	T9335	■	◪					●	++	.031	.003	.011	.024	.118
	T8430	■		◪				●	+	.031	.003	.011	.024	.118
TCMT 21.50.5-FM	T7325	◪	■			□		●	++	.008	.003	.005	.008	.079
	T7335	◪	■			□		●	++	.008	.003	.005	.008	.079
	T9315	■		◪				●	++	.008	.003	.005	.008	.079
	T9325	■	■	◪		□		●	+	.008	.003	.005	.008	.079
	T8315	◪	■	◪		□		●	+	.008	.003	.005	.008	.079
	T8430	■	■	◪	◪			●	+	.008	.003	.005	.008	.079
TCMT 21.51-FM	T7325	◪	■			□		●	++	.016	.006	.009	.008	.079
	T7335	◪	■			□		●	++	.016	.006	.009	.008	.079
	T9315	■		◪				●	++	.016	.006	.009	.008	.079
	T9325	■	■	◪		□		●	+	.016	.006	.009	.008	.079
	T8315	◪	■	◪		□		●	+	.016	.003	.009	.008	.079
	T8430	■	■	◪	◪			●	+	.016	.003	.009	.008	.079
TCMT 21.52-FM	T7325	◪	■			□		●	++	.031	.006	.012	.020	.098
	T9315	■		◪				●	++	.031	.006	.012	.020	.098
	T9325	■	■	◪		□		●	+	.031	.006	.012	.020	.098
	T8430	■	■	◪	◪			●	+	.031	.006	.012	.020	.098
TCMT 32.51-FM	T7325	◪	■			□		●	++	.016	.006	.009	.012	.118
	T7335	◪	■			□		●	++	.016	.006	.009	.012	.118
	T9315	■		◪				●	++	.016	.006	.009	.012	.118
	T9325	■	■	◪		□		●	+	.016	.006	.009	.012	.118
	T8315	◪	■	◪		□		●	+	.016	.004	.009	.012	.118
	T8430	■	■	◪	◪			●	+	.016	.004	.009	.012	.118
TCMT 32.52-FM	T7325	◪	■			□		●	++	.031	.006	.014	.020	.118
	T7335	◪	■			□		●	++	.031	.006	.014	.020	.118
	T9315	■		◪				●	++	.031	.006	.014	.020	.118
	T9325	■	■	◪		□		●	++	.031	.006	.014	.020	.118
	T8315	◪	■	◪		□		●	-	.031	.004	.010	.020	.118
	T8430	■	■	◪	◪			●	-	.031	.004	.010	.020	.118
TCMT 21.51-FM2	T9325	■	◪	◪		□		●	+	.016	.002	.009	.012	.098
	T8430	■	◪	◪				●	+	.016	.002	.009	.012	.098
TCMT 21.52-FM2	T9325	■	◪	◪		□		●	+	.031	.004	.012	.024	.118
	T9335	■	◪			□		●	++	.031	.004	.012	.024	.118
	T8430	■	◪	◪				●	+	.031	.004	.012	.024	.118
TCMT 32.52-FM2	T7325	◪	◪			□		●	++	.031	.004	.014	.031	.138
	T9325	■	◪	◪		□		●	++	.031	.004	.014	.031	.138
	T9335	■	◪			□		●	++	.031	.004	.014	.031	.138
	T8430	■	◪	◪				⬢	++	.031	.004	.014	.031	.138
TCMT 32.52-RM	T5305	□		■			□	●	+	.031	.006	.016	.039	.157
	T5315	◪	□	■			□	●	++	.031	.006	.016	.039	.157
	T7335	◪	■					●	+++	.031	.006	.016	.039	.157
	T9315	■		◪			□	●	++	.031	.006	.016	.039	.157
	T9325	■	■	◪		□		●	++	.031	.006	.016	.039	.157
	T8430	■	■	◪		◪	◪	⬢	++	.031	.006	.016	.039	.157
TCMT 32.53-RM	T5305	□		■			□	●	++	.047	.006	.018	.059	.157
	T5315	◪	□	■			□	●	++	.047	.006	.018	.059	.157
	T9315	■		◪			□	⬢	++	.047	.006	.018	.059	.157
	T9325	■	■	◪		□		⬢	++	.047	.006	.018	.059	.157
	T8430	■	■	◪		◪	◪	⬢	++	.047	.006	.018	.059	.157

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TCMT 32.51-RM3	**T7325**	◪	◪					●	+ +	.016	.010	.009	.016	.118
	T9315	■		◪				●	+ +	.016	.010	.009	.016	.118
	T9325	■	◪	◪				●	+ +	.016	.010	.009	.016	.118
	T9335	■	◪					●	+ +	.016	.010	.009	.016	.118
	T6310	◪	◪	◪				●	+	.016	.010	.009	.016	.118
	T8430	■	◪	◪			◪	●	+ +	.016	.010	.009	.016	.118
TCMT 32.52-RM3	**T7325**	◪	◪					●	+ +	.031	.010	.016	.031	.118
	T9315	■		◪				●	+ +	.031	.010	.016	.031	.118
	T9325	■	◪	◪				●	+ +	.031	.010	.016	.031	.118
	T9335	■	◪					●	+++	.031	.010	.016	.031	.118
	T6310	◪	◪	◪				●	+ +	.031	.010	.016	.031	.118
	T8430	■	◪	◪			◪	●	+ +	.031	.010	.016	.031	.118
TCMT 21.51-UR	**T7325**	◪	■					●	+ +	.016	.006	.009	.016	.079
	T9315	■		◪				●	+ +	.016	.006	.009	.016	.079
	T9325	■	■	◪				●	+	.016	.006	.009	.016	.079
	T8430	■	◪	◪				●	+	.016	.003	.009	.016	.079
TCMT 32.51-UR	**T7325**	◪	■					●	+ +	.016	.006	.009	.016	.118
	T9315	■		◪				●	+ +	.016	.006	.009	.016	.118
	T9325	■	■	◪				●	+	.016	.006	.009	.016	.118
	T8430	■	◪	◪				●	+	.016	.003	.009	.016	.118
	TT310	■	◪					●	+ / -	.016	.003	.009	.016	.118
TCMT 32.52-UR	**T5315**	◪	□	■				●	+	.031	.004	.012	.031	.118
	T7325	◪	■					●	+ +	.031	.006	.012	.031	.118
	T9315	■		◪				●	+ +	.031	.006	.012	.031	.118
	T9325	■	■	◪				●	+	.031	.006	.012	.031	.118
	T8430	■	◪	◪				●	+	.031	.003	.012	.031	.118

TCMW

d	d_1	l	s
.250	.110	.433	.094
.375	.173	.650	.156

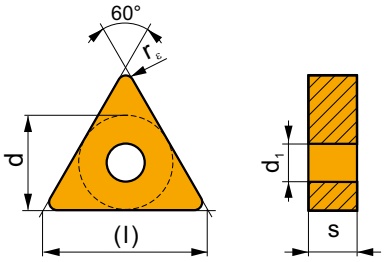


For tools see pages: T224

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TCMW 21.51	**T5305**	□		■			◪	●	+	.016	.004	.008	.016	.142
	T5315	◪	□	■			□	●	+	.016	.004	.008	.016	.142
TCMW 32.51	**T5305**	□		■			◪	●	+	.016	.004	.009	.016	.189
	T5315	◪	□	■			□	●	+	.016	.004	.009	.016	.189
	T6310	◪	□	◪			◪	●	+	.016	.002	.009	.016	.189
TCMW 32.52	**T5305**	□		■			◪	●	+	.031	.004	.014	.031	.189
	T5315	◪	□	■			□	●	+	.031	.004	.014	.031	.189
	T6310	◪	□	◪			◪	●	+	.031	.002	.014	.031	.189

TNMA

	d	d_1	l	s
33	.375	.150	.650	.187
43	.500	.203	.866	.187

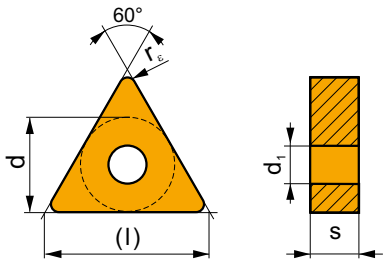


For tools see pages: T196-T198, T209, T217, T250-T253

ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TNMA 331	**T5305**	☐		■			◪	●	.016	.004	.009	.016	.189
	T5315	◪	☐	■			☐	●	.016	.004	.009	.016	.189
TNMA 332	**T5305**	☐		■			◪	●	.031	.004	.016	.031	.189
	T5315	◪	☐	■			☐	●	++ .031	.004	.016	.031	.189
	T6310	◪	☐	◪			◪	●●	++ .031	.002	.016	.031	.189
TNMA 333	**T5305**	☐		■			◪	●	.047	.004	.016	.047	.189
	T5315	◪	☐	■			☐	●●	++ .047	.004	.016	.047	.189
TNMA 432	**T5305**	☐		■			◪	●	.031	.004	.016	.031	.252
	T5315	◪	☐	■			☐	●	++ .031	.004	.016	.031	.252
	T6310	◪	☐	◪			◪	●●	++ .031	.002	.016	.031	.252
TNMA 433	**T5305**	☐		■			◪	●	.047	.004	.016	.047	.252
	T5315	◪	☐	■			☐	●●	++ .047	.004	.016	.047	.252
TNMA 332S	**T5305**	☐		■			◪	●	.031	.004	.016	.031	.189
TNMA 433S	**T5305**	☐		■			◪	●●	.047	.004	.016	.047	.252

TNMG

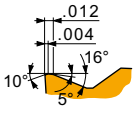
	d	d_1	l	s
33	.375	.150	.650	.187
43	.500	.203	.866	.187
54	.625	.250	1.083	.250
66	.750	.313	1.299	.375

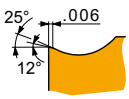


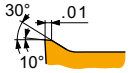
For tools see pages: T196-T198, T209, T217, T250-T253

ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TNMG 331-FF	**T7325**	◪	■			□		●	+ +	.016	.006	.008	.016	.059
	T8315	◪	■	◪	□	□		●	+	.016	.002	.008	.016	.059
	T8430	■	■	◪	□	□		●	+	.016	.002	.008	.016	.059
TNMG 332-FF	**T7325**	◪	■			□		●	+ +	.031	.006	.010	.031	.059
	T8315	◪	■	◪	□	□		●	+	.031	.003	.010	.031	.059
TNMG 331-FM	**T7325**	◪	■			□		●	+ +	.016	.006	.009	.020	.118
	T7335	◪	■			□		●	+ +	.016	.006	.009	.020	.118
	T9310	■		◪				●	+	.016	.006	.009	.020	.118
	T9315	■		◪				●	+ +	.016	.006	.009	.020	.118
	T9325	■	■	◪		□		●	+	.016	.006	.009	.020	.118
	T8315	◪	■	◪		□		●	+	.016	.004	.009	.020	.118
	T8430	■	◪	◪		◪		●	+	.016	.004	.009	.020	.118
	TT310	■	◪					●	+ / -	.016	.004	.009	.020	.118
TNMG 332-FM	**T7325**	◪	■			□		●	+ +	.031	.006	.018	.031	.118
	T7335	◪	■			□		●	+++	.031	.006	.018	.031	.118
	T9310	■		◪				●	+ +	.031	.006	.018	.031	.118
	T9315	■		◪				●	+ +	.031	.006	.018	.031	.118
	T9325	■	■	◪		□		●	+ +	.031	.006	.018	.031	.118
	T8315	◪	■	◪		□		●	+ +	.031	.006	.018	.031	.118
	T8430	■	◪	◪		◪		●	+ +	.031	.006	.018	.031	.118
	TT310	■	◪					●	+ / -	.031	.006	.018	.031	.118
TNMG 333-FM	**T7325**	◪	■			□		●	+ +	.047	.006	.018	.047	.118
	T9315	■		◪				●	+ +	.047	.006	.018	.047	.118
	T9325	■	■	◪		□		●	+ +	.047	.006	.018	.047	.118
	T8430	■	◪	◪		◪		●	+ +	.047	.006	.018	.047	.118
TNMG 431-FM	**T9315**	■		◪				●	+ +	.016	.008	.009	.031	.197
	T9325	■	■	◪		□		●	+	.016	.006	.009	.031	.118
	T8430	■	◪	◪		◪		●	+	.016	.006	.009	.031	.118
TNMG 432-FM	**T9315**	■		◪				●	+ +	.031	.006	.018	.031	.118
	T9325	■	■	◪		□		●	+ +	.031	.006	.018	.031	.118
	T8430	■	◪	◪		◪		●	+ +	.031	.006	.018	.031	.118
TNMG 332-KR	**T5305**	□		■			□	●	+	.031	.008	.016	.031	.156
	T5315	◪	□	■			□	●	+	.031	.008	.016	.031	.156

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TNMG 331-M	**T5315**	◪	□	■			□	●	+	.016	.007	.009	.031	.118
	T9315	■		◪			□	●	++	.016	.007	.009	.031	.118
	T9325	■	◪	◪				●	+	.016	.007	.009	.031	.118
	T9335	■	◪					●	++	.016	.007	.009	.031	.118
TNMG 332-M	**T5305**	□		■			□	●	++	.031	.006	.019	.031	.197
	T5315	◪	□	■			□	●	++	.031	.006	.019	.031	.197
	T9310	■		◪				●	++	.031	.006	.019	.031	.197
	T9315	■		◪			□	●	++	.031	.006	.019	.031	.197
	T9325	■	◪	◪				●	++	.031	.006	.019	.031	.197
	T9335	■	◪					●	+++	.031	.006	.019	.031	.197
TNMG 333-M	**T5315**	◪	□	■			□	●	++	.047	.007	.028	.047	.208
	T9315	■		◪			□	●	+++	.047	.007	.028	.047	.208
	T9325	■	◪	◪				⬢	++	.047	.007	.028	.047	.208
	T9335	■	◪					⬢	+++	.047	.007	.028	.047	.208
TNMG 432-M	**T5305**	□		■			□	●	++	.031	.007	.019	.031	.236
	T5315	◪	□	■			□	●	++	.031	.007	.019	.031	.236
	T9310	■		◪				●	++	.031	.007	.019	.031	.236
	T9315	■		◪			□	●	++	.031	.007	.019	.031	.236
	T9325	■	◪	◪				●	++	.031	.007	.019	.031	.236
	T9335	■	◪					●	+++	.031	.007	.019	.031	.236
TNMG 433-M	**T5315**	◪	□	■			□	●	++	.047	.007	.028	.047	.236
	T9315	■		◪			□	●	+++	.047	.007	.028	.047	.236
	T9325	■	◪	◪				⬢	++	.047	.007	.028	.047	.236
	T9335	■	◪					⬢	+++	.047	.007	.028	.047	.236
TNMG 331-NF	**T7325**	◪	■			◪		●	++	.016	.006	.009	.016	.118
	T7335	◪	■			◪		●	++	.016	.006	.009	.016	.118
	T9315	■						●	++	.016	.006	.009	.016	.118
	T9325	■	■			◪		●	+	.016	.006	.009	.016	.118
	T6310	◪	■		□	◪		●	+	.016	.005	.009	.016	.118
	T8315	◪	■		□	□		●	+	.016	.005	.009	.016	.118
	T8430	■	■	◪	◪	◪		●	+	.016	.005	.009	.016	.118
	HF7		□		□	□		●	+	.016	.005	.009	.016	.118
TNMG 332-NF	**T7325**	◪	■			◪		●	++	.031	.006	.012	.031	.118
	T7335	◪	■			◪		●	++	.031	.006	.012	.031	.118
	T9315	■						●	++	.031	.006	.012	.031	.118
	T9325	■	■			◪		●	+	.031	.006	.012	.031	.118
	T6310	◪	■		□	◪		●	+	.031	.006	.012	.031	.118
	T8315	◪	■		□	□		●	+	.031	.006	.012	.031	.118
	T8430	■	■	◪	◪	◪		●	+	.031	.006	.012	.031	.118
	HF7		□		□	□		●	+	.031	.006	.012	.031	.118
TNMG 331-NM	**T7325**	◪	■			■		●	++	.016	.006	.009	.020	.118
	T7335	◪	■					●	++	.016	.006	.009	.020	.118
	T9325	■	■	□		□		●	+	.016	.006	.009	.020	.118
	T8315*	◪	■	□	□	□		●	+	.016	.006	.009	.020	.118
	T8430	■	■		◪	◪		●	+	.016	.006	.009	.020	.118
TNMG 332-NM	**T7325**	◪	■			■		●	++	.031	.008	.016	.039	.118
	T7335	◪	■					●	++	.031	.008	.016	.039	.118
	T9315	■		□				●	++	.031	.008	.016	.039	.118
	T9325	■	■	□		□		●	++	.031	.008	.016	.039	.118
	T8315	◪	■	□	□	□		●	+	.031	.008	.016	.039	.118
	T8430	■	■		◪	◪		⬢	++	.031	.008	.016	.039	.118
TNMG 432-NM	**T7325**	◪	■			■		●	++	.031	.008	.016	.039	.138
	T7335	◪	■					●	++	.031	.008	.016	.039	.138
	T9315	■		□				●	++	.031	.008	.016	.039	.138
	T9325	■	■	□		□		●	++	.031	.008	.016	.039	.138
	T8315	◪	■	□	□	□		●	+	.031	.008	.016	.039	.138
	T8430	■	■		◪	◪		⬢	++	.031	.008	.016	.039	.138
TNMG 433-NM	**T7325**	◪	■			■		⬢	++	.047	.008	.016	.047	.138

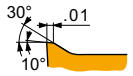


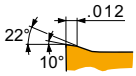


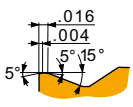


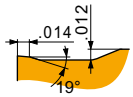
* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TNMG 433-NM	**T7335**	◪	■					●	+ +	.047	.008	.016	.047	.138
	T9325	■	■	□		□		●	+ +	.047	.008	.016	.047	.138
TNMG 331-NMR	**T6310**	◪	■			◪		●	+	.016	.008	.009	.016	.157
	T7325	◪	■			◪		●	+ +	.016	.008	.009	.016	.157
	T7335	◪	■			◪		●	+ +	.016	.008	.009	.016	.157
	T9315	■						●	+ +	.016	.008	.009	.016	.157
	T9325	■	■			◪		●	+	.016	.008	.009	.016	.157
	T8430	■	■			◪		●	+	.016	.008	.009	.016	.157
TNMG 332-NMR	**T6310**	◪	■			◪		⬢	+ +	.031	.008	.019	.031	.157
	T7325	◪	■			◪		⬢	+ +	.031	.008	.019	.031	.157
	T7335	◪	■			◪		⬢	+++	.031	.008	.019	.031	.157
	T9315	■						●	+ +	.031	.008	.019	.031	.157
	T9325	■	■			◪		⬢	+ +	.031	.008	.019	.031	.157
	T8430	■	■			◪		⬢	+ +	.031	.008	.019	.031	.157
TNMG 333-NMR	**T7325**	◪	■			◪		⬢	+ +	.047	.009	.022	.047	.177
	T9315	■						⬢	+ +	.047	.009	.022	.047	.177
	T9325	■	■			◪		⬢	+ +	.047	.009	.022	.047	.177
TNMG 432-NMR	**T6310**	◪	■			◪		⬢	+ +	.031	.008	.019	.031	.236
	T7325	◪	■			◪		⬢	+ +	.031	.008	.019	.031	.236
	T7335	◪	■			◪		⬢	+++	.031	.008	.019	.031	.236
	T9315	■						●	+ +	.031	.008	.019	.031	.236
	T9325	■	■			◪		⬢	+ +	.031	.008	.019	.031	.236
	T8430	■	■			◪		⬢	+ +	.031	.008	.019	.031	.236
TNMG 433-NMR	**T6310**	◪	■			◪		⬢	+ +	.047	.009	.028	.047	.236
	T7325	◪	■			◪		⬢	+++	.047	.009	.028	.047	.236
	T9315	■						⬢	+ +	.047	.009	.028	.047	.236
	T9325	■	■			◪		⬢	+ +	.047	.009	.028	.047	.236
TNMG 332-R	**T5305**	◪		■			□	●	+ +	.031	.010	.019	.031	.208
	T5315	◪	□	■			□	⬢	+ +	.031	.010	.019	.031	.208
	T9310	■		◪			□	⬢	+ +	.031	.010	.019	.031	.208
	T9315	■		◪			□	⬢	+ +	.031	.010	.019	.031	.208
	T9325	■	◪	◪				⬢	+ +	.031	.010	.019	.031	.208
	T9335	■	◪					⬢	+++	.031	.010	.019	.031	.208
TNMG 333-R	**T5315**	◪	□	■			□	⬢	+ +	.047	.010	.028	.079	.236
	T9325	■	◪	◪				⬢	+ +	.047	.010	.028	.079	.236
	T9335	■	◪					⬢	+++	.047	.010	.028	.079	.236
TNMG 432-R	**T9325**	■	◪	◪				⬢	+ +	.031	.010	.019	.079	.236
	T9335	■	◪					⬢	+++	.031	.010	.019	.079	.236
	T9335	■	◪					⬢	+++	.031	.010	.019	.079	.236
TNMG 433-R	**T9310**	■		◪			□	⬢	+ +	.047	.010	.028	.079	.236
	T9315	■		◪			□	⬢	+++	.047	.010	.028	.079	.236
	T9325	■	◪	◪				⬢	+ +	.047	.010	.028	.079	.236
TNMG 434-R	**T9315**	■		◪			□	⬢	+++	.063	.010	.031	.079	.236
	T9325	■	◪	◪				⬢	+ +	.063	.010	.031	.079	.236
TNMG 332-RM	**T5305**	□		■			□	●	+ +	.031	.008	.019	.039	.208
	T5315	◪	□	■			□	●	+ +	.031	.008	.019	.039	.208
	T7325	◪	■			◪		⬢	+ +	.031	.008	.019	.039	.208
	T7335	◪	■			◪		⬢	+++	.031	.008	.019	.039	.208
	T9310	■		◪				●	+ +	.031	.008	.019	.039	.208
	T9315	■		◪			□	●	+ +	.031	.008	.019	.039	.208
	T9325	■	■	◪		□		⬢	+ +	.031	.008	.019	.039	.208
	T9335	■	◪					⬢	+++	.031	.008	.019	.039	.208





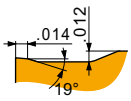




ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TNMG 333-RM	**T5305**	□		■			□	●	+ +	.047	.010	.026	.059	.208
	T5315	◪	□	■			□	⬢	+ +	.047	.010	.026	.059	.208
	T7325	◪	■			◪		⬢	+++	.047	.010	.026	.059	.208
	T7335	◪	■			◪		⬢	+++	.047	.010	.026	.059	.208
	T9315	■		◪			□	⬢	+++	.047	.010	.026	.059	.208
	T9325	■	■	◪		□		⬢	+ +	.047	.010	.026	.059	.208
	T9335	■	◪					⬢	+++	.047	.010	.026	.059	.208
	T8430	■	◪	◪				⬢	+ +	.047	.010	.026	.059	.208
TNMG 432-RM	**T5305**	□		■			□	●	+ +	.031	.008	.019	.039	.276
	T5315	◪	□	■			□	●	+ +	.031	.008	.019	.039	.276
	T7325	◪	■			◪		⬢	+ +	.031	.008	.019	.039	.276
	T7335	◪	■			◪		⬢	+++	.031	.008	.019	.039	.276
	T9310*	■		◪				●	+ +	.031	.008	.019	.039	.276
	T9315	■		◪			□	●	+ +	.031	.008	.019	.039	.276
	T9325	■	■	◪		□		⬢	+ +	.031	.008	.019	.039	.276
	T9335	■	◪					⬢	+++	.031	.008	.019	.039	.276
TNMG 433-RM	**T5305**	□		■			□	●	+ +	.047	.010	.026	.059	.276
	T5315	◪	□	■			□	⬢	+ +	.047	.010	.026	.059	.276
	T7325	◪	■			◪		⬢	+++	.047	.010	.026	.059	.276
	T7335	◪	■			◪		⬢	+++	.047	.010	.026	.059	.276
	T9315	■		◪			□	⬢	+++	.047	.010	.026	.059	.276
	T9325	■	■	◪		□		⬢	+ +	.047	.010	.026	.059	.276
	T9335	■	◪					⬢	+++	.047	.010	.026	.059	.276
TNMG 434-RM	**T5305**	□		■			□	●	+ +	.063	.012	.030	.079	.276
	T5315	◪	□	■			□	⬢	+ +	.063	.012	.030	.079	.276
	T7325	◪	■			◪		⬢	+++	.063	.012	.030	.079	.276
	T9315	■		◪			□	⬢	+++	.063	.012	.030	.079	.276
	T9325	■	■	◪		□		⬢	+ +	.063	.012	.030	.079	.276
	T9335	■	◪					⬢	+++	.063	.012	.030	.079	.276
TNMG 543-RM	**T7325**	◪	■			◪		⬢	+++	.047	.014	.028	.047	.351
	T9325	■	■	◪		□		⬢	+ +	.047	.014	.028	.047	.351
TNMG 544-RM	**T7325**	◪	■			◪		⬢	+++	.063	.014	.030	.079	.351
	T9315	■		◪			□	⬢	+++	.063	.014	.030	.079	.351
	T9325	■	■	◪		□		⬢	+ +	.063	.014	.030	.079	.351
	T9335	■	◪					⬢	+++	.063	.014	.030	.079	.351
TNMG 546-RM	**T7325**	◪	■			◪		⬢	+++	.094	.014	.031	.118	.351
	T9325	■	■	◪		□		⬢	+ +	.094	.014	.031	.118	.351
	T9335	■	◪					⬢	+++	.094	.014	.031	.118	.351
TNMG 548-RM	**T9335**	■	◪					⬢	+++	.126	.014	.031	.126	.351
TNMG 666-RM	**T9335**	■	◪					⬢	+++	.094	.018	.035	.118	.429
TNMG 331-SF	**T7325**	◪	■			■		●	+ +	.016	.006	.009	.016	.098
	T7335	◪	■			■		●	+ +	.016	.006	.009	.016	.098
	T9315	◪					□	●	+ +	.016	.006	.009	.016	.098
	T9325	◪	■			◪		●	+	.016	.006	.009	.016	.098
	T6310	◪	■		□	■	□	●	+	.016	.004	.009	.016	.098
	T8315	◪	■		□	□	□	●	+	.016	.004	.009	.016	.098
	T8430	■	■	◪	◪	◪	◪	●	+	.016	.004	.009	.016	.098
	H07		◪		□	■		●	+	.016	.004	.009	.016	.098
TNMG 332-SF	**T7325**	◪	■			■		●	+ +	.031	.006	.011	.031	.118
	T7335	◪	■			■		●	+ +	.031	.006	.011	.031	.118
	T9315	◪					□	●	+ +	.031	.006	.011	.031	.118
	T9325	◪	■			◪		●	+ +	.031	.006	.011	.031	.118
	T6310	◪	■		□	■	□	●	+	.031	.005	.011	.031	.118
	T8315	◪	■		□	□	□	●	+	.031	.005	.011	.031	.118
	T8430	■	■	◪	◪	◪	◪	⬢	+ +	.031	.005	.011	.031	.118

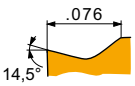






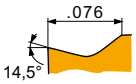


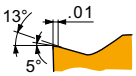


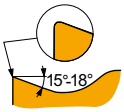


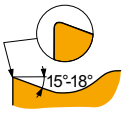
* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TNMG 332-SF	H07		◪		□	■		●	+	.031	.005	.011	.031	.118
TNMG 333-SF	T7325	◪	■			■		●●	++	.047	.006	.011	.047	.118
TNMG 432-SF	T6310	◪	■		□	■	□	●	+	.031	.006	.014	.031	.138
	T8315	◪	■		□	□	□	●	+	.031	.006	.014	.031	.138
	T8430	■	■	◪	◪	◪	◪	●●	++	.031	.006	.014	.031	.138
TNMG 331-SM	T7325	◪	■			■		●	++	.016	.007	.009	.016	.157
	T7335	◪	■			■		●	++	.016	.007	.009	.016	.157
	T9315	■		◪			□	●	++	.016	.007	.009	.016	.157
	T9325	■	■	◪		◪		●	+	.016	.007	.009	.016	.157
	T6310	◪	■	◪		■	□	●	+	.016	.007	.009	.016	.157
	T8430	■	■	◪	◪	◪	◪	●	+	.016	.007	.009	.016	.157
TNMG 332-SM	T7325	◪	■			■		●	++	.031	.008	.016	.031	.157
	T7335	◪	■			■		●	++	.031	.008	.016	.031	.157
	T9315	■		◪			□	●	++	.031	.008	.016	.031	.157
	T9325	■	■	◪		◪		●	++	.031	.008	.016	.031	.157
	T6310	◪	■	◪		■	□	●	++	.031	.008	.016	.031	.157
	T8430	■	■	◪	◪	◪	◪	●●	++	.031	.008	.016	.031	.157
TNMG 333-SM	T7325	◪	■			■		●●	++	.047	.009	.016	.047	.157
	T7335	◪	■			■		●●	+++	.047	.009	.016	.047	.157
	T9325	■	■	◪		◪		●●	++	.047	.009	.016	.047	.157
TNMG 431-SM	T7325	◪	■			■		●	++	.016	.008	.009	.016	.157
	T9325	■	■	◪		◪		●	+	.016	.008	.009	.016	.157
	T6310	◪	■	◪		■	□	●	+	.016	.008	.009	.016	.157
	T8430	■	■	◪	◪	◪	◪	●	+	.016	.008	.009	.016	.157
TNMG 432-SM	T7325	◪	■			■		●	++	.031	.008	.018	.031	.177
	T7335	◪	■			■		●	+++	.031	.008	.018	.031	.177
	T9315	■		◪			□	●	++	.031	.008	.018	.031	.177
	T9325	■	■	◪		◪		●	++	.031	.008	.018	.031	.177
	T6310	◪	■	◪		■	□	●	++	.031	.008	.018	.031	.177
	T8430	■	■	◪	◪	◪	◪	●●	++	.031	.008	.018	.031	.177
TNMG 433-SM	T7325	◪	■			■		●●	++	.047	.009	.020	.047	.197
	T7335	◪	■			■		●●	+++	.047	.009	.020	.047	.197
	T9315	■		◪			□	●	++	.047	.009	.020	.047	.197
	T9325	■	■	◪		◪		●●	++	.047	.009	.020	.047	.197
TNMG 331R-SI	T7325	◪	■			■		●	++	.016	.008	.009	.031	.197
	T7335	◪	■					●	++	.016	.008	.009	.031	.197
	T9325	■	■	□		□		●	+	.016	.008	.009	.031	.197
	T8315	◪	■	□	□	□		●	+	.016	.008	.009	.031	.197
	T8430	■	■		◪	◪		●	+	.016	.008	.009	.031	.197
TNMG 332R-SI	T7325	◪	■			■		●	++	.031	.008	.019	.031	.197
	T7335	◪	■					●	+++	.031	.008	.019	.031	.197
	T9325	■	■	□		□		●	++	.031	.008	.019	.031	.197
	T8315	◪	■	□	□	□		●	++	.031	.008	.019	.031	.197
	T8430	■	■		◪	◪		●	++	.031	.008	.019	.031	.197
TNMG 331L-SI	T7325	◪	■			■		●	++	.016	.008	.009	.031	.197
	T7335	◪	■					●	++	.016	.008	.009	.031	.197
	T9325	■	■	□		□		●	+	.016	.008	.009	.031	.197
	T8315	◪	■	□	□	□		●	+	.016	.008	.009	.031	.197
	T8430	■	■		◪	◪		●	+	.016	.008	.009	.031	.197
TNMG 332L-SI	T7325	◪	■			■		●	++	.031	.008	.019	.031	.197
	T7335	◪	■					●	+++	.031	.008	.019	.031	.197
	T9325	■	■	□		□		●	++	.031	.008	.019	.031	.197
	T8315	◪	■	□	□	□		●	++	.031	.008	.019	.031	.197
	T8430	■	■		◪	◪		●	++	.031	.008	.019	.031	.197



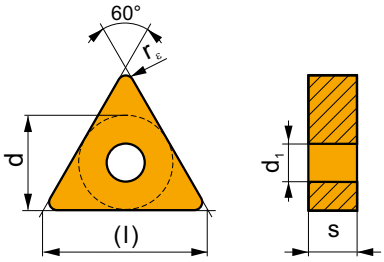






TNMM

	d	d_1	l	s
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43	.500	.203	.866	.187
54	.625	.250	1.083	.250

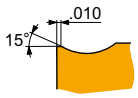


For tools see pages: T196-T198, T209, T217, T250-T253

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		TNMM 332-DR	**T9325**	■	■	◪		□		●	+ +	.031	.012	.019	.098	.208
		TNMM 432-DR	**T9325**	■	■	◪		□		●	+ +	.031	.012	.019	.098	.286
			T9335	■	◪					●	+++	.031	.012	.019	.098	.286
		TNMM 433-DR	**T9315***	■		◪				●	+++	.047	.012	.028	.098	.286
			T9325	■	■	◪		□		●	+ +	.047	.012	.028	.098	.286
			T9335	■	◪					●	+++	.047	.012	.028	.098	.286
		TNMM 434-DR	**T9325**	■	■	◪		□		●	+ +	.063	.012	.033	.098	.286
		TNMM 544-DR	**T9325**	■	■	◪		□		●	+ +	.063	.012	.033	.098	.351
			T9335	■	◪					●	+++	.063	.012	.033	.098	.351
		TNMM 544-HR	**T9325**	■	◪	◪		□		●	+++	.063	.020	.038	.197	.351
			T9335	■	◪					●	+++	.063	.020	.038	.197	.351
		TNMM 332-NR2	**T9325**	■	■	□		□		●	+ +	.031	.008	.019	.031	.208
		TNMM 432-NR2	**T7325**	◪	■			■		●	+++	.031	.010	.019	.031	.286
			T9325	■	■	□		□		●	+ +	.031	.010	.019	.031	.286
		TNMM 433-NR2	**T7325**	◪	■			■		●	+++	.047	.012	.028	.047	.286
			T9325	■	■	□		□		●	+ +	.047	.012	.028	.047	.286
			T8430	■	■	◪		◪		●	+ +	.047	.012	.028	.047	.286
		TNMM 332-OR	**T9315**	■		◪				●	+ +	.031	.010	.018	.079	.197
			T9325	■	■	◪		□		●	+ +	.031	.010	.018	.079	.197
		TNMM 333-OR	**T9325**	■	■	◪		□		●	+ +	.047	.012	.024	.079	.208
		TNMM 432-OR	**T9315**	■		◪				●	+ +	.031	.012	.019	.079	.236
			T9325	■	■	◪		□		●	+ +	.031	.012	.019	.079	.236
			T9335	■	◪					●	+++	.031	.012	.019	.079	.236
		TNMM 433-OR	**T9315**	■		◪				●	+++	.047	.013	.028	.079	.276
			T9325	■	■	◪		□		●	+ +	.047	.013	.028	.079	.276
			T9335	■	◪					●	+++	.047	.013	.028	.079	.276
		TNMM 434-OR	**T9315**	■		◪				●	+++	.063	.016	.031	.118	.286
		TNMM 433R	**T9335**	■	◪					◉	+++	.047	.008	.020	.047	.197

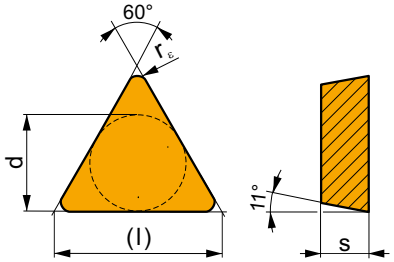
* Non-stocked item

ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TNMM 433L	**T9335**	■	◪					●	+++	.047	.008	.020	.047	.197

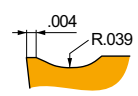


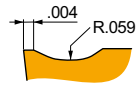
TPMR

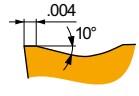
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32	.375	.650	.125

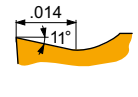


ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TPMR 221-46	**T9325**	■	■	◪				●	+	.016	.006	.009	.039	.118
	T9335	■	◪					●	+ +	.016	.006	.009	.039	.118
	6640	■	■	◪				●	+ +	.016	.004	.009	.039	.118
TPMR 222-46	**T9325**	■	■	◪				●	+ +	.031	.006	.016	.039	.118
	T9335	■	◪					●	+++	.031	.006	.016	.039	.118
TPMR 321-47	**T9325**	■	■	◪				●	+	.016	.006	.009	.031	.157
	T9335	■	◪					●	+ +	.016	.006	.009	.031	.157
	6630	■	■	◪				●	+ +	.016	.006	.009	.031	.157
	6640	■	■	◪				●	+ +	.016	.004	.009	.031	.157
TPMR 322-47	**T9325**	■	■	◪				●	+ +	.031	.006	.016	.031	.157
	T9335	■	◪					●	+++	.031	.006	.016	.031	.157
	6630	■	■	◪				●	+ +	.031	.006	.016	.031	.157
	6640	■	■	◪				●	+ +	.031	.004	.016	.031	.157
TPMR 323-47	**T9325**	■	■	◪				●	+ +	.047	.006	.016	.047	.157
	T9335	■	◪					●	+++	.047	.006	.016	.047	.157
TPMR 322-61	**T9325**	■	■	◪		□		●	+ +	.031	.012	.019	.039	.208
	T9335	■	◪					●	+++	.031	.012	.019	.039	.208
TPMR 221-PF2	**TT010**	■	◪					●	+ / -	.016	.004	.009	.008	.118
TPMR 321-PF2	**TT010**	■	◪					●	+ / -	.016	.004	.009	.008	.150



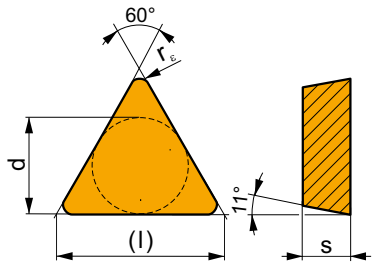






TPU

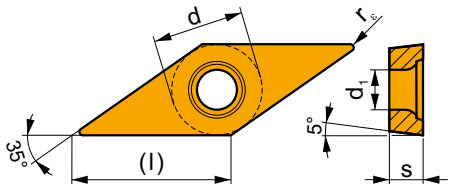
	d	l	s
22	.250	.433	.125
32	.375	.650	.125
43	.500	.866	.187



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TPU 221	**6640**	◪	□	◪				●	+ +	.016	.004	.009	.016	.142
TPU 222	**6640**	◪	□	◪				⬢	+ +	.031	.004	.012	.031	.142
TPU 321	**6640**	◪	□	◪				●	+ +	.016	.004	.009	.016	.189
TPU 322	**6640**	◪	□	◪				⬢	+ +	.031	.004	.012	.031	.189
TPU 323	**6640**	◪	□	◪				⬢	+ +	.047	.004	.012	.047	.189
TPU 432	**6640**	◪	□	◪				⬢	+ +	.031	.004	.016	.031	.252
TPU 433	**6640**	◪	□	◪				⬢	+ +	.047	.004	.016	.047	.252

VBMT

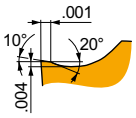
	d	d_1	l	s
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22	.250	.110	.437	.125
33	.375	.173	.654	.187

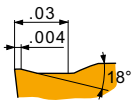


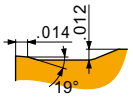
For tools see pages: T210-T212, T225-T226

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VBMT 331-FF2	**T7325**	◪	◪					●	+ +	.016	.002	.008	.012	.098
	T9315	■		◪				●	+ +	.016	.002	.008	.012	.098
	T9325	■	◪	◪				●	+	.016	.002	.008	.012	.098
	T9335	■	◪					●	+ +	.016	.002	.008	.012	.098
	T8330	■	◪	■				●	+	.016	.002	.008	.012	.098

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VBMT 220.5-FM	T7325	◪	■			□		●	++	.008	.003	.004	.008	.079
	T9325	■	■	◪		□		●	+	.008	.003	.004	.008	.079
	T8315	◪	■	◪		□		●	+	.008	.003	.004	.008	.079
	T8330	■	■	◪		□		●	+	.008	.003	.004	.008	.079
VBMT 221-FM	T7325	◪	■			□		●	++	.016	.006	.008	.016	.079
	T7335	◪	■			□		●	++	.016	.006	.008	.016	.079
	T9315	■		◪				●	++	.016	.006	.008	.016	.079
	T9325	■	■	◪		□		●	+	.016	.006	.008	.016	.079
	T8315	◪	■	◪		□		●	+	.016	.003	.008	.016	.079
	T8330	■	■	◪		□		●	+	.016	.003	.008	.016	.079
VBMT 222-FM	T7325	◪	■			□		●	++	.031	.006	.010	.031	.098
	T9315	■		◪				●	++	.031	.006	.010	.031	.098
	T9325	■	■	◪		□		●	++	.031	.006	.010	.031	.098
	T8330	■	■	◪		□		●	++	.031	.004	.010	.031	.098
VBMT 330.5-FM	T7325	◪	■			□		●	++	.008	.003	.004	.008	.079
	T9315	■		◪				●	++	.008	.003	.004	.008	.079
	T9325	■	■	◪		□		●	+	.008	.003	.004	.008	.079
	T8330	■	■	◪		□		●	+	.008	.003	.004	.008	.079
VBMT 331-FM	T5315	◪	□	◪				●	+	.016	.004	.008	.016	.079
	T7325	◪	■			□		●	++	.016	.006	.008	.016	.079
	T7335	◪	■			□		●	++	.016	.006	.008	.016	.079
	T9315	■		◪				●	++	.016	.006	.008	.016	.079
	T9325	■	■	◪		□		●	+	.016	.006	.008	.016	.079
	T8315	◪	■	◪		□		●	+	.016	.004	.008	.016	.079
	T8330	■	■	◪		□		●	+	.016	.004	.008	.016	.079
VBMT 332-FM	T5315	◪	□	◪				●	+	.031	.006	.012	.031	.098
	T7325	◪	■			□		●	++	.031	.006	.012	.031	.098
	T7335	◪	■			□		●	++	.031	.006	.012	.031	.098
	T9315	■		◪				●	++	.031	.006	.012	.031	.098
	T9325	■	■	◪		□		●	++	.031	.006	.012	.031	.098
	T8315	◪	■	◪		□		●	+	.031	.006	.012	.031	.098
	T8330	■	■	◪		□		●	++	.031	.006	.012	.031	.098
VBMT 333-FM	T7325	◪	■			□		●	++	.047	.008	.016	.047	.118
	T9315	■		◪				●	++	.047	.008	.016	.047	.118
	T9325	■	■	◪		□		●	++	.047	.008	.016	.047	.118
	T8330	■	■	◪		□		●	++	.047	.008	.016	.047	.118
VBMT 331-FM2	T7325	◪	◪			□		●	++	.016	.002	.008	.008	.110
	T9315	■		◪			□	●	++	.016	.002	.008	.008	.110
	T9325	■	◪	◪		□		●	+	.016	.002	.008	.008	.110
	T9335	■	◪			□		●	++	.016	.002	.008	.008	.110
	T6310	◪	◪	◪		□	□	●	+	.016	.002	.008	.008	.110
	T8330	■	◪	■		□	□	●	+	.016	.002	.008	.008	.110
VBMT 332-FM2	T7325	◪	◪			□		●	++	.031	.004	.010	.024	.118
	T9315	■		◪			□	●	++	.031	.004	.010	.024	.118
	T9325	■	◪	◪		□		●	++	.031	.004	.010	.024	.118
	T9335	■	◪			□		●	++	.031	.004	.010	.024	.118
	T6310	◪	◪	◪		□	□	●	++	.031	.004	.010	.024	.118
	T8330	■	◪	■		□	□	●	++	.031	.004	.010	.024	.118
VBMT 333-FM2	T9315	■		◪			□	●	++	.047	.005	.012	.039	.118
	T9325	■	◪	◪		□		●	++	.047	.005	.012	.039	.118



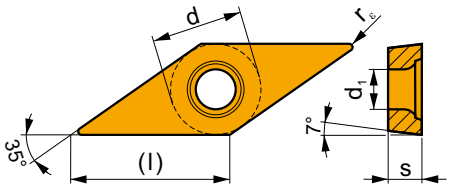




ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VBMT 331-RM	**T5305**	□		■			□	●	+	.016	.004	.008	.031	.142
	T5315	◪	□	■			□	●	+	.016	.004	.008	.031	.142
	T7335	◪	■					●	+ +	.016	.006	.008	.031	.142
	T9315	■		◪			□	●	+ +	.016	.006	.008	.031	.142
	T9325	■	■	◪		□		●	+	.016	.006	.008	.031	.142
	T8330	■	■	■		◪	□	●	+	.016	.004	.008	.031	.142
VBMT 332-RM	**T5305**	□		■			□	●	+	.031	.004	.014	.039	.142
	T5315	◪	□	■			□	●	+ +	.031	.004	.014	.039	.142
	T7335	◪	■					●	+ + +	.031	.006	.014	.039	.142
	T9315	■		◪			□	●	+ +	.031	.006	.014	.039	.142
	T9325	■	■	◪		□		●	+ +	.031	.006	.014	.039	.142
	T8330	■	■	■		◪	□	●	+ +	.031	.004	.014	.039	.142
VBMT 333-RM	**T7335**	◪	■					●	+ + +	.047	.006	.016	.047	.142
	T9315	■		◪			□	●	+ +	.047	.006	.016	.047	.142
	T9325	■	■	◪		□		●	+ +	.047	.006	.016	.047	.142
	T8330	■	■	■		◪	□	◆	+ +	.047	.006	.016	.047	.142
VBMT 21.50.5-UR	**TT310**	■	◪					●	+ / -	.008	.003	.004	.008	.079
VBMT 21.51-UR	**T7325**	◪	■					●	+ +	.016	.006	.008	.016	.079
	T9315	■		◪				●	+ +	.016	.006	.008	.016	.079
	T9325	■	■	◪				●	+	.016	.006	.008	.016	.079
	T8330	■	■	■	□			●	+	.016	.003	.008	.016	.079
	TT310	■	◪					●	+ / -	.016	.003	.008	.016	.079
VBMT 330.5-UR	**T8330**	■	■	■	□			●	+	.008	.002	.004	.008	.079
VBMT 331-UR	**T5315**	◪	□	■				●	+	.016	.004	.008	.016	.079
	T7325	◪	■					●	+ +	.016	.006	.008	.016	.079
	T9310	■		◪				●	+	.016	.006	.008	.016	.079
	T9315	■		◪				●	+ +	.016	.006	.008	.016	.079
	T9325	■	■	◪				●	+	.016	.006	.008	.016	.079
	T8330	■	■	■	□			●	+	.016	.003	.008	.016	.079
	TT310	■	◪					●	+ / -	.016	.003	.008	.016	.079
VBMT 332-UR	**T5315**	◪	□	■				●	+	.031	.004	.012	.031	.118
	T7325	◪	■					●	+ +	.031	.006	.012	.031	.118
	T9310	■		◪				●	+	.031	.006	.012	.031	.118
	T9315	■		◪				●	+ +	.031	.006	.012	.031	.118
	T9325	■	■	◪				●	+ +	.031	.006	.012	.031	.118
	T8330	■	■	■	□			●	+	.031	.003	.012	.031	.118
	TT310	■	◪					●	+ / -	.031	.003	.012	.031	.118
VBMT 333-UR	**T7325**	◪	■					●	+ +	.047	.006	.012	.047	.118
	T9310	■		◪				●	+	.047	.006	.012	.047	.118
	T9315	■		◪				●	+ +	.047	.006	.012	.047	.118
	T9325	■	■	◪				●	+ +	.047	.006	.012	.047	.118
	T8330	■	■	■	□			●	+	.047	.003	.012	.047	.118

VCGT

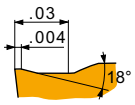
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2.52	.313	.134	.543	.125
2.52-AL	.313	.134	.543	.135
2.52-SF3	.313	.134	.543	.135
21.5-SF3	.250	.110	.437	.102
22	.250	.110	.437	.125
33	.375	.173	.654	.187
33-SF3	.375	.173	.654	.197



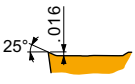
For tools see pages: T210-T212, T225-T226

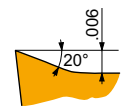
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VCGT 1.21.50.5-AL	**T8310**				◪			●	+	.008	.002	.004	.012	.069
VCGT 1.21.50.5F-AL	**HF7**				■			●	+	.008	.002	.004	.012	.069
VCGT 1.21.51-AL	**T8310**				◪			●	+	.016	.002	.008	.016	.069
VCGT 220.5F-AL	**T0315**				■			●	+	.008	.002	.004	.012	.108
	HF7				■			●	+	.008	.002	.004	.012	.108
VCGT 221F-AL	**T0315**				■			●	+	.016	.004	.008	.016	.108
	HF7				■			●	+	.016	.004	.008	.016	.108
VCGT 2.520.5-AL	**T8310**				◪			●	+	.008	.002	.004	.012	.128
VCGT 2.520.5F-AL	**T0315**				■			●	+	.008	.002	.004	.012	.128
	HF7				■			●	+	.008	.002	.004	.012	.128
VCGT 2.521-AL	**T8310**				◪			●	+	.016	.002	.008	.016	.128
VCGT 2.521F-AL	**T0315**				■			●	+	.016	.002	.008	.016	.128
	HF7				■			●	+	.016	.002	.008	.016	.128
VCGT 2.522-AL	**T8310**				◪			●	++	.031	.004	.014	.031	.128
VCGT 2.522F-AL	**T0315**				■			●	+	.031	.004	.014	.031	.128
	HF7				■			●	+	.031	.004	.014	.031	.128
VCGT 330.5F-AL	**T0315**				■			●	+	.008	.002	.004	.012	.157
	HF7				■			●	+	.008	.002	.004	.012	.157
VCGT 331F-AL	**T0315**				■			●	+	.016	.004	.008	.016	.157
	HF7				■			●	+	.016	.004	.008	.016	.157
VCGT 332F-AL	**T0315**				■			●	++	.031	.006	.016	.031	.157
	HF7				■			●	++	.031	.006	.016	.031	.157
VCGT 333F-AL	**T0315**				■			●	++	.047	.006	.024	.047	.157
	HF7				■			●	++	.047	.006	.024	.047	.157
VCGT 1.21.50.5-FF2	**T8315**	◪	◪	■				●	+	.008	.001	.004	.006	.059
	T8330	■	◪	■				●	+	.008	.001	.004	.006	.059
VCGT 1.21.51-FF2	**T8315**	◪	◪	■				●	+	.016	.002	.008	.012	.069
	T8330	■	◪	■				●	+	.016	.002	.008	.012	.069
VCGT 2.520.5-FF2	**T5315**	◪	□	■				●	+	.008	.002	.004	.006	.059
	T7325	◪	◪					●	++	.008	.002	.004	.006	.059
	T9315	■		◪				●	++	.008	.002	.004	.006	.059
	T9325	■	◪	◪				●	+	.008	.002	.004	.006	.059
	T8330	■	◪	■				●	+	.008	.002	.004	.006	.059
	TT010	■	◪					●	+/-	.008	.002	.004	.006	.059
VCGT 2.521-FF2	**T5315**	◪	□	■				●	+	.016	.002	.008	.012	.098
	T7325	◪	◪					●	++	.016	.002	.008	.012	.098
	T9315	■		◪				●	++	.016	.002	.008	.012	.098
	T9325	■	◪	◪				●	+	.016	.002	.008	.012	.098
	T8330	■	◪	■				●	+	.016	.002	.008	.012	.098
	TT010	■	◪					●	+/-	.016	.002	.008	.012	.098
VCGT 2.522-FF2	**T7325**	◪	◪					●	++	.031	.003	.011	.024	.118
	T9315	■		◪				●	++	.031	.003	.011	.024	.118
	T9325	■	◪	◪				●	++	.031	.003	.011	.024	.118
	TT010	■	◪					●	+/-	.031	.003	.011	.024	.118

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VCGT 2.522-FM2	T9325	■	◪	◪		□		●	++	.031	.004	.015	.024	.128
	T8330	■	◪	■		□	□	●	++	.031	.004	.015	.024	.128
	T7325	◪	◪					●	++	.008	.002	.004	.008	.128
	T7335	◪	◪					●	++	.008	.002	.004	.008	.128
	T9315*	◪		◪				●	++	.008	.002	.004	.008	.128
	T9325	■	◪	◪				●	+	.008	.002	.004	.008	.128
	T9335	◪	■			◪		●	++	.008	.002	.004	.008	.128
	H07		◪	◪		■		●	+	.008	.002	.004	.008	.128
	TT010	■	◪					●	+/-	.008	.002	.004	.008	.128
VCGT 2.521-NF2	T5315	◪	□	■				●	+	.016	.004	.006	.008	.128
	T7325	◪	◪					●	++	.016	.004	.006	.008	.128
	T7335	◪	◪					●	++	.016	.004	.006	.008	.128
	T9315	◪		◪				●	++	.016	.004	.006	.008	.128
	T9325	■	◪	◪				●	+	.016	.004	.006	.008	.128
	T9335	◪	■			◪		●	++	.016	.004	.006	.008	.128
	T6310	◪	■	◪		■		●	+	.016	.004	.006	.008	.128
	H07		◪	◪		■		●	+	.016	.004	.006	.008	.128
	TT010	■	◪					●	+/-	.016	.004	.006	.008	.128
VCGT 2.522-NF2	T5315	◪	□	■				●	++	.031	.006	.015	.024	.128
	T7325	◪	◪					●	++	.031	.006	.015	.024	.128
	T7335	◪	◪					●	+++	.031	.006	.015	.024	.128
	T9315	◪		◪				●	++	.031	.006	.015	.024	.128
	T9325	■	◪	◪				●	++	.031	.006	.015	.024	.128
	T9335	◪	■			◪		●	+++	.031	.006	.015	.024	.128
	TT010	■	◪					●	+/-	.031	.006	.015	.024	.128
VCGT 2.520.2-SF2	T6310		■		◪	■		●	+	.004	.001	.004	.004	.098
	T8310		■		◪	■		●	+	.004	.001	.004	.004	.098
	H07		◪		◪	■		●	+	.004	.001	.004	.004	.098
VCGT 2.520.5-SF2	T6310		■		◪	■		●	+	.008	.001	.004	.008	.098
	T8310		■		◪	■		●	+	.008	.001	.004	.008	.098
	H07		◪		◪	■		●	+	.008	.001	.004	.008	.098
	HF7		□		■	□		●	+	.008	.001	.004	.008	.098
VCGT 2.521-SF2	T6310		■		◪	■		●	+	.016	.002	.008	.008	.098
	T8310		■		◪	■		●	+	.016	.002	.008	.008	.098
	H07		◪		◪	■		●	+	.016	.002	.008	.008	.098
	HF7		□		■	□		●	+	.016	.002	.008	.008	.098
VCGT 2.522-SF2	T6310		■		◪	■		●	++	.031	.003	.011	.020	.098
	T8310		■		◪	■		●	++	.031	.003	.011	.020	.098
	H07		◪		◪	■		●	++	.031	.003	.011	.020	.098
	HF7		□		■	□		●	+	.031	.003	.011	.020	.098
VCGT 1.21.50.5-SF3	T6310		■		◪	■		●	+	.008	.001	.004	.008	.063
	H07		◪		◪	■		●	+	.008	.001	.004	.008	.063
VCGT 1.21.51-SF3	T6310		■		◪	■		●	+	.016	.001	.008	.008	.069
VCGT 21.50.5-SF3	T6310		■		◪	■		●	+	.008	.001	.004	.008	.063
	T8315		■		◪	□		●	+	.008	.001	.004	.008	.063
	H07		◪		◪	■		●	+	.008	.001	.004	.008	.063
VCGT 21.51-SF3	T6310		■		◪	■		●	+	.016	.002	.008	.008	.079
	T8315		■		◪	□		●	+	.016	.002	.008	.008	.079
	H07		◪		◪	■		●	+	.016	.002	.008	.008	.079
VCGT 2.520.5-SF3	T6310		■		◪	■		●	+	.008	.001	.004	.008	.063
	T8315		■		◪	□		●	+	.008	.001	.004	.008	.063
	H07		◪		◪	■		●	+	.008	.001	.004	.008	.063
VCGT 2.521-SF3	T6310		■		◪	■		●	+	.016	.001	.008	.008	.087
	T8315		■		◪	□		●	+	.016	.001	.008	.008	.087
	H07		◪		◪	■		●	+	.016	.001	.008	.008	.087



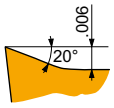






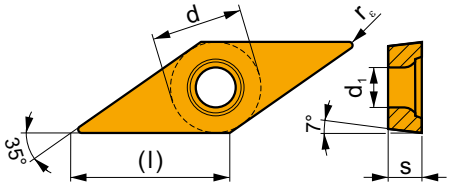
* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VCGT 2.522-SF3	**T6310**		■		◪	■		●	+	.031	.003	.012	.024	.118
	T8315		■		◪	□		●	+	.031	.003	.012	.024	.118
	H07		◪		◪	■		●	+	.031	.003	.012	.024	.118
VCGT 331-SF3	**T6310**		■		◪	■		●	+	.016	.001	.008	.008	.087
	T8315		■		◪	□		●	+	.016	.001	.008	.008	.087
	H07		◪		◪	■		●	+	.016	.001	.008	.008	.087
VCGT 332-SF3	**T6310**		■		◪	■		●	+	.031	.003	.012	.024	.118
	T8315		■		◪	□		●	+	.031	.003	.012	.024	.118
	H07		◪		◪	■		●	+	.031	.003	.012	.024	.118
VCGT 333-SF3	**T6310**		■		◪	■		●	+ +	.047	.004	.014	.039	.126
	H07		◪		◪	■		●	+ +	.047	.004	.014	.039	.126



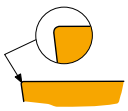
VCGW

d	d_1	l	s
.313	.134	.543	.125



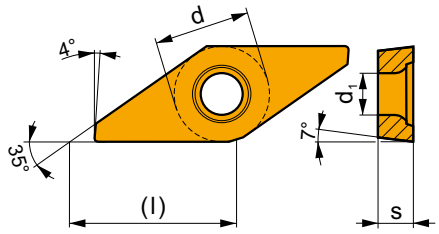
For tools see pages: T210-T212, T225-T226

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VCGW 2.520.5	**T5305**	□		■			◪	●	+	.008	.003	.004	.016	.128
VCGW 2.521	**T5305**	□		■			◪	●	+	.016	.004	.008	.016	.128
VCGW 2.522	**T5305**	□		■			◪	●	+ +	.031	.004	.016	.031	.128



VCGX

	d	d_1	l	s
2.52	.313	.134	.543	.125

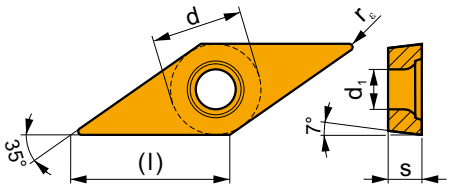


For tools see pages: T210-T212, T225-T226

ANSI		P	M	K	N	S	H	?		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VCGX 2.520FR-FF2	**T6310**	◪	◪	◪				●	+	.000	.002	.003	.008	.059
	TT010	■	◪					●	+ / -	.000	.002	.003	.008	.059
VCGX 2.520.2FR-FF2	**T6310**	◪	◪	◪				●	+	.004	.002	.003	.008	.059
	TT010	■	◪					●	+ / -	.004	.002	.003	.008	.059
VCGX 2.520FL-FF2	**T6310**	◪	◪	◪				●	+	.000	.002	.003	.008	.059
	TT010	■	◪					●	+ / -	.000	.002	.003	.008	.059
VCGX 2.520.2FL-FF2	**T6310**	◪	◪	◪				●	+	.004	.002	.003	.008	.059

VCMT

	d	d_1	l	s
22	.250	.110	.437	.125
33	.375	.173	.654	.187

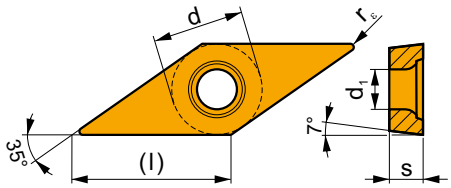


For tools see pages: T210-T212, T225-T226

ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VCMT 331-FM	**T7325**	◪	■			□		●	+ +	.016	.006	.008	.012	.079
	T9315	■		◪				●	+ +	.016	.006	.008	.012	.079
	T9325	■	■	◪		□		●	+	.016	.006	.008	.012	.079
	T8330	■	■	◪		□		●	+	.016	.004	.008	.012	.079
VCMT 332-FM	**T7325**	◪	■			□		●	+ +	.031	.006	.012	.020	.098
	T9315	■		◪				●	+ +	.031	.006	.012	.020	.098
	T9325	■	■	◪		□		●	+ +	.031	.006	.012	.020	.098
	T8330	■	■	◪		□		●	+ +	.031	.006	.012	.020	.098
VCMT 221-UR	**T7325**	◪	■					●	+ +	.016	.006	.008	.016	.079
	T9315	■		◪				●	+ +	.016	.006	.008	.016	.079
	T9325	■	■	◪				●	+	.016	.006	.008	.016	.079
	T8330	■	■	■	□			●	+	.016	.003	.008	.016	.079
VCMT 222-UR	**T7325**	◪	■					●	+ +	.031	.006	.012	.031	.079
	T9315	■		◪				●	+ +	.031	.006	.012	.031	.079
	T9325	■	■	◪				●	+ +	.031	.006	.012	.031	.079
	T8330	■	■	■	□			●	+	.031	.003	.012	.031	.079
VCMT 331-UR	**T7325**	◪	■					●	+ +	.016	.006	.008	.016	.079
	T9315	■		◪				●	+ +	.016	.006	.008	.016	.079
	T9325	■	■	◪				●	+	.016	.006	.008	.016	.079
	T8330	■	■	■	□			●	+	.016	.003	.008	.016	.079
VCMT 332-UR	**T7325**	◪	■					●	+ +	.031	.006	.012	.031	.118
	T9315	■		◪				●	+ +	.031	.006	.012	.031	.118
	T9325	■	■	◪				●	+ +	.031	.006	.012	.031	.118
	T8330	■	■	■	□			●	+	.031	.003	.012	.031	.118

VCMW

	d	d_1	l	s
22	.250	.110	.437	.125
33	.375	.173	.654	.125

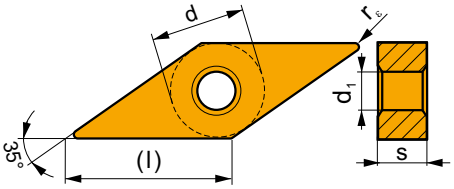


For tools see pages: T210-T212, T225-T226

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VCMW 220.5	**T5305**	☐		■			◪	●	+	.008	.003	.004	.008	.094
	T5315	◪	☐	■			☐	●	+	.008	.003	.004	.008	.094
	T6310	◪	☐	◪			◪	●	+	.008	.002	.004	.008	.094
VCMW 221	**T5305**	☐		■			◪	●	+	.016	.004	.008	.016	.094
	T5315	◪	☐	■			☐	●	+	.016	.004	.008	.016	.094
	T6310	◪	☐	◪			◪	●	+	.016	.002	.008	.016	.094
VCMW 331	**T5305**	☐		■			◪	●	+	.016	.004	.008	.016	.146
	T5315	◪	☐	■			☐	●	+	.016	.004	.008	.016	.146
	T6310	◪	☐	◪			◪	●	+	.016	.002	.008	.016	.146
VCMW 332	**T5305**	☐		■			◪	●	+ +	.031	.004	.016	.031	.146
	T5315	◪	☐	■			☐	●	+ +	.031	.004	.016	.031	.146
	T6310	◪	☐	◪			◪	●	+ +	.031	.002	.016	.031	.146

VNMG

	d	d_1	l	s
33	.375	.150	.654	.187

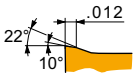


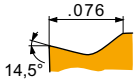
For tools see pages: T199

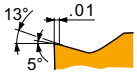
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VNMG 331-FF	**T7325**	◪	■			☐		●	+ +	.016	.006	.008	.016	.059
	T8315	◪	■	◪	☐	☐		●	+	.016	.002	.008	.016	.059
	T8330	■	■	◪	☐	☐		●	+	.016	.002	.008	.016	.059

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VNMG 331-FM	T7325	◪	■			□		●	++	.016	.006	.008	.020	.118
	T9310	■		◪				●	+	.016	.006	.008	.020	.118
	T9315	■		◪				●	++	.016	.006	.008	.020	.118
	T9325	■	■	◪		□		●	+	.016	.006	.008	.020	.118
	T8330	■	■	◪		□		●	+	.016	.004	.008	.020	.118
VNMG 332-FM	T7325	◪	■			□		●	++	.031	.006	.014	.031	.118
	T9310	■		◪				●	++	.031	.006	.014	.031	.118
	T9315	■		◪				●	++	.031	.006	.014	.031	.118
	T9325	■	■	◪		□		●	++	.031	.006	.014	.031	.118
	T8330	■	■	◪		□		●	++	.031	.006	.014	.031	.118
VNMG 333-FM	T7325	◪	■			□		●	++	.047	.006	.018	.047	.118
	T9315	■		◪				●	++	.047	.006	.018	.047	.118
	T9325	■	■	◪		□		●	++	.047	.006	.018	.047	.118
	T8330	■	■	◪		□		●	++	.047	.006	.018	.047	.118
VNMG 331-M	T5315	◪	□	■			□	●	+	.016	.005	.008	.031	.118
	T9315	■		◪			□	●	++	.016	.006	.008	.031	.118
	T9325	■	◪	◪				●	+	.016	.006	.008	.031	.118
	T9335	■	◪					●	++	.016	.006	.008	.031	.118
VNMG 332-M	T5305	□		■			□	●	++	.031	.006	.016	.031	.118
	T5315	◪	□	■			□	●	++	.031	.006	.016	.031	.118
	T9310	■		◪				●	++	.031	.006	.016	.031	.118
	T9315	■		◪			□	●	++	.031	.006	.016	.031	.118
	T9325	■	◪	◪				●	++	.031	.006	.016	.031	.118
	T9335	■	◪					●	+++	.031	.006	.016	.031	.118
VNMG 333-M	T9325	■	◪	◪				●	++	.047	.007	.024	.047	.157
	T9335	■	◪					●	+++	.047	.007	.024	.047	.157
VNMG 331-NF	T7325	◪	■			◪		●	++	.016	.006	.008	.016	.098
	T7335	◪	■			◪		●	++	.016	.006	.008	.016	.098
	T9315	■						●	++	.016	.006	.008	.016	.098
	T9325	■	■			◪		●	+	.016	.006	.008	.016	.098
	T6310	◪	■		□	◪		●	+	.016	.004	.008	.016	.098
	T8315	◪	■		□	□		●	+	.016	.004	.008	.016	.098
	T8330	■	■		□	◪		●	+	.016	.004	.008	.016	.098
VNMG 332-NF	T7325	◪	■			◪		●	++	.031	.006	.012	.031	.118
	T7335	◪	■			◪		●	++	.031	.006	.012	.031	.118
	T9315	■						●	++	.031	.006	.012	.031	.118
	T9325	■	■			◪		●	++	.031	.006	.012	.031	.118
	T6310	◪	■		□	◪		●	+	.031	.005	.012	.031	.118
	T8315	◪	■		□	□		●	+	.031	.005	.012	.031	.118
	T8330	■	■		□	◪		●	++	.031	.005	.012	.031	.118
VNMG 331-NM	T7325	◪	■			■		●	++	.016	.006	.008	.020	.118
	T7335	◪	■					●	++	.016	.006	.008	.020	.118
	T9325	■	■	□		□		●	+	.016	.006	.008	.020	.118
	T8315	◪	■	□	□	□		●	+	.016	.006	.008	.020	.118
	T8330	■	■	□	□	◪		●	+	.016	.006	.008	.020	.118
VNMG 332-NM	T7325	◪	■			■		●	++	.031	.008	.016	.031	.118
	T7335	◪	■					●	+++	.031	.008	.016	.031	.118
	T9325	■	■	□		□		●	++	.031	.008	.016	.031	.118
	T8315	◪	■	□	□	□		●	++	.031	.008	.016	.031	.118
	T8330	■	■	□	□	◪		●	++	.031	.008	.016	.031	.118
VNMG 331-NMR	T7325	◪	■			◪		●	++	.016	.007	.008	.016	.118
	T7335	◪	■			◪		●	++	.016	.007	.008	.016	.118
	T9325	■	■			◪		●	+	.016	.007	.008	.016	.118
VNMG 332-NMR	T7325	◪	■			◪		●	++	.031	.008	.014	.031	.118
	T7335	◪	■			◪		●	++	.031	.008	.014	.031	.118
	T9315	■						●	++	.031	.008	.014	.031	.118
	T9325	■	■			◪		●	++	.031	.008	.014	.031	.118
VNMG 333-NMR	T7325	◪	■			◪		⬢	++	.047	.008	.016	.047	.118

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VNMG 333-NMR	T9325	■	■			◪		●	+ +	.047	.008	.016	.047	.118
	T8330	■	■			◪		●	+ +	.047	.008	.016	.047	.118
VNMG 331-SF	T7325	◪	■			■		●	+ +	.016	.006	.008	.016	.079
	T9315	◪					□	●	+ +	.016	.006	.008	.016	.079
	T9325	◪	■			◪		●	+	.016	.006	.008	.016	.079
	T6310	◪	■		□	■	□	●	+	.016	.004	.008	.016	.079
	T8315	◪	■		□	□	□	●	+	.016	.004	.008	.016	.079
	T8330	◪	■		□	◪	□	●	+	.016	.004	.008	.016	.079
VNMG 332-SF	T9315	◪					□	●	+ +	.031	.006	.010	.031	.098
	T9325	◪	■			◪		●	+ +	.031	.006	.010	.031	.098
	T6310	◪	■		□	■	□	●	+ +	.031	.005	.010	.031	.098
	T8315	◪	■		□	□	□	●	+	.031	.005	.010	.031	.098
	T8330	◪	■		□	◪	□	●	+ +	.031	.005	.010	.031	.098
VNMG 333-SF	T7325	◪	■			■		●	+ +	.047	.006	.011	.047	.118
	T6310	◪	■		□	■	□	●	+ +	.047	.006	.011	.047	.118
VNMG 331-SM	T7325	◪	■			■		●	+ +	.016	.006	.008	.016	.118
	T7335	◪	■			■		●	+ +	.016	.006	.008	.016	.118
	T9315	■		◪			□	●	+ +	.016	.006	.008	.016	.118
	T9325	■	■	◪		◪		●	+	.016	.006	.008	.016	.118
	T6310	◪	■	◪		■	□	●	+	.016	.006	.008	.016	.118
	T8330	■	■	◪		◪	□	●	+	.016	.006	.008	.016	.118
VNMG 332-SM	T7325	◪	■			■		●	+ +	.031	.008	.012	.031	.138
	T9315	■		◪			□	●	+ +	.031	.008	.012	.031	.138
	T9325	■	■	◪		◪		●	+ +	.031	.008	.012	.031	.138
	T6310	◪	■	◪		■	□	●	+	.031	.008	.012	.031	.138
	T8330	■	■	◪		◪	□	●	+	.031	.008	.012	.031	.138
VNMG 333-SM	T6310	◪	■	◪		■	□	●	+ +	.047	.009	.016	.047	.138

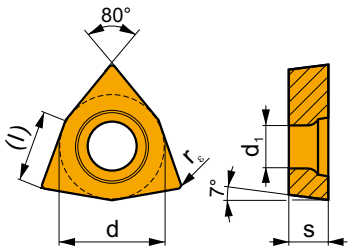






WCGT

	d	d_1	l	s
1.21	.156	.087	.106	.063
32.5	.375	.173	.256	.156
43	.500	.217	.343	.187

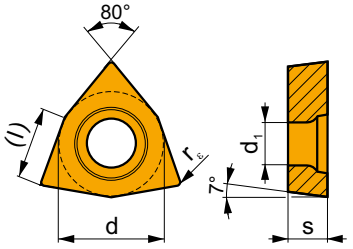


For tools see pages: T213, T227

ANSI		P	M	K	N	S	H	?		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WCGT 32.50.5F-AL	**HF7**				■			●	+ / -	.008	.002	.006	.012	.118
WCGT 32.51F-AL	**T0315**				■			●	+	.016	.003	.012	.016	.138
	HF7				■			●	+	.016	.003	.012	.016	.138
WCGT 32.52F-AL	**T0315**				■			●	+	.031	.003	.024	.031	.165
	HF7				■			●	+	.031	.003	.024	.031	.165
WCGT 433F-AL	**T0315**				■			●	+	.047	.006	.024	.047	.220
	HF7				■			●	+	.047	.006	.024	.047	.220
WCGT 1.210.5-FF2	**T8330**	■	◪	■				●	+	.008	.002	.006	.008	.055
	HF7		□	■				●	+ / -	.008	.002	.006	.008	.055
	TT010	■	◪					●	+ / -	.008	.002	.006	.008	.055
WCGT 1.211-FF2	**T8330**	■	◪	■				●	+	.016	.002	.009	.012	.055
	HF7		□	■				●	+	.016	.002	.009	.012	.055
	TT010	■	◪					●	+ / -	.016	.002	.009	.012	.055

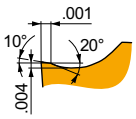
WCMT

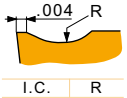
	d	d_1	l	s
32.5	.375	.173	.256	.156
43	.500	.217	.343	.187

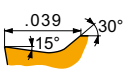


For tools see pages: T213, T227

ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WCMT 32.51-FM	**T7325**	◪	■			□		●	+ +	.016	.006	.012	.012	.118
	T7335	◪	■			□		●	+ +	.016	.006	.012	.012	.118
	T9315	■		◪				●	+ +	.016	.006	.012	.012	.118
	T9325	■	■	◪		□		●	+	.016	.006	.012	.012	.118
	T8315	◪	■	◪		□		●	+	.016	.004	.012	.012	.118
	T8330	■	■	◪		□		●	+	.016	.004	.012	.012	.118
WCMT 32.52-FM	**T7325**	◪	■			□		●	+ +	.031	.006	.014	.020	.118
	T7335	◪	■			□		●	+ +	.031	.006	.014	.020	.118
	T9315	■		◪				●	+ +	.031	.006	.014	.020	.118
	T9325	■	■	◪		□		●	+	.031	.006	.014	.020	.118
	T8315	◪	■	◪		□		●	+	.031	.006	.014	.020	.118
	T8330	■	■	◪		□		⬢	+	.031	.006	.014	.020	.118
WCMT 431-FM	**T7325**	◪	■			□		●	+ +	.016	.006	.012	.016	.157
	T9315	■		◪				●	+ +	.016	.006	.012	.016	.157
	T9325	■	■	◪		□		●	+	.016	.006	.012	.016	.157
	T8315	◪	■	◪		□		●	+	.016	.004	.012	.016	.157
	T8330	■	■	◪		□		●	+	.016	.004	.012	.016	.157
WCMT 432-FM	**T7325**	◪	■			□		●	+ +	.031	.006	.014	.020	.157
	T7335	◪	■			□		●	+ +	.031	.006	.014	.020	.157
	T9315	■		◪				●	+ +	.031	.006	.014	.020	.157
	T9325	■	■	◪		□		●	+	.031	.006	.014	.020	.157
	T8315	◪	■	◪		□		●	+	.031	.006	.014	.020	.157
	T8330	■	■	◪		□		⬢	+	.031	.006	.014	.020	.157
WCMT 433-FM	**T9325**	■	■	◪		□		⬢	+ +	.047	.006	.018	.031	.157
	T8330	■	■	◪		□		⬢	+ +	.047	.006	.018	.031	.157
WCMT 32.52-RF	**T7335**	◪	◪					●	+ +	.031	.006	.016	.031	.157
WCMT 32.52-UR	**T7325***	◪	■					●	+ +	.031	.006	.012	.031	.118
	T9315	■		◪				●	+ +	.031	.006	.012	.031	.118
	T9325	■	■	◪				●	+	.031	.006	.012	.031	.118



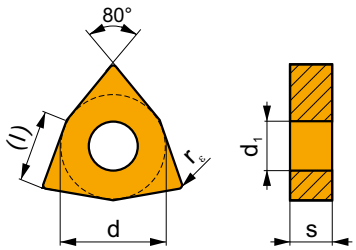




* Non-stocked item

WNMA

	d	d_1	l	s
43	.500	.203	.343	.187

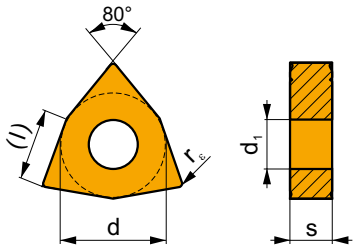


For tools see pages: T200, T218

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNMA 431	**T5305**	☐		■			◪	●	+	.016	.004	.012	.016	.173
	T5315	◪	☐	■			☐	●	+	.016	.004	.012	.016	.173
WNMA 432	**T5305**	☐		■			◪	●	+	.031	.004	.024	.031	.173
	T5315	◪	☐	■			☐	●●	++	.031	.004	.024	.031	.173
	T6310	◪	☐	◪			◪	●●	++	.031	.002	.024	.031	.173
WNMA 433	**T5305**	☐		■			◪	●●	+	.047	.004	.024	.047	.173
	T5315	◪	☐	■			☐	●●	++	.047	.004	.024	.047	.173
	T6310	◪	☐	◪			◪	●●	++	.047	.002	.024	.047	.173
WNMA 432S	**T5305**	☐		■			◪	●●	+	.031	.004	.024	.031	.173

WNMG

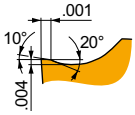
	d	d_1	l	s
32.5	.375	.150	.256	.156
33	.375	.150	.256	.187
43	.500	.203	.343	.187

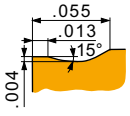


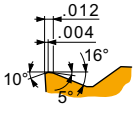
For tools see pages: T200, T218

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNMG 330.5-FF	**T8315**	◪	■	◪	☐	☐		●	+/-	.008	.002	.006	.008	.059
WNMG 331-FF	**T8315**	◪	■	◪	☐	☐		●	+/-	.016	.002	.008	.016	.059
WNMG 431-FF	**T7325**	◪	■			☐		●	+	.016	.006	.008	.016	.059
	T8315	◪	■	◪	☐	☐		●	+/-	.016	.002	.008	.016	.059
WNMG 432-FF	**T7325**	◪	■			☐		●	++	.031	.006	.010	.031	.059
	T8315	◪	■	◪	☐	☐		●	+	.031	.003	.010	.031	.059

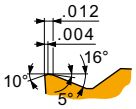
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNMG 331-FM	T7325	◪	■			□		●	++	.016	.006	.012	.020	.118
	T9315	■		◪				●	++	.016	.006	.012	.020	.118
	T9325	■	■	◪		□		●	+	.016	.006	.012	.020	.118
	T8315	◪	■	◪		□		●	+	.016	.004	.012	.020	.118
	T8330	■	■	◪		□		●	+	.016	.004	.012	.020	.118
	TT310	■	◪					●	+/-	.016	.004	.012	.020	.118
WNMG 332-FM	T7325	◪	■			□		⬢	++	.031	.006	.014	.031	.118
	T9315	■		◪				●	++	.031	.006	.014	.031	.118
	T9325	■	■	◪		□		●	+	.031	.006	.014	.031	.118
	T8330	■	■	◪		□		⬢	+	.031	.004	.014	.031	.118
WNMG 333-FM	T9315	■		◪				⬢	++	.047	.006	.018	.047	.118
WNMG 32.51-FM	T7325	◪	■			□		●	++	.016	.006	.012	.020	.118
	T9325	■	■	◪		□		●	+	.016	.006	.012	.020	.118
	T8330	■	■	◪		□		●	+	.016	.004	.012	.020	.118
WNMG 32.52-FM	T9325	■	■	◪		□		●	+	.031	.006	.014	.031	.118
	T8330	■	■	◪		□		⬢	+	.031	.004	.014	.031	.118
WNMG 431-FM	T7325	◪	■			□		●	++	.016	.006	.012	.020	.118
	T7335	◪	■			□		●	++	.016	.006	.012	.020	.118
	T9310	■		◪				●	+	.016	.006	.012	.020	.118
	T9315	■		◪				●	++	.016	.006	.012	.020	.118
	T9325	■	■	◪		□		●	+	.016	.006	.012	.020	.118
	T8315	◪	■	◪		□		●	+	.016	.004	.012	.020	.118
	T8330	■	■	◪		□		●	+	.016	.004	.012	.020	.118
WNMG 432-FM	T7325	◪	■			□		⬢	++	.031	.006	.018	.031	.118
	T7335	◪	■			□		⬢	++	.031	.006	.018	.031	.118
	T9310	■		◪				●	+	.031	.006	.018	.031	.118
	T9315	■		◪				●	++	.031	.006	.018	.031	.118
	T9325	■	■	◪		□		●	++	.031	.006	.018	.031	.118
	T8315	◪	■	◪		□		⬢	+	.031	.006	.018	.031	.118
	T8330	■	■	◪		□		⬢	++	.031	.006	.018	.031	.118
WNMG 433-FM	T7325	◪	■			□		⬢	++	.047	.006	.018	.047	.157
	T7335	◪	■			□		⬢	++	.047	.006	.018	.047	.157
	T9310	■		◪				⬢	+	.047	.006	.018	.047	.157
	T9315	■		◪				⬢	++	.047	.006	.018	.047	.157
	T9325	■	■	◪		□		⬢	++	.047	.006	.018	.047	.157
	T8330	■	■	◪		□		⬢	++	.047	.006	.018	.047	.157
WNMG 432-KR	T5305	◪		■			□	●	++	.031	.010	.024	.031	.217
	T5315	◪	□	■			□	⬢	++	.031	.010	.024	.031	.217
WNMG 433-KR	T5305	◪		■			□	⬢	++	.047	.010	.024	.047	.217
	T5315	◪	□	■			□	⬢	++	.047	.010	.024	.047	.217
WNMG 331-M	T5315	◪	□	■			□	●	+	.016	.006	.012	.031	.118
	T9315	■		◪			□	●	++	.016	.006	.012	.031	.118
	T9325	■	◪	◪				●	+	.016	.006	.012	.031	.118
	T9335	■	◪					●	++	.016	.006	.012	.031	.118
WNMG 332-M	T5315	◪	□	■			□	⬢	++	.031	.007	.024	.031	.157
	T9310	■		◪				⬢	++	.031	.007	.024	.031	.157
	T9315	■		◪			□	⬢	++	.031	.007	.024	.031	.157
	T9325	■	◪	◪				⬢	++	.031	.007	.024	.031	.157
	T9335	■	◪					⬢	+++	.031	.007	.024	.031	.157
WNMG 431-M	T5315	◪	□	■			□	●	+	.016	.006	.012	.031	.118
	T9315	■		◪			□	●	++	.016	.006	.012	.031	.118
	T9325	■	◪	◪				●	+	.016	.006	.012	.031	.118
	T9335	■	◪					●	++	.016	.006	.012	.031	.118
WNMG 432-M	T5305	□		■			□	●	+	.031	.007	.024	.031	.220
	T5315	◪	□	■			□	⬢	++	.031	.007	.024	.031	.220

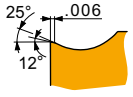


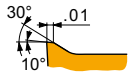




* Non-stocked item



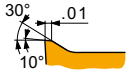


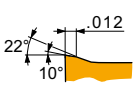


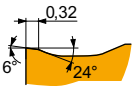
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNMG 432-M	**T9310**	■		◪				●	+ +	.031	.007	.024	.031	.220
	T9315	■		◪			□	●	+ +	.031	.007	.024	.031	.220
	T9325	■	◪	◪				●	+ +	.031	.007	.024	.031	.220
	T9335	■	◪					●	+++	.031	.007	.024	.031	.220
	T8330	■	◪	■			□	●	+ +	.031	.007	.024	.031	.220
WNMG 433-M	**T5305**	□		■			□	●	+ +	.047	.007	.031	.047	.220
	T5315	◪	□	■			□	●	+ +	.047	.007	.031	.047	.220
	T9310	■		◪				●	+ +	.047	.007	.031	.047	.220
	T9315	■		◪			□	●	+ +	.047	.007	.031	.047	.220
	T9325	■	◪	◪				●	+ +	.047	.007	.031	.047	.220
	T9335	■	◪					●	+++	.047	.007	.031	.047	.220
WNMG 331-NF	**T7325**	◪	■			◪		●	+ +	.016	.006	.012	.016	.118
	T7335	◪	■			◪		●	+ +	.016	.004	.012	.016	.118
	T9315	■						●	+ +	.016	.004	.012	.016	.118
	T9325	■	■			◪		●	+	.016	.004	.012	.016	.118
	T6310	◪	■		□	◪		●	+	.016	.004	.012	.016	.118
	T8315	◪	■		□	□		●	+	.016	.004	.012	.016	.118
	T8330	■	■		□	◪		●	+	.016	.004	.012	.016	.118
WNMG 332-NF	**T7325**	◪	■			◪		●	+ +	.031	.006	.012	.031	.118
	T9315	■						●	+ +	.031	.006	.012	.031	.118
	T9325	■	■			◪		●	+	.031	.006	.012	.031	.118
	T6310	◪	■		□	◪		●	+	.031	.005	.012	.031	.118
	T8330	■	■		□	◪		●	+	.031	.005	.012	.031	.118
WNMG 431-NF	**T7325**	◪	■			◪		●	+ +	.016	.006	.012	.016	.118
	T7335	◪	■			◪		●	+ +	.016	.006	.012	.016	.118
	T9315	■						●	+ +	.016	.006	.012	.016	.118
	T9325	■	■			◪		●	+	.016	.006	.012	.016	.118
	T6310	◪	■		□	◪		●	+	.016	.005	.012	.016	.118
	T8315	◪	■		□	□		●	+	.016	.005	.012	.016	.118
	T8330	■	■		□	◪		●	+	.016	.005	.012	.016	.118
	HF7		□		□	□		●	+	.016	.005	.012	.016	.118
WNMG 432-NF	**T7325**	◪	■			◪		●	+ +	.031	.006	.014	.031	.138
	T7335	◪	■			◪		●	+ +	.031	.006	.014	.031	.138
	T9315	■						●	+ +	.031	.006	.014	.031	.138
	T9325	■	■			◪		●	+	.031	.006	.014	.031	.138
	T6310	◪	■		□	◪		●	+	.031	.006	.014	.031	.138
	T8315	◪	■		□	□		●	+	.031	.006	.014	.031	.138
	T8330	■	■		□	◪		●	+	.031	.006	.014	.031	.138
	HF7		□		□	□		●	+	.031	.006	.014	.031	.138
WNMG 433-NF	**T7325**	◪	■			◪		●	+ +	.047	.006	.014	.047	.157
	T9315	■						●	+ +	.047	.006	.014	.047	.157
	T9325	■	■			◪		●	+	.047	.006	.014	.047	.157
	T6310	◪	■		□	◪		●	+	.047	.006	.014	.047	.157
WNMG 331-NM	**T7325**	◪	■			■		●	+ +	.016	.006	.012	.020	.118
	T7335	◪	■					●	+ +	.016	.006	.012	.020	.118
	T9325	■	■	□		□		●	+	.016	.006	.012	.020	.118
	T8315*	◪	■	□	□	□		●	+	.016	.006	.012	.020	.118
	T8330	■	■	□	□	◪		●	+	.016	.006	.012	.020	.118
WNMG 332-NM	**T7325**	◪	■			■		●	+ +	.031	.008	.016	.031	.118
	T7335	◪	■					●	+ +	.031	.008	.016	.031	.118
	T9315	■		□				●	+ +	.031	.008	.016	.031	.118
	T9325	■	■	□		□		●	+	.031	.008	.016	.031	.118
	T8315	◪	■	□	□	□		●	+	.031	.008	.016	.031	.118
	T8330	■	■	□	□	◪		●	+	.031	.008	.016	.031	.118
WNMG 333-NM	**T7325**	◪	■			■		●	+ +	.047	.008	.020	.047	.138
	T7335	◪	■					●	+ +	.047	.008	.020	.047	.138
	T9315	■		□				●	+ +	.047	.008	.020	.047	.138

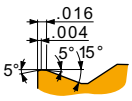
* Non-stocked item

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNMG 333-NM	T9325	■	■	□		□		●	+	.047	.008	.020	.047	.138
WNMG 431-NM	T7325	◪	■			■		●	++	.016	.006	.012	.020	.118
	T7335	◪	■					●	++	.016	.006	.012	.020	.118
	T9315	■		□				●	++	.016	.006	.012	.020	.118
	T9325	■	■	□		□		●	+	.016	.006	.012	.020	.118
	T8315*	◪	■	□	□	□		●	+	.016	.006	.012	.020	.118
	T8330	■	■	□	□	◪		●	+	.016	.006	.012	.020	.118
WNMG 432-NM	T7325	◪	■			■		●	++	.031	.008	.020	.031	.118
	T7335	◪	■					●	++	.031	.008	.020	.031	.118
	T9315	■		□				●	++	.031	.008	.020	.031	.118
	T9325	■	■	□		□		●	+	.031	.008	.020	.031	.118
	T8315	◪	■	□	□	□		●	+	.031	.008	.020	.031	.118
	T8330	■	■	□	□	◪		●	+	.031	.008	.020	.031	.118
WNMG 433-NM	T7325	◪	■			■		●	++	.047	.008	.020	.047	.138
	T7335	◪	■					●	++	.047	.008	.020	.047	.138
	T9325	■	■	□		□		●	+	.047	.008	.020	.047	.138
	T8315	◪	■	□	□	□		●	+	.047	.008	.020	.047	.138
WNMG 331-NMR	T6310	◪	■			◪		●	+	.016	.008	.012	.016	.138
	T7325	◪	■			◪		●	++	.016	.008	.012	.016	.138
	T9325	■	■			◪		●	+	.016	.008	.012	.016	.138
WNMG 332-NMR	T6310	◪	■			◪		●	+	.031	.008	.018	.031	.138
	T7325	◪	■			◪		●	++	.031	.008	.018	.031	.138
	T7335	◪	■			◪		●	++	.031	.008	.018	.031	.138
	T9315	■						●	++	.031	.008	.018	.031	.138
	T9325	■	■			◪		●	++	.031	.008	.018	.031	.138
WNMG 431-NMR	T6310	◪	■			◪		●	+	.016	.008	.012	.016	.157
	T7325	◪	■			◪		●	++	.016	.008	.012	.016	.157
	T7335	◪	■			◪		●	++	.016	.008	.012	.016	.157
	T9315	■						●	+	.016	.008	.012	.016	.157
	T9325	■	■			◪		●	+	.016	.008	.012	.016	.157
	T8330	■	■			◪		●	+	.016	.008	.012	.016	.157
WNMG 432-NMR	T6310	◪	■			◪		●	++	.031	.008	.022	.031	.197
	T7325	◪	■			◪		●	++	.031	.008	.022	.031	.197
	T7335	◪	■			◪		●	++	.031	.008	.022	.031	.197
	T9315	■						●	++	.031	.008	.022	.031	.197
	T9325	■	■			◪		●	++	.031	.008	.022	.031	.197
	T8330	■	■			◪		●	++	.031	.008	.022	.031	.197
WNMG 433-NMR	T6310	◪	■			◪		●	++	.047	.009	.024	.047	.197
	T7325	◪	■			◪		●	++	.047	.009	.024	.047	.197
	T7335	◪	■			◪		●	+++	.047	.009	.024	.047	.197
	T9315	■						●	++	.047	.009	.024	.047	.197
	T9325	■	■			◪		●	++	.047	.009	.024	.047	.197
	T8330	■	■			◪		✖	++	.047	.009	.024	.047	.197
WNMG 431-NRM	T7325	◪	■			□		●	++	.016	.006	.012	.016	.157
	T7335*	◪	■			□		●	++	.016	.006	.012	.016	.157
	T9315*	■						●	++	.016	.006	.012	.016	.157
WNMG 432-NRM	T7325	◪	■			□		●	++	.031	.009	.022	.031	.197
	T7335	◪	■			□		●	++	.031	.009	.022	.031	.197
	T9315	■						●	++	.031	.009	.022	.031	.197
WNMG 433-NRM	T7325	◪	■			□		●	++	.047	.010	.028	.047	.197
	T7335	◪	■			□		●	+++	.047	.010	.028	.047	.197
	T9315	■						●	++	.047	.010	.028	.047	.197
WNMG 432-R	T5305	□		■			□	●	++	.031	.010	.024	.079	.220
	T5315	◪	□	■			□	●	++	.031	.010	.024	.079	.220
	T9310	■		◪			□	●	++	.031	.010	.024	.079	.220
	T9315	■		◪			□	●	++	.031	.010	.024	.079	.220
	T9325	■	◪	◪				●	++	.031	.010	.024	.079	.220
	T9335	■	◪					●	+++	.031	.010	.024	.079	.220



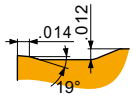


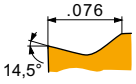




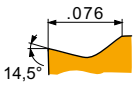
* Non-stocked item

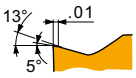
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNMG 433-R	**T5305**	□		■			□	●	+ +	.047	.010	.028	.079	.220
	T5315	◪	□	■			□	●	+ +	.047	.010	.028	.079	.220
	T9310	■		◪			□	●	+ +	.047	.010	.028	.079	.220
	T9315	■		◪			□	●	+ +	.047	.010	.028	.079	.220
	T9325	■	◪	◪				●	+ +	.047	.010	.028	.079	.220
	T9335	■	◪					✖	+++	.047	.010	.028	.079	.220
WNMG 333-RM	**T7325**	◪	■			◪		●	+ +	.047	.010	.024	.051	.157
	T7335	◪	■			◪		●	+++	.047	.010	.024	.051	.157
	T9315	■		◪			□	●	+ +	.047	.010	.024	.051	.157
	T9325	■	■	◪		□		●	+ +	.047	.010	.024	.051	.157
	T9335	■	◪					●	+++	.047	.010	.024	.051	.157
WNMG 432-RM	**T5305**	□		■			□	●	+	.031	.008	.022	.039	.197
	T5315	◪	□	■			□	●	+	.031	.008	.022	.039	.197
	T7325	◪	■			◪		●	+ +	.031	.008	.022	.039	.197
	T7335	◪	■			◪		●	+ +	.031	.008	.022	.039	.197
	T9310	■		◪				●	+	.031	.008	.022	.039	.197
	T9315	■		◪			□	●	+ +	.031	.008	.022	.039	.197
	T9325	■	■	◪		□		●	+ +	.031	.008	.022	.039	.197
	T9335	■	◪					●	+ +	.031	.008	.022	.039	.197
	T8315	◪	■	■		□	□	●	+	.031	.008	.022	.039	.197
	T8330	■	■	■		◪	□	●	+ +	.031	.008	.022	.039	.197
WNMG 433-RM	**T5305**	□		■			□	●	+ +	.047	.010	.028	.059	.197
	T5315	◪	□	■			□	●	+ +	.047	.010	.028	.059	.197
	T9310	■		◪				●	+ +	.047	.010	.028	.059	.197
	T9315	■		◪			□	●	+ +	.047	.010	.028	.059	.197
	T9325	■	■	◪		□		●	+ +	.047	.010	.028	.059	.197
	T9335	■	◪					●	+++	.047	.010	.028	.059	.197
	T8315	◪	■	■		□	□	●	+ +	.047	.010	.028	.059	.197
WNMG 434-RM	**T5305**	□		■			□	●	+ +	.063	.012	.030	.079	.197
	T5315	◪	□	■			□	●	+ +	.063	.012	.030	.079	.197
	T7335	◪	■			◪		●	+++	.063	.012	.030	.079	.197
	T9310	■		◪				●	+ +	.063	.012	.030	.079	.197
	T9315	■		◪			□	●	+ +	.063	.012	.030	.079	.197
	T9325	■	■	◪		□		●	+ +	.063	.012	.030	.079	.197
	T9335	■	◪					●	+++	.063	.012	.030	.079	.197
WNMG 331-SF	**T7325**	◪	■			■		●	+ +	.016	.006	.010	.016	.098
	T7335	◪	■			■		●	+ +	.016	.006	.010	.016	.098
	T9325	◪	■			◪		●	+	.016	.006	.010	.016	.098
	T6310	◪	■		□	■	□	●	+	.016	.004	.010	.016	.098
	T8315	◪	■		□	□	□	●	+	.016	.004	.010	.016	.098
	T8330	◪	■		□	◪	□	●	+	.016	.004	.010	.016	.098
	H07		◪		□	■		●	+	.016	.004	.010	.016	.098
WNMG 332-SF	**T7335**	◪	■			■		●	+ +	.031	.006	.011	.031	.118
	T9325	◪	■			◪		●	+	.031	.006	.011	.031	.118
	T6310	◪	■		□	■	□	●	+	.031	.005	.011	.031	.118
	T8315	◪	■		□	□	□	●	+	.031	.005	.011	.031	.118
	T8330	◪	■		□	◪	□	●	+	.031	.005	.011	.031	.118
	H07		◪		□	■		●	+	.031	.005	.011	.031	.118
WNMG 431-SF	**T7325**	◪	■			■		●	+ +	.016	.006	.012	.016	.106
	T7335	◪	■			■		●	+ +	.016	.006	.012	.016	.106
	T9315	◪					□	●	+ +	.016	.006	.012	.016	.106
	T9325	◪	■			◪		●	+	.016	.006	.012	.016	.106
	T6310	◪	■		□	■	□	●	+	.016	.004	.012	.016	.106
	T8315	◪	■		□	□	□	●	+	.016	.004	.012	.016	.106

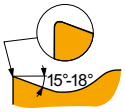




ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNMG 431-SF	T8330	◪	■		□	◪	□	●	+	.016	.004	.012	.016	.106
	H07		◪		□	■		●	+	.016	.004	.012	.016	.106
WNMG 432-SF	T7325	◪	■			■		●●	++	.031	.006	.012	.031	.118
	T7335	◪	■			■		●●	++	.031	.006	.012	.031	.118
	T9315	◪					□	●	++	.031	.006	.012	.031	.118
	T9325	◪	■			◪		●●	+	.031	.006	.012	.031	.118
	T6310	◪	■		□	■	□	●●	+	.031	.005	.012	.031	.118
	T8315	◪	■		□	□	□	●●	+	.031	.005	.012	.031	.118
	T8330	◪	■		□	◪	□	●●	+	.031	.005	.012	.031	.118
	H07		◪		□	■		●●	+	.031	.005	.012	.031	.118
WNMG 433-SF	T7325	◪	■			■		●●	++	.047	.006	.012	.047	.118
WNMG 331-SM	T7325	◪	■			■		●	++	.016	.007	.012	.016	.118
	T7335	◪	■			■		●	++	.016	.007	.012	.016	.118
	T9315	■		◪			□	●	++	.016	.007	.012	.016	.118
	T9325	■	■	◪		◪		●	+	.016	.007	.012	.016	.118
	T8330	■	■	◪		◪	□	●	+	.016	.007	.012	.016	.118
WNMG 332-SM	T7325	◪	■			■		●●	++	.031	.007	.014	.031	.138
	T7335	◪	■			■		●●	++	.031	.007	.014	.031	.138
	T9325	■	■	◪		◪		●●	+	.031	.007	.014	.031	.138
	T6310	◪	■	◪		■	□	●●	+	.031	.007	.014	.031	.138
	T8330	■	■	◪		◪	□	●●	+	.031	.007	.014	.031	.138
WNMG 333-SM	T7325	◪	■			■		●●	++	.047	.008	.016	.047	.157
	T9325	■	■	◪		◪		●●	+	.047	.008	.016	.047	.157
	T8330	■	■	◪		◪	□	●●	+	.047	.008	.016	.047	.157
WNMG 431-SM	T7325	◪	■			■		●	++	.016	.007	.012	.016	.157
	T7335	◪	■			■		●	++	.016	.007	.012	.016	.157
	T9315	■		◪			□	●	++	.016	.007	.012	.016	.157
	T9325	■	■	◪		◪		●	+	.016	.007	.012	.016	.157
	T6310	◪	■	◪		■	□	●	+	.016	.007	.012	.016	.157
	T8330	■	■	◪		◪	□	●	+	.016	.007	.012	.016	.157
WNMG 432-SM	T7325	◪	■			■		●●	++	.031	.008	.018	.031	.157
	T7335	◪	■			■		●●	++	.031	.008	.018	.031	.157
	T9315	■		◪			□	●●	++	.031	.008	.018	.031	.157
	T9325	■	■	◪		◪		●●	++	.031	.008	.018	.031	.157
	T6310	◪	■	◪		■	□	●●	+	.031	.008	.018	.031	.157
	T8330	■	■	◪		◪	□	●●	++	.031	.008	.018	.031	.157
WNMG 433-SM	T7325	◪	■			■		●●	++	.047	.009	.018	.047	.177
	T7335	◪	■			■		●●	++	.047	.009	.018	.047	.177
	T9315	■		◪			□	●●	++	.047	.009	.018	.047	.177
	T9325	■	■	◪		◪		●●	++	.047	.009	.018	.047	.177
	T6310	◪	■	◪		■	□	●●	++	.047	.009	.018	.047	.177
	T8330	■	■	◪		◪	□	●●	++	.047	.009	.018	.047	.177
WNMG 331R-SI	T9325	■	■	□		□		●	+	.016	.008	.012	.031	.165
	T8330	■	■	□	□	◪		●	+	.016	.008	.012	.031	.165
WNMG 431R-SI	T7325	◪	■			■		●	++	.016	.008	.012	.031	.197
	T7335	◪	■			■		●	++	.016	.008	.012	.031	.197
	T9325	■	■	□		□		●	+	.016	.008	.012	.031	.197
	T8315	◪	■	□	□	□		●	+	.016	.008	.012	.031	.197
	T8330	■	■	□	□	◪		●	+	.016	.008	.012	.031	.197
WNMG 432R-SI	T7325	◪	■			■		●●	++	.031	.008	.020	.031	.197
	T7335	◪	■			■		●●	++	.031	.008	.020	.031	.197
	T9325	■	■	□		□		●●	+	.031	.008	.020	.031	.197
	T8315	◪	■	□	□	□		●●	+	.031	.008	.020	.031	.197
	T8330	■	■	□	□	◪		●●	+	.031	.008	.020	.031	.197
WNMG 433R-SI	T9325	■	■	□		□		●●	+	.047	.008	.020	.047	.197





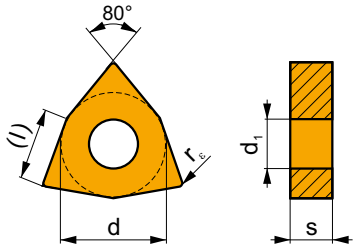


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNMG 331L-SI	T9325	■	■	□		□		●	+	.016	.008	.012	.031	.165
	T8330	■	■	□	□	◪		●	+	.016	.008	.012	.031	.165
WNMG 431L-SI	T7325	◪	■			■		●	+ +	.016	.008	.012	.031	.197
	T7335	◪	■			■		●	+ +	.016	.008	.012	.031	.197
	T9325	■	■	□		□		●	+	.016	.008	.012	.031	.197
	T8315	◪	■	□	□	□		●	+	.016	.008	.012	.031	.197
	T8330	■	■	□	□	◪		●	+	.016	.008	.012	.031	.197
WNMG 432L-SI	T7325	◪	■			■		⬢	+ +	.031	.008	.020	.031	.197
	T7335	◪	■			■		⬢	+ +	.031	.008	.020	.031	.197
	T9325	■	■	□		□		●	+	.031	.008	.020	.031	.197
	T8315	◪	■	□	□	□		⬢	+	.031	.008	.020	.031	.197
	T8330	■	■	□	□	◪		⬢	+	.031	.008	.020	.031	.197
WNMG 332W-F	T9315	■		◪				●	+ +	.031	.006	.024	.031	.165
	T9325	■		◪				⬢	+ +	.031	.006	.024	.031	.165
WNMG 431W-F	T9315	■		◪				●	+ +	.016	.006	.012	.016	.173
	T9325	■		◪				●	+	.016	.006	.012	.016	.173
WNMG 332W-M	T9310	■		◪				⬢	+ +	.031	.007	.024	.031	.118
	T9315	■		◪				⬢	+ +	.031	.007	.024	.031	.118
	T9325	■		◪				⬢	+ +	.031	.007	.024	.031	.118
WNMG 333W-M	T5315	◪	□	■			□	⬢	+ +	.047	.008	.035	.047	.118
	T9315	■		◪				⬢	+ +	.047	.008	.035	.047	.118
	T9325	■		◪				⬢	+ +	.047	.008	.035	.047	.118
WNMG 432W-M	T9315	■		◪				⬢	+ +	.031	.007	.024	.031	.157
	T9325	■		◪				⬢	+ +	.031	.007	.024	.031	.157
WNMG 433W-M	T9325	■		◪				⬢	+ +	.047	.008	.035	.047	.157
WNMG 332W-MR	T9315	■		◪				⬢	+ +	.031	.008	.028	.031	.118
	T9325	■	■	◪				⬢	+ +	.031	.008	.028	.031	.118
WNMG 431W-MR	T9315	■		◪				●	+ +	.016	.008	.024	.020	.157
	T9325	■	■	◪				●	+ +	.016	.008	.024	.020	.157
WNMG 432W-MR	T5315	◪	□	■				⬢	+ +	.031	.008	.028	.031	.157
	T9310	■		◪				⬢	+ +	.031	.008	.028	.031	.157
	T9315	■		◪				⬢	+ +	.031	.008	.028	.031	.157
	T9325	■	■	◪				⬢	+ +	.031	.008	.028	.031	.157
WNMG 433W-MR	T5315	◪	□	■				⬢	+ +	.047	.010	.030	.047	.157
	T9310	■		◪				⬢	+ +	.047	.010	.030	.047	.157
	T9315	■		◪				⬢	+ +	.047	.010	.030	.047	.157
	T9325	■	■	◪				⬢	+ +	.047	.010	.030	.047	.157
WNMG 332W-NM	T7325	◪	■			■		⬢	+ +	.031	.008	.020	.031	.118
	T7335	◪	■					⬢	+ +	.031	.008	.020	.031	.118
	T9315	■		□				⬢	+ +	.031	.008	.020	.031	.118
	T9325	■	■	□		□		⬢	+	.031	.008	.020	.031	.118
WNMG 431W-NM	T7325	◪	■			■		●	+ +	.016	.006	.016	.020	.118
	T7335	◪	■					●	+ +	.016	.006	.016	.020	.118
	T9315	■		□				●	+ +	.016	.006	.016	.020	.118
	T9325*	■	■	□		□		●	+	.016	.006	.016	.020	.118
WNMG 432W-NM	T7325	◪	■			■		⬢	+ +	.031	.008	.020	.031	.118
	T7335	◪	■					⬢	+ +	.031	.008	.020	.031	.118
	T9315	■		□				⬢	+ +	.031	.008	.020	.031	.118
	T9325*	■	■	□		□		⬢	+	.031	.008	.020	.031	.118
WNMG 433W-NM	T7325	◪	■			■		⬢	+ +	.047	.008	.022	.047	.138
	T7335	◪	■					⬢	+ +	.047	.008	.022	.047	.138
	T9315	■		□				⬢	+ +	.047	.008	.022	.047	.138

* Non-stocked item

WNMM

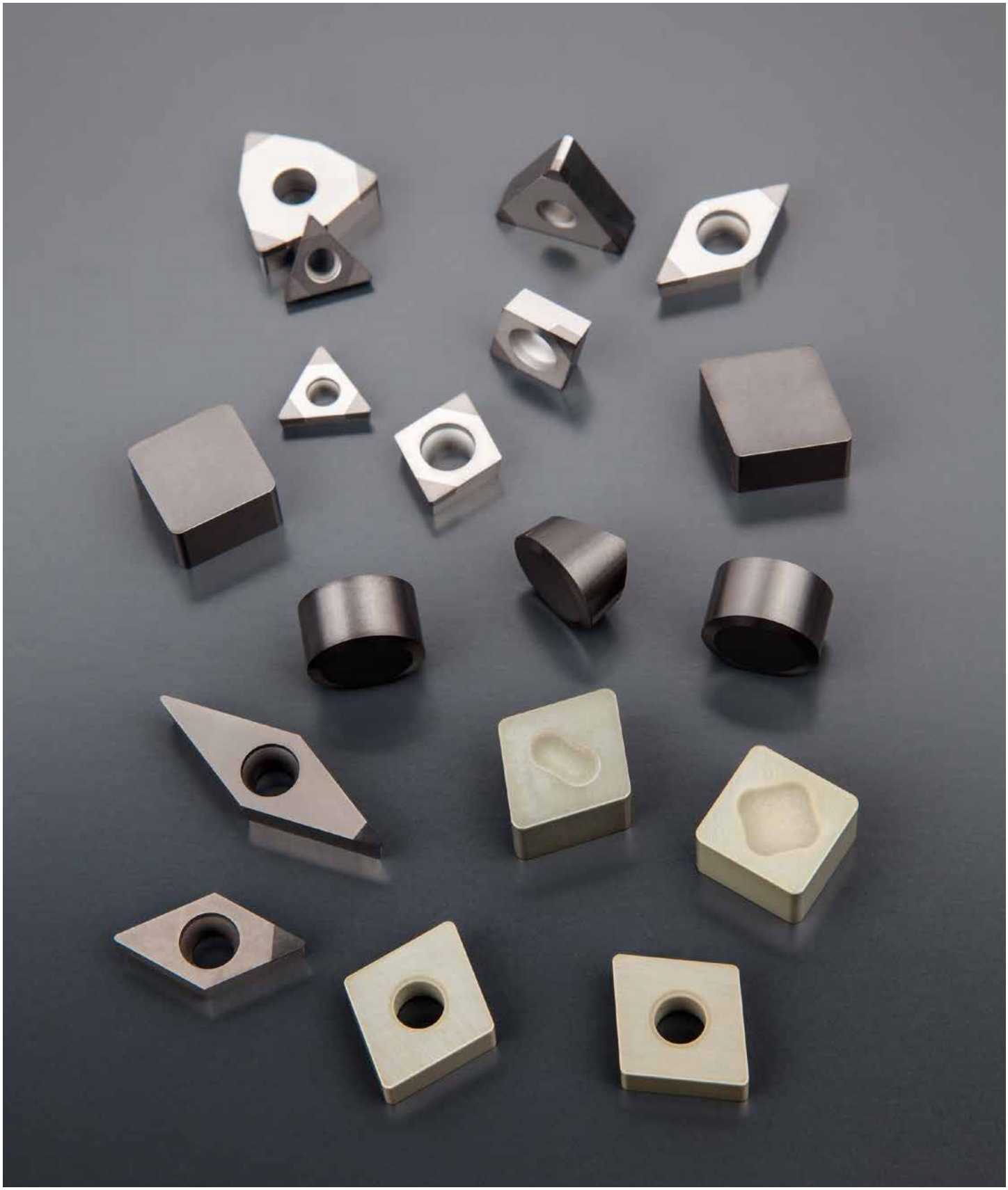
	d	d_1	l	s
43	.500	.203	.343	.187
54	.625	.250	.425	.250
64	.750	.313	.512	.250



For tools see pages: T200, T218

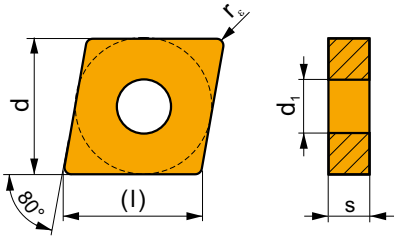
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNMM 542-DR	**T9325**	■	■	◪		□		⧓	+ +	.031	.012	.024	.098	.276
	T9335	■	◪					⧓	+++	.031	.012	.024	.098	.276
WNMM 643-DR	**T9325**	■	■	◪		□		⧓	+ +	.047	.012	.033	.098	.354
	T9335	■	◪					⧓	+++	.047	.012	.033	.098	.354
WNMM 432-NR	**T7325**	◪	■			■		⧓	+ +	.031	.010	.024	.039	.220
	T7335	◪	■					⧓	+++	.031	.010	.024	.039	.220
	T9325	■	■	□		□		⧓	+ +	.031	.010	.024	.039	.220
	T8430	■	■	◪		◪		⧓	+ +	.031	.010	.024	.039	.220
WNMM 432-NR2	**T7335**	◪	■					⧓	+++	.031	.010	.024	.039	.197
	T9325	■	■	□		□		⧓	+ +	.031	.010	.024	.039	.197
WNMM 433-NR2	**T7325**	◪	■			■		✖	+ +	.047	.011	.028	.059	.197
	T9325	■	■	□		□		⧓	+ +	.047	.011	.028	.059	.197
WNMM 432-OR	**T9325**	■	■	◪		□		⧓	+ +	.031	.010	.024	.079	.197
	T9335	■	◪					⧓	+++	.031	.010	.024	.079	.197
	T8430	■	◪	◪		◪		✖	+ +	.031	.010	.024	.079	.197
WNMM 433-OR	**T9315**	■		◪				⧓	+ +	.047	.013	.028	.079	.220
	T9325	■	■	◪		□		✖	+ +	.047	.013	.028	.079	.220
	T9335	■	◪					✖	+++	.047	.013	.028	.079	.220
WNMM 434-OR	**T9325**	■	■	◪		□		✖	+ +	.063	.014	.039	.118	.220
WNMM 643-OR	**T9325**	■	■	◪		□		✖	+ +	.047	.013	.028	.079	.354
WNMM 644-OR	**T9325**	■	■	◪		□		✖	+ +	.063	.014	.039	.118	.354

CERAMICS, CBN, PCD INSERTS
PLAQUITAS DE CERÁMICA, CBN, PCD
PLAQUETTES CÉRAMIQUES, CBN, PCD

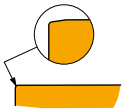


CNGA CER

	d	d_1	l	s
43	.500	.203	.508	.187

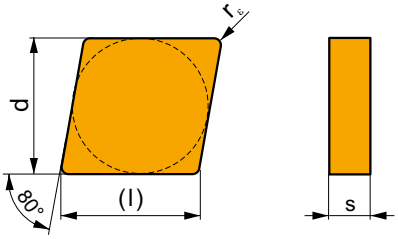


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNGA 431 T00820	**TC100**			■		◪	□	●	-	.016	.002	.007	.016	.236
CNGA 432 T00420	**TC100**			■		◪	□	●	-	.031	.002	.013	.031	.236
CNGA 432 T00820	**SN100**			■				●	-	.031	.002	.013	.031	.236
CNGA 433 T00420	**TC100**			■		◪	□	●	-	.047	.002	.020	.047	.236

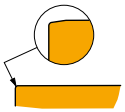


CNGN CER

	d	l	s
43	.500	.508	.187
45	.500	.508	.313

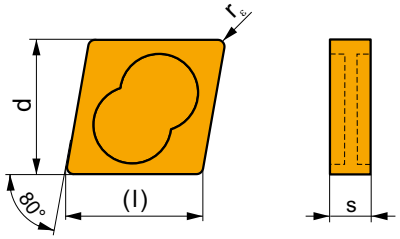


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNG 432 T00420	**TC100**			■		◪	□	●	-	.031	.002	.013	.031	.236
CNG 452 T00420	**TC100**			■		◪	□	●	-	.031	.002	.013	.031	.236
CNG 453 T00420	**TC100**			■		◪	□	●	-	.047	.002	.020	.047	.236

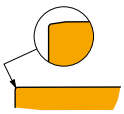


CNGX CER

	d	l	s
45	.500	.508	.313

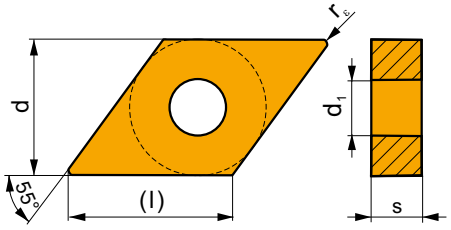


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNGX 453 T00825	**SN100**			■				●	-	.047	.002	.020	.047	.236
CNGX 454 T00825	**SN100**			■				●	-	.063	.002	.022	.063	.236

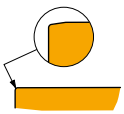


DNGA CER

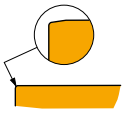
	d	d_1	l	s
43	.500	.203	.610	.187



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNGA 431 S00820	**TC100**			■		◪	□	●	-	.031	.002	.011	.031	.126

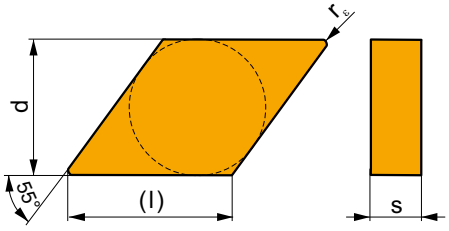


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNGA 431 T00420	**TC100**			■		◪	□	●	-	.016	.002	.005	.016	.126
DNGA 432 T00520	**TC100**			■		◪	□	●	-	.031	.002	.011	.031	.126

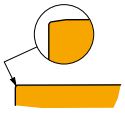


DNGN CER

	d	l	s
43	.500	.610	.187

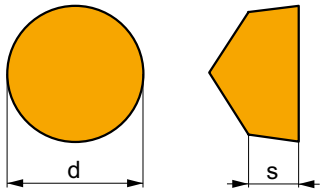


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNG 431 T00420	**TC100**			■		◪	□	●	-	.016	.002	.005	.016	.126

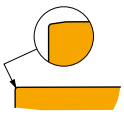


RCGX CER

	d	s
0606	.250	.250
0907	.375	.313
1207	.500	.313

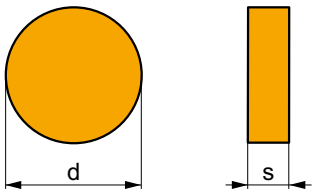


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RCGX 060600 K15015	**TC100**			■		◪	□	●	-	–	.004	.018	.009	.067
RCGX 090700 K15015	**TC100**			■		◪	□	●	-	–	.006	.022	.014	.101
RCGX 120700 K15015	**TC100**			■		◪	□	●	-	–	.008	.026	.019	.135

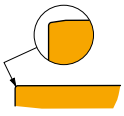


RNGN CER

	d	s
32	.375	.125
43	.500	.187
45	.500	.313

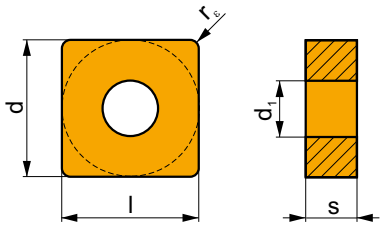


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RNG 32 T00420	**TC100**			■		◪	□	●	-	–	.006	.024	.014	.101
RNG 43 T00420	**TC100**			■		◪	□	●	-	–	.010	.028	.019	.135
RNG 45 T00420	**TC100**			■		◪	□	●	-	–	.010	.028	.019	.135
RNG 45 T06015	**TC100**			■		◪	□	●	-	–	.010	.028	.019	.135

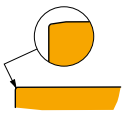


SNGA CER

	d	d_1	l	s
43	.500	.203	.500	.187

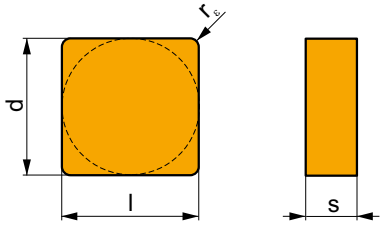


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNGA 432 T00425	**TC100**			■		◪	□	●	-	.031	.002	.015	.031	.236
SNGA 432 T00820	**SN100**			■				●	-	.031	.002	.015	.031	.236
SNGA 433 T00420	**TC100**			■		◪	□	●	-	.047	.002	.022	.047	.236

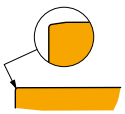


SNGN CER

	d	l	s
32	.375	.375	.125
43	.500	.500	.187
45	.500	.500	.313

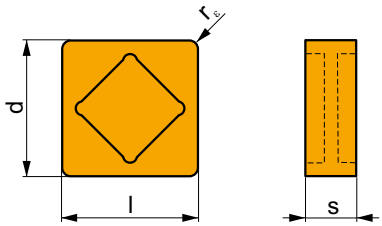


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNG 322 T00420	**TC100**			■		◪	□	●	-	.031	.002	.015	.031	.177
SNG 323 T00420	**TC100**			■		◪	□	●	-	.047	.002	.022	.047	.177
SNG 431 T00420	**TC100**			■		◪	□	●	-	.016	.002	.007	.016	.236
SNG 432 T00420	**TC100**			■		◪	□	●	-	.031	.002	.015	.031	.236
SNG 452 T00420	**TC100**			■		◪	□	●	-	.031	.002	.015	.031	.236
SNG 453 T00420	**TC100**			■		◪	□	●	-	.047	.002	.022	.047	.236
SNG 454 T00820	**SN100**			■				●	-	.063	.002	.022	.063	.236

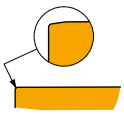


SNGX CER

	d	l	s
45	.500	.500	.313
554	.625	.625	.313

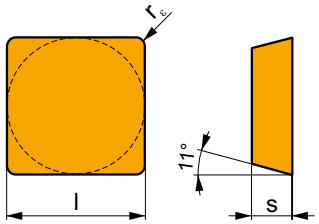


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNGX 453 T00825	**SN100**			■				●	-	.047	.002	.022	.047	.236
SNGX 554 T00825	**SN100**			■				●	-	.063	.002	.022	.063	.281

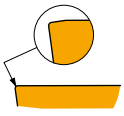


SPGN CER

	d	l	s
42	.500	.500	.125
43	.500	.500	.187

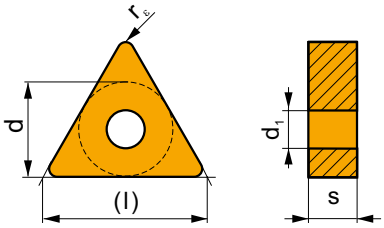


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SPG 422 T00420	**TC100**			■		◪	□	●	-	.031	.002	.015	.031	.236

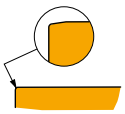


TNGA CER

	d	d_1	l	s
33	.375	.150	.650	.187

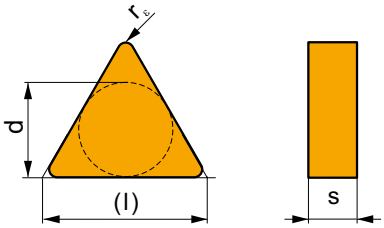


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TNGA 332 T00420	**TC100**			■		◪	□	●	-	.031	.002	.011	.031	.148
TNGA 332 T00820	**SN100**			■				●	-	.031	.002	.011	.031	.148
TNGA 333 T00420	**TC100**			■		◪	□	●	-	.047	.002	.016	.047	.148

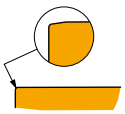


TNGN CER

	d	l	s
33	.375	.650	.187
352	.375	.650	.313

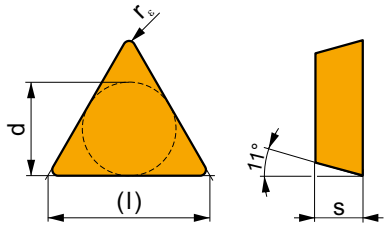


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TNG 332 T00420	**TC100**			■		◪	□	●	-	.031	.002	.011	.031	.148
TNG 333 T00420	**TC100**			■		◪	□	●	-	.047	.002	.016	.047	.148
TNG 352 T00820	**TC100**			■		◪	□	●	-	.031	.002	.011	.031	.148



TPGN CER

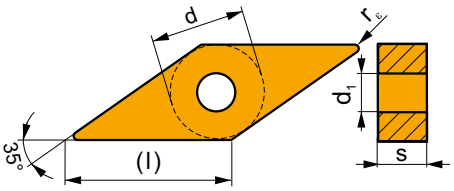
	d	l	s
22	.250	.433	.125
32	.375	.650	.125



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TPG 221 T00420	**TC100**			■		◪	□	●	-	.016	.002	.005	.016	.102
TPG 222 T00420	**TC100**			■		◪	□	●	-	.031	.002	.011	.031	.102
TPG 321 T00420	**TC100**			■		◪	□	●	-	.016	.002	.005	.016	.148
TPG 322 T00420	**TC100**			■		◪	□	●	-	.031	.002	.011	.031	.148
TPG 323 T00420	**TC100**			■		◪	□	●	-	.047	.002	.016	.047	.148

VNGA CER

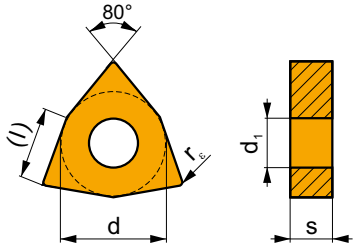
	d	d_1	l	s
33	.375	.150	.654	.187



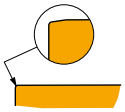
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VNGA 331 T00420	**TC100**			■		◪	□	●	-	.016	.002	.004	.016	.113
VNGA 332 T00420	**TC100**			■		◪	□	●	-	.031	.002	.009	.031	.113

WNGA CER

	d	d_1	l	s
43	.500	.203	.343	.187

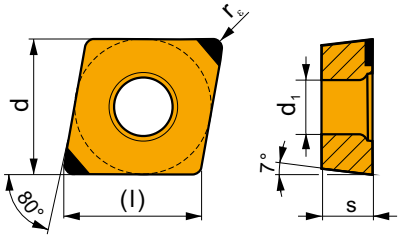


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNGA 432 T00820	**SN100**			■				●	-	.031	.002	.013	.031	.157

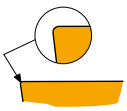


CCGW CBN

	d	d_1	l	s
21.5	.250	.110	.256	.094
32.5	.375	.177	.382	.156



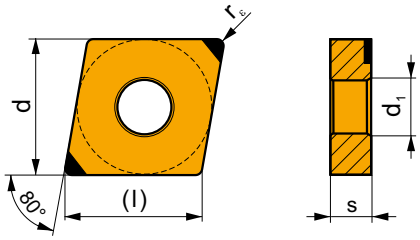
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CCGW 21.51E	**TB310**					◪	■	●	- - -	.016	.001	.008	.002	.106
CCGW 32.51E	**TB310**					◪	■	●	- - -	.016	.001	.008	.002	.106



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CCGW 21.51S00420	**TB310**					◪	■	●	- - -	.016	.001	.008	.002	.106
CCGW 32.51S00420	**TB310**					◪	■	●	- - -	.016	.001	.008	.002	.106
CCGW 32.51S00420W	**TB310**						■	●	- - -	.016	.001	.008	.002	.106

CNGA CBN

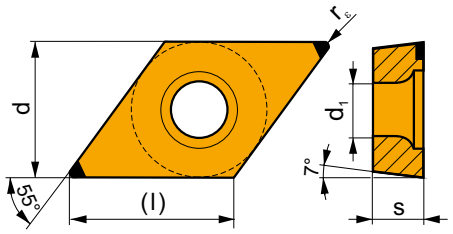
	d	d_1	l	s
43	.500	.203	.508	.187



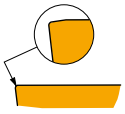
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNGA 431S00420	**TB310**					◪	■	●	- - -	.016	.001	.008	.002	.106
CNGA 432S00420	**TB310**					◪	■	●	- - -	.031	.001	.008	.002	.106

DCGW CBN

	d	d_1	l	s
32.5	.375	.177	.457	.156

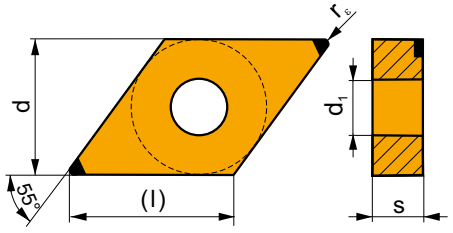


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DCGW 32.51S00420	**TB310**					◪	■	●	---	.016	.001	.008	.002	.118
DCGW 32.52S00420	**TB310**					◪	■	●	---	.031	.001	.008	.002	.118

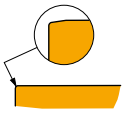


DNGA CBN

	d	d_1	l	s
44	.500	.203	.610	.250

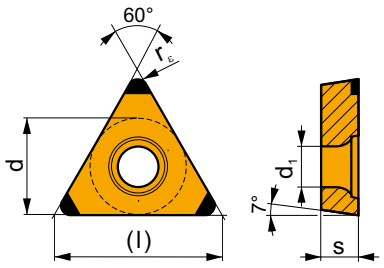


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNGA 442S00420	**TB310**					◪	■	●	---	.031	.001	.008	.002	.118



TCGW CBN

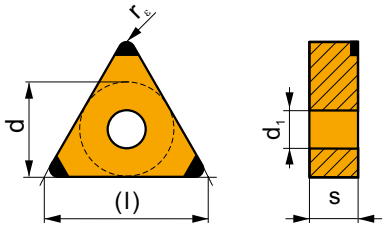
	d	d_1	l	s
21.5	.250	.114	.433	.094



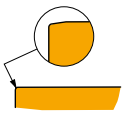
	ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	TCGW 21.51E	**TB310**					◪	■	●	---	.016	.001	.008	.002	.098
	TCGW 21.51S00420	**TB310**					◪	■	●	---	.016	.001	.008	.002	.098
	TCGW 21.52S00420	**TB310**					◪	■	●	---	.031	.001	.008	.002	.098

TNGA CBN

	d	d_1	l	s
33	.375	.150	.650	.187

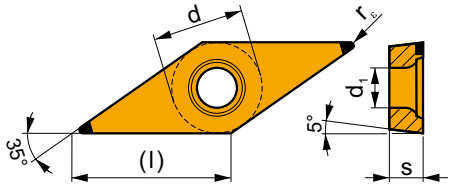


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TNGA 332S00420	**TB310**					◪	■	●	- - -	.031	.001	.008	.002	.098

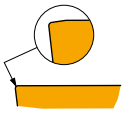


VBGW CBN

	d	d_1	l	s
33	.375	.177	.630	.187

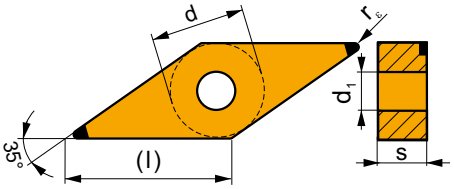


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VBGW 331S00420	**TB310**					◪	■	●	- - -	.016	.001	.008	.002	.142
VBGW 332S00420	**TB310**					◪	■	●	- - -	.031	.001	.008	.002	.142

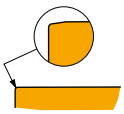


VNGA CBN

	d	d_1	l	s
33	.375	.150	.630	.187

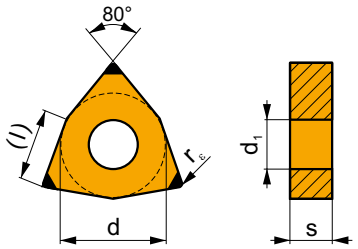


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VNGA 331S00420	**TB310**					◪	■	●	---	.016	.001	.008	.002	.142
VNGA 332S00420	**TB310**					◪	■	●	---	.031	.001	.008	.002	.142

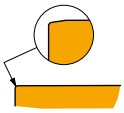


WNGA CBN

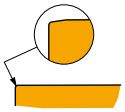
	d	d_1	l	s
43	.500	.203	.343	.187



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNGA 432S00420	**TB310**					◪	■	●	---	.031	.001	.008	.002	.106

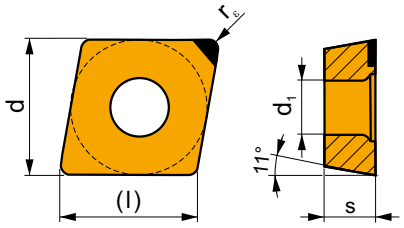


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNGA 432S00420W	**TB310**					◪	■	●	- - -	.031	0,02	0,20	0,1	2,7

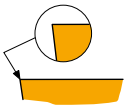


CPGW PCD

	d	d_1	l	s
2.52	.313	.134	.319	.125
21.5	.250	.110	.252	.094

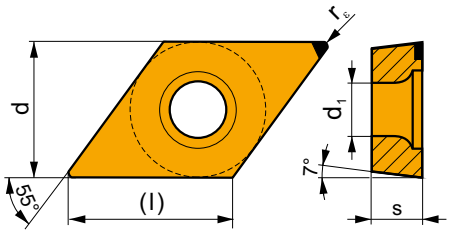


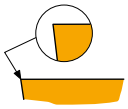
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CPGW 21.50.5 FN-30-1	**PC30**				■			●	- -	.008	.002	.006	.008	.079
CPGW 21.51 F	**D720**				■			●	- -	.016	.002	.012	.016	.079
CPGW 21.51 FN-30-1	**PC30**				■			●	- -	.016	.002	.012	.016	.079
CPGW 21.52 F	**D720**				■			●	- -	.031	.002	.016	.031	.079
CPGW 21.52 FN-30-1	**PC30**				■			●	- -	.031	.002	.016	.031	.079
CPGW 2.520.5 FN-30-1	**PC30**				■			●	- -	.008	.002	.006	.008	.079
CPGW 2.521 F	**D720**				■			●	- -	.016	.002	.012	.016	.079
CPGW 2.521 FN-30-1	**PC30**				■			●	- -	.016	.002	.012	.016	.079
CPGW 2.522 FN-30-1	**PC30**				■			●	- -	.031	.002	.016	.031	.079



DCGW PCD

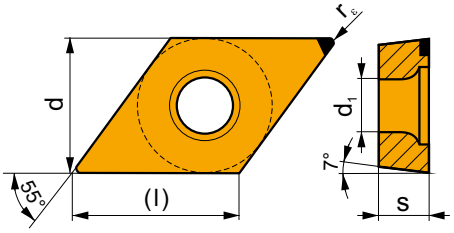
	d	d_1	l	s
21.5	.250	.110	.307	.094

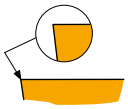


		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
HSC F		**DCGW 21.52 FN-30-1**	**PC30**				■			●	- -	.031	.002	.012	.031	.079

DCMW PCD

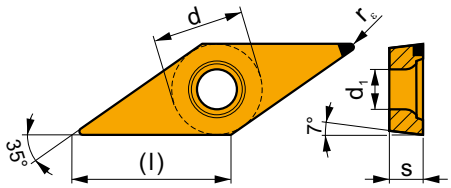
	d	d_1	l	s
32.5	.375	.173	.457	.156



		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
HSC F		**DCMW 32.51FN**	**PD1**				■			●	+ / -	.016	.002	.007	.016	.079

VCMW PCD

	d	d_1	l	s
33	.375	.173	.654	.187



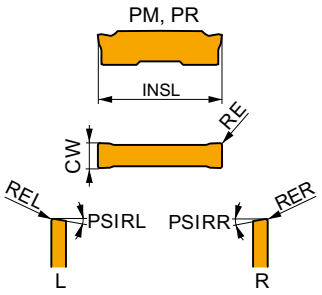
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VCMW 331FN	**PD1**				■			●	+ / -	.016	.004	.006	.016	.079
VCMW 332FN	**PD1**				■			●	+ / -	.031	.004	.006	.031	.079

PARTING & GROOVING INSERTS
PLAQUITAS PARA TRONZADO Y RANURADO
PLAQUETTES POUR TRONÇONNAGE ET GORGES



GL. D

	CW	CWTOLL	CWTOLU	INSL
200	.079	.002	.002	.984
250	.098	.002	.002	.984
300	.118	.002	.002	.984
400	.157	.002	.002	.984
500	.197	.002	.002	.984
600	.236	.002	.002	.984



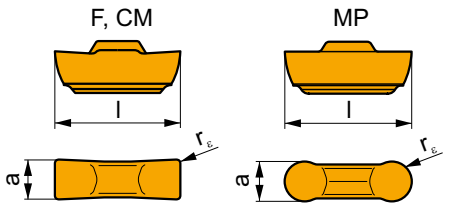
For tools see pages: T230 -231

		ANSI		P	M	K	N	S	H			RE	FN	FX	PSIRL	PSIRR
1 E	27° 3°	GL2-D200M02-PM	G8330	■	■	◪				●	+++	.008	.002	.005	-	-
		GL2-D200M02-PM	T7325	◪	■					●	+++	.008	.002	.005	-	-
		GL3-D250G02-PM	G8330	■	■	◪				●	+++	.008	.002	.006	-	-
		GL3-D300M02-PM	G8330	■	■	◪				●	+++	.008	.002	.006	-	-
		GL3-D300M02-PM	T7325	◪	■					●	+++	.008	.002	.006	-	-
		GL4-D400M02-PM	G8330	■	■	◪				●	+++	.008	.003	.007	-	-
		GL4-D400M02-PM	T7325	◪	■					●	+++	.008	.003	.007	-	-
		GL5-D500M03-PM	G8330	■	■	◪				●	+++	.012	.004	.008	-	-
		GL6-D600M03-PM	G8330	■	■	◪				●	+++	.012	.004	.009	-	-
E	27° 3°	GL2-D200G02R06-PM	G8330	■	■	◪				●	+++	.008	.002	.005	-	6°
		GL2-D200G02R06-PM	T7325	◪	■					●	+++	.008	.002	.005	-	6°
		GL2-D200G02R12-PM	G8330	■	■	◪				●	+++	.008	.002	.006	-	12°
		GL3-D300G02R06-PM	G8330	■	■	◪				●	+++	.008	.002	.006	-	6°
		GL3-D300G02R06-PM	T7325	◪	■					●	+++	.008	.002	.006	-	6°
		GL3-D300G02R12-PM	G8330	■	■	◪				●	+++	.008	.002	.006	-	12°
		GL4-D400G02R06-PM	G8330	■	■	◪				●	+++	.008	.003	.007	-	6°
		GL4-D400G02R06-PM	T7325	◪	■					●	+++	.008	.003	.007	-	6°
		GL4-D400G02R12-PM	G8330	■	■	◪				●	+++	.008	.003	.007	-	12°
E	27° 3°	GL2-D200G02L06-PM	G8330	■	■	◪				●	+++	.008	.002	.005	6°	-
		GL2-D200G02L06-PM	T7325	◪	■					●	+++	.008	.002	.005	6°	-
		GL2-D200G02L12-PM	G8330	■	■	◪				●	+++	.008	.002	.006	12°	-
		GL3-D300G02L06-PM	G8330	■	■	◪				●	+++	.008	.002	.006	6°	-
		GL3-D300G02L06-PM	T7325	◪	■					●	+++	.008	.002	.006	6°	-
		GL3-D300G02L12-PM	G8330	■	■	◪				●	+++	.008	.002	.006	12°	-
		GL4-D400G02L06-PM	G8330	■	■	◪				●	+++	.008	.003	.007	6°	-
		GL4-D400G02L06-PM	T7325	◪	■					●	+++	.008	.003	.007	6°	-
		GL4-D400G02L12-PM	G8330	■	■	◪				●	+++	.008	.003	.007	12°	-
U S	30° 12°	GL2-D200M02-PR	G8330	■	◪	◪				⬢	+++	.008	.002	.006	-	-
		GL2-D200M02-PR	T7325	■	◪					●	+++	.008	.002	.006	-	-
		GL3-D300M02-PR	G8330	■	◪	◪				⬢	+++	.008	.002	.008	-	-
		GL3-D300M02-PR	T7325	■	◪					●	+++	.008	.002	.008	-	-
		GL4-D400M02-PR	G8330	■	◪	◪				⬢	+++	.008	.003	.010	-	-
		GL4-D400M02-PR	T7325	■	◪					●	+++	.008	.003	.010	-	-
		GL5-D500M04-PR	G8330	■	◪	◪				⬢	+++	.016	.004	.011	-	-
		GL6-D600M04-PR	G8330	■	◪	◪				⬢	+++	.016	.004	.013	-	-
S	30° 12°	GL2-D200G02R06-PR	G8330	■	◪	◪				●	+++	.008	.002	.006	-	6°
		GL2-D200G02R12-PR	G8330	■	◪	◪				●	+++	.008	.002	.006	-	12°
		GL3-D300G02R06-PR	G8330	■	◪	◪				●	+++	.008	.002	.008	-	6°
		GL3-D300G02R12-PR	G8330	■	◪	◪				●	+++	.008	.002	.008	-	12°
		GL4-D400G02R06-PR	G8330	■	◪	◪				●	+++	.008	.003	.010	-	6°
		GL4-D400G02R12-PR	G8330	■	◪	◪				●	+++	.008	.003	.010	-	12°
S	30° 12°	GL2-D200G02L06-PR	G8330	■	◪	◪				●	+++	.008	.002	.006	6°	-
		GL2-D200G02L12-PR	G8330	■	◪	◪				●	+++	.008	.002	.006	12°	-
		GL3-D300G02L06-PR	G8330	■	◪	◪				●	+++	.008	.002	.008	6°	-
		GL3-D300G02L12-PR	G8330	■	◪	◪				●	+++	.008	.002	.008	12°	-
		GL4-D400G02L06-PR	G8330	■	◪	◪				●	+++	.008	.003	.010	6°	-
		GL4-D400G02L12-PR	G8330	■	◪	◪				●	+++	.008	.003	.010	12°	-

LCMF 13

	a	a±	l
0313	.118	±.002	.496
0413	.157	±.002	.496

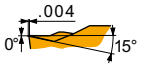
For tools see pages: T232-T235, T237, T239-T242, T244, T246



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	κ°
LCMF 031304-CM	**T8330**	■	◪	■				●	+++	.016	.002	.012	–	–	–
LCMF 031304-CM-04*	**T8330**	■	◪	■				●	+++	.016	.002	.012	–	–	–
LCMF 041304-CM	**T8330**	■	◪	■				●	+++	.016	.002	.012	–	–	–
LCMF 031302-F	**T8330**	■	■	◪				●	+++	.008	.002	.008	.012	.118	–
LCMF 031302-F-04	**T8330**	■	◪	■				●	+++	.008	.002	.008	.012	.079	–
LCMF 031304-F	**T8330**	■	■	◪				●	+++	.016	.002	.010	.012	.118	–
LCMF 031304-F-04*	**T8330**	■	◪	■				●	+++	.016	.002	.008	.012	.079	–
LCMF 041304-F	**T9325**	■	◪	◪				●	+++	.016	.002	.010	.020	.118	–
	T8330	■	■	◪				●	+++	.016	.002	.010	.020	.118	–

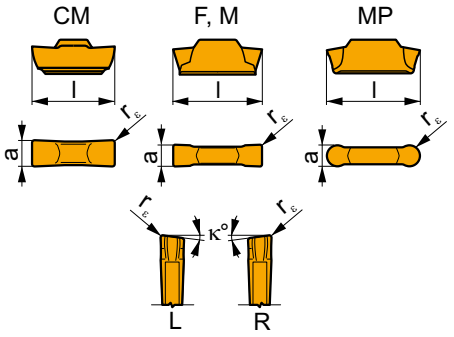
*For internal holder A...-GG.R/L 0313-04

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	κ°
LCMF 0313MO-MP	T8330	■	◪	■				●	+++	.059	.002	.012	.020	.059	–
LCMF 0313MO-MP-04	T8330	■	◪	■				●	+++	.059	.002	.012	.020	.059	–
LCMF 0413MO-MP	T8330	■	◪	■				●	+++	.079	.002	.014	.020	.079	–



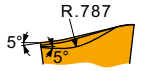
LCMF 16, LCMF 30

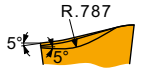
	a	a±	l
0316	.118	±.002	.646
0416	.157	±.002	.646
0516	.197	±.002	.646
0616	.236	±.002	.646
0830	.315	±.002	1.181

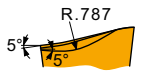


For tools see pages: T232-T235, T237, T239-T242, T244, T246

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	κ°
LCMF 031602-CM	T8330	■	◪	■				●	+++	.008	.002	.012	–	–	–
LCMF 031604-CM	T8330	■	◪	■				●	+++	.016	.002	.012	–	–	–
LCMF 041602-CM	T8330	■	◪	■				●	+++	.008	.002	.012	–	–	–
LCMF 041604-CM	T8330	■	◪	■				●	+++	.016	.002	.012	–	–	–
LCMF 051604-CM	T8330	■	◪	■				●	+++	.016	.004	.016	–	–	–
LCMF 061604-CM	T8330	■	◪	■				●	+++	.016	.004	.016	–	–	–
LCMF 031602R6-CM	T8330	■	◪	■				●	+++	.008	.002	.012	–	–	6
LCMF 031602R15-CM*	T8330	■	◪	■				●	+++	.008	.002	.012	–	–	15
LCMF 041602R6-CM	T8330	■	◪	■				●	+++	.008	.002	.012	–	–	6
LCMF 041602R15-CM*	T8330	■	◪	■				●	+++	.008	.002	.012	–	–	15
LCMF 031602L6-CM	T8330	■	◪	■				●	+++	.008	.002	.012	–	–	6
LCMF 031602L15-CM*	T8330	■	◪	■				●	+++	.008	.002	.012	–	–	15
LCMF 041602L6-CM	T8330	■	◪	■				●	+++	.008	.002	.012	–	–	6
LCMF 041602L15-CM*	T8330	■	◪	■				●	+++	.008	.002	.012	–	–	15





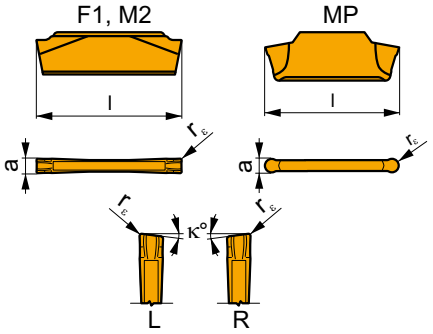


* Tool holders have to be modified.

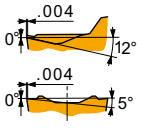
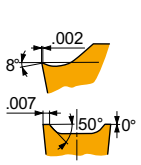
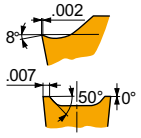
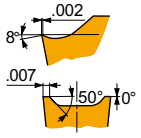
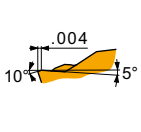
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	κ°
LCMF 031602-F	T8330	■	◪	■				●	+++	.008	.002	.007	.012	.118	–
LCMF 031604-F	T8330	■	◪	■				●	+++	.016	.002	.007	.012	.118	–
LCMF 041604-F	T9325	■	◪	◪				●	+++	.016	.006	.010	.020	.118	–
	T8330	■	◪	■				●	+++	.016	.003	.010	.020	.118	–
LCMF 041608-F	T9325	■	◪	◪				●	+++	.031	.006	.010	.020	.118	–
	T8330	■	◪	■				⬢	+++	.031	.003	.010	.020	.118	–
LCMF 051608-F	T9325	■	◪	◪				●	+++	.031	.006	.012	.020	.118	–
	T8330	■	◪	■				⬢	+++	.031	.004	.012	.020	.118	–
LCMF 061608-F	T9325	■	◪	◪				●	+++	.031	.006	.014	.020	.118	–
	T8330	■	◪	■				⬢	+++	.031	.004	.014	.020	.118	–
LCMF 083008-F	T8330	■	◪	■				⬢	+++	.031	.004	.020	.031	.236	–
LCMF 083012-F	T8330	■	◪	■				⬢	+++	.047	.010	.020	.047	.236	–
LCMF 031602-M	T8330	■	◪	■				●	+++	.008	.004	.010	.012	.118	–
LCMF 031604-M	T8330	■	◪	■				●	+++	.016	.004	.010	.012	.118	–
LCMF 041604-M	T9325	■	◪	◪				●	+++	.016	.006	.014	.020	.118	–
	T8330	■	◪	■				●	+++	.016	.006	.014	.020	.118	–
LCMF 041608-M	T9325	■	◪	◪				⬢	+++	.031	.006	.014	.020	.118	–
	T8330	■	◪	■				⬢	+++	.031	.006	.014	.020	.118	–
LCMF 051608-M	T9325	■	◪	◪				⬢	+++	.031	.007	.017	.020	.118	–
	T8330	■	◪	■				⬢	+++	.031	.007	.017	.020	.118	–
LCMF 061608-M	T9325	■	◪	◪				⬢	+++	.031	.008	.020	.020	.118	–
	T8330	■	◪	■				⬢	+++	.031	.008	.020	.020	.118	–
LCMF 0316MO-MP	T8330	■	◪	■				⬢	+++	.059	.002	.016	.020	.059	–
LCMF 0416MO-MP	T9325	■	◪	◪				⬢	+++	.079	.006	.024	.030	.079	–
	T8330	■	◪	■				⬢	+++	.079	.003	.024	.030	.079	–
LCMF 0516MO-MP	T9325	■	◪	◪				⬢	+++	.098	.006	.028	.031	.098	–
	T8330	■	◪	■				⬢	+++	.098	.003	.028	.031	.098	–
LCMF 0616MO-MP	T9325	■	◪	◪				⬢	+++	.118	.006	.031	.039	.118	–
	T8330	■	◪	■				⬢	+++	.118	.003	.031	.039	.118	–
LCMF 0830MO-MP	T8330	■	◪	■				⬢	+++	.157	.004	.039	.039	.157	–

LCMF 20

	a	a±	l
0220	.079	±.001	.768

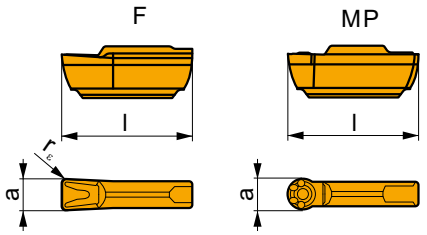


For tools see pages: T232-T235, T237, T239-T242, T244, T246

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	κ°
		**LCMF 022002-F1**	**T8330**	■	◪	■				●	+++	.008	.003	.008	.008	.079	–
		**LCMF 022002-M2**	**T8330**	■	■	◪	□	◪	□	●	+++	.008	.004	.009	.008	.079	–
		**LCMF 022002R6-M2**	**T8330**	■	■	◪	□	◪	□	●	+++	.008	.002	.008	–	–	6
		**LCMF 022002L6-M2**	**T8330**	■	■	◪	□	◪	□	●	+++	.008	.002	.008	–	–	6
		**LCMF 0220MO-MP**	**T8330**	■	◪	■				●	+++	.039	.003	.016	.008	.039	–

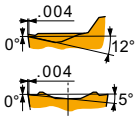
LCMR 13

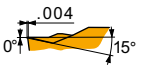
	a	a±	l
0313	.118	±.002	.496
0413	.157	±.002	.496



For tools see pages: T232-T235, T237, T239-T242, T244, T246

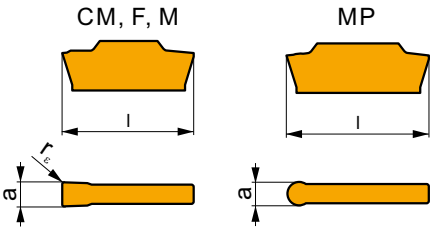
	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	κ°
U, S	**LCMR 031304-F**	**T8330**	■	■	◪				●	+++	.016	.002	.010	.012	.118	–
	LCMR 041304-F	**T8330**	■	■	◪				●	+++	.016	.004	.010	.020	.118	–
U, S	**LCMR 0313MO-MP**	**T8330**	■	◪	■				⬢	+++	.059	.002	.012	.020	.059	–
	LCMR 0413MO-MP	**T8330**	■	◪	■				⬢	+++	.079	.002	.014	.020	.079	–





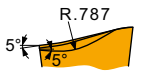
LCMR 16, LCMR 30

	a	a±	l
0316	.118	±.002	.646
0416	.157	±.002	.646
0516	.197	±.002	.646
0616	.236	±.002	.646
0830	.315	±.002	1.181



For tools see pages: T232-T235, T237, T239-T242, T244, T246

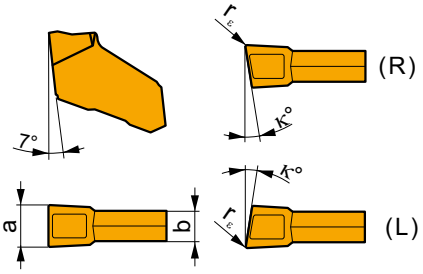
	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	κ°
1, U, E	**LCMR 031602-CM**	**T8330**	■	◪	■				●	+++	.008	.002	.012	–	–	–
	LCMR 041604-CM	**T8330**	■	◪	■				●	+++	.016	.002	.012	–	–	–



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	κ°
LCMR 031604-F	T8330	■	■	◪				●	+++	.016	.002	.007	.012	.118	–
LCMR 041604-F	T8330	■	■	◪				●	+++	.016	.003	.010	.020	.118	–
LCMR 051604-F	T8330	■	■	◪				●	+++	.016	.004	.012	.020	.118	–
LCMR 061608-F	T8330	■	■	◪				⬢	+++	.031	.004	.014	.020	.118	–
LCMR 083008-F	T8330	■	■	◪				⬢	+++	.031	.004	.020	.031	.236	–
LCMR 031604-M	T8330	■	◪	■				●	+++	.016	.004	.010	.012	.118	–
LCMR 041604-M	T8330	■	◪	■				●	+++	.016	.006	.014	.020	.118	–
LCMR 051604-M	T8330	■	◪	■				●	+++	.016	.007	.017	.020	.118	–
LCMR 061608-M	T8330	■	◪	■				⬢	+++	.031	.008	.020	.020	.118	–
LCMR 0316MO-MP	T8330	■	◪	■				⬢	+++	.059	.002	.016	.020	.059	–
LCMR 0416MO-MP	T8330	■	◪	■				⬢	+++	.079	.003	.024	.030	.079	–
LCMR 0516MO-MP	T8330	■	◪	■				⬢	+++	.098	.003	.028	.031	.098	–
LCMR 0616MO-MP	T8330	■	◪	■				⬢	+++	.118	.004	.031	.039	.118	–

LFMX

	a	a±	b
1.5-	.059	±.001	.051
1.6-	.063	±.001	.051
2.0-	.079	±.001	.063
2.2-	.079	±.001	.063
3.1-	.122	±.002	.102
4.1-	.161	±.002	.142
5.1-	.201	±.002	.181
6.35	.250	±.002	.228



For tools see pages: T245, 247

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	κ°
LFMX 1.5-.16ENF1	T8330	■	◪	■				⬢	+++	.006	.002	.004	–	–	–
LFMX 1.6-.16ENF1	T8330	■	◪	■				⬢	+++	.006	.002	.004	–	–	–
LFMX 2.0-.16ENF1	T8330	■	◪	■				●	+++	.006	.002	.005	–	–	–
LFMX 3.1-.20ENF1	T8330	■	◪	■				●	+++	.008	.002	.006	–	–	–
LFMX 4.1-.20ENF1	T8330	■	◪	■				●	+++	.008	.002	.007	–	–	–



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	κ°
LFMX 1.6-.16SNF2	T8330	■	◪	■		□	□	●	+++	.006	.002	.004	–	–	–
LFMX 2.0-.16SNF2	6640	■	◪	◪		□		●	+++	.006	.004	.006	–	–	–
	T8330	■	◪	■		□	□	●	+++	.006	.002	.006	–	–	–
LFMX 3.1-.20SNF2	6640	■	◪	◪		□		●	+++	.008	.004	.007	–	–	–
	T8330	■	◪	■		□	□	●	+++	.008	.003	.007	–	–	–
LFMX 3.1-.20TNF2	6640	■	◪	◪		□		●	+++	.008	.004	.007	–	–	–
	T8330	■	◪	■		□	□	●	+++	.008	.002	.007	–	–	–
LFMX 4.1-.20SNF2	T8330	■	◪	■		□	□	●	+++	.008	.003	.009	–	–	–
LFMX 4.1-.20TNF2	T8330	■	◪	■		□	□	●	+++	.008	.002	.009	–	–	–
LFMX 5.1-.20SNF2	T8330	■	◪	■		□	□	●	+++	.008	.003	.010	–	–	–
LFMX 6.35-.20SNF2	T8330	■	◪	■		□	□	●	+++	.008	.003	.012	–	–	–
LFMX 2.0-.16SNM2	6640	■	■	◪		□		●	+++	.006	.004	.007	–	–	–
	T8330	■	■	◪	□	◪	□	●	+++	.006	.003	.007	–	–	–
LFMX 2.2-.16SNM2	6640	■	■	◪		□		●	+++	.006	.004	.007	–	–	–
	T8330	■	■	◪	□	◪	□	●	+++	.006	.003	.007	–	–	–
LFMX 3.1-.20SNM2	6640	■	■	◪		□		●	+++	.008	.004	.008	–	–	–
	T8330	■	■	◪	□	◪	□	●	+++	.008	.003	.008	–	–	–
LFMX 3.1-.20TNM2	6640	■	■	◪		□		●	+++	.008	.004	.008	–	–	–
	T8330	■	■	◪	□	◪	□	●	+++	.008	.002	.008	–	–	–
LFMX 4.1-.20SNM2	6640	■	■	◪		□		●	+++	.008	.004	.010	–	–	–
	T8330	■	■	◪	□	◪	□	●	+++	.008	.003	.010	–	–	–
LFMX 4.1-.20TNM2	6640	■	■	◪		□		●	+++	.008	.004	.010	–	–	–
	T8330	■	■	◪	□	◪	□	●	+++	.008	.002	.010	–	–	–
LFMX 5.1-.20SNM2	6640	■	■	◪		□		●	+++	.008	.004	.012	–	–	–
	T8330	■	■	◪	□	◪	□	●	+++	.008	.003	.012	–	–	–
LFMX 6.35-.20SNM2	6640	■	■	◪		□		●	+++	.008	.004	.014	–	–	–
	T8330	■	■	◪	□	◪	□	●	+++	.008	.003	.014	–	–	–
LFMX 2.0-.16SR6M2	T8330	■	■	◪	□	◪	□	●	+++	.006	.002	.006	–	–	6
LFMX 2.0-.16SR12M2	T8330	■	■	◪	□	◪	□	●	+++	.006	.002	.005	–	–	12
LFMX 3.1-.20SR8M2	T8330	■	■	◪	□	◪	□	●	+++	.008	.003	.006	–	–	8
LFMX 4.1-.20SR8M2	T8330	■	■	◪	□	◪	□	●	+++	.008	.003	.008	–	–	8
LFMX 2.0-.16SL6M2	T8330	■	■	◪	□	◪	□	●	+++	.006	.002	.006	–	–	6
LFMX 2.0-.16SL12M2	T8330	■	■	◪	□	◪	□	●	+++	.006	.002	.005	–	–	12
LFMX 3.1-.20SL8M2	T8330	■	■	◪	□	◪	□	●	+++	.008	.003	.006	–	–	8
LFMX 4.1-.20SL8M2	T8330	■	■	◪	□	◪	□	●	+++	.008	.003	.008	–	–	8

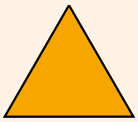
PRAMET

ISO/ANSI CODE DESIGNATION - INDEXABLE CUTTING INSERTS FOR THREADING
DESIGNACIÓN CÓDIGO ISO/ANSI - PLAQUITAS PARA ROSCADO
CODIFICATION ISO/ANSI - PLAQUETTES DE COUPE INDEXABLES DE FILETAGE

	1	2	3	4	5	6	7		8
ISO	T	N	16	E	R	175	M	–	P1
ANSI	T	N	16	E	R	120	W	–	P1

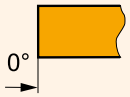
1 Insert shape / Forma de plaquita / Forme de la plaquette

T

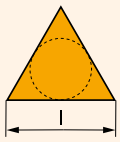


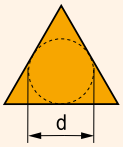
2 Insert clearance angle / Ángulo de incidencia / Angle de dépouille de la plaquette

N



3 Insert cutting edge length (insert size) / Longitud del filo de corte (tamaño de plaquita) / Longueur de l'arête de coupe (taille de plaquette)





l		d = I.C.	
[mm]	[in]	[mm]	[in]
11	.433	6,350	1/4
16	.650	9,525	3/8
22	.866	12,7	1/2

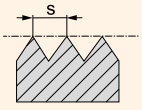
4 External - Internal / Exterior - Interior / Extérieur - Intérieur

External Exterior Extérieur	E
Internal Interior Intérieur	N

5 Direction of cut / Dirección del corte / Direction de coupe

Right Derecha Droite	R
Left Izquierda Gauche	L
Neutral Neutral Neutre	N

6 Thread pitch / Paso de rosca / Pas du filet



s x 100

Thread Pitch mm x 100
Paso de rosca mm x 100
Pas du filet mm x 100

6 No. of threads / Nº de hilos / Nb de filets

No. of threads per in x 10
Nº de hilos por pulgada x 10
b de filets au pouce x 10

7 Thread profile / Perfil de rosca / Profil du filet

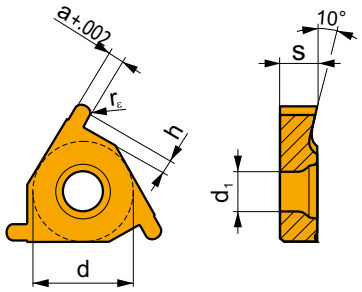
M	Metric 60° Métrica 60° Métrique 60° ISO 965/1–1980	TR	TR 30° ISO 2901/3–1977
W	Whitworth 55° ISO 228–1982	UN	American UN 60° ISO 5864–1978
RD	Round 30° Redonda 30° Rond 30° DIN 405–1981	ACME	ACME 29° ANSI B1.5–1988
BSPT	ISO 228/1 35 21 1959 ISO 7/1	API RD	API
NPT	ANSI B1.1–1983		

8 Chip breaker designation / Designación del rompevirutas / Désignation du brise-copeaux (géométrie)

P1	Pressed Prensada Pressé

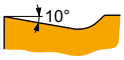
TN R EXT

	d	d_1	s
16	.375	.154	.141
22	.500	.193	.185



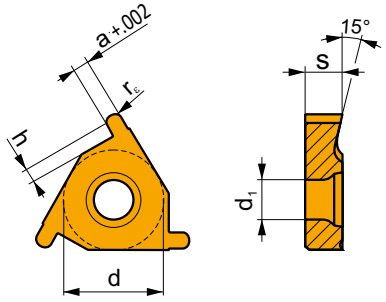
For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	a	h
TN 16ER-R050	**T8330**	■	■	■	□	◪	□	●	+++	.020	–	–	–	–	.039	.051
TN 16ER-R100	**T8330**	■	■	■	□	◪	□	●	+++	.039	–	–	–	–	.079	.073
TN 22ER-R150	**T8330**	■	■	■	□	◪	□	●	+++	.059	–	–	–	–	.118	.087



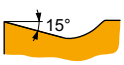
TN R INT

	d	d_1	s
11	.250	.110	.122
16	.375	.154	.141
22	.500	.193	.185



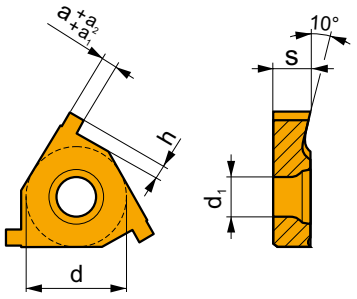
For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	a	h
TN 11NR-R050	**T8330**	■	■	■	□	◪	□	●	+++	.020	–	–	–	–	.039	.051
TN 16NR-R100	**T8330**	■	■	■	□	◪	□	●	+++	.039	–	–	–	–	.079	.073
TN 22NR-R150	**T8330**	■	■	■	□	◪	□	●	+++	.059	–	–	–	–	.118	.087
TN 11NL-R050	**T8330**	■	■	■	□	◪	□	●	+++	.020	–	–	–	–	.039	.051
TN 16NL-R100	**T8330**	■	■	■	□	◪	□	●	+++	.039	–	–	–	–	.079	.073



TN ZZ EXT

	d	d_1	s
16	.375	.154	.134
22	.500	.193	.185

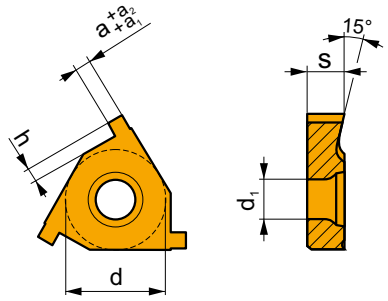


For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	a	a_1	a_2	h
TN 16ER090ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.035	.002	.004	.035
TN 16ER110ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.043	.002	.004	.051
TN 16ER130ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.051	.002	.004	.063
TN 16ER160ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.063	.002	.004	.073
TN 16ER185ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.073	.002	.004	.073
TN 16ER215ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.085	.002	.004	.073
TN 16ER265ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.104	.002	.004	.081
TN 22ER265ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.104	.003	.005	.087
TN 22ER315ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.124	.003	.005	.087
TN 22ER415ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.163	.003	.005	.094
TN 16EL090ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.035	.002	.004	.035
TN 16EL110ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.043	.002	.004	.051
TN 16EL130ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.051	.002	.004	.063
TN 16EL160ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.063	.002	.004	.073
TN 16EL185ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.073	.002	.004	.073
TN 16EL215ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.085	.002	.004	.073
TN 16EL265ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.104	.002	.004	.081
TN 22EL315ZZ	**T8330**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.124	.003	.005	.087

TN ZZ INT

	d	d_1	s
11	.250	.110	.118
16	.375	.154	.134
22	.500	.193	.185

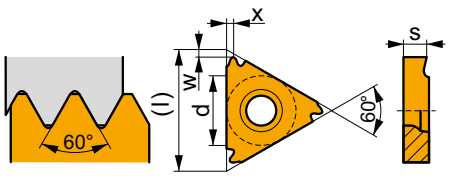


For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	a	a_1	a_2	h
TN 11NR090ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.035	.002	.004	.035
TN 11NR110ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.043	.002	.004	.051
TN 16NR090ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.035	.002	.004	.035
TN 16NR110ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.043	.002	.004	.051
TN 16NR130ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.051	.002	.004	.063
TN 16NR160ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.063	.002	.004	.073
TN 16NR185ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.073	.002	.004	.073
TN 16NR215ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.085	.002	.004	.073
TN 16NR265ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.104	.002	.004	.081
TN 22NR265ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.104	.003	.005	.087
TN 22NR315ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.124	.003	.005	.087
TN 22NR415ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.163	.003	.005	.094
TN 11NL110ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.043	.002	.004	.051
TN 16NL090ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.035	.002	.004	.035
TN 16NL110ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.043	.002	.004	.051
TN 16NL130ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.051	.002	.004	.063
TN 16NL160ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.063	.002	.004	.073
TN 16NL185ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.073	.002	.004	.073
TN 16NL215ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.085	.002	.004	.073
TN 16NL265ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.104	.002	.004	.081
TN 22NL315ZZ	T8330	■	■	■	□	◪	□	●	+++	–	–	–	–	–	.124	.003	.005	.087

TN M EXT

	d	l	s
16	.375	.650	.137
22	.500	.866	.185



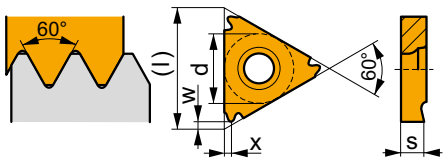
For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H	?		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
TN 16ER050M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50	–	.031	.031
TN 16ER075M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0.75	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.75	–	.031	.031
TN 16ER080M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0.80	–	.024	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.80	–	.024	.031
TN 16ER100M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	1.00	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.00	–	.031	.031
TN 16ER125M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	1.25	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.25	–	.031	.031
TN 16ER150M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	1.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.031
TN 16ER175M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	1.75	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75	–	.059	.047
TN 16ER200M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	2.00	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.059	.047
TN 16ER250M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	2.50	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.50	–	.059	.047
TN 16ER300M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	3.00	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.00	–	.059	.047
TN 22ER350M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	3.50	–	.098	.071
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50	–	.098	.071
TN 22ER400M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	4.00	–	.098	.071
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	4.00	–	.098	.071
TN 22ER450M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	4.50	–	.098	.071
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	4.50	–	.098	.071
TN 22ER500M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	5.00	–	.098	.071
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	5.00	–	.098	.071
TN 16EL050M	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50	–	.031	.031
TN 16EL075M	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.75	–	.031	.031
TN 16EL080M	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.80	–	.024	.031
TN 16EL100M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	1.00	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.00	–	.031	.031
TN 16EL125M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	1.25	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.25	–	.031	.031
TN 16EL150M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	1.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.031
TN 16EL175M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	1.75	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75	–	.059	.047
TN 16EL200M	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	2.00	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.059	.047

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
TN 16EL250M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2.50	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.50	–	.059	.047
TN 16EL300M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	3.00	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.00	–	.059	.047
TN 22EL350M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50	–	.098	.071
TN 22EL400M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	4.00	–	.098	.071
TN 22EL450M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	4.50	–	.098	.071
TN 22EL500M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	5.00	–	.098	.071
TN 16ER100M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.00	–	.031	.031
TN 16ER125M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.25	–	.031	.031
TN 16ER150M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.031
TN 16ER175M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75	–	.059	.047
TN 16ER200M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.059	.047
TN 16ER250M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.50	–	.059	.047
TN 16ER300M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.00	–	.059	.047
TN 16ER050M-AL	HF7				■			●	+++	-	-	-	-	-	0.50	-	.031	.031
TN 16ER075M-AL	HF7				■			●	+++	-	-	-	-	-	0.75	-	.031	.031
TN 16ER080M-AL	HF7				■			●	+++	-	-	-	-	-	0.80	-	.023	.031
TN 16ER100M-AL	HF7				■			●	+++	-	-	-	-	-	1.00	-	.031	.031
TN 16ER125M-AL	HF7				■			●	+++	-	-	-	-	-	1.25	-	.031	.031
TN 16ER150M-AL	HF7				■			●	+++	-	-	-	-	-	1.50	-	.031	.031
TN 16ER175M-AL	HF7				■			●	+++	-	-	-	-	-	1.75	-	.059	.047
TN 16ER200M-AL	HF7				■			●	+++	-	-	-	-	-	2.00	-	.059	.047
TN 16ER250M-AL	HF7				■			●	+++	-	-	-	-	-	2.50	-	.059	.047
TN 16ER300M-AL	HF7				■			●	+++	-	-	-	-	-	3.00	-	.059	.047

TN M INT

	d	l	s
11	.250	.433	.118
16	.375	.650	.137
22	.500	.866	.185



For tools see pages: T250 -T253

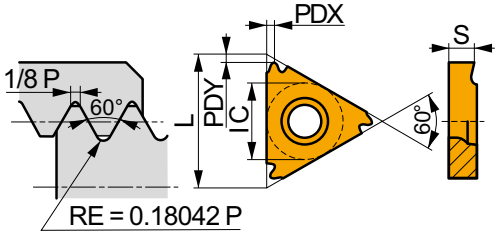
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
TN 11NR050M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50	–	.031	.031
TN 11NR075M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0.75	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.75	–	.031	.031
TN 11NR100M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.00	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.00	–	.031	.031
TN 11NR125M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.25	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.25	–	.031	.031
TN 11NR150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.031
TN 11NR200M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2.00	–	.035	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.035	.031
TN 16NR050M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50	–	.031	.031
TN 16NR075M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0.75	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.75	–	.031	.031
TN 16NR100M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.00	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.00	–	.031	.031

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
TN 16NR125M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.25	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.25	–	.031	.031
TN 16NR150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.031
TN 16NR175M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.75	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75	–	.059	.047
TN 11NR050M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50	–	.031	.031
TN 11NR075M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0.75	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.75	–	.031	.031
TN 11NR100M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.00	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.00	–	.031	.031
TN 11NR125M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.25	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.25	–	.031	.031
TN 11NR150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.031
TN 11NR200M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2.00	–	.035	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.035	.031
TN 16NR050M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50	–	.031	.031
TN 16NR075M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0.75	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.75	–	.031	.031
TN 16NR100M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.00	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.00	–	.031	.031
TN 16NR125M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.25	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.25	–	.031	.031
TN 16NR150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.031
TN 16NR175M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.75	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75	–	.059	.047
TN 16NR250M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2.50	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.50	–	.059	.047
TN 16NR300M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	3.00	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.00	–	.059	.047
TN 22NR350M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	3.50	–	.098	.071
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50	–	.098	.071
TN 22NR400M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	4.00	–	.098	.071
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	4.00	–	.098	.071
TN 22NR450M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	4.50	–	.098	.071
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	4.50	–	.098	.071
TN 22NR500M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	5.00	–	.098	.071
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	5.00	–	.098	.071
TN 11NL050M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50	–	.031	.031
TN 11NL075M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.75	–	.031	.031
TN 11NL100M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.00	–	.031	.031
TN 11NL125M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.25	–	.031	.031
TN 11NL150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.031
TN 11NL200M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2.00	–	.035	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.035	.031
TN 16NL050M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50	–	.031	.031
TN 16NL075M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.75	–	.031	.031
TN 16NL100M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.00	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.00	–	.031	.031
TN 16NL125M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.25	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.25	–	.031	.031
TN 16NL150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.50	–	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.031

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
TN 16NL175M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1.75	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75	–	.059	.047
TN 16NL200M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2.00	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.059	.047
TN 16NL250M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2.50	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.50	–	.059	.047
TN 16NL300M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	3.00	–	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.00	–	.059	.047
TN 22NL350M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50	–	.098	.071
TN 22NL400M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	4.00	–	.098	.071
TN 22NL500M	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	5.00	–	.098	.071
TN 11NR100M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.00	–	.031	.031
TN 11NR150M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.031
TN 16NR100M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.00	–	.031	.031
TN 16NR150M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.031
TN 16NR200M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.059	.047
TN 16NR250M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.50	–	.059	.047
TN 16NR300M-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.00	–	.059	.047
TN 16NR050M-AL	HF7				■			●	+++	-	-	-	-	-	0.50	-	.031	.031
TN 16NR075M-AL	HF7				■			●	+++	-	-	-	-	-	0.75	-	.031	.031
TN 16NR100M-AL	HF7				■			●	+++	-	-	-	-	-	1.00	-	.031	.031
TN 16NR125M-AL	HF7				■			●	+++	-	-	-	-	-	1.25	-	.031	.031
TN 16NR150M-AL	HF7				■			●	+++	-	-	-	-	-	1.50	-	.031	.031
TN 16NR175M-AL	HF7				■			●	+++	-	-	-	-	-	1.75	-	.059	.047
TN 16NR200M-AL	HF7				■			●	+++	-	-	-	-	-	2.00	-	.059	.047
TN 16NR250M-AL	HF7				■			●	+++	-	-	-	-	-	2.50	-	.059	.047
TN 16NR300M-AL	HF7				■			●	+++	-	-	-	-	-	3.00	-	.059	.047

TN MJ EXT

	IC	L	S
16	3/8	.650	.137

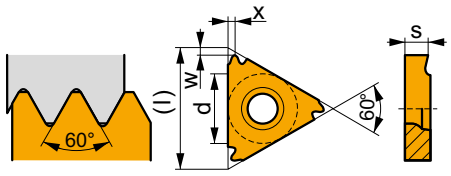


For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			RE	FN	FX	CDN	CDX	TP	TPI	PDX	PDY
TN 16ER100MJ	T8030	■	■	■		◪		●	+++	-	-	-	-	-	1.00	-	.031	.031
TN 16ER150MJ	T8030	■	■	■		◪		●	+++	-	-	-	-	-	1.50	-	.031	.031

TN 60° PP EXT

	d	l	s
16	.375	.650	.137
22	.500	.866	.185

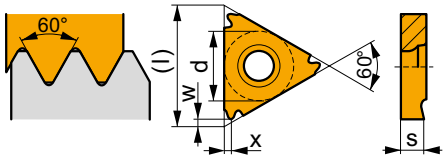


For tools see pages: T250 -T253

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
1 U E	10°	TN 16ERA60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 1.50	48.0 - 16.0	.031	.024
		TN 16ERAG60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 3.00	48.0 - 8.0	.059	.043
		TN 16ERG60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75 - 3.00	14.0 - 8.0	.059	.043
		TN 22ERN60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50 - 5.00	7.0 - 5.0	.098	.071
1 U E	10°	TN 16ELA60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 1.50	48.0 - 16.0	.031	.024
		TN 16ELAG60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 3.00	48.0 - 8.0	.059	.043
		TN 16ELG60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75 - 3.00	14.0 - 8.0	.059	.043
		TN 22ELN60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50 - 5.00	7.0 - 5.0	.098	.071

TN 60° PP INT

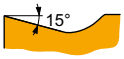
	d	l	s
11	.250	.433	.118
16	.375	.650	.137
22	.500	.866	.185



For tools see pages: T250 -T253

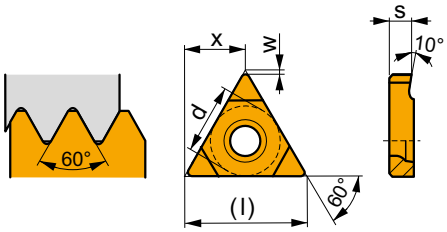
		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
1 U E	15°	TN 11NRA60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 1.50	48.0 - 16.0	.031	.028
		TN 16NRA60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 1.50	48.0 - 16.0	.031	.028
		TN 16NRAG60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 3.00	48.0 - 8.0	.059	.043
		TN 16NRG60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75 - 3.00	14.0 - 8.0	.059	.043
		TN 22NRN60	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50 - 5.00	7.0 - 5.0	.098	.071

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
TN 11NLA60	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 1.50	48.0 - 16.0	.031	.028
TN 16NLAG60	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 3.00	48.0 - 8.0	.059	.043
TN 22NLN60	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50 - 5.00	7.0 - 5.0	.098	.071



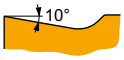
TN 60°-S PP EXT

	d	l	s
22	.500	.866	.181



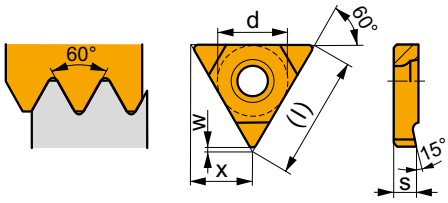
For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
TN 22EN350-500M	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50 - 5.00	7.0 - 5.0	.433	.020
TN 22EN550-800M	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	5.50 - 8.00	4.5 - 3.0	.433	.031



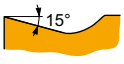
TN 60°-S PP INT

	d	l	s
22	.500	.866	.181



For tools see pages: T250 -T253

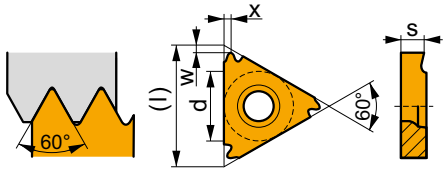
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
TN 22NN350-500M	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50 - 5.00	7.0 - 5.0	.433	.008
TN 22NN550-800M	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	5.50 - 8.00	4.5 - 3.0	.433	.020



PRAMET

TN UN EXT

	d	l	s
16	.375	.650	.137
22	.500	.866	.185

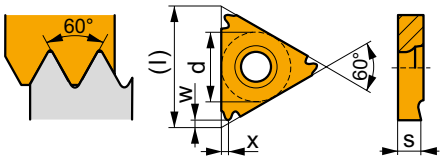


For tools see pages: T250 -T253

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
		TN 16ER320UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	32.0	.031	.031
		TN 16ER280UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	28.0	.031	.031
		TN 16ER240UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	24.0	.031	.031
		TN 16ER200UN	T8010	■	■	■		◪		●	+++	–	–	–	–	–	–	20.0	.031	.031
			T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	20.0	.031	.031
1		TN 16ER180UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	18.0	.031	.031
		TN 16ER160UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	16.0	.031	.031
U		TN 16ER140UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
	10°	TN 16ER130UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	13.0	.059	.047
E		TN 16ER120UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	12.0	.059	.047
		TN 16ER115UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.5	.059	.047
		TN 16ER110UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047
		TN 16ER100UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	10.0	.059	.047
		TN 16ER090UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	9.0	.059	.047
		TN 16ER080UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047
		TN 22ER070UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	7.0	.098	.071
		TN 22ER060UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071
		TN 22ER050UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	5.0	.098	.071
		TN 16EL320UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	32.0	.031	.031
		TN 16EL280UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	28.0	.031	.031
		TN 16EL240UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	24.0	.031	.031
1		TN 16EL200UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	20.0	.031	.031
		TN 16EL180UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	18.0	.031	.031
U		TN 16EL160UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	16.0	.031	.031
	10°	TN 16EL140UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
E		TN 16EL120UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	12.0	.059	.047
		TN 16EL110UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047
		TN 16EL100UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	10.0	.059	.047
		TN 16EL090UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	9.0	.059	.047
		TN 16EL080UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047
		TN 22EL070UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	7.0	.098	.071
		TN 22EL060UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071
		TN 22EL050UN	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	5.0	.098	.071
		TN 16ER200UN-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	20.0	.031	.031
		TN 16ER180UN-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	18.0	.031	.031
		TN 16ER160UN-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	16.0	.031	.031
E	10°	TN 16ER140UN-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
		TN 16ER120UN-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	12.0	.059	.047
		TN 16ER080UN-P1	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047

TN UN INT

	d	l	s
16	.375	.650	.137
22	.500	.866	.185

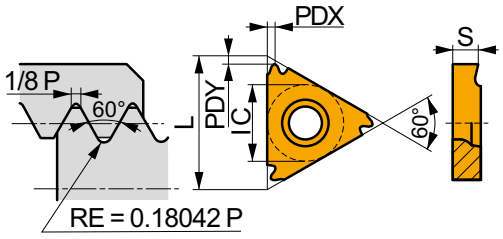


For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1/1"	x	w
TN 16NR320UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	32.0	.031	.031
TN 16NR280UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	28.0	.031	.031
TN 16NR240UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	24.0	.031	.031
TN 16NR200UN	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	20.0	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	20.0	.031	.031
TN 16NR180UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	18.0	.031	.031
TN 16NR160UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	16.0	.031	.031
TN 16NR140UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
TN 16NR130UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	13.0	.059	.047
TN 16NR120UN	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	12.0	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	12.0	.059	.047
TN 16NR115UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.5	.059	.047
TN 16NR110UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047
TN 16NR100UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	10.0	.059	.047
TN 16NR080UN	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	8.0	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047
TN 22NR060UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071
TN 22NR050UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	5.0	.098	.071
TN 16NL320UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	32.0	.031	.031
TN 16NL280UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	28.0	.031	.031
TN 16NL240UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	24.0	.031	.031
TN 16NL200UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	20.0	.031	.031
TN 16NL180UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	18.0	.031	.031
TN 16NL160UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	16.0	.031	.031
TN 16NL140UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
TN 16NL120UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	12.0	.059	.047
TN 16NL110UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047
TN 16NL100UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	10.0	.059	.047
TN 16NL080UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047
TN 22NL070UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	7.0	.098	.071
TN 22NL060UN	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071
TN 16NR200UN-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	20.0	.031	.031
TN 16NR180UN-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	18.0	.031	.031
TN 16NR160UN-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	16.0	.031	.031
TN 16NR140UN-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
TN 16NR120UN-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	12.0	.059	.047
TN 16NR080UN-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047

TN UNJ EXT

	IC	L	S
16	3/8	.650	.137

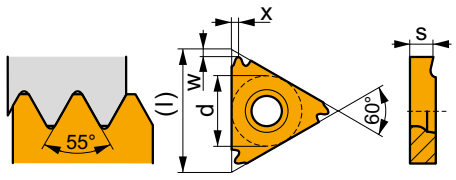


For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H	?		RE	FN	FX	CDN	CDX	TP	TPI	PDX	PDY
TN 16ER320UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	32	.031	.031
TN 16ER280UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	28	.031	.031
TN 16ER240UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	24	.031	.031
TN 16ER200UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	20	.031	.031
TN 16ER180UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	18	.031	.031
TN 16ER160UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	16	.059	.047
TN 16ER120UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	12	.059	.047
TN 16EL320UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	32	.031	.031
TN 16EL280UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	28	.031	.031
TN 16EL240UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	24	.031	.031
TN 16EL200UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	20	.031	.031
TN 16EL180UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	18	.031	.031
TN 16EL160UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	16	.059	.047
TN 16EL120UNJ	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	12	.059	.047

TN W EXT

	d	l	s
16	.375	.650	.137
22	.500	.866	.185



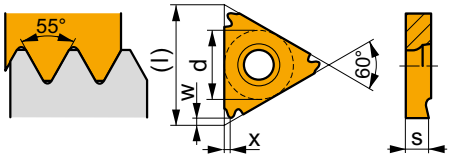
For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
TN 16ER280W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	28.0	.031	.031
TN 16ER200W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	20.0	.031	.031
TN 16ER190W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	19.0	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	19.0	.031	.031
TN 16ER180W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	18.0	.031	.031
TN 16ER160W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	16.0	.031	.031
TN 16ER140W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	14.0	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
TN 16ER120W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	12.0	.059	.047
TN 16ER110W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	11.0	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047
TN 16ER100W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	10.0	.059	.047
TN 16ER090W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	9.0	.059	.047
TN 16ER080W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047
TN 22ER070W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	7.0	.098	.071
TN 22ER060W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071
TN 22ER050W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	5.0	.098	.067
TN 16EL280W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	28.0	.031	.031
TN 16EL200W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	20.0	.031	.031
TN 16EL190W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	19.0	.031	.031
TN 16EL160W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	16.0	.031	.031
TN 16EL140W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
TN 16EL120W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	12.0	.059	.047
TN 16EL110W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047
TN 16EL100W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	10.0	.059	.047
TN 16EL090W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	9.0	.059	.047
TN 16EL080W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047
TN 22EL070W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	7.0	.098	.071
TN 22EL060W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071
TN 22EL050W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	5.0	.098	.067
TN 16ER190W-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	19.0	.031	.031
TN 16ER140W-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
TN 16ER110W-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047

PRAMET

TN W INT

	d	l	s
11	.250	.433	.118
16	.375	.650	.137
22	.500	.866	.185

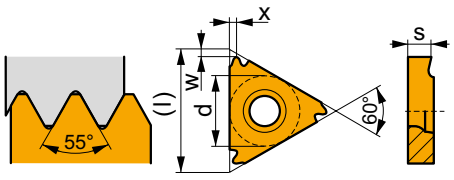


For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
TN 11NR190W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	19,0	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	19.0	.031	.031
TN 11NR140W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	14.0	.035	.028
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.035	.028
TN 16NR280W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	28.0	.031	.031
TN 16NR200W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	20.0	.031	.031
TN 16NR190W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	19.0	.031	.031
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	19.0	.031	.031
TN 16NR160W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	16.0	.031	.031
TN 16NR140W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	14.0	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
TN 16NR120W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	12.0	.059	.047
TN 16NR110W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	11.0	.059	.047
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047
TN 16NR100W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	10.0	.059	.047
TN 16NR090W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	9.0	.059	.047
TN 16NR080W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047
TN 22NR070W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	7.0	.098	.071
TN 22NR060W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071
TN 22NR050W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	5.0	.098	.067
TN 11NL190W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	19.0	.031	.031
TN 11NL140W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.035	.028
TN 16NL280W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	28.0	.031	.031
TN 16NL200W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	20.0	.031	.031
TN 16NL190W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	19.0	.031	.031
TN 16NL120W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	12.0	.059	.047
TN 16NL110W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047
TN 16NL100W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	10.0	.059	.047
TN 16NL090W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	9.0	.059	.047
TN 16NL080W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047
TN 22NL070W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	7.0	.098	.071
TN 22NL060W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071
TN 22NL050W	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	3.0	.098	.067
TN 11NR190W-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	19.0	.031	.031
TN 11NR140W-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.035	.028
TN 16NR140W-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
TN 16NR110W-P1	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047

TN 55° PP EXT

	d	l	s
16	.375	.650	.137
22	.500	.866	.185

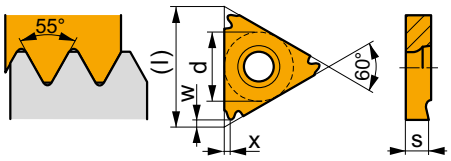


For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
TN 16ERA55	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 1.50	48.0 - 16.0	.031	.024
TN 16ERAG55	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0,50 - 3,00	48,0 - 8,0	1,50	1,10
TN 16ERAG55	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 3.00	48.0 - 8.0	.059	.043
TN 16ERG55	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75 - 3.00	14.0 - 8.0	.059	.043
TN 22ERN55	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	3,50 - 5,00	7,0 - 5,0	2,50	1,80
TN 22ERN55	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50 - 5.00	7.0 - 5.0	.098	.071
TN 16ELA55	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 1.50	48.0 - 16.0	.031	.024
TN 16ELAG55	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 3.00	48.0 - 8.0	.059	.043
TN 16ELG55	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75 - 3.00	14.0 - 8.0	.059	.043
TN 22ELN55	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50 - 5.00	7.0 - 5.0	.098	.071

TN 55° PP INT

	d	l	s
11	.250	.433	.118
16	.375	.650	.137
22	.500	.866	.185

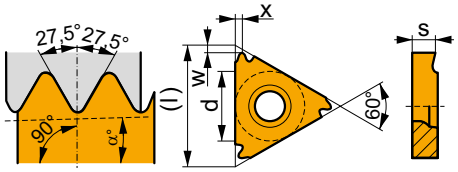


For tools see pages: T250 -T253

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
1 U E	15°	TN 11NRA55	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 1.50	48.0 - 16.0	.031	.024
		TN 16NRA55	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 1.50	48.0 - 16.0	.031	.024
		TN 16NRAG55	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 3.00	48.0 - 8.0	.059	.043
		TN 16NRG55	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75 - 3.00	14.0 - 8.0	.059	.043
		TN 22NRN55	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.50 - 5.00	7.0 - 5.0	.098	.071
1 U E	15°	TN 11NLA55	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 1.50	48.0 - 16.0	.031	.024
		TN 16NLA55	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 1.50	48.0 - 16.0	.031	.024
		TN 16NLAG55	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	0.50 - 3.00	48.0 - 8.0	.059	.043
		TN 16NLG55	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.75 - 3.00	14.0 - 8.0	.059	.043

TN BSPT EXT

	α°	d	l	s
16	1°47´	.375	.650	.137

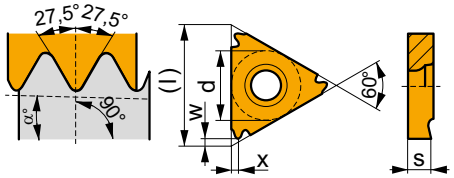


For tools see pages: T250 -T253

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
1 U E	10°	TN 16ER140BSPT	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
		TN 16ER110BSPT	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047

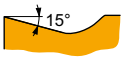
TN BSPT INT

	α°	d	l	s
16	1°47′	.375	.650	.137



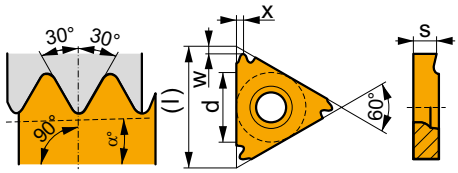
For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
TN 16NR140BSPT	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.047
TN 16NR110BSPT	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.0	.059	.047



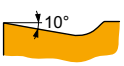
TN NPT EXT

	α°	d	l	s
16	1°47′	.375	.650	.137



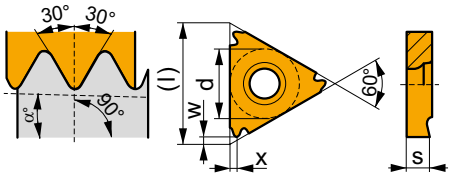
For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
TN 16ER270NPT	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	27.0	.031	.028
TN 16ER180NPT	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	18.0	.031	.028
TN 16ER140NPT	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	14.0	.059	.043
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.043
TN 16ER115NPT	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	11.5	.059	.043
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.5	.059	.043
TN 16ER080NPT	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.063	.043



TN NPT INT

	α°	d	l	s
11	1°47′	.250	.433	.118
16	1°47′	.375	.650	.137



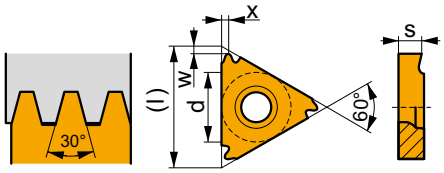
For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
TN 11NR180NPT	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	18.0	.031	.028
TN 11NR140NPT	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.039	.028
TN 16NR140NPT	T8010	■	■	■		◪		●	+++	–	–	–	–	–		14.0	.059	.043
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	14.0	.059	.043
TN 16NR115NPT	T8010	■	■	■		◪		●	+++	–	–	–	–	–		11.5	.059	.043
	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	11.5	.059	.043
TN 16NR080NPT	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.063	.043

15°

TN TR EXT

	d	l	s
16	.375	.650	.137
22	.500	.866	.185



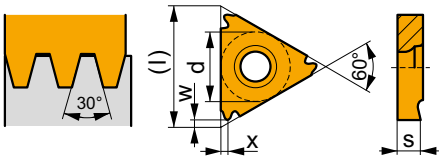
For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
TN 16ER150TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.035
TN 16ER200TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.059	.051
TN 16ER300TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.00	–	.063	.051
TN 22ER400TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	4.00	–	.087	.071
TN 22ER500TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	5.00	–	.087	.071
TN 16EL150TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.035
TN 16EL200TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.059	.051
TN 16EL300TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.00	–	.063	.051
TN 22EL400TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	4.00	–	.087	.071
TN 22EL500TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	5.00	–	.087	.071

10°

TN TR INT

	d	l	s
16	.375	.650	.137
22	.500	.866	.185

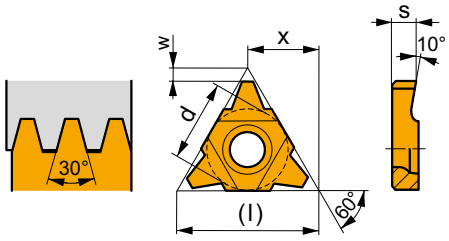


For tools see pages: T250 -T253

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
1 U E	15°	TN 16NR150TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.035
		TN 16NR200TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.059	.051
		TN 16NR300TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.00	–	.063	.051
		TN 22NR400TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	4.00	–	.087	.071
		TN 22NR500TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	5.00	–	.087	.071
1 U E	15°	TN 16NL150TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	1.50	–	.031	.035
		TN 16NL200TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	2.00	–	.059	.051
		TN 16NL300TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	3.00	–	.063	.051
		TN 22NL400TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	4.00	–	.087	.071
		TN 22NL500TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	5.00	–	.087	.071

TN TR-S EXT

	d	l	s
22	.500	.866	.181

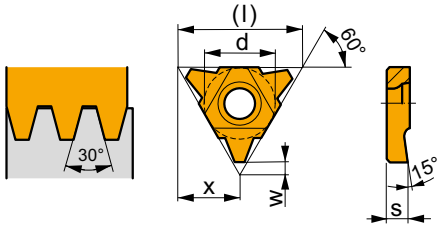


For tools see pages: T250 -T253

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
1 U E	10°	TN 22EN600TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	6.00	–	.433	.075
		TN 22EN700TR	T8030	■	■	■	□	◪	□	●	+++	–	–	–	–	–	7.00	–	.433	.091

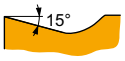
TN TR-S INT

	d	l	s
22	.500	.866	.181



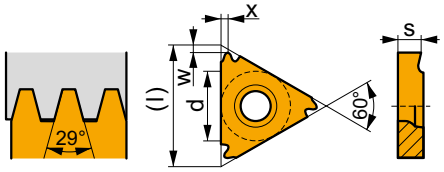
For tools see pages: T250 -T253

	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
1 U E	**TN 22NN600TR**	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	6.00	–	.433	.075
	TN 22NN700TR	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	7.00	–	.433	.091



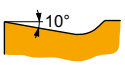
TN ACME EXT

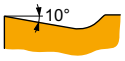
	d	l	s
16	.375	.650	.137
22	.500	.866	.185



For tools see pages: T250 -T253

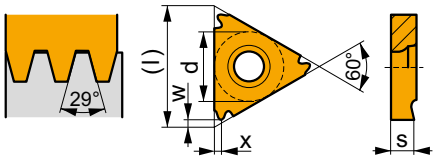
	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 /1"	x	w
1 U E	**TN 16ER120ACME**	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	12.0	.059	.051
	TN 16ER100ACME	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	10.0	.059	.051
	TN 16ER080ACME	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.051
	TN 22ER060ACME	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.079
	TN 22ER050ACME	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	5.0	.091	.079
1 U E	**TN 22EL060ACME**	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.079
	TN 22EL050ACME	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	5.0	.091	.079





TN ACME INT

	d	l	s
16	.375	.650	.137
22	.500	.866	.185

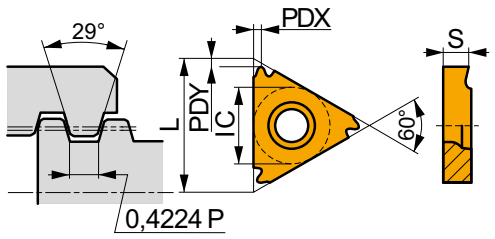


For tools see pages: T250 -T253

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
1 U E	15°	**TN 16NR080ACME**	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.051
		TN 22NR060ACME	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.079
		TN 22NR050ACME	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	5.0	.091	.079
1 U E	15°	**TN 22NL050ACME**	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	5.0	.091	.079

TN STACME EXT

	IC	L	S
16	3/8	.650	.137

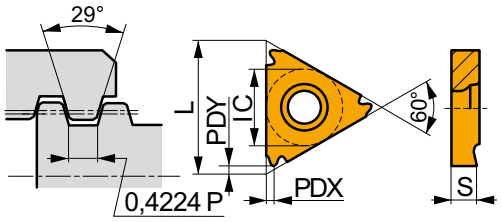


For tools see pages: T250 -T253

		ANSI		P	M	K	N	S	H			RE	FN	FX	CDN	CDX	TP	TPI	PDX	PDY
1 U E	10°	**TN 16ER160STACME**	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	16	.031	.031
		TN 16ER120STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	12	.031	.031
		TN 16ER100STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	10	.059	.051
		TN 16ER080STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	8	.059	.051
		TN 16ER060STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	6	.055	.051
1 U E	10°	**TN 16EL160STACME**	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	16	.031	.031
		TN 16EL120STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	12	.031	.031
		TN 16EL100STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	10	.059	.051
		TN 16EL080STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	8	.059	.051
		TN 16EL060STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	6	.055	.051

TN STACME INT

	IC	L	S
16	3/8	.650	.137

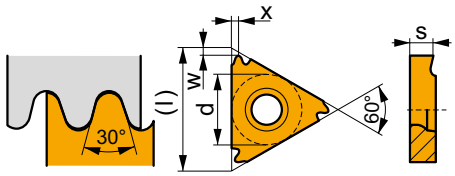


For tools see pages: T250 -T253

		ANSI		P	M	K	N	S	H			RE	FN	FX	CDN	CDX	TP	TPI	PDX	PDY
1 U E	15°	**TN 16NR160STACME**	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	16	.031	.031
		TN 16NR120STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	12	.031	.031
		TN 16NR100STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	10	.059	.051
		TN 16NR080STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	8	.059	.051
		TN 16NR060STACME*	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	6	.051	.051
1 U E	15°	**TN 16NL160STACME**	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	16	.031	.031
		TN 16NL120STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	12	.031	.031
		TN 16NL100STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	10	.059	.051
		TN 16NL080STACME	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	8	.059	.051
		TN 16NL060STACME*	**T8030**	■	■	■		◪		●	+++	-	-	-	-	-	-	6	.051	.051

TN RD EXT

	d	l	s
16	.375	.650	.137
22	.500	.866	.185

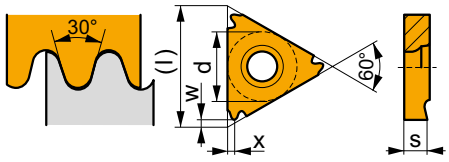


For tools see pages: T250 -T253

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
TN 16ER100RD	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	10.0	.059	.047
TN 16ER080RD	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047
TN 16ER060RD	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.059	.047
TN 22ER060RD	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071
TN 22EL060RD	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071

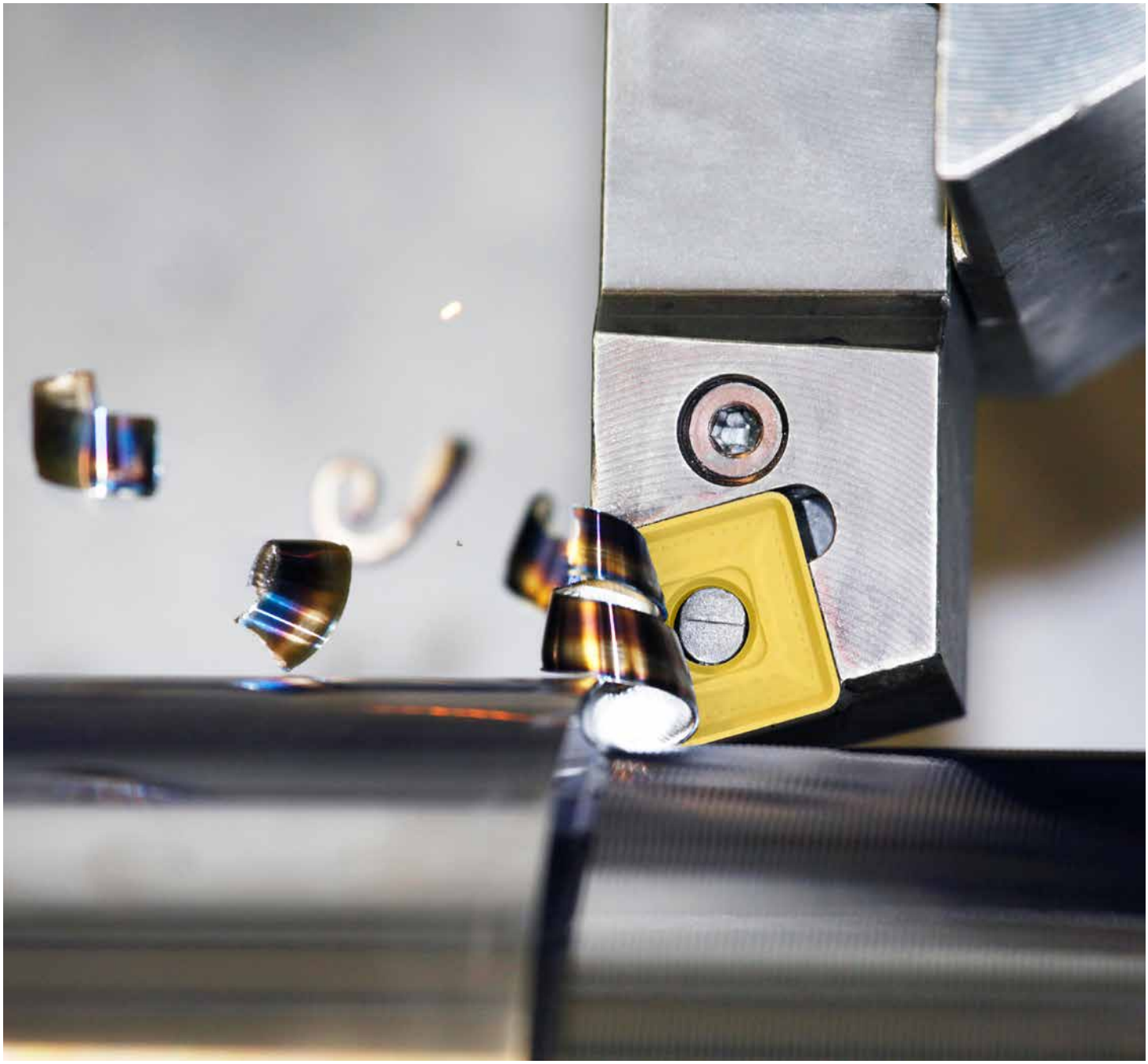
TN RD INT

	d	l	s
16	.375	.650	.137
22	.500	.866	.185



For tools see pages: T250 -T253

		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$	[mm]	1 2 3 / 1"	x	w
1 U E	15°	**TN 16NR100RD**	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	10.0	.059	.047
1 U E	15°	**TN 16NR080RD**	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	8.0	.059	.047
1 U E	15°	**TN 16NR060RD**	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.059	.047
1 U E	15°	**TN 22NR060RD**	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071
1 U E	15°	**TN 22NL060RD**	**T8030**	■	■	■	□	◪	□	●	+++	–	–	–	–	–	–	6.0	.098	.071



PRAMET

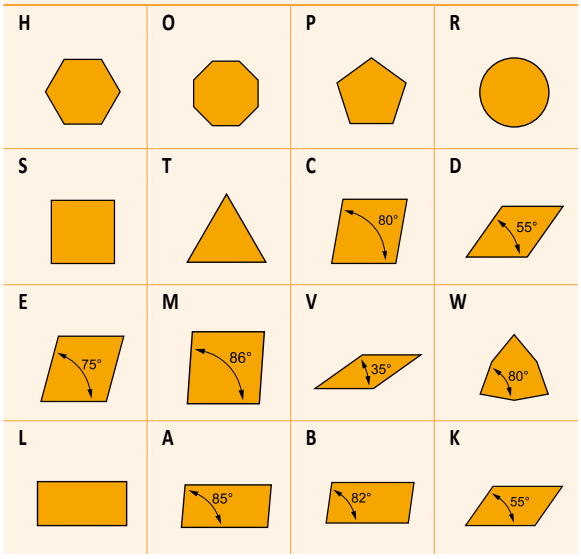
ISO/ANSI CODE DESIGNATION – EXTERNAL TURNING TOOLS
DESIGNACIÓN CÓDIGO ISO/ANSI - HERRAMIENTAS DE TORNEADO EXTERIOR
CODIFICATION ISO/ANSI - PORTE-OUTILS EXTERIEURS

	1	2	3	4	5		6	7	8	9		10
ISO	P	C	L	N	R	–	32	25	L	12	–	S
ANSI	1	2	3	4	5		6 & 7		9	8		
	D	C	L	N	R	–	16		4	D		

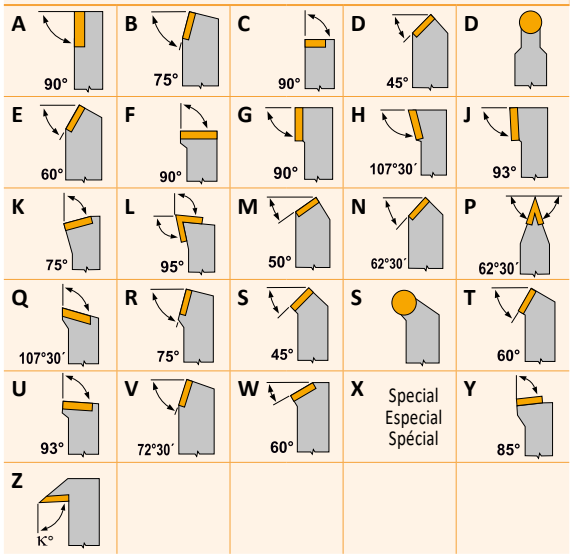
1 Clamping designation / Tipo de fijación / Désignation de la fixation

C	
D	
P	
M	
S	
X	
G	

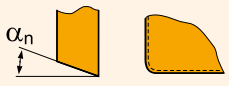
2 Insert shape / Forma de plaquita / Forme de la plaquette



3 Holder style – cutting edge angle / Tipo de herramienta - ángulo de posición / Type d'outil - angle d'attaque

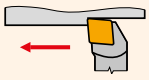
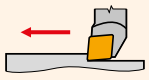
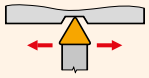


4 Insert clearance angle / Ángulo de incidencia / Angle de dépouille de la plaquette

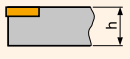


N	B	C	P
α_n=0°	α_n=5°	α_n=7°	α_n=11°

5 Direction of cut / Dirección del corte / Direction de coupe

R	
L	
N	

6 Shank height [mm] / Altura del mango [mm] / Hauteur de manche [mm]



08	10	12	16	20	25
32	38	40	45	50	60

7 Shank width [mm] / Anchura del mango [mm] / Largeur de manche [mm]



08	10	12	16	20	25
32	38	40	45	50	60

6 & 7 Shank width & Shank height [in] / Anchura y altura del mango [in] / Largeur de manche & hauteur de manche [in]

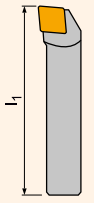
	b [in]	h [in]
05	5/16	5/16
06	3/8	3/8
08	1/2	1/2
12	3/4	5/8
16	1	1
85	1	1 1/4
86	1	1 1/2
20	1 1/4	1 1/4
24	1 1/2	1 1/2
32	2	2

For square shanks, the number is the width or height in terms of 16ths. For rectangular shanks the first digit is the width in terms of 8ths and the second digit is the height in terms of 4ths.

Para mangos cuadrados, el dígito indica el ancho o la altura en número de dieciseisavos de pulgada. Para mangos rectangulares, el primer dígito indica el ancho en número de octavos de pulgada y el segundo dígito indica la altura en número de cuartos de pulgada.

Pour les manches carrés, c'est le nombre 16 de la largeur et de la hauteur en pouce. Pour les manches rectangulaires le premier digit est le nombre 8 de la largeur en pouce et le second digit le nombre 4 de la hauteur en pouce.

8 Holder total length / Longitud total / Longueur totale de l'outil



	l_1 [in]		l_1 [mm]
A	4.000	D	60
B	4.500	E	70
C	5.000	F	80
D	6.000	H	100
E	7.000	J	110
F	8.000	K	125
M	4.000	L	140
N	4.500	M	150
R	6.000	N	160
S	7.000	P	170
T	8.000	Q	180
U	4.000	R	200
V	4.500	S	250
W	6.000	T	300
X	Spec.	U	350
Y	500	V	400
		W	450

PRAMET

ISO/ANSI CODE DESIGNATION – INTERNAL TURNING TOOLS
DESIGNACIÓN CÓDIGO ISO/ANSI - HERRAMIENTAS DE TORNEADO INTERIOR
CODIFICATION ISO/ANSI - PORTE-OUTILS INTÉRIEURS

	12	13	14		1	2	3	4	5	9		11
ISO	A	25	T	–	P	C	L	N	L	12	–	X
ANSI	A	16	T	–	D	C	L	N	L	4		

9 / 9 — Insert cutting edge length (insert size)
Longitud del filo de corte (tamaño de plaquita)
Longueur de l'arête de coupe (taille de plaquette)

d = I.C. [mm]	[in]	H	O	P	S	T	C	D	E	M	V	W	R	K
3,97					03	06		04			06	02		
	5/32"	1.2												
4,76					04	08	04	05	04	04	08	L3		
	3/16"	1.5												
5,56					05	09	05	06	05	05	09	03		
	7/32"	1.8												
6,35		03	02	04	08	11	06	07	08	08	11	04	06	
	1/4"	2												
7,94		04	03	05	07	13	08	09	06	07	13	05	07	
	5/16"	2,5												
9,525		05	04	07	09	16	09	11	09	09	16	06	09	16
	3/8"	3												
12,7		07	05	09	12	22	12	15	13	12	22	08	12	
	1/2"	4												
15,875		09	06	11	15	27	16	19	16	15	27	10	15	
	5/8"	5												
19,05		11	07	13	19	33	19	23	19	19	33	13	19	
	3/4"	6												
25,40		14	10	18	25	44	25	31	26	25	44	17	25	
	1"	8												
31,75		18	13	23	31	54	32	38	32	31	54	21	31	
	1 1/4"	10												

10 — Manufacturer's designation / Designación del fabricante / Désignation du fabricant

M	Clamping system "S" with shim Sistema de fijación "S" con placa base Système de fixation "S" avec assise
S	Holder with adjusting screws Portaherramientas con tornillos de ajuste Outil avec vis de réglage

11 — Manufacturer's designation / Designación del fabricante / Désignation du fabricant

X	Special shank style Tipo de mango especial Type de queue spéciale
. .	
93	Z – style tool setting angle Ángulo de herramienta tipo Z Angle d'attaque - Outil type Z
. .	

12 / 12 — Shank / Mango / Queue

S	Steel shank Mango de acero Queue en acier
A	Steel shank with coolant hole Mango de acero con refrigeración interna Queue en acier avec trou d'arrosage
E	Tungsten carbide shank with coolant hole Mango de metal duro con refrigeración interna Queue en carbure avec trou d'arrosage

13 / 13 — Shank Ø [mm] / Mango Ø [mm] / Queue Ø [mm]

	d [mm]		d [in]
08	8	03	.1875
10	10	04	.250
12	12	05	.3125
16	16	06	.375
20	20	08	.500
25	25	10	.625
32	32	12	.750
40	40	16	1.000
50	50	20	1.250
60	60		

14 / 14 — Holder total length / Longitud total / Longueur totale de l'outil



	l_1 [in]
F	3.250
H	4.000
K	5.000
M	6.000
P	6.250
Q	7.250
R	8.000
S	10.000
T	12.000
U	14.000
V	15.750
W	17.750
Y	20.000
X	Spec.

	l_1 [mm]
D	60
E	70
F	80
H	100
J	110
K	125
L	140
M	150
N	160
P	170
Q	180
R	200
S	250
T	300
U	350
V	400
W	450
X	Spec.
Y	500

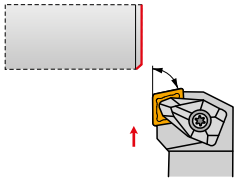
DCKN(RL) EXT

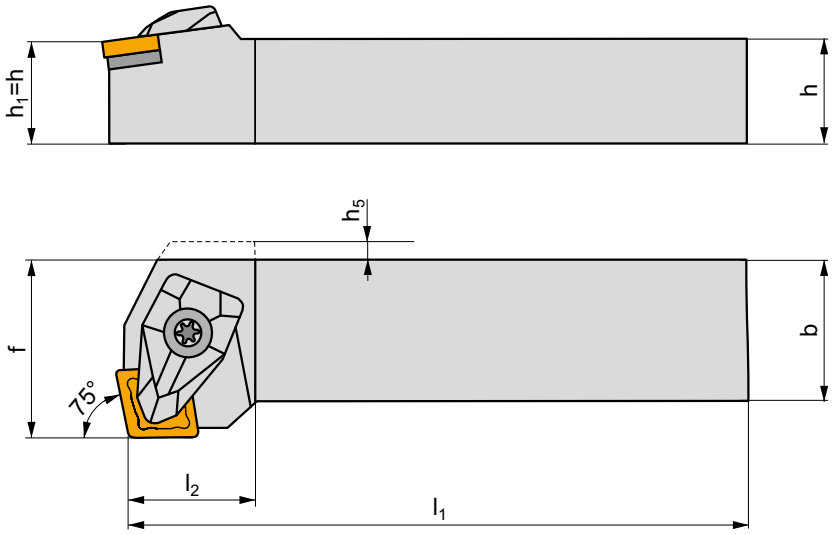
P M K N S H

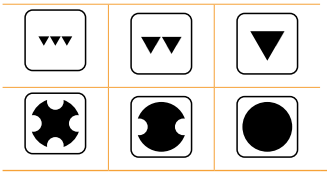
D

T44 - T56











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	h$_5$	λ$_s$°	γ$_o$°	lbs			
DCKNR/L 16 4D	1.000	1.000	1.250	6.000	1.300	–	-6	-6	1.54	IGI005	DC12	IAT001

IGI005	CN.. 43.

DC12	DCS 12	3.9	DCS 234-01	US 2002-T15P	FLAG T15P/3.5	–

IAT001	CN.. 45.	–	DCS 234-02
IAT001	CER CN.N 43.	DCS 12C4	–
IAT001	CER CN.A 43.	DCS 12C2	–

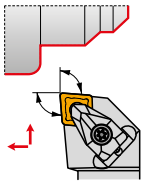
DCLN(RL) EXT

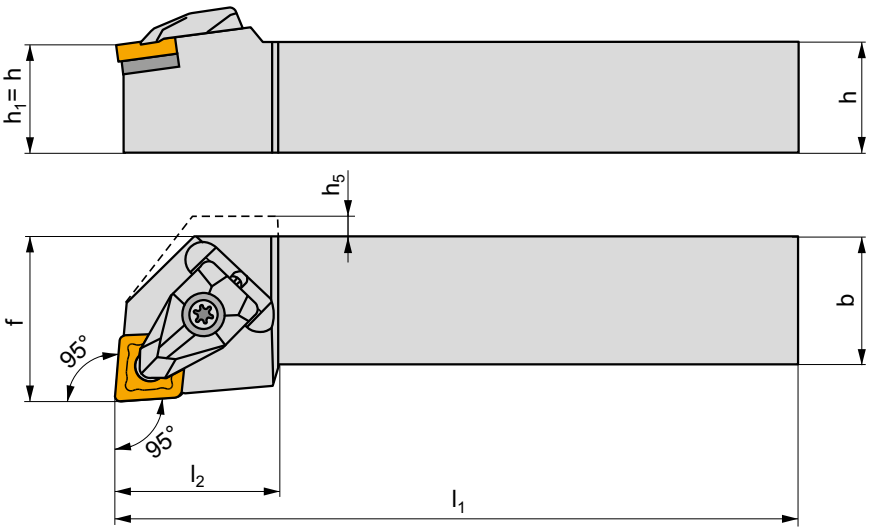
P M K N S H

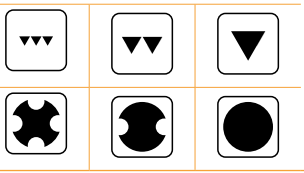
D

T44 - T56











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	h$_5$	λ$_s$°	γ$_o$°	lbs			
DCLNR/L 10 3A	.625	.625	.875	4.000	.980	–	-6	-6	.44	IGI004	DC09	–
DCLNR/L 12 3C	.750	.750	1.000	5.000	.980	–	-6	-6	1.06	IGI004	DC09	–
DCLNR/L 12 4B	.750	.750	1.000	4.500	1.260	–	-6	-6	.88	IGI005	DC12	IAT001
DCLNR/L 16 4D	1.000	1.000	1.250	6.000	1.260	–	-6	-6	1.54	IGI005	DC12	IAT001
DCLNR/L 85 4D	1.250	1.000	1.500	6.000	1.260	–	-6	-6	4.70	IGI005	DC12	IAT001
DCLNR/L 85 5D	1.250	1.000	1.500	6.000	1.540	–	-6	-6	4.70	IGI006	DC16	IAT005
DCLNR/L 20 6D	1.250	1.250	1.500	6.000	1.700	–	-6	-6	2.76	IGI007	DC19	–
DCLNR/L 24 6D	1.500	1.500	2.000	6.000	1.700	–	-6	-6	4.96	IGI007	DC19	–
DCLNR/L 24 8E	1.500	1.500	2.000	7.000	2.090	–	-6	-6	6.17	IGI008	DC25	–

IGI004	CN.. 32.
IGI005	CN.. 43.
IGI006	CN.. 54.
IGI007	CN.. 64.
IGI008	CN.. 86.

		Nm				
DC09	DCS 09	1.7	DCS 236-04	US 2004-T09P	FLAG T09P	–
DC12	DCS 12	3.9	DCS 234-01	US 2002-T15P	FLAG T15P/3.5	–
DC16	DCS 16	6.4	DCS 234-03	US 2007-T20P	–	LK T20P
DC19	DCS 19	6.4	DCS 236-01	US 2007-T20P	–	LK T20P
DC25	DCS 25	9.5	DCS 234-05	US 2008-T25P	–	LK T25P

			
IAT001	CN.. 45.	–	DCS 234-02
IAT005	CN.. 55.	–	DCS 234-04
IAT001	CER CN.N 43.	DCS 12C4	–
IAT001	CER CN.A 43.	DCS 12C2	–
IAT005	CER CN.N 54.	DCS 16C4	–
IAT005	CER CN.A 54.	DCS 16C2	–

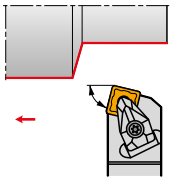
DCRN(RL) EXT

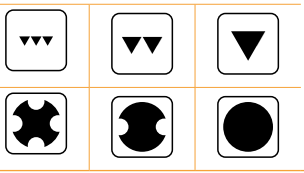
P M K N S H

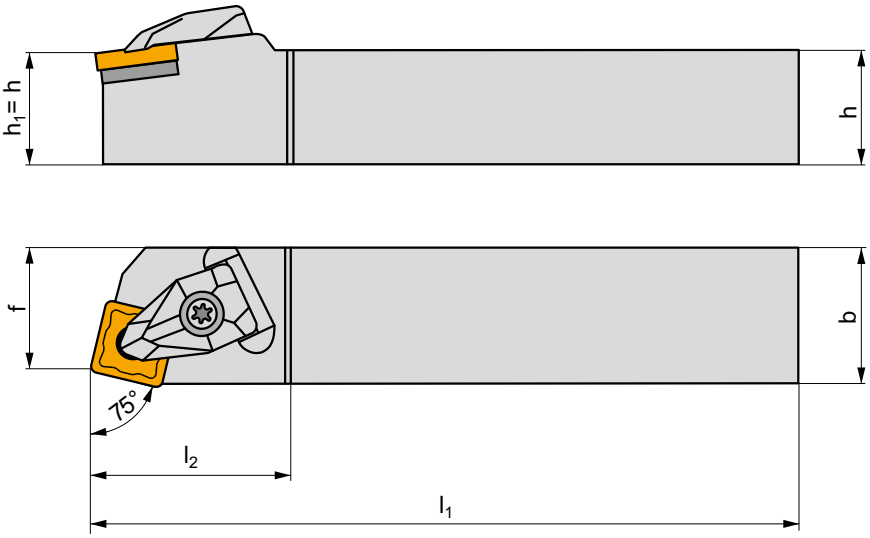
D

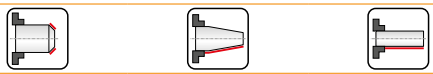
T44 - T56











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs			
DCRNR/L 12 4B	.750	.750	.855	4.500	1.350	-6	-6	.88	IGI005	DC12	IAT001
DCRNR/L 16 4D	1.000	1.000	1.048	6.000	1.350	-6	-6	1.54	IGI005	DC12	IAT001
DCRNR/L 20 4D	1.250	1.250	1.292	6.000	1.350	-6	-6	2.76	IGI005	DC12	IAT001
DCRNR/L 20 5D	1.250	1.250	1.291	6.000	1.640	-6	-6	2.76	IGI006	DC16	IAT005
DCRNR/L 20 6D	1.250	1.250	1.291	6.000	1.820	-6	-6	2.76	IGI007	DC19	–
DCRNR/L 24 6D	1.500	1.500	1.697	6.000	1.820	-6	-6	4.96	IGI007	DC19	–

IGI005	CN.. 43.
IGI006	CN.. 54.
IGI007	CN.. 64.

DC12	DCS 12	3.9	DCS 234-01	US 2002-T15P	FLAG T15P/3.5
DC16	DCS 16	6.4	DCS 234-03	US 2007-T20P	–
DC19	DCS 19	6.4	DCS 236-01	US 2007-T20P	–

IAT001	CN.. 45.	–	DCS 234-02
IAT005	CN.. 55.	–	DCS 234-04
IAT001	CER CN.N 43.	DCS 12C4	–
IAT001	CER CN.A 43.	DCS 12C2	–
IAT005	CER CN.N 54.	DCS 16C4	–
IAT005	CER CN.A 54.	DCS 16C2	–

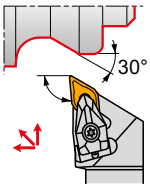
DDJN(RL) EXT

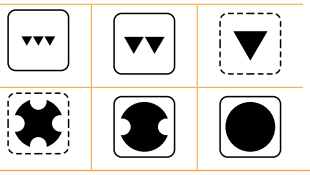
P M K N S H

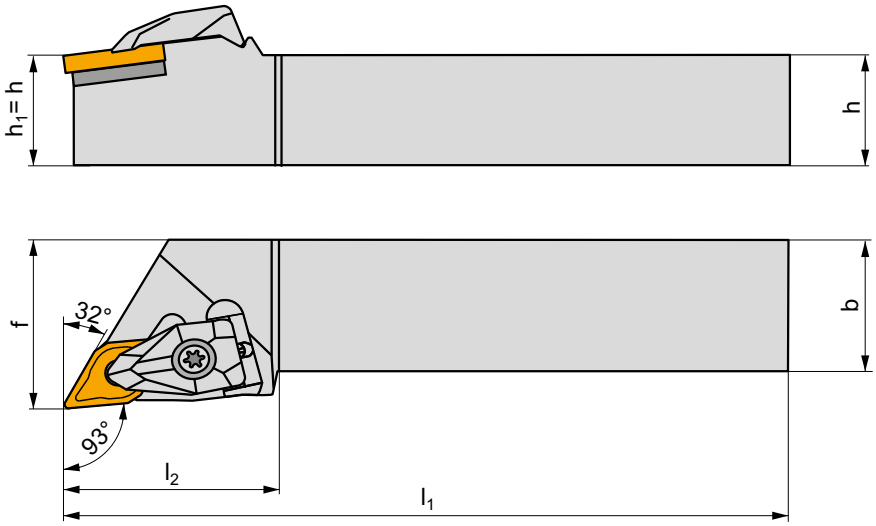
D

T62 - T70











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs			
DDJNR/L 12 3C	.750	.750	1.000	5.000	1.190	-6	-6	1.06	IGI011	DD11	–
DDJNR/L 16 3D	1.000	1.000	1.250	6.000	1.190	-6	-6	1.54	IGI011	DD11	–
DDJNR/L 12 4B	.750	.750	1.000	4.500	1.450	-6	-6	.88	IGI012	DD156	IAT002
DDJNR/L 16 4D	1.000	1.000	1.250	6.000	1.550	-6	-6	1.54	IGI012	DD156	IAT002
DDJNR/L 20 4D	1.250	1.250	1.500	6.000	1.550	-6	-6	2.76	IGI012	DD156	IAT002

IGI011	DN.. 33.
IGI012	DN.. 43.

DD11	DCS 09	1.7	DDS 267-01	US 2004-T09P	FLAG T09P
DD156	DCS 12	3.9	DDS 266-01	US 2002-T15P	FLAG T15P/3.5

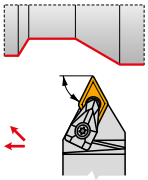
IAT002	DN.. 44.	–	DDS 266-02
IAT002	CER DN.N 44.	DCS 12C4	DDS 266-02
IAT002	CER DN.A 44.	DCS 12C2	DDS 266-02

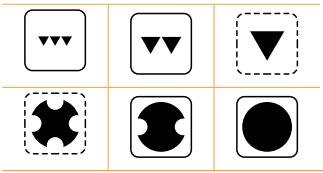
DDPNN EXT

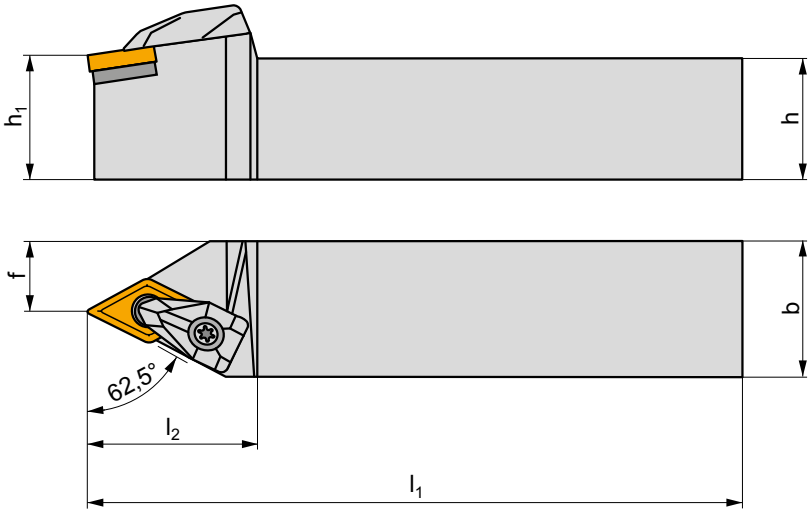
P M K N S H

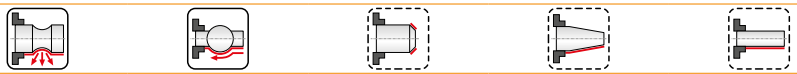
T62 - T70











ANSI	h=h1	b	f	l1	l2	λs°	γo°	lbs			
DDPNN 12 3B	.750	.750	.375	4.500	1.230	-9	-5	1.06	IGI011	DD11	–
DDPNN 16 4D	1.000	1.000	.500	6.000	1.610	-9	-5	1.54	IGI012	DD156	IAT002

IGI011	DN.. 33.
IGI012	DN.. 43.

DD11	DCS 09	1.7	DDS 267-01	US 2004-T09P	FLAG T09P
DD156	DCS 12	3.9	DDS 266-01	US 2002-T15P	FLAG T15P/3.5

IAT002	DN.. 44.	–	DDS 266-02
IAT002	CER DN.N 44.	DCS 12C4	DDS 266-02
IAT002	CER DN.A 44.	DCS 12C2	DDS 266-02

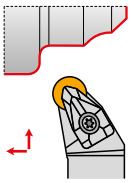
DRSNR EXT

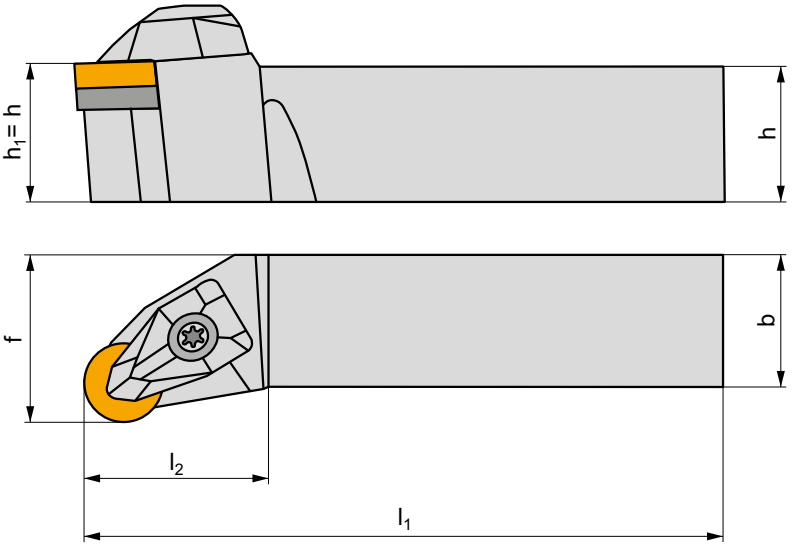
P M K

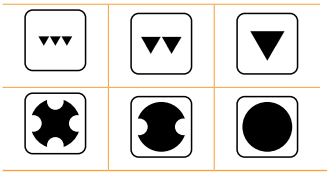
D

T80











ANSI	h=h1	b	f	l1	l2	λs°	γo°	lbs		
DRSNR 16 4D	1.000	1.000	1.250	6.000	1.244	-6	-6	1.54	IGI038	DR12

IGI038	RN.. 43

DR12	DCS 12	3.9 Nm	DRS 155-02	US 2002-T15P	FLAG T15P/3.5

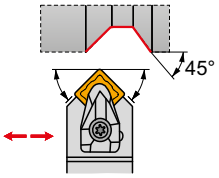
DSDNN EXT

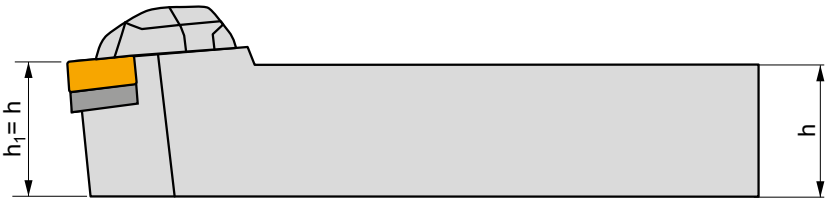
P M K N S H

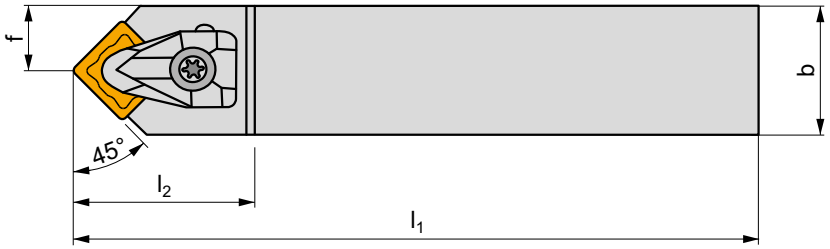
D

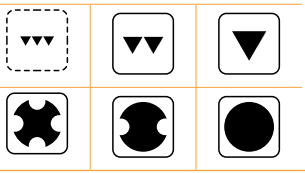
T85-T94













ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs			
DSDNN 12 4B	.750	.750	.386	4.500	1.450	-6	-6	.88	IGI040	DS12	IAT003
DSDNN 16 4D	1.000	1.000	.512	6.000	1.450	-6	-6	1.54	IGI040	DS12	IAT003
DSDNN 20 5D	1.250	1.250	.646	6.000	1.760	-6	-6	2.76	IGI041	DS15	IAT006
DSDNN 20 6D	1.250	1.250	.646	6.000	1.970	-6	-6	2.76	IGI042	DS19	–
DSDNN 24 8D	1.500	1.500	.791	6.000	2.260	-6	-6	4.96	IGI043	DS25	–

IGI040	SN.. 43.
IGI041	SN.. 54.
IGI042	SN.. 64.
IGI043	SN.. 85.

		Nm				
DS12	DCS 12	3.9	DSS 425-01	US 2002-T15P	FLAG T15P/3.5	–
DS15	DCS 16	6.4	DSS 425-03	US 2007-T20P	–	LK T20P
DS19	DCS 19	6.4	DSS 425-04	US 2007-T20P	–	LK T20P
DS25	DCS 25	9.5	DSS 425-07	US 2008-T25P	–	LK T25P

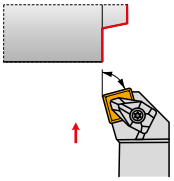
DSKN(RL) EXT

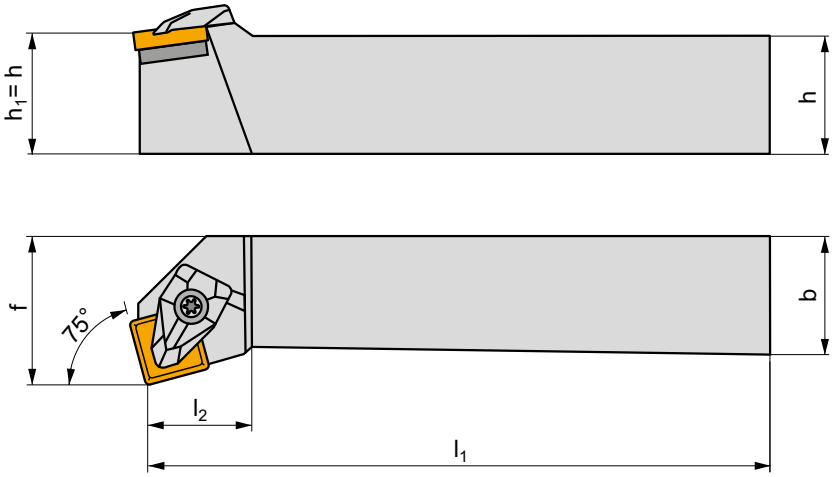
P M K N S H

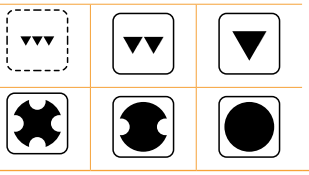
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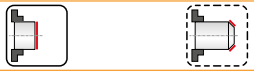
T85-T94











ANSI	h=h1	b	f	l1	l2	λs°	γo°	lbs			
DSKNR/L 16 4D	1.000	1.000	1.250	6.000	.930	-6	-6	1.54	IGI040	DS12	IAT003
DSKNR/L 20 5D	1.250	1.250	1.500	6.000	1.140	-6	-6	2.76	IGI041	DS15	IAT006

IGI040	SN.. 43.
IGI041	SN.. 54.

		Nm				
DS12	DCS 12	3.9	DSS 425-01	US 2002-T15P	FLAG T15P/3.5	–
DS15	DCS 16	6.4	DSS 425-03	US 2007-T20P	–	LK T20P

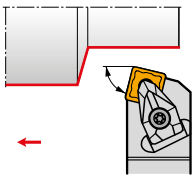
IAT003	SN.. 45.	–	DSS 425-02
IAT006	SN.. 55.	–	DSS 425-05
IAT003	CER SN.N 43.	DCS 12C4	–
IAT003	CER SN.A 43.	DCS 12C2	–
IAT006	CER SN.N 54.	DCS 16C4	–
IAT006	CER SN.A 54.	DCS 16C2	–

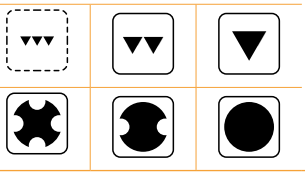
DSRN(RL) EXT

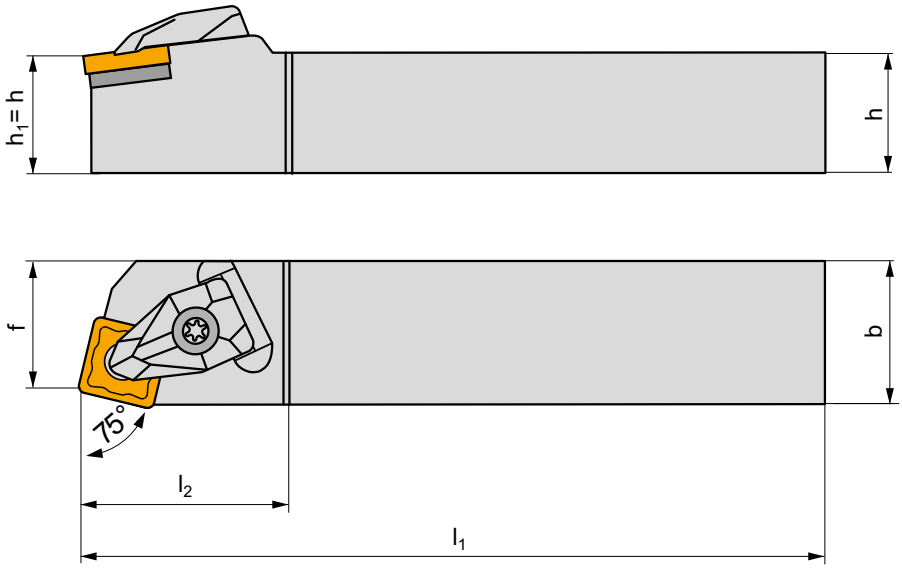
P M K N S H

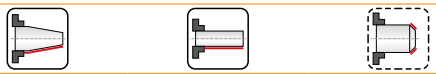
T85-T94











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs			
DSRNR/L 12 4B	.750	.750	.855	4.500	1.350	-6	-6	.88	IGI040	DS12	IAT003
DSRNR/L 16 4D	1.000	1.000	1.048	6.000	1.350	-6	-6	1.54	IGI040	DS12	IAT003
DSRNR/L 20 5D	1.250	1.250	1.291	6.000	1.640	-6	-6	2.76	IGI041	DS15	IAT006
DSRNR/L 20 6D	1.250	1.250	1.292	6.000	1.830	-6	-6	2.76	IGI042	DS19	–
DSRNR/L 24 6D	1.500	1.500	1.697	6.000	1.830	-6	-6	4.96	IGI042	DS19	–
DSRNR/L 24 8E	1.500	1.500	1.697	7.000	2.220	-6	-6	6.17	IGI043	DS25	–

IGI040	SN.. 43.
IGI041	SN.. 54.
IGI042	SN.. 64.
IGI043	SN.. 85.

		Nm			
DS12	DCS 12	3.9	DSS 425-01	US 2002-T15P	FLAG T15P/3.5
DS15	DCS 16	6.4	DSS 425-03	US 2007-T20P	–
DS19	DCS 19	6.4	DSS 425-04	US 2007-T20P	–
DS25	DCS 25	9.5	DSS 425-07	US 2008-T25P	–

IAT003	SN.. 45.	–	DSS 425-02
IAT006	SN.. 55.	–	DSS 425-05
IAT003	CER SN.N 43.	DCS 12C4	–
IAT003	CER SN.A 43.	DCS 12C2	–
IAT006	CER SN.N 54.	DCS 16C4	–
IAT006	CER SN.A 54.	DCS 16C2	–

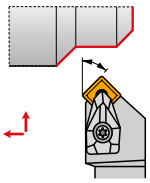
DSSN(RL) EXT

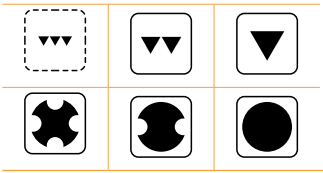
P M K N S H

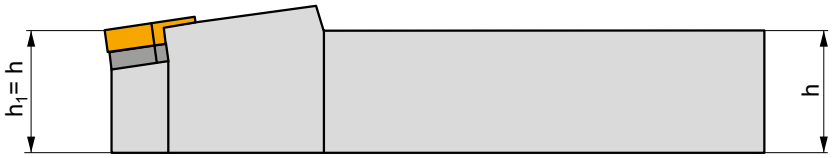
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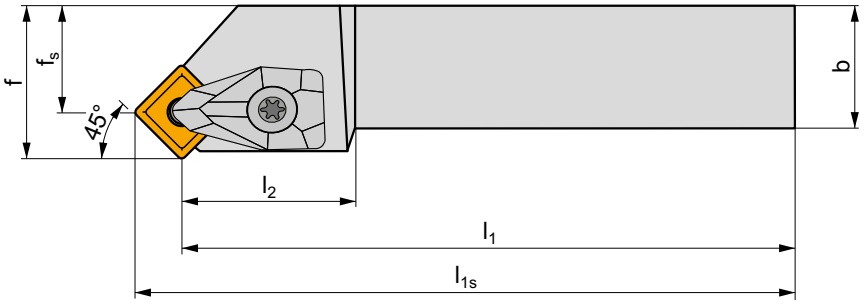
T85-T94













ANSI	h=h$_1$	b	f	f$_s$	l$_1$	l$_{1s}$	l$_2$	λ$_s$°	γ$_o$°	lbs			
DSSNR/L 12 4B	.750	.750	1.000	.740	4.500	4.880	1.130	0	-8	.88	IGI040	DS12	IAT003
DSSNR/L 16 4D	1.000	1.000	1.250	.925	6.000	6.327	1.172	0	-8	1.54	IGI040	DS12	IAT003
DSSNR/L 20 5D	1.250	1.250	1.500	1.098	6.000	6.413	1.303	0	-8	2.76	IGI041	DS15	IAT006
DSSNR/L 20 6D	1.250	1.250	1.500	1.008	6.000	6.492	1.413	0	-8	2.76	IGI042	DS19	–
DSSNR/L 24 6E	1.500	1.500	2.000	1.508	7.000	7.492	1.484	0	-8	6.17	IGI042	DS19	–

IGI040	SN.. 43.
IGI041	SN.. 54.
IGI042	SN.. 64.

		Nm				
DS12	DCS 12	3.9	DSS 425-01	US 2002-T15P	FLAG T15P/3.5	–
DS15	DCS 16	6.4	DSS 425-03	US 2007-T20P	–	LK T20P
DS19	DCS 19	6.4	DSS 425-04	US 2007-T20P	–	LK T20P

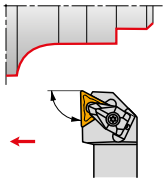
DTGN(RL) EXT

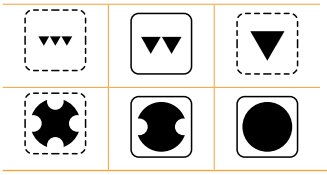
P M K N S H

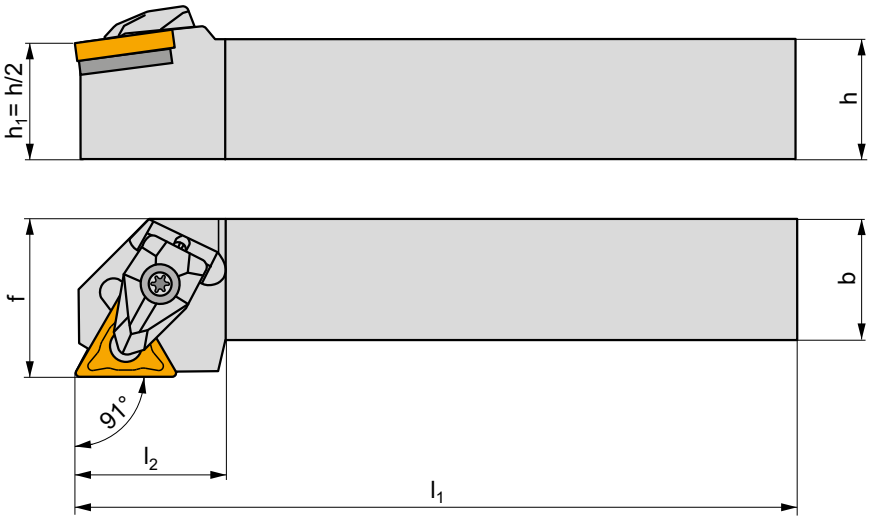
D

T100-T107











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs		
DTGNR/L 12 3B	.750	.750	1.000	4.500	.970	-6	-6	.88	IGI058	DT16
DTGNR/L 16 3D	1.000	1.000	1.250	6.000	.970	-6	-6	1.54	IGI058	DT16
DTGNR/L 16 4D	1.000	1.000	1.250	6.000	1.260	-6	-6	1.54	IGI059	DT22
DTGNR/L 20 4D	1.250	1.250	1.500	6.000	1.310	-6	-6	2.76	IGI059	DT22
DTGNR/L 24 5D	1.500	1.500	2.000	6.000	1.550	-6	-6	4.96	IGI060	DT27

IGI058	TN.. 33.
IGI059	TN.. 43.
IGI060	TN.. 54.

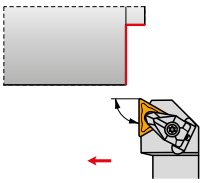
DT16	DCS 09	1.7	DTS 315-02	US 2004-T09P	FLAG T09P
DT22	DCS 12	3.9	DTS 315-04	US 2002-T15P	FLAG T15P/3.5
DT27	DCS 16	6.4	DTS 315-05	US 2007-T20P	LK T20P

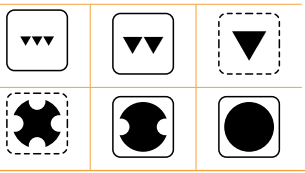
DTJN(RL) EXT

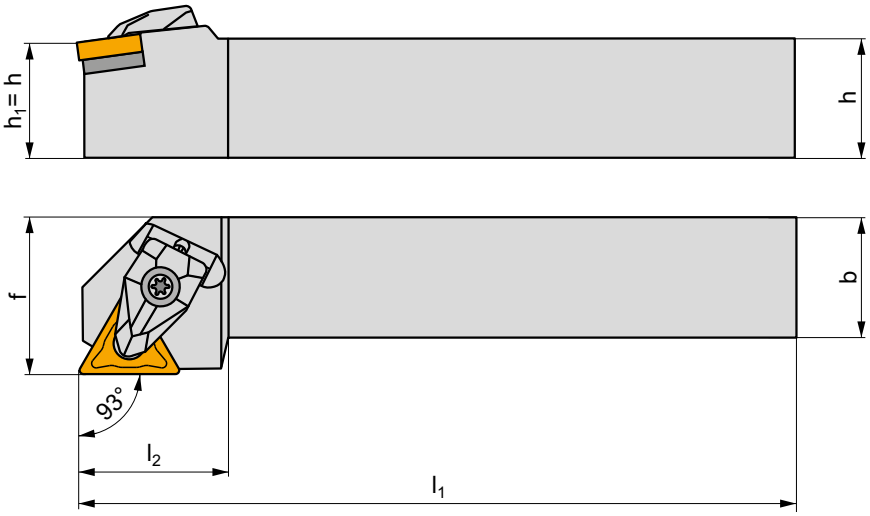
P M K N S H

T100-T107











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs		
DTJNR/L 12 3B	.750	.750	1.000	4.500	.953	-6	-6	.88	IGI058	DT16
DTJNR/L 16 3D	1.000	1.000	1.250	6.000	.980	-6	-6	1.54	IGI058	DT16
DTJNR/L 20 4D	1.250	1.250	1.500	6.000	1.283	-6	-6	2.76	IGI059	DT22

IGI058	TN.. 33.
IGI059	TN.. 43.

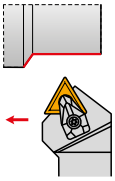
		Nm			
DT16	DCS 09	1.7	DTS 315-02	US 2004-T09P	FLAG T09P
DT22	DCS 12	3.9	DTS 315-04	US 2002-T15P	FLAG T15P/3.5

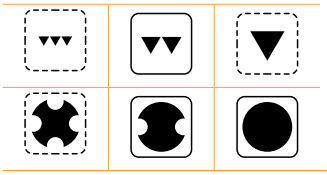
DTTN(RL) EXT

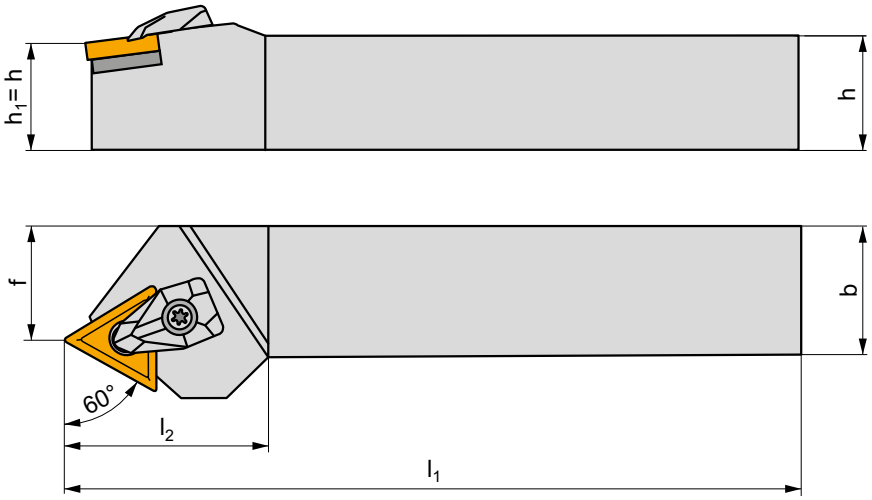
P M K N S H

T100-T107











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs		
DTTNR/L 12 3B	.750	.750	.598	4.500	1.190	-6	-6	.88	IGI058	DT16
DTTNR/L 16 4D	1.000	1.000	.791	6.000	1.560	-6	-6	1.54	IGI059	DT22

IGI058	TN.. 33.
IGI059	TN.. 43.

DT16	DCS 09	1.7	DTS 315-02	US 2004-T09P	FLAG T09P
DT22	DCS 12	3.9	DTS 315-04	US 2002-T15P	FLAG T15P/3.5

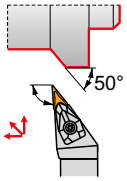
DVJN(RL) EXT

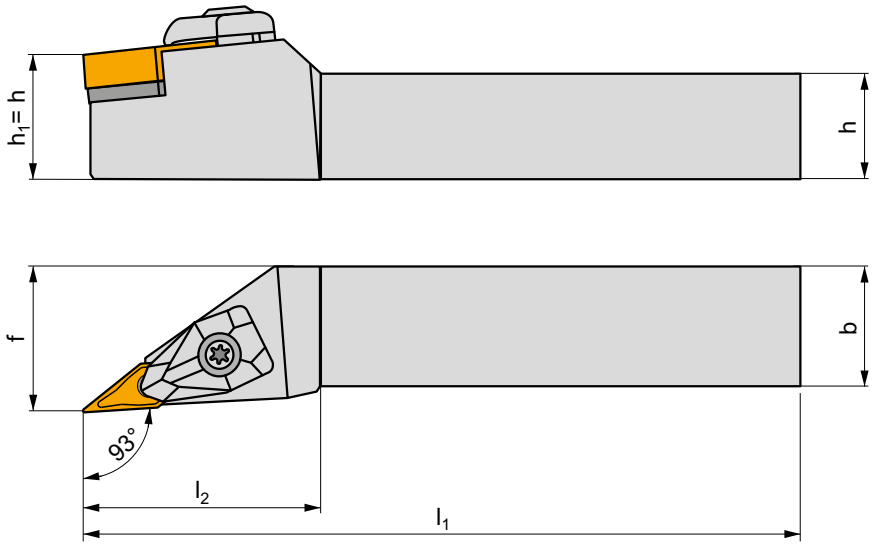
P M K N S H

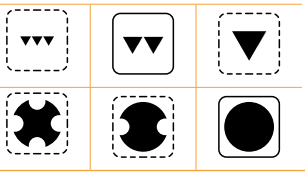
D

T116-T118











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs		
DVJNR/L 12 3B	.750	.750	1.000	4.500	1.830	-13	-4	.88	IGI063	DV16
DVJNR/L 16 3D	1.000	1.000	1.250	6.000	1.830	-13	-4	1.54	IGI063	DV16
DVJNR/L 20 3D	1.250	1.250	1.500	6.000	1.830	-13	-4	2.76	IGI063	DV16

IGI063	VN.. 33.

DV16	DCS 16V	3.0	DVS 269-01	US 2009-T15P	FLAG T15P/3.5

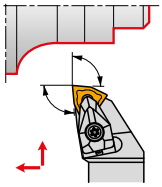
DWLN(RL) EXT

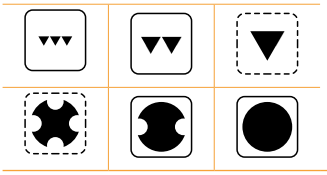
P M K N S H

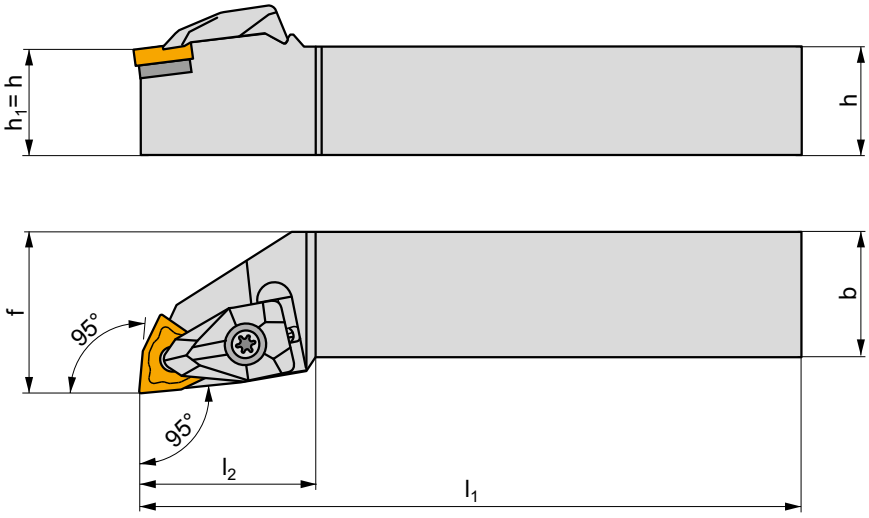
D

T121-T128











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs			
DWLNR/L 10 3B	.625	.625	.875	4.500	1.070	-6	-6	.60	IGI066	DW06	–
DWLNR/L 12 3C	.750	.750	1.000	5.000	1.950	-6	-6	1.06	IGI066	DW06	–
DWLNR/L 16 3D	1.000	1.000	1.250	6.000	1.950	-6	-6	1.54	IGI066	DW06	–
DWLNR/L 12 4C	.750	.750	1.000	5.000	1.378	-6	-6	1.06	IGI067	DW08	IAT004
DWLNR/L 16 4D	1.000	1.000	1.250	6.000	1.350	-6	-6	1.54	IGI067	DW08	IAT004
DWLNR/L 20 4D	1.250	1.250	1.500	6.000	1.378	-6	-6	2.76	IGI067	DW08	IAT004

IGI066	WN.. 33.
IGI067	WN.. 43.

DW06	DCS 09	1.7	DWS 328-01	US 2004-T09P	FLAG T09P	–
DW08	DCS 12	3.9	DWS 331-12	US 2002-T15P	FLAG T15P/3.5	–

IAT004	CER WN.N 43.	DCS 12C4
IAT004	CER WN.A 43.	DCS 12C2

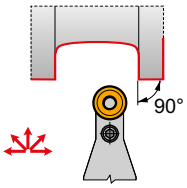
PRDCN EXT

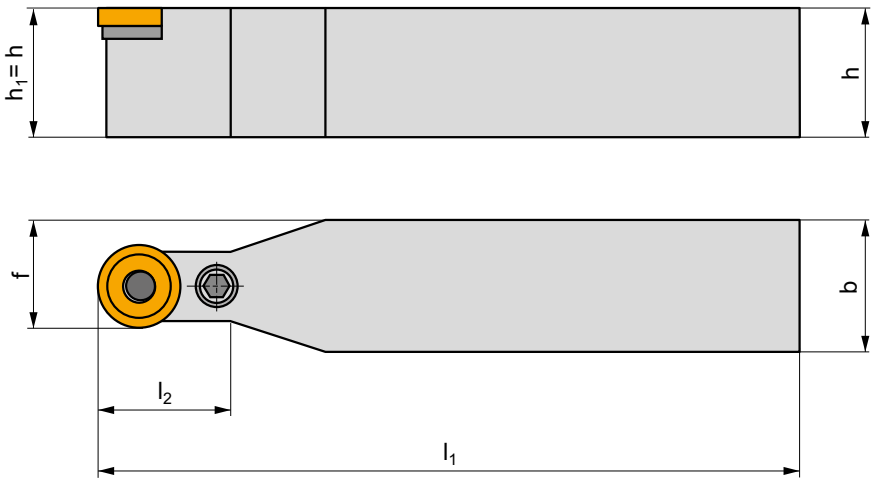
P M K

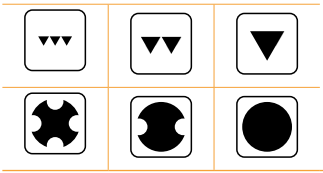
P

T78-T80











ANSI	h=h1	b	f	l1	l2	λs°	γo°	lbs		
PRDCN 3225 P 16	1.260	.984	.807	6.693	1.260	0	0	1.76	IGI035	IPRP70
PRDCN 3232 P 20	1.260	1.260	1.024	6.693	1.260	0	0	2.87	IGI036	IPRP90
PRDCN 4040 S 20	1.575	1.575	1.181	9.843	1.575	0	0	6.83	IGI036	IPRP90
PRDCN 4040 S 25	1.575	1.575	1.280	9.843	1.575	0	0	7.05	IGI037	IPRP80

IGI035	RCMX 1606MO
IGI036	RCMX 2006MO
IGI037	RCMX 2507MO

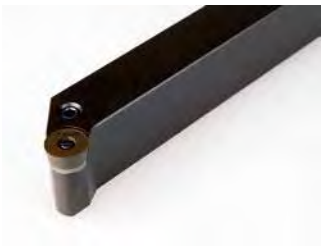
				Nm					
IPRP70	RCU 160300	PU 07	US 36	6.0	M8x1	1.02	NT 05	MT 05	HXK 4
IPRP80	RCU 250600	PU 08	US 38	8.0	M10x1	1.14	NT 06	MT 06	HXK 5
IPRP90	RCU 200400	PU 09	US 36	6.0	M8x1	1.02	NT 07	MT 07	HXK 4

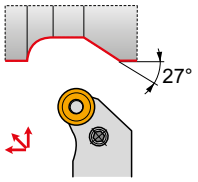
PRSC(RL) EXT

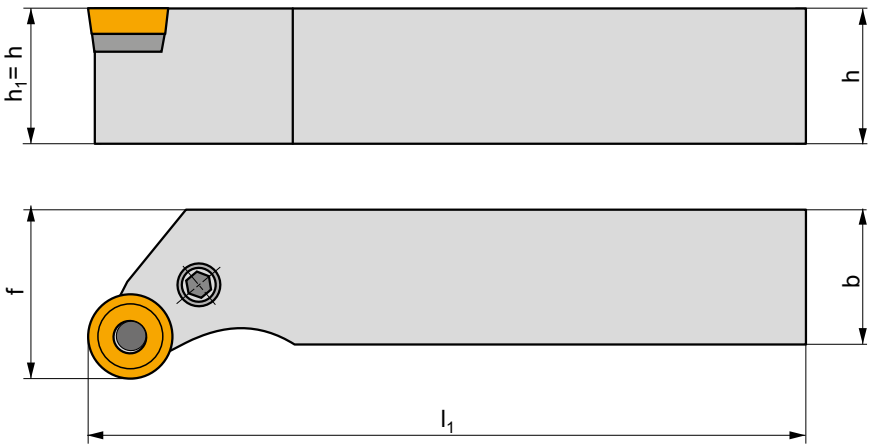
P M K

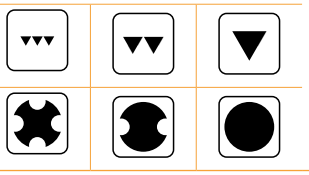
P

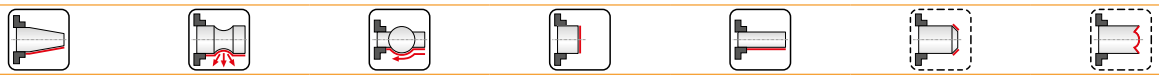
T78-T80











ANSI	h=h$_1$	b	f	l$_1$	λ$_s$°	γ$_o$°	lbs		
PRSCR/L 3225 P 16	1.260	.984	.807	6.693	0	0	1.98	IGI035	IPRP70
PRSCR/L 3232 P 20	1.260	1.260	1.024	6.693	0	0	3.09	IGI036	IPRP90
PRSCR/L 4040 S 25	1.575	1.575	1.280	9.843	0	0	7.50	IGI037	IPRP80

IGI035	RCMX 1606MO
IGI036	RCMX 2006MO
IGI037	RCMX 2507MO

				Nm					
IPRP70	RCU 160300	PU 07	US 36	6.0	M8x1	1.02	NT 05	MT 05	HXK 4
IPRP80	RCU 250600	PU 08	US 38	8.0	M10x1	1.14	NT 06	MT 06	HXK 5
IPRP90	RCU 200400	PU 09	US 36	6.0	M8x1	1.02	NT 07	MT 07	HXK 4

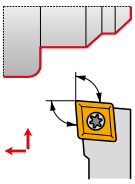
SCLC(RL) EXT

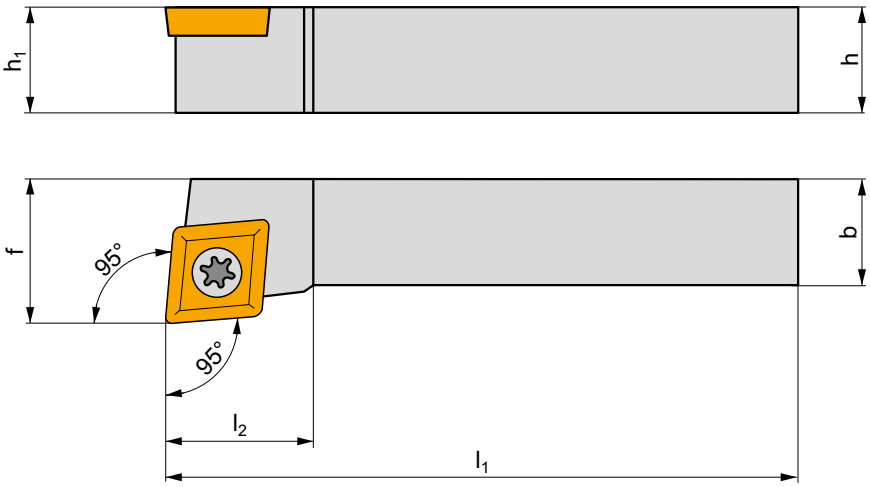
P M K N S H

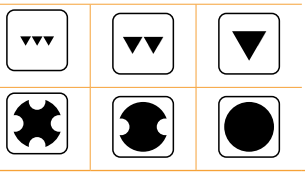
S

T36-T43











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs		
SCLCR/L 06 2	.375	.375	.500	2.500	.390	0	0	.24	IGI001	ISC06
SCLCR/L 08 3	.500	.500	.625	3.500	.390	0	0	.33	IGI002	ISC09
SCLCR/L 10 3	.625	.625	.750	4.000	.630	0	0	.62	IGI002	ISC095
SCLCR/L 12 4B	.750	.750	1.000	4.500	.830	0	0	.88	IGI003	ISC12
SCLCR/L 16 4D	1.000	1.000	1.250	6.000	.830	0	0	1.54	IGI003	ISC12

IGI001	CC.. 21.5.
IGI002	CC.. 32.5.
IGI003	CC.. 43.

		Nm						
ISC06	US 2003-T07P	.8	M2.5	.26	–	–	FLAG T07P	–
ISC09	US 2010-T15P	3.0	M3.5	.40	–	–	FLAG T15P/3.5	–
ISC095	US 2001-T15P	3.0	M3.5	.48	SCS 232-01	MS 9001	FLAG T15P/3.5	–
ISC12	US 2018-T15P	3.0	M4	.55	SCS 232-02	MS 9003	FLAG T15P/4	–

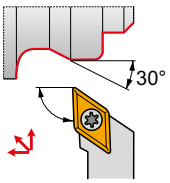
SDJC(RL) EXT

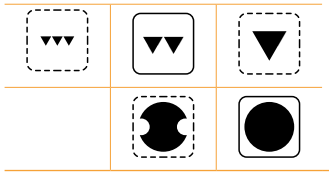
P M K N S H

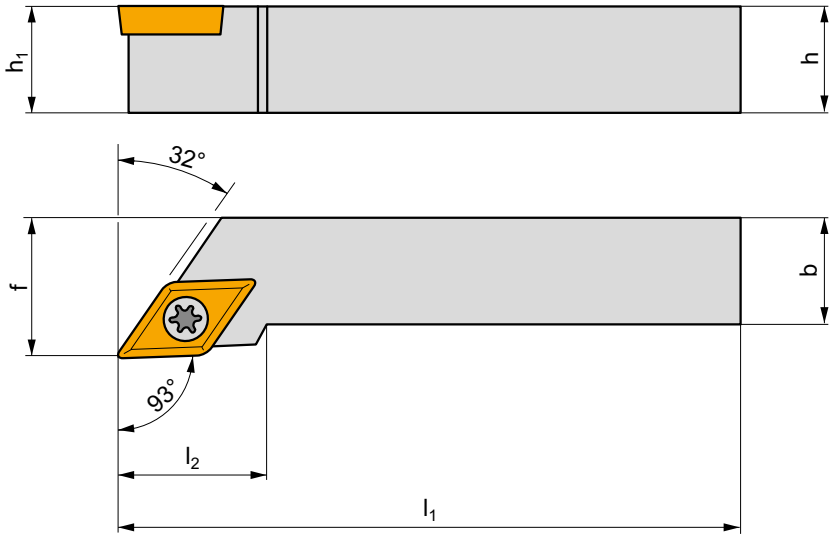
S

T57-T61











ANSI	$h=h_1$	b	f	l_1	l_2	λ_s°	γ_o°	lbs		
SDJCR/L 06 2	.375	.375	.500	2.500	.590	0	0	.24	IGI009	ISD07
SDJCR/L 08 2	.500	.500	.625	3.500	.670	0	0	.33	IGI009	ISD07
SDJCR/L 12 3B	.750	.750	1.000	4.500	.940	0	0	.88	IGI010	ISD11V
SDJCR/L 16 3D	1.000	1.000	1.250	6.000	1.100	0	0	1.54	IGI010	ISD11V

IGI009	DC.. 21.5.
IGI010	DC.. 32.5.

		Nm						
ISD07	US 2003-T07P	.8	M2.5	.26	–	–	FLAG T07P	–
ISD11V	US 2001-T15P	3.0	M3.5	.48	SDS 263-01	MS 9001	FLAG T15P/3.5	–

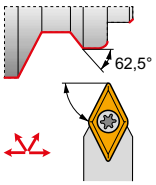
SDPCN EXT

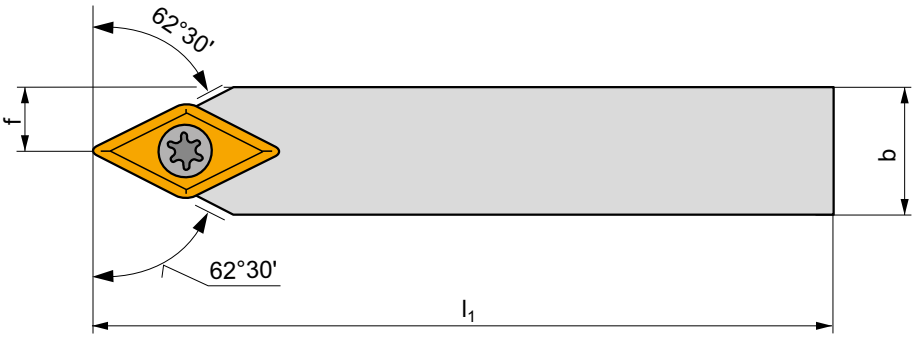
P M K N S H

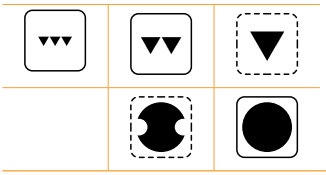
T57-T61

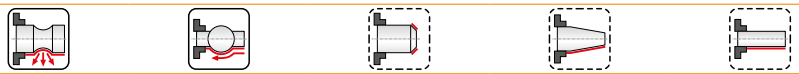












ANSI	h=h1	b	f	l1	l2	λs°	γo°	γf	lbs		
SDPCN 06 2	.375	.375	.216	2.500	.571	0	0	–	.24	IGI009	ISD07
SDPCN 08 2	.500	.500	.279	3.482	.571	0	0	–	.33	IGI009	ISD07
SDPCN 10 3	.625	.625	.341	4.000	.862	0	0	–	.62	IGI010	ISD11V
SDPCN 12 3B	.750	.750	.404	4.500	.862	0	0	–	.88	IGI010	ISD11V
SDPCN 16 3C	1.000	1.000	.529	5.000	.890	0	0	–	1.54	IGI010	ISD11V

IGI009	DC.. 21.5.
IGI010	DC.. 32.5.

		Nm						
ISD07	US 2003-T07P	.8	M2.5	.26	–	–	FLAG T07P	–
ISD11V	US 2001-T15P	3.0	M3.5	.48	SDS 263-01	MS 9001	FLAG T15P/3.5	–

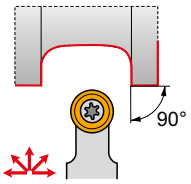
SRDCN EXT

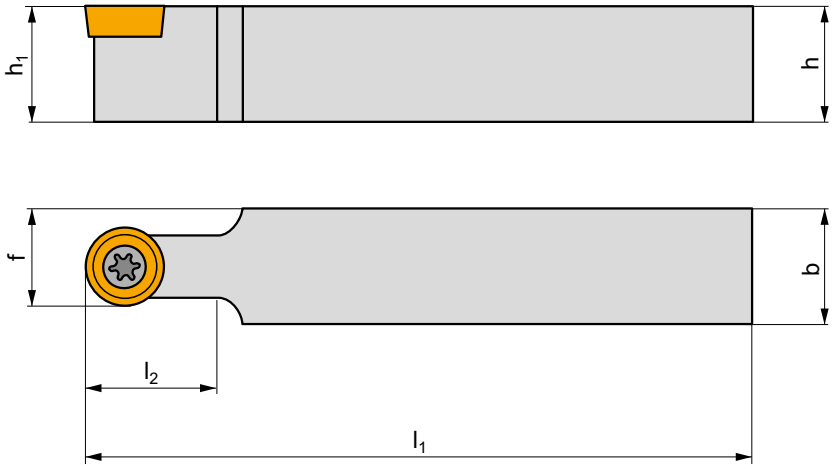
P M K N S H

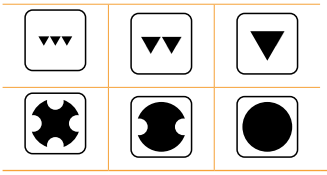
S

T76-T77











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs		
SRDCN 1212 F 06	.472	.472	.354	3.150	.472	0	0	.22	IGI029	ISO1
SRDCN 1616 H 06	.630	.630	.433	3.937	.472	0	0	.44	IGI029	ISO1
SRDCN 2020 K 08	.787	.787	.551	4.921	.787	0	0	.88	IGI030	ISO3
SRDCN 2020 K 1003-M-A	.787	.787	.591	4.921	.984	0	0	.88	IGI031	ISR10
SRDCN 2020 K 10-M-A	.787	.787	.591	4.921	.984	0	0	.88	IGI032	ISR10
SRDCN 2525 M 10-M-A	.984	.984	.689	5.906	.984	0	0	1.54	IGI032	ISR10
SRDCN 2525 M 12-M-A	.984	.984	.728	5.906	1.181	0	0	1.54	IGI033	ISR12
SRDCN 3225 P 10-M	1.260	.984	.689	6.693	.984	0	0	1.98	IGI032	ISR10
SRDCN 3225 P 12-M	1.260	.984	.728	6.693	1.181	0	0	1.98	IGI033	ISR12
SRDCN 3225 P 16-M	1.260	.984	.807	6.693	1.260	0	0	2.20	IGI034	ISR16

IGI029	RCMT 0602MO
IGI030	RCMT 0803MO
IGI031	RCMT 1003MO
IGI032	RCMT 10T3MO
IGI033	RCMT 1204MO
IGI034	RCMT 1606MO

		Nm						
ISO1	US 2506-T07P	.9	M2.5	.25	–	–	FLAG T07P	–
ISO3	US 3007-T09P	2.0	M3	.29	–	–	FLAG T09P	–
ISR10	US 3510-T15P	3.0	M3.5	.42	SRN 100300	MS 3510	FLAG T15P	HXK 3.5
ISR12	US 3510-T15P	3.0	M3.5	.42	SRN 120300	MS 3510	FLAG T15P	HXK 3.5
ISR16	US 5018-T20P	5.0	M5	.71	SRN 16T3MO	MS 5015	FLAG T20P	HXK 5

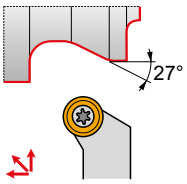
SRSC(RL) EXT

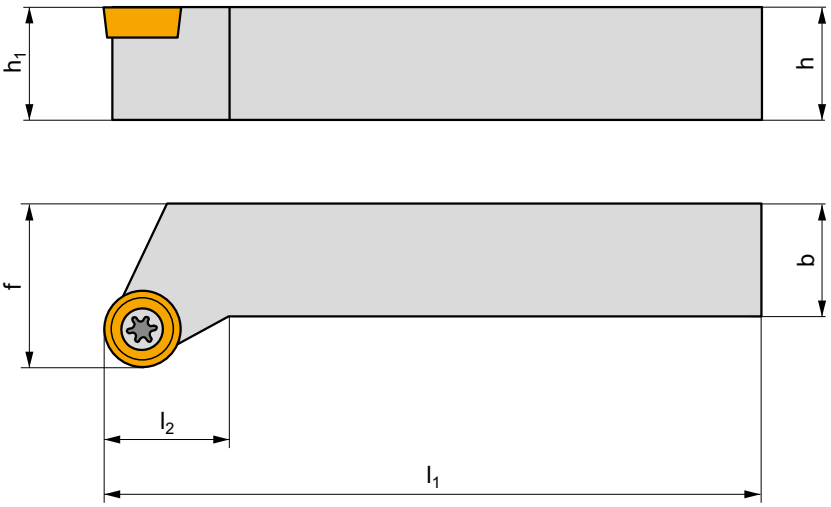
P M K N S H

S

T76-T77







ANSI	h=h1	b	f	l1	l2	λs°	γo°	lbs		
SRSCR/L 1616 H 06	.630	.630	.787	3.937	.472	0	0	.49	IGI029	ISO1
SRSCR/L 2020 K 08	.787	.787	.984	4.921	.787	0	0	.99	IGI030	ISO3
SRSCR/L 2020 K 10-M-A	.787	.787	.984	4.921	.787	0	0	.99	IGI032	ISR10
SRSCR/L 2525 M 10-M-A	.984	.984	1.260	5.906	.787	0	0	1.65	IGI032	ISR10
SRSCR/L 2525 M 12-M-A	.984	.984	1.260	5.906	.787	0	0	1.65	IGI033	ISR12
SRSCR/L 3225 P 16-M	1.260	.984	1.260	6.693	.787	0	0	2.43	IGI034	ISR16

IGI029	RCMT 0602MO
IGI030	RCMT 0803MO
IGI032	RCMT 10T3MO
IGI033	RCMT 1204MO
IGI034	RCMT 1606MO

		Nm						
ISO1	US 2506-T07P	.9	M2.5	.25	–	–	FLAG T07P	–
ISO3	US 3007-T09P	2.0	M3	.29	–	–	FLAG T09P	–
ISR10	US 3510-T15P	3.0	M3.5	.42	SRN 100300	MS 3510	FLAG T15P	HXK 3.5
ISR12	US 3510-T15P	3.0	M3.5	.42	SRN 120300	MS 3510	FLAG T15P	HXK 3.5
ISR16	US 5018-T20P	5.0	M5	.71	SRN 16T3MO	MS 5015	FLAG T20P	HXK 5

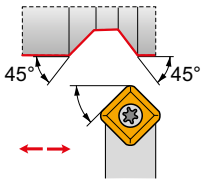
SSDCN EXT

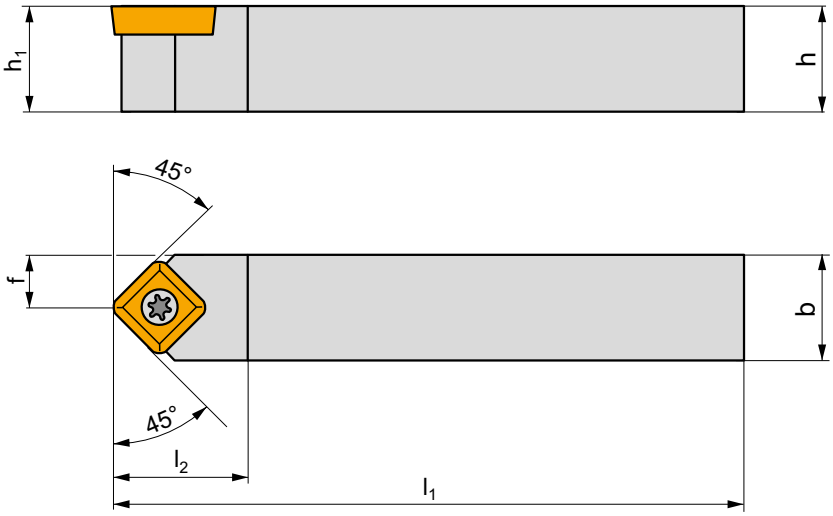
P M K N S H

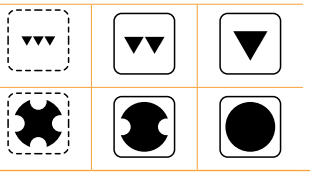
S

T81-T84











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs		
SSDCN 08 3	.500	.500	.261	3.500	.594	0	0	.33	IGI039	ISS09
SSDCN 10 3	.625	.625	.323	4.000	.594	0	0	.62	IGI039	ISS095

IGI039	SC.. 32.5.

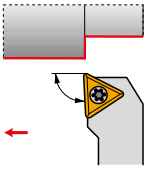
		Nm						
ISS09	US 2010-T15P	3.0	M3.5	.40	–	–	FLAG T15P/3.5	–
ISS095	US 2010-T15P	3.0	M3.5	.40	SSS 420-01	MS 9001	FLAG T15P/3.5	–

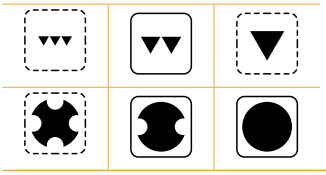
STGC(RL) EXT

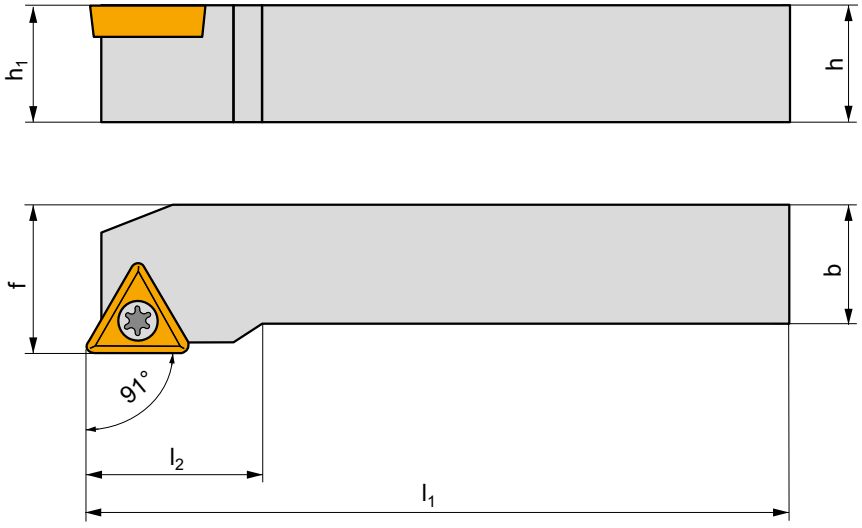
P M K N S H

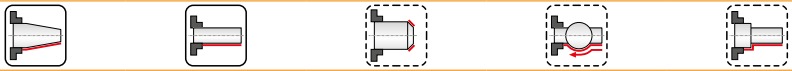
T96 -T99











ANSI	h=h1	b	f	l1	l2	λs°	γo°	lbs		
STGCR/L 08 2	.500	.500	.625	3.500	.543	0	0	.33	IGI044	IST11
STGCR/L 12 3B	.750	.750	1.000	4.500	.815	0	0	.88	IGI045	IST16
STGCR/L 16 3D	1.000	1.000	1.250	6.000	.815	0	0	1.54	IGI045	IST16

IGI044	TC.. 21.5.
IGI045	TC.. 32.5.

		Nm						
IST11	US 2003-T07P	.8	M2.5	.26	–	–	FLAG T07P	–
IST16	US 2001-T15P	3.0	M3.5	.48	STS 320-01	MS 9001	FLAG T15P/3.5	–

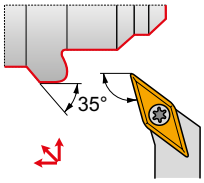
SVHB(C)(RL) EXT

P M K N S H

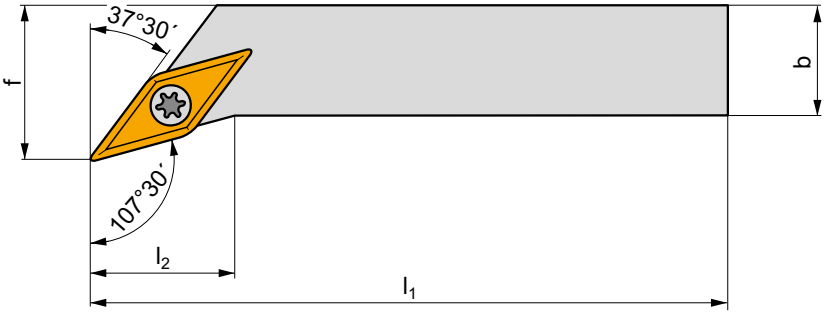
S

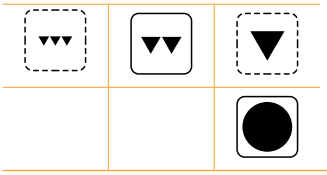
T108-T116













ANSI	h=h1	b	f	l1	l2	λs°	γo°	lbs		
SVHBR/L 12 3B	.750	.750	1.000	4.500	1.087	0	0	.88	IGI062	ISV16S
SVHBR/L 16 3D	1.000	1.000	1.250	6.000	1.087	0	0	1.54	IGI062	ISV16S

IGI062	VB.. 33.	VC.. 33.

ISV16S	US 2001-T15P	3.0	M3.5	.48	SVS 270-01	MS 9001	FLAG T15P/3.5	–

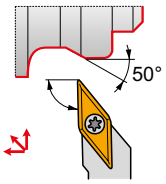
SVJB(C)(RL) EXT

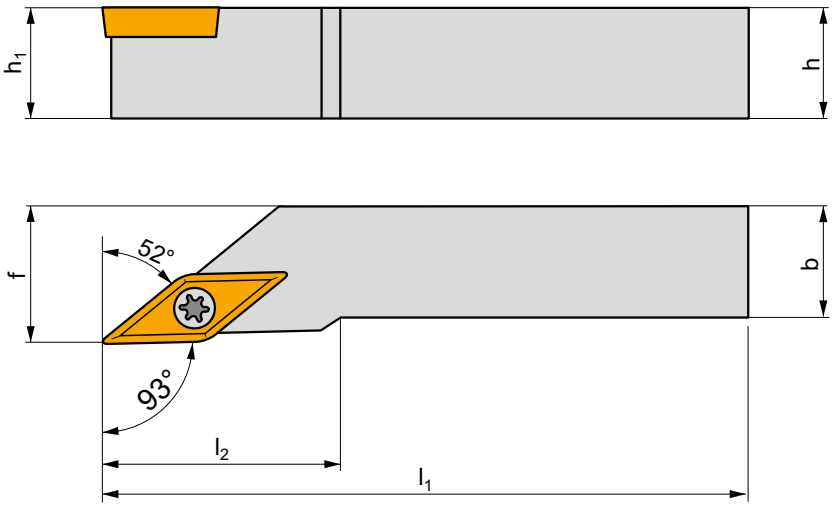
P M K N S H

S

T108-T116







ANSI	h=h1	b	f	l1	l2	λs°	γo°	lbs		
SVJBR/L 10 2	.625	.625	.750	4.000	.835	0	0	.22	IGI061	ISV11
SVJBR/L 12 2B	.750	.750	1.000	4.500	.835	0	0	.88	IGI061	ISV11
SVJBR/L 12 3B	.750	.750	1.000	4.500	1.228	0	0	.88	IGI062	ISV16S
SVJBR/L 16 3D	1.000	1.000	1.250	6.000	1.240	0	0	1.54	IGI062	ISV16S
SVJBR/L 20 3D	1.250	1.250	1.500	6.000	1.240	0	0	2.76	IGI062	ISV16S

IGI061	VB.. 22.	VC.. 22.
IGI062	VB.. 33.	VC.. 33.

ISV11	US 2003-T07P	.8	M2.5	.26	–	–	FLAG T07P	–
ISV16S	US 2001-T15P	3.0	M3.5	.48	SVS 270-01	MS 9001	FLAG T15P/3.5	–

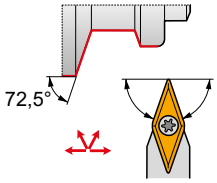
SVVB(C)N EXT

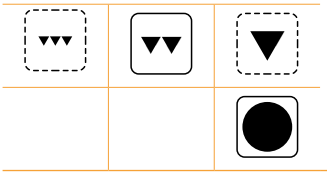
P M K N S H

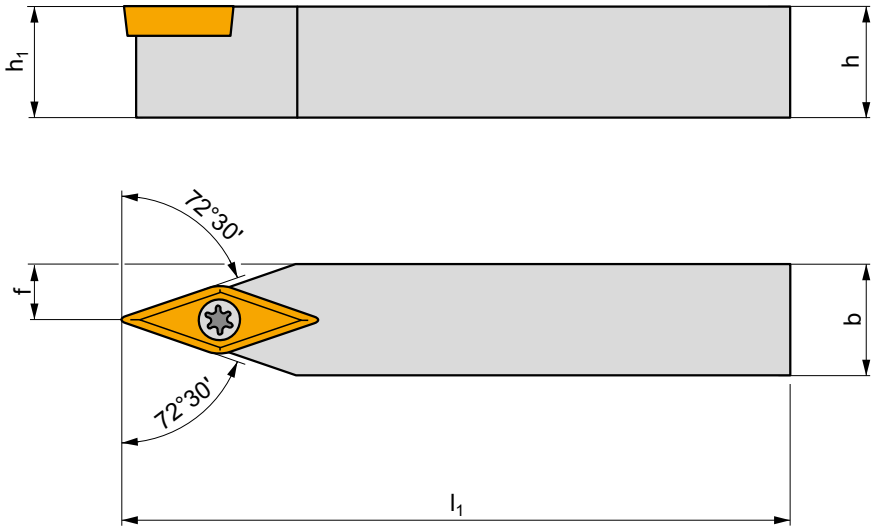
S

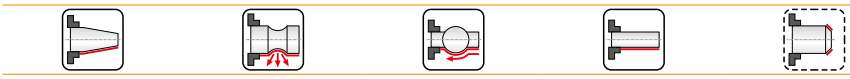
T108-T116











ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ$_s$°	γ$_o$°	lbs		
SVVBN 08 2	.500	.500	.260	3.500	.831	0	0	.22	IGI061	ISV11
SVVBN 12 2B	.750	.750	.384	4.500	.831	0	0	.88	IGI061	ISV11
SVVBN 12 3B	.750	.750	.395	4.500	1.240	0	0	.88	IGI062	ISV16S
SVVBN 16 3D	1.000	1.000	.520	6.000	1.240	0	0	1.54	IGI062	ISV16S
SVVBN 20 3D	1.250	1.250	.645	6.000	1.240	0	0	2.76	IGI062	ISV16S

IGI061	VB.. 22.	VC.. 22.
IGI062	VB.. 33.	VC.. 33.

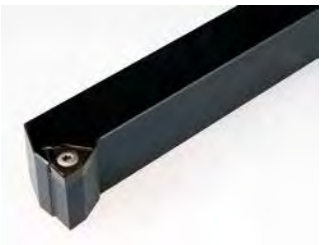
		Nm						
ISV11	US 2003-T07P	.8	M2.5	.26	–	–	FLAG T07P	–
ISV16S	US 2001-T15P	3.0	M3.5	.48	SVS 270-01	MS 9001	FLAG T15P/3.5	–

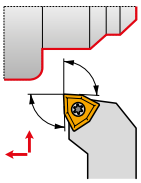
SWLC(RL) EXT

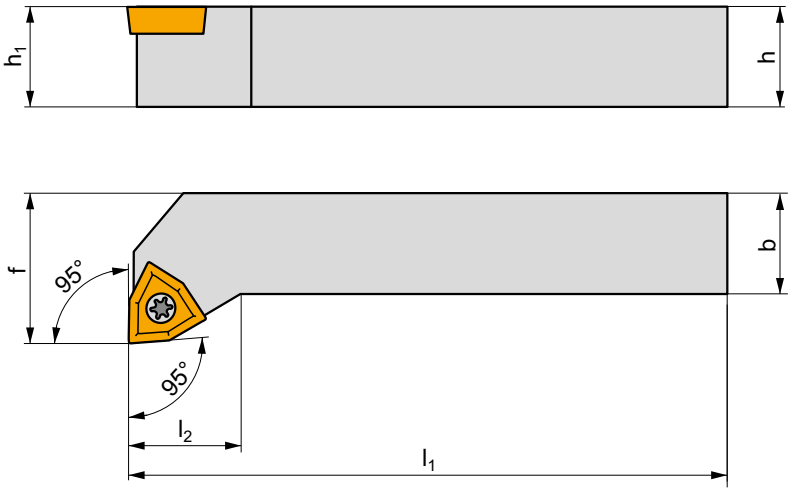
P M K N S H

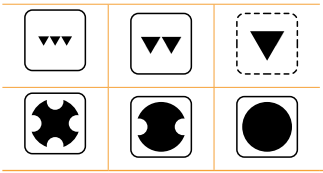
S

T119-T120











ANSI	h=h1	b	f	l1	l2	λs°	γo°	lbs		
SWLCR/L 12 3B	.750	.750	1.000	4.500	.630	0	0	.88	IGI064	ISO8
SWLCR/L 16 4D	1.000	1.000	1.250	6.000	.830	0	0	1.54	IGI065	ISO9

IGI064	WC.. 32.5.
IGI065	WC.. 43.

ISO8	US 3510-T15P	3.0	M3.5	.42	FLAG T15P
ISO9	US 4512-T15P	5.0	M4.5	.48	FLAG T15P



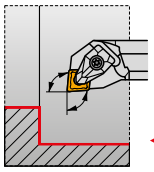
DCLN(RL) INT

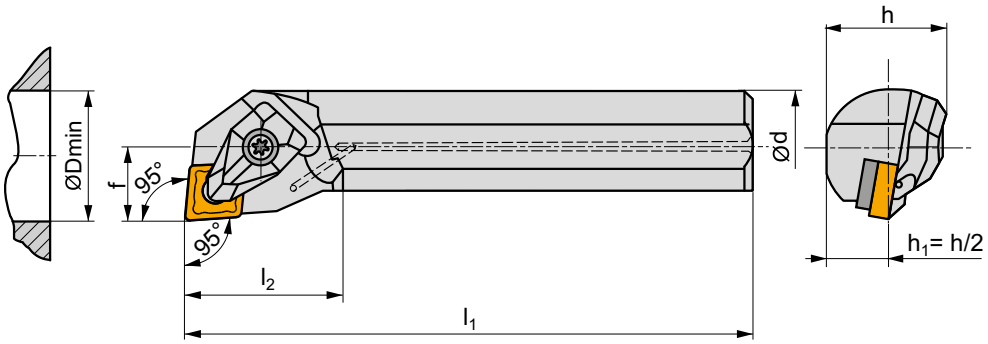
P M K N S H

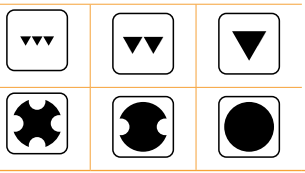
D

T44-T56











ANSI	d	D_{min}	f	h	l_1	l_2	λ_s°	γ_o°		lbs		
A12S-DCLNR/L 3	.750	1.000	.500	.709	10.000	1.024	-14	-6	✓	1.21	IGI004	DC09
A16T-DCLNR/L 4	1.000	1.280	.640	.906	12.000	1.339	-12	-6	✓	1.54	IGI005	DCI12
A20T-DCLNR/L 4	1.250	1.468	.765	1.181	12.000	1.299	-11	-6	✓	3.09	IGI005	DCI12
A24T-DCLNR/L 4	1.500	1.760	.890	1.374	12.000	1.575	-16	-6	✓	8.25	IGI005	DCI12
A24T-DCLNR/L 5	1.500	1.760	.890	1.374	12.000	1.575	-18	-6	✓	8.25	IGI006	DC16

IGI004	CN.. 32.
IGI005	CN.. 43.
IGI006	CN.. 54.

		Nm				
DC09	DCS 09	1.7	DCS 236-04	US 2004-T09P	FLAG T09P	–
DC16	DCS 16	6.4	DCS 234-03	US 2007-T20P	–	LK T20P
DCI12	DCS 12	3.9	DCS 236-03	US 2002-T15P	FLAG T15P/3.5	–

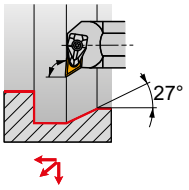
DDUN(RL) INT

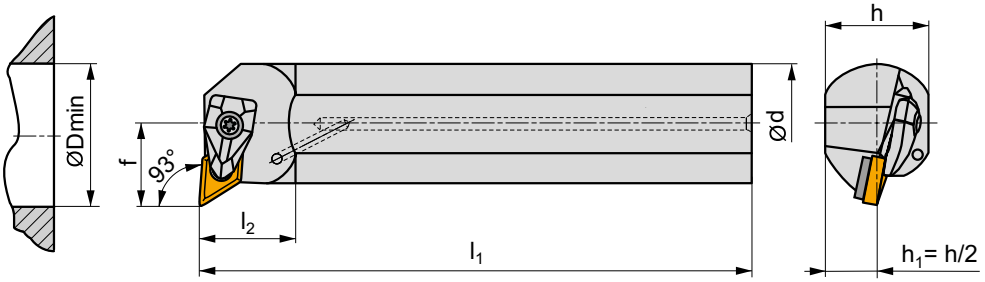
P M K N S H

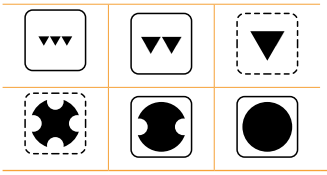
D

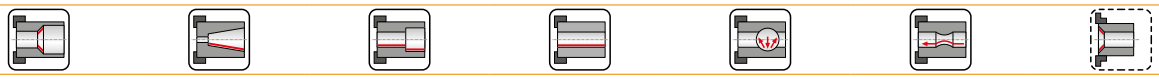
T62-T70











ANSI	d	D_{min}	f	h	l_1	l_2	λ_s°	γ_o°		lbs			
A16T-DDUNR/L 3	1.000	1.299	.750	.906	12.000	1.142	-12	-6	✓	1.54	IGI011	DD11	–
A20T-DDUNR/L 3	1.250	1.705	1.000	1.181	12.000	1.181	-9	-6	✓	3.09	IGI011	DD11	–
A20T-DDUNR/L 4	1.250	1.705	1.000	1.181	12.000	1.181	-13	-6	✓	3.09	IGI013	DD154	IAT007
A24T-DDUNR/L 4	1.500	2.000	1.125	1.374	12.000	1.299	-11	-6	✓	8.25	IGI013	DD154	IAT007

IGI011	DN.. 33.
IGI013	DN.. 44.

		Nm			
DD11	DCS 09	1.7	DDS 267-01	US 2004-T09P	FLAG T09P
DD154	DCS 12	3.9	DDS 266-02	US 2002-T15P	FLAG T15P/3.5

IAT007	DN.. 43.	–	DDS 266-01
IAT007	CER DN.N 44.	DCS 12C4	DDS 266-02
IAT007	CER DN.A 44.	DCS 12C2	DDS 266-02

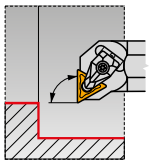
DTFN(RL) INT

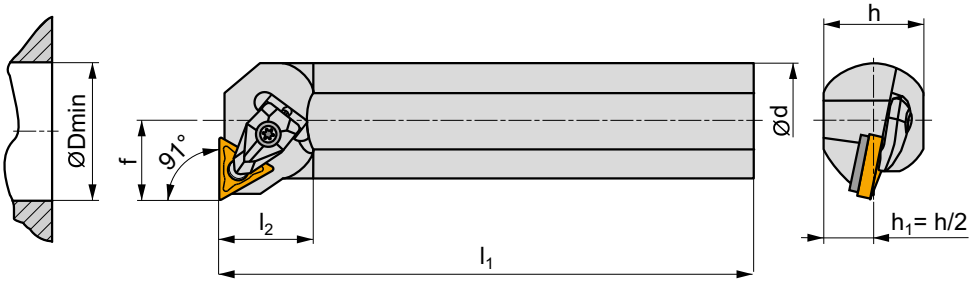
P M K N S H

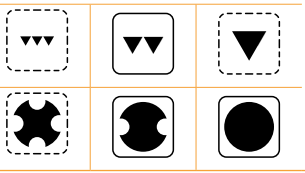
D

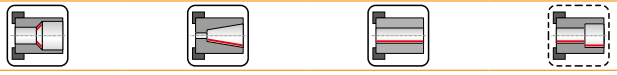
T100-T107











ANSI	d	D_{min}	f	h	l_1	l_2	λ_s°	γ_o°		lbs		
A16T-DTFNR/L 3	1.000	1.201	.640	.906	12.000	1.339	-12	-6	✓	1.54	IGI058	DTI16
A20T-DTFNR/L 3	1.250	1.468	.765	1.181	12.000	1.417	-11	-6	✓	3.09	IGI058	DTI16
A24T-DTFNR/L 4	1.500	1.760	.890	1.374	12.000	1.417	-15	-6	✓	8.25	IGI059	DT22

IGI058	TN.. 33.
IGI059	TN.. 43.

		Nm			
DTI16	DCS 09	1.7	DTS 316-01	US 2004-T09P	FLAG T09P
DT22	DCS 12	3.9	DTS 315-04	US 2002-T15P	FLAG T15P/3.5

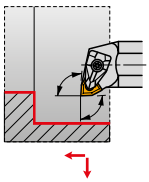
DWLN(RL) INT

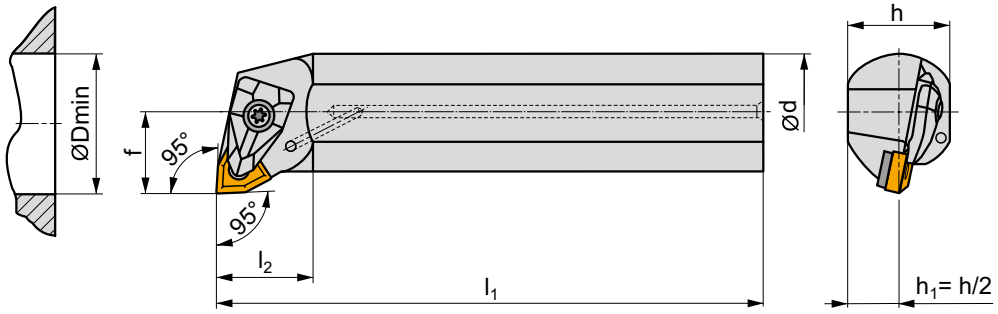
P M K N S H

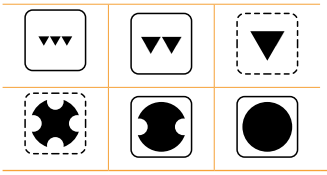
D

T121-T128











ANSI	d	D_{min}	f	h	l_1	l_2	λ_s°	γ_o°		lbs		
A16T-DWLNR/L 4	1.000	1.299	.750	.906	12.000	1.339	-12	-6	✓	1.54	IGI067	DWI08
A20T-DWLNR/L 4	1.250	1.705	1.000	1.181	12.000	1.339	-15	-6	✓	3.09	IGI067	DWI08
A24T-DWLNR/L 4	1.500	2.000	1.000	1.374	12.000	1.339	-13	-6	✓	8.25	IGI067	DW08

IGI067	WN.. 43.

		Nm			
DW08	DCS 12	3.9	DWS 331-12	US 2002-T15P	FLAG T15P/3.5
DWI08	DCS 12	3.9	DWS 328-02	US 2002-T15P	FLAG T15P/3.5

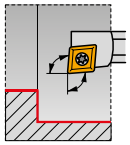
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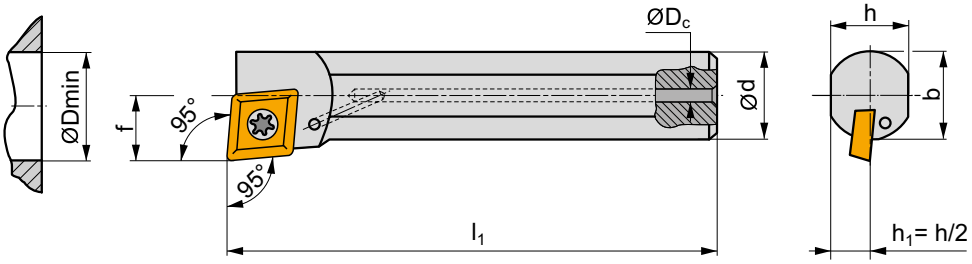
P M K N S H

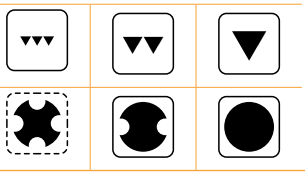
S

T36-T43











ANSI	d	D_{min}	f	h	b	l_1	D_c	λ_s°	γ_o°		lbs		
A06M-SCLCR/L 2	.375	.480	.250	.336	–	6.000	–	-11	0	✓	.13	IGI001	ISC06M
A08M-SCLCR/L 2	.500	.598	.312	.460	–	6.000	–	-8	0	✓	.33	IGI001	ISC06
A10R-SCLCR/L 3	.625	.772	.406	.562	–	8.000	–	-9	0	✓	.66	IGI002	ISC09M
A12S-SCLCR/L 3	.750	.929	.500	.709	–	10.000	–	-6	0	✓	1.21	IGI002	ISC09M
A16T-SCLCR/L 3	1.000	1.201	.640	.906	–	12.000	–	-4	0	✓	1.54	IGI002	ISC09
A20T-SCLCR/L 4	1.250	1.468	.765	1.181	–	12.000	–	-11	0	✓	3.09	IGI003	ISC12

IGI001	CC.. 21.5.
IGI002	CC.. 32.5.
IGI003	CC.. 43.

		Nm						
ISC06M	US 2046-T07P	.9	M2.5	.20	–	–	FLAG T07P	–
ISC06	US 2003-T07P	.8	M2.5	.26	–	–	FLAG T07P	–
ISC09M	US 2009-T15P	3.0	M3.5	.32	–	–	FLAG T15P/3.5	–
ISC09	US 2010-T15P	3.0	M3.5	.40	–	–	FLAG T15P/3.5	–
ISC12	US 2018-T15P	3.0	M4	.55	SCS 232-02	MS 9003	FLAG T15P/4	–

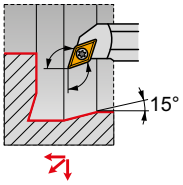
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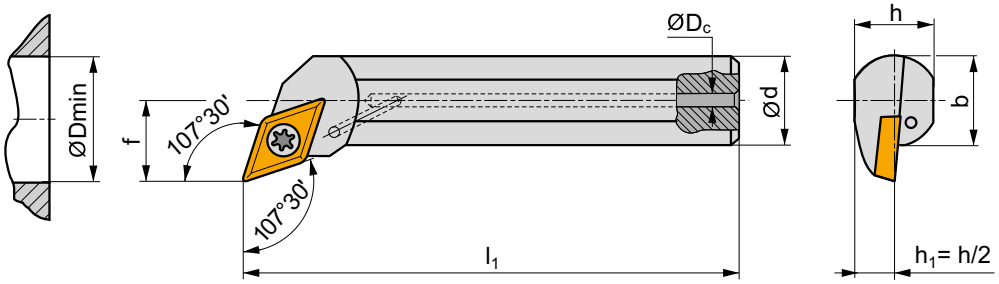
P M K N S H

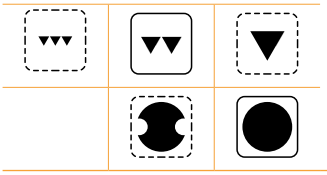
S

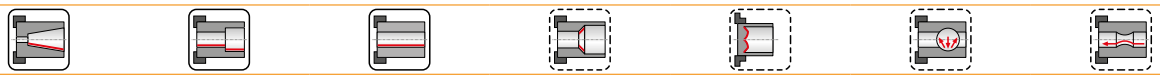
T57-T61











ANSI	d	D_{min}	f	h	b	l_1	D_c	λ_s°	γ_o°		lbs		
A06M-SDQCR/L 2	.375	.598	.375	.336	–	6.000	–	-8	0	✓	.13	IGI009	ISD07
A08M-SDQCR/L 2	.500	.728	.437	.460	–	6.000	–	-6	0	✓	.33	IGI009	ISD07
A10R-SDQCR/L 2	.625	.850	.500	.562	–	8.000	–	-4	0	✓	.66	IGI009	ISD07
A12S-SDQCR/L 3	.750	.980	.562	.709	–	10.000	–	-6	0	✓	1.21	IGI010	ISD11M
A16T-SDQCR/L 3	1.000	1.299	.750	.906	–	12.000	–	-3	0	✓	1.54	IGI010	ISD11I

IGI009	DC.. 21.5.
IGI010	DC.. 32.5.

		Nm						
ISD07	US 2003-T07P	.8	M2.5	.26	–	–	FLAG T07P	–
ISD11M	US 2009-T15P	3.0	M3.5	.32	–	–	FLAG T15P/3.5	–
ISD11I	US 2010-T15P	3.0	M3.5	.40	–	–	FLAG T15P/3.5	–

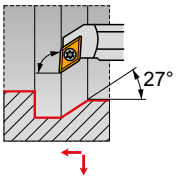
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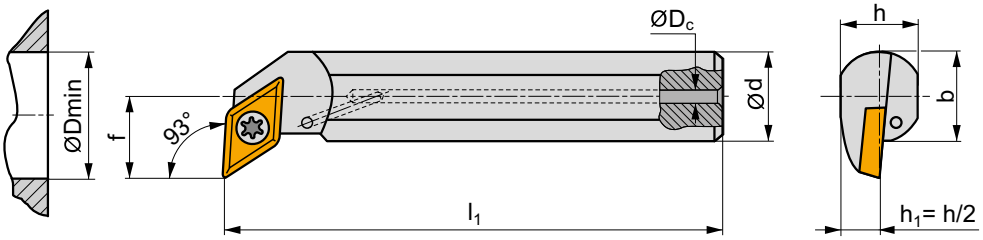
P M K N S H

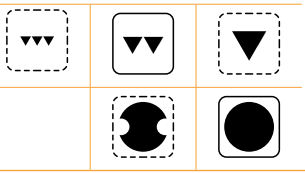
S

T57-T61











ANSI	d	D_{min}	f	h	b	l_1	D_c	λ_s°	γ_o°		lbs		
A06M-SDUCR/L 2	.375	.598	.375	.336	–	6.000	–	-7	0	✓	.13	IGI009	ISD07
A08M-SDUCR/L 2	.500	.728	.438	.460	–	6.000	–	-5	0	✓	.33	IGI009	ISD07
A10R-SDUCR/L 2	.625	.850	.500	.562	–	8.000	–	-4	0	✓	.66	IGI009	ISD07
A12S-SDUCR/L 3	.750	1.051	.625	.709	–	10.000	–	-5	0	✓	1.21	IGI010	ISD11M
A16T-SDUCR/L 3	1.000	1.299	.750	.906	–	12.000	–	-3	0	✓	1.54	IGI010	ISD11I
A20T-SDUCR/L 3	1.250	1.579	.875	1.181	–	12.000	–	-8	0	✓	3.09	IGI010	ISD11V

IGI009	DC.. 21.5.
IGI010	DC.. 32.5.

		Nm						
ISD07	US 2003-T07P	.8	M2.5	.26	–	–	FLAG T07P	–
ISD11M	US 2009-T15P	3.0	M3.5	.32	–	–	FLAG T15P/3.5	–
ISD11I	US 2010-T15P	3.0	M3.5	.40	–	–	FLAG T15P/3.5	–
ISD11V	US 2001-T15P	3.0	M3.5	.48	SDS 263-01	MS 9001	FLAG T15P/3.5	–

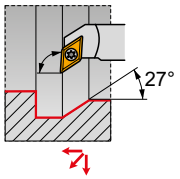
SDUC(RL)-E INT

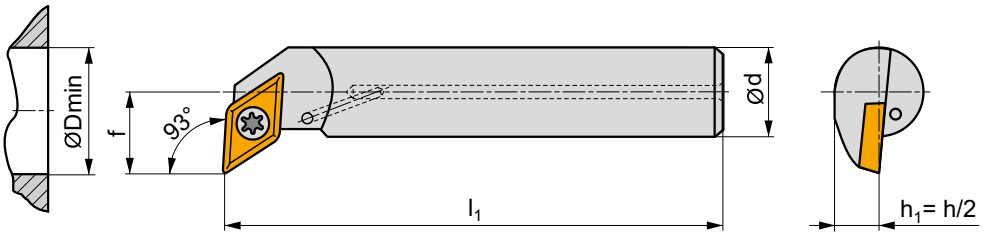
P M K N S H

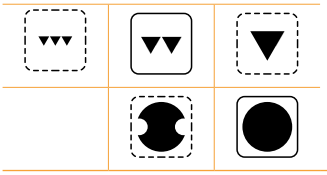
S

T57-T61











ANSI	d	D_{min}	f	h	l_1	λ_s°	γ_o°		lbs		
E06M-SDUCR/L 2	.375	.598	.375	.336	6.000	-7	0	✓	1.19	IGI009	ISD07
E08R-SDUCR/L 2	.500	.716	.438	.460	8.000	-5	0	✓	1.65	IGI009	ISD07
E10R-SDUCR/L 2	.625	.850	.500	.562	8.000	-4	0	✓	2.36	IGI009	ISD07

IGI009	DC.. 21.5.

		Nm			
ISD07	US 2003-T07P	.8	M2.5	.26	–

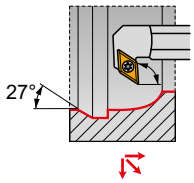
SDZC(RL) INT

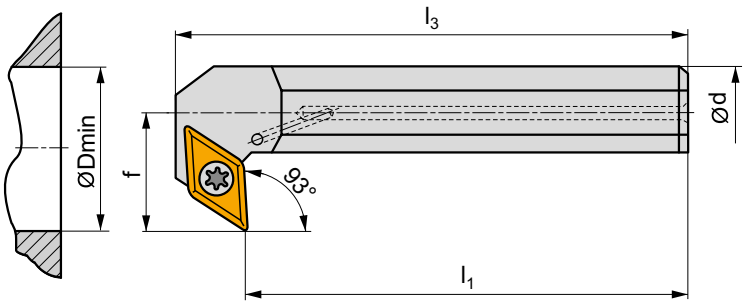
P M K N S H

S

T57-T61







ANSI	d	D_{min}	f	h	b	l_1	l_3	λ_s°	γ_o°	lbs		
A20T-SDZCR/L 3-93	1.250	1.579	.875	1.181	–	12.000	12.658	-7	0	3.09	IGI010	ISD11V

IGI010	DC.. 32.5.

		Nm						
ISD11V	US 2001-T15P	3.0	M3.5	.48	SDS 263-01	MS 9001	FLAG T15P/3.5	–

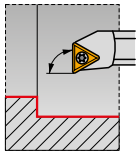
STFC(RL) INT

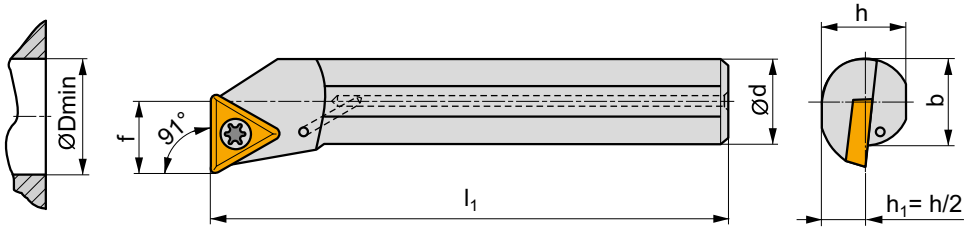
P M K N S H

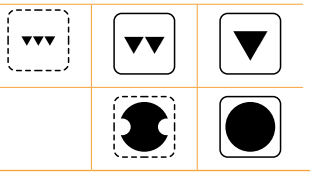
S

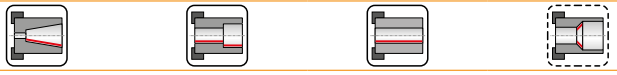
T96-T99











ANSI	d	D_{min}	f	h	b	l_1	λ_s°	γ_o°		lbs		
A08M-STFCR/L 2	.500	.598	.312	.460	–	6.000	-7	0	✓	.33	IGI044	IST11
A10R-STFCR/L 2	.625	.772	.406	.562	–	8.000	-5	0	✓	.66	IGI044	IST11
A12S-STFCR/L 2	.750	.929	.500	.709	–	10.000	-3	0	✓	1.21	IGI044	IST11
A16T-STFCR/L 3	1.000	1.201	.640	.906	–	12.000	-4	0	✓	1.54	IGI045	IST16I

IGI044	TC.. 21.5.
IGI045	TC.. 32.5.

		Nm							
IST11	US 2003-T07P	.8	M2.5	.26	–	–	FLAG T07P	–	–
IST16I	US 2010-T15P	3.0	M3.5	.40	–	–	FLAG T15P/3.5	–	–

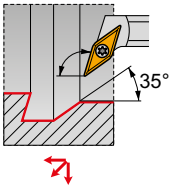
SVQB(C)(RL) INT

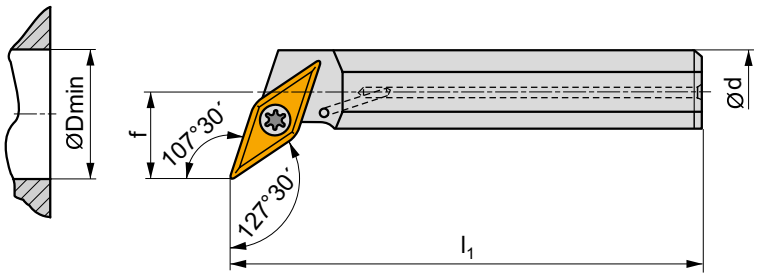
P M K N S H

S

T108-T116







ANSI	d	D_{min}	f	h	b	l_1	λ_s°	γ_o°		lbs		
A16T-SVQBR/L 3	1.000	1.299	.750	.906	–	12.000	-7	0	✓	1.54	IGI062	ISV16
A20T-SVQBR/L 3	1.250	1.579	.875	1.181	–	12.000	-7	0	✓	4.52	IGI062	ISV16S
A24T-SVQBR/L 3	1.500	1.841	1.063	1.374	–	12.000	-5	0	✓	8.25	IGI062	ISV16S

IGI062	VB.. 33.	VC.. 33.

		Nm						
ISV16	US 2010-T15P	3.0	M3.5	.40	–	–	FLAG T15P/3.5	–
ISV16S	US 2001-T15P	3.0	M3.5	.48	SVS 270-01	MS 9001	FLAG T15P/3.5	–

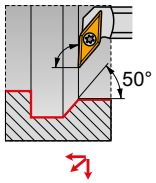
SVUB(C)(RL) INT

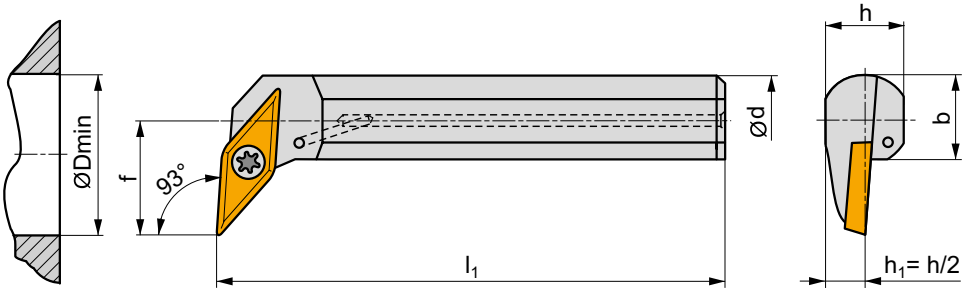
P M K N S H

S

T108-T116







ANSI	d	D_{min}	f	h	b	l_1	λ_s°	γ_o°		lbs		
A10R-SVUBR/L 2	.625	.850	.486	.560	–	8.000	-7	0	✓	.66	IGI061	ISV11I
A12S-SVUBR/L 2	.750	1.012	.580	.710	–	10.000	-5	0	✓	1.21	IGI061	ISV11I
A20T-SVUBR/L 3	1.250	1.705	1.000	1.181	–	12.000	-5	0	✓	4.52	IGI062	ISV16S
A24T-SVUBR/L 3	1.500	2.126	1.125	1.374	–	12.000	-3	0	✓	8.25	IGI062	ISV16S

IGI061	VB.. 22.	VC.. 22.
IGI062	VB.. 33.	VC.. 33.

		Nm						
ISV16S	US 2001-T15P	3.0	M3.5	.48	SVS 270-01	MS 9001	FLAG T15P/3.5	–
ISV11I	US 2020-T07P	.8	M2.5	.28	–	–	FLAG T07P	–

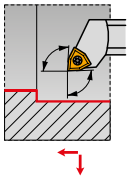
SWLC(RL) INT

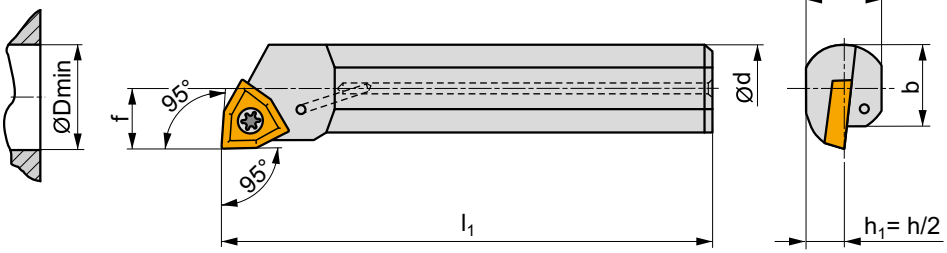
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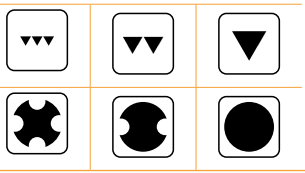
S

T119-T120











ANSI	d	D_{min}	f	h	b	l_1	λ_s°	γ_o°		lbs		
A12S-SWLCR/L 3	.750	.929	.500	.709	–	10.000	-6	0	✓	1.32	IGI064	ISO8

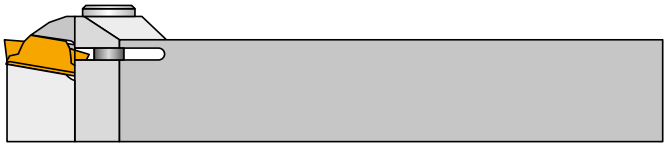
IGI064	WC.. 32.5.

ISO8	US 3510-T15P	3.0	M3.5	.42	FLAG T15P

PRAMET

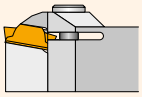
ISO/ANSI CODE DESIGNATION – PARTING AND GROOVING TOOLS – EXTERNAL TURNING
DESIGNACIÓN CÓDIGO ISO/ANSI - HERRAMIENTAS DE TRONZADO Y RANURADO - EXTERIOR
CODIFICATION ISO/ANSI - OUTILS DE TRONÇONNAGE ET GORGES - TOURNAGE EXTÉRIEUR

	1	2	3	4	5	6	7	8	9	10	11
ISO	G	F	I	L	25	25	M	0316	R	030	017
	1	2	3	4	5 & 6		7	8	9	10	11
ANSI	G	F	I	L	16		D	0316	R	1.18	.670

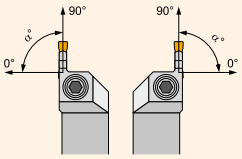


1 | 1 Clamping designation / Tipo de fijación / Désignation de la fixation

G

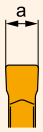


2 | 2 Holder style – cutting edge angle / Tipo de herramienta - ángulo de posición / Type d'outil - angle d'attaque



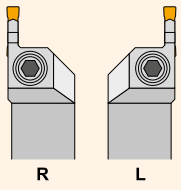
α°	
G = 0°	K = 75°
R = 15°	F = 90°
T = 30°	B = 105°
S = 45°	E = 120°
W = 60°	D = 135°

3 | 3 Maximum grooving/turning depth / Máxima profundidad de ranurado/torneado / Profondeur maximum de gorge/tournage

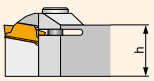


G = 2,0 × a	N = 5,5 × a
H = 2,5 × a	O = 6,0 × a
I = 3,0 × a	P = 6,5 × a
J = 3,5 × a	Q = 7,0 × a
K = 4,0 × a	R = 7,5 × a
L = 4,5 × a	S = 8,0 × a
M = 5,0 × a	T = 8,5 × a

4 | 4 Version (right/left) R/L / Versión (derecha/izquierda) R/L / Version (droite/gauche) R/L

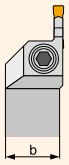


5 Shank height [mm] / Altura del mango [mm] / Hauteur de manche [mm]



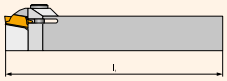
12 = 12 mm
16 = 16 mm
20 = 20 mm
atd./etc.

6 Shank width [mm] / Anchura del mango [mm] / Largeur de manche [mm]



12 = 12 mm
16 = 16 mm
20 = 20 mm
atd./etc.

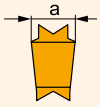
7 | 7 Holder total length / Longitud total / Longueur totale de l'outil



	l_1 [mm]
H	100
J	110
K	125
L	140
E	150
N	160
P	170
Q	180
R	200

	l_1 [in]
A	4.000
B	4.500
C	5.000
D	6.000
E	7.000
F	8.000

8 | 8 Insert width / Ancho de plaquita / Largeur de plaquette



	a [mm]	a [in]
02	2,0	.079
03, 0313, 0316	3,0	.118
04, 0413, 0416	4,0	.157
05, 0516	5,0	.197
06, 0616	6,0	.236
08, 0830	8,0	.315

6 & 7

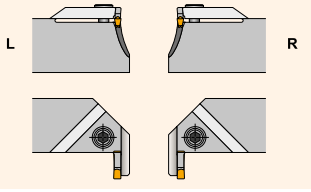
	b [in]	h [in]		b [in]	h [in]		b [in]	h [in]
05	5/16	5/16	12	3/4	3/4	20	1 1/4	1 1/4
06	3/8	3/8	16	1	1	24	1 1/2	1 1/2
08	1/2	1/2	85	1	1 1/4	32	2	2
10	5/8	5/8	86	1	1 1/2			

For square shanks, the number is the width or height in terms of 16ths. For rectangular shanks the first digit is the width in terms of 8ths and the second digit is the height in terms of 4ths.

Para mangos cuadrados, el dígito indica el ancho o la altura en número de dieciseisavos de pulgada. Para mangos rectangulares, el primer dígito indica el ancho en número de octavos de pulgada y el segundo dígito indica la altura en número de cuartos de pulgada.

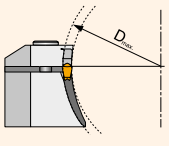
Pour les manches carrés, c'est le nombre 16 de la largeur et de la hauteur en pouce. Pour les manches rectangulaires le premier digit est le nombre 8 de la largeur en pouce et le second digit le nombre 4 de la hauteur en pouce.

9 | 9 Blade curvature direction / Dirección de la curvatura de la lama / Direction de la lame incurvée



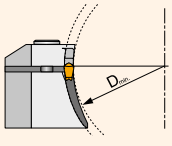
Additional information for axial turning.
Información adicional para ranurado axial o frontal.
Information complémentaire pour tournage axial

10 | 10 Maximum diameter - face grooving / Diámetro máximo - ranurado frontal / Diamètre maximum - gorge frontale



Additional information for axial turning.
Información adicional para ranurado axial o frontal.
Information complémentaire pour tournage axial

11 | 11 Minimum diameter - face grooving / Diámetro mínimo - ranurado frontal / Diamètre minimum - gorge frontale



Additional information for axial turning.
Información adicional para ranurado axial o frontal.
Information complémentaire pour tournage axial

ISO/ANSI CODE DESIGNATION – PARTING AND GROOVING TOOLS – INTERNAL TURNING
DESIGNACIÓN CÓDIGO ISO/ANSI - HERRAMIENTAS DE TRONZADO Y RANURADO - INTERIOR
CODIFICATION ISO/ANSI - OUTILS DE TRONÇONNAGE ET GORGES - TOURNAGE INTÉRIEUR

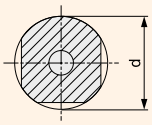
	1	2	3		4	5	6	7	8
ISO	A	25	S	–	G	G	H	L	0313
ANSI	A	16	S	–	G	G	H	L	0313



1 | 1 Shank / Mango / Queue

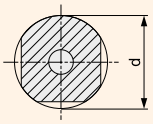
S	Steel shank Mango de acero Queue en acier
A	Steel shank with coolant hole Mango de acero con refrigeración interna Queue en acier avec trou d'arrosage

2 Diameter of shank / Diámetro del mango / Diamètre de queue



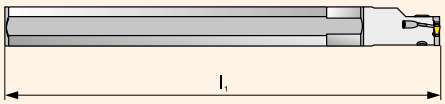
	d [mm]
12	12
16	16
20	20
25	25
32	32
40	40

2 Diameter of shank / Diámetro del mango / Diamètre de queue



	d [in]
08	.500
10	.625
12	.750
16	1.000
20	1.250
24	1.500

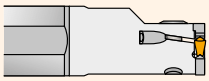
3 | 3 Holder total length / Longitud total / Longueur totale de l'outil



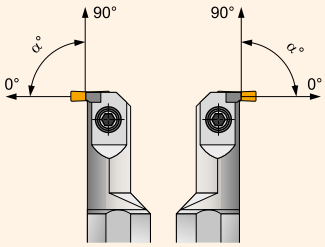
l_1 [mm]		l_1 [in]	l_1 [mm]		l_1 [in]
M	150	6.000	S	250	10.000
P	170	6.250	T	300	12.000
Q	180	7.250	U	350	14.000
R	200	8.000	V	400	15.750

4 | 4 Clamping designation / Tipo de fijación / Désignation de la fixation

G

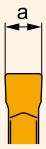


5 | 5 Tool style – cutting edge angle / Tipo de herramienta - ángulo de posición / Type d'outil - angle d'attaque



α°	
G = 0°	K = 75°
R = 15°	F = 90°
T = 30°	B = 105°
S = 45°	E = 120°
W = 60°	D = 135°

6 | 6 Maximum grooving/turning depth / Máxima profundidad de ranurado/torneado / Profondeur maximum de gorge/tournage

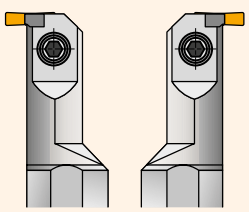


E = 1,0 × a	J = 3,5 × a
F = 1,5 × a	K = 4,0 × a
G = 2,0 × a	L = 4,5 × a
H = 2,5 × a	M = 5,0 × a
I = 3,0 × a	N = 5,5 × a

X = Special
X = Especial
X = Spécial

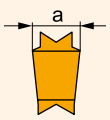
7 | 7 Version (right/left) R/L / Versión (derecha/izquierda) R/L / Version (droite/gauche) R/L

R



L

8 | 8 Insert width / Ancho de plaquita / Largeur de plaquette



	a [mm]
0313	3,0
0413	4,0

GLSF(RL) EXT

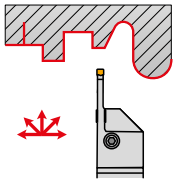
P M K N S H

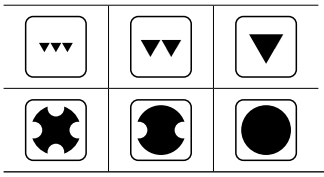
PRAMET

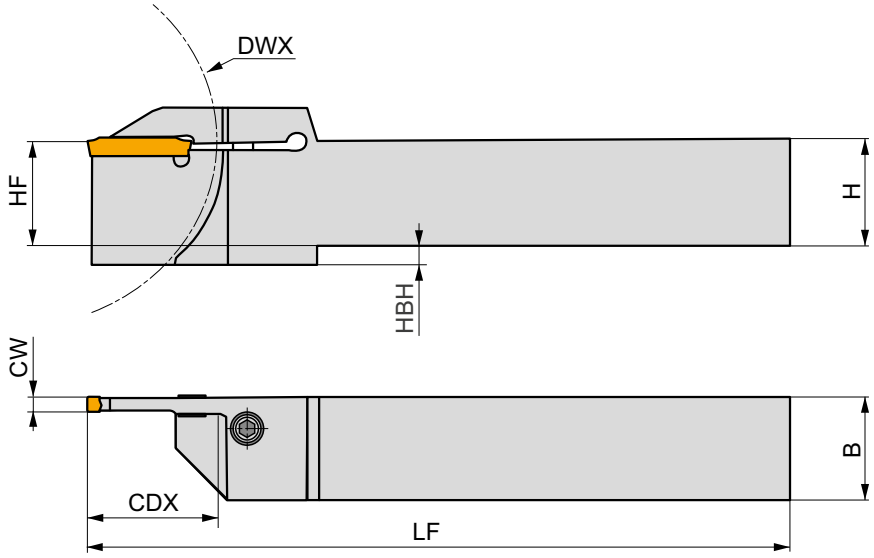
G

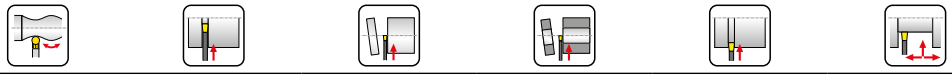
T148











	HF [in]	H [in]	B [in]	LF [in]	CW [in]	CDX [in]	HBH [in]	DWX [in]	lbs		
GL2-S10CFR/L-.63-1.78	.625	.625	.625	5.000	.079	.630	.118	1.780	.510	GI334	GL12
GL2-S12CFR/L-.79-3.15	.750	.750	.750	5.000	.079	.790	.000	3.150	.860	GI334	GL11
GL2-S16DFR/L-.79-3.15	1.000	1.000	1.000	6.000	.079	.790	.000	3.150	1.500	GI334	GL11
GL3-S10CFR/L-.63-1.78	.625	.625	.625	5.000	.118	.630	.118	1.780	.510	GI335	GL12
GL3-S12CFR/L-.79-3.15	.750	.750	.750	5.000	.118	.790	.000	3.150	.860	GI335	GL11
GL3-S16DFR/L-.79-3.15	1.000	1.000	1.000	6.000	.118	.790	.000	3.150	1.500	GI335	GL11
GL3-S16EFR/L-1.26-3.15	1.000	1.000	1.000	7.000	.118	1.200	.197	3.150	1.590	GI335	GL11
GL4-S12CFR/L-.79-3.15	.750	.750	.750	5.000	.157	.790	.000	3.150	.860	GI336	GL11
GL4-S16DFR/L-.79-3.15	1.000	1.000	1.000	6.000	.157	.790	.000	3.150	1.500	GI336	GL11
GL4-S16EFR/L-1.26-3.15	1.000	1.000	1.000	7.000	.157	1.200	.197	3.150	1.590	GI336	GL11
GL5-S12CFR/L-.79-3.15	.750	.750	.750	5.000	.197	.790	.000	3.150	.860	GI337	GL11
GL5-S16DFR/L-.79-3.15	1.000	1.000	1.000	6.000	.197	.790	.000	3.150	1.500	GI337	GL11
GL6-S12CFR/L-.79-3.15	.750	.750	.750	5.000	.236	.790	.000	3.150	.860	GI338	GL11
GL6-S16DFR/L-.79-3.15	1.000	1.000	1.000	6.000	.236	.790	.000	3.150	1.500	GI338	GL11

GI334	GL2..
GI335	GL3..
GI336	GL4..
GI337	GL5..
GI338	GL6..

		Nm					
GL11	US 5018-T20P	5.0	M5	.717	-	LK T20P	-
GL12	HS 0516	5.0	M5	-	.63	-	HXK4

GLS B

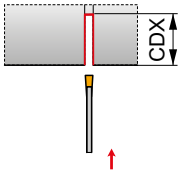
P M K N S H

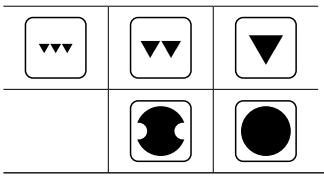
PRAMET

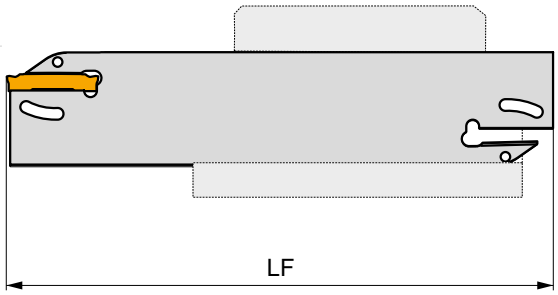
X

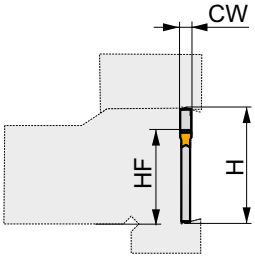
T148















	HF [in]	H [in]	LF [in]	CW [in]	CDX [in]	lbs		
GL2-S26KB	.787	1.024	4.921	.079	1.378	.310	GI334	KV2
GL2-S32MB	.984	1.260	5.906	.079	1.969	.350	GI334	KV2
GL3-S26KB	.787	1.024	4.921	.118	1.378	.310	GI335	KV2
GL3-S32MB	.984	1.260	5.906	.118	1.969	.350	GI335	KV2
GL4-S32MB	.984	1.260	5.906	.157	1.969	.350	GI336	KV2
GL5-S32MB	.984	1.260	5.906	.197	2.362	.350	GI337	KV2
GL6-S32MB	.984	1.260	5.906	.236	2.362	.350	GI338	KV2

GI334	GL2..
GI335	GL3..
GI336	GL4..
GI337	GL5..
GI338	GL6..

KV2	KV 15x150

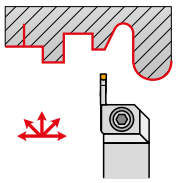
GFK(RL) EXT

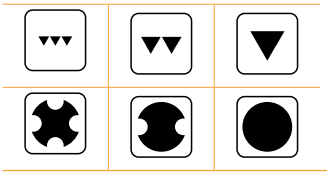
P M K N S H

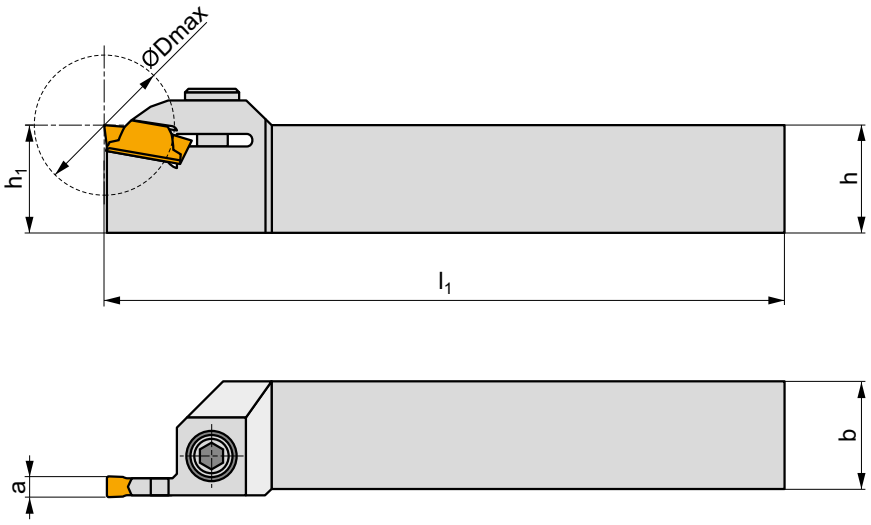
G

T149-T155









ANSI	h=h1	b	l1	a	Dmax	lbs		
GFKR/L 10A 02	.625	.625	4.000	.078	1.259	.40	IGI022	IGL03
GFKR/L 12C 02	.750	.750	5.000	.078	1.259	.71	IGI022	IGL03
GFKR/L 16D 02	1.000	1.000	6.000	.078	1.259	1.50	IGI022	IGL05

IGI022	LCMF 022..

IGL03	HS 0616C	6.0	M6	.63	HXK 5
IGL05	HS 0625C	6.0	M6	.98	HXK 5

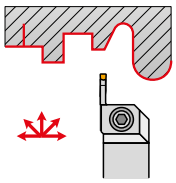
GFI(RL) EXT

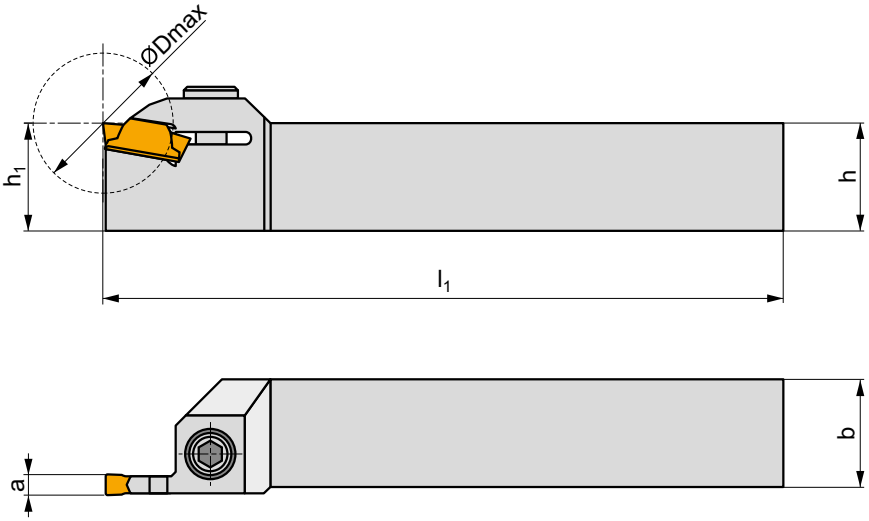
P M K N S H

G

T149-T155







ANSI	h=h1	b	l1	a	Dmax	lbs		
GFIR/L 10A 03	.625	.625	4.000	.118	.708	.40	IGI016	IGL03
GFIR/L 12C 03	.750	.750	5.000	.118	.708	.73	IGI016	IGL03
GFIR/L 16D 03	1.000	1.000	6.000	.118	.708	1.57	IGI016	IGL05
GFIR/L 10A 04	.625	.625	4.000	.157	.944	.40	IGI018	IGL03
GFIR/L 12C 04	.750	.750	5.000	.157	.944	.73	IGI018	IGL03
GFIR/L 16D 04	1.000	1.000	6.000	.157	.944	1.54	IGI018	IGL05
GFIR/L 12C 05	.750	.750	5.000	.196	1.102	.73	IGI019	IGL03
GFIR/L 16D 05	1.000	1.000	6.000	.196	1.102	1.52	IGI019	IGL05
GFIR/L 12C 06	.750	.750	5.000	.236	1.102	.73	IGI020	IGL03
GFIR/L 16D 06	1.000	1.000	6.000	.236	1.102	1.50	IGI020	IGL05
GFIR/L 16D 08	1.000	1.000	7.000	.315	1.890	1.54	IGI021	IGL09
GFIR/L 85E 08	1.250	1.000	7.000	.315	1.890	2.20	IGI021	IGL09

IGI016	LCM. 0316..
IGI018	LCM. 0416..
IGI019	LCM. 0516..
IGI020	LCM. 0616..
IGI021	LCM. 083..

		Nm			
IGL05	HS 0625C	6.0	M6	.98	HXK 5
IGL09	HSI 1020	8.0	M10	.79	HXK 6
IGL03	HS 0616C	6.0	M6	.63	HXK 5

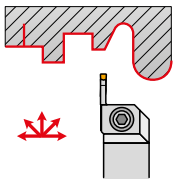
GFM(RL) EXT

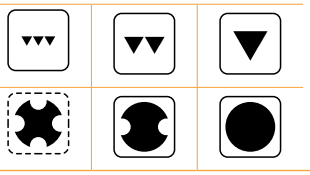
P M K N S H

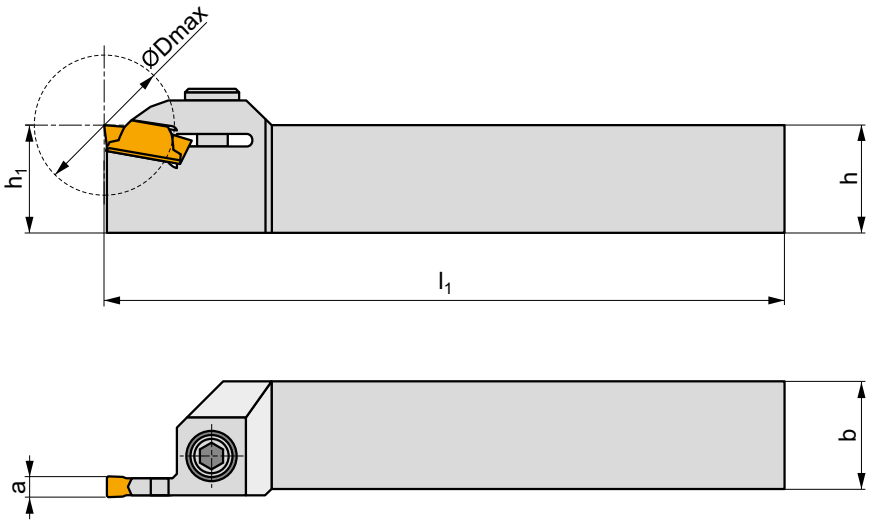
G

T149-T155











ANSI	h=h$_1$	b	l$_1$	a	D$_{max}$	lbs		
GFMR/L 12C 0316	.750	.750	5.000	.118	1.181	.71	IGI016	IGL04
GFMR/L 16D 0316	1.000	1.000	6.000	.118	1.181	.68	IGI016	IGL04
GFMR/L 12C 0416	.750	.750	5.000	.158	1.575	1.50	IGI018	IGL04
GFMR/L 16D 0416	1.000	1.000	6.000	.158	1.575	1.46	IGI018	IGL04
GFMR/L 16D 0516	1.000	1.000	6.000	.197	1.969	1.43	IGI019	IGL04
GFMR/L 85E 0516	1.250	1.000	7.000	.197	1.969	1.41	IGI019	IGL04
GFMR/L 16D 0616	1.000	1.000	6.000	.236	2.362	2.14	IGI020	IGL04
GFMR/L 85E 0616	1.250	1.000	7.000	.236	2.362	2.12	IGI020	IGL04
GFMR/L 85E 0830	1.250	1.000	7.000	.315	3.150	2.03	IGI021	IGL09

IGI016	LCM. 0316..
IGI018	LCM. 0416..
IGI019	LCM. 0516..
IGI020	LCM. 0616..
IGI021	LCM. 083..

		Nm			
IGL04	HS 0620C	6.0	M6	.79	HXK 5
IGL09	HSI 1020	8.0	M10	.79	HXK 6

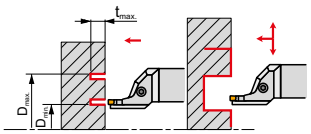
GFIR-L AXIAL

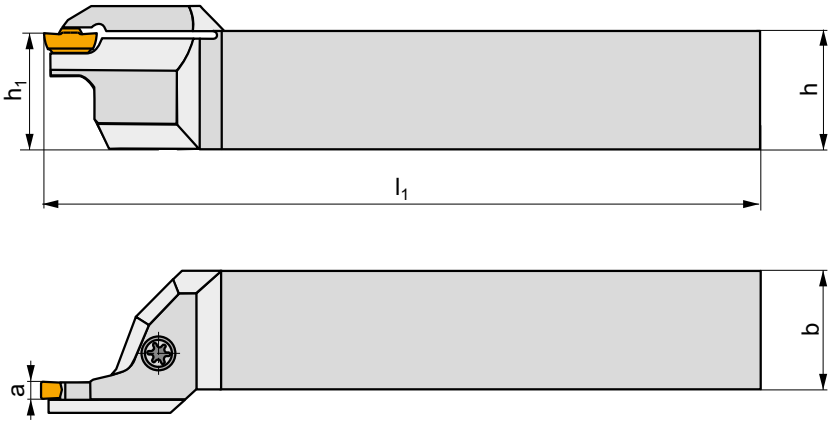
P M K N S H

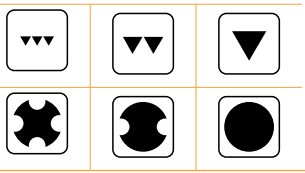
G

T149-T155











ANSI	$h=h_1$	b	l_1	a	t_{max}	D_{min}	D_{max}	lbs		
GFIR 16D 03L 1.18-.670	1.000	1.000	6.000	.118	.374	.670	1.180	1.52	IGI014	IGL07
GFIR 16D 03L 1.54-.940	1.000	1.000	6.000	.118	.374	.940	1.540	1.52	IGI014	IGL07
GFIR 16D 03L 1.97-1.30	1.000	1.000	6.000	.118	.433	1.300	1.970	1.50	IGI014	IGL07
GFIR 16D 03L 2.36-1.69	1.000	1.000	6.000	.118	.433	1.690	2.360	1.50	IGI014	IGL07
GFIR 16D 03L 2.99-2.09	1.000	1.000	6.000	.118	.433	2.090	2.990	1.50	IGI014	IGL07
GFIR 16D 03L 3.94-2.76	1.000	1.000	6.000	.118	.354	2.760	3.940	1.50	IGI016	IGL08
GFIR 16D 03L 5.12-3.54	1.000	1.000	6.000	.118	.354	3.540	5.120	1.52	IGI016	IGL08
GFIR 16D 03L 6.69-4.33	1.000	1.000	6.000	.118	.354	4.330	6.690	1.50	IGI016	IGL08
GFIR 16D 04L 1.18-.670	1.000	1.000	6.000	.158	.374	.670	1.180	1.52	IGI017	IGL07
GFIR 16D 04L 1.34-.826	1.000	1.000	6.000	.158	.374	.826	1.340	1.54	IGI017	IGL07
GFIR 16D 04L 1.57-1.02	1.000	1.000	6.000	.158	.433	1.020	1.570	1.52	IGI017	IGL07
GFIR 16D 04L 1.97-1.26	1.000	1.000	6.000	.158	.433	1.260	1.970	1.52	IGI017	IGL07
GFIR 16D 04L 2.36-1.65	1.000	1.000	6.000	.158	.433	1.650	2.360	1.52	IGI017	IGL07
GFIR 16D 04L 2.95-2.05	1.000	1.000	6.000	.158	.433	2.050	2.950	1.52	IGI017	IGL07
GFIR 16D 04L 3.94-2.76	1.000	1.000	6.000	.158	.472	2.760	3.940	1.50	IGI018	IGL08
GFIR 16D 04L 5.12-3.54	1.000	1.000	6.000	.158	.472	3.540	5.120	1.50	IGI018	IGL08
GFIR 16D 04L 6.69-4.33	1.000	1.000	6.000	.158	.472	4.330	6.690	1.50	IGI018	IGL08
GFIR 16D 04L 9.06-5.51	1.000	1.000	6.000	.158	.472	5.510	9.060	1.50	IGI018	IGL08

IGI014	LCM. 0313..
IGI016	LCM. 0316..
IGI017	LCM. 0413..
IGI018	LCM. 0416..

		Nm				
IGL07	US 5018-T20P	5.0	M5	.71	FLAG T20P	–
IGL08	US 6020-T25P	6.0	M6	.79	–	SDR T25P

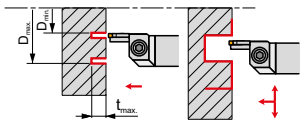
GFIL-R AXIAL

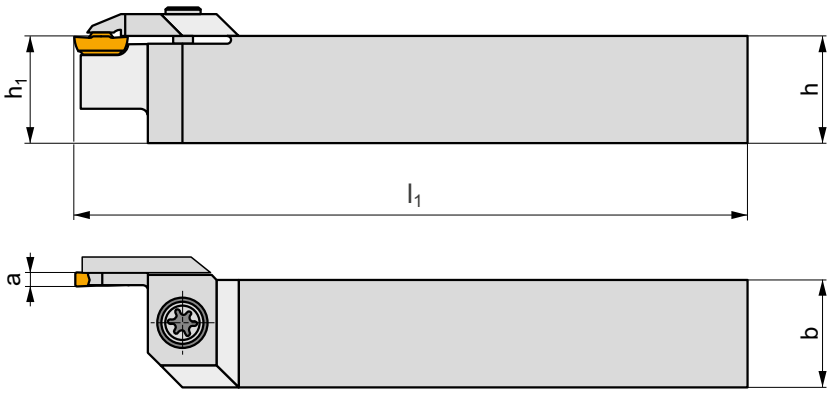
P M K N S H

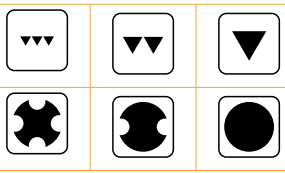
G

T149-T155











ANSI	$h=h_1$	b	l_1	a	t_{max}	D_{min}	D_{max}	lbs		
GFIL 16D 03R 1.18-.670	1.000	1.000	6.000	.118	.374	.670	1.180	1.52	IGI014	IGL07
GFIL 16D 03R 1.54-.940	1.000	1.000	6.000	.118	.374	.940	1.540	1.52	IGI014	IGL07
GFIL 16D 03R 1.97-1.30	1.000	1.000	6.000	.118	.433	1.300	1.970	1.50	IGI014	IGL07
GFIL 16D 03R 2.36-1.69	1.000	1.000	6.000	.118	.433	1.690	2.360	1.50	IGI014	IGL07
GFIL 16D 03R 2.99-2.09	1.000	1.000	6.000	.118	.433	2.090	2.990	1.50	IGI014	IGL07
GFIL 16D 03R 3.94-2.76	1.000	1.000	6.000	.118	.354	2.760	3.940	1.50	IGI016	IGL08
GFIL 16D 03R 5.12-3.54	1.000	1.000	6.000	.118	.354	3.540	5.120	1.52	IGI016	IGL08
GFIL 16D 03R 6.69-4.33	1.000	1.000	6.000	.118	.354	4.330	6.690	1.50	IGI016	IGL08
GFIL 16D 04R 1.18-.670	1.000	1.000	6.000	.158	.374	.670	1.180	1.52	IGI017	IGL07
GFIL 16D 04R 1.34-.826	1.000	1.000	6.000	.158	.374	.826	1.340	1.54	IGI017	IGL07
GFIL 16D 04R 1.57-1.02	1.000	1.000	6.000	.158	.433	1.020	1.570	1.52	IGI017	IGL07
GFIL 16D 04R 1.97-1.26	1.000	1.000	6.000	.158	.433	1.260	1.970	1.52	IGI017	IGL07
GFIL 16D 04R 2.36-1.65	1.000	1.000	6.000	.158	.433	1.650	2.360	1.52	IGI017	IGL07
GFIL 16D 04R 2.95-2.05	1.000	1.000	6.000	.158	.433	2.050	2.950	1.52	IGI017	IGL07
GFIL 16D 04R 3.94-2.76	1.000	1.000	6.000	.158	.472	2.760	3.940	1.50	IGI018	IGL08
GFIL 16D 04R 5.12-3.54	1.000	1.000	6.000	.158	.472	3.540	5.120	1.50	IGI018	IGL08
GFIL 16D 04R 6.69-4.33	1.000	1.000	6.000	.158	.472	4.330	6.690	1.50	IGI018	IGL08
GFIL 16D 04R 9.06-5.51	1.000	1.000	6.000	.158	.472	5.510	9.060	1.50	IGI018	IGL08

IGI014	LCM. 0313..
IGI016	LCM. 0316..
IGI017	LCM. 0413..
IGI018	LCM. 0416..

		Nm				
IGL07	US 5018-T20P	5.0	M5	.71	FLAG T20P	–
IGL08	US 6020-T25P	6.0	M6	.79	–	SDR T25P

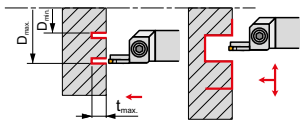
GFIR-R AXIAL

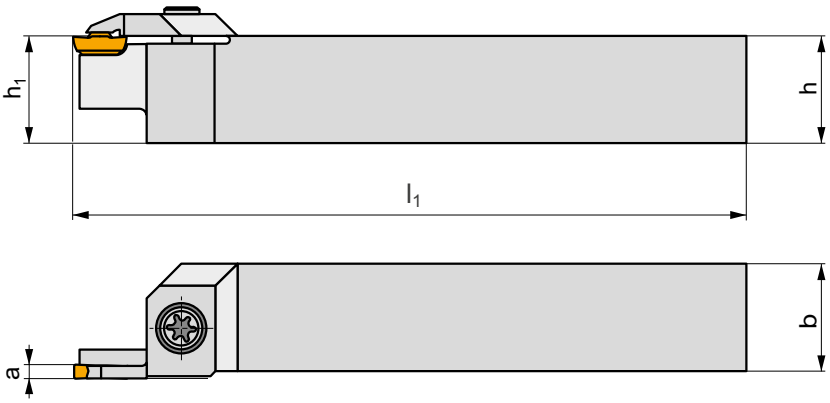
P M K N S H

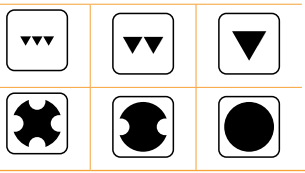
G

T149-T155











ANSI	h=h$_1$	b	l$_1$	a	t$_{max}$	D$_{min}$	D$_{max}$	lbs		
GFIR 16D 0313R 1.18-.670	1.000	1.000	6.000	.118	.354	.670	1.180	1.46	IGI014	IGL07
GFIR 16D 0313R 1.54-.940	1.000	1.000	6.000	.118	.354	.940	1.540	1.48	IGI014	IGL07
GFIR 16D 0313R 1.97-1.30	1.000	1.000	6.000	.118	.354	1.300	1.970	1.50	IGI014	IGL07
GFIR 16D 0313R 2.36-1.69	1.000	1.000	6.000	.118	.354	1.690	2.360	1.52	IGI014	IGL07
GFIR 16D 0313R 2.99-2.09	1.000	1.000	6.000	.118	.354	2.090	2.990	1.52	IGI014	IGL07
GFIR 16D 0316R 3.94-2.76	1.000	1.000	6.000	.118	.354	2.760	3.940	1.54	IGI016	IGL07
GFIR 16D 0316R 5.12-3.54	1.000	1.000	6.000	.118	.354	3.540	5.120	1.57	IGI016	IGL07
GFIR 16D 0316R 6.69-4.33	1.000	1.000	6.000	.118	.354	4.330	6.690	1.57	IGI016	IGL07

IGI014	LCM. 0313..
IGI016	LCM. 0316..

IGL07	US 5018-T20P	5.0	M5	.71	FLAG T20P

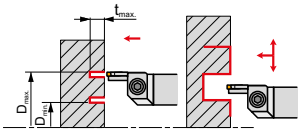
GFIL-L AXIAL

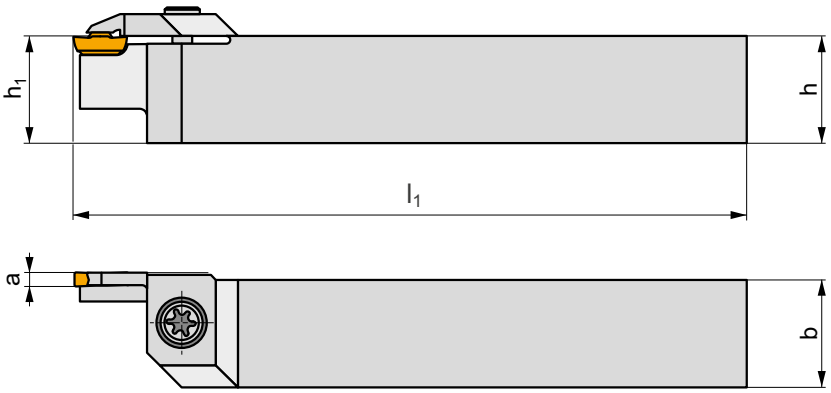
P M K N S H

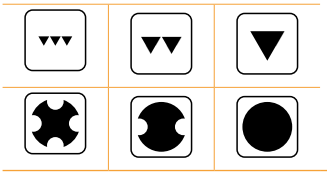
G

T149-T155











ANSI	$h=h_1$	b	l_1	a	t_{max}	D_{min}	D_{max}	lbs		
GFIL 16D 0313L 1.18-.670	1.000	1.000	6.000	.118	.354	.670	1.180	1.46	IGI014	IGL07
GFIL 16D 0313L 1.54-.940	1.000	1.000	6.000	.118	.354	.940	1.540	1.48	IGI014	IGL07
GFIL 16D 0313L 1.97-1.30	1.000	1.000	6.000	.118	.354	1.300	1.970	1.50	IGI014	IGL07
GFIL 16D 0313L 2.36-1.69	1.000	1.000	6.000	.118	.354	1.690	2.360	1.52	IGI014	IGL07
GFIL 16D 0313L 2.99-2.09	1.000	1.000	6.000	.118	.354	2.090	2.990	1.52	IGI014	IGL07
GFIL 16D 0316L 3.94-2.76	1.000	1.000	6.000	.118	.354	2.760	3.940	1.54	IGI016	IGL07
GFIL 16D 0316L 5.12-3.54	1.000	1.000	6.000	.118	.354	3.540	5.120	1.57	IGI016	IGL07
GFIL 16D 0316L 6.69-4.33	1.000	1.000	6.000	.118	.354	4.330	6.690	1.57	IGI016	IGL07

IGI014	LCM. 0313..
IGI016	LCM. 0316..

IGL07	US 5018-T20P	5.0	M5	.71	FLAG T20P

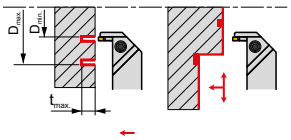
GGI(RL)-90 AXIAL

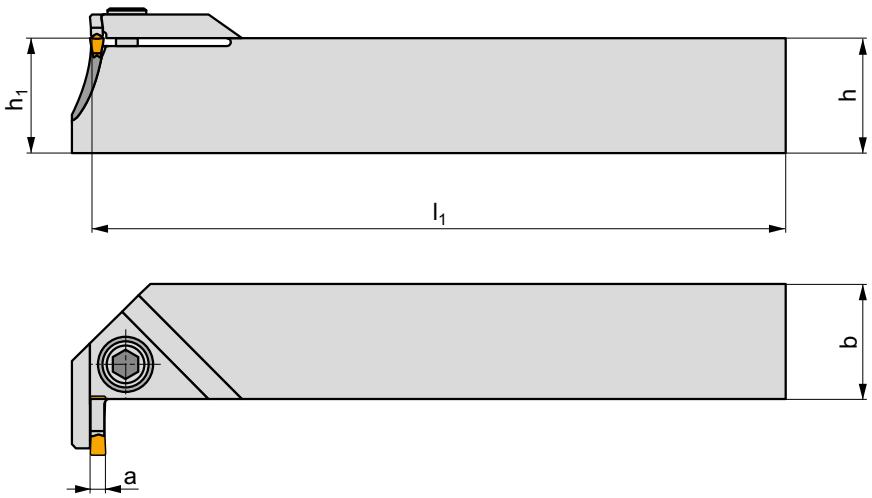
P M K N S H

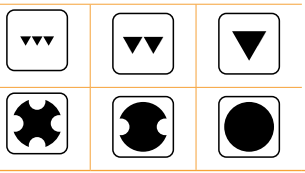
G

T149-T155











ANSI	h=h$_1$	b	l$_1$	a	t$_{max}$	D$_{min}$	D$_{max}$	lbs		
GGIR 16D 03R 1.18-.670	1.000	1.000	6.000	.118	.374	.670	1.180	1.70	IGI014	IGL01
GGIR 16D 03R 1.54-.940	1.000	1.000	6.000	.118	.374	.940	1.540	1.70	IGI014	IGL01
GGIR 16D 03R 1.97-1.30	1.000	1.000	6.000	.118	.433	1.300	1.970	1.70	IGI014	IGL01
GGIR 16D 03R 2.36-1.69	1.000	1.000	6.000	.118	.433	1.690	2.360	1.70	IGI014	IGL01
GGIR 16D 03R 2.99-2.09	1.000	1.000	6.000	.118	.433	2.090	2.990	1.70	IGI014	IGL01
GGIR 16D 03R 3.94-2.76	1.000	1.000	6.000	.118	.354	2.760	3.940	1.70	IGI016	IGL04
GGIR 16D 03R 5.12-3.54	1.000	1.000	6.000	.118	.354	3.540	5.120	1.70	IGI016	IGL04
GGIR 16D 03R 6.69-4.33	1.000	1.000	6.000	.118	.354	4.330	6.690	1.70	IGI016	IGL04
GGIL 16D 03L 1.18-.670	1.000	1.000	6.000	.118	.374	.670	1.180	1.70	IGI014	IGL01
GGIL 16D 03L 1.54-.940	1.000	1.000	6.000	.118	.374	.940	1.540	1.70	IGI014	IGL01
GGIL 16D 03L 1.97-1.30	1.000	1.000	6.000	.118	.433	1.300	1.970	1.70	IGI014	IGL01
GGIL 16D 03L 2.36-1.69	1.000	1.000	6.000	.118	.433	1.690	2.360	1.70	IGI014	IGL01
GGIL 16D 03L 2.99-2.09	1.000	1.000	6.000	.118	.433	2.090	2.990	1.70	IGI014	IGL01
GGIL 16D 03L 3.94-2.76	1.000	1.000	6.000	.118	.354	2.760	3.940	1.70	IGI016	IGL04
GGIL 16D 03L 5.12-3.54	1.000	1.000	6.000	.118	.354	3.540	5.120	1.70	IGI016	IGL04
GGIL 16D 03L 6.69-4.33	1.000	1.000	6.000	.118	.354	4.330	6.690	1.70	IGI016	IGL04

IGI014	LCM. 0313..
IGI016	LCM. 0316..

		Nm			
IGL01	HS 0520C	5.0	M5	.79	HXK 4
IGL04	HS 0620C	6.0	M6	.79	HXK 5

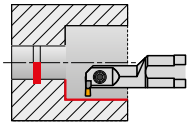
GG.(RL) INT

P M K N S H

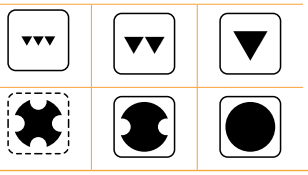
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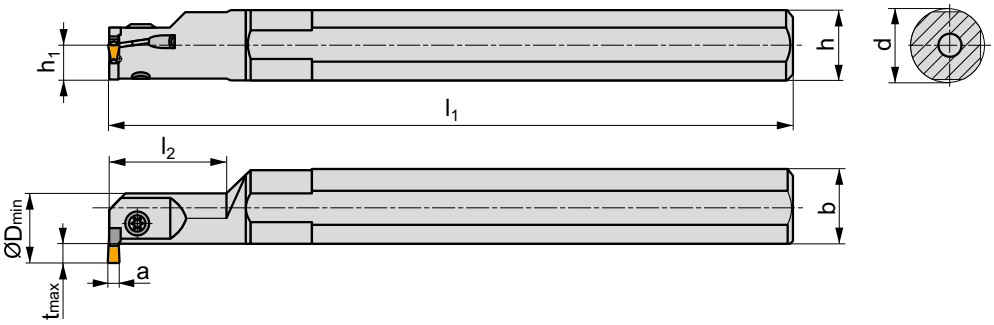
T149-T155













ANSI	d	h	h_1	b	l_1	l_2	a	t_{max}	D_{min}		lbs		
A10Q-GGER/L 0313-04	.625	.591	.296	.608	7.000	.984	.118	.118	.630	#	.51	IGI015	IGL06
A12R-GGFR/L 0313-04	.750	.709	.355	.729	8.000	1.181	.118	.217	.787	#	.73	IGI015	IGL06
A16S-GGHR/L 0313	1.000	.906	.453	.953	10.000	1.575	.118	.295	.984	#	1.70	IGI014	IGL06
A16S-GGFR/L 0413	1.000	.906	.453	.953	10.000	1.575	.158	.295	.984	#	1.70	IGI017	IGL06
A20T-GGHR/L 0413	1.250	1.181	.591	1.216	12.000	1.969	.158	.413	1.260	#	3.42	IGI017	IGL06

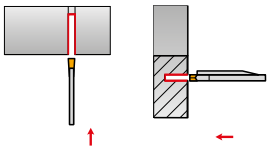
IGI014	LCM. 0313..
IGI015	LCM. 0313.....04
IGI017	LCM. 0413..

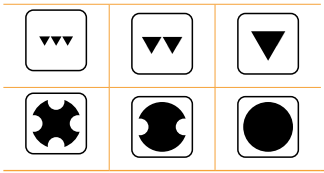
IGL06	SR 85011-T15P	5.0	M5	.35	FLAG T15P

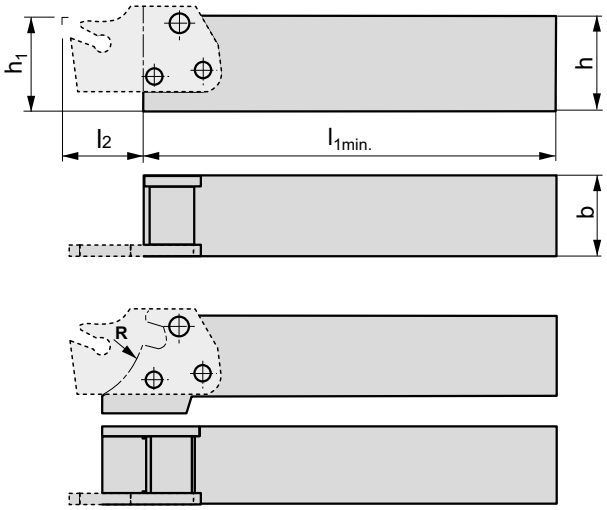
MS-EN

T149-T155









ANSI	h=h1	b	l1 min	l2	R	lbs		
MS-EN-08 A	.500	.500	4.000	.591 (.788)	–	.29	IGI072	IND4
MS-EN-10 A	.625	.625	4.000	.591 (.788)	–	.44	IGI072	IND4
MS-EN-12 C	.750	.750	5.000	.591 (.984)	–	.82	IGI068	IND5
MS-EN-16 D	1.000	1.000	6.000	.591 (.984)	–	1.65	IGI068	IND5
MS-EN-85 E	1.250	1.000	7.000	.591 (.984)	–	2.40	IGI068	IND5

IGI068	XLC.. 25..15...
IGI072	XLCF. 16..15...

		Nm				Nm			
IND4	3x US 4011-T15P	3.5	M4	.42	–	–	–	–	FLAG T15P
IND5	2x US 45013-T20P	5.0	M5	.51	US 46017-T20P	5.0	M6	17	FLAG T20P

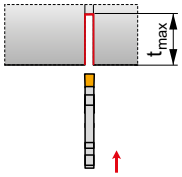
XLCCN 25 BS

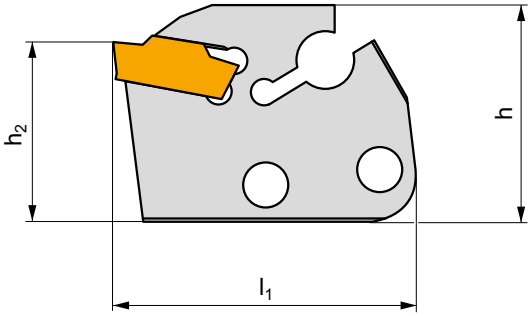
P M K N S H

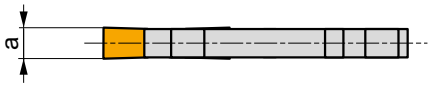
G

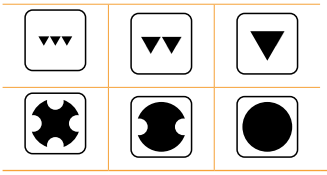
T149-T154













ANSI	h	h_2	l_1	a	t_{max}	lbs		
XLCCN 250215-0316	1.142	.945	1.575	.118	.591	.02	IGI016	-
XLCCN 250225-0316	1.142	.945	1.969	.118	.984	.04	IGI016	-
XLCCN 250315-0416	1.142	.945	1.575	.157	.591	.04	IGI018	-
XLCCN 250325-0416	1.142	.945	1.969	.157	.984	.07	IGI018	-
XLCCN 250425-0516	1.142	.945	1.969	.197	.984	.07	IGI019	-
XLCCN 250525-0616	1.142	.945	1.969	.236	.984	.09	IGI020	-

IGI016	LCM. 0316..
IGI018	LCM. 0416..
IGI019	LCM. 0516..
IGI020	LCM. 0616..

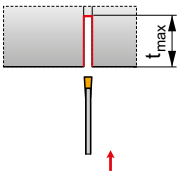
XLCF(NRL) BS

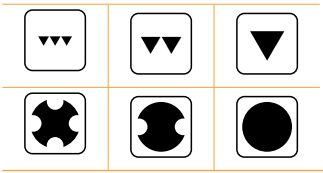
P M K N S H

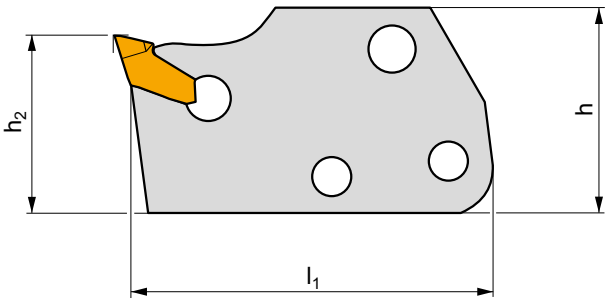
X

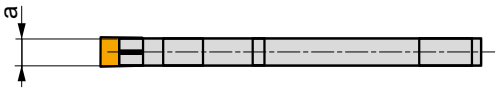
T154-T155













ANSI	h	h_2	l_1	a	t_{max}	lbs		
XLCFN 160215-3.00	.984	.472	1.378	.122	.591	.02	IGI025	KV
XLCFN 160220-3.00	.984	.472	1.575	.122	.787	.04	IGI025	KV
XLCFN 250215-3.00	1.142	.945	1.575	.122	.591	.04	IGI025	KV
XLCFN 250225-3.00	1.142	.945	1.969	.122	.984	.04	IGI025	KV
XLCFN 250315-4.00	1.142	.945	1.575	.161	.591	.04	IGI026	KV
XLCFN 250325-4.00	1.142	.945	1.969	.161	.984	.07	IGI026	KV
XLCFN 250425-5.00	1.142	.945	1.969	.201	.984	.09	IGI027	KV
XLCFN 250525-6.35	1.142	.945	1.969	.250	.984	.09	IGI028	KV
XLCFR/L 160115-1.60	.984	.472	1.378	.059 - .063	.591	.02	IGI023	KV
XLCFR/L 160115-2.00	.984	.472	1.378	.079 - .087	.591	.02	IGI024	KV
XLCFR/L 250115-1.60	1.142	.945	1.575	.059 - .063	.591	.02	IGI023	KV
XLCFR/L 250115-2.00	1.142	.945	1.575	.079 - .087	.591	.02	IGI024	KV

IGI023	LFMX 1.5.	LFMX 1.6.
IGI024	LFMX 2..	LFMX 2.2.
IGI025	LFMX 3.1.	–
IGI026	LFMX 4.1.	–
IGI027	LFMX 5.1.	–
IGI028	LFMX 6.35.	–

KV	KV 5x70

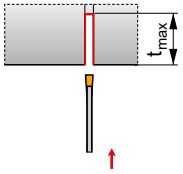
XLCCN B

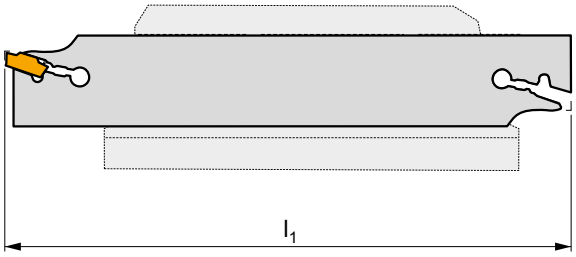
P M K N S H

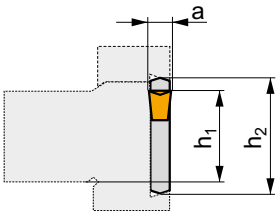
X

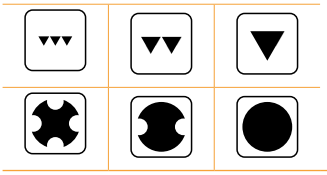
T149-T154













ANSI	h_1	h_2	l_1	a	t_{max}	lbs		
XLCCN 2602 J 0316	.787	1.024	4.331	.118	1.378	.11	IGI016	KV1
XLCCN 3202 M 0316	.984	1.260	5.906	.118	1.969	.18	IGI016	KV1
XLCCN 3203 M 0416	.984	1.260	5.906	.157	1.969	.24	IGI018	KV1
XLCCN 3204 M 0516	.984	1.260	5.906	.197	2.362	.31	IGI019	KV1
XLCCN 3205 M 0616	.984	1.260	5.906	.236	2.362	.37	IGI020	KV1

IGI016	LCM. 0316..
IGI018	LCM. 0416..
IGI019	LCM. 0516..
IGI020	LCM. 0616..

KV1	KV 5x100

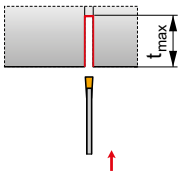
XLCFN B

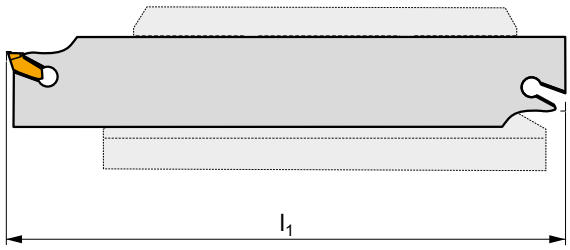
P M K N S H

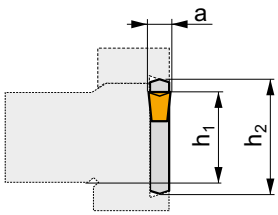
X

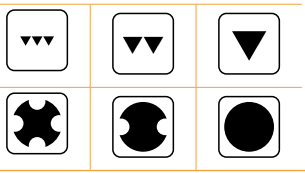
T154-T155













ANSI	h_1	h_2	l_1	a	t_{max}	lbs		
XLCFN 2601 J 1.60	.787	1.024	4.331	.059 - .063	.591	.07	IGI023	KV
XLCFN 2601 J 2.00	.787	1.024	4.331	.079 - .087	.984	.09	IGI024	KV
XLCFN 2602 J 3.00	.787	1.024	4.331	.122	1.476	.11	IGI025	KV
XLCFN 2603 J 4.00	.787	1.024	4.331	.161	1.575	.13	IGI026	KV
XLCFN 3201 M 1.60	.984	1.260	5.906	.059 - .063	.591	.13	IGI023	KV
XLCFN 3201 M 2.00	.984	1.260	5.906	.079 - .087	.984	.15	IGI024	KV
XLCFN 3202 M 3.00	.984	1.260	5.906	.122	1.969	.18	IGI025	KV
XLCFN 3203 M 4.00	.984	1.260	5.906	.161	1.969	.24	IGI026	KV
XLCFN 3204 M 5.00	.984	1.260	5.906	.201	2.362	.31	IGI027	KV
XLCFN 3205 M 6.35	.984	1.260	5.906	.250	2.362	.37	IGI028	KV
XLCFN 4502 S 3.00	1.260	1.772	9.843	.122	3.150	.26	IGI025	KV
XLCFN 4503 S 4.00	1.260	1.772	9.843	.161	3.150	.42	IGI026	KV
XLCFN 4504 S 5.00	1.260	1.772	9.843	.201	3.150	.62	IGI027	KV
XLCFN 4505 S 6.35	1.260	1.772	9.843	.250	3.150	.88	IGI028	KV

IGI023	LFMX 1.5.	LFMX 1.6.
IGI024	LFMX 2..	LFMX 2.2.
IGI025	LFMX 3.1.	–
IGI026	LFMX 4.1.	–
IGI027	LFMX 5.1.	–
IGI028	LFMX 6.35.	–

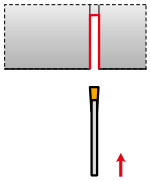
KV	KV 5x70

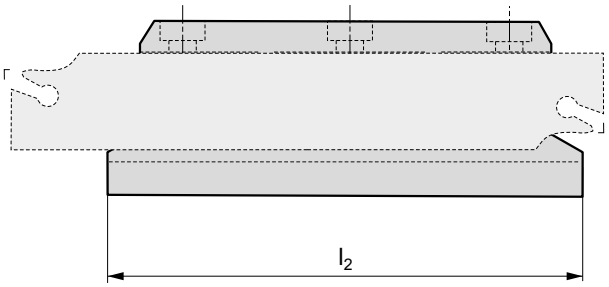
DU. D

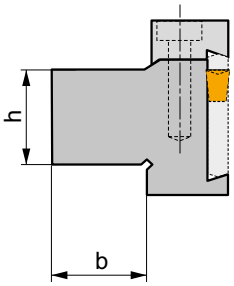
P M K N S H

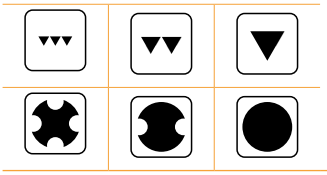
T149-T155











ANSI	h	b	l_2	lbs		
26-DU 12	.750	.750	3.540	1.15	IGI069	IND2
32-DU 74	1.000	.875	4.330	1.87	IGI070	IND2
32-DU 104	1.000	1.250	4.330	2.31	IGI070	IND2
32-DU 95	1.250	1.125	4.330	2.31	IGI070	IND2
45-DU 95	1.250	1.125	4.330	2.98	IGI071	IND7
45-DU 24	1.500	1.500	4.330	3.90	IGI071	IND7

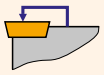
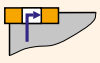
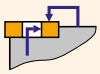
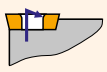
IGI069	XLC.N 26..
IGI070	XLC.N 32..
IGI071	XLC.N 45..

		Nm			
IND2	HS 0625	6.0	M6	.98	HXK 5
IND7	HS 0630	6.0	M6	1.18	HXK 5

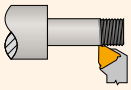
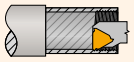
ISO/ANSI CODE DESIGNATION – THREADING
DESIGNACIÓN CÓDIGO ISO/ANSI - ROSCADO
CODIFICATION ISO/ANSI - FILETAGE

	1	2	3		4	5	6	7		8
ISO	S	E	R	–	S	2525	M	16	–	
ANSI	S	E	R	–	S	16	D	16	–	

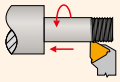
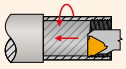
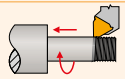
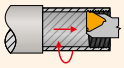
1 Clamping designation / Tipo de fijación / Désignation de la fixation

C	
P	
M	
S	

2 Machining orientation / Tipo de mecanizado / Procédé d'usinage

E	External Exterior Extérieur	
I	Internal Interior Intérieur	

3 Direction of cut / Dirección del corte / Direction de coupe

R – Right	External Exterior Extérieur	
	Internal Interior Intérieur	
L – Left	External Exterior Extérieur	
	Internal Interior Intérieur	

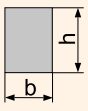
4 Type of construction / Tipo de construcción / Type de construction

–	Normal
S	Special Especial Spécial

5 Holder dimensions [mm] / Dimensiones del portaherramientas [mm] / Dimensions de l'outil [mm]

External turning Mecanizado exterior Tournage extérieur	**2525**	25 × 25 mm
Internal turning Mecanizado interior Tournage intérieur	**1416**	Shank – 14 mm / Shank height Ø – 16 mm Mango– 14 mm / Ø montaje - 16mm Queue– 14 mm / Ø Hauteur de manche - 16 mm

5 Tool dimensions [in] / Dimensiones de la herramienta (pulgadas) / Dimensions de l'outil [in]



	b [in]	h [in]
10	5/8	5/8
12	3/4	3/4
16	1	1
85	1	1 1/4
86	1	1 1/2
20	1 1/4	1 1/4



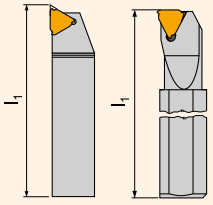
	d [in]
08	.500
10	.625
12	.750
16	1.000
20	1.250
24	1.500

For square shanks, the number is the width or height in terms of 16ths. For rectangular shanks the first digit is the width in terms of 8ths and the second digit is the height in terms of 4ths.

Para mangos cuadrados, el dígito indica el ancho o la altura en número de dieciseisavos de pulgada. Para mangos rectangulares, el primer dígito indica el ancho en número de octavos de pulgada y el segundo dígito indica la altura en número de cuartos de pulgada.

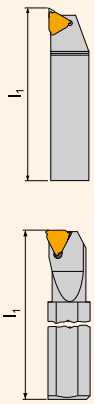
Pour les manches carrés, c'est le nombre 16 de la largeur et de la hauteur en pouce. Pour les manches rectangulaires le premier digit est le nombre 8 de la largeur en pouce et le second digit le nombre 4 de la hauteur en pouce.

6 Holder total length / Longitud total / Longueur totale de l'outil



	l_1 [mm]
K	125
L	140
M	150
N	160
P	170
Q	180
R	200
S	250
T	300

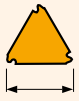
6



	l_1 [in]
C	5.000
D	6.000
E	7.000
F	8.000

	l_1 [in]
K	5.000
M	6.000
P	6.250
Q	7.250
R	8.000
S	10.000
T	12.000
U	14.000

7 Insert cutting edge length (insert size) / Longitud del filo de corte (tamaño de plaquita) / Longueur de l'arête de coupe (taille de plaquette)

d = I.C.		T
[mm]	[in]	
6,350	1/4	11
9,525	3/8	16
12,700	1/2	22

8 Helix angle λ / Ángulo de hélice λ / Angle d'hélice λ

0	Helix angle λ = 0° Ángulo de hélice λ = 0° Angle d'hélice λ = 0°
1	Helix angle λ = 1° Ángulo de hélice λ = 1° Angle d'hélice λ = 1°
2	Helix angle λ = 2° Ángulo de hélice λ = 2° Angle d'hélice λ = 2°

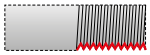
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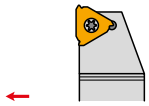
P M K N S H

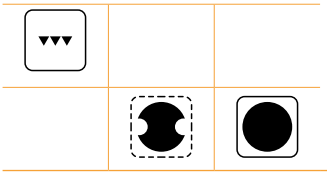
S

T157-T180

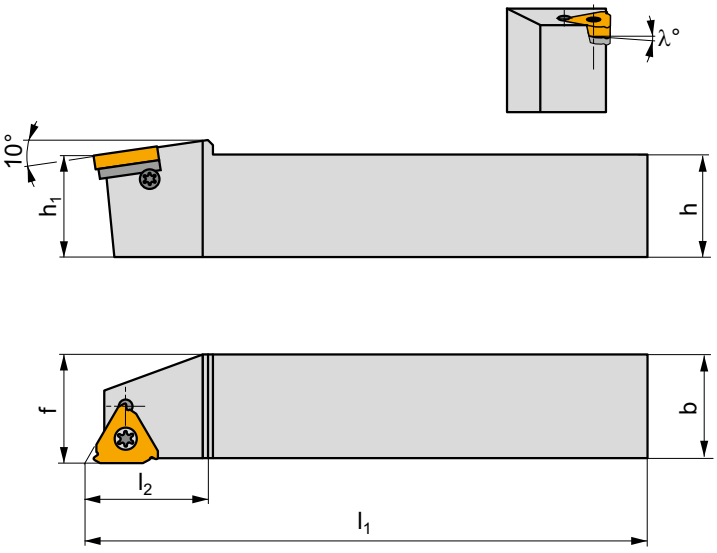












ANSI	h=h$_1$	b	f	l$_1$	l$_2$	λ°	lbs		
SER/L 12 C16	.750	.750	.750	5.000	.900	T334	.77	IGI048	IZ12
SER/L 16 D16	1.000	1.000	1.000	6.000	.950	T334	1.54	IGI048	IZ12
SER/L 85 D16	1.250	1.000	1.000	6.000	1.000	T334	1.98	IGI048	IZ12
SER/L 16 D22	1.000	1.000	1.000	6.000	1.000	T334	1.54	IGI052	IZ13
SER/L 85 D22	1.250	1.000	1.000	6.000	1.000	T334	1.98	IGI052	IZ13

IGI048	TN 16EL..	TN 16ER..
IGI052	TN 22EL..	TN 22ER..

		Nm							
IZ12	US 3512A-T15P	3.0	M3.5	.50	–	HS 0304	FLAG T15P	HXK 2.5	T334
IZ13	US 4514A-T20	5.0	M4.5	.55	SP 0405	–	FLAG T20	–	T334

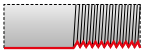
SE(RL)-S

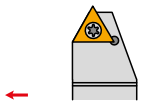
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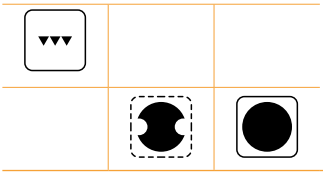
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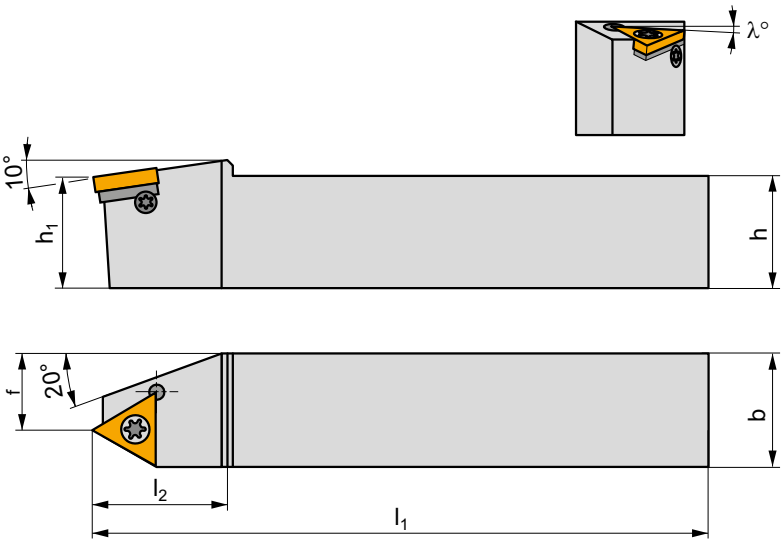
T157-T180













ANSI	h=h1	b	f	l1	l2	λ°	lbs		
SER/L-S 16 D22	1.000	1.000	.575	6.000	1.200	T334	.77	IGI053	IZ13
SER/L-S 85 D22	1.250	1.000	.575	6.000	1.200	T334	1.54	IGI053	IZ13

IGI053	TN 22EN..

IZ13	US 4514A-T20	3.0	M4.5	.55	SP 0405	FLAG T20	T334

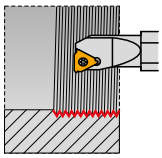
SI(RL)

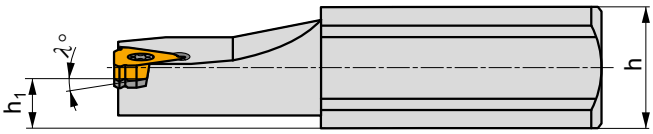
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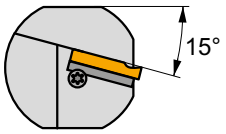
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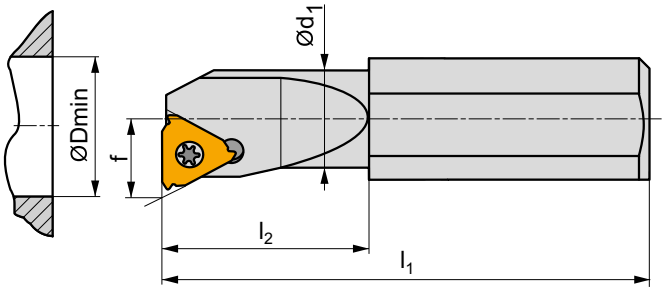
T157-T180

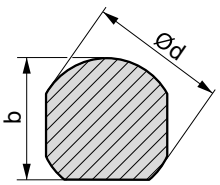




















ANSI	b	d	D_{min}	d_1	f	h	h_1	l_1	l_2	λ°		lbs		
SIR/L 10 K11-0	.570	.625	.500	.380	.295	.550	–	5.000	1.000	0	–	.33	IGI046	IZ11
SIR/L 10 K11-1	.570	.625	.500	.380	.295	.550	–	5.000	1.000	1	–	.33	IGI046	IZ11
SIR/L 10 M11-0	.570	.625	.630	.500	.350	.550	–	6.000	1.250	0	–	.44	IGI046	IZ11
SIR/L 10 M11-1	.570	.625	.630	.500	.350	.550	–	6.000	1.250	1	–	.44	IGI046	IZ11
SIR/L 10 M16-0	.550	.625	.850	–	.450	.550	–	6.000	–	0	–	.44	IGI050	IZ9
SIR/L 10 M16-1	.550	.625	.850	–	.450	.550	–	6.000	–	1	–	.44	IGI050	IZ9
SIR/L 10 M16-2**	.550	.625	.650	.600	.430	.550	–	6.000	1.500	2	✓	.44	IGI050	IZ10
SIR/L 12 P16	.700	.750	.850	–	.500	.700	–	6.250	–	T336	–	.66	IGI050	IZ12
SIR/L 16 Q16	.900	1.000	1.150	–	.650	.900	–	7.250	–	T336	–	1.37	IGI050	IZ12
SIR/L 20 S16	1.200	1.250	1.400	–	.760	1.000	–	10.000	–	T336	–	2.98	IGI050	IZ12
SIR/L 20 S22	1.200	1.250	1.450	–	.850	1.000	–	10.000	–	T336	–	2.98	IGI055	IZ13
SIR/L 20 S22-2**	1.200	1.250	1.000	.950	.650	1.000	–	10.000	3.000	2	✓	2.43	IGI055	IZ14
SIR/L 24 T22	1.250	1.500	1.750	–	.950	1.450	–	12.000	–	T336	–	5.18	IGI055	IZ13

** With internal coolant

IGI046	TN 11NL..	TN 11NR..
IGI050	TN 16NL..	TN 16NR..
IGI055	TN 22NL..	TN 22NR..

		Nm							
IZ9	US 3510A-T15P	3.0	M3.5	.42	–	–	FLAG T15P	–	P-16
IZ10	US 3510A-T15P	3.0	M3.5	.42	–	–	FLAG T15P	–	–
IZ11	US 2506-T07P	.9	M2.5	.25	–	–	FLAG T07P	–	–
IZ12	US 3512A-T15P	3.0	M3.5	.50	–	HS 0304	FLAG T15P	HXK 2.5	T334
IZ13	US 4514A-T20	5.0	M4.5	.55	SP 0405	–	FLAG T20	–	T334
IZ14	US 4514A-T20	5.0	M4.5	.55	–	–	FLAG T20	–	–

SI(RL)-S

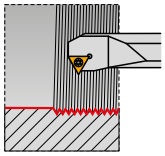
P M K N S H

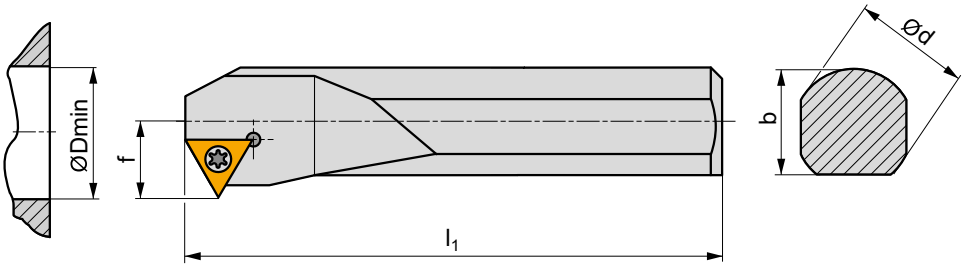
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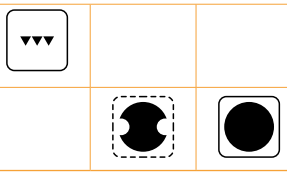
T157-T180













ANSI	b	d	D_{min}	f	h	h_1	l_1	λ°	lbs		
SIR/L-S 20 S22	1.200	1.250	1.550	.880	1.000	–	10.000	T334	2.87	IGI056	IZ13
SIR/L-S 24 T22	1.250	1.500	1.800	1.020	1.450	–	12.000	T334	5.07	IGI056	IZ13

IGI056	TN 22NN..

IZ13	US 4514A-T20	5.0	M4.5	.55	SP 0405	FLAG T20	T334

TECHNICAL INFORMATION

INFORMACIÓN TÉCNICA

PARTIE TECHNIQUE

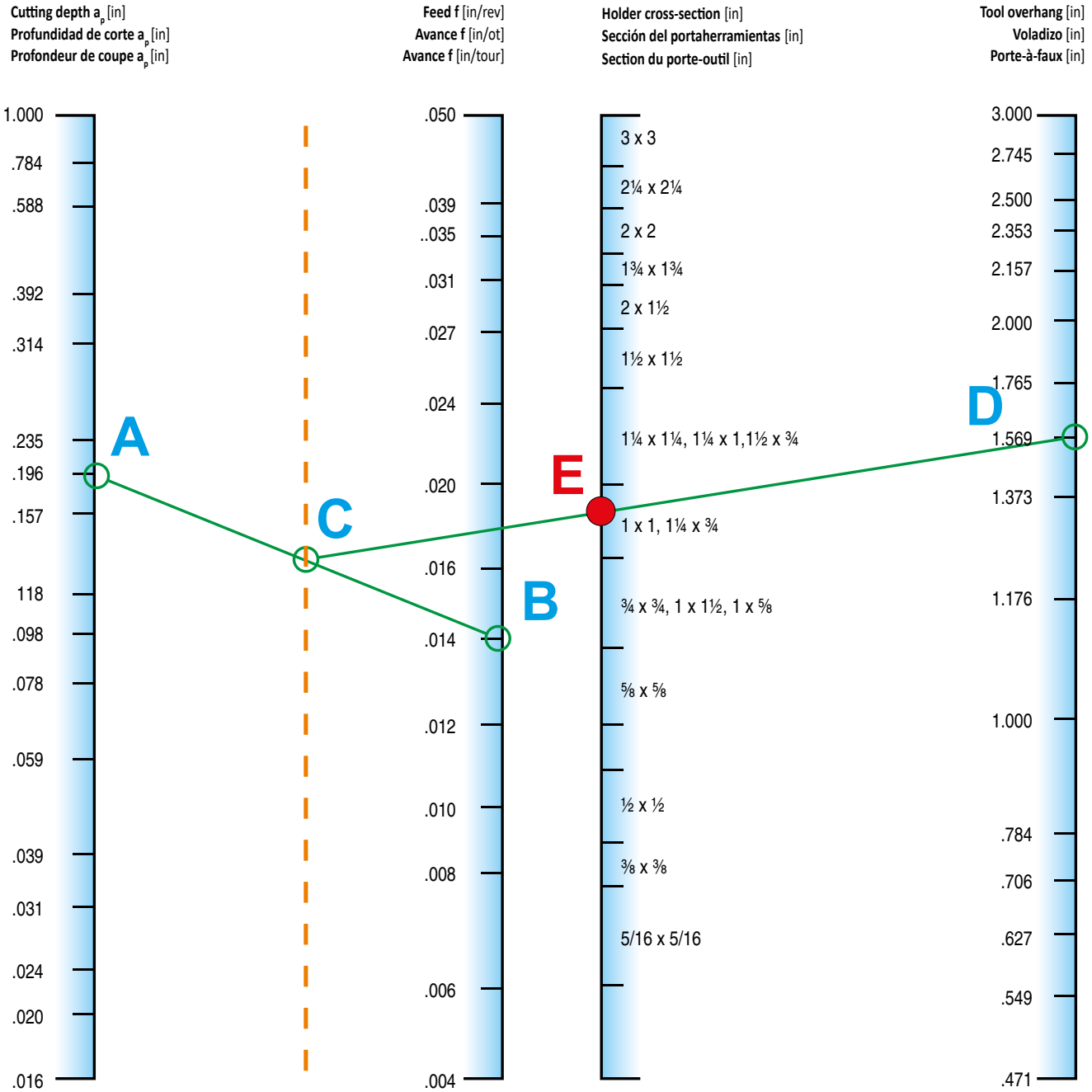
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Choosing the cross-section of the tool holder
Selección de la sección transversal del portaherramientas
Choix de la section du porte-outil

Picture / Imagen / Image 1

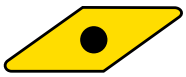
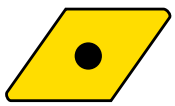
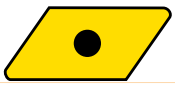
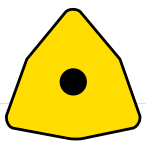
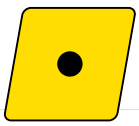
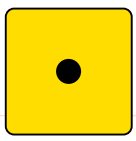
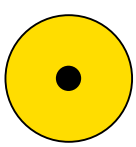


Choosing the shape and size of the insert
Selección de la forma y el tamaño de la plaquita de corte
Choix de la forme et de la dimension de la plaquette

Table / Tabla / Tableau 1

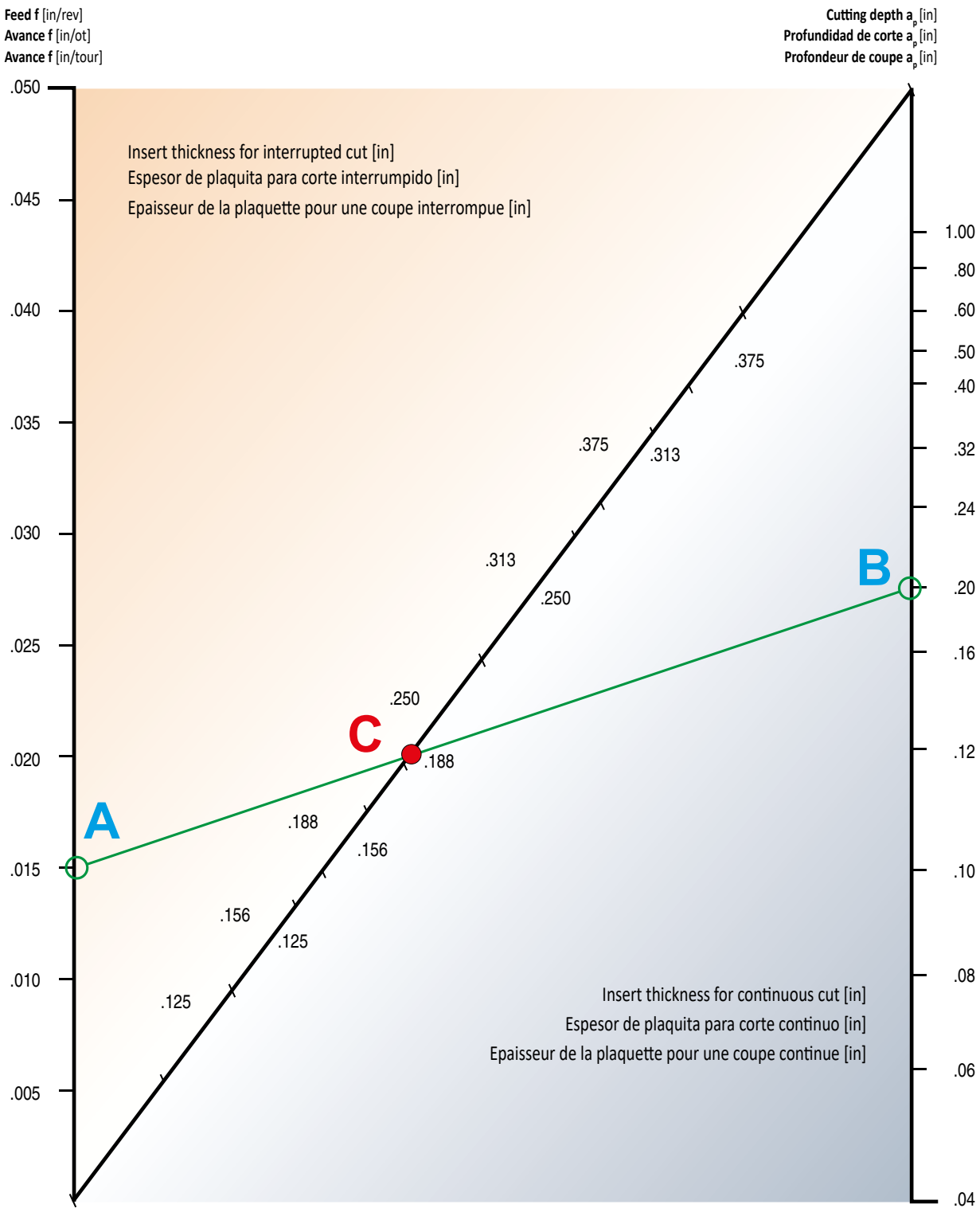
Increasing the accessibility of the cutting edge for profiling and fewer vibrations.
Mayor accesibilidad del filo de corte para perfilado y menos vibraciones.
Adapter l'arête de coupe à certaines formes de pièces et diminuer les vibrations.

Increasing the strength of the cutting edge and suitability for interrupted cut.
Mayor resistencia del filo de corte e idoneidad para cortes interrumpidos.
Augmenter la robustesse de l' arête de coupe et la rendre capable de travailler en coupe interrompue.

Priority of choice Prioridad de selección Priorité de choix	Insert shape Forma de la plaquita Forme de plaquette		Insert size Tamaño de la plaquita Taille de plaquette	Maximum length of cutting edge L_{max} [in] Longitud máxima del filo en corte L_{max} [in] Longueur maximum de l'arête de coupe L_{max} [in]	Length Longitud Longueur
		V	1/4“	25% of length	.110
			3/8“		.165
		D	1/4“	25% of length	.079
			3/8“		.114
			1/2“		.154
		K	3/8“	25% of length	.185
		T	1/4“	33% of length	.142
			3/8“		.217
			1/2“		.287
			5/8“		.358
		W	3/8“	50% of length	.130
			1/2“		.173
		C	1/4“	66% of length	.165
			3/8“		.252
			1/2“		.335
			5/8“		.417
			3/4“		.500
			1“		.650
		S	3/8“	66% of length	.248
			1/2“		.331
			5/8“		.409
			3/4“		.496
			1“		.661
			1.1/4“		.984
		R	6mm	40% of length	.094
			8mm		.126
			10mm		.157
			12mm		.189
			15mm		.236
			16mm		.252
			19mm		.299
			20mm		.315
			25mm		.394
			32mm		.504

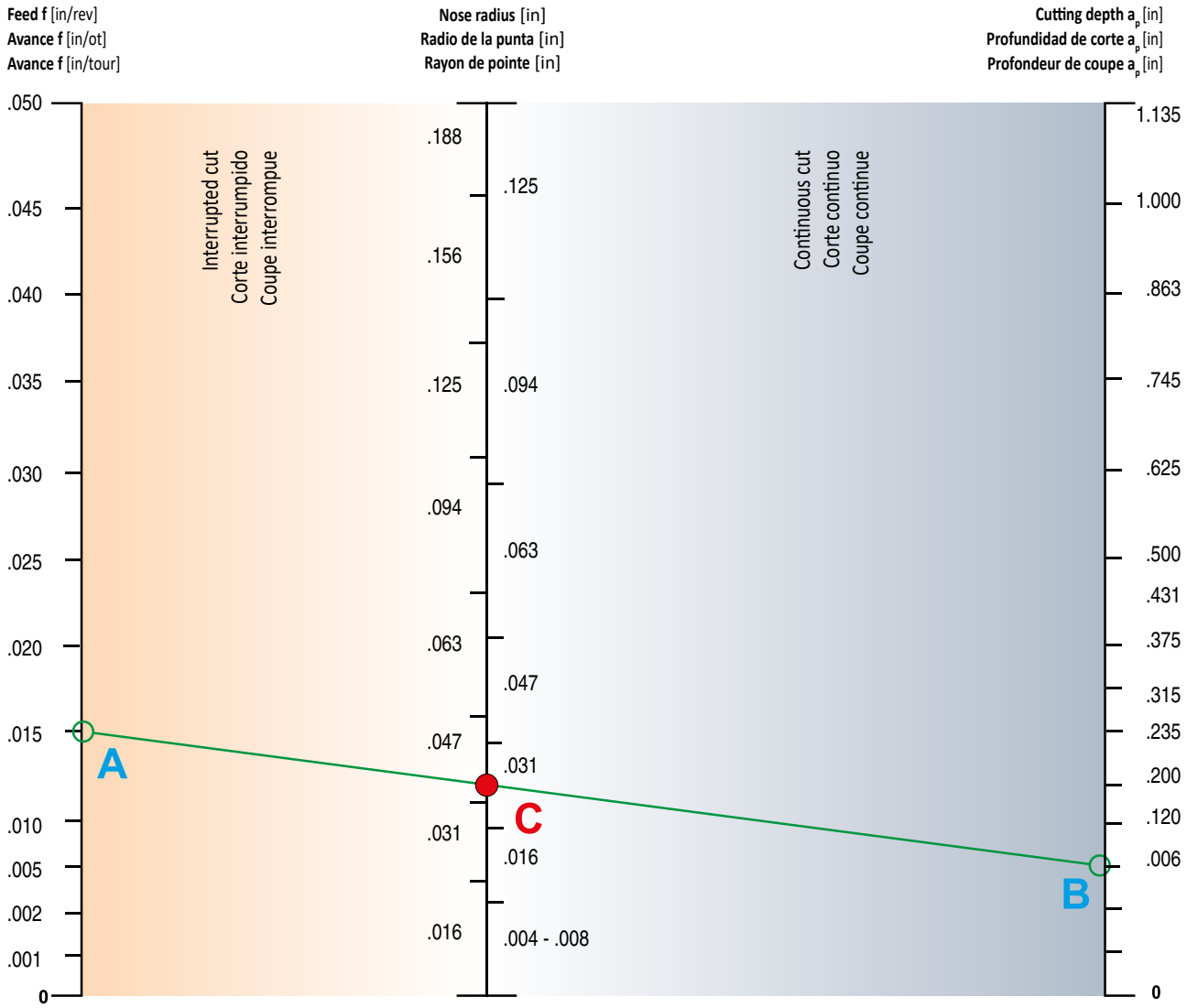
Choosing the optimum thickness of the insert
Selección del espesor máximo de la plaquita de corte intercambiable
Choix de l'épaisseur optimale de la plaquette de coupe indexable

Picture / Imagen / Image 2



Choosing the nose radius of the insert
Selección del radio de la punta de la plaquita de corte intercambiable
Le choix du rayon de pointe d'une plaquette de coupe

Picture / Imagen / Image 3



Choosing the chip breaker

The shape of the chip depends on several factors – the properties of the machined component, material strength, toughness and microstructure, properties of the insert grade, especially the frictional properties (on the rake face), geometry of cutting edge, cutting conditions and the type of chip breaker, also static and dynamic properties of the machine.

Virtually all of these factors in the cutting process work to combine and determine the shape of the chip (shearing action, flow of the chip, or curled chip – which can gather and clog the machining area). Each chip breaker works in a defined range of feed and depth of cut.

The minimum feed at which the chip breaker functions depends on the width of Top Land „x" and it's angle. The maximum feed depends on the distance from the cutting edge to the end of the chip breaker b and the depth of the chip breaker h.

Choix de la géométrie

La forme du copeau dépend de plusieurs facteurs – des propriétés du matériau usiné, de la résistance du matériau, de sa tenacité et de sa microstructure, des propriétés du matériau de coupe, spécialement des propriétés de frottement (sur la face de dépouille), des propriétés statique et dynamique de la machine, du lubrifiant, de la géométrie de l'arête de coupe, des conditions de coupe et du type du brise-copeaux. Tous ces facteurs se combinent dans le processus de coupe et déterminent la forme du copeau (son cisaillement, son écoulement, ou son écrasement – qui peut remplir l'espace de travail de la zône usinée).

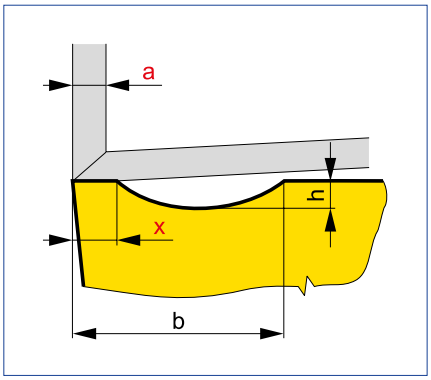
Chaque brise-copeaux travaille (se fractionne) seulement dans une plage définie d'avances et de profondeurs de coupe. L'avance minimum à laquelle le brise-copeaux fonctionne dépend de la largeur du listel „x" et de son angle γ_x. L' avance maximum, quand le brise-copeaux agit encore, dépend de la distance „b" du segment de l'arête de coupe et de la profondeur „h" de la forme creuse du brise-copeaux.

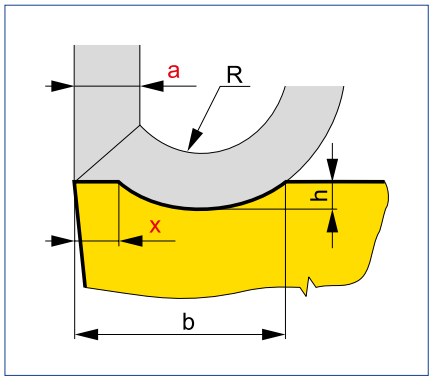
Selección del rompevirutas:

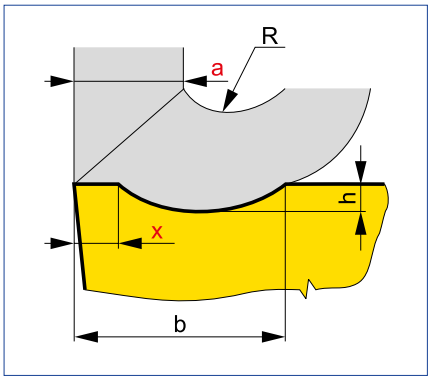
La forma de la viruta depende de varios factores: propiedades del material mecanizado, resistencia, dureza y microestructura del material mecanizado, propiedades de la calidad de corte, especialmente las propiedades de rozamiento (en la cara de desprendimiento), propiedades estáticas y dinámicas de la máquina, refrigerante, geometría del filo de corte, condiciones de corte y el tipo de rompevirutas. Todos estos factores del proceso de corte se combinan para determinar la forma de las virutas (acción de cizallamiento, flujo de la viruta o rizado de la viruta), que pueden acumularse en el espacio de trabajo de la zona de mecanizado.

Cada rompevirutas funciona (rompe la viruta) solo en un rango determinado de avance y profundidad de corte. El avance mínimo al que funciona el rompevirutas depende de la anchura de la faceta superior „x" y su ángulo γ_x. El avance máximo al que sigue funcionando el rompevirutas depende de la distancia desde la salida del filo de corte b y la profundidad de la ranura h del rompevirutas.

Picture / Imagen / Image 4







If the thickness of layer „a" cut away (at setting angle κ_r = 90°, equal to the feed) is significantly smaller than the T–land „x", the chip is only in contact with the chamfer. It cannot enter the chip breaker and therefore it cannot be broken (see picture).

If the feed „f" is greater (thickness greater than the depth of „a" and x < a (f), the chip enters the chip breaker and is curved at specific values of radius R (see picture).

If x << a (see picture) the chip is excessively deformed (chip is crushed). If the chip misses the chip breaker it will not be broken.

La capa „a" muestra la profundidad de corte, y si esta es más pequeño que la anchura de la faceta superior „x" (a un ángulo de posicionamiento κ_r = 90° igual al avance), la viruta no puede alcanzar la cara de formación de virutas de la plaquita. Por lo tanto, la viruta no se romperá (consulte el diagrama de arriba).

Cuando se aplica la velocidad de avance correcta (se está cortando una sección transversal de viruta mayor), y por lo tanto x < a (f), la viruta que se está evacuando entra en el rompevirutas y se perfila y se rompe mediante la formación del radio R (consulte el diagrama de arriba).

Si la sección transversal de la viruta „a" es significativamente mayor que la faceta superior de la plaquita „x", la rotura de virutas será demasiado dura y el resultado serán virutas „demasiado rotas" o „trituradas". Tenga en cuenta el ajuste del radio „R". Si se aumenta más la velocidad de avance, la viruta no llegará a la zona de formación de virutas de la plaquita. (consulte el diagrama de arriba).

La couche „a" représente la profondeur de coupe qui, si elle est plus petite que la largeur du liste „x" (avec un angle d'attaque κ_r = 90 ° égal à l'avance), alors le copeau ne peut pas atteindre la partie creuse du brise-copeau de la plaquette. Par conséquent le copeau ne sera pas fractionné (voir shéma ci-dessus).

Quand la gaine de valeurs d'avance est correctement appliquée, (une plus large section de copeau est coupée), et donc x < a (f), le copeau est contraint à l'entrée du brise-copeaux puis s'enroule et se fractionne par sa forme de rayon R (voir le schéma au dessus).

Si la section du copeau "a" est trop supérieure à la largeur du listel "x" de la plaquette, alors le fractionnement sera trop difficile et le copeau sera déformé ou écrasé. Noter que le rayon "R" est très resserré. Si l'avance est encore augmentée le copeau passera au-dessus de la géométrie brise-copeaux et ne sera pas fractionné. (voir shéma ci-dessus).

All chip breakers work in a defined range of cutting conditions. This is why the chip breaking area is shown as a continuous range in order to define the most commonly used depth of cut and feed combinations (see following picture). The chip breaker application ranges also overlap.

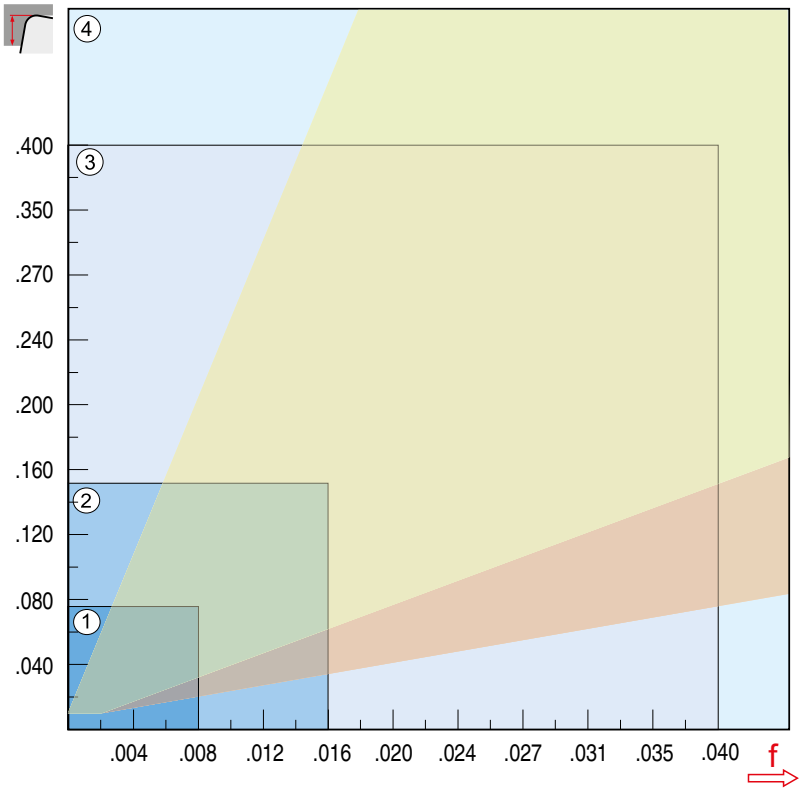
Todos los rompevirutas funcionan en un rango de condiciones de corte definido. Por este motivo, la zona de rotura de virutas se muestra como un rango continuo, lo que permite definir las combinaciones de profundidad de corte y avance que se utilizan con más frecuencia (consulte el esquema siguiente). Además, los rangos de aplicación de los rompevirutas se superponen.

Toutes les géométries fonctionnent pour une plage de conditions de coupe définies. Pour cette raison, le domaine de fractionnement des copeaux se présente coine une plage continue, qui autorise par définition les avances (f) et les profondeurs de coupe « ap» les plus utilisées (voir image ci-dessous). Pour cette raison, les plages d'applications des géométries se chevauchent.

f = Feed [in/rev]

a_p = Depth of cut [in]

Picture / Imagen / Image 5



		f	a_p
1	FF F	.001 – .007	.001 – .007
2	M	.002 – .016	.080 – .160
3	R	.016 – .040	.160 – .400
4	HR	> .040	> .400

Table 2
Tabla 2
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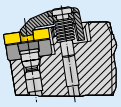
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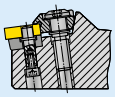
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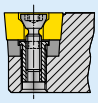
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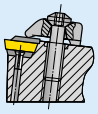
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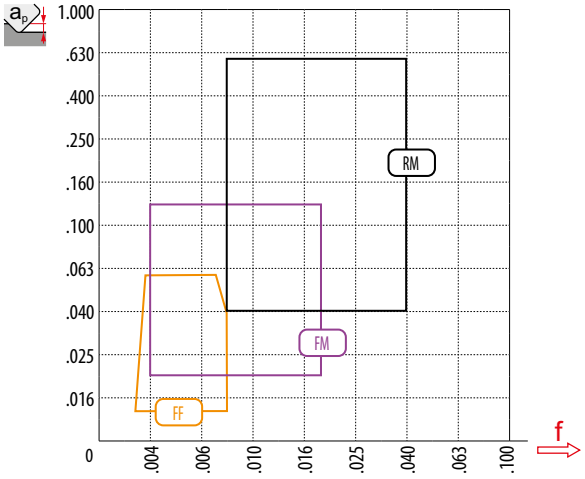


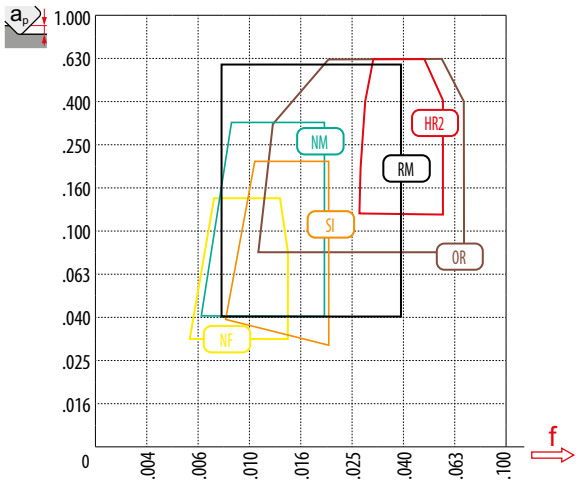
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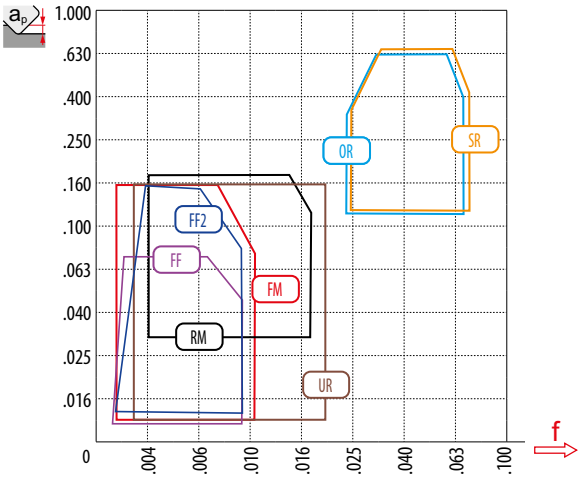


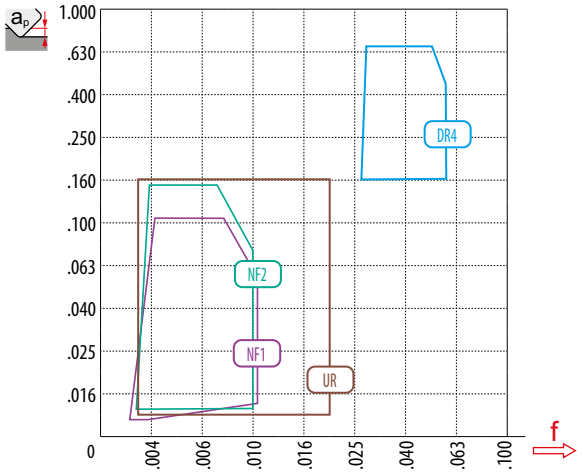
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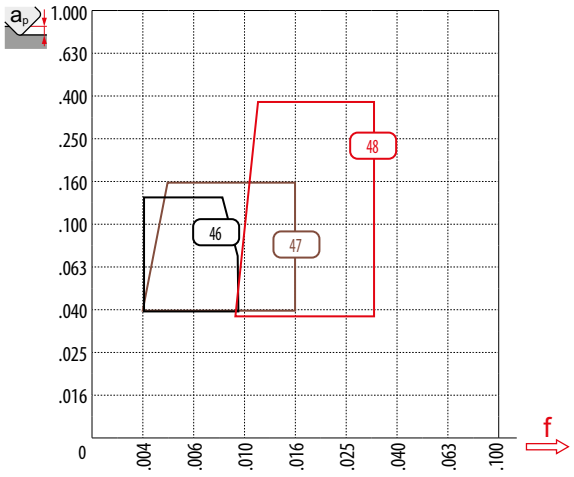


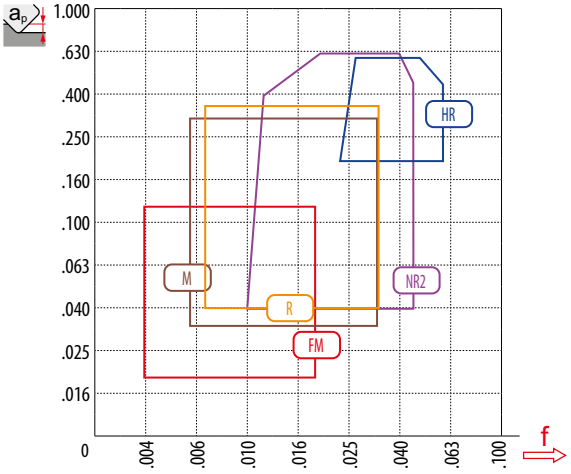
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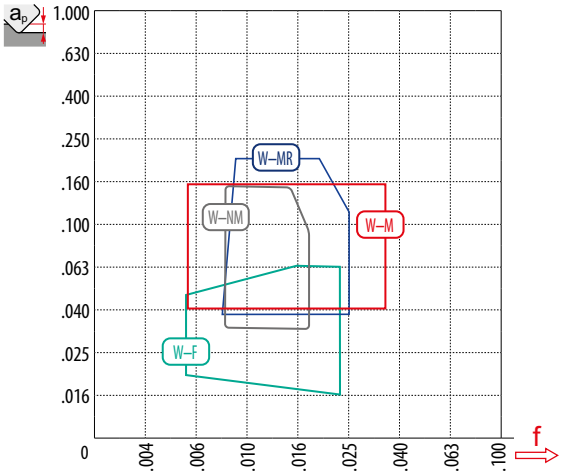
GEOMETRY OF CUTTING INSERTS – TURNING
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First choice
Primera elección
Premier choix

Low cutting resistance / tough material
Bajas fuerzas de corte / material dificil
Forces de coupe / Matériau résistant

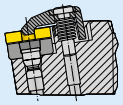




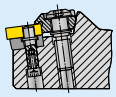
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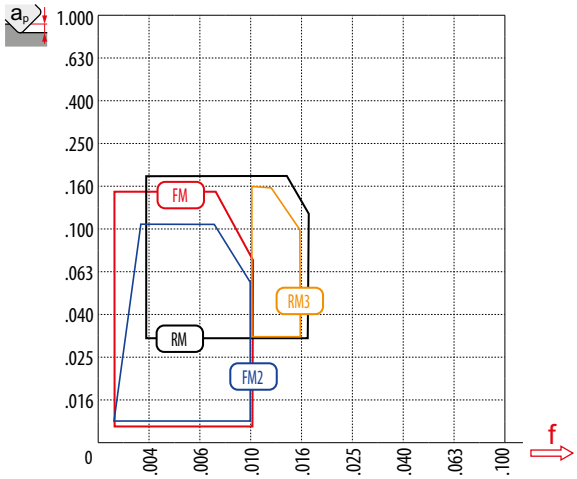


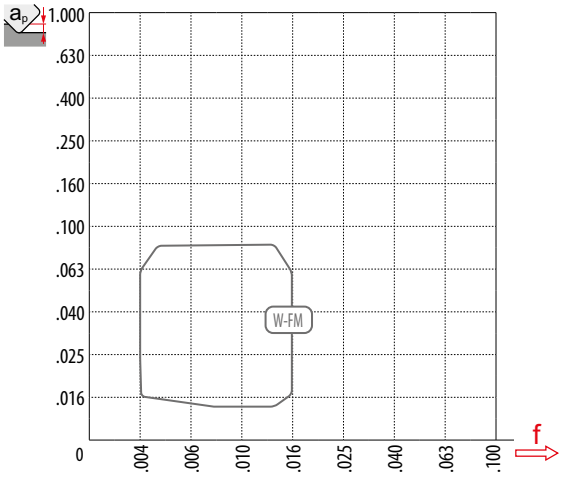
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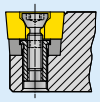
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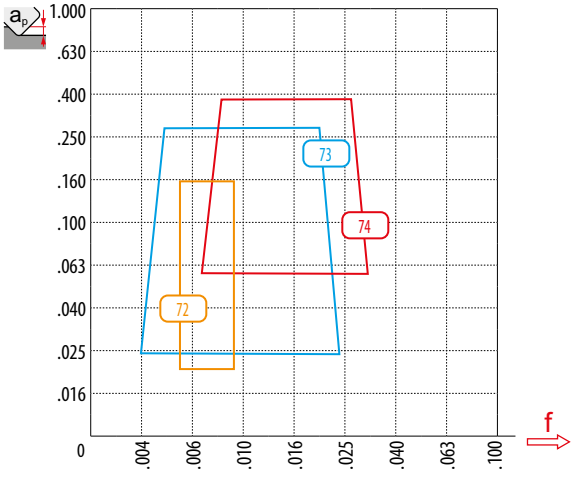






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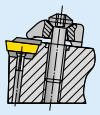


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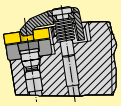
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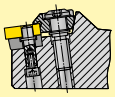
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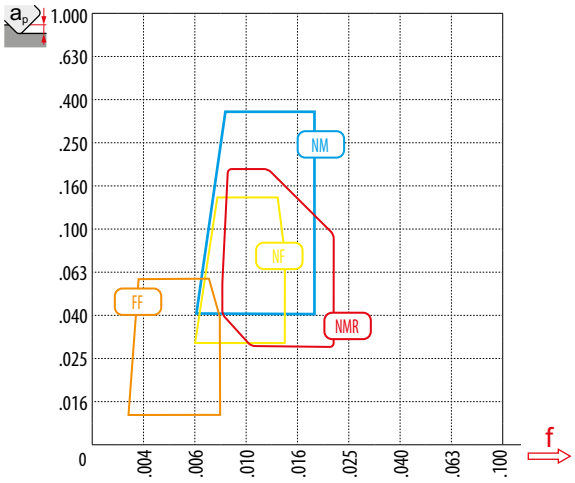


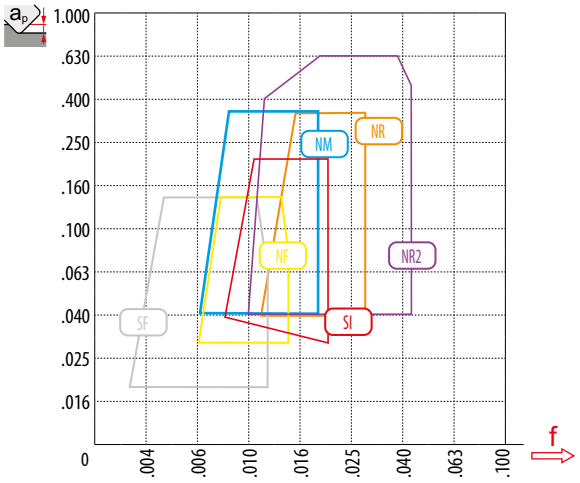
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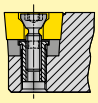
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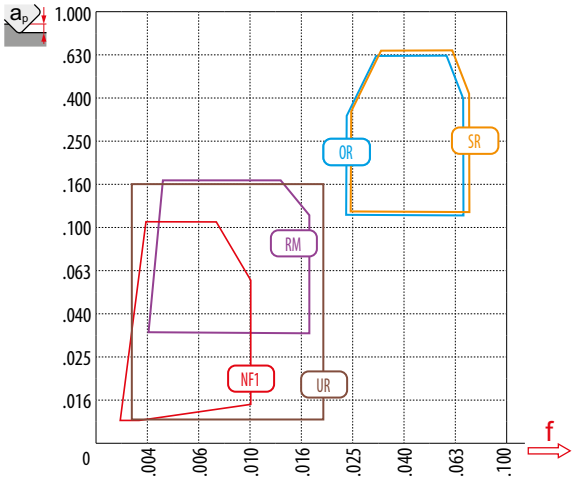


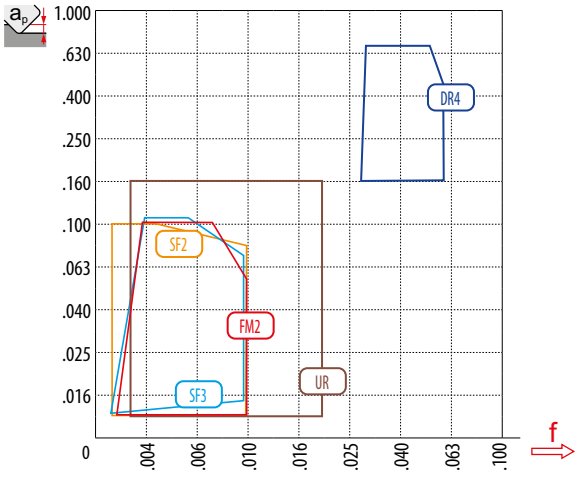




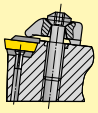
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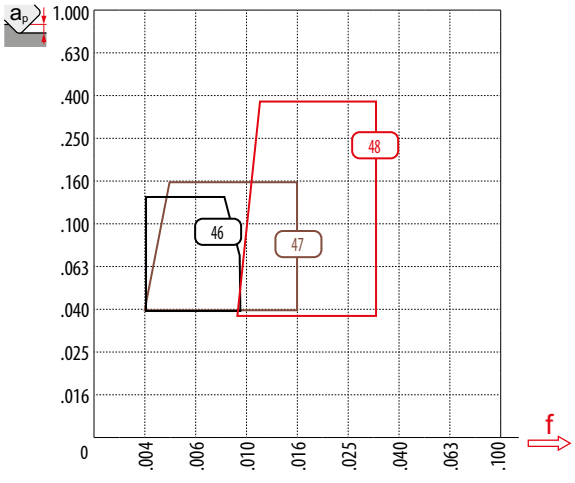


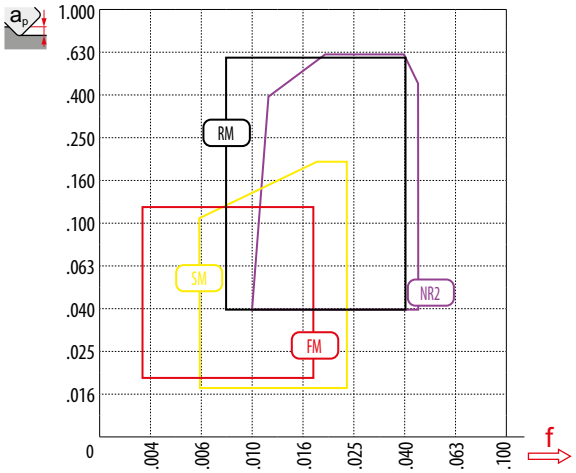
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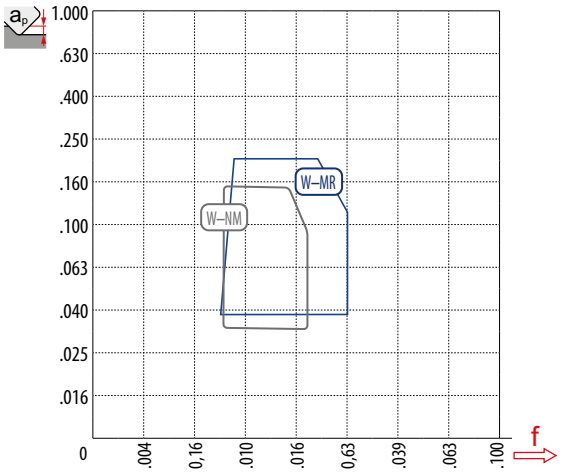
GEOMETRY OF CUTTING INSERTS – TURNING
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M

First choice
Primera elección
Premier choix

Low cutting resistance / tough material
Bajas fuerzas de corte / material dificil
Forces de coupe / Matériau résistant

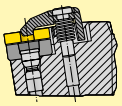




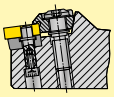
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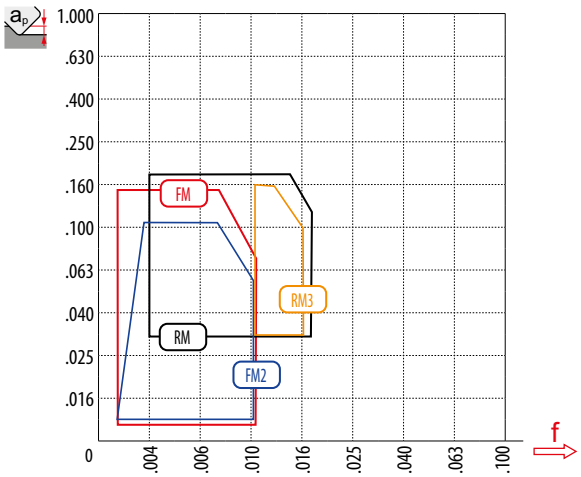


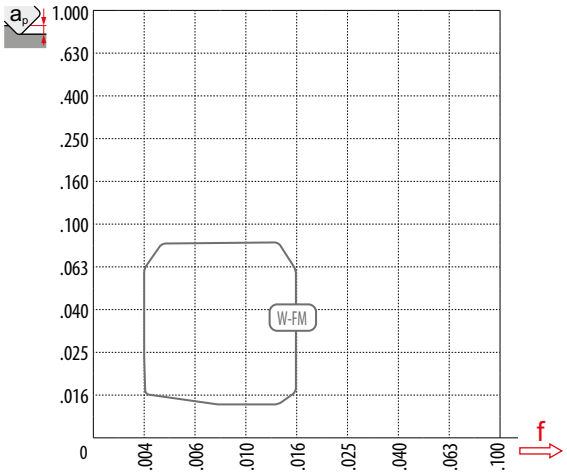
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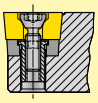
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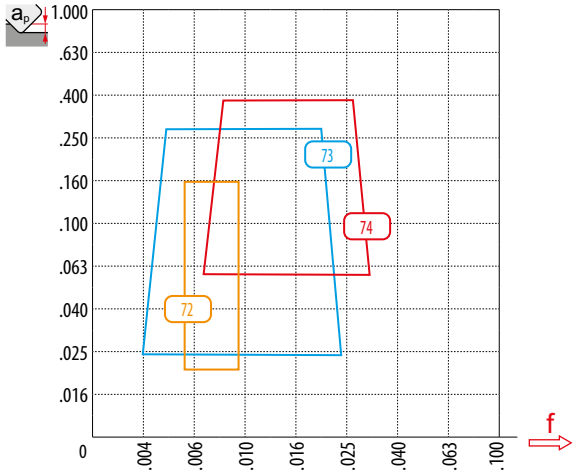






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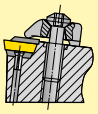


Table 2
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GEOMETRY OF CUTTING INSERTS – TURNING
GEOMETRIA DE LAS PLAQUITAS – TORNEADO
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K

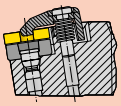
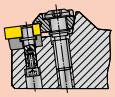
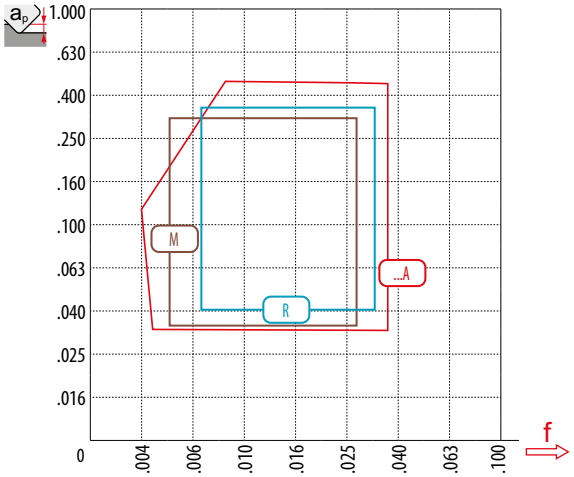
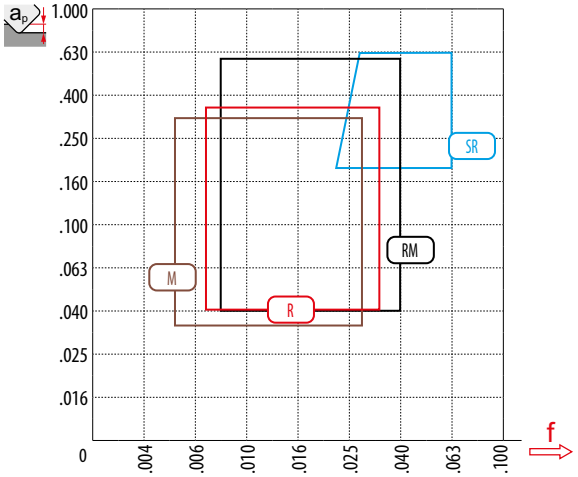
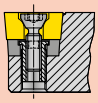
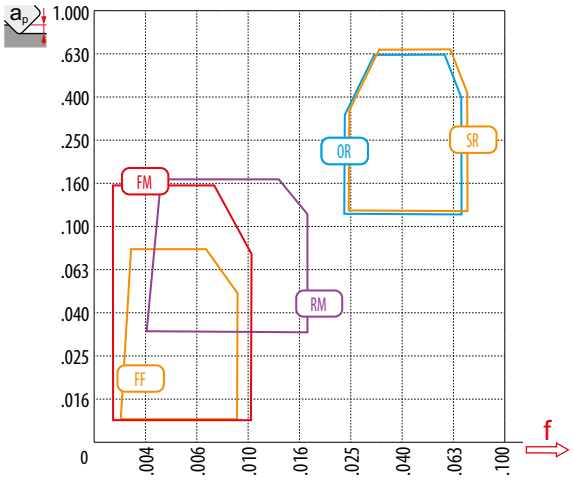
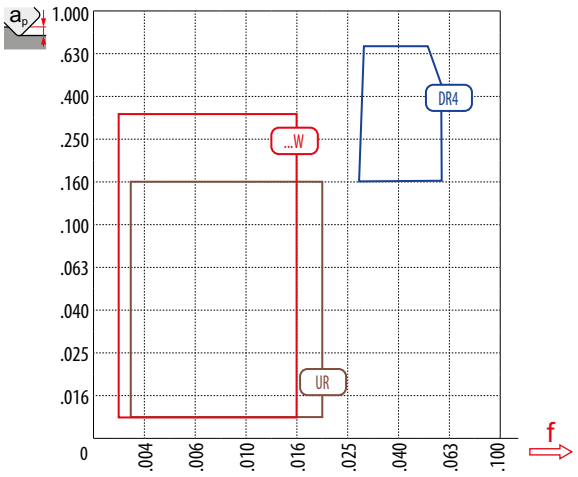
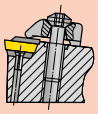
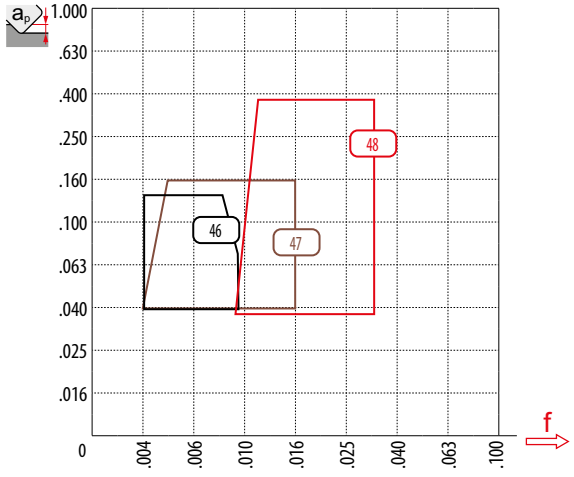
	Difficult working conditions Malas condiciones de trabajo Mauvaises conditions de travail	Specific use Uso específico Application spécifique
P  D  M 		
S 		
C 		

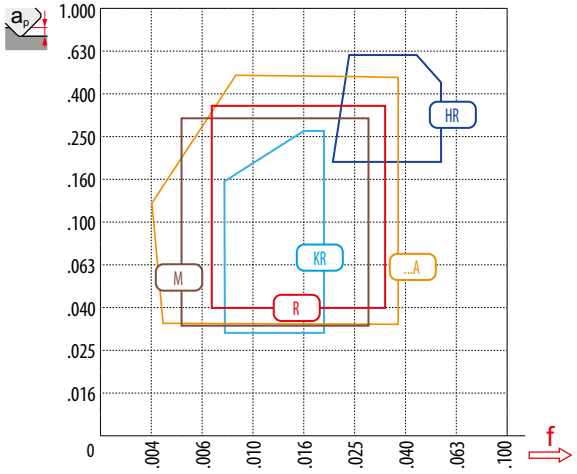
Table 2
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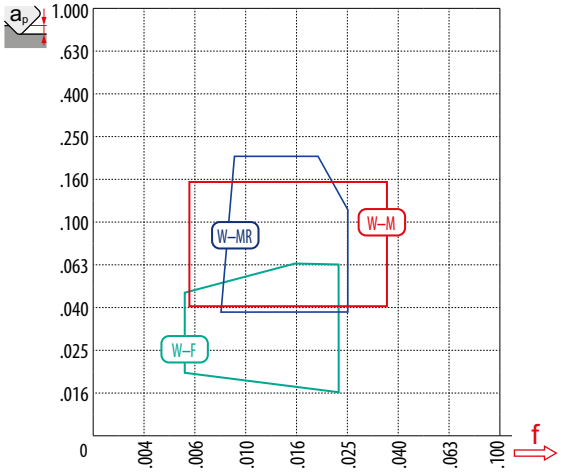
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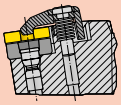




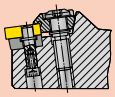
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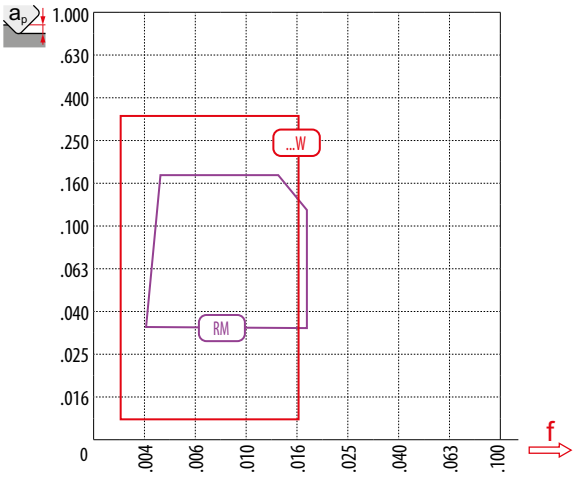


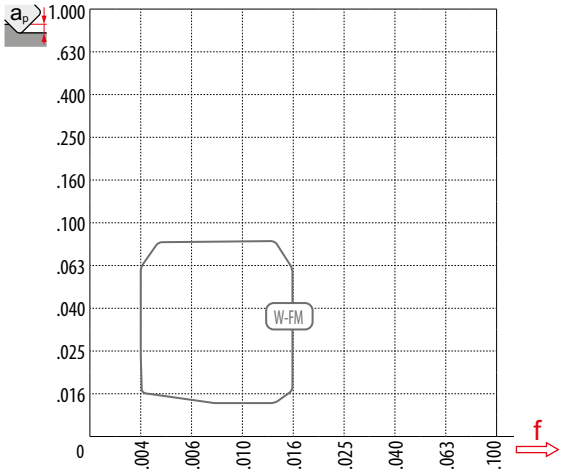
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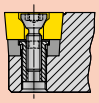
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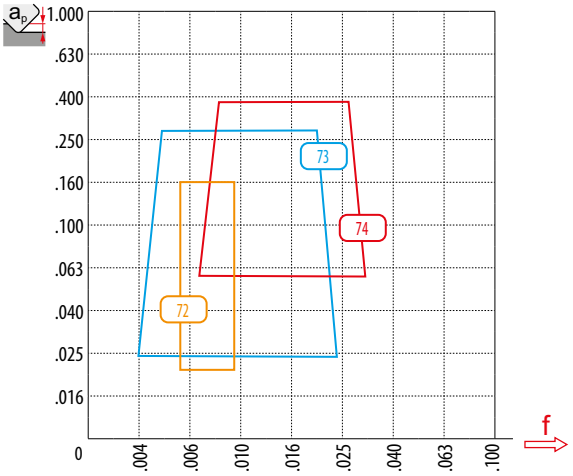






S





C

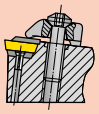
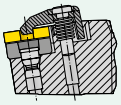
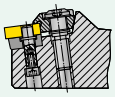
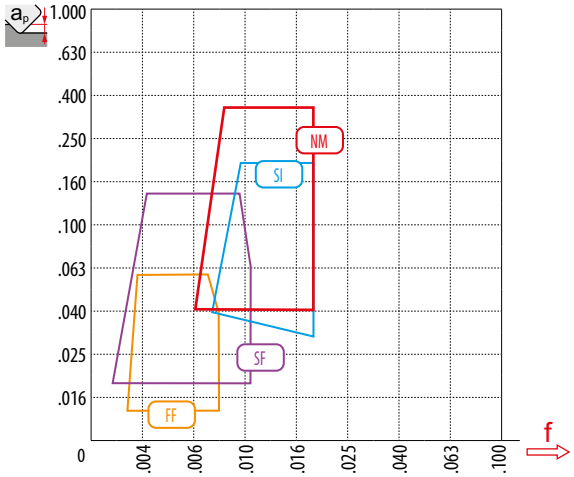
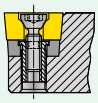
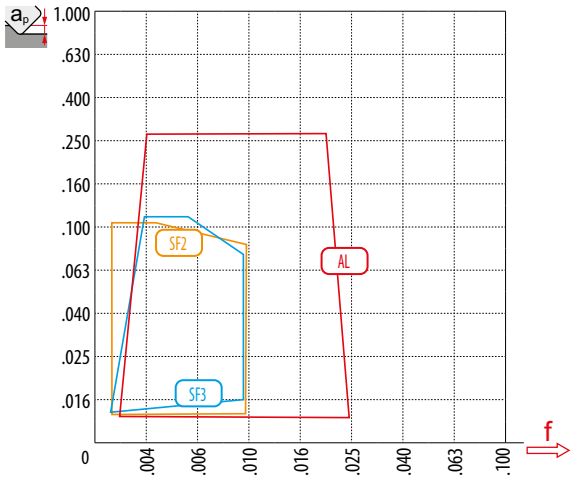
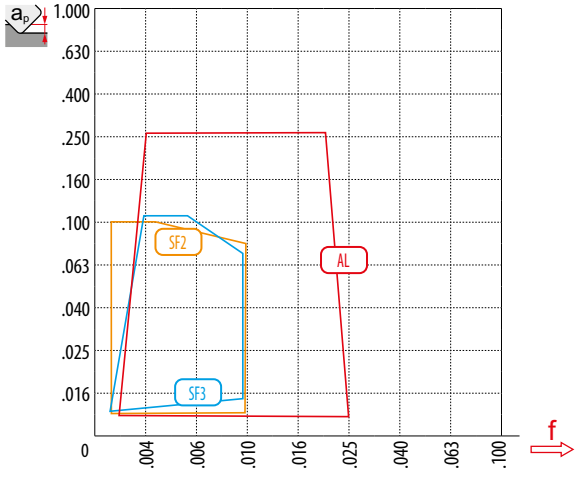
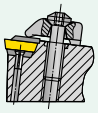


Table 2
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GEOMETRY OF CUTTING INSERTS – TURNING
GEOMETRIA DE LAS PLAQUITAS – TORNEADO
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N

	Difficult working conditions Malas condiciones de trabajo Mauvaises conditions de travail	Specific use Uso específico Application spécifique
P  D  M 		
S 		
C 		


T6310
T8315
T6310

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S

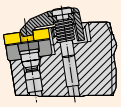
Difficult working conditions
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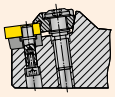
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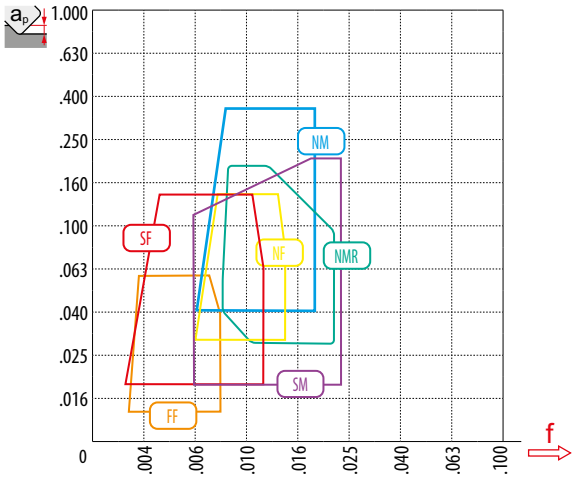


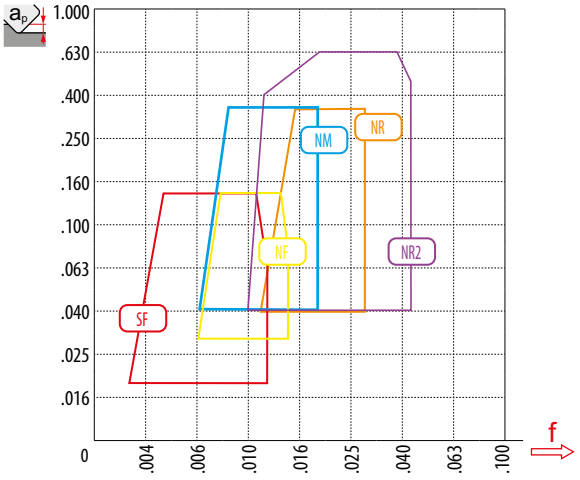
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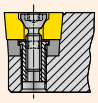
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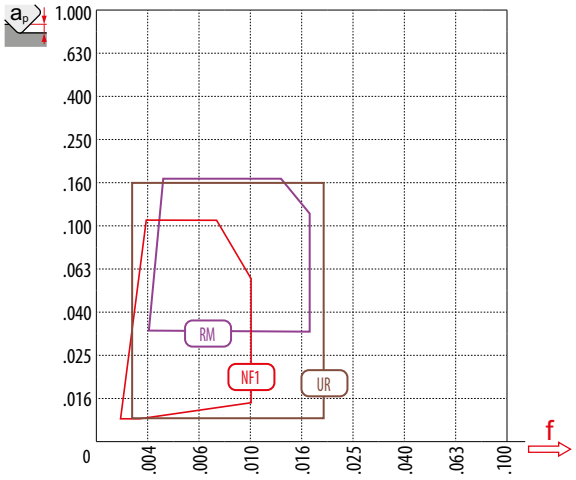


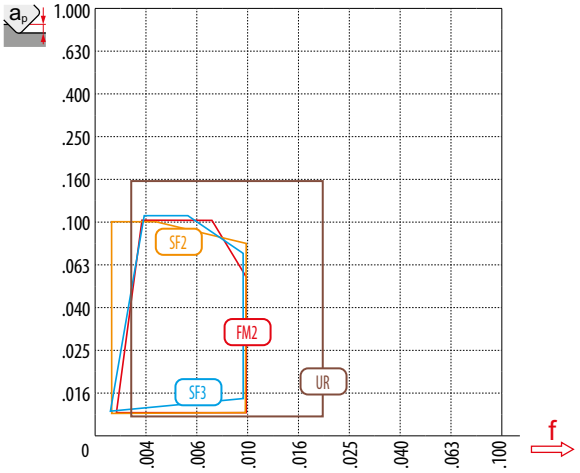




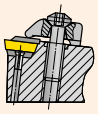
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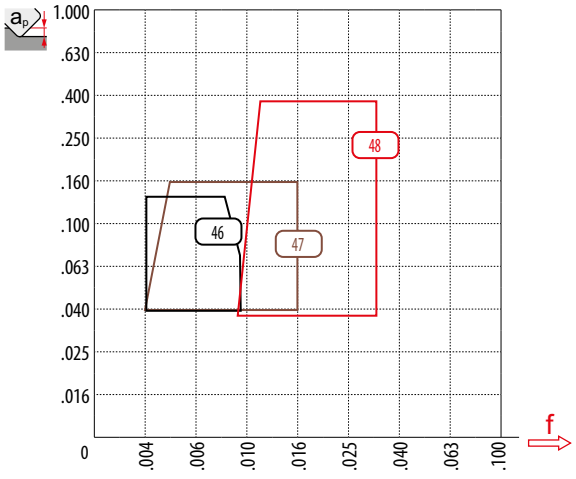


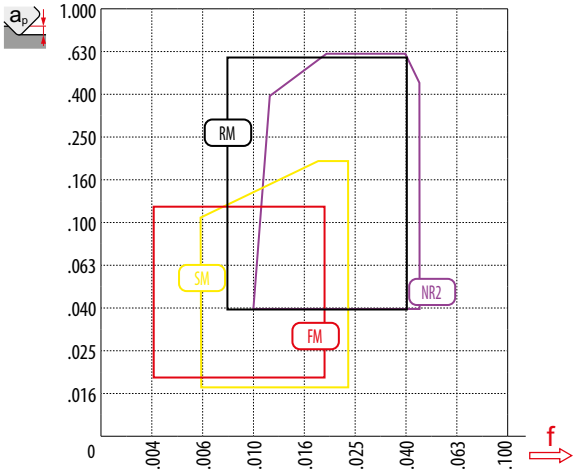
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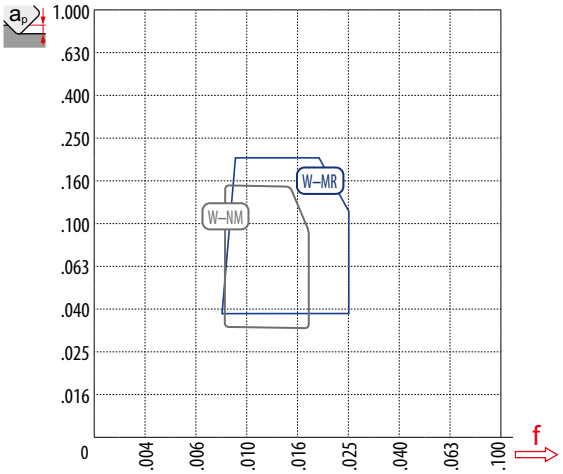
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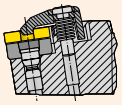




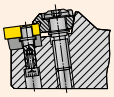
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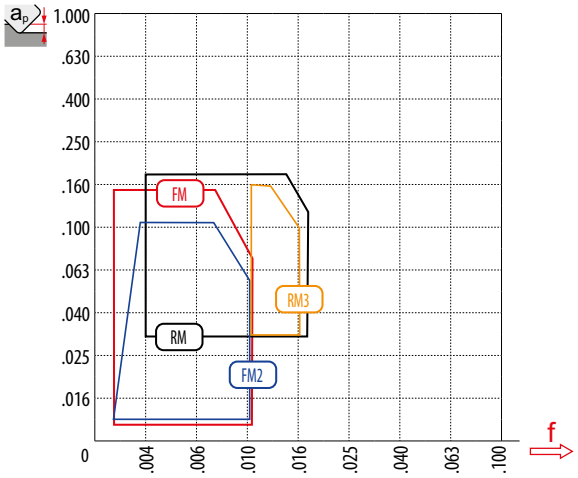


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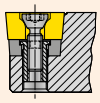


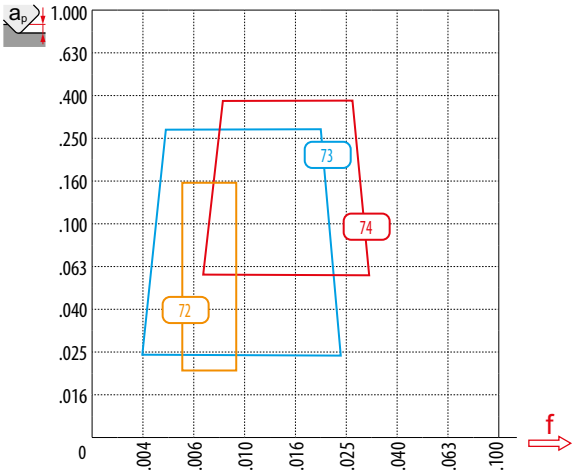
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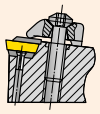


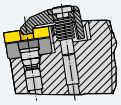
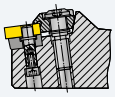
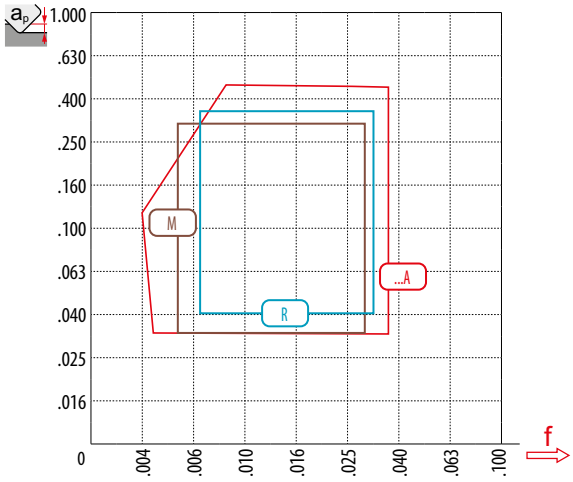
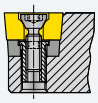
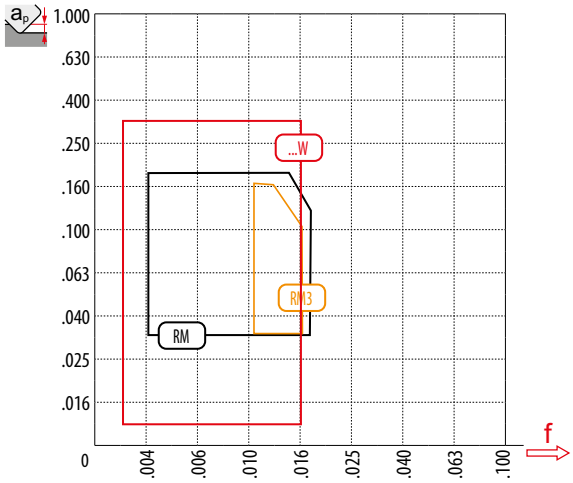
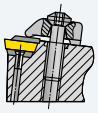
S





C



	Difficult working conditions Malas condiciones de trabajo Mauvaises conditions de travail	Specific use Uso específico Application spécifique
P  D  M 		
S 		
C 		


DCLNR 2525 M12

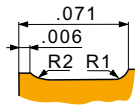
Clamping designation – ISO P, M, D / Plaquitas – fijación ISO P, M, D Plaquettes - fixation ISO P, M, D	
08 (RNMG)	T272
31 (RCMX)	T272
81 (RNMG)	T272
321 (RCMX)	T272
331 (RCMX)	T273
361 (RCMX)	T273
923	T273
...A	T273
DR	T274
FF	T274
FM	T274
HR	T274
HR2	T275
KR	T275
M	T275
NF	T275
NM	T276
NMR	T276
NR	T276
NR2	T276
OR	T277
OR1	T277
R	T277
RF1 (RCMX)	T277
RM	T278
RM1 (RCMX)	T278
RM2 (RCM.)	T278
RR2 (RCM.)	T278
RR4 (RCMT)	T279
SF	T279
SI	T279
SM	T279
SR	T280
W–MR	T280
W–F	T280
W–M	T280
W-NM	T281
Clamping designation – ISO S / Plaquitas – fijación ISO S Plaquettes - fixation ISO S	
371 (RCMT)	T282
372 (RCMT)	T282
...W	T282
AL	T282
DR4 (SCMT)	T283
FF	T283
FF2	T283
FM	T283
FM (RCMT)	T284
FM2	T284
NF1	T284
NF2	T284
OR (SCMT)	T285
RF	T285
RM	T285
RM3	T285
SF2	T286
SF3	T286
SI	T286
SR (SCMT)	T286
UR (RCMT)	T287
UR	T287
W-FM	T287
W-UR	T287
Clamping designation – ISO C / Plaquitas – fijación ISO C Plaquettes - fixation ISO C	
46	T288
47	T288
48	T288
61	T288
72	T289
73	T289
74	T289
.PUN	T289
Clamping designation – ISO X, G / Plaquitas – fijación ISO X, G Plaquettes - fixation ISO X, G	
13 F (LCM.)	T290
13 MP (LCM.)	T290
16 F (LCM.)	T290
16 M (LCM.)	T290
16 MP (LCM.)	T291
20 F1 (LCMF)	T291
20 M2 (LCMF)	T291
30 F (LCM.)	T291
CM (LCM.)	T292
F1 (LFMX)	T292
F2 (LFMX)	T292
M2 (LFMX)	T292

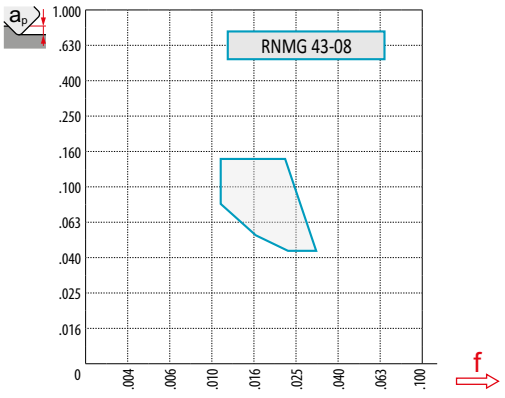
Table 3
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GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO P, M, D
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO P, M, D
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO P, M, D

08 (RNMG)

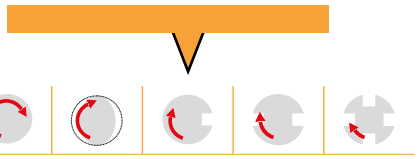






P	M	K	N	S	H
◪		■			■

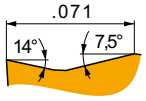
f .012 – .031
ap .039 – .157

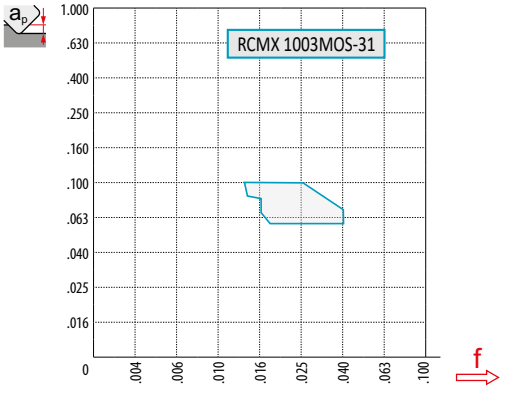


? RNMG

31 (RCMX)

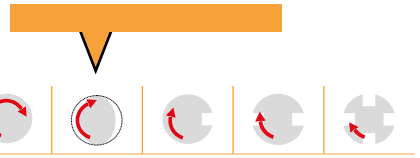






P	M	K	N	S	H
■	◪	■			

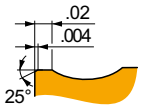
f .016 – .039
ap .059 – .098

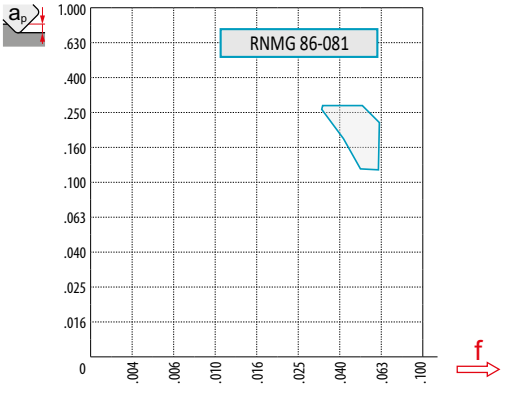


? RCMX

81 (RNMG)

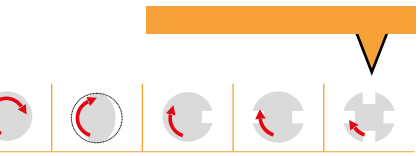






P	M	K	N	S	H
■	◪	■			

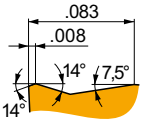
f .031 – .047
ap .118 – .276

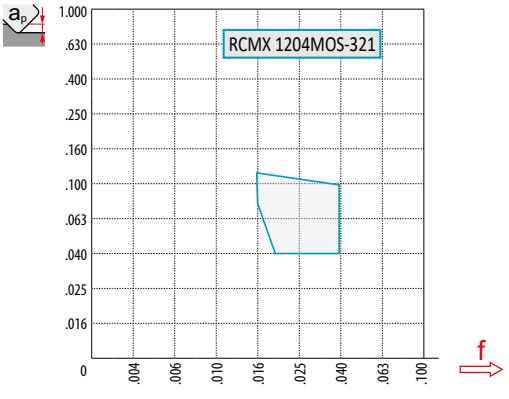


? RNMG

321 (RCMX)

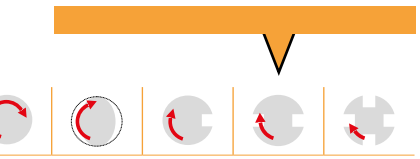






P	M	K	N	S	H
■	□	■			

f .016 – .039
ap .039 – .118



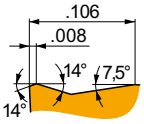
? RCMX

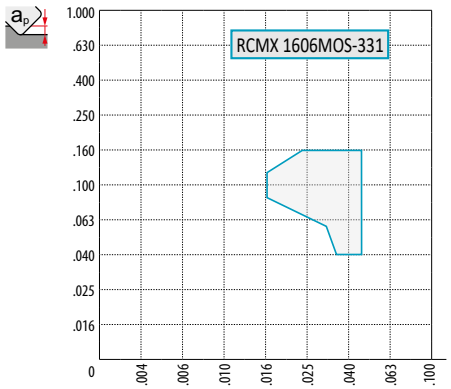
Table 3
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GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO P, M, D
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO P, M, D
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO P, M, D

331 (RCMX)

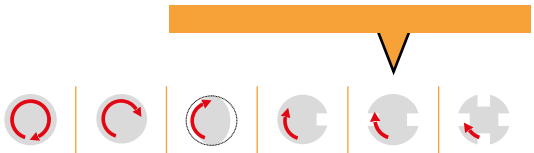






P	M	K	N	S	H
■	□	■			

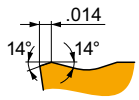
f .016 – .047
a_p .039 – .157

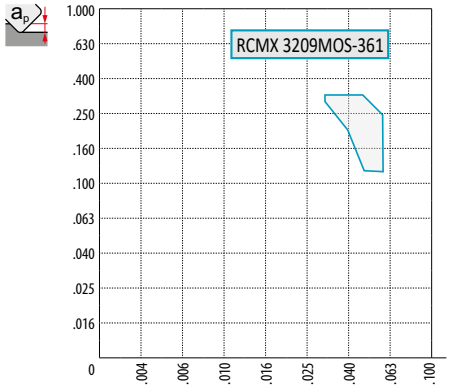


RCMX

361 (RCMX)

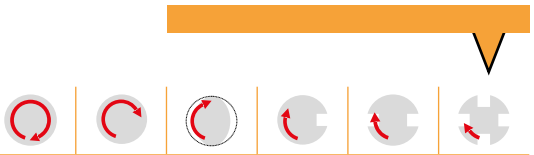






P	M	K	N	S	H
■	□	■			

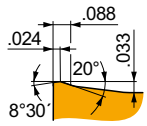
f .031 – .059
a_p .118 – .315

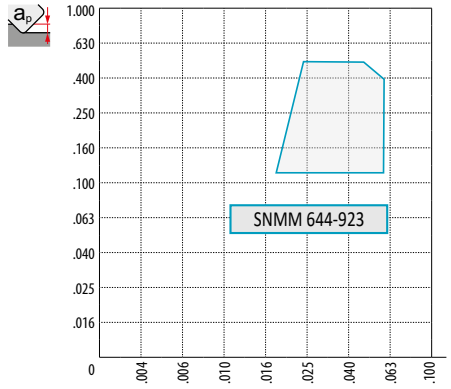


RCMX

923

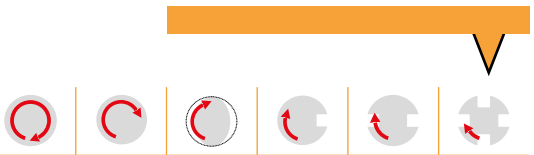






P	M	K	N	S	H
■	◪	◪			

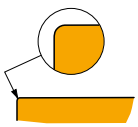
f .018 – .059
a_p .118 – .512

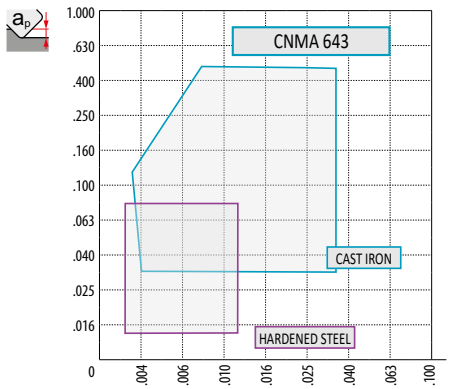


CNMM, SNMM

...A

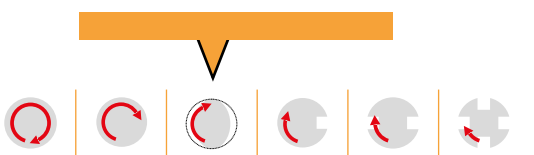






P	M	K	N	S	H
◪	□	■			◪

f .004 – .035
a_p .031 – .472



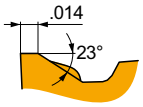
CNMA, DNMA, SNMA, TNMA, WNMA

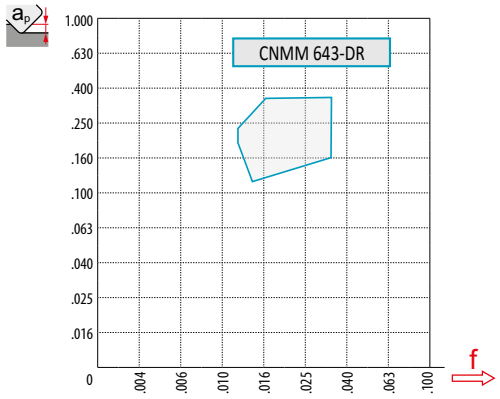
Table 3
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GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO P, M, D
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO P, M, D
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO P, M, D

DR







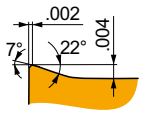
P	M	K	N	S	H
■	■	◪		□	

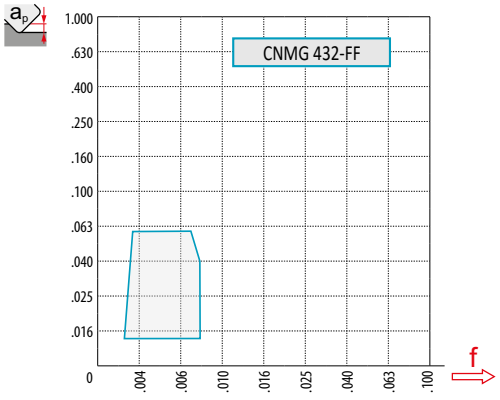
f	.012 – .033
ap	.098 – .354

CNMM, DNMM, SNMM, TNMM, WNMM

FF







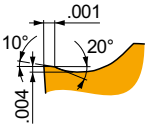
P	M	K	N	S	H
■	■	◪	□	□	

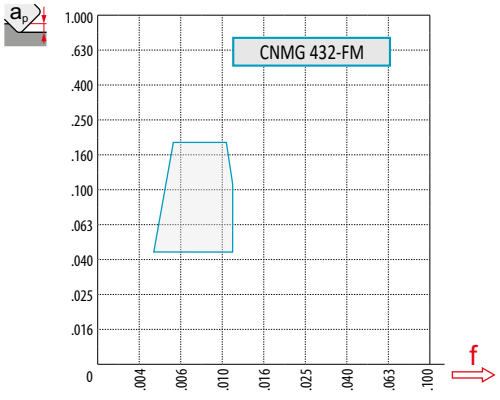
f	.002 – .008
ap	.012 – .059

CNMG, DNMG, TNMG, VNMG, WNMG

FM







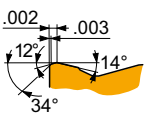
P	M	K	N	S	H
■	■	◪		□	

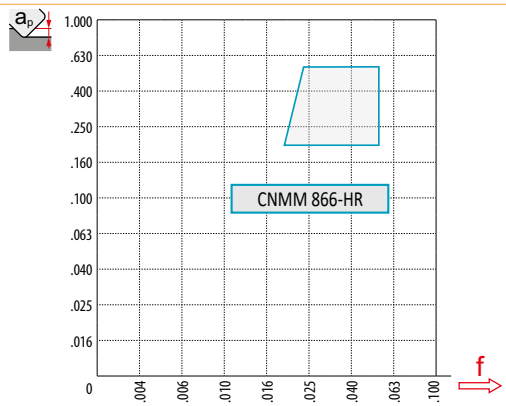
f	.006 – .018
ap	.020 – .118

CNMG, DNMG, SNMG, TNMG, VNMG, WNMG

HR







P	M	K	N	S	H
■	◪	■		□	

f	.020 – .055
ap	.197 – .551

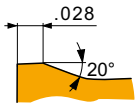
CNMM, SNMM, TNMM

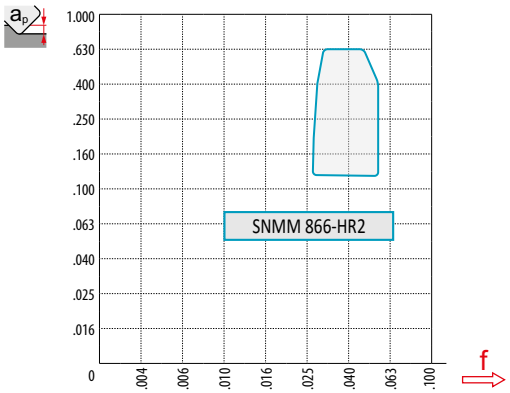
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO P, M, D
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO P, M, D
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO P, M, D

HR2







P	M	K	N	S	H
■	◪	■		□	

f .020 – .055

ap .118 – .630

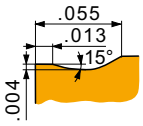


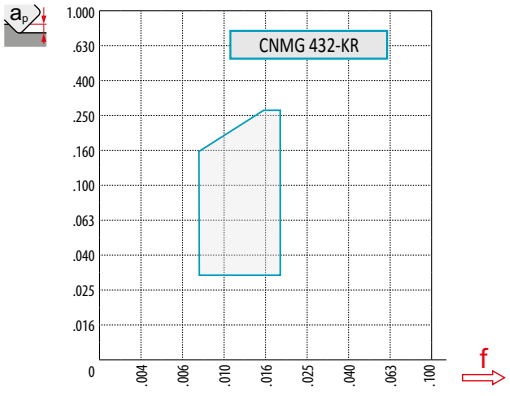


? CNMM, SNMM

KR







P	M	K	N	S	H
■	◪	■			□

f .008 – .028

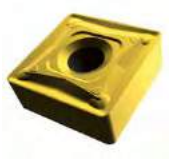
ap .031 – .276

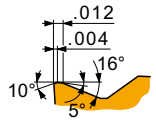


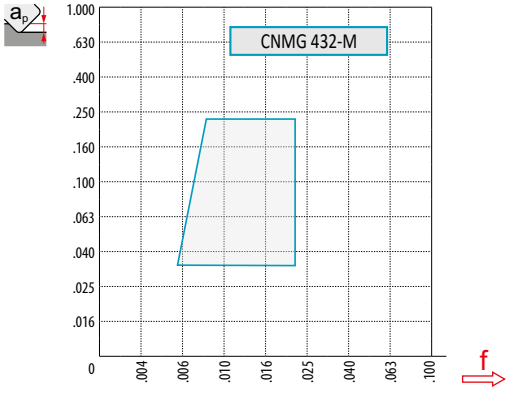


? CNMG, SNMG, TNMG, WNMG

M







P	M	K	N	S	H
■	◪	■			□

f .007 – .031

ap .039 – .315

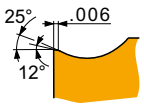


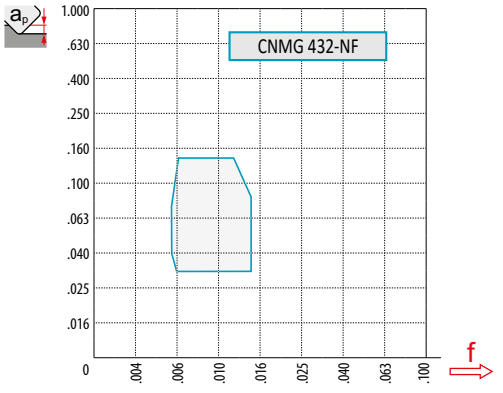


? CNMG, DNMG, SNMG, TNMG, VNMG, WNMG

NF







P	M	K	N	S	H
■	■		□	◪	

f .004 – .014

ap .016 – .157





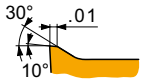
? CNMG, DNMG, SNMG, TNMG, VNMG, WNMG

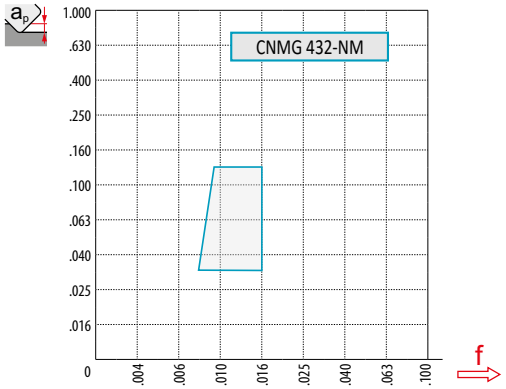
Table 3
Tabla 3
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GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO P, M, D
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO P, M, D
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO P, M, D

NM







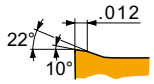
P	M	K	N	S	H
■	■	□	□	■	

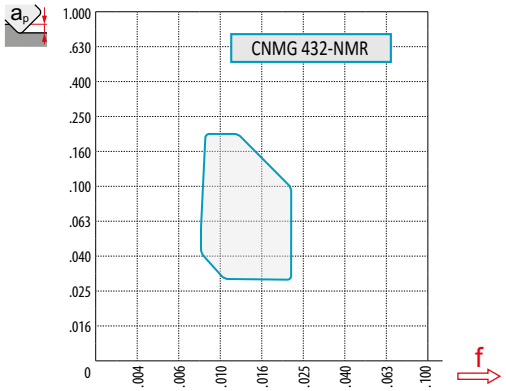
f .006 – .020
ap .020 – .315

CNMG, DNMG, TNMG, VNMG, WNMG

NMR







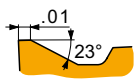
P	M	K	N	S	H
■	■			◪	

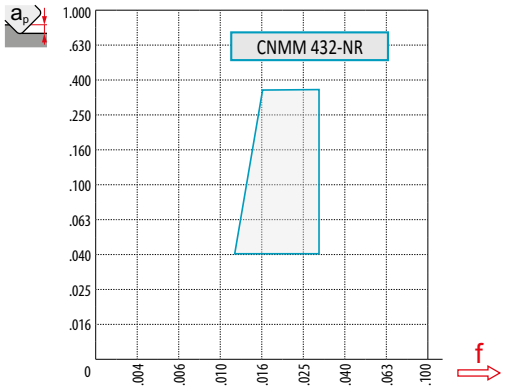
f .007 – .028
ap .016 – .315

CNMG, DNMG, SNMG, TNMG, VNMG, WNMG

NR





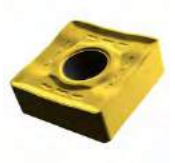


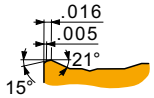
P	M	K	N	S	H
■	■	□	□	■	

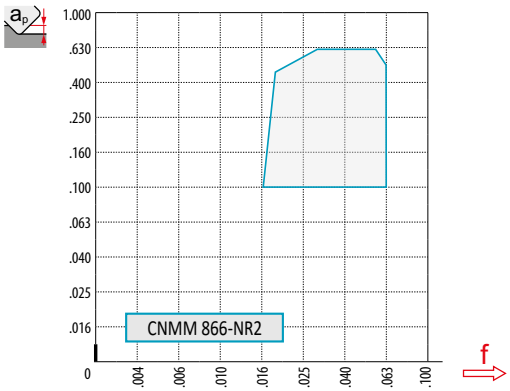
f .010 – .031
ap .039 – .354

CNMM, DNMM, SNMM, TNMM, WNMM

NR2







P	M	K	N	S	H
■	■	□	□	■	

f .010 – .047
ap .039 – .630

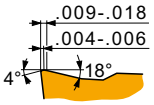
CNMM, DNMM, SNMM, TNMM, WNMM

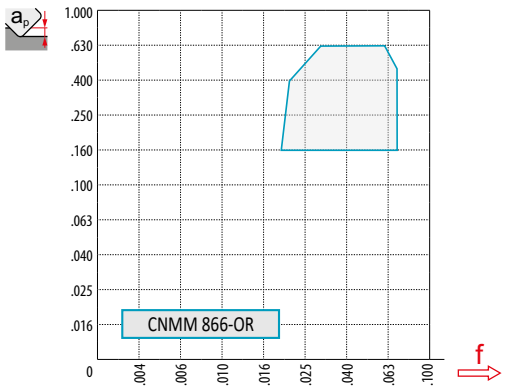
Table 3
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GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO P, M, D
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO P, M, D
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO P, M, D

OR



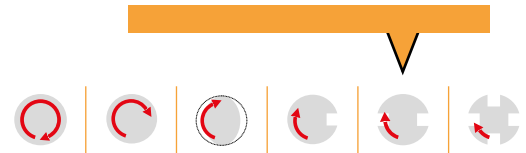




P	M	K	N	S	H
■	■	◪		□	

f .010 – .067

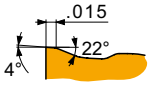
ap .079 – .630

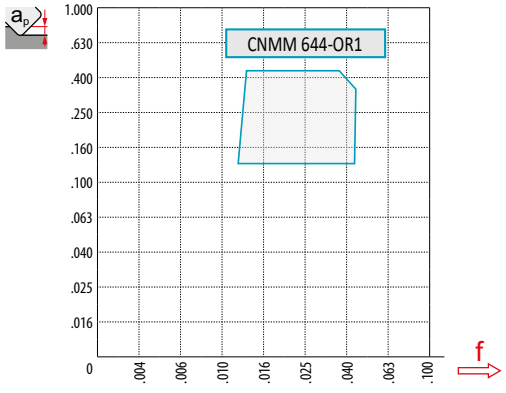


? CNMM, DNMM, SNMM, TNMM, WNMM, SCMT

OR1



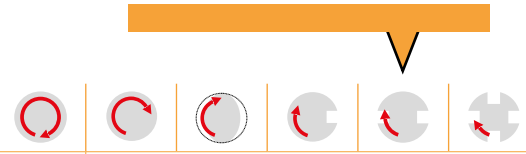




P	M	K	N	S	H
■	■	◪		□	

f .015 – .047

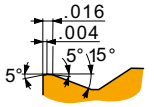
ap .118 – .394

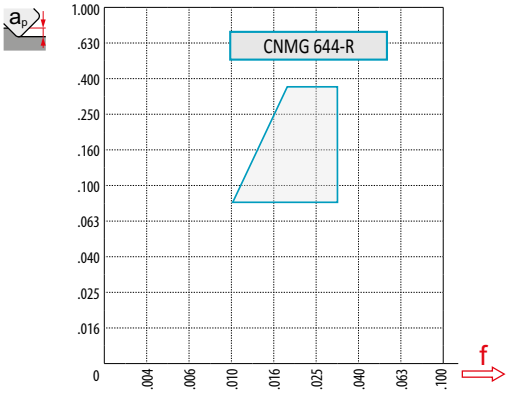


? CNMM, SNMM

R



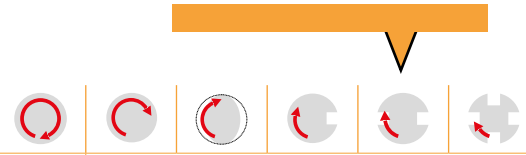




P	M	K	N	S	H
■	◪	■			□

f .012 – .031

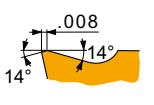
ap .118 – .394

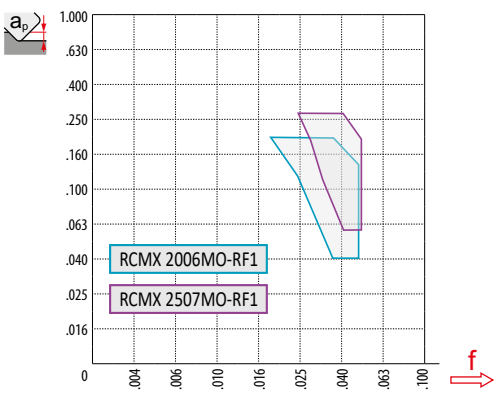


? CNMG, DNMG, SNMG, TNMG, WNMG

RF1 (RCMX)



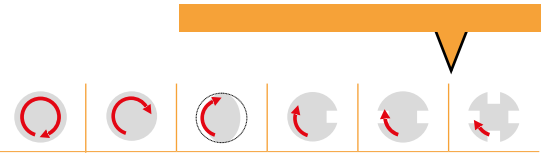




P	M	K	N	S	H
■	□	■			

f .018 (.024) – .047 (.049)

ap .039 (.059) – .197 (.276)

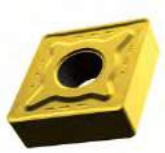


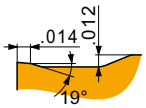
? RCMX 20, RCMX 25

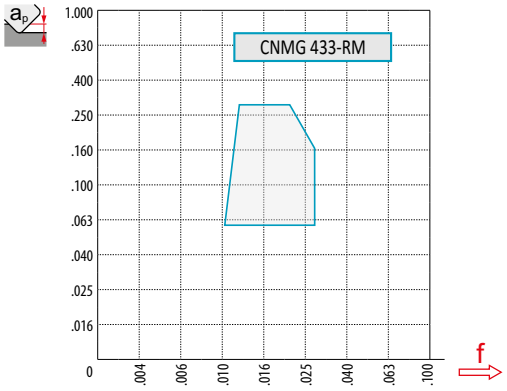
Table 3
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GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO P, M, D
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO P, M, D
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO P, M, D

RM







P	M	K	N	S	H
■	■	■		◪	□

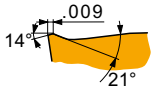
f .012 – .031

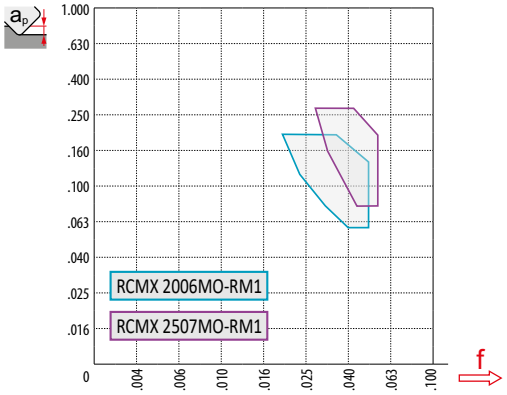
ap .059 – .276

CNMG. DNMG, SNMG, TNMG, WNMG

RM1 (RCMX)







P	M	K	N	S	H
■	□	■			

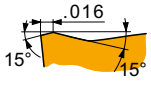
f .020 (.028) – .051 (.055)

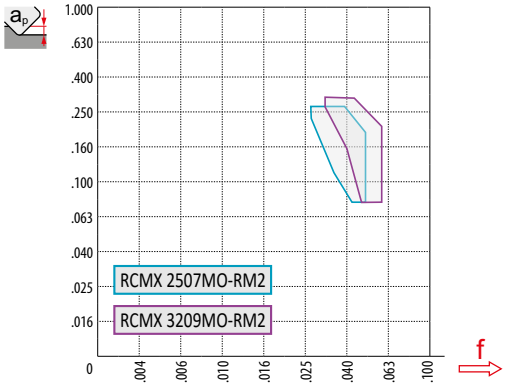
ap .059 (.079) – .197 (.276)

RCMX 20, RCMX 25

RM2 (RCM.)







P	M	K	N	S	H
■	□	■			

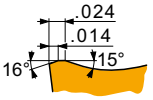
f .028 (.031) – .051 (.059)

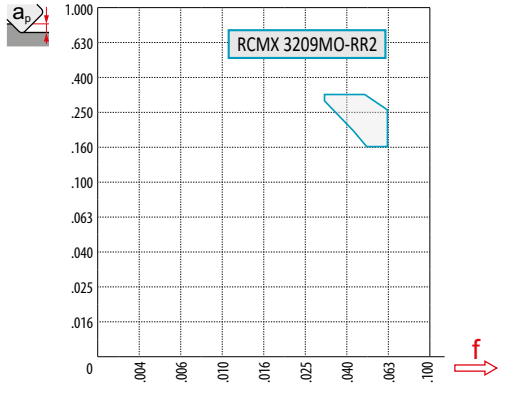
ap .079 – .276 (.315)

RCMX 25, RCMX 32, RCMH 32

RR2 (RCM.)







P	M	K	N	S	H
■	□	■			

f .031 – .063

ap .157 – .315

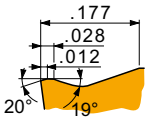
RCMX 32, RCMH 32

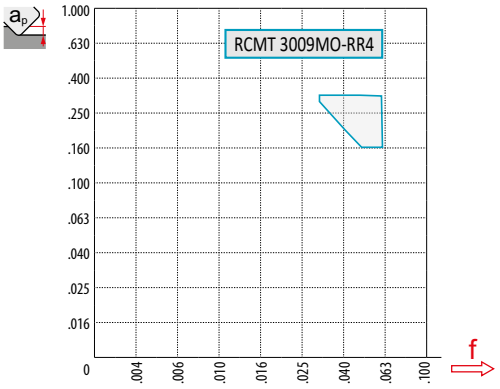
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO P, M, D
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO P, M, D
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO P, M, D

RR4 (RCMT)







P	M	K	N	S	H
■	□	■			

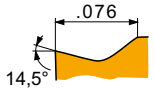
f .031 – .063

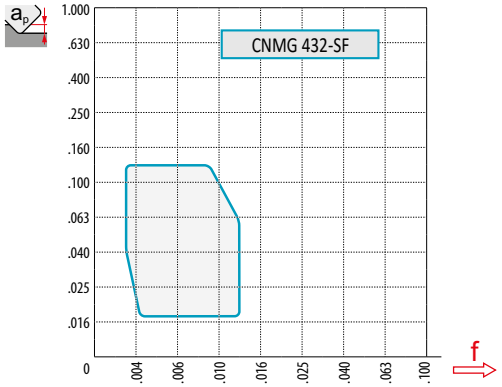
a_p .059 – .276

RCMT 30

SF







P	M	K	N	S	H
◪	■		□	■	□

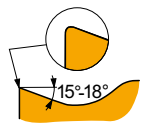
f .003 – .014

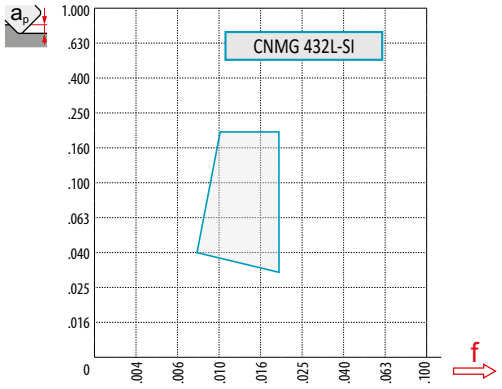
a_p .008 – .138

CNGG, CNMG, DNMG,
SNMG, TNMG, VNMG, WNMG

SI







P	M	K	N	S	H
■	■	□	□	■	

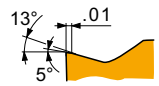
f .008 – .020

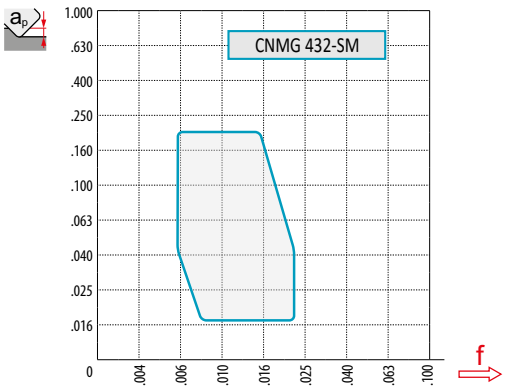
a_p .031 – .197

CNMG, DNMG, TNMG, WNMG

SM







P	M	K	N	S	H
■	■	◪		■	□

f .006 – .022

a_p .016 – .236

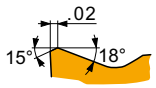
CNMG, DNMG, SNMG, TNMG, VNMG, WNMG

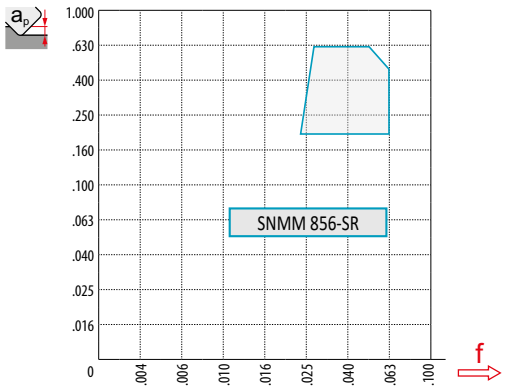
Table 3
Tabla 3
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GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO P, M, D
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO P, M, D
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO P, M, D

SR

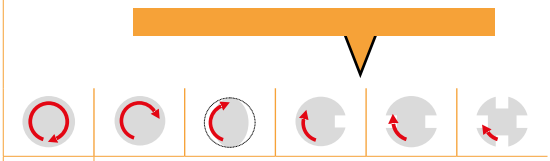






P	M	K	N	S	H
■	■	■			

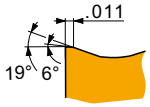
f: .028 – .063
ap: .197 – .630

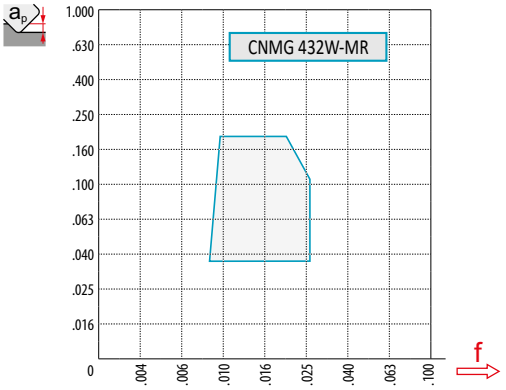


SNMM, SNMX

W–MR

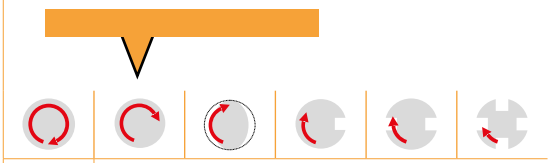






P	M	K	N	S	H
■	■	■			

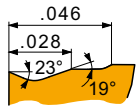
f: .008 – .030
ap: .020 – .197

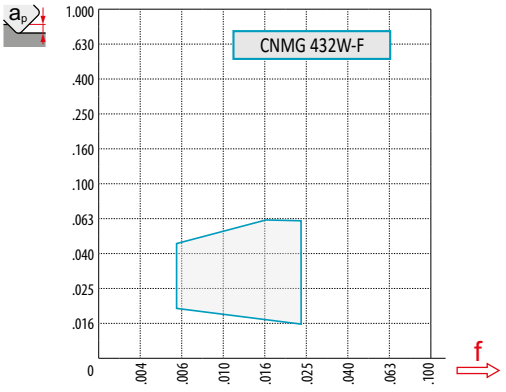


CNMG, WNMG, DNMG

W–F

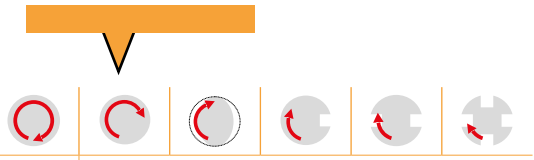






P	M	K	N	S	H
■		■			

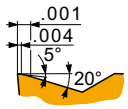
f: .006 – .024
ap: .016 – .063

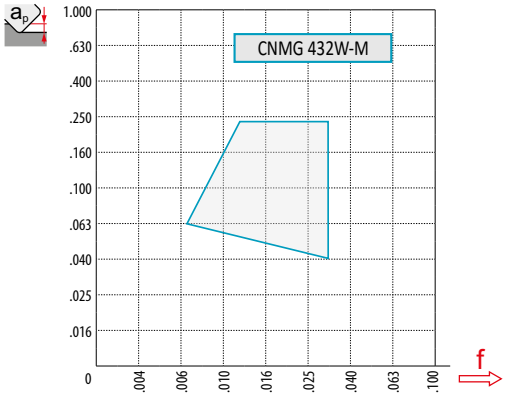


CNMG, WNMG

W–M

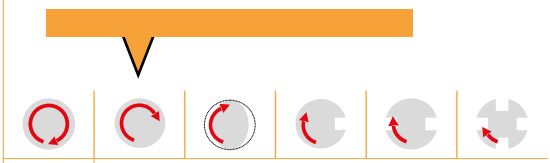






P	M	K	N	S	H
■		■			

f: .007 – .031
ap: .039 – .236



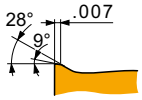
CNMG, WNMG

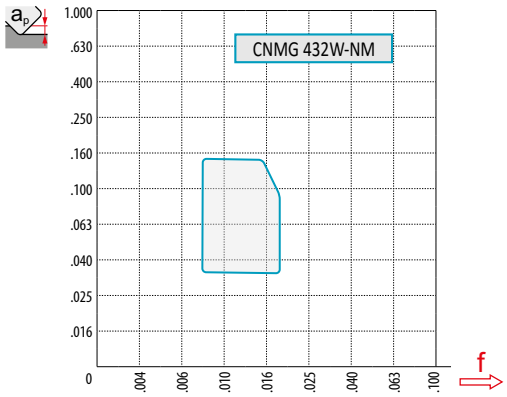
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO P, M, D
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO P, M, D
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO P, M, D

W-NM

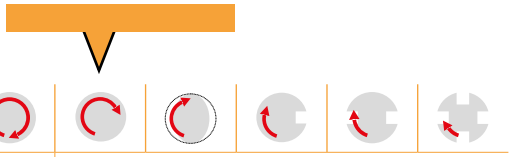






P	M	K	N	S	H
■	■	□	□	■	

f	.006 – .020
a_p	.020 – .138



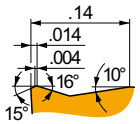
?	CNMG, DNMX, WNMG

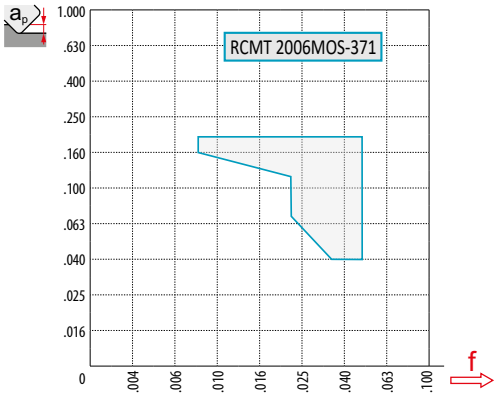
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO S
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO S
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO S

371 (RCMT)







P	M	K	N	S	H
■	□	■			

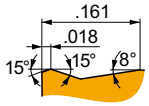
f .008 – .047

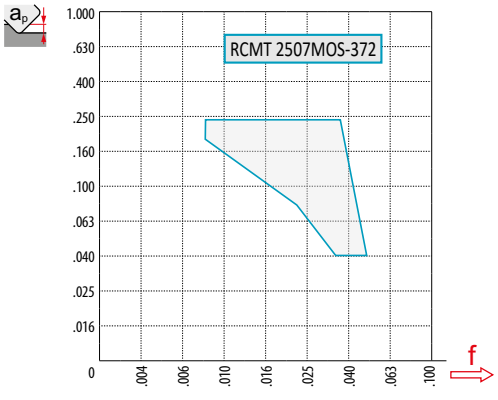
a_p .039 – .197

RCMT

372 (RCMT)







P	M	K	N	S	H
■	□	■			

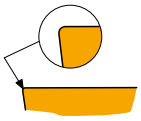
f .008 – .047

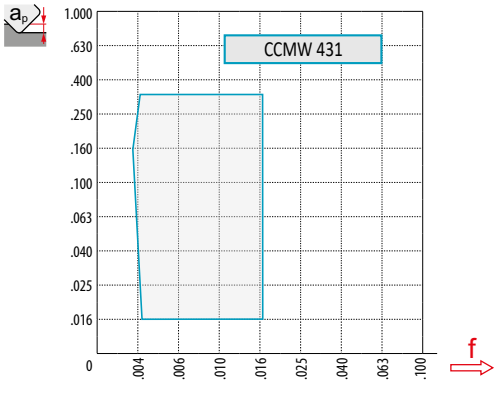
a_p .039 – .236

RCMT

...W







P	M	K	N	S	H
◪	□	■			◪

f .004 – .016

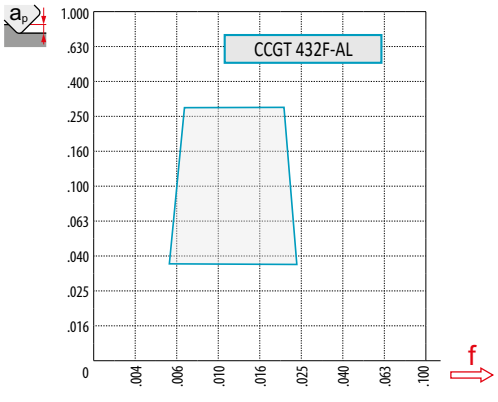
a_p .016 – .331

CCMW, DCMW, SCMW, RCMW, TCMW, VCMW

AL







P	M	K	N	S	H
			■		

f .002 – .024

a_p .008 – .276

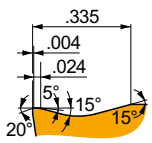
CCGT, DCGT, SCGT, RCGT, TCGT, VCGT, WCGT

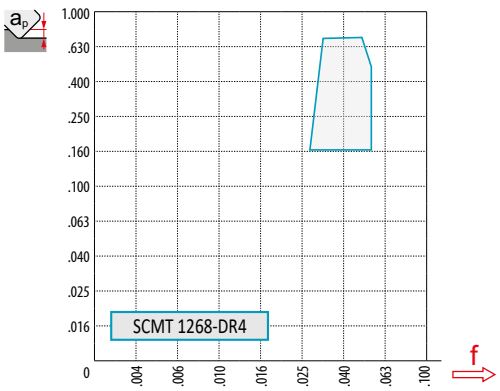
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO S
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO S
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO S

DR4 (SCMT)



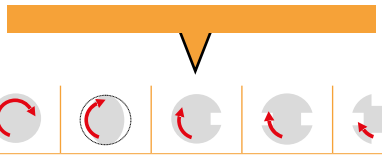




P	M	K	N	S	H
■	◪	■			

f .028 – .055

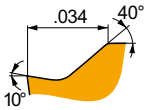
ap .157 – .709

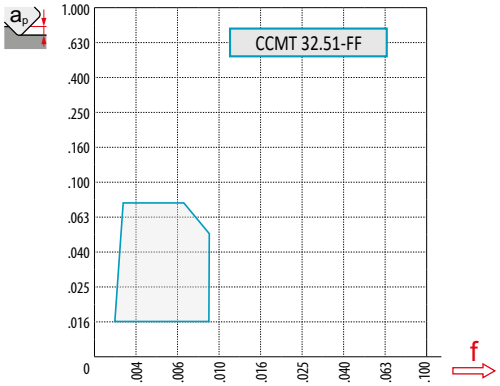


? SCMT

FF



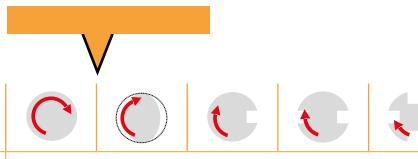




P	M	K	N	S	H
■	■	◪	□	□	

f .002 – .009

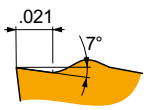
ap .008 – .079

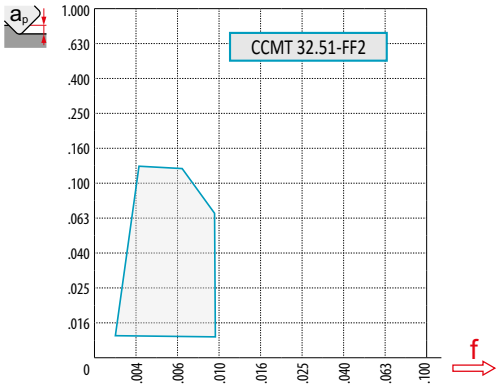


? CCMT, DCMT

FF2



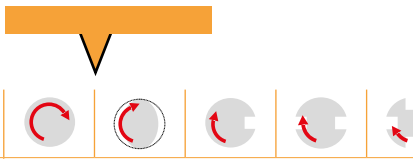




P	M	K	N	S	H
■	◪	■			

f .001 – .011

ap .006 – .118

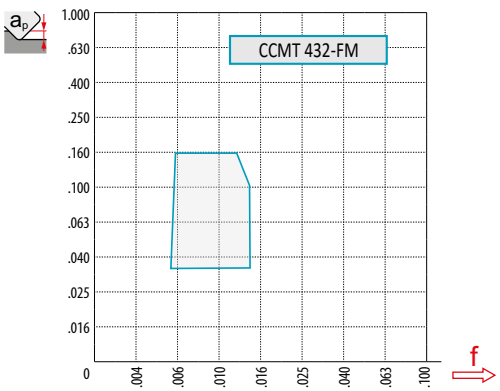


? CCMT, CCGT, DCGT, DCMT, SCMT, TCGT, TCMT, VBMT, VCGT, VCGX, WCGT

FM



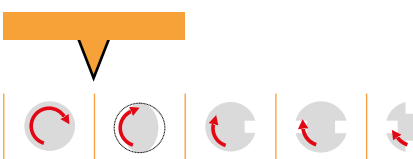




P	M	K	N	S	H
■	■	◪		□	

f .003 – .018

ap .008 – .157



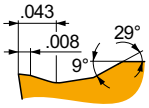
? CCMT, DCMT, SCMT, TCMT, VBMT, WCMT

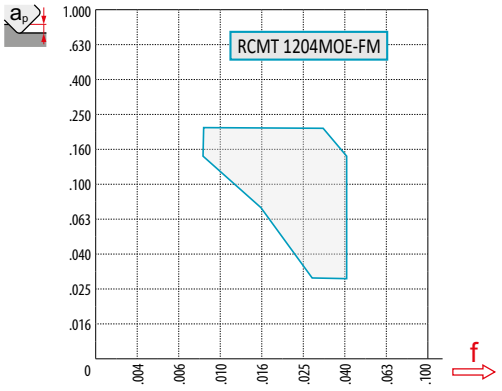
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO S
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO S
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO S

FM (RCMT)







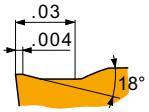
P	M	K	N	S	H
■	■	◪		□	

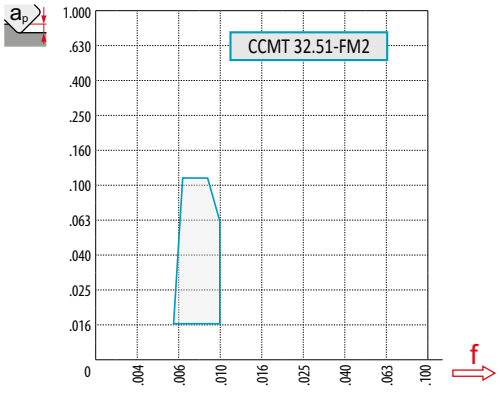
f .004 – .039
a_p .012 – .189

RCMT

FM2







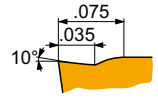
P	M	K	N	S	H
■	◪	■		□	□

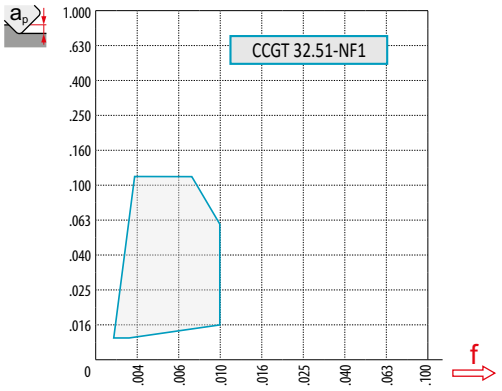
f .002 – .016
a_p .008 – .157

CCMT, DCMT, ECMT, SCMT, TCMT, VBMT, VCGT

NF1







P	M	K	N	S	H
■	■	◪		■	

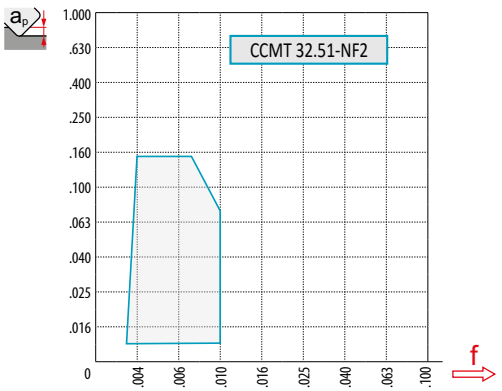
f .002 – .014
a_p .012 – .138

CCGT, DCGT, SCGT, TCGT

NF2







P	M	K	N	S	H
◪	■	◪		■	

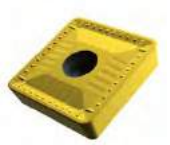
f .002 – .018
a_p .008 – .157

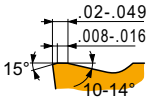
CCMT, EPMT, SCMT, TCMT, VCGT

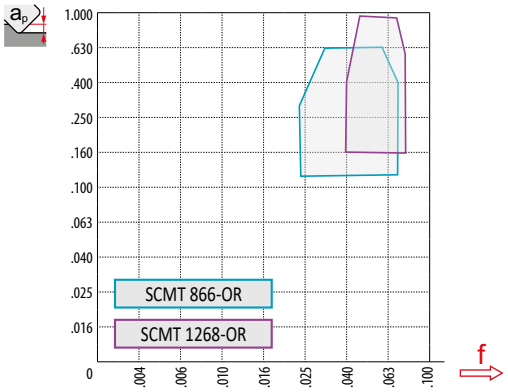
Table 3
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GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO S
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO S
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO S

OR (SCMT)



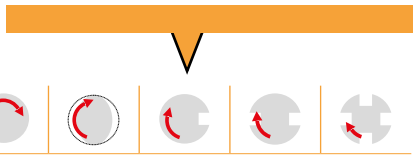




P	M	K	N	S	H
■	■	◪		□	

f .024 – .079

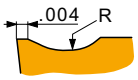
a_p .118 – .945



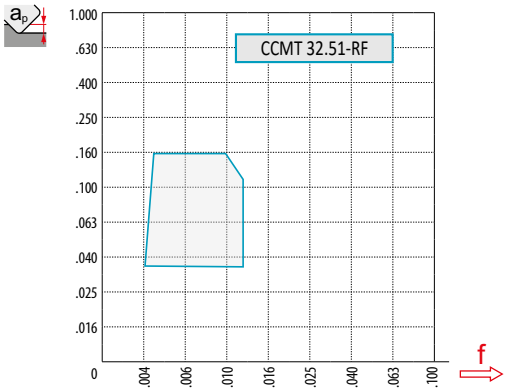
?: SCMT

RF





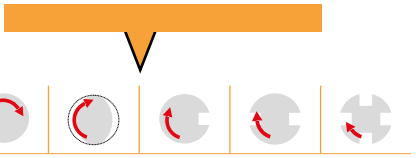
I.C.	R
.25	.039
.375	.059
.5	.098



P	M	K	N	S	H
■	◪	■			

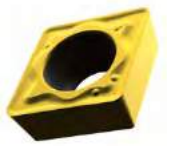
f .004 – .024

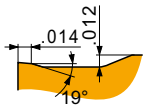
a_p .031 – .315

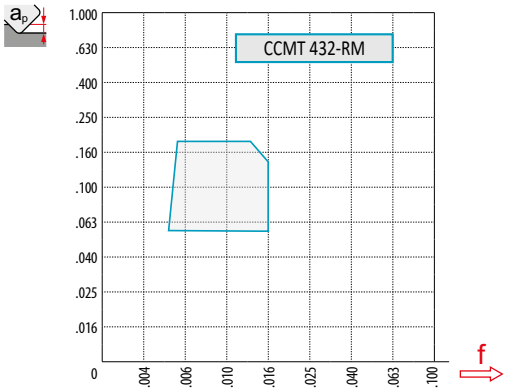


?: CCMT, DCMT, SCMT, TCMT, WCMT

RM



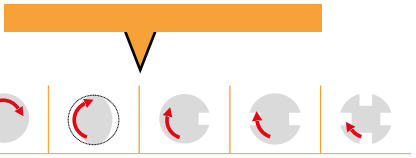




P	M	K	N	S	H
■	■	■		◪	□

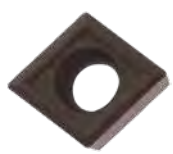
f .004 – .020

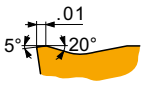
a_p .031 – .177

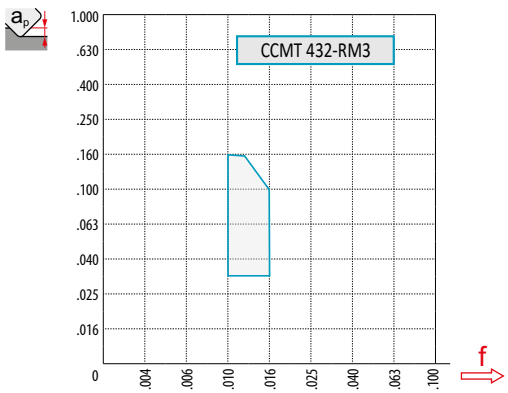


?: CCMT, DCMT, SCMT, TCMT, VBMT

RM3



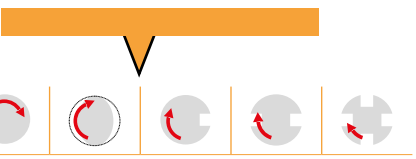




P	M	K	N	S	H
■	◪	■			

f .006 – .035

a_p .016 – .236



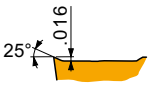
?: CCMT, SCMT, TCMT, RCMT

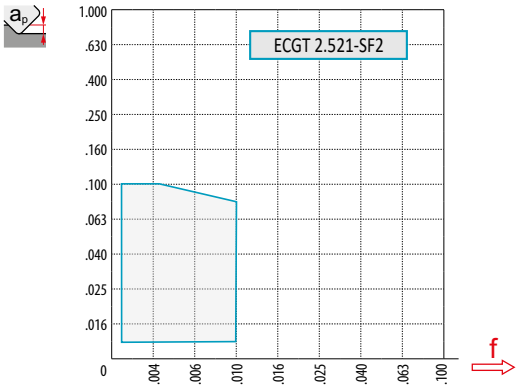
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO S
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO S
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO S

SF2







P	M	K	N	S	H
■	■		■	■	

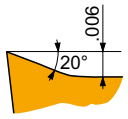
f .001 – .011

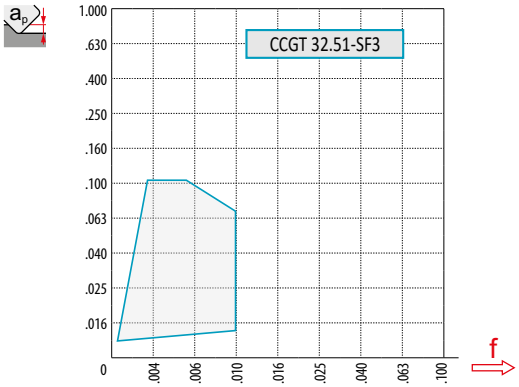
a_p .004 – .098

ECGT, VCGT

SF3







P	M	K	N	S	H
■	■		■	■	

f .001 – .014

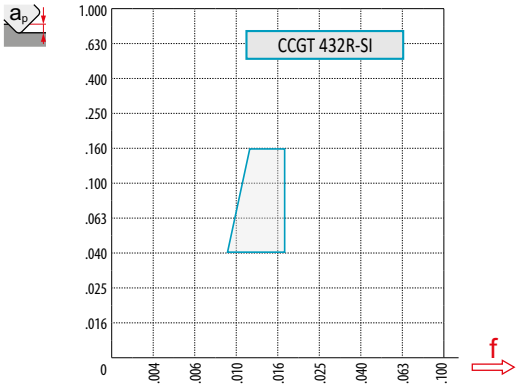
a_p .008 – .157

CCGT, DCGT, ECGT, SCGT, TCGT, VCGT

SI







P	M	K	N	S	H
■	■	□	□	■	

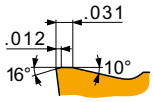
f .003 – .018

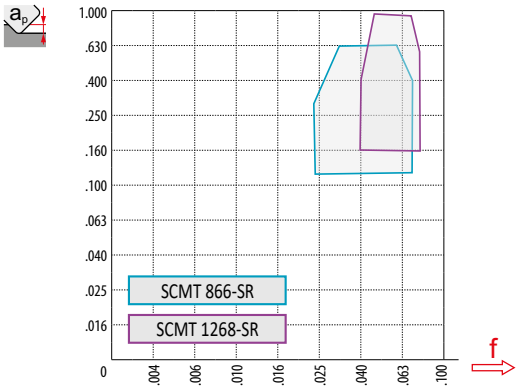
a_p .016 – .157

CCGT, TCGT

SR (SCMT)







P	M	K	N	S	H
■	■	■			

f .024 – .079

a_p .118 – .945

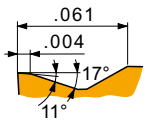
SCMT

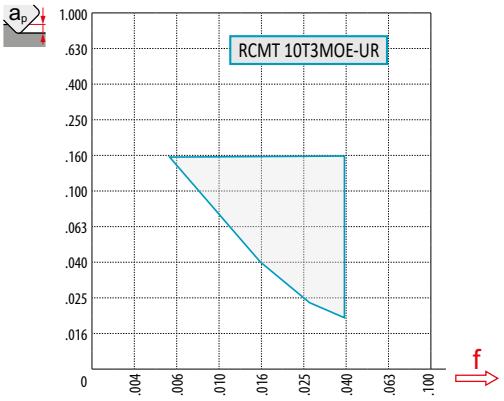
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO S
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO S
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO S

UR (RCMT)







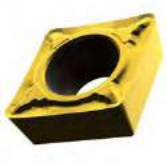
P	M	K	N	S	H
■	■	■	□		

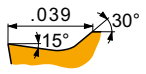
f .006 – .039

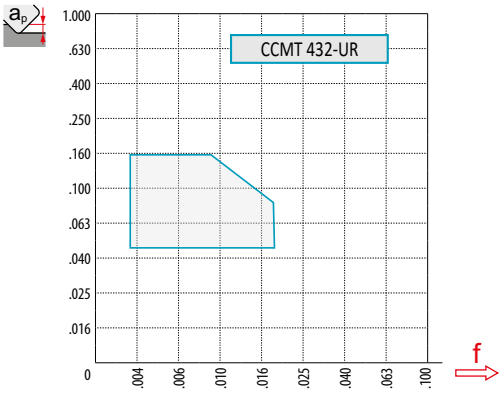
ap .020 – .197

RCMT

UR







P	M	K	N	S	H
■	■	■	□		

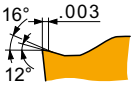
f .004 – .016

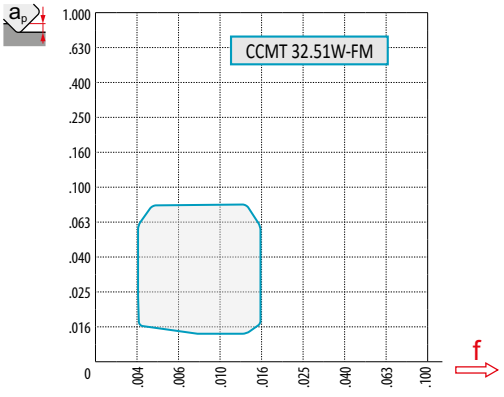
ap .039 – .157

CCMT, DCMT, RCMT, SCMT,
TCMT, VCMT, VBMT, WCMT

W-FM







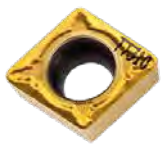
P	M	K	N	S	H
■	■	□		□	

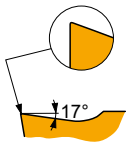
f .004 – .016

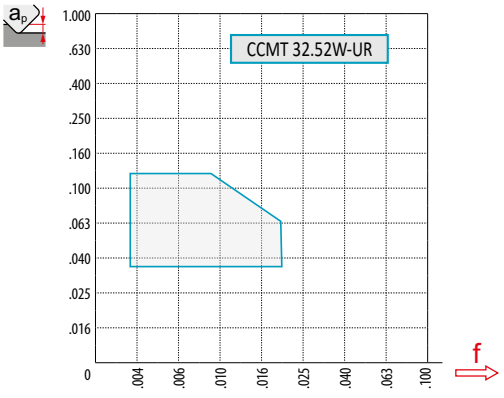
ap .012 – .118

CCMT, DCMX

W-UR







P	M	K	N	S	H
■	■	■	□		

f .003 – .020

ap .016 – .118

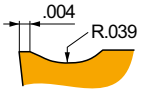
CCMT

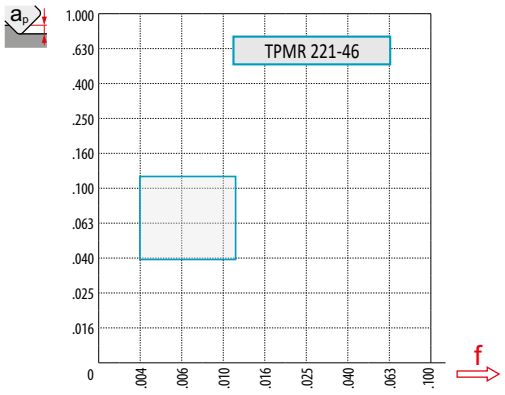
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO C
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO C
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO C

46



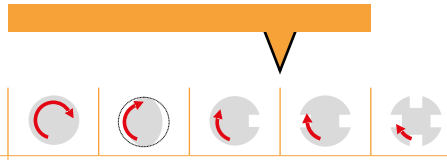




P	M	K	N	S	H
■	◪	■			

f .004 – .012

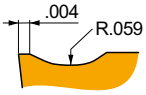
a_p .039 – .118

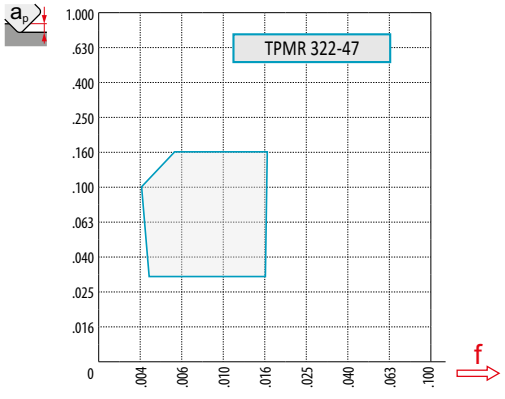


?: SPMR, TPMR

47



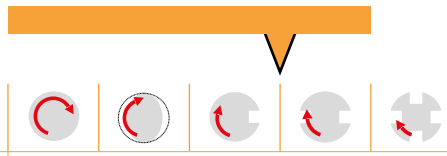




P	M	K	N	S	H
■	◪	■			

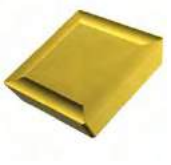
f .004 – .016

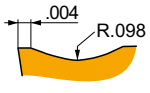
a_p .031 – .157

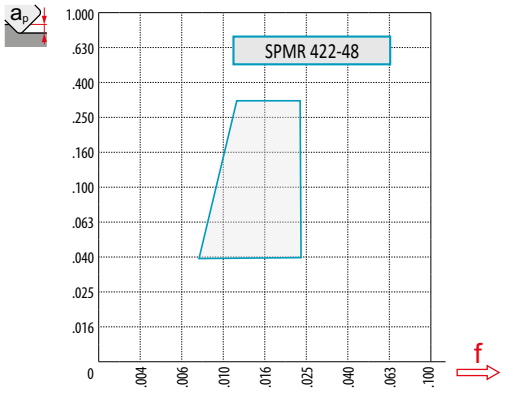


?: TPMR

48



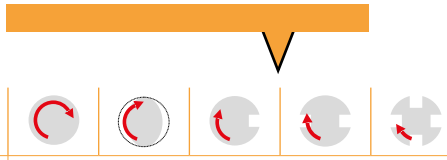




P	M	K	N	S	H
■	◪	■			

f .008 – .024

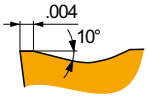
a_p .039 – .315

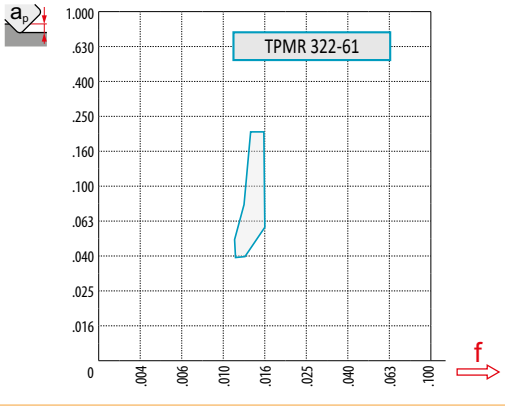


?: SPMR

61



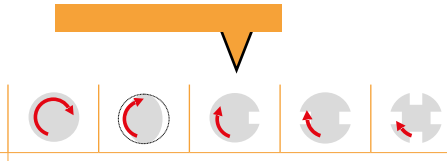




P	M	K	N	S	H
■	■	■		◪	■

f .012 – .016

a_p .039 – .209



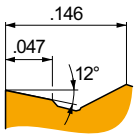
?: TPMR

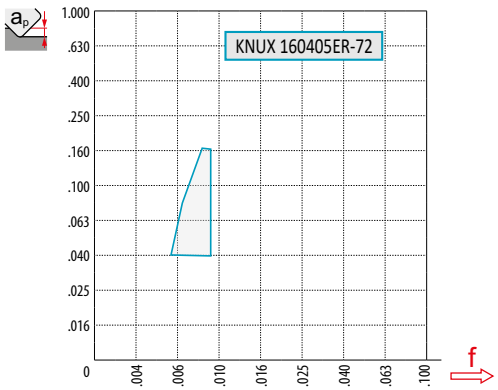
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO C
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO C
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO C

72



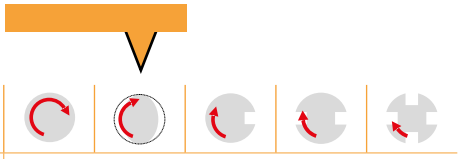




P	M	K	N	S	H
■	◪	■			

f .006 – .009

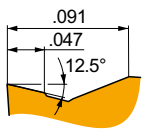
ap .039 – .157

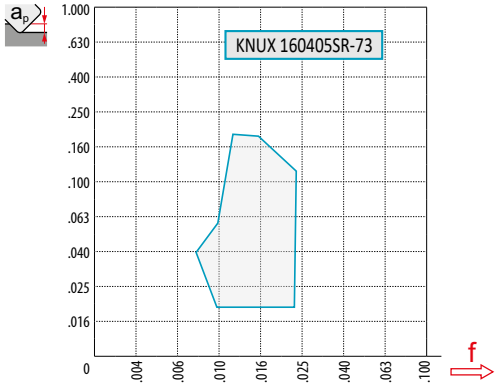


? KNUX

73



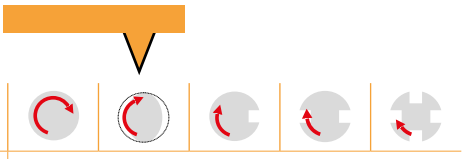




P	M	K	N	S	H
■	■	◪	□	◪	

f .008 – .024

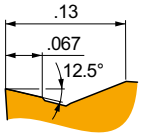
ap .020 – .189

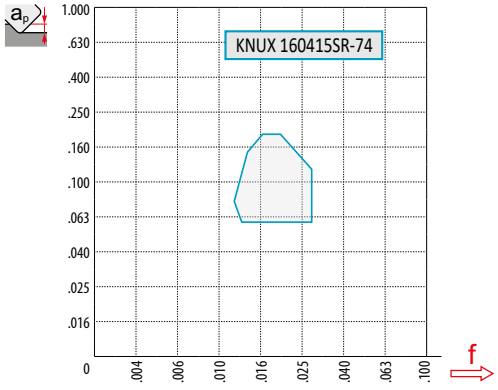


? KNUX

74







P	M	K	N	S	H
■	■	◪	□	◪	

f .012 – .028

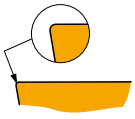
ap .059 – .189

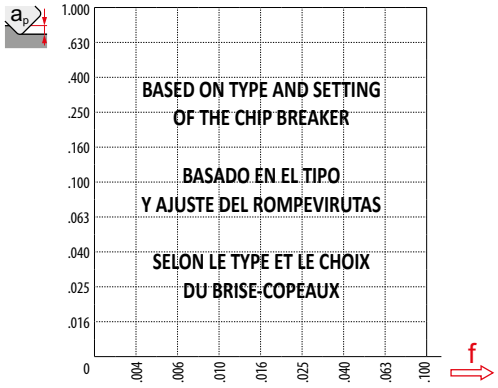


? KNUX

.PUN



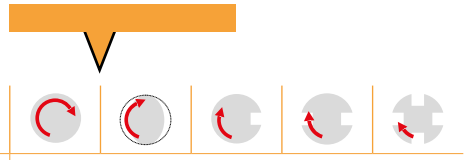




P	M	K	N	S	H
◪	□	■			◪

f .004 – .024

ap .016 – .689



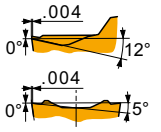
? TPUN, SPUN

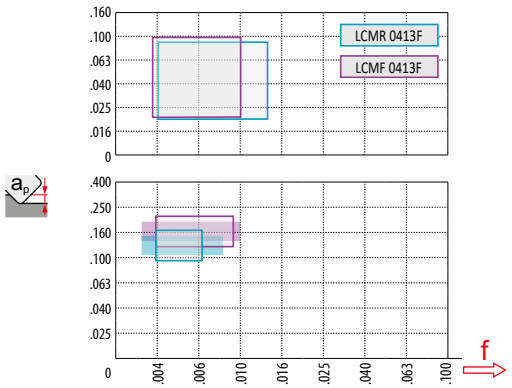
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO X AND G
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO X Y G
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO X ET G

13 F (LCM.)

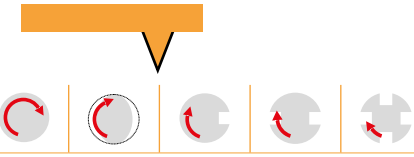






P	M	K	N	S	H
■	◪	■			

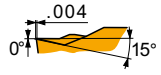
f, ap: See diagram / Consultar diagrama / Voir diagramme

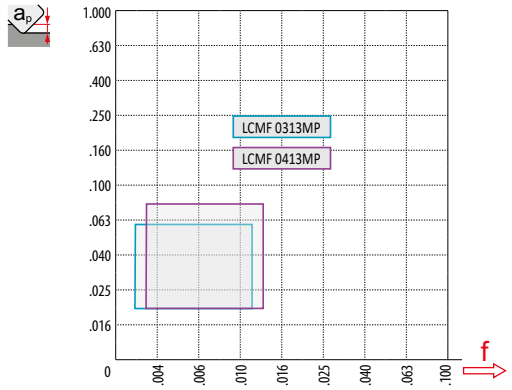


?: LCMF, LCMR

13 MP (LCM.)

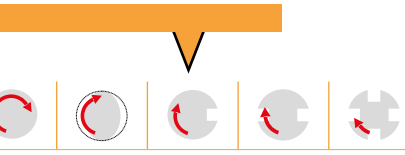






P	M	K	N	S	H
■	◪	■			

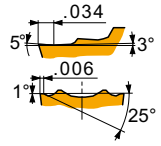
f, ap: See diagram / Consultar diagrama / Voir diagramme

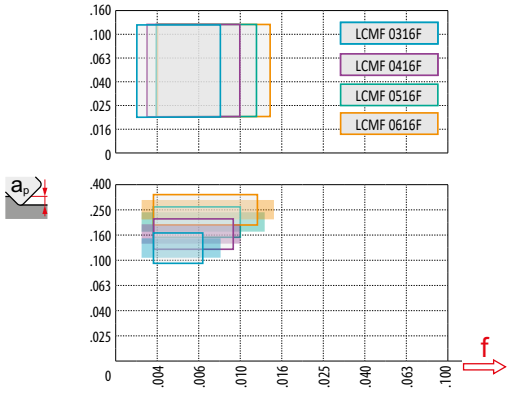


?: LCMF, LCMR

16 F (LCM.)

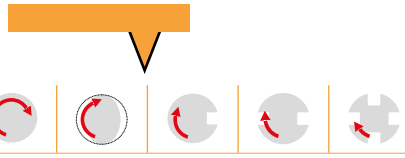






P	M	K	N	S	H
■	◪	■			

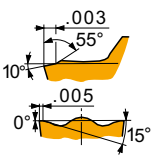
f, ap: See diagram / Consultar diagrama / Voir diagramme

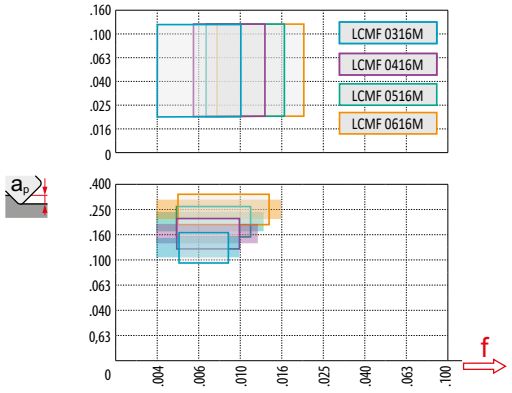


?: LCMF, LCMR

16 M (LCM.)

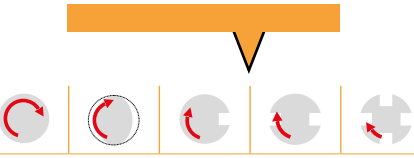






P	M	K	N	S	H
■	◪	■			

f, ap: See diagram / Consultar diagrama / Voir diagramme



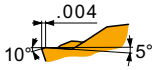
?: LCMF, LCMR

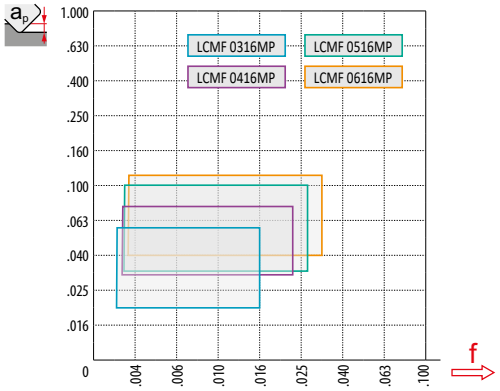
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GEOMETRY OF CUTTING INSERTS – CLAMPING DESIGNATION ISO X AND G
GEOMETRÍA DE PLAQUITAS DE CORTE – TIPO DE FIJACIÓN ISO X Y G
GÉOMÉTRIE DES PLAQUETTES – FIXATION DE TYPE ISO X ET G

16 MP (LCM.)

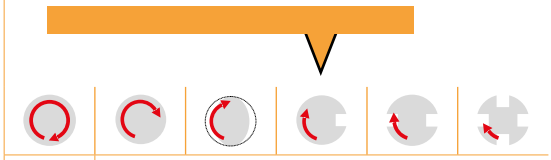






P	M	K	N	S	H
■	◪	■			

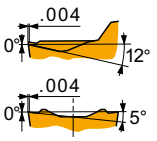
f: See diagram / Consultar diagrama / Voir diagramme
ap: See diagram / Consultar diagrama / Voir diagramme

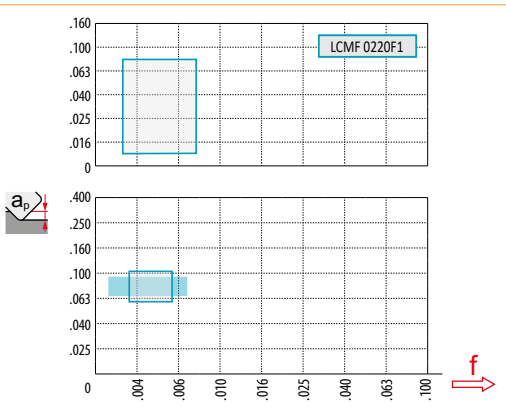


?: LCMF, LCMR

20 F1 (LCMF)

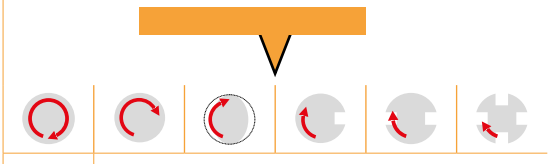






P	M	K	N	S	H
■	◪	■			

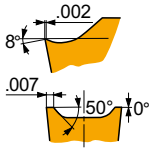
f: See diagram / Consultar diagrama / Voir diagramme
ap: See diagram / Consultar diagrama / Voir diagramme

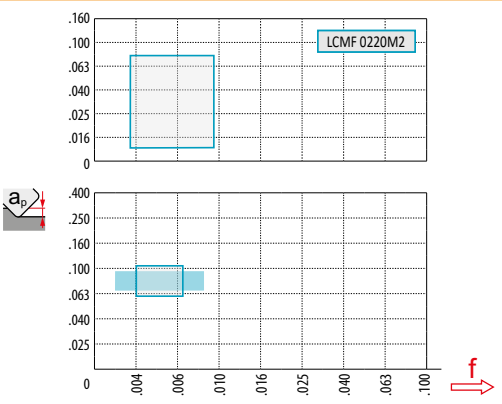


?: LCMF

20 M2 (LCMF)

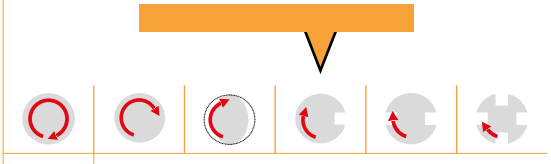






P	M	K	N	S	H
■	■	◪	□	◪	□

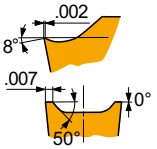
f: .004 – .009
ap: .012 – .059

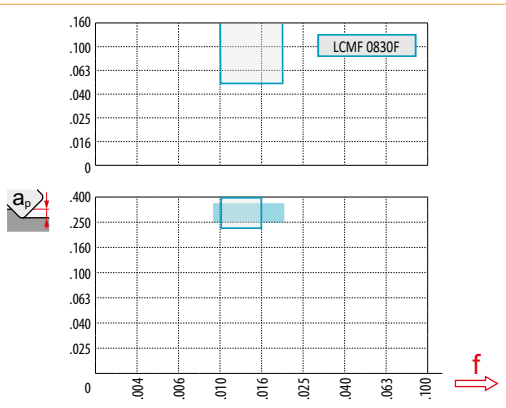


?: LCMF

30 F (LCM.)

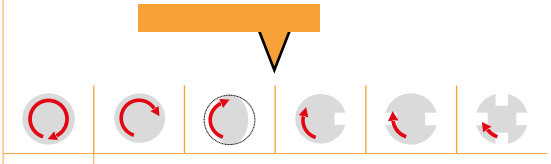






P	M	K	N	S	H
■	◪	■			

f: .010 – .020
ap: .051 – .236



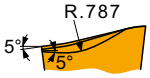
?: LCMF, LCMR

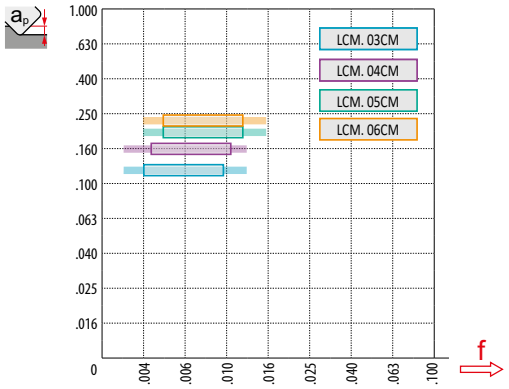
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CM (LCM.)







P	M	K	N	S	H
■	◪	■			

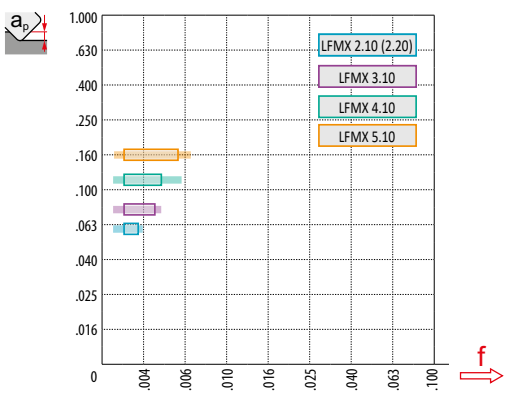
f
ap
See diagram / Consultar diagrama / Voir diagramme

?
LCMF 13 CM, LCMF 16 CM, LCMR 16 CM

F1 (LFMX)





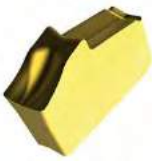


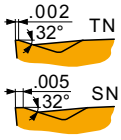
P	M	K	N	S	H
■	◪	■			

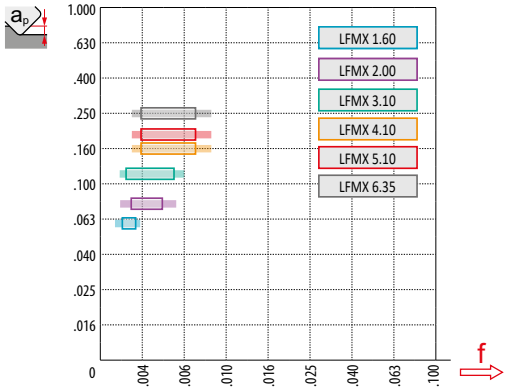
f
ap
See diagram / Consultar diagrama / Voir diagramme

?
LFMX

F2 (LFMX)







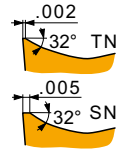
P	M	K	N	S	H
■	◪	■		□	□

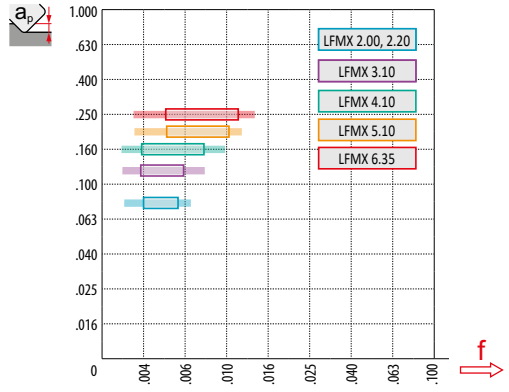
f
ap
See diagram / Consultar diagrama / Voir diagramme

?
LFMX

M2 (LFMX)







P	M	K	N	S	H
■	■	◪	□	◪	□

f
ap
See diagram / Consultar diagrama / Voir diagramme

?
LFMX

T 9 3 1 5

T	9	3	1 5
Application Aplicación Application	Coating/Substrate Recubrimiento/Sustrato Revêtement/Substrat	Sequence number Número de secuencia Numéro de séquence	ISO range Gama ISO Plage ISO

D	Drilling Taladrado Perçage
M	Milling Fresado Fraisage
T	Turning Torneado Tournage

0 PVD **1 CVD**	Special application Aplicación especial Application spéciale
2 PVD **3 CVD**	Free Libre Libre
4 PVD **5 CVD**	Cast iron Fundición Fonte
6 PVD **7 CVD**	Group M, S Grupos M, S Groupes M, S
8 PVD **9 CVD**	Universal Universal Universel
B	CBN
C	Ceramic Cerámica Céramique
D	PCD
T	Cermet

1 – 9

01 – 50	
	**01 – 05**
	**05 – 10**
	**10 – 20**
	**20 – 30**
	**30 – 40**
	**40 – 50**

PRAMET

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TURNING GRADES
CALIDADES PARA TORNEADO
NUANCE DE TOURNAGE

Grade Identification / Calidad / Désignation de la nuance	Area of Application / Área de aplicación / Domaine d'application / Application / Aplicación/ Application		Feed / Avance / Avance	Cutting speed / Velocidad de corte / Vitesse de coupe	Resistance to adverse Working Conditions / Resistencia a condiciones de trabajo adversas / Résistance aux chocs et aux conditions défavorables	Substrate / Sustrato / Substrat	Coating / Recubrimiento / Revêtement	Colour / Color / Couleur	Coolant benefit / Refrigerante / Bénéfice de l'arrosage	General / General / Général	Parting off / Tronzado / Tronçonnage	Threading / Roscado / Filetage	Heavy roughing / Desbaste pesado / Ébauche lourde
T9226	P15 - P35	■				FGM	MT-CVD		+ + +				✓
	M10 - M30	■											
	K15 - K35	◪											
	S15 - S25	□											
T9310	P01 - P15	■				FGM	MT-CVD		+ +		✓		
	K05 - K20	◪											
	H10 - H20	◪											
T9315	P05 - P25	■				FGM	MT-CVD		+ +		✓		✓
	K05 - K25	◪											
	H10 - H20	◪											
T9316	P10 - P20	■				FGM	MT-CVD		+ + +				✓
	M05 - M15	◪											
	K10 - K30	■											
	H15 - H25	◪											
T9325	P15 - P35	■				FGM	MT-CVD		+ +		✓	✓	✓
	M10 - M30	■											
	K15 - K35	◪											
	S10 - S20	◪											
T9335	P20 - P45	■				FGM	MT-CVD		+ + +		✓		✓
	M15 - M40	■											
	S15 - S25	◪											
T7325	P15 - P35	◪				FGM	MT-CVD		+ + +		✓		✓
	M10 - M25	■											
	S10 - S25	■											
T7335	P20 - P40	◪				FGM	MT-CVD		+ + +		✓		
	M20 - M40	■											
	S15 - S25	◪											
T5305	P05 - P15	◪				H	MT-CVD		+		✓		✓
	K01 - K15	■											
	H15 - H20	■											
T5315	P10 - P25	◪				H	MT-CVD		+		✓		
	M05 - M15	□											
	K10 - K25	■											
	H15 - H25	◪											
6630	P15 - P35	■				FGM	MT-CVD		+ + +		✓		✓
	M10 - M30	■											
	K20 - K30	◪											
	S15 - S25	□											
6640	P20 - P40	■				H	MT-CVD		+ + +		✓	✓	✓
	M20 - M35	■											
	K25 - K40	◪											
	S20 - S30	□											

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TURNING GRADES
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NUANCE DE TOURNAGE

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T6310	P05 - P15	◪				ultra submicron H	PVD		+ + +	✓			
	M01 - M15	■											
	K05 - K15	◪											
	N01 - N15	◪											
	S01 - S15	■											
	H01 - H15	◪											
T8310	P05 - P15	□				ultra submicron H	PVD		+ +	✓			
	M01 - M15	■											
	K05 - K15	□											
	N01 - N15	◪											
	S01 - S15	■											
	H01 - H15	◪											
T8315	P05 - P20	◪				submicron H	PVD		+ +	✓			
	M05 - M20	■											
	K05 - K25	■											
	N05 - N25	■											
	S05 - S15	□											
	H05 - H15	■											
T8330	P25 - P40	■				submicron H	PVD		+ + +	✓	✓		✓
	M20 - M35	■											
	K20 - K40	■											
	N15 - N30	□											
	S15 - S25	◪											
	H15 - H25	□											
T8345	P30 - P50	◪				submicron H	PVD		+ + +	✓			✓
	M20 - M40	■											
	K30 - K40	◪											
	S20 - S30	■											
T8030	P25 - P40	■				submicron H	PVD		+ + +			✓	
	M20 - M35	■											
	K20 - K40	■											
	N15 - N30	◪											
	S15 - S25	◪											
	H15 - H25	◪											
T0315	N05 - N30	■				submicron H	PVD		+ +	✓			
HF7	M10 - M20	□				submicron H	X		+ +	✓			
	K10 - K25	■											
	N10 - N25	■											
	S10 - S20	◪											
	H10 - H20	□											
H07	M05 - M15	◪				H	X		+ +	✓			
	K10 - K25	■											
	N10 - N30	◪											
	S01 - S20	■											

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TURNING GRADES
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NUANCE DE TOURNAGE

Grade Identification / Calidad / Désignation de la nuance	Area of Application / Área de aplicación / Domaine d'application	Application / Aplicación/ Application	Feed / Avance / Avance	Cutting speed / Velocidad de corte / Vitesse de coupe	Resistance to adverse Working Conditions / Resistencia a condiciones de trabajo adversas / Résistance aux chocs et aux conditions défavorables	Substrate / Sustrato / Substrat	Coating / Recubrimiento / Revêtement	Colour / Color / Couleur	Coolant benefit / Refrigerante / Bénéfice de l'arrosage	General / General / Général	Parting off / Tronzado / Tronçonnage	Threading / Roscado / Filetage	Heavy roughing / Desbaste pesado / Ébauche lourde
TT310	P10 - P25	■				cermet	PVD		+ / -	✓			
	M15 - M25	◪											
TT010	P01 - P10	■				cermet	X		+ / -	✓			
	M01 - M15	■											
TC100	K01 - K15	■				ceramics	X		- -	✓			
	S01 - S05	□											
	H05 - H20	□											
SN100	K05 - K15	■				ceramics	X		+ / -	✓			
TB310	H01 - H10	■				CBN	X		- -	✓			
PD1	N05 - N25	■				PKD	X		-	✓			
PC30	N01 - N10	■				PKD	X		-	✓			
D720	N05 - N15	■				PKD	X		-	✓			

Substrate / Sustrato / Substrat			
H	WC-Co based substrate	Sustrato de base WC-Co	Substrat de base WC-Co
submicron H	WC-Co based substrate fine grained (< 39.37 µin)	Sustrato de base WC-Co de grano fino (< 39.37 µin)	Substrat à grains fins base WC-Co (< 39.37 µin)
ultra submicron H	WC-Co based substrate very fine grained (< 19.69 µin)	Sustrato de base WC-Co de grano muy fino (< 19.69 µin)	Substrat à grains très fins base WC-Co (< 19.69 µin)
FGM	Functionally graded substrate	Sustrato de grado funcional	Substrat gradient fonctionnel
cermet	Cemented carbide without WC	Carburo sin WC	Carbure cémenté sans WC
ceramics	Cutting ceramics	Cerámica de corte	Céramique
PCD	Polycrystalline Diamond	Diamante policristalino	Diamant polycristallin
CBN	Cubic Boron Nitride	Nitruro de Boro Cúbico	Nitrure de Bore cubique
HSS	High speed steel	Acero rápido	Acier rapide
Coating / Recubrimiento / Revêtement			
MT-CVD	Medium-temperature chemical method of coating	Método de recubrimiento químico a media temperatura	Méthode de revêtement par dépôt chimique à moyenne température
PVD	Low-temperature physical method of coating	Método de recubrimiento físico a baja temperatura	Méthode de revêtement par dépôt physique à basse température
X	Uncoated grade	Sin recubrimiento	Nuance non revêtue

WORKPIECE MATERIALS – CLASSIFICATION
CLASIFICACIÓN DE MATERIALES MECANIZADOS

Correctly identifying the machined material is one of the most important factors when choosing the tool and the initial machining conditions. To facilitate this, the machined materials are divided into six basic groups, or into twenty–four subgroups, combining materials that qualitatively cause the same type of loading (pressure) on the cutting edge and therefore a similar type of wear.

Thus the first step is to assign the workpiece material to one of the (sub)groups – see table 5. below.

Identificar correctamente el material mecanizado es uno de los factores más importantes al momento de elegir la herramienta y la condiciones iniciales de mecanizado. Para facilitar esto, los materiales mecanizados se dividen en seis grupos básicos, o en veinticuatro subgrupos, combinando materiales que cualitativamente pueden causar el mismo tipo de carga (esfuerzo) en la arista de de corte y por lo tanto un tipo similar de desgaste. Así, el primer paso es asignar el material de la pieza a uno de los (sub) grupos - véase la tabla 5. a continuación.

Table 5

Tabla 5

Subgroup Sub-grupo		DORMER AMG	Subgroup definition	Definición de sub-grupo	Example Ejemplo	Correction factor / Factor de corrección
P	P1	1.1, 1.2	Steel and cast steel with very good (enhanced) machinability; automatic steel and low–carbon steel	Acero y fundición de acero con muy buena (mejorado) mecanización, acero automático y de acero bajo en carbono	9SMn28	1.33
	P2	1.3	Non–alloy and low–alloy cast steel and steel with a medium carbon content (0.25 < C < 0.55); rigidity of up to 900 MPa and hardness of 160 – 255 HB	Sin alear y de baja aleación de acero fundido y acero con un contenido de carbono medio (0,25 < C < 0,55); rigidez de hasta 900 MPa y una dureza de 160 – 255 HB	C45	1.00
	P3	1.4	Less machinable non–alloy and low–alloy cast steel and steel with a medium carbon content; rigidity of up to 1000 MPa and hardness of up to 300 HB	Menos mecanizable sin alear y de acero fundido de baja aleación y acero con un contenido de carbono medio; rigidez de hasta 1000 MPa y una dureza de hasta 300 HB	41CrAlMo7	0.80
	P4	1.5	Medium – to high-alloy cast steel and steel (usually with a carbon content of 0.55 < C); rigidity of up to 1270 MPa and hardness of up to 375 HB (resp. 40 HRC)	Medio – alto-aleación de acero fundido y acero (normalmente con un contenido de carbono de 0,55 < C); rigidez de hasta 1270 MPa y una dureza de hasta 375HB (resp. 40 HRC)	X210Cr12	0.60
M	M1	2.1	Ferritic corrosion–resistant steel	Acero resistente a la corrosión ferrítico	X6Cr17	1.09
	M2	(2.1, 2.4)	Martensitic corrosion–resistant steel	Acero resistente a la corrosión martensítico	X 45CrSi 9.3	1.06
	M3	2.2	Austenitic corrosion–resistant steel	Acero resistente a la corrosión austenítico	X 6CrNiTi 18 10	1.00
	M4	2.3, 2.4	Ferritic–austenitic (duplex) and super–austenitic corrosion–resistant steel	Ferrítico-austenítico (dúplex) y super-austenítico acero resistente a la corrosión	X 53 CrMnNiN21 9	0.93
K	K1	3.1, 3.2	Grey cast iron	Gris hierro fundido	GG–25	1.00
	K2	3.1, 3.2	Tempered cast iron	Hierro fundido templado	GTS 45–06	0.95
	K3	3.3	Ductile cast iron ferritic and ferrite–pearlite	Fundición ferrítico hierro y ferrita-perlita	GGG40	0.90
	K4	3.4	Ductile cast iron pearlite–ferritic, pearlite–sorbitic and pearlite	Fundición dúctil de perlita y ferrita, perlita-sorbitic y perlita	GGG–70	0.85
N	N1	7.1	Aluminium and its soft alloys (with a low Si content), particularly formed and cast (non–hardened); hardness of up to 100 HB	Aluminio y sus aleaciones blandas (con bajo contenido de Si), especialmente formado y yeso (no resistente); dureza de hasta 100 HB	AlMgSi1	1.00
	N2	7.2, 7.3, 7.4	Hard Al alloys, particularly cast and hardened (with a high Si content)	Duro aleaciones de Al, en particular emitidos y endurecidos (con un alto contenido de Si)	G–AlSi11	0.65
	N3	6.1, 6.2, 6.3	Soft Cu alloys, automatic brass and other types of soft brass and bronze	Aleaciones Cu suaves, latón automática y otros tipos de latón blando y bronce	G–CuSn5Zn5Pb	0.60
	N4	6.4	Less machinable and hard Cu alloys	Aleaciones Cu menos mecanizables y duros	G–CuAl10Fe	0.40
S	S1	4.1, 4.2, 4.3	Technically pure Ti, alloys α , α+β and β, refined and aged alloys	Técnicamente ti puro, aleaciones α, α+β y β, refinado y aleaciones viejas	TiAl6V4	1.75
	S2	(9.1)	Fe–based alloys	Aleaciones a base de hierro	X10NiCrAlTi3221	1.20
	S3	5.1, 5.2, 5.3	Ni–based alloys	Aleaciones a base de niquel	INCONEL 718	1.20
	S4	(9.1)	Co–based alloys	Aleaciones a base de cobalto	Haynes 25	0.75
H	H1	1.6	Highly rigid and hard tool steel and hardened and refined steel with a hardness of 40 – 50 HRC	Muy rígido y duro y acero para herramientas endurecido y acero refinado, con una dureza de 40 – 50 HRC	X30WCrV9.3	1.15
	H2	–	Hardened and white cast iron 350 – 600 HV	Hierro fundido templado y blanco 350 – 600 HV	G–X 260 NiCr 4 2	1.10
	H3	1.7	Hardened and refined steel with hardness in the 50 – 55 HRC range	Acero templado y refinada con dureza en el 50 – 55 gama HRC	X38CrMoV5.1	1.00
	H4	1.8	Hardened and refined (mostly tool) steel with hardness of more than 55 HRC	Endurecido y refinado (en su mayoría de la herramienta) de acero con dureza de más de 55 HRC	X210Cr12	0.95

CLASSIFICATION DES GROUPES DE MATÉRIAUX À USINER

L'identification du matériau à usiner est l'un des facteurs les plus importants pour choisir l'outil et les conditions de coupe de départ. Pour simplifier ce choix, les matériaux usinés sont divisés en six groupes de base, ou vingt quatre sous-groupes. Dans chacun sont associés des matériaux qui causent le même type de charge sur l'arête de coupe et également un type d'usure similaire. C'est pourquoi la première étape consiste à identifier le matériau à usiner parmi les (sous-)groupes référencés - voir tableau N°5 ci-dessous.

Tableau 5

Subgrupo Sous-groupe		DORMER AMG	Définition du sous-groupe	Exemplo Exemple	Correção Standard Correction à la norme
P	P1	1.1, 1.2	Acier et acier coulé avec une usinabilité améliorée ; acier de construction et acier à faible teneur en carbone	9SMn28	1.33
	P2	1.3	Acier et acier coulé non allié et faiblement allié à moyenne teneur en carbone (0,25 < C < 0,55); résistance jusqu'à 900 MPa et dureté de 160 – 255 HB	C45	1.00
	P3	1.4	Acier et acier coulé non allié et faiblement allié à moyenne teneur en carbone plus difficiles à usiner; résistance jusqu'à 1000 MPa et dureté jusqu'à 300 HB	41CrAlMo7	0.80
	P4	1.5	Acier et acier coulé moyennement et fortement allié (généralement avec une teneur en carbonne 0,55 < C); résistance jusqu'à 1270 MPa et dureté jusqu'à 375 HB HRC)	X210Cr12	0.60
M	M1	2.1	Aciers inoxydables ferritiques résistants à la corrosion	X6Cr17	1.09
	M2	(2.1, 2.4)	Aciers inoxydables martensitiques résistants à la corrosion	X 45CrSi 9.3	1.06
	M3	2.2	Aciers inoxydables austénitiques résistants à la corrosion	X 6CrNiTi 18 10	1.00
	M4	2. , 2.4	Aciers inoxydables ferritiques-austénitiques (duplex) et super austénitiques résistants à la corrosion	X 53 CrMnNiN21 9	0.93
K	K1	3.1, 3.2	Fontes grises	GG–25	1.00
	K2	3.1, 3.2	Fontes trempées	GTS 45–06	0.95
	K3	3.3	Fontes ductiles ferritiques et ferritiques-perlitiques	GGG40	0.90
	K4	3.4	Fontes ductiles perlites-ferrites, perlites et de perlites sorbitiques	GGG–70	0.85
N	N1	7.1	L'aluminium et ses alliages doux (à faible teneur en Si), en particulier formés et coulés (non trempé); dureté jusqu'à 100 HB	AlMgSi1	1.00
	N2	7.2, 7.3, 7.4	Alliages Al durs, en particulier coulés et traités (à haute teneur en Si)	G–AlSi11	0.65
	N3	6.1, 6.2, 6.3	Alliages Cu doux, laiton automatique et autres types de laiton et de bronze tendre	G–CuSn5Zn5Pb	0.60
	N4	6.4	Alliages moins faciles à usiner et alliages durs Cu	G–CuAl10Fe	0.40
S	S1	4.1, 4.2, 4.3	Ti techniquement pur, alliages α, α+β et β, alliages affinés et vieillis	TiAl6V4	1.75
	S2	(9.1)	Alliages base Fe	X10NiCrAlTi3221	1.20
	S3	5.1, 5.2, 5.3	Alliages base Ni	INCONEL 718	1.00
	S4	(9.1)	Alliages base Co	Haynes 25	0.75
H	H1	1.6	Aciers à outils très résistants durs, trempés, affinés avec une dureté de 40 – 50 HRC	X30WCrV9.3	1.15
	H2	–	Fontes trempées et blanches 350 – 600 HV	G–X 260 NiCr 4 2	1.10
	H3	1.7	Aciers trempés et affinés avec une dureté dans la plage 50 – 55 HRC	X38CrMoV5.1	1.00
	H4	1.8	Aciers trempés et affinés (principalement acier à outil) avec une dureté de plus de 55 HRC	X210Cr12	0.95

RECOMMENDATIONS FOR FINDING SUITABLE CHIP BREAKER – GRADE COMBINATION
RECOMENDACIONES PARA ENCONTRAR LA COMBINACIÓN ROMPEVIRUTAS – CALIDAD ADECUADA
RECOMMANDATIONS POUR TROUVER LA BONNE COMBINAISON GÉOMÉTRIE - NUANCE

The choice of insert shape depends on the choice of tool holder. The following procedure will help you to not only choose an optimal product, but to also determine the correct starting conditions.

Example: finding a suitable chip breaker – grade combination for machining steel using tool PCLNR 2020M12 with insert CN.. 12.., cutting conditions a_p = .039 in, f = .006 in/rev

1. Classify machined material into one of six groups according to ISO 513, see Table 5. Result: P – steel.
2. Select the grade and geometry based on insert type and operation type from Tables 6a - 11a (pgs T396-T407). Only variants with the highest probability of successful application upon first deployment are included.

Le choix de la forme de plaquette dépend du choix du porte-outil. La procédure suivante vous aidera non seulement à choisir le produit optimum, mais aussi à déterminer correctement les valeurs initiales de conditions de travail.

Exemple : trouver la bonne combinaison géométrie - nuance pour l'usinage de l'acier en utilisant un outil PCLNR 2020M12 avec une plaquette CN.. 12.., conditions de coupe a_p = .039 in, f = .006 in/tour

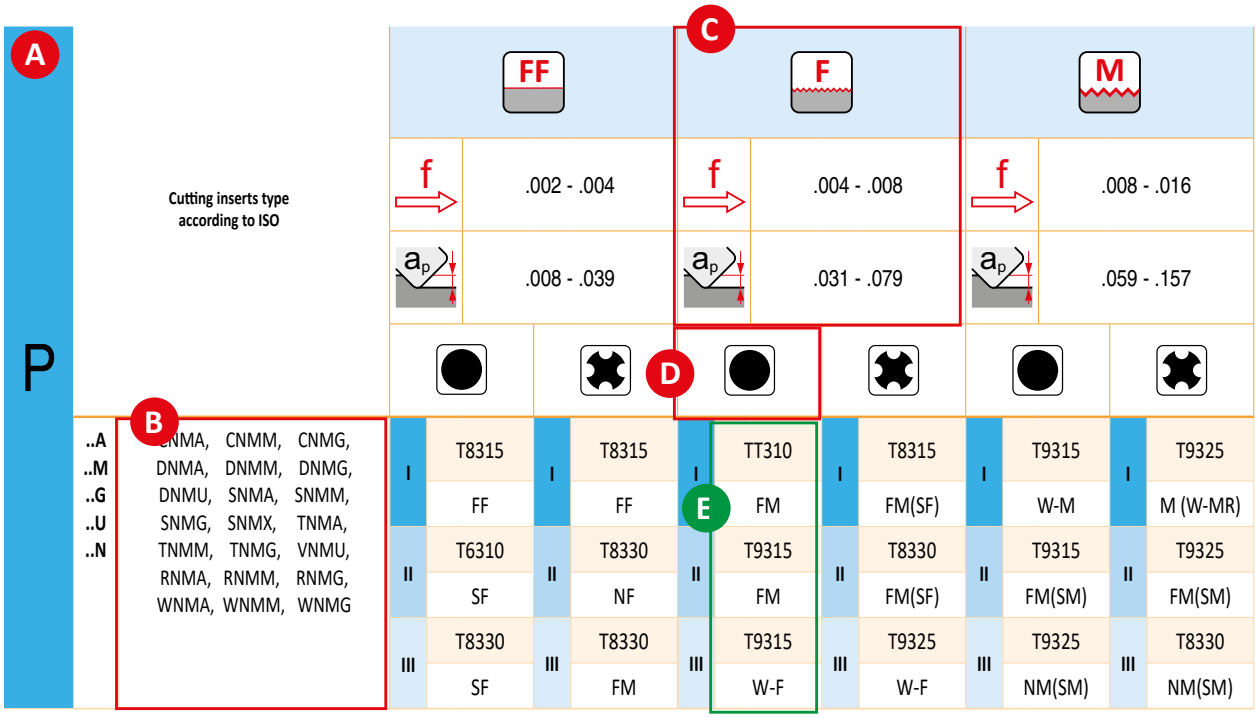
1. Trouver la matière à usiner dans l'un des six groupes ISO 513, voir Table 5. Résultat: P – acier.
2. Sélectionner la nuance et la géométrie selon le type de plaquette et d'opération dans les tables 6a - 11a (pgs T396-T407). Seules sont incluses les variantes ayant la plus grande probabilité de réussir l'application dès le premier essai.

La elección de la forma de la plaquita depende de la elección del portaherramientas. El siguiente procedimiento le ayudará, no sólo a elegir un producto óptimo, sino también a determinar las condiciones de corte iniciales.

Ejemplo: encontrar la combinación rompevirutas - calidad adecuada para mecanizar acero utilizando una herramienta PCLNR 2020M12 con una plaquita CN..12.., condiciones de corte a_p = .039 in, f = .006 in/rev

1. Clasificar el material dentro de uno de los seis grupos según ISO 513, ver tabla 5. Resultado: P - acero.
2. Seleccionar calidad y geometría, en base a la forma de la plaquita y el tipo de operación, de las Tablas 6a - 11a (pgs T396-T407). Sólo se incluyen las variantes con la más alta probabilidad de éxito en la aplicación desde el principio.

Picture / Imagen / Image 6



RECOMMENDATIONS FOR FINDING SUITABLE CHIP BREAKER – GRADE COMBINATION
RECOMENDACIONES PARA ENCONTRAR LA COMBINACIÓN ROMPEVIRUTAS – CALIDAD ADECUADA
RECOMMANDATIONS POUR TROUVER LA BONNE COMBINAISON GÉOMÉTRIE - NUANCE

Example – legend: / Ejemplo - leyenda / Exemple - Légende :	
A	Find blue table (steel – P) - Table 6a Encontrar la tabla azul (acero - P) - Tabla 6a Trouver le tableau bleu (acier – P) - Table 6a
B	Find group with the chosen insert (CN..) Encontrar el grupo con la plaquita elegida (CN..) Trouver le groupe avec la plaquette choisie (CN..)
C	Find operation type based on input parameters (a_p, f) Encontrar el tipo de operación en base a los parametros dados (a_p, f) Trouver le type d'opération selon les paramètres de base (a_p, f)
D	Choose cut type based on planned operation (continuous) Elegir el tipo de corte en base a la operación (contínuo) Choisir le type de coupe pour l'opération à réaliser (continue)
E	Result = First choice: grade TT310, chip breaker FM / Second choice: grade T9315, chip breaker FM / Third choice: grade T9315, chip breaker W-F Resultado = Primera elección: calidad TT310, rompevirutas FM / Segunda elección: calidad T9315, rompevirutas FM / Tercera elección: calidad T9315, rompevirutas W-F Résultat = Premier choix : nuance TT310, géométrie FM / Second choix : nuance T9315, géométrie FM / Troisième choix : nuance T9315, géométrie W-F

Note: the choices are graded so that the first variant offers the best power and the third highest operational reliability (it is necessary to always take into consideration the specific conditions).
You can verify the correct choice of chip breaker or grade in the section dedicated to the description of geometry or grades in the technical section for turning.

Note : Les choix sont classés de sorte que la première variante offre la meilleure performance et la troisième la plus grande fiabilité de fonctionnement (il est nécessaire de toujours prendre en compte les conditions spécifiques).
Vous pouvez vérifier le choix correct de la géométrie et de la nuance dans la partie technique de tournage comprenant les descriptions des géométries ou des nuances.

Nota: las elecciones estan graduadas de forma que la primera variante ofrece las mejores prestaciones y la tercera la mejor fiabilidad operacional (es necesario siempre tomar en consideración las condiciones específicas).
Se puede verificar la correcta elección de rompevirutas o calidad en el capítulo dedicado a la descripción de geometrías o calidades en la sección técnica para torneado.

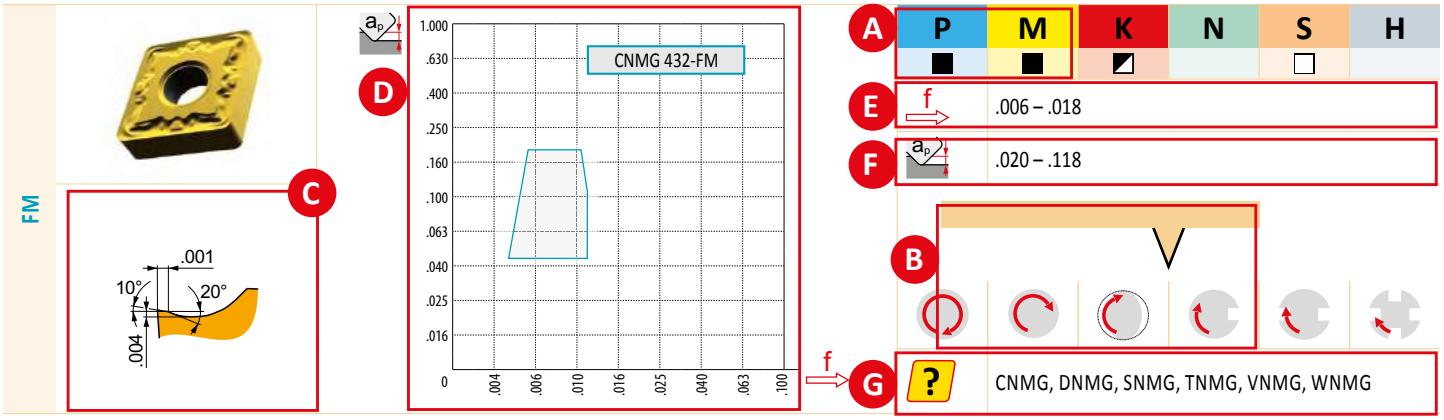
VERIFYING THE CHOICE OF CHIP BREAKER AND CUTTING GRADE
VERIFICAR LA ELECCIÓN DE ROMPEVIRUTAS Y CALIDAD
VÉRIFICATION DE LA GÉOMÉTRIE ET DE LA NUANCE DE COUPE

You can verify the correct choice of chip breaker or grade in the section dedicated to the description of geometry or grades – Tables 3 and 4.

Vous pouvez vérifier le choix correct de la géométrie et de la nuance dans la partie technique de tournage présentant les descriptions des géométries ou des nuances – Tables 3 et 4.

Se puede verificar la correcta elección de rompevirutas o calidad en el capítulo dedicado a la descripción de geometrías o calidades - Tablas 3 y 4

Picture / Imagen / Image 7

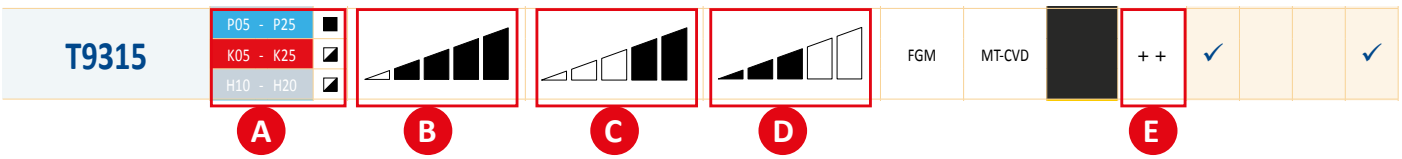


Verification result:
Chip breaker FM is primarily recommended for machining of, among others, common steels **(A)** and its geometry is suitable for machining, among others, on medium speeds with slightly worse cutting conditions and fluctuating depth of cut **(B)**. The above corresponds to the assignment – workpiece with skin. In addition, we have obtained the information about the main cutting edge **(C)**, the depth/ feed areas where the given geometry does the forming **(D)**, the maximum feed range **(E)**, the maximum range for depth of cut **(F)** and the insert shapes where this chip breaker can be found **(G)**.

Resultado de la verificación:
El rompevirutas FM es la primera recomendación para el mecanizado de, entre otros, aceros normales **(A)** y su geometría es adecuada para mecanizar, entre otros, a velocidades medias en condiciones ligeramente desfavorables y una profundidad de corte con fluctuaciones **(B)**. Esto corresponde a la pieza. Adicionalmente, hemos obtenido la información sobre el filo de corte principal **(C)**, el área de aplicación de profundidad y avance en el que esta geometría conforma la viruta **(D)**, el avance máximo **(E)**, la profundidad de corte máxima **(F)** y las formas de plaquita en las que este rompevirutas está disponible **(G)**

Vérification du résultat:
La géométrie (brise-copeaux) FM est principalement recommandée, entre autre, pour l'usinage de l'acier **(A)** et sa géométrie convient pour usiner, entre autre, avec une avance moyenne dans des conditions de travail légèrement défavorables et avec des profondeurs de coupe variables **(B)**. Ce qui précède correspond à l'état de la pièce - pièce avec croûte. En complément, nous vous donnons l'information du profil de l'arête de coupe principale **(C)**, Les graphes profondeur / avance donnent les valeurs pour lesquelles la géométrie fractionne le copeau **(D)**, la plage d'avances **(E)**, la plage de profondeurs de coupe **(F)** et les types de plaquettes disponibles avec cette géométrie.

Picture / Imagen / Image 8



Verification result:
Grade T9315 is recommended for machining, among others, common steels **(A)**, for the full range of feeds with the exception of the smallest ones **(B)**, i.e. smaller than 0.15, and further for the band of high and very high cutting speeds **(C)** and for stable to worse cutting conditions **(D)**. These values comply with the conditions of our example. The resulting productivity of the operation can be further increased by using cutting fluid, which in this case will have a positive effect on the durability of the edge **(E)**.

Resultado de la verificación:
La calidad T9315 esta recomendada para mecanizar, entre otros, aceros normales **(A)**, para toda la gama de avances exceptuando los más bajos **(B)**, es decir, menores de 0,15, además para la gama de velocidades de corte altas y muy altas **(C)** y para condiciones de corte estables a ligeramente desfavorables **(D)**. Estos valores cumplen con las condiciones de nuestro ejemplo. La productividad resultante de la operación se puede incrementar mediante el uso de refrigerante, que en este caso tiene un efecto positivo en la duración del filo de corte **(E)**.

Vérification du résultat:
La nuance T9315 est recommandée, entre autre, pour l'usinage de l'acier **(A)** pour une gamme étendue d'avances à l'exception des plus petites **(B)**, par exemple inférieure à 0.15, et également pour une plage de vitesses de coupe élévées à très élevées **(C)** et pour des conditions de travail favorables à plus mauvaises **(D)**. Ces valeurs sont conformes aux conditions de notre exemple. La productivité résultante de l'opération peut encore être améliorée en utilisant du fluide de coupe, lequel peut dans ce cas avoir un effet positif sur la durée de vie de l'arête **(E)**.

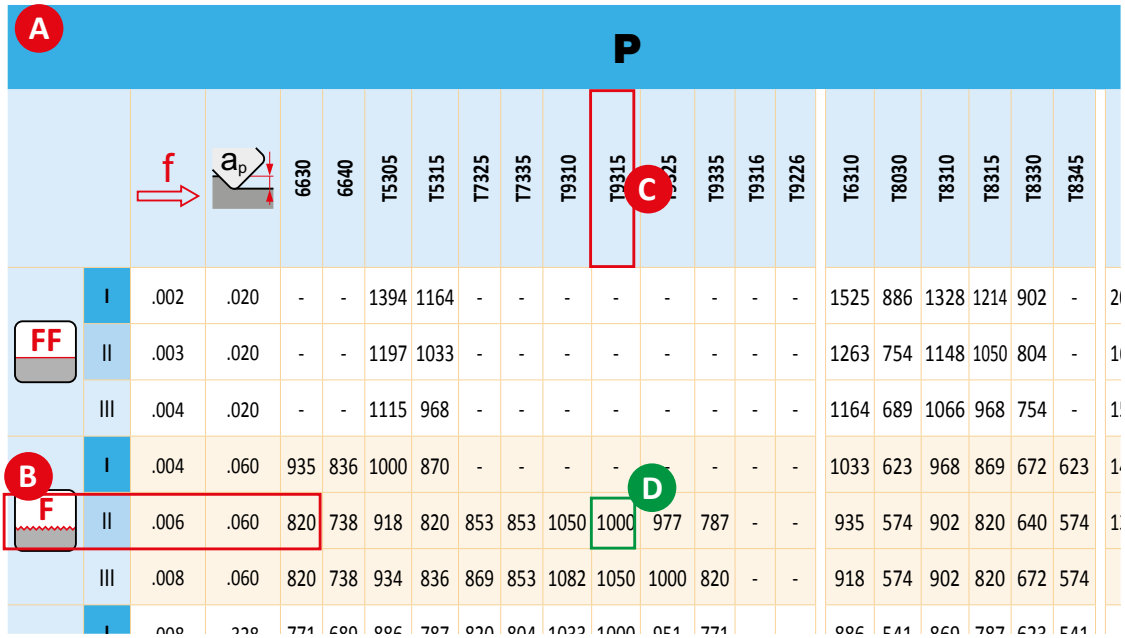
RECOMMENDATIONS FOR DETERMINING STARTING CUTTING CONDITIONS
RECOMENDACIONES PARA DETERMINAR LAS CONDICIONES DE CORTE INICIALES
RECOMMANDATIONS POUR TROUVER LES CONDITIONS DE COUPE DE DÉPART

Example: to continue with the example, we shall work with the second option – grade T9315, chip breaker FM – which offers a compromise between power and operational reliability.
3. In Tables 6b - 11b (pgs T397-T407) select starting cutting speed:

Ejemplo: para continuar con el ejemplo, trabajaremos con la segunda opción - calidad T9315, rompevirutas FM - que ofrece un compromiso entre prestaciones y fiabilidad.
3. En las Tablas 6b - 11b (pgs T397-T407) seleccionar la velocidad de corte inicial:

Exemple : pour continuer avec cet exemple, nous travaillerons avec la deuxième option – nuance T9315, brise-copeaux FM – qui offrent un compromis entre la performance et la fiabilité de fonctionnement.
3. Dans les Tables 6b - 11b (pgs T397-T407), sélectionner la vitesse de coupe de départ:

Picture / Imagen / Image 9



Example – legend: / Ejemplo - leyenda: / Exemple - Légende:

A	Find blue table (steel – P) - Table 6b Encontrar la tabla azul (acero - P) - Tabla 6b Trouver le tableau bleu (acier – P) - Table 6b
B	Find operation type (operation F, f = .006 in/rev, a_p - closest value – .059 in) Buscar el tipo de operación (operación F, f = .006 in/rev, a_p - valor más cercano - .059 in) Trouver le type d'opération (opération F, f = .006 in/tour, a_p - valeur la plus proche – .059 in)
C	Find the chosen material (T9315) Buscar la calidad elegida (T9315) Trouver la nuance choisie (T9315)
D	Result = starting cutting speed 1000 SFM Resultado = velocidad de corte inicial 1000 SFM Résultat = vitesse de coupe de départ 1000 SFM

The initial cutting speeds are set for 15 minutes (45 minutes for heavy roughing) without cooling. These speeds are listed for threading, parting and grooving inserts with the use of cutting fluid.

La velocidad de corte inicial se da para 15 minutos (45 minutos para desbaste pesado) sin refrigerante. Estas velocidades estan indicadas para plaquitas de roscado, tronzado y ranurado con uso de refrigerante.

Les vitesses de coupe initiales sont données pour 15 minutes (45 minutes pour l'ébauche lourde) sans arrosage. Ces vitesses sont données pour le filetage, les plaquettes pour tronçonnage et gorges avec l'utilisation de fluide de coupe.

4. Tables 6b - 11b, see the previous step, are supplemented with correction coefficients for converting the cutting speeds for turning to take into account the condition of the machine, the tool durability required, the material and the hardness of the workpiece. Therefore, where necessary, use these correction coefficients to calculate the final starting speed.
Example: specify with regard to the blank – sandblasted forging with crust, medium carbon steel with hardness 240 HB – and the working conditions – required durability of insert 20 minutes and poor condition of the machine.

4. Les tables 6b - 11b (voir étape précédente) sont complétées par des coefficients correcteurs pour convertir les vitesses de coupe de tournage en prenant en compte la condition de la machine, la durabilité de l'outil demandée, la matière et la dureté de la pièce. Cependant, si nécessaire, utiliser ces facteurs de correction pour calculer la vitessse de coupe finale.
Exemple : spécifier l'état brut de la pièce – avec croûte de forge ou de fonderie, acier à moyenne teneur en carbone d'une dureté de 240 HB – et les conditions de travail – durabilité souhaitée de la plaquette 20 minutes et mauvaises conditions machine.

4. Tablas 6b - 11b, ver paso previo, estan complementadas con coeficientes de corrección para modificar las velocidades de corte teniendo en cuenta las condiciones de la máquina, la durabilidad requerida, el material de la pieza y su dureza. Por tanto, si es necesario, utilizar estos coeficientes de corrección para calcular la velocidad de corte inicial definitiva.
Ejemplo: especificar en función de la pieza - forja chorreada con arena con cascarilla, acero de medio contenido en carbono con una dureza de 240 HB - y las condiciones de trabajo - una duración del filo de 20 minutos y una máquina en malas condiciones.

Picture / Imagen 10

A CORRECTION v_c

	Subgroup	P	P2 (A1)	P3	P4
	Hardness	k_{vHB} - P1	kv_{HB} - P2	kv_{HB} - P3	kv_{HB} - P4
k_{vHB}	120	**1.53**	1.18	.94	.71
	140	**1.46**	1.12	.90	.67
	160	**1.37**	1.05	.84	.63
	180	**1.30**	**1.00**	.80	.60
	200	**1.24**		.76	.57
	220	**1.17**		**.72**	.54
	240 (A2)	**1.12**	**.86** (A3)	**.69**	.52
	260	**1.07**	**.82**	**.66**	**.49**
	280	1.04	**.80**	**.64**	**.48**
	300	1.00	**.77**	**.62**	**.46**
	320	.96	.74	**.59**	**.44**
	340	.92	.71	**.57**	**.43**
	360	.88	.68	.54	**.41**
	375	.85	.65	.52	**.39**
B1		k_{vT}		k_{vT}	
$k_{vT\ (GM)}$	10		30	.84	
B2	15	B3	45	.76	
	20	0,93	60	.71	
		k_{vT}		k_{vT}	
$k_{vT\ (HM)}$	30	1.10 (C1)	60	(C2)	
	45	1.00			
k_{vx}	Skin of forging and casting			.70 - .80	
	Internal turning			.75 - .85	
	Interrupted cut			.80 - .90	
	Stable machine conditio (C3)			(C4) .20	
	Unstable machine conditions			.85 - .95	
k_{vi}	Insert shape			k_{vD}	
	S.... C.... W....			1.00	
	T.... (D1)			(D2)	
	V.... L... (parting and grooving)			.80	
	R.... L... (heavy roughing)			1.10	

Example – legend:

A	Find blue table (correction for steels – P) - Table 6b Encontrar la tabla azul (correcciones para acero - P) - Tabla 6b
A1	Find subgroup P2 (steels with medium carbon content) Buscar subgrupo P2 (aceros de medio contenido en carbono)
A2	Find required hardness (240 HB) Buscar la dureza (240 HB)
A3	Result = correction coefficient for machined material of required hardness (0.86 k_{vHB}) Resultado = coeficiente de corrección para mecanizar un material con la dureza requerida (0.86 k_{vHB})
B1	Find durability table for general machining (GM) Buscar la tabla de durabilidad para mecanizado general (GM)
B2	Find required durability (20 min) Buscar la duración requerida (20 min)
B3	Result = correction coefficient for required durability (0.93 k_{vT} (GM)) Resultado = coeficiente de corrección para la dureza requerida (0.93 k_{vT} (GM))
C1	Find correction for skin of the forging Buscar la corrección para corteza de forja
C2	Result $k_{vx}1$ = 0.8 (choose the higher value from the range offered, since we are dealing with sandblasted forgings with smoother surface) Resultado $k_{vx}1$ = 0.8 (elegir el valor más alto de la gama indicada ya que estamos trabajando con forja chorreada con arena y con cascarilla
C3	Find correction for machine condition (poor) Buscar la correción para el estado de la máquina (malo)
C4	Result $k_{vx}2$ = 0.85 (choose the lower from the range offered) Resultado $k_{vx}2$ = 0.85 (elegir el valor más pequeño de la gama indicada)
D1	Find correction for insert shape (C..) Buscar la corrección para la forma de la plaquita (C..)
D2	Result k_{vi} = 1.00 Resultado k_{vi} = 1.00

RECOMMENDATIONS FOR DETERMINING STARTING CUTTING CONDITIONS
RECOMENDACIONES PARA DETERMINAR LAS CONDICIONES DE CORTE INICIALES
RECOMMANDATIONS POUR TROUVER LES CONDITIONS DE COUPE DE DÉPART

Image 10

A **CORRECTION v_c**

Subgroup	P	P2	P3	P4
Hardness	k_{vHB} - P1	kv_{HB} - P2	kv_{HB} - P3	kv_{HB} - P4
120	**1.53**	1.18	.94	.71
140	**1.46**	1.12	.90	.67
160	**1.37**	1.05	.84	.63
180	**1.30**	**1.00**	.80	.60
200	**1.24**	**.96**	.76	.57
220	**1.17**	**.90**	**.72**	.54
240	**1.12**	**.86**	**.69**	.52
260	**1.07**	**.82**	**.66**	**.49**
280	1.04	**.80**	**.64**	**.48**
300	1.00	**.77**	**.62**	**.46**
320	.96	.74	**.59**	**.44**
340	.92	.71	**.57**	**.43**
360	.88	.68	.54	**.41**
375	.85	.65	.52	**.39**

A1 **A2** **A3**

B1 k_{vT} (GM)

	k_{vT}		k_{vT}
10		30	.84
15		45	.76
20	0,93	60	.71

B2 **B3**

k_{vT} (HM)

	k_{vT}		k_{vT}
30	1.10	60	
45	1.00		

C1 **C2**

k_{vx}

Skin of forging and casting	.70 - .80
Internal turning	.75 - .85
Interrupted cut	.80 - .90
Stable machine conditi	
Unstable machine conditions	.85 - .95

C3 **C4**

k_{vi}

Insert shape	k_{vi}
S..., C..., W...	1.00
T...	
V..., L... (parting and grooving)	
R..., L... (heavy roughing)	1.10

D1 **D2**

Example – legend:

A	Trouver le tableau bleu (correction pour les aciers – P) - Table 6b
A1	Trouver le sous-groupe P2 (aciers à moyenne teneur en carbone)
A2	Trouver la dureté requise (240 HB)
A3	Résultat = coefficient correcteur pour la matière à usiner avec la dureté requise (0.86 k_{vHB})
B1	Trouver la table de durabilité pour l'usinage général (GM)
B2	Trouver la durabilité souhaitée (20 min)
B3	Résultat = coefficient correcteur pour la durabilité souhaitée 0.93 k_{vT} (GM)
C1	Trouver la correction pour croûte de forge ou de fonderie
C2	Résultat $k_{vx}1$ = 0.8 (choisir la valeur la plus élevée dans la plage, puisque l'état du brut de la pièce comprend de la croûte de forge ou de fonderie)
C3	Trouver la correction pour les conditions de la machine (mauvaises)
C4	Résultat $k_{vx}2$ = 0.85 (choisir la plus basse de la plage)
D1	Trouver la correction pour la forme de la plaquette (C..)
D2	Résultat k_{vi} = 1.00

$$v_c = v_{15} \cdot k_{vx} \cdot k_{vT} \cdot k_{vHB} \cdot (k_{vN})$$

$$v_c = 305 \times 0.86 \times 0.93 \times 0.80 \times 0.85 \times 1.00 = 166$$

Cutting speed determined in this way is the initial (default) value defining the basic level of cutting speed for a given operation.
The variance in machinability of the machined material, above all, often causes the need to adjust the cutting speed to a certain extent in case we need to adhere relatively precisely to the economical durability of the edge.

La velocidad de corte determinada de esta forma es el valor inicial y define el nivel básico de velocidad de corte para una operación determinada.
La variación en la maquinabilidad del material a mecanizar, en general, hace necesario ajustar la velocidad de corte en cierta medida si tenemos que determinar de manera precisa la durabilidad económica del filo.

La valeur de la vitesse de coupe déterminée de cette façon est une valeur initiale (par défaut) représentant une vitesse de base pour une opération donnée.
C'est avant-tout la variation d'usinabilité de la matière usinée qui nécessite d'avoir à ajuster la vitesse de coupe dans le cas où l'on recherche un peu plus précisémment une durabilité économique de l'arête.

Table 6a
Tabla 6a
Tableau 6a

CHOICE OF INSERT
ELECCIÓN DE PLAQUITA
CHOIX DE LA PLAQUETTE

P

Cutting inserts type according to ISO		FF		F		M		R		HR		P+G		T
Tipo de plaquita ISO		f	.002 - .004	f	.004 - .008	f	.008 - .016	f	.016 - .040	f	> .040	f	.002 - .012	-
Tipo de Pastilha ISO		a_p	.020 - .040	a_p	.040 - .080	a_p	.080 - .160	a_p	.160 - .400	a_p	> .400		-	-
Type de plaquettes de coupe définies par la norme ISO		●	✖	●	✖	●	✖	●	✖	●	✖	▱ ▱	▱ ▱	▥
..A ..M ..G ..U ..N	CNMA, CNMM, CNMG, DNMA, DNMM, DNMG, DNMU, SNMA, SNMM, SNMG, SNMX, TNMA, TNMM, TNMG, VNMU, RNMA, RNMM, RNMG, WNMA, WNMM, WNMG	I	T8315	I	T8315	I	TT310	I	T8315	I	T9315	I	T9325	I	T9315	I	T9315	I	T9316 (T9325)	I	T9226 (T9325)	I	-	I	-	I	-
			FF		FF		FM		FM(SF)		W-M		M (W-MR)		RM (W-M)		R (W-MR)		NR2 (OR)		SR(HR2)		-		-		-
		II	T6310	II	T8330	II	T9315	II	T8330	II	T9315	II	T9325	II	T9325	II	T9325	II	T9335	II	T9335	II	-	II	-	II	-
			SF		NF		FM		FM(SF)		FM(SM)		FM(SM)		RM (W-M)		R (W-MR)		NR2 (OR)		SR(HR2)		-		-		-
		III	T8330	III	T8330	III	T9315	III	T9325	III	T9325	III	T8330	III	T9325	III	T8330	III	T8330	III	T8345	III	-	III	-	III	-
			SF		FM		W-F		W-F		NM(SM)		NM(SM)		OR (NR2)		NR2 (OR)		NR2 (OR)		SR(HR2)		-		-		-
..X	KNUX, LNUX LNMX	I	-	I	-	I	T9325	I	T9335	I	6640	I	6640	I	6640	I	-	I	T9310	I	T9315 (T9325)	I	-	I	-	I	-
			-		-		72		72		73		73		73		-		-		-		-		-		-
		II	-	II	-	II	-	II	-	II	T9325	II	T9335	II	6640	II	-	II	T9315	II	T9325 (T9335)	II	-	II	-	II	-
			-		-		-		-		72		72		74		-		-		-		-		-		-
..W ..T	CCMW, CCMT, SCMW, SCMT, DCMW, DCMT, TCMW, TCMT, VCMW, VCMT, WCMW, WCMT, RCMW, RCMT, RCMX	I	TT310	I	T8315	I	TT310	I	T8315	I	T9315	I	T9315	I	-	I	-	I	T9315	I	T9335	I	-	I	-	I	-
			UR		FF(NF2)		UR		FF(NF2)		RM		RM		-		-		OR		OR		-		-		-
		II	TT010	II	T8330	II	T9315	II	T9325	II	T9315	II	T9325	II	-	II	-	II	T9325	II	T9335	II	-	II	-	II	-
			FF2		FF(FF2)		FM		FM(FM2)		RM		RM		-		-		SR		DR4		-		-		-
		III	T8315	III	-	III	T8315	III	T8330	III	T9325	III	T8330	III	-	III	-	III	T9316	III	T9335	III	-	III	-	III	-
			FF(NF2)		-		UR		FM		RM(RM3)		RM(RM3)		-		-		RM1		SR		-		-		-
..R ..N	SPMR, SPGR, SPUN, SPGN, TPMR, TPGR, TPUN, TPGN	I	-	I	-	I	T9325	I	T9335	I	T9325	I	T9335	I	-	I	-	I	-	I	-	I	-	I	-	I	-
			-		-		46		46		46		46		-		-		-		-		-		-		-
		II	-	II	-	II	T9325	II	T9335	II	T9325	II	T9335	II	-	II	-	II	-	II	-	II	-	II	-	II	-
			-		-		47		47		47		47		-		-		-		-		-		-		-
		III	-	III	-	III	T9325	III	T9335	III	T9325	III	T9335	III	-	III	-	III	-	III	-	III	-	III	-	III	-
			-		-		48		48		48		48		-		-		-		-		-		-		-
..X	LFMX, LFUX, LCMF(R), TN11 ZZ, TN16 ZZ, TN22 ZZ, TN11 R, TN16 R, TN22 R	I	T9325	I	T8330	I	T8330	I	T8330	I	-	I	-	I	-	I	-	I	-	I	-	I	T9325	I	T8330	I	-
			-		-		-		-		-		-		-		-		-		-						-
		II	T8330	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	T8330 (6630)	II	T9325 (6640)	II	-
			-		-		-		-		-		-		-		-		-		-						-
	TN11.., TN16.., TN 22	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	T8030

PRAMET

P

		f	a_p	6630	6640	T5305	T5315	T7325	T7335	T9310	T9315	T9325	T9335	T9316	T9226	T6310	T8030	T8310	T8315	T8330	T8430	T8345	TT010	TT310	
FF	I	.002	.020	-	-	1394	1164	-	-	-	-	-	-	-	-	1525	886	1328	1214	902	1230	-	2000	1509	V_{15} [sfm]
	II	.003	.020	-	-	1197	1033	-	-	-	-	-	-	-	-	1263	754	1148	1050	804	1017	-	1689	1296	
	III	.004	.020	-	-	1115	968	-	-	-	-	-	-	-	-	1164	689	1066	968	754	935	-	1574	1214	
F	I	.004	.060	935	836	1000	870	-	-	-	-	-	-	-	-	1033	623	968	869	672	837	623	1492	1082	
	II	.006	.060	820	738	918	820	853	853	1050	1000	977	787	-	-	935	574	902	820	640	771	574	1361	1000	
	III	.008	.060	820	738	934	836	869	853	1082	1050	1000	820	-	-	918	574	902	820	672	738	574	-	-	
M	I	.008	.328	771	689	886	787	820	804	1033	1000	951	771	-	-	886	541	869	787	623	705	541	-	-	
	II	.012	.328	640	574	771	705	722	689	918	918	869	705	-	-	738	476	754	689	574	607	476	-	-	
	III	.016	.328	607	541	738	689	705	640	902	918	853	689	-	-	705	459	738	672	544	574	459	-	-	
R	I	.016	.200	525	476	656	607	623	574	804	804	754	607	787	590	623	394	656	590	492	492	394	-	-	
	II	.024	.200	443	394	574	541	541	492	705	754	689	558	738	508	525	344	574	525	443	427	344	-	-	
	III	.031	.200	394	361	525	492	508	426	656	705	640	508	705	476	459	312	525	476	410	377	312	-	-	
HR	I	.031	.500	279	361	295	344	377	328	410	508	476	361	525	328	-	-	-	-	295	230	197	-	-	V_{45} [sfm]
	II	.040	.500	246	230	262	328	361	295	394	492	459	344	508	312	-	-	-	-	279	197	180	-	-	
	III	.050	.500	230	197	246	295	328	262	361	476	426	312	476	295	-	-	-	-	262	180	164	-	-	
		.004	-	-	-	-	-	-	-	-	-	771	-	-	-	-	-	-	-	525	-	-	-	-	V_{15} [sfm]
		.006	-	-	-	-	-	-	-	-	-	754	-	-	-	-	-	-	-	492	-	-	-	-	
		.008	-	-	-	-	-	-	-	-	-	705	-	-	-	-	-	-	-	459	-	-	-	-	
		.012	-	-	-	-	-	-	-	-	-	640	-	-	-	-	-	-	-	426	-	-	-	-	
		.004	-	-	-	-	-	-	-	-	-	623	-	-	-	-	-	-	-	410	-	-	-	-	
		.006	-	-	-	-	-	-	-	-	-	590	-	-	-	-	-	-	-	394	-	-	-	-	
		.008	-	-	-	-	-	-	-	-	-	558	-	-	-	-	-	-	-	361	-	-	-	-	
		.012	-	-	-	-	-	-	-	-	-	508	-	-	-	-	-	-	-	344	-	-	-	-	
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	459	-	-	-	-	
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	443	-	-	-	-	
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	394	-	-	-	-	

Figures in blue are valid for machining with coolant. / Las cifras en azul son válidas para mecanizado con refrigerante.
Valeurs en bleu pour usinage avec arrosage.

CORRECTION / CORRECCIÓN / CORRECTION v_c

	Subgroup / Subgrupo Sous-groupe	P1	P2	P3	P4
k_{vHB}	Hardness / Dureza Dureté	k_{vHB} - P1	kv_{HB} - P2	kv_{HB} - P3	kv_{HB} - P4
	120	**1.53**	1.18	.94	.71
	140	**1.46**	1.12	.90	.67
	160	**1.37**	1.05	.84	.63
	180	**1.30**	**1.00**	.80	.60
	200	**1.24**	**.95**	.76	.57
	220	**1.17**	**.90**	**.72**	.54
	240	**1.12**	**.86**	**.69**	.52
	260	**1.07**	**.82**	**.66**	**.49**
	280	1.04	**.80**	**.64**	**.48**
	300	.00	**.77**	**.62**	**.46**
	320	.96	.74	**.59**	**.44**
	340	.92	.71	**.57**	**.43**
	360	.88	.68	.54	**.41**
	375	.85	.65	.52	**.39**

$k_{vT\ (GM)}$				
	⏲	k_{vT}	⏲	k_{vT}
	10	1.10	30	.84
	15	1.00	45	.76
	20	.93	60	.71

$k_{vT\ (HM)}$				
	⏲	k_{vT}	⏲	k_{vT}
	30	1.10	60	.93
	45	1.00		

k_{vx}		
	Skin of forging and casting / Revestimiento de piezas forjadas y fundidas Croûte de forge et de fonderie	.70 - .80
	Internal turning / Torneado interno Tournage intérieur	.75 - .85
	Interrupted cut / Corte interrumpido Coupe interrompue	.80 - .90
	Stable machine conditions / Condiciones de máquina estables Bonnes conditions machine	1.05 - 1.20
	Unstable machine conditions / Condiciones de máquina inestables Mauvaises conditions machine	.85 - .95

k_{vi}	Insert shape / Forma de la plaquita / Forme de plaquette	k_{VBD}
	S..., C..., W...	1.00
	T..., D..., K...	.95
	V..., L... (parting and grooving / tronzado y ranurado) (tronçonnage et gorges)	.88
	R..., L... (heavy roughing / desbaste pesado) (ébauche lourde)	1.10

Table 6b
Tabla 6b
Tableau 6b

CHOICE OF INSERT
ELECCIÓN DE PLAQUITA
CHOIX DE LA PLAQUETTE

PRAMET

CHOICE OF INITIAL CUTTING CONDITIONS
SELECCIÓN DE CONDICIONES DE CORTE INICIALES
CHOIX DES CONDITIONS DE COUPE INTIALES

M

Cutting inserts type according to ISO		FF				F				M				R				HR				P+G						T	
Tipo de plaquita ISO		f	.002 - .004			f	.004 - .008			f	.008 - .016			f	.016 - .040			f	> .040			f	.002 - .012						
Tipo de Pastilha ISO																													
Type de plaquettes de coupe définies par la norme ISO		a_p	.020 - .040			a_p	.040 - .080			a_p	.080 - .160			a_p	.160 - .400			a_p	> .400			a_p								
		●		✖		●		✖		●		✖		●		✖		●		✖										
..A ..M ..G ..U ..N	CNMA, CNMM, CNMG, DNMA, DNMM, DNMG, DNMU, SNMA, SNMM, SNMG, SNMX, TNMA, TNMM, TNMG, VNMU, RNMA, RNMM, RNMG, WNMA, WNMM, WNMG	I	T8315	I	T8315	I	TT310	I	T8315	I	T7325	I	T7335	I	T9325	I	T8315	I	T9226 (T9325)	I	T9335	I	-	I	-	I	-		
			FF		FF		FM		NF		SM (W-MR)		SM		RM (W-MR)		RM		NR2 (OR)		NR2 (OR)		-		-		-		
		II	T6310	II	T8330	II	T6310	II	T8330	II	T9325	II	T7335	II	T7335	II	T7335	II	T7335	II	T9335	II	-	II	-	II	-		
			SF		SF		SF		SM		NM (SI)		FM		NR		R		NR2 (OR)		SR(HR2)		-		-		-		
		III	-	III	-	III	T9315	III	T8330	III	T8330	III	T8330	III	T7335	III	T8330	III	T8330	III	T8345	III	-	III	-	III	-		
			-		-		NF		FM		NM (SI)		FM		RM		NR2 (OR)		NR2 (OR)		SR(HR2)		-		-		-		
..X	KNUX, LNUX LNMX	I	-	I	-	I	T9325	I	T9335	I	6640	I	6640	I	6640	I	-	I	T9310	I	T9315 (T9325)	I	-	I	-	I	-		
			-		-		72		72		73		73		73		-		-		-		-		-		-		
		II	-	II	-	II	-	II	-	II	T9325	II	T9335	II	6640	II	-	II	T9315	II	T9325 (T9335)	II	-	II	-	II	-		
			-		-		-		-		72		72		74		-						-		-		-		
..W ..T	CCMW, CCMT, SCMW, SCMT, DCMW, DCMT, TCMW, TCMT, VCMW, VCMT, WCMW, WCMT, RCMW, RCMT, RCMX	I	TT310	I	T8315	I	TT310	I	T8315	I	T9315	I	T9315	I	-	I	-	I	T9315	I	T9325	I	-	I	-	I	-		
			UR		FF(NF2)		UR		FF(NF2)		UR(RM)		RM		-		-		OR		OR		-		-		-		
		II	TT010	II	T8330	II	TT010	II	T9325	II	T9315	II	T9325	II	-	II	-	II	T9325	II	T9335	II	-	II	-	II	-		
			FF2		FF(FF2)		FF2		FM(FM2)		RM		RM		-		-		SR		DR4		-		-		-		
		III	T6310	III	-	III	T9315	III	T8330	III	T9325	III	T8330	III	-	III	-	III	T9316	III	T9335	III	-	III	-	III	-		
			Al(SF3)		-		FM(FM2)		FM		RM(RM3)		RM(RM3)		-		-		RM1		SR		-		-		-		
..R ..N	SPMR, SPGR, SPUN, SPGN, TPMR, TPGR, TPUN, TPGN	I	-	I	-	I	T9325	I	T9335	I	T9325	I	T9335	I	-	I	-	I	-	I	-	I	-	I	-	I	-		
			-		-		46		46		46		46		-		-		-		-		-		-		-		
		II	-	II	-	II	T9325	II	T9335	II	T9325	II	T9335	II	-	II	-	II	-	II	-	II	-	II	-	II	-		
			-		-		47		47		47		47		-		-		-		-		-		-		-		
		III	-	III	-	III	T9325	III	T9335	III	T9325	III	T9335	III	-	III	-	III	-	III	-	III	-	III	-	III	-		
			-		-		48		48		48		48		-		-		-		-		-		-		-		
..X	LFMX, LFUX, LCMF(R), TN11 ZZ, TN16 ZZ, TN22 ZZ, TN11 R, TN16 R, TN22 R	I	T9325	I	T8330	I	T9325	I	T8330	I	-	I	-	I	-	I	-	I	-	I	-	I	T9325	I	T8330	I	-		
			-		-		-		-		-		-		-		-		-		-		-		-		-		
		II	T8330	II	-	II	T8330	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	T9325 (6630)	II	T9325 (6640)	II	-		
			-		-		-		-		-		-		-		-		-		-		-		-		-		
	TN11.., TN16.., TN 22	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	T8030		

M

		f	a_p	6630	6640	T5315	T7325	T7335	T9325	T9335	T9316	T9226	T6310	T8030	T8310	T8315	T8330	T8430	T8345	H07	HF7	TT010	TT310	
FF	I	.002	.020	-	-	705	-	-	-	-	-	-	918	525	787	722	541	673	-	574	574	1197	902	V_{15} [sfm]
	II	.003	.020	-	-	607	-	-	-	-	-	-	754	443	689	623	476	558	-	476	476	1017	771	
	III	.004	.020	-	-	574	-	-	-	-	-	-	689	410	640	574	443	509	-	443	443	935	722	
F	I	.004	.060	558	492	508	-	-	-	-	-	-	623	377	574	525	410	443	377	394	394	886	640	
	II	.006	.060	492	443	492	574	508	574	476	-	-	558	344	541	492	377	410	344	361	361	820	607	
	III	.008	.060	492	443	492	590	508	590	492	-	-	558	344	541	492	394	410	344	361	361	-	-	
M	I	.008	.328	459	410	476	574	476	574	459	-	-	525	328	508	476	377	377	328	328	328	-	-	
	II	.012	.328	377	344	426	508	410	508	410	-	-	443	279	459	410	344	328	279	279	279	-	-	
	III	.016	.328	361	328	410	508	377	508	410	-	-	410	262	443	394	328	312	262	262	262	-	-	
R	I	.016	.200	312	279	361	443	344	443	361	476	344	361	230	394	344	295	262	230	230	230	-	-	
	II	.024	.200	262	230	328	410	295	410	328	443	312	312	197	344	312	262	230	197	197	197	-	-	
	III	.031	.200	230	197	295	377	262	377	312	427	279	279	180	312	279	246	197	180	180	180	-	-	
HR	I	.031	.500	164	148	197	279	197	279	197	312	197	-	-	-	-	164	115	115	-	-	-	-	V_{45} [sfm]
	II	.040	.500	148	131	197	262	180	262	197	295	180	-	-	-	-	164	98	115	-	-	-	-	
	III	.050	.500	131	115	180	246	164	246	180	279	164	-	-	-	-	148	98	98	-	-	-	-	
		.004	-	-	-	-	459	-	459	-	-	-	-	-	-	-	312	-	-	-	-	-	-	V_{15} [sfm]
		.006	-	-	-	-	443	-	443	-	-	-	-	-	-	-	295	-	-	-	-	-	-	
		.008	-	-	-	-	410	-	410	-	-	-	-	-	-	-	279	-	-	-	-	-	-	
		.012	-	-	-	-	377	-	377	-	-	-	-	-	-	-	246	-	-	-	-	-	-	
		.004	-	-	-	-	361	-	361	-	-	-	-	-	-	-	246	-	-	-	-	-	-	
		.006	-	-	-	-	36	-	361	-	-	-	-	-	-	-	230	-	-	-	-	-	-	
		.008	-	-	-	-	328	-	328	-	-	-	-	-	-	-	197	-	-	-	-	-	-	
		.012	-	-	-	-	312	-	312	-	-	-	-	-	-	-	197	-	-	-	-	-	-	
				-	-	-	-	-	-	-	-	-	-	-	-	-	262	-	-	-	-	-	-	
				-	-	-	-	-	-	-	-	-	-	-	-	-	262	-	-	-	-	-	-	
				-	-	-	-	-	-	-	-	-	-	-	-	-	230	-	-	-	-	-	-	

Figures in blue are valid for machining with coolant. / Las cifras en azul son válidas para mecanizado con refrigerante.
Valeurs en bleu pour usinage avec arrosage.

CORRECTION / CORRECCIÓN / CORRECTION v_c

	Subgroup / Subgrupo Sous-groupe	M1	M2	M3	M4
k_{vHB}	Hardness / Dureza Dureté	k_{vHB} - M1	kv_{HB} - M2	kv_{HB} - M3	kv_{HB} - M4
	120	**1.35**	1.31	1.24	1.15
	140	**1.28**	**1.24**	1.18	1.10
	160	**1.22**	**1.18**	**1.12**	1.04
	180	**1.14**	**1.11**	**1.05**	.98
	200	**1.09**	**1.06**	**1.00**	.93
	220	**1.03**	**1.00**	**.95**	.88
	240	.98	**.95**	**.90**	**.84**
	260	.93	**.91**	**.86**	**.80**
	280	.89	**.87**	**.82**	**.76**
	300	.87	**.84**	**.80**	**.74**
	320	.84	**.81**	.77	**.72**
	340	.80	.78	.74	**.69**
	360	.77	.75	.71	**.66**
	375	.74	.72	.68	**.63**

$k_{vT\ (GM)}$		k_{vT}		k_{vT}
	10	1.10	30	.84
	15	1.00	45	.76
	20	.93	60	.71

$k_{vT\ (HM)}$		k_{vT}		k_{vT}
	30	1.10	60	.93
	45	1.00		

k_{vx}	Skin of forging and casting / Revestimiento de piezas forjadas y fundidas Croûte de forge et de fonderie	.70 - .80
	Internal turning / Torneado interno Tournage intérieur	.75 - .85
	Interrupted cut / Corte interrumpido Coupe interrompue	.80 - .90
	Stable machine conditions / Condiciones de máquina estables Bonnes conditions machine	1.05 - 1.20
	Unstable machine conditions / Condiciones de máquina inestables Mauvaises conditions machine	.85 - .95

k_{vi}	Insert shape / Forma de la plaquita / Forme de plaquette	k_{VBD}
	S..., C..., W...	1.00
	T..., D..., K...	.95
	V..., L... (parting and grooving / tronzado y ranurado) (tronçonnage et gorges)	.88
	R..., L... (heavy roughing / desbaste pesado) (ébauche lourde)	1.10

Table 7b
Tabla 7b
Tableau 7b

CHOICE OF INSERT
ELECCIÓN DE PLAQUITA
CHOIX DE LA PLAQUETTE

Table 8a
Tabla 8a
Tableau 8a

CHOICE OF INITIAL CUTTING CONDITIONS
SELECCIÓN DE CONDICIONES DE CORTE INICIALES
CHOIX DES CONDITIONS DE COUPE INTIALES

K

Cutting inserts type according to ISO / Tipo de plaquita ISO / Tipo de Pastilha ISO / Type de plaquettes de coupe définies par la norme ISO		FF				F				M				R				HR				P+G				T	
		f	.002 - .004			f	.004 - .008			f	.008 - .016			f	.016 - .040			f	> .040			f	.002 - .012				
		a_p	.020 - .040			a_p	.040 - .080			a_p	.080 - .160			a_p	.160 - .400			a_p	> .400			a_p					
		●		✖		●		✖		●		✖		●		✖		●		✖							
..A ..M ..G ..U ..N	CNMA, CNMM, CNMG, DNMA, DNMM, DNMG, DNMU, SNMA, SNMM, SNMG, SNMX, TNMA, TNMM, TNMG, VNMU, RNMA, RNMM, RNMG, WNMA, WNMM, WNMG	I	TC100	I	T5305	I	TC100	I	T5305	I	TC100	I	T5305	I	T5305	I	T5315	I	T9316 (T9325)	I	T9325	I	-	I	-	I	-
			-		-		-		-		-		M (W-MR)		RM		RM		OR		SR		-		-		-
		II	TB310	II	T5315	II	TB310	II	T5315	II	T5305	II	T5315	II	T5305	II	T5315	II	T9335	II	T9335	II	-	II	-	II	-
			-		-		-		-		M		M (W-M)		R (RM)		R (RM)		OR		SR(HR2)		-		-		-
		III	T5305	III	T8315	III	T5305	III	T8315	III	T5305	III	T9325	III	T9325	III	T9325	III	T8330	III	T8345	III	-	III	-	III	-
			-		FF		-		FF		R(RM)		RM (KR)		R		R (W-M)		OR		SR(HR2)		-		-		-
..X	KNUX, LNUX LNMX	I	-	I	-	I	T9325	I	T9335	I	6640	I	6640	I	6640	I	-	I	T9310	I	T9315 (T9325)	I	-	I	-	I	-
			-		-		72		72		73		73		73		-						-		-		-
		II	-	II	-	II	-	II	-	II	T9325	II	T9335	II	6640	II	-	II	T9315	II	T9325 (T9335)	II	-	II	-	II	-
			-		-						72		72		74		-						-		-		-
..W ..T	CCMW, CCMT, SCMW, SCMT, DCMW, DCMT, TCMW, TCMT, VCMW, VCMT, WCMW, WCMT, RCMW, RCMT, RCMX	I	T5305	I	T5305	I	T5305	I	T5305	I	T5305	I	T9315	I	-	I	-	I	T9325	I	T9335	I	-	I	-	I	-
			UR		-		UR		-		RM		RM		-		-		OR		OR		-		-		-
		II	T5305	II	T5315	II	T5305	II	T5315	II	T5315	II	T9325	II	-	II	-	II	T9325	II	T9335	II	-	II	-	II	-
			_		-		_		-		RM		RM		-		-		SR		SR		-		-		-
		III	T5315	III	T8315	III	T5315	III	T8315	III	T9315	III	T8330	III	-	III	-	III	T9316	III	-	III	-	III	-	III	-
			UR		FF		UR		FF(FM)		RM		RM		-		-		RM1		-		-		-		-
..R ..N	SPMR, SPGR, SPUN, SPGN, TPMR, TPGR, TPUN, TPGN	I	-	I	-	I	T9325	I	T9335	I	T9325	I	T9335	I	-	I	-	I	-	I	-	I	-	I	-	I	-
			-		-		46		46		46		46		-		-		-		-		-		-		-
		II	-	II	-	II	T9325	II	T9335	II	T9325	II	T9335	II	-	II	-	II	-	II	-	II	-	II	-	II	-
			-		-		47		47		47		47		-		-		-		-		-		-		-
		III	-	III	-	III	T9325	III	T9335	III	T9325	III	T9335	III	-	III	-	III	-	III	-	III	-	III	-	III	-
			-		-		48		48		48		48		-		-		-		-		-		-		-
..X	LFMX, LFUX, LCMF(R), TN11 ZZ, TN16 ZZ, TN22 ZZ, TN11 R, TN16 R, TN22 R	I	T9325	I	T8330	I	T9325	I	T8330	I	-	I	-	I	-	I	-	I	-	I	-	I	T9325	I	T8330	I	-
			-		-		-		-		-		-		-		-		-		-						-
		II	T8330	II	-	II	T8330	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	T9325 (6630)	II	T9325 (6640)	II	-
	TN11.., TN16.., TN 22	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	T8030

K

		f	a_p	6630	6640	T5305	T5315	T9310	T9315	T9325	T9316	T9226	T6310	T8030	T8310	T8315	T8330	T8430	T8345	HF7	H07	SN100	TC100	T8310	
FF	I	.002	.020	-	-	1771	1492	-	-	-	-	-	1460	836	1263	1148	869	1017	-	918	918	2591	2837	2083	V_{15} [sfm]
	II	.003	.020	-	-	1525	1296	-	-	-	-	-	1197	705	1099	984	754	837	-	771	771	2198	2411	1853	
	III	.004	.020	-	-	1410	1230	-	-	-	-	-	1099	656	1017	918	722	771	-	705	705	2034	2230	1755	
F	I	.004	.060	886	804	1263	199	-	-	-	-	-	984	590	918	820	640	673	590	623	623	1920	2099	1574	
	II	.006	.060	787	705	1164	1033	1000	951	918	-	-	886	541	853	771	607	640	541	574	574	1771	1935	1509	
	III	.008	.060	771	689	1181	1066	1033	1000	951	-	-	886	541	869	787	623	607	541	558	558	1771	1952	1558	
M	I	.008	.328	738	656	1115	1000	984	951	902	-	-	836	525	820	738	607	574	525	541	541	1738	1902	1476	
	II	.012	.328	607	558	984	902	869	869	820	-	-	705	459	722	656	541	492	443	459	459	1508	1640	1328	
	III	.016	.328	574	508	934	869	853	869	804	-	-	656	426	689	640	525	459	426	426	426	1394	1525	1312	
R	I	.016	.200	508	459	836	771	755	771	722	754	558	590	377	623	557	459	410	377	377	377	-	-	-	
	II	.024	.200	426	377	722	689	672	705	656	705	492	492	328	541	492	410	344	328	328	328	-	-	-	
	III	.031	.200	377	328	656	640	623	672	607	672	443	443	295	492	443	394	312	295	295	295	-	-	-	
HR	I	.031	.500	262	246	377	426	394	492	459	492	312	-	-	-	-	279	180	197	-	-	-	-	-	V_{45} [sfm]
	II	.040	.500	246	197	344	410	377	476	426	476	295	-	-	-	-	262	164	180	-	-	-	-	-	
	III	.050	.500	197	197	312	377	344	443	410	459	279	-	-	-	-	246	148	164	-	-	-	-	-	
		.004	-	-	-	-	-	-	-	738	-	-	-	-	-	-	492	-	-	-	-	-	-	-	
		.006	-	-	-	-	-	-	-	705	-	-	-	-	-	-	476	-	-	-	-	-	-	-	
		.008	-	-	-	-	-	-	-	656	-	-	-	-	-	-	449	-	-	-	-	-	-	-	
		.012	-	-	-	-	-	-	-	607	-	-	-	-	-	-	394	-	-	-	-	-	-	-	
		.004	-	-	-	-	-	-	-	590	-	-	-	-	-	-	394	-	-	-	-	-	-	-	
		.006	-	-	-	-	-	-	-	558	-	-	-	-	-	-	377	-	-	-	-	-	-	-	
		.008	-	-	-	-	-	-	-	525	-	-	-	-	-	-	344	-	-	-	-	-	-	-	
		.012	-	-	-	-	-	-	-	492	-	-	-	-	-	-	312	-	-	-	-	-	-	-	V_{15} [sfm]
				-	-	-	-	-	-	-	-	-	-	-	-	-	426	-	-	-	-	-	-	-	
				-	-	-	-	-	-	-	-	-	-	-	-	-	426	-	-	-	-	-	-	-	
				-	-	-	-	-	-	-	-	-	-	-	-	-	377	-	-	-	-	-	-	-	

Figures in blue are valid for machining with coolant. / Las cifras en azul son válidas para mecanizado con refrigerante.
Valeurs en bleu pour usinage avec arrosage.

CORRECTION / CORRECCIÓN / CORRECTION v_c

	Subgroup / Subgrupo Sous-groupe	K1	K2	K3	K4
k_{vHB}	Hardness / Dureza Dureté	k_{vHB} - K1	kv_{HB} - K2	kv_{HB} - K3	kv_{HB} - K4
	120	1.60	1.52	1.44	1.36
	140	1.45	1.38	1.31	1.23
	160	1.35	**1.28**	1.22	1.15
	180	1.25	**1.19**	**1.13**	1.06
	200	**1.10**	**1.05**	**.99**	.94
	220	**1.00**	**.95**	**.90**	.85
	240	**.90**	**.86**	**.81**	.77
	260	**.80**	.76	.72	.68
	280	**.70**	.67	.63	**.60**
	300	.65	.62	.59	**.55**
	320	.60	.57	.54	**.51**
	340	.55	.52	.50	**.47**
	360	.50	.48	.45	.43
	375	.40	.38	.36	.34

$k_{vT\ (GM)}$		k_{vT}		k_{vT}
	10	1.10	30	.84
	15	1.00	45	.76
	20	.93	60	.71

$k_{vT\ (HM)}$		k_{vT}		k_{vT}
	30	1.10	60	.93
	45	1.00		

k_{vx}		
	Skin of forging and casting / Revestimiento de piezas forjadas y fundidas Croûte de forge et de fonderie	.70 - .80
	Internal turning / Torneado interno Tournage intérieur	.75 - .85
	Interrupted cut / Corte interrumpido Coupe interrompue	.80 - .90
	Stable machine conditions / Condiciones de máquina estables Bonnes conditions machine	1.05 - 1.20
	Unstable machine conditions / Condiciones de máquina inestables Mauvaises conditions machine	.85 - .95

k_{vi}	Insert shape / Forma de la plaquita / Forme de plaquette	k_{VBD}
	S..., C..., W...	1.00
	T..., D..., K...	.95
	V..., L... (parting and grooving / tronzado y ranurado) (tronçonnage et gorges)	.88
	R..., L... (heavy roughing / desbaste pesado) (ébauche lourde)	1.10

Table 8b
Tabla 8b
Tableau 8b

CHOICE OF INSERT
ELECCIÓN DE PLAQUITA
CHOIX DE LA PLAQUETTE

Table 9a
Tabla 9a
Tableau 9a

CHOICE OF INITIAL CUTTING CONDITIONS
SELECCIÓN DE CONDICIONES DE CORTE INICIALES
CHOIX DES CONDITIONS DE COUPE INTIALES

N

Cutting inserts type according to ISO / Tipo de plaquita ISO / Tipo de Pastilha ISO / Type de plaquettes de coupe définies par la norme ISO		FF		F		M		R		HR		P+G		T
		f .002 - .004		f .004 - .008		f .008 - .016		f .016 - .040		f > .040		f .002 - .012		
		a_p .020 - .040		a_p .040 - .080		a_p .080 - .160		a_p .160 - .400		a_p > .400		a_p		
		●	✖	●	✖	●	✖	●	✖	●	✖			
..A ..M ..G ..U ..N	CNMA, CNMM, CNMG, DNMA, DNMM, DNMG, DNMU, SNMA, SNMM, SNMG, SNMX, TNMA, TNMM, TNMG, VNMU, RNMA, RNMM, RNMG, WNMA, WNMM, WNMG	I - -	I - -	I T6310 SF	I T8330 SF	I T6310 NF	I T8315 NF	I - -	I - -	I - -	I - -	I - -	I - -	I - -
		II - -	II - -	II T6310 NF	II T8330 NF	II T8315 NF	II T8330 NF	II - -	II - -	II - -	II - -	II - -	II - -	II - -
		III T8315 FF	III T8315 FF	III T8330 SI	III T8330 SI	III T8330 NM	III T8330 NM	III T8330 NM	III T8330 NR	III - -	III - -	III - -	III - -	III - -
..X	KNUX	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -
		II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -
..W ..T	CCMW, CCMT, SCMW, SCMT, DCMW, DCMT, TCMW, TCMT, VCMW, VCMT, WCMW, WCMT, RCMW, RCMT, RCMX	I PC30(PCD) -	I PC30(PCD) -	I PC30(PCD) -	I PC30(PCD) -	I PC30(PCD) -	I PC30(PCD) -	I - -	I - -	I - -	I - -	I - -	I - -	I - -
		II T0315 (HF7) AL (SF2)	II T0315 (HF7) AL (SF2)	II T6310 AL(SF3)	II T6310 AL(SF3)	II T6310 AL(SF3)	II T6310 AL(SF3)	II - -	II - -	II - -	II - -	II - -	II - -	II - -
		III H07(HF7) AL (SF2)	III H07(HF7) AL (SF2)	III H07(HF7) AL(SF3)	III H07(HF7) AL(SF3)	III H07(HF7) AL(SF3)	III H07(HF7) AL(SF3)	III - -	III - -	III - -	III - -	III - -	III - -	III - -
..R ..N	SPMR, SPGR, SPUN, SPGN, TPMR, TPGR, TPUN, TPGN	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -
		II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -
		III - -	III - -	III - -	III - -	III - -	III - -	III - -	III - -	III - -	III - -	III - -	III - -	III - -
..X	LFMX, LFUX, LCMF(R), TN11 ZZ, TN16 ZZ, TN22 ZZ, TN11 R, TN16 R, TN22 R	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I - -	I T8330	I T8330	I -
		II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II - -	II T9325 -	II T9325 -	II -
	TN11.., TN16.., TN 22	I -	I -	I -	I -	I -	I -	I -	I -	I -	I -	I -	I T8330	I T8030

		N												
		f	a_p	T0315	T6310	T8030	T8310	T8315	T8330	T8430	HF7	H07	PC30 D720	
FF	I	.002	.020	3526	3837	2214	3346	3034	2280	2805	2444	2444	5855	V_{15} [sfm]
	II	.003	.020	2804	3182	1886	2886	2624	2017	2346	2034	2034	5707	
	III	.004	.020	2690	2903	1755	2690	2444	1902	2149	2460	2460	5642	
F	I	.004	.060	2411	2608	1558	2411	2198	1706	1903	1673	1673	1630	
	II	.006	.060	2181	2345	1443	2247	2050	1624	1772	1509	1509	5346	
	III	.008	.060	2165	2329	1460	2280	2083	1673	1706	1509	1509	6084	
M	I	.008	.100	2050	2214	1378	2181	1968	1624	1608	1427	1427	5920	
	II	.012	.100	1755	1870	1197	1919	1738	1427	1378	1214	1214	5609	
	III	.016	.100	1656	1755	1148	1837	1673	1394	1296	1148	1148	5871	
R	I	.016	.200	1460	1558	1017	1640	1492	1230	1132	1017	1017	-	
	II	.024	.200	1246	1328	886	1443	1312	1115	968	869	869	-	
	III	.031	.200	1115	1181	804	1312	1197	1033	869	771	771	-	
HR	I	.031	.500	-	-	-	-	-	738	525	-	-	-	V_{45} [sfm]
	II	.040	.500	-	-	-	-	-	705	459	-	-	-	
	III	.050	.500	-	-	-	-	-	656	410	-	-	-	
		.004	-	-	-	-	-	-	1328	-	-	-	-	V_{15} [sfm]
		.006	-	-	-	-	-	-	1263	-	-	-	-	
		.008	-	-	-	-	-	-	1164	-	-	-	-	
		.012	-	-	-	-	-	-	1066	-	-	-	-	
		.004	-	-	-	-	-	-	1050	-	-	-	-	
		.006	-	-	-	-	-	-	1000	-	-	-	-	
		.008	-	-	-	-	-	-	935	-	-	-	-	
		.012	-	-	-	-	-	-	853	-	-	-	-	
				-	-	-	-	-	1148	-	-	-	-	
				-	-	-	-	-	1132	-	-	-	-	
				-	-	-	-	-	1000	-	-	-	-	

Figures in blue are valid for machining with coolant. / Las cifras en azul son válidas para mecanizado con refrigerante.
Valeurs en bleu pour usinage avec arrosage.

CORRECTION / CORRECCIÓN / CORRECTION v_c

Subgroup / Subgrupo Sous-groupe		N1	N2	N3	N4
k_{VHB}	Alloy type / Tipo di lega Type d'alliage	k_{VX}			
	Electrotechnical aluminium / Alumínio eletrolítico Aluminium électrotechnique	2.00			
	Al alloys formed, unhardened HB 60 / Aleaciones de Al formada, sin endurecer HB 60 Alliages d'Aluminium formé, état naturel HB 60	1.50			N1
	Al alloys formed, hardened HB100 / Al aleaciones formadas, dureza HB100 Alliages d'Aluminium formé, durci HB 100	**1.00**			
	Al alloys cast, unhardened HB75 / Aleaciones de Al fundido, HB75 sin endurecer Alliages d'Aluminium coulé, état naturel HB 75	.90			
	Al alloys cast, hardened HB90 /Al aleaciones de fundición, HB90 endurecido Alliages d'Aluminium coulé, durci HB 90	.65			N2
	Al alloys cast, unhardened HB 130 >12% Si Aleaciones de Al fundido, HB sin endurecer 130> 12% Si Alliages d'Aluminium coulé (S 12%), état naturel HB 130	1.0 PKD / .20			
	Highly machinable alloys (>1%Pb) / Aleaciones altamente mecanizables (> 1% de Pb) Alliages à usinabilité améliorée (Pb > 1%)	.90			
	Brass and lead bronze (<1%Pb) / Latón y bronce al plomo (<1% Pb) Laiton et bronze au plomb (Pb > 1%)	.75			N3
	Other brass HB <90 / Otro bronce HB <90 Autre laiton HB <90	.60			
	Other brass HB >90 / Otro bronce HB> 90 Autre laiton HB >90	.54			
	Bronze electrolytic Cu / Bronce Cu electrolítico Bronze électrolytique Cu	.40			N4
	Hard and very hard bronze / Bronce duro y muy difícil Bronze dur et très dur	.6 PKD / .20			

$k_{vT (GM)}$		k_{vT}		k_{vT}
	10	1,10	30	.84
	15	1,00	45	.76
	20	0,93	60	.71

k_{vx}		
	Skin of forging and casting / Revestimiento de piezas forjadas y fundidas Croûte de forge et de fonderie	.70 - .80
	Internal turning / Torneado interno Tournage intérieur	.75 - .85
	Interrupted cut / Corte interrumpido Coupe interrompue	.80 - .90
	Stable machine conditions / Condiciones de máquina estables Bonnes conditions machine	1.05 - 1.20
	Unstable machine conditions / Condiciones de máquina inestables Mauvaises conditions machine	.85 - .95

k_{vi}		
	Insert shape / Forma de la plaquita / Forme de plaquette	k_{VBD}
	S..., C..., W...	1.00
	T..., D..., K...	.95
	V..., L... (parting and grooving/ tronzado y ranurado) (tronçonnage et gorges)	.88
	R..., L... (heavy roughing / desbaste pesado) (ébauche lourde)	1.10

Table 9b
Tabla 9b
Tableau 9b

CHOICE OF INSERT
ELECCIÓN DE PLAQUITA
CHOIX DE LA PLAQUETTE

Table 10a
Tabla 10a
Tableau 10a

CHOICE OF INITIAL CUTTING CONDITIONS
SELECCIÓN DE CONDICIONES DE CORTE INICIALES
CHOIX DES CONDITIONS DE COUPE INTIALES

S

Cutting inserts type according to ISO		FF				F				M				R				HR				P+G				T	
Tipo de plaquita ISO		f	.002 - .004			f	.004 - .008			f	.008 - .016			f	.016 - .040			f	> .040			f	.002 - .012				
Tipo de Pastilha ISO																											
Type de plaquettes de coupe définies par la norme ISO		a_p	.020 - .040			a_p	.040 - .080			a_p	.080 - .160			a_p	.160 - .400			a_p	> .400			a_p						
		●		✖		●		✖		●		✖		●		✖		●		✖								
..A ..M ..G ..U ..N	CNMA, CNMM, CNMG, DNMA, DNMM, DNMG, DNMU, SNMA, SNMM, SNMG, SNMX, TNMA, TNMM, TNMG, VNMU, RNMA, RNMM, RNMG, WNMA, WNMM, WNMG	I	T8315	I	T8315	I	T8315	I	T8315	I	T9325	I	T7335	I	T9325	I	T8315	I	T9226 (T9325)	I	T9335	I	-	I	-	I	-
			FF		FF		FM		NF		SM (W-MR)		SM		RM (W-MR)		RM		NR2 (OR)		NR2 (OR)		-		-		-
		II	T6310	II	T8330	II	T6310	II	T8330	II	T7335	II	T9325	II	T7335	II	T7335	II	T7335	II	T9335	II	-	II	-	II	-
			SF		SF		SF		SM		NM (SI)		FM		NR		R		NR2 (OR)		SR(HR2)		-		-		-
		III	-	III	-	III	T9315	III	T8330	III	T8330	III	T8330	III	T7335	III	T8330	III	T8330	III	T8345	III	-	III	-	III	-
			-		-		NF		FM		NM (SI)		FM		RM		NR2 (OR)		NR2 (OR)		SR(HR2)		-		-		-
..X	KNUX	I	-	I	-	I	T9325	I	T9335	I	6640	I	6640	I	6640	I	-	I	T9310	I	T9315 (T9325)	I	-	I	-	I	-
			-		-		72		72		73		73		73		-		-		-		-		-		-
		II	-	II	-	II		II		II	T9325	II	T9335	II	6640	II	-	II	T9315	II	T9325 (T9335)	II	-	II	-	II	-
			-		-						72		72		74		-		-		-		-		-		-
..W ..T	CCMW, CCMT, SCMW, SCMT, DCMW, DCMT, TCMW, TCMT, VCMW, VCMT, WCMW, WCMT, RCMW, RCMT, RCMX	I	T8315	I	T8315	I	T8315	I	T8315	I	T9315	I	T9315	I	-	I	-	I	T9315	I	T9325	I	-	I	-	I	-
			UR		FF(NF2)		UR		FF(NF2)		UR(RM)		RM		-		-		OR		OR		-		-		-
		II	T8315	II	T8330	II	T8315	II	T9325	II	T9315	II	T9325	II	-	II	-	II	T9325	II	T9335	II	-	II	-	II	-
			FF2		FF(FF2)		FF2		FM(FM2)		RM		RM		-		-		SR		DR4		-		-		-
		III	T6310	III	-	III	T9315	III	T8330	III	T9325	III	T8330	III	-	III	-	III	T9316	III	T9335	III	-	III	-	III	-
			Al(SF3)		-		FM(FM2)		FM		RM(RM3)		RM(RM3)		-		-		RM1		SR		-		-		-
..R ..N	SPMR, SPGR, SPUN, SPGN, TPMR, TPGR, TPUN, TPGN	I	-	I	-	I	T9325	I	T9335	I	T9325	I	T9335	I	-	I	-	I	-	I	-	I	-	I	-	I	-
			-		-		46		46		46		46		-		-		-		-		-		-		-
		II	-	II	-	II	T9325	II	T9335	II	T9325	II	T9335	II	-	II	-	II	-	II	-	II	-	II	-	II	-
			-		-		47		47		47		47		-		-		-		-		-		-		-
		III	-	III	-	III	T9325	III	T9335	III	T9325	III	T9335	III	-	III	-	III	-	III	-	III	-	III	-	III	-
			-		-		48		48		48		48		-		-		-		-		-		-		-
..X	LFMX, LFUX, LCMF(R), TN11 ZZ, TN16 ZZ, TN22 ZZ, TN11 R, TN16 R, TN22 R	I	T9325	I	T8330	I	T9325	I	T8330	I	-	I	-	I	-	I	-	I	-	I	-	I	T9325	I	T8330	I	-
			-		-		-		-		-		-		-		-		-		-						-
		II	T8330	II	-	II	T8330	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	T8330 (6630)	II	T9325 (6640)	II	-
			-		-		-		-		-		-		-		-		-		-						-
	TN11.., TN16.., TN 22	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	T8030

S

		f	a_p	6630	6640	T7325	T7335	T9325	T9335	T9226	T6310	T8030	T8310	T8315	T8330	T8430	T8345	HF7	H07	TC100	
FF	I	.002	.020	-	-	-	-	-	-	-	459	262	394	361	262	312	-	279	279	886	V_{15} [sfm]
	II	.003	.020	-	-	-	-	-	-	-	377	197	344	312	230	262	-	230	230	754	
	III	.004	.020	-	-	-	-	-	-	-	344	197	312	279	197	230	-	197	197	705	
F	I	.004	.060	277	246	-	-	-	-	-	312	180	279	262	197	213	180.4	197	197	656	
	II	.006	.060	246	213	213	246	279	230	-	279	164	262	246	180	197	246	180	180	607	
	III	.008	.060	246	213	213	246	295	246	-	279	164	262	246	197	180	164	180	180	607	
M	I	.008	.100	230	197	197	230	279	230	-	2629	164	246	230	180	180	164	164	164	590	
	II	.012	.100	180	164	180	197	246	197	-	197	131	230	197	164	148	131.2	131	131	508	
	III	.016	.100	180	164	180	180	246	197	-	197	131	197	197	164	148	131.2	131	131	476	
R	I	.016	.200	148	131	148	164	197	180	164	180	115	197	164	148	115	114.8	115	115	-	
	II	.024	.200	131	115	131	148	197	164	148	148	98	164	148	132	98	98.4	985	985	-	
	III	.031	.200	115	98	115	131	180	148	131	131	82	148	131	115	98	82	82	82	-	
HR	I	.031	.500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	V_{45} [sfm]
	II	.040	.500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	III	.050	.500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		.004	-	-	-	-	-	230	-	-	-	-	-	-	148	-	-	-	-	-	V_{15} [sfm]
		.006	-	-	-	-	-	197	-	-	-	-	-	-	148	-	-	-	-	-	
		.008	-	-	-	-	-	197	-	-	-	-	-	-	131	-	-	-	-	-	
		.012	-	-	-	-	-	180	-	-	-	-	-	-	115	-	-	-	-	-	
		.004	-	-	-	-	-	180	-	-	-	-	-	-	115	-	-	-	-	-	
		.006	-	-	-	-	-	180	-	-	-	-	-	-	115	-	-	-	-	-	
		.008	-	-	-	-	-	164	-	-	-	-	-	-	98	-	-	-	-	-	
		.012	-	-	-	-	-	148	-	-	-	-	-	-	98	-	-	-	-	-	
				-	-	-	-	-	-	-	-	-	-	-	131	-	-	-	-	-	
				-	-	-	-	-	-	-	-	-	-	-	131	-	-	-	-	-	
				-	-	-	-	-	-	-	-	-	-	-	115	-	-	-	-	-	

Figures in blue are valid for machining with coolant. / Las cifras en azul son válidas para mecanizado con refrigerante.
Valeurs en bleu pour usinage avec arrosage.

CORRECTION / CORRECCIÓN /CORRECTION v_c

	Subgroup / Subgrupo Sous-groupe	S1	S2	S3	S4
k_{VHB}	Hardness / Dureza Dureté	k_{VHB} - S1	kv_{HB} -S2	kv_{HB} - S3	kv_{HB} - S4
	120	**2.14**	**1.46**	1.22	.92
	140	**2.01**	**1.38**	1.15	**.86**
	160	**1.93**	**1.32**	1.10	**.83**
	180	**1.89**	**1.30**	1.08	**.81**
	200	**1.84**	**1.26**	**1.05**	**.79**
	220	**1.80**	**1.24**	**1.03**	**.77**
	240	**1.75**	**1.20**	**1.00**	**.75**
	260	**1.70**	**1.16**	**.97**	**.73**
	280	**1.61**	**1.10**	**.92**	**.69**
	300	**1.54**	1.06	**.88**	**.66**
	320	**1.47**	1.01	**.84**	**.63**
	340	**1.40**	.96	**.80**	.60
	360	**1.37**	.94	**.78**	.59
	375	**1.30**	.89	.74	.56

$k_{VT (GM)}$		k_{VT}		k_{VT}
	10	1,10	30	.84
	15	1,00	45	.76
	20	0,93	60	.71

k_{VX}		
	Skin of forging and casting / Revestimiento de piezas forjadas y fundidas Croûte de forge et de fonderie	.70 - .80
	Internal turning / Torneado interno Tournage intérieur	.75 - .85
	Interrupted cut / Corte interrumpido Coupe interrompue	.80 - .90
	Stable machine conditions / Condiciones de máquina estables Bonnes conditions machine	1.05 - 1.20
	Unstable machine conditions / Condiciones de máquina inestables Mauvaises conditions machine	.85 - .95

k_{Vi}	Insert shape / Forma de la plaquita Forme de plaquette	k_{VBD}
	S..., C..., W...	1.00
	T..., D..., K...	.95
	V..., L... (parting and grooving/ tronzado y ranurado) (tronçonnage et gorges)	.88
	R..., L... (heavy roughing / desbaste pesado) (ébauche lourde)	1.10

Table 10b
Tabla 10b
Tableau 10b

CHOICE OF INSERT
ELECCIÓN DE PLAQUITA
CHOIX DE LA PLAQUETTE

PRAMET

Table 11a
Tabla 11a
Tableau 11a

CHOICE OF INITIAL CUTTING CONDITIONS
SELECCIÓN DE CONDICIONES DE CORTE INICIALES
CHOIX DES CONDITIONS DE COUPE INTIALES

H

Cutting inserts type according to ISO		FF				F				M				R				HR				P+G				T
Tipo de plaquita ISO		f ⇨	.002 - .004			f ⇨	.004 - .008			f ⇨	.008 - .016			f ⇨	.016 - .040			f ⇨	> .040			f ⇨	.002 - .012			
Tipo de Pastilha ISO		a_p	.020 - .040			a_p	.040 - .080			a_p	.080 - .160			a_p	.160 - .400			a_p	> .400			a_p				
Type de plaquettes de coupe définies par la norme ISO		●		✖		●		✖		●		✖		●		✖		●		✖		▱	▱	▱	▱	⫴
..A ..M ..G ..U ..N	CNMA, CNMM, CNMG, DNMA, DNMM, DNMG, DNMU, SNMA, SNMM, SNMG, SNMX, TNMA, TNMM, TNMG, VNMU, RNMA, RNMM, RNMG, WNMA, WNMM, WNMG	I	TC100	I	T5305	I	TC100	I	T5305	I	TC100	I	T5305	I	-	I	-	I	-	I	-	I	-	I	-	I	-
			-		-		-		-		-		M		-		-		-		-		-		-		-
		II	TB310	II	T5305	II	TB310	II	T5305	II	T5305	II	T5315	II	-	II	-	II	-	II	-	II	-	II	-	II	-
			-		R (RM)		-		R (RM)		M		M (W-M)		-		-		-		-		-		-		-
		III	T5305	III	T5315	III	T5305	III	T5315	III	T5305	III	T5315	III	-	III	-	III	-	III	-	III	-	III	-	III	-
			-		R (RM)		-		R (RM)		R(RM)		R (RM)		-		-		-		-		-		-		-
..X	KNUX	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-
			-		-		-		-		-		-		-		-		-		-		-		-		-
		II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-
			-		-		-		-		-		-		-		-		-		-		-		-		-
..W ..T	CCMW, CCMT, SCMW, SCMT, DCMW, DCMT, TCMW, TCMT, VCMW, VCMT, WCMW, WCMT, RCMW, RCMT, RCMX	I	T5305	I	T5305	I	T5305	I	T5305	I	T5305	I	T9315	I	-	I	-	I	-	I	-	I	-	I	-	I	-
			RM		-		RM		-		RM		RM		-		-		-		-		-		-		-
		II	T5305	II	T5315	II	T5305	II	T5315	II	T5315	II	T8330	II	-	II	-	II	-	II	-	II	-	II	-	II	-
			_		RM		_		RM		RM		RM		-		-		-		-		-		-		-
		III	T5315	III	T8330	III	T5315	III	T8330	III	T9315	III		III	-	III	-	III	-	III	-	III	-	III	-	III	-
			RM		RM		RM		RM (RM3)		RM (RM3)				-		-		-		-		-		-		-
..R ..N	SPMR, SPGR, SPUN, SPGN, TPMR, TPGR, TPUN, TPGN	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-
			-		-		-		-		-		-		-		-		-		-		-		-		-
		II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	-
			-		-		-		-		-		-		-		-		-		-		-		-		-
		III	-	III	-	III	-	III	-	III	-	III	-	III	-	III	-	III	-	III	-	III	-	III	-	III	-
			-		-		-		-		-		-		-		-		-		-		-		-		-
..X	LFMX, LFUX, LCMF(R), TN11 ZZ, TN16 ZZ, TN22 ZZ, TN11 R, TN16 R, TN22 R	I	T9325	I	T8330	I	T9325	I	T8330	I	-	I	-	I	-	I	-	I	-	I	-	I	T9325	I	T8330	I	-
			-		-		-		-		-		-		-		-		-		-						-
		II	T8330	II	-	II	T8330	II	-	II	-	II	-	II	-	II	-	II	-	II	-	II	T8330 (6630)	II	T9325 (6640)	II	-
			-		-		-		-		-		-		-		-		-		-		-		-		-
	TN11.., TN16.., TN 22	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	-	I	T8030

H

		f	a_p	T5305	T5315	T9310	T9315	T6310	T26.230	T8310	T8315	T8330	T8430	HF7	TC100	TB310	
FF	I	.002	.020	361	312	-	-	295	538	262	230	180	213	180	590	426	V_{f15} [sfm]
	II	.003	.020	312	262	-	-	807	148	230	197	148	164	148	508	377	
	III	.004	.020	295	807	-	-	230	131	197	180	148	148	148	459	361	
F	I	.004	.060	262	230	-	-	197	115	180	538	131	131	131	443	328	
	II	.006	.060	807	197	197	197	180	115	180	538	115	131	115	394	312	
	III	.008	.060	807	197	197	197	180	115	180	538	131	115	115	410	295	
M	I	.008	.100	230	197	197	197	538	98	538	148	115	115	98	394	312	
	II	.012	.100	197	180	180	180	148	82	148	131	115	98	82	344	279	
	III	.016	.100	197	180	180	180	131	82	148	131	98	98	82	312	262	
R	I	.016	.200	-	-	-	-	-	-	-	-	-	-	-	-	-	
	II	.024	.200	-	-	-	-	-	-	-	-	-	-	-	-	-	
	III	.031	.200	-	-	-	-	-	-	-	-	-	-	-	-	-	
HR	I	.031	.500	-	-	-	-	-	-	-	-	-	-	-	-	-	V_{f45} [sfm]
	II	.040	.500	-	-	-	-	-	-	-	-	-	-	-	-	-	
	III	.050	.500	-	-	-	-	-	-	-	-	-	-	-	-	-	
		.004	-	-	-	-	-	-	-	-	-	98	-	-	-	-	V_{f15} [sfm]
		.006	-	-	-	-	-	-	-	-	-	98	-	-	-	-	
		.008	-	-	-	-	-	-	-	-	-	82	-	-	-	-	
		.012	-	-	-	-	-	-	-	-	-	82	-	-	-	-	
		.004	-	-	-	-	-	-	-	-	-	82	-	-	-	-	
		.006	-	-	-	-	-	-	-	-	-	66	-	-	-	-	
		.008	-	-	-	-	-	-	-	-	-	66	-	-	-	-	
		.012	-	-	-	-	-	-	-	-	-	66	-	-	-	-	
				-	-	-	-	-	-	-	-	82	-	-	-	-	
				-	-	-	-	-	-	-	-	82	-	-	-	-	
				-	-	-	-	-	-	-	-	66	-	-	-	-	

Figures in blue are valid for machining with coolant. / Las cifras en azul son válidas para mecanizado con refrigerante.
Valeurs en bleu pour usinage avec arrosage.

CORRECTION / CORRECCIÓN / CORRECTION v_c

	Subgroup / Subgrupo Sous-groupe	H1	H2	H3	H4
k_{vHB}	Hardness / Dureza Dureté	kv_{HBH1}	kv_{HBH2}	kv_{HBH3}	kv_{HBH4}
	380 / 4.8	**1.84**	**1.76**	1.60	1.52
	400 / 42.7	**1.73**	**1.65**	1.50	1.43
	420 / 44.6	**1.61**	**1.54**	1.40	1.33
	440 / 46.5	**1.50**	**1.43**	1.30	1.24
	460 / 48.1	**1.38**	**1.32**	**1.20**	1.14
	500 / 5.8	**1.15**	**1.10**	**1.00**	.95
	520 / 52.0	1.09	1.05	**.95**	.90
	540 / 53.5	1.04	.99	**.90**	.86
	560 / 54.7	.98	.94	**.85**	.81
	580 / 55.7	.92	.88	**.80**	**.76**
	600 / 56.8	.86	.83	.75	**.71**
	620 / 57.9	.81	.77	.70	**.67**
	640 / 59.0	.75	.72	.65	**.62**
	>640 / >59	.69	.66	.60	**.57**

$k_{vT (GM)}$		k_{vT}		k_{vT}
	10	1,10	30	.84
	15	1,00	45	.76
	20	0,93	60	.71

k_{vx}	Skin of forging and casting / Revestimiento de piezas forjadas y fundidas Croûte de forge et de fonderie	.70 - .80
	Internal turning / Torneado interno Tournage intérieur	.75 - .85
	Interrupted cut / Corte interrumpido Coupe interrompue	.80 - .90
	Stable machine conditions / Condiciones de máquina estables Bonnes conditions machine	1.05 - 1.20
	Unstable machine conditions / Condiciones de máquina inestables Mauvaises conditions machine	.85 - .95

k_{vi}	Insert shape / Forma de la plaquita / Forme de plaquette	k_{VBD}
	S..., C..., W...	1.00
	T..., D..., K...	.95
	V..., L... (parting and grooving /tronzado y ranurado) (tronçonnage et gorges)	.88
	R..., L... (heavy roughing / desbaste pesado) (ébauche lourde)	1.10

Table 11b
Tabla 11b
Tableau 11b

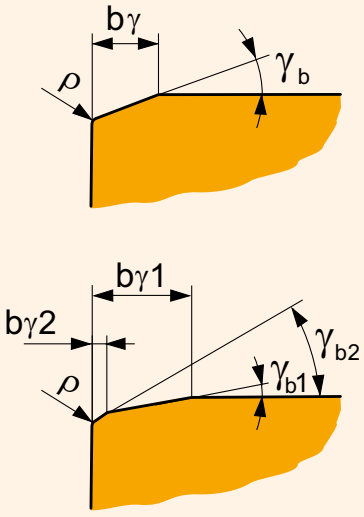
CHOICE OF INSERT
ELECCIÓN DE PLAQUITA
CHOIX DE LA PLAQUETTE

T00820 ⇒

Edge finishing
Preparación del filo
Préparation d'arête

bγ (bγ1)

γ_b (bγ2 x γ_{b2} dependent on bγ1 x γ_{b1})
γ_b (bγ2 x γ_{b2} dependiente de bγ1 x γ_{b1})
γ_b (bγ2 x γ_{b2} dépend de bγ1 x γ_{b1})



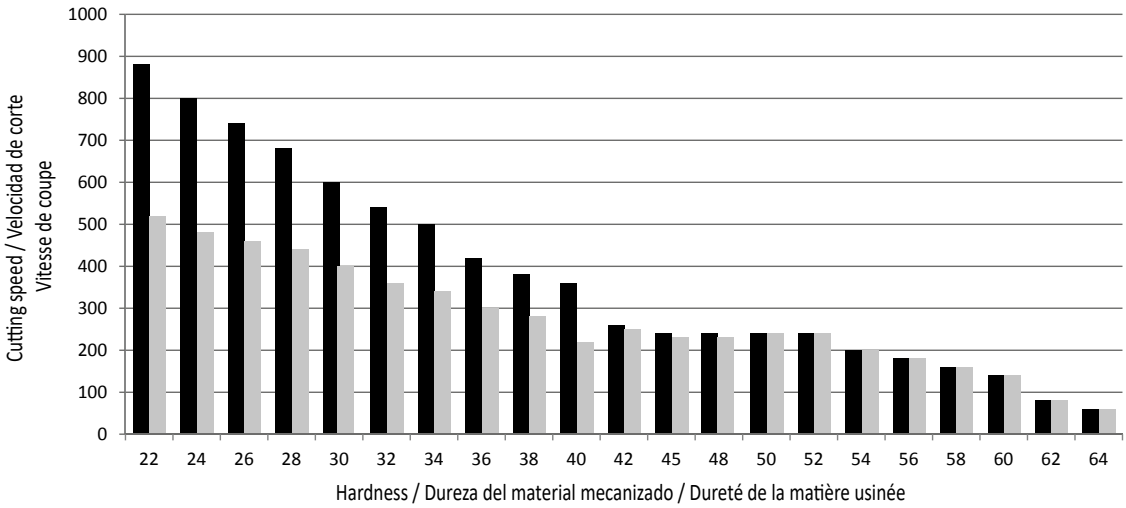
Example: **CNGA 432 T00820** – insert CNGA 120404 with T-land (cutting edge design T) width .008 in and angle –20°
Ejemplo: **CNGA 432 T00820** – plaquita CNGA 120404 con faceta en T (filo de corte con diseño T) ancho .008 in y ángulo –20°
Exemple: **CNGA 432 T00820** – plaquette CNGA 120404 avec listel T (arête coupante de forme T) largeur .008 in et angle –20°

Ceramics are materials that have one of the highest levels of thermal stability.
During their practical application, however, it is necessary to reduce the cutting speed with regard to the hardness of the machined material and its other characteristics.
For illustration purposes, we have provided a concrete example of a round insert used for finishing.

Las cerámicas de corte son materiales con uno de los límites de estabilidad térmica más elevados.
No obstante, durante su uso efectivo, también es necesario reducir la velocidad de corte según la dureza y otras características del material mecanizado.
A modo de ilustración, facilitamos un ejemplo concreto de una plaquita redonda que se utiliza para el torneado de acabado.

Les céramiques de coupe sont des matériaux qui possèdent les limites de stabilité thermique les plus élevées.
Pendant son utilisation pratique, cependant, il est nécessaire de réduire la vitesse de coupe en rapport avec la dureté et les autres caratéristiques de la matière usinée.
Voici un exemple concret pour une plaquette ronde utilisée en tournage de finition.

Cutting speed for / Velocidad de corte para / Velocidade de corte para / Vitesse de coupe pour RNGN (a_p = .059 in)



Homogenous material / Material homogéneo / Matériau homogène
Forged materials, cold rolled materials, etc. / Materiales forjados, materiales laminados en frío, etc.
Matériaux forgés, matériaux laminés à froid, etc.

The following table provides further parameters that need to be taken into account when selecting the cutting speed to use.

La tabla siguiente indica otros parámetros que se deben tener en cuenta cuando se selecciona la velocidad de corte

La table suivante fait état d'autres paramètres qui doivent être pris en compte au moment de sélectionner la vitesse de coupe résultante

Table / Tabla / Tableau 12

Point radius / Radio de la punta / Rayon de plaquette	.016	.031	.047	.063	.094	.118
Reduction v_c by / Reducción de la v_c / Réduction de v_c de	20%	16%	12%	10%	5%	2%
Reduction / Reducción de Kr /Réduction Kr	90°	75°	60°	45°	30°	< 15°
Reduction v_c by / Reducción de la v_c / Réduction de v_c de	0%	5%	8%	12%	15%	18%
Insert shape / Forma de la plaquita / Forme de plaquette	V	D	T	C, W	S	R
Point angle / Ángulo de la punta / Angle de pointe	35°	55°	60°	80°	90°	
Reduction v_c by / Reducción de la v_c / Réduction de v_c de	17%	12%	10%	6%	4%	0%
Depth of cut / Profundidad de corte / Profondeur de coupe [mm]	<.055	.118	.236	.394	.512	.787
Reduction v_c by / Reducción de la v_c / Réduction de v_c de	5%	8%	13%	16%	18%	20%

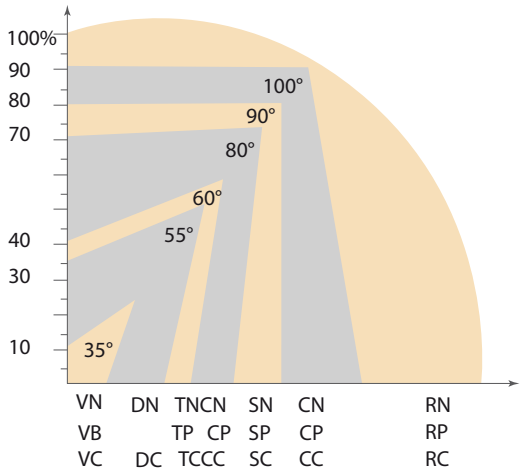
As previously stated, ceramics are materials that have one of the highest levels of abrasion resistance, yet they also have one of the lowest levels of strength.
With regard to rigidity, it is therefore also necessary to take into account other limiting criteria when selecting the right insert.

Como se mencionó anteriormente, las cerámicas de corte son materiales con una resistencia a la abrasión muy elevada, pero al mismo tiempo, su dureza es una de las más bajas.
Por lo tanto, con respecto a la rigidez, es necesario tener en cuenta también otros criterios limitadores a la hora de seleccionar la plaquita adecuada..

Comme déjà mentionné, les céramiques de coupe sont des matériaux possédant l'une des plus hautes résistances à l'abrasion, cependant, dans le même temps, elles possèdent une des moins bonnes tenacités.
En ce qui concerne la rigidité, il est donc nécessaire de prendre en compte d'autres critères limitatifs pour la sélection de la plaquette appropriée.

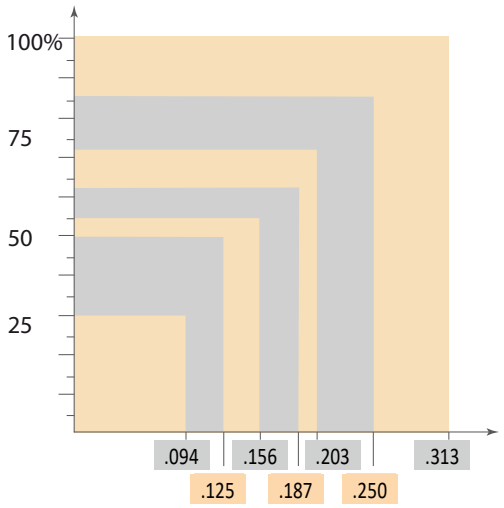
Rigidity in relation to insert shape / Rigidez en relación con la forma de la plaquita / Rigidité en relation avec la forme de plaquette

Picture 11
Imagen 11
Image 11



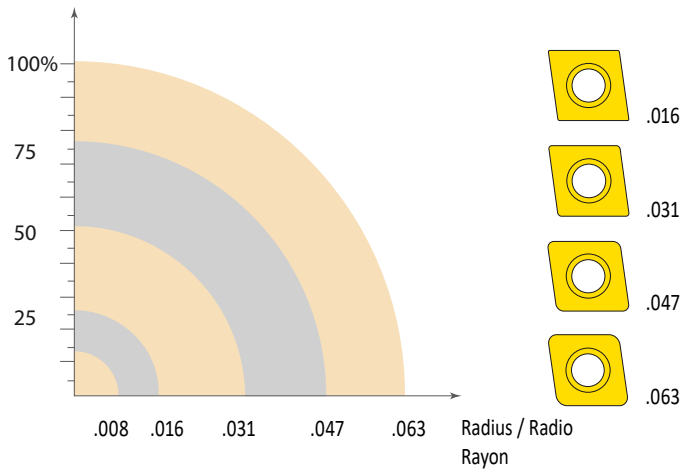
Rigidity in relation to insert thickness / Rigidez en relación con el grosor de la plaquita / Rigidité en relation avec l'épaisseur de plaquette

Picture 12
Imagen 12
Image 12



Rigidity in relation to insert radius / Rigidez en relación con el radio de la plaquita / Rigidité en relation avec le rayon de plaquette

Picture 13
Imagen 13
Image 13



Finally, we would like to give some recommendations regarding practical application:

1) Burrs at the output of the tool can result in chipped edges and damage the whole insert. It is therefore necessary to bevel the edge to eliminate the burrs first.

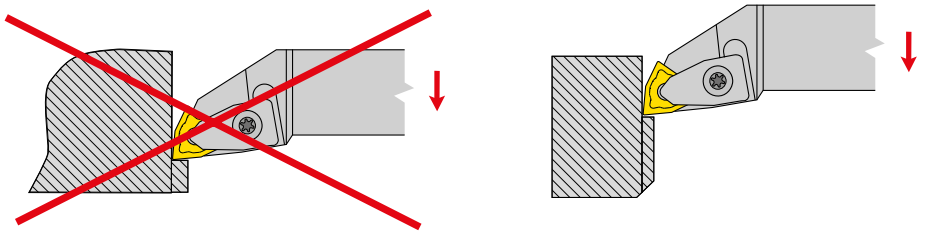
Finalmente, nos gustaría hacer algunas recomendaciones de aplicación práctica:

1) Las rebabas en la salida de la herramienta pueden producir la rotura del filo de corte y la destrucción de toda la plaquita. Por lo tanto, es necesario en primer lugar hacer un chaflán en la pieza para eliminar las rebabas.

Enfin, nous vous donnons quelques recommandations pour une application pratique:

1) Les bavures en sortie de pièce peuvent endommager l'arête de coupe, et parfois détruire entièrement la plaquette. Donc, il est nécessaire de réaliser en premier un chanfrein sur la pièce pour éviter les bavures.

Picture 14
Imagen 14
Image 14

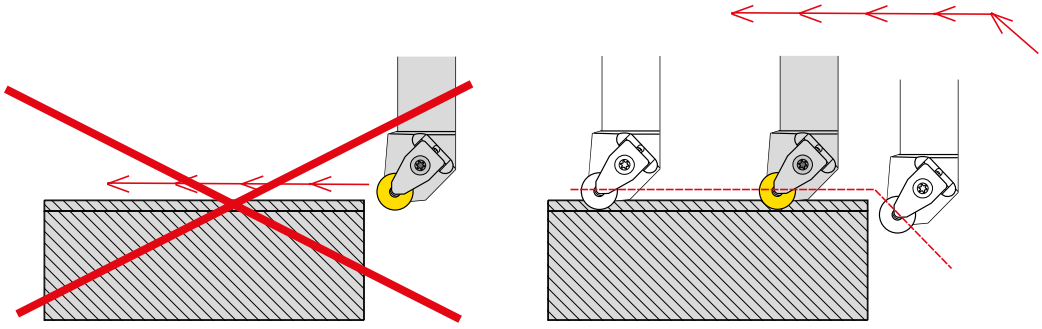


2) It is advisable to modify the standard program (adding the material) as this slows down the creation of burrs on the edge, which increases the durability of the edge and also eliminates the need to bevel the edge.

2) Se recomienda modificar el programa estándar (introduciendo el material); de este modo, se ralentiza la creación de rebabas y se prolonga la duración del filo. Así también se elimina la operación de biselar el filo.

2) Il est recommandé de modifier le programme standard(engagement dans la matière); ceci ralentit la création de bavures sur la pièce et prolonge la durée de vie de l'arête de coupe; cette opération permet également d'éviter l'opération de chanfreinage sur la pièce.

Picture 15
Imagen 15
Image 15

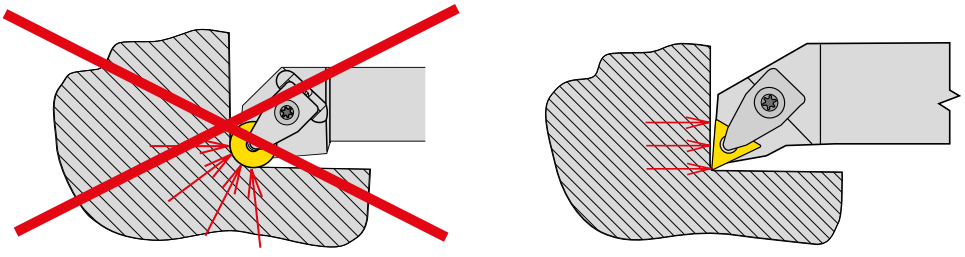


3) If there is a risk of problems occurring as a result of tool vibration, it is better to use inserts with a smaller radius to eliminate radial forces.

3) Si hay riesgo de problemas debido a las vibraciones de la herramienta, deben utilizarse plaquitas con un radio más pequeño para eliminar las fuerzas radiales.

3) Si il y a un risque de problèmes liés aux vibrations de l'outil, il est préférable d'utiliser une plaquette avec un plus petit rayon pour éliminer les forces radiales.

Picture 16
Imagen 16
Image 16



Surface quality in turning R_{max} / Calidad de la superficie por torneado R_{max} / Qualité de surface en tournage R_{max}

Table 13a
Tabla 13a
Tableau 13a

$$R_{max} = \frac{f^2}{8.r_\varepsilon} \cdot 1000$$

f →	0.1	0.2	0.4	0.5	0.8	1.0	1.2	1.5	1.6	2.0	2.4	2.5	3.0	3.2	3.5	4.0	5.0	6.0	8.0
0.05	3.13	1.56	0.78	0.63	0.39	0.31	0.26	0.21	0.20	0.16	0.13	0.13	0.10	0.10	0.09	0.08	0.06	0.05	0.04
0.07	6.1	3.06	1.53	1.23	0.77	0.61	0.51	0.41	0.38	0.31	0.26	0.25	0.20	0.19	0.18	0.15	0.12	0.10	0.08
0.08	8.0	4.0	2.00	1.60	1.00	0.80	0.67	0.53	0.50	0.40	0.33	0.32	0.27	0.25	0.23	0.20	0.16	0.13	0.10
0.10		6.3	3.13	2.50	1.56	1.25	1.04	0.83	0.78	0.63	0.52	0.50	0.42	0.39	0.36	0.31	0.25	0.21	0.16
0.12		9.0	4.50	3.60	2.25	1.80	1.50	1.20	1.13	0.90	0.75	0.72	0.60	0.56	0.51	0.45	0.36	0.30	0.23
0.15		14	7.0	5.6	3.52	2.81	2.34	1.88	1.76	1.41	1.17	1.13	0.94	0.88	0.80	0.70	0.56	0.47	0.35
0.16		16	8.0	6.4	4.00	3.20	2.67	2.13	2.00	1.60	1.33	1.28	1.07	1.00	0.91	0.80	0.64	0.53	0.40
0.18		20	10.1	8.1	5.1	4.05	3.38	2.70	2.53	2.03	1.69	1.62	1.35	1.27	1.16	1.01	0.81	0.68	0.51
0.20			13	10.0	6.3	5.0	4.17	3.33	3.13	2.50	2.08	2.00	1.67	1.56	1.43	1.25	1.00	0.83	0.63
0.22			15	12.1	7.6	6.1	5.0	4.03	3.78	3.03	2.52	2.42	2.02	1.89	1.73	1.51	1.21	1.01	0.76
0.25			20	16	9.8	7.8	6.5	5.2	4.88	3.91	3.26	3.13	2.60	2.44	2.23	1.95	1.56	1.30	0.98
0.27			23	18	11.4	9.1	7.6	6.1	5.7	4.56	3.80	3.65	3.04	2.85	2.60	2.28	1.82	1.52	1.14
0.30			28	23	14	11.3	9.4	7.5	7.0	5.6	4.69	4.50	3.75	3.52	3.21	2.81	2.25	1.88	1.41
0.32			32	26	16	13	10.7	8.5	8.0	6.4	5.3	5.1	4.27	4.00	3.66	3.20	2.56	2.13	1.60
0.35			38	31	19	15	13	10.2	9.6	7.7	6.4	6.1	5.1	4.79	4.38	3.83	3.06	2.55	1.91
0.37			43	34	21	17	14	11.4	10.7	8.6	7.1	6.8	5.7	5.3	4.89	4.28	3.42	2.85	2.14
0.40				40	25	20	17	13	13	10.0	8.3	8.0	6.7	6.3	5.7	5.0	4.00	3.33	2.50
0.45				51	32	25	21	17	16	13	10.5	10.1	8.4	7.9	7.2	6.3	5.1	4.22	3.16
0.50					39	31	26	21	20	16	13	13	10.4	9.8	8.9	7.8	6.3	5.2	3.91
0.55					47	38	32	25	24	19	16	15	13	11.8	10.8	9.5	7.6	6.3	4.73
0.60					56	45	38	30	28	23	19	18	15	14	13	11.3	9.0	7.5	5.6
0.65					66	53	44	35	33	26	22	21	18	17	15	13	10.6	8.8	6.6
0.70					77	61	51	41	38	31	26	25	20	19	18	15	12.3	10.2	7.7
0.75					88	70	59	47	44	35	29	28	23	22	20	18	14	11.7	8.8
0.80						80	67	53	50	40	33	32	27	25	23	20	16	13	10.0
0.85						90	75	60	56	45	38	36	30	28	26	23	18	15	11.3
0.90						101	84	68	63	51	42	41	34	32	29	25	20	17	13
0.95						113	94	75	71	56	47	45	38	35	32	28	23	19	14
1.00							104	83	78	63	52	50	42	39	36	31	25	21	16
1.20								120	113	90	75	72	60	56	51	45	36	30	23
1.30								141	132	106	88	85	70	66	60	53	42	35	26
1.40								163	153	123	102	98	82	77	70	61	49	41	31
1.50									176	141	117	113	94	88	80	70	56	47	35
1.60										160	133	128	107	100	91	80	64	53	40
1.70										181	151	145	120	113	103	90	72	60	45
1.80										203	169	162	135	127	116	101	81	68	51
1.90										226	188	181	150	141	129	113	90	75	56
2.00											208	200	167	156	143	125	100	83	63
2.20											252	242	202	189	173	151	121	101	76
2.50													260	244	223	195	156	130	98

Surface quality in turning R_a / Calidad de la superficie por torneado R_a / Qualité de surface en tournage R_a

Table 13b
Tabla 13b
Tableau 13b

$$R_a = 33337 \cdot \frac{f_z^{1,88}}{r_\varepsilon^{0,97}} \quad [\mu in]$$

f ⇨	r_ε Radius [in]																
	.004	.008	.016	.031	.039	.047	.063	.071	.078	.094	.118	.125	.137	.157	.196	.235	.314
	Surface R_a [µin]																
.002	58.5	29.9	15.2	7.8	6.3	5.3	4.0	3.5	3.2	2.7	2.2	2.0	1.9	1.6	1.3	1.1	0.8
.003	110.1	56.2	28.7	14.6	11.8	9.9	7.5	6.7	6.0	5.0	4.1	3.8	3.5	3.1	2.5	2.1	1.6
.003	141.5	72.2	36.9	18.8	15.2	12.7	9.6	8.6	7.7	6.5	5.2	4.9	4.5	4.0	3.2	2.7	2.0
.004	-	109.9	56.1	28.6	23.1	19.3	14.6	13.0	11.8	9.9	7.9	7.5	6.8	6.0	4.8	4.1	3.1
.005	-	154.8	79.0	40.3	32.5	27.2	20.6	18.4	16.6	13.9	11.2	10.5	9.6	8.5	6.8	5.7	4.3
.006	-	235.5	120.2	61.4	49.4	41.4	31.3	28.0	25.2	21.1	17.0	16.0	14.7	12.9	10.4	8.7	6.6
.006	-	265.9	135.7	69.3	55.8	46.8	35.4	31.6	28.5	23.9	19.2	18.1	16.6	14.5	11.7	9.8	7.4
.007	-	331.8	169.4	86.5	69.6	58.4	44.1	39.4	35.6	29.8	24.0	22.5	20.7	18.2	14.6	12.2	9.3
.008	-	-	206.5	105.4	84.9	71.1	53.8	48.0	43.3	36.3	29.2	27.5	25.2	22.1	17.8	14.9	11.3
.009	-	-	247.0	126.1	101.6	85.1	64.4	57.4	51.8	43.4	35.0	32.9	30.1	26.5	21.3	17.9	13.5
.010	-	-	314.1	160.4	129.2	108.2	81.9	73.0	65.9	55.2	44.5	41.8	38.3	33.7	27.1	22.7	17.2
.011	-	-	363.0	185.3	149.3	125.1	94.6	84.4	76.2	63.8	51.4	48.3	44.3	38.9	31.3	26.3	19.9
.012	-	-	442.6	225.9	182.0	152.5	115.3	102.9	92.9	77.8	62.7	58.9	54.0	47.4	38.2	32.0	24.2
.013	-	-	499.6	255.1	205.4	172.1	130.2	116.2	104.9	87.9	70.8	66.5	60.9	53.5	43.1	36.1	27.3
.014	-	-	591.3	301.9	243.1	203.7	154.1	137.5	124.1	104.0	83.8	78.7	72.1	63.4	51.0	42.8	32.3
.015	-	-	656.4	335.1	269.9	226.1	171.1	152.6	137.8	115.4	93.0	87.3	80.1	70.3	56.6	47.5	35.9
.016	-	-	-	388.0	312.5	261.8	198.1	176.7	159.5	133.7	107.7	101.1	92.7	81.4	65.6	55.0	41.6
.018	-	-	-	484.2	390.0	326.7	247.2	220.5	199.1	166.8	134.3	126.2	115.7	101.6	81.8	68.6	51.9
.020	-	-	-	590.3	475.4	398.3	301.3	268.8	242.7	203.3	163.8	153.8	141.0	123.9	99.8	83.6	63.2
.022	-	-	-	706.1	568.7	476.5	360.5	321.5	290.3	243.2	195.9	184.0	168.7	148.2	119.4	100.0	75.7
.024	-	-	-	831.6	669.7	561.2	424.5	378.7	341.9	286.5	230.7	216.7	198.7	174.5	140.6	117.8	89.1
.025	-	-	-	966.6	778.5	652.3	493.5	440.2	397.4	333.0	268.2	251.9	230.9	202.9	163.4	136.9	103.6
.027	-	-	-	1111.1	894.9	749.8	567.2	506.0	456.8	382.8	308.3	289.6	265.5	233.2	187.8	157.4	119.1
.029	-	-	-	1265.0	1018.8	853.7	645.8	576.1	520.1	435.8	351.0	329.7	302.2	265.5	213.8	179.2	135.5
.031	-	-	-	-	1150.2	963.8	729.1	650.4	587.2	492.0	396.3	372.2	341.2	299.8	241.4	202.3	153.0
.033	-	-	-	-	1289.1	1080.1	817.1	728.9	658.1	551.4	444.1	417.1	382.4	336.0	270.6	226.7	171.5
.035	-	-	-	-	1435.3	1202.7	909.8	811.6	732.7	614.0	494.5	464.5	425.8	374.1	301.3	252.4	191.0
.037	-	-	-	-	1588.9	1331.3	1007.2	898.4	811.1	679.7	547.4	514.2	471.4	414.1	333.5	279.4	211.4
.039	-	-	-	-	-	1466.1	1109.1	989.4	893.3	748.5	602.8	566.2	519.1	456.0	367.3	307.7	232.8
.047	-	-	-	-	-	-	1562.6	1393.9	1258.5	1054.5	849.2	797.7	731.3	642.4	517.4	433.5	328.0

SURFACE ROUGHNESS CONVERSION CHART

R_a (micrometers)	R_a (microinches)	RMS	CLA (N)	R_{max}	R_a (micrometers)	R_a (microinches)	RMS	CLA (N)	R_{max}
0.025	1	1. 1	1	0.3	1.6	63	64.3	63	8.0
0.05	2	2.2	2	0.5	3.2	125	137.5	125	13
0.1	4	4.4	4	0.8	6.3	250	275	250	25
0.2	8	8.8	8	1.2	12.5	500	550	500	50
0.4	16	17.6	16	2.0	25.0	1000	11 00	1000	100
0.8	32	32.5	32	4.0	50.0	2000	2200	2000	200

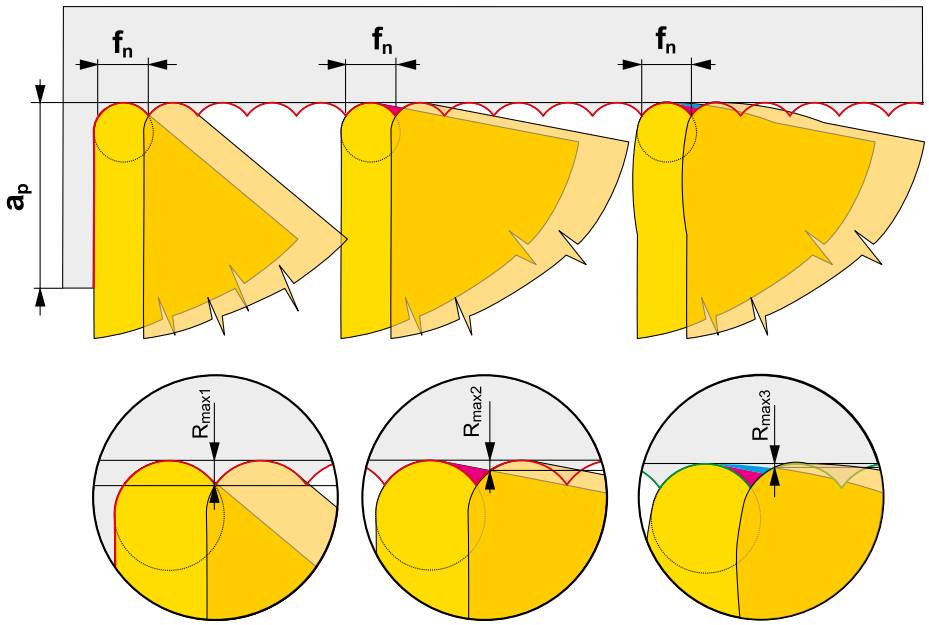
R_a = Roughness Average in micrometers or microinches.
RMS = Root Mean Square in microinches.
CLA = Center Line Average in microinches.
R_{max} = Roughness T otal in microns

Values of surface finish R_a stated in this table apply for turning by cutting indexable inserts with bigger setting angles of minor cutting edge κ_r' (inserts shapes **T..., S..., D...., K..., V...**). The surface finish Ra is better than values mentioned in previous tables, with insert shapes **C..., W...** and primarily by inserts with WIPER geometry (tools with setting angle κ_r = 90 – 95°). The reason is the low value of setting angles of minor cutting edge κ_r'. In this case the value of max. height of profile R_{max} is reduced to $R_{max3} < R_{max2} < R_{max1}$ as you can see in picture no. 17 below.

Los valores de acabado de superficie R_a que se indican en esta tabla se aplican al torneado mediante plaquitas de corte intercambiables con ángulos de posicionamiento mayores del filo de corte secundario κ_r' (plaquitas con formas **T..., S..., D...., K..., V...**). El acabado superficial Ra es mejor que los valores indicados en la tabla en el torneado mediante plaquitas de corte con las formas **C..., W...** y principalmente mediante plaquitas con geometría de rascadora (herramientas con ángulo de posicionamiento κ_r = 90 ÷ 95°). El motivo es el bajo valor de los ángulos de posicionamiento del filo de corte secundario κ_r'. En este caso, el valor de altura máxima del perfil R_{max} se reduce a $R_{max3} < R_{max2} < R_{max1}$ como se puede ver en la imagen n-º 17 siguiente.

Les valeurs de surface R_a indiquées dans ce tableau s'appliquent pour le tournage par plaquettes de coupe indexables avec de grands angles d'attaque κ_r' de l'arête de coupe secondaire (formes plaquettes **T..., S..., D...., K..., V...**). La qualité de surface Ra est meilleure que les valeurs mentionnées dans le tableau avec des plaquettes de coupe **C..., W...** notamment avec des plaquettes WIPER (outils avec un angle d'attaque Kr = 90 ÷ 95 °). La raison est la faible valeur des angles d'attaque Kr sur l'arête secondaire. Dans ce cas, la valeur maxi de la hauteur du profil R_{max} est réduite à $R_{max3} < R_{max2} < R_{max1}$ comme vous pouvez le voir sur l'Image 17.

Picture / Imagen / Image 17



WORKING AND CONSTRUCTION ANGLES OF TURNING TOOLS
ÁNGULOS DE TRABAJO Y CONSTRUCTIVO DE LA HERRAMIENTA DE TORNEADO
ANGLES DE TRAVAIL ET DE CONSTRUCTION DES OUTILS DE TOURNAGE

The position and orientation of the cutting edge in relation to the workpiece and it's geometric shape determine the cutting angle characteristics.

The angles on the cutting edge are determined by a two coordinate system:

a) tool

b) working

a) tool coordinate system (stationary), which is used to determine the cutting edge geometry during design, production and checking. All angles defined in this system are called tool cutting angles. All angles defined by ISO standards according to the insert shape belong in this group.

La posición del filo de corte considerando la pieza de trabajo y su forma geométrica se determinan mediante los ángulos formados por la superficie funcional y los planos auxiliares. Los ángulos del filo de corte se determinan en dos sistemas de coordenadas:

a) herramienta

b) trabajo

a) Sistema de coordenadas de herramienta (estacionario): se utiliza para la determinación de la geometría del filo de corte en el diseño, la producción y la verificación. Todos los ángulos definidos en este sistema se llaman ángulos corte de herramienta. Todos los ángulos que se definen según la norma ISO de acuerdo con la forma de la plaquita pertenecen a este grupo.

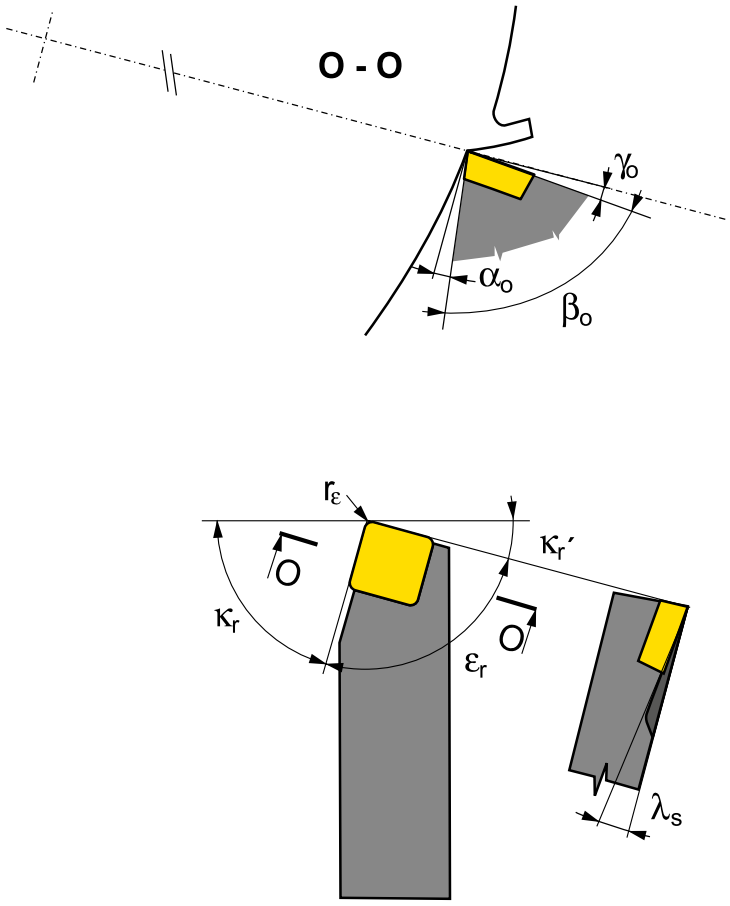
La position de l'arête de coupe sur la pièce à usiner et sa forme géométrique sont déterminées par les angles formés par la surface fonctionnelle et les plans auxiliaires. Les angles sur l'arête de coupe sont déterminés sur deux systèmes de coordonnées :

a) référentiel outil

b) référentiel de travail

a) Le système de coordonnées de l'outil (fixe), est utilisé pour déterminer la géométrie de l'arête de coupe à la conception, la production et la vérification. Tous les angles définis dans ce système sont appelés angles de coupe de l'outil. Tous les angles définis par la norme ISO, selon la forme de plaquette, rentrent dans ce groupe.

Picture / Imagen / Image 18



WORKING AND CONSTRUCTION ANGLES OF TURNING TOOLS
ÁNGULOS DE TRABAJO Y CONSTRUCTIVO DE LA HERRAMIENTA DE TORNEADO
ANGLES DE TRAVAIL ET DE CONSTRUCTION DES OUTILS DE TOURNAGE

b) working coordinate system, used to determine the cutting edge geometry during the machining process. These angles are called working angles and they depend on the position of the insert clamped into the tool holder. For example, the cutting insert SNUN ..... has a tool clearance angle $\alpha = 0°$ and a rake angle $\gamma = 0°$, however the insert is clamped in the tool holder to give a working clearance angle $\alpha_o = 6°$ and a working rake angle $\gamma_o = –6°$. The working angles affect the tool angles with pre-formed chip breakers. However the most important are the working angles for the cutting process.

The basic tool angles are indicated in the picture in the basic tool plane (interlaid by the bearing surface of the tool holder) and in the normal tool plane (interlaid across to cutting edge – cut O-O).

We are concerned with the following angles:

The rake angle γ_o – substantially affects the cutting process. Its size determines the progress and the intensity of plastic deformation during chip forming; it also determines the value of the cutting forces and the thermal stress on the cutting edge. The range of rake angles is wide, from $\gamma_o = +25°$ to $–15°$ for cutting tools with indexable cutting inserts for milling and turning. A positive rake angle improves the chip forming conditions, reduces the cutting forces and reduces the cutting temperature level. A negative rake angle improves the strength of the cutting edge, however it increases plastic deformation during chip forming and thereby also the cutting forces and temperatures.

Clearance angle α_o affects the value of friction between the flank and the machined surface. Increasing the clearance angle α_o reduces this friction and thereby flank wear as well.

Wedge angle β_o is the angle of the cutting insert's wedge. Increasing angle β_o increases the strength of the cutting edge (resistance against shock), however it also increases the cutting resistance.

Inclination angle of main cutting edge λ_s – determines the point of first contact between the cutting edge and the workpiece, which is important for interrupted cut. If λ_s is positive, the point of contact is close to the nose of the cutting insert. The negative angle λ_s moves the point of first contact far from the nose and thereby affects the resistance of the cutting edge against mechanical stress. Furthermore, λ_s affects the direction of chip evacuation. If λ_s is negative, the direction of chip evacuation is towards the machined surface. Whereas if λ_s is positive, the direction of chip evacuation is away from the machined surface.

Setting angle of main cutting edge κ_r affects the shape of the chip cross-section. Reducing angle κ_r makes the chip thinner at a given feed f and depth of cut a_p. Whereas if $\kappa_r = 90°$ the chip thickness $h = f$ and the chip width $b = a_p$ becomes wider.

Setting angle of minor cutting edge κ_r together with nose radius r_ε define the final surface quality.

b) Sistema de coordenadas de trabajo: se utiliza para la determinación de la geometría del filo de corte durante el proceso de mecanizado. Estos ángulos se llaman algunos de trabajo y dependen de la posición de la plaquita fijada en el portaherramientas. Por ejemplo, el ángulo de separación de la herramienta de la plaquita de corte SNUN ..... $\alpha° = 0°$, ángulo de desprendimiento $\gamma = 0°$. Sin embar γ_o, la plaquita está fijada en el portaherramientas por debajo del ángulo, y por lo tanto, se determinan el ángulo de separación operativo $\alpha° = 6°$ y el ángulo de desprendimiento operativo $\gamma_o = – 6°$.

Los ángulos de trabajo afectan a los ángulos de herramienta con formadores de virutas preformados. No obstante, los más importantes son los ángulos de trabajo del proceso de corte.

Los ángulos básicos de la herramienta se indican en parte en el plano básico de la herramienta (superficie del cojinete del portaherramientas) y en parte en el plano normal de la herramienta (filo de corte – corte O-O).

Hablamos de los ángulos siguientes:

El ángulo de desprendimiento γ_o: afecta sustancialmente al proceso de corte. El progreso y la extensión de la deformación plástica durante la formación de virutas depende de su dimensión, ya que determina el valor de las fuerzas de corte y la fatiga térmica del filo de corte. La dimensión del ángulo de desprendimiento está en el intervalo $\gamma_o = + 25°$ až $–15°$ para herramientas de corte con plaquitas de corte intercambiables para fresado y torneado. El ángulo de desprendimiento positivo mejora las condiciones de formación de virutas, reduce la fuerza de corte y el nivel de la temperatura de corte. El ángulo de desprendimiento negativo mejora la resistencia del filo de corte, aunque aumenta la deformación plástica en la formación de virutas y por lo tanto, las fuerzas de corte y las temperaturas.

Ángulo de separación α_o: afecta al valor de fricción entre el flanco y la superficie mecanizada. Con un ángulo de separación αo mayor se reduce la fricción y también el desgaste del flanco.

Ángulo de cuña β_o: es el ángulo incluido de la plaquita de corte. Con un ángulo β_o mayor aumenta la resistencia del filo de corte (resistencia a los golpes), aunque al mismo tiempo aumenta la resistencia de corte.

Ángulo de inclinación del filo de corte principal λ_s: determina el primer punto de contacto del filo de corte con la pieza de trabajo, muy importante para el corte interrumpido. Si el λ_s es positivo, el punto de contacto está cerca de la punta de la plaquita de corte. El ángulo λ_s desplaza el primer punto de contacto lejos de la punta y por lo tanto, afecta a la resistencia de filo a la fatiga mecánica. Además, λ_s afecta a la dirección de evacuación de las virutas. Si λ_s es negativo, la dirección de evacuación de las virutas es hacia la superficie mecanizada. Si λ_s es positivo, la dirección de evacuación de las virutas es hacia fuera de la superficie mecanizada.

Ángulo de posicionamiento del filo de corte principal κ_r : afecta a la forma de la sección transversal de las virutas. Con un ángulo κr más pequeño, la viruta es más ancha y delgada a un avance f y una profundidad de corte a_p determinados. Por otro lado, con $\kappa_r = 90°$ el espesor de las virutas $h = f$ y la anchura de las virutas $b = a_p$.

„Ángulo de posicionamiento del filo de corte secundario κ_r: junto con el radio de punta r_ε define la calidad final de la superficie.“

b) Le système de coordonnées de travail, est utilisé pour déterminer la géométrie de l'arête de coupe pendant le processus d'usinage. Ces angles sont appelés angles de travail, ils dépendent de la position de la plaquette fixée dans le porte-outil. Par exemple, une plaquette de coupe SNUN possède un angle de dépouille $\alpha = 0°$ et un angle de coupe $\gamma = 0°$. Toutefois cette plaquette une fois serrée dans le porte-outil conçu avec un angle déterminé, transforme les angles qui deviennent alors: angle de dépouille réel $\alpha_o = 6°$ et angle de coupe réel $\gamma_o = – 6 °$. Les angles de travail affectent les angles de l'outil équipé de plaquettes à géométrie pressée. Cependant le plus important pour le processus de coupe reste les angles de travail.

Les angles de base de l'outil sont indiqués dans le plan de base de l'outil (à partir de la surface d'appui de l'outil) dans le plan normal à l'outil (suivant le plan de coupe O-O).

Nous parlons des angles suivants :

L'angle de coupe γ_o affecte substantiellement le processus de coupe. La propagation et l'importance de la déformation plastique durant la formation du copeau dépend de sa dimension et détermine la valeur de la force de coupe et de la contrainte thermique de l'arête de coupe. La valeur de l'angle de coupe se situe dans un intervalle $\gamma_o = + 25° – 15°$ pour les outils de coupe à plaquettes de coupe indexables pour le fraisage et le tournage. Un angle de coupe positif améliore les conditions de formation du copeau, réduit la force de coupe et le niveau de température de coupe. Un angle de coupe négatif améliore la résistance de l'arête de coupe mais augmente cependant la déformation plastique lors de la formation du copeau, les efforts de coupe et les températures.

L'angle de dépouille α_o affecte les valeurs de frottement entre le flanc et la surface usinée. Avec une augmentation de l'angle de dépouille αo le frottement diminue et ainsi l'usure en dépouille également.

L'angle de taillant β_o est l'angle résultant sur la plaquette. Plus l'angle β_o est grand, plus l'arête de coupe est robuste (résistance aux chocs), mais dans le même temps la résistance à la coupe augmente.

L'angle d'inclinaison de l'arête de coupe principale λ_s détermine le point de contact de l'arête de coupe avec la pièce à usiner, c'est important pour la coupe interrompue. Si l'angle λ_s est positif, le point de contact est proche de la pointe de la plaquette de coupe. Un angle λ_s négatif déplace le premier point de contact loin de la pointe et agit sur la résistance de l'arête de coupe aux contraintes mécaniques. La modification de l'angle λ_s change la direction de l'évacuation des copeaux. Si λ_s est négatif, l'évacuation des copeaux s'effectue vers la surface usinée. Alors que si λ_s est positif, la direction de l'évacuation des copeaux s'effectue à partir de la surface usinée.

L'angle d'attaque κ_r de l'arête de coupe principale affecte la forme de la section du copeau Avec un plus petit angle κ_r le copeau est plus large et plus fin avec des valeurs d'avance f et de profondeur de coupe ap données. Avec un angle $\kappa_r = 90 °$ l'épaisseur du copeau $h = f$ et la largeur du copeau $b = a_p$.

L'angle d'attaque κ_r de l'arête de coupe secondaire et le rayon de pointe r_ε définissent ensemble la qualité de surface finale.

CORRECTION OF X AND Z COORDINATES BY RADIUS AND HOLDER
CORRECCIÓN EN COORDENADAS X Y Z SEGÚN EL RADIO Y EL PORTAHERRAMIENTAS
CHANGEMENT DE TAILLE (CORRECTION) SUIVANT LE RAYON UTILISÉ

Correction of X and Z coordinates by radius and holder:
Corrección en coordenadas X y Z según el radio y el portaherramientas:
Changement de taille (correction) suivant le rayon utilisé:

Picture / Imagen / Image 19

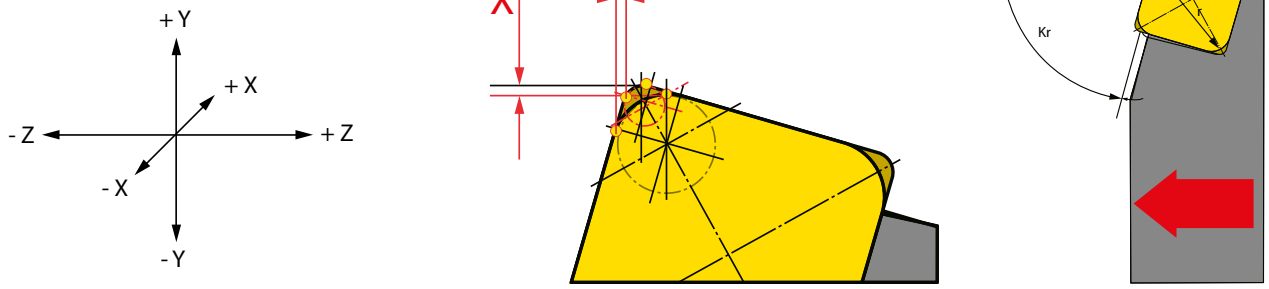


Table / Tabla / Tableau 14

ATTENTION – the data is valid for right-hand holders oriented as shown in picture 19. For internal holders, left-hand holders or other orientations it is necessary to correct or mark +/– (to substitute values X/Z)

ATENCIÓN – los datos son válidos para el portaherramientas del lado derecho orientado según la Imagen 19. Para los portaherramientas internos, es necesaria la orientación hacia el lado izquierdo o de otro tipo para hacer la corrección de las marcas +/– (para sustituir los valores X/Z)

ATTENTION – Les valeurs dans le tableau sont valables pour des outils orientés à droite comme sur l'Image 19. Pour les outils intérieurs, à gauche ou avec d'autres orientations, il est nécessaire de corriger les valeurs avec les signes +/– (pour substituer les valeurs X/Z)

Holder Portaherramientas Outil		Coordinates Coordenadas Coordonnées	Radius .020 Radio .020 Rayon .020	Radius .039 Radio .039 Rayon .039	Radius .059 Radio .059 Rayon.059				
External holder Portaherramientas externo Outils extérieurs	CKJNR/L	x	0.443	0.000	-0.433				
		z	-0.050	0.000	0.050				
Holder Portaherramientas Outil		Coordinates Coordenadas Coordonnées	Radius .008 Radio .008 Rayon .008	Radius .016 Radio .016 Rayon .016	Radius .031 Radio .031 Rayon .031	Radius .047 Radio .047 Rayon .047	Radius .063 Radio .063 Rayon .063	Radius .094 Radio .094 Rayon .094	Radius .125 Radio .125 Rayon .125
External holder Portaherramientas externo Outils extérieurs	DCLNR/L	x	0.00236	0.00157	0.00000	-0.00157	-0.00315	-0.00630	-0.00945
		z	-0.00244	-0.00165	0.00000	0.00165	0.00327	0.00654	0.00980
	DDJNR/L	x	0.02031	0.01366	0.00000	-0.01295	-0.02626	-0.05287	-0.07949
		z	-0.00220	-0.00161	0.00000	0.00087	0.00213	0.00461	0.00709
	DSBNR/L	x	0.00992	0.00669	0.00000	-0.00622	-0.01268	-0.02555	-0.03846
		z	0.01661	0.01102	0.00000	-0.01122	-0.02236	-0.04465	-0.06693
	DSDNN	x	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		z	0.00972	0.00650	0.00000	-0.00650	-0.01299	-0.02594	-0.03894
	DSKNR/L	x	0.00528	0.00350	0.00000	-0.00350	-0.00701	-0.01409	-0.02114
		z	-0.00657	-0.00437	0.00000	0.00437	0.00874	0.01748	0.02626
	DSSNR/L	x	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		z	0.00965	0.00638	0.00000	-0.00657	-0.01268	-0.02606	-0.03906
	DTFNR/L	x	0.01677	0.01118	0.00000	-0.01118	-0.02240	-0.04476	-0.06713
		z	0.00114	0.00075	0.00000	-0.00075	-0.00157	-0.00307	-0.00461

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Holder Portaherramientas Outil		Coordinates Coordenadas Coordonnées	Radius .008 Radio .008 Rayon .008	Radius .016 Radio .016 Rayon .016	Radius .031 Radio .031 Rayon .031	Radius .047 Radio .047 Rayon .047	Radius .063 Radio .063 Rayon .063	Radius .094 Radio .094 Rayon .094	Radius .125 Radio .125 Rayon .125
External holder Portaherramientas externo Outils extérieurs	DTGNR/L	x	0.01720	0.01157	0.00000	-0.01091	-0.02213	-0.04461	-0.06705
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	DVJNR/L	x	0.00248	0.00165	0.00000	-0.00165	-0.00331	-0.00665	-0.00996
		z	0.04858	0.03240	0.00000	-0.03240	-0.06480	-0.12957	-0.19437
	DVPNR/L	x	0.03110	0.02075	0.00000	-0.02075	-0.04150	-0.08299	-0.12445
		z	0.03283	0.02181	0.00000	-0.02181	-0.04366	-0.08728	-0.13094
	DWLNR/L	x	0.00240	0.00173	0.00000	-0.00102	-0.00240	-0.00516	-0.00787
		z	-0.00248	-0.00177	0.00000	0.00106	0.00244	0.00528	0.00811
Internal holder Portaherramientas interno Outils intérieurs	DCLNR/L	x	-0.00209	-0.00138	0.00000	0.00138	0.00276	0.00551	0.00827
		z	-0.00236	-0.00157	0.00000	0.00157	0.00315	0.00626	0.00941
	DDUNR/L	x	-0.02016	-0.01343	0.00000	0.00134	0.02689	0.05374	0.08059
		z	-0.00287	-0.00193	0.00000	0.00193	0.00382	0.00768	0.01150
	DTFNR/L	x	-0.01673	-0.01138	0.00000	0.01000	0.02071	0.04209	0.06350
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	DVUNR/L	x	0.04937	-0.03291	0.00000	0.03291	0.06579	0.13161	0.19740
		z	-0.00508	-0.00339	0.00000	0.00339	0.00677	0.01354	0.02031
	DWLNR/L	x	-0.00209	-0.00138	0.00000	0.00138	0.00276	0.00551	0.00827
		z	-0.00236	-0.00157	0.00000	0.00157	0.00315	0.00626	0.00941
External holder Portaherramientas externo Outils extérieurs	MTJNR/L	x	0.01720	0.01157	0.00000	-0.01091	-0.02213	-0.04461	-0.06705
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	MVJNR/L	x	0.04972	0.03335	0.00000	-0.03224	-0.06500	-0.13059	-0.19614
		z	-0.00295	-0.00217	0.00000	0.00098	0.00256	0.00575	0.00890
	MWLNR/L	x	0.02398	0.00173	0.00000	-0.00102	-0.00240	-0.00516	-0.00787
		z	-0.00248	-0.00177	0.00000	0.00106	0.00244	0.00528	0.00811
	PCBNR/L	x	0.00177	0.00130	0.00000	-0.00063	-0.00157	-0.00346	-0.00539
		z	0.00504	0.00327	0.00000	-0.00378	-0.00728	-0.01433	-0.02138
	PCKNR/L	x	0.00673	0.00453	0.00000	-0.00433	-0.00878	-0.01764	-0.02646
		z	0.02697	0.01799	0.00000	-0.01799	-0.03598	-0.07193	-0.10791
	PCLNR/L	x	0.00240	0.00173	0.00000	-0.00102	-0.00240	-0.00516	-0.00787
		z	-0.00248	-0.00177	0.00000	0.00106	0.00244	0.00528	0.00811
	PDJNR/L	x	0.02031	0.01366	0.00000	-0.01295	-0.02626	-0.05287	-0.07949
		z	-0.00220	-0.00161	0.00000	0.00087	0.00213	0.00461	0.00709
	PDNNR/L	x	0.02752	0.01846	0.00000	-0.01783	-0.03602	-0.07232	-0.10862
		z	0.02063	0.01370	0.00000	-0.01406	-0.02795	-0.05571	-0.08346
	PDXNR/L	x	0.01783	0.01201	0.00000	-0.01134	-0.02299	-0.04634	-0.06969
		z	-0.00614	-0.00421	0.00000	0.00346	0.00728	0.01496	0.02264
	PLBNR/L	x	0.00539	0.00370	0.00000	-0.00307	-0.00642	-0.01319	-0.01996
		z	0.00602	0.00394	0.00000	-0.00433	-0.00866	-0.01705	-0.02543
	PSBNR/L	x	0.00539	0.00370	0.00000	-0.00307	-0.00642	-0.01319	-0.01996
		z	0.00602	0.00394	0.00000	-0.00433	-0.00866	-0.01705	-0.02543
	PSDNN	x	0.00992	0.00669	0.00000	-0.00622	-0.01268	-0.02555	-0.03846
		z	0.01661	0.01102	0.00000	-0.01122	-0.02236	-0.04465	-0.06689
	PSKNR/L	x	0.00551	0.00370	0.00000	-0.00354	-0.00598	-0.01441	-0.02165
		z	0.02260	0.01508	0.00000	-0.01512	-0.03020	-0.06035	-0.09055
	PSSNR/L	x	0.00969	0.00646	0.00000	-0.00646	-0.01291	-0.02583	-0.03870
		z	0.01669	0.01114	0.00000	-0.01114	-0.02228	-0.04453	-0.06681
	PTFNR/L	x	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		z	-0.01618	-0.00957	0.00000	0.01689	0.03012	0.05657	0.08307
	PTGNR/L	x	0.01720	0.01157	0.00000	-0.01091	-0.02213	-0.04461	-0.06705
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	PTTNR/L	x	0.02366	0.01587	0.00000	-0.01531	-0.03087	-0.06201	-0.09319
		z	0.02043	0.01358	0.00000	-0.01394	-0.02768	-0.05516	-0.08264
	PWLNR/L	x	0.02398	0.00173	0.00000	-0.00102	-0.00240	-0.00516	-0.00787
		z	-0.00248	-0.00177	0.00000	0.00106	0.00244	0.00528	0.00811

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Holder Portaherramientas Outil		Coordinates Coordenadas Coordonnées	Radius .008 Radio .008 Rayon .008	Radius .016 Radio .016 Rayon .016	Radius .031 Radio .031 Rayon .031	Radius .047 Radio .047 Rayon .047	Radius .063 Radio .063 Rayon .063	Radius .094 Radio .094 Rayon .094	Radius .125 Radio .125 Rayon .125
Internal holder Portaherramientas interno Outils intérieurs	PCLNR/L	x	-0.00240	-0.00181	0.00000	0.00047	0.00157	0.00386	0.00614
		z	-0.00244	-0.00185	0.00000	0.00059	0.00181	0.00630	0.00665
	PDUNR/L	x	-0.01969	-0.01335	0.00000	0.01201	0.02469	0.05004	0.07539
		z	-0.00205	-0.00157	0.00000	0.00024	0.00114	0.00299	0.00480
	PSKNR/L	x	-0.00602	-0.00382	0.00000	0.00248	0.00563	0.01193	0.01823
		z	0.00539	0.00386	0.00000	-0.00488	-0.00921	-0.01795	-0.02665
	PTFNR/L	x	-0.01673	-0.01138	0.00000	0.01000	0.02071	0.04209	0.06350
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	PWLNR/L	x	-0.00236	-0.00181	0.00000	0.00047	0.00169	0.00386	0.00614
		z	-0.00256	-0.00193	0.00000	0.00047	0.00157	0.00413	0.00654
External holder Portaherramientas externo Porta ferramentas externo Outils extérieurs	SCACR/L	x	0.00453	0.00303	0.00000	-0.00303	-0.00602	-0.01209	-0.01811
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	SCBCR/L	x	0.00165	0.00110	0.00000	-0.00110	-0.00217	-0.00437	-0.00654
		z	0.00512	0.00343	0.00000	-0.00343	-0.00685	-0.01366	-0.02051
	SCDCR/L	x	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		z	-0.01098	-0.00732	0.00000	0.00732	0.01465	0.02933	0.04398
	SCFCR/L	x	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		z	-0.00488	-0.00327	0.00000	0.00327	0.00654	0.01303	0.01957
	SCLCR/L	x	0.00236	0.00157	0.00000	-0.00157	-0.00315	-0.00630	-0.00945
		z	-0.00244	-0.00165	0.00000	0.00165	0.00327	0.00654	0.00980
	SDJCR/L	x	0.02047	0.01362	0.00000	-0.01362	-0.02728	-0.05457	-0.08181
		z	-0.00236	-0.00157	0.00000	0.00157	0.00315	0.00634	0.00949
	SDNCN	x	0.02752	0.01835	0.00000	-0.01835	-0.03673	-0.07343	-0.11016
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	SEGCR/L	x	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		z	-0.00717	-0.00476	0.00000	0.00476	0.00957	0.01909	0.02866
	SSBCR/L	x	0.00531	0.00354	0.00000	-0.00354	-0.00709	-0.01417	-0.02122
		z	0.00610	0.00409	0.00000	-0.00409	-0.00815	-0.01630	-0.02445
	SSDCN	x	0.00980	0.00654	0.00000	-0.00654	-0.01303	-0.02610	-0.03913
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	SSKCR/L	x	-0.01480	-0.02035	0.00000	-0.04264	-0.05378	-0.07602	-0.09831
		z	-0.00531	-0.00354	0.00000	0.00354	0.00709	0.01417	0.02122
	STCFR/L	x	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		z	–	–	0.00000	–	–	–	–
	STJCR/L	x	0.01598	0.01067	0.00000	-0.01067	-0.02134	-0.04268	-0.06402
		z	-0.00213	-0.00142	0.00000	0.00142	0.00280	0.00563	-0.00843
	SVACR/L	x	00/0	.004/-.004	–	–	–	–	–
		z	00/0	.004/-.004	–	–	–	–	–
	SVGCR/L	x	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
		z	-0.05130	-0.03421	0.00000	0.03421	0.06839	0.13681	0.20520
	SVHBR/L	x	0.04071	0.02717	0.00000	-0.02717	-0.05429	-0.10862	-0.16291
		z	-0.02142	-0.01429	0.00000	0.01429	0.02858	0.05717	0.08575
	SVHCR/L	x	0.04071	0.02717	0.00000	-0.02717	-0.05429	-0.10862	-0.16291
		z	-0.02142	-0.01429	0.00000	0.01429	0.02858	0.05717	0.08575
	SVJBR/L	x	0.04996	0.03331	0.00000	-0.03331	-0.06661	-0.13323	-0.19984
		z	-0.00390	-0.00260	0.00000	0.00260	0.00520	0.01035	0.01555
	SVJCR/L	x	0.04996	0.03331	0.00000	-0.03331	-0.06661	-0.13323	-0.19984
		z	-0.00390	-0.00260	0.00000	0.00260	0.00520	0.01035	0.01555
	SVPBR/L	x	0.03193	0.02130	0.00000	-0.02130	-0.04256	-0.08512	-0.12772
		z	-0.03193	-0.02130	0.00000	0.02130	0.04256	0.08512	0.12772
	SVPCR/L	x	0.03193	0.02130	0.00000	-0.02130	-0.04256	-0.08512	-0.12772
		z	-0.03193	-0.02130	0.00000	0.02130	0.04256	0.08512	0.12772
	SVVBN	x	0.05492	0.03661	0.00000	-0.03661	-0.07323	-0.14650	-0.21972
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

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Holder Portaherramientas Outil		Coordinates Coordenadas Coordonnées	Radius .008 Radio .008 Rayon .008	Radius .016 Radio .016 Rayon .016	Radius .031 Radio .031 Rayon .031	Radius .047 Radio .047 Rayon .047	Radius .063 Radio .063 Rayon .063	Radius .094 Radio .094 Rayon .094	Radius .125 Radio .125 Rayon .125
External holder Portaherramientas externo Outils extérieurs	SVVCN	x	0.05492	0.03661	0.00000	-0.03661	-0.07323	-0.14650	-0.21972
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	SVXBR/L	x	0.04728	0.03154	0.00000	-0.00315	-0.06303	-0.12606	-0.18913
		z	-0.01020	-0.00681	0.00000	0.00681	0.01358	0.02720	0.04079
	SVXCR/L	x	0.04728	0.03154	0.00000	-0.00315	-0.06303	-0.12606	-0.18913
		z	-0.01020	-0.00681	0.00000	0.00681	0.01358	0.02720	0.04079
	SWLCR/L	x	0.00236	0.00157	0.00000	-0.00157	-0.00315	-0.00630	-0.00945
		z	-0.00236	-0.00157	0.00000	0.00157	0.00315	0.00630	0.00945
Internal holder Portaherramientas interno Outils intérieurs	SCFCR/L	x	-0.01654	-0.01102	0.00000	0.01102	0.02205	0.04413	0.06618
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	SCKCR/L	x	-0.00157	-0.00106	0.00000	0.00106	0.00213	0.00425	0.00634
		z	0.00512	0.00343	0.00000	-0.00343	-0.00685	-0.01370	0.02051
	SCLCR/L	x	-0.00228	-0.00154	0.00000	0.00154	0.00307	0.00610	0.00917
		z	-0.00244	-0.00165	0.00000	0.00165	0.00327	0.00654	0.00980
	SCXCR/L	x	-0.00701	-0.00469	0.00000	0.00469	0.00933	0.01866	0.02799
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	SDQCR/L	x	-0.01217	-0.00764	0.00000	0.00811	0.01622	0.03248	0.04870
		z	-0.01220	-0.00811	0.00000	0.01055	0.01965	0.03783	0.05602
	SDUCR/L	x	-0.01984	-0.01323	0.00000	0.01323	0.02646	0.05291	0.07937
		z	-0.00232	-0.00154	0.00000	0.00161	0.00323	0.00638	0.00953
	SDZCR/L	x	-0.02047	-0.01362	0.00000	0.01362	0.02728	0.00547	0.08181
		z	0.00232	0.00154	0.00000	-0.00161	-0.00323	-0.00638	-0.00953
	SELPR/L	x	-0.00496	-0.00331	0.00000	0.00331	0.00661	0.01327	0.00201
		z	-0.00260	-0.00173	0.00000	0.00173	0.00346	0.00693	0.01039
	SEUCR/L	x	-0.00587	-0.00390	0.00000	0.00390	0.00783	0.01563	0.02346
		z	-0.00161	-0.00106	0.00000	0.00106	0.00209	0.00421	0.00630
	SEUPR/L	x	-0.00583	-0.00390	0.00000	0.00390	0.00780	0.01559	0.02335
		z	-0.00157	-0.00106	0.00000	0.00106	0.00209	0.00421	0.00630
	SEXPR/L	x	-0.01512	-0.01008	0.00000	0.01008	0.02016	0.04031	0.06051
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	SSSCR/L	x	-0.00980	-0.00654	0.00000	0.00654	0.01303	0.02610	0.03913
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	STFCR/L	x	-0.01705	-0.01138	0.00000	0.01138	0.02272	0.04543	0.06815
		z	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
	SVLCR/L	x	-0.04894	-0.03260	0.00000	0.03260	0.06524	0.13047	0.19571
		z	0.00941	0.02724	0.00000	-0.00425	-0.00846	-0.01693	-0.02539
	SVQBR/L	x	-0.04043	-0.02693	0.00000	0.02717	0.05390	0.10780	0.16165
		z	-0.02146	-0.01429	0.00000	0.01429	0.02858	0.05717	0.08575
	SVQCR/L	x	-0.04043	-0.02693	0.00000	0.02717	0.05390	0.10780	0.16165
		z	-0.02146	-0.01429	0.00000	0.01429	0.02858	0.05717	0.08575
	SVUBR/L	x	-0.04957	-0.03307	0.00000	0.03307	0.06610	0.13220	0.19831
		z	0.00390	-0.00260	0.00000	0.00260	0.00520	0.01035	0.01555
	SVUCR/L	x	-0.04957	-0.03307	0.00000	0.03307	0.06610	0.13220	0.19831
		z	0.00390	-0.00260	0.00000	0.00260	0.00520	0.01035	0.01555
	SVXCR/L	x	-0.03610	-0.02406	0.00000	0.02406	0.04811	0.09626	0.14437
		z	-0.02740	-0.01827	0.00000	0.01827	0.03654	0.07307	0.10957
	SWLCR/L	x	-0.00236	-0.00154	0.00000	0.00154	0.00311	0.00622	0.00933
		z	-0.00236	-0.00157	0.00000	0.00157	0.00315	0.00630	0.00945
	SWUCR/L	x	-0.00315	-0.00209	0.00000	0.00209	0.00421	0.00839	0.01256
		z	-0.00134	-0.00094	0.00000	0.00094	0.00193	0.00386	0.00575

ATTENTION – the data is valid for right-hand holders oriented as shown in picture 19. For internal holders, left-hand holders or other orientations it is necessary to correct or mark +/– (to substitute values X/Z)

ATENCIÓN – los datos son válidos para el portaherramientas del lado derecho orientado según la Imagen 19. Para los portaherramientas internos, es necesaria la orientación hacia el lado izquierdo o de otro tipo para hacer la corrección de las marcas +/– (para sustituir los valores X/Z)

ATTENTION – Les valeurs dans le tableau sont valables pour des outils orientés à droite comme sur l'Image 19. Pour les outils intérieurs, à gauche ou avec d'autres orientations, il est nécessaire de corriger les valeurs avec les signes +/– (pour substituer les valeurs X/Z)

The choice of production method is influenced by the workpiece and the machine. Workpiece – external or internal thread, right- or left-hand thread. Machine – right- or left-hand tool. For guidance, you can use table 15 below.

Le choix de la méthode d'usinage est guidé par la pièce à réaliser et la machine. Pièce avec filetage extérieur ou intérieur, sens des filets à droite ou à gauche. Tourelle placée à l'avant ou à l'arrière. Vous pouvez utiliser les tableaux N° 15.

La pieza de trabajo y la máquina influyen en la elección del método de producción. Pieza de trabajo: rosca interna o externa, a derecha o a izquierda. Máquina: herramienta a derecha o a izquierda. Puede utilizar la Tabla 15 siguiente.

Table / Tabla / Tableau 15a

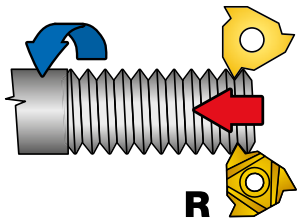
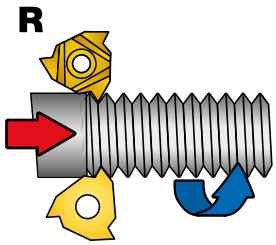
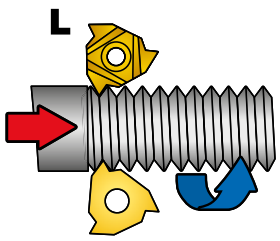
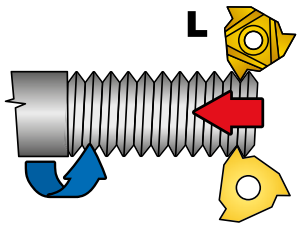
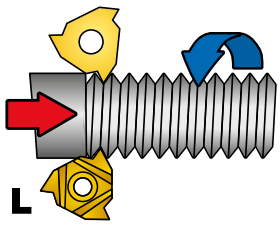
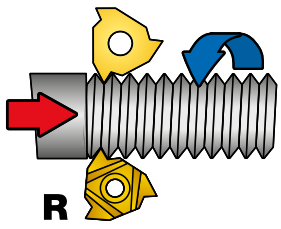
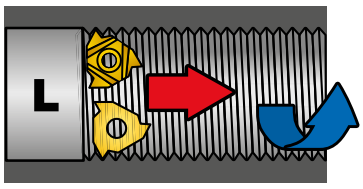
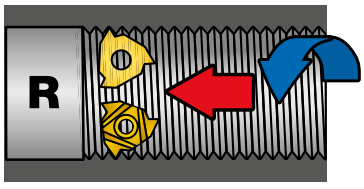
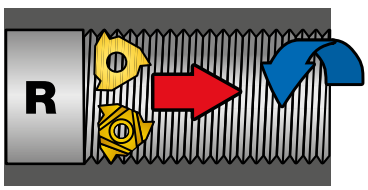
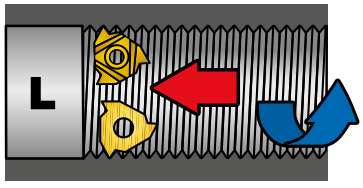
EXTERNAL THREAD, RIGHT-HAND / ROSCA EXTERNA, DERECHA / FILETAGE EXTÉRIEUR À DROITE		
		
EXTERNAL THREAD, LEFT-HAND / ROSCA EXTERNA, IZQUIERDA / FILETAGE EXTÉRIEUR À GAUCHE		
		

Table / Tabla / Tableau 15b

INTERNAL THREAD, RIGHT-HAND / ROSCA INTERNA, DERECHA / FILETAGE INTÉRIEUR À DROITE	
	
INTERNAL THREAD, LEFT-HAND / ROSCA INTERNA, IZQUIERDA / FILETAGE INTÉRIEUR À GAUCHE	
	

Movement of the workpiece
Movimiento de la pieza
Mouvement de la pièce

Tool movement
Movimiento de la herramienta
Mouvement de l'outil

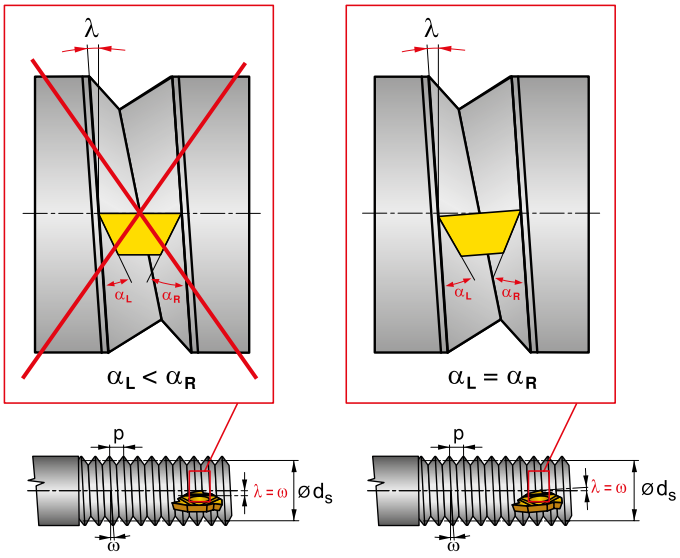
L / R Insert design
Tipo de inserto
Sens de coupe plaquette

The following formula can be used to calculate the helix angle:
Se puede utilizar la siguiente fórmula para calcular el ángulo de hélice:
La formule suivante est à utiliser pour le calcul de l'angle d'hélice :

$$\operatorname{tg} \omega = \frac{p}{d_s \cdot \pi}$$

ω	helix angle	[°]	p	pitch	[in]	d_s	pitch diameter	[in]
ω	ángulo de hélice	[°]	p	paso	[in]	d_s	diámetro de paso	[in]
ω	ângulo da hélice	[°]	p	passo	[in]	d_s	diâmetro do passo	[in]
ω	angle d'hélice	[°]	p	pas	[in]	d_s	diamètre du pas	[in]

Picture / Imagen / Image 20



To generate the correct shape on the thread and uniform wear on the insert, the cutting edge helix angle should be equal to the thread lead angle.

Tool holders are usually supplied with a helix angle λ = 1.5°. A different helix angle can be selected by changing the anvil.

Use the following graph (picture 21) or table (table 16) to choose the correct anvil.

Pour réaliser la forme correcte du filet et obtenir une usure régulière sur l'arête de coupe, l'angle d'hélice de l'arête doit être égal à l'angle d'inclinaison du filet.

Les outils sont généralement fournis avec un angle d'hélice λ = 1,5°. Un angle d'hélice différent peut être choisi en changeant la cale.

Voir le graphique ou le tableau ci-dessous pour choisir la bonne cale pentée. Tableau 16 et Image 21.

Para generar la forma correcta de la rosca y un desgaste uniforme en la plaquita el ángulo de hélice del filo de corte debe ser igual al ángulo de inclinación base de la rosca.

Normalmente los portaherramientas se suministran con un ángulo de hélice λ = 1,5°. Se puede seleccionar un ángulo de hélice diferente cambiando la base.

Utilice el gráfico o la tabla siguientes para elegir la base correcta. Tabla 16 y gráfica en Imagen 21.

Table 16. – Choice of shim
Tabla 16 – Selección de la base
Tableau 16 – Choix de l'assise

Helix angle λ Ángulo de hélice λ Angle d'hélice λ	Positive Positivo Positive					Negative Negativo Négative		for grooving inserts Para placas de ranurado Pour plaquettes à gorge TN16.. ... ZZ, TN22.. ... ZZ
	4.5°	3.5°	2.5°	**1.5°**	0.5°	-0.5°	-1.5°	
Tool holder / Portaherramientas Porte-outil	Anvil specification / Especificación de la base Spécification de base							
SER .... .16; SIL .... .16	PE16+4.5	PE16+3.5	PE16+2.5	PE16+1.5	PE16+0.5	PE16-0.5	PE16-1.5	PE16ZZ
SEL .... .16; SIR .... .16	PI16+4.5	PI16+3.5	PI16+2.5	PI16+1.5	PI16+0.5	PI16-0.5	PI16-1.5	PI16ZZ
SER .... .22; SIL .... .22	PE22+4.5	PE22+3.5	PE22+2.5	PE22+1.5	PE22+0.5	PE22-0.5	PE22-1.5	PE22ZZ
SEL .... .22; SIR .... .22	PI22+4.5	PI22+3.5	PI22+2.5	PI22+1.5	PI22+0.5	PI22-0.5	PI22-1.5	PI22ZZ
SER-S .... .22; SIL-S .... .22	PE22S+4.5	PE22S+3.5	PE22S+2.5	PE22S+1.5	PE22S+0.5	PE22S-0.5	PE22S-1.5	-
SEL-S .... .22; SIR-S .... .22	PI22S+4.5	PI22S+3.5	PI22S+2.5	PI22S+1.5	PI22S+0.5	PI22S-0.5	PI22S-1.5	-

Tool holders are usually supplied with a helix angle λ = 1.5°. A different helix angle can be selected by changing the anvil.
Shims for holders SER-S ...., SIR-S .... are marked with „S"

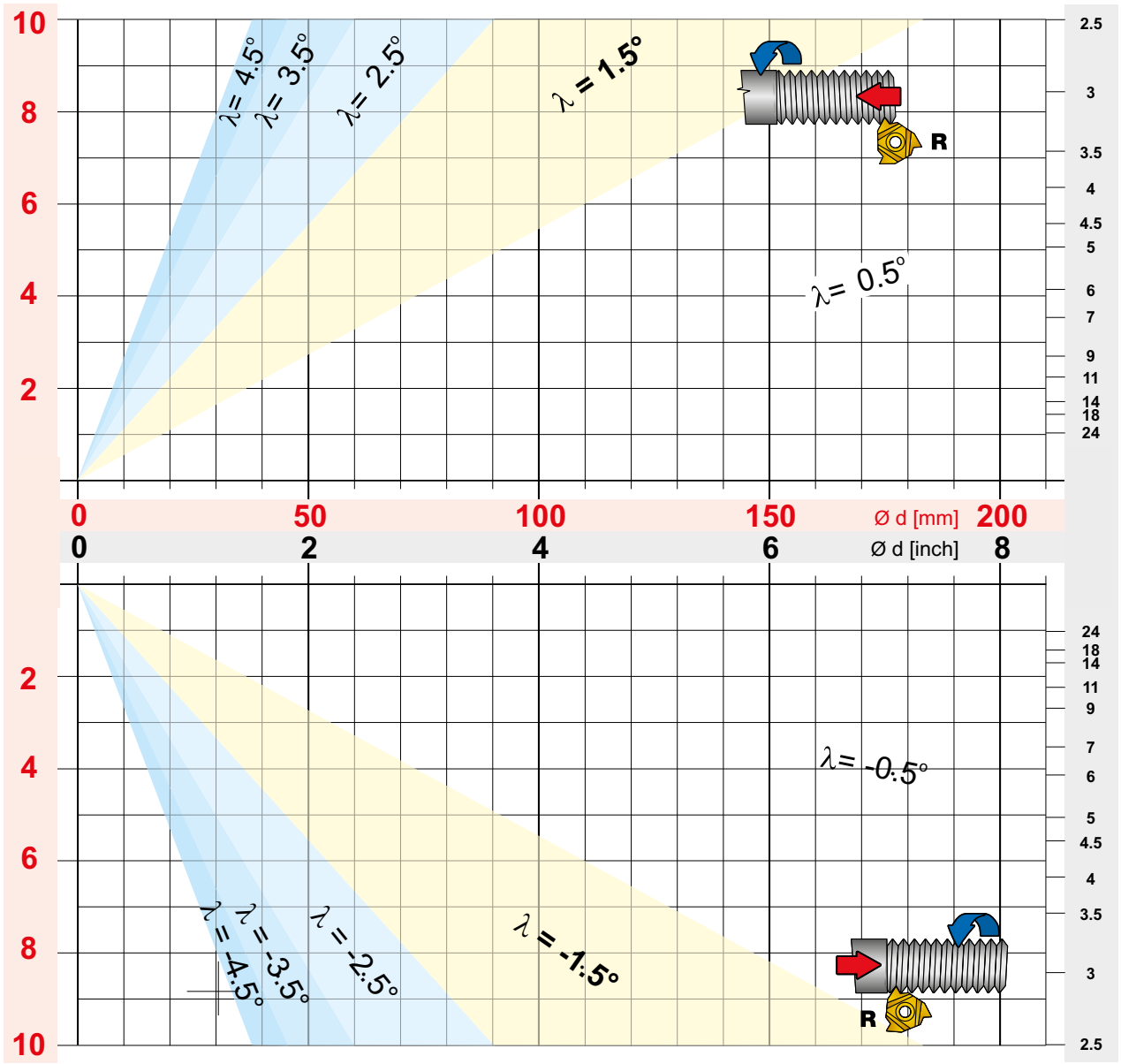
Nota: Normalmente los portaherramientas se suministran con un ángulo de hélice λ = 1,5°. Se puede seleccionar un ángulo de hélice diferente cambiando la base. Las bases para portaherramientas SER-S ...., SIR-S .... están marcadas con una „S"

Les outils sont généralement fournis avec un angle d'hélice λ = 1.5°. Un angle d'hélice différent peut être choisi en changeant la cale.
Les assises pour porte-outils SER-S ...., SIR-S .... sont marquées avec un „S"

Picture 21. – Graph for shim selection
Imagen 21 – Selección de la base
Image N° 21 – Graphique pour sélection des assises

Thread pitch P [in]
Paso de rosca P [in]
Pas P [in]

No. of threads / 1”
N.º de roscas /1”
Nb de filets /1“



Movement of the workpiece
Movimiento de la pieza
Mouvement de la pièce

Tool movement
Movimiento de la herramienta
Mouvement de l’outil

L / R Insert design
Tipo de inserto
Sens de coupe plaquette

Infeed method and depth

The choice of infeed method is most important for long chipping materials to ensure good chip control.

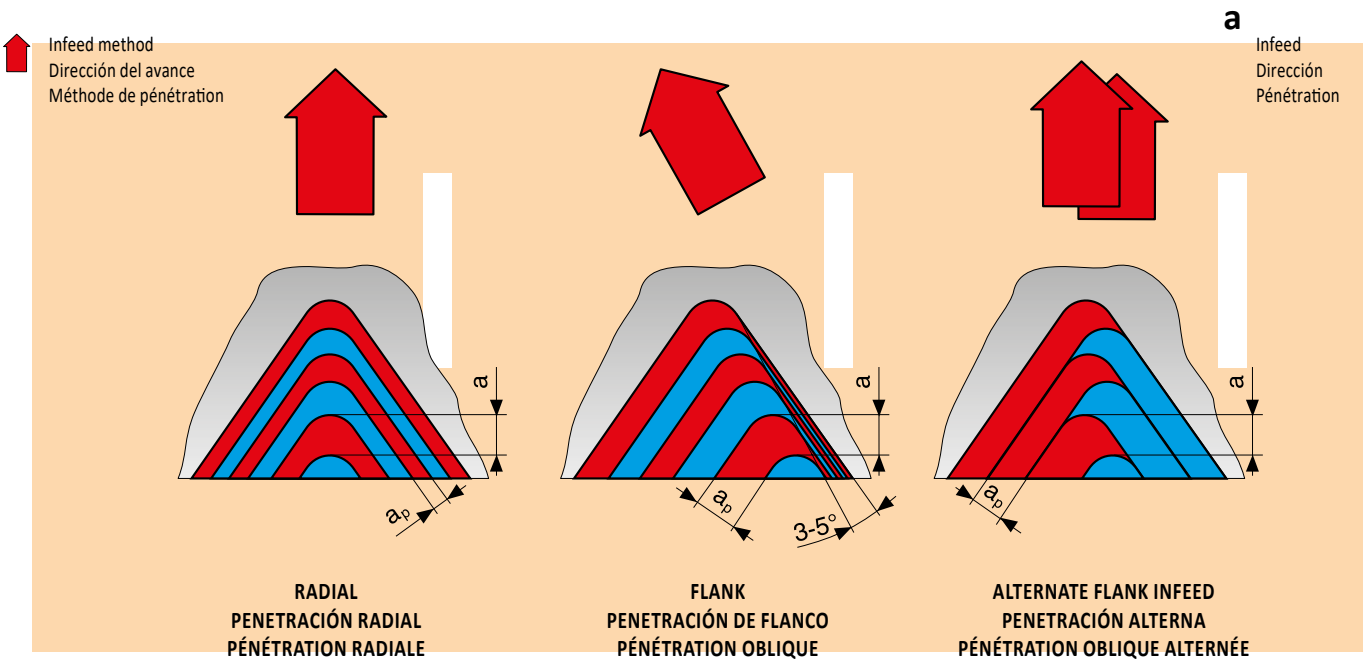
Método de avance y profundidad

La selección del método de avance es muy importante con materiales de viruta larga para garantizar un buen control de las virutas.

Méthode de pénétration et profondeur

Le choix de la méthode de pénétration est important pour assurer une bonne maîtrise des matériaux à copeaux longs.

Picture / Imagen / Image 22



The choice depends on the machine type, the machined material and the pitch.

Radial infeed – the most simple and the most used. The infeed is perpendicular to the axis of rotation of the workpiece. It contributes to good chip formation and uniform wear on the cutting edge. Suitable for threads with a small pitch (p <.059“). There is a risk of vibration at higher feeds. First choice for working on hard materials (e.g. austenitic stainless steels, steels with low carbon content).

Flank infeed – reduces thermal stress on the cutting edge and thereby wear. Good chip control. Suitable for threads with a pitch of p >.059“ for TR threads. Flank infeed with deviation 3-5° eliminates friction on the thread flank.

Alternate flank infeed – recommended for coarse threads and materials with poor chip formation. Long tool life. For CNC machines, higher demand on CNC programming.

Infeed method and number of passes depend on the thread pitch. The tables give basic recommendations and apply to all geometries. If the insert fractures, the infeed value should be decreased and the number of passes should be increased. The infeed depth should not be less than .059“/pass. On austenitic and soft steels the infeed depth per pass should be greater than .003“.

La selección depende del tipo de máquina, el material mecanizado y el paso.

Avance radial: sencillo, el más utilizado. El avance es perpendicular al eje de rotación de la pieza de trabajo. Buena formación de virutas, desgaste uniforme del filo de corte. Adecuado para roscas de paso pequeño (p <.059“). Riesgo de vibraciones con avances mayores. Primera opción para materiales endurecidos (por ejemplo, aceros inoxidables austeníticos, aceros con bajo contenido de carbono).

Avance de flanco: reduce la fatiga térmica del filo de corte y por lo tanto, el desgaste. Excelente control de virutas. Adecuado para roscas con paso p >.059“ para roscas TR. El avance de flanco con desviación de 3-5° elimina la fricción en el flanco de la rosca.

Avance de flanco alternativo: se recomienda para roscas de paso grande y materiales con mala formación de virutas. Larga vida útil de la herramienta. Para máquinas CNC, demanda alta de programación CNC

El método de avance y el número de pasadas dependen del paso de rosca. Las tablas ofrecen recomendaciones básicas y son aplicables a todas las geometrías. Si se produce una fractura de la plaquita, debe aumentarse el número de pasadas. la profundidad de avance no debe ser inferior a .059“/pasada. En los aceros austeníticos y blandos la profundidad de avance por pasada debe ser superior a .003“.

Le choix dépend du type de machine, du matériau à usiner et du pas.

Pénétration radiale – simple et la plus généralement utilisée. La pénétration est perpendiculaire à l'axe de rotation de la pièce. La formation du copeau est bonne, l'usure de l'arête de coupe est uniforme. Convient pour les filets TR avec un petit pas (p <.059“). Risque de vibrations avec des vitesses élevées. Premier choix pour les matières difficiles à travailler (ex: aciers inoxydables austénitiques, aciers bas carbone).

Pénétration oblique – Réduit les contraintes thermiques sur l'arête de coupe et donc l'usure. Bon contrôle des copeaux. Convient pour les filets avec un pas p > .059“ pour les filets TR. La pénétration oblique suivant un angle de 3,5° élimine le frottement sur le flanc de filet.

Pénétration oblique alternée – recommandée pour les gros filets et les matériaux avec une formation de copeaux difficile. Longue durée de vie. Pour les machines CNC, plus grande demande pour la programmation CNC.

La méthode de pénétration et le nombre de passes dépendent de la valeur du pas de filetage. Les tableaux donnent des recommandations de base et sont applicables à toutes les géométries. Dans le cas d'une casse de plaquette, le nombre de passes doit être augmenté. La profondeur de pénétration ne doit pas être inférieure à .059“ par passe. Pour les aciers doux et les austénitiques la profondeur doit être supérieure à .003“.

Table / Tabla / Tableau 17

Tubular cylindrical thread profile corresponds with W (WHITWORTH 55°)
El perfil de rosca cilíndrico tubular corresponde a W (WHITWORTH 55°)
Profil de filet tubulaire cylindrique correspondant à W (WHITWORTH 55°)

Thread marking Marcado de rosca Marquage du filet	No. of threads / 1" N.º de roscas / 1" No. de filets / 1"	Thread pitch P Paso de rosca P Pas P [in]	Nominal diameter of thread Diámetro nominal de rosca Diamètre nominal de filet [in]	Small diameter of thread Diámetro pequeño de rosca Petit diamètre de filet [in]	Thread insert marking Marcado de plaquita de rosca Marquage du filet sur plaquette
G 1/16″	28	.0357	.304	.258	**TN xxxx280W**
G 1/8″			.383	.337	
G 1/4″	19	.0526	.518	.450	**TN xxxx190W**
G 3/8″			.656	.588	
G 1/2″	14	.0714	.825	.733	**TN xxxx140W**
G 5/8″			.902	.810	
G 3/4″			1.041	.949	
G 7/8″			1.189	1.097	
G 1″	11	.0909	1.309	1.192	**TN xxxx110W**
G1 1/8″			1.492	1.376	
G1 1/4″			1.650	1.534	
G1 1/2″			1.882	1.767	
G1 3/4″			2.216	1.999	
G 2″			2.347	2.231	
G2 1/4″			2.587	2.471	
G2 1/2″			2.960	2.844	
G2 3/4″			3.210	3.094	
G3″			3.460	3.344	
G3 1/2″			3.950	3.834	
G4″			4.450	4.334	
G4 1/2″			4.950	4.834	
G5″			5.450	5.334	
G5 1/2″			5.950	5.834	
G6″			6.450	6.334	

Example: for right-hand external thread on 1 ½´´ tube use thread insert TN 16ER110W; 8030
Ejemplo: para una rosca externa derecha en un tubo de 1 ½´´ utilice la plaquita de rosca TN 16ER110W; 8030
Exemple : Pour un filetage extérieur à droite sur un tube 1 ½´´ utiliser la plaquette de filetage TN 16ER110W; 8030

INFEED DEPTH
PROFUNDIDAD DE AVANCE
PROFONDEUR DE PÉNÉTRATION

Table 18a: M – metric 60° – external / Tabla 18a: M – métrica 60° – externa / Tableau 18a : M – métrique 60° – extérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS														
	Pitch [mm] / Paso [mm] / Pas [mm]														
	6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.75	1.5	1.25	1.0	0.75	0.50
1	.018	.017	.016	.015	.003	.013	.011	.011	.009	.008	.008	.008	.008	.006	.005
2	.017	.016	.015	.013	.013	.012	.010	.009	.009	.008	.008	.007	.006	.006	.004
3	.014	.013	.013	.011	.010	.010	.008	.008	.007	.007	.007	.006	.005	.004	.003
4	.012	.011	.011	.009	.009	.008	.007	.007	.006	.006	.006	.004	.004	.003	.002
5	.011	.010	.010	.009	.008	.008	.007	.006	.006	.005	.005	.004	.003		
6	.010	.009	.009	.008	.007	.007	.006	.006	.005	.004	.003	.003			
7	.009	.008	.009	.008	.007	.006	.006	.005	.004	.003					
8	.009	.008	.008	.007	.006	.006	.005	.004	.003	.003					
9	.009	.007	.007	.007	.006	.006	.005	.004							
10	.008	.007	.007	.006	.005	.005	.004	.003							
11	.007	.007	.006	.006	.005	.004	.004								
12	.006	.006	.006	.005	.004	.003	.003								
13	.006	.006	.005	.005	.004										
14	.006	.005	.004	.004	.003										
15	.005	.005													
16	.004	.004													
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	.151	.139	.126	.113	.100	.088	.076	.063	.049	.044	.037	.032	.026	.019	.014

Table 18b: M – Metric 60° – internal / Tabla 18b: M – métrica 60° – interna / Tableau 18B : M – métrique 60° – intérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS														
	Pitch [mm] / Paso [mm]/ Pas [mm]														
	6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.75	1.5	1.25	1.0	0.75	0.50
1	.018	.017	.017	.015	.013	.013	.011	.010	.009	.009	.008	.007	.007	.006	.004
2	.017	.016	.016	.013	.012	.012	.010	.010	.008	.007	.007	.007	.006	.005	.003
3	.014	.013	.013	.011	.009	.009	.008	.007	.007	.006	.006	.006	.004	.004	.003
4	.012	.010	.010	.009	.008	.007	.006	.006	.006	.005	.005	.004	.004	.003	.002
5	.010	.009	.009	.008	.007	.007	.006	.005	.005	.004	.004	.003	.003		
6	.009	.008	.008	.007	.007	.006	.005	.005	.004	.004	.003	.003			
7	.008	.007	.007	.006	.006	.006	.005	.004	.003	.003					
8	.007	.006	.006	.006	.005	.005	.004	.004	.003	.003					
9	.007	.006	.006	.006	.005	.005	.004	.004							
10	.006	.006	.006	.005	.005	.004	.004	.003							
11	.006	.006	.005	.005	.004	.004	.004								
12	.006	.006	.005	.005	.004	.003	.003								
13	.005	.005	.005	.004	.004										
14	.005	.005	.004	.004	.003										
15	.005	.004													
16	.004	.004													
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	.139	.128	.117	.104	.092	.081	.070	.058	.045	.041	.033	.030	.024	.018	.012

INFEED DEPTH
PROFUNDIDAD DE AVANCE
PROFONDEUR DE PÉNÉTRATION

Table 19: W – Whitworth 55° – external and internal / Tabla 19: W – Whitworth 55° – externa e interna / Tableau 19 : W – Whitworth 55° – intérieur et extérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS																
	Pitch [no of thread/in] / Paso [fpp] / Pas [Nombre de filets/pouce]																
	4	4.5	5	6	7	8	9	10	11	12	14	16	18	19	20	26	28
1	0.019	0.018	0.018	0.015	0.015	0.013	0.012	0.011	0.011	0.011	0.009	0.009	0.009	0.009	0.008	0.007	0.007
2	0.018	0.017	0.017	0.014	0.014	0.012	0.011	0.011	0.010	0.010	0.009	0.009	0.009	0.009	0.008	0.007	0.007
3	0.015	0.015	0.015	0.012	0.011	0.009	0.009	0.009	0.009	0.009	0.007	0.007	0.007	0.007	0.007	0.006	0.006
4	0.014	0.013	0.013	0.010	0.010	0.008	0.008	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.006	0.005	0.005
5	0.013	0.011	0.011	0.009	0.009	0.007	0.007	0.007	0.006	0.006	0.005	0.005	0.005	0.005	0.004	0.003	0.003
6	0.012	0.010	0.010	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.004	0.004	0.003	0.003	0.003		
7	0.011	0.009	0.009	0.007	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.003					
8	0.011	0.009	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.003	0.003						
9	0.009	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.003								
10	0.009	0.007	0.007	0.006	0.006	0.005	0.005	0.003									
11	0.008	0.007	0.007	0.006	0.005	0.005	0.003										
12	0.007	0.006	0.006	0.006	0.003	0.003											
13	0.007	0.006	0.005	0.005													
14	0.006	0.006	0.004	0.004													
15	0.005	0.005															
16	0.004	0.004															
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	0.169	0.150	0.135	0.114	0.098	0.085	0.076	0.069	0.062	0.057	0.047	0.044	0.040	0.038	0.036	0.028	0.027

Table 20a: UN – UN 60° – external / Tabla 120a: UN 60° – externa / Tableau 20a : UN – UN 60° – extérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS																
	Pitch [no of thread/in] / Paso [fpp] / / Pas [Nombre de filets/pouce]																
	4	4.5	5	6	7	8	9	10	11	12	13	14	16	18	20	24	28	32
1	0.019	0.018	0.017	0.014	0.014	0.012	0.011	0.011	0.011	0.011	0.010	0.009	0.009	0.009	0.008	0.007	0.007	0.007
2	0.017	0.016	0.016	0.013	0.013	0.011	0.010	0.010	0.010	0.010	0.009	0.009	0.008	0.008	0.007	0.007	0.006	0.006
3	0.016	0.015	0.014	0.011	0.010	0.010	0.008	0.008	0.008	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.004	0.005
4	0.014	0.012	0.012	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.003
5	0.013	0.010	0.010	0.009	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.004	0.003	0.003	
6	0.011	0.009	0.009	0.008	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.003	0.003			
7	0.010	0.008	0.008	0.007	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.003					
8	0.009	0.008	0.007	0.006	0.006	0.005	0.005	0.005	0.004	0.003	0.003	0.003						
9	0.009	0.007	0.007	0.006	0.006	0.005	0.005	0.004	0.003									
10	0.008	0.007	0.007	0.006	0.005	0.005	0.004	0.003										
11	0.007	0.006	0.007	0.005	0.004	0.004	0.003											
12	0.007	0.006	0.006	0.005	0.003	0.003												
13	0.006	0.006	0.005	0.004														
14	0.006	0.006	0.004	0.004														
15	0.005	0.005																
16	0.004	0.004																
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	0.160	0.143	0.130	0.107	0.092	0.082	0.072	0.065	0.060	0.055	0.051	0.047	0.041	0.037	0.033	0.028	0.024	0.021

INFEED DEPTH
PROFUNDIDAD DE AVANCE
PROFONDEUR DE PÉNÉTRATION

Table 20b: UN - UN 60° – internal / Tabla 20a: UN 60° – interna / Tableau 20b : UN 60° – intérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS																	
	Pitch [no of thread/in] / Paso [fpp] / Pas [Nombre de filets/pouce]																	
	4	4.5	5	6	7	8	9	10	11	12	13	14	16	18	20	24	28	32
1	0.017	0.016	0.017	0.014	0.013	0.012	0.011	0.011	0.011	0.011	0.010	0.009	0.009	0.009	0.008	0.007	0.007	0.007
2	0.016	0.015	0.015	0.013	0.013	0.011	0.010	0.010	0.009	0.009	0.008	0.007	0.007	0.007	0.006	0.006	0.006	0.006
3	0.015	0.013	0.013	0.010	0.009	0.009	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.004
4	0.013	0.011	0.011	0.008	0.008	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.004	0.004	0.003	0.003
5	0.011	0.009	0.009	0.007	0.007	0.006	0.006	0.005	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.003	0.003	
6	0.009	0.008	0.008	0.006	0.006	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.003	0.003			
7	0.009	0.007	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.003					
8	0.008	0.007	0.007	0.006	0.005	0.004	0.004	0.004	0.004	0.003	0.003	0.003						
9	0.008	0.007	0.006	0.005	0.005	0.004	0.004	0.004	0.003									
10	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.003										
11	0.007	0.006	0.006	0.005	0.004	0.004	0.003											
12	0.006	0.006	0.006	0.004	0.003	0.003												
13	0.006	0.006	0.005	0.004														
14	0.006	0.005	0.004	0.004														
15	0.005	0.005																
16	0.004	0.004																
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	0.147	0.131	0.118	0.097	0.084	0.074	0.065	0.059	0.054	0.049	0.045	0.042	0.037	0.033	0.030	0.025	0.022	0.019

Table 21: NPT 60° – internal and external / Tabla 21: NPT 60° – interna ed externa / Tabela 21. NPT 60º – interna e externa / Tableau 21 : NPT 60° – intérieur et extérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS				
	Pitch [no of thread/in] / Paso [fpp] / Pas [Nombre de filets/pouce]				
	8	11.5	14	18	27
1	0.011	0.010	0.009	0.009	0.007
2	0.010	0.009	0.009	0.007	0.006
3	0.009	0.007	0.007	0.006	0.005
4	0.007	0.006	0.006	0.006	0.004
5	0.007	0.006	0.006	0.005	0.004
6	0.007	0.006	0.005	0.005	0.003
7	0.007	0.006	0.005	0.004	
8	0.007	0.005	0.004	0.003	
9	0.006	0.005	0.004		
10	0.006	0.004	0.003		
11	0.006	0.004			
12	0.005	0.003			
13	0.005				
14	0.004				
15	0.003				
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	0.100	0.069	0.057	0.044	0.030

INFEED DEPTH
PROFUNDIDAD DE AVANCE
PROFONDEUR DE PÉNÉTRATION

Table 22a: RD – RD 30° – external / Tabla 22a: RD – RD 30° – externa / Tableau 22a : RD – RD 30° – extérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS			
	Pitch [no of thread/in] / Paso [fpp] / Pas [Nombre de filets/pouce]			
	4	6	8	10
1	0.017	0.013	0.011	0.010
2	0.016	0.011	0.010	0.010
3	0.013	0.010	0.008	0.009
4	0.013	0.009	0.007	0.008
5	0.011	0.008	0.007	0.006
6	0.010	0.007	0.006	0.005
7	0.009	0.006	0.006	0.004
8	0.009	0.006	0.005	0.003
9	0.008	0.006	0.004	
10	0.007	0.005	0.003	
11	0.007	0.004		
12	0.006	0.003		
13	0.005			
14	0.004			
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	0.135	0.088	0.068	0.055

Table 22b : RD – RD 30° – internal / Tabla 22b: RD – RD 30° – interna / Tableau 22b : RD – RD 30° – intérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS			
	Pitch [no of thread/in] / Paso [fpp] / Passo (nº de fios / polegada) / Pas [Nombre de filets/pouce]			
	4	6	8	10
1	0.018	0.015	0.010	0.011
2	0.017	0.013	0.009	0.010
3	0.016	0.012	0.008	0.010
4	0.014	0.010	0.007	0.009
5	0.012	0.008	0.007	0.007
6	0.010	0.007	0.006	0.005
7	0.009	0.007	0.006	0.004
8	0.009	0.006	0.005	0.003
9	0.008	0.006	0.004	
10	0.007	0.005	0.003	
11	0.007	0.004		
12	0.006	0.003		
13	0.005			
14	0.004			
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	0.141	0.096	0.065	0.059

INFEED DEPTH
PROFUNDIDAD DE AVANCE
PROFONDEUR DE PÉNÉTRATION

Table 23a: TR 30° external / Tabla 23a: TR – TR 30° – externa / Tableau 23a : TR – Trapèze 30° – extérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS											
	Pitch [mm] / Paso [mm] /Pas [mm]											
	14.0	12.0	1.0	9.0	8.0	7.0	6.0	5.0	4.0	3.0	2.0	1.5
1	.40	.38	.38	.38	.37	.37	.37	.34	.31	.27	.25	.23
2	.37	.36	.36	.35	.35	.34	.35	.33	.28	.25	.24	.22
3	.36	.34	.34	.34	.34	.33	.32	.27	.24	.21	.20	.18
4	.36	.34	.34	.33	.33	.31	.29	.25	.20	.17	.17	.14
5	.35	.32	.32	.31	.31	.29	.27	.23	.19	.15	.14	.12
6	.35	.32	.32	.30	.29	.26	.25	.21	.18	.13	.13	.08
7	.34	.30	.31	.29	.28	.26	.23	.20	.16	.13	.11	
8	.34	.30	.29	.28	.27	.26	.22	.20	.15	.12	.09	
9	.34	.30	.28	.26	.25	.24	.22	.18	.15	.12		
10	.33	.29	.27	.25	.24	.23	.20	.16	.15	.10		
11	.33	.29	.25	.24	.23	.22	.18	.15	.14	.10		
12	.32	.29	.24	.23	.21	.22	.17	.14	.13	.08		
13	.32	.28	.23	.22	.20	.20	.17	.13	.10			
14	.31	.27	.22	.21	.19	.19	.16	.10				
15	.31	.25	.22	.21	.19	.17	.14					
16	.30	.25	.20	.19	.18	.16	.12					
17	.30	.24	.19	.18	.17	.12						
18	.29	.22	.18	.16	.15							
19	.28	.20	.17	.15	.13							
20	.27	.20	.16	.15								
21	.23	.19	.15	.13								
22	.23	.18	.15									
23	.21	.17	.13									
24	.19	.16										
25	.17	.15										
26	.16	.13										
27	.16											
28	.15											
29	.13											
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	8.2	6.72	5.7	5.16	4.68	4.17	3.66	2.89	2.38	1.83	1.33	.97

INFEED DEPTH
PROFUNDIDAD DE AVANCE
PROFONDEUR DE PÉNÉTRATION

Table 23b: TR - TR 30° – internal / Tabla 23b: TR - TR 30° – interna / Tableau 23b : TR – Trapèze 30° – intérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS											
	Pitch [mm] / Paso [mm] / Pas [mm]											
	14.0	12.0	1.0	9.0	8.0	7.0	6.0	5.0	4.0	3.0	2.0	1.5
1	.40	.38	.38	.38	.37	.37	.37	.34	.31	.27	.25	.23
2	.37	.36	.36	.35	.35	.34	.34	.33	.28	.25	.24	.22
3	.36	.34	.34	.34	.34	.33	.32	.27	.24	.22	.21	.19
4	.36	.34	.34	.33	.33	.31	.29	.25	.20	.17	.17	.14
5	.35	.32	.32	.31	.31	.29	.27	.23	.19	.15	.14	.12
6	.35	.32	.32	.31	.29	.26	.25	.21	.18	.14	.13	.08
7	.34	.30	.31	.29	.28	.26	.23	.20	.16	.13	.11	
8	.34	.30	.29	.29	.27	.26	.22	.20	.15	.12	.09	
9	.34	.30	.28	.26	.25	.24	.22	.18	.15	.12		
10	.33	.29	.27	.25	.24	.23	.20	.16	.15	.10		
11	.33	.29	.25	.24	.23	.22	.18	.15	.14	.10		
12	.32	.28	.24	.23	.21	.22	.17	.14	.13	.08		
13	.32	.28	.23	.22	.20	.20	.17	.13	.10			
14	.31	.27	.22	.21	.19	.19	.16	.10				
15	.31	.25	.22	.21	.19	.17	.14					
16	.30	.25	.20	.20	.18	.16	.12					
17	.30	.24	.19	.18	.17	.12						
18	.29	.22	.18	.16	.15							
19	.28	.20	.17	.15	.13							
20	.27	.20	.16	.15								
21	.27	.19	.15	.13								
22	.23	.18	.15									
23	.23	.17	.13									
24	.21	.16										
25	.19	.15										
26	.17	.13										
27	.16											
28	.16											
29	.15											
30	.13											
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	8.47	6.71	5.7	5.19	4.68	4.17	3.65	2.89	2.38	1.85	1.34	.98

Table 24: BSPT 55° – internal and external / Tabla 24: BSPT 55° – interna ed externa / Tableau 24: BSPT 55° – intérieur et extérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS			
	Pitch [mm] / Paso [mm] / Passo [mm] / Pas [mm]			
	11	14	19	28
1	0.22	0.19	0.19	0.15
2	0.21	0.18	0.18	0.14
3	0.20	0.17	0.17	0.13
4	0.19	0.16	0.15	0.12
5	0.18	0.15	0.13	0.08
6	0.16	0.14	0.08	
7	0.15	0.12		
8	0.13	0.08		
9	0.08			
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	1.52	1.19	0.90	0.62

INFEED DEPTH
PROFUNDIDAD DE AVANCE
PROFONDEUR DE PÉNÉTRATION

Table 25a: ACME – ACME 29° – external / Tabla 25a: ACME – ACME 29° – externa / Tableau 25a : ACME – ACME 29° – extérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS							
	Pitch [no of thread/in] / Paso [fpp] / Pas [Nombre de filets/pouce]							
	4	5	6	8	10	12	14	16
1	0.015	0.013	0.001	0.000	0.011	0.010	0.009	0.009
2	0.013	0.001	0.011	0.010	0.009	0.009	0.008	0.008
3	0.012	0.010	0.009	0.008	0.008	0.007	0.007	0.007
4	0.011	0.009	0.008	0.007	0.007	0.006	0.006	0.006
5	0.010	0.009	0.007	0.006	0.006	0.005	0.005	0.005
6	0.009	0.008	0.007	0.005	0.005	0.005	0.004	0.003
7	0.008	0.007	0.006	0.005	0.005	0.004	0.003	
8	0.008	0.007	0.006	0.005	0.004	0.004		
9	0.008	0.007	0.006	0.005	0.004			
10	0.007	0.006	0.006	0.004	0.004			
11	0.007	0.006	0.006	0.004				
12	0.006	0.006	0.005	0.004				
13	0.006	0.005	0.004					
14	0.006	0.004						
15	0.006							
16	0.005							
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	0.136	0.111	0.095	0.074	0.062	0.048	0.042	0.038

Table 25b: ACME – ACME 29° – internal / Tabla 25b: ACME – ACME 29° – interna / Tabela 25b: ACME – ACME 29º – interna / Tableau 25b : ACME – ACME 29° – intérieur

Number of passes Número de pasadas Nombre de passes	REDUCE THE CUTTING SPEED PROPORTIONALLY TO INCREASING THE THREAD PITCH REDUZCA LA VELOCIDAD DE CORTE PROPORCIONALMENTE AL AUMENTO DEL PASO DE ROSCA RÉDUIRE LA VITESSE DE COUPE PROPORTIONNELLEMENT AVEC L'AUGMENTATION DU PAS							
	Pitch [no of thread/in] / Paso [fpp] / / Pas [Nombre de filets/pouce]							
	4	5	6	8	10	12	14	16
1	0.015	0.013	0.001	0.000	0.011	0.010	0.009	0.009
2	0.013	0.012	0.011	0.010	0.009	0.009	0.008	0.008
3	0.012	0.010	0.009	0.008	0.008	0.007	0.007	0.007
4	0.011	0.009	0.008	0.007	0.007	0.006	0.006	0.006
5	0.010	0.009	0.007	0.006	0.006	0.005	0.005	0.005
6	0.009	0.008	0.007	0.006	0.005	0.005	0.004	0.003
7	0.008	0.007	0.006	0.005	0.005	0.004	0.003	
8	0.008	0.007	0.006	0.005	0.004	0.004		
9	0.008	0.007	0.006	0.005	0.004			
10	0.007	0.006	0.006	0.005	0.004			
11	0.007	0.006	0.006	0.004				
12	0.006	0.006	0.005	0.004				
13	0.006	0.005	0.004					
14	0.006	0.004						
15	0.006							
16	0.005							
Total infeed depth Profundidad de avance total Profondeur totale de pénétration	0.135	0.109	0.094	0.075	0.063	0.048	0.042	0.037

Recesses, parting and copy turning.

Pramet offers a comprehensive range of tools for turning shallow and deep recesses, both radially and axially (face grooving). Circular/copy profile turning can also be performed through side cutting.

The Pramet range of tools for recessing, grooving, profiling and parting are shown in picture 23 below.

Tournage d'évidements, tronçonnage et copiage.

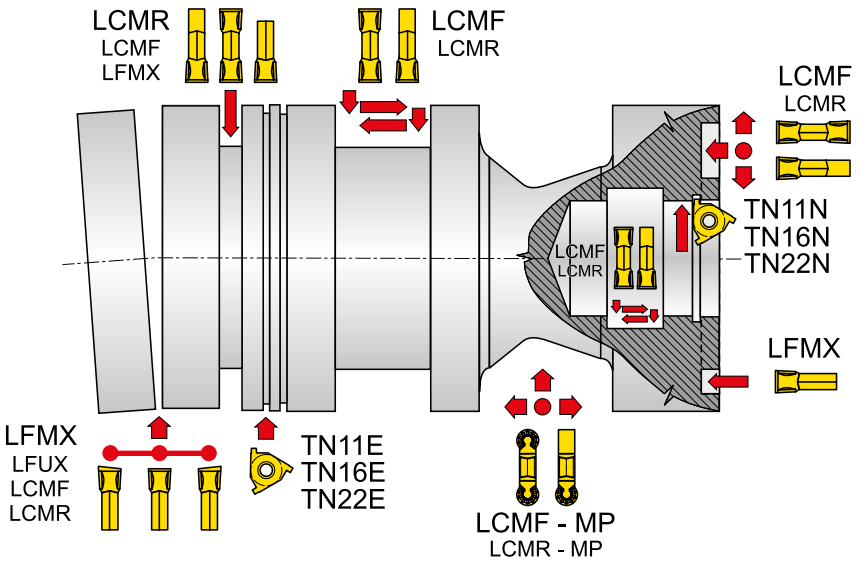
Nous vous offrons un programme complet d'outils de tournage pour le tournage productif d'évidements profonds et peu profonds, radiaux et axiaux (gorges frontales). De plus, nous proposons des plaquettes pour le copiage de profils réalisables avec l'arête de coupe latérale.

Notre gamme d'outils pour les évidements, le rainurage, le profilage et le tronçonnage est représentée schématiquement dans le tableau ci-dessous. Image 23.

Torneado de ranuras, tronzado y torneado en copia

Pramet Tools ofrece una gama completa de herramientas de torneado para el torneado productivo de rebajes superficiales y profundos, tanto radiales como axiales (ranurado frontal). Además, se puede realizar un torneado circular / de copias mediante el corte lateral. La gama de herramientas de Pramet Tools para rebaje, ranurado, perfilado y corte se muestra de forma esquemática en el gráfico siguiente. Imagen 23.

Picture / Imagen /Image 23



Recommendation for practical usage:

The procedure for turning a recess (deepening and widening) is shown in the following illustration – picture 24.

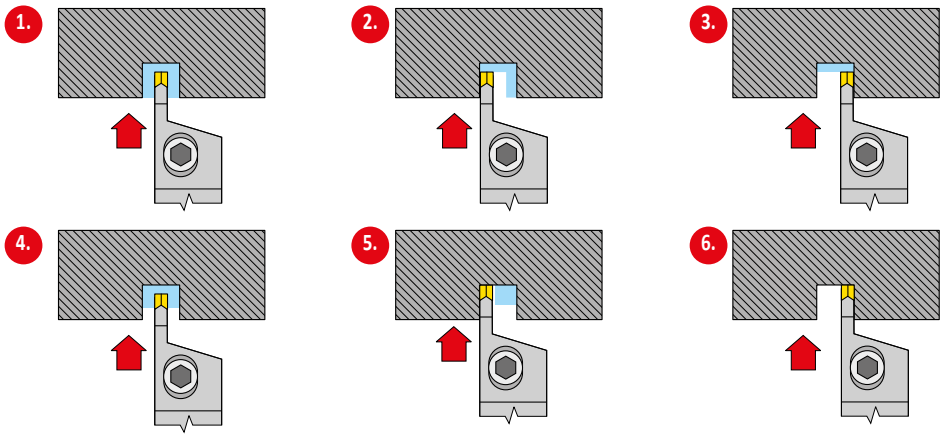
Recommandation pour utilisation pratique :

La procédure de tournage (pour approfondir et élargir) un évidement est schématisée sur l'image suivante N° 24.

Recomendación para uso práctico:

El procedimiento de torneado (profundización y ensanchamiento) de rebaje se describe de forma esquemática en la Imagen 24 siguiente.

Picture / Imagen / Image 24



Note: To create a flat seating surface, use insert **type LCMF** with chip breaker **F**. The outboard radial grooving passes should overlap the central pass by two times the insert corner radius.

Nota: Para generar una superficie de asiento plana, utilice el tipo de **plaquita LCMF** con rompevirutas **F**. Las pasadas de ranurado radial de la parte exterior deben superponerse con la pasada central en 2 veces el radio de esquina de la plaquita.

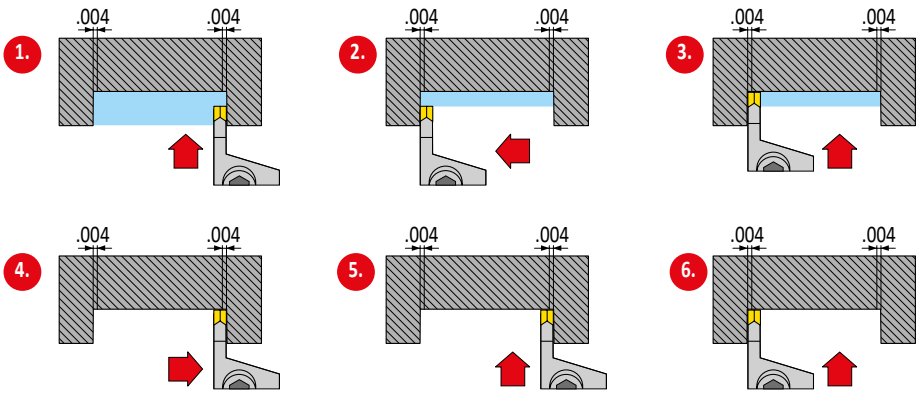
Remarque : Pour générer une face d'appui plane, utiliser une plaquette de **type LCMF** avec géométrie **F**. Les passes de rainurage des flancs doivent chevaucher la passe centrale d'au moins 2 fois le rayon de pointe de la plaquette.

When machining a wide recess, follow the procedure shown in the following illustration – picture 25.

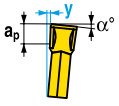
Cuando mecanice un rebaje ancho siga el procedimiento que se describe de forma esquemática en la imagen 25 siguiente.

Pour usiner un large évidement, suivre la procédure d'usinage représentée sur l'image suivante N° 25.

Picture / Imagen / Image 25

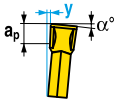


Note: Use the cutting insert LCMF with chip breaker M. You must consider the tool's deformation "y":



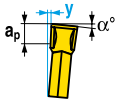
– for f =.006 in/rev;	a_p = .118 in	y = **.003 in**
– for f =.010 in/rev;	a_p = .118 in	y = **.003 in**
– for f =.014 in/rev;	a_p = .118 in	y = **.004 in**

Nota: Utilice las plaquitas de corte LCMF con rompevirutas M. Debe tener en cuenta la deformación de la herramienta "y"



– para f =.006 in/rev;	a_p = .118 in	y = **.003 in**
– para f =.010 in/rev;	a_p = .118 in	y = **.003 in**
– para f =.014 in/rev;	a_p = .118 in	y = **.004 in**

Note: Utiliser la plaquette LCMF avec une géométrie M. Vous devez tenir compte de la déformation de l'outil "y"



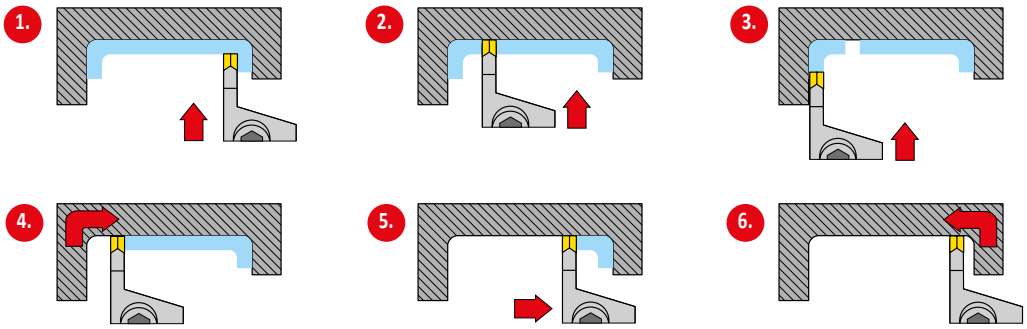
– pour f =.006 in/tr;	a_p = .118 in	y = **.003 in**
– pour f =.010 in/tr;	a_p = .118 in	y = **.003 in**
– pour f =.014 in/tr;	a_p = .118 in	y = **.004 in**

When opening up or deepening a contour using side turning, use the procedure shown in picture 26.

Cuando abra o profundice un contorno utilizando el torneado lateral utilice el procedimiento indicado en la Imagen 26.

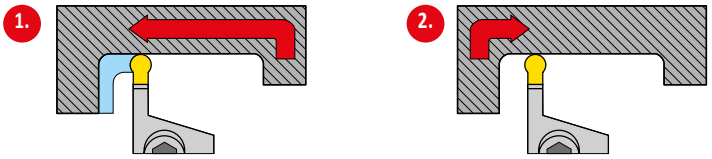
Pour ouvrir ou approfondir un contour en utilisant la coupe latérale utiliser la procédure indiquée sur l'Image 26.

Picture / Imagen / Image 26



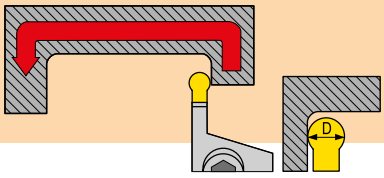
Roughing of contour (insert with round cutting edge) / Desbaste de contorno (plaquita con filo de corte redondo
Ebauche du contour (plaquette avec arête de coupe ronde)

Picture / Imagen / Image 27



Finishing of contour (insert with round cutting edge) / Acabado de contorno (plaquita con filo de corte redondo)
Finition du contour (plaquette avec arête de coupe ronde)

Picture / Imagen / Image 28



D [in]	a_p [in]
.118	.006
.157	.008
.197	.009
.236	.010
.315	.016

TURNING OF SLENDER SHAFTS AND INTERNAL TURNING (BORING) OF DEEP HOLES
TORNEADO DE EJES DELGADOS Y TORNEADO INTERIOR (MANDRINADO) DE AGUJEROS PROFUNDOS
TOURNAGE D'ÉVIDEMENTS, TRONÇONNAGE ET GORGES

When copy turning using indexable inserts with a round cutting edge, the maximum depth of cut is 50% of the diameter of the insert.

Choose the tool holder with the maximum cross-section and minimum tool overhang to eliminate vibrations.

The longitudinal axis of the cutting insert must be perpendicular to the axis of rotation of the workpiece (at radial recesses).

The cutting edge must be on centerline within a tolerance of + – .004"

Coolant must be applied directly onto the cutting edge, and onto the support area of the tool holder under the insert cutting edge, in sufficient quantities to guarantee effective cooling of the insert.

When face grooving it is necessary to select a tool holder with the correct range of diameters for the groove to be machined. The tool must be set parallel to the axis of rotation of the workpiece (perpendicular to the face of the groove). Otherwise there is a risk of rubbing against the wall(s) of the groove during machining.

In the event of the tool rubbing against the outer wall of the groove, it may be necessary to raise the cutting edge above centre (see example A in picture 29).

„Cuando realice torneado de copias con plaquitas intercambiables de filo de corte redondo, la profundidad máxima de corte es del 50% del diámetro de la plaquita redonda."

Elija el portaherramientas con sección transversal máxima y voladizo de herramienta mínimo para eliminar las vibraciones.

El eje longitudinal de la plaquita de corte debe ser perpendicular al eje de rotación de la pieza de trabajo (en rebajes radiales).

El filo de corte debe estar sobre la línea central con una tolerancia de +/– .004"

Se debe aplicar refrigerante sobre el filo de corte en un volumen suficiente, y también en la zona de soporte del portaherramientas debajo del filo de corte de la plaquita.

En el ranurado frontal es necesario seleccionar un portaherramientas con el rango de diámetros correcto para la ranura que se va a mecanizar. La herramienta debe posicionarse en paralelo al eje de rotación de la pieza de trabajo (perpendicular a la parte frontal de la ranura). De lo contrario, existe riesgo de rozamiento contra las paredes de la ranura durante el mecanizado.

En caso de rozamiento de la herramienta contra la pared exterior de la ranura, puede ser necesario elevar el filo de corte por encima del centro (consulte el ejemplo A en la imagen 29).

Pour le copiage avec des plaquettes avec arête de coupe ronde, la profondeur de coupe maximum est de 50% de la valeur du diamètre de l'arête de coupe ronde.

Choisir le porte-outil avec une section maximum et un porte-à-faux minimum pour éliminer les vibrations.

L'axe longitudinal de la plaquette doit être perpendiculaire à l'axe de rotation de la pièce (évidements radiaux).

L'arête de coupe doit être sur l'axe central avec une tolérance de + – .004"

L'arrosage doit être dirigé sur la zone de coupe et de façon abondante, et aussi sur la zone du porte-outil située sous l'arête de coupe.

Pour l'usinage d'une gorge frontale, il est nécessaire de sélectionner un porte-outil ayant une plage de diamètres correspondant à la gorge à usiner. L'outil doit être réglé parallèlement à l'axe de rotation de la pièce à usiner (perpendiculaire à la face de la gorge). Sinon, il y a un risque de frottement sur le flanc de la gorge usinée.

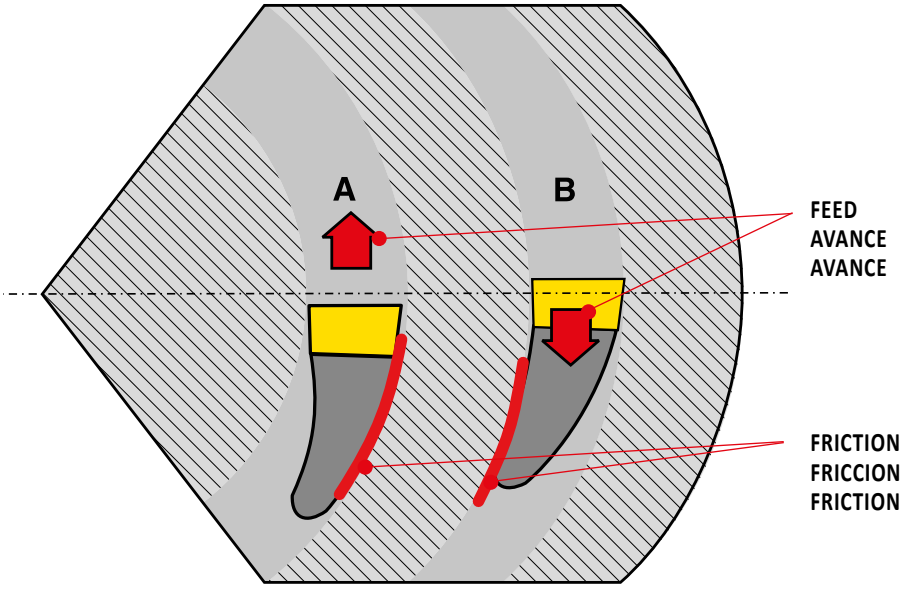
Dans le cas où l'outil frotte contre le flanc extérieur de la gorge, il peut être nécessaire de régler l'arête de coupe au-dessus de l'axe de rotation (voir exemple A sur l'image 29).

When face grooving, the tool must be set to be perpendicular to the face of the workpiece with high accuracy, otherwise the side of the tool will rub against the groove being created.

Pour l'usinage d'une gorge frontale, l'outil doit être réglé avec une grande précision pour être perpendiculaire à la face de la pièce, autrement le coté de l'outil frottera contre la gorge en cours d'usinage.

En el ranurado frontal, la herramienta debe posicionarse con gran precisión para que quede perpendicular a la parte frontal de la pieza de trabajo; en caso contrario, el lateral de la herramienta rozará con la ranura que se está generando.

Picture / Imagen / Image 29



Using effective coolant, applied directly to the cutting edge in sufficient quantities, is very important. Cooling reduces the temperature of the cutting edge and also the lower part of the tool holder, in which the cutting insert is seated.

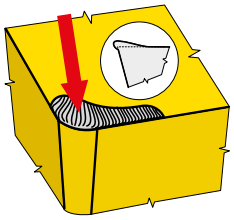
L'utilisation d'un liquide de coupe (arrosage) doit être efficace et dirigé directement sur l'arête de coupe en quantité suffisante. Le refroidissement permet de réduire la température de l'arête de coupe et de la partie du porte-outil supportant la plaquette.

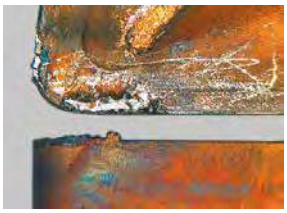
Es muy importante el uso de un refrigerante de corte eficaz, dirigido directamente al filo de corte en un volumen suficiente. El refrigerante debe reducir la temperatura del filo de corte y también de la parte subyacente del portaherramientas con el asiento para la plaquita de corte.

Table 26
Tabla 26
Tableau 26

TYPES OF WEAR ON TURNING INSERTS
TIPOS DE DESGASTE DE LAS PLAQUITAS DE TORNEADO
TYPES D'USURE DES PLAQUETTES DE TOURNAGE

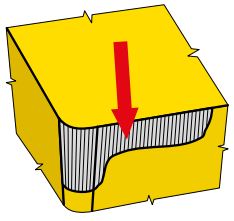
BUILT–UP EDGE / FILO DE APORTACIÓN
ARÊTE RAPPORTÉE

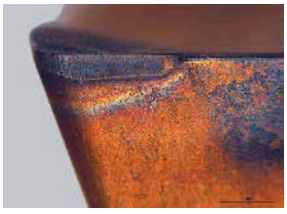




		it has no influence No influye N'a aucune influence
(MT)CVD / PVD	+ +	any coating (decisive factor is anti-adhesion effect) Cualquier recubrimiento (el factor decisivo es el efecto anti-adherente) Tout revêtement (le facteur décisif est l'effet anti-adhérence)
f	↑	The higher the feed rate the less probability of built-up edge creation. Cuanto mayor sea el avance menor probabilidad de formación de filo de aportación Plus l'avance est forte, moins la probabilité de générer une arête rapportée est grande
v	↓↑	Change (generally increase) the cutting speed. Cambiar (generalmente aumentar) la velocidad de corte Modifier (souvent en l'augmentant) la vitesse de coupe
a_p		it has no influence No influye N'a aucune influence
	↓↑	Use more positive geometry (built up edge is not created when the rake angle is more than 40°) Utilizar una geometría más positiva (el filo de aportación no se crea cuando el ángulo de desprendimiento es mayor de 40º) Utiliser une géométrie plus positive (Une arête rapportée n'apparaît jamais sur des angles de coupe de plus de 40°)
	-	Use a coolant with more effective anti-sticking properties (or no coolant at all) Usar un refrigerante con propiedades anti-adherencia más efectivas (o no utilizar ningún refrigerante) Utiliser un arrosage plus efficace quant à ses propriétés anti-adhérentes (ou pas du tout d'arrosage)

FLANK WEAR / DESGASTE EN FLANCO (EN INCIDENCIA)
USURE EN DÉPOUILLE



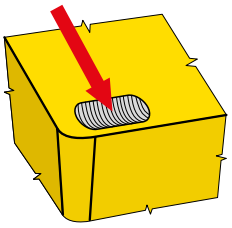


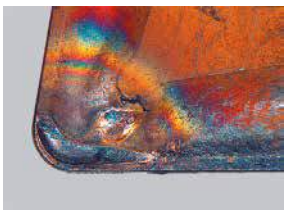
	↑	use a more wear resistant substrate (H) Utilizar un sustrato más resistente al desgaste (H) Utiliser un substrat plus résistant à l'usure (H)
(MT)CVD / PVD	+ +	any coating (decisive factor is hardness - TiC, TiCN) Cualquier recubrimiento (el factor decisivo es la dureza - TiC, TiCN) Tout revêtement (le facteur décisif est sa dureté - TiC, TiCN)
f	↑	increase feed (especially if it is under .004") Incrementar el avance (especialmente si está por debajo de .004") Augmenter l'avance (particulièrement quand elle est inférieure à .004")
v	↓	decrease cutting speed Reducir la velocidad de corte Diminuer la vitesse de coupe
a_p		It has no influence No influye N'a aucune influence
	↑	increase the clearance angle Lo más importante es aumentar el ángulo de incidencia Le plus important est d'augmenter l'angle de dépouille
	+	use a coolant or increase its intensity Usar refrigerante o incrementar su intensidad Utiliser l'arrosage ou augmenter son débit

Table 26
Tabla 26
Tableau 26

TYPES OF WEAR ON TURNING INSERTS
TIPOS DE DESGASTE DE LAS PLAQUITAS DE TORNEADO
TYPES D'USURE DES PLAQUETTES DE TOURNAGE

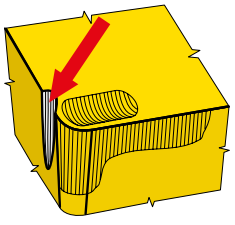
CRATERING / CRÁTER
USURE EN CRATÈRE

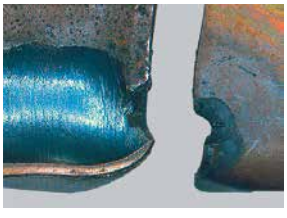




	↑	use a more wear resistant substrate (S) Utilizar un sustrato más resistente al desgaste (S) Utiliser un substrat plus résistant à l'usure (S)
(MT)CVD / PVD	+ +	any coating (decisive factor is thermal resistance - α Al_2O_3) Cualquier recubrimiento (el factor decisivo es la resistencia térmica - α Al_2O_3) Tout revêtement (le facteur décisif est sa résistance à la température – α Al_2O_3)
f	↑	feed has influence on shape and position of crater El avance influye en la forma y la posición del cráter L'avance influe sur la forme et la position du cratère
v	↓	decrease cutting speed Reducir la velocidad de corte Diminuer la vitesse de coupe
a_p	↓	minimal effect Mínimo efecto Effet minime
	↑	use more positive cutting geometry Utilizar una geometría de corte más positiva Utiliser une géométrie de coupe plus positive
	+ +	use coolant or increase its intensity Usar refrigerante o incrementar su intensidad Utiliser l'arrosage ou augmenter son débit

OXIDATION GROOVE ON THE MINOR EDGE / ENTALLA POR OXIDACIÓN
ENTAILLE PAR OXYDATION SUR L'ARÊTE SECONDAIRE



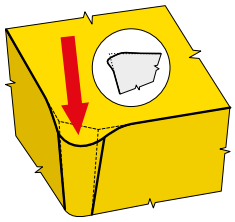


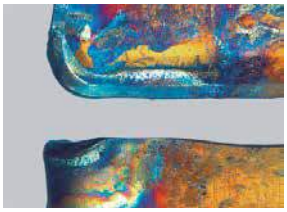
	↑	use a more wear resistant substrate (S) Utilizar un sustrato más resistente al desgaste (S) Utiliser un substrat plus résistant à l'usure (S)
(MT)CVD / PVD	+ +	any coating (decisive factor is oxidation resistance - α Al_2O_3) Cualquier recubrimiento (el factor decisivo es la resistencia a la oxidación - α Al_2O_3) Tout revêtement (le facteur décisif est sa résistance à l'oxydation – α Al_2O_3)
f	↓	feed has influence on shape and position of groove El avance influye en la forma y la posición de la entalla L'avance influe sur la forme et la position de l'entaille
v	↓	decrease cutting speed Reducir la velocidad de corte Diminuer la vitesse de coupe
a_p	↓	minimal effect Mínimo efecto Effet minime
	↑	use another (more positive) cutting geometry Utilizar otra (más positiva) geometría de corte Utiliser une autre géométrie de coupe (plus positive)
	+ +	use coolant or increase its intensity Usar refrigerante o incrementar su intensidad Utiliser l'arrosage ou augmenter son débit

Table 26
Tabla 26
Tableau 26

TYPES OF WEAR ON TURNING INSERTS
TIPOS DE DESGASTE DE LAS PLAQUITAS DE TORNEADO
TYPES D'USURE DES PLAQUETTES DE TOURNAGE

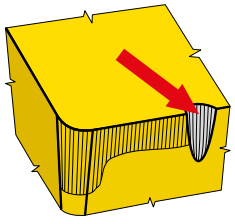
PLASTIC DEFORMATION / DEFORMACIÓN PLÁSTICA
DÉFORMATION PLASTIQUE

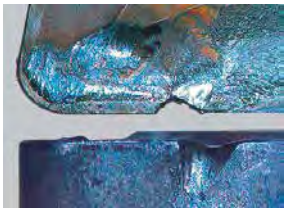




	↑	use a more wear resistant grade (decisive factor is content of Co) Utilizar un sustrato más resistente al desgaste (el factor decisivo es el contenido en Co) Utiliser un substrat plus résistant à l'usure (le taux de cobalt est décisif)
(MT)CVD / PVD	+	any coating (decisive factor is friction) Cualquier recubrimiento (el factor decisivo es la fricción) Tout revêtement (le facteur décisif est le frottement)
f	↓	decrease feed rate Reducir el avance Diminuer l'avance
v	↓	decrease cutting speed Reducir la velocidad de corte Diminuer la vitesse de coupe
a_p	↓	minimal effect Mínimo efecto Effet minime
	↑	use another (more positive) cutting geometry Utilizar otra (más positiva) geometría de corte Utiliser une autre géométrie de coupe (plus positive)
	+ +	use coolant or increase its intensity Usar refrigerante o incrementar su intensidad Utiliser l'arrosage ou augmenter son débit

SIDE FLANK NOTCH - REMEDY / ENTALLA LATERAL - REMEDIO
USURE EN ENTAILLE



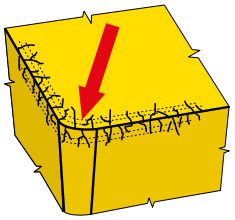


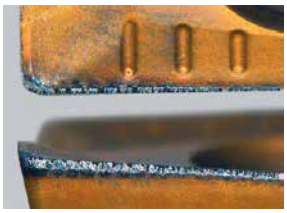
	↑ ↓	it depends on the character of the damage (abrasive - use more wear resistant substrate; breaking - use tougher substrate) Depende del caracter del problema (abrasivo - usar un sustrato más resistente al desgaste; rotura - usar un sustrato más tenaz) Dépend de la cause de l'usure (abrasion - utiliser un substrat plus résistant à l'usure; rupture - utiliser un substrat plus tenace)
(MT)CVD / PVD	+ +	CVD coating (decisive factor is oxidation resistance - α Al_2O_3) Recubrimiento CVD (el factor decisivo es la resistencia a la oxidación - α Al_2O_3) Revêtement CVD (le facteur décisif est sa résistance à l'oxydation - α Al_2O_3)
f	↓	feed has influence on intensity, but less than the cutting speed El avance influye en la intensidad, pero menos que la velocidad de corte L'avance influe sur l'intensité, mais moins que la vitesse de coupe
v	↓	decrease cutting speed Reducir la velocidad de corte Diminuer la vitesse de coupe
a_p	↑ ↓	use unequal depth of cut Utilizar una profundidad de corte desigual Faire varier la profondeur de coupe
	↓	use less positive cutting geometry Utilizar una geometría de corte menos positiva Utiliser une géométrie moins positive
	+	use coolant or increase its intensity Usar refrigerante o incrementar su intensidad Utiliser l'arrosage ou augmenter son débit
		use tool with smaller setting angle Utilizar una herramienta con menor ángulo de posición Utiliser un outil avec un angle d'attaque plus petit

Table 26
Tabla 26
Tableau 26

TYPES OF WEAR ON TURNING INSERTS
TIPOS DE DESGASTE DE LAS PLAQUITAS DE TORNEADO
TYPES D'USURE DES PLAQUETTES DE TOURNAGE

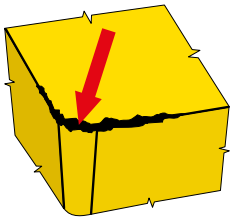
CREATION OF RACK CRACKS / MICRO-FISURAS
USURE EN PEIGNE (FISSURES)





	↓	(H) grain has a great influence El sustrato (H) tiene un papel muy importante Choisir un substrat à grains plus gros (H)
(MT)CVD / PVD	+ +	PVD coating recommended Se recomienda recubrimiento PVD Un revêtement PVD est recommandé
f	↓	feed has influence on intensity, but less than the cutting speed El avance influye en la intensidad, pero menos que la velocidad de corte L'avance influe sur l'intensité, mais moins que la vitesse de coupe
v	↓	lower speed means lower temperature Menor velocidad significa menor temperatura Vitesse plus basse veut dire température moins élevée
a_p		it has no influence No influye N'a aucune influence
	↓	use less positive cutting geometry Utilizar una geometría de corte menos positiva Utiliser une géométrie moins positive
	- - -	no coolant (it is possible to use air to remove chips from cutting area) Sin refrigeración (se puede utilizar aire para evacuar virutas de la zona de corte) Pas d'arrosage (utiliser de l'air pour évacuer les copeaux hors de la zone de coupe)

BRITTLE CRACKS AT THE CUTTING EDGE / ASTILLAMIENTO DEL FILO DE CORTE
ÉCAILLAGE DE L'ARÊTE DE COUPE



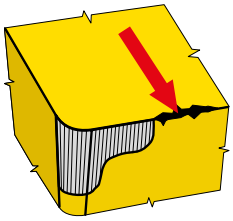


	↓	(H) grain has a great influence El sustrato (H) tiene un papel muy importante Choisir un substrat à grains plus gros (H)
(MT)CVD / PVD	+	PVD coating recommended Se recomienda recubrimiento PVD Un revêtement PVD est recommandé
f	↓	Good swarf control is very important Es muy importante una rotura de virutas correcta Un bon fractionnement du copeau est très important
v	↑↓	it is about swarf control and vibration Influye en la rotura de virutas y las vibraciones Il s'agit d'évacuation copeaux et de vibrations
a_p	↓	reduces the force load (important for machining with long overhangs) Reduce la carga mecánica en el filo de corte (importante cuando se mecaniza con voladizos largos) Réduire la charge (important pour l'usinage avec de longs porte-à-faux)
	↓	use less positive cutting geometry Utilizar una geometría de corte menos positiva Utiliser une géométrie moins positive
		it has no influence No influye N'a aucune influence
		use better working conditions, reduce feed rate until insert is in cut Mejorar las condiciones de trabajo, reducir el avance al inicio del corte Utiliser de meilleurs conditions de travail, réduire l'avance d'approche (à l'entrée)

Table 26
Tabla 26
Tableau 26

TYPES OF WEAR ON TURNING INSERTS
TIPOS DE DESGASTE DE LAS PLAQUITAS DE TORNEADO
TYPES D'USURE DES PLAQUETTES DE TOURNAGE

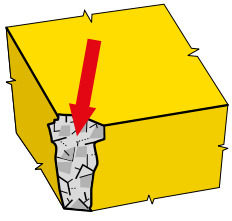
FAILURE OF CUTTING EDGE / DESPRENDIMIENTO DEL FILO POR MARTILLEO DE VIRUTAS
AFFAIBLISSEMENT DE L'ARÊTE DE COUPE





	↓	(H) grain has a great influence El sustrato (H) tiene un papel muy importante Choisir un substrat à grains plus gros (H)
(MT)CVD / PVD	+	PVD coating recommended Se recomienda recubrimiento PVD Un revêtement PVD est recommandé
f	↑↓	Good swarf control is very important Es muy importante una rotura de virutas correcta Un bon fractionnement du copeau est très important
v	↑↓	it is about swarf control and vibration Influye en la rotura de virutas y las vibraciones Il s'agit d'évacuation copeaux et de vibrations
a_p	↑↓	Good swarf control is very important Es muy importante una rotura de virutas correcta Un bon fractionnement du copeau est très important
	↓	use less positive cutting geometry Utilizar una geometría de corte menos positiva Utiliser une géométrie moins positive
		it has no influence No influye N'a aucune influence
		problem is poor swarf control or evacuation of chips El problema es una mala rotura de virutas, evacuación de virutas o arranque de viruta Le problème est un mauvais fractionnement du copeau, une mauvaise évacuation des copeaux

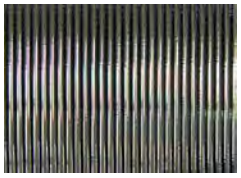
INSERT FRACTURE / ROTURA DE PLAQUITA
RUPTURE DE PLAQUETTE





	↓	(H) grain has a great influence El sustrato (H) tiene un papel muy importante Choisir un substrat à grains plus gros (H)
(MT)CVD / PVD	+	PVD coating recommended Se recomienda recubrimiento PVD Un revêtement PVD est recommandé
f	↓	reduces the force load Reduce la carga mecánica en el filo de corte Réduire la charge
v	↑↓	it is about swarf control and vibration Influye en la evacuación de viruta y vibraciones Il s'agit d'évacuation copeaux et de vibrations
a_p	↓	reduces the force load Reduce la carga mecánica en el filo de corte Réduire la charge
	↓	use less positive cutting geometry Utilizar una geometría de corte menos positiva Utiliser une géométrie moins positive
		it has no influence No influye N'a aucune influence
		Use better working conditions Mejorar las condiciones de trabajo Utiliser de meilleures conditions de travail

POOR SURFACE QUALITY / MALA CALIDAD DE LA SUPERFICIE
QUALITÉ DE SURFACE MAUVAISE



Description and cause:
Numerous causes depending on the workpiece material, cutting conditions (feed rate and cutting speed), the condition of the cutting edge, the extent and type of wear, and the condition and rigidity of the machine–tool–workpiece assembly.
- incorrect tool chosen
- incorrect chip thickness
- incorrect cutting speed
- coolant is needed
- high feed rate

Corrective measures:
- use a wiper insert
- use a cutting insert with the right geometry
- reduce the feed rate
- change (usually increase) the cutting speed
- use a coolant
- improve the stability of the tool and workpiece
- change the chip cross section
- select a more easy–cutting chip breaker
- increase the nose radius

Descripción y causa:
Las causas son diversas, en función del material de la pieza de trabajo, las condiciones de corte (avance y velocidad de corte), la condición del filo de corte, la extensión y el tipo de desgaste, la condición y la rigidez de la pieza de trabajo mecanizada.
- elección incorrecta de herramienta
- espesor de viruta inadecuado
- velocidad de corte inadecuada
- se necesita refrigerante
- velocidad de avance alta

Solución del problema:
- utilizar una plaquita rascadora (wiper)
- utilizar plaquita de corte con la geometría adecuada
- reducir la velocidad de avance
- cambiar (normalmente aumentar) la velocidad de corte
- utilizar un refrigerante
- mejorar la estabilidad de la herramienta y la pieza de trabajo
- cambiar la sección transversal de la viruta
- seleccionar un rompevirutas que corte con más facilidad
- aumentar el radio de punta

Description et cause:
Les causes sont nombreuses, elles dépendent du matériau à usiner, des conditions de coupe (avance et vitesse de coupe), de la condition de l'arête de coupe, du niveau et du type d'usure, de l'état et de la rigidité de la machine.
- mauvais choix d'outil
- mauvaise épaisseur du copeau
- mauvaise vitesse de coupe
- arrosage nécessaire
- vitesse d'avance élevée

Solution:
- utiliser une plaquette racleuse (Wiper)
- utiliser une plaquette avec une géométrie correcte
- réduire la vitesse d'avance
- changer (en général augmenter) la vitesse de coupe
- utiliser l'arrosage
- améliorer la stabilité de l'outil et de la pièce et à usiner
- changer la section du copeau
- sélectionner une géométrie plus coupante
- utiliser une plaquette avec un plus gros rayon de pointe

Table 27
Tabla 27
Tableau 27

VIBRATIONS / VIBRACIONES
VIBRATIONS



Description and cause:
This is a very common problem, which is mainly caused by an unbalanced workpiece or tool, unstable fixing of the workpiece, high cutting forces or tool overhang.

Corrective measures:
- improve the stability of the tool and workpiece
- reduce the depth of cut
- minimize tool overhang
- reduce the cutting speed
- use a tool with smaller setting angle
- reduce the chip cross section
- use a tool with a low cutting resistance
- increase the feed rate
- select a more easy–cutting chip breaker
- increase the nose radius

Descripción y causa:
Son muy frecuentes. Los principales motivos son el desequilibrio de la pieza de trabajo o la herramienta, la estabilidad de la pieza de trabajo, las fuerzas de corte elevadas o el voladizo de la herramienta.

Solución del problema:
- mejorar la estabilidad de la herramienta y la pieza de trabajo
- reducir la profundidad de corte
- minimizar el voladizo de la herramienta
- reducir la velocidad de corte
- utilizar una herramienta con un ángulo de posicionamiento más pequeño
- reducir la sección transversal de la viruta
- utilizar una herramienta con una baja resistencia de corte
- aumentar la velocidad de avance
- seleccionar un rompevirutas que corte con más facilidad
- aumentar el radio de punta

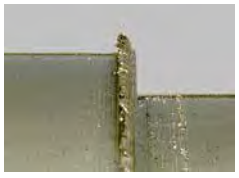
Description et cause:
Ceci est très fréquent. Les principales raisons sont le déséquilibre de la pièce ou de l'outil, la mauvaise stabilité de la pièce, des forces de coupe très fortes, du porte-à-faux de l'outil.

Solution:
- améliorer la stabilité de l'outil et de la pièce et à usiner
- réduire la profondeur de coupe
- diminuer le porte-à-faux de l'outil
- réduire la vitesse de coupe
- utiliser un outil avec un angle d'attaque plus petit
- réduire la section copeaux
- utiliser un outil avec une plus faible résistance à la coupe
- augmenter la vitesse d'avance
- sélectionner une géométire plus coupante
- utiliser une plaquette avec un plus gros rayon de pointe

Table 27
Tabla 27
Tableau 27

TROUBLESHOOTING
SOLUCIÓN DE PROBLEMAS
PHÉNOMÈNES INDÉSIRABLES

BURRS / REBABAS
BAVURE



Description and cause:
This usually occurs on soft steels and plastic materials.

Corrective measures:
- use a cutting insert with a sharp cutting edge
- use a cutting insert with positive geometry
- use a tool with a smaller setting angle

Descripción y causa:
Suelen aparecer en el mecanizado de aceros blandos y materiales plásticos.

Solución del problema:
- utilizar una plaquita de corte con filo de corte afilado
- utilizar una plaquita de corte con geometría positiva
- utilizar una herramienta con un ángulo de posicionamiento más pequeño

Description et cause:
Ceci apparaît régulièrement en usinage de matériaux doux ou de matières plastiques.

Solution:
- utiliser une plaquette avec une arête vive
- utiliser une plaquette avec une géométrie positive
- utiliser un outil avec un angle d'attaque plus petit

ERRORS IN DIMENSIONS AND SHAPE OF WORKPIECE / ERRORES EN DIMENSIONES Y FORMA DE LA PIEZA
INEXACTITUDE DES DIMENSIONS ET DE LA FORME DE LA PIÈCE



Description and cause:
Depends on a number of factors.

Corrective measures:
- use a wear–resistant cutting insert
- improve the stability of the cutter and workpiece
- minimize tool overhang
- use a workpiece with a suitable machining allowance

Descripción y causa:
Depende de diversos factores.

Solución del problema:
- utilizar una plaquita de corte resistente al desgaste
- mejorar la estabilidad de la herramienta y la pieza de trabajo, minimizar el voladizo
- utilizar una pieza de trabajo con un margen de mecanizado adecuado

Description et cause:
Dépend d'un certain nombres de facteurs.

Solution:
- utiliser une plaquette résistante à l'usure
- améliorer la stabilité de l'outil et de la pièce usinée, diminuer le porte-à-faux de l'outil
- utiliser une pièce avec une surépaisseur d'usinage mieux appropriée

INADEQUATE CHIP FORMATION / FORMACIÓN INADECUADA DE VIRUTA
MAÎTRISE DES COPEAUX INACCEPTABLE



Description and cause:
Producing a chip with a suitable shape is very important to insert durability and service life of the tool. The workpiece material, the feed rate, the depth of cut and the cutting geometry all have an effect on chip forming. A chip that is too long is unacceptable for various reasons, while a chip that is too short is undesirable as it overloads the cutting edge and causes vibrations.

Corrective measures:
- change the feed rate and depth of cut
- use a more suitable cutting geometry
- change the cutting conditions

Descripción y causa:
Una forma adecuada de la viruta es un criterio importante, igual que la durabilidad (vida útil de la herramienta). El material de la pieza de trabajo, el avance, la profundidad de corte y la geometría de corte adecuada (rompevirutas) afectan a la formación correcta de las virutas. Una viruta larga es inaceptable, pero una viruta demasiado corta (triturada) tampoco es deseable, ya que indica una sobrecarga del filo y causa vibraciones.

Solución del problema:
- cambiar el avance y la profundidad de corte
- utilizar una geometría de corte más adecuada
- cambiar las condiciones de corte

Description et cause:
Une forme de copeau convenable est un critère important, comme la durée de vie de l'outil. Le matériau de la pièce à usiner, l'avance, la profondeur de coupe, la géométrie de coupe adaptée (brise-copeaux) agissent sur la forme correcte du copeau. Un copeau long est inacceptable cependant qu'un copeau trop court (écrasé) n'est pas souhaitable, ceci indique une trop forte charge sur l'arête et génère des vibrations.

Solution:
- changer l'avance et la profondeur de coupe
- utiliser une plaquette avec une géométrie correcte
- changer les conditions de coupe

Table 27
Tabla 27
Tableau 27

GENERAL PRINCIPLES
PRINCIPIOS GENERALES
PRINCIPES GÉNÉRAUX

GENERAL PRINCIPLES / PRINCIPIOS GENERALES
PRINCÍPIOS GERAIS / PRINCIPES GÉNÉRAUX

Check the seat condition of the cutting insert Before clamping a new cutting insert or changing the edge, it is necessary to clean the seat and check its condition or the condition of the anvil and wedge (especially the damage under the corner of the cutting insert).	**Check and service the clamping parts** It is also important to check the clamping parts, including clamping levers, screws, wedges and clamps. Only use original, undamaged parts (found in the catalogue). Regularly lubricate the threads and the binding surface of screws, for example using heat–resistant lubricant (Molykote G.). For assembly and disassembly, only use screwdrivers and wrenches specified in our catalogue or recommended by the tool manufacturer. Pay attention to the correct tightening (proportional) – it is advisable to use a torque wrench.	**Check the tightening** Before tightening, check the fit of the cutting insert on the whole of the binding surface and in the radial and axial directions. Cutting inserts and tools must always be clean and undamaged.
Comprobar el estado del asiento de la plaquita: Antes de montar una plaquita nueva o cambiar el filo de corte, es necesario limpiar el asiento y comprobar el estado de la plaquita de apoyo, especialmente la esquina que está bajo el filo de corte.	**Comprobar el mantenimiento de los elementos de fijación:** Compruebe los elementos de fijación: palancas de fijación, tornillos, cuñas, abrazaderas. Utilice solo piezas sin daños, utilice solo las piezas originales que se encuentran en el catálogo. Lubrique regularmente las roscas y las superficies de unión de los tornillos, por ejemplo, con un lubricante resistente al calor (Molyko G). Para el montaje y el desmontaje, utilice solo los destornilladores y las llaves recomendados en nuestro catálogo por el fabricante de la herramienta. Preste atención al apriete adecuado (proporcional), se recomiendan llaves dinamométricas.	**Comprobar el apriete:** Antes de apretar, comprobar la forma en que la plaquita asienta en el portaherramientas, tanto en la superficie plana bajo el filo como en las paredes axial y radial del asiento. Herramientas y plaquitas deben estar siempre limpias y sin daños.
Vérification de l'état correct des logements de plaquettes: Avant le serrage d'une nouvelle plaquette ou avant de changer une arête (indexage ou rotation de la plaquette) il est nécessaire de nettoyer le logement, de vérifier l'état du système de fixation de la plaquette et du corps d'outil (particulièrement l'endroit sous la pointe de la plaquette).	**Vérification et maintenance des pièces de fixation:** La vérification des pièces de fixation (leviers, vis, coins, brides) est importante. Utiliser uniquement des pièces d'origine et en bon état (vous les trouvez dans le catalogue). Graisser régulièrement les filets et les surfaces de contact des vis, par exemple avec de la graisse résitante à haute température (Molykote G.). Pour le montage et le démontage, utiliser seulement les clés et les tournevis comme sur le catalogue ou recommandés par le fabricant d'outil. Porter attention au couple de serrage, nous recommandons l'usage d'un tournevis dynamométrique.	**Vérification du serrage:** Au serrage, vérifier l'appui de la plaquette sur la surface de contact avec le trou et dans les directions radiale et axiale. Les plaquettes et les outils doivent rester propres et intacts.

Table 28
Tabla 28

FORMULA FOR CALCULATING CUTTING DATA
FÓRMULAS PARA EL CÁLCULO DE LOS PARÁMETROS DE CORTE

Value / Valor	Formula / Fórmula	Unit / Unidad	Note / Nota
Number of revolutions **Número de revoluciones**	$n = \frac{v_c \cdot 12}{D \cdot \pi}$	[1.min^{-1}] [rpm]	n Number of revolutions [1.min^{-1}] D Diameter (of tool or workpiece) [in] v_c Cutting speed [ft.min^{-1}] f_{rev} Feed per revolution [in.rev] f_{min} Feed per minute (Linear Feedrate) [in.min] n Número de revoluciones [rpm] D Diámetro (de herramienta o pieza de trabajo) [in] v_c Velocidad de corte [m.min^{-1}] f_{rev} Avance por revolución [in.rot] f_{min} Avance por minuto (Velocidad de avance lineal) [in.min^{-1}]
Cutting speed **Velocidad de corte**	$v_c = \frac{\pi \cdot D \cdot n}{12}$	[ft.min]	
Feed per revolution **Avance por revolución**	$f_{rev} = \frac{f_{min}}{n} = f_z \cdot z$	[in.rev]	
Feed per minute (Linear Feedrate) **Avance por minuto**	$f_{min} = v_f = f_{ot} \cdot n$	[in.min]	
Max. height of profile R_{max} **Altura máx. del perfil R_{max}**	$R_{max} = 127000 \cdot \frac{f^2}{r_\varepsilon}$	[µin]	R_{max} max. height of profile [µin] R_a surface finish [µin] f_{rev} feed per revolution [in.rev] r_ε nose radius [in] R_{max} Altura máx. del perfil [in] R_a Acabado de superficie [in] f_{rev} Avance por revolución [in/rot] r_ε Radio de la punta [in]
Surface finish R_a **Acabado superficial R_a**	$R_a = 33337 \cdot \frac{f_z^{1,88}}{r_\varepsilon^{.97}}$	[µin]	
Chip cross section **Sección transversal de viruta**	$A = f_{rev} \cdot a_p$	[in^2]	A Chip cross section [in^2] f_{rev} Feed per revolution [in.rev] a_p Axial depth of cut [in] κ_r Primary edge setting angle [°] h Chip thickness [in] v_c Cutting speed [in.min] f_{min} Feed per minute (Linear Feedrate) [in.min] Q Material removal rate per minute [in^3.min] **A** Sección transversal de viruta [in^2] **f_{rev}** Avance por revolución [in/rev] **a_p** Profundidad de corte axial [in] **κ_r** Ángulo de posicionamiento del filo principal [°] **h** Espesor de viruta [in] **v_c** Velocidad de corte [m.min] **f_{min}** Avance por minuto (Velocidad de avance lineal) [in.min] **Q** Tasa de arranque de material por minuto [in^3.min]
Chip thickness **(For insert with straight edge)** **Espesor de viruta**	$h = f \cdot \sin \kappa_r$	[in]	
Chip thickness **(For round cutting insert)** **Espesor de viruta**	$h = f_z \cdot \sqrt{\frac{a_p}{D}}$	[in]	
Metal removal rate **Caudal de Viruta**	$Q = 12 \cdot a_p \cdot f_{ot} \cdot v_c$	[in^3/min]	

Material Material	Steel Acero	Cast iron Fundición	Al
Coefficient x Coeficiente x	20	25	100

Tableau 28

FORMULES DE CALCUL DES PARAMÈTRES DE COUPE

Valeur	Formule	Unité	Note
Vitesse de rotation	$n = \frac{v_c \cdot 12}{D \cdot \pi}$	[1.min^{-1}]	n Vitesse de rotation [1.min^{-1}] D Diamètre (de l'outil ou de la pièce à usiner) [in] v_c Vitesse de coupe [ft.min^{-1}] f_{rev} Avance par tour [in.tr] f_{min} Avance par minute (Avance linéaire) [in.min]
Vitesse de coupe	$v_c = \frac{\pi \cdot D \cdot n}{12}$	[ft.min]	
Avance par tour	$f_{rev} = \frac{f_{min}}{n} = f_z \cdot z$	[in.U]	
Avance par minute (Avance linéaire)	$f_{min} = v_f = f_{ot} \cdot n$	[in.min]	
Hauteur maximum du profil R_{max}	$R_{max} = 127000 \cdot \frac{f^2}{r_\varepsilon}$	[µin]	R_{max} Hauteur maximum du profil [in] R_a Etat de surface [in] f_{rev} Avance par tour [in.tr] r_e Rayon de pointe [in]
Etat de surface R_a	$R_a = 33337 \cdot \frac{f_z^{1,88}}{r_\varepsilon^{.97}}$	[µin]	
Section copeau	$A = f_{rev} \cdot a_p$	[in^2]	A Section copeau [in^2] f_{rev} Avance par tour [in.tr] a_p Angle d'attaque principal [in] κ_r Angle d'attaque principal κ_r [°] h Epaisseur copeau [in] v_c Vitesse de coupe [in.min] f_{min} Avance par minute (Avance linéaire) [in.min] Q Taux d'enlèvement de matière par minute [in^3.min]
Epaisseur copeau (Pour plaquette avec arête droite)	$h = f \cdot \sin \kappa_r$	[in]	
Epaisseur copeau (Pour plaquette ronde)	$h = f_z \cdot \sqrt{\frac{a_p}{D}}$	[in]	
Taux d'enlèvement de matière	$Q = 12 \cdot a_p \cdot f_{ot} \cdot v_c$	[in/min]	Matière Acier Fonte Al Coefficient x

Table 29
Tabla 29
Tableau 29

RECOMMENDED SCREW TORQUES
TORNILLOS DE FIJACIÓN
COUPLES DE SERRAGE RECOMMANDÉS

CLAMPING SCREW / TORNILLO DE FIJACIÓN / VIS DE FIXATION

Screw designation / Tipo de tornillo / Désignation de la vis	Screwdriver / Destornillador / Tournevis	Torque [Nm]* / Par de apriete [Nm]* / Couple [Nm]*
28588	MA2-8304	0.8
28992	MA2-8304	0.8
416.1-832	PT-8002	3.6
5513 020-01	PT-8004	3.6
5513 020-03	PT-8001	0.8
5513 020-04	PT-8003	1.5
5513 020-05	PT-8001	0.8
5513 020-14	TX 225PLUS	8.5
5513 020-24	PT-8002	1.5
5513 020-27	PT-8000	0.6
5513 020-28	PT-8000	0.6
5513 021-03	DMN 3124	13
CS 8601-T09P	SDR T09P	1.7
CS 8601-T15P	SDR T15P	3.9
CS 8601-T20P	SDR T20P	6.4
CS 8601-T25P	SDR T25P	9.5
DVF 0573	PT-8002	1.5
DVF 2260	TX 215PLUS	3.6
DVF 3584	DMD 1650	0.6
DVF 3593	TX 207PLUS	0.8
HS 0408	HXK 3	5
HS 0520C	HXK 4	5
HS 0616C	HXK 5	8
HS 0620	HXK 5	6
HS 0620C	HXK 5	6
HS 0625	HXK 5	6
HS 0625C	HXK 5	6
HS 0630	HXK 5	6
HS 0825	HXK 6	10
HS 0830	HXK 6	10
HS 0835	HXK 6	10
HS 0840	HXK 8	11
HS 1030	HXK 8	8
HS 1060	HXK 6	10
HS 93	HXK 5	8
HS 94	HXK 5	8
HSI 1020	HXK 6	8
PS 0512	HXK 2	2
PS 0512-A	HXK 2	2
PS 0616	HXK 2,5	4
PS 12040	HXK 5	8
PS 6026-709P	SRD T09P	2
PS 8290	HXK 2	2
SR 14	HXK 10	10
SR 85011-T15P	SDR T15P	5
SR 85017-T09P	SDR T09P	2
SR 85020-T15P	SDR T15P	3
SR 86025-T20P	SRD T20P	5
T20.037	DMD 1650	0.6
UP 0909-T09P	SRD T09P	2
UP 1515-T15P	SDR T15P	8
US 2505-T07P	SDR T07P	0.9
US 2506-T07P	SDR T07P	0.9
US 3007-T09P	SDR T09P	2
US 34	HXK 3	5
US 35	HXK 4	6
US 3508-T15P	SDR T15P	3
US 3510A-T15P	SDR T15P	3
US 3510-T15P	SDR T15P	3

Table 29
Tabla 29
Tableau 29

RECOMMENDED SCREW TORQUES
TORNILLOS DE FIJACIÓN
COUPLES DE SERRAGE RECOMMANDÉS

CLAMPING SCREW / TORNILLO DE FIJACIÓN / VIS DE FIXATION

Screw designation / Tipo de tornillo / Désignation de la vis	Screwdriver / Destornillador / Tournevis	Torque [Nm]* / Par de apriete [Nm]* / Couple [Nm]*
US 3512A-T15P	SDR T15P	3
US 3512-T15P	SDR T15P	3
US 36	HXK 4	6
US 38	HXK 5	8
US 39	HXK 5	8
US 40	HXK 4	6
US 4008-T15P	SDR T15P	3.5
US 4011-T15P	SDR T15P	3.5
US 41	HXK 4	6
US 42	HXK 4	6
US 45013-T20P	SDR T20P	5
US 4512-T15P	SDR T15P	5
US 4514A-T20	SDR T20	5
US 46	HXK 3	5
US 46017-T20P	SDR T20P	5
US 47	HXK 5	8
US 5012-T15P	SDR T15P	5
US 5015-T20P	SDR T20P	5
US 5018-T20P	SDR T20P	5
US 6020-T25P	SDR T25P	6
US 64518-T15P	SDR T15P	5
US 8025-T30P	SDR T20P	13
US 83	HXK 4	6
US 95	HXK 4	10

TORQUE SCREWDRIVERS / DESTORNILLADORES DINAMOMÉTRICOS TOURNEVIS DYNAMOMÉTRIQUES

Torque handle / Mango de apriete / Tige dynamométrique	Torque (Nm) / Par de apriete (Nm) / Couple (Nm)	Clamping screw thread / Rosca del tornillo de apriete / Pas de la vis de fixation
MR-0.8-2.0 vario	0.5 - 2.0	M 2 - M 3
MR-1.0-5.0 vario	0.8 - 5.0	M 2.5 - M 5
MR-0.9 fix	0.9	M 2
MR-2.0 fix	2.0	M 3
MR-3.0 fix	3.0	M 3.5
MR-3.5 fix	3.5	M 4
MR-5.0 fix	5.0	M 5

REPLACEABLE SHANKS / VÁSTAGOS SUSTITUIBLES POIGNÉES REMPLAÇABLES

Replaceable shanks / Vástagos sustituibles / Poignées remplaçables
D-T6
D-T6P
D-T7
D-T7P
D-T8
D-T8P
D-T9
D-T9P
D-T15
D-T15P
D-T20
D-T20P

SCREW LUBRICATION

Insert clamping screws are subject to high thermal stresses. It is recommended that all screws be lubricated with a high quality paste such as MOLYKOTE 1000. This paste can be ordered in the same way as any other spare part from Dormer Pramet.

LUBRICACIÓN DE TORNILLOS

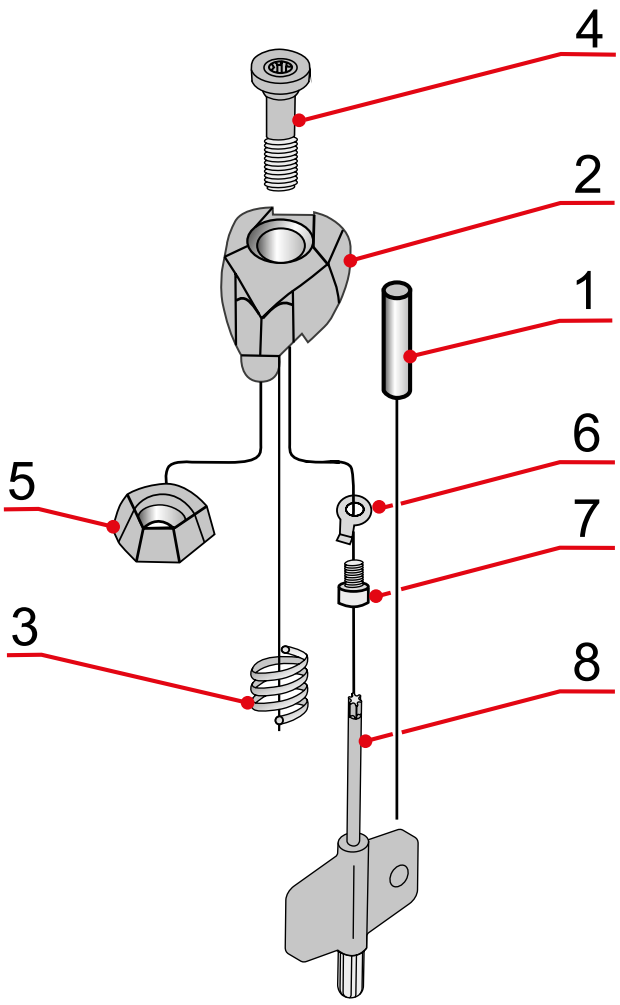
Los tornillos de fijación de las plaquitas están sometidos a tensiones térmicas elevadas. Se recomienda lubricar todos los tornillos con una pasta de alta calidad como MOLYCOTE 1000. Esta pasta se puede pedir de la misma forma que cualquier otro recambio.

LUBRIFICATION DES VIS

Dans le respect des contraintes thermiques élevées des vis de serrage, il est recommandé de les lubrifier avec une pâte haute qualité MOLYKOTE 1000. Cette pâte peut être commandée de la même façon que les pièces détachées.

Picture 30
Imagen 30
Image 30

COMPLETE CLAMP SET
JUEGO COMPLETO DE FIJACIÓN
SET DE BRIDE COMPLET



	1	2	3	4		5	6	7	8
					Nm				
DCS 09	CP 3055	CD 09	PR 0157	CS 8601-T09P	1.7	-	-	-	-
DCS 12	CP 3007	CD 12	PR 0158	CS 8602-T15P	3.9	-	-	-	-
DCS 16	CP 3007	CD 16	PR 0159	CS 8603-T20P	6.4	-	-	-	-
DCS 19	CP 3007	CD 19	PR 0159	CS 8603-T20P	6.4	-	-	-	-
DCS 25	CP 3007	CD 25	PR 0101	CS 8604-T25P	9.5	-	-	-	-
DCS 16V	CP 3007	CD 16V	PR 0158	CS 8602-T15P	3.9	-	-	-	-
DCS 12C2	CP 3007	CD 12C2	PR 0158	CS 8602-T15P	3.9	PP 3002	H 1201	US 9701-T07P	FLAG T07P
DCS 16C2	CP 3007	CD 16C2	PR 0159	CS 8603-T20P	6.4	PP 3003	H 1201	US 9701-T07P	FLAG T07P
DCS 12C4	CP 3007	CD 12C4	PR 0158	CS 8602-T15P	3.9	PP 3002	H 1201	US 9701-T07P	FLAG T07P
DCS 16C4	CP 3007	CD 16C4	PR 0159	CS 8603-T20P	6.4	PP 3003	H 1201	US 9701-T07P	FLAG T07P

Picture 31.

TECHNICAL INFORMATION ON INSERT BOX

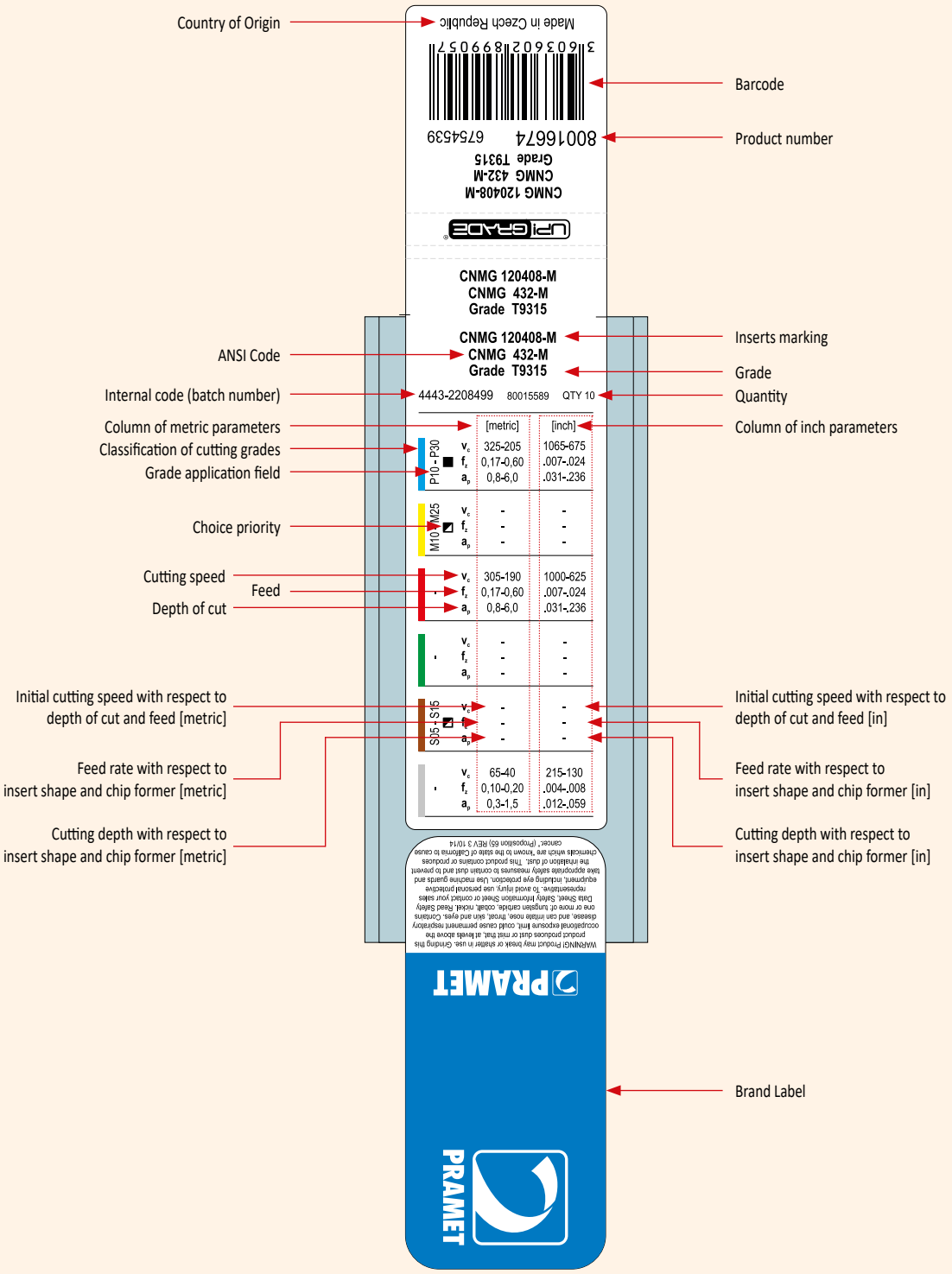
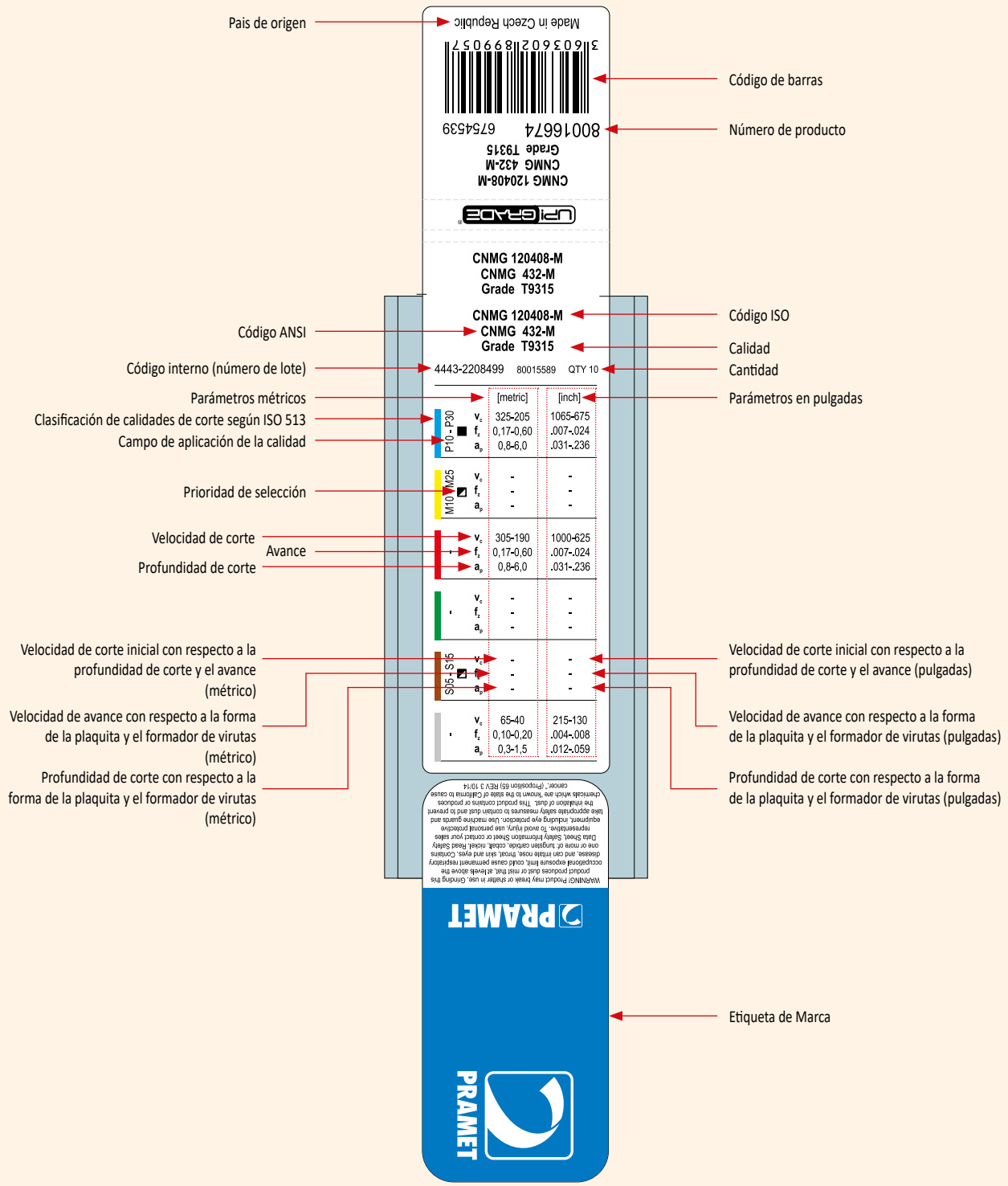
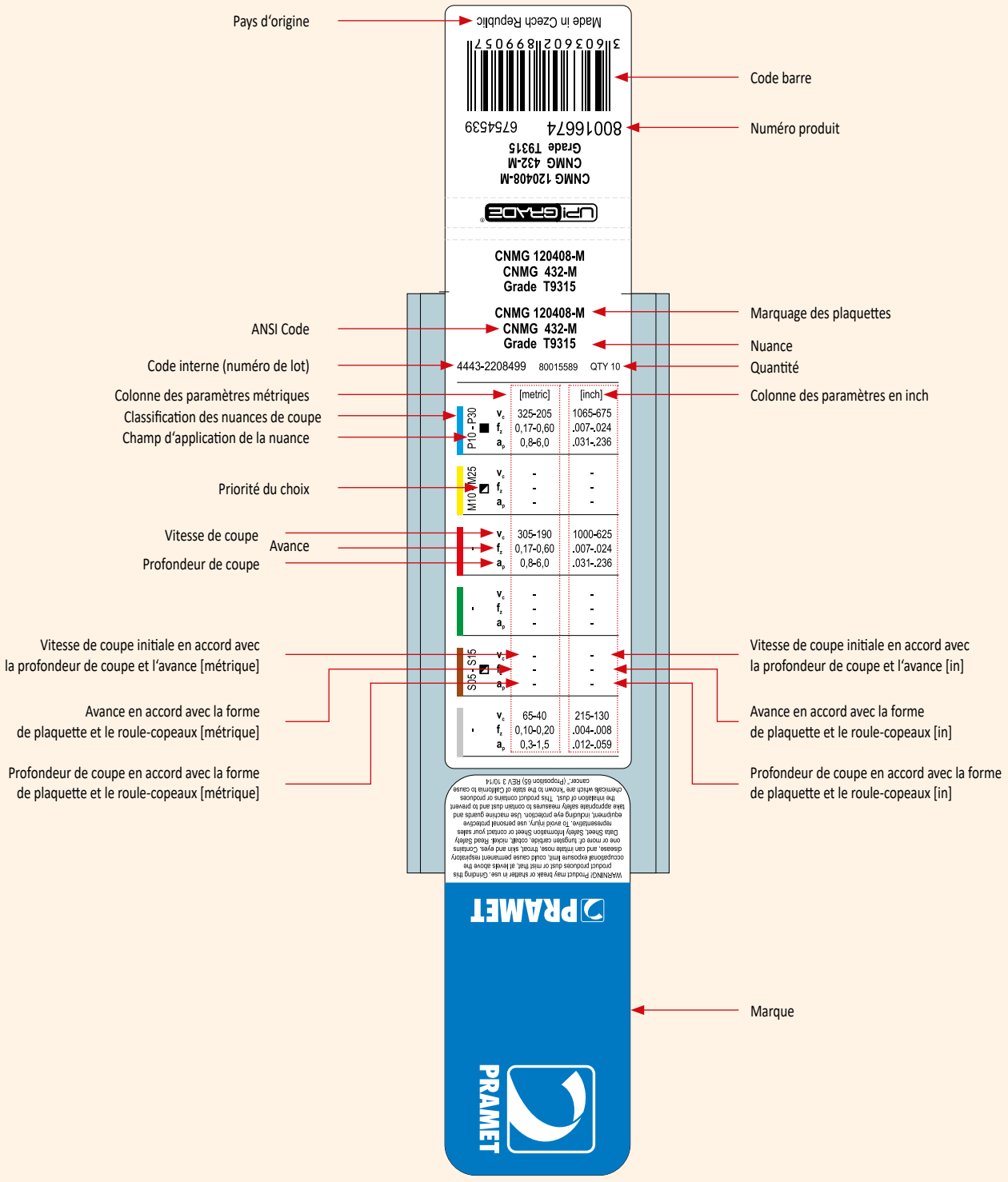
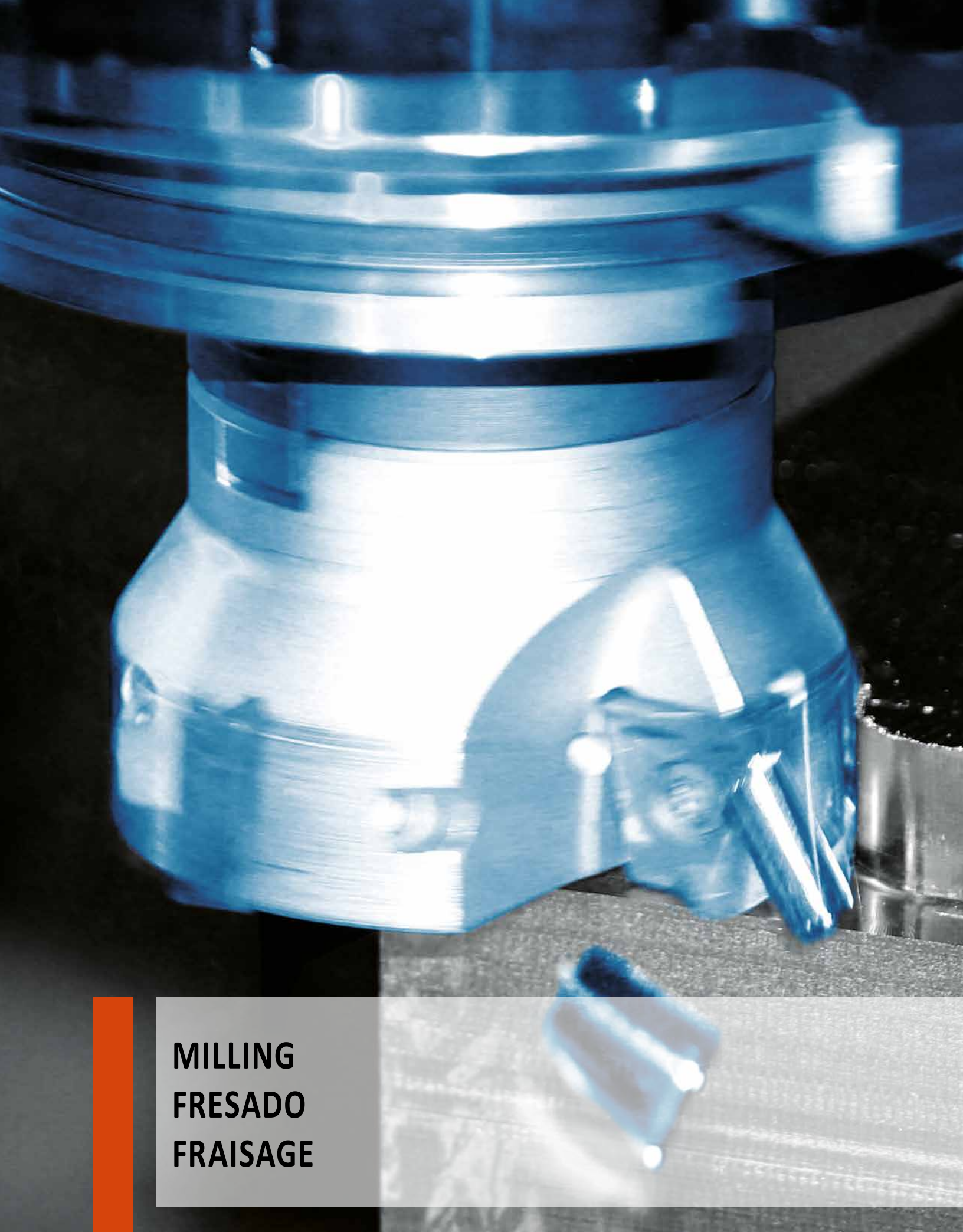


Imagen 31

INFORMACIÓN TÉCNICA IMPRESA EN LA CAJA DE PLAQUITAS




Pays d'origine
Made in Czech Republic
Code barre
Numéro produit
8001667 6754539
Grade T9315
CNMG 120408-M
CNMG 432-M
Grade T9315
ANSI Code
Marquage des plaquettes
Nuance
Code interne (numéro de lot)
4443-2208499 80015589 QTY 10
Quantité
Colonne des paramètres métriques
Colonne des paramètres en inch
[metric]
[inch]
Classification des nuances de coupe
Champ d'application de la nuance
P10 - P30
325-205
0,17-0,60
0,8-6,0
1065-675
.007-.024
.031-.236
Priorité du choix
M10 - M25
Vitesse de coupe
Avance
Profondeur de coupe
305-190
0,17-0,60
0,8-6,0
1000-625
.007-.024
.031-.236
Vitesse de coupe initiale en accord avec la profondeur de coupe et l'avance [métrique]
Vitesse de coupe initiale en accord avec la profondeur de coupe et l'avance [in]
S05 - S15
Avance en accord avec la forme de plaquette et le roule-copeaux [métrique]
Avance en accord avec la forme de plaquette et le roule-copeaux [in]
65-40
0,10-0,20
0,3-1,5
215-130
.004-.008
.012-.059
Profondeur de coupe en accord avec la forme de plaquette et le roule-copeaux [métrique]
Profondeur de coupe en accord avec la forme de plaquette et le roule-copeaux [in]
Marque
PRAMET



MILLING
FRESADO
FRAISAGE

PRAMET

CONTENT
CONTENIDO
CONTENU

INSTRUCTIONS
INSTRUCCIONES
INSTRUCTIONS — M4 – M13

NAVIGATOR
NAVEGADOR
NAVIGATEUR — M14 – M25

MILLING CUTTERS + INSERTS / FRESAS + PLAQUITAS / FRAISES ET PLAQUETTES

FACE MILLING
PLANEADO
SURFAÇAGE — M26 – M73

SQUARE SHOULDER MILLING
ESCUADRADO
FRAISAGE D'ÉPAULEMENTS — M74 – M115

DEEP SHOULDER MILLING
ESCUADRADO CON FILO LARGO
FRAISAGE D'ÉPAULEMENTS PROFONDS — M116 – M126

SLOT MILLING
RANURADO
RAINURAGE — M127 – M132

COPY MILLING
COPIADO
COPIAGE — M133 – M137

SPECIAL APPLICATIONS
APLICACIONES ESPECIALES
APPLICATIONS SPÉCIALES — M138 – M148

OTHER INSERTS
OTRAS PLAQUITAS
AUTRES PLAQUETTES — M149 – M180

TECHNICAL INFORMATION
SECCIÓN TÉCNICA
PARTIE TECHNIQUE — M181 – M244

	🕮
IFSB22X	M71
IS90SN	M128
ISAD11E	M75
ISAD16E	M83
ISBN10	M96
ISHN06C	M26
ISHN09C	M31
ISLN12	M107
ISOD05	M56
ISOE06Z	M36
ISOE09Z	M43
ISPD09	M65
ISPN13	M52
ISRC10	M134
ISSD09	M139
ISSE09	M48
ISSN11	M102
ISSO09	M113
ISTN10	M91
J(T)-ISAD11E	M117
J(T)-ISAD16E	M122
J(T)-ISXP16	M143

	🕮
ADEX 07 FA	M150
ADEX 07 HF	M150
ADEX 11-FA	M79, M120
ADEX 11-HF	M78
ADEX 16	M86, M124
ADEX 16-FA	M87
ADEX 16-HF	M86
ADKT 15	M151
ADKX 15	M151
ADMX 07	M152
ADMX 11	M76,M118
ADMX 16	M84, M123
ANHX 10	M98
APET 16-FA	M152
APKT 10	M153
APKT 10-FA	M153
APKT 16	M154
APMT 16	M155
BNGX 10	M97
HNEF 09	M156
HNGX 06	M27
HNGX 09	M32
HNMF 09	M156
LNGU 12	M109
LNGU 16	M157
LNGX 12	M108
LNGX 12-FA	M110
LNMU 16	M158
ODKT 05IM	M57
ODMT 05IM	M57
OEHT 06	M37
OEHT 06-FA	M38
OEHT 09	M44
OFKR 07	M159
PDKT 09	M67
PDKX 09	M66
PDMW 09	M68
PDMX 09	M66
PNMQ 13	M53
PNMU 13	M53
RCMT10	M135
RDET	M159

	🕮
RDEW	M160
RDEX	M160
RDGT 07	M161
RDGT 10	M161
RDGT 12	M162
RDGT 12IM	M58
RDGT 16	M162
RDHT 07-FA	M163
RDHT 10-FA	M163
RDHT 12-FA	M164
RDHT 16-FA	M164
RDHX 07	M165
RDHX 10	M165
RDHX 12	M166
RDHX 16	M166
RDMT 07	M167
RDMT 10	M167
RDMT 12	M168
RDMT 12IM	M59
RDMT 16	M168
RDMX 10	M169
RDMX 12	M169
RDMX 16	M170
REHT 16	M39
REHT 24	M45
RPET 12	M171
RPEW 12	M171
SBKX 22	M72
SBMR 22	M72
SDEW 09	M140
SDEX 09	M140
SDKT 12IM	M59
SDMT 12	M172
SDMT 12IM	M60
SEEN	M173
SEER	M174
SEET 09	M49
SEET 12-PM	M175
SEMT 09	M50
SNGX 11	M103
SNHF	M175
SNHN	M176

	🕮
SNHQ AZ	M129
SNHQ TRL	M130
SOMT 09	M114
SPG	M176
SPKN	M177
SPKR	M177
TNGX 10	M92,M106
TNGX 10-FA	M93
TPKN	M178
TPKR	M178
TPU	M179
XEHT 06	M38
XEHT 09	M44
XNGX 06	M28
XNGX 09	M33
XPHT 16	M144
XPHT 16-FA	M144
ZDCW 07	M179
ZDCW 09	M180
ZDEW 12	M180

1 **ISAD11E**

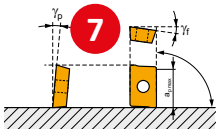
P M K N S H 2

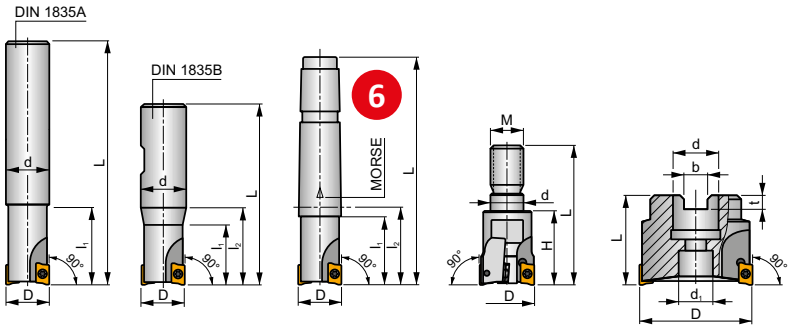
S 3

***FORCE** AD*



κ_r	5	90°
a_{pmax}		.354





8

9

10 h_m .0031-.0062

h_m .0023-.0051

11

	ANSI	D	L	d	d_1	l_1	l_2	H	M	b	t	γ_f°	γ_p°			max.		lbs		
12	**062A2R094C062-ISAD11E-C**	.625	5.315	.625	–	.945	–	–	–	–	–	-12.8	4	15	–	30100	18	.44	IGI169	21
	062A2R197C062-ISAD11E-C	.625	5.315	.625	–	1.969	–	–	–	–	–	-12.6	4		–	30100		.44	IGI169	
	075A2R11 13 **ISAD11E-C**	.750	5.906	.750	–	14	–	–	–	–	–	-11.5	5	2		27000	✓	66	IGI169	ISQ020
	075A2R27 ISAD11E-C	.750	5.906	.750	–		–	–	–	–	–	-11.5	5	2	16	27000	✓	19	IGI169	ISQ020
	075A3R114C075-ISAD11E-C	.750	5.906	.750	–	1.142	–	–	–	–	–	-11.5	5	3		27000	✓	66	IGI169	ISQ025
	100A3R134C100-ISAD11E-C	1.000	6.693	1.000	–	1.339	–	–	–	–	–	-1.2	5	3	–	17	✓	1.10	20	ISQ020
	100A3R315C100-ISAD11E-C	1.000	6.693	1.000	–	3.150	–	–	–	–	–	-1.2	5	3	–		✓	1.10		ISQ020

GI169	ADMX 11T3..	22	ADEX 11T3..

		Nm			23			
SQ020	US 62506-T07P	1,2	M 2,5	6	–	–	Flag T07P	–
SQ021	US 62506-T07P	1,2	M 2,5	6	D-T07P/T09P	FG-15	–	–
SQ022	US 62506-T07P	1,2	M 2,5	6	D-T07P/T09P	FG-15	–	HS 0830C
SQ023	US 62506-T07P	1,2	M 2,5	6	D-T07P/T09P	FG-15	–	HS 1030C
SQ025	US 62505-T07P	1,2	M 2,5	5	–	–	Flag T07P	–

Typical page with milling cutter displayed – specific page details will differ.

Page typique illustrant une fraise – la page finale peut varier avec des détails spécifiques.

Típica página con una fresa mostrada – los detalles específicos en cada página son diferentes.

1	Designation of cutter Designación de la fresa Désignation de la fraise
2	Material group recommendations Gupos de material Groupes de matériaux pour lesquels l'outil est indiqué
3	Clamping system of insert Sistema de fijación de la plaquita Système de fixation de la plaquette
4	Illustrative picture Esquema Ilustrativo Image pour illustration
5	Setting angle and maximal theoretical depth of cut [inch] Ángulo de posición y máxima profundidad de corte teórica [inch] Profondeur de coupe maximale thérorique [inch]
6	Schematic drawing of tool Esquema de la herramienta Dessin schématique de l'outil

PAGE OVERVIEW – MILLING CUTTERS
VISIÓN GENERAL – FRESAS
VUE D'ENSEMBLE – FRAISES

7	Tool geometry Geometría de la herramienta Géométrie de l'outil
8	Achievable quality of surface Calidad superficial alcanzable État de surface pouvant être atteint
9	Character of cut/working conditions Condiciones de corte /trabajo Caractère de la coupe/conditions de travail
10	Maximum range of mean chip thickness [inch] for end milling cutters and/or shell milling cutters Gama máxima de espesor medio de viruta [inch] para fresas con mango y/o fresas para montaje en cono Plage d'épaisseur de copeaux maximum [inch] pour les fraises à queue et/ou à alésage
11	Possible applications Posibilidades tecnológicas de la herramienta Possibilités technologiques de l'outil
12	Shank type Tipo de mango Type de queue
13	ANSI code of cutter Codificación ANSI para fresas Code ANSI de la fraise
14	Dimensions [inch], angles [1] [°] and type of tool clamping Dimensiones [inch], ángulos [1] [°] y tipo de montaje de la herramienta Dimensions [inch], angles [1] [°] et système de fixation de la fraise
15	Number of teeth Número de dientes Nombre de dents
16	Irregular teeth pitch Paso irregular Pas irrégulier
17	Maximum revolutions of cutter Máximas revoluciones de la fresa Tours maximum de la fraise
18	Internal supply of coolant Refrigeración interna Arrosage interne
19	Weight [lbs] Peso [lbs] Poids [lbs]
20	Group of compatible inserts [2] Grupo de plaquitas compatibles [2] Groupe de plaquettes compatibles [2]
21	Group of spare parts [2] Grupo de repuestos [2] Groupe de pièces de rechange [2]
22	Compatible inserts Plaquitas compatibles Plaquettes compatibles
23	Spare parts Repuestos Pièces de rechange

1) γ_f = radial rake angle (see technical section)
γ_p = axial rake angle (see technical section)

2) Spare parts and special accessories icons are designed schematically for their ease of understanding. They aren't included in the list of icons. Screws are, in some cases, completed with info on torque value in Nm, length of screw and size of thread.

1) γ_f = ángulo de desprendimiento radial (ver sección técnica)
γ_p = ángulo de desprendimiento axial (ver sección técnica)

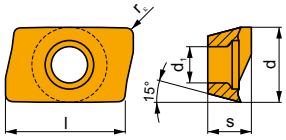
2) Los iconos de los repuestos y accesorios especiales estan diseñados esquemáticamente para su fácil comprensión. No estan incluidos en la lista de iconos. En algunos casos, la información de los tornillos se completa con el par de apriete en Nm, longitud y tamaño de rosca.

1) γ_f = angle de coupe radial (voir partie technique)
γ_p = angle de coupe axial (voir partie technique)

2) Les icônes des pièces de rechange et des accessoires spéciaux sont schématisées pour une compréhension simple. Elles ne sont pas incluses dans la liste des icônes. Les vis, dans certains cas, sont complétées avec l'information du couple de serrage Nm, de la longueur de vis et du diamètre du filetage.

1 ADMX 11

	d	d	l	s
11T3	.257	.[illegible]	.433	.156

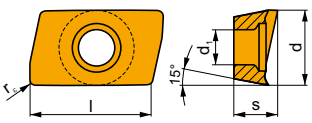


	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
4 S	ADMX 11T304SR-F	M9340	◪	■			◪		●	- - -	.016	.003	.004	.008	.354
		M8310	■	◪	◪		◪		●	-	.016	.003	.005	.008	.354
		M8340	■	■	◪		◪		●	+ / -	.016	.003	.005	.008	.354
		[illegible]	■	◪	◪		◪		●	[illegible]	[illegible]	.003	.005	[illegible]	.354
		[illegible]	■	■	[illegible]		◪		●	[illegible]	[illegible]	.003	.00[illegible]	[illegible]	.354
	ADMX 11T308SR-F	M9340	◪	■			◪		●●	- - -	.031	.003	.004	.008	.354
		M8340	■	■	◪		◪		●●	+ / -	.031	.003	.005	.008	.354
		8215	■	◪	◪	■	◪		●●	-	.031	.003	.005	.008	.354
		8230	■	■	◪	□	◪		●●	-	.031	.003	.005	.008	.354

5 — 23° .002 — 6 — 7 — 8 — 9 — 10 — 11 — 12

1 ADEX 11-FA

	d	d	l	s
11T3	.254	.[illegible]	.382	.154



	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
4 F	ADEX 11T304FR-FA	M0315				■			●	++	.016	.001	.012	.016	.354
		HF7				■			●	+ / -	.016	.001	.012	.008	.354
	ADEX 11T308FR-FA	M0315				■			●	[illegible]	[illegible]	.001	.012	.008	.354
	ADEX 11[illegible]ZFR-FA	[illegible]				■			●	[illegible]	[illegible]	.001	.012	.008	.354
		HF7				■			●	+ / -	.047	.001	.012	.008	.354
	ADEX 11T316FR-FA	HF7				■			●	+ / -	.063	.001	.012	.008	.354

5 — 34° — 6 — 7 — 8 — 9 — 10 — 11 — 12

ISO		f_{min}	f_{max}	M5315	M9315	M9325	M9340	M0315	M6330	M8310	M8340	M8345	8215	8230	HF7
P	●	.0028	.0071	1280	1247	1198	1033	–	935	1066	951	689	1033	935	–
	●●	.0028	.0059	1181	1148	1083	919	–	837	968	837	591	886	820	–
	✖	.0028	.0039	1083	1033	951	820	–	738	869	722	492	755	705	–
M	●	.0028	.0071	–	–	722	607	–	607	640	574	410	607	558	–
	●●	.0028	.0059	–	–	640	558	–	541	574	492	344	525	492	–
	✖	.0028	.0039	–	–	574	476	–	459	509	427	295	443	427	–
K	●	.0028	.0071	1214	1181	–	–	13	–	1017	886	–	968	886	–
	●●	.0028	.0059	1132	1083	–	–		–	919	787	–	853	771	–
	✖	.0028	.0039	1033	984	–	–		–	820	689	–	722	673	–
N	●	.0028	.0071	–	–	–	–	2231	–	–	–	–	2592	2362	1001
	●●	.0028	.0059	–	–	–	–	2001	–	–	–	–	2247	2083	886
	✖	.0028	.0039	–	–	–	–	1755	–	–	–	–	1919	1788	771
S	●	.0028	.0071	–	–	344	295	–	295	312	279	197	295	279	–
	●●	.0028	.0059	–	–	312	279	–	262	279	246	164	262	246	–
	✖	.0028	.0039	–	–	279	230	–	230	246	197	148	213	197	–
H	●	.0028	.0071	246	246	–	–	–	–	197	–	–	197	164	–
	●●	.0028	.0059	230	213	–	–	–	–	180	–	–	164	148	–
	✖	.0028	.0039	197	197	–	–	–	–	148	–	–	148	131	–

PAGE OVERVIEW – MILLING INSERTS
VISIÓN GENERAL – PLAQUITAS DE FRESADO
VUE D'ENSEMBLE – PLAQUETTES

Typical page with milling inserts displayed – specific page details will differ. Most of inserts can be found in this catalogue just immediately after the relevant milling cutter or, alternatively, in the separate inserts chapter.

La mayoría de plaquitas de este catálogo se pueden encontrar en la página contigua a la de la fresa correspondiente. Existe un capítulo separado que incluye sólo plaquitas, sin información de la fresa.

Page typique illustrant les plaquettes de fraisage – la page finale peut contenir des détails spécifiques. La plupart des plaquettes peuvent être trouvées dans ce catalogue immédiatement après la fraise correspondante. Les chapitres sur les plaquettes séparées incluent seulement les plaquettes sans fraise compatible dans notre offre.

1	Designation of insert Designación Désignation de la plaquette
2	Schematic drawing of insert Esquema de la plaquita Dessin schématique de la plaquette
3	Table with insert sizes [in] Tabla con tamaños de plaquita [in] Tableau des tailles de plaquettes [in]
4	Icons – specific features, cutting edge type and picture of representative insert Iconos – características específicas, tipo de filo de corte y foto representativa de la plaquita Icônes – caratéristiques spécifiques, type d'arête de coupe et photo d'une plaquette représentative
5	Profile of main cutting edge Perfil del filo de corte Profil de l'arête de coupe principale
6	ANSI code of insert Codificación ANSI de plaquitas Code ANSI de la plaquette
7	Grade Calidad Nuance
8	Application area of insert Área de aplicación Domaine d'application de la plaquette
9	Suitability of insert use with respect to specific working conditions Uso de plaquitas en función de las condiciones de trabajo Possibilité d'utilisation de la plaquette en fonction des conditions de travail spécifiques
10	Influence of use of cutting fluids in continual cut Influencia del uso de fluidos de corte en corte contínuo Influence de l'usage du fluide en coupe continue
11	Insert radii [in] Radio de plaquita [in] Rayon de plaquette [in]
12	Maximum range of feed [mm/tooth] and cutting depth [in] Gama máxima de avance [mm/diente] y profundidad de corte [in] Plage de avances [mm/dent] et profondeurs de passe [in]
13	Table of starting cutting speeds for grades, which the insert is available in [1)] Tabla de velocidades de corte iniciales para calidades, plaquitas disponibles [1)] Tableau des vitesses de coupe de départ des nuances pour lesquelles la plaquette est disponible [1)]

[1)] Recommendations for cutting speed corrections can be found at the end of Milling chapter in the technical section.

[1)] Les recommandations pour les corrections de la vitesse de coupe se trouvent à la fin du chapitre Fraisage dans la partie technique.

[1)] Las recomendaciones de corrección para la velocidad de corte se pueden encontrar al final del capítulo de fresado en la sección técnica.

Technical information follows immediately after the milling cutter pages, their compatible inserts and info on starting cutting speeds. These will help you to use the tools in the correct way. If you are unsure how to use or interpret this information, either refer to the technical section at the end of the milling chapter or contact your Dormer Pramet representative.

Las informaciones técnicas estan disponibles después de las páginas de fresas y sus plaquitas compatibles, así como información con velocidades de corte iniciales. Deben servir de guía para utilizar las herramientas de forma correcta. Si no se tiene la seguridad de haber comprendido o interpretado bien las informaciones técnicas, se recomienda estudiar la sección técnica disponible al final del capítulo de fresado o contactar con representantes de nuestra compañía.

Les informations techniques se trouvent juste après les pages des fraises, des plaquettes compatibles et des conditions de coupe de départ. Elles vous aideront à utiliser les outils correctement. Si vous n'êtes pas certain de la compréhension ou de l'interprétation des informations techniques, étudiez la partie technique à la fin du chapitre Fraisage ou contactez les représentants de notre société.

ICONS AND SYMBOLS – MILLING
ICONOS Y SÍMBOLOS – FRESADO
ICÔNES ET SYMBOLES – FRAISAGE

Priority use
Uso prioritario
Utilisation prioritaire

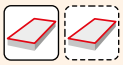
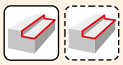
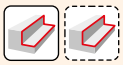
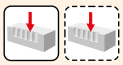
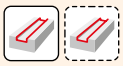
Possible use
Uso posible
Utilisation possible

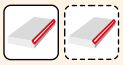
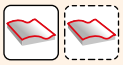
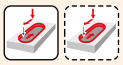
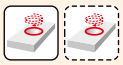
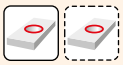
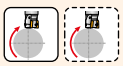
Icon absence – tool is not recommended for specific operation or group of materials or it does not have specific feature.

Ausencia de icono – la herramienta no se recomienda para la operación específica, grupo de materiales o no tiene ninguna característica específica

Absence d'icône – outil non recommandé pour l'opération spécifique ou pour le groupe de matériaux ou parce qu'il ne possède pas de caractéristiques spécifiques

Icons – milling cutters / Iconos – fresas / Icônes – Porte-outils

General features of tools / Características generales de las herramientas / Icônes – Porte – outils			
	Material groups	Grupos de materiales	Groupe de matériaux
	Finishing – very good surface quality	Acabado – calidad superficial muy buena	Finition – très bonne qualité de surface
	Medium machining – good surface quality	Mecanizado medio – calidad superficial buena	Usinage moyen – bonne qualité de surface
	Roughing – unlimited surface roughness	Desbaste – rugosidad superficial ilimitada	Ébauche – Rugosité de surface non limitée
	Stable working conditions	Condiciones estables	Conditions de travail stables
	Unstable working conditions	Condiciones inestables	Conditions de travail instables
	Very unstable working conditions	Condiciones muy inestables	Conditions de travail très instables
Possible applications / Posibilidades tecnológicas de la herramienta / Possibilités technologiques des outils			
	Face milling	Planeado	Surfaçage
	Shallow shoulder milling	Escuadrado	Fraisage de petits épaulements
	Deep shoulder milling	Escuadrado profundo	Fraisage de grands épaulements
	Plunge milling	Fresado axial (plunging)	Tréflage
	Shallow slot milling	Ranurado	Fraisage de rainures peu profondes
	Deep slot milling	Ranurado profundo	Fraisage de rainures profondes
	T slot milling	Ranurado en T	Fraisage de rainures en Té

	Chamfer milling	Achaflanado	Fraisage de chanfreins
	Shape surfaces milling (copy milling)	Copiado	Fraisage de formes (copiage)
	Ramping	Fresado en rampa	Fraisage en pente
	Progressive plunging	Fresado progresivo	Tréflage progressif
	Helical interpolation	Interpolación helicoidal	Fraisage en interpolation hélicoïdale
	Drilling	Taladrado	Perçage
	Rear face milling	Fresado trasero	Fraisage par dessous
	Turn-milling	Torno-fresado	Tournage – fraisage
Shank type / Tipo de mango / Type de queue			
	End mill cutter with WELDON shank	Fresa con mango Weldon	Queue WELDON
	End mill cutter with cylindrical shank	Fresa con mango cilíndrico	Queue cylindrique
	MORSE shank	Cono MORSE	Cône morse
	WHISTLE NOTCH shank	Mango WHISTLE NOTCH	Queue WISTLE NOTCH
	Modular clamping system	Sistema modular	Système de fixation modulaire
	ISO 297 shank	Mango cono ISO 297	Cône ISO 297
	ISO/DIS 7388-1 shank	Mango cono ISO/DIS 7388-1	Cône ISO/DIS 7388-1
	CAPTO shank	CAPTO	Cône CAPTO
	HSK shank	HSK	Cône HSK
	JIS B 6339 shank	Mango cono JIS B 6339	Cône JIS B 6339

ICONS AND SYMBOLS – MILLING
ICONOS Y SÍMBOLOS – FRESADO
ICÔNES ET SYMBOLES – FRAISAGE

	Standard shell cutter	Montaje portafresas estándar	Alésage standard
	Disc mill cutter	Fresa de disco	Fraise disque
	Helical milling cutter	Fresa de filo largo (helicoidal)	Fraise hérisson
	Others / Otros / Autres		
	Number of teeth (helical cutters)	Número de dientes (fresas de filo largo)	Nombre de dents (fraises hérisson)
	Taper size [in]	Tamaño de cono [in]	Taille de cône [in]
	Effective number of teeth	Número de dientes efectivos	Nombre de dents effectif
	Clamping torque of screw [Nm]	Par de apriete del tornillo [Nm]	Couple de serrage de la vis [Nm]

Icons and symbols – inserts / Iconos y símbolos – plaquitas / Icônes et symboles - plaquettes

	Features / Características / Caractéristiques		
	First choice	Primera elección	Premier choix
	Universal wide range option	Gama completa universal	Large gamme de solutions universelles
	Thin-walled and slim workpieces	Piezas delgadas y de paredes delgadas	Paroies fines et pièces minces
	Heavy working conditions	Condiciones de trabajo pesadas	Conditions de travail très difficiles
	Large overhang	Gran voladizo	Long porte-à-faux
	Large overhang (turning inserts)	Gran voladizo (plaquitas de torneado)	Long porte-à-faux (opération de tournage – fraisage)
	High Feed Cutting	Alto avance	Usinage grande avance
	High Speed Cutting	Alta velocidad	Usinage grande vitesse
	Insert with Wiper geometry	Plaquita con geometría rascadora (Wiper)	Plaquette avec géométrie Wiper
	For short chipping materials	Para materiales de viruta corta	Pour matériaux à copeaux courts

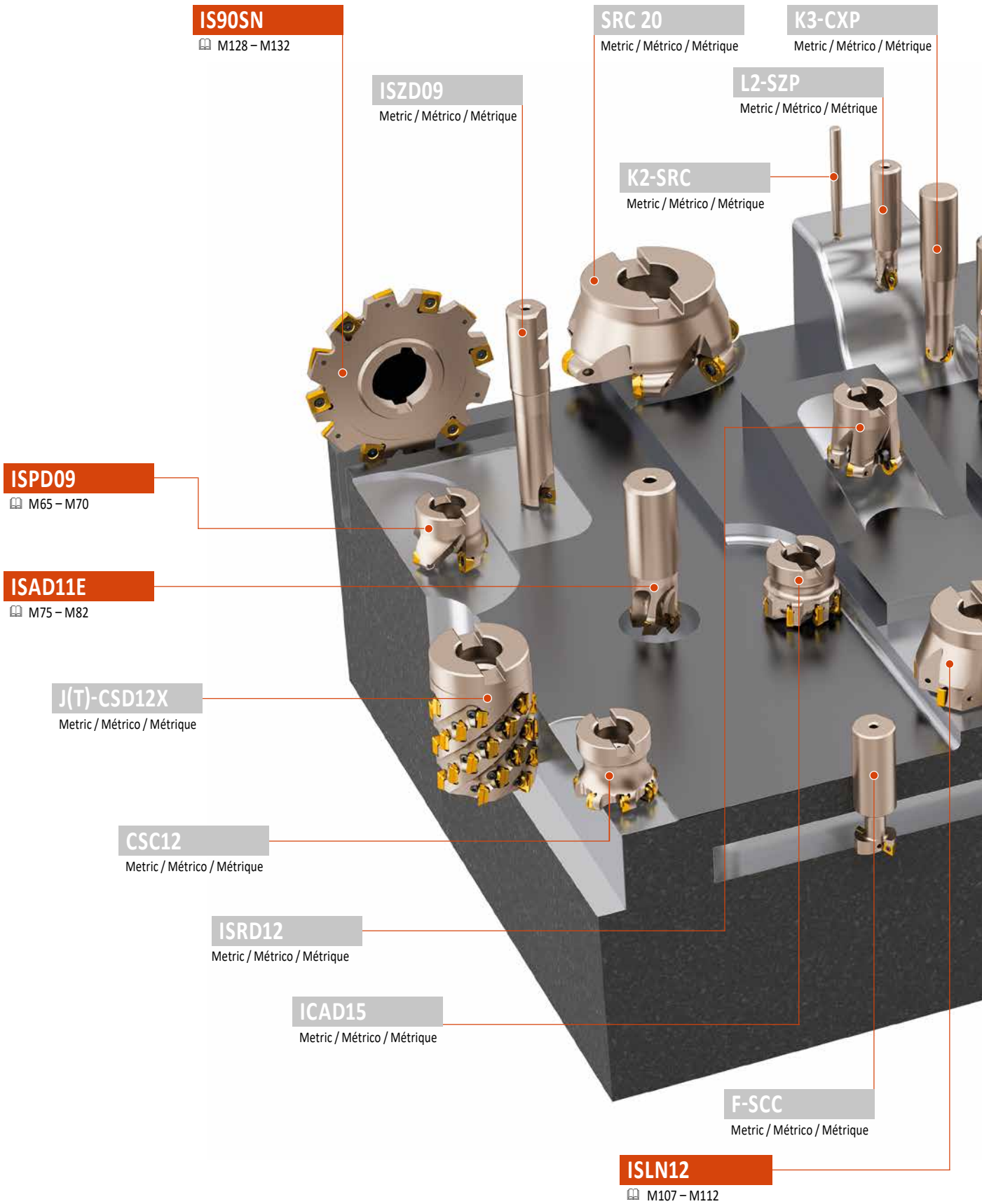
	For tough materials (long chipping)	Para materiales difíciles (viruta larga)	Pour matériaux tenaces (copeaux longs)
	Sharp edge	Filo vivo	Arête vive
	Rounded edge	Filo redondeado	Arête arrondie
	Edge with facet	Filo con faceta	Arête avec listel
	Rounded edge with facet	Filo redondeado con faceta	Arête arrondie avec listel
	Edge with double facet	Filo con doble faceta	Arête avec double listel
	Rounded edge with double facet	Filo redondeado con doble faceta	Arête arrondie avec double listel
Conditions of use / Condiciones de uso / Conditions d'utilisation			
■	Main application	Aplicación principal	Apllication principale
◪	Secondary application	Aplicación secundaria	Application secondaire
□	Supplementary application	Aplicación suplementaria	Application supplémentaire
●	Stable working conditions	Condiciones estables	Conditions de travail stables
⬣	Unstable working conditions	Condiciones inestables	Conditions de travail instables
✖	Very unstable working conditions	Condiciones muy inestables	Conditions de travail très instables
- - -	Very negative effect on tool life – cooling is not recommended	Efecto muy negativo en la vida de filo – no se recomienda refrigerante	Effet très négatif sur la durée de vie de l'outil – l'arrosage n'est pas recommandé
- -	Negative effect on tool life – cooling is not recommended	Efecto negativo en la vida de filo – no se recomienda refrigerante	Effet négatif sur la durée de vie de l'outil – l'arrosage n'est pas recommandé
-	Slightly negative effect on tool life	Efecto ligeramente negativo en la vida de filo	Effet légèrement négatif sur la durée de vie de l'outil
+/-	Influence of cooling may be both positive and negative – decisive factor is specific working conditions	La influencia del refrigerante puede ser positiva o negativa – depende de las condiciones de trabajo	L'influence de l'arrosage peut être positive ou négative – le facteur décisif est les conditions spécifiques de travail
+	Slightly positive effect on tool life	Efecto ligeramente positivo en la vida de filo	Effet légèrement positif sur la durée de vie de l'outil

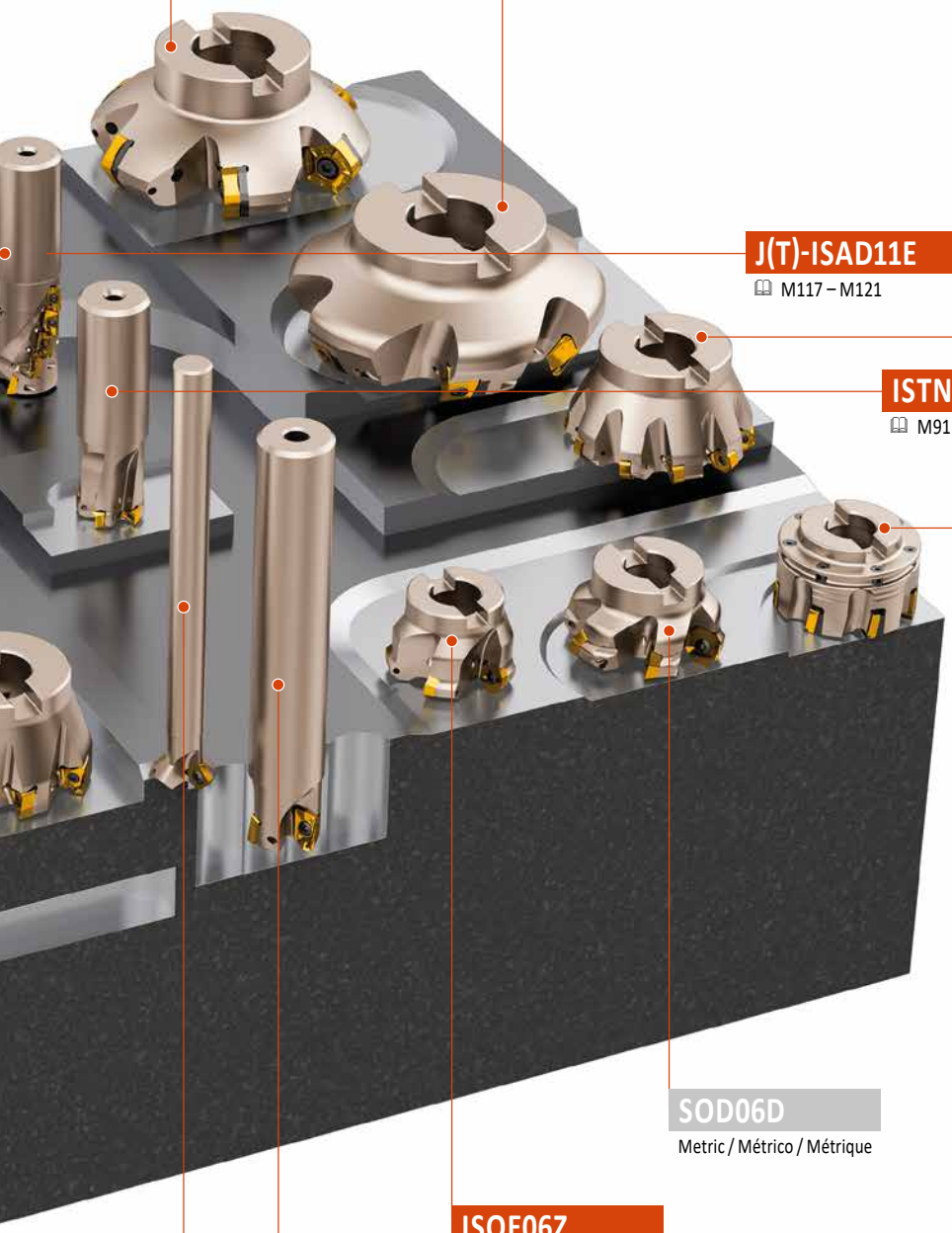
++	Positive effect on tool life – cooling is recommended	Efecto positivo en la vida de filo – se recomienda refrigerante	Effet positif sur la durée de vie de l'outil – l'arrosage est recommandé
+++	Very positive effect on tool life – cooling is recommended	Efecto muy positivo en la vida de filo – se recomienda refrigerante	Effet très positif sur la durée de vie de l'outil – l'arrosage est recommandé

Icons – technical pages / Iconos – sección técnica / Icônes – partie technique

	Multiplication factor for cutting speed	Factor de multiplicación para la velocidad de corte	Coefficient multiplicateur pour la vitesse de coupe
	Multiplication factor for feed	Factor de multiplicación para el avance	Coefficient multiplicateur pour l'avance
	Multiplication factor for feed (machining on center line)	Factor de multiplicación para el avance (mecanizado con la fresa centrada)	Coefficient multiplicateur pour l'avance (usinage avec fraise centrée)
	Multiplication factor for feed (machining off center line)	Factor de multiplicación para el avance (mecanizado con la fresa descentrada)	Coefficient multiplicateur pour l'avance (usinage avec fraise non centrée)
	Radius of insert [in]	Radio de plaquita [in]	Rayon de plaquette [in]
	Size of smoothing segment [in]	Tamaño de faceta [in]	Longueur du plat de planage [in]
	Approach angle [°]	Ángulo de posición [°]	Angle d'attaque [°]
	Depth of cut [in]	Profundidad de corte [in]	Profondeur de coupe [in]
	Feed [mm/tooth]	Avance [mm/diente]	Avance [mm/dent]
	Starting feed [mm/tooth]	Avance inicial [mm/diente]	Avance de départ [mm/dent]
	Diameter of cutter [in]	Diámetro de la fresa [in]	Diamètre de coupe [in]
	Effective diameter of cutter [in]	Diámetro efectivo de la fresa [in]	Diamètre effectif de coupe [in]
	Maximal angle for ramping [°]	Máximo ángulo de rampa [°]	Angle maximum de ramping [°]
	Maximum cutting depth in direction of cutting [in]	Máxima profundidad en la dirección del corte [in]	Profondeur de coupe maximum en fraisage en pente [in]
	Waviness of machined surface [µm]	Ondulación de la superficie [µm]	Rugosité de la surface usinée [µm]
	Step of conventional milling [in]	Paso para fresado convencional [in]	Pas en fraisage conventionnel [in]

	Step of cross milling [inch]	Paso para fresado cruzado [inch]	Pas en fraisage transversal ou tréflage [inch]
	s_{max} for d_{min} [in]	s_{max} para d_{min} [in]	s_{max} pour d_{min} [in]
	s_{max} for d_{max} [in]	s_{max} para d_{max} [in]	s_{max} pour d_{max} [in]
	Number of edges in use	Número de filos en uso	Nombre d'arêtes à utiliser
	Effective working length of tool [in]	Longitud de trabajo de la herramienta [in]	Longueur de travail de l'outil [in]
	Effective reach of tool [in]	Ancho de trabajo de la herramienta [in]	Largeur de travail de l'outil [in]
	Maximal width of machined area [in]	Ancho máximo de la superficie mecanizada [in]	Largeur maximum de la surface usinée [in]
	Durability [min]	Durabilidad [min]	Durabilité [min]
	Grade	Calidad	Nuance
	Coating	Recubrimiento	Revêtement
	Cutting speed	Velocidad de corte	Vitesse de coupe
	Cutting edge profile	Perfil del filo de corte	Profil de l'arête de coupe
	Cooling	Refrigerante	Arrosage
 01 – 05	Very high cutting speed, excellent system rigidity (stable working conditions)	Velocidad de corte muy alta, excelente rigidez del sistema (condiciones estables)	Vitesse de coupe très élevée, excellente rigidité du système (conditions de travail stables)
 05 – 10	High cutting speed, high system rigidity (stable working conditions)	Velocidad de corte alta, alta rigidez del sistema (condiciones estables)	Vitesse de coupe élevée, bonne rigidité du système (conditions de travail stables)
 10 – 20	High cutting speed, system rigidity slightly limited (depth of cut changing)	Velocidad de corte alta, rigidez del sistema ligeramente limitada (profundidad de corte variable)	Vitesse de coupe élevée, rigidité du système légèrement limité (variation de la profondeur de coupe)
20 – 30	Medium cutting speed, system rigidity limited (slightly interrupted cut)	Velocidad de corte media, rigidez del sistema limitada (corte ligeramente interrumpido)	Vitesse de coupe moyenne, rigidité du système limitée (coupe légèrement interrompue)
 30 – 40	Low cutting speed, low system rigidity (interrupted cut)	Velocidad de corte baja, rigidez del sistema baja (corte interrumpido)	Vitesse de coupe faible, mauvaise rigidité du système (coupe interrompue)
 40 – 50	Very low cutting speed, very low system rigidity (very unstable working conditions)	Velocidad de corte muy baja, rigidez del sistema muy baja (condiciones muy inestables)	Vitesse de coupe faible, mauvaise rigidité du système (coupe interrompue)


IS90SN
M128 – M132
SRC 20
Metric / Métrico / Métrique
K3-CXP
Metric / Métrico / Métrique
ISZD09
Metric / Métrico / Métrique
L2-SZP
Metric / Métrico / Métrique
K2-SRC
Metric / Métrico / Métrique
ISPD09
M65 – M70
ISAD11E
M75 – M82
J(T)-CSD12X
Metric / Métrico / Métrique
CSC12
Metric / Métrico / Métrique
ISRD12
Metric / Métrico / Métrique
ICAD15
Metric / Métrico / Métrique
F-SCC
Metric / Métrico / Métrique
ISLN12
M107 – M112



ISPN13
M52 – M55

SLN15C
Metric / Métrico / Métrique

J(T)-ISAD11E
M117 – M121

ISHN09C
Metric / Métrico / Métrique

ISTN10
M91 – M95

WXO12
Metric / Métrico / Métrique

SOD06D
Metric / Métrico / Métrique

ISOE06Z
M36 – M42

ISAD16E
M83 – M90

ISSD09
M156 – M159

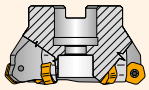
NAVIGATOR
NAVEGADOR
NAVIGATEUR

MILLING FLAT SURFACES
PLANEADO
FRAISAGE DE SURFACES PLANES

ISHN06C

45° | $a_{p\,max}$ [in] .118 | ø D [in] 1.000 – 5.000

ECON HN



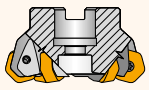
		P	M	K
	HN 0604	P	M	K
	XN 0604	N		H

M26 – M30

ISHN09C

45° | $a_{p\,max}$ [in] .197 | ø D [in] 2.000-12.000

ECON HN

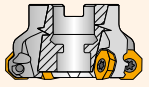


		P	M	K
	HN.. 0906	P	M	K
	XN.. 0906	N		H

M31 – M35

ISOE06Z

43° | $a_{p\,max}$ [in] .130 (.390) | ø D [in] 2.000 – 8.000

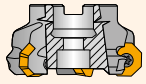


		P	M	
	OE 0604	P	M	
	REHT 16	N	S	
	XEHT 06			

M36 – M42

ISOE09Z

43° | $a_{p\,max}$ [in] .197 (.555) | ø D [in] 3.000 – 12.000

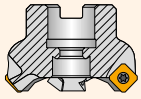


		P	M	
	OE 0906	P	M	
	REHT 24	N	S	
	XEHT 09			

M43 – M47

ISSE09

45° | $a_{p\,max}$ [in] .177 | ø D [in] .750 – 6.000



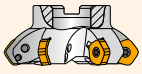
		P	M	K
	SE 09T3	P	M	K
		N	S	

M48 – M51

ISPN13

57° | $a_{p\,max}$ [in] .394 | ø D [in] 4.000 – 12.000

PENTA HD



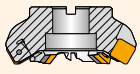
		P	M	K
	PN 1308	P	M	K
			S	H

M52 – M55

IFSB22X

60° | $a_{p\,max}$ [in] .591 | ø D [in] 5.000 – 12.000

ROUGH SB



		P	M	K
	SB 2207	P	M	K

M71 – M73

ISRC10

– | $a_{p\,max}$ [in] .097 | ø D [in] 1.000 – 1.500



		P	M	K
	RC.. 10T3	P	M	K
		N	S	H

M134 – M137

NAVIGATOR
NAVEGADOR
NAVIGATEUR

MILLING FLAT SURFACES
PLANEADO
FRAISAGE DE SURFACES PLANES

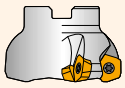


ISPD09

19°

$a_{p\,max}$ [in]	.079
ø D [in]	1.250 – 4.000

PENTA HF





PD 0905

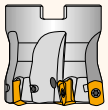
P	M	K
N	S	H

M65 – M70

ISBN10

20°

$a_{p\,max}$ [in]	.039
ø D [in]	.0625 – 1.500





BN.. 10T3
AN.. 10T3

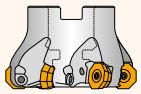
P	M	K
	S	H

M96 – M101

ISOD05

45°

$a_{p\,max}$ [in]	.118 (.394)
ø D [in]	1.250 – 5.000





OD.. 0505
RD..1205
SD..1205

P	M	K
N	S	

M56 – M64

ISSN11

18°

$a_{p\,max}$ [in]	.067
ø D [in]	1.500 – 4.000





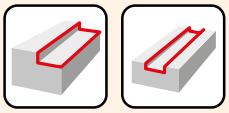
SN 1104..

P	M	K
	S	H

M102 – M106

NAVIGATOR
NAVEGADOR
NAVIGATEUR

MILLING SHALLOW SHOULDERS AND SLOTS
ESCUADRADO Y RANURADO
FRAISAGE DE PETITS ÉPAULEMENTS ET DE RAINURES

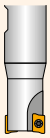


ISAD11E

90°

$a_{p\,max}$ [in]	.354
ø D [in]	.625 – 5.000

FORCE AD



	P	M	K
AD 11T3	N	S	H

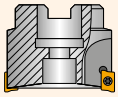
M75 – M82

ISAD16E

90°

$a_{p\,max}$ [in]	.512
ø D [in]	1.000 – 6.000

FORCE AD



	P	M	K
AD 1606	N	S	H

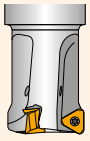
M83 – M90

ISTN10

90°

$a_{p\,max}$ [in]	.197
ø D [in]	.750 – 3.000

ECON TN



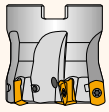
	P	M	K
TN 1004	N	S	

M91 – M95

ISBN10

20°

$a_{p\,max}$ [in]	.039
ø D [in]	.0625 – 1.500



	P	M	K
BN.. 10T3			
AN.. 10T3		S	H

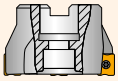
M96 – M101

ISLN12

90°

$a_{p\,max}$ [in]	.354
ø D [in]	1.000 – 5.000

ECON LN



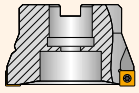
	P	M	K
LN 1205	N	S	H

M107 – M112

ISSO09

90°

$a_{p\,max}$ [in]	.315
ø D [in]	1.000 – 5.000



	P	M	K
SO 09T3	N	S	

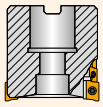
M113 – M115

J(T)-ISAD11E

90°

$a_{p\,max}$ [in]	1.456–2.205
ø D [in]	1.000 – 2.000

FORCE AD



	P	M	K
AD 11T3			

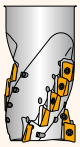
M117 – M121

J(T)-ISAD16E

90°

$a_{p\,max}$ [in]	2.126 – 4.252
ø D [in]	2.000 – 4.000

HELICAL AD



	P	M	K
AD.. 1606			

M122 – M126

IS90SN

90°

$a_{p\,max}$ [in]	.156 – .375
ø D [in]	3.000 – 6.000

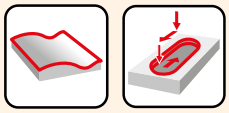


	P	M	K
SN 11			
SN 12	N	S	H

M128– M132

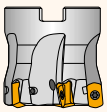
NAVIGATOR
NAVEGADOR
NAVIGATEUR

MILLING SHAPED SURFACES (COPY MILLING)
COPIADO
FRAISAGES DE FORMES (COPIAGE)



ISBN10

20°	$a_{p\,max}$ [in]	.039
	ø D [in]	.0625 – 1.500



	BN.. 10T3	P	M	K
	AN.. 10T3		S	H
		M96 – M101		

ISRC10

–	$a_{p\,max}$ [in]	.097
	ø D [in]	1.000 – 1.500

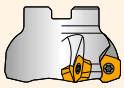


	RC.. 10T3	P	M	K
		N	S	H
		M134 – M137		

ISPD09

19°	$a_{p\,max}$ [in]	.079
	ø D [in]	1.250 – 4.000

PENTA HF



	PD 0905	P	M	K
		N	S	H
		M65 – M70		

ISSN11

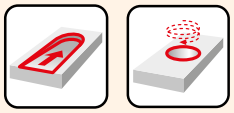
18°	$a_{p\,max}$ [in]	.067
	ø D [in]	1.500 – 4.000



	SN 1104..	P	M	K
			S	H
		M102 – M106		

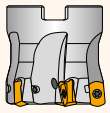
NAVIGATOR
NAVEGADOR
NAVIGATEUR

RAMPING AND HELICAL INTERPOLATION
INTERPOLACIÓN HELICOIDAL Y RAMPA
FRAISAGE EN PENTE (RAMPING) ET INTERPOLATION HELICOÏDALE



ISBN10

20°	$a_{p\,max}$ [in]	.039
	ø D [in]	.0625 – 1.500



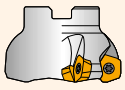
BN.. 10T3	P	M	K
AN.. 10T3		S	H

M96 – M101

ISPD09

19°	$a_{p\,max}$ [in]	.079
	ø D [in]	1.250 – 4.000

PENTA HF



PD 0905	P	M	K
	N	S	H

M65 – M70

ISRC10

–	$a_{p\,max}$ [in]	.097
	ø D [in]	1.000 – 1.500



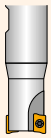
RC.. 10T3	P	M	K
	N	S	H

M134 – M137

ISAD11E

90°	$a_{p\,max}$ [in]	.354
	ø D [in]	.625 – 5.000

FORCE AD



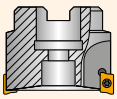
AD 11T3	P	M	K
	N	S	H

M75 – M82

ISAD16E

90°	$a_{p\,max}$ [in]	.512
	ø D [in]	1.000 – 6.000

FORCE AD



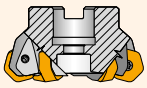
AD 1606	P	M	K
	N	S	H

M83 – M90

ISHN09

45°	$a_{p\,max}$ [in]	.197
	ø D [in]	2.000 – 12.000

ECON HN



HN 0906	P	M	K
XN 0906	N		H

M31 – M35

ISTN10

90°	$a_{p\,max}$ [in]	.197
	ø D [in]	.750 – 3.000



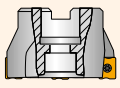
TN 1004	P	M	K
	N	S	

M91 – M95

ISLN12

90°	$a_{p\,max}$ [in]	.354
	ø D [in]	1.000 – 5.000

ECON LN

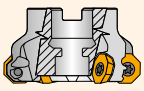


LN 1205	P	M	K
	N	S	H

M107 – M112

ISOE06Z

43°	$a_{p\,max}$ [in]	.130 (.390)
	ø D [in]	2.000 – 8.000

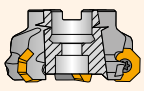


OE 0604	P	M	
REHT 16	N	S	
XEHT 06			

M36 – M42

ISOE09Z

43°	$a_{p\,max}$ [in]	.197 (.555)
	ø D [in]	3.000 – 12.000



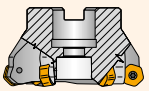
OE 0906	P	M	
REHT 24	N	S	
XEHT 09			

M43 – M47

ISHN06C

45°	$a_{p\,max}$ [in]	.118
	ø D [in]	1.000– 5.000

ECON HN

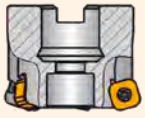


HN 0604	P	M	K
XN 0604	N		H

M26 – M30

ISSN11

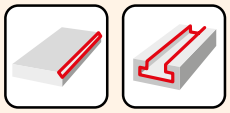
18°	$a_{p\,max}$ [in]	.067
	ø D [in]	1.500 – 4.000



SN 1104..	P	M	K
		S	H

M102 – M106

CHAMFER MILLING AND T-SLOTS
ACHAFLANADO Y RANURAS EN T
FRAISAGE DE CHANFREINS ET DE RAINURES EN TÉ



ISSD09

45°	$a_{p\,max}$ [in]	.177
	ø D [in]	.375 – 1.000

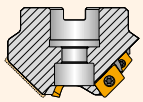


SD 0903	P	M	K
	N	S	H

M139 – M142

J(T)-ISXP16

15 – 75°	$a_{p\,max}$ [in]	.276 – 1.102
	ø D [in]	1.500 – 2.000



XP 1604	P	M	K
	N		

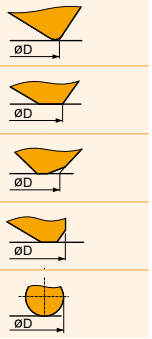
M143 – M147

PRAMET

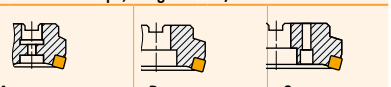
ISO/ANSI CODE DESIGNATION – SHELL CUTTER BODIES
CODIFICACIÓN ISO/ANSI – CUERPOS DE FRESA
CODIFICATION ISO/ANSI – FRAISES A ALÉSAGE

	1	2	3	4		5	6	7	8	9	10	11	12
ISO	63	A	06	R	–		S	90	A	D	16	E	
ANSI	1	2	3	4		5	6	7	8	9	10	11	12
	300	F	04	N	–	I	S	90	S	N	12	N	4

1 Cutting diameter / Diámetro de corte / Diamètre de coupe

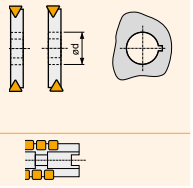


2 Cutting type, designation and/or size of clamping / Tipo de fresa, designación y/o tamaño de amarre / Diamètre de coupe, désignation et/ou taille de la fixation



A ISO 6462/A DIN 8030/A	B ISO 6462/B DIN 8030/B	C ISO 6462/C DIN 8030/C

F	ød = 27 mm	ød = 1.000
G	ød = 32 mm	ød = 1.250
H	ød = 40 mm	–
J	ød = 50 mm	–
K	ød = 60 mm	–
M	ød = 80 mm	–
T		



3 No. of working edges / Nº de filos / Nombre de dents

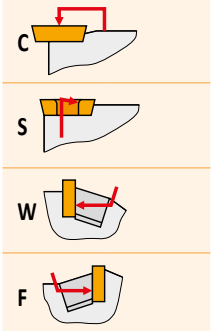
4 Direction of cut / Dirección del corte / Sens de la coupe



5 Standard / Sist. de medida / Standard

I	[″]

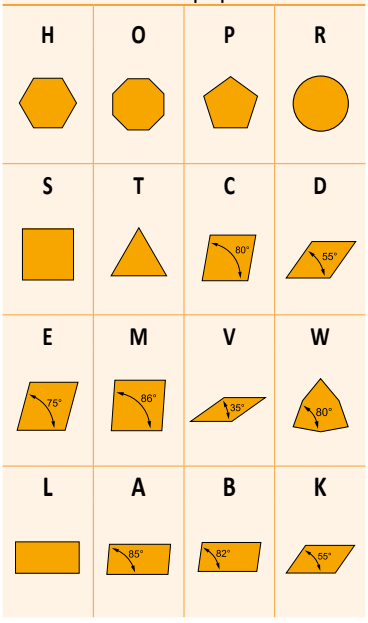
6 Clamping designation / Tipo de fijación / Système de fixation



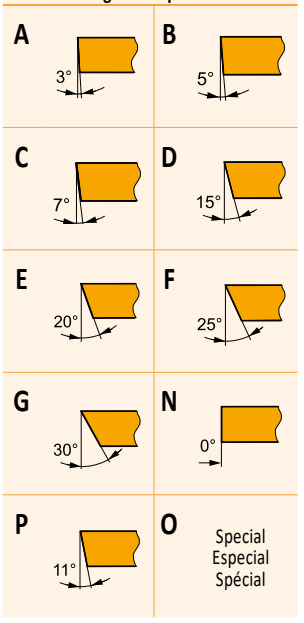
7 Setting angle / Ángulo de posición / Angle d'attaque



8 Insert shape / Forma de plaquita / Forme de la plaquette



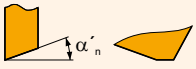
9 Clearance angle / Ángulo de incidencia de plaquita / Angle de dépouille



10 Cutting edge length / Longitud del filo de corte / Longueur d'arête de coupe

d = I.C.		H	O	P	S	T	C	D	E	M	V	W	R	K
[mm]	[″]													
3,97					03	06		04			06	02		
	5/32″							1.2						
4,76					04	08	04	05	04	04	08	L3		
	3/16″							1.5						
5,56					05	09	05	06	05	05	09	03		
	7/32″							1.8						
6,35		03	02	04	08	11	06	07	08	08	11	04	06	
	1/4″							2						
7,94		04	03	05	07	13	08	09	06	07	13	05	07	
	5/16″							2.5						
9,525		05	04	07	09	16	09	11	09	09	16	06	09	19
	3/8″							3						
12,7		07	05	09	12	22	12	15	13	12	22	08	12	
	1/2″							4						
15,875		09	06	11	15	27	16	19	16	15	27	10	15	
	5/8″							5						
19,05		11	07	13	19	33	19	23	19	19	33	13	19	
	3/4″							6						
25,4		14	10	18	25	44	25	31	26	25	44	17	25	
	1″							8						
31,75		18	13	23	31	54	32	38	32	31	54	21	31	
	1 1/4″							10						

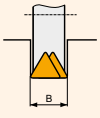
11 Clearance angle / Ángulo de incidencia / Angle de dépouille secondaire



N α'_N = 0°	C α'_N = 7°	P α'_N = 11°
D α'_N = 15°	E α'_N = 20°	F α'_N = 25°

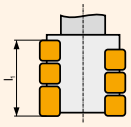
12 Cutting edge length (width) / Longitud de filo (ancho) / Longueur d'arête de coupe (largeur)

B [mm]/[″]



B	1/16″
.156	2.5
.187	3
.250	4
.313	5
.375	6

l_1

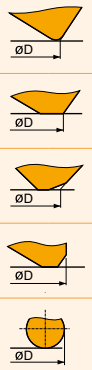


PRAMET

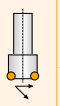
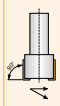
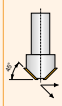
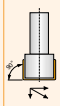
ISO/ANSI CODE DESIGNATION – SHOULDER END MILLING CUTTERS
CODIFICACIÓN ISO/ANSI – FRESAS DE RANURAR / ESCUADRAR
CODIFICATION ISO/ANSI – FRAISES A ALÉSAGE

	1	2	3	4	5	6	7		8	9	10	11	12	13
ISO	32	A	4	R	042	B	32	–		S	A	D	11	E
ANSI	125	A	4	R	150	W	125	–	I	S	A	D	11	E

1 Cutting diameter / Diámetro de corte / Diamètre de coupe



2 Cutter type and setting angle / Tipo de fresa y ángulo de posición / Type de fraise et angle d'attaque

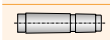
A	E	J	N	H	K
					

3 No. of working edges / Nº de filos / Nombre de dents

5 Overhang / Voladizo / Porte-à-faux

[mm]
["]

6 Shank designation / Mango / Désignation de l'attachement

	A	C	DIN 1835A
	B	W	ISO 3338-2, DIN 1835B
	E	-	ISO 296, DIN 228-1
	G	-	ISO 297, DIN 208-1
	H	-	ISO/DIS 7388-1, DIN 69871-1
	N	-	ISO 12 164-1, DIN 69893
	-	R8	R8
	X	-	MAS BT
	XC	-	CAPTO
	-	CA	ANSI B5.50

7 Shank size / Tamaño de mango / Taille de l'attachement

6 – 40	.250" – 1.250"
6 – 50	.375" – 2.000"
1 – 6	–
40 – 50	–
30 – 50	–
25 – 100	–
–	1.250"
30 – 50	–
3 – 10	–
–	40 / 50

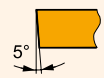
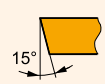
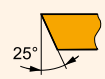
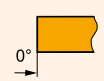
8 Standard / Sist. de medida / Standard

I	["]

8 Insert shape / Forma de plaquita / Forme de la plaquette

H	O	P	R
			
S	**T**	**C**	**D**
			
E	**M**	**V**	**W**
			
L	**A**	**B**	**K**
			

9 Clearance angle / Ángulo de incidencia de plaquita / Angle de dépouille

A 	**B** 		
C 	**D** 		
E 	**F** 		
G 	**N** 		
P 	**O** Special / Especial / Spécial		

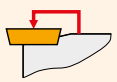
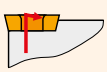
10 Cutting edge length / Longitud del filo de corte / Longueur d'arête de coupe

d = I.C. [mm]	d = I.C. ["]	H	O	P	S	T	C	D	E	M	V	W	R	K
3,97					03	06		04			06	02		
	5/32"							1.2						
4,76					04	08	04	05	04	04	08	L3		
	3/16"							1.5						
5,56					05	09	05	06	05	05	09	03		
	7/32"							1.8						
6,35		03	02	04	08	11	06	07	08	08	11	04	06	
	1/4"							2						
7,94		04	03	05	07	13	08	09	06	07	13	05	07	
	5/16"							2.5						
9,525		05	04	07	09	16	09	11	09	09	16	06	09	19
	3/8"							3						
12,7		07	05	09	12	22	12	15	13	12	22	08	12	
	1/2"							4						
15,875		09	06	11	15	27	16	19	16	15	27	10	15	
	5/8"							5						
19,05		11	07	13	19	33	19	23	19	19	33	13	19	
	3/4"							6						
25,4		14	10	18	25	44	25	31	26	25	44	17	25	
	1"							8						
31,75		18	13	23	31	54	32	38	32	31	54	21	31	
	1 1/4"							10						

4 Direction of cut / Dirección del corte / Sens de la coupe

R	
L	
N	

9 Clamping designation / Tipo de fijación / Système de fixation

C		**W**	
S		**F**	

13 Clearance angle / Ángulo de incidencia / Angle de dépouille secondaire



N α'_N = 0°	**C** α'_N = 7°	**P** α'_N = 11°
D α'_N = 15°	**E** α'_N = 20°	**F** α'_N = 25°

ISO/ANSI CODE DESIGNATION – INSERTS
CODIFICACIÓN ISO/ANSI – PLAQUITAS
CODIFICATION ISO/ANSI – PLAQUETTES

1 1 Insert shape / Forma de plaquita / Forme de la plaquette

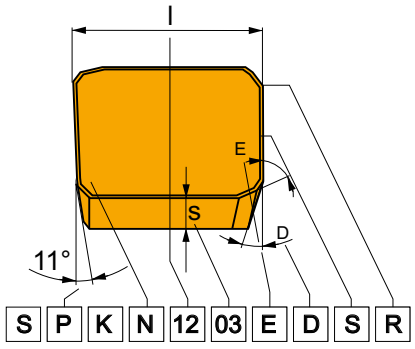
H	O	P	R
S	T	C 80°	D 55°
E 75°	M 86°	V 35°	W 80°
L	A 85°	B 82°	K 55°

2 2 Clearance angle / Ángulo de incidencia de plaquita / Angle de dépouille

A 3°	B 5°
C 7°	D 15°
E 20°	F 25°
G 30°	N 0°
P 11°	O Special / Especial / Spécial

4 4 Insert type / Tipo de plaquita / Type de plaquette

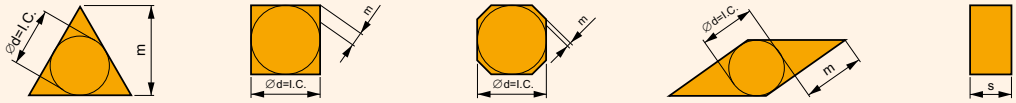
N		
R		
F		
A		
M		
G		
W	40 – 60°	
T	40 – 60°	
Q	40 – 60°	
U	40 – 60°	
B	70 – 90°	
H	70 – 90°	
C	70 – 90°	
J	70 – 90°	
X	Special / Especial / Spécial	



	1	2	3	4
ISO	S	P	G	N
	S	P	K	N
ANSI	S	P	G	
	S	P	K	N

3 3 Tolerances / Tolerancia / Tolérances

	[mm]			[″]		
	m (±)	s (±)	d = I.C. (±)	m (±)	s (±)	d = I.C. (±)
A	0,005	0,025	0,025	.0002″	.001″	.0010″
F	0,005	0,025	0,013	.0002″	.001″	.0005″
C	0,013	0,025	0,025	.0005″	.001″	.0010″
H	0,013	0,025	0,013	.0005″	.001″	.0005″
E	0,025	0,025	0,025	.0010″	.001″	.0010″
G	0,025	0,130	0,025	.0010″	.005″	.0010″
J	0,005	0,025	0,05 – 0,13	.0002″	.001″	.002″ – .005″
K	0,013	0,025	0,05 – 0,13	.0005″	.001″	.002″ – .005″
L	0,025	0,025	0,05 – 0,13	.0010″	.001″	.002″ – .005″
M	0,08 – 0,18	0,130	0,05 – 0,13	.003″ – .007″	.005″	.002″ – .005″
N	0,08 – 0,18	0,025	0,05 – 0,13	.003″ – .007″	.001″	.002″ – .005″
U	0,05 – 0,38	0,130	0,05 – 0,13	.005″ – .015″	.005″	.003″ – .010″



ISO/ANSI CODE DESIGNATION – INSERTS
CODIFICACIÓN ISO/ANSI – PLAQUITAS
CODIFICATION ISO/ANSI – PLAQUETTES

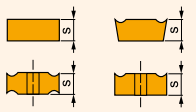
5

Cutting edge length / Longitud del filo de corte / Longueur d'arête de coupe

d = I.C.		H	O	P	S	T	C	D	E	M	V	W	R	K
[mm]	[″]													
3,97					03	06		04			06	02		
	5/32″							1.2						
4,76					04	08	04	05	04	04	08	L3		
	3/16″							1.5						
5,56					05	09	05	06	05	05	09	03		
	7/32″							1.8						
6,35		03	02	04	08	11	06	07	08	08	11	04	06	
	1/4″							2						
7,94		04	03	05	07	13	08	09	06	07	13	05	07	
	5/16″							2.5						
9,525		05	04	07	09	16	09	11	09	09	16	06	09	19
	3/8″							3						
12,7		07	05	09	12	22	12	15	13	12	22	08	12	
	1/2″							4						
15,875		09	06	11	15	27	16	19	16	15	27	10	15	
	5/8″							5						
19,05		11	07	13	19	33	19	23	19	19	33	13	19	
	3/4″							6						
25,4		14	10	18	25	44	25	31	26	25	44	17	25	
	1″							8						
31,75		18	13	23	31	54	32	38	32	31	54	21	31	
	1 1/4″							10						

6

Thickness
Espesor / Épaisseur

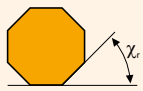


Symbol	s	
	[mm]	[″]
01	1,59	1/16″
T1	1,98	5/64″
02	2,38	3/32″
03	3,18	1/8″
T3	3,97	5,32″
04	4,76	3/16″
05	5,56	7/32″
06	6,35	1/4″
07	7,94	5/16″
09	9,52	3/8″

7

Cutting edge angles
Ángulo de corte
Angle d'attaque

Clearance angle
Ángulo de incidencia de corte
Angle de dépouille



	χ_r		α'_n
A	45°	A	3°
D	60°	B	5°
E	75°	C	7°
F	85°	D	15°
P	90°	E	20°
Z	Special Especial Spécial	F	25°
		G	30°
		N	0°
		P	11°
		Z	Special Especial Spécial

ZZ - Special/Especial/Spécial

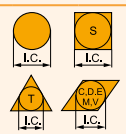
5	6	7	8	9		10
12	03	08			-	
12	03	ED	S	R		

5a	6a	7a	8	9		10
4	2	2			-	
4	2	ED	S	R		

ANSI

5a

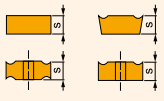
Inscribed circle
Círculo inscrito / Cercle inscrit



Symbol	d = I.C.	
	[mm]	[″]
1	3,175	1/8″
1.2	3,969	5/32″
1.5	4,763	3/16″
1.8	5,556	7/32″
2	6,350	1/4″
2.5	7,938	5/16″
3	9,525	3/8″
4	12,700	1/2″
5	15,875	5/8″
6	19,050	3/4″
7	22,225	7/8″
8	25,400	1″
10	31,750	1-1/4″
12	38,100	1-1/2″

6a

Thickness
Espesor / Épaisseur



Symbol	s	
	[mm]	[″]
1	1,588	1/16″
1.2	1,984	5/64″
1.5	2,381	3/32″
2	3,175	1/8″
2.5	3,969	5/32″
3	4,763	3/16″
3.5	5,556	7/32″
4	6,350	1/4″
5	7,938	5/16″
6	9,525	3/8″
7	11,113	7/16″
8	12,700	1/2″
9	14,288	9/16″
10	15,875	5/8″

7a

Nose radius
Radio de punta
Rayon de pointe



Symbol	r_ε	
	[mm]	[″]
0	0	0″
0.2	0,099	1/256″
0.5	0,198	1/128″
1	0,397	1/64″
2	0,794	1/32″
3	1,191	3/64″
4	1,588	1/16″
5	1,984	5/64″
6	2,381	3/32″
7	2,778	7/64″
8	3,175	1/8″
10	3,969	5/32″
12	4,763	3/16″
14	5,556	7/32″
16	6,350	1/4″

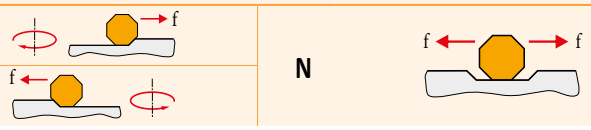
8

Cutting edge design / Diseño del filo / Conception d'arête de coupe

F	Sharp edges Filo vivo Arêtes vives	E	Rounded edges Filo redondeado Arêtes rayonnées
T	Edges with facet Filo vivo con faceta Arêtes avec listel	S	Rounded edges with facet Filo redondeado con faceta Arêtes rayonnées avec listel
K	Edges with double facet Filo con doble faceta Arêtes avec double listel	P	Rounded edges with double facet Filo redondeado con doble faceta Arêtes rayonnées avec double listel

9

Feed direction / Dirección del avance / Direction d'avance



10

Chip breaker designation / Designación del rompevirutas / Désignation de géométrie

PRAMET

ISHN06C

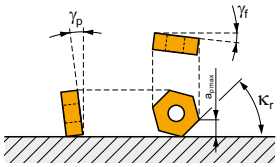
P M K N H

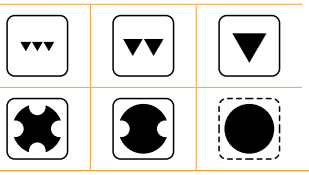
S

ECON *HN*

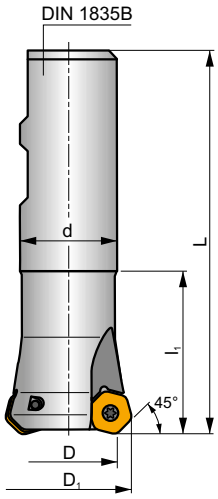


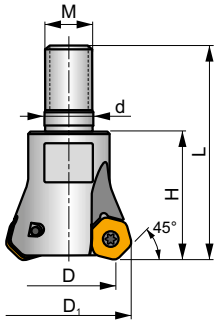
κ_r	45°
a_{pmax}	.118

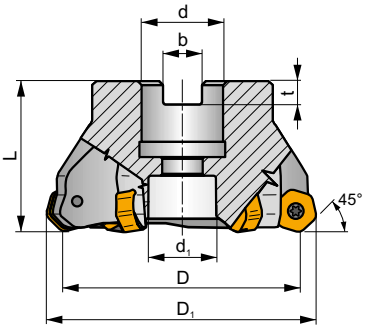




DIN 1835B







h_m	.0016-.0031
h_m	.0016-.0024





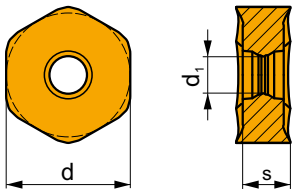

	ANSI	D	D_1	L	d	d_1	l_1	H	M	b	t	γ_f°	γ_p°			max.		lbs		
DIN 1835A	**100N2R138M12-ISHN06C-C**	1.000	1.283	2.244	.492	–	–	1.378	M12	–	–	-7	-7	2	–	–	✓	.22	GI204	IFA010
	125N3R169M16-ISHN06C-C	1.250	1.537	2.598	.669	–	–	1.693	M16	–	–	-7	-7	3	–	–	✓	.49	GI204	IFA010
	150N4R169M16-ISHN06C-C	1.500	1.787	2.598	.669	–	–	1.693	M16	–	–	-7	-7	4	✓	–	✓	.60	GI204	IFA010
ISO 6462 DIN 8030	**150A05R-IS45HN06C-C**	1.500	1.787	1.575	.500	.433	–	–	–	.258	.165	-7	-7	5	✓	13800	✓	.55	GI204	IFA012
	200A04R-IS45HN06C-C	2.000	2.287	1.575	.750	.630	–	–	–	.321	.193	-7	-7	4	✓	12300	✓	.93	GI204	IFA013
	250A06R-IS45HN06C-C	2.500	2.287	1.575	.750	.630	–	–	–	.321	.193	-7	-7	6	✓	11000	✓	1.21	GI204	IFA013
	300A07R-IS45HN06C-C	3.000	3.268	1.969	1.000	.827	–	–	–	.382	.224	-7	-7	7	✓	9700	✓	2.40	GI204	IFA014
	400A08R-IS45HN06C-C	4.000	4.280	1.969	1.500	1.260	–	–	–	.630	.382	-7	-7	8	✓	8700	✓	3.99	GI204	IFA015
	500A16R-IS45HN06C-C	5.000	5.283	2.480	1.500	1.260	–	–	–	.630	.382	-7	-7	16	✓	7800	✓	7.30	GI204	IFA019

GI204	HNGX 0604AN..	XNGX 0604AN..

		Nm						
IFA010	US 3007-T09P	2.0	M 3	.280	–	–	Flag T09P	–
IFA012	US 3007-T09P	2.0	M 3	.280	D-T07P/T09P	FG-15	–	HS 025100
IFA013	US 3007-T09P	2.0	M 3	.280	D-T07P/T09P	FG-15	–	HS 037100
IFA014	US 3007-T09P	2.0	M 3	.280	D-T07P/T09P	FG-15	–	HS 050125
IFA015	US 3007-T09P	2.0	M 3	.280	D-T07P/T09P	FG-15	–	HCS 075200
IFA019	US 3007-T09P	2.0	M 3	.280	D-T07P/T09P	FG-15	–	HS 075125

HNGX 06

	d	d_1	s
0604	.413	.146	.187

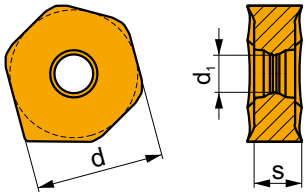


		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	25° .002	**HNGX 0604ANSN-F**	**M9340**	■	■					●	---	–	.003	.007	.012	.118
			M6330	■	■					●	-	–	.003	.007	.012	.118
			M8310	■	◪	□				●	-	–	.003	.007	.012	.118
			M8330	■	◪	□	□			●	-	-	.003	.007	.012	.118
			M8340	■	■	□				●	+/-	–	.003	.007	.012	.118
			8215	■	◪	□	□			●	-	–	.003	.007	.012	.118
	23° .004	**HNGX 0604ANSN-M**	**M5315**	◪		■			□	●	---	–	.005	.010	.024	.118
			M9315	■		◪			□	●	---	–	.005	.010	.024	.118
			M9325	■	◪					●	---	–	.005	.010	.024	.118
			M9340	◪	◪					●	---	–	.005	.010	.024	.118
			M6330	◪	◪					✖	-	–	.005	.010	.024	.118
			M8310	■	◪	■			□	●	-	–	.005	.010	.024	.118
			M8330	■	◪	■	□		□	✖	-	-	.005	.010	.024	.118
			M8340	■	◪	◪				✖	+/-	–	.005	.010	.024	.118
			8215	■	◪	■	□		□	●	-	–	.005	.010	.024	.118
	17° .005	**HNGX 0604ANSN-R**	**M5315**	◪		■			◪	●	---	–	.007	.012	.039	.118
			M9315	■		◪			◪	●	---	–	.007	.012	.039	.118
			M9325	■	◪					✖	---	–	.007	.012	.039	.118
			M8310	■	◪	■			◪	✖	-	–	.007	.012	.039	.118
			M8330	■	◪	■			◪	✖	-	-	.007	.012	.039	.118
			M8340	■	◪	◪				✖	+/-	–	.007	.012	.039	.118
			8215	■	◪	■			◪	✖	-	–	.007	.012	.039	.118

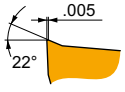
PRAMET

XNGX 06

	d	d_1	s
0604	.413	.146	.187



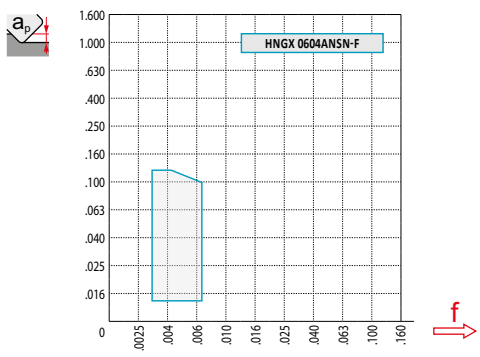
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
XNGX 0604ANSN	**8215**	■	◪	■	□			?	-	–	.005	.010	.028	.118

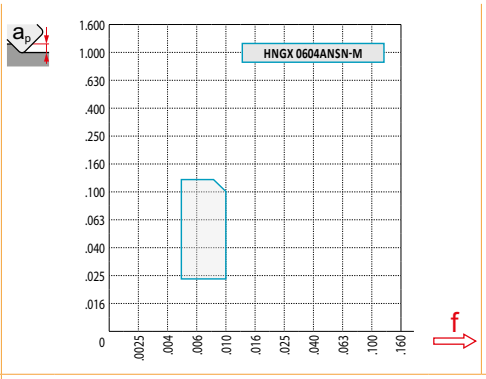


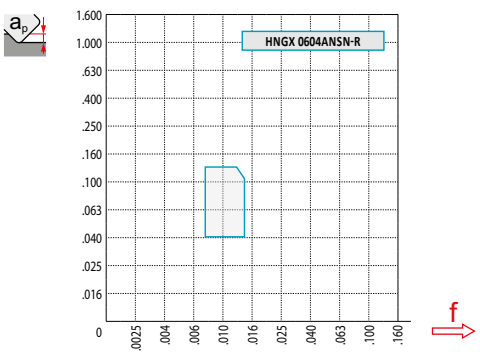
ISO		f_{min}	f_{max}	M5315	M9315	M9325	M9340	M8310	M8340	8215	M8330
P	●	.0039	.0118	1640	1604	1549	1339	1378	1227	1322	1207
	⧓	.0039	.0098	1529	1473	1398	1188	1247	1076	1152	1056
	✖	.0039	.0059	1398	1322	1227	1056	1112	925	981	906
M	●	.0039	.0118	-	-	925	794	830	735	794	719
	⧓	.0039	.0098	-	-	830	719	735	643	679	643
	✖	.0039	.0059	-	-	735	623	659	548	584	548
K	●	.0039	.0118	1565	1529	-	-	1302	1152	1247	1152
	⧓	.0039	.0098	1453	1398	-	-	1188	1020	1096	1001
	✖	.0039	.0059	1339	1263	-	-	1056	886	925	869
N	●	.0039	.0118	-	-	-	-	-	-	3320	3038
	⧓	.0039	.0098	-	-	-	-	-	-	2887	2680
	✖	.0039	.0059	-	-	-	-	-	-	2470	2303
H	●	.0039	.0079	322	322	-	-	266	-	266	226
	⧓	.0039	.0063	302	282	-	-	246	-	226	207
	✖	.0039	.0047	266	266	-	-	207	-	190	171

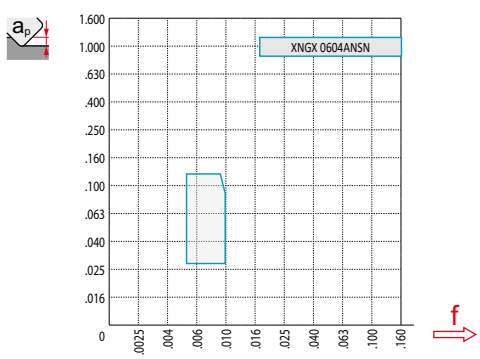
a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.02	1.01	.99	.98
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

	HNGX 06-F	HNGX 06-M	HNGX 06-R	XNGX 06
r_ε	–	–	–	–
a	.044	.031	.031	.163









D	X.V	f_{max}
1.000	1.31	.009
1.250	1.36	.011
1.500	1.40	.012
2.000	1.45	.014
2.500	1.49	.015
3.000	1.54	.017
4.000	1.59	.019
5.000	1.64	.022



D	α_{max} °	a_p/l
1.00	2.7	.12/2.5
1.25	1.9	.12/3.5
1.50	1.5	.1/4.0
2.00	1.1	.075/4.0
2.50	.9	.06/4.0
3.00	.6	.045/4.0
4.00	.5	.03/4.0
5.00	.4	.025/4.0



a_p
.035

ISHN09C

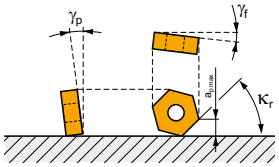
P M K N H

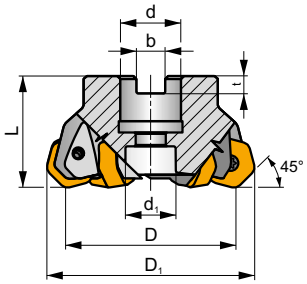
S

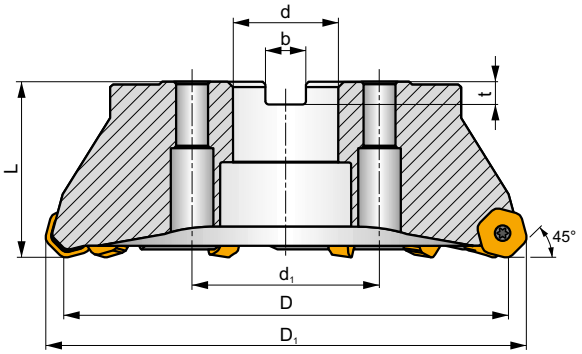
ECON HN

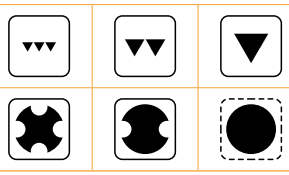


κ_r	45°
a_{pmax}	.197









h_m .0031-.0098



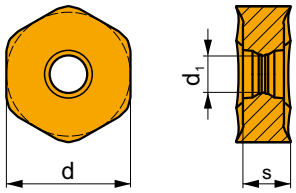
	ANSI	D	D_1	L	d	d_1	b	t	γ_f°	γ_p°			max.		lbs		
	200A04R-IS45HN09C-CF	2.000	2.461	1.575	.750	.630	.321	.193	-7	-7	4	✓	7900	✓	.77	IGI252	IFA023
	250A06R-IS45HN09C-CF	2.500	2.961	1.575	.750	.630	.321	.193	-7	-7	6	✓	7000	✓	1.08	IGI252	IFA023
	300A06R-IS45HN09C-CF	3.000	3.461	1.969	1.000	.827	.382	.224	-7	-7	6	✓	6200	✓	2.34	IGI252	IFA024
	300A08R-IS45HN09C-CF	3.000	3.461	1.969	1.000	.827	.382	.224	-7	-7	8	✓	6200	✓	2.34	IGI252	IFA024
	400A06R-IS45HN09C-CF	4.000	4.461	1.969	1.500	1.260	.630	.382	-7	-7	6	✓	5600	✓	3.84	IGI252	IFA025
	400A08R-IS45HN09C-CF	4.000	4.461	1.969	1.500	1.260	.630	.382	-7	-7	8	✓	5600	✓	3.84	IGI252	IFA025
	400A10R-IS45HN09C-CF	4.000	4.461	1.969	1.500	1.260	.630	.382	-8	-7	10	–	5600	✓	3.84	IGI252	IFA025
ISO 6462 DIN 8030	**500A06R-IS45HN09C-CF**	5.000	5.461	2.480	1.500	1.260	.630	.382	-7	-7	6	✓	5000	✓	7.14	IGI252	IFA020
	500A10R-IS45HN09C-CF	5.000	5.461	2.480	1.500	1.260	.630	.382	-7	-7	10	✓	5000	✓	7.14	IGI252	IFA020
	500A12R-IS45HN09C-CF	5.000	5.461	2.480	1.500	1.260	.630	.382	-8	-7	12	–	5000	✓	7.14	IGI252	IFA020
	600B08R-IS45HN09CF	6.000	6.461	2.480	2.000	3.465	.756	.445	-7	-7	8	✓	4400	–	12.57	IGI252	IFA021
	600B12R-IS45HN09CF	6.000	6.461	2.480	2.000	3.465	.756	.445	-7	-7	12	✓	4400	–	12.57	IGI252	IFA021
	800C10R-IS45HN09CF	8.000	8.461	2.480	2.500	4.000	1.000	.559	-7	-7	10	✓	3900	–	19.84	IGI252	IFA021
	1000C14R-IS45HN09CF	10.000	1.461	2.480	2.500	4.000	1.000	.559	-7	-7	14	✓	3500	–	28.22	IGI252	IFA021
	1200C16R-IS45HN09CF	12.000	12.461	3.150	2.500	4.000	1.000	.559	-7	-7	16	✓	3100	–	7.99	IGI252	IFA021

IGI252	HNGX 0906AN..	XNGX 0906AN..

		Nm										
IFA020	US 54511-T15P	5.0	M 4.5	.445	D-T08P/T15P	FG-15	–	HS 075125	–	–	–	–
IFA021	US 54511-T15P	5.0	M 4.5	.445	D-T08P/T15P	FG-15	–	–	–	–	–	–
IFA023	US 54511-T15P	5.0	M 4.5	.445	D-T08P/T15P	FG-15	–	HS 037100	–	–	–	–
IFA024	US 54511-T15P	5.0	M 4.5	.445	D-T08P/T15P	FG-15	–	HS 050125	–	–	–	–
IFA025	US 54511-T15P	5.0	M 4.5	.445	D-T08P/T15P	FG-15	–	HCS 075200	–	–	–	–

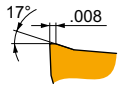
HNGX 09

	d	d_1	s
0906	.650	.193	.250



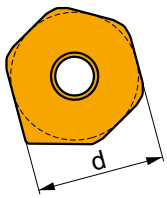
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E	22°	**HNGX 0906ANEN-FF**	**M9340**	◪	■					●	- - -	–	.002	.008	.020	.197
			8215	■	◪	□	□			●	-	–	.002	.008	.020	.197
			8230	■	■	□	□			●	-	–	.002	.008	.020	.197
			M8330	■	◪	□	□			●	-	-	.002	.008	.020	.197
S	22° .003	**HNGX 0906ANSN-F**	**M9340**	◪	■					⧓	- - -	–	.004	.008	.020	.197
			M6330	◪	■					⧓	-	–	.004	.008	.020	.197
			M8310	■	◪	□				⧓	-	–	.004	.008	.020	.197
			M8330	■	◪	□	□			⧓	-	-	.004	.008	.020	.197
			M8340	■	■	□				⧓	+ / -	–	.004	.008	.020	.197
			8215	■	◪	□	□			⧓	-	–	.004	.008	.020	.197
			8230	■	■	□	□			⧓	-	–	.004	.008	.020	.197
1 U S	22° .005	**HNGX 0906ANSN-M**	**M5315**	◪		■			□	⧓	- - -	–	.007	.014	.031	.197
			M9315	■		◪			□	⧓	- - -	–	.007	.014	.031	.197
			M9325	■	◪					⧓	- - -	–	.007	.014	.031	.197
			M9340	◪	◪					✖	- - -	–	.007	.014	.031	.197
			M6330	◪	◪					✖	-	–	.007	.014	.031	.197
			M8310	■	◪	■			□	⧓	-	–	.007	.014	.031	.197
			M8330	■	◪	■	□		□	✖	-	-	.007	.014	.031	.197
			M8340	■	◪	◪				✖	+ / -	–	.007	.014	.031	.197
			8215	■	◪	■	□		□	✖	-	–	.007	.014	.031	.197
			8230	■	◪	■	□		□	✖	-	–	.007	.014	.031	.197

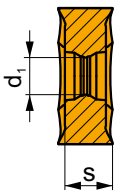
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HNGX 0906ANSN-R	**M5315**	◪		■			◪	✖	---	–	.012	.020	.039	.197
	M9315	■		◪			◪	✖	---	–	.012	.020	.039	.197
	M9325	■	◪					✖	---	–	.012	.020	.039	.197
	M8310	■	◪	■			◪	✖	-	–	.012	.020	.039	.197
	M8330	■	◪	■			◪	✖	-	-	.012	.020	.039	.197
	M8340	■	◪	◪				✖	+/-	–	.012	.020	.039	.197
	8215	■	◪	■			◪	✖	-	–	.012	.020	.039	.197



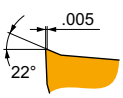
XNGX 09

	d	d_1	s
0906	.650	.193	.250





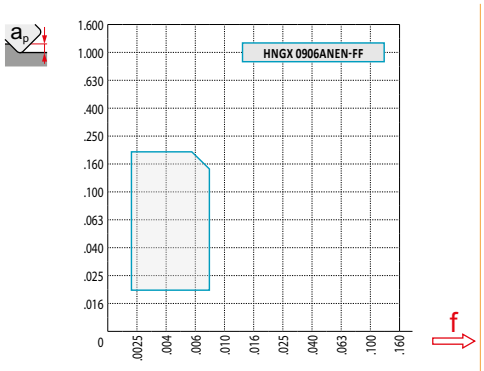
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
XNGX 0906ANSN	**M8330**	■	◪	■				✖	-	–	.007	.020	.031	.197
	8215	■	◪	■				✖	-	–	.007	.020	.031	.197

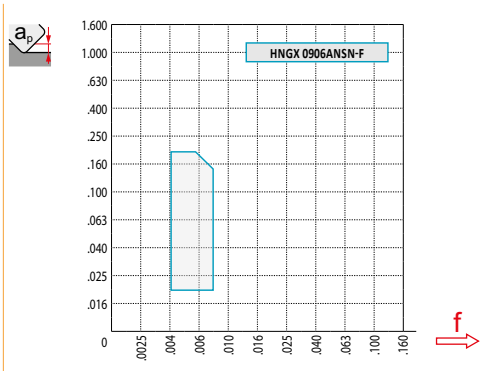


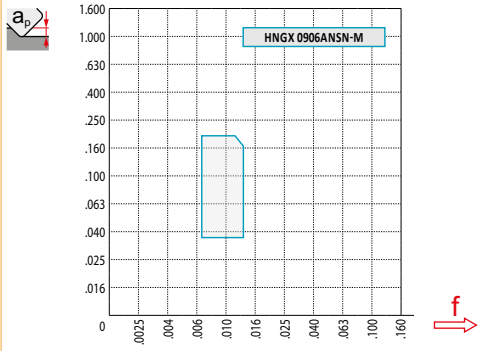
ISO		f_{min}	f_{max}	M5315	M9315	M9325	M9340	M6330	M8310	M8340	8215	M8330
P	●	.0039	.0157	1640	1604	1549	1339	1207	1378	1227	1322	1207
	◪	.0039	.0118	1529	1473	1398	1188	1076	1247	1076	1152	1056
	✖	.0039	.0079	1398	1322	1227	1056	945	1112	925	981	906
M	●	.0039	.0138	–	–	925	794	794	830	735	794	719
	◪	.0039	.0098	–	–	830	719	699	735	643	679	643
	✖	.0039	.0059	–	–	735	623	604	659	548	584	548
K	●	.0039	.0157	1565	1529	–	–	–	1302	1152	1247	1152
	◪	.0039	.0118	1453	1398	–	–	–	1188	1020	1096	1001
	✖	.0039	.0079	1339	1263	–	–	–	1056	886	925	869
N	●	.0039	.0157	–	–	–	–	–	–	–	3320	3038
	◪	.0039	.0118	–	–	–	–	–	–	–	2887	2680
	✖	.0039	.0079	–	–	–	–	–	–	–	2470	2303
H	●	.0039	.0098	322	322	–	–	–	266	–	266	226
	◪	.0039	.0079	302	282	–	–	–	246	–	226	207
	✖	.0039	.0059	266	266	–	–	–	207	–	190	171

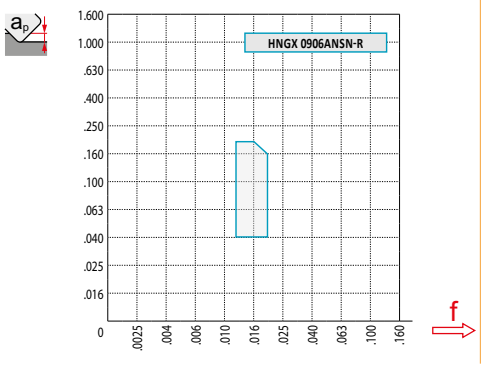
a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.02	1.01	.99	.98
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

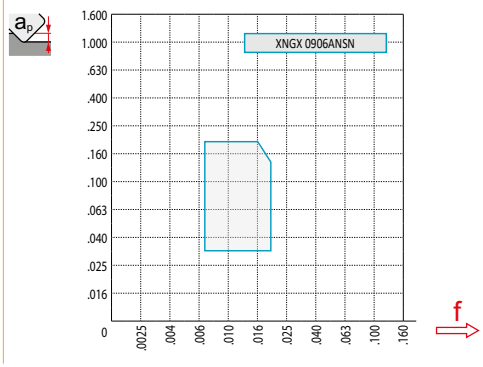
	HNGX 09-FF	HNGX 09-F	HNGX 09-M	HNGX 09-R	XNGX 09
r_ε	–	–	–	–	–
a	.059	.046	.046	.046	.296











D	X.V	f_{max} ⇨
2.00	1.35	.014
2.50	1.39	.016
3.00	1.44	.018
4.00	1.48	.020
5.00	1.53	.022
6.00	1.58	.025
8.00	1.63	.028
10.00	1.68	.031
12.00	1.74	.035

D	α_{max} °	a_p/l
2.00	2.1	.140/4.00
2.50	1.5	.100/4.00
3.00	1.1	.070/4.00
4.00	.9	.060/4.00
5.00	.7	.045/4.00
6.00	.5	.030/4.00

a_p
.075

PRAMET

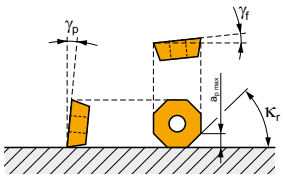
ISOE06Z

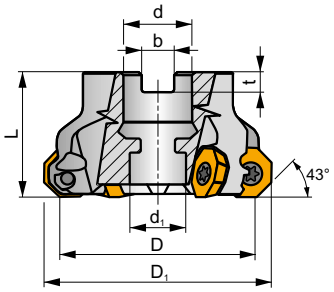
P M N S

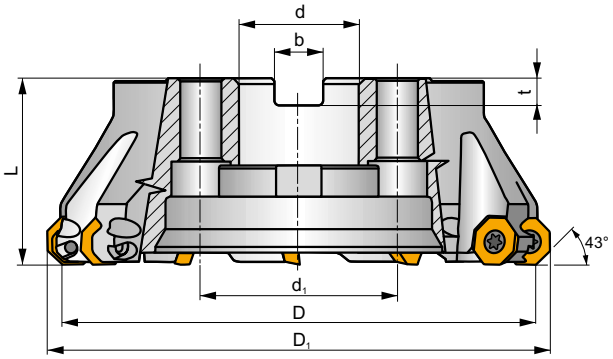
S

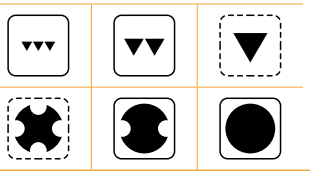


κ_r	43°
a_{pmax}	.130 (.390)











.0024-.0079



	ANSI	D	D_1	L	d	d_1	b	t	γ_f°	γ_p°			max.		lbs		
	200A04R-IS45OE06Z-C	2.000	2.402	1.575	.750	.630	.321	.193	6	10	4	✓	10700	✓	.82	IGI283	IFA053
	200A05R-IS45OE06Z-C	2.000	2.394	1.575	.750	.630	.321	.193	1	10	5	✓	10700	✓	.82	IGI283	IFA053
	250A04R-IS45OE06Z-C	2.500	2.902	1.575	.750	.630	.321	.193	6	10	4	✓	9600	✓	1.04	IGI283	IFA053
	250A06R-IS45OE06Z-C	2.500	2.894	1.575	.750	.630	.321	.193	1	10	6	✓	9600	✓	1.10	IGI283	IFA053
	300A05R-IS45OE06Z-C	3.000	3.402	1.969	1.000	.827	.382	.224	6	10	5	✓	8500	✓	2.18	IGI283	IFA054
	300A06R-IS45OE06Z-C	3.000	3.402	1.969	1.000	.827	.382	.224	6	10	6	✓	8500	✓	2.25	IGI283	IFA054
ISO 6462 DIN 8030	**400A06R-IS45OE06Z-C**	4.000	4.402	1.969	1.500	1.417	.630	.382	6	10	6	✓	7600	✓	4.25	IGI283	IFA055
	400A08R-IS45OE06Z-C	4.000	4.390	1.969	1.500	1.417	.630	.382	1	10	8	✓	7600	✓	4.30	IGI283	IFA055
	500A07R-IS45OE06Z-C	5.000	5.402	2.480	1.500	1.260	.630	.382	6	10	7	✓	6800	✓	7.72	IGI283	IFA050
	500A09R-IS45OE06Z-C	5.000	5.390	2.480	1.500	1.260	.630	.382	1	10	9	✓	6800	✓	7.72	IGI283	IFA050
	600A09R-IS45OE06Z-C	6.000	6.402	2.480	2.000	1.654	.756	.445	6	10	9	✓	6000	✓	12.92	IGI283	IFA056
	600A12R-IS45OE06Z-C	6.000	6.390	2.480	2.000	1.654	.756	.445	1	10	12	✓	6000	✓	13.03	IGI283	IFA056
	800C11R-IS45OE06Z-C	8.000	8.402	2.480	2.500	4.000	1.000	.559	6	10	11	✓	5300	✓	18.43	IGI283	IFA057
	800C14R-IS45OE06Z-C	8.000	8.390	2.480	2.500	4.000	1.000	.559	1	10	14	✓	5300	✓	18.65	IGI283	IFA057



IGI283



OEHT 0604AE..



REHT 1604M..

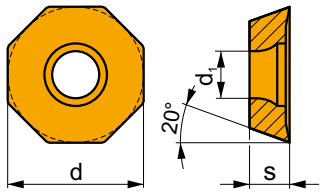


XEHT 0604AE..

IFA050	US 5011-T20P	5.0	M 5	.445	SDR T20P-T	HS 075125	–	–	–
IFA053	US 5011-T20P	5.0	M 5	.445	SDR T20P-T	HS 037100	–	–	–
IFA054	US 5011-T20P	5.0	M 5	.445	SDR T20P-T	HS 050125	–	–	–
IFA055	US 5011-T20P	5.0	M 5	.445	SDR T20P-T	HCS 075200	–	–	–
IFA056	US 5011-T20P	5.0	M 5	.445	SDR T20P-T	HS 100150	CAC 160C	HSD 0825C	HXK 5
IFA057	US 5011-T20P	5.0	M 5	.445	SDR T20P-T	–	CAC 200C	HSD 1025C	HXK 7

OEHT 06

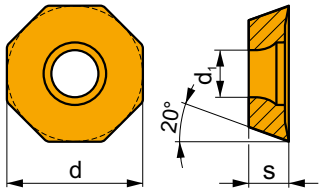
	d	d_1	s
0604	.632	.217	.187



	ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	OEHT 0604AEER-MF	**M6330**	◪	■			■			-	–	.003	.008	.020	.130
		M8330	◪	◪		□	□			-	–	0,08	0,20	0,5	3,3
		M8340	◪	■			■			+ / -	–	.003	.008	.020	.130
	OEHT 0604AEER-MM	**M9325**	◪	◪			◪			- - -	–	.003	.008	.020	.130
		M9340	◪	■			■			- - -	–	.003	.008	.020	.130
		M6330	◪	■			■			-	–	.003	.010	.020	.130
		M8330	◪	◪		□	□			-	–	0,08	0,25	0,5	3,3
		M8340	◪	■			■			+ / -	–	.003	.010	.020	.130
		M8345	◪	■			■			+ / -	–	.003	.010	.020	.130
	OEHT 0604AESR-M	**M9325**	■	◪			◪			- - -	–	.003	.012	.020	.130
		M9340	◪	■			◪			- - -	–	.003	.012	.020	.130
		M6330	◪	■			◪			-	–	.003	.014	.020	.130
		M8310	■	◪			◪			-	–	.003	.014	.020	.130
		M8330	■	◪			□			-	–	0,08	0,35	0,5	3,3
		M8340	■	■			◪			+ / -	–	.003	.014	.020	.130

OEHT 06-FA

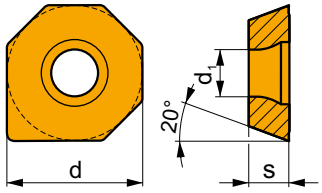
	d	d_1	s
0604	.632	.217	.187



		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
1		**OEHT 0604AEFR-FA**	**M0315**				■			●	++	–	.003	.008	.020	.130
			HF7				■			●	+/-	–	.003	.008	.020	.130
	12°															
F																

XEHT 06

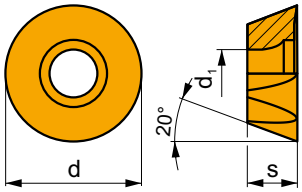
	d	d_1	s
0604	.632	.217	.187

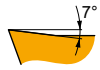
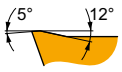


		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
W		**XEHT 0604AESR**	**M8310**	■	◪			◪		❀	-	–	.003	.014	.004	.130
			M8330	■	◪			□		✖	-	–	.003	.014	.004	.130
S	.001 9° 5°															

REHT 16

	d	d_1	s
1604	.630	.217	.187

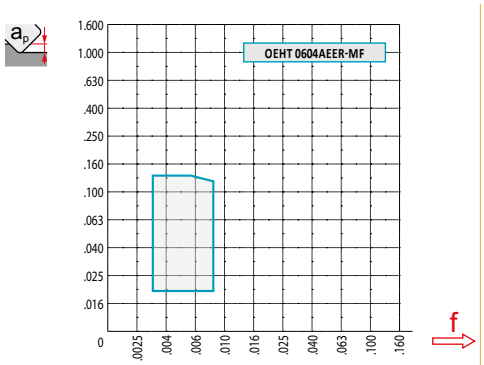


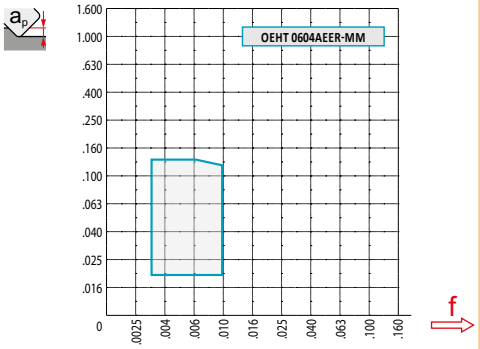
		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
E		**REHT 1604M0EN-MM**	**M9325**	◪	◪			◪		●	---	–	.003	.008	.020	.157
			M9340	◪	■			■		●	---	–	.003	.008	.020	.157
			M6330	◪	■			■		✖	-	–	.003	.010	.020	.157
			M8330	◪	◪		□	□		●	-	–	.003	.010	.020	.157
			M8340	◪	■			■		✖	+/-	–	.003	.010	.020	.157
			M8345	◪	■			■		✖	+/-	–	.003	.010	.020	.157
S		**REHT 1604M0SN-M**	**M9325**	■	◪			◪		✖	---	–	.003	.012	.020	.157
			M8310	■	◪			◪		✖	-	–	.003	.014	.020	.157
			M8330	■	◪			□		✖	-	–	.003	.014	.020	.157
			M8340	■	■			◪		✖	+/-	–	.003	.014	.020	.157

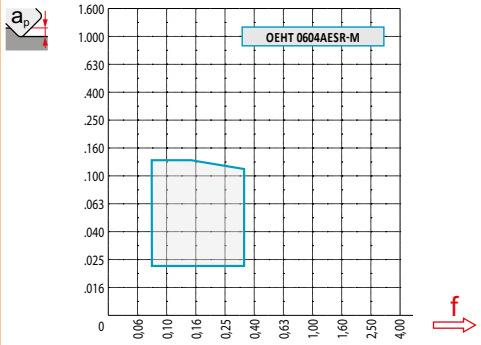
ISO		f_{min}	f_{max}	M9325	M9340	M0315	M6330	M8310	M8340	M8345	M8330	HF7
P	●	.0039	.0118	1414	1224	–	1102	1257	1119	810	1102	–
	●	.0039	.0098	1276	1086	–	981	1138	981	689	965	–
	✖	.0039	.0059	1119	965	–	863	1017	843	587	827	–
M	●	.0039	.0118	843	725	–	725	758	673	482	656	–
	●	.0039	.0098	758	656	–	636	673	587	413	587	–
	✖	.0039	.0059	673	568	–	551	604	499	344	499	–
N	●	.0039	.0118	–	–	2618	–	–	–	–	2772	1171
	●	.0039	.0098	–	–	2343	–	–	–	–	2448	1050
	✖	.0039	.0059	–	–	2051	–	–	–	–	2103	912
S	●	.0039	.0098	413	361	–	361	381	328	243	328	–
	●	.0039	.0079	381	328	–	312	328	292	207	292	–
	✖	.0039	.0059	328	276	–	276	292	243	174	243	–

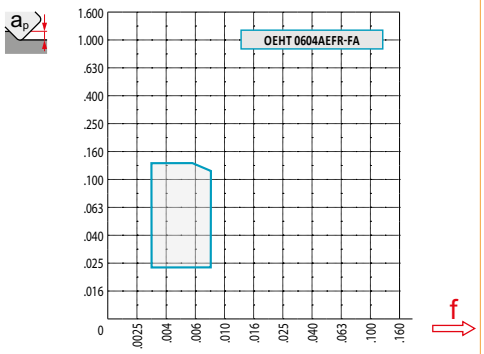
a_e / D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.02	1.01	.99	.98
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

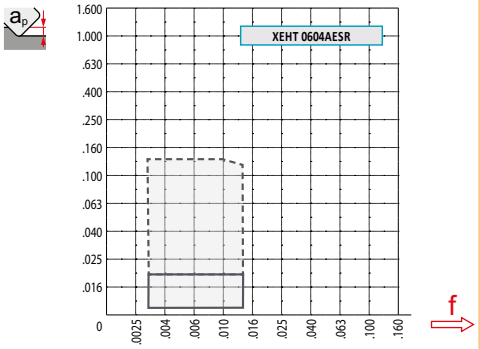
	OEHT 06-MF	OEHT 06-MM	OEHT 06-M	OEHT 06-FA	XEHT 06	REHT 16-MM	REHT 16-M
r_ε	–	–	–	–	–	.315	.315
a	.054	.054	.054	.054	.390	–	–

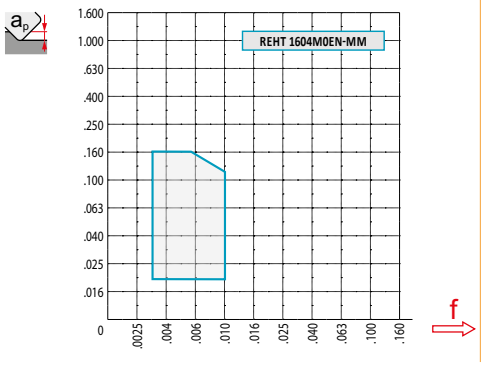


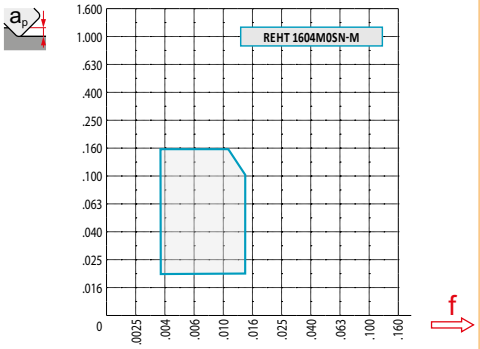












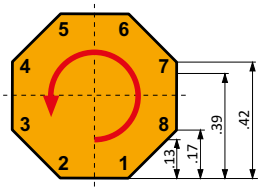
D		R							
O	R	a_p	.000	.020	.030	.049	.059	.079	.098	.118	.157
2.00	2.396		1.728	1.948	1.994	2.067	2.096	2.145	2.186	2.220	2.274
2.50	2.893		2.240	2.459	2.506	2.578	2.607	2.657	2.698	2.732	2.786
3.00	3.371		2.909	3.129	3.176	3.248	3.277	3.326	3.367	3.401	3.455
3.50	3.881	D_{ef}	3.299	3.519	3.565	3.637	3.667	3.716	3.757	3.791	3.845
4.00	4.396		3.697	3.916	3.963	4.035	4.064	4.113	4.154	4.189	4.243
5.00	5.396		4.681	4.900	4.947	5.019	5.048	5.098	5.139	5.173	5.227
6.00	6.371		6.059	6.278	6.325	6.397	6.426	6.476	6.517	6.551	6.605
8.00	8.396		7.634	7.853	7.900	7.972	8.001	8.050	8.091	8.126	8.180

D	X.V	f_{max}
2.00	1.43	.013
2.50	1.47	.015
3.00	1.52	.017
4.00	1.57	.019
5.00	1.62	.020
6.00	1.68	.023
8.00	1.73	.026

D		O		R	
O	R	α_{max} °	a_p/l	α_{max} °	a_p/l
2.00	2.396	4.9	.30/4.00	4.6	.30/4.00
2.50	2.893	3.6	.25/4.00	3	.20/4.00
3.00	3.371	2.6	.20/4.00	2.2	.15/4.00
4.00	4.396	2	.15/4.00	1.8	.12/4.00
5.00	5.396	1.5	.10/4.00	1.3	.08/4.00

D		O				R			
O	R	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}
2.00	2.396	3.602	4.724	.232	.232	3.602	4.705	.232	.232
2.50	2.893	4.622	5.748	.232	.232	4.646	5.728	.232	.232
3.00	3.371	5.961	7.087	.232	.232	5.965	7.067	.232	.232
4.00	4.396	7.535	8.661	.232	.232	7.539	8.642	.232	.232
5.00	5.396	9.500	1.630	.232	.232	9.508	1.610	.232	.232

	O	R
a_p	.122	.118



a_p	
–> .13	8
–> .17	7
–> .39	4
–> .42	2

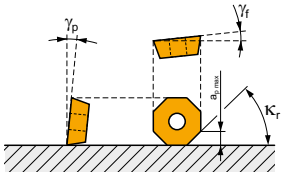
ISOE09Z

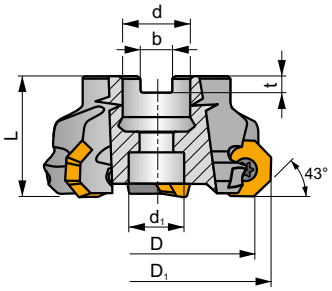
P M N S

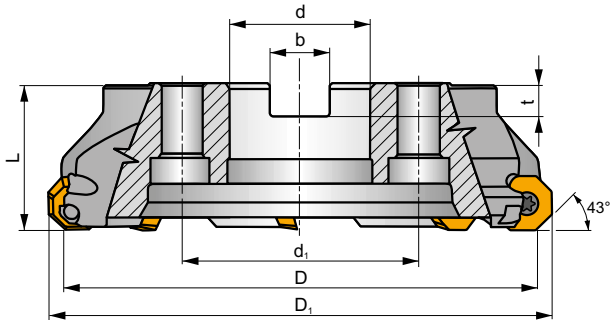
S

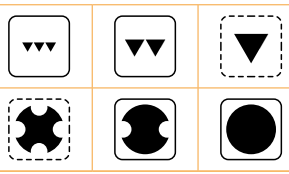


κ_r	43°
a_{pmax}	.197 (.555)









h_m .0035-.0098



	ANSI	D	D_1	L	d	d_1	b	t	γ_f°	γ_p°			max.		lbs		
ISO 6462 DIN 8030	**300A05R-IS45OE09Z-C**	3.000	3.604	1.969	1.000	.827	.382	.224	6	10	5	✓	6100	✓	2.01	IGI293	IFA064
	500A05R-IS45OE09Z-C	5.000	5.602	2.480	1.500	1.260	.630	.382	6	10	5	✓	4800	✓	7.87	IGI293	IFA060
	500A07R-IS45OE09Z-C	5.000	5.602	2.480	1.500	1.260	.630	.382	6	10	7	✓	4800	✓	7.63	IGI293	IFA060
	600A08R-IS45OE09Z-C	6.000	6.602	2.480	2.000	1.654	.756	.445	6	10	8	✓	4300	✓	12.19	IGI293	IFA066
	800C10R-IS45OE09Z-C	8.000	8.586	2.480	2.500	4.000	1.000	.559	1	10	10	✓	3800	✓	18.34	IGI293	IFA067
	1000C12R-IS45OE09Z-C	10.000	1.586	2.480	2.500	4.000	1.000	.559	1	10	12	✓	3400	✓	32.39	IGI293	IFA068
	1200C14R-IS45OE09Z-C	12.000	12.585	3.150	2.500	4.000	1.000	.559	1	10	14	✓	3000	✓	6.67	IGI293	IFA069

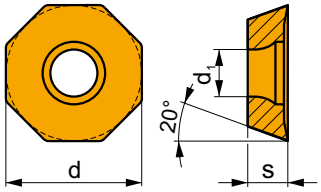
IGI293	OEHT 0906AE..	REHT 2406M..	XEHT 0906AE..

		Nm									
IFA060	US 68020-T30P	15.0	M 8	.780	SDR T30P-T	HS 075125	–	–	–	–	–
IFA064	US 68020-T30P	15.0	M 8	.780	SDR T30P-T	HS 050125	–	–	–	–	–
IFA065	US 68020-T30P	15.0	M 8	.780	SDR T30P-T	HCS 075175	–	–	–	–	–
IFA066	US 68020-T30P	15.0	M 8	.780	SDR T30P-T	HS 100150	CAC 160C	HSD 0825C	HXK 5	–	–
IFA067	US 68020-T30P	15.0	M 8	.780	SDR T30P-T	–	CAC 200C	HSD 1025C	HXK 7	–	–
IFA068	US 68020-T30P	15.0	M 8	.780	SDR T30P-T	–	CAC 250C	HSD 1025C	HXK 7	–	–
IFA069	US 68020-T30P	15.0	M 8	.780	SDR T30P-T	–	CAC 315C	HSD 1035C	HXK 7	CACP 315C	RRH 34

PRAMET

OEHT 09

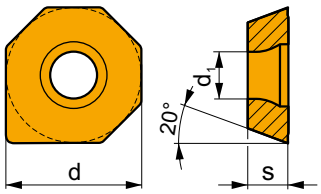
	d	d_1	s
0906	.949	.339	.281



	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
1 E	**OEHT 0906AEER-MM**	**M9325**	◪	◪			◪		✱	- - -	–	.005	.012	.039	.197
		M8330	◪	◪		□	□		✱	-	–	.005	.014	.039	.197
		M8340	◪	■			■		✱	+ / -	–	.005	.014	.039	.197
S	**OEHT 0906AESR-M**	**M9325**	■	◪			◪		✱	- - -	–	.005	.015	.047	.197
		M8310	■	◪			◪		✱	-	–	.005	.018	.047	.197
		M8330	■	◪			□		✖	-	–	.005	.018	.047	.197
		M8340	■	■			◪		✖	+ / -	–	.005	.018	.047	.197

XEHT 09

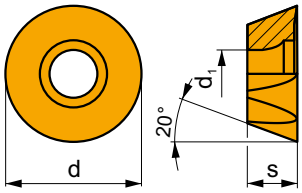
	d	d_1	s
0906	.949	.339	.281



	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
W S	**XEHT 0906AESR**	**M8310**	■	◪			◪		✱	-	–	.005	.018	.020	.197

REHT 24

	d	d_1	s
2406	.945	.339	.281

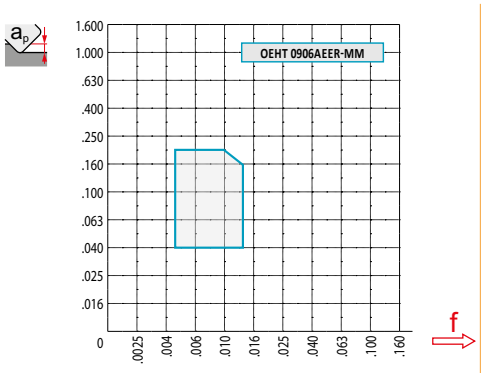


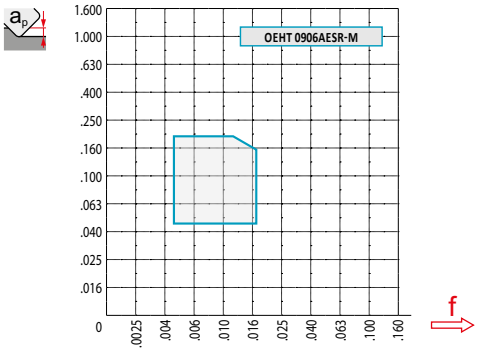
	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
E	XEHT	M8310	◪	◪			◪		⬣	-	–	.005	.014	.024	.236
		M8330	◪	◪		□	□		⬣	-	–	.005	.014	.024	.236
		M8340	◪	■			■		✖	+/-	–	.005	.014	.024	.236
S	REHT 2406M0SN-M	M9325	■	◪			◪		✖	- - -	–	.005	.015	.020	.236
		M8310	■	◪			◪		✖	-	–	.005	.018	.020	.236
		M8330	■	◪			□		✖	-	–	.005	.018	.020	.236
		M8340	■	■			◪		✖	+/-	–	.005	.018	.020	.236

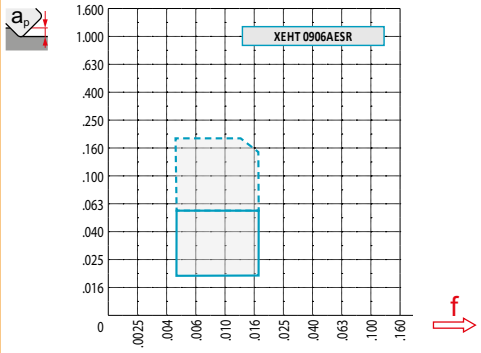
ISO		f_{min}	f_{max}	M9325	M8310	M8340	8230
P	●	.0047	.0157	1414	1257	1119	1102
	⬣	.0047	.0118	1276	1138	981	965
	✖	.0047	.0071	1119	1017	843	827
M	●	.0047	.0118	843	758	673	656
	⬣	.0047	.0098	758	673	587	587
	✖	.0047	.0067	673	604	499	499
N	●	.0047	.0157	–	–	–	2772
	⬣	.0047	.0118	–	–	–	2448
	✖	.0047	.0071	–	–	–	2103
S	●	.0047	.0118	413	381	328	328
	⬣	.0047	.0098	381	328	292	292
	✖	.0047	.0067	328	285	243	243

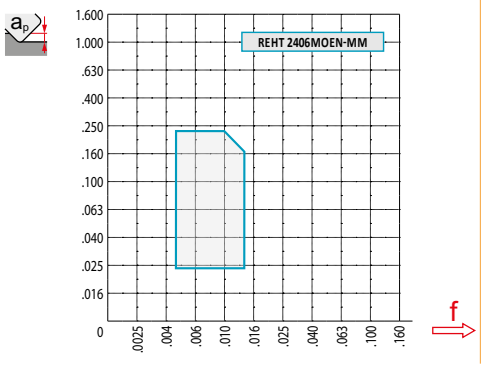
a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.v	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.02	1.01	.99	.98
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

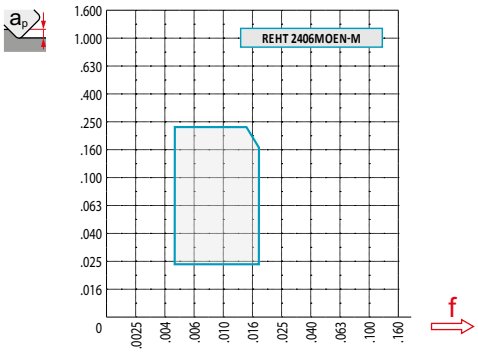
	OEHT 09-MM	OEHT 09-M	XEHT 09	REHT 24-MM	REHT 24-M
r_ε	–	–	–	.472	.472
a	.079	.079	.583	–	–











O	R
3.00	3.559
4.00	4.596
5.00	5.596
6.00	6.559
8.00	8.596
1.00	1.584
12.00	12.556

R

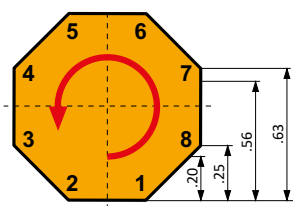
a_p / D_{ef}	.000	.020	.030	.049	.059	.079	.098	.118	.157	.197	.236
	2.791	3.061	3.120	3.211	3.249	3.314	3.369	3.416	3.496	3.559	3.609
	3.579	3.849	3.907	3.999	4.036	4.101	4.156	4.204	4.283	4.346	4.397
	4.563	4.833	4.892	4.983	5.020	5.085	5.140	5.188	5.267	5.330	5.381
	5.941	6.211	6.270	6.361	6.398	6.463	6.518	6.566	6.645	6.708	6.759
	7.516	7.786	7.844	7.936	7.973	8.038	8.093	8.141	8.220	8.283	8.334
	9.472	9.743	9.801	9.893	9.930	9.995	1.050	1.097	1.177	1.240	1.291
	12.031	12.302	12.360	12.452	12.489	12.554	12.609	12.656	12.736	12.799	12.850

D	X.V	f_{max}
3.00	1.44	.020
4.00	1.48	.022
5.00	1.53	.025
6.00	1.58	.028
8.00	1.63	.031
1.00	1.68	.035
12.00	1.74	.040

D		O		R	
O	R	α_{max}	a_p/l	α_{max}	a_p/l
3.00	3.558	4.9	.33/4.00	5	.35/4.00
4.00	4.596	3.7	.25/4.00	3.7	.25/4.00
5.00	5.596	2.8	.20/4.00	2.8	.20/4.00
6.00	6.559	2.1	.15/4.00	2.1	.15/4.00
8.00	8.596	1.6	.10/4.00	1.6	.10/4.00

D		O				R			
O	R	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}
3.00	3.559	5.75	7.48	.35	.35	5.75	7.44	.45	.45
4.00	4.596	7.32	9.06	.35	.35	7.32	9.02	.45	.45
5.00	5.596	9.29	11.02	.35	.35	9.29	1.98	.45	.45
6.00	6.559	12.05	13.78	.35	.35	12.05	13.74	.45	.45
8.00	8.596	15.20	16.93	.35	.35	15.20	16.89	.45	.45

	O	R
a_p	.217	.213



a_p	
–> .20	8
–> .25	7
–> .56	4
–> .63	2

PRAMET

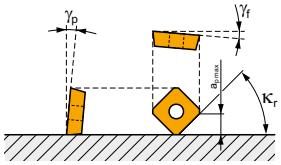
ISSE09

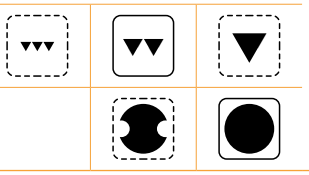
P M K N S

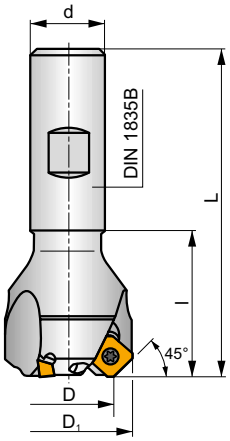
S

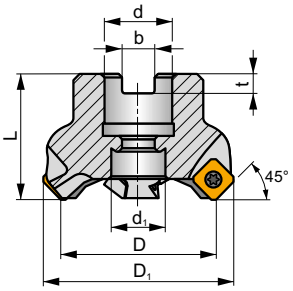


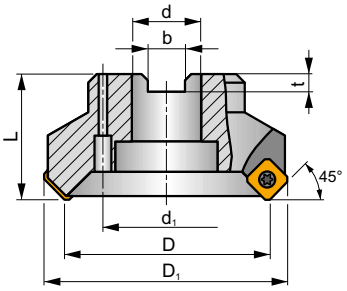
κ_r	45°
a_{pmax}	.177











h_m .0023-.0078

h_m .0023-.0070





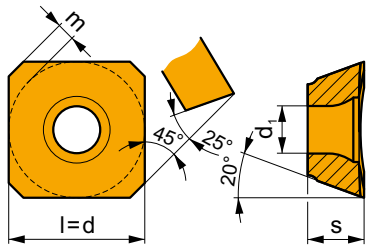
	ANSI	D	D_1	L	d	d_1	l	b	t	γ_f°	γ_p°			max.		lbs		
DIN 1835B	**075N2R126W075-ISSE09-C**	.750	1.136	3.331	.750	–	1.260	–	–	-5	20	2	–	24600	✓	.22	IGI147	IFA010
	100N3R128W100-ISSE09-C	1.000	1.386	3.819	1.000	–	1.280	–	–	-5	20	3	–	22000	✓	.66	IGI147	IFA010
	125N4R150W125-ISSE09-C	1.250	1.644	4.039	1.250	–	1.500	–	–	-5	20	4	–	19400	✓	1.32	IGI147	IFA010
	150A04R-IS45SE09F-C	1.500	1.878	1.575	.500	.433	–	.258	.165	-5	20	4	✓	17400	✓	.75	IGI147	IFA012
	200A05R-IS45SE09F-C	2.000	2.378	1.575	.750	.630	–	.321	.193	-5	20	5	✓	15600	✓	.84	IGI147	IFA013
	250A05R-IS45SE09F-C	2.500	2.878	1.575	.750	.630	–	.321	.193	-5	20	5	✓	13900	✓	1.19	IGI147	IFA013
	250A06R-IS45SE09F-C	2.500	2.878	1.575	.750	.630	–	.321	.193	-5	20	6	✓	13900	✓	1.23	IGI147	IFA013
	300A06R-IS45SE09F-C	3.000	3.378	1.969	1.000	.827	–	.382	.224	-5	20	6	✓	12300	✓	2.20	IGI147	IFA014
ISO 6462 DIN 8030	**300A08R-IS45SE09F-C**	3.000	3.378	1.969	1.000	.827	–	.382	.224	-5	20	8	✓	12300	✓	2.43	IGI147	IFA014
	400A08R-IS45SE09F-C	4.000	4.394	1.969	1.500	1.260	–	.630	.382	-5	20	8	✓	11000	✓	3.04	IGI147	IFA015
	400A10R-IS45SE09F-C	4.000	4.394	1.969	1.500	1.260	–	.630	.382	-5	20	10	✓	10900	✓	3.37	IGI147	IFA015
	500A09R-IS45SE09F-C	5.000	5.374	2.480	1.500	1.260	–	.630	.382	-5	20	9	✓	9800	✓	6.02	IGI147	IFA019
	500A12R-IS45SE09F-C	5.000	5.374	2.480	1.500	1.260	–	.630	.382	-5	20	12	✓	9800	✓	6.88	IGI147	IFA019
	600B10R-IS45SE09F	6.000	6.378	2.480	2.000	3.465	–	.756	.445	-5	20	10	✓	8700	–	1.43	IGI147	IFA011
	600B14R-IS45SE09F	6.000	6.378	2.480	2.000	3.465	–	.756	.445	-5	20	14	✓	8700	–	11.24	IGI147	IFA011

IGI147	SEET 09T3AF..	SEMT 09T3AF..

		Nm						
IFA010	US 3007-T09P	2.0	M 3	.280	–	–	Flag T09P	–
IFA011	US 3007-T09P	2.0	M 3	.280	D-T07P/T09P	FG-15	–	–
IFA012	US 3007-T09P	2.0	M 3	.280	D-T07P/T09P	FG-15	–	HS 025100
IFA013	US 3007-T09P	2.0	M 3	.280	D-T07P/T09P	FG-15	–	HS 037100
IFA014	US 3007-T09P	2.0	M 3	.280	D-T07P/T09P	FG-15	–	HS 050125
IFA015	US 3007-T09P	2.0	M 3	.280	D-T07P/T09P	FG-15	–	HCS 075200
IFA019	US 3007-T09P	2.0	M 3	.280	D-T07P/T09P	FG-15	–	HS 075125

SEET 09

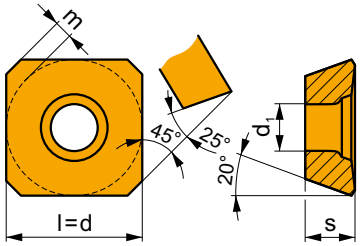
	d	d_1	l	m	s
09T3	.375	.138	.375	.048	.156



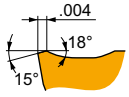
		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		SEET 09T3AFEN	**M9325**	■	◪			◪		●	- - -	–	.003	.010	.012	.177
			M9340	◪	■			■		⬢	- - -	–	.003	.010	.012	.177
			M6330	◪	■			■		⬢	-	–	.003	.012	.012	.177
			M8330	■	◪		□	□		⬢	-	–	.003	.012	.012	.177
			M8340	■	■			■		⬢	+ / -	–	.003	.012	.012	.177
			8215	■	◪		◪	◪		⬢	-	–	.003	.012	.012	.177

SEMT 09

	d	d_1	l	m	s
09T3	.375	.138	.375	.048	.156



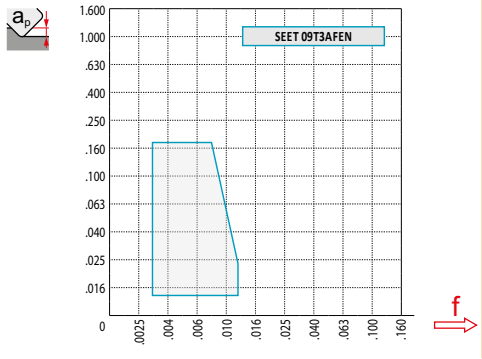
ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SEMT 09T3AFSN	**M9325**	■	◪			□		---	–	.005	.010	.020	.177
	M9340	◪	■			□		---	–	.005	.010	.020	.177
	M8330	■	◪	■	□	□		-	–	.005	.014	.020	.177
	M8340	■	■	◪		□		+/-	–	.005	.014	.020	.177
	8215	■	◪	■	□	□		-	–	.005	.014	.020	.177

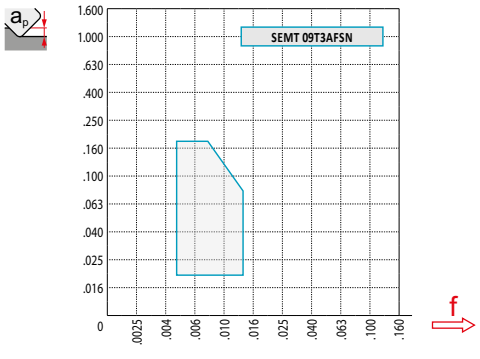


ISO		f_{min}	f_{max}	M9325	M9340	M6330	M8340	8215	M8330
P	●	.0039	.0118	1280	1106	997	1014	1093	997
	⧓	.0039	.0098	1155	981	889	889	951	873
	✖	.0039	.0059	1014	873	781	764	810	748
M	●	.0039	.0098	764	656	656	607	656	594
	⧓	.0039	.0079	686	594	577	531	561	531
	✖	.0039	.0059	607	515	499	453	482	453
K	●	.0039	.0118	–	–	–	951	1030	951
	⧓	.0039	.0098	–	–	–	843	906	827
	✖	.0039	.0059	–	–	–	732	764	719
N	●	.0039	.0118	–	–	–	–	2743	2510
	⧓	.0039	.0098	–	–	–	–	2385	2215
	✖	.0039	.0059	–	–	–	–	2041	1903
S	●	.0039	.0098	374	328	328	295	328	295
	⧓	.0039	.0079	344	295	282	266	282	266
	✖	.0039	.0059	295	249	249	220	233	220

a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

	SEET 09	SEMT 09
r_ε	–	–
a	.050	.049





D	X.V	f_{max}
.75	1.20	.007
1.00	1.24	.008
1.25	1.29	.009
1.50	1.33	.010
2.00	1.37	.011
2.50	1.41	.013
3.00	1.46	.014
4.00	1.50	.016
5.00	1.55	.018
6.00	1.60	.020

PRAMET

ISPN13

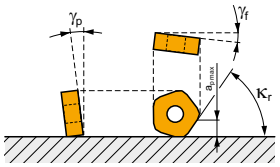
P M K S H

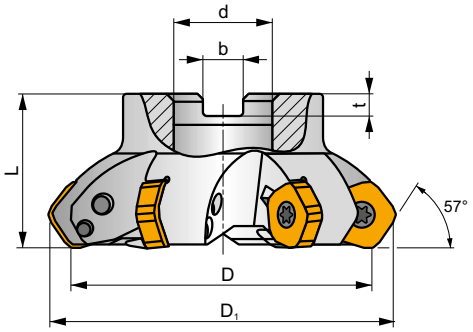
S

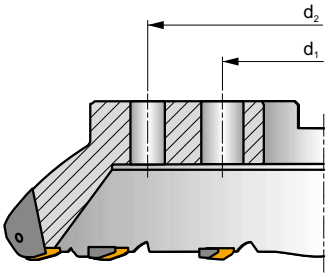
PENTA *HD*

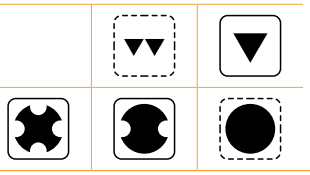


κ_r	57°
a_{pmax}	.394









h_m .0078-.0196



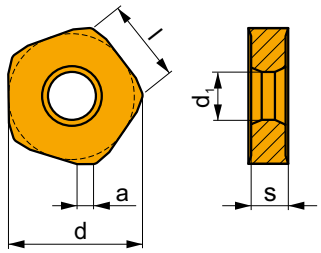
	ANSI	D	D_1	L	d	d_1	d_2	b	t	γ_f°	γ_p°			max.		lbs		
ISO 6462 DIN 8030	**400A05R-IS57PN13**	4.000	4.629	1.969	1.500	–	–	.630	.382	-8.2	-4	5	–	3400	–	2.62	IGI261	IFA085
	500B06R-IS57PN13	5.000	5.629	2.480	1.500	2.205	–	.630	.382	-7	-4	6	–	3100	–	5.03	IGI261	IFA081
	600B08R-IS57PN13	6.000	6.628	2.480	2.000	3.465	–	.756	.445	-6	-4	8	–	2700	–	7.03	IGI261	IFA081
	800C10R-IS57PN13	8.000	8.627	2.480	2.500	4.000	–	1.000	.559	-5	-4	10	–	2400	–	14.73	IGI261	IFA081
	1000C12R-IS57PN13	10.000	1.627	2.480	2.500	4.000	–	1.000	.559	-5	-4	12	–	2200	–	27.54	IGI261	IFA081
	1200C14R-IS57PN13	12.000	1.627	3.150	2.500	4.000	7.000	1.000	.559	-5	-4	14	–	1900	–	45.50	IGI261	IFA081

IGI261	PNMU 1308DN..	PNMQ 1308DN..

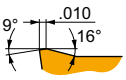
					Nm			
IFA081	SPN 13T3DN	US 64010-T15P	SDR T15P	US 68026-T30P	15.0	M 8	1.020	SDR T30P-T
IFA085	SPN 13T3DN	US 64010-T15P	SDR T15P	US 68026-T30P	15.0	M 8	1.020	SDR T30P-T

PNMU 13

	a	d	d_1	l	s
1308	.118	.961	.394	.512	.313

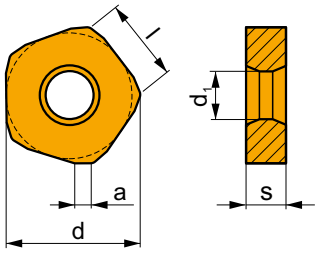


ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
PNMU 1308DNSR-M	**M9315**	■		◪			□		–	.010	.024	.020	.394
	M9340	◪	◪			□			–	.010	.024	.020	.394
	M8330	■	◪	■		□	□		–	.010	.028	.020	.394
	M8345	■	◪			□			–	.010	.028	.020	.394
	8215	◪	◪	■		□	□		–	.010	.028	.020	.394

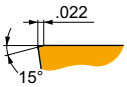


PNMQ 13

	a	d	d_1	l	s
1308	.118	.961	.394	.512	.313



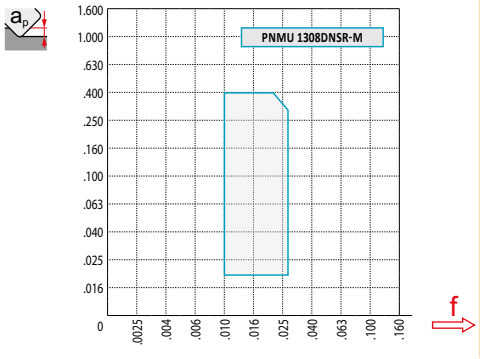
ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
PNMQ 1308DNSN	**M9315**	□		◪			◪		–	.012	.024	.020	.394
	M8330	◪		■			◪		–	.012	.028	.020	.394
	M8345	□							–	.012	.028	.020	.394

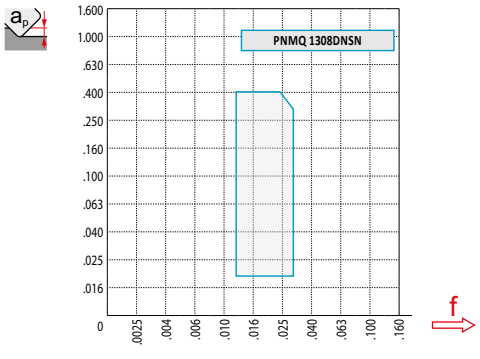


ISO		f_{min}	f_{max}	M9315	M9340	M8345	8215	M8330
P	●	.0098	.0197	1535	1283	850	1263	1155
	⬢	.0098	.0157	1407	1138	722	1102	1010
	✖	.0098	.0118	1263	1010	614	938	866
M	●	.0098	.0197	–	758	505	758	686
	⬢	.0098	.0157	–	686	433	650	614
	✖	.0098	.0118	–	597	361	561	525
K	●	.0098	.0197	1463	–	–	1191	1102
	⬢	.0098	.0157	1335	–	–	1047	958
	✖	.0098	.0118	1211	–	–	886	830
S	●	.0098	.0177	–	381	253	381	344
	⬢	.0098	.0157	–	344	217	325	308
	✖	.0098	.0118	–	289	180	272	253
H	●	.0079	.0138	308	–	–	253	217
	⬢	.0079	.0118	272	–	–	217	200
	✖	.0079	.0098	253	–	–	180	164

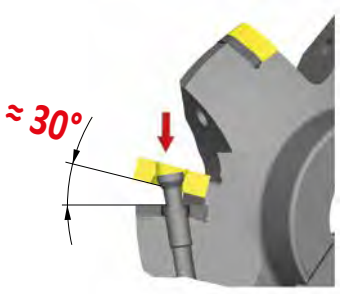
a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

	PNMU 13-M	PNMQ 13
r_ε	–	–
a	.118	.118





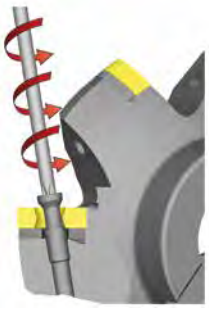
1



2



3



4



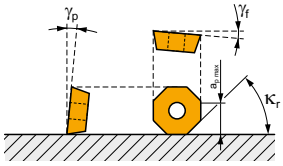
ISOD05

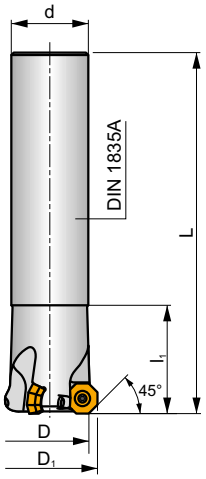
P M K N S

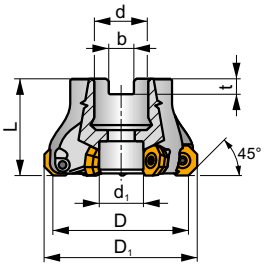
S

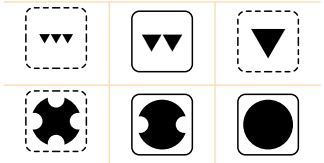


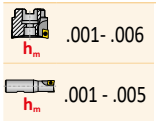
κ_r	45°
a_{pmax}	.118 (.394)











	ISO	D	D_1	L	d	d_1	l_1	k_r	b	t	γ_f°	γ_p°			max.		lbs				
DIN 1835A	**125N3R177C100-ISOD05-C**	0.961	1.250	5.000	1.000	–	1.772	45°	–	–	-10	8	3	–	17700		0.904	GI326	FA049	–
DIN 1835A	**150N3R177C125-ISOD05-C**	1.209	1.500	6.000	1.250	–	1.772	45°	–	–	-7	8	3	–	15800		1.830	GI326	FA040	–
	200A04R-IS45OD05-C	1.709	2.000	1.575	.750	.630	–	45°	.321	.193	-7	8	4	–	14100		0.353	GI326	IFA043	–
	200A05R-IS45OD05-C	1.709	2.000	1.575	.750	.630	–	45°	.321	.193	-7	8	5	–	14100		0.529	GI326	IFA043	–
	250A05R-IS45OD05-C	2.209	2.500	1.575	.750	.630	–	45°	.321	.193	-7	8	5		12600		0.551	GI326	IFA043	–
ISO 6462 DIN 8030	**250A06R-IS45OD05-C**	2.209	2.500	1.575	.750	.630	–	45°	.321	.193	-7	8	6		12600		0.794	GI326	IFA043	–
ISO 6462 DIN 8030	**300A06R-IS45OD05-C**	2.709	3.000	1.969	1.000	.827	–	45°	.382	.224	-7	8	6		11100		0.794	GI326	IFA044	–
	300A08R-IS45OD05-C	2.709	3.000	1.969	1.000	.827	–	45°	.382	.224	-7	8	8		11100		1.367	GI326	IFA044	AC001
	400A07R-IS45OD05-C	3.709	4.000	1.969	1.500	1.417	–	45°	.630	.382	-7	8	7		10000		1.433	GI326	IFA045	AC001
	500A08R-IS45OD05-C	4.709	5.000	2.480	1.500	1.260	–	45°	.630	.382	-7	8	8		8900		2.337	GI326	IFA046	AC002

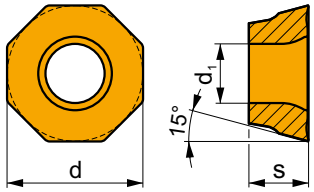
GI326	OD.. 0505..	RD.. 1205..	SDKT 1205..	SDMT 1205..SN

		Nm					
FA040	US 45014-T20P	5	M 5	.512	Flag T20P	–	–
FA041	US 45014-T20P	5	M 5	.512	–	SDR T20P-T	–
FA042	US 45014-T20P	5	M 5	.512	–	SDR T20P-T	HS 90835
FA043	US 45014-T20P	5	M 5	.512	–	SDR T20P-T	HS 1030C
FA049	US 45011-T20P	5	M 5	.433	Flag T20P	–	–

AC001	KS 1230	K.FMH27
AC002	KS 1635	K.FMH32
AC003	KS 2040	K.FMH40

ODKT 05IM

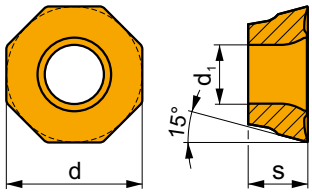
	d	d_1	s
0505	.500	.217	.219



	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	ODKT 0505ADFR-F	**M8310**	■	◪			□		●	-	.031	.002	.010	.008	.106
	ODKT 0505ADSR-FM	**M9340**	◪	■			□		⬢	- - -	.031	.007	.010	.012	.106
		M8310	■	◪	◪		□		⬢	-	.031	.007	.014	.012	.106
		M8345	■	◪			□		✖	+ / -	.031	.007	.014	.012	.106
		M8330	■	◪	◪		□		⬢	-	.031	.007	.014	.012	.106

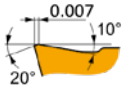
ODMT 05IM

	d	d_1	s
0505	.500	.217	.219



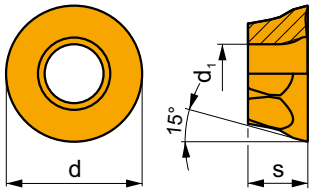
	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	ODMT 0505ADSR-FM	**M9340**	◪	■			□		⬢	- - -	.031	.007	.010	.012	.118
		M8340	■	◪	◪		□		✖	+ / -	.031	.007	.014	.012	.118

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	ODMT 050508SN-R	**M9340**	◪						✖	- - -	.031	.009	.013	.012	.118
		M8330	■		■				✖	-	.031	.009	.018	.012	.118

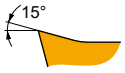


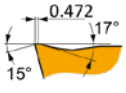
RDGT 12IM

	d	d_1	s
1205	.500	.217	.219



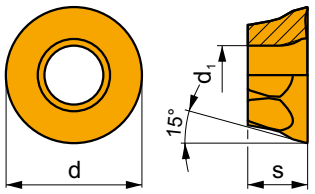
	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
HFC F	**RDGT 120500FN-F**	**M8310**	■	◪			□		●	-	–	.002	.010	.008	.236
U HFC S	**RDGT 120500SN-FM**	**M8345**	■	◪			□		●	+ / -	–	.005	.014	.008	.236
		M8330	■	◪	◪		□		●	-	–	.005	.014	.008	.236



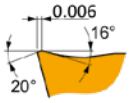


RDMT 12IM

	d	d_1	s
1205	.500	.217	.219

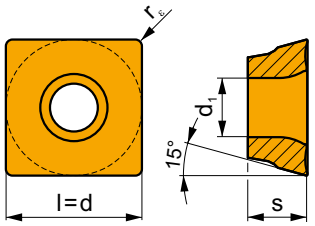


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDMT 120500SN-R	**M9340**	■						●●	- - -	–	.007	.013	.012	.236
	M8340	■		◪				●●	+ / -	–	.007	.018	.012	.236
	M8330	■	◪			□		●●	- - -	–	.007	.018	.012	.236

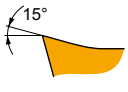


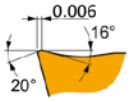
SDKT 12IM

	d	d_1	l	s
1205	.500	.217	.500	.219



ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SDKT 1205PDFR-F	**8215**	■	◪		◪	□		●	-	.031	.002	.010	.008	.394
SDKT 1205PDSR-FM	**M8345**	■	◪			□		●●	+ / -	.031	.006	.014	.008	.394
	M8330	■	◪	◪		□		●●	-	.031	.006	.014	.008	.394
SDKT 1205AESN-FM	**M8345**	■	◪			□		✖	+ / -	–	.006	.014	.008	.394
	M8330	■	◪	◪		□		●●	-	–	.006	.014	.008	.394

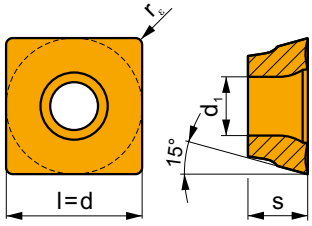


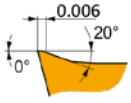
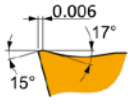
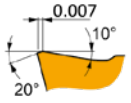


PRAMET

SDMT 12IM

	d	d_1	l	s
1205	.500	.217	0.500	0.219



		ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
S		**SDMT 120508SN-F**	**M8310**	■	◪			□		●	-	.031	.006	.012	.012	.394
			M8330	■	◪		□	□		●	-	.031	.006	.012	.012	.394
S		**SDMT 120508SN-FM**	**M8345**	■	◪			□		●	+/-	.031	.006	.014	.012	.394
✖		**SDMT 120508SN-R**	**M9340**	◪						✖	- - -	.031	.007	.013	.012	.394
			M8345	■						✖	+/-	.031	.007	.018	.012	.394
			M8330	■		■				✖	-	.031	.007	.018	.012	.394
S		**SDMT 1205AESN-R**	**M8340**	■		◪				✖	+/-	–	.007	.018	.012	.394
			M8330	■		■				✖	-	–	.007	.018	.012	.394

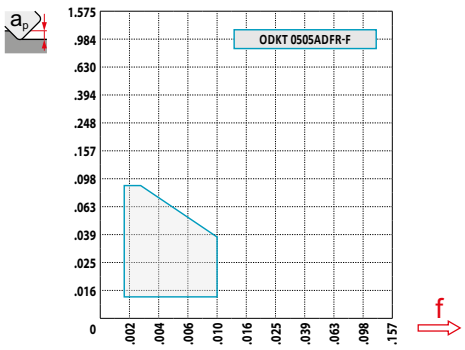
ISO		f_{min}	f_{max}	M9340	M8310	M8340	M8345	8215	M8330
P	●	.003	.012	1050	1079	961	696	1033	945
	●	.003	.010	932	974	843	591	902	827
	✖	.003	.006	827	873	725	502	768	709
M	●	.003	.010	620	650	577	413	620	561
	●	.003	.008	561	577	502	354	531	502
	✖	.003	.006	489	518	430	295	459	430
K	●	.003	.012	-	1020	902	-	974	902
	●	.003	.010	-	932	797	-	856	784
	✖	.003	.006	-	827	696	-	725	679
N	●	.003	.012	-	-	-	-	2598	2379
	●	.003	.010	-	-	-	-	2260	2096
	✖	.003	.006	-	-	-	-	1936	1801
S	●	.003	.010	312	325	282	207	312	282
	●	.003	.008	282	282	253	177	266	253
	✖	.003	.006	236	253	207	148	223	207

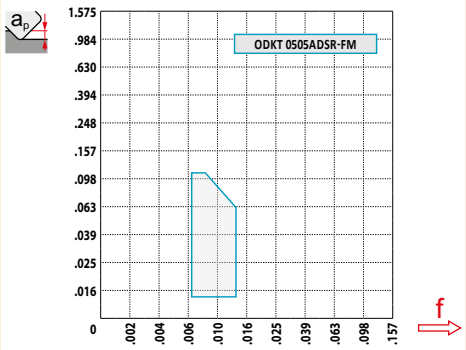
a_e/D	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.50	0.60	0.70	0.75	0.80	0.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	0.75	0.94	0.90	0.89	0.88	0.88	1.00
⇨X.f	0.64	0.64	0.64	0.64	0.64	0.65	0.65	0.67	0.68	0.71	0.72	0.74	0.79	1.00

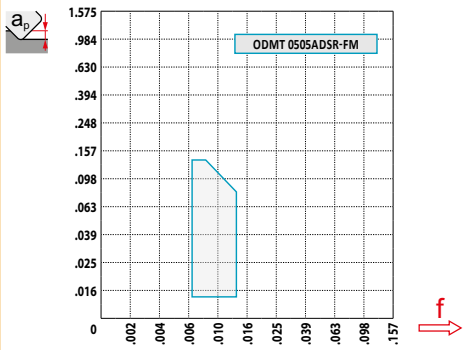
	ODKT 05-F	ODKT 05-FM	ODMT 05-FM	ODMT 05-R
r_ε	.016	.031	.031	.031
a	.039	.039	–	–

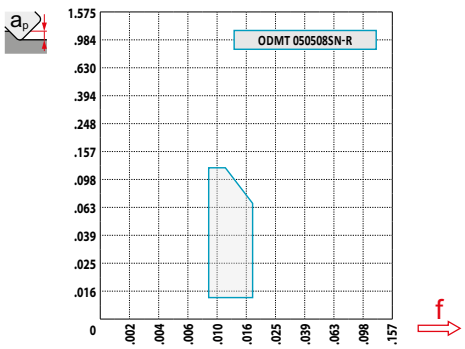
	RDGT 12-F	RDGT 12-FM	RDGT 12-R
r_ε	.250	.250	.250
a	–	–	–

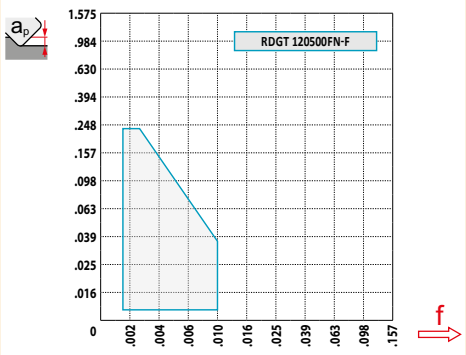
	SDKT 12-F	SDKT 12-FM	SDMT 12-F	SDMT 12-R
r_ε	.031	.031	.031	.031
a	.091	.091	–	–

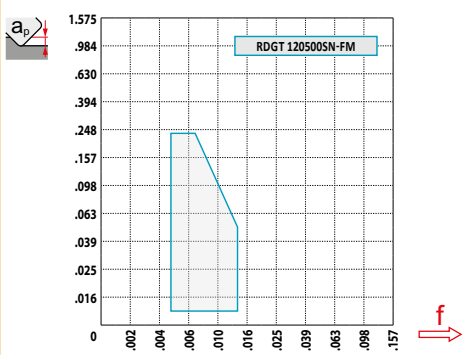


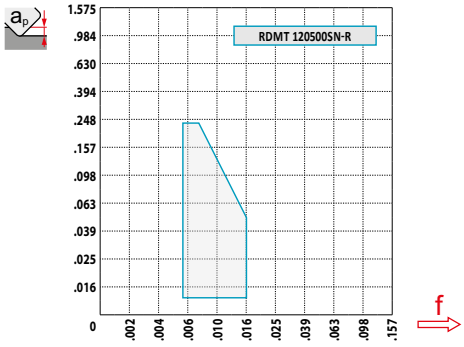


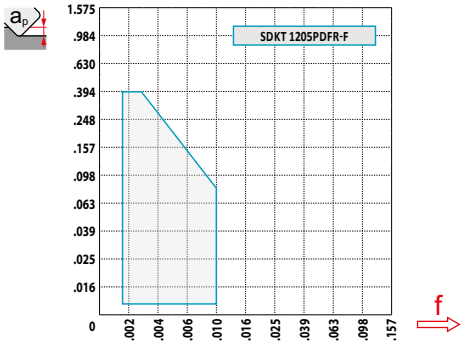


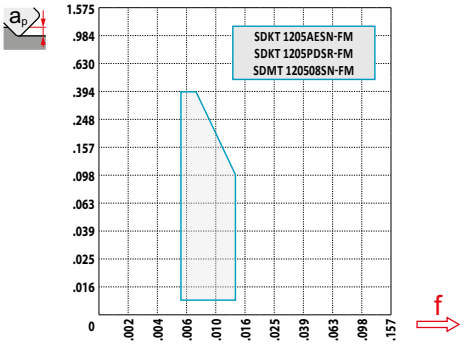


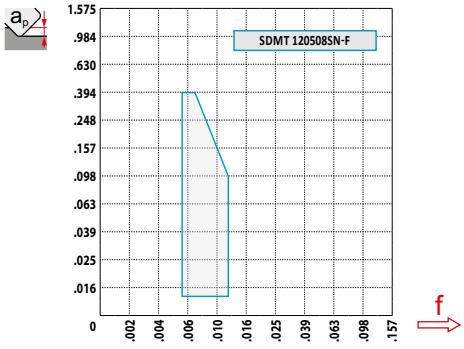


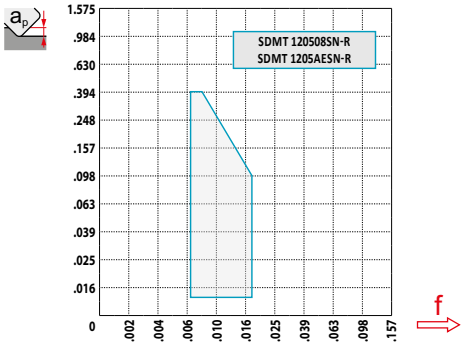












R

R	a_p 0.010	0.020	0.024	0.028	0.031	0.039	0.049	0.059	0.079	0.118	0.157	0.197	0.236
32	0.922	0.976	0.993	1.009	1.023	1.048	1.076	1.100	1.139	1.196	1.233	1.253	1.260
40	1.237	1.291	1.308	1.324	1.338	1.363	1.391	1.415	1.454	1.511	1.548	1.568	1.575
50	1.631	1.685	1.702	1.717	1.732	1.757	1.785	1.809	1.848	1.905	1.941	1.962	1.969
63	2.143	2.197	2.214	2.229	2.244	2.269	2.296	2.320	2.360	2.417	2.453	2.474	2.480
80	2.812	2.866	2.883	2.898	2.913	2.938	2.966	2.990	3.029	3.086	3.122	3.143	3.150
100	3.600	3.654	3.670	3.686	3.700	3.726	3.753	3.777	3.817	3.874	3.910	3.930	3.937
125	4.584	4.638	4.655	4.670	4.685	4.710	4.737	4.761	4.801	4.858	4.894	4.915	4.921

D	X.V	f_{max}
1.250	1.36	.011
1.500	1.40	.012
2.000	1.43	.013
2.500	1.47	.015
3.000	1.52	.017
4.000	1.57	.019
5.000	1.62	.020

S

max
10.0

S

a_p	.039	.197	.394
f	.014	.008	.006

O / R

D	O α_{max} °	O a_p/l	R α_{max} °	R a_p/l
2.000	4.1	.278/3.94	3.8	.244/3.74
2.500	2.7	.181/3.94	2.5	.167/3.94
3.000	1.8	.118/3.94	1.7	.112/3.94
4.000	1.7	.112/3.94	1.6	.104/3.94
5.000	0.7	.043/3.94	0.3	.016/3.94

O / R

D	O d_{min}	O d_{max}	O s_{max} / D_{min}	O s_{max} / d_{max}	R d_{min}	R d_{max}	R s_{max} / D_{min}	R s_{max} / d_{max}
2.000	3.071	3.937	0.177	0.177	3.071	3.937	0.177	0.177
2.000	3.071	3.937	0.177	0.177	3.071	3.937	0.177	0.177
2.500	4.134	4.961	0.177	0.177	4.134	4.961	0.177	0.177
2.500	4.134	4.961	0.177	0.177	4.134	4.961	0.177	0.177
3.000	5.433	6.299	0.177	0.177	5.433	6.299	0.177	0.177
3.000	5.433	6.299	0.177	0.177	5.433	6.299	0.177	0.177
4.000	7.008	7.874	0.177	0.177	7.008	7.874	0.177	0.177
5.000	9.016	9.843	0.157	0.177	9.055	9.843	0.157	0.177

O / R

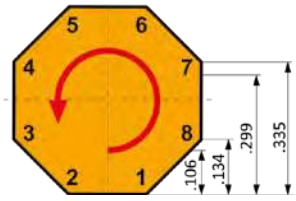
	O	R
a_p	.094	.091

R

D	µm	3	5	10	15	20	30	40	50	60	80	100
1.500		0.024	0.031	0.045	0.055	0.063	0.077	0.089	0.100	0.109	0.126	0.141
1.750		0.027	0.035	0.050	0.061	0.070	0.086	0.100	0.111	0.122	0.141	0.157
2.000		0.031	0.039	0.056	0.068	0.079	0.096	0.111	0.124	0.136	0.157	0.176
2.500		0.034	0.044	0.062	0.077	0.088	0.108	0.125	0.140	0.153	0.177	0.198
3.000		0.039	0.050	0.070	0.086	0.100	0.122	0.141	0.157	0.173	0.199	0.223
4.000		0.043	0.056	0.079	0.096	0.111	0.136	0.157	0.176	0.193	0.223	0.249
5.000		0.048	0.062	0.088	0.108	0.124	0.152	0.176	0.197	0.216	0.249	0.278

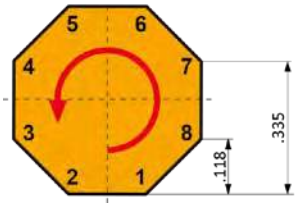
r_ε	µm	3	5	10	15	20	30	40	50	60	80	100
.236		0.015	0.019	0.027	0.033	0.039	0.047	0.055	0.061	0.067	0.077	0.086

ODKT 05



a_p	
–> .106	8
–> .134	7
–> .299	4
–> .335	2

ODMT 05



a_p	
–> .118	8
–> .335	4

ISPD09

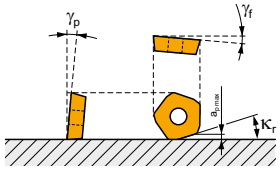
P M K N S H

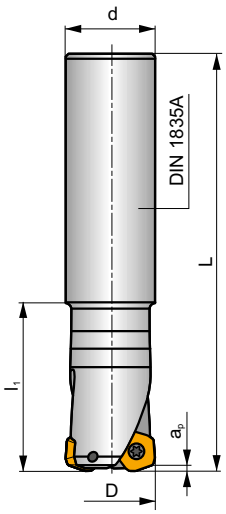
S

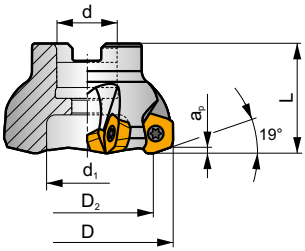
PENTA *HF*



κ_r	19°
a_{pmax}	.079







h_m .0025-.0383

h_m .0025-.0383

	ANSI	D	D_2	L	d	d_1	l_1	γ_f°	γ_p°			max.		lbs		
DIN 1835A	**125E2R236C125-ISPD09-C**	1.250	–	9.843	1.250	–	2.362	-24	10	2	–	13100	✓	3.13	IGI245	ICO340
	150E3R236C125-ISPD09-C	1.500	–	9.843	1.250	–	2.362	-11	10	3	–	11700	✓	3.31	IGI245	ICO340
ISO 6462 DIN 8030	**200A04R-IS19PD09-C**	2.000	1.433	1.575	.750	.630	–	-3	10	4	–	10500	✓	.51	IGI245	ICO343
	250A05R-IS19PD09-C	2.500	1.931	1.575	.750	.630	–	-1	10	5	–	9400	✓	.68	IGI245	ICO343
	300A05R-IS19PD09-C	3.000	2.432	1.969	1.000	.827	–	-1	10	5	–	8300	✓	1.83	IGI245	ICO344
	400A06R-IS19PD09-C	4.000	3.431	1.969	1.500	1.417	–	-1	10	6	–	7400	✓	3.09	IGI245	ICO345
	400A08R-IS19PD09-C	4.000	3.431	1.969	1.500	1.417	–	-1	10	8	–	7400	✓	3.04	IGI245	ICO345

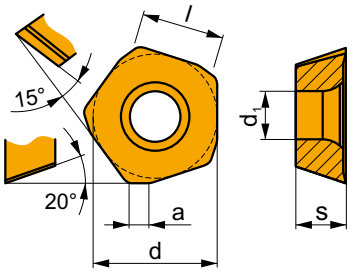
IGI245	PD.X 0905ZE..	PDKT 0905..	PDMW 0905..

		Nm					
ICO340	US 45011-T20P	5	M 5	.430	–	–	Flag T20P
ICO343	US 45011-T20P	5	M 5	.430	SDR T20P-T	HS 037100	–
ICO344	US 45011-T20P	5	M 5	.430	SDR T20P-T	HS 050125	–
ICO345	US 45011-T20P	5	M 5	.430	SDR T20P-T	HCS 075175	–

PRAMET

PDKX 09

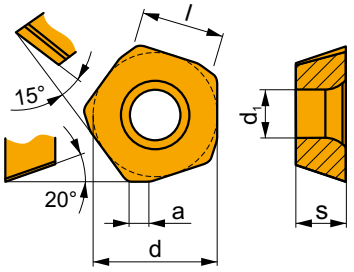
	a	d	d_1	l	s
0905	.079	.531	.217	.354	.215



		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		PDKX 0905ZEER-FM	**M9340**	◪	■			□		●	- - -	–	.020	.069	.012	.079
			M6330	◪	■			□		⬢	-	–	.020	.098	.012	.079
HFC	.009 16°		**M8345**	■	■			□		⬢	+ / -	–	.020	.098	.012	.079
S																

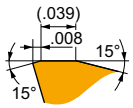
PDMX 09

	a	d	d_1	l	s
0905	.079	.531	.217	.354	.215



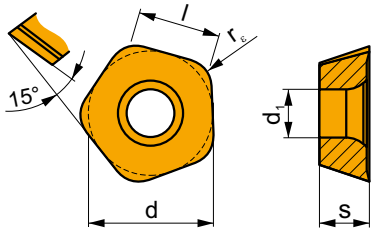
		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		PDMX 0905ZEER-M	**M9340**	◪	■			□		⬢	- - -	–	.020	.069	.012	.079
1			**M8330**	■	◪	◪	□	□		⬢	-	–	.020	.098	.012	.079
HFC	.008 15°		**M8345**	■	■			□		⬢	+ / -	–	.020	.098	.012	.079
S			**8215**	◪	◪	◪	□	□		⬢	-	–	.020	.098	.012	.079

ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
PDMX 0905ZESR-R	**M9325**	◪	□						- - -	–	.020	.069	.012	.079
	M8330	◪	□	■			◪		-	–	.020	.098	.012	.079
	M8345	◪	□						+ / -	–	.020	.098	.012	.079
	8215	◪	□	■			■		-	–	.020	.098	.012	.079

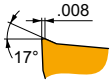


PDKT 09

	d	d_1	l	s
0905	.531	.217	.354	.215



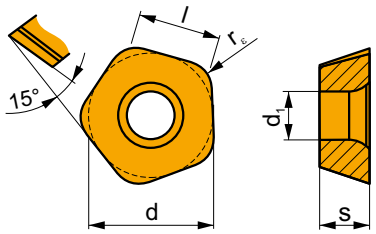
ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
PDKT 090530ER-FM	**M9325**	■	◪			□			- - -	.118	.020	.069	.012	.079
	M6330	◪	■			□			-	.118	.020	.098	.012	.079
	M8310	■	◪	◪		□			-	.118	.020	.098	.012	.079
	M8330	■	◪	◪	□	□			-	.118	.020	.098	.012	.079
	M8345	■	■			□			+ / -	.118	.020	.098	.012	.079
	8215	■	◪	◪	□	□			-	.118	.020	.098	.012	.079



PRAMET

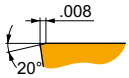
PDMW 09

	d	d_1	l	s
0905	.531	.217	.354	.215



ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
PDMW 090530SR	M9325	◪	□	■			□	✖	- - -	.118	.020	.069	.012	.079
	M8310	◪	□	■			■	✖	-	.118	.020	.098	.012	.079
	M8345	◪	□					✖	+ / -	.118	.020	.098	.012	.079

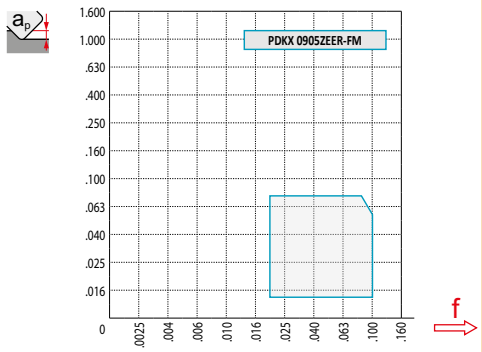
HFC

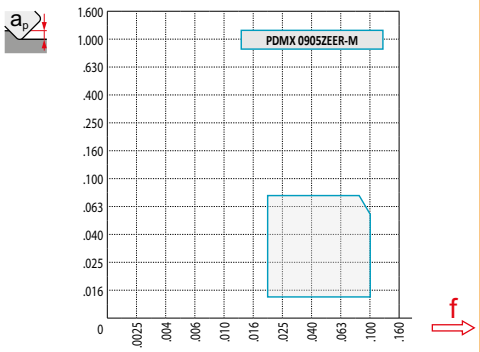


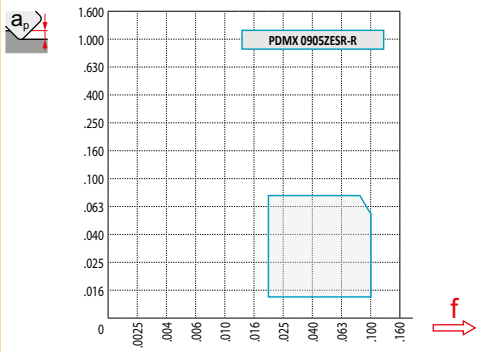
ISO		f_{min}	f_{max}	M9315	M9325	M9340	M6330	M8310	M8345	8215	M8330
P	●	.0197	.0984	1535	1480	1283	1155	1319	850	1263	1155
	⬢	.0197	.0787	1407	1335	1138	1030	1191	722	1102	1010
	✖	.0197	.0591	1263	1175	1010	902	1066	614	938	866
M	●	.0197	.0984	–	886	758	758	794	505	758	686
	⬢	.0197	.0787	–	794	686	669	705	433	650	614
	✖	.0197	.0591	–	705	597	577	633	361	561	525
K	●	.0197	.0984	1463	–	–	–	1247	–	1191	1102
	⬢	.0197	.0787	1335	–	–	–	1138	–	1047	958
	✖	.0197	.0591	1211	–	–	–	1010	–	886	830
N	●	.0197	.0984	–	–	–	–	–	–	3176	2907
	⬢	.0197	.0787	–	–	–	–	–	–	2762	2562
	✖	.0197	.0591	–	–	–	–	–	–	2365	2201
S	●	.0197	.0846	–	433	381	381	397	253	381	344
	⬢	.0197	.0709	–	397	344	325	344	217	325	308
	✖	.0197	.0551	–	344	289	289	308	180	272	253
H	●	.0197	.0787	308	–	–	–	253	–	253	217
	⬢	.0197	.063	272	–	–	–	236	–	217	200
	✖	.0197	.0472	253	–	–	–	200	–	180	164

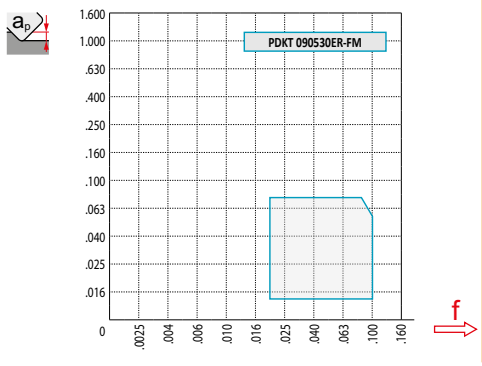
a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

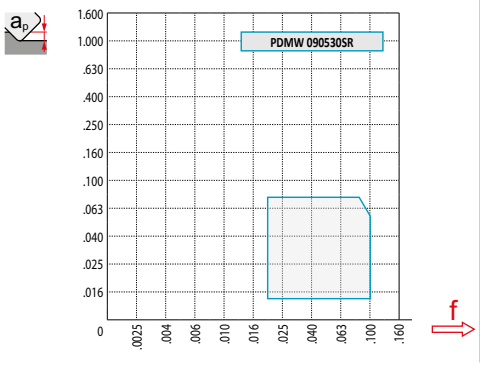
	PDKX 09-FM	PDMX 09-M	PDMX 09-R	PDKT 09-FM	PDMW 09
r_ε	–	–	–	.118	.118
a	.079	.079	.079	–	–











D	a_p	.000	.012	.016	.020	.024	.028	.031	.035	.039	.049	.059	.079
1.25		.724	.791	.815	.839	.862	.886	.906	.929	.953	1.012	1.067	1.181
1.50		1.004	1.071	1.094	1.118	1.142	1.165	1.185	1.209	1.232	1.291	1.346	1.461
2.00	D_{ef}	1.390	1.457	1.480	1.504	1.528	1.551	1.571	1.594	1.618	1.677	1.732	1.846
2.50		1.898	1.965	1.988	2.012	2.035	2.059	2.079	2.102	2.126	2.185	2.240	2.354
3.00		2.571	2.638	2.661	2.685	2.709	2.732	2.752	2.776	2.799	2.858	2.913	3.028
4.00		3.358	3.425	3.449	3.472	3.496	3.520	3.539	3.563	3.587	3.646	3.701	3.815

	a_p	.000	.012	.016	.020	.024	.028	.031	.035	.039	.049	.059	.079
	1 ⇨f	–	.118	.118	.114	.110	.106	.102	.098	.094	.089	.059	.059

Follow instructions provided for flat surface milling. When milling close to vertical surfaces, decrease feed per tooth (f_z) by 50 % to prevent vibrations and damage of the cutting edge.

Seguir las instrucciones para fresado de superficies planas (planeado). En caso de mecanizar cerca de una superficie vertical, reducir el avance por diente (f_z) al 50% para evitar vibraciones y daños en el filo de corte.

Suivre les instructions indiquées pour le fraisage de surfaces planes. Dans le cas de fraisage proche d'une surface verticale, diminuer l'avance par dent (f_z) de 50 % pour éviter les vibrations et la casse de l'arête.

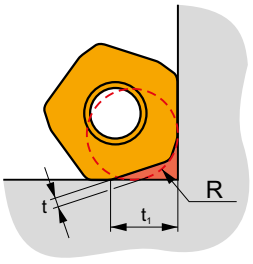
D	max	f_{max}
1.25	.197	.008
1.50	.197	.008
2.00	.236	.008
2.50	.276	.010
3.00	.315	.012
4.00	.315	.012

	HFC		
a_p	**.020**	**.039**	**.079**
1 f	.118	.091	.059

D	α_{max} °	a_p/l
1.50	8.0	.071/.630
2.00	8.0	.079/.630
2.50	7.0	.079/.710
3.00	5.0	.079/.710
4.00	3.0	.079/.575

D	d_{min}	d_{max}	s_{max} / d_{min}	s_{max} / d_{max}
1.50	2.508	3.150	.079	.079
2.00	3.280	3.937	.079	.079
2.50	4.299	4.961	.079	.079
3.00	5.642	6.299	.079	.079
4.00	7.217	7.874	.079	.079

D	a_p	f_{max}
1.25	.071	.008
1.50	.071	.008
2.00	.079	.008
2.50	.079	.010
3.00	.079	.012
4.00	.079	.012



D	R	t	t_1
1.25	.177	.043	.268
1.5 – 6	.177	.043	.287

IFSB22X

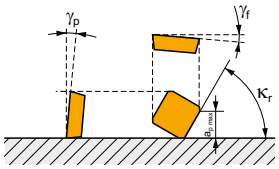
P M K

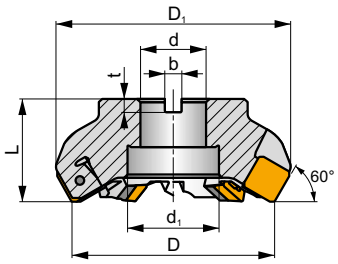
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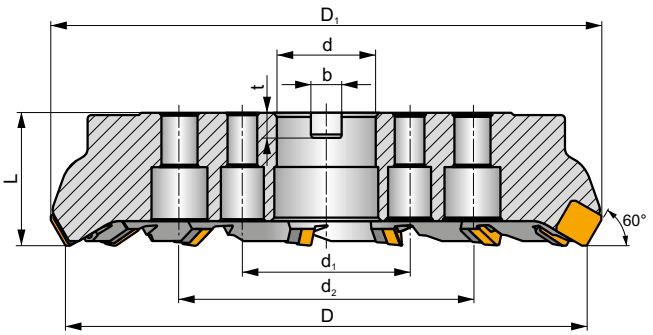
ROUGH SB

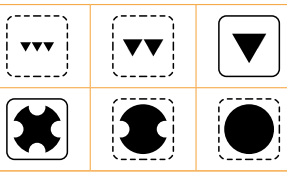


κ_r	60°
a_{pmax}	.591









h_m .006-.197



	ANSI	D	D_1	L	d	d_1	d_2	b	t	γ_f°	γ_p°			max.		lbs		
ISO 6462 DIN 8030	**500B07R-IF60SB22X**	5.000	5.764	2.480	1.500	2.205	–	.630	.382	-9	9	7	✓	–	–	7.05	GI144	FA111
	600B08R-IF60SB22X	6.000	6.736	2.480	2.000	3.465	–	.756	.445	-9	9	8	✓	–	–	12.57	GI144	FA111
	800C10R-IF60SB22X	8.000	8.705	2.480	2.500	4.000	–	1.000	.559	-9	9	10	✓	–	–	19.40	GI144	FA111
	1000C12R-IF60SB22X	10.000	1.685	2.480	2.500	4.000	–	1.000	.559	-9	9	12	✓	–	–	33.51	GI144	FA111
	1200C14R-IF60SB22X	12.000	12.661	3.150	2.500	4.000	7.000	1.000	.559	-9	9	14	✓	–	–	73.19	GI144	FA111

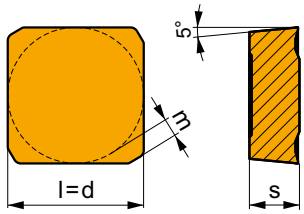
GI144	SBKX 2207DZ..	SBMR 2207DZ..

FA111	LNX 220616	US 6013-T20P	SDR T20P-T	KU SBMR 2207	DS 01Z	KL 04	–

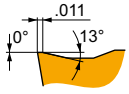
PRAMET

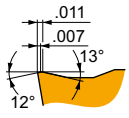
SBMR 22

	d	l	m	s
2207	.866	.866	.111	.315



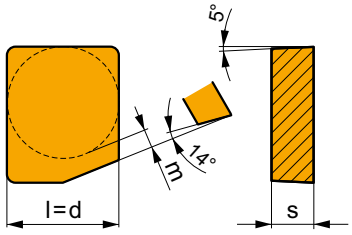
	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
1	SBMR 2207DZSR	M9325	■	◪					●	---	–	.014	.031	.059	.591
		M8326	■	□	□				●	-	–	.014	.031	.059	.591
		M8346	■	◪					✖	+/-	–	.014	.031	.059	.591
S	SBMR 2207DZSR-R	M5326	◪		■				●	---	–	.014	.031	.059	.591
		M8326	■	□	□				●	-	–	.014	.031	.059	.591
		M8346	■	◪					✖	+/-	–	.014	.031	.059	.591





SBKX 22

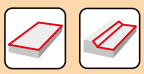
	d	l	m	s
2207	.866	.866	.127	.315



	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
W	SBKX 2207DZER	M8326	■	□	□				●	-	–	.014	.031	.059	.591
E															

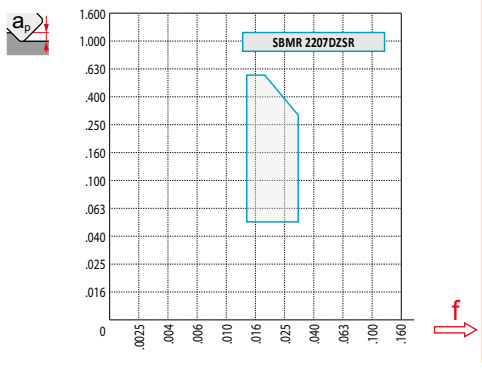


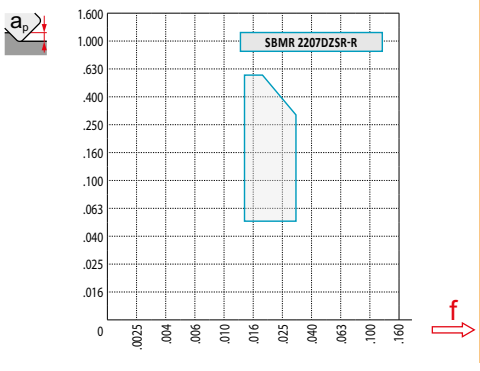
ISO		f_{min}	f_{max}	M5326	M9325	M8326	M8346
P	●	.0138	.0236	1184	1145	810	656
	⬣	.0138	.0197	1089	1033	725	558
	✖	.0138	.0157	978	906	643	476
M	●	.0138	.0217	–	682	489	390
	⬣	.0138	.0177	–	614	433	335
	✖	.0138	.0157	–	545	390	279
K	●	.0138	.0236	1129	–	768	–
	⬣	.0138	.0197	1033	–	699	–
	✖	.0138	.0157	935	–	614	–

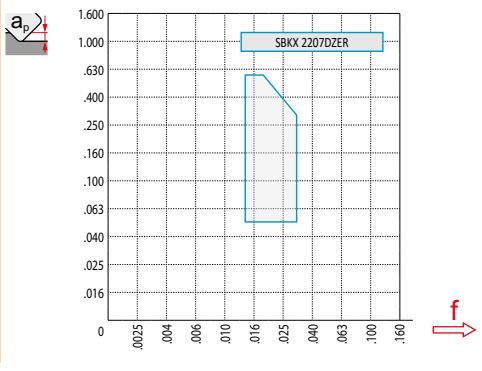


a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

	SBMR 22	SBMR 22-R	SBKX 22
r_ε	–	–	–
a	.078	.078	.466







SQUARE SHOULDER MILLING
ESCUADRADO
FRAISAGE D'ÉPAULEMENTS



ISAD11E

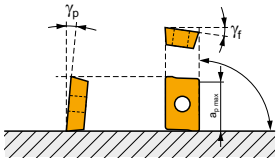
P M K N S H

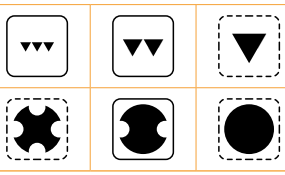
S

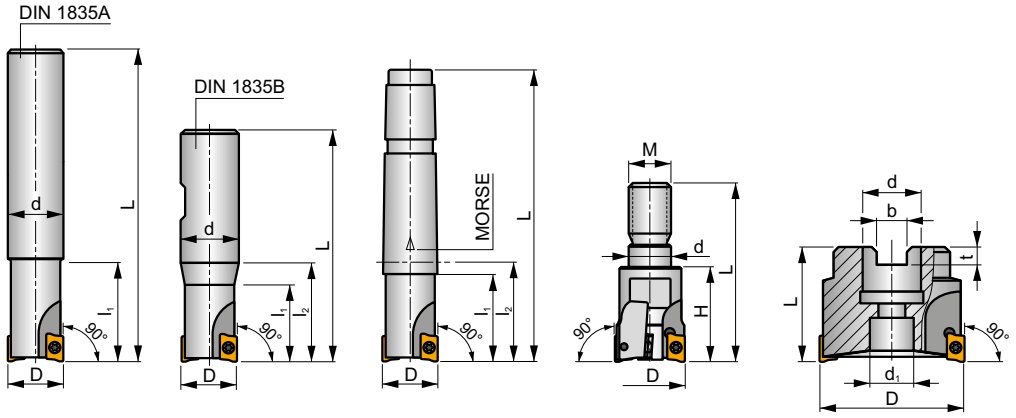
FORCE AD



κ_r	90°
a_{pmax}	.354







h_m .0031-.0062

h_m .0023-.0051



	ANSI	D	L	d	d_1	l_1	l_2	H	M	b	t	γ_f°	γ_p°			max.		lbs		
	062A2R094C062-ISAD11E-C	.625	5.315	.625	–	.945	–	–	–	–	–	-12.8	4	2	–	30100	✓	.44	IGI169	ISQ025
	062A2R197C062-ISAD11E-C	.625	5.315	.625	–	1.969	–	–	–	–	–	-12.6	4	2	–	30100	✓	.44	IGI169	ISQ025
	075A2R114C075-ISAD11E-C	.750	5.906	.750	–	1.142	–	–	–	–	–	-11.5	5	2	–	27000	✓	.66	IGI169	ISQ020
	075A2R276C075-ISAD11E-C	.750	5.906	.750	–	2.756	–	–	–	–	–	-11.5	5	2	–	27000	✓	.66	IGI169	ISQ020
DIN 1835A	**075A3R114C075-ISAD11E-C**	.750	5.906	.750	–	1.142	–	–	–	–	–	-11.5	5	3	–	27000	✓	.66	IGI169	ISQ025
DIN 1835A	**100A3R134C100-ISAD11E-C**	1.000	6.693	1.000	–	1.339	–	–	–	–	–	-1.2	5	3	–	24100	✓	1.10	IGI169	ISQ020
DIN 1835A	**100A3R315C100-ISAD11E-C**	1.000	6.693	1.000	–	3.150	–	–	–	–	–	-1.2	5	3	–	24100	✓	1.10	IGI169	ISQ020
DIN 1835A	**100A4R134C100-ISAD11E-C**	1.000	6.693	1.000	–	1.339	–	–	–	–	–	-1.2	5	4	–	24100	✓	1.10	IGI169	ISQ025
DIN 1835A	**125A3R354C125-ISAD11E-C**	1.250	7.677	1.250	–	3.543	–	–	–	–	–	-9	5	3	–	21300	✓	1.98	IGI169	ISQ020
DIN 1835A	**125A5R134C125-ISAD11E-C**	1.250	7.677	1.250	–	1.339	–	–	–	–	–	-9	8	5	–	21300	✓	1.98	IGI169	ISQ025
	062A2R106W062-ISAD11E-C	.625	2.969	.625	–	1.063	–	–	–	–	–	-12.8	4	2	–	30100	✓	.22	IGI169	ISQ025
	075A2R126W075-ISAD11E-C	.750	3.291	.750	–	1.260	–	–	–	–	–	-11.5	5	2	–	27000	✓	.44	IGI169	ISQ020
DIN 1835B	**075A3R126W075-ISAD11E-C**	.750	3.291	.750	–	1.260	–	–	–	–	–	-11.5	5	3	–	27000	✓	.44	IGI169	ISQ025
DIN 1835B	**100A3R128W100-ISAD11E-C**	1.000	3.780	1.000	–	1.280	–	–	–	–	–	-1.2	5	3	–	24100	✓	.66	IGI169	ISQ020
DIN 1835B	**100A4R128W100-ISAD11E-C**	1.000	3.780	1.000	–	1.280	–	–	–	–	–	-1.2	5	4	–	24100	✓	.66	IGI169	ISQ025
DIN 1835B	**125A4R150W125-ISAD11E-C**	1.250	4.000	1.250	–	1.500	–	–	–	–	–	-9	8	4	–	21300	✓	.88	IGI169	ISQ020
DIN 1835B	**125A5R150W125-ISAD11E-C**	1.250	4.000	1.250	–	1.500	–	–	–	–	–	-9	8	5	–	21300	✓	.88	IGI169	ISQ025
	062A2R094M08-ISAD11E-C	.625	1.496	.335	–	–	–	.945	M8	–	–	-12.8	4	2	–	–	✓	.22	IGI169	ISQ025
	075A2R102M10-ISAD11E-C	.750	1.772	.413	–	–	–	1.024	M10	–	–	-11.5	5	2	–	–	✓	.22	IGI169	ISQ020
	075A3R102M10-ISAD11E-C	.750	1.772	.413	–	–	–	1.024	M10	–	–	-11.5	5	3	–	–	✓	.22	IGI169	ISQ025
	100A3R138M12-ISAD11E-C	1.000	2.244	.492	–	–	–	1.378	M12	–	–	-1.2	5	3	–	–	✓	.22	IGI169	ISQ020
MODULAR	**100A4R138M12-ISAD11E-C**	1.000	2.244	.492	–	–	–	1.378	M12	–	–	-1.2	5	4	–	–	✓	.22	IGI169	ISQ025
MODULAR	**125A4R169M16-ISAD11E-C**	1.250	2.598	.669	–	–	–	1.693	M16	–	–	-9	8	4	–	–	✓	.22	IGI169	ISQ020
MODULAR	**125A5R169M16-ISAD11E-C**	1.250	2.598	.669	–	–	–	1.693	M16	–	–	-9	8	5	–	–	✓	.22	IGI169	ISQ025
MODULAR	**150A4R169M16-ISAD11E-C**	1.500	2.598	.669	–	–	–	1.693	M16	–	–	-8.1	11	4	–	–	✓	.44	IGI169	ISQ020
MODULAR	**150A6R169M16-ISAD11E-C**	1.500	2.598	.669	–	–	–	1.693	M16	–	–	-8.1	11	6	–	–	✓	.44	IGI169	ISQ020
ISO 6462 DIN 8030	**150A04R-IS90AD11E-C**	1.500	1.575	.500	.433	–	–	–	–	.258	.165	-8.1	11	4	✓	19000	✓	.44	IGI169	ISQ022
ISO 6462 DIN 8030	**150A06R-IS90AD11E-C**	1.500	1.575	.500	.433	–	–	–	–	.258	.165	-8.1	11	6	✓	19100	✓	.44	IGI169	ISQ022

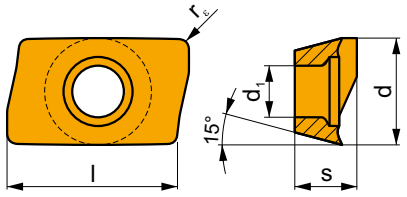
	ANSI	D	L	d	d_1	l_1	l_2	H	M	b	t	γ_f°	γ_p°			max.		lbs		
ISO 6462 DIN 8030	**200A05R-IS90AD11E-C**	2.000	1.575	.750	.630	–	–	–	–	.321	.193	-7.2	12	5	✓	17000	✓	.66	IGI169	ISQ023
	200A07R-IS90AD11E-C	2.000	1.575	.750	.630	–	–	–	–	.321	.193	-7.2	12	7	✓	17000	✓	.66	IGI169	ISQ023
	250A06R-IS90AD11E-C	2.500	1.575	.750	.630	–	–	–	–	.321	.193	-6.5	12	6	✓	15200	✓	1.10	IGI169	ISQ023
	250A09R-IS90AD11E-C	2.500	1.575	.750	.630	–	–	–	–	.321	.193	-6.5	12	9	✓	15200	✓	1.10	IGI169	ISQ023
	300A10R-IS90AD11E-C	3.000	1.969	1.000	.827	–	–	–	–	.382	.224	-6	12	10	✓	13500	✓	2.20	IGI169	ISQ024
	400A11R-IS90AD11E-C	4.000	1.969	1.500	1.260	–	–	–	–	.630	.382	-5.5	12	11	✓	12100	✓	3.75	IGI169	ISQ025
	500A12R-IS90AD11E-C	5.000	2.480	1.500	1.260	–	–	–	–	.630	.382	-5.2	12	12	✓	10800	✓	7.72	IGI169	ISQ025

IGI169	ADMX 11T3..	ADEX 11T3..

		Nm							
ISQ020	US 62506-T07P	1.2	M 2.5	.240	–	–	Flag T07P	–
ISQ022	US 62506-T07P	1.2	M 2.5	.240	D-T07P/T09P	FG-15	–	HS 025100
ISQ023	US 62506-T07P	1.2	M 2.5	.240	D-T07P/T09P	FG-15	–	HS 037100
ISQ024	US 62506-T07P	1.2	M 2.5	.240	D-T07P/T09P	FG-15	–	HS 050125
ISQ025	US 62505-T07P	1.2	M 2.5	.200	–	–	Flag T07P	–

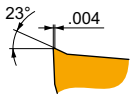
ADMX 11

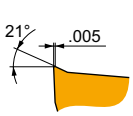
	d	d_1	l	s
11T3	.257	.114	.433	.156



		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		ADMX 11T304SR-F	**M9340**	◪	■			◪		●	- - -	.016	.003	.004	.008	.354
			M8310	■	◪	◪		◪		●	-	.016	.003	.005	.008	.354
			M8330	■	◪	◪	□	□		●	-	.016	.003	.005	.008	.354
			M8340	■	■	◪		◪		●	+ / -	.016	.003	.005	.008	.354
	23° .002		**8215**	■	◪	◪	■	◪		●	-	.016	.003	.005	.008	.354
S		**ADMX 11T308SR-F**	**M9340**	◪	■			◪		⬢	- - -	.031	.003	.004	.008	.354
			M8330	■	◪	◪	□	□		⬢	-	.031	.003	.005	.008	.354
			M8340	■	■	◪		◪		⬢	+ / -	.031	.003	.005	.008	.354
			8215	■	◪	◪	■	◪		⬢	-	.031	.003	.005	.008	.354

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADMX 11T302SR-M	**M8330**	■	◪	■		□		●	-	.008	.004	.006	.008	.354
	M8340	■	■	◪		◪		●	+/-	.008	.004	.006	.008	.354
ADMX 11T304SR-M	**M9325**	■	◪			◪		●	---	.016	.004	.006	.008	.354
	M9340	◪	■			◪		●	---	.016	.004	.006	.008	.354
	M8310	■	◪	■		◪		●	-	.016	.004	.007	.008	.354
	M8330	■	◪	■		□		⬣	-	.016	.004	.007	.008	.354
	M8340	■	■	◪		◪		⬣	+/-	.016	.004	.007	.008	.354
	8215	■	◪	■		◪		●	-	.016	.004	.007	.008	.354
ADMX 11T308SR-M	**M5315**	◪		■				⬣	---	.031	.004	.006	.008	.354
	M9315	■		◪				⬣	---	.031	.004	.006	.008	.354
	M9325	■	◪			◪		⬣	---	.031	.004	.006	.008	.354
	M9340	◪	■			◪		⬣	---	.031	.004	.006	.008	.354
	M8310	■	◪	■		◪		⬣	-	.031	.004	.007	.008	.354
	M8330	■	◪	■		□		⬣	-	.031	.004	.007	.008	.354
	M8340	■	■	◪		◪		⬣	+/-	.031	.004	.007	.008	.354
	8215	■	◪	■		◪		⬣	-	.031	.004	.007	.008	.354
ADMX 11T310SR-M	**M8330**	■	◪	■		□		✖	-	.039	.004	.009	.008	.354
	M8340	■	■	◪		◪		✖	+/-	.039	.004	.009	.008	.354
ADMX 11T312SR-M	**M8330**	■	◪	■		□		✖	-	.047	.004	.009	.008	.354
	M8340	■	■	◪		◪		✖	+/-	.047	.004	.009	.008	.354
	8215	■	◪	■		◪		⬣	-	.047	.004	.009	.008	.354
ADMX 11T316SR-M	**M6330**	◪	■			◪		✖	-	.063	.004	.009	.008	.354
	M8310	■	◪	■		◪		⬣	-	.063	.004	.009	.008	.354
	M8330	■	◪	■		□		✖	-	.063	.004	.009	.008	.354
	M8340	■	■	◪		◪		✖	+/-	.063	.004	.009	.008	.354
	8215	■	◪	■		◪		⬣	-	.063	.004	.009	.008	.354
ADMX 11T320SR-M	**M6330**	◪	■			◪		✖	-	.079	.004	.009	.008	.354
	M8330	■	◪	■		□		✖	-	.079	.004	.009	.008	.354
	M8340	■	■	◪		◪		✖	+/-	.079	.004	.009	.008	.354
ADMX 11T325SR-M	**M6330**	◪	■			◪		✖	-	.098	.004	.009	.008	.354
	M8340	■	■	◪		◪		✖	+/-	.098	.004	.009	.008	.354
ADMX 11T330SR-M	**M6330**	■	■	■		◪		✖	-	.118	.004	.009	.008	.354
	M8330	■	■	■		◪		✖	-	.118	.004	.009	.008	.354
	M8340	■	■	◪		◪		✖	+/-	.118	.004	.009	.008	.354
ADMX 11T308PR-R	**M5315**	◪		■			◪	⬣	---	.031	.006	.008	.031	.354
	M9315	■		◪			◪	⬣	---	.031	.006	.008	.031	.354
	M9325	■	◪			◪		✖	---	.031	.006	.008	.031	.354
	M8310	■	◪	■		◪	◪	✖	-	.031	.006	.010	.031	.354
	M8830	■	◪	■		□	◪	✖	-	.031	.006	.010	.031	.354
	M8340	■	◪	◪		◪		✖	+/-	.031	.006	.010	.031	.354
	8215	■	◪	■		◪	◪	✖	-	.031	.006	.010	.031	.354
ADMX 11T316PR-R	**M9325**	■	◪			◪		✖	---	.063	.006	.008	.031	.354
	M8330	■	◪	■		□	◪	✖	-	.063	.006	.010	.031	.354
	8215	■	◪	■		◪	◪	✖	-	.063	.006	.010	.031	.354

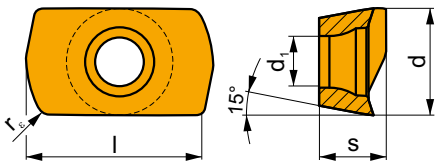




ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADMX 11T304SR-MF	**M6330**	◪	■			■		●	-	.016	.002	.006	.008	.354
	M8340	■	■			■		●	+/-	.016	.002	.006	.008	.354
ADMX 11T308SR-MF	**M9340**	◪	■			■		⬣	- - -	.031	.002	.005	.008	.354
	M6330	◪	■			■		⬣	-	.031	.002	.006	.008	.354
	M8340	■	■			■		⬣	+/-	.031	.002	.006	.008	.354
ADMX 11T304SR-MM	**M9340**	◪	■			■		●	- - -	.016	.004	.006	.008	.354
	M6330	◪	■			■		⬣	-	.016	.004	.007	.008	.354
	M8340	■	■			■		⬣	+/-	.016	.004	.007	.008	.354
ADMX 11T308SR-MM	**M9340**	◪	■			■		⬣	- - -	.031	.004	.006	.008	.354
	M6330	◪	■			■		⬣	-	.031	.004	.007	.008	.354
	M8340	■	■			■		⬣	+/-	.031	.004	.007	.008	.354
	M8345	■	■			■		⬣	+/-	.031	.004	.007	.008	.354
ADMX 11T312SR-MM	**M9340**	◪	■			■		⬣	- - -	.047	.004	.006	.008	.354
	M6330	◪	■			■		✖	-	.047	.004	.007	.008	.354
	M8340	■	■			■		✖	+/-	.047	.004	.007	.008	.354

ADEX 11-HF

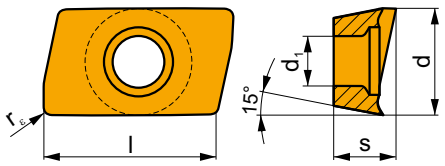
	d	d_1	l	s
11T3	.254	.114	.420	.150



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADEX 11T308SR-HF	**M9340**	◪	■			◪		⬣	- - -	.031	.016	.044	.004	.024
	M6330	◪	■			◪		⬣	-	.031	.016	.051	.004	.024
	M8310	■	◪	□		◪	□	⬣	-	.031	.016	.051	.004	.024
	M8330	■	◪	□		□	□	⬣	-	.031	.016	.051	.004	.024
	M8340	■	■	□		◪		⬣	+/-	.031	.016	.051	.004	.024
	8215	■	◪	□		◪	□	⬣	-	.031	.016	.051	.004	.024
ADEX 11T308SR-HF2	**M9325**	■	◪			□		⬣	- - -	.031	.016	.046	.006	.024
	M9340	◪	◪			□		⬣	- - -	.031	.016	.046	.006	.024
	M8310	■	◪	■		□	■	⬣	-	.031	.016	.051	.006	.024
	M8330	■	◪	■		□	◪	⬣	-	.031	.016	.051	.006	.024
	M8340	■	◪	◪		□		✖	+/-	.031	.016	.051	.006	.024

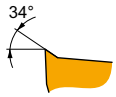
ADEX 11-FA

	d	d_1	l	s
11T3	.254	.114	.382	.154





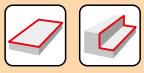




ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADEX 11T304FR-FA	**M0315**				■			●	++	.016	.001	.012	.016	.354
	HF7				■			●	+ / -	.016	.001	.012	.008	.354
ADEX 11T308FR-FA	**M0315**				■			●	++	.031	.001	.012	.008	.354
	HF7				■			●	+ / -	.031	.001	.012	.008	.354
ADEX 11T312FR-FA	**HF7**				■			●	+ / -	.047	.001	.012	.008	.354
ADEX 11T316FR-FA	**HF7**				■			●	+ / -	.063	.001	.012	.008	.354

ISO		f_{min}	f_{max}	M5315	M9315	M9325	M9340	M0315	M6330	M8310	M8340	M8345	8215	M8330	HF7
P	●	.0028	.0071	1280	1247	1198	1033	–	935	1066	951	689	1033	935	–
	⧓	.0028	.0059	1181	1148	1083	919	–	837	968	837	591	886	820	–
	✖	.0028	.0039	1083	1033	951	820	–	738	869	722	492	755	705	–
M	●	.0028	.0071	–	–	722	607	–	607	640	574	410	607	558	–
	⧓	.0028	.0059	–	–	640	558	–	541	574	492	344	525	492	–
	✖	.0028	.0039	–	–	574	476	–	459	509	427	295	443	427	–
K	●	.0028	.0071	1214	1181	–	–	–	–	1017	886	–	968	886	–
	⧓	.0028	.0059	1132	1083	–	–	–	–	919	787	–	853	771	–
	✖	.0028	.0039	1033	984	–	–	–	–	820	689	–	722	673	–
N	●	.0028	.0071	–	–	–	–	2231	–	–	–	–	2592	2362	1001
	⧓	.0028	.0059	–	–	–	–	2001	–	–	–	–	2247	2083	886
	✖	.0028	.0039	–	–	–	–	1755	–	–	–	–	1919	1788	771
S	●	.0028	.0071	–	–	344	295	–	295	312	279	197	295	279	–
	⧓	.0028	.0059	–	–	312	279	–	262	279	246	164	262	246	–
	✖	.0028	.0039	–	–	279	230	–	230	246	197	148	213	197	–
H	●	.0028	.0071	246	246	–	–	–	–	197	–	–	197	164	–
	⧓	.0028	.0059	230	213	–	–	–	–	180	–	–	164	148	–
	✖	.0028	.0039	197	197	–	–	–	–	148	–	–	148	131	–

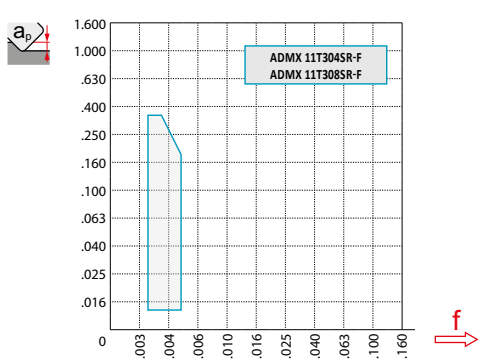
HFC		f_{min}	f_{max}	M9325	M9340	M8310	M8340	8215	M8330
P	●	.0177	.0492	1066	918	951	853	918	836
	⧓	.0177	.0394	968	820	853	738	787	722
	✖	.0177	.0315	853	722	771	640	672	623
M	●	.0177	.0492	640	541	574	508	541	492
	⧓	.0177	.0394	574	492	508	443	459	443
	✖	.0177	.0315	508	426	459	377	394	377
K	●	.0177	.0492	–	–	902	787	853	787
	⧓	.0177	.0394	–	–	820	705	754	689
	✖	.0177	.0315	–	–	722	607	640	590
N	●	.0177	.0492	–	–	–	–	2296	2099
	⧓	.0177	.0394	–	–	–	–	2001	1853
	✖	.0177	.0315	–	–	–	–	1706	1591
S	●	.0177	.0472	312	262	279	246	262	246
	⧓	.0177	.0394	279	246	246	213	230	213
	✖	.0177	.0315	246	197	213	180	197	180
H	●	.0157	.0394	–	–	180	–	180	148
	⧓	.0157	.0315	–	–	164	–	148	131
	✖	.0157	.0236	–	–	131	–	131	115

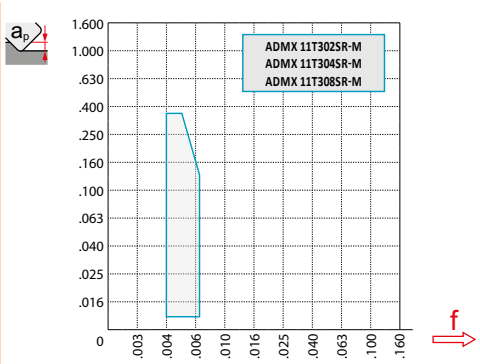


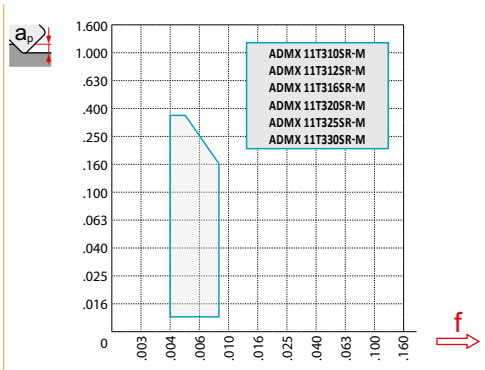
a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

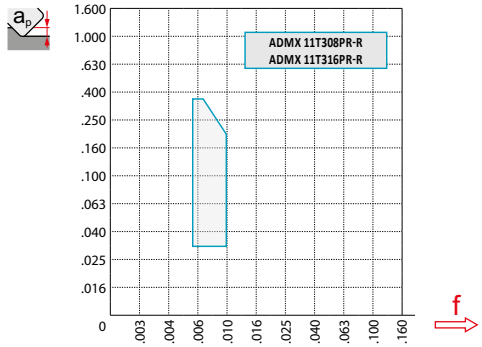
	ADMX 11-F		ADMX 11-M									ADMX 11-R		ADMX 11-MF	
r_ε	.016	.031	.008	.016	.031	.039	.047	.063	.079	.098	.118	.031	.063	.016	.031
a	.074	.058	.082	.074	.058	.050	.043	.027	.063	.044	.026	.058	.027	.074	.058

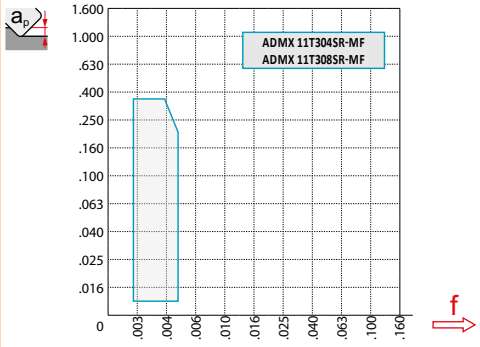
	ADMX 11-MM				ADEX 11-HF	ADEX 11-HF2	ADEX 11-FA			
r_ε	.016	.031	.047	.063	.031	.031	.016	.031	.047	.063
a	.074	.058	.043	.024	.007	.007	.070	.055	.039	.024

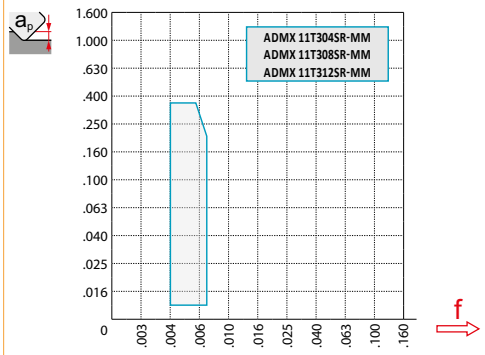


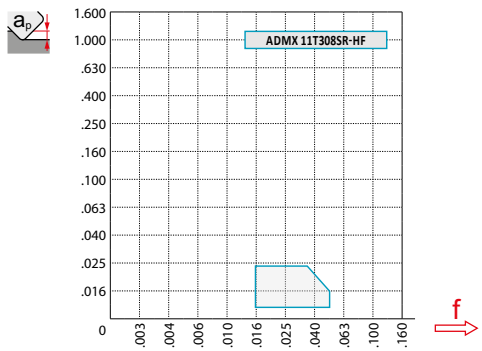


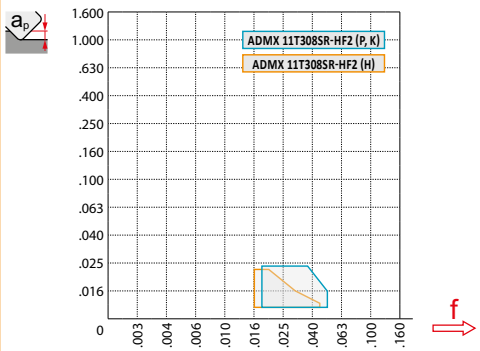


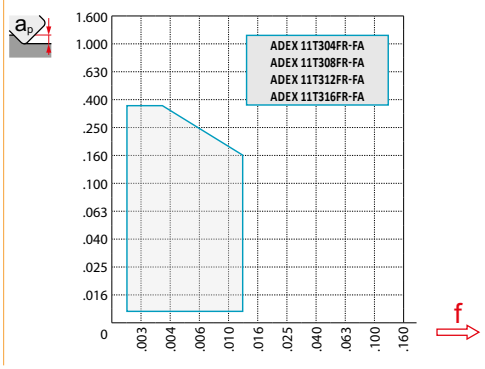












max

.177

a_p	.040	.197	.354
1 f	.008	.005	.004

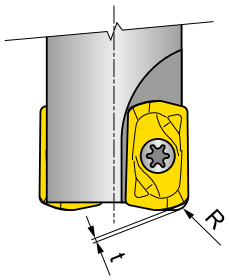
D	α_{max} °	a_p/l	HFC α_{max} °	HFC α_{max} °	HFC a_p/l
.625	13.5	.354/1.575	4.1	5.7	.024/.315
.750	9.0	.354/2.323	2.8	4.3	.024/.591
1.00	6.0	.354/3.425	2.3	6.7	.024/1.024
1.25	5.3	.354/3.898	1.3	4.3	.024/1.929
1.50	3.8	.256/4.000	.7	2.9	.024/4.000
2.00	2.8	.185/4.000	.3	2.1	.024/4.000
2.50	1.8	.118/4.000	.1	–	–
3.00	1.6	.102/4.000	–	–	–

D	d_{min}	d_{max}	s_{max} / d_{min}	s_{max} / d_{max}	HFC d_{min}	HFC d_{max}	HFC s_{max} / d_{min}	HFC s_{max} / d_{max}
.625	1.063	1.260	.327	.354	.827	1.260	.024	.024
.750	1.378	1.575	.295	.354	1.142	1.575	.024	.024
1.00	1.772	1.969	.256	.295	1.535	1.969	.024	.024
1.25	2.323	2.520	.157	.177	2.087	2.520	.024	.024
1.50	2.953	3.150	.059	.079	2.697	3.150	.024	.024
2.00	–	–	–	–	3.484	3.937	.024	.024

a_p
.067



ADMX/ADEX 11	R
ADMX 11T320SR-M	.039
ADMX 11T325SR-M	.071
ADMX 11T330SR-M	.071
ADEX 11T308SR-HF	.055
ADEX 11T308SR-HF2	.055



ADEX 11	R	t
	[in]	[in]
ADEX 11T308SR-HF	.056	.014
ADEX 11T308SR-HF2	.053	.015

ISAD16E

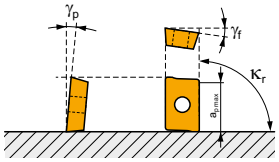
P M K N S H

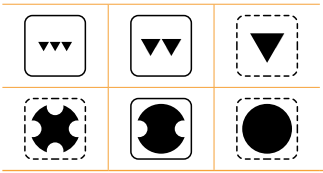
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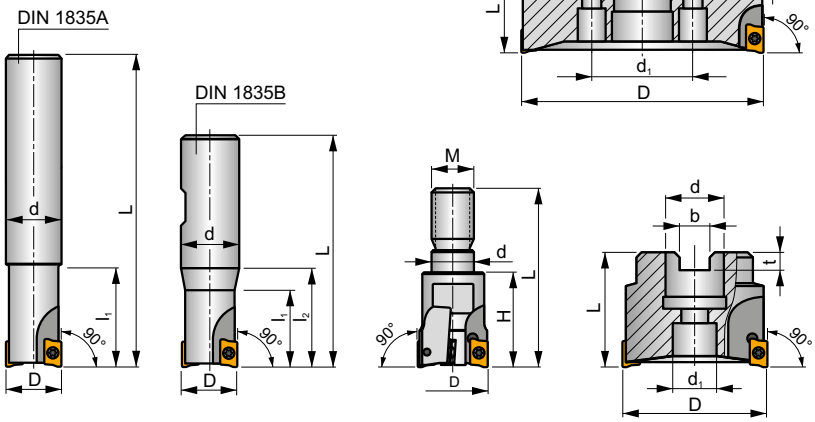
FORCE AD



κ_r	90°
a_{pmax}	.512







h_m .0031-.0086

h_m .0023-.0070



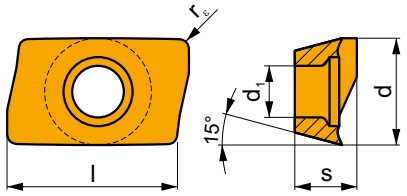
	ANSI	D	L	d	d_1	l_1	l_2	H	M	b	t	γ_f°	γ_p°			max.		lbs		
DIN 1835A	**100A2R130C100-ISAD16E-C**	1.000	6.496	1.000	–	1.300	–	–	–	–	–	-13	5	2	–	18700	✓	1.10	IGI165	ISQ030
	125A3R130C125-ISAD16E-C	1.250	7.677	1.250	–	1.300	–	–	–	–	–	-12	7	3	–	18700	✓	1.98	IGI165	ISQ030
DIN 1835B	**100A2R128W100-ISAD16E-C**	1.000	3.780	1.000	–	1.280	–	–	–	–	–	-13	5	2	–	18700	✓	.66	IGI165	ISQ030
	125A3R150W125-ISAD16E-C	1.250	4.000	1.250	–	1.500	–	–	–	–	–	-12	7	3	–	16500	✓	1.10	IGI165	ISQ030
	150A3R160W125-ISAD16E-C	1.500	4.350	1.250	–	1.600	–	–	–	–	–	-8.2	1.5	3	–	14800	✓	1.32	IGI165	ISQ030
	150A4R160W125-ISAD16E-C	1.500	4.350	1.250	–	1.600	–	–	–	–	–	-8.2	1.5	4	–	14800	✓	1.32	IGI165	ISQ030
MODULAR	**125A3R169M16-ISAD16E-C**	1.250	2.596	.669	–	–	–	1.690	M16	–	–	-12	7	3	–	–	✓	.46	IGI165	ISQ030
	150A4R169M16-ISAD16E-C	1.500	2.596	.669	–	–	–	1.690	M16	–	–	-8.2	1.5	4	–	–	✓	.60	IGI165	ISQ030
ISO 6462 DIN 8030	**150A04R-IS90AD16E-C**	1.500	1.575	.500	.433	–	–	–	–	.258	.165	-8.2	1.5	4	–	14700	✓	.44	IGI165	ISQ032
	200A03R-IS90AD16E-C	2.000	1.575	.750	.630	–	–	–	–	.321	.193	-7	11	3	–	13200	✓	.66	IGI165	ISQ033
	200A05R-IS90AD16E-C	2.000	1.575	.750	.630	–	–	–	–	.321	.193	-7	11	5	✓	13200	✓	.66	IGI165	ISQ033
	250A04R-IS90AD16E-C	2.500	1.575	.750	.630	–	–	–	–	.321	.193	-6	12	4	✓	11800	✓	1.10	IGI165	ISQ033
	250A06R-IS90AD16E-C	2.500	1.575	.750	.630	–	–	–	–	.321	.193	-6	12	6	✓	11800	✓	1.10	IGI165	ISQ033
	300A05R-IS90AD16E-C	3.000	1.969	1.000	.827	–	–	–	–	.382	.224	-5	12	5	✓	10400	✓	2.20	IGI165	ISQ034
	300A07R-IS90AD16E-C	3.000	1.969	1.000	.827	–	–	–	–	.382	.224	-5	13	7	✓	10400	✓	2.20	IGI165	ISQ034
	400A06R-IS90AD16E-C	4.000	1.969	1.500	1.260	–	–	–	–	.630	.382	-4	12	6	✓	9300	✓	3.97	IGI165	ISQ035
	400A08R-IS90AD16E-C	4.000	1.969	1.500	1.260	–	–	–	–	.630	.382	-4	12	8	✓	9300	✓	3.75	IGI165	ISQ035
	500A09R-IS90AD16E-C	5.000	2.480	1.500	1.260	–	–	–	–	.630	.382	-3.8	12	9	✓	8400	✓	7.72	IGI165	ISQ035
	600B10R-IS90AD16E	6.000	2.480	2.000	3.465	–	–	–	–	.756	.445	-3.8	10	10	✓	7300	✓	12.57	IGI165	ISQ031

IGI165	ADMX 1606..	ADEX 1606..

		Nm						
ISQ030	US 4008-T15P	3.5	M 4	.310	–	–	Flag T15P	–
ISQ031	US 4011-T15P	3.5	M 4	.430	D-T08P/T15P	FG-15	–	–
ISQ032	US 4008-T15P	3.5	M 4	.310	D-T08P/T15P	FG-15	–	HS 025100
ISQ033	US 4011-T15P	3.5	M 4	.430	D-T08P/T15P	FG-15	–	HS 037100
ISQ034	US 4011-T15P	3.5	M 4	.430	D-T08P/T15P	FG-15	–	HS 050125
ISQ035	US 4011-T15P	3.5	M 4	.430	D-T08P/T15P	FG-15	–	HS 075125

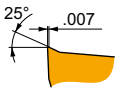
ADMX 16

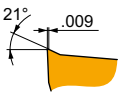
	d	d_1	l	s
1606	.392	.177	.630	.246

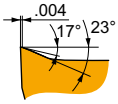


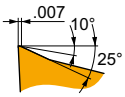
		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		ADMX 160608SR-F	**M9340**	◪	■					●	- - -	.031	.003	.005	.012	.512
			M8310	■	◪	◪		◪		●	-	.031	.003	.006	.012	.512
			M8330	■	◪	◪	□	□		●	-	.031	.003	.006	.012	.512
			M8340	■	■	◪		◪		●	+ / -	.031	.003	.006	.012	.512
	25° .004		**8215**	◪	◪	◪	■	□		●	-	.031	.003	.006	.012	.512
		ADMX 160604SR-M	**M8330**	■	◪	■		□		●	-	.016	.004	.010	.012	.512
			M8340	■	■	◪		◪		●	+ / -	.016	.004	.010	.012	.512
			8215	■	◪	■		◪		■	-	.016	.004	.010	.012	.512
		ADMX 160608SR-M	**M5315**			■				●	- - -	.031	.004	.008	.012	.512
			M9315	■		◪				●	- - -	.031	.004	.008	.012	.512
			M9325	■	◪			◪		●	- - -	.031	.004	.008	.012	.512
			M9340	◪	■					●	- - -	.031	.004	.008	.012	.512
1			**M8310**	■	◪	■		◪		●	-	.031	.004	.010	.012	.512
			M8330	■	◪	■		□		●	-	.031	.004	.010	.012	.512
U			**M8340**	■	■	◪		◪		●	+ / -	.031	.004	.010	.012	.512
	25° .007		**8215**	■	◪	■		◪		●	-	.031	.004	.010	.012	.512
		ADMX 160616SR-M	**M9325**	■	◪			◪		●	- - -	.063	.004	.009	.012	.512
			M8310	■	◪	■		◪		●	-	.063	.004	.012	.012	.512
			M8330	■	◪	■		□		✖	-	.063	.004	.012	.012	.512
			M8340	■	■	◪		◪		✖	+ / -	.063	.004	.012	.012	.512
			8215	■	◪	■		◪		●	-	.063	.004	.012	.012	.512
		ADMX 160620SR-M	**M8340**	■	■	◪		◪		✖	+ / -	.079	.004	.012	.012	.512
			M6330	◪	■			◪		✖	-	.079	.004	.012	.012	.512
			M8330	■	◪	■		□		✖	-	.079	.004	.012	.012	.512

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADMX 160630SR-M	M8330	■	◪	■		□		✖	-	.118	.004	.012	.012	.512
	M8340	■	■	◪		◪		✖	+/-	.118	.004	.012	.012	.512
ADMX 160632SR-M	M9325	■	◪			◪		✖	---	.126	.004	.009	.012	.512
	M6330	◪	■			◪		✖	-	.126	.004	.012	.012	.512
	M8330	■	◪	■		□		✖	-	.126	.004	.012	.012	.512
	M8340	■	■	◪		◪		✖	+/-	.126	.004	.012	.012	.512
	8215	■	◪	■		◪		✖	-	.126	.004	.012	.012	.512
ADMX 160640SR-M	M6330	◪	■			◪		✖	-	.157	.004	.012	.012	.512
	M8330	■	◪	■		□		✖	-	.157	.004	.012	.012	.512
	M8340	■	■	◪		◪		✖	+/-	.157	.004	.012	.012	.512
ADMX 160650SR-M	M8330	■	◪	■		□		✖	-	.197	.004	.012	.012	.512
	M8340	■	■	◪		◪		✖	+/-	.197	.004	.012	.012	.512
ADMX 160608PR-R	M5315			■				✖	---	.031	.007	.011	.039	.512
	M9315	■		◪			◪	✖	---	.031	.007	.011	.039	.512
	M9325	■	◪			◪		✖	---	.031	.007	.011	.039	.512
	M8310	■	◪	■		◪	◪	✖	-	.031	.007	.014	.039	.512
	M8330	■	◪	■		□	◪	✖	-	.031	.007	.014	.039	.512
	M8340	■	◪	◪		◪		✖	+/-	.031	.007	.014	.039	.512
	8215	◪	◪	■		□	◪	✖	-	.031	.007	.014	.039	.512
ADMX 160616PR-R	M5315			■				✖	---	.063	.007	.011	.039	.512
	M9315	■		◪			◪	✖	---	.063	.007	.011	.039	.512
	M9325	■	◪			◪		✖	---	.063	.007	.011	.039	.512
	M8330	■	◪	■		□	◪	✖	-	.063	.007	.014	.039	.512
	M8340	■	◪	◪		◪		✖	+/-	.063	.007	.014	.039	.512
	8215	◪	◪	■		□	◪	✖	-	.063	.007	.014	.039	.512
ADMX 160608SR-MF	M9340	◪	■			■		✖	---	.031	.002	.006	.012	.512
	M6330	◪	■			■		✖	-	.031	.002	.006	.012	.512
	M8340	■	■			■		✖	+/-	.031	.002	.006	.012	.512
ADMX 160604SR-MM	M6330	◪	■			■		✖	-	.016	.006	.009	.012	.512
	M8340	■	■			■		✖	+/-	.016	.006	.009	.012	.512
ADMX 160608SR-MM	M9340	◪	■			■		✖	---	.031	.006	.007	.012	.512
	M6330	◪	■			■		✖	-	.031	.006	.009	.012	.512
	M8340	■	■			■		✖	+/-	.031	.006	.009	.012	.512
	M8345	■	■			■		✖	+/-	.031	.006	.009	.012	.512
ADMX 160616SR-MM	M9340	◪	■			■		✖	---	.063	.006	.007	.012	.512
	M6330	◪	■			■		✖	-	.063	.006	.009	.012	.512
	M8340	■	■			■		✖	+/-	.063	.006	.009	.012	.512
	M8345	■	■			■		✖	+/-	.063	.006	.009	.012	.512





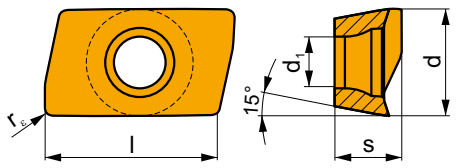




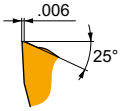
PRAMET

ADEX 16

	d	d_1	l	s
1606	.392	.177	.630	.246

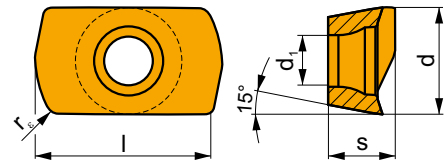


	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	ADEX 160608SR-FM	**M9325**	■	◪			◪		●	- - -	.031	.004	.008	.012	.512
		M9340	◪	■			◪		●	- - -	.031	.004	.008	.012	.512
		M8330	■	◪	■		□		●	-	.031	.004	.010	.012	.512
		M8340	■	■	◪		◪		●	+ / -	.031	.004	.010	.012	.512
		8215	■	◪	■		◪		●	-	.031	.004	.010	.012	.512

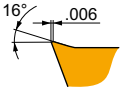


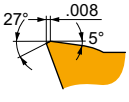
ADEX 16-HF

	d	d_1	l	s
1606	.392	.177	.630	.231



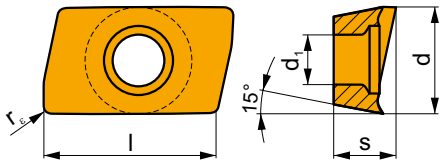
	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
HFC	**ADEX 160612SR-HF**	**M9340**	◪	■			◪		●	- - -	.047	.024	.044	.010	.051
		M8310	■	◪	□		◪	□	●	-	.047	.024	.051	.010	.051
		M8330	■	◪	□		□	□	●	-	.047	.024	.051	.010	.051
		M8340	■	■	□		◪		●	+ / -	.047	.024	.051	.010	.051
		8215	■	◪	□		◪	□	●	-	.047	.024	.051	.010	.051
HFC	**ADEX 160612SR-HF2**	**M9325**	■	◪			□		●	- - -	.047	.024	.046	.010	.051
		M9340	◪	◪			□		●	- - -	.047	.024	.046	.010	.051
		M8310	■	◪	■		□	■	●	-	.047	.024	.051	.010	.051
		M8330	■	◪	■		□	◪	✖	-	.047	.024	.051	.010	.051
		M8340	■	◪	◪		□		✖	+ / -	.047	.024	.051	.010	.051

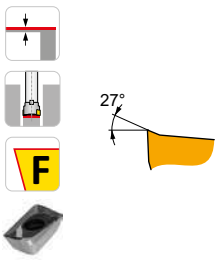




ADEX 16-FA

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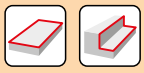




ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADEX 160604FR-FA	**M0315**				■			●	++	.016	.002	.014	.012	.512
	HF7				■			●	+/-	.016	.002	.014	.012	.512
ADEX 160608FR-FA	**M0315**				■			●	++	.031	.002	.014	.012	.512
	HF7				■			●	+/-	.031	.002	.014	.012	.512
ADEX 160616FR-FA	**HF7**				■			●	+/-	.063	.002	.014	.012	.512
ADEX 160630FR-FA	**HF7**				■			●	+/-	.118	.002	.014	.012	.512

ISO		f_{min}	f_{max}	M5315	M9315	M9325	M9340	M0315	M6330	M8310	M8340	M8345	8215	M8330	HF7
P	●	.0039	.0118	1427	1394	1345	1165	–	1050	1198	1066	771	1148	1050	–
	⧓	.0039	.0098	1329	1280	1214	1033	–	935	1083	935	656	1001	919	–
	✖	.0039	.0059	1214	1148	1066	919	–	820	968	804	558	853	787	–
M	●	.0039	.0098	–	–	804	689	–	689	722	640	459	689	623	–
	⧓	.0039	.0079	–	–	722	623	–	607	640	558	394	591	558	–
	✖	.0039	.0047	–	–	640	541	–	525	574	476	328	509	476	–
K	●	.0039	.0118	1362	1329	–	–	–	–	1132	1001	–	1083	1001	–
	⧓	.0039	.0098	1263	1214	–	–	–	–	1033	886	–	951	869	–
	✖	.0039	.0059	1165	1099	–	–	–	–	919	771	–	804	755	–
N	●	.0039	.0118	–	–	–	–	2493	–	–	–	–	2887	2641	1115
	⧓	.0039	.0098	–	–	–	–	2231	–	–	–	–	2510	2329	1001
	✖	.0039	.0059	–	–	–	–	1952	–	–	–	–	2149	2001	869
S	●	.0039	.0098	–	–	394	344	–	344	361	312	230	344	312	–
	⧓	.0039	.0079	–	–	361	312	–	295	312	279	197	295	279	–
	✖	.0039	.0047	–	–	312	262	–	262	279	230	164	246	230	–
H	●	.0039	.0098	279	279	–	–	–	–	230	–	–	230	197	–
	⧓	.0039	.0079	262	246	–	–	–	–	213	–	–	197	180	–
	✖	.0039	.0047	230	230	–	–	–	–	180	–	–	164	148	–

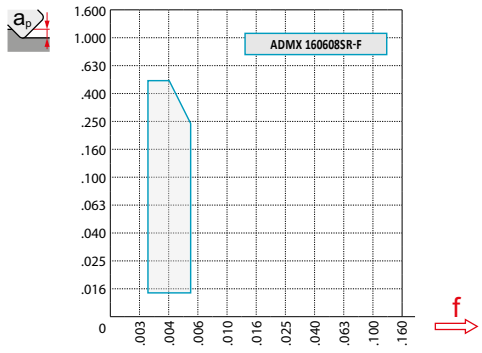
HFC		f_{min}	f_{max}	M9325	M9340	M8310	M8340	8215	M8330
P	●	.0217	.0492	1132	984	1017	902	968	886
	⧓	.0217	.0394	1017	869	918	787	836	771
	✖	.0217	.0315	902	771	820	672	722	656
M	●	.0217	.0492	672	574	607	541	574	525
	⧓	.0217	.0394	607	525	541	459	492	459
	✖	.0217	.0315	541	459	476	394	426	394
K	●	.0217	.0492	–	–	951	836	918	836
	⧓	.0217	.0394	–	–	869	738	804	738
	✖	.0217	.0315	–	–	771	640	672	640
N	●	.0217	.0492	–	–	–	–	2444	2230
	⧓	.0217	.0394	–	–	–	–	2132	1968
	✖	.0217	.0315	–	–	–	–	1820	1689
S	●	.0217	.0472	328	279	295	262	279	262
	⧓	.0217	.0394	295	262	262	230	246	230
	✖	.0217	.0315	262	213	230	180	197	180
H	●	.0197	.0394	–	–	180	–	180	164
	⧓	.0197	.0315	–	–	180	–	164	148
	✖	.0197	.0236	–	–	148	–	131	115

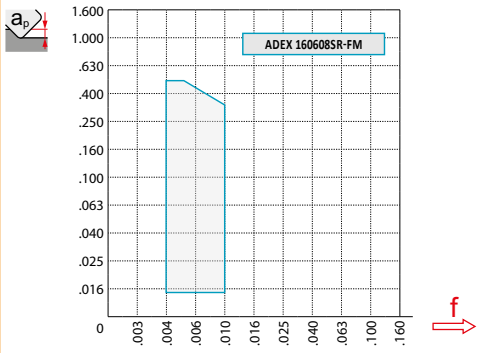


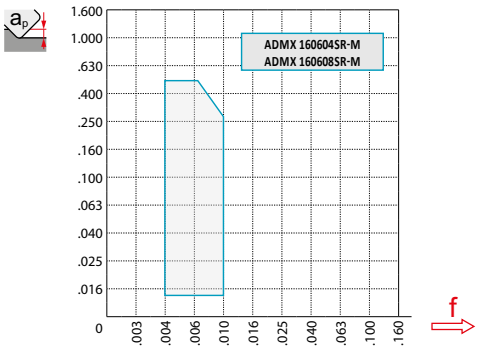
a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

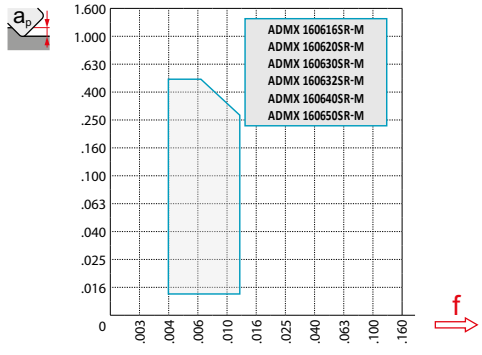
	ADMX 16-F	ADEX 16-FM	ADMX 16-M								ADMX 16-R	
r_ε	.031	.031	.016	.031	.063	.079	.118	.126	.157	.197	.031	.063
a	.118	.086	.133	.118	.064	.048	.011	.004	.106	.060	.118	.064

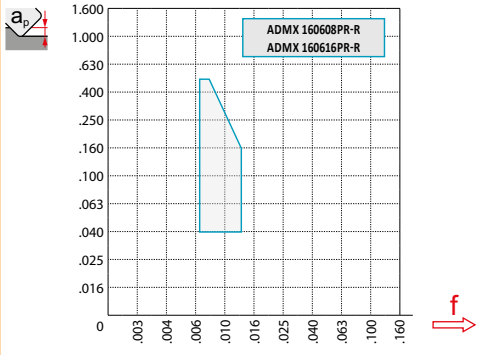
	ADMX 16-MF	ADMX 16-MM			ADEX 16-HF	ADEX 16-HF2	ADEX 16-FA			
r_ε	.031	.016	.031	.063	.047	.047	.016	.031	.063	.118
a	.118	.133	.118	.064	.020	.020	.112	.096	.065	.027

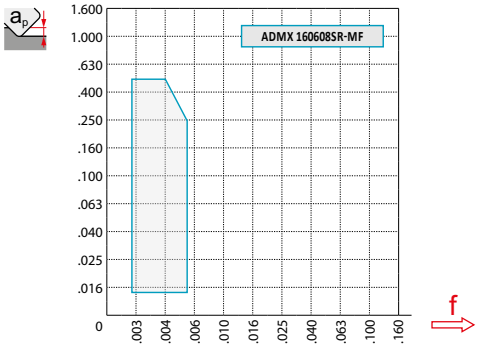

ADMX 160608SR-F
1.600
1.000
.630
.400
.250
.160
.100
.063
.040
.025
.016
0
.003
.004
.006
.010
.016
.025
.040
.063
.100
.160
f

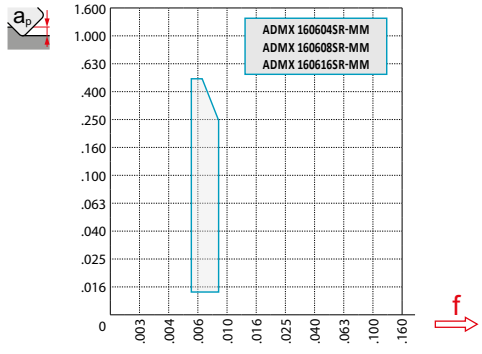

ADEX 160608SR-FM
1.600
1.000
.630
.400
.250
.160
.100
.063
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.025
.016
0
.003
.004
.006
.010
.016
.025
.040
.063
.100
.160
f

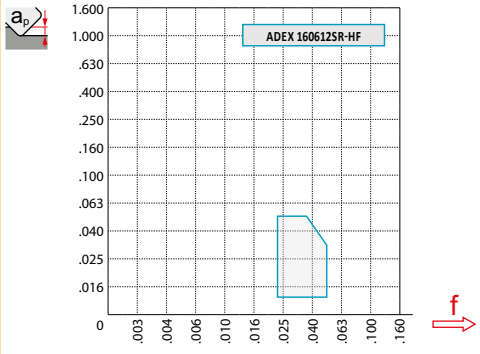

ADMX 160604SR-M
ADMX 160608SR-M
1.600
1.000
.630
.400
.250
.160
.100
.063
.040
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.016
0
.003
.004
.006
.010
.016
.025
.040
.063
.100
.160
f

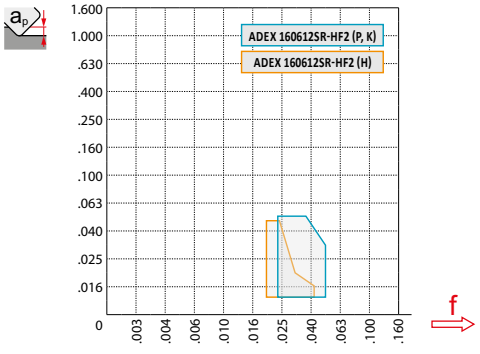

ADMX 160616SR-M
ADMX 160620SR-M
ADMX 160630SR-M
ADMX 160632SR-M
ADMX 160640SR-M
ADMX 160650SR-M
1.600
1.000
.630
.400
.250
.160
.100
.063
.040
.025
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0
.003
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.006
.010
.016
.025
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.063
.100
.160
f

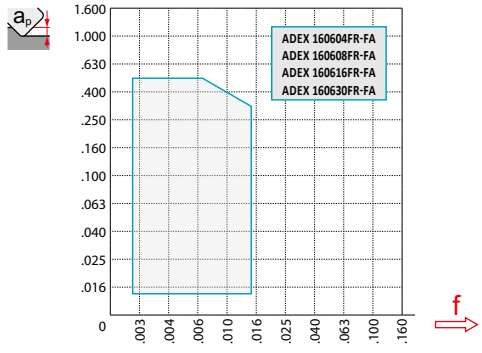

ADMX 160608PR-R
ADMX 160616PR-R
1.600
1.000
.630
.400
.250
.160
.100
.063
.040
.025
.016
0
.003
.004
.006
.010
.016
.025
.040
.063
.100
.160
f


ADMX 160608SR-MF
1.600
1.000
.630
.400
.250
.160
.100
.063
.040
.025
.016
0
.003
.004
.006
.010
.016
.025
.040
.063
.100
.160
f


ADMX 160604SR-MM
ADMX 160608SR-MM
ADMX 160616SR-MM
1.600
1.000
.630
.400
.250
.160
.100
.063
.040
.025
.016
0
.003
.004
.006
.010
.016
.025
.040
.063
.100
.160
f


ADEX 160612SR-HF
1.600
1.000
.630
.400
.250
.160
.100
.063
.040
.025
.016
0
.003
.004
.006
.010
.016
.025
.040
.063
.100
.160
f


ADEX 160612SR-HF2 (P, K)
ADEX 160612SR-HF2 (H)
1.600
1.000
.630
.400
.250
.160
.100
.063
.040
.025
.016
0
.003
.004
.006
.010
.016
.025
.040
.063
.100
.160
f


ADEX 160604FR-FA
ADEX 160608FR-FA
ADEX 160616FR-FA
ADEX 160630FR-FA
1.600
1.000
.630
.400
.250
.160
.100
.063
.040
.025
.016
0
.003
.004
.006
.010
.016
.025
.040
.063
.100
.160
f

max

.295

a_p	.039	.236	.512
f	.011	.007	.004

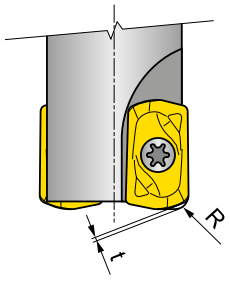
			HFC		
D	α_{max} °	a_p/l	α_{max} °	α_{max} °	a_p/l
1.00	12.5	.512/2.362	4.0	8.0	.051/.748
1.25	7.5	.512/4.000	2.0	7.5	.051/1.500
1.50	5.0	.339/4.000	1.2	4.5	.051/2.559
2.00	3.5	.236/4.000	.8	3.0	1,3/4.000
2.50	2.5	.165/4.000	.5	2.0	0,8/4.000
3.00	2.0	.130/4.000	.4	1.5	0,6/4.000

					HFC			
D	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}
1.00	1.654	1.969	.394	.492	1.654	1.969	.051	.051
1.25	2.165	2.520	.256	.354	2.165	2.520	.051	.051
1.50	2.835	3.150	.197	.315	2.835	3.150	.051	.051
2.00	3.622	3.937	.177	.236	3.622	3.937	.051	.051
2.50	4.646	4.961	.157	.197	4.646	4.961	.051	.051
3.00	5.354	6.299	.059	.079	5.354	6.299	.051	.051

a_p
.098



ADMX/ADEX 16	R
ADMX 160630SR-M	.098
ADMX 160632SR-M	.098
ADMX 160640SR-M	.157
ADMX 160650SR-M	.177
ADEX 160612SR-HF	.118
ADEX 160612SR-HF2	.118



ADEX 16	R	t
	[in]	[in]
ADEX 160612SR-HF	.102	.022
ADEX 160612SR-HF2	.098	.022

ISTN10

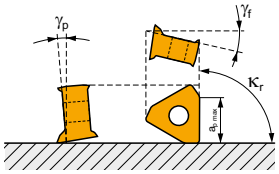
P M K N S

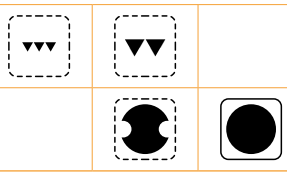
S

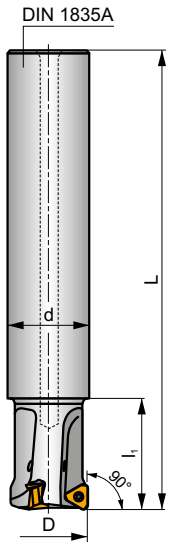
ECON *TN*

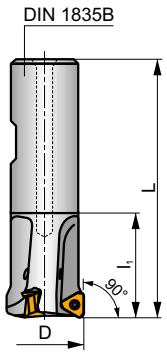


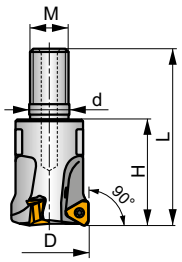
κ_r	90°
a_{pmax}	.197

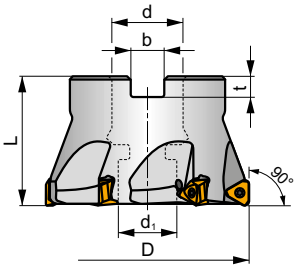












hm .0012-.0032

hm .0012-.0024

	ANSI	D	L	d	d_1	l_1	H	M	b	t	γ_f°	γ_p°			max.		lbs		
	075A2R114C075-ISTN10-C	.750	5.906	.750	–	1.142	–	–	–	–	-16.5	-11	2	–	27600	✓	.64	IGI292	ISQ300
	075A3R114C075-ISTN10-C	.750	5.906	.750	–	1.142	–	–	–	–	-16.5	-11	3	–	27600	✓	.62	IGI292	ISQ300
DIN 1835A	**100A3R140C100-ISTN10-C**	1.000	6.693	1.000	–	1.339	–	–	–	–	-16	-11	3	–	24700	✓	1.28	IGI292	ISQ300
	100A4R140C100-ISTN10-C	1.000	6.693	1.000	–	1.339	–	–	–	–	-16	-11	4	✓	24700	✓	1.28	IGI292	ISQ300
	125A4R146C125-ISTN10-C	1.250	7.677	1.250	–	1.457	–	–	–	–	-16	-11	4	✓	21800	✓	2.31	IGI292	ISQ300
	125A5R146C125-ISTN10-C	1.250	7.677	1.250	–	1.457	–	–	–	–	-16	-11	5	✓	21800	✓	2.31	IGI292	ISQ300
	075A2R125W075-ISTN10-C	.750	3.500	.750	–	1.250	–	–	–	–	-16.5	-11	2	–	27600	✓	.33	IGI292	ISQ300
	075A3R125W075-ISTN10-C	.750	3.500	.750	–	1.250	–	–	–	–	-16.5	-11	3	–	27600	✓	.33	IGI292	ISQ300
DIN 1835B	**100A3R150W100-ISTN10-C**	1.000	4.000	1.000	–	1.500	–	–	–	–	-16	-11	3	–	24700	✓	.68	IGI292	ISQ300
	100A4R150W100-ISTN10-C	1.000	4.000	1.000	–	1.500	–	–	–	–	-16	-11	4	✓	24700	✓	.68	IGI292	ISQ300
	125A4R150W125-ISTN10-C	1.250	4.331	1.250	–	1.500	–	–	–	–	-16	-11	4	✓	21800	✓	1.21	IGI292	ISQ300
	125A5R150W125-ISTN10-C	1.250	4.331	1.250	–	1.500	–	–	–	–	-16	-11	5	✓	21800	✓	1.19	IGI292	ISQ300
	075A2R102M10-ISTN10-C	.750	1.772	.413	–	–	1.024	M10	–	–	-16.5	-11	2	–	–	✓	.09	IGI292	ISQ300
	075A3R102M10-ISTN10-C	.750	1.772	.413	–	–	1.024	M10	–	–	-16.5	-11	3	–	–	✓	.09	IGI292	ISQ300
MODULAR	**100A3R130M12-ISTN10-C**	1.000	2.165	.492	–	–	1.300	M12	–	–	-16	-11	3	–	–	✓	.18	IGI292	ISQ300
	100A4R130M12-ISTN10-C	1.000	2.165	.492	–	–	1.300	M12	–	–	-16	-11	4	✓	–	✓	.18	IGI292	ISQ300
	125A4R169M16-ISTN10-C	1.250	2.598	.669	–	–	1.693	M16	–	–	-16	-11	4	✓	–	✓	.44	IGI292	ISQ300
	125A5R169M16-ISTN10-C	1.250	2.598	.669	–	–	1.693	M16	–	–	-16	-11	5	✓	–	✓	.44	IGI292	ISQ300
	150A04R-IS90TN10-C	1.500	1.575	.500	.433	–	–	–	.258	.165	-15	-11	4	✓	19500	✓	.49	IGI292	ISQ302
	150A06R-IS90TN10-C	1.500	1.575	.500	.433	–	–	–	.258	.165	-15	-11	6	✓	19500	✓	.46	IGI292	ISQ302
ISO 6462 DIN 8030	**200A05R-IS90TN10-C**	2.000	1.575	.750	.630	–	–	–	.321	.193	-15	-11	5	✓	17400	✓	.84	IGI292	ISQ303
	200A07R-IS90TN10-C	2.000	1.575	.750	.630	–	–	–	.321	.193	-15	-11	7	✓	17400	✓	.86	IGI292	ISQ303
	250A06R-IS90TN10-C	2.500	1.575	.750	.630	–	–	–	.321	.193	-15	-11	6	✓	15500	✓	1.15	IGI292	ISQ303
	250A09R-IS90TN10-C	2.500	1.575	.750	.630	–	–	–	.321	.193	-15	-11	9	✓	15500	✓	1.15	IGI292	ISQ303
	300A10R-IS90TN10-C	3.000	1.969	1.000	.827	–	–	–	.224	.394	-15	-11	10	✓	13800	✓	2.34	IGI292	ISQ304

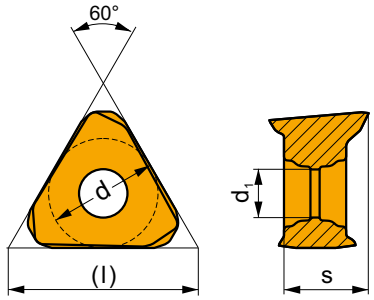
PRAMET

IGI292	TNGX 1004..

		Nm						
ISQ300	US 52506-T07P	.8	M 2.5	.240	–	–	Flag T07P	–
ISQ302	US 52506-T07P	.8	M 2.5	.240	D-T07P/T09P	FG-15	–	HS 025100
ISQ303	US 52506-T07P	.8	M 2.5	.240	D-T07P/T09P	FG-15	–	HS 037100
ISQ304	US 52506-T07P	.8	M 2.5	.240	D-T07P/T09P	FG-15	–	HS 050125

TNGX 10

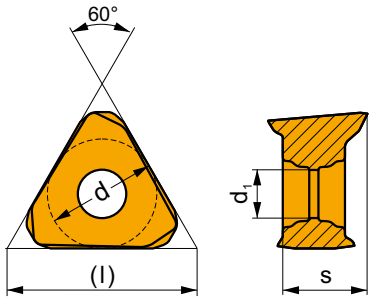
	d	d_1	l	s
1004	.236	.110	.409	.185



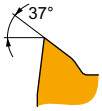
		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		TNGX 100402SR-F	**M8330**	■	◪	◪		□		●	-	.008	.001	.004	.004	.197
			M8340	■	■	◪		◪		●	+/-	.008	.001	.004	.004	.197
			8230	■	■	◪		◪		●	-	.008	.001	.004	.004	.197
		TNGX 100404SR-F	**M9340**	◪	■			◪		●	---	.016	.001	.004	.004	.197
			M6330	◪	■			◪		●	-	.016	.001	.004	.004	.197
			M8330	■	◪	◪		□		●	-	.016	.001	.004	.004	.197
			M8340	■	■	◪		◪		●	+/-	.016	.001	.004	.004	.197
			8215	■	◪	◪		◪		●	-	.016	.001	.004	.004	.197
			8230	■	■	◪		◪		●	-	.016	.001	.004	.004	.197
		TNGX 100408SR-F	**M9340**	◪	■			◪		●	---	.031	.001	.004	.004	.197
			M6330	◪	■			◪		●	-	.031	.001	.004	.004	.197
			M8330	■	◪	◪		□		●	-	.031	.001	.004	.004	.197
			M8340	■	■	◪		◪		●	+/-	.031	.001	.004	.004	.197
			8215	■	◪	◪		◪		●	-	.031	.001	.004	.004	.197
			8230	■	■	◪		◪		●	-	.031	.001	.004	.004	.197
1 U S	.002 37° 22°	**TNGX 100404SR-M**	**M9340**	◪	■			◪		●	---	.016	.002	.005	.012	.197
			M6330	◪	■			◪		●	-	.016	.002	.006	.012	.197
			M8330	■	◪	◪		□		●	-	.016	.002	.006	.012	.197
			M8340	■	■	◪		◪		●	+/-	.016	.002	.006	.012	.197
			M8345	■	■			◪		●	+/-	.016	.002	.006	.012	.197
			8215	■	◪	◪		◪		●	-	.016	.002	.006	.012	.197
			8230	■	■	◪		◪		●	-	.016	.002	.006	.012	.197
	.004 31° 13°	**TNGX 100408SR-M**	**M9340**	◪	■			◪		●	---	.031	.002	.005	.012	.197
			M6330	◪	■			◪		⬢	-	.031	.002	.006	.012	.197
			M8310	■	◪	◪		◪		●	-	.031	.002	.006	.012	.197
			M8330	■	◪	◪		□		⬢	-	.031	.002	.006	.012	.197
			M8340	■	■	◪		◪		⬢	+/-	.031	.002	.006	.012	.197
			M8345	■	■			◪		⬢	+/-	.031	.002	.006	.012	.197
			8215	■	◪	◪		◪		●	-	.031	.002	.006	.012	.197
			8230	■	■	◪		◪		⬢	-	.031	.002	.006	.012	.197

TNGX 10-FA

	d	d_1	l	s
1004	.236	.110	.409	.185



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TNGX 100404FR-FA	**M0315**				■			●	++	.016	.001	.008	.004	.157
	HF7				■			●	+/-	.016	.001	.008	.004	.157
TNGX 100408FR-FA	**M0315**				■			●	++	.031	.001	.008	.004	.157
	HF7				■			●	+/-	.031	.001	.008	.004	.157

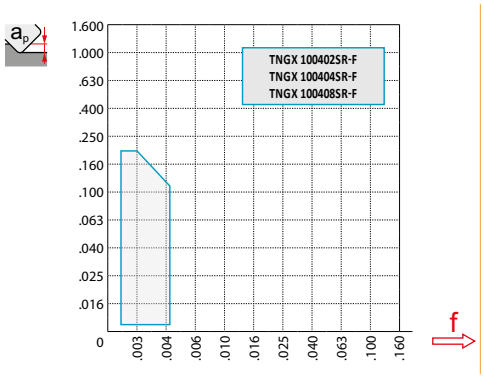


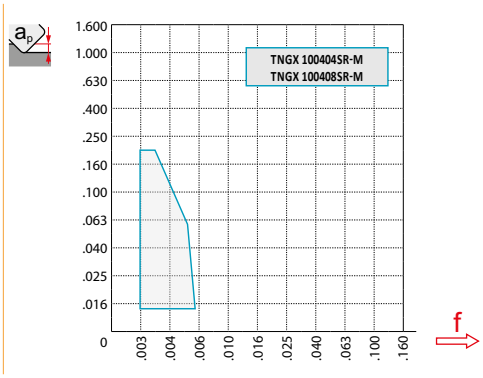
ISO		f_{min}	f_{max}	M9340	M0315	M6330	M8310	M8340	M8345	8215	M8330	HF7
P	●	.0020	.0059	817	–	735	840	748	541	804	735	–
	⧓	.0020	.0043	725	–	656	758	656	459	702	643	–
	✖	.0020	.0031	643	–	574	679	564	390	597	551	–
M	●	.0020	.0047	482	–	482	505	449	322	482	436	–
	⧓	.0020	.0020	436	–	427	449	390	276	413	390	–
	✖	.0020	.0024	381	–	367	404	335	230	358	335	–
K	●	.0020	.0059	–	–	–	794	702	–	758	702	–
	⧓	.0020	.0039	–	–	–	725	620	–	666	610	–
	✖	.0020	.0031	–	–	–	643	541	–	564	528	–
N	●	.0020	.0079	–	1745	–	–	–	–	–	–	781
	⧓	.0020	.0059	–	1562	–	–	–	–	–	–	702
	✖	.0020	.0039	–	1368	–	–	–	–	–	–	610
S	●	.0020	.0047	243	–	243	253	220	161	243	220	–
	⧓	.0020	.0031	220	–	207	220	197	138	207	197	–
	✖	.0020	.0024	184	–	184	197	161	115	174	161	–

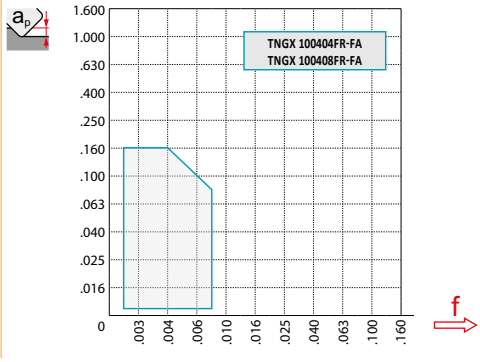
PRAMET

a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

	TNGX 10-F			TNGX 10-M		TNGX 10-FA	
r_ε	.008	.016	.031	.016	.031	.016	.031
a	.060	.053	.036	.053	.036	.052	.037







max
.059

a_p	.039	.118	.197
1 f	.004	.003	.002

D	α_{max} °	a_p/l
.750	1.60	.106/4.00
1.00	1.00	.067/4.00
1.25	.80	.051/4.00
1.50	.60	.035/4.00
2.00	.50	.028/4.00
2.50	.40	.020/4.00
3.00	.25	.012/4.00

D	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}
.750	1.457	1.575	.047	.047
1.00	1.850	1.969	.039	.039
1.25	2.402	2.520	.039	.039
1.50	3.031	3.150	.035	.035
2.00	3.819	3.937	.035	.035
2.50	4.843	4.961	.035	.035
3.00	6.181	6.299	.035	.035

a_p
.008

PRAMET

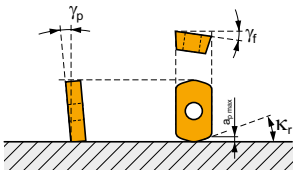
ISBN10

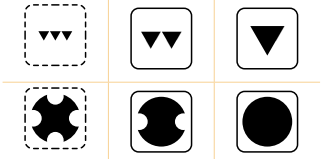
P M K S H

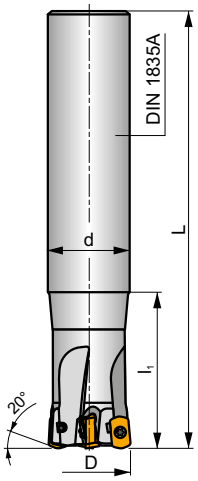
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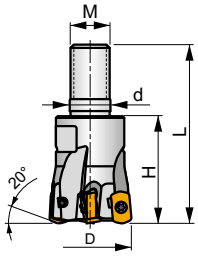


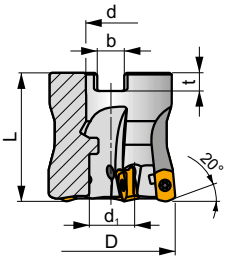
κ_r	20°
a_{pmax}	.039











h_m	.006 - .016
h_m	.006 - .016

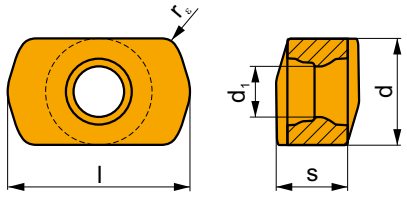
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DIN 1835A	062E2R118C062-ISBN10-C	.625	–	3.937	.625	–	1.181	–	–	–	–	-10	-12	2	–	31100	✓	.26	GI329	ICO310
	062E2R197C062-ISBN10-C	.625	–	5.906	.625	–	1.969	–	–	–	–	-10	-12	2	–	31100	✓	.40	GI329	ICO310
	075E3R157C075-ISBN10-C	.750	–	5.118	.750	–	1.575	–	–	–	–	-10	-10,5	3	–	28400	✓	.49	GI329	ICO310
	075E3R315C075-ISBN10-C	.750	–	6.299	.750	–	3.150	–	–	–	–	-10	-10,5	3	–	28400	✓	.57	GI329	ICO310
	100E4R197C100-ISBN10-C	1.00	–	5.512	1.00	–	1.969	–	–	–	–	-10	-9	4	✓	24600	✓	.95	GI329	ICO310
	100E4R394C100-ISBN10-C	1.00	–	7.087	1.00	–	3.937	–	–	–	–	-10	-9	4	✓	24600	✓	1.17	GI329	ICO310
	100E4R472C100-ISBN10-C	1.00	–	8.661	1.00	–	4.724	–	–	–	–	-10	-9	4	✓	24600	✓	1.43	GI329	ICO310
	100E5R197C100-ISBN10-C	1.00	–	5.512	1.00	–	1.969	–	–	–	–	-10	-9	5	–	24600	✓	.97	GI329	ICO310
	125E5R276C125-ISBN10-C	1.25	–	5.906	1.25	–	2.756	–	–	–	–	-10	-8	5	✓	22000	✓	1.57	GI329	ICO310
	125E6R276C125-ISBN10-C	1.25	–	5.906	1.25	–	2.756	–	–	–	–	-10	-8	6	✓	22000	✓	1.59	GI329	ICO310
	125E5R472C125-ISBN10-C	1.25	–	7.874	1.25	–	4.724	–	–	–	–	-10	-8	5	✓	22000	✓	2.03	GI329	ICO310
MODULAR	100E4R130M12-ISBN10-C	1.00	–	2.165	.492	–	–	1.299	M12	–	–	-10	-9	4	✓	24600	✓	.18	GI329	ICO310
	100E5R130M12-ISBN10-C	1.00	–	2.165	.492	–	–	1.299	M12	–	–	-10	-9	5	–	24600	✓	.18	GI329	ICO310
	125E5R157M16-ISBN10-C	1.25	–	2.480	.669	–	–	1.575	M16	–	–	-10	-8	5	✓	22000	✓	.42	GI329	ICO310
	125E6R157M16-ISBN10-C	1.25	–	2.480	.669	–	–	1.575	M16	–	–	-10	-8	6	✓	22000	✓	.42	GI329	ICO310
ISO 6462 DIN 8030	150A05R-ISMOBN10-C	1.50	–	1.575	.500	.433	–	–	–	.258	.165	-10	-7	5	✓	20100	✓	.46	GI329	ICO312
	150A07R-ISMOBN10-C	1.50	–	1.575	.500	.433	–	–	–	.258	.165	-10	-7	7	–	20100	✓	.46	GI329	ICO312

GI329	BNGX 10T3..	ANHX 10T3..

		Nm						
ICO310	US42507-T07P	0,9	M 2,5	.275	–	–	Flag T07P	–
ICO312	US42507-T07P	0,9	M 2,5	.275	D-T07P/T09P	FG-15	–	HS025100

BNGX 10

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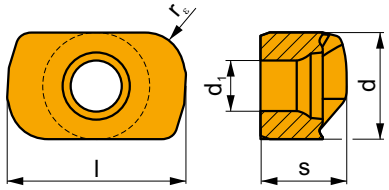


ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
BNGX 10T308SR-M	M9325	■	□					●	- - -	.031	.008	.041	.012	.039
	M6330	◪	■			■		●	-	.031	.008	.055	.012	.039
	M8310	■	□	■			◪	●	-	.031	.008	.055	.012	.039
	M8330	■	□	■			◪	●	-	.031	.008	.055	.012	.039
	M8340	■	□	◪				✖	+ / -	.031	.008	.055	.012	.039
	M8345	■	□					✖	+ / -	.031	.008	.055	.012	.039
	8215	■	□	■			◪	●	-	.031	.008	.055	.012	.039
BNGX 10T308SR-MM	M9325	◪	◪			◪		●	- - -	.031	.008	.033	.012	.039
	M9340	◪	■			■		●	- - -	.031	.008	.033	.012	.039
	M6330	◪	■			■		●	-	.031	.010	.043	.012	.039
	M8310	◪	◪	□		□		●	-	.031	.010	.043	.012	.039
	M8330	◪	◪	□	□	□		●	-	.031	.010	.043	.012	.039
	M8340	◪	■	□		■		●	+ / -	.031	.010	.043	.012	.039
	M8345	◪	■			■		●	+ / -	.031	.010	.043	.012	.039
BNGX 10T308SR-HM	M8310	□		■			■	✖	-	.031	.004	.039	.004	.039
	M8330	□		■			◪	✖	-	.031	.004	.039	.004	.039
	8215	□		■			■	✖	-	.031	.004	.039	.004	.039

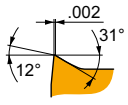
ISO		f_{min}	f_{max}	M9325	M9340	M6330	M8310	M8330	M8340	M8345	8215
P	●	.008	.055	971	867	694	876	800	727	580	842
	●	.008	.046	893	798	638	806	736	669	533	774
	✖	.008	.037	767	685	548	672	613	574	458	636
M	●	.008	.043	487	509	487	417	450	432	340	465
	●	.008	.035	448	469	448	384	414	397	312	428
	✖	.008	.026	385	402	385	330	356	341	268	367
K	●	.008	.059	–	–	–	829	753	683	–	794
	●	.008	.049	–	–	–	763	693	628	–	730
	✖	.008	.039	–	–	–	655	595	539	–	627
S	●	.008	.035	221	236	214	192	207	192	155	–
	●	.008	.030	204	217	197	177	190	177	143	–
	✖	.004	.026	175	187	169	152	163	152	122	–
H	●	.002	.028	–	–	–	173	159	–	–	166
	●	.002	.022	–	–	–	160	146	–	–	153
	✖	.002	.017	–	–	–	137	125	–	–	131

ANHX 10

	d	d_1	l	s
10T3	.228	.109	.383	.185



	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ANHX 10T320SR-F	**M8310**	■	◪	□		□	◪	●	-	.079	.002	.006	.004	.118
	M8330	■	◪	□	□	□	◪	✖	-	.079	.002	.006	.004	.118

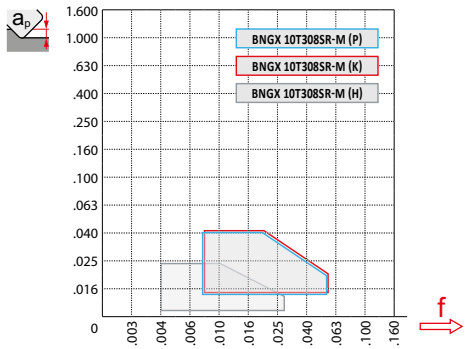


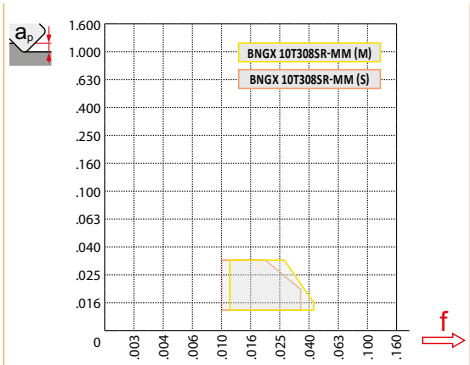
ISO		f_{min}	f_{max}	M8310	M8330	M8340
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	●	.002	.005	1207	973	973
	✖	.002	.004	1037	836	836
M	●	.002	.006	664	623	697
	●	.002	.005	611	574	641
	✖	.002	.004	525	492	551
K	●	.002	.006	1239	993	1116
	●	.002	.005	1139	913	1026
	✖	.002	.004	978	784	881
S	●	.002	.006	295	279	312
	●	.002	.005	272	257	287
	✖	.002	.004	233	220	246
H	●	.002	.006	254	230	–
	●	.002	.005	234	211	–
	✖	.002	.004	201	181	–

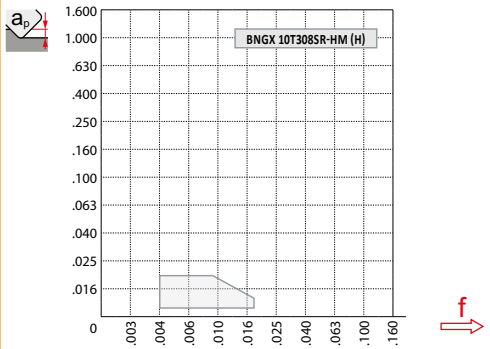
a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.v	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

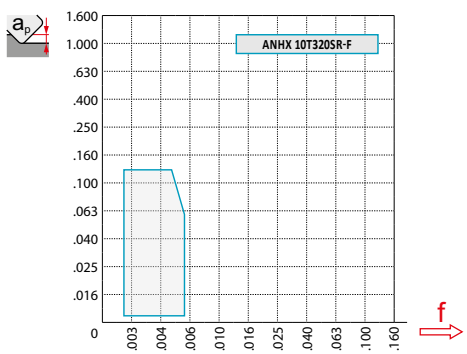
	BNGX 10-M	BNGX 10-MM	BNGX 10-HM
r_ε	.031	.031	.031
a	–	–	–

	ANHX 10 - F
r_ε	.079
a	.036









PRAMET

BNGX 10 (HFC)										
D	a_p	.000	.012	.016	.020	.024	.028	.031	.035	.039
.625	D_{ef}	.365	.501	.521	.539	.554	.568	.581	.593	.604
.75		.490	.626	.646	.664	.679	.693	.706	.718	.729
1		.740	.876	.896	.914	.929	.943	.956	.968	.979
1.25		.990	1.126	1.146	1.164	1.179	1.193	1.206	1.218	1.229
1.5		1.240	1.376	1.396	1.414	1.429	1.443	1.456	1.468	1.479

	a_p	.000	.012	.016	.020	.024	.028	.031	.035	.039
	f_1	–	.051	.043	.035	.031	.028	.027	.026	.020

BNGX 10		
D	max	f_{max}
.625	.138	.005
.750	.157	.005
1.000	.157	.006
1.250	.157	.006
1.500	.157	.007

BNGX 10 (HFC)			
a_p	.012	.024	.039
f_1	.043	.024	.012

BNGX 10 (HFC)		
D	α_{max} °	a_p/l
.625	4.0	.0393/.629
.750	4.0	.0393/.629
1.000	2.6	.0393/.945
1.250	1.9	.0393/1.260
1.500	1.5	.0393/1.575

ANHX 10		
D	α_{max} °	a_p/l
.625	1.6	.104/3.937
.750	1.2	.077/3.937
1.000	.8	.049/3.937
1.250	.5	.030/3.937
1.500	.4	.016/3.937

BNGX 10 (HFC)

D	a_p	f_{max}
.625	.016	.006
.750	.028	.006
1.000	.028	.008
1.250	.028	.008
1.500	.028	.008

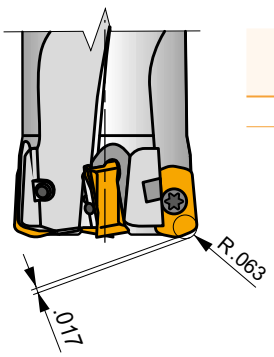
BNGX 10 (HFC)

D	d_{min}	d_{max}	s_{max} / d_{min}	s_{max} / d_{max}
.625	.870	1.240	.020	.020
.750	1.087	1.492	.020	.020
1.000	1.583	1.992	.020	.020
1.250	2.083	2.492	.020	.020
1.500	2.583	2.992	.020	.020

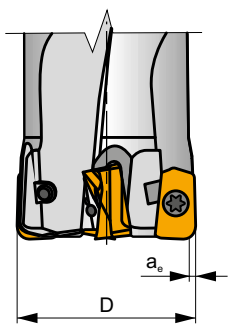
D	µm	.118	.197	.394	.591	.787	1.181	1.575	1.969	2.362	3.150	3.937
.625	f_e	.017	.022	.031	.038	.044	.054	.063	.070	.077	.089	.099
.750		.019	.024	.034	.042	.049	.060	.069	.077	.084	.097	.109
1.000		.022	.028	.040	.049	.056	.069	.079	.089	.097	.112	.125
1.250		.024	.031	.044	.054	.063	.077	.089	.099	.109	.125	.140
1.500		.027	.034	.049	.060	.069	.084	.097	.109	.119	.137	.154

ANHX 10

r_ε	µm	.118	.197	.394	.591	.787	1.181	1.575	1.969	2.362	3.150	3.937
.079	f_e	.009	.011	.016	.019	.022	.027	.031	.035	.039	.045	.050



	R	t
BNGX 10T308	.063	.017



	max a_e/D
ANHX 10T320	.05

PRAMET

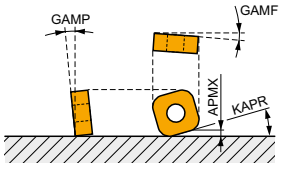
ISSN11

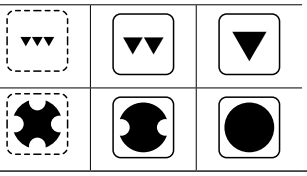
P M K S H

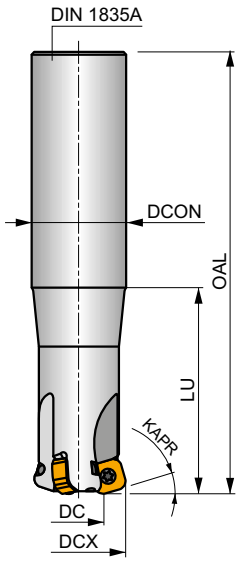
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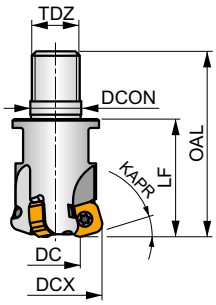


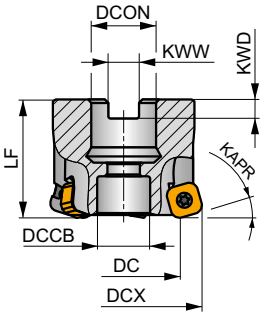
KAPR	18°
APMX	.067 in











h_m .008-.018

h_m .008-.018

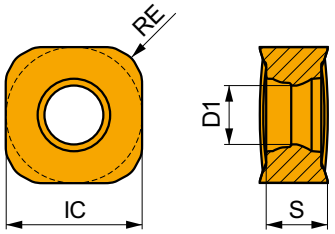
	ANSI	DCX [in]	DC [in]	LF [in]	DCON MS [in]	DCCB [in]	KWW [in]	KWD [in]	GAMP [°]	GAMF [°]			max.		lbs			
ISO 6462 DIN 8030	**150A04R-ISMOSN11-C**	1.500	0.957	1.575	0.500	0.409	0.258	0.165	-10	-10.5	4	✓	16100	✓	0.18	GI339	IC0316	–
	200A05R-ISMOSN11-C	2.000	1.453	1.575	0.750	0.630	0.321	0.193	-10	-10	5	✓	13900	✓	0.34	GI339	IC0318	–
	200A06R-ISMOSN11-C	2.000	1.453	1.575	0.750	0.630	0.321	0.193	-10	-10	6	✓	13900	✓	0.34	GI339	IC0318	–
	250A06R-ISMOSN11-C	2.500	1.953	1.575	0.750	0.630	0.321	0.193	-10	-10	6	✓	12400	✓	0.49	GI339	IC0318	–
	250A08R-ISMOSN11-C	2.500	1.953	1.575	0.750	0.630	0.321	0.193	-10	-10	8	✓	12400	✓	0.49	GI339	IC0318	–
	300A07R-ISMOSN11-C	3.000	2.453	1.969	1.000	0.827	0.382	0.224	-10	-10	7	✓	11400	✓	1.02	GI339	IC0320	–
	300A09R-ISMOSN11-C	3.000	2.453	1.969	1.000	0.827	0.382	0.224	-10	-10	9	✓	11400	✓	1.01	GI339	IC0320	–
	400A08R-ISMOSN11-C	4.000	3.453	1.969	1.500	1.417	0.630	0.382	-10	-10	8	✓	9800	✓	1.93	GI339	IC0322	–

GI339	SNGX 1104..

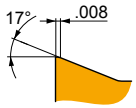
		Nm						
IC0316	US 44012-T15P	3.5	M4	.472	D-T08P/T15P	FG-15	–	HCS025150C
IC0318	US 44012-T15P	3.5	M4	.472	D-T08P/T15P	FG-15	–	HS037100C
IC0320	US 44012-T15P	3.5	M4	.472	D-T08P/T15P	FG-15	–	HS050125C
IC0322	US 44012-T15P	3.5	M4	.472	D-T08P/T15P	FG-15	–	HCS075175C

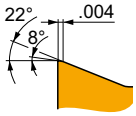
SNGX 11

	IC	D1	S
1104	.417	.180	.187



	ANSI		P	M	K	N	S	H			RE	FN	FX	APMN	APMX
1 U S	SNGX 110416SR-M	M9325	■						●	---	.063	.008	.044	.008	.067
		M9340	■						✖	---	.063	.008	.044	.008	.067
		M8310	■		◪			◪	✖	-	.063	.008	.059	.008	.067
		M8330	■		◪			◪	✖	-	.063	.008	.059	.008	.067
		M8340	■		◪				✖	+/-	.063	.008	.059	.008	.067
		8215	■		◪			◪	✖	-	.063	.008	.059	.008	.067
HFC S	SNGX 110416SR-MM	M9340	◪	■			■		●	---	.063	.004	.035	.008	.067
		M6330	◪	■			■		✖	-	.063	.004	.047	.008	.067
		M8340	◪	■			■		✖	+/-	.063	.004	.047	.008	.067
		M8345	◪	■			■		✖	+/-	.063	.004	.047	.008	.067



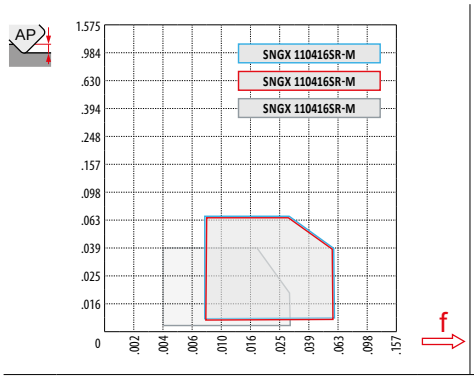


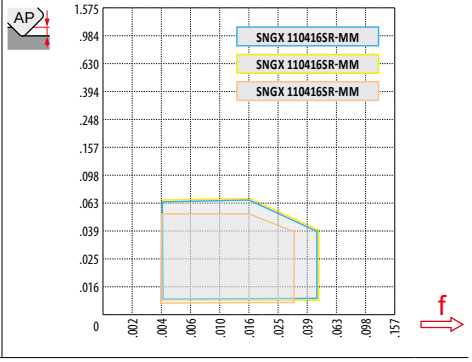
ANSI		FN	FX	M9325	M9340	M6330	M8310	M8330	M8340	M8345	8215
P	●	.008	.059	1099	980	755	951	896	808	632	902
	●	.008	.049	1011	902	694	875	824	743	581	830
	✖	.008	.039	868	774	596	752	705	638	499	713
M	●	.004	.047	-	574	533			468	369	-
	●	.004	.039	-	528	491			430	340	-
	✖	.004	.031	-	454	421			369	292	-
K	●	.008	.059	-	-	-	902	846	779	-	853
	●	.008	.049	-	-	-	830	778	717	-	785
	✖	.008	.039	-	-	-	713	666	616	-	674
S	●	.004	.033	-	262	238	-		205	164	-
	●	.004	.027	-	241	219	-		189	151	-
	✖	.004	.024	-	207	188	-		162	130	-
H	●	.004	.030	-	-	-	189	174	-	-	172
	●	.004	.024	-	-	-	174	157	-	-	158
	✖	.004	.018	-	-	-	149	135	-	-	136

PRAMET

a_e / DCX	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.02	1.01	.99	.98
X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

	SNGX 11 - M	SNGX 11 - MM
RE	.063	.063
BS	-	-





HFC

DCX	AP	.000	.008	.016	.024	.031	.039	.043	.047	.051	.055	.059	.063	.067
1.500	DEF	.957	1.005	1.054	1.102	1.151	1.199	1.223	1.247	1.272	1.296	1.320	1.344	1.369
2.000		1.453	1.501	1.550	1.598	1.647	1.695	1.719	1.744	1.768	1.792	1.816	1.840	1.865
2.500		1.953	2.001	2.050	2.098	2.147	2.195	2.219	2.244	2.268	2.292	2.316	2.340	2.365
3.000		2.453	2.501	2.550	2.598	2.647	2.695	2.719	2.744	2.768	2.792	2.816	2.840	2.865
4.000		3.453	3.501	3.550	3.598	3.647	3.695	3.719	3.744	3.768	3.792	3.816	3.840	3.865

SNGX

DCX	max	FX
1.500	.204	.012
2.000	.208	.012
2.500	.212	.012
3.000	.216	.014
4.000	.216	.014

SNGX (HFC)

DCX	RPMX	APMX / I
1.500	.8	.047/3.937
2.000	.8	.035/3.937
2.500	.7	.028/3.937
3.000	.7	.020/3.937
4.000	.5	.012/3.937

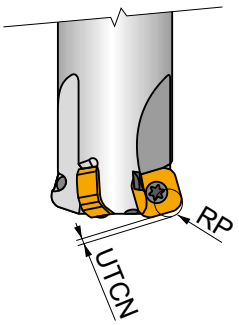
SNGX (HFC)

DCX	AP	FX
1.500	.008	.012
2.000	.012	.016
2.500	.012	.016
3.000	.012	.016
4.000	.012	.016

DCX	µm	.118	.197	.394	.591	.787	1.181	1.575	1.969	2.352	3.150	3.937
1.500		.027	.034	.049	.060	.069	.084	.097	.109	.119	.137	.154
2.000		.031	.040	.056	.069	.079	.097	.112	.125	.137	.159	.177
2.500		.034	.044	.063	.077	.089	.109	.125	.140	.154	.177	.198
3.000		.038	.049	.069	.084	.097	.119	.137	.154	.168	.194	.217
4.000		.043	.056	.079	.097	.112	.137	.159	.177	.194	.224	.251

SNGX				
AP	.008	.020	.039	.067
F	.047	.039	.020	.010

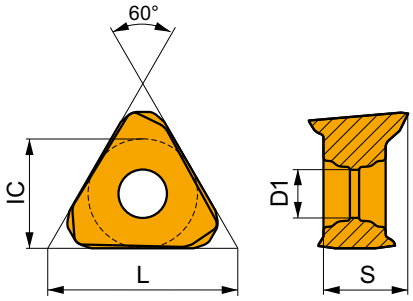
SNGX (HFC)				
DCX	d_{min}	d_{max}	s_{max} / d_{min}	s_{max} / d_{max}
1.500	2.362	2.984	.033	.057
2.000	3.346	3.992	.037	.055
2.500	4.331	4.992	.040	.055
3.000	5.354	5.984	.039	.049
4.000	7.323	7.992	.036	.044



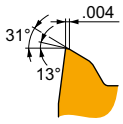
SNGX	RP	UTCN
	[in]	[in]
SNGX 110416	.181	.036

TNGX 10

	IC	D1	L	S
100412	.236	.110	.409	.181
100416	.236	.110	.409	.179



ANSI		P	M	K	N	S	H		RE	FN	FX	APMN	APMX
TNGX 100412SR-M	**M8330**	■	◪	◪		◪		⬢	-	.047	.002	.006	.012	.197
	M8340	■	■	◪		◪		⬢	+/-	.047	.002	.006	.012	.197
TNGX 100416SR-M	**M8310**	■	◪	◪		◪		●	-	.063	.002	.006	.012	.197
	M8330	■	◪	◪		◪		⬢	-	.063	.002	.006	.012	.197
	M8340	■	■	◪		◪		⬢	+/-	.063	.002	.006	.012	.197



ISLN12

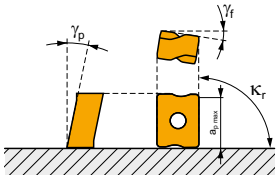
P M K N S H

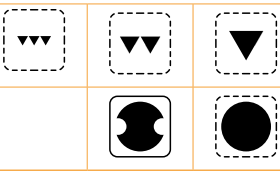
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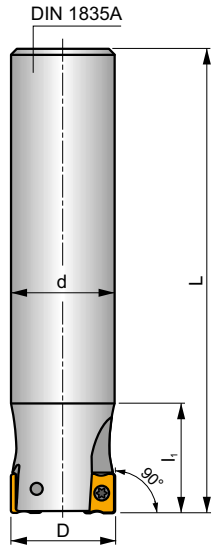
ECON *LN*

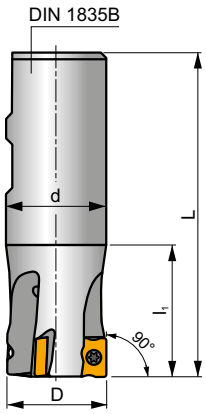


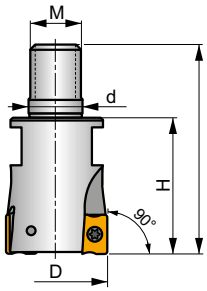
κ_r	90°
a_{pmax}	.354

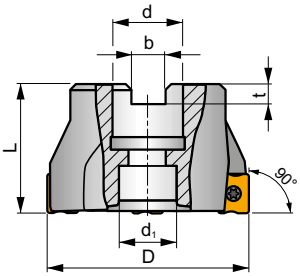












hm .0023-.0059

hm .0023-.0051

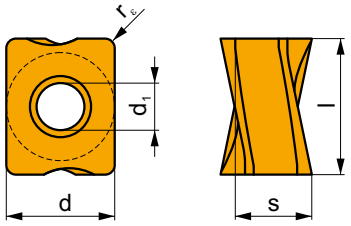
	ANSI	D	L	d	d_1	l_1	H	M	b	t	γ_f°	γ_p°			max.		lbs		
DIN 1835A	**100A2R134C100-ISLN12-C**	1.000	6.693	1.000	–	1.340	–	–	–	–	-23	-8	2	–	19500	✓	1.10	IGI205	ISQ340
	100A2R315C100-ISLN12-C	1.000	6.693	1.000	–	3.150	–	–	–	–	-23	-8	2	–	19500	✓	1.10	IGI205	ISQ340
	125A2R134C125-ISLN12-C	1.250	7.677	1.250	–	1.340	–	–	–	–	-15	-6	2	–	17300	✓	1.98	IGI205	ISQ340
	125A2R354C125-ISLN12-C	1.250	7.677	1.250	–	3.543	–	–	–	–	-15	-6	2	–	17300	✓	1.98	IGI205	ISQ340
DIN 1835B	**100A2R128W100-ISLN12-C**	1.000	3.819	1.000	–	1.280	–	–	–	–	-23	-8	2	–	19500	✓	.22	IGI205	ISQ340
	125A3R150W125-ISLN12-C	1.250	4.039	1.250	–	1.500	–	–	–	–	-15	-6	3	–	17300	✓	1.10	IGI205	ISQ340
	150A4R160W125-ISLN12-C	1.500	4.389	1.250	–	1.600	–	–	–	–	-15	-6	4	✓	15500	✓	1.32	IGI205	ISQ340
DIN 228A	**100A2R138M12-ISLN12-C**	1.000	2.244	.492	–	–	1.378	–	–	–	-22	-6	2	✓	–	✓	.22	IGI205	ISQ340
	125A2R169M16-ISLN12-C	1.250	2.598	.669	–	–	1.693	–	–	–	-15	-6	2	✓	–	✓	.44	IGI205	ISQ340
	125A3R169M16-ISLN12-C	1.250	2.598	.669	–	–	1.693	–	–	–	-15	-6	3	✓	–	✓	.44	IGI205	ISQ340
	150A3R169M16-ISLN12-C	1.500	2.598	.669	–	–	1.693	–	–	–	-15	-6	3	✓	–	✓	.44	IGI205	ISQ340
ISO 6462 DIN 8030	**150A04R-IS90LN12-C**	1.500	1.575	.500	.433	–	–	–	.258	.165	-15	-6	4	✓	15500	✓	.44	IGI205	ISQ342
	200A04R-IS90LN12-C	2.000	1.575	.750	.630	–	–	–	.321	.193	-14.5	-6	4	✓	13800	✓	.66	IGI205	ISQ343
	200A05R-IS90LN12-C	2.000	1.575	.750	.630	–	–	–	.321	.193	-14.5	-6	5	✓	13800	✓	.66	IGI205	ISQ343
	250A04R-IS90LN12-C	2.500	1.575	.750	.630	–	–	–	.321	.193	-14	-6	4	✓	12300	✓	1.10	IGI205	ISQ343
	250A06R-IS90LN12-C	2.500	1.575	.750	.630	–	–	–	.321	.193	-14	-6	6	✓	12300	✓	1.10	IGI205	ISQ343
	300A05R-IS90LN12-C	3.000	1.969	1.000	.827	–	–	–	.382	.224	-14	-6	5	✓	10900	✓	2.20	IGI205	ISQ344
	300A07R-IS90LN12-C	3.000	1.969	1.000	.827	–	–	–	.382	.224	-14	-6	7	✓	10900	✓	2.20	IGI205	ISQ344
	400A06R-IS90LN12-C	4.000	1.969	1.500	1.260	–	–	–	.630	.382	-14	-6	6	✓	9800	✓	3.75	IGI205	ISQ345
	400A08R-IS90LN12-C	4.000	1.969	1.500	1.260	–	–	–	.630	.382	-14	-6	8	✓	9800	✓	3.75	IGI205	ISQ345
	500A07R-IS90LN12-C	5.000	2.480	1.500	1.260	–	–	–	.630	.382	-14	-6	7	✓	8700	✓	7.05	IGI205	ISQ349
	500A09R-IS90LN12-C	5.000	2.480	1.500	1.260	–	–	–	.630	.382	-14	-6	9	✓	8700	✓	7.05	IGI205	ISQ349

IGI205	LNGX 1205..	LNGU 1205..

		Nm						
ISQ340	US 44012-T15P	3.5	M 4	.470	–	–	Flag T15P	–
ISQ342	US 44012-T15P	3.5	M 4	.470	D-T08P/T15P	FG-15	–	HS 025100
ISQ343	US 44012-T15P	3.5	M 4	.470	D-T08P/T15P	FG-15	–	HS 037100
ISQ344	US 44012-T15P	3.5	M 4	.470	D-T08P/T15P	FG-15	–	HS 050125
ISQ345	US 44012-T15P	3.5	M 4	.470	D-T08P/T15P	FG-15	–	HCS 075200
ISQ349	US 44012-T15P	3.5	M 4	.470	D-T08P/T15P	FG-15	–	HS 075125

LNGX 12

	d	d_1	l	s
1205	.374	.177	.472	.235

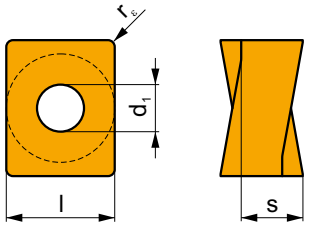


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
LNGX 120504ER-F	**M8330**	■	◪	◪		□		●	-	.016	.002	.006	.008	.354
	M8340	■	◪	◪		□		●	+/-	.016	.002	.006	.008	.354
	8215	■	◪	◪		□		●	-	.016	.002	.006	.008	.354
LNGX 120508ER-F	**M8310**	■	◪	◪		□		⬢	-	.031	.002	.006	.008	.354
	M8330	■	◪	◪		□		⬢	-	.031	.002	.006	.008	.354
	M8340	■	◪	◪		□		⬢	+/-	.031	.002	.006	.008	.354
	8215	■	◪	◪		□		⬢	-	.031	.002	.006	.008	.354
LNGX 120504ER-M	**M8340**	■	□	◪		□		⬢	+/-	.016	.002	.010	.008	.354
	M8330	■	□	■		□	□	●	-	.016	.002	.010	.008	.354
LNGX 120508ER-M	**M9315**	■		◪			□	⬢	---	.031	.002	.006	.008	.354
	M9325	■	□			□		⬢	---	.031	.002	.006	.008	.354
	M9340	◪	□			□		⬢	---	.031	.002	.006	.008	.354
	M8310	■	□	■		□	□	⬢	-	.031	.002	.010	.008	.354
	M8330	■	□	■		□	□	⬢	-	.031	.002	.010	.008	.354
	M8340	■	□	◪		□		⬢	+/-	.031	.002	.010	.008	.354
	8215	■	□	■		□	□	⬢	-	.031	.002	.010	.008	.354
LNGX 120510ER-M	**M8330**	■	□	■		□	□	⬢	-	.039	.002	.010	.008	.354
	M8340	■	□	◪		□		✖	+/-	.039	.002	.010	.008	.354
LNGX 120512ER-M	**M8330**	■	□	■		□	□	⬢	-	.047	.002	.010	.008	.354
	M8340	■	□	◪		□		✖	+/-	.047	.002	.010	.008	.354
LNGX 120516ER-M	**M8330**	■	□	■		□	□	⬢	-	.063	.002	.010	.008	.354
	M8340	■	□	◪		□		✖	+/-	.063	.002	.010	.008	.354
LNGX 120520ER-M	**M8310**	■	□	■		□	□	⬢	-	.079	.002	.010	.008	.354
	M8330	■	□	■		□	□	✖	-	.079	.002	.010	.008	.354
	M8340	■	□	◪		□		✖	+/-	.079	.002	.010	.008	.354
LNGX 120508SR-R	**M5315**	◪		■			□	⬢	---	.031	.006	.011	.039	.354
	M9315	■		◪			□	⬢	---	.031	.006	.011	.039	.354
	M9325	■	□			□		⬢	---	.031	.006	.011	.039	.354
	M9340	◪	□			□		⬢	---	.031	.006	.011	.039	.354
	M8310	■	□	■		□	□	⬢	-	.031	.006	.014	.039	.354
	M8340	■	□	◪		□		✖	+/-	.031	.006	.014	.039	.354
	8215	■	□	■		□	□	⬢	-	.031	.006	.014	.039	.354

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
LNGX 120508SR-R	**M5315**	◪		■			□	●	- - -	.031	.006	.011	.039	.354
	M9315	■		◪			□	●	- - -	.031	.006	.011	.039	.354
	M9325	■	□			□		●	- - -	.031	.006	.011	.039	.354
	M9340	◪	□			□		●	- - -	.031	.006	.011	.039	.354
	M8310	■	□	■		□	□	●	-	.031	.006	.014	.039	.354
	M8330	■	□	■		□	□	●	-	.031	.006	.014	.039	.354
	M8340	■	□	◪		□		✖	+ / -	.031	.006	.014	.039	.354
	8215	■	□	■		□	□	●	-	.031	.006	.014	.039	.354
LNGX 120516SR-R	**M9325**	■	□			□		●	- - -	.063	.006	.011	.039	.354
	M8330	■	□	■		□	□	✖	-	.063	.006	.014	.039	.354
	M8340	■	□	◪		□		✖	+ / -	.063	.006	.014	.039	.354
	8215	■	□	■		□	□	✖	-	.063	.006	.014	.039	.354
LNGX 120504ER-MF	**M9340**	◪	■			◪		●	- - -	.016	.002	.005	.012	.354
	M6330	◪	■			◪		●	-	.016	.002	.006	.012	.354
	M8340	◪	■			◪		●	+ / -	.016	.002	.006	.012	.354
LNGX 120508ER-MF	**M9340**	◪	■			◪		●	- - -	.031	.002	.005	.012	.354
	M6330	◪	■			◪		●	-	.031	.002	.006	.012	.354
	M8340	◪	■			◪		●	+ / -	.031	.002	.006	.012	.354
LNGX 120508SR-MM	**M9340**	◪	■			◪		●	- - -	.031	.003	.007	.012	.354
	M6330	◪	■			◪		✖	-	.031	.003	.008	.012	.354
	M8340	■	■			◪		✖	+ / -	.031	.003	.008	.012	.354
	M8345	■	■			◪		✖	+ / -	.031	.003	.008	.012	.354

LNGU 12

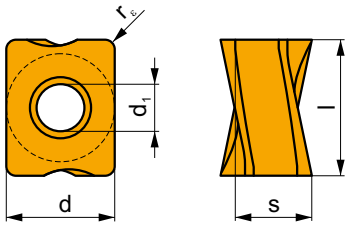
	d	d_1	l	s
1205	.374	.177	.472	.235



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
LNGU 120525ER-M	**M8330**	■	□	■		□	□	✖	-	.098	.002	.010	.008	.354
	M8340	■	□	◪		□		✖	+ / -	.098	.002	.010	.008	.354
LNGU 120530ER-M	**M8330**	■	□	■		□	□	✖	-	.118	.002	.010	.008	.354
	M8340	■	□	◪		□		✖	+ / -	.118	.002	.010	.008	.354

LNGX 12-FA

	d	d_1	l	s
1205	.374	.177	.472	.235



ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
LNGX 120504FR-FA	**HF7**		□		■	□		●	+ / -	.016	.001	.014	.008	.354
LNGX 120508FR-FA	**M0315**				■			●	++	.031	.001	.014	.008	.354
	HF7		□		■	□		●	+ / -	.031	.001	.014	.008	.354

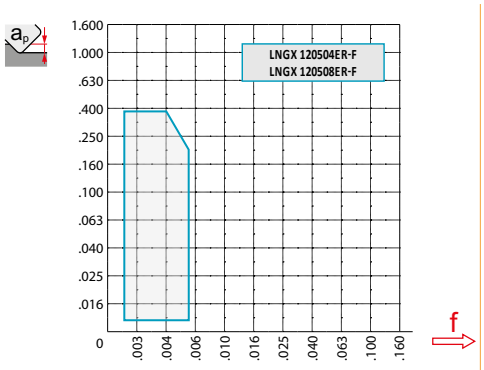


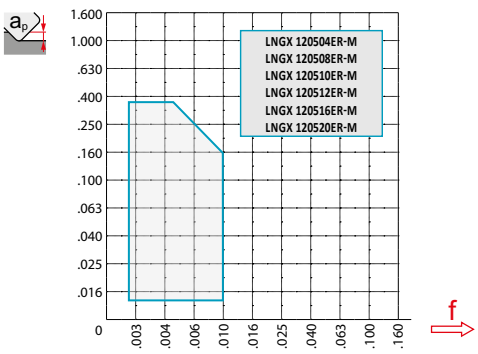
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P	●	.0020	.0079	1070	1047	1010	873	–	787	899	801	577	863	787	–
	⬢	.0020	.0059	997	961	912	774	–	702	814	702	492	751	689	–
	✖	.0020	.0039	912	863	801	689	–	617	725	604	420	640	591	–
M	●	.0020	.0079	–	–	604	518	–	518	541	479	344	518	469	–
	⬢	.0020	.0059	–	–	541	469	–	456	479	420	295	443	420	–
	✖	.0020	.0039	–	–	479	407	–	394	430	358	246	381	358	–
K	●	.0020	.0079	1020	997	–	–	–	–	850	751	–	814	751	–
	⬢	.0020	.0059	948	912	–	–	–	–	774	666	–	715	653	–
	✖	.0020	.0039	873	823	–	–	–	–	689	577	–	604	568	–
N	●	.0020	.0079	–	–	–	–	1870	–	–	–	–	–	–	837
	⬢	.0020	.0059	–	–	–	–	1673	–	–	–	–	–	–	751
	✖	.0020	.0039	–	–	–	–	1463	–	–	–	–	–	–	653
S	●	.0020	.0079	–	–	295	259	–	259	272	233	174	259	233	–
	⬢	.0020	.0059	–	–	272	233	–	223	233	210	148	223	210	–
	✖	.0020	.0039	–	–	233	197	–	197	210	174	125	184	174	–
H	●	.0020	.0079	210	210	–	–	–	–	174	–	–	174	148	–
	⬢	.0020	.0059	197	184	–	–	–	–	161	–	–	148	135	–
	✖	.0020	.0039	174	174	–	–	–	–	135	–	–	125	112	–

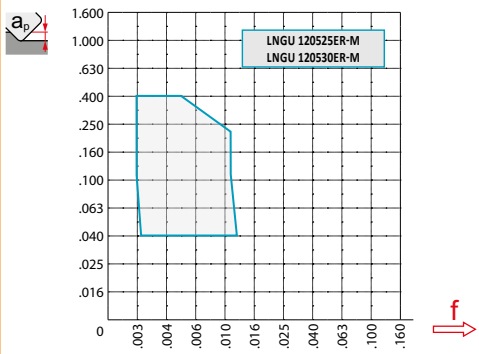
a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

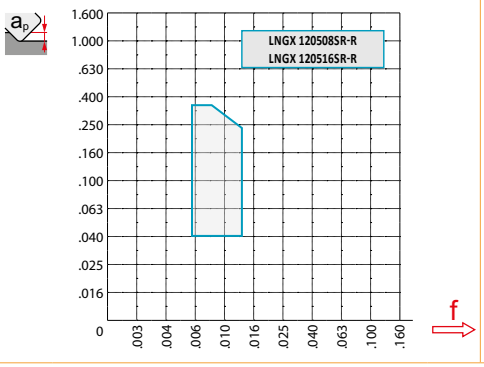
	LNGX 12-F		LNGX 12-M						LNGU 12-M	
r_ε	.016	.031	.016	.031	.039	.047	.063	.079	.098	.118
a	.090	.074	.090	.074	.067	.059	.043	.027	.034	.014

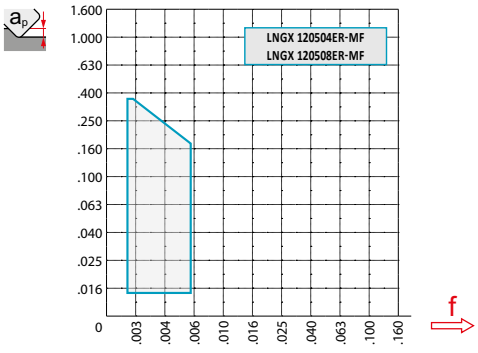
	LNGX 12-R		LNGX 12-MF		LNGX 12-MM	LNGX 12-FA	
r_ε	.031	.063	.016	.031	.031	.016	.031
a	.074	.043	.090	.074	.074	.091	.074

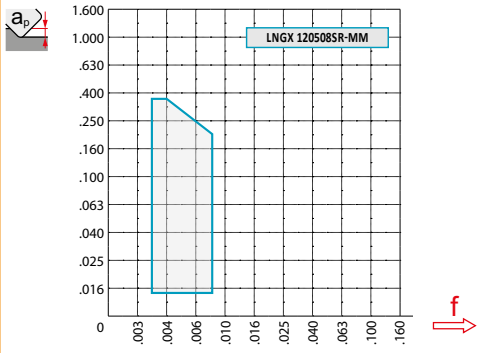


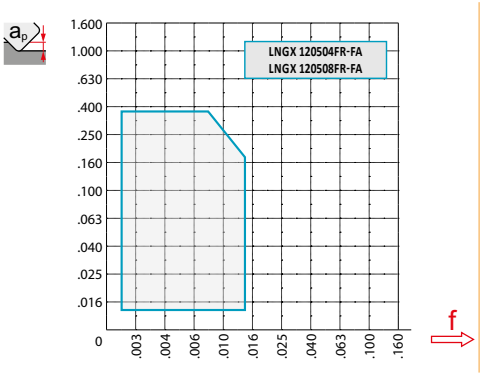












max

.299

ap	.039	.197	.354
f	.007	.005	.003

LNGX 12		
D	α_{max} °	a_p/l
1.00	1.3	.083/4.000
1.25	.7	.043/4.000
1.50	.5	.028/4.000
2.00	.4	.020/4.000
2.50	.2	.012/4.000
3.00	.2	.008/4.000

ap

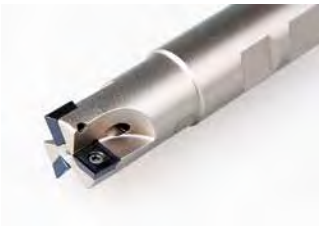
.008

LNGX 12				
D	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}
1.00	1.378	1.969	.028	.067
1.25	1.929	2.520	.024	.047
1.50	2.559	3.150	.024	.039
2.00	3.346	3.937	.028	.039
2.50	4.370	4.961	.024	.031
3.00	5.709	6.299	.028	.031

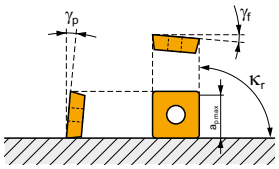
ISSO09

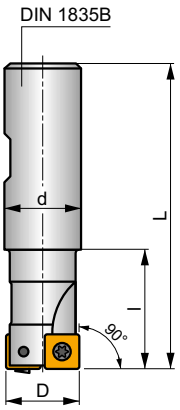
P M K N S

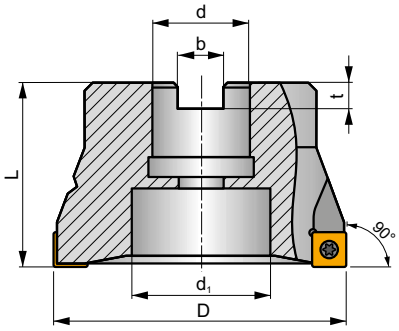
S

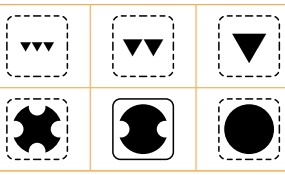


κ_r	90°
a_{pmax}	.315













	ANSI	D	L	d_1	l	b	t	γ_f°	γ_p°			max.		lbs		
DIN 1835B	**100A3R128W100-ISSO09-C**	1.000	3.780	–	1.280	–	–	-12	6	3	–	21300	✓	.66	IGI146	ISQ400
	125A4R150W125-ISSO09-C	1.250	4.000	–	1.500	–	–	-10	10	4	✓	18800	✓	1.54	IGI146	ISQ400
ISO 6462 DIN 8030	**150A05R-IS90SO09-C**	1.500	1.575	.433	–	.258	.165	-9.1	10	5	–	16800	✓	.33	IGI146	ISQ402
	200A06R-IS90SO09-C	2.000	1.575	.630	–	.321	.193	-8.8	10	6	–	15100	✓	.66	IGI146	ISQ403
	250A07R-IS90SO09-C	2.500	1.575	.630	–	.321	.193	-8.6	10	7	–	13400	✓	1.12	IGI146	ISQ403
	300A09R-IS90SO09-C	3.000	1.969	.827	–	.382	.224	-8.1	10	9	–	11900	✓	2.14	IGI146	ISQ404
	400A10R-IS90SO09-C	4.000	1.969	1.260	–	.630	.382	-8.1	10	10	–	10700	✓	3.55	IGI146	ISQ405
	500A12R-IS90SO09-C	5.000	2.480	1.260	–	.630	.382	-8.1	10	12	–	9500	✓	6.55	IGI146	ISQ405

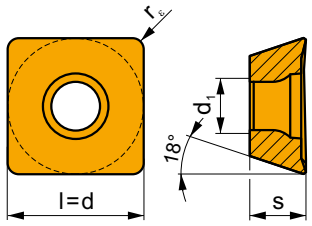
IGI146	SOMT 09T3..

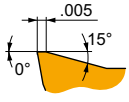
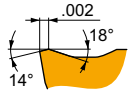
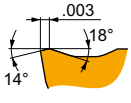
		Nm						
ISQ400	US 3006-T09P	2.0	M 3	.240	–	–	Flag T09P	–
ISQ402	US 3006-T09P	2.0	M 3	.240	D-T07P/T09P	FG-15	–	HS 025100
ISQ403	US 3006-T09P	2.0	M 3	.240	D-T07P/T09P	FG-15	–	HS 037100
ISQ404	US 3006-T09P	2.0	M 3	.240	D-T07P/T09P	FG-15	–	HS 050125
ISQ405	US 3006-T09P	2.0	M 3	.240	D-T07P/T09P	FG-15	–	HS 075125

PRAMET

SOMT 09

	d	d_1	l	s
09T3	.376	.138	.376	.156

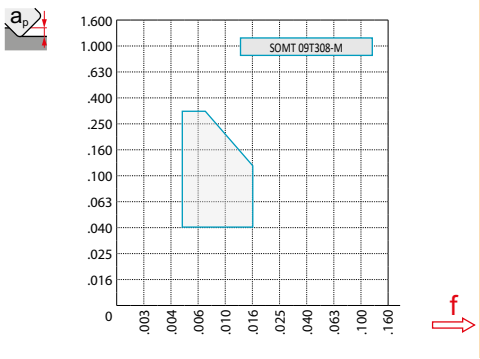


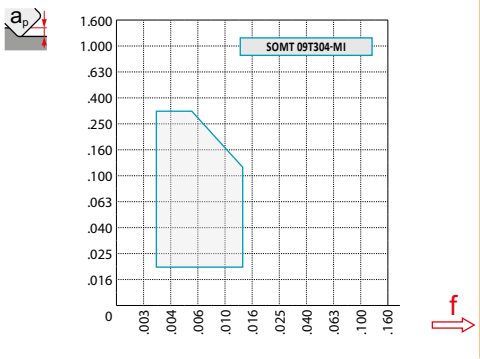
		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
1 U S		**SOMT 09T308-M**	**M5315**	■		◪				●	---	.031	.005	.012	.039	.315
			M9315	■		◪				●	---	.031	.005	.012	.039	.315
			M8330	■	◪	■	□	□		●	-	.031	.005	.016	.039	.315
			M8340	■	■	◪		◪		●	+/-	.031	.005	.016	.039	.315
			8215	◪	◪	■	□	□		●	-	.031	.005	.016	.039	.315
✖ S		**SOMT 09T304-MI**	**M9315**	■		◪				●	---	.016	.003	.010	.020	.315
			M9340	◪	■					●	---	.016	.003	.010	.020	.315
			M8310	■	◪	■		□		●	-	.016	.003	.014	.020	.315
			M8330	■	◪	■	□	□		●	-	.016	.003	.014	.020	.315
			M8340	■	■	◪		◪		●	+/-	.016	.003	.014	.020	.315
			8215	◪	◪	■	□	□		●	-	.016	.003	.014	.020	.315
S		**SOMT 09T304-P**	**M9325**	■	◪			◪		●	---	.016	.003	.010	.020	.315
			M8330	■	◪	◪	□	□		●	-	.016	.003	.014	.020	.315
			M8340	■	■	◪		◪		●	+/-	.016	.003	.014	.020	.315

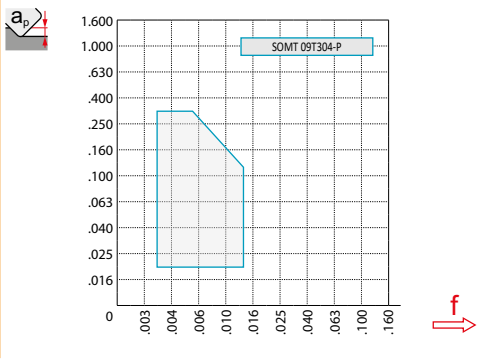
ISO		f_{min}	f_{max}	M5315	M9315	M9325	M9340	M8310	M8340	8215	M8330
P	●	.0039	.0118	1214	1184	1145	991	1017	906	978	892
	■	.0039	.0098	1129	1089	1033	879	922	794	850	781
	✖	.0039	.0059	1033	978	906	781	823	682	725	669
M	●	.0039	.0118	–	–	682	587	614	545	587	531
	■	.0039	.0098	–	–	614	531	545	476	502	476
	✖	.0039	.0059	–	–	545	459	489	404	433	404
K	●	.0039	.0118	1158	1129	–	–	961	850	922	850
	■	.0039	.0098	1073	1033	–	–	879	755	810	738
	✖	.0039	.0059	991	935	–	–	781	656	682	643
N	●	.0039	.0118	–	–	–	–	–	–	2454	2244
	■	.0039	.0098	–	–	–	–	–	–	2133	1982
	✖	.0039	.0059	–	–	–	–	–	–	1827	1703
S	●	.0039	.0098	–	–	335	292	308	266	292	266
	■	.0039	.0079	–	–	308	266	266	236	253	236
	✖	.0039	.0059	–	–	266	223	236	197	210	197

a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

	SOMT 09-M	SOMT 09-MI	SOMT 09-P
r_ε	.032	.016	.016
a	.035	.051	.051







max
.236

a_p	.394	.158	.315
1 ⇨f	.011	.007	.004

DEEP SHOULDER MILLING
ESCUADRADO CON FILO LARGO
FRAISAGE D'ÉPAULEMENTS PROFONDS



J(T)-ISAD11E

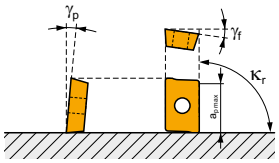
P M K

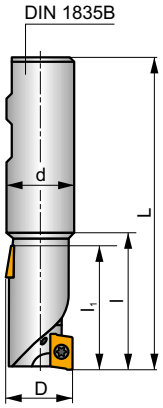
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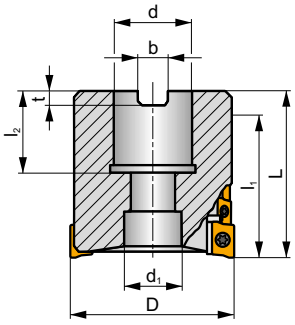
FORCE *AD*

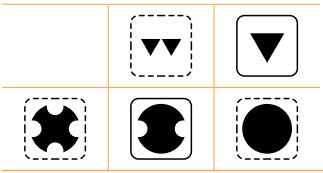


κ_r	90°
a_{pmax}	1.496-2.205













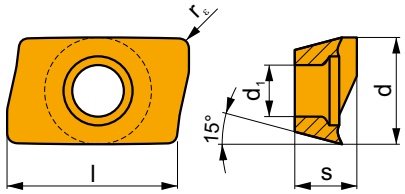
	ANSI	D	L	d	d_1	l	l_1	l_2	γ_f°	γ_p°				max.		lbs		
DIN 1835B	**100J2R197W100-ISAD11E150**	1.000	4.508	1.000	–	1.969	1.496	–	-1.5	5	2	8	–	24100	✓	.66	IGI184	ISQ210
DIN 1835B	**125J2R236W125-ISAD11E185**	1.250	4.902	1.250	–	2.362	1.850	–	-9	8	2	10	–	21300	✓	1.32	IGI184	ISQ210
DIN 1835B	**150J3R276W125-ISAD11E220**	1.500	5.295	1.250	–	2.756	2.205	–	-8.1	11	3	18	–	19100	✓	2.20	IGI184	ISQ210
ISO 6462 DIN 8030	**200T03R-IS90AD11E146-C**	2.000	2.362	.750	.630	–	1.457	.827	-7.2	12	3	12	–	1700	✓	1.10	IGI184	ISQ903

IGI184	ADMX 11T3..	ADEX 11T3..-FA

		Nm						
ISQ210	US 2506-T07P	1.2	M 2.5	.240	–	–	Flag T07P	–
ISQ903	US 2506-T07P	1.2	M 2.5	.240	D-T07P/T09P	FG-15	–	HS 037100

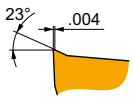
ADMX 11

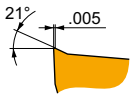
	d	d_1	l	s
11T3	.257	.114	.433	.156

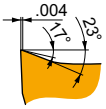


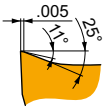
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADMX 11T304SR-F	**M9340**	◪	■			◪		●	- - -	.016	.003	.004	.008	.354
	M8310	■	◪	◪		◪		●	-	.016	.003	.005	.008	.354
	M8330	■	◪	◪	□	□		●	-	.016	.003	.005	.008	.354
	M8340	■	■	◪		◪		●	+ / -	.016	.003	.005	.008	.354
	8215	■	◪	◪	■	◪		●	-	.016	.003	.005	.008	.354
ADMX 11T308SR-F	**M9340**	◪	■			◪		⬢	- - -	.031	.003	.004	.008	.354
	M8330	■	◪	◪	□	□		⬢	-	.031	.003	.005	.008	.354
	M8340	■	■	◪		◪		⬢	+ / -	.031	.003	.005	.008	.354
	8215	■	◪	◪	■	◪		⬢	-	.031	.003	.005	.008	.354
ADMX 11T302SR-M	**M8340**	■	■	◪		◪		●	+ / -	.008	.004	.006	.008	.354
	M8330	■	■	■		◪		●	-	.008	.004	.006	.008	.354
ADMX 11T304SR-M	**M9325**	■	◪			◪		●	- - -	.016	.004	.006	.008	.354
	M9340	◪	■			◪		●	- - -	.016	.004	.006	.008	.354
	M8310	■	◪	■		◪		●	-	.016	.004	.007	.008	.354
	M8330	■	◪	■		□		⬢	-	.016	.004	.007	.008	.354
	M8340	■	■	◪		◪		⬢	+ / -	.016	.004	.007	.008	.354
	8215	■	◪	■		◪		●	-	.016	.004	.007	.008	.354
ADMX 11T308SR-M	**M5315**	◪		■				⬢	- - -	.031	.004	.006	.008	.354
	M9315	■		◪				⬢	- - -	.031	.004	.006	.008	.354
	M9325	■	◪			◪		⬢	- - -	.031	.004	.006	.008	.354
	M9340	◪	■			◪		⬢	- - -	.031	.004	.006	.008	.354
	M8310	■	◪	■		◪		⬢	-	.031	.004	.007	.008	.354
	M8330	■	◪	■		□		⬢	-	.031	.004	.007	.008	.354
	M8340	■	■	◪		◪		⬢	+ / -	.031	.004	.007	.008	.354
	8215	■	◪	■		◪		⬢	-	.031	.004	.007	.008	.354
ADMX 11T310SR-M	**M8330**	■	◪	■		□		✖	-	.039	.004	.009	.008	.354
	M8340	■	■	◪		◪		✖	+ / -	.039	.004	.009	.008	.354
ADMX 11T312SR-M	**M8330**	■	◪	■		□		✖	-	.047	.004	.009	.008	.354
	M8340	■	■	◪		◪		✖	+ / -	.047	.004	.009	.008	.354
	8215	■	◪	■		◪		⬢	-	.047	.004	.009	.008	.354
ADMX 11T316SR-M	**M6330**	◪	■			◪		✖	-	.063	.004	.009	.008	.354
	M8310	■	◪	■		◪		⬢	-	.063	.004	.009	.008	.354
	M8330	■	◪	■		□		✖	-	.063	.004	.009	.008	.354
	M8340	■	■	◪		◪		✖	+ / -	.063	.004	.009	.008	.354
	8215	■	◪	■		◪		⬢	-	.063	.004	.009	.008	.354
ADMX 11T320SR-M	**M8340**	■	■	◪		◪		✖	+ / -	.079	.004	.009	.008	.354

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADMX 11T325SR-M	M6330	◪	■			◪		✖	-	.098	.004	.009	.008	.354
	M8330	■	■	■		◪		✖	-	.098	.004	.009	.008	.354
	M8340	■	■	◪		◪		✖	+/-	.098	.004	.009	.008	.354
ADMX 11T330SR-M	M6330	■	■	■		◪		✖	-	.118	.004	.009	.008	.354
	M8330	■	■	■		◪		✖	-	.118	.004	.009	.008	.354
	M8340	■	■	◪		◪		✖	+/-	.118	.004	.009	.008	.354
ADMX 11T308PR-R	M5315	◪		■			◪	❋	---	.031	.006	.008	.031	.354
	M9315	■		◪			◪	❋	---	.031	.006	.008	.031	.354
	M9325	■	◪			◪		✖	---	.031	.006	.008	.031	.354
	M8310	■	◪	■		◪	◪	✖	-	.031	.006	.010	.031	.354
	M8830	■	◪	■		□	◪	✖	-	.031	.006	.010	.031	.354
	M8340	■	◪	◪		◪		✖	+/-	.031	.006	.010	.031	.354
	8215	■	◪	■		◪	◪	✖	-	.031	.006	.010	.031	.354
ADMX 11T316PR-R	M9325	■	◪			◪		✖	---	.063	.006	.008	.031	.354
	M8330	■	◪	■		□	◪	✖	-	.063	.006	.010	.031	.354
	M8340	■	◪	◪		◪		✖	+/-	.063	.006	.010	.031	.354
	8215	■	◪	■		◪	◪	✖	-	.063	.006	.010	.031	.354
ADMX 11T304SR-MF	M9340	◪	■			■		●	---	.016	.002	.005	.008	.354
	M6330	◪	■			■		●	-	.016	.002	.006	.008	.354
	M8340	■	■			■		●	+/-	.016	.002	.006	.008	.354
ADMX 11T308SR-MF	M9340	◪	■			■		❋	---	.031	.002	.005	.008	.354
	M6330	◪	■			■		❋	-	.031	.002	.006	.008	.354
	M8340	■	■			■		❋	+/-	.031	.002	.006	.008	.354
ADMX 11T304SR-MM	M9340	◪	■			■		●	---	.016	.004	.006	.008	.354
	M6330	◪	■			■		❋	-	.016	.004	.007	.008	.354
	M8340	■	■			■		❋	+/-	.016	.004	.007	.008	.354
ADMX 11T308SR-MM	M9340	◪	■			■		❋	---	.031	.004	.006	.008	.354
	M6330	◪	■			■		❋	-	.031	.004	.007	.008	.354
	M8340	■	■			■		❋	+/-	.031	.004	.007	.008	.354
	M8345	■	■			■		❋	+/-	.031	.004	.007	.008	.354
ADMX 11T312SR-MM	M9340	◪	■			■		❋	---	.047	.004	.006	.008	.354
	M6330	◪	■			■		✖	-	.047	.004	.007	.008	.354
	M8340	■	■			■		✖	+/-	.047	.004	.007	.008	.354
	M8345	■	■			■		✖	+/-	.047	.004	.007	.008	.354





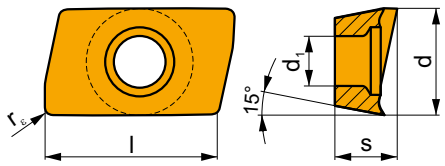




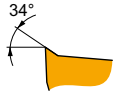
PRAMET

ADEX 11-FA

	d	d_1	l	s
11T3	.254	.114	.382	.154



		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		ADEX 11T304FR-FA	**M0315**				■			●	++	.016	.001	.012	.016	.354
			HF7				■			●	+/-	.016	.001	.012	.008	.354
		ADEX 11T308FR-FA	**M0315**				■			●	++	.031	.001	.012	.008	.354
			HF7				■			●	+/-	.031	.001	.012	.008	.354
		ADEX 11T312FR-FA	**M0315**				■			●	++	.047	.001	.012	.008	.354
			HF7				■			●	+/-	.047	.001	.012	.008	.354
		ADEX 11T316FR-FA	**HF7**				■			●	+/-	.063	.001	.012	.008	.354



a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

	ADMX 11-F		ADMX 11-M									ADMX 11-R		ADMX 11-MF		ADMX 11-MM			ADEX 11-FA		
r_ε	.016	.031	.008	.016	.031	.039	.047	.063	.079	.098	.118	.031	.063	.016	.031	.016	.031	.047	.016	.031	.063
a	.074	.058	.082	.074	.058	.050	.043	.027	.063	.044	.026	.058	.027	.074	.058	.074	.058	.043	.070	.055	.024

ISO		f_{min}	f_{max}	M5315	M9315	M9325	M9340	M6330	M8310	M8340	M8345	8215	M8330
P	●	.0028	.0071	856	836	807	699	630	718	640	462	689	630
	⧓	.0028	.0059	797	768	728	620	561	649	561	394	600	551
	✖	.0028	.0039	728	689	640	551	492	581	482	335	512	472
M	●	.0028	.0071	–	–	482	413	413	433	384	276	413	374
	⧓	.0028	.0059	–	–	433	374	364	384	335	236	354	335
	✖	.0028	.0039	–	–	384	325	315	344	285	197	305	285
K	●	.0028	.0071	817	797	–	–	–	679	600	–	649	600
	⧓	.0028	.0059	758	728	–	–	–	620	531	–	571	522
	✖	.0028	.0039	699	659	–	–	–	551	462	–	482	453

ISO	D		l_1	a_p
25J2R50B25-SAD11E38-C	1.00	2	1.496	1.358
32J2R60B32-SAD11E47-C	1.25	2	1.850	1.713
40J2R60B40-SAD11E47-C	1.50	2	1.850	1.713
40J3R70B32-SAD11E56-C	1.50	3	2.205	2.067
40J3R70B40-SAD11E56-C	1.50	3	2.205	2.067
25J2R55E03-SAD11E38-C	1.00	2	1.496	1.358
32J2R65E04-SAD11E47-C	1.25	2	1.850	1.713
40J3R75E04-SAD11E56-C	1.50	3	2.205	2.067
50T03R-S90AD11E37-C	2.00	3	1.457	1.319

max
.177

max	.039		.098		.197		.295		.394		.591		.787	
D	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨
1.00	.010	.016	.006	.010	.005	.007	.004	.006	.004	.006	.003	.005	.003	.004
1.25	.011	.018	.007	.011	.005	.008	.004	.007	.004	.006	.003	.005	.003	.005
1.50	.013	.020	.008	.013	.006	.009	.005	.007	.004	.007	.004	.006	.003	.005
2.00	.014	.022	.009	.014	.006	.010	.005	.008	.005	.007	.004	.006	.004	.006

max	.984		1.260		1.575		1.969	
D	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨
1.00	.003	.005	-	-	-	-	-	-
1.25	.003	.004	.003	.005	-	-	-	-
1.50	.003	.005	.003	.004	.003	.005	-	-
2.00	.003	.005	.003	.005	.003	.004	.003	.005



ADMX/ADEX 11	R
ADMX 11T320SR-M	.039
ADMX 11T325SR-M	.071
ADMX 11T330SR-M	.071

PRAMET

J(T)-ISAD16E

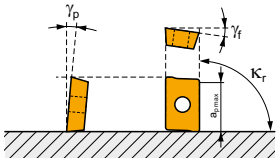
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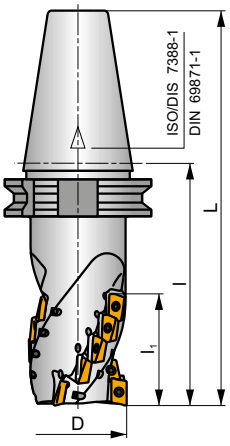
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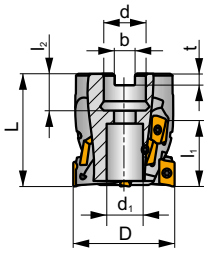
HELICAL AD

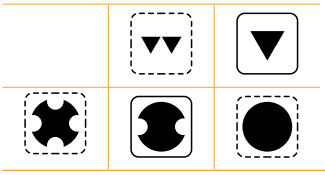


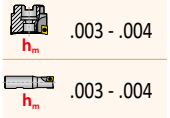
κ_r	90°
a_{pmax}	1.575 - 4.252











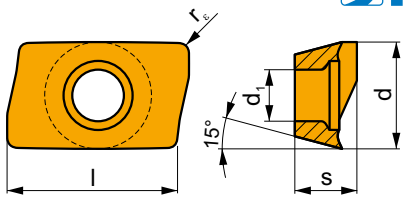


	ISO	D	L	d	d_1	l	l_1	l_2	γ_f°	γ_p°					max.		lbs		
	200J3R394CA50-ISAD16E213	2.00	7.94	–	–	3.94	2.16	–	-7	11	50	3	12	–	13 200	✓	11.64	GI282	SQ031
	200J3R551CA50-ISAD16E315	2.00	9.52	–	–	5.51	3.22	–	-7	11	50	3	18	–	13 200	✓	12.30	GI282	SQ031
	250J3R551CA50-ISAD16E268	2.50	9.52	–	–	5.51	2.69	–	-6	12	50	3	15	–	11 700	✓	13.66	GI282	SQ031
	250J3R610CA50-ISAD16E374	2.50	9.52	–	–	5.51	3.74	–	-6	12	50	3	15	–	11 700	✓	14.30	GI282	SQ031
	300J4R650CA50-ISAD16E425	3.00	10.50	–	–	6.50	4.27	–	-5	12	50	4	32	✓	10 400	✓	17.38	GI282	SQ031
	200T03R-IS90AD16E163-C	2.00	2.76	0.75	0.63	–	1.63	0.79	-7	11	–	3	9	–	13,200	✓	2.44	GI282	ISQ033
	250T04R-IS90AD16E163-C	2.50	2.76	1.00	0.83	–	1.63	0.91	-6	12	–	4	12	✓	11,700	✓	3.31	GI282	ISQ034
	250T04R-IS90AD16E268-C	2.50	3.94	1.00	0.83	–	2.69	0.91	-6	12	–	4	20	✓	11,700	✓	4.10	GI282	ISQ034
	300T04R-IS90AD16E217-C	3.00	3.35	1.25	1.06	–	2.16	1.02	-5	12	–	4	16	✓	10 400	✓	5.64	GI282	ISQ035
	300T04R-IS90AD16E315-C	3.00	4.52	1.25	1.06	–	3.22	1.02	-5	12	–	4	24	✓	10 400	✓	6.99	GI282	ISQ035
	400T05R-IS90AD16E315-C	4.00	4.72	1.5	1.26	–	3.22	1.00	-4	12	–	5	30	✓	9 300	✓	12.63	GI282	ISQ036

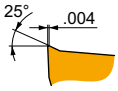
GI282	ADMX 1606..	ADEX 1606..-FM

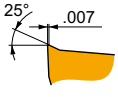
		Nm					
SQ031	US 4011-T15P	3,5	M 4	.433	D-T08P/T15P	FG-15	–
SQ033	US 4011-T15P	3,5	M 4	.433	D-T08P/T15P	FG-15	HS 1030C
SQ914	US 4011-T15P	3,5	M 4	.433	D-T08P/T15P	FG-15	HS 1230C
SQ915	US 4011-T15P	3,5	M 4	.433	D-T08P/T15P	FG-15	HS 1630C
SQ916	US 4011-T15P	3,5	M 4	.433	D-T08P/T15P	FG-15	HS 2040C

ADMX 16



	d	d_1	l	s
1606	.392	.177	.630	.246



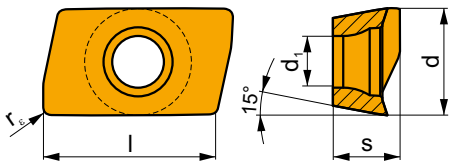


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADMX 160608SR-F	**M9340**	◪	■					●	---	.031	.003	.005	.012	.512
	M8310	■	◪	◪		◪		●	-	.031	.003	.006	.012	.512
	M8330	■	◪	◪	□	□		●	-	.031	.003	.006	.012	.512
	M8340	■	■	◪		◪		●	+/-	.031	.003	.006	.012	.512
	8215	◪	◪	◪	■	□		●	-	.031	.003	.006	.012	.512
ADMX 160604SR-M	**M8330**	■	◪	■		□		●	-	.016	.004	.010	.012	.512
	M8340	■	■	◪		◪		●	+/-	.016	.004	.010	.012	.512
	8215	■	◪	■		◪		●	-	.016	.004	.010	.012	.512
ADMX 160608SR-M	**M5315**			■				●	---	.031	.004	.008	.012	.512
	M9315	■		◪				●	---	.031	.004	.008	.012	.512
	M9325	■	◪			◪		●	---	.031	.004	.008	.012	.512
	M9340	◪	■					●	---	.031	.004	.008	.012	.512
	M8310	■	◪	■		◪		●	-	.031	.004	.010	.012	.512
	M8330	■	◪	■		□		●	-	.031	.004	.010	.012	.512
	M8340	■	■	◪		◪		●	+/-	.031	.004	.010	.012	.512
	8215	■	◪	■		◪		●	-	.031	.004	.010	.012	.512
ADMX 160616SR-M	**M9325**	■	◪			◪		●	---	.063	.004	.009	.012	.512
	M8310	■	◪	■		◪		●	-	.063	.004	.012	.012	.512
	M8330	■	◪	■		□		✖	-	.063	.004	.012	.012	.512
	M8340	■	■	◪		◪		✖	+/-	.063	.004	.012	.012	.512
	8215	■	◪	■		◪		●	-	.063	.004	.012	.012	.512
ADMX 160620SR-M	**M8340**	■	■	◪		◪		✖	+/-	.079	.004	.012	.012	.512
	M6330	◪	■			◪		✖	-	.079	.004	.012	.012	.512
	M8330	■	◪	■		□		✖	-	.079	.004	.012	.012	.512
ADMX 160630SR-M	**M8330**	■	◪	■		□		✖	-	.118	.004	.012	.012	.512
	M8340	■	■	◪		◪		✖	+/-	.118	.004	.012	.012	.512
ADMX 160632SR-M	**M9325**	■	◪			◪		●	---	.126	.004	.009	.012	.512
	M6330	◪	■			◪		✖	-	.126	.004	.012	.012	.512
	M8330	■	◪	■		□		✖	-	.126	.004	.012	.012	.512
	M8340	■	■	◪		◪		✖	+/-	.126	.004	.012	.012	.512
	8215	■	◪	■		◪		✖	-	.126	.004	.012	.012	.512
ADMX 160640SR-M	**M6330**	◪	■			◪		✖	-	.157	.004	.012	.012	.512
	M8330	■	◪	■		□		✖	-	.157	.004	.012	.012	.512
	M8340	■	■	◪		◪		✖	+/-	.157	.004	.012	.012	.512
ADMX 160650SR-M	**M8330**	■	◪	■		□		✖	-	.197	.004	.012	.012	.512
	M8340	■	■	◪		◪		✖	+/-	.197	.004	.012	.012	.512

ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADMX 160608PR-R	**M5315**			■				✖	- - -	.031	.007	.011	.039	.512
	M9315	■		◪			◪	✖	- - -	.031	.007	.011	.039	.512
	M9325	■	◪			◪		✖	- - -	.031	.007	.011	.039	.512
	M8310	■	◪	■		◪	◪	✖	-	.031	.007	.014	.039	.512
	M8330	■	◪	■		□	◪	✖	-	.031	.007	.014	.039	.512
	M8340	■	◪	◪		◪		✖	+ / -	.031	.007	.014	.039	.512
	8215	◪	◪	■		□	◪	✖	-	.031	.007	.014	.039	.512
ADMX 160616PR-R	**M5315**			■				✖	- - -	.063	.007	.011	.039	.512
	M9315	■		◪			◪	✖	- - -	.063	.007	.011	.039	.512
	M9325	■	◪			◪		✖	- - -	.063	.007	.011	.039	.512
	M8330	■	◪	■		□	◪	✖	-	.063	.007	.014	.039	.512
	M8340	■	◪	◪		◪		✖	+ / -	.063	.007	.014	.039	.512
	8215	◪	◪	■		□	◪	✖	-	.063	.007	.014	.039	.512
ADMX 160608SR-MF	**M9340**	◪	■			■		⬣	- - -	.031	.002	.006	.012	.512
	M6330	◪	■			■		⬣	-	.031	.002	.006	.012	.512
	M8340	■	■			■		⬣	+ / -	.031	.002	.006	.012	.512
ADMX 160604SR-MM	**M9340**	◪	■			■		●	- - -	.016	.006	.007	.012	.512
	M6330	◪	■			■		⬣	-	.016	.006	.009	.012	.512
	M8340	■	■			■		⬣	+ / -	.016	.006	.009	.012	.512
ADMX 160608SR-MM	**M9340**	◪	■			■		⬣	- - -	.031	.006	.007	.012	.512
	M6330	◪	■			■		⬣	-	.031	.006	.009	.012	.512
	M8340	■	■			■		⬣	+ / -	.031	.006	.009	.012	.512
	M8345	■	■			■		⬣	+ / -	.031	.006	.009	.012	.512
ADMX 160616SR-MM	**M9340**	◪	■			■		⬣	- - -	.063	.006	.007	.012	.512
	M6330	◪	■			■		✖	-	.063	.006	.009	.012	.512
	M8340	■	■			■		✖	+ / -	.063	.006	.009	.012	.512
	M8345	■	■			■		✖	+ / -	.063	.006	.009	.012	.512

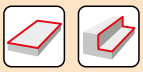
ADEX 16

	d	d_1	l	s
1606	.392	.177	.630	.246



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADEX 160608SR-FM	**M9325**	■	◪			◪		⬣	- - -	.031	.004	.008	.012	.512
	M9340	◪	■			◪		⬣	- - -	.031	.004	.008	.012	.512
	M8310	■	◪	■		◪		⬣	-	.031	.004	.010	.012	.512
	M8330	■	◪	■		□		⬣	-	.031	.004	.010	.012	.512
	M8340	■	■	◪		◪		⬣	+ / -	.031	.004	.010	.012	.512
	8215	■	◪	■		◪		⬣	-	.031	.004	.010	.012	.512

ISO		f_{min}	f_{max}	M5315	M9315	M9325	M9340	M6330	M8310	M8330	M8340	M8345	8215	M8330
P	●	.004	.012	856	856	758	679	581	719	663	620	492	679	650
	⬢	.004	.010	797	778	669	610	522	650	594	551	433	600	581
	✖	.004	.006	728	709	591	541	453	581	512	482	384	531	502
M	●	.004	.010	–	–	384	404	413	364	384	364	295	404	384
	⬢	.004	.008	–	–	344	364	364	325	344	325	256	364	344
	✖	.004	.005	–	–	295	325	315	295	305	285	226	315	305
K	●	.004	.012	817	817	–	–	–	679	633	591	–	640	620
	⬢	.004	.010	758	738	–	–	–	620	561	522	–	571	551
	✖	.004	.006	699	669	–	–	–	551	492	453	–	502	482



a_e/D	0.05	0.10	0.15	0.20	0.25	0.30	0.40	0.50	0.60	0.70	0.75	0.80	0.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	0.75	0.94	0.90	0.89	0.88	0.88	1.00
⇨X.f	0.64	0.64	0.64	0.64	0.64	0.65	0.65	0.67	0.68	0.71	0.72	0.74	0.79	1.00

	ADMX 16-F	ADEX 16-FM	ADMX 16-M								ADMX 16-R	
r_ε	.031	.031	.016	.031	.063	.000	.001	.001	.001	.001	.002	.063
a	.118	.086	.133	.118	.064	.000	.005	.003	.005	.005	.003	.064

	ADMX 16-MF	ADMX 16-MM		
r_ε	.031	.016	.031	.063
a	.118	.133	.118	.064



ISO	D		l_1	a_p
200J3R394CA50-ISAD16E213	2.000	3	2.16	2.02
200J3R551CA50-ISAD16E315	2.000	3	3.22	3.08
250J3R551CA50-ISAD16E268	2.500	3	2.69	2.55
250J3R610CA50-ISAD16E374	2.500	3	3.74	3.60
300J4R650CA50-ISAD16E425	3.000	4	4.27	4.13
200T03R-IS90AD16E163-C	2.000	3	1.63	1.49
250T04R-IS90AD16E163-C	2.500	4	1.63	1.49
250T04R-IS90AD16E268-C	2.500	4	2.69	2.55
300T04R-IS90AD16E217-C	3.000	4	2.16	2.02
300T04R-IS90AD16E315-C	3.000	4	3.22	3.08
400T05R-IS90AD16E315-C	4.000	5	3.22	3.08





.295



max	0.039		0.098		0.197		0.295		0.394		0.591		0.787	
D	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨
2.000	0.022	0.028	0.014	0.018	0.010	0.013	0.008	0.011	0.007	0.009	0.006	0.007	0.006	0.007
2.500	0.025	0.031	0.016	0.020	0.011	0.014	0.009	0.012	0.008	0.010	0.007	0.008	0.006	0.007
3.000	0.028	0.035	0.018	0.022	0.013	0.016	0.011	0.013	0.009	0.011	0.007	0.009	0.007	0.008
4.000	0.031	0.039	0.020	0.025	0.014	0.018	0.012	0.015	0.010	0.013	0.008	0.011	0.007	0.009

max	0.984		1.260		1.575		1.969		2.480		3.150		3.937	
D	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨
2.000	0.005	0.006	0.005	0.006	0.004	0.006	0.005	0.006	-	-	-	-	-	-
2.500	0.006	0.007	0.005	0.006	0.005	0.006	0.004	0.006	0.005	0.006	-	-	-	-
3.000	0.006	0.007	0.006	0.007	0.005	0.006	0.005	0.006	0.004	0.006	0.005	0.006	-	-
4.000	0.007	0.008	0.006	0.007	0.006	0.007	0.005	0.006	0.005	0.006	0.004	0.006	0.005	0.006





ADMX/ADEX 16	R
ADMX 160630SR-M	0.098
ADMX 160632SR-M	0.098
ADMX 160640SR-M	0.157
ADMX 160650SR-M	0.177


KT 748
9208
9208

PRAMET

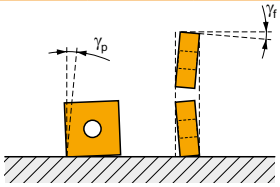
IS90SN

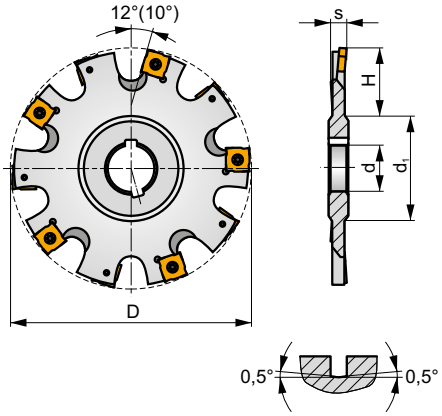
P M K N S H

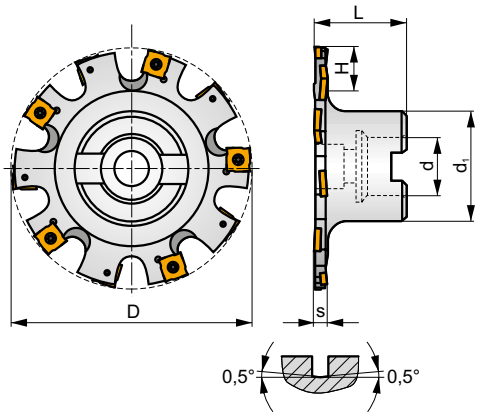
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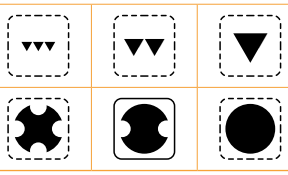


κ_r	90°
a_{pmax}	.156-.375









h_m	.0027-.0035
h_m	.0027-.0035



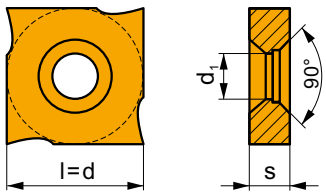
	ANSI	D	L	d	d_1	H	s	x/z_1	γ_f°	γ_p°			max.		lbs		
	300F04N-IS90SN11N2.5	3.000	–	1.000	1.480	.630	.156	–	2.5	-.5	8	–	12300	–	.44	GI151	IDI011
	300F04N-IS90SN12N4	3.000	–	1.000	1.480	.630	.250	–	2.5	-.5	8	–	8400	–	.44	GI153	IDI012
	300F04N-IS90SN12N5	3.000	–	1.000	1.480	.630	.313	–	2.5	-.5	8	–	8400	–	.66	GI157	IDI013
	400G05N-IS90SN12N4	4.000	–	1.250	1.750	.945	.250	–	2.5	-.5	10	–	7500	–	.66	GI153	IDI012
	400G05N-IS90SN12N5	4.000	–	1.250	1.750	.945	.313	–	2.5	-.5	10	–	7500	–	.88	GI157	IDI013
	400G05N-IS90SN12N6	4.000	–	1.250	1.750	.945	.375	–	2.5	-.5	10	–	7500	–	1.10	GI154	IDI014
	500H06N-IS90SN12N4	5.000	–	1.250	2.000	1.220	.250	–	2.5	-.5	12	–	6700	–	1.10	GI153	IDI012
	500H06N-IS90SN12N5	5.000	–	1.250	2.000	1.220	.313	–	2.5	-.5	12	–	6700	–	1.32	GI157	IDI013
ISO 6462 DIN 8030	**600H08N-IS90SN12N4**	6.000	–	1.250	2.000	1.693	.250	–	2.5	-.5	16	–	5900	–	2.20	GI153	IDI012
	600H08N-IS90SN12N5	6.000	–	1.250	2.000	1.693	.313	–	2.5	-.5	16	–	5900	–	2.43	GI157	IDI013
	600H08N-IS90SN12N6	6.000	–	1.250	2.000	1.693	.375	–	2.5	-.5	16	–	5900	–	2.65	GI154	IDI014
	250A03R-IS90SN11N2.5	2.500	1.575	.750	1.378	.413	.156	3	2.5	-.5	6	–	13900	–	1.10	GI151	IDI021
	250A03R-IS90SN12N4	2.500	1.575	.750	1.319	.413	.250	3	2.5	-.5	6	–	9500	–	1.10	GI153	IDI022
	300A04R-IS90SN11N3	3.000	1.575	.750	1.575	.610	.187	4	2.5	-.5	8	–	12300	–	1.32	GI152	IDI023
	300A04R-IS90SN12N4	3.000	1.575	.750	1.575	.610	.250	4	2.5	-.5	8	–	8400	–	1.32	GI153	IDI024
	400A05R-IS90SN12N4	4.000	1.969	1.000	1.890	.945	.250	5	2.5	-.5	10	–	7500	–	1.54	GI153	IDI025
	600B08R-IS90SN12N6	6.000	1.969	1.500	2.756	1.457	.375	8	2.5	-.5	16	–	5900	–	4.63	GI154	IDI014

GI151	SNHQ 1102..
GI152	SNHQ 1103..
GI153	SNHQ 12T3..
GI154	SNHQ 1205..
GI157	SNHQ 1204..

		Nm					
IDI011	US 3504-T09P	3.0	M 3.5	.160	D-T07P/T09P	FG-15	–
IDI012	US 70	5.0	M 4	.200	D-T07/T15	FG-15	–
IDI013	US 71	5.0	M 4	.280	D-T07/T15	FG-15	–
IDI014	US 72	5.0	M 4	.350	D-T07/T15	FG-15	–
IDI021	US 3504-T09P	3.0	M 3.5	.160	D-T07P/T09P	FG-15	HS 037100
IDI022	US 70	5.0	M 4	.200	D-T07/T15	FG-15	HS 037100
IDI023	US 3505-T09P	3.0	M 3.5	.197	D-T07P/T09P	FG-15	HS 037100
IDI024	US 70	5.0	M 4	.200	D-T07/T15	FG-15	HS 037100
IDI025	US 70	5.0	M 4	.200	D-T07/T15	FG-15	HS 050125

SNHQ AZ

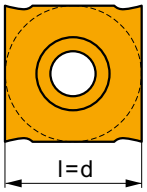
	d	d_1	l	s
1102	.433	.169	.433	.091
1103	.433	.169	.433	.106
1203	.500	.197	.500	.126
1204	.500	.197	.500	.177
1205	.500	.197	.500	.213
1207	.500	.197	.500	.276

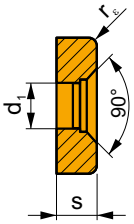


ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNHQ 1203AZEN	**M8340**	■	◪	◪		□			+ / -	–	.004	.016	–	–
	8215	■	◪	■	□	□	□		-	–	.004	.016	–	–
SNHQ 1204AZEN	**M8340**	■	◪	◪		□			+ / -	–	.008	.020	–	–
	8215	■	◪	■	□	□	□		-	–	.008	.020	–	–
SNHQ 1205AZEN	**M8340**	■	◪	◪		□			+ / -	–	.008	.020	–	–
	8215	■	◪	■	□	□	□		-	–	.008	.020	–	–
SNHQ 1207AZEN	**M8340**	■	◪	◪		□			+ / -	–	.008	.020	–	–
	8215	■	◪	■	□	□	□		-	–	.008	.020	–	–
SNHQ 1102AZTN	**M8330**	■	◪	■	□	□	□		-	–	.004	.016	–	–
	M8340	■	◪	◪		□			+ / -	–	.004	.016	–	–
	8230	■	◪	■	□	□	□		-	–	.004	.016	–	–
SNHQ 1103AZTN	**M8330**	■	◪	■	□	□	□		-	–	.004	.016	–	–
	M8340	■	◪	◪		□			+ / -	–	.004	.016	–	–
	8230	■	◪	■	□	□	□		-	–	.004	.016	–	–
SNHQ 1203AZTN	**M8330**	■	◪	■	□	□	□		-	–	.004	.016	–	–
	M8340	■	◪	◪		□			+ / -	–	.004	.016	–	–
	8230	■	◪	■	□	□	□		-	–	.004	.016	–	–
SNHQ 1204AZTN	**M8330**	■	◪	■	□	□	□		-	–	.008	.020	–	–
	M8340	■	◪	◪		□			+ / -	–	.008	.020	–	–
	8230	■	◪	■	□	□	□		-	–	.008	.020	–	–
SNHQ 1205AZTN	**M8330**	■	◪	■	□	□	□		-	–	.008	.020	–	–
	M8340	■	◪	◪		□			+ / -	–	.008	.020	–	–
	8230	■	◪	■	□	□	□		-	–	.008	.020	–	–
SNHQ 1207AZTN	**M8330**	■	◪	■	□	□	□		-	–	.008	.020	–	–
	M8340	■	◪	◪		□		✖	+ / -	–	.008	.020	–	–
	8230	■	◪	■	□	□	□		-	–	.008	.020	–	–

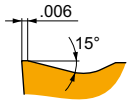
SNHQ TRL

	d	d_1	l	s
1203	.500	.197	.500	.126
1204	.500	.197	.500	.177
1205	.500	.197	.500	.213
1207	.500	.197	.500	.276

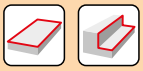




ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNHQ 120305TRL	**M8340**	■	◪	◪		□			+/- .020	.004	.016	–	–
SNHQ 120310TRL	**M8340**	■	◪	◪		□			+/- .039	.004	.016	–	–
SNHQ 120315TRL	**M8340**	■	◪	◪		□			+/- .059	.004	.016	–	–
SNHQ 120405TRL	**M8340**	■	◪	◪		□			+/- .020	.008	.020	–	–
SNHQ 120410TRL	**M8340**	■	◪	◪		□			+/- .039	.008	.020	–	–
SNHQ 120415TRL	**M8340**	■	◪	◪		□			+/- .059	.008	.020	–	–
SNHQ 120505TRL	**M8340**	■	◪	◪		□			+/- .020	.008	.020	–	–
SNHQ 120510TRL	**M8340**	■	◪	◪		□			+/- .039	.008	.020	–	–
SNHQ 120515TRL	**M8340**	■	◪	◪		□			+/- .059	.008	.020	–	–
SNHQ 120705TRL	**M8340**	■	◪	◪		□			+/- .020	.008	.020	–	–
SNHQ 120710TRL	**M8340**	■	◪	◪		□			+/- .039	.008	.020	–	–
SNHQ 120715TRL	**M8340**	■	◪	◪		□			+/- .059	.008	.020	–	–

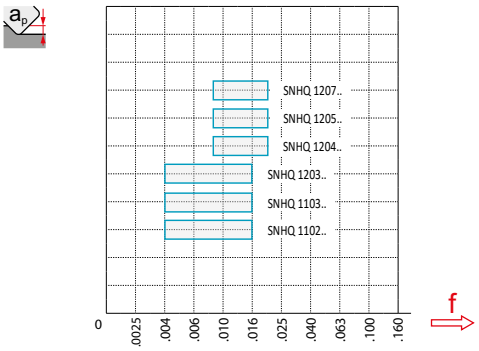


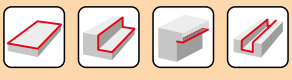
ISO		f_{min}	f_{max}	M8340	8215	M8330
P	●	.0039	.0118	961	1033	945
	❀	.0039	.0098	843	902	827
	✖	.0039	.0059	725	768	709
M	●	.0039	.0098	577	620	561
	❀	.0039	.0079	502	531	502
	✖	.0039	.5906	430	459	430
K	●	.0039	.0118	902	974	902
	❀	.0039	.0098	797	856	784
	✖	.0039	.0059	696	725	679
N	●	.0039	.0118	–	2598	2379
	❀	.0039	.0098	–	2260	2096
	✖	.0039	.0059	–	1936	1801
S	●	.0039	.0098	282	312	282
	❀	.0039	.0079	253	266	253
	✖	.0039	.0059	207	223	207
H	●	.0039	.0079	–	207	177
	❀	.0039	.0059	–	177	164
	✖	.0039	.0047	–	148	135

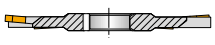
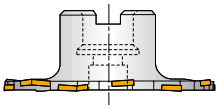


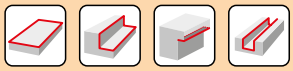
a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00

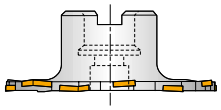
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r_ε	–	–	.020 – .059
a	–	–	–

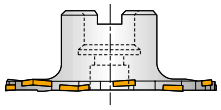


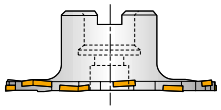


	D		H	max
	3.00	4	.630	.630
	4.00	5	.945	.945
	5.00	6	1.220	1.220
	6.00	5	1.693	1.693
	8.00	9	2.441	2.441
	2.50	3	.413	2.480
	3.00	4	.689	3.150
	4.00	5	.925	3.937
	5.00	6	.945	4.921
	6.00	8	1.614	6.299



	a_e	.197		.394		.591		.787		.984	
	D	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨
	3.00	.011	.014	.008	.010	.007	.008	–	–	–	–
	4.00	.013	.016	.009	.011	.007	.009	.006	.008	–	–
	5.00	.014	.018	.010	.013	.008	.011	.007	.009	.006	.008
	6.00	.016	.020	.011	.014	.009	.012	.008	.010	.007	.009
	8.00	.017	.022	.013	.016	.010	.013	.009	.011	.008	.010
	2.50	.010	.013	.007	.009	.006	.007	.005	.007	.005	.006
	3.00	.011	.014	.008	.010	.007	.008	.006	.007	.005	.007
	4.00	.013	.016	.009	.011	.007	.009	.006	.008	.006	.007
	5.00	.014	.018	.010	.013	.008	.011	.007	.009	.006	.008
	6.00	.016	.020	.011	.014	.009	.012	.008	.010	.007	.009

	a_e	1.260		1.575		1.969		2.480		3.150	
	D	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨
	3.00	–	–	–	–	–	–	–	–	–	–
	4.00	–	–	–	–	–	–	–	–	–	–
	5.00	–	–	–	–	–	–	–	–	–	–
	6.00	.006	.008	.006	.007	–	–	–	–	–	–
	8.00	.007	.009	.006	.008	.006	.007	–	–	–	–
	2.50	.004	.006	.004	.005	.004	.005	.004	.004	–	–
	3.00	.005	.006	.004	.006	.004	.005	.004	.005	.004	.004
	4.00	.005	.007	.005	.006	.004	.006	.004	.005	.004	.005
	5.00	.006	.007	.005	.007	.005	.006	.004	.006	.004	.005
	6.00	.006	.008	.006	.007	.005	.007	.005	.006	.004	.006

	a_e	3.937		4.921		6.299	
	D	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨
	3.00	–	–	–	–	–	–
	4.00	–	–	–	–	–	–
	5.00	–	–	–	–	–	–
	6.00	–	–	–	–	–	–
	8.00	–	–	–	–	–	–
	2.50	–	–	–	–	–	–
	3.00	–	–	–	–	–	–
	4.00	.004	.004	–	–	–	–
	5.00	.004	.005	.004	.004	–	–
	6.00	.004	.005	.004	.005	.004	.004

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PRAMET

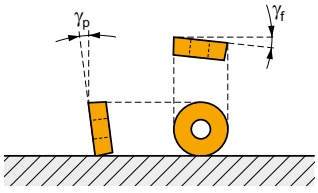
ISRC10

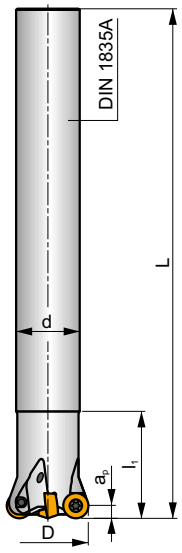
P M K N S H

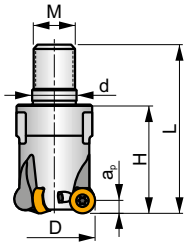
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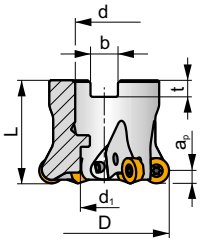


a_{pmax}	.197









h_m .003 - .006

h_m .002 - .005

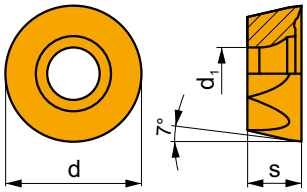
	ANSI	D	D_1	L	d	d_1	l	H	M	b	t	γ_p°	γ_f°			max.		lbs		
DIN 1835A	**100E2R134C075-ISRC10-C**	1.000	–	6.700	.750	–	1.339	–	–	–	–	-7	-3	2	–	20900	✓	1.61	GI328	ICO010
	100E3R134C075-ISRC10-C	1.000	–	6.700	.750	–	1.339	–	–	–	–	-7	-3	3	–	20900	✓	1.61	GI328	ICO010
	125E3R165C100-ISRC10-C	1.250	–	7.900	1.000	–	1.654	–	–	–	–	-7	-2.6	3	–	18500	✓	3.35	GI328	ICO010
	125E4R165C100-ISRC10-C	1.250	–	7.900	1.000	–	1.654	–	–	–	–	-7	-2.6	4	–	18500	✓	3.35	GI328	ICO010
MODULAR	**100E2R126M12-ISRC10-C**	1.000	.827	2.126	.492	–	–	1.260	M12	–	–	-7	-3	2	–	20900	✓	.40	GI328	ICO010
	100E3R126M12-ISRC10-C	1.000	.827	2.126	.492	–	–	1.260	M12	–	–	-7	-3	3	–	20900	✓	.40	GI328	ICO010
	125E3R165M16-ISRC10-C	1.250	1.142	2.559	.669	–	–	1.654	M16	–	–	-7	-2.6	3	–	18500	✓	.88	GI328	ICO010
	125E4R165M16-ISRC10-C	1.250	1.142	2.559	.669	–	–	1.654	M16	–	–	-7	-2.6	4	–	18500	✓	.88	GI328	ICO010
	150E4R165M16-ISRC10-C	1.500	1.142	2.559	.669	–	–	1.654	M16	–	–	-7	-2.1	4	–	16500	✓	.97	GI328	ICO010
	150E5R165M16-ISRC10-C	1.500	1.142	2.559	.669	–	–	1.654	M16	–	–	-7	-2.1	5	–	16500	✓	.97	GI328	ICO010
ISO 6462 DIN 8030	**150A05R-ISMORC10-C**	1.500	–	1.575	.500	.433	–	–	–	.258	.165	-7	-2.2	5	–	16500	✓	.73	GI328	ICO012
	200A05R-ISMORC10-C	2.000	–	1.575	.750	.630	–	–	–	.321	.193	-7	-2	5	–	14800	✓	1.37	GI328	ICO013
	200A06R-ISMORC10-C	2.000	–	1.575	.750	.630	–	–	–	.321	.193	-7	-2	6	–	14800	✓	1.32	GI328	ICO013
	250A06R-ISMORC10-C	2.500	–	1.575	.750	.630	–	–	–	.321	.193	-7	-1.8	6	–	13200	✓	2.18	GI328	ICO013
	250A07R-ISMORC10-C	2.500	–	1.575	.750	.630	–	–	–	.321	.193	-7	-1.8	7	–	13200	✓	2.14	GI328	ICO013

GI328	RCMT 10T3MO..

		Nm				
ICO010	US 63509-T10P	3,0	M 3,5	.354	Flag T10P	–
ICO012	US 63509-T10P	3,0	M 3,5	.354	Flag T10P	HS025100
ICO013	US 63509-T10P	3,0	M 3,5	.354	Flag T10P	HS037100

RCMT 10

	d	d_1	s
10T3	.394	.154	.156



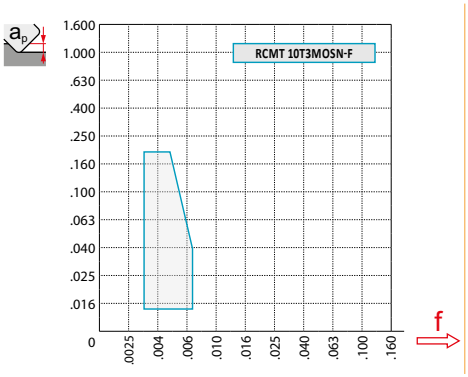
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RCMT 10T3MOSN-F	**M6330**	◪	■			■		✖	-	–	.003	.007	.012	.197
	M8310	■	◪	□		□		✖	-	–	.003	.007	.012	.197
	M8330	■	◪	□	□	□		✖	-	–	.003	.007	.012	.197
RCMT 10T3MOSN-M	**M9340**	◪	■			■		✖	- - -	–	.004	.009	.012	.197
	M6330	◪	■			■		✖	-	–	.004	.011	.012	.197
	M8310	■	◪	■		□	□	✖	-	–	.004	.011	.012	.197
	M8330	■	◪	■	□	□	□	✖	-	–	.004	.011	.012	.197
	M8340	■	■	◪		■		✖	+/-	–	.004	.011	.012	.197
	M8345	■	■			■		✖	+/-	–	.004	.011	.012	.197
RCMT 10T3MOSN-R	**M5315**	◪		■			■	✖	- - -	–	.006	.015	.020	.197
	M8310	■	◪	■		□	■	✖	-	–	.006	.016	.020	.197
	M8330	■	◪	■		□	◪	✖	-	–	.006	.016	.020	.197

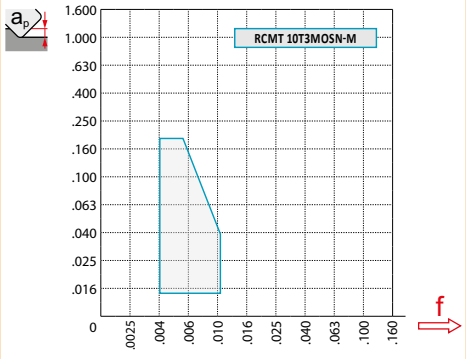
ISO		f_{min}	f_{max}	M5315	M9325	M9340	M6330	M8310	M8330	M8340	M8345
P	●	0.0039	0.0138	1224	1257	1247	981	1175	1056	961	771
	⬣	0.0039	0.0098	1099	1129	1122	883	1056	951	843	696
	✖	0.0039	0.0059	978	1004	997	784	938	843	725	617
M	●	0.0039	0.0098	-	633	738	692	587	630	577	453
	⬣	0.0039	0.0079	-	568	666	623	528	568	502	407
	✖	0.0039	0.0059	-	505	591	554	469	502	430	361
K	●	0.0039	0.0138	1158	-	-	-	1109	994	902	-
	⬣	0.0039	0.0098	1040	-	-	-	997	892	797	-
	✖	0.0039	0.0059	925	-	-	-	886	794	696	-
S	●	0.0039	0.0098	-	276	328	299	256	272	282	197
	⬣	0.0039	0.0079	-	246	295	269	233	243	253	177
	✖	0.0039	0.0059	-	220	262	240	207	217	207	157
H	●	0.0039	0.0079	240	-	-	-	210	194	-	-
	⬣	0.0039	0.0059	213	-	-	-	187	174	-	-
	✖	0.0039	0.0047	190	-	-	-	167	154	-	-

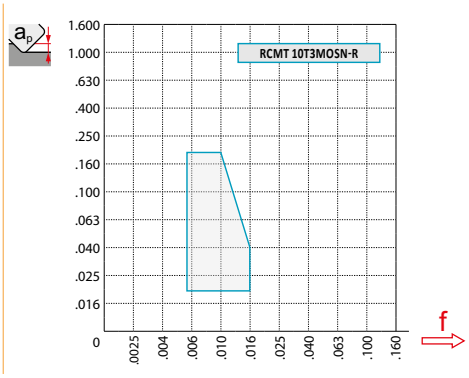
PRAMET

a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
X.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

	RCMT 10-F	RCMT 10-M	RCMT 10-R
r_ε	.197	.197	.197
a	–	–	–







D	a_p	.000	.006	.012	.020	.030	.039	.049	.059	.079	.098	.118	.157	.197
1.000		.606	.702	.741	.778	.814	.843	.867	.887	.921	.947	.967	.992	1.000
1.250		.856	.952	.991	1.028	1.064	1.093	1.117	1.137	1.171	1.197	1.217	1.242	1.250
1.500	D_{ef}	1.106	1.202	1.241	1.278	1.314	1.343	1.367	1.387	1.421	1.447	1.467	1.492	1.500
2.000		1.606	1.702	1.741	1.778	1.814	1.843	1.867	1.887	1.921	1.947	1.967	1.992	2.000
2.500		2.106	2.202	2.241	2.278	2.314	2.343	2.367	2.387	2.421	2.447	2.467	2.492	2.500

	a_p	–	.006	.012	.020	.030	.039	.049	.059	.079	.098	.118	.157	.197
	1/f	–	.035	.025	.020	.016	.014	.013	.011	.010	.009	.008	.007	.007

D	α_{max} °	a_p/l
1.000	13.2	.197/.906
1.250	12.7	.197/.945
1.500	9.1	.197/1.300
2.000	6.3	.197/1.851
2.500	4.6	.197/2.520

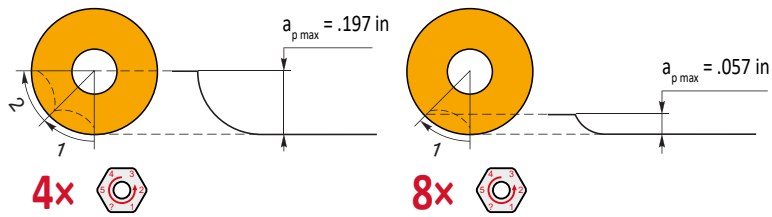
D	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}
1.000	1.299	2.000	.118	.118
1.250	1.732	2.500	.118	.118
1.500	2.244	3.000	.118	.118
2.000	3.228	4.000	.118	.118
2.500	4.252	5.000	.118	.118

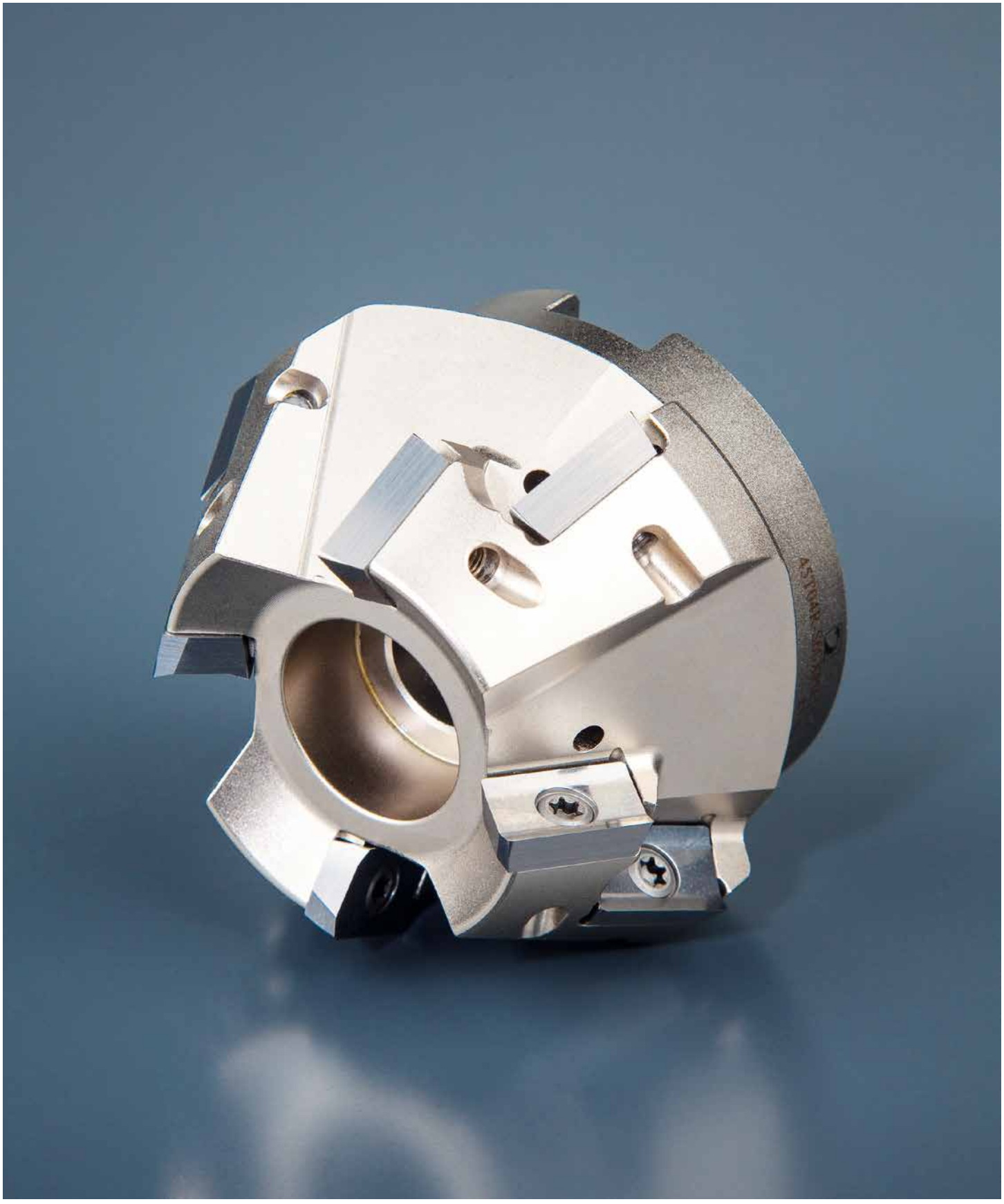
a_p

.091

D	µm	.118	.197	.394	.591	.787	1.181	1.575	1.969	2.362	3.150	3.937
1.000	f_e	.022	.028	.040	.049	.056	.069	.079	.089	.097	.112	.125
1.250		.024	.031	.044	.054	.063	.077	.089	.099	.109	.125	.140
1.500		.027	.034	.049	.060	.069	.084	.097	.109	.119	.137	.154
2.000		.031	.040	.056	.069	.079	.097	.112	.125	.137	.159	.177
2.500		.034	.044	.063	.077	.089	.109	.125	.140	.154	.177	.198

r_ε	µm	.118	.197	.394	.591	.787	1.181	1.575	1.969	2.362	3.150	3.937
.197	f_e	.014	.018	.025	.030	.035	.043	.050	.056	.061	.070	.079





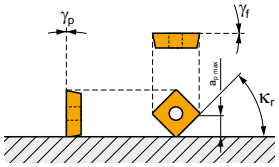
ISSD09

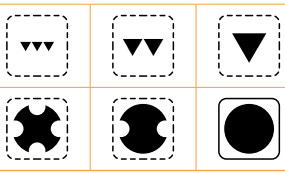
P M K N S H

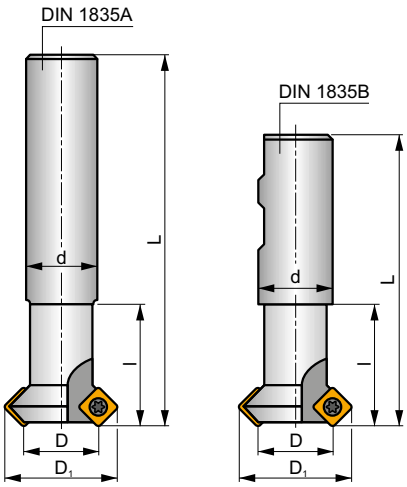
S



κ_r	45°
a_{pmax}	.177







h_m .0037-.0059



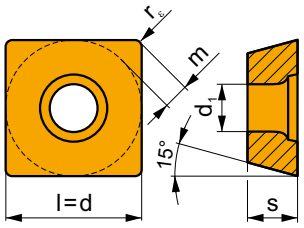
	ANSI	D	D_1	L	d	l	γ_f°	γ_p°			max.		lbs		
DIN 1835A	**062N2R106C062-ISSD09**	.625	1.097	7.874	.625	1.063	0	0	2	–	32200	–	.88	IGI129	ICO070
	100N3R128C100-ISSD09	1.000	1.472	7.874	1.000	1.280	0	0	3	–	25800	–	1.54	IGI129	ICH011
DIN 1835B	**037N1R106W062-ISSD09**	.375	.847	2.969	.625	1.063	0	0	1	–	40700	–	.26	IGI129	ICO070
	062N2R106W062-ISSD09	.625	1.097	2.969	.625	1.063	0	0	2	–	32200	–	.44	IGI129	ICO070
	100N3R128W100-ISSD09	1.000	1.472	3.780	1.000	1.280	0	0	3	–	25800	–	.88	IGI129	ICH011

IGI129	SDEW 0903..	SDEX 0903..

		Nm			
ICO070	US 3507-T15	3.0	M 3.5	.280	Flag T15
ICH011	US 3509-T15	3.0	M 3.5	.350	Flag T15

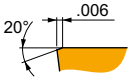
SDEW 09

	d	d_1	l	m	s
0903	.375	.173	.375	.065	.125



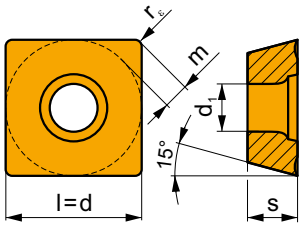
	ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
U	**SDEW 090308EN**	**M8330**	◪	□	■			◪	⬍	-	.031	.004	.012	.039	.177
		M8340	◪	□	◪				⬍	+/-	.031	.004	.012	.039	.177
E															
	SDEW 090308SN	**M8330**	◪	□	■			◪	⬍	-	.031	.006	.012	.039	.177
		M8340	◪	□	◪				✖	+/-	.031	.006	.012	.039	.177
S		**8215**	◪	□	■			◪	⬍	-	.031	.006	.012	.039	.177



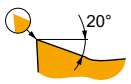


SDEX 09

	d	d_1	l	m	s
0903	.375	.173	.375	.065	.125



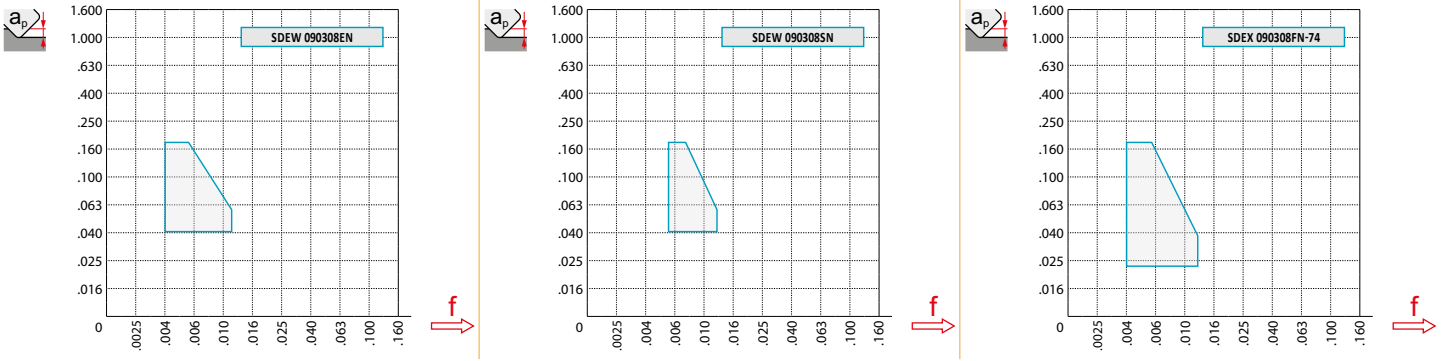
	ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
F	**SDEX 090308FN-74**	**M8330**	■	◪	◪	□	□		⬍	-	.031	.004	.012	.020	.177



ISO		f_{min}	f_{max}	M8340	8215	M8330
P	●	–	–	906	978	892
	●	–	–	794	850	781
	✖	–	–	682	725	669
M	●	–	–	545	587	531
	●	–	–	476	502	476
	✖	–	–	404	433	404
K	●	–	–	850	922	850
	●	–	–	755	810	738
	✖	–	–	656	682	643
N	●	–	–	–	2454	2244
	●	–	–	–	2133	1982
	✖	–	–	–	1827	1703
S	●	–	–	266	292	266
	●	–	–	236	253	236
	✖	–	–	197	210	197
H	●	–	–	–	197	167
	●	–	–	–	167	154
	✖	–	–	–	141	125

PRAMET

	SDEW 09 EN	SDEW 09 SN	SDEX 09
r_ε	.031	.031	.031
a	–	–	–



d_{min}	d_{max}	X.V	f_{min}	f_{max}
.394	.866	1.09	.008	.012
.630	1.102	1.17	.010	.013
.984	1.457	1.24	.013	.015

a_e/D	.004			.006			.008			.010			.012			.014			.016			.020 - .040		
	f																							
45	.017	.021	.026	.014	.017	.022	.012	.015	.019	.011	.013	.017	.010	.012	.015	.009	.011	.014	.008	.011	.013	.007	.009	.012
X.V	1.35			1.27			1.22			1.19			1.16			1.13			1.11			1.00		

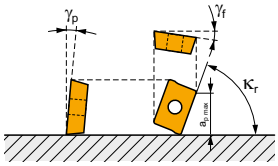
J(T)-ISXP16

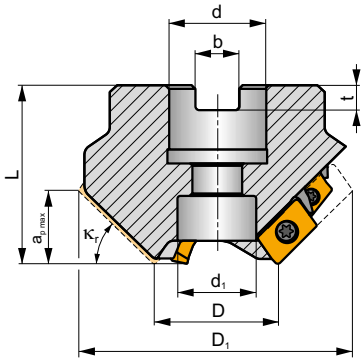
P M K N

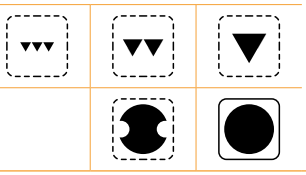
S



κ_r	30-60°
a_{pmax}	.276-1.102







h_m .0019-.0043



	ANSI	D	D_1	L	d	d_1	k_r	b	t	$a_{p\,max}$	γ_f°	γ_p°				max.		lbs		
ISO 6462 DIN 8030	**150T03R-IS30XP16-C**	1.500	3.350	1.969	1.000	.827	30	.382	.224	.551	-6	0	3	6	–	15200	✓	2.14	IGI208	ICH050
	150T03R-IS45XP16-C	1.500	3.035	1.969	1.000	.827	45	.382	.224	.787	-6	2	3	6	–	15200	✓	1.70	IGI208	ICH050
	150T03R-IS60XP16-C	1.500	2.642	1.969	1.000	.827	60	.382	.224	.984	-5	4	3	6	–	15200	✓	1.17	IGI208	ICH050
	200T04R-IS30XP16-C	2.000	3.850	1.969	1.000	.827	30	.382	.224	.551	-6	0	4	8	✓	13400	✓	2.38	IGI208	ICH050
	200T04R-IS45XP16-C	2.000	3.575	1.969	1.000	.827	45	.382	.224	.787	-6	2	4	8	✓	13400	✓	1.98	IGI208	ICH050
	200T04R-IS60XP16-C	2.000	3.102	1.969	1.000	.827	60	.382	.224	.984	-5	4	4	8	✓	13400	✓	1.50	IGI208	ICH050





IGI208 — XPHT 1604..















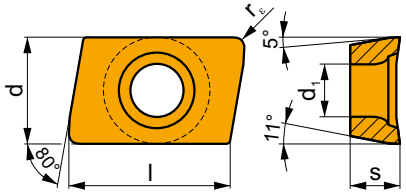


ICH050	US 3509-T15	3.0	M 3.5	.350	D-T07/T15	FG-15	HS 050125

PRAMET

XPHT 16

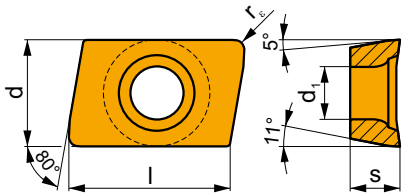
	d	d_1	l	s
1604	.375	.173	.625	.187



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
XPHT 160412E	**M6330**	■	■			□		●	-	.047	.002	.012	.047	.591
	M8330	■	◪	◪		□		●	-	.047	.002	.012	.047	.591
	M8340	■	■	◪		□		●	+/-	.047	.002	.012	.047	.591
	8215	◪	◪	◪		□		●	-	.047	.002	.012	.047	.591
XPHT 160412S	**M9325**	■	◪			□		●	- - -	.047	.004	.009	.047	.591
	M9340	◪	■					●	- - -	.047	.004	.009	.047	.591
	M8330	■	◪	◪		□		✖	-	.047	.004	.012	.047	.591
	M8340	■	■	◪		□		✖	+/-	.047	.004	.012	.047	.591
	8215	◪	◪	◪		□		●	-	.047	.004	.012	.047	.591

XPHT 16-FA

	d	d_1	l	s
1604	.375	.173	.625	.187

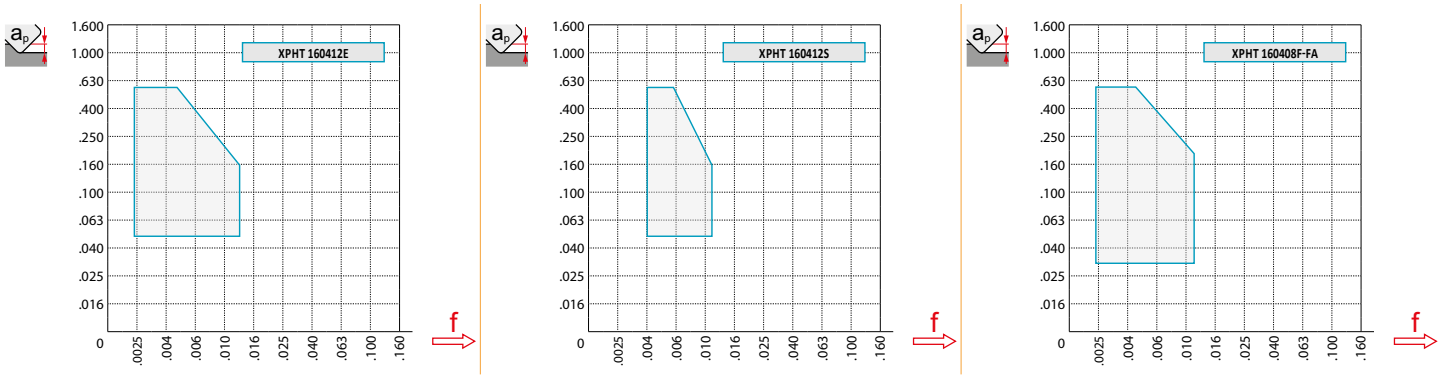


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
XPHT 160408F-FA	**HF7**				■			●	+/-	.031	.002	.012	.031	.591

ISO		f_{min}	f_{max}	M9325	M9340	M8340	8215	M8330	HF7
P	●	–	–	1076	932	853	919	840	–
	⬢	–	–	971	827	748	801	735	–
	✖	–	–	853	735	643	682	630	–
M	●	–	–	643	551	512	551	499	–
	⬢	–	–	577	499	446	472	446	–
	✖	–	–	512	433	381	407	381	–
K	●	–	–	–	–	801	866	801	–
	⬢	–	–	–	–	709	761	696	–
	✖	–	–	–	–	617	643	604	–
N	●	–	–	–	–	–	–	–	892
	⬢	–	–	–	–	–	–	–	801
	✖	–	–	–	–	–	–	–	696

PRAMET

	XPHT 16 E	XPHT 16 S	XPHT 16-FA
r_ε	.047	.047	.031
a	–	–	–



a_e / D	.10			.15			.20			.25			.30			.35			.40			.50 - 1.0		
	f																							
15	.039	.053	.020	.031	.043	.017	.027	.037	.015	.024	.033	.014	.022	.031	.013	.020	.028	.012	.019	.026	.011	.017	.024	.024
25	.024	.032	.012	.019	.026	.010	.017	.023	.009	.015	.020	.009	.014	.019	.008	.013	.017	.007	.012	.016	.007	.011	.015	.015
30	.020	.028	.010	.016	.022	.009	.014	.019	.008	.013	.017	.007	.011	.016	.007	.011	.015	.006	.010	.014	.006	.009	.012	.012
35	.017	.024	.009	.014	.020	.007	.012	.017	.007	.011	.015	.006	.010	.014	.006	.009	.013	.006	.009	.012	.005	.008	.011	.011
40	.015	.021	.008	.013	.017	.007	.011	.015	.006	.010	.013	.006	.009	.012	.005	.008	.011	.005	.008	.011	.004	.007	.009	.009
45	.014	.019	.007	.011	.016	.006	.010	.014	.006	.009	.012	.005	.008	.011	.005	.007	.010	.004	.007	.010	.004	.006	.009	.009
50	.013	.018	.007	.011	.015	.006	.009	.013	.005	.008	.011	.005	.007	.010	.004	.007	.009	.004	.007	.009	.004	.006	.008	.008
55	.012	.017	.006	.010	.014	.006	.009	.012	.005	.008	.011	.004	.007	.010	.004	.007	.009	.004	.006	.008	.004	.006	.007	.007
60	.011	.016	.006	.009	.013	.005	.008	.011	.005	.007	.010	.004	.007	.009	.004	.006	.008	.004	.006	.008	.003	.005	.007	.007
75	.010	.014	.005	.008	.011	.005	.007	.010	.004	.007	.009	.004	.006	.008	.004	.006	.007	.003	.005	.007	.003	.005	.006	.006
X.V	1.35			1.27			1.22			1.19			1.16			1.13			1.11			1.00		



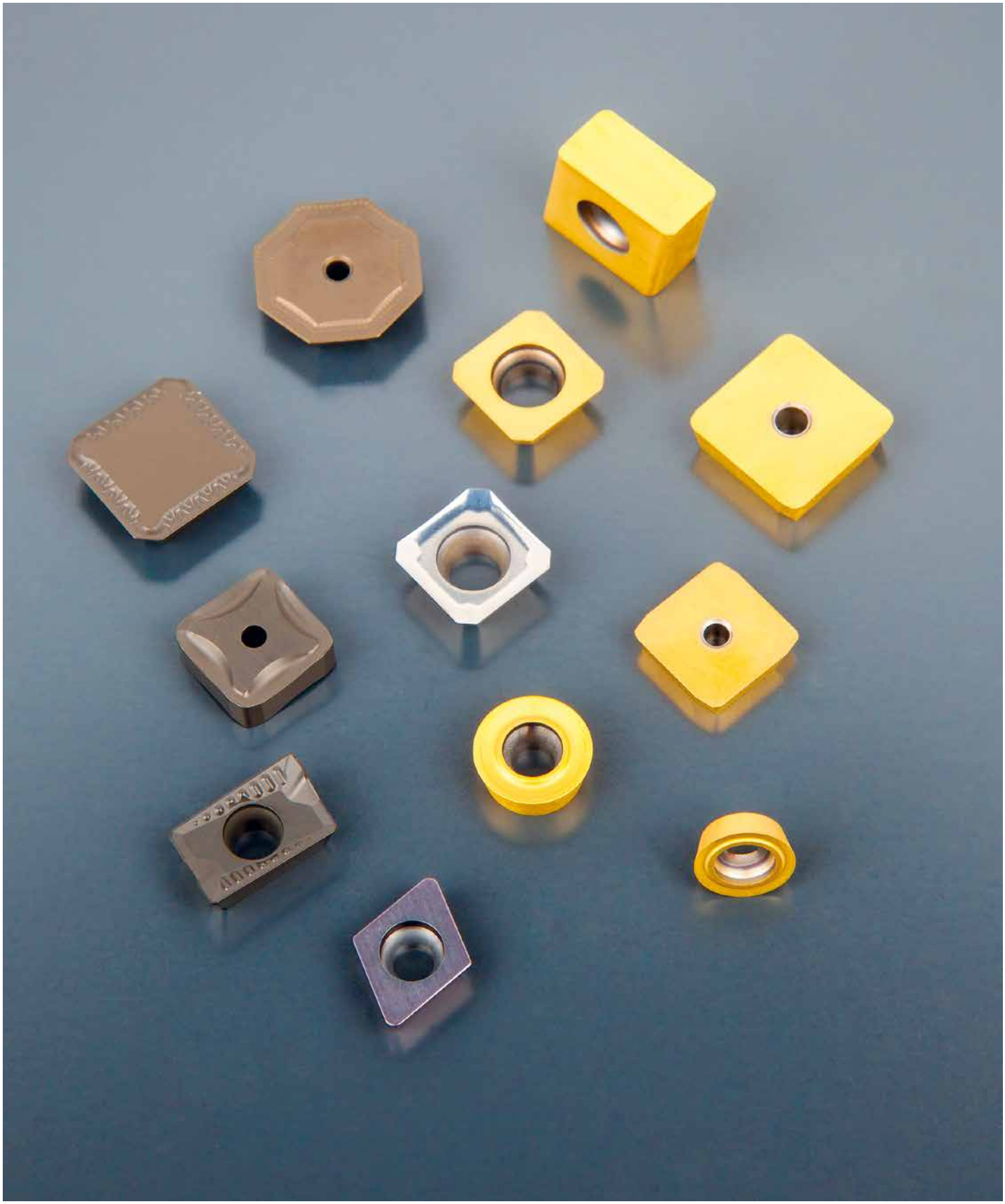
	a_p	d_{min}	d_{max}	X.V	f_{min} ⇨	f_{max} ⟹
15	.276	1.378	3.567	1.16	.017	.028
25	.472	1.378	3.437	1.16	.008	.013
30	.551	1.378	3.350	1.17	.006	.010
35	.630	1.378	3.244	1.17	.005	.008
40	.709	1.378	3.126	1.17	.004	.006
45	.787	1.378	2.992	1.18	.004	.006
50	.866	1.378	2.850	1.18	.003	.005
55	.906	1.378	2.693	1.20	.003	.004
60	.984	1.378	2.524	1.20	.003	.004
25	.472	1.772	3.831	1.18	.009	.013
30	.551	1.772	3.740	1.18	.007	.010
35	.630	1.772	3.638	1.19	.006	.008
40	.709	1.772	3.524	1.19	.005	.007
45	.787	1.772	3.386	1.20	.004	.006
50	.866	1.772	3.244	1.21	.004	.005
55	.906	1.772	3.087	1.22	.004	.004
60	.984	1.772	2.917	1.23	.003	.004
75	1.102	1.772	2.366	1.31	.003	.003

Cutters with setting angle 15°can be used as HFC. Use feeds from chamfers table.

Las fresas con ángulo de posición de 15° se pueden utilizar para alto avance (HFC). Utilizar los avances indicados en la tabla de chaflanes.

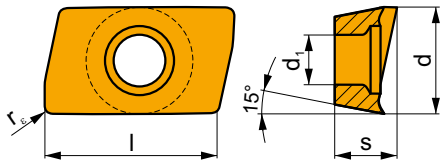
Les fraises avec un angle d'attaque de 15° peuvent être utilisées en grande avance (HF). Utiliser les avances de la table des chanfreins.

OTHER INSERTS
OTRAS PLAQUITAS
AUTRES PLAQUETTES

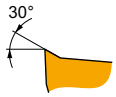


ADEX 07-FA

	d	d_1	l	s
0702	0.177	0.087	0.274	0.098

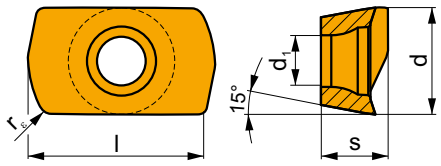


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADEX 070204FR-FA	M0315				■			●	++	0.016	0.001	0.008	0.004	0.197
	HF7				■			●	+/-	0.016	0.001	0.008	0.004	0.197
ADEX 070208FR-FA	HF7				■			●	+/-	0.031	0.001	0.008	0.004	0.197

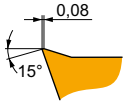


ADEX 07-HF

	d	d_1	l	s
0702	0.175	0.087	0.254	0.098

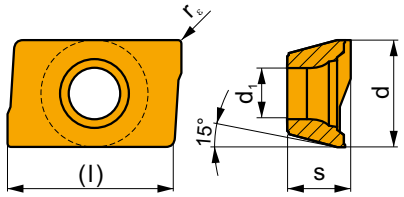


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADEX 070206SR-HF	M6330	◪	■			◪		⬢	-	0.024	0.008	0.035	0.004	0.012
	M8330	■	◪	□		□	□	⬢	-	0.024	0.008	0.035	0.004	0.012
	M8340	■	■	□		◪		⬢	+/-	0.024	0.008	0.035	0.004	0.012

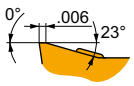


ADKT 15

	d	d_1	l	s
1505	.375	.173	.612	.220



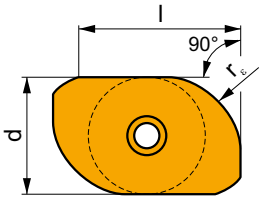
ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADKT 1505PDER-M	M9315	■		◪				●	- - -	.031	.006	.009	.039	.512
	M9325	■	◪			◪		⬣	- - -	.031	.006	.009	.039	.512
	M8330	■	◪	■		□		⬣	-	.031	.006	.009	.039	.512
	M8340	■	■	◪		◪		⬣	+ / -	.031	.006	.012	.039	.512



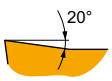
ADKX 15

	d	l	s
15T3	.375	.480	.156



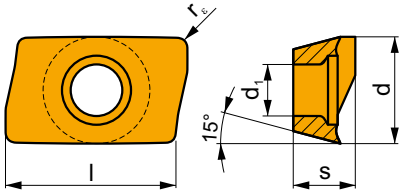


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADKX 15T308ER-F	M8345	■	■			■		⬣	+ / -	.031	.002	.005	.012	.394
ADKX 15T330ER-F	M8345	■	■			■		✖	+ / -	.118	.002	.006	.012	.394
ADKX 15T340ER-F	M8345	■	■			■		✖	+ / -	.157	.002	.007	.012	.394
ADKX 15T360ER-F	M8345	■	■			■		✖	+ / -	.236	.002	.010	.012	.394

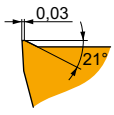


ADMX 07

	d	d_1	l	s
0702	0.176	0.087	0.274	0.098

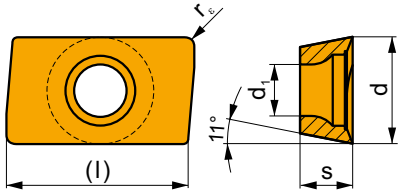


	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
1	ADMX 070208SR-M	M6330	◪	■			◪		●	-	0.031	0.001	0.005	0.004	0.197
U															
S															

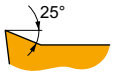


APET 16-FA

	d	d_1	l	s
1604	.378	.177	.669	.187

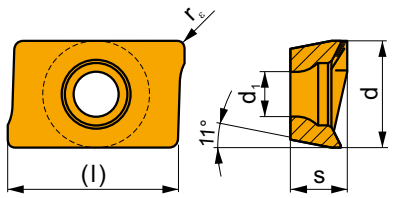


	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
F	APET 160408FR-FA	HF7				■			●	+ / -	.031	.002	.016	.031	.591

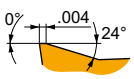


APKT 10

	d	d_1	l	s
1003	.264	.113	.433	.138

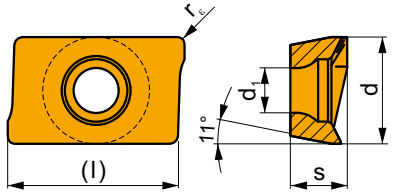


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
APKT 1003PDER-M	M9315	■		◪				●	---	.020	.004	.008	.039	.354
	M9325	■	◪			◪		●	---	.020	.004	.008	.039	.354
	M9340	◪	■					⬬	---	.020	.004	.008	.039	.354
	M8330	■	◪	■		□		⬬	-	.020	.004	.010	.039	.354
	M8340	■	■	◪		◪		⬬	+/-	.020	.004	.010	.039	.354
	8215	◪	◪	■		□		⬬	-	.020	.004	.010	.039	.354

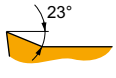


APKT 10-FA

	d	d_1	l	s
1003	.264	.113	.433	.138

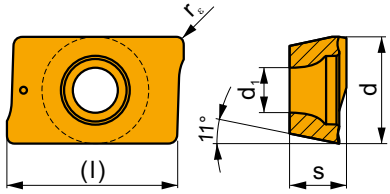


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
APKT 1003PDFR-FA	HF7				■			●	+/-	.020	.002	.012	.031	.354



APKT 16

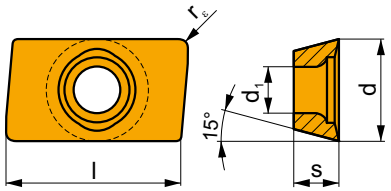
	d	d_1	l	s
1604	.372	.177	.669	.223



ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
APKT 1604PDR-GM	M9315	■		◪				●	- - -	.031	.006	.009	.039	.512
	M9325	■	◪			◪		●	- - -	.031	.006	.009	.039	.512
	M9340	◪	■					⬢	- - -	.031	.006	.009	.039	.512
	M8330	■	◪	■		□		⬢	-	.031	.006	.012	.039	.512
	M8340	■	■	◪		◪		⬢	+ / -	.031	.006	.012	.039	.512
	8230	■	■	■		◪		⬢	-	.031	.006	.012	.039	.512
APKT 1604PDR-HM	M5315			■				●	- - -	.031	.008	.014	.039	.512
	M9315	■		◪				●	- - -	.031	.008	.014	.039	.512
	M9325	■	◪			◪		⬢	- - -	.031	.008	.014	.039	.512
	M8330	■	◪	■		□		⬢	-	.031	.008	.014	.039	.512
	M8340	■	■	◪		◪		⬢	+ / -	.031	.008	.014	.039	.512
	8215	◪	◪	■		□		⬢	-	.031	.008	.014	.039	.512
	8230	■	■	■		◪		⬢	-	.031	.008	.014	.039	.512
APKT 160404-HM	M8340	■	■	◪		◪		⬢	+ / -	.016	.008	.014	.020	.512
APKT 160416-HM	M8340	■	■	◪		◪		✖	+ / -	.063	.008	.014	.039	.512
APKT 160431-HM	M8340	■	■	◪		◪		✖	+ / -	.122	.008	.014	.039	.512

APMT 16

	d	d_1	l	s
1604	.378	.177	.669	.187

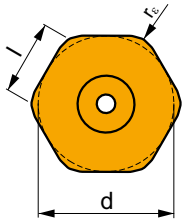


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
APMT 1604PDER-F	**M9340**	◪	■			◪		●	- - -	–	.003	.005	.012	.512
	M8330	■	◪	◪	□	□		⧓	-	–	.003	.006	.012	.512
APMT 1604PDER-FM	**M8330**	■	◪	◪	□	□		⧓	-	–	.005	.010	.024	.512
	M8345	■	■			□		⧓	+ / -	–	.005	.010	.024	.512
APMT 1604PDER-R	**M8330**	■	□	■				⧓	-	–	.006	.012	.031	.512
	M8345	■	□					⧓	+ / -	–	.006	.012	.031	.512
APMT 1604PDSR-R	**M8330**	■	□	■				✖	-	–	.007	.016	.031	.512
	M8345	■	□					✖	+ / -	–	.007	.016	.031	.512

PRAMET

HNEF 09

	d	l	s
0905	.638	.370	.222

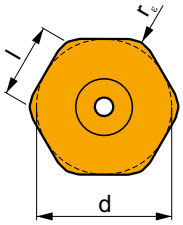




ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
HNEF 0905DNFN-F	M5315	☐		■				●	---	.016	.003	.008	.012	.118
	M8310	☐		■				●	-	.016	.003	.008	.012	.118
HNEF 090508EN-M	M5315	☐		■				●	---	.031	.007	.012	.039	.157
	8215	☐		■				●	-	.031	.007	.012	.039	.157
HNEF 0905ZZR-W	M5315	☐		■				●	---	.031	.003	.008	.012	.118
	8215	☐		■				●	-	.031	.003	.008	.012	.118

HNMF 09

	d	l	s
0905	.638	.370	.222

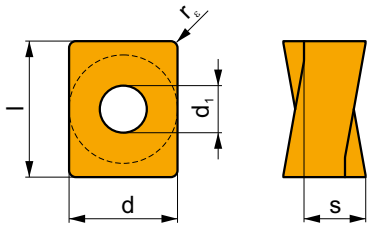




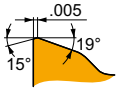
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
HNMF 090516SN-R	M5315	☐		■			☐	✖	---	.063	.009	.020	.059	.236
	M9325	☐						✖	---	.063	.009	.020	.059	.236
	8215	☐		■			☐	✖	-	.063	.009	.020	.059	.236

LNGU 16

	d	d_1	l	s
1607	.520	.224	.654	.295



ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
LNGU 160708SR-M	M9315	■		◪			◪	●	- - -	.031	.004	.011	.039	.512
	M9325	■						✖	- - -	.031	.004	.011	.039	.512
	M8340	■		◪				✖	+ / -	.031	.004	.012	.039	.512
	8215	■		■			◪	✖	-	.031	.004	.012	.039	.512

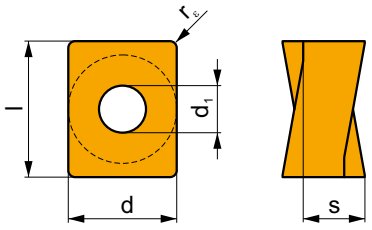


ISO		f_{min}	f_{max}	M5315	M9315	M9325	M6330	M8310	M8340	8215	M8330	HF7
P	●	.0039	.0098	1070	1047	1010	787	899	801	863	787	–
	●	.0039	.0079	997	961	912	702	814	702	751	689	–
	✖	.0039	.0059	912	863	801	617	725	604	640	591	–
K	●	.0039	.0098	1020	997	–	–	850	751	814	751	–
	●	.0039	.0079	948	912	–	–	774	666	715	653	–
	✖	.0039	.0059	873	823	–	–	689	577	604	568	–
N	●	.0039	.0098	–	–	–	–	–	–	–	–	837
	●	.0039	.0079	–	–	–	–	–	–	–	–	751
	✖	.0039	.0059	–	–	–	–	–	–	–	–	653
H	●	.0039	.0079	210	210	–	–	174	–	174	148	–
	●	.0039	.0059	197	184	–	–	161	–	148	135	–
	✖	.0039	.0047	174	174	–	–	135	–	125	112	–

PRAMET

LNMU 16

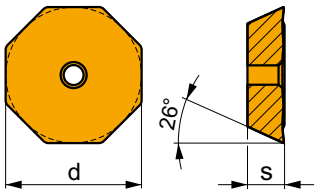
	d	d_1	l	s
1607	.520	.224	.654	.295



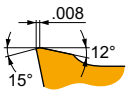
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
LNMU 160708ER-F	M8340	■		◪				●	+ / -	.031	.003	.008	.012	.512
	8215	■		◪				●	-	.031	.003	.008	.012	.512
LNMU 160708SR-M	M9325	■						●	- - -	.031	.004	.007	.012	.512
	M6330	◪						✖	-	.031	.004	.012	.012	.512
	M8340	■		◪				✖	+ / -	.031	.004	.012	.012	.512
	8215	■		■			□	●	-	.031	.004	.012	.012	.512
LNMU 160720SR-M	M8340	■		◪				✖	+ / -	.079	.004	.012	.012	.512
LNMU 160730SR-M	M8340	■		◪				✖	+ / -	.118	.004	.012	.012	.512
LNMU 160740SR-M	M8340	■		◪				✖	+ / -	.157	.004	.012	.012	.512
LNMU 160708SR-R	M5315	◪		■			◪	●	- - -	.031	.006	.014	.039	.512
	M9315	■		◪			◪	●	- - -	.031	.006	.014	.039	.512
	M9325	■						✖	- - -	.031	.006	.014	.039	.512
	M8310	■		■			◪	✖	-	.031	.006	.016	.039	.512
	M8340	■		◪				✖	+ / -	.031	.006	.016	.039	.512
	8215	■		■			◪	✖	-	.031	.006	.016	.039	.512
LNMU 160716SR-R	M9315	■		◪			◪	✖	- - -	.063	.006	.014	.039	.512
	M9325	■						✖	- - -	.063	.006	.014	.039	.512
	M8340	■		◪				✖	+ / -	.063	.006	.016	.039	.512

OFKR 07

	d	d_1	s
0704	.703	.104	.180

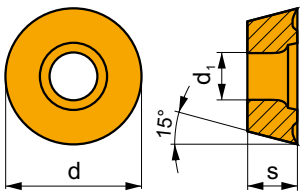


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
OFKR 0704SN-M	M9340	◪	■					✱	---	–	.004	.012	.020	.472
	M8330	■	◪	◪				✖	-	–	.004	.012	.020	.472
	M8340	■	■	◪				✱	+/-	–	.004	.012	.020	.472

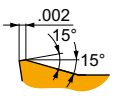


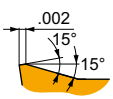
RDET

	d	d_1	s
1003	.394	.173	.125
10T3	.394	.173	.156
12T3	.472	.173	.156



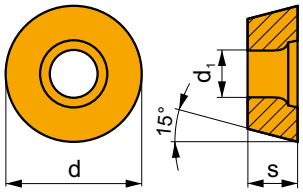
ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDET 1003MOSN	M8340	■	■	◪		◪		✖	+/-	–	.004	.012	.020	.079
RDET 10T3MOSN	M8340	■	■	◪		◪		✖	+/-	–	.004	.014	.020	.098
RDET 12T3MOSN	M8340	■	■	◪		◪		✖	+/-	–	.004	.014	.020	.118





RDEW

	d	d_1	s
1003	.394	.173	.125
10T3	.394	.173	.156
12T3	.472	.173	.156

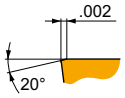


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDEW 1003MOSN	8215	◪	□	■			■	✖	-	–	.004	.014	.020	.098

HFC

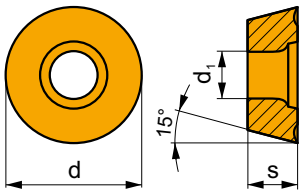
S





RDEX

	d	d_1	s
1204	.472	.173	.187

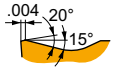


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDEX 1204MOSN-12	M8340	■	■	◪		◪		✖	+ / -	–	.005	.016	.020	.118

HFC

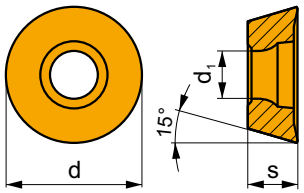
S



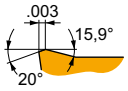


RDGT 07

	d	d_1	s
0702	.276	.110	.094

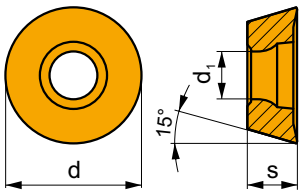


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDGT 0702MOT	M8325	■	◪	□		□		●	-	–	.004	.008	.012	.079
	M8345	■	■			◪		✖	+/-	–	.004	.008	.012	.079

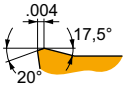


RDGT 10

	d	d_1	s
1003	.394	.154	.125



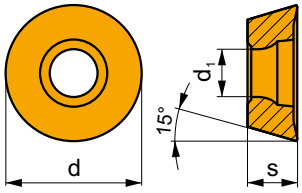
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDGT 1003MOT	M9340	◪	■			◪		●	---	–	.004	.009	.020	.098
	M6330	◪	■			◪		✖	-	–	.004	.012	.020	.098
	M8310	■	◪	◪		□	□	●	-	–	.004	.012	.020	.098
	M8325	■	◪	□		□		●	-	–	.004	.012	.020	.098
	M8345	■	■			◪		✖	+/-	–	.004	.012	.020	.098



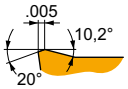
PRAMET

RDGT 12

	d	d_1	s
12T3	.472	.154	.156

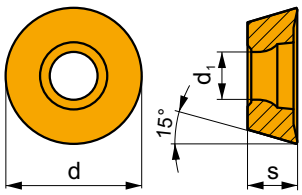


ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDGT 12T3MOT	M9340	◪	■			◪			---	–	.004	.010	.039	.118
	M6330	◪	■			◪		✖	-	–	.004	.014	.039	.118
	M8310	■	◪	◪		□	□		-	–	.004	.014	.039	.118
	M8325	■	◪	□		□			-	–	.004	.014	.039	.118
	M8345	■	■			◪		✖	+/-	–	.004	.014	.039	.118

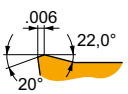


RDGT 16

	d	d_1	s
1604	.630	.205	.187

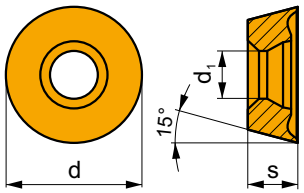


ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDGT 1604MOT	M9340	◪	■			◪			---	–	.004	.012	.039	.157
	M6330	◪	■			◪		✖	-	–	.004	.016	.039	.157
	M8310	■	◪	◪		□	□		-	–	.004	.016	.039	.157
	M8325	■	◪	□		□			-	–	.004	.016	.039	.157
	M8345	■	■			◪		✖	+/-	–	.004	.016	.039	.157

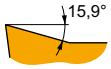


RDHT 07-FA

	d	d_1	s
0702	.276	.110	.094
07T1	.276	.110	.078

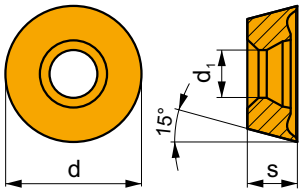


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDHT 0702MO-FA	HF7				■			●	+/-	–	.004	.008	.012	.079

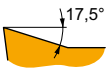


RDHT 10-FA

	d	d_1	s
1003	.394	.154	.125

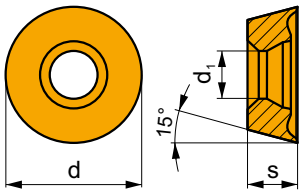


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDHT 1003MO-FA	HF7				■			●	+/-	–	.004	.012	.012	.098



RDHT 12-FA

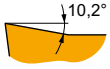
	d	d_1	s
12T3	.472	.154	.156



	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	RDHT 12T3MO-FA	HF7				■			●	+ / -	–	.004	.012	.012	.118

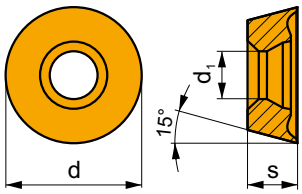
HFC

F



RDHT 16-FA

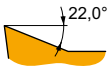
	d	d_1	s
1604	.630	.205	.187



	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	RDHT 1604MO-FA	HF7				■			●	+ / -	–	.004	.016	.012	.157

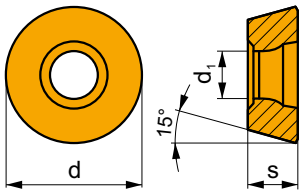
HFC

F

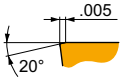


RDHX 07

	d	d_1	s
0702	.276	.110	.094
07T1	.276	.110	.078

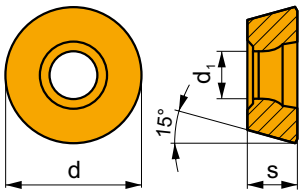


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDHX 0702MOT	M4303	◪	□	■			■	✖	-	–	.004	.008	.020	.079
	M8310	◪	□	■			■	✖	-	–	.004	.008	.020	.079
	M8325	◪	□	□				✖	-	–	.004	.008	.020	.079
	7205	◪	□	■			■	✖	-	–	.004	.007	.020	.079
RDHX 07T1MOT	M8310	◪	□	■			■	✖	-	–	.004	.007	.020	.079
	M8325	◪	□	□				✖	-	–	.004	.007	.020	.079

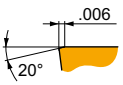


RDHX 10

	d	d_1	s
1003	.394	.154	.125



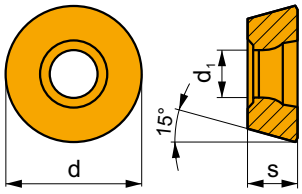
ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDHX 1003MOT	M4303	◪	□	■			■	✖	-	–	.004	.012	.020	.098
	M8310	◪	□	■			■	✖	-	–	.004	.012	.020	.098
	M8325	◪	□	□				✖	-	–	.004	.012	.020	.098
	M8345	◪	□					✖	+ / -	–	.004	.012	.020	.098
	7205	◪	□	■			■	✖	-	–	.004	.012	.012	.098



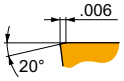
PRAMET

RDHX 12

	d	d_1	s
12T3	.472	.154	.156

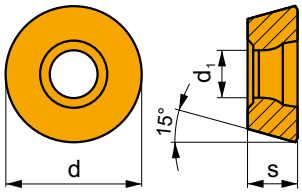


	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	RDHX 12T3MOT	M4303	◪	□	■			■	✖	-	–	.004	.014	.039	.118
		M8310	◪	□	■			■	✖	-	–	.004	.014	.039	.118
		M8325	◪	□	□				✖	-	–	.004	.014	.039	.118
		M8345	◪	□					✖	+/-	–	.004	.014	.039	.118
		7205	◪	□	■			■	✖	-	–	.004	.014	.039	.118

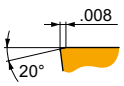


RDHX 16

	d	d_1	s
1604	.630	.205	.187

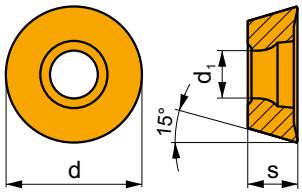


	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	RDHX 1604MOT	M9325	◪	□					✖	---	–	.008	.016	.039	.157
		M8310	◪	□	■			■	✖	-	–	.008	.016	.039	.157
		M8325	◪	□	□				✖	-	–	.008	.016	.039	.157
		M8345	◪	□					✖	+/-	–	.008	.016	.039	.157

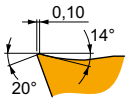


RDMT 07

	d	d_1	s
0702	7,000	2,8	2,38

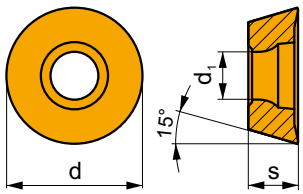


	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
HFC, S	RDMT 0702MOT	M8325	■	◪	□					-	–	0,10	0,20	0,3	2,0

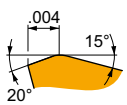


RDMT 10

	d	d_1	s
1003	.394	.154	.125

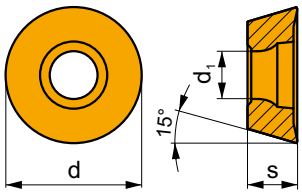


	ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
HFC, S	RDMT 1003MOT	M8325	■	◪	□					-	–	.005	.012	.020	.098
		M8345	■	◪					✖	+ / -	–	.005	.012	.020	.098



RDMT 12

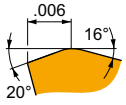
	d	d_1	s
12T3	.472	.154	.156



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDMT 12T3MOT	M8325	■	◪	□					-	–	.006	.014	.039	.118
	M8345	■	◪						+/-	–	.006	.014	.039	.118

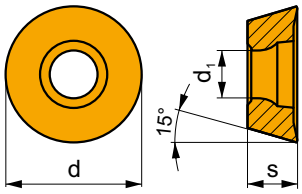
HFC

S



RDMT 16

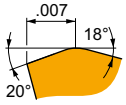
	d	d_1	s
1604	.630	.205	.187



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDMT 1604MOT	M8325	■	◪	□					-	–	.007	.016	.039	.157
	M8345	■	◪						+/-	–	.007	.016	.039	.157

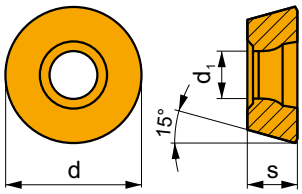
HFC

S

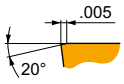


RDMX 10

	d	d_1	s
1003	.394	.154	.125

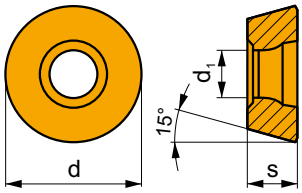


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDMX 1003MOT	M8310	◪	□	■			■	✖	-	–	.004	.012	.020	.098
	M8325	◪	□	□				✖	-	–	.004	.012	.020	.098
	M8345	◪	□					✖	+/-	–	.004	.012	.020	.098

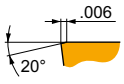


RDMX 12

	d	d_1	s
12T3	.472	.154	.156

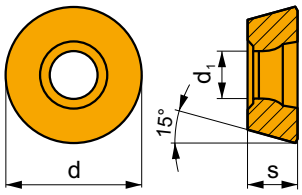


ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDMX 12T3MOT	M8310	◪	□	■			■	✖	-	–	.004	.014	.039	.118
	M8325	◪	□	□				✖	-	–	.004	.014	.039	.118
	M8345	◪	□					✖	+/-	–	.004	.014	.039	.118

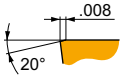


RDMX 16

	d	d_1	s
1604	.630	.205	.187

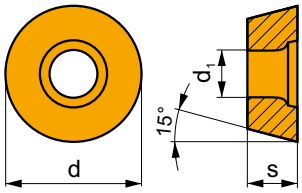


ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDMX 1604MOT	M8310	◪	□	■			■	✖	-	–	.008	.016	.039	.157
	M8325	◪	□	□				✖	-	–	.008	.016	.039	.157
	M8345	◪	□					✖	+/-	–	.008	.016	.039	.157



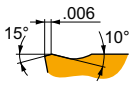
RPET 12

	d	d_1	s
1204	.472	.173	.187



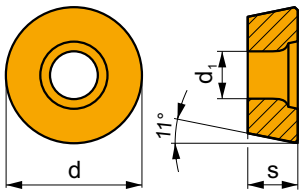
ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RPET 1204MOSN	M8330	■	◪	◪		□	□	✖	-	–	.005	.016	.020	.118
	M8340	■	■	◪		◪		✖	+ / -	–	.005	.016	.020	.118
	8215	◪	◪	◪		□	□	✖	-	–	.005	.016	.020	.118

HFC



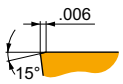
RPEW 12

	d	d_1	s
1204	.472	.173	4,76



ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RPEW 1204MOSN	M8325	◪	□	□				✖	-	–	.004	.016	.020	.118
	M8330	◪	□	■			◪	✖	-	–	.004	.016	.020	.118
	M8340	◪	□	◪				✖	+ / -	–	.004	.016	.020	.118
	8215	◪	□	■			■	✖	-	–	.004	.016	.020	.118

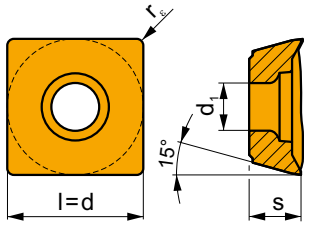
HFC

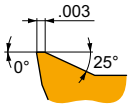
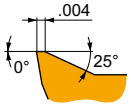
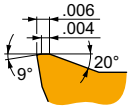


PRAMET

SDMT 12

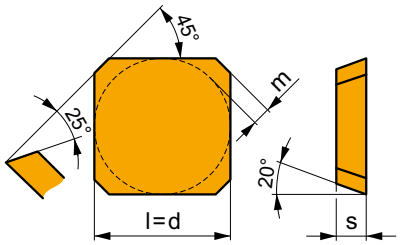
	d	d_1	l	s
1205	.500	.173	.500	.197



		ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
S		SDMT 120508SR-F	M8330	■	◪	◪	□	□		⬢	-	.031	.003	.010	.039	.197
			M8340	■	■	◪		◪		⬢	+/-	.031	.003	.010	.039	.197
1 U S		SDMT 120508SR-M	M9325	■	◪			◪		⬢	---	.031	.004	.007	.039	.394
			M8330	■	◪	◪	□	□		⬢	-	.031	.004	.010	.039	.394
			M8340	■	■	◪		◪		✖	+/-	.031	.004	.010	.039	.394
			8215	◪	◪	◪	◪	□		⬢	-	.031	.004	.010	.039	.394
P		SDMT 120508PR-R	M9315	■		◪				⬢	---	.031	.008	.013	.039	.394
			M9325	■	◪			◪		⬢	---	.031	.008	.013	.039	.394
			M8330	■	◪	◪		□		✖	-	.031	.008	.018	.039	.394
			M8340	■	■	◪		■		✖	+/-	.031	.008	.018	.039	.394

SEEN

	d	l	m	s
42	.500	.500	.063	.125
43	.500	.500	.063	.187
53	.625	.625	.079	.187

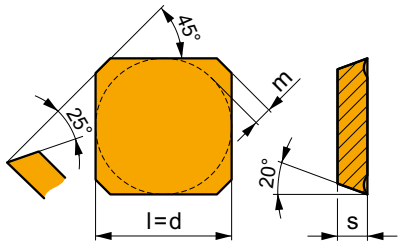


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SEEN 42AFFN	M9340	■	◪					●	- - -	–	.002	.010	.020	.256
	M8330	■	◪	□	□			●	-	–	.002	.012	.020	.256
	M8340	■	◪	□				●	+ / -	–	.002	.012	.020	.256
SEEN 43AFFN	M8340	■	◪	□				●	+ / -	–	.002	.016	.020	.256
SEEN 42AFSN	M9315	◪		◪			◪	●	- - -	–	.006	.013	.039	.256
	M9325	◪	□					●	- - -	–	.006	.013	.039	.256
	M9340	◪	◪					●	- - -	–	.006	.013	.039	.256
	M8330	■	◪	□	□			✖	-	–	.006	.016	.039	.256
	M8340	■	◪	□				✖	+ / -	–	.006	.016	.039	.256
	8215	◪	□	■			◪	●	-	–	.006	.012	.039	.256
SEEN 43AFSN	M8340	■	◪	□				✖	+ / -	–	.006	.016	.039	.256
SEEN 53AFSN	M9315	◪		◪			◪	●	- - -	–	.008	.013	.039	.354
	M9325	◪	□					●	- - -	–	.008	.013	.039	.354
	M9340	◪	◪					●	- - -	–	.008	.013	.039	.354
	M8330	■	◪	□	□			✖	-	–	.008	.016	.039	.354
	M8340	■	◪	□				✖	+ / -	–	.008	.016	.039	.354

PRAMET

SEER

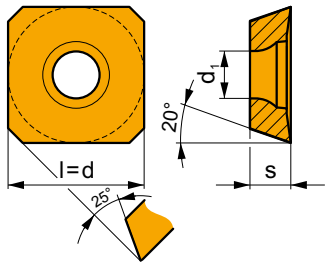
	d	l	m	s
42	.500	.500	.063	.125
43	.500	.500	.063	.187
53	.625	.625	.079	.187



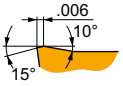
ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SEER 42AFEN	M8330	■	◪	◪		□	□		-	–	.008	.012	.020	.256
	M8340	■	■	◪		◪			+/-	–	.008	.012	.020	.256
SEER 43AFEN	M8330	■	◪	◪		□	□		-	–	.008	.016	.020	.256
SEER 53AFEN	M8330	■	◪	◪		□	□		-	–	.008	.016	.020	.354
SEER 42AFSN	M9325	■	◪			◪			- - -	–	.008	.012	.039	.256
	M9340	◪	■						- - -	–	.008	.012	.039	.256
	M8330	■	◪	◪		□	□		-	–	.008	.016	.039	.256
	M8340	■	■	◪		◪			+/-	–	.008	.016	.039	.256
SEER 43AFSN	M8330	■	◪	◪		□	□		-	–	.008	.016	.039	.256
	M8340	■	■	◪		◪		✖	+/-	–	.008	.016	.039	.256
SEER 53AFSN	M9325	■	◪			◪			- - -	–	.008	.012	.020	.354
	M9340	◪	■						- - -	–	.008	.012	.020	.354
	M8330	■	◪	◪		□	□		-	–	.008	.016	.039	.354
	M8340	■	■	◪		◪		✖	+/-	–	.008	.016	.039	.354

SEET 12-PM

	d	d_1	l	s
12T3	.528	.165	.528	.156

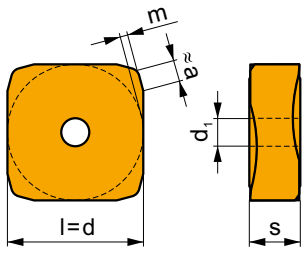


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SEET 12T3M-PM	M9325	■	◪			◪		✱	---	–	.008	.014	.039	.256
	M8330	■	◪	◪		□	□	✱	-	–	.008	.014	.039	.256
	M8340	■	■	◪		◪		✱	+/-	–	.008	.014	.039	.256

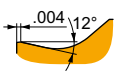


SNHF

	a	d	l	m	s
43	.079	.500	.500	.020	.187
53	.055	.625	.625	.043	.187



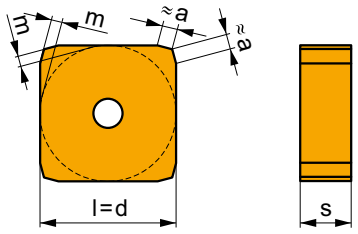
ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNHF 43ENSR-M	M9325	■	◪			□		✱	---	–	.006	.012	.039	.236
	M8330	■	◪	■		□		✖	-	–	.006	.012	.039	.236
	M8340	■	◪	◪		□		✖	+/-	–	.006	.016	.039	.236
SNHF 53ENSR-M	M8340	■	◪	◪		□		✖	+/-	–	.006	.016	.039	.354
	M8330	■	◪	■		□		✖	-	–	.006	.016	.039	.354



PRAMET

SNHN

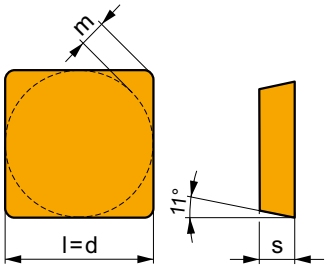
	a	d	l	m	s
43	.055	.500	.500	.037	.187
53	.055	.625	.625	.051	.187



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SNHN 43ENEN	M9315	◪		◪			◪	●	---	–	.004	.013	.020	.354
	M9325	◪	□					●	---	–	.004	.013	.020	.354
	M8330	■	◪	■		□		✖	-	–	.004	.016	.020	.354
	M8340	◪	□	◪				●	+/-	–	.004	.016	.020	.354
	8215	◪	□	■			◪	●	-	–	.004	.016	.020	.354
SNHN 53ENEN	M8330	■	◪	■		□		✖	-	–	.004	.016	.020	.531
	M8340	◪	□	◪				●	+/-	–	.004	.016	.020	.531
	8215	◪	□	■			◪	●	-	–	.004	.016	.020	.531

SPG

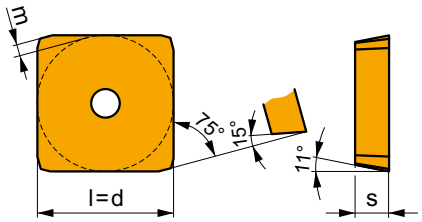
	d	l	m	s
32	.375	.375	.065	.125
42	.500	.500	.091	.125



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SPG 322	M8340	◪	□	◪				●	+/-	.031	.004	.010	.039	.236
SPG 421	M8330	◪	□	■			◪	●	-	.016	.004	.010	.020	.354
	M8340	◪	□	◪				●	+/-	.016	.004	.010	.020	.354
SPG 422	M8330	◪	□	■			◪	●	-	.031	.004	.010	.039	.354
SPG 532	M8330	◪	□	■			◪	●	-	.031	.004	.014	.039	.531
SPG 533	M8330	◪	□	■			◪	✖	-	.047	.004	.014	.047	.531

SPKN

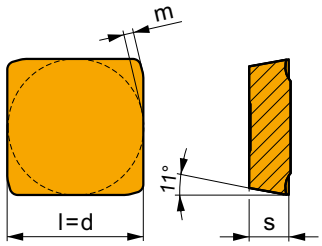
	d	l	m	s
42	.500	.500	.035	.125
53	.625	.625	.050	.187



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SPKN 42EDER	M8330	◪	□	■			◪	❦	-	–	.004	.010	.039	.354
	M8340	◪	□	◪				❦	+/-	–	.004	.010	.039	.354
SPKN 53EDER	M8330	◪	□	■			◪	❦	-	–	.004	.014	.039	.512
	M8340	◪	□	◪				❦	+/-	–	.004	.014	.039	.512
SPKN 53EDEL	M8330	◪	□	■			◪	❦	-	–	.004	.014	.039	.512
SPKN 42EDSR	M9315	◪		◪			◪	❦	---	–	.006	.010	.039	.354
	M9325	◪	□					❦	---	–	.006	.010	.039	.354
	M8330	◪	□	■			◪	❦	-	–	.006	.012	.039	.354
	M8340	◪	□	◪				❦	+/-	–	.006	.012	.039	.354
	8215	◪	□	■			◪	❦	-	–	.006	.012	.039	.354
SPKN 42EDSL	M8330	◪	□	■			◪	❦	-	–	.006	.012	.039	.354
SPKN 53EDSR	M5315	◪		■			◪	❦	---	–	.008	.013	.039	.512
	M9315	◪		◪			◪	❦	---	–	.008	.013	.039	.512
	M9325	◪	□					❦	---	–	.008	.013	.039	.512
	M8330	◪	□	■			◪	❦	-	–	.008	.016	.039	.512
	M8340	◪	□	◪				✖	+/-	–	.008	.016	.039	.512
	8215	◪	□	■			◪	❦	-	–	.008	.016	.039	.512

SPKR

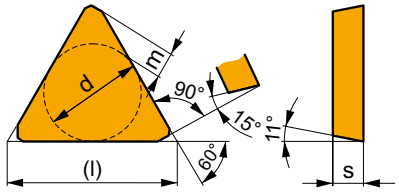
	d	l	m	s
42	.500	.500	.035	.125
53	.625	.625	.048	.187



ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SPKR 42EDSR	M9325	■	◪			◪		❦	---	–	.006	.009	.039	.354
	M8330	■	◪	◪		□	□	❦	-	–	.006	.012	.039	.354
	M8340	■	■	◪		◪		❦	+/-	–	.006	.012	.039	.354
SPKR 53EDSR	M8330	■	◪	◪		□	□	❦	-	–	.010	.018	.039	.472
	M8340	■	■	◪		◪		❦	+/-	–	.010	.018	.039	.472

TPKN

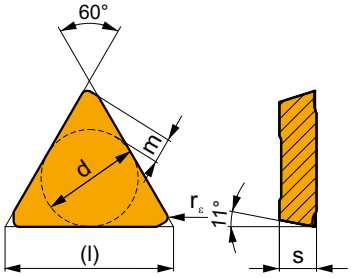
	d	l	m	s
32	.375	.650	.096	.125
43	.500	.866	.140	.187



ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TPKN 32PDER	**M8330**	◪	□	■			□	●	-	–	.004	.008	.039	.472
	M8340	◪	□	◪				●	+/-	–	.004	.008	.039	.472
TPKN 43PDER	**M8330**	◪	□	■			□	●	-	–	.004	.010	.039	.669
	M8340	◪	□	◪				●	+/-	–	.004	.010	.039	.669
	8215	◪	□	■			□	●	-	–	.004	.010	.039	.669
TPKN 32PDSR	**M8330**	◪	□	■			□	⬣	-	–	.008	.010	.039	.472
	M8340	◪	□	◪				⬣	+/-	–	.008	.010	.039	.472
TPKN 43PDSR	**M5315**	◪		■			□	●	---	–	.008	.010	.039	.669
	M9325	◪	□					●	---	–	.008	.010	.039	.669
	M8310	◪	□	■			□	●	-	–	.008	.012	.039	.669
	M8330	◪	□	■			□	⬣	-	–	.008	.012	.039	.669
	M8340	◪	□	◪				⬣	+/-	–	.008	.012	.039	.669

TPKR

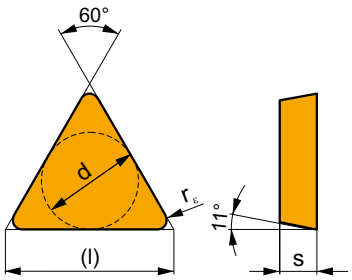
	d	l	m	s
32	.375	.650	.096	.125
43	.500	.866	.140	.187



ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TPKR 32PDSR	**M9340**	◪	◪					●	---	–	.004	.008	.039	.472
	M8330	■	◪	■				⬣	-	–	.004	.008	.039	.472
	M8340	■	◪	◪				⬣	+/-	–	.004	.008	.039	.472
TPKR 43PDSR	**M9325**	■	◪					●	---	–	.004	.010	.039	.669
	M9340	◪	◪					●	---	–	.004	.010	.039	.669
	M8330	■	◪	■				⬣	-	–	.004	.010	.039	.669
	M8340	■	◪	◪				⬣	+/-	–	.004	.010	.039	.669

TPU

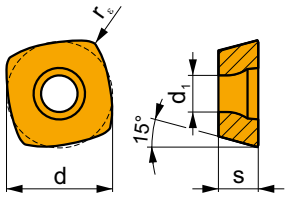
	d	l	s
22	.250	.433	.125
32	.375	.650	.125
43	.500	.866	.187



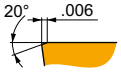
ANSI		P	M	K	N	S	H			r	f min	f max	a p min	a p max
TPU 221	M8330	◪	□	■			◪	●	-	.016	.004	.006	.020	.315
TPU 222	M8330	◪	□	■			◪	⬌	-	.031	.004	.006	.031	.315
TPU 321	M8330	◪	□	■			□	●	-	.016	.004	.008	.020	.472
	8215	◪	□	■			□	●	-	.016	.004	.008	.020	.472
TPU 322	M8330	◪	□	■			◪	⬌	-	.031	.004	.008	.039	.472
	8215	◪	□	■			□	●	-	.031	.004	.008	.039	.472
TPU 323	M8330	◪	□	■			◪	⬌	-	.047	.004	.008	.047	.472
TPU 432	M8330	◪	□	■			□	●	-	.031	.004	.010	.039	.669
	8215	◪	□	■			□	●	-	.031	.004	.010	.039	.669
TPU 433	M8330	◪	□	■			◪	⬌	-	.047	.004	.010	.047	.669

ZDCW 07

	d	d_1	l	s
0703	.268	.102	.268	.125



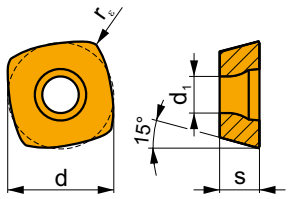
ANSI		P	M	K	N	S	H			r	f min	f max	a p min	a p max
ZDCW 070304	M8310	■		■			■	⬌	-	.016	.006	.059	.012	.039
	M8325	■		□				⬌	-	.016	.006	.059	.012	.039
	M8345	■						⬌	+ / -	.016	.006	.059	.012	.039
	7215	◪		■			■	⬌	-	.016	.006	.059	.012	.039
	7230	■		■			◪	⬌	-	.016	.006	.059	.012	.039



PRAMET

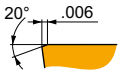
ZDCW 09

	d	d_1	l	s
09T3	.375	.134	.375	.156



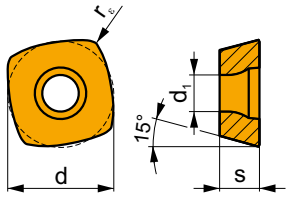
ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ZDCW 09T304	M8310	■		■			■	-	.016	.012	.079	.012	.039
	M8325	■		□				-	.016	.012	.079	.012	.039
	M8345	■						+/-	.016	.012	.079	.012	.039
	7205	◪		■			■	-	.016	.012	.079	.012	.039
	7215	◪		■			■	-	.016	.012	.079	.012	.039
	7230	■		■			◪	-	.016	.012	.079	.012	.039

HFC



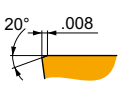
ZDEW 12

	d	d_1	l	s
1204	.500	.173	.500	.187



ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ZDEW 120408	M8310	■		■			■	-	.031	.020	.118	.012	.063
	M8325	■		□				-	.031	.020	.118	.012	.063
	M8345	■						+/-	.031	.020	.118	.012	.063
	7205	◪		■			■	-	.031	.008	.059	.012	.039

HFC



TECHNICAL INFORMATION

INFORMACIÓN TECNICA

PARTIE TECHNIQUE

RECOMMENDATIONS FOR DETERMINING STARTING CUTTING CONDITIONS
RECOMENDACIONES PARA DETERMINAR LAS CONDICIONES DE CORTE INICIALES
RECOMMANDATIONS POUR DÉTERMINER LES CONDITIONS D'USINAGE DE DÉPART

The end of the product section of individual tool groups includes a table of starting cutting speeds. The following example will allow you to determine the proper value with regard to the nature of the engagement conditions.

Example:
Milling of a flat surface on a steel component with a large amount of intermittent cutting (very unfavourable engagement conditions) using a 63A06R-S90AD11E-C milling cutter with ADMX 11T308SR-M, M9340 inserts.

First, choose feed based on working conditions and choose starting cutting speed. Then, amend the cutting speed based on the table of corrections which is included in the technical section for milling using data for hardness, condition of machined surface, condition of machine tool and required durability.

La fin de la section produit pour chaque groupe d'outils comprend un tableau de Vitesses de Coupe (Vc) de départ. L'exemple ci-dessous vous permettra de déterminer la valeur correcte des conditions d'engagement de base.

Exemple:
Fraisage d'une surface plane sur un composant en acier avec une quantité importante d'ouvertures (conditions d'engagement très défavorables) avec une fraise référence 63A06R-S90AD11E-C et des plaquettes ADMX 11T308SR-M nuance M9340.

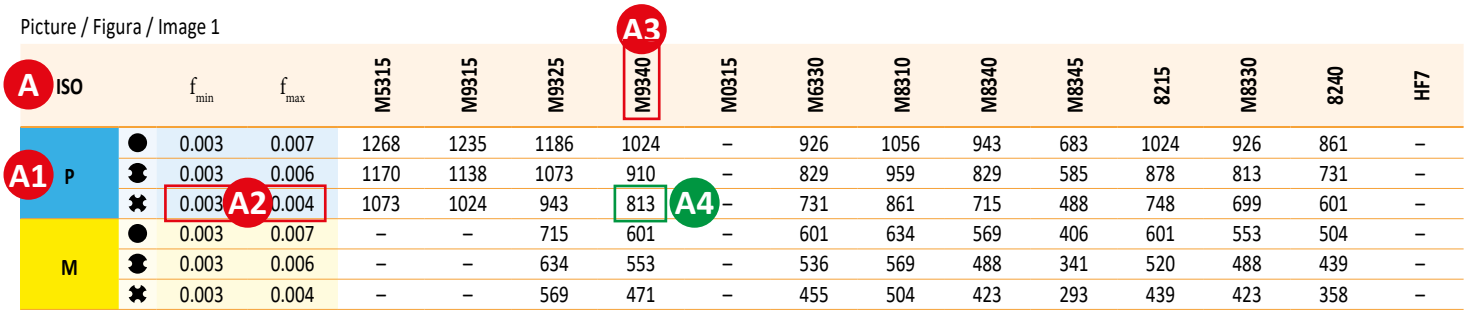
Choisissez tout d'abord l'avance par dent (f) dans l'intervalle proposé en fonction des conditions d'usinage puis choisissez la vitesse de coupe de départ. Corrigez ensuite la vitesse de coupe sur la base du tableau de corrections qui est inclus dans la section technique Fraisage, en utilisant les données de dureté matière, l'état de la surface usinée, l'état de la machine ainsi que la durée de vie souhaitée.

Al final de la sección de producto de cada grupo de herramientas se incluye una tabla de velocidades de corte iniciales. El siguiente ejemplo le permitirá determinar el valor correcto en función de las condiciones de trabajo.

Ejemplo:
Fresado de una superficie plana en una pieza de acero con una gran cantidad de agujeros (condiciones de trabajo muy desfavorables) utilizando una fresa 63A06R-S90AD11E-C con plaquitas ADMX 11T308SR-M, M9340.

Primero , elegir el avance en función de las condiciones de trabajo y elegir la velocidad de corte inicial. Luego, corregir la velocidad de corte en base a la tabla de correcciones incluida en la sección técnica de fresado utilizando los datos de dureza, estado de la superficie mecanizada, estado de la máquina y durabilidad requerida.

Picture / Figura / Image 1



A ISO		f_{min}	f_{max}	M5315	M9315	M9325	A3 M9340	M0315	M6330	M8310	M8340	M8345	8215	M8330	8240	HF7
A1 P	●	0.003	0.007	1268	1235	1186	1024	–	926	1056	943	683	1024	926	861	–
	⬣	0.003	0.006	1170	1138	1073	910	–	829	959	829	585	878	813	731	–
	✖	0.003 A2	0.004	1073	1024	943	813 A4	–	731	861	715	488	748	699	601	–
M	●	0.003	0.007	–	–	715	601	–	601	634	569	406	601	553	504	–
	⬣	0.003	0.006	–	–	634	553	–	536	569	488	341	520	488	439	–
	✖	0.003	0.004	–	–	569	471	–	455	504	423	293	439	423	358	–

A
Find table with cutting speeds
Tabla con velocidades de corte
Trouver le tableau des vitesses de coupe

A1
Find blue section of the table (steels – P)
Sección azul de la tabla (aceros – P)
Trouver la section correspondant au type de matière usinée (ex: Aciers – ISO P)

A2
Find feed for difficult engagement conditions (f_{min} = .003"/tooth, f_{max} = .004"/tooth)
Avance para condiciones de trabajo difíciles (f_{min} = .003"/rev, f_{max} = .004"/rev)
Trouver l'avance correspondant à des conditions défavorables (f_{min} = .003"/tr, f_{max} = .004"/tr)

A3
Find column with values for material M9340
Columna con valores para la calidad M9340
Trouver la colonne correspondant à la nuance carbure utilisée (M9340 dans l'exemple)

A4
Result = starting cutting speed 813 sfm
Resultado = velocidad de corte inicial 813 sfm
Résultat: Vitesse de Coupe de base recommandée: 813 sfm

You can further correct the starting cutting speed chosen from the catalogue section by taking into account the required durability:

Example:

Perform specification in relation to machine condition, required durability, blank - required tool life is 20 minutes. Machining is performed on a new machine with relatively low rigidity. The blank is a pre-machined cube of medium-carbon steel with hardness of 240 HB.

Vous pouvez également corriger la vitesse de coupe initiale choisie dans la section du catalogue en tenant compte de la durée de vie souhaitée:

Exemple:

Ajuster les spécifications en fonction de l'état de la machine, de la durée de vie souhaitée, de l'état du brut à usiner.

- La durée de vie de l'outil souhaitée est de 20 minutes.

- L'usinage est effectué sur une nouvelle machine avec une faible rigidité.

- Le brut est un cube pré-usiné en acier au carbone moyen avec une dureté de 240 HB

Posteriormente poderá corrigir a velocidade de corte inicial eleita a partir do catálogo tendo em conta a durabilidade requerida:

Exemplo:

Indicar especificação em relação ao estado da máquinan durabilidade requerida, peça. O tempo de vida do fio requerido é de 20 minutos. A mecanização realiza-se numa máquina nova com uma rigidez relativamente baixa. A peça é um cubo pré-mecanizado de aço com um conteúdo médio de carbono e uma dureza de 240 HB.

Picture / Figura / Image 2

Correction for durability (general machining) Corrección para duración (mecanizado general) Correction de durée de vie (usinage général)	
	k_{vT}
15	1.23
20	1.13
B1 30	1.00 B2
45	0.89
60	0.81
90	0.72

Correction for durability (heavy roughing) Corrección para duración (desbaste pesado) Correction de durée de vie (ébauche lourde)	
30	1.23
60	1.00
90	0.89
120	0.81

B1 Find required durability (20 min)
Duración requerida (20 min)
Trouver la durée de vie souhaitée (20 min)

B2 Result = correction coefficient for required durability (1.13 k_{vT})
Resultado = coeficiente de corrección para la duración requerida (1.13 k_{vT})
Résultat = coefficient de correction pour la durée de vie souhaitée (1.13 k_{vT})

RECOMMENDATIONS FOR DETERMINING STARTING CUTTING CONDITIONS
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Further corrections can be made with regard to the condition of the machine and the workpiece.

De plus amples corrections peuvent être apportées en fonction de l'état de la machine et de la pièce à usiner.

Se pueden realizar correcciones en función del estado de la máquina y de la pieza.

Picture / Figura / Image 3

Speed factor k_{vx} / Factor de velocidad k_{vx} / Facteur de vitesse k_{vx}	
C1 Forged and cast piece skin / Corteza de forja o de fundición Surface de pièce forgée et coulée	0.70 - 0.90 C2
C3 Good machine conditions / Buen estado de la máquina Bonnes conditions machine	1.05 - 1.20 C4
Unstable machine conditions / Mal estado de la máquina Mauvaises conditions machine	0.85 - 0.95

C1

The workpiece is a blank with pre-machined surface, i.e. WITHOUT SKIN - therefore, either do not include at all or use a factor of 1.0
Pieza con superficie pre-mecanizada, es decir, SIN CORTEZA - por tanto, bien no incluir o bien utilizar un factor de 1.0
La pièce à usiner est une ébauche avec une surface pré-usinée, c'est-à-dire NON BRUTE - donc, soit ne pas appliquer de facteur, soit utiliser un facteur de 1.0

C2

Result $k_{vx1} = 1$
Resultado $k_{vx1} = 1$
Résultat $k_{vx1} = 1$

C3

Find correction for machine condition (it is a new machine, i.e. condition very good)
Corrección para el estado de la máquina (es una máquina nueva, es decir, muy buen estado)
Trouver une correction pour l'état de la machine (c'est une nouvelle machine, c'est-à-dire en très bonne condition)

C4

Result $k_{vx2} = 1.05$ (choose the lower value from the range offered, since the machine is new, but its rigidity is relatively low)
Resultado $k_{vx2} = 1.05$ (elegir el valor más bajo del rango que se ofrece, ya que la máquina es nueva pero su rigidez es relativamente baja)
Résultat $k_{vx2} = 1.05$ (choisissez la valeur inférieure de la plage offerte, puisque la machine est nouvelle, mais sa rigidité est relativement faible)

Finally, perform correction with regard to the type of machined material and its hardness.

Finalmente, realizar la corrección en función del tipo de material mecanizado y su dureza.

Finalement, effectuer la correction en fonction du type de matériau usiné et de sa dureté.

RECOMMENDATIONS FOR DETERMINING STARTING CUTTING CONDITIONS
RECOMENDACIONES PARA DETERMINAR LAS CONDICIONES DE CORTE INICIALES
RECOMMANDATIONS POUR DÉTERMINER LES CONDITIONS D'USINAGE DE DÉPART

Picture / Figura / Image 4

D	P			
CORRECTION / CORRECCIÓN / CORRECTION v_c				
Subgroup / Subgrupo Sous-groupe	**P1**	**D1 P2**	**P3**	**P4**
Workpiece hardness factor / Factor de dureza / Facteur de dureté de la pièce usinée				
Hardness / Dureza / Dureté	kv_{HBP1}	kv_{HBP2}	kv_{HBP3}	kv_{HBP4}
120 HB	**1.53**	1.18	0.94	0.71
140 HB	**1.46**	1.12	0.90	0.67
160 HB	**1.37**	1.05	0.84	0.63
180 HB	**1.30**	**1.00**	0.80	0.60
200 HB	**1.24**	**0.95**	0.76	0.57
220 HB	**1.17**	**0.90**	**0.72**	0.54
D2 240 HB	**1.12**	**0.86** D3	**0.69**	0.52
260 HB	**1.07**	**0.82**	**0.66**	**0.49**
280 HB	1.04	**0.80**	**0.64**	**0.48**
300 HB	1.00	**0.77**	**0.62**	**0.46**
320 HB	0.96	0.74	**0.59**	**0.44**
340 HB	0.92	0.71	**0.57**	**0.43**
360 HB	0.88	0.68	**0.54**	**0.41**
375 HB	0.85	0.65	**0.52**	**0.39**

D	Find blue table (correction for steels – P) Tabla azul (correción para aceros – P) À partir de la table bleue (correction pour aciers – P)
D1	Find subgroup P2 (medium-carbon steel) Subgrupo P2 (acero medio en carbono) Trouver le sous-groupe P2 (Acier faiblement allié)
D2	Find required hardness (240 HB) Dureza (240 HB) Trouver la dureté matière appropriée (240 HB)
D3	Result = correction coefficient for machined material of required hardness ($0{,}86\ k_{vHB}$) Resultado = coeficiente de corrección para la dureza del material mecanizado ($0{,}86\ k_{vHB}$) Résultat = coefficient de correction de dureté pour la matière usinée ($0{,}86\ k_{vHB}$)

$$v_c = v_{30} \cdot k_{vT} \cdot k_{vx} \cdot (kvN) \cdot k_{vHB} \quad v_c = 250 \times 1.13 \times (1.00) \times 1.05 \times 0.86 = 255$$

Cutting speed determined in this way is the initial value (default) defining the basic cutting speed for a given operation. Variance in machinability of the workpiece material may require adjustment of the cutting speed to provide economical durability of the cutting edge.

La velocidad de corte determinada de esta forma es un valor inicial, definiendo la velocidad de corte básica para una operación dada. La variación en la maquinabilidad del material puede ser la principal causa de la necesidad de ajustar la velocidad de corte en caso de que necesitemos establecer una duración económica del filo de corte con relativa precisión.

La vitesse de coupe déterminée de cette manière est la valeur initiale (par défaut) définissant la vitesse de coupe de base pour une opération donnée. La variation de l'usinabilité du matériau usiné peut être une cause principale dans la nécessité d'ajuster la vitesse de coupe au cas où nous devons adhérer de manière relativement précise à la durée de vie économique de l'arête de coupe.

Table 1
Tabla 1
Tableau 1

CORRECTION TABLES FOR CUTTING SPEED
TABLAS DE CORRECCIÓN PARA LA VELOCIDAD DE CORTE
TABLES DE CORRECTION DE VITESSE DE COUPE

P

CORRECTION / CORRECCIÓN / CORRECTION v_c

Subgroup / Subgrupo Sous-groupe	P1	P2	P3	P4
Workpiece hardness factor / Factor de dureza / Facteur de dureté de la pièce usinée				
Hardness / Dureza / Dureté	kv_{HBP1}	kv_{HBP2}	kv_{HBP3}	kv_{HBP4}
120 HB	**1.53**	1.18	.94	.71
140 HB	**1.46**	1.12	.90	.67
160 HB	**1.37**	1.05	.84	.63
180 HB	**1.30**	**1.00**	.80	.60
200 HB	**1.24**	**.95**	.76	.57
220 HB	**1.17**	**.90**	**.72**	.54
240 HB	**1.12**	**.86**	**.69**	.52
260 HB	**1.07**	**.82**	**.66**	**.49**
280 HB	1.04	**.80**	**.64**	**.48**
300 HB	1.00	**.77**	**.62**	**.46**
320 HB	.96	.74	**.59**	**.44**
340 HB	.92	.71	**.57**	**.43**
360 HB	.88	.68	**.54**	**.41**
375 HB	.85	.65	**.52**	**.39**

M

CORRECTION / CORRECCIÓN / CORRECTION v_c

Subgroup / Subgrupo Sous-groupe	M1	M2	M3	M4
Workpiece hardness factor / Factor de dureza / Facteur de dureté de la pièce usinée				
Hardness / Dureza / Dureté	kv_{HBP1}	kv_{HBP2}	kv_{HBP3}	kv_{HBP4}
120 HB	**1.35**	1.31	1.24	1.15
140 HB	**1.28**	**1.24**	1.18	1.10
160 HB	**1.22**	**1.18**	**1.12**	1.04
180 HB	**1.14**	**1.11**	**1.05**	.98
200 HB	**1.09**	**1.06**	**1.00**	.93
220 HB	**1.03**	**1.00**	**.95**	.88
240 HB	.98	**.95**	**.90**	**.84**
260 HB	.93	**.91**	**.86**	**.80**
280 HB	.89	**.87**	**.82**	**.76**
300 HB	.87	**.84**	**.80**	**.74**
320 HB	.84	**.81**	.77	**.72**
340 HB	.80	.78	.74	**.69**
360 HB	.77	.75	.71	**.66**
375 HB	.74	.72	.68	**.63**

S

CORRECTION / CORRECCIÓN / CORRECTION v_c

Subgroup / Subgrupo Sous-groupe	S1	S2	S3	S4
Workpiece hardness factor / Factor de dureza / Facteur de dureté de la pièce usinée				
Hardness / Dureza / Dureté	kv_{HBP1}	kv_{HBP2}	kv_{HBP3}	kv_{HBP4}
120 HB	**2.14**	**1.46**	1.22	.92
140 HB	**2.01**	**1.38**	1.15	**.93**
160 HB	**1.93**	**1.32**	1.10	**.83**
180 HB	**1.89**	**1.30**	1.08	**.81**
200 HB	**1.84**	**1.26**	**1.05**	**.79**
220 HB	**1.80**	**1.24**	**1.03**	**.77**
240 HB	**1.75**	**1.20**	**1.00**	**.75**
260 HB	**1.70**	**1.16**	**.97**	**.73**
280 HB	**1.61**	**1.10**	**.92**	**.69**
300 HB	**1.54**	1.06	**.88**	**.66**
320 HB	**1.47**	1.01	**.84**	**.63**
340 HB	**1.40**	.96	**.80**	.60
360 HB	**1.37**	.94	**.78**	.59
375 HB	**1.30**	.89	.74	.56

H

CORRECTION / CORRECCIÓN / CORRECTION v_c

Subgroup / Subgrupo Sous-groupe	H1	H2	H3	H4
Workpiece hardness factor / Factor de dureza / Facteur de dureté de la pièce usinée				
Hardness / Dureza / Dureté	kv_{HBP1}	kv_{HBP2}	kv_{HBP3}	kv_{HBP4}
380 HB (40.8 HRC)	**1.84**	**1.76**	1.60	1.52
400 HB (42.7 HRC)	**1.73**	**1.65**	1.50	1.43
420 HB (44.6 HRC)	**1.61**	**1.54**	1.40	1.33
440 HB (46.5 HRC)	**1.50**	**1.43**	1.30	1.24
460 HB (48.1 HRC)	**1.38**	**1.32**	1.20	1.14
500 HB (50.8 HRC)	**1.15**	**1.10**	**1.00**	.95
520 HB (52.0 HRC)	1.09	1.05	**.95**	.90
540 HB (53.5 HRC)	1.04	.99	**.90**	.96
560 HB (54.7 HRC)	.98	.94	**.85**	.81
580 HB (55.7 HRC)	.92	.88	**.80**	**.76**
600 HB (56.8 HRC)	.86	.93	.75	**.71**
620 HB (57.9 HRC)	.81	.77	.70	**.67**
640 HB (59.0 HRC)	.75	.72	.65	**.62**
>640 HB (>59.0 HRC)	.69	.66	.60	**.57**

Table 1
Tabla 1
Tableau 1

CORRECTION TABLES FOR CUTTING SPEED
TABLAS DE CORRECCIÓN PARA LA VELOCIDAD DE CORTE
TABLES DE CORRECTION DE VITESSE DE COUPE

K

CORRECTION / CORRECCIÓN / CORRECTION v_c

Subgroup / Subgrupo Sous-groupe	K1	K2	K3	K4
Workpiece hardness factor / Factor de dureza / Facteur de dureté de la pièce usinée				
Hardness / Dureza / Dureté	kv_{HBP1}	kv_{HBP2}	kv_{HBP3}	kv_{HBP4}
120 HB	1.60	1.52	1.44	1.36
140 HB	1.45	1.38	1.31	1.23
160 HB	1.35	**1.28**	1.22	1.15
180 HB	1.25	**1.19**	**1.13**	1.06
200 HB	**1.10**	**1.05**	**.99**	0.94
220 HB	**1.00**	**.95**	**.90**	0.85
240 HB	**.90**	**.86**	**.81**	0.77
260 HB	**.80**	.76	.72	0.68
280 HB	**.70**	.67	.63	**0.60**
300 HB	.65	.62	.59	**0.55**
320 HB	.60	.57	.54	**0.51**
340 HB	.55	.52	.50	**0.47**
360 HB	.50	.48	.45	0.43
375 HB	.40	.38	.36	0.34

Correction for durability (general machining) Corrección para duración (mecanizado general) Correction de la durée de vie (usinage général)	
	k_{vT}
15	1.23
20	1.13
30	1.00
45	.89
60	.81
90	.72
Correction for durability (heavy roughing) Corrección para duración (desbaste pesado) Durée de vie (ébauche lourde)	
30	1.23
60	1.00
90	.89
120	.81

Speed factor k_{vx} / Factor de velocidad k_{vx} / Facteur de vitesse k_{vx}	
Forged and cast piece skin / Corteza de forja o de fundición Surface de pièce forgée et coulée	.70 – .90
Good machine conditions / Buen estado de la máquina Bonnes conditions machine	1.05 – 1.20
Unstable machine conditions / Mal estado de la máquina Mauvaises conditions machine	.85 – .95

N

CORRECTION / CORRECCIÓN / CORRECTION v_c

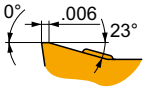
Group / Grupo / Groupe	N
Workpiece hardness factor / Factor de dureza / Facteur de dureté de la pièce usinée	
Alloy type / Tipo aleación / Type d'alliage	kv_x	Subgroup Subgrupo Sous-groupe
Electrotechnical aluminium Aluminio electrotécnico Aluminium électro-technique	2.00	
Al alloys formed, unhardened HB 60 Aleaciones de aluminio sin endurecer HB 60 Alliage d'Aluminium formé, non durci HB 60	1.50	**N1**
Al alloys formed, hardened HB 100 Aleaciones de aluminio endurecidas HB 100 Alliage d'Aluminium formé, durci HB 100	1.00	
Al alloys cast, unhardened HB75 Aleaciones de aluminio fundidas, sin endurecer HB 75 Alliage d'Aluminium coulé, non durci HB 75	.90	
Al alloys cast, hardened HB90 Aleaciones de aluminio fundidas, endurecidas HB 90 Alliage d'Aluminium coulé, durci HB 90	.65	**N2**
Al alloys cast, unhardened HB 130 >12% Si Aleaciones de aluminio fundidas, sin endurecer HB 130 >12 % Si Alliage d'Aluminium coulé, non durci HB 130 >12 % Si	1.0 PCD/0.20	
Highly machinable alloys (>1 % Pb) Aleaciones altamente mecanizables (>1 % Pb) Alliages hautement usinables (>1 % Pb)	.90	
Brass and lead bronze (<1 % Pb) Latón y bronce al plomo (<1 % Pb) Cuivre et laiton (<1 % Pb)	.75	**N3**
Other brass HB <90 Latón HB <90 Autres alliages de Laiton HB<90	.60	
Other brass HB >90 Latón HB >90 Autres alliages de Laiton HB >90	.54	
Bronze electrolytic Cu Bronce electrolítico, Cu Bronze électrolytique Cu	.40	**N4**
Hard and very hard bronze Bronce duro y muy duro Bronze dur et très dur	.6 PCD/0.20	

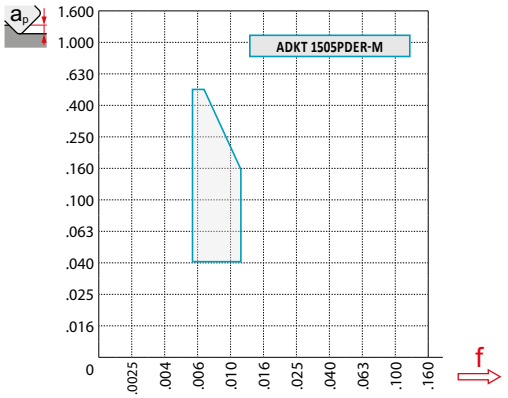
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS
GEOMETRÍA DE PLAQUITAS DE CORTE
GÉOMÉTRIE DE PLAQUETTES

ADKT 15



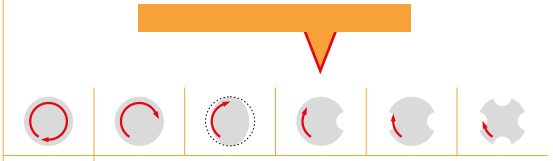




P	M	K	N	S	H
■	■	■		◪	

f .006 – .012

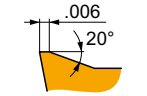
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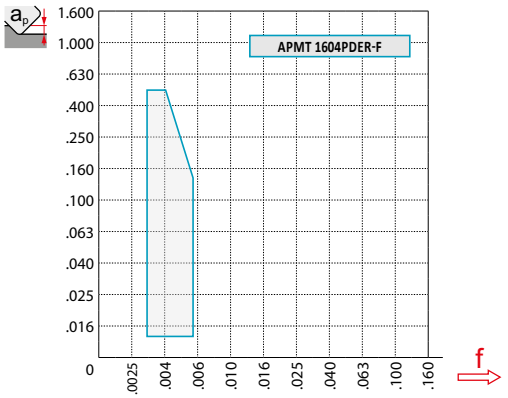


ADKT 1505PDER-M

APMT 16-F



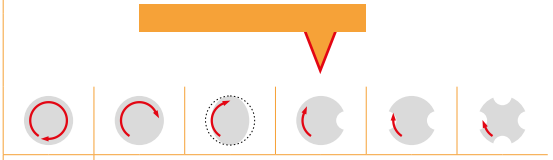




P	M	K	N	S	H
■	■	◪	□	◪	

f .002 – .005

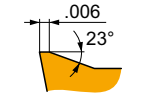
a_p .012 – .512

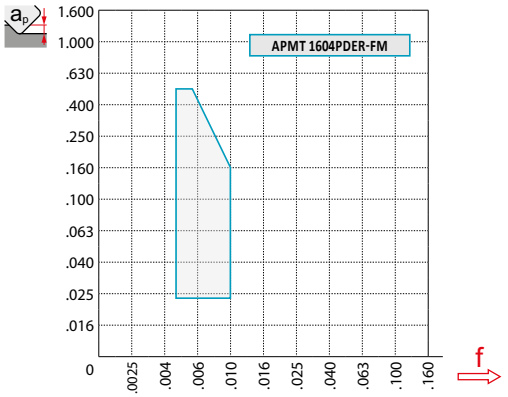


APMT 1604PDER-F

APMT 16-FM



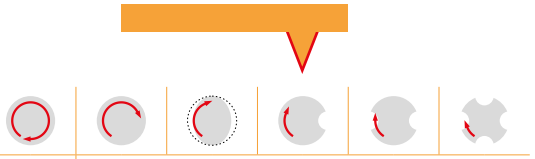




P	M	K	N	S	H
■	■	◪	□	□	

f .005 – .010

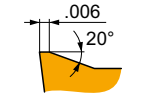
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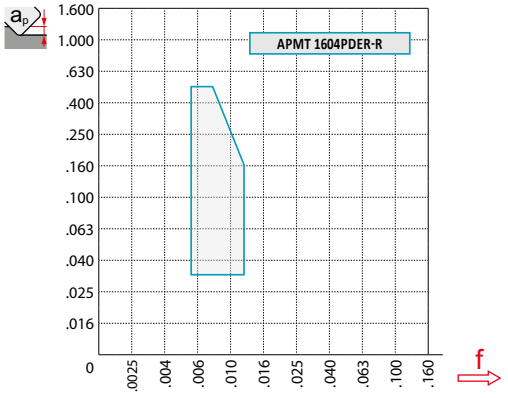


APMT 1604PDER-FM

APMT 16 ER-R



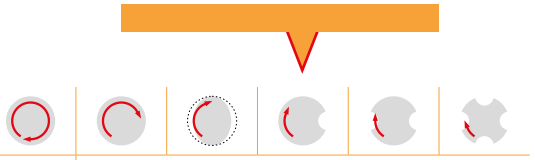




P	M	K	N	S	H
■	□	■			

f .006 – .012

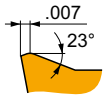
a_p .031 – .512

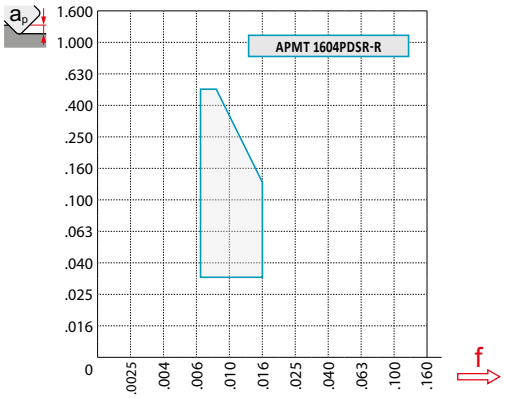


APMT 1604PDER-R

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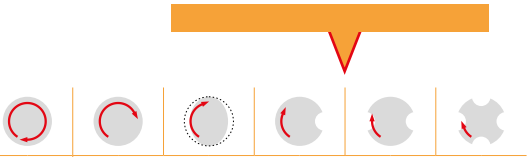




P	M	K	N	S	H
■	□	■			

f .007 – .016

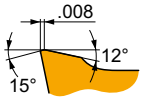
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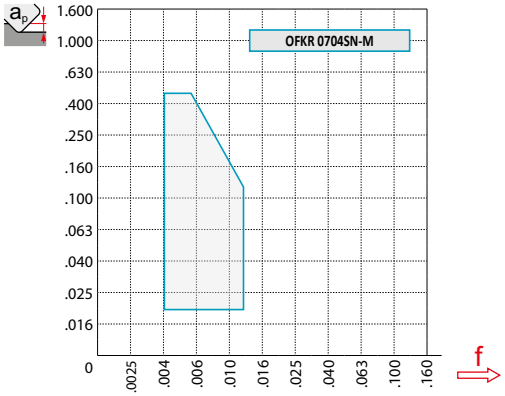


APMT 1604PDSR-R

OFKR 07-M



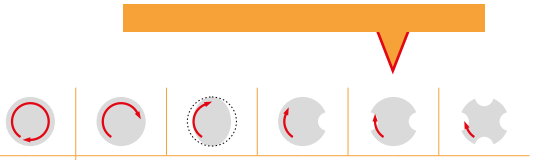




P	M	K	N	S	H
■	■	◪			

f .004 – .012

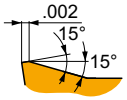
a_p .020 – .472



OFKR 0704SN-M

RDET 10



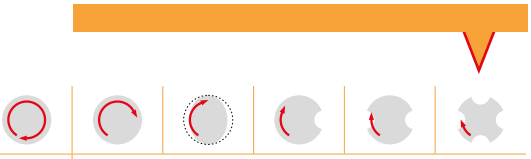




P	M	K	N	S	H
■	■	◪		◪	□

f .004 – .014

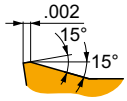
a_p .020 – .098

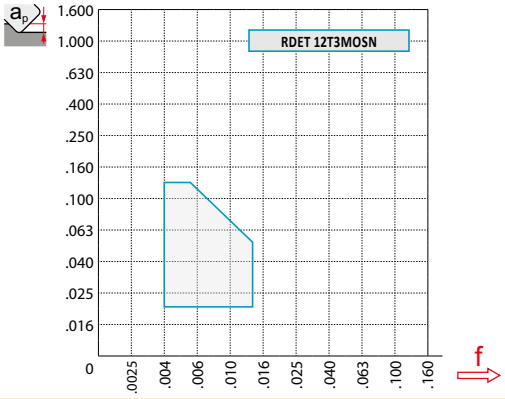


RDET 1003MOSN, RDET 10T3MOSN

RDET 12



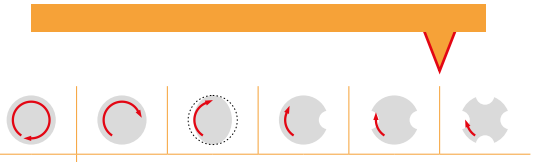




P	M	K	N	S	H
■	■	◪		◪	□

f .004 – .014

a_p .020 – .118



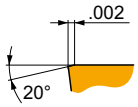
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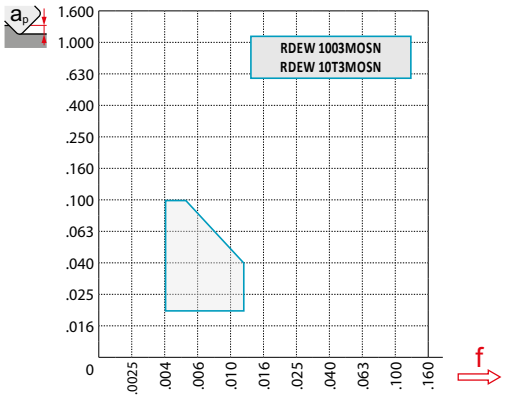
Table 3
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GEOMETRY OF CUTTING INSERTS
GEOMETRÍA DE PLAQUITAS DE CORTE
GÉOMÉTRIE DE PLAQUETTES

RDEW 10







P	M	K	N	S	H
◪	□	■			■

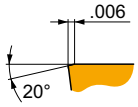
f .004 – .014

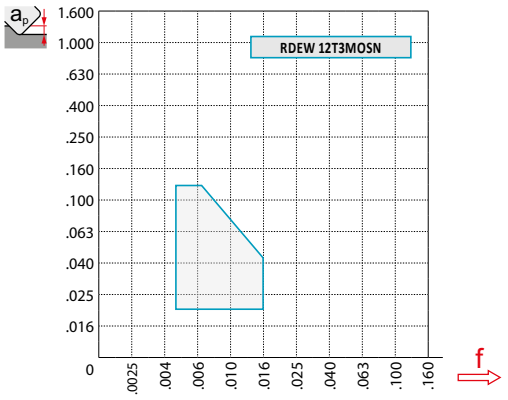
a_p .020 – .098

RDEW 1003MOSN, RDEW 10T3MOSN

RDEW 12







P	M	K	N	S	H
◪	□	■			■

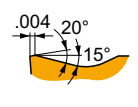
f .005 – .016

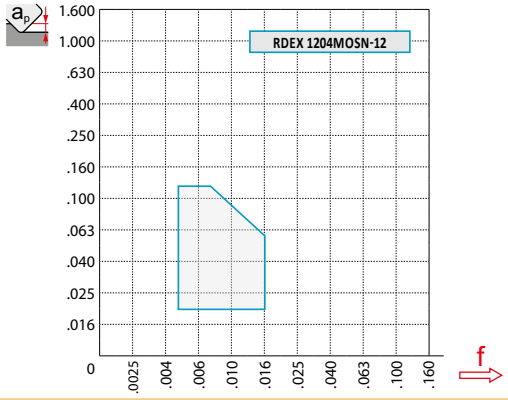
a_p .020 – .118

RDEW 12T3MOSN

RDEX 12







P	M	K	N	S	H
■	■	◪		◪	□

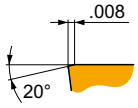
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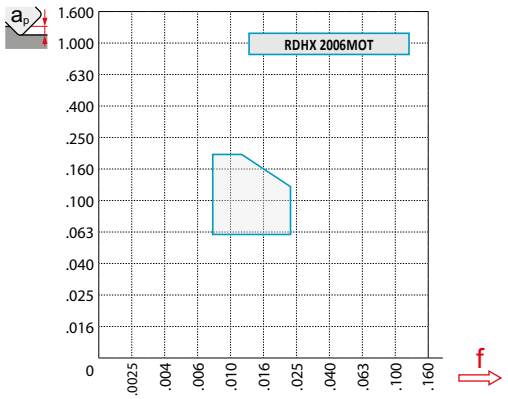
a_p .020 – .118

RDEX 1604MOSN-12

RDHX 20







P	M	K	N	S	H
◪	□	■			■

f .008 – .024

a_p .039 – .197

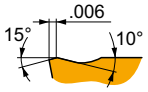
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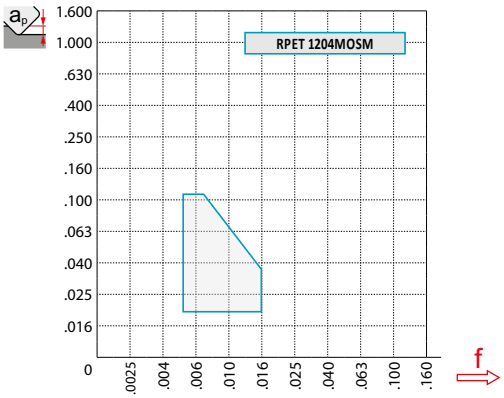
Table 3
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Tableau 3

GEOMETRY OF CUTTING INSERTS
GEOMETRÍA DE PLAQUITAS DE CORTE
GÉOMÉTRIE DE PLAQUETTES

RPET 12







P	M	K	N	S	H
■	■	◪		◪	□

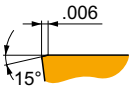
f .005 – .016

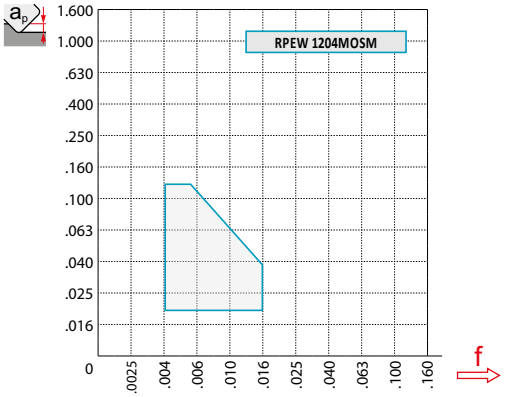
a_p .020 – .118

RPET 1204MOSN

RPEW 12







P	M	K	N	S	H
◪	□	■			■

f .004 – .016

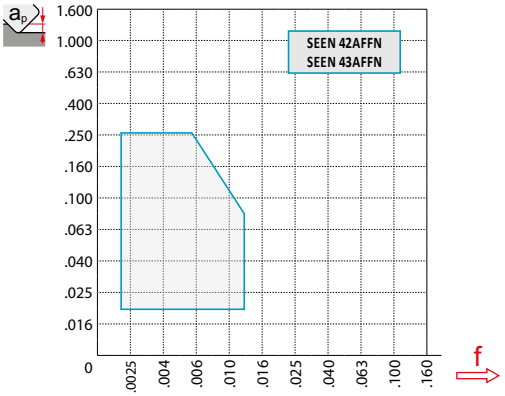
a_p .020 – .118

RPEW 1204MOSM

SEEN 12 FN







P	M	K	N	S	H
■	◪	□	□	□	

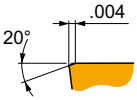
f .002 – .016

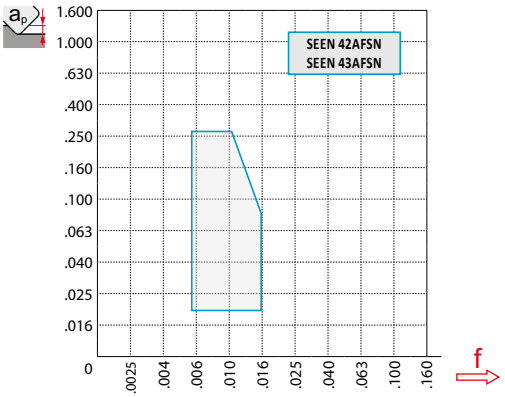
a_p .020 – .256

SEEN 42AFFN, SEEN 43AFFN

SEEN 12 SN







P	M	K	N	S	H
◪	□	■			■

f .006 – .016

a_p .020 – .256

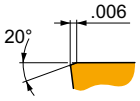
SEEN 42AFSN, SEEN 43AFSN

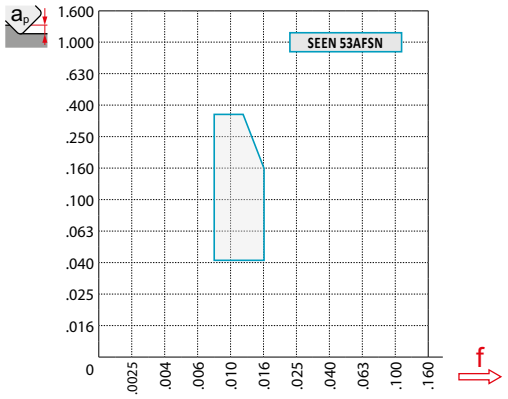
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS
GEOMETRÍA DE PLAQUITAS DE CORTE
GÉOMÉTRIE DE PLAQUETTES

SEEN 15 SN







P	M	K	N	S	H
◪	□	■			■

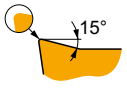
f .008 – .016

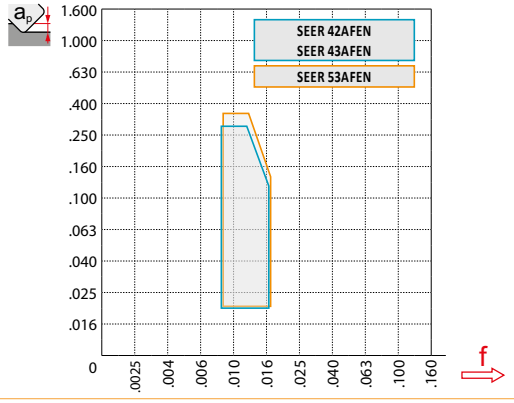
a_p .039 – .354

SEEN 53AFSN

SEER EN







P	M	K	N	S	H
■	■	◪		◪	□

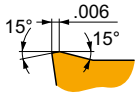
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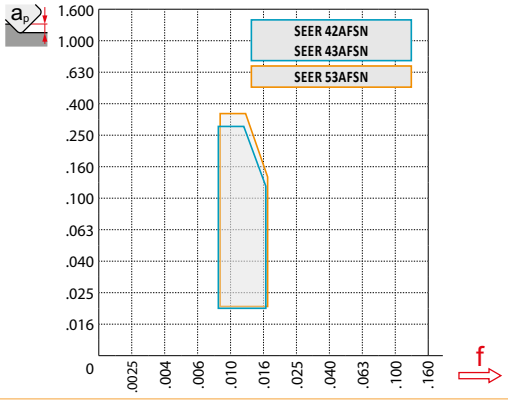
a_p .020 – .256(.354)

SEER 42AFEN, SEER 43AFEN, SEER 53AFEN

SEER SN







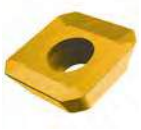
P	M	K	N	S	H
■	■	◪		◪	□

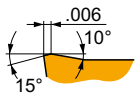
f .008 – .016

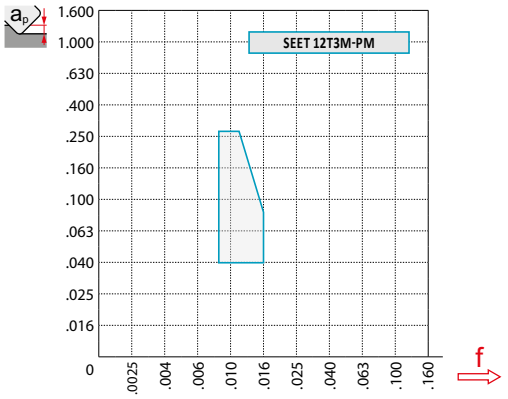
a_p .039 – .256(.354)

SEER 42AFSN, SEER 43AFSN, SEER 53AFSN

SEET 12-PM







P	M	K	N	S	H
■	■	◪		◪	□

f .008 – .016

a_p .039 – .256

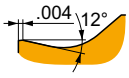
SEET 12T3M-PM

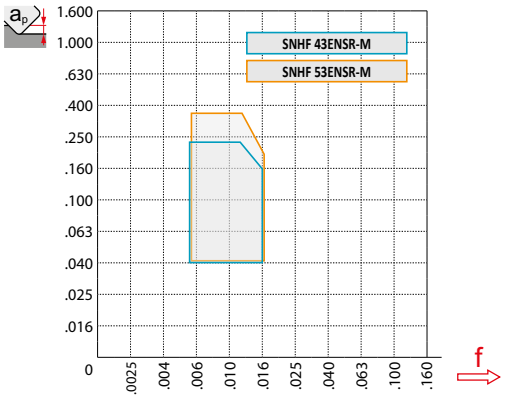
Table 3
Tabla 3
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GEOMETRY OF CUTTING INSERTS
GEOMETRÍA DE PLAQUITAS DE CORTE
GÉOMÉTRIE DE PLAQUETTES

SNHF-M



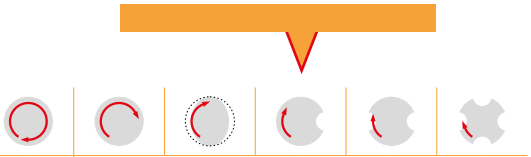




P	M	K	N	S	H
■	◪	■		□	

f .006 – .016

a_p .039 – .236(.354)

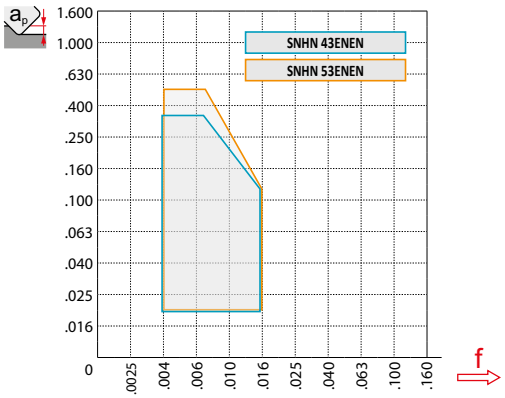


SNHF 43ENSR-M, SNHF 53ENSR-M

SNHN



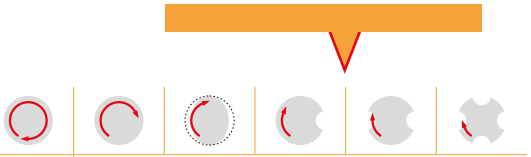




P	M	K	N	S	H
◪	□	■			■

f .004 – .016

a_p .020 – .354 (.531)



SNHN 43ENEN, SNHN 53ENEN

SPGN



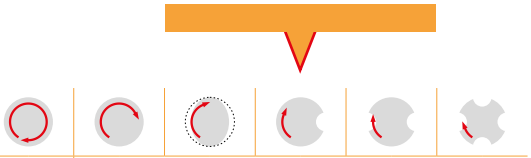




P	M	K	N	S	H
◪	□	■			■

f .004 – .010 (.014)

a_p .039 – .531

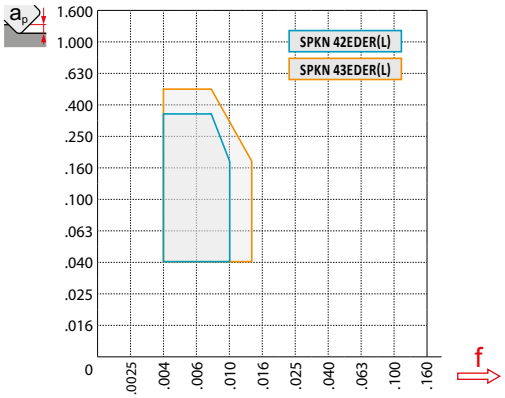


SPGN 322, SPGN 42., SPGN 53.

SPKN ER(L)



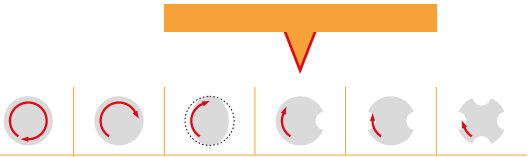




P	M	K	N	S	H
◪	□	■			■

f .004 – .010 (.014)

a_p .039 – .354 (.512)

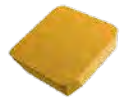


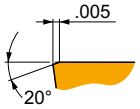
SPKN 42EDER(L), SPKN 53EDER(L)

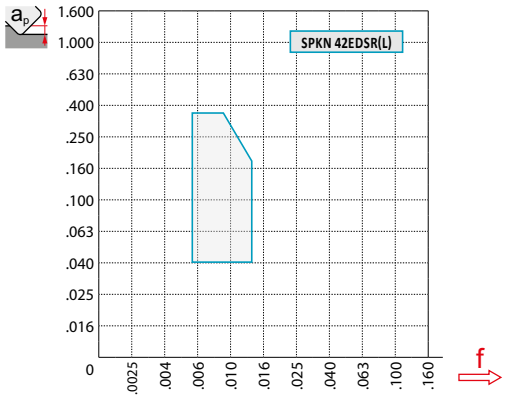
Table 3
Tabla 3
Tableau 3

GEOMETRY OF CUTTING INSERTS
GEOMETRÍA DE PLAQUITAS DE CORTE
GÉOMÉTRIE DE PLAQUETTES

SPKN 12 SR(L)



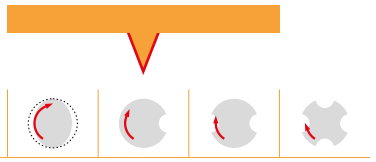




P	M	K	N	S	H
◪	□	■			■

f .006 – .012

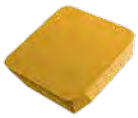
a_p .039 – .354

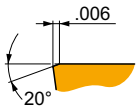


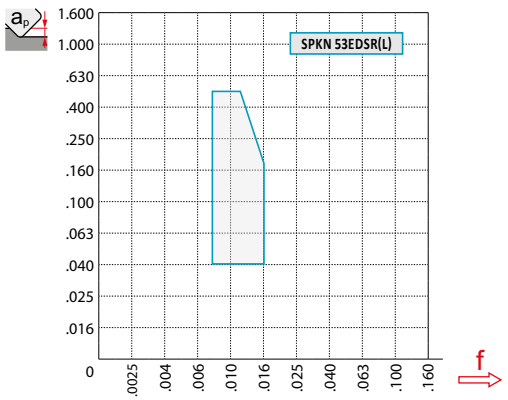
?

SPKN 42EDSR(L)

SPKN 15 SR(L)



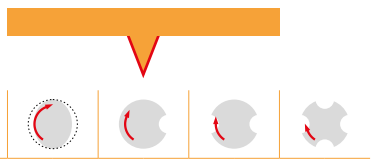




P	M	K	N	S	H
◪	□	■			■

f .008 – .016

a_p .039 – .512

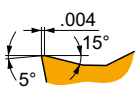


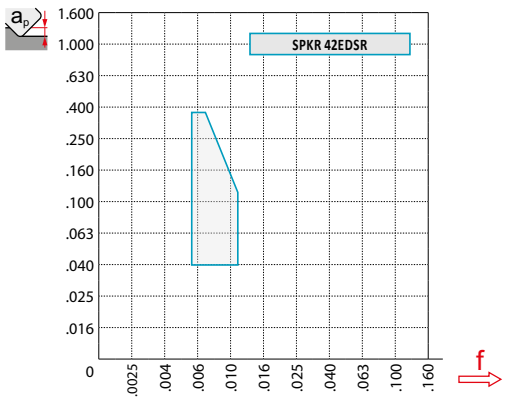
?

SPKN 53EDSR(L)

SPKR 12 SR



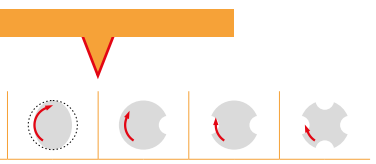




P	M	K	N	S	H
■	■	◪		◪	□

f .006 – .012

a_p .039 – .354

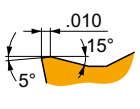


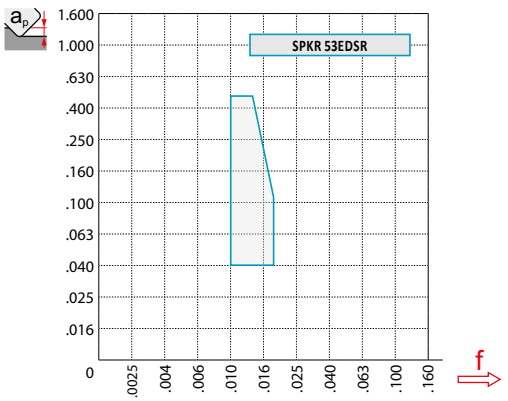
?

SPKR 42EDSR

SPKR 15 SR



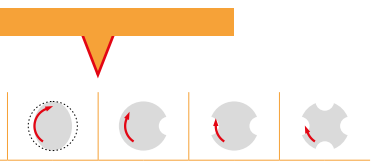




P	M	K	N	S	H
■	■	◪		◪	□

f .010 – .018

a_p .039 – .472



?

SPKR 53EDSR

Table 3
Tabla 3
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GEOMETRY OF CUTTING INSERTS
GEOMETRÍA DE PLAQUITAS DE CORTE
GÉOMÉTRIE DE PLAQUETTES

TPKN ER

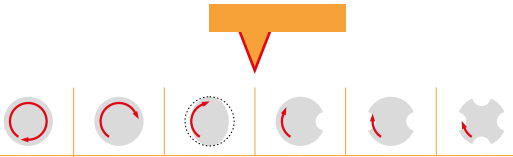






P	M	K	N	S	H
◪	□	■			□

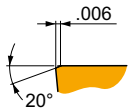
f	.004 – .008 (.010)
a_p	.039 – .472 (.670)

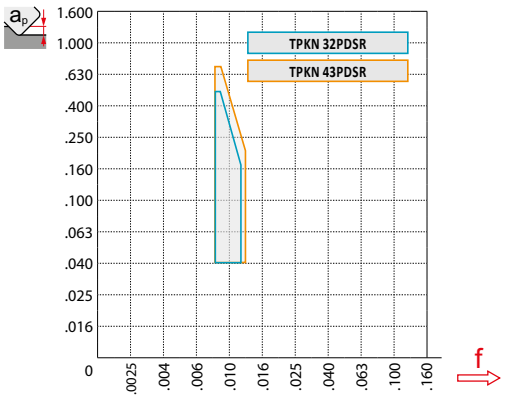


TPKN 32PDER, TPKN 43PDER

TPKN SR

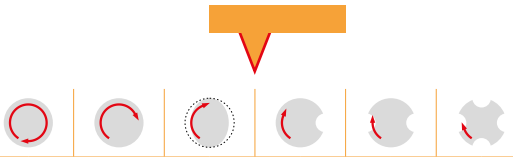






P	M	K	N	S	H
◪		■			□

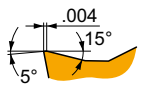
f	.008 – .010 (.012)
a_p	.039 – .472 (.670)



TPKN 32PDSR, TPKN 43PDSR

TPKR

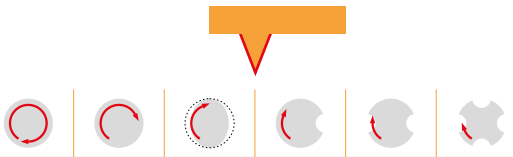






P	M	K	N	S	H
■	◪	■			

f	.004 – .012 (.016)
a_p	.039 – .472 (.670)

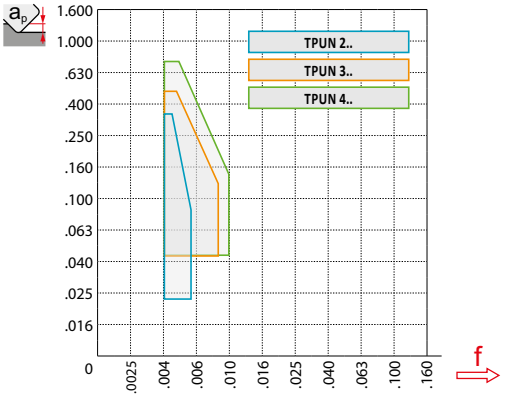


TPKR 32PDSR, TPKR 43PDSR

TPUN

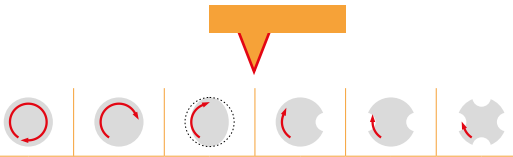






P	M	K	N	S	H
◪		■			□

f	.004 – .006 (.010)
a_p	.020 – .315 (.670)



TPUN 2.., 3.., 4..

WORKPIECE MATERIALS – CLASSIFICATION
CLASIFICACIÓN DE MATERIALES MECANIZADOS

Correctly identifying the machined material is one of the most important factors when choosing the tool and the initial machining conditions. To facilitate this, the machined materials are divided into six basic groups, or into twenty–four subgroups, combining materials that qualitatively cause the same type of loading (pressure) on the cutting edge and therefore a similar type of wear.

Thus the first step is to assign the workpiece material to one of the (sub)groups – see table 4. below.

Identificar correctamente el material mecanizado es uno de los factores más importantes al momento de elegir la herramienta y la condiciones iniciales de mecanizado. Para facilitar esto, los materiales mecanizados se dividen en seis grupos básicos, o en veinticuatro subgrupos, combinando materiales que cualitativamente pueden causar el mismo tipo de carga (esfuerzo) en la arista de de corte y por lo tanto un tipo similar de desgaste. Así, el primer paso es asignar el material de la pieza a uno de los (sub) grupos - véase la tabla 4. a continuación.

Table 4

Tabla 4

Subgroup Sub-grupo		DORMER AMG	Subgroup definition	Definición de sub-grupo	Example Ejemplo	Correction factor Corrección standard
P	P1	1.1, 1.2	Steel and cast steel with very good (enhanced) machinability; automatic steel and low–carbon steel	Acero y fundición de acero con muy buena (mejorado) mecanización, acero automático y de acero bajo en carbono	1213	1.33
	P2	1.3	Non–alloy and low–alloy cast steel and steel with a medium carbon content (.25 < C < .55); rigidity of up to 900 MPa and hardness of 160 – 255 HB	Sin alear y de baja aleación de acero fundido y acero con un contenido de carbono medio (.25 < C < .55); rigidez de hasta 900 MPa y una dureza de 160 – 255 HB	Gr.1043	1.00
	P3	1.4	Less machinable non–alloy and low–alloy cast steel and steel with a medium carbon content; rigidity of up to 1000 MPa and hardness of up to 300 HB	Menos mecanizable sin alear y de acero fundido de baja aleación y acero con un contenido de carbono medio; rigidez de hasta 1000 MPa y una dureza de hasta 300 HB	Cl. A	0.80
	P4	1.5	Medium – to high-alloy cast steel and steel (usually with a carbon content of .55 < C); rigidity of up to 1270 MPa and hardness of up to 375 HB (resp. 40 HRC)	Medio – alto-aleación de acero fundido y acero (normalmente con un contenido de carbono de .55 < C); rigidez de hasta 1270 MPa y una dureza de hasta 375HB (resp. 40 HRC)	D3	0.60
M	M1	2.1	Ferritic corrosion–resistant steel	Acero resistente a la corrosión ferrítico	Type 430	1.09
	M2	(2.1, 2.4)	Martensitic corrosion–resistant steel	Acero resistente a la corrosión martensítico	HNV 3	1.06
	M3	2.2	Austenitic corrosion–resistant steel	Acero resistente a la corrosión austenítico	Type 321	1.00
	M4	2.3, 2.4	Ferritic–austenitic (duplex) and super–austenitic corrosion–resistant steel	Ferrítico-austenítico (dúplex) y super-austenítico acero resistente a la corrosión	EV 12	0.93
K	K1	3.1, 3.2	Grey cast iron	Gris hierro fundido	C1.35B	1.00
	K2	3.1, 3.2	Tempered cast iron	Hierro fundido templado	Gr.45006	0.95
	K3	3.3	Ductile cast iron ferritic and ferrite–pearlite	Fundición ferrítico hierro y ferrita-perlita	Gr.60-40-18	0.90
	K4	3.4	Ductile cast iron pearlite–ferritic, pearlite–sorbitic and pearlite	Fundición dúctil de perlita y ferrita, perlita-sorbitic y perlita	100-70-03	0.85
N	N1	7.1	Aluminium and its soft alloys (with a low Si content), particularly formed and cast (non–hardened); hardness of up to 100 HB	Aluminio y sus aleaciones blandas (con bajo contenido de Si), especialmente formado y yeso (no resistente); dureza de hasta 100 HB	A96061	1.00
	N2	7.2, 7.3, 7.4	Hard Al alloys, particularly cast and hardened (with a high Si content)	Duro aleaciones de Al, en particular emitidos y endurecidos (con un alto contenido de Si)	A04130	0.65
	N3	6.1, 6.2, 6.3	Soft Cu alloys, automatic brass and other types of soft brass and bronze	Aleaciones Cu suaves, latón automática y otros tipos de latón blando y bronce	C83600	0.60
	N4	6.4	Less machinable and hard Cu alloys	Aleaciones Cu menos mecanizables y duros	C95200	0.40
S	S1	4.1, 4.2, 4.3	Technically pure Ti, alloys α , $\alpha+\beta$ and β, refined and aged alloys	Técnicamente ti puro, aleaciones α, $\alpha+\beta$ y β, refinado y aleaciones viejas	AMS R56401	1.75
	S2	(9.1)	Fe–based alloys	Aleaciones a base de hierro	B 163	1.20
	S3	5.1, 5.2, 5.3	Ni–based alloys	Aleaciones a base de niquel	AMS 5589	1.00
	S4	(9.1)	Co–based alloys	Aleaciones a base de cobalto	AMS 5759	0.75
H	H1	1.6	Highly rigid and hard tool steel and hardened and refined steel with a hardness of 40 – 50 HRC	Muy rígido y duro y acero para herramientas endurecido y acero refinado, con una dureza de 40 – 50 HRC	H21	1.15
	H2	–	Hardened and white cast iron 350 – 600 HV	Hierro fundido templado y blanco 350 – 600 HV	Ni-Hard 2	1.10
	H3	1.7	Hardened and refined steel with hardness in the 50 – 55 HRC range	Acero templado y refinada con dureza en el 50 – 55 gama HRC	H11	1.00
	H4	1.8	Hardened and refined (mostly tool) steel with hardness of more than 55 HRC	Endurecido y refinado (en su mayoría de la herramienta) de acero con dureza de más de 55 HRC	D3	0.95

CLASSIFICATION DES GROUPES DE MATÉRIAUX À USINER

L'identification du matériau à usiner est l'un des facteurs les plus important pour choisir l'outil et les conditions de coupe de départ. Pour simplifier ce choix, les matériaux usinés sont divisés en six groupes de base, ou vingt quatre sous-groupes. Dans chacun sont associés des matériaux qui causent le même type de charge sur l'arête de coupe et également un type d'usure similaire. C'est pourquoi la première étape consiste à identifier le matériau à usiner parmi les (sous-)groupes référencés - voir tableau N°4 ci-dessous.

Tableau 4

Sous-groupe		DORMER AMG	Définition du sous-groupe	Exemple	Correction à la norme
P	P1	1.1. 1.2	Acier et acier coulé avec une usinabilité améliorée ; acier de construction et acier à faible teneur en carbone	1213	1.33
	P2	1.3	Acier et acier coulé non allié et faiblement allié à moyenne teneur en carbone (.25 < C < .55); résistance jusqu'à 900 MPa et dureté de 160 – 255 HB	Gr.1043	1.00
	P3	1.4	Acier et acier coulé non allié et faiblement allié à moyenne teneur en carbone plus difficiles à usiner; résistance jusqu'à 1000 MPa et dureté jusqu'à 300 HB	Cl. A	0.80
	P4	1.5	Acier et acier coulé moyennement et fortement allié (généralement avec une teneur en carbonne .55 < C); résistance jusqu'à 1270 MPa et dureté jusqu'à 375 HB HRC)	D3	0.60
M	M1	2.1	Aciers inoxydables ferritiques résistants à la corrosion	Type 430	1.09
	M2	(2.1. 2.4)	Aciers inoxydables martensitiques résistants à la corrosion	HNV 3	1.06
	M3	2.2	Aciers inoxydables austénitiques résistants à la corrosion	Type 321	1.00
	M4	2.3. 2.4	Aciers inoxydables ferritiques-austénitiques (duplex) et super austénitiques résistants à la corrosion	EV 12	0.93
K	K1	3.1. 3.2	Fontes grises	C1.35B	1.00
	K2	3.1. 3.2	Fontes trempées	Gr.45006	0.95
	K3	3.3	Fontes ductiles ferritiques et ferritiques-perlitiques	Gr.60-40-18	0.90
	K4	3.4	Fontes ductiles perlites-ferrites. perlites et de perlites sorbitiques	100-70-03	0.85
N	N1	7.1	L'aluminium et ses alliages doux (à faible teneur en Si). en particulier formés et coulés (non trempé); dureté jusqu'à 100 HB	A96061	1.00
	N2	7.2. 7.3. 7.4	Alliages Al durs. en particulier coulés et traités (à haute teneur en Si)	A04130	0.65
	N3	6.1.6.2. 6.3	Alliages Cu doux. laiton automatique et autres types de laiton et de bronze tendre	C83600	0.60
	N4	6.4	Alliages moins faciles à usiner et alliages durs Cu	C95200	0.40
S	S1	4.1. 4.2. 4.3	Ti techniquement pur. alliages α. $\alpha+\beta$ et β. alliages affinés et vieillis	AMS R56401	1.75
	S2	(9.1)	Alliages base Fe	B 163	1.20
	S3	5.1. 5.2. 5.3	Alliages base Ni	AMS 5589	1.00
	S4	(9.1)	Alliages base Co	AMS 5759	0.75
H	H1	1.6	Aciers à outils très résistants durs. trempés. affinés avec une dureté de 40 – 50 HRC	H21	1.15
	H2	–	Fontes trempées et blanches 350 – 600 HV	Ni-Hard 2	1.10
	H3	1.7	Aciers trempés et affinés avec une dureté dans la plage 50 – 55 HRC	H11	1.00
	H4	1.8	Aciers trempés et affinés (principalement acier à outil) avec une dureté de plus de 55 HRC	D3	0.95

PRAMET

MILLING GRADES
CALIDADES DE FRESADO
NUANCES DE FRAISAGE

M	9	3	2	5
Application Aplicación Application	Coating / Substrate Recubrimiento / Sustrato Revêtement / Substrat	Sequence number Número de secuencia Numéro de séquence	ISO range Gama ISO Plage ISO	

D	Drilling Taladrado Perçage
M	Milling Fresado Fraisage
T	Turning Torneado Tournage

0 PVD **1 CVD**	Special application Aplicación especial Application spéciale
2 PVD **3 CVD**	Free Libre Libre
4 PVD **5 CVD**	Cast iron Fundición Fonte
6 PVD **7 CVD**	Group M, S Grupos M, S Groupe ISO M & S
8 PVD **9 CVD**	Universal Universal Universel
B	CBN
D	PCD

1 – 9

01 – 50

	01 – 05
	05 – 10
	10 – 20
	20 – 30
	30 – 40
	40 – 50

Table 2
Tabla 2
Tableau 2

MILLING GRADES
CALIDADES DE FRESADO
NUANCES DE FRAISAGE

Grade identification Calidad Code nuance	Area of Application Área de aplicación Plage d'application Matière	Application / Application / Aplicación	Feed Avance Avance	Cutting speed Velocidad de corte Vitesse de coupe	Resistance to adverse working conditions Resistencia a condiciones de corte adversas Résistance à des conditions d'usinage difficiles	Substrate Sustrato Substrat	Coating / Recubrimiento Type de revêtement	Color / Color / Couleur	Coolant benefit / Refrigerante Bénéfice de l'arrosage	General / General / Général	Disc Milling Cutters / Fresas de disco Fraises à disques	Copy Milling / Copiado / Copiage	Heavy roughing / Desbaste fuerte Ébauche lourde
M9315	P05 - P25	■				H	MT-CVD		- - -	✓		✓	
	K10 - K30	◪											
	H10 - H20	◪											
M9325	P10 - P30	■				H	MT-CVD		- - -	✓		✓	
	M10 - M25	◪											
	S05 - S15	◪											
M9340	P35 - P50	◪				H	MT-CVD		- - -	✓		✓	
	M30 - M40	■											
	S15 - S20	■											
M5315	P05 - P20	◪				H	MT-CVD		- - -	✓			
	K05 - K25	■											
	H05 - H20	■											
M5326	P05 - P25	■				H	MT-CVD		- - -				✓
	K10 - K30	◪											
M6330	P20 - P35	◪				H	PVD		+/-	✓			
	M20 - M35	■											
	S10 - S30	■											
M8310	P01 - P10	■				submicron H	PVD		-			✓	
	M01 - M10	◪											
	K01 - K10	■											
	S05 - S10	◪											
	H05 - H15	■											
M8325	P20 - P40	■				S	PVD		-			✓	
	M15 - M30	◪											
	K20 - K35	□											
M8326	P20 - P40	■				H	PVD		-				✓
	M15 - M35	□											
	K15 - K35	□											
M8340	P25 - P50	■				submicron H	PVD		+/-	✓	✓	✓	
	M20 - M40	■											
	K20 - K40	◪											
	S20 - S30	■											
M8345	P30 - P50	■				H	PVD		-	✓		✓	✓
	M30 - M40	■											
	S20 - S30	■											
M8346	P30 - P50	■				H	PVD		-				✓
	M30 - M40	■											
M0315	N05 - N25	■				submicron H	PVD		-	✓			

PRAMET

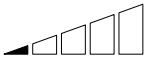
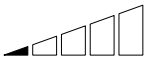
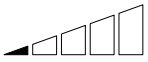
Table 2
Tabla 2
Tableau 2

MILLING GRADES
CALIDADES DE FRESADO
NUANCES DE FRAISAGE

Grade identification Calidad Code nuance	Area of Application Área de aplicación Plage d'application Matière	Application / Application / Aplicación	Feed Avance Avance	Cutting speed Velocidad de corte Vitesse de coupe	Resistance to adverse working conditions Resistencia a condiciones de corte adversas Résistance à des conditions d'usinage difficiles	Substrate Sustrato Substrat	Coating / Recubrimiento Type de revêtement	Color / Color / Couleur	Coolant benefit / Refrigerante Bénéfice de l'arrosage	General / General / Général	Disc Milling Cutters / Fresas de disco Fraises à disques	Copy Milling / Copiado / Copiage	Heavy roughing / Desbaste fuerte Ébauche lourde
8215	P10 - P20	■	▲	▲	▲	submicron H	PVD		+/-	✓	✓	✓	
	M10 - M20	◪											
	K10 - K25	■											
	N10 - N25	■											
	S10 - S15	◪											
	H10 - H15	■											
M8330	P20 - P40	■	▲	▲	▲	submicron H	PVD		-	✓	✓	✓	
	M20 - M35	◪											
	K20 - K40	■											
	N15 - N30	□											
	S15 - S25	□											
	H15 - H25	◪											
M8340	P25 - P50	■	▲	▲	▲+	submicron H	PVD		+/-	✓	✓	✓	✓
	M20 - M40	■											
	K20 - K40	◪											
	S20 - S30	■											
7205	P01 - P10	◪	▲	▲		ultra submicron H	PVD		-			✓	
	M01 - M10	□											
	K01 - K10	■											
	N01 - N10	◪											
	H01 - H10	■											
7215	P05 - P20	◪	▲	▲	▲	submicron H	PVD		-			✓	
	M05 - M20	◪											
	K05 - K25	■											
	N05 - N25	◪											
	S05 - S15	□											
	H05 - H15	■											
7230	P25 - P40	■	▲	▲	▲	submicron H	PVD		-			✓	
	M20 - M35	◪											
	K20 - K35	■											
	N15 - N30	◪											
	S15 - S25	◪											
	H15 - H25	◪											

Table 2
Tabla 2
Tableau 2

MILLING GRADES
CALIDADES DE FRESADO
NUANCES DE FRAISAGE

Grade identification Calidad Code nuance	Area of Application Área de aplicación Plage d'application Matière	Application / Application / Aplicación	Feed Avance Avance	Cutting speed Velocidad de corte Vitesse de coupe	Resistance to adverse working conditions Resistencia a condiciones de corte adversas Résistance à des conditions d'usinage difficiles	Substrate Sustrato Substrat	Coating / Recubrimiento Type de revêtement	Color / Color / Couleur	Coolant benefit / Refrigerante Bénéfice de l'arrosage	General / General / Général	Disc Milling Cutters / Fresas de disco Fraises à disques	Copy Milling / Copiado / Copiage	Heavy roughing / Desbaste fuerte Ébauche lourde
HF7	M10 - M20	□				submicron H	X		+ +	✓			
	K10 - K25	■											
	N10 - N25	■											
	S10 - S20	□											
	H10 - H20	□											
S26	P15 - P30	■				S	X		+ +	✓			✓
S45	P30 - P45					S	X		+ +	✓			
	M30 - M40												

Substrate / Sustrato / Substrat			
H	WC-Co based substrate	Sustrato de base WC-Co	Base de substrat WC-Co (Carbure de Tungstène – base Cobalt)
submicron H	WC-Co based substrate fine grained (< 40 µin)	Sustrato de base WC-Co de grano fino (< 40 µin)	Base de substrat WC-Co à grains fins (<40 µin)
ultra submicron H	WC-Co based substrate very fine grained (< 20 µin)	Sustrato de base WC-Co de grano muy fino (< 20 µin)	Base de substrat WC-Co à grains très fins (< 20 µin)
S	Substrate with cubic carbides	Sustrato con carburos cúbicos	Substrat à carbures cubiques
PCD	Polycrystalline Diamond	Diamante Policristalino	Diamant Polycristallin
CBN	Cubic Boron Nitride	Nitruro de Boro Cúbico	Nitrure de Bore Cubique
Coating / Recubrimiento / Revêtement			
MT-CVD	Medium-temperature chemical method of coating	Método de recubrimiento químico a media temperatura	Méthode de revêtement à déposition chimique moyenne température
PVD	Low-temperature physical method of coating	Método de recubrimiento físico a baja temperatura	Méthode de revêtement à déposition physique basse température
X	Uncoated grade	Calidad sin recubrimiento	Nuance carbure non revêtue





FACE MILLING (WITH SHOULDER, WITH CHAMFER) / PLANEADO (CON ESCUADRA, CON CHAFLÁN) SURFAÇAGE (AVEC ÉPAULEMENT, CHANFREIN)

Face milling (with shoulder or chamfer) is one of key milling operations, and we must therefore split it into multiple sections.

1. Determine whether the required operation is roughing or finishing.
2. Decide whether you wish to machine using the face or the periphery of the milling cutter.
3. Choose the proper tool based on the type, size, power and rigidity of the machine.

For roughing, the basic requirement is to remove as much material as possible in the shortest amount of time while at the same time approaching the final shape as much as possible. In powerful and rigid machines, choose tools which allow the highest depth of cut while less stable machines with lower output require a tool with low recommended depth of cut and higher allowed feed (toroidal or HFC milling cutters). The same recommendation goes for both cases: Use the information provided for inserts, where you use the minimum feed values for $a_{p\,max}$ and maximum feed values for $a_{p\,min}$.

In finishing operations, where we are limited by the required surface roughness, the key factors are the size of the wiper segment, or rather the size of the radius, the number of tool teeth and feed.

For inserts with wiper segments, the feed per revolution must be smaller than the size of the wiper segment.

El planeado (con escuadra o chaflán) es una de las operaciones clave en fresado y por tanto debemos dividirlo en múltiples secciones.

1. Determinar si la operación requerida es desbaste o acabado.
2. Decidir si se quiere mecanizar utilizando la cara o la periféria de la fresa.
3. Elegir la herramienta adecuada en función del tipo, tamaño, potencia y rigidez de la máquina.

Para desbaste, el requerimiento básico es arrancar todo el material posible en el espacio de tiempo más corto posible a la vez que se deja la pieza tan cerca de su forma final como sea posible. En máquinas potentes y rígidas, elegir herramientas que permitan la mayor profundidad de corte mientras que en máquinas menos estables con menor potencia es necesario elegir herramientas con poca profundidad de corte recomendada y mayores avances permitidos (fresas toroidales o de alto avance HFC). La misma recomendación vale para ambos casos: Usar la información proporcionada en las plaquitas, donde se deben utilizar los valores mínimos de avance para $a_{p\,max}$ y máximos valores de avance para $a_{p\,min}$.

En operaciones de acabado, donde estamos limitados por la rugosidad superficial, los factores clave son el tamaño de la faceta rascadora o wiper, el tamaño del radio, el número de dientes y el avance.

Para plaquitas con faceta rascadora o wiper, el avance por revolución debe ser menor que el tamaño de la faceta wiper.

Le surfaçage (avec épaulement ou chanfrein) est l'une des principales opérations de fraisage, et il doit donc être divisé en plusieurs sections.

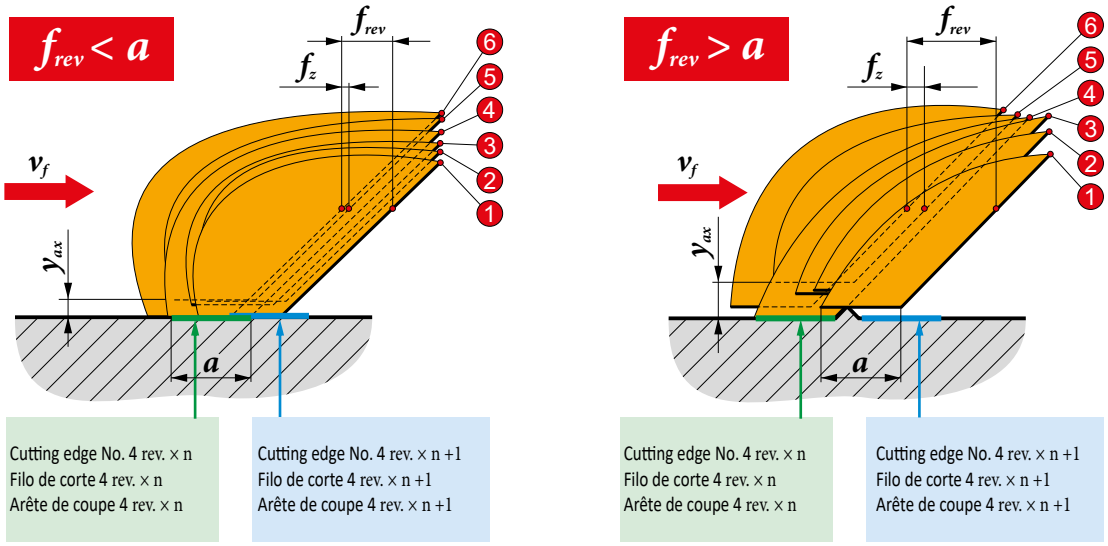
1. Déterminer si l'opération requise est une ébauche ou une finition.
2. Décider si vous souhaitez travailler dans l'axe ou dans la périphérie de la fraise.
3. Choisir l'outil approprié en fonction du type, de la taille, de la puissance et de la rigidité de la machine.

Pour l'ébauche, l'exigence de base est d'éliminer autant de matière que possible dans le temps le plus court, tout en se rapprochant de la forme finale. Avec des machines puissantes et rigides, choisissez des outils qui autorisent la plus haute profondeur de coupe, tandis que les machines moins stables avec une puissance plus faible nécessiteront un outil à profondeur de passe réduite avec des avances supérieures (fraises toroïdales ou grandes avances HFC).

La même recommandation suivante est valable dans les deux cas : utilisez les informations fournies pour les plaquettes, où vous sélectionnerez les valeurs d'avance minimum pour $a_{p\,max}$, et les valeurs maximales d'avance pour $a_{p\,min}$.

Dans les opérations de finition, où nous sommes limités par la rugosité de surface requise, les facteurs clés sont la taille du plat de planage, ou encore la dimension du rayon de plaquette, le nombre de dents sur l'outil et l'avance. Pour les plaquettes avec plats de planage, l'avance par tour doit être inférieure à la valeur du plat de planage.

Picture / Figura / Image 12



That means: $f_{z\,max} \leq a/z$

a wiper segment size [in]

z number of milling cutter teeth [-]

f_{rev} feed per revolution [in/rev]

f_z feed per tooth [in/tooth]

For toroidal milling cutters the situation is similar for round and radius version of inserts.

Esto significa: $f_{z\,max} \leq a/z$

a tamaño de la faceta wiper [in]

z número de dientes de la fresa [-]

f_{rev} avance por revolución [in/rev]

f_z avance por diente [in/diente]

Para fresas toroidales (la situación es similar para plaquitas redondas o de radio).

Ce qui veut dire: $f_{z\,max} \leq a/z$

a valeur du plat de planage [in]

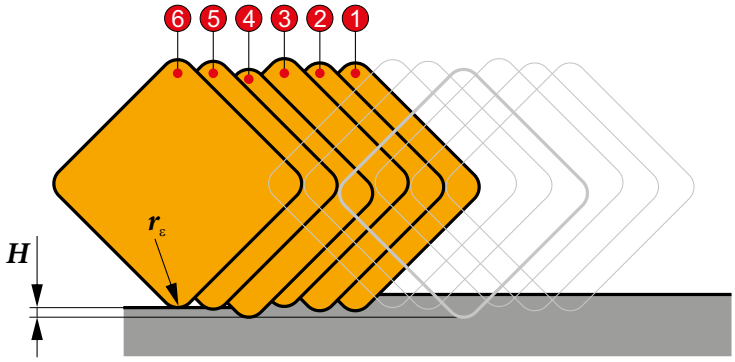
z nombre de dents sur la fraise [-]

f_{rev} avance par tour [in/tour]

f_z avance par dent [in/dent]

Pour les fraises toroïdales (la situation est la même pour les versions à plaquettes rondes et les plaquettes à rayons).

Picture / Figura / Image 13



Therefore, feed per tooth: $f_{z\,max} \leq (\sqrt{8 \cdot r_\varepsilon \cdot H})/z$

r_ε size of insert radius [in]

z number of milling cutter teeth [-]

H maximum cusp height (~H) [in]

Roughness can of course be determined approximately even when machining with the periphery of the milling cutter:

Por tanto, avance por diente: $f_{z\,max} \leq (\sqrt{8 \cdot r_\varepsilon \cdot H})/z$

r_ε tamaño del radio de plaquita [in]

z número de dientes de la fresa [-]

H máxima altura (~H) en [in]

La rugosidad se puede determinar aproximadamente incluso cuando se mecaniza con la periféria de la fresa:

Par conséquent, l'avance par dent: $f_{z\,max} \leq (\sqrt{8 \cdot r_\varepsilon \cdot H})/z$

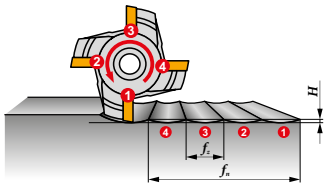
r_ε valeur du rayon de plaquette [in]

z nombre de dents sur la fraise [-]

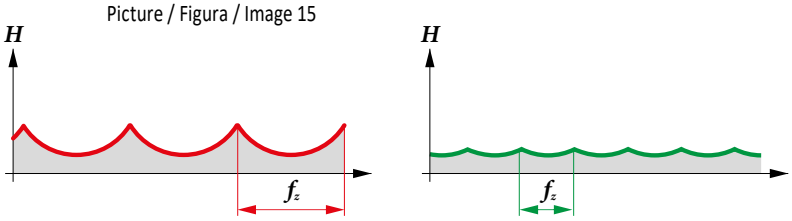
H hauteur de pointe maximale (~H) doit être indiquée en [in]

La rugosité peut bien sûr être déterminée approximativement même lors de l'usinage avec la périphérie de la fraise:

Picture / Figura / Image 14



Picture / Figura / Image 15



Where:

f_z feed per tooth [in/tooth]

D milling cutter diameter [in]

H maximum cusp height (~R_z) in [in]

Donde:

f_z avance por diente [in/diente]

D diámetro de la fresa [in]

H máxima altura (~R_z) en [in]

Où:

f_z avance par dent [in/dent]

D diamètre de la fraise [in]

H hauteur de pointe maximale (~R_z) en [in]

During face milling where the width of the milled surface is equal to the milling cutter diameter, use the values recommended for inserts. If the width of cut is smaller than the milling cutter diameter, the key factor is whether machining is done using the center or the side of the milling cutter. In both cases, corrections in feed and cutting speed should be made.

However, it is essential in either case to ensure that the tool does not enter or exit the cut in the area close to the center of the milling cutter (so-called „death zone").

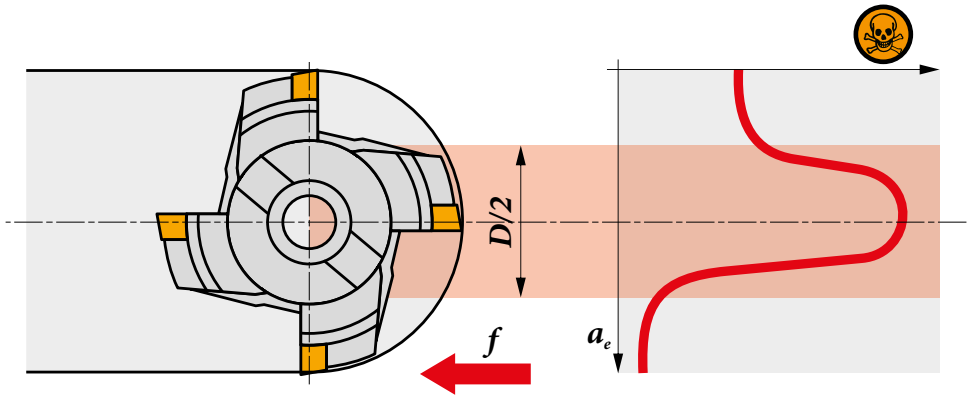
Durante el planeado, donde el ancho de la superficie fresada es igual al diámetro de la fresa, utilizar los valores recomendados para las plaquitas. Si el ancho de corte es menor que el diámetro de la fresa, el factor clave es si se mecaniza con el centro o con el lateral de la fresa. En ambos casos, hay que hacer correcciones en el avance y en la velocidad de corte.

No obstante, es esencial en cualquier caso asegurarse de que la herramienta no entra ni sale del corte en el área cercana al centro de la fresa (llamada zona de muerte).

Pendant une opération de surfacage, où la largeur de la surface usinée est égale au diamètre de la fraise, utiliser les valeurs d'avance recommandées pour les plaquettes. Si la largeur de coupe est inférieure au diamètre de la fraise, le facteur clé est de déterminer si l'usinage est fait en utilisant le centre ou le côté de la fraise. Dans les deux cas, des corrections d'avance et de vitesse de coupe devront être faites.

Toutefois, il est essentiel, dans l'un ou l'autre cas, de s'assurer que l'outil n'entre ni ne sorte de la matière par la zone proche du centre de la fraise.

Picture / Figura / Image 16



Below are the corrections for cutting speed and feed.

Aquí estan las correcciones de velocidad de corte y avance.

Voici les corrections de vitesse de coupe et d'avance recommandées.

Table / Tabla / Tableau 5

a_e/D	.05	.10	.15	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	1.00
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.87	2.05	1.69	1.48	1.33	1.23	1.09	.75	.94	.90	.89	.88	.88	1.00
⇨X.f	.64	.64	.64	.64	.64	.65	.65	.67	**.68**	**.71**	**.72**	**.74**	.79	1.00

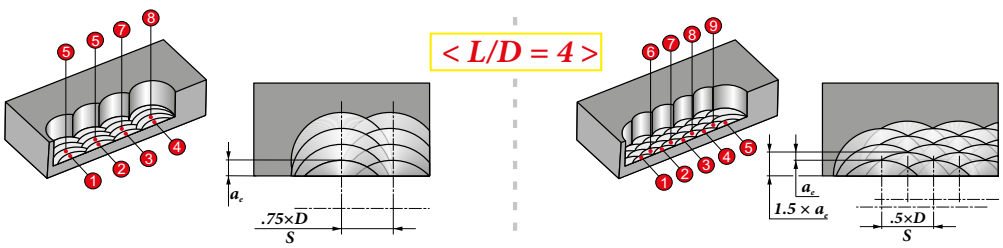
PLUNGE MILLING (SLOTTING) / FRESADO EN PLUNGE (FRESADO AXIAL) / OPÉRATION DE TRÉFLAGE

This category contains recommendations for maximum permissible radial depth of cut for a given tool group. In this case, tool overhang plays a vital role. Therefore, when using higher overhang (L/D > 4) to create wider shoulders, we recommend modifying the working conditions in line with the following figure.

Esta categoría contiene recomendaciones para una profundidad de corte radial máxima permisible para un grupo de herramientas determinado. En este caso, el voladizo de la herramienta juega un papel vital. Por tanto, cuando se utilizan grandes voladizos (L/D > 4) para crear escuadras, recomendamos modificar las condiciones en línea con la siguiente figura.

Cette catégorie contient des recommandations pour la profondeur de coupe radiale maximale autorisée pour un groupe d'outils donné. Dans ce cas, le porte-à-faux de l'outil joue un rôle essentiel. Par conséquent, lorsque vous utilisez un porte-à-faux élevé (L/D > 4) pour créer des épaulements plus larges, nous vous recommandons de modifier les conditions de travail selon la figure suivante.

Picture / Figura / Image 17

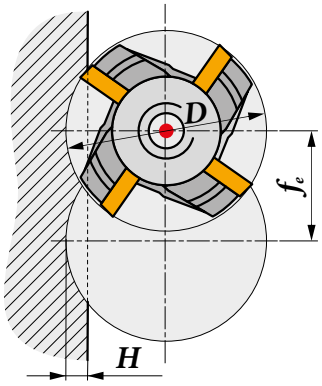


This method can also be used as finishing; the resulting roughness (cusp height) of the surface can then be calculated with the formula:

Cette technique peut également être utilisée en finition; la rugosité résultante (hauteur d'engagement) de la surface peut alors être calculée avec la formule:

Esta tecnología se puede utilizar también para acabado; la rugodidad resultante (altura de crestas) de la superficie se puede calcular con la fórmula:

Picture / Figura / Image 18



$$H = \frac{f_e^{\,2}}{4.D}$$

Where:

f_e plunging step [in]

D milling cutter diameter [in]

H maximum cusp height (~R_z) in [in]

Où:

f_e incrément de plongée [in]

D diamètre de la fraise [in]

H hauteur maximale d'engagement (~R_z) en [in]

Donde:

f_e paso [in]

D diámetro de la fresa [in]

H altura máxima de crestas (~R_z) en [in]



SLOT MILLING / RANURADO / RAINURAGE

Here again, we must make a differentiation between milling with disc milling cutters and cylindrical milling cutters or end mills.

Disc milling cutters can be used for machining both shoulders and slots. Therefore, we have included tables in the technology section from which you can determine the minimum and maximum feed you can use for the given tool and radial depth of cut (slot depth) or for the given a_e/D ratio.

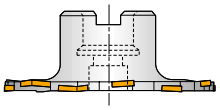
Là encore, nous devons faire une distinction entre le fraisage avec une fraise-disque (ou fraise 3 tailles) et une fraise cylindrique.

Les fraises-disques peuvent être utilisées pour usiner à la fois les épaulements et les rainures. Par conséquent, nous avons inclus des tableaux dans la section technique de ce catalogue à partir desquels vous pouvez déterminer les avances minimum et maximum que vous pouvez utiliser pour un outil donné, pour la profondeur de coupe radiale donnée (profondeur de la rainure) ou pour le rapport a_e/D donné.

Aquí tenemos que hacer de nuevo una diferenciación entre fresas de disco y fresas cilíndricas o de ranurado.

Las fresas de disco se pueden usar para escuadras o para ranuras. Por tanto, hemos incluido tablas en la sección tecnológica con la que se puede determinar el avance mínimo y máximo que se puede utilizar para una herramienta determinada y la profundidad de corte radial (profundidad de ranura) o para la relación a_e/D.

Table / Tabla / Tableau 6

	a_e	0.20		0.40		0.60		0.80		1.00	
	D	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨
	3.00	.011	.014	.008	.010	.007	.008	–	–	–	–
	4.00	.013	.016	.009	.011	.007	.009	.006	.008	–	–
	5.00	.014	.018	.010	.013	.008	.011	.007	.009	.006	.008
	6.00	.016	.020	.011	.014	.009	.012	.008	.010	.007	.009
	8.00	.017	.022	.013	.016	.010	.013	.009	.011	.008	.010
		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	2.50	.010	.013	.007	.009	.006	.007	.005	.007	.005	.006
	3.00	.011	.014	.008	.010	.007	.008	.006	.007	.005	.007
	4.00	.013	.016	.009	.011	.007	.009	.006	.008	.006	.007
	5.00	.014	.018	.010	.013	.008	.011	.007	.009	.006	.008
	6.00	.016	.020	.011	.014	.009	.012	.008	.010	.007	.009

A similar solution is used for cylindrical milling cutters with teeth in a helix (porcupine cutters etc.). These also have recommended minimum and maximum feed values with regard to a_e in [in].

Une solution similaire est utilisée pour les fraises cylindriques avec dents en hélice (fraises type “hérisson”). Elles ont également des valeurs d’avance minimale et maximale recommandées en fonction de la valeur a_e en [in].

Se utiliza una solución similar para fresas cilíndricas con dientes en una hélice (fresas de cocodrilo, etc.). Esto también proporciona valores de avance mínimo y máximo en relación con a_e en [in].

Table / Tabla / Tableau 7

a_e	0.05		0.10		0.20		0.30		0.40		0.60		0.80	
D	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨
1.00	.010	.016	.006	.010	.005	.007	.004	.006	.004	.006	.003	.005	.003	.004
1.25	.011	.018	.007	.011	.005	.008	.004	.007	.004	.006	.003	.005	.003	.005
1.50	.013	.020	.008	.013	.006	.009	.005	.007	.004	.007	.004	.006	.003	.005
2.00	.014	.022	.009	.014	.006	.010	.005	.008	.005	.007	.004	.006	.004	.006

a_e	1.00		1.25		1.50		2.00	
D	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨	f_{min} ⇨	f_{max} ⇨
1.00	.003	.005	-	-	-	-	-	-
1.25	.003	.004	.003	.005	-	-	-	-
1.50	.003	.005	.003	.004	.003	.005	-	-
2.00	.003	.005	.003	.005	.003	.004	.003	.005

However, the table of corrections for cutting speed no longer applies here. **On the contrary: as a_e increases, we recommend reducing the cutting speed to up to ca 25 % with full width and maximum depth of cut.**

The exact same method is used with milling cutters for T-slots, with the difference that starting values are in this case divided into three sections: shoulder milling, rear face milling and T-slot milling.

Cependant, le tableau des corrections pour la vitesse de coupe ne s‘applique plus ici. **Au contraire: à mesure que ae augmente, nous recommandons de réduire la vitesse de coupe jusqu‘à environ 25 % en situation d‘engagement de fraise total (a_e = D) et profondeur maximale de coupe ($a_{p\,max}$).**

La même méthode est utilisée avec les fraises pour rainures en T, à la différence que les valeurs de départ sont dans ce cas divisées en trois sections: fraisage d‘épaulement, fraisage de face arrière et fraisage de rainure en T.

Por tanto, la tabla de correcciones para la velocidad de corte no se aplica aquí. **Al contrario, al incrementarse ae, recomendamos reducir la velocidad de corte hasta un 25 % con todo el ancho y la máxima profundidad de corte.**

Se utiliza exactamente el mismo método con fresas para ranuras en T, con la diferencia de que los valores iniciales estan en este caso divididos en tres secciones: escuadrado, fresado trasero y ranurado en T.

Perform shoulder milling with end mills using the recommendations given in the previous section. For slot milling, use the table included in the technical section following the milling cutter group. The table contains the starting feed values for minimum, average and maximum depth of cut.

Realizar un escuadrado con una fresa de ranurado usando las recomendaciones dadas en la sección anterior. Para ranurado, utilizar la tabla incluida en la sección técnica siguiendo el grupo de fresas. La tabla contiene valores iniciales de avance para una profundidad de corte mínima, media y máxima.

Effectuer le fraisage d'épaulement en utilisant les recommandations données dans la section précédente. Pour le rainurage, utilisez le tableau figurant dans la section technique en respectant le groupe d'outil. Le tableau contient les valeurs d'avance de départ pour les profondeurs de passe minimum, moyenne et maximale.

Table / Tabla / Tableau 8

Table / Tabla / Tableau 8

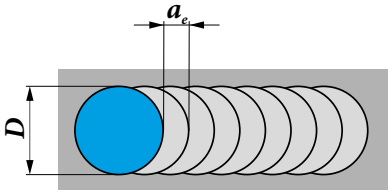
a_p	.039	.236	.512
f	.011	.007	.004

The method of plunging (slotting) can also be used for slot milling. Follow the instructions provided in the grooving section.

La tecnología de fresado axial (plunging) se puede utilizar también para ranurado. Siga las instrucciones proporcionadas en la sección de ranurado.

La technique de tréflage peut également être utilisée pour le fraisage de rainures. Suivre les instructions fournies dans la section rainurage.

Picture / Figura / Image 19

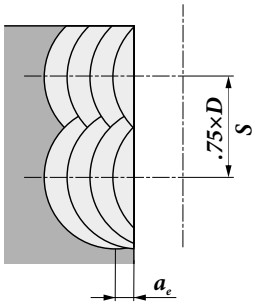


For machining wider slots by plunging, the mutual movement between particular steps (S) should not exceed ¾ of milling cutter diameter.

Para mecanizar ranuras más anchas, el movimiento entre los pasos (S) no debe ser mayor de ¾ el diámetro de la fresa.

Pour l'usinage de rainures plus larges en tréflage, le mouvement alternatif à programmer entre chaque passe (S) ne doit pas dépasser ¾ du diamètre de la fraise.

Picture / Figura / Image 20



PROGRESSIVE PLUNGING / FRESADO PROGRESIVO / PLONGÉE PROGRESSIVE

The limiting factor in this case is the construction of the tool or the insert itself. Thus, we are using the maximum permissible plunging depth valid in general for the entire group.

Le facteur limitant dans ce cas est la construction de l'outil ou de la plaquette elle-même. Ainsi, nous utilisons la profondeur de plongée maximale admissible valable en général pour l'ensemble du groupe.

La limitación en este caso es la propia construcción de la fresa o la plaquita en si. Por tanto estamos utilizando la máxima profundidad axial permisible válida en general para todo el grupo.

RAMPING / FRESADO EN RAMPA / RAMPING

Ramping, i.e. two-axis progressive sinking, is a process that simultaneously applies three different cutting methods:

Le ramping, c'est-à-dire la plongée progressive suivant deux axes de déplacement, est une technique qui utilise simultanément trois méthodes de coupe différentes:

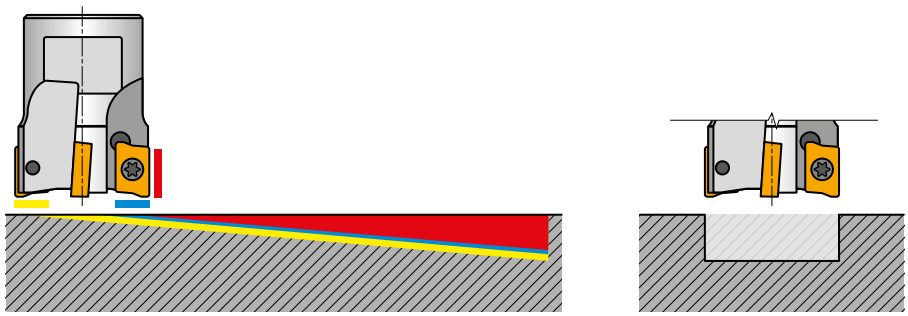
El fresado en rampa, es decir, la penetración progresiva en dos ejes, es una tecnología que aplica simultáneamente tres métodos de corte diferentes:

Picture / Figura / Image 21

Front insert – cut with the primary edge (tool periphery) / Plaquita frontal – corta con el filo primario (periféria de la herramienta)
Plaquette avant – coupe avec l'arête primaire (périphérie de l'outil)

Front insert – cut with the secondary edge (tool face) / Plaquita frontal – corta con el filo secundario (frente de la herramienta)
Plaquette avant – coupe avec l'arête secondaire (face de l'outil)

Rear insert – cut with the secondary edge (tool face) / Plaquita trasera – corta con el filo secundario (frente de la herramienta)
Plaquette arrière – coupe avec l'arête secondaire (face de l'outil)



A very important fact here is the angle of descent, respectively decline in the Z-axis on that section.

Some tools (HFC) allow descent at a smaller angle, but larger feed, or using larger angle of descent with lower feed.

The gradient of descent (ramp angle) recommended for different cutter styles can be found in the technical section.

Un paramètre très important est ici l'angle de descente, représenté par le déplacement d'outil dans l'axe Z sur la section ci-dessus.

Certains outils (grande avance HFC) permettent une descente à un angle plus petit, mais avec une avance plus importante, ou en utilisant un angle de descente plus grand avec une avance réduite.

Ces valeurs d'angles de descente pour un diamètre d'outil donné peuvent être trouvées dans les recommandations techniques.

Aquí es muy importante el ángulo de descenso, disminución en el eje Z en esta sección.

Algunas herramientas (alto avance, HFC) permiten descender con un ángulo menor pero a mayor avance, o utilizando un ángulo mayor con menor avance.

Estos ángulos y los respectivos valores de descenso en una sección determinada se pueden encontrar en las recomendaciones técnicas.

Table / Tabla / Tableau 9

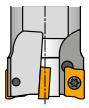
D	α_{max} °	a_p/l	HFC α_{max} °	HFC α_{max} °	HFC a_p/l
1.00	12.5	.50/2.50	4.0	8.0	.05/.75
1.25	7.5	.50/4.00	2.0	7.5	.05/1.50
1.50	5.0	.35/4.00	1.2	4.5	.05/2.60
2.00	3.5	.25/4.00	0.8	3.0	.05/4.00
2.50	2.5	.20/4.00	0.5	2.0	.03/4.00
3.00	2.0	.15/4.00	0.4	1.5	.02/4.00

When choosing feed, we advise following the recommendations provided for slot milling. If the slot is deeper (i.e. first pass at an angle, second to level off), you must choose one of four basic programme variants for the consecutive steps:

Lorsque vous choisissez l'avance, nous vous conseillons de suivre les recommandations fournies pour le fraisage de rainures. Si la rainure est profonde et ne peut être réalisée en une seule passe (c'est-à-dire que la première passe suit un angle, la seconde reste dans lemême plan), vous devez choisir une des quatre variantes de programmation de base suivantes pour chaque étape consécutive:

Al elegir el avnce, aconsejamos seguir las recomendaciones proporcionadas para ranurado.Si la ranura es más profunda (es decir, primera pasada a un ángulo, segunda pasada para nivelar), se debe elegir una de estas cuatro programaciones básicas para los pasos consecutivos:

Picture / Figura / Image 22

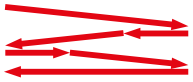




Down at max. angle and back straight and again down at max. angle and back straight...
Bajar con el ángulo máx. y volver recto, bajar otra vez con el ángulo máx. y volver recto...
Descente à angle max. et retour dans le même plan, puis de nouveau répéter le même cycle...



There and back at a smaller (half) angle and last exit straight.
Ir y volver con un ángulo menor (la mitad) y la última pasada recta.
Descente aller et retour avec des angles de pente plus faibles et réguliers, puis dernière passe dans le même plan.



Down at max. angle, back straight by length D and then down at max. angle, repeat straight...
Bajar con el ángulo máx., volver recto una longitud igual a D y bajar otra vez con el ángulo máx., de nuevo volver recto...
Descente à angle max. et retour dans le même plan sur une longueur égale au diamètre de la fraise, puis de nouveau descente à angle max. et répéter le même cycle...



Down at max. angle, then up by length X and back down at max. angle.
Bajar con el ángulo máx., luego subir la longitud X y volver a bajar otra vez con el ángulo máx.
Descente à angle max. puis remonter la fraise d'une longueur X et à nouveau plonger à angle max. recommandé.

$$X = tg\ \alpha\ (D\text{-}2b)$$

Where:
X rebound (step) [in]
α angle of descent [°]
D milling cutter diameter [in]
b insert width [in]

Où:
X rebond (pas) [in]
α angle de descente [°]
D diamètre de la fraise [in]
b largeur de la plaquette [in]

Donde:
X rebote (paso) [in]
α ángulo de descenso [°]
D diámetro de la fresa [in]
b ancho de la plaquita [in]

CIRCULAR OR HELICAL INTERPOLATION MILLING / INTERPOLACIÓN CIRCULAR O HELICOIDAL
FRAISAGE PAR INTERPOLATION CIRCULAIRE OU HÉLICOÏDALE

The method is basically analogous to ramping. In this case, one of the most important factors is milling cutter diameter or minimum and maximum diameter of hole we are able to machine with the given milling cutter type (this information is vital only when using milling cutters without central cutting edges).

If the milling cutter diameter is too large, the trajectory of the cutting edge insert does not pass through the axis of the hole, resulting in a protrusion which collides with the tool face and can cause the destruction of the tool.

On the other hand, if the diameter of the milling cutter is too small, the core will remain inside the hole axis and must then be milled off afterwards.

La méthode est en fait analogue au ramping. Dans ce cas, l'un des critères les plus importants est le diamètre de la fraise ou le diamètre minimum et maximum du trou qu'il est possible d'usiner avec le type de fraise donné (ces informations sont vitales uniquement en utilisation de fraises sans arêtes de coupe au centre).

Si le diamètre de la fraise est trop grand, la trajectoire de l'arête de coupe de la plaquette ne traversera pas l'axe du trou à réaliser, ce qui entraînera un surplus de matière au centre qui finira par heurter la face avant de l'outil et pourra provoquer sa destruction.

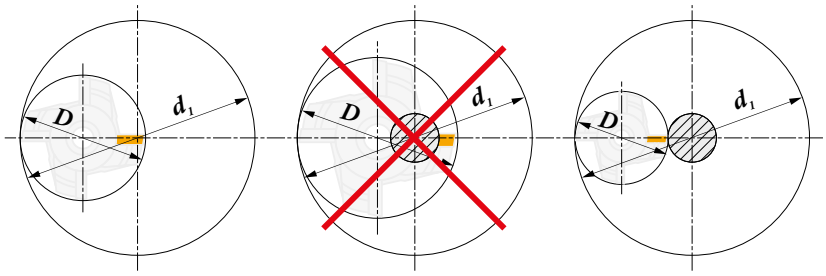
D'autre part, si le diamètre de la fraise est trop petit, un noyau de matière subsistera au centre du trou et devra être réusiné par la suite.

Este método es básicamente análogo al fresado en rampa. En este caso, uno de los factores más importantes es el diámetro de la fresa o el diámetro mínimo y máximo del agujero que somos capaces de mecanizar con un tipo de fresa determinada (esta información es vital sólo cuando se utilizan fresas sin filos de corte centrales).

Si el diámetro de la fresa es demasiado grande, la trayectoria del filo de corte no pasa por el eje del agujero, dando como resultado una protuberancia que colisiona con la cara de la herramienta y que puede causar su destrucción.

Por otro lado, si el diámetro de la fresa es demasiado pequeño, el material central permanece dentro en el eje del agujero y debe ser fresado posteriormente.

Picture / Figura / Image 23



Therefore, recommendations include tables listing minimum hole diameter values, maximum hole diameter values, and in-axis descent angle values corresponding to these diameters (in some cases there will be two tables: one for standard insert geometry and another for HFC).

Par conséquent, les recommandations comprennent des tableaux indiquant les valeurs minimales de diamètre de trou, les valeurs maximales de diamètre de trou et des valeurs d'angle de descente axiale correspondant à ces diamètres (dans certains cas, il y aura deux tableaux: l'un adapté à une géométrie de plaquette standard et l'autre pour le fraisage grande avance HFC).

Por tanto, las recomendaciones incluyen tablas con valores de diámetros mínimos de agujero, valores de diámetros máximos de agujero y valores de ángulos de descenso correspondientes a esos diámetros (en algunos casos hay dos tablas: una para geometriías estándar de plaquita y otra para HFC, alto avance).

Table / Tabla / Tableau 10

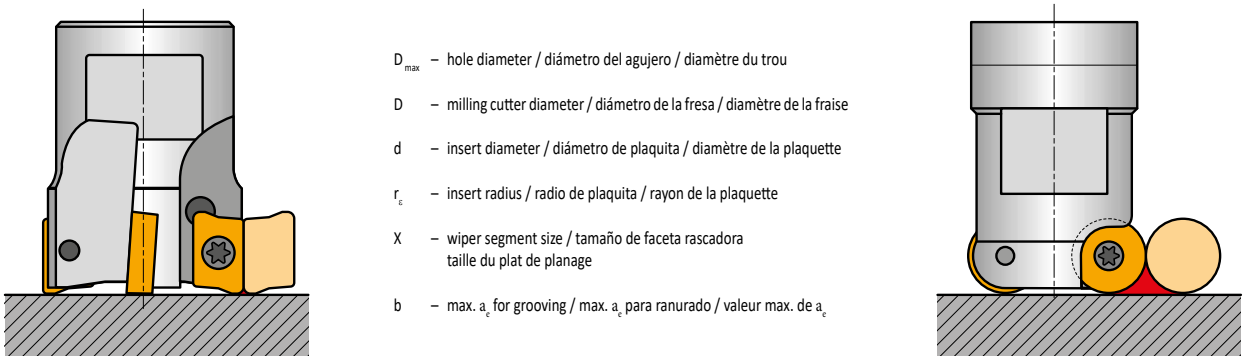
D	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}	HFC d_{min}	HFC d_{max}	HFC s_{max} d_{min}	HFC s_{max} d_{max}
1.00	1.65	1.97	.39	.49	1.65	1.97	.05	.05
1.25	2.17	2.52	.26	.35	2.17	2.52	.05	.05
1.50	2.83	3.15	.20	.31	2.83	3.15	.05	.05
2.00	3.62	3.94	.18	.24	3.62	3.94	.05	.05
2.50	4.65	4.96	.16	.20	4.65	4.96	.05	.05
3.00	5.35	6.30	.06	.08	5.35	6.30	.05	.05

The following figure schematically explains the methodology of diameter calculation.

La siguiente figura explica esquemáticamente la metodología del cálculo del diámetro.

La figure suivante explique schématiquement la méthodologie de calcul du diamètre d'outil.

Picture / Figura / Image 24



D_{max} – hole diameter / diámetro del agujero / diamètre du trou

D – milling cutter diameter / diámetro de la fresa / diamètre de la fraise

d – insert diameter / diámetro de plaquita / diamètre de la plaquette

r_ε – insert radius / radio de plaquita / rayon de la plaquette

X – wiper segment size / tamaño de faceta rascadora
taille du plat de planage

b – max. a_e for grooving / max. a_e para ranurado / valeur max. de a_e

Maximum hole diameter / Diámetro máximo del agujero / Diamètre de trou maximum

For through hole:
Para agujero pasante:
Pour trou débouchant:

$$D_{max} = 2 \cdot D$$

$$D_{max} = 2 \cdot D$$

For blind holes, you can achieve a flat bottom by having the tool pass over the bottom's center.
Para agujeros ciegos, se puede producir un fondo plano haciendo pasar la herramienta por el centro del fondo.
Pour un trou borgne, vous pouvez obtenir une surface à fond plat en faisant passer l'outil sur le centre du trou.

Minimum hole diameter / Diámetro mínimo del agujero / Diamètre de trou minimum

For through hole:
Para agujero pasante:
Pour trou débouchant:

$$D_{min} = (D - b) \cdot 2$$

$$D_{min} = (D - 0.8d) \cdot 2$$

For flat bottom:
Para fondo plano:
Pour trou borgne (fond plat):

$$D_{min} = (D - (r_\varepsilon + x)) \cdot 2$$

$$D_{min} = (D - 0.5d) \cdot 2$$

When choosing feed, we advise following the recommendations given for slot milling.

ATTENTION: It is necessary to use correction for circular interpolation (normally programmed to tool center, but feed is significantly higher during internal circular interpolation)!

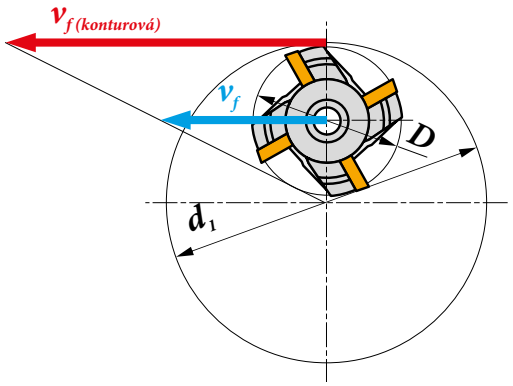
Para elegir el avance, aconsejamos seguir las recomendaciones dadas para ranurado.

ATENCIÓN: Es necesario usar correcciones para interpolación circular (normalmente programada al centro de la herramienta, pero el avance es significativamente mayor durante la interpolación circular interna)!

Lors du choix de l'avance, nous conseillons de suivre les recommandations données pour le rainurage.

ATTENTION: Il est nécessaire d'utiliser un facteur de correction pour l'interpolation circulaire (normalement programmée au centre de l'outil, mais l'avance est significativement plus élevée dans le cas d'une interpolation circulaire intérieure)!

Picture / Figura / Image 25



$$V_f = \frac{d_1}{d_1 - D}$$

CHAMFER MILLING / FRESADO DE CHAFLANES / FRAISAGE DE CHANFREIN

The essential issues are the coefficient which multiplies cutting speed and the starting feed you should use if you want to mill a chamfer corresponding to maximum depth of cut × 45°. Chamfering requires proper choice of cutting speed and, above all, choice of feed based on the nature of engagement.

Los puntos esenciales son el coeficiente con múltiples velocidades de corte y los avances iniciales que deberían ser utilizados si se quiere mecanizar un chaflán a máxima profundidad de corte × 45°. La operación de achaflanado requiere una correcta elección de la velocidad de corte y, sobre todo, elegir el avance en función del trabajo.

Les problèmes essentiels sont le coefficient qui multiplie la vitesse de coupe et la vitesse d'avance que vous devez utiliser si vous souhaitez usiner un chanfrein correspondant à la profondeur maximale de coupe × 45°. Le chanfreinage nécessite un choix approprié de la vitesse de coupe et, surtout, un choix d'avance basé sur la nature de l'engagement d'outil.

Table / Tabla / Tableau 11

D	X.V	f_{max}
2.00	1.35	.014
2.50	1.39	.016
3.00	1.44	.018
4.00	1.48	.020
5.00	1.53	.022
6.00	1.58	.025

For tools suited purely for chamfer milling, we have prepared tables combining applications from chamfer milling to face milling. They list ranges of recommended feed (minimum, starting and maximum) for the given a_e/D ratio. Furthermore, they include the correction factor for cutting speed that you can (but do not have to) use.

Para herramientas adecuadas especialmente para achaflanado, hemos preparado tablas combinando aplicaciones de fresado de chaflanes a fresado frontal o planeado. Se indican gamas de avances recomendados (mínimo, inicial y máximo) para la relación a_e/D dada. Además se incluye el factor de corrección para la velocidad de corte que se puede (no necesariamente) usar.

Pour les outils conçus à la base pour le fraisage de chanfreins, nous vous avons préparé des tableaux combinant les applications de fraisage de chanfrein au fraisage de faces. Ils indiquent les plages d'avance recommandées (minimum de départ et maximum) pour un rapport a_e/D donné. En outre, ils incluent le facteur de correction pour la vitesse de coupe que vous pouvez utiliser (sans obligation).

Table / Tabla / Tableau 12

a_e/D	.10			.15			.20			.25			.30			.35			.40			.50 – 1.0		
K_r													f											
15	.024	.039	.053	.020	.031	.043	.017	.027	.037	.015	.024	.033	.014	.022	.031	.013	.020	.028	.012	.019	.026	.011	.017	.024
25	.015	.024	.032	.012	.019	.026	.010	.017	.023	.009	.015	.020	.009	.014	.019	.008	.013	.017	.007	.012	.016	.007	.011	.015
30	.013	.020	.028	.010	.016	.022	.009	.014	.019	.008	.013	.017	.007	.011	.016	.007	.011	.015	.006	.010	.014	.006	.009	.012
35	.011	.017	.024	.009	.014	.020	.007	.012	.017	.007	.011	.015	.006	.010	.014	.006	.009	.013	.006	.009	.012	.005	.008	.011
40	.010	.015	.021	.008	.013	.017	.007	.011	.015	.006	.010	.013	.006	.009	.012	.005	.008	.011	.005	.008	.011	.004	.007	.009
45	.009	.014	.019	.007	.011	.016	.006	.010	.014	.006	.009	.012	.005	.008	.011	.005	.007	.010	.004	.007	.010	.004	.006	.009
50	.008	.013	.018	.007	.011	.015	.006	.009	.013	.005	.008	.011	.005	.007	.010	.004	.007	.009	.004	.007	.009	.004	.006	.008
55	.007	.012	.017	.006	.010	.014	.006	.009	.012	.005	.008	.011	.004	.007	.010	.004	.007	.009	.004	.006	.008	.004	.006	.007
60	.007	.011	.016	.006	.009	.013	.005	.008	.011	.005	.007	.010	.004	.007	.009	.004	.006	.008	.004	.006	.008	.003	.005	.007
75	.006	.010	.014	.005	.008	.011	.005	.007	.010	.004	.007	.009	.004	.006	.008	.004	.006	.007	.003	.005	.007	.003	.005	.006
X.V		1.35			1.27			1.22			1.19			1.16			1.13			1.11			1.00	

MILLING OF FREE FORM SURFACES (COPY MILLING) / FRESADO EN COPIA (COPIADO) / FRAISAGE DE FORMES COMPLEXES (COPIAGE 3D)

This is one of the most demanding operations in terms of milling applications. The main issue is the frequent change in both cutting and working conditions. These operations are performed in the vast majority of cases using toroidal (radius) or ball-nose milling cutters. To facilitate the correct use of these tools, we have included the following supporting materials in the technical section after the given tool group.

Toroidal Milling Cutters

One of the first pieces of data you will find here is the effective milling cutter diameter with regard to depth of cut. Zero depth is included on purpose to show where a toroidal milling cutter can still create a flat bottom (that is important with respect to the correct choice of a_e when milling larger surfaces).

Una de las operaciones más exigentes en términos de tecnología. El principal factor es el frecuente cambio en las condiciones de corte y de trabajo. Estas operaciones se realizan en la gran mayoría de los casos utilizando fresas toroidales (radio) o fresas de punta esférica. Para facilitar el correcto uso de estas herramientas, hemos incluido el siguiente material de apoyo en la sección técnica tras el grupo de herramientas determinado.

Fresas Toroidales

Uno de los principales datos que se encuentran aquí es el diámetro efectivo de la fresa en función de la profundidad de corte. Profundidad cero se incluye también con la finalidad de mostrar dónde una fresa toroidal puede aún crear un fondo plano (que es importante respecto a la correcta elección de a_e al fresar grandes superficies).

Une des opérations les plus exigeantes en termes de technologie. L'enjeu principal est le changement fréquent des conditions de coupe et de travail. Ces opérations sont effectué-esdans la grande majorité des cas à l'aide de fraises toroïdales (rayon) ou de fraises à bout sphérique. Afin de faciliter l'utilisation correcte de ces outils, nous avons inclus les supports suivants dans la section technique pour chaque groupe d'outils.

Fraises Toroïdales

L'une des premières données que vous trouverez ici est le diamètre de coupe effectif de la fraise en fonction de la profondeur de coupe. La profondeur zéro est incluse volontairement afin de montrer la largeur de surface plane qu'une fraise toroïdale est capable de générer (ce qui est important pour un choix approprié de a_e lors du fraisage de plus grandes surfaces).

Table / Tabla / Tableau 13

D	a_p	.00	.01	.02	.03	.04	.05	.06	.08	.10	.12	.16	.20	.24	.28	.31
2.50	D_{ef}	1.850	2.020	2.071	2.118	2.154	2.189	2.217	2.268	2.307	2.343	2.398	2.433	2.461	2.476	2.480
3.00		2.520	2.689	2.740	2.787	2.823	2.858	2.886	2.937	2.976	3.012	3.067	3.102	3.130	3.146	3.150
4.00		3.307	3.476	3.528	3.575	3.610	3.646	3.673	3.724	3.764	3.799	3.854	3.890	3.917	3.933	3.937

For toroidal milling cutters, a table follows listing the starting feed values with regard to depth of cut (at small depth of cut, chip thickness is very low; this could mean that the milling cutter would be "rubbing" rather than cutting when working with soft materials in particular).

Pour les fraises toroïdales, le tableau suivant indique les valeurs de départ d'avance par rapport à la profondeur de coupe (à petite profondeur de coupe, l'épaisseur des copeaux est très faible; et dans ce cas de figure l'outil frotterait la matière au lieu de la couper, en particulier en usinage de matériaux mous).

Para fresas toroidales, esta tabla muestra los valores de avance en relación con la profundidad de corte (a pequeña profundidad de corte, el espesor de viruta es muy pequeño; esto puede significar que la fresa esté "rozando" en lugar de cortando, particularmente con materiales blandos).

Table / Tabla / Tableau 14

a_p	.000	.012	.020	.030	.039	.049	.059	.079	.098	.118	.157	.197	.236	.276	.315
1 f	–	.043	.033	.028	.024	.021	.020	.017	.015	.014	.012	.011	.010	.010	.009

Another piece of data which could facilitate your use of toroidal milling cutters is listed in tables related to the choice of milling strategy. It is basically a comparison of the strategy of transverse and peripheral slotting. In these tables, you will find the so-called slotting step which you must use to achieve the required roughness (cusp height) of the surface (in micrometers).

Un autre élément d'information qui peut faciliter votre utilisation des fraises toroïdales est énuméré dans les tableaux relatifs au choix de la stratégie de fraisage. Il s'agit essentiellement d'une comparaison des stratégies de fraisage transversale et périphérique. Dans ces tableaux, vous trouverez la valeur de l'intervalle de balayage que vous devez utiliser pour obtenir la rugosité requise (hauteur de crête) de la surface usinée (en microns).

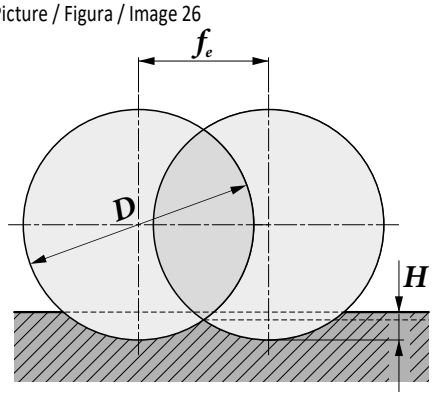
Otro dato que puede facilitar el uso de fresas toroidales está en tablas relativas a la elección de la estrategia de fresado. Es básicamente una comparación de las estrategias de fresado transversal y periférico. En esas tablas se puede encontrar el llamado "paso" que se debe utilizar para alcanzar la rugosidad requerida de la siperficie (en micrómetros).

Table / Tabla / Tableau 15

D	µm	118	197	394	590	787
.500	f_e	.015	.019	.027	.033	.039
.625		.017	.022	.031	.039	.045
.750		.019	.025	.035	.043	.050

r_ε	µm	118	197	394	590	787
.05	f_e	.007	.009	.013	.016	.018
.06		.008	.010	.014	.017	.020
.08		.009	.011	.016	.019	.022
.12		.011	.014	.019	.024	.027
.16		.012	.016	.022	.027	.031

Picture / Figura / Image 26



$$H = \frac{f_e^2 \cdot 1000}{4 \cdot D}$$

Where: f_e slotting step [in]
D diameter [in]

The same formula is used in both cases. For conventional (peripheral) slotting D is substituted with insert diameter, while for transverse slotting D is substituted with milling cutter diameter.

Où: f_e valeur du pas ou intervalle de balayage [in]
D diamètre [in]

La même formule est utilisée dans les deux cas. Pour les rainures conventionnelles (périphériques), D est substitué au diamètre de plaquette, tandis que pour une rainure transversale D est substitué au diamètre de la fraise.

Donde: f_e paso [in]
D diámetro [in]

Se utiliza la misma fórmula en ambos casos. Para fresado convencional (periférico), D se sustituye por el diámetro de la plaquita, mientras que para fresado transversal, D se sustituye por el diámetro de la fresa.

Ball-nose Milling Cutters

One of the first pieces of information included here is once again the actual cutting diameter value with regard to depth of cut, with all values listed in mm.

Fresas de Punta Esférica

Una de las primeras informaciones incluidas aquí, es una vez más el diámetro de corte en función de la profundidad de corte, con todos los valores en mm.

Fraises à bout sphérique

L'un des premiers éléments d'information inclus ici est une fois de plus le diamètre de coupe effectif en fonction de la profondeur de coupe, toutes les valeurs étant indiquées en mm.

Table / Tabla / Tableau 16

D	a_p	.012	.016	.020	.028	.039	.049	.059	.079	.098	.118	.157	.197	.236	.315	.394	.472	.591	.630
.3125		.118	.138	.154	.177	.209	.228	.244	.272	.291	.303	.315	–	–	–	–	–	–	–
.3750		.134	.154	.173	.201	.236	.260	.280	.315	.343	.362	.386	.394	–	–	–	–	–	–
.5000		.146	.169	.189	.220	.260	.287	.311	.350	.382	.409	.445	.465	.472	–	–	–	–	–
.6250	D_{ef}	.169	.197	.220	.256	.303	.339	.366	.417	.457	.492	.547	.583	.610	.630	–	–	–	–
.7500		.193	.220	.244	.291	.343	.382	.413	.472	.520	.563	.630	.681	.720	.772	.787	–	–	–
1.000		.213	.248	.276	.323	.386	.429	.469	.535	.591	.638	.720	.787	.843	.917	.965	.984	–	–
1.250		.243	.280	.313	.369	.439	.488	.533	.610	.676	.734	.833	.915	.983	1.091	1.168	1.220	1.257	1.260

Furthermore, you will find information on which milling cutter section (only for L2-SZP, K3-CXP) utilises only one edge.

Además se puede encontrar información de qué sección de fresa (sólo para L2-SZP, K3-CXP) utiliza sólo un filo.

En outre, vous trouverez des informations relatives à quelle section de fraise (uniquement pour L2-SZP, K3-CXP) utilise une seule arête.

Picture / Figura / Image 27

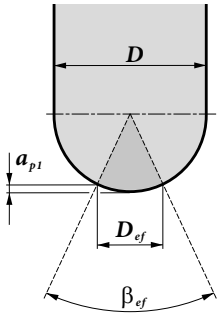


Table / Tabla / Tableau 17

D [in]		β_{ef} [°]	D_{ef} [in]	a_p [in]
.375	FM	41	.138	.013
.500	FM	41	.165	.015
.625	FM	42	.223	.020
.750	FM	42	.280	.026
1.00	FM	41	.345	.031
1.50	R	41	.555	.051
2.00	R	45	.755	.075

Similarly to toroidal milling cutters, this information is followed by data on what slotting step to use in order to achieve the required surface roughness (it does not matter whether the slotting is transverse or longitudinal here).

Igual que en las fresas toroidales, esta información está acompañada de datos sobre qué paso utilizar para alcanzar la rugosidad superficial requerida (aquí no importa si el fresado es transversal o longitudinal).

De la même manière que pour les fraises toroïdales, cette information est suivie par des données sur l'intervalle de balayage à utiliser pour obtenir la rugosité de surface requise (peu importe si la rainure est transversale ou longitudinale ici).

Table / Tabla / Tableau 18

D	µm	118	197	394	590	787	1181	1574	1968	2361	3148	3935
.500		.015	.019	.027	.033	.039	.047	.055	.061	.067	.077	.086
.625		.017	.022	.031	.039	.045	.055	.063	.070	.077	.089	.100
.750		.019	.025	.035	.043	.050	.061	.070	.079	.086	.100	.111

r_ε	µm	118	197	394	590	787	1181	1574	1968	2361	3148	3935
.05		.007	.009	.013	.016	.018	.022	.025	.028	.031	.036	.040
.06		.008	.010	.014	.017	.020	.024	.028	.031	.034	.040	.045
.08		.009	.011	.016	.019	.022	.027	.031	.035	.039	.045	.050
.12		.011	.014	.019	.024	.027	.033	.039	.043	.047	.055	.061
.16		.012	.016	.022	.027	.031	.039	.045	.050	.055	.063	.070

The final values listed are cutting speed correction values for tool overhang:

Los valores finales listados son valores de corrección de la velocidad de corte para el voladizo de la herramienta:

Les valeurs finales indiquées sont des valeurs de correction de vitesse de coupe en fonction du porte-à-faux de l'outil:

Table / Tabla / Tableau 19

x.D	**Tool overhang (multiples of diameter D)** **Voladizo de la herramienta (múltiplos del diámetro D)** **Porte-à-faux de l'outil (multiples du diamètre D)**	**<3**	**3 – 4**	**4 – 6**	**>6**
X.V	Multiple coefficient for speed Coeficiente para la velocidad Coefficient multiplicateur pour la vitesse de coupe	1	.9	.7	.5

CUTTING CONDITIONS WHEN MILLING
CONDICIONES DE CORTE EN FRESADO
CONDITIONS DE COUPE EN FRAISAGE

During the process of milling, the milling cutter blade operates almost always in interrupted cut conditions. Within a single revolution of the tool, each blade enters the workpiece at least once and exits the cut once.

In addition, the chip thickness periodically changes during a single milling cutter revolution. That also results in fluctuations in the size and direction of the tangential component of the cutting force. The milling cutter blade is therefore exposed to cyclic stress which leads to specific wear of the edge.

The durability of the milling cutter edge is therefore dependent on the conditions in which the blade enters and exits the workpiece. Proper selection of these conditions significantly affects the process and result of milling in terms of cutting power and quality of the machined surface.

At the moment of entering the workpiece, the edge is subject to more or less intense mechanical impact which causes mechanical stress in the immediate vicinity of the edge. If the engagement conditions are chosen incorrectly, this impact can cause brittle damage to the edge either in the form of fracture or crumbling of the edge.

Even for tools with indexable inserts, we recommend down (climb) milling (i.e. edge cuts up to the maximum chip thickness).

Durante el proceso de fresado, cada diente de la fresa opera casi siempre en corte interrumpido. Por cada revolución de la herramienta, cada diente entra en la pieza al menos una vez y se produce corte una vez.

Además, el espesor de viruta va variando en cada revolución de la fresa. Como resultado se producen fluctuaciones en el tamaño y la dirección de la componente tangencial de la fuerza de corte. Por tanto cada diente de la fresa está expuesto cíclicamente a una tensión que provoca un desgaste específico del filo de corte.

La duración del filo de corte depende por tanto de las condiciones en las que el diente entra y sale de la pieza. Una selección adecuada de estas condiciones afecta significativamente al proceso y al resultado del fresado en términos de potencia de corte y calidad de la superficie mecanizada.

En el momento de la entrada en la pieza, el filo está sometido a un impacto mecánico más o menos intenso que produce una tensión mecánica en la zona inmediatamente posterior al filo de corte. Si las condiciones de trabajo no se han elegido correctamente, este impacto puede producir la rotura del filo en forma de fractura o de desmoronamiento.

Para fresado con plaquita intercambiable recomendamos el fresado ascendente (es decir, el filo corta desde el espesor máximo de viruta).

Durant le processus de fraisage, l'outil fonctionne presque toujours en conditions de coupe interrompues. Pendant une rotation d'outil, chaque dent entre dans la pièce au moins une fois et quitte la matière une fois.

De plus, l'épaisseur de copeaux change constamment lors de chaque rotation de la fraise. Cela induit des fluctuations de dimension et de direction dans la résultante tangentielle de la force de coupe. Le corps de fraise est donc exposé à des contraintes cycliques qui conduisent à une usure caractéristique des arêtes de coupe.

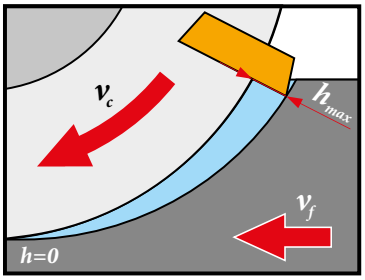
La durée de vie des arêtes de coupe de la fraise dépend donc des conditions dans lesquelles l'outil entre et sort de la pièce à usiner. Un choix approprié de ces conditions affecte de façon significative le processus et le résultat du fraisage en termes de puissance de coupe et de qualité de la surface obtenue.

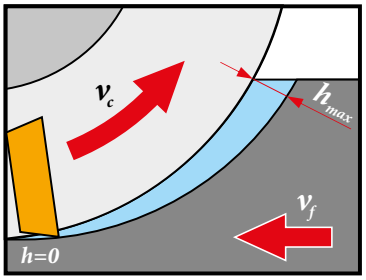
Au moment de l'entrée dans la matière, la plaquette de coupe est sujette à des impacts mécaniques plus ou moins intenses qui provoquent des contraintes mécaniques à proximité immédiate de l'arête de coupe. Si les conditions d'engagement de l'outil sont choisies incorrectement, cet impact peut provoquer une détérioration des plaquettes sous la forme d'une rupture ou d'un effondrement de l'arête de coupe.

Même pour les outils à plaquettes indexables, nous recommandons la méthode de fraisage en „avalant" (c'est-à-dire que l'arête de coupe pénètre dans la matière au point d'épaisseur maximale du copeau).

Picture / Figura / Image 5

DOWN (CLIMB) MILLING
FRESADO ASCENDENTE
FRAISAGE EN „AVALANT"





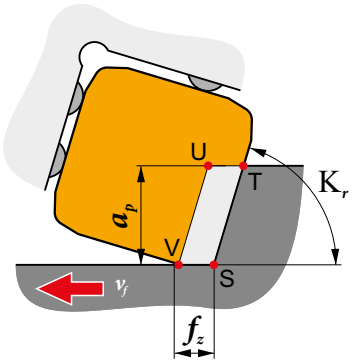
UP (CONVENTIONAL) MILLING
FRESADO CONVENCIONAL
FRAISAGE EN „OPPOSITION"

Furthermore, the place of first contact between the edge and the workpiece should lie further from the insert's tip. However, the position depends on both the basic geometry of the inserts, i.e. angles γ_o, λ_s, κ_r and the mutual position of the milling cutter axis and the entry edge of the workpiece.

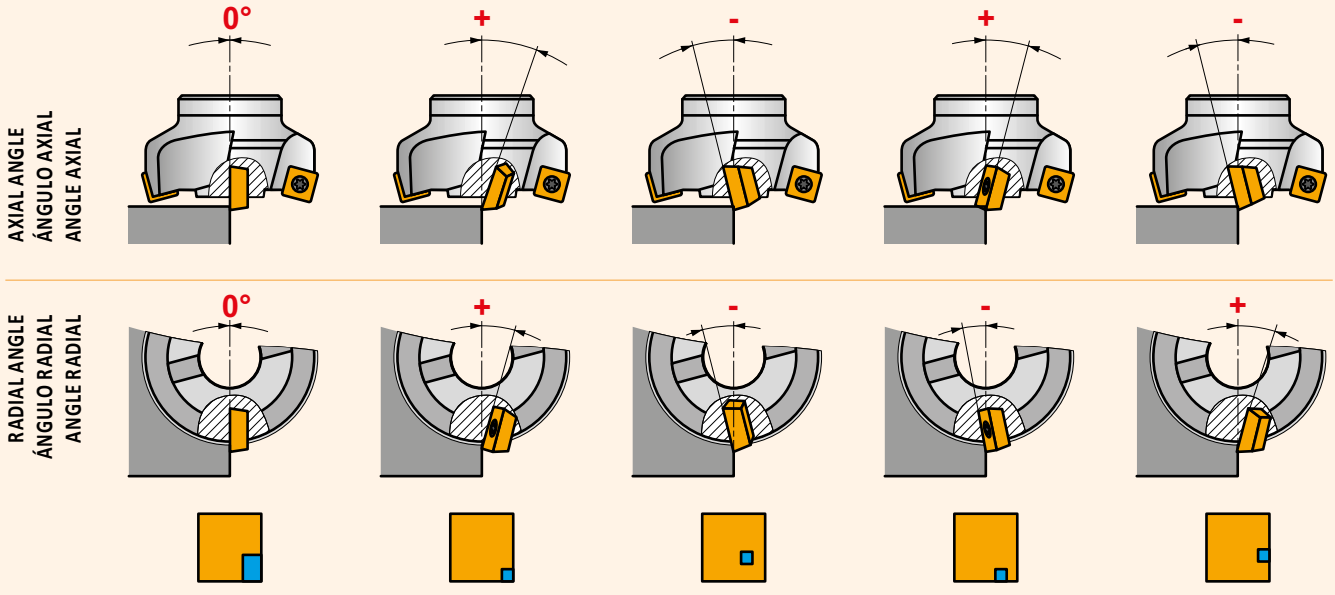
En outre, le point de premier contact entre l'arête de coupe et la pièce doit idéalement se situer éloigné de l'extrémité de la plaquette. Toutefois, sa position dépend à la fois de la géométrie de base des plaquettes, c'est-à-dire les angles γ_o, λ_s, κ_r et la position mutuelle de l'axe de la fraise et du bord d'entrée de la pièce.

Además, el lugar del primer contacto entre el filo y la pieza debe estar alejado de la punta de la plaquita. Sin embargo, la posición depende de la geometría básica de la plaquita, es decir, angulos γ_o, λ_s, κ_r y la posición mutua del eje de la fresa y el borde de entrada de la pieza.

Picture / Figura / Image 6



Picture / Figura / Image 7



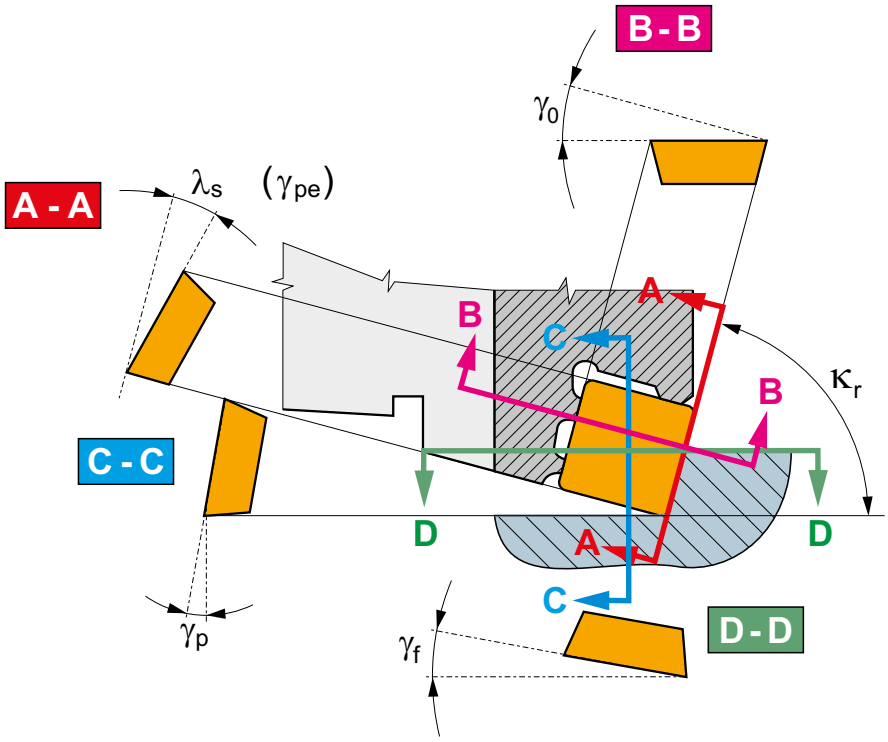
WORKING AND CONSTRUCTIONAL ANGLES OF MILLING CUTTERS
ÁNGULOS DE CONSTRUCCIÓN Y DE TRABAJO DE UNA FRESA
ANGLES DE CONSTRUCTION ET DE TRAVAIL DES FRAISES

The position of the cutting insert clamped in the tool is determined by several angles – see picture 8.

La posición de la plaquita en la herramienta está determinada por varios ángulos – ver figura 8.

La position d'une plaquette de coupe montée sur l'outil est définie par plusieurs angles, voir image N° 8.

Picture / Figura / Image 8



Constructional angles determine the basic orientation of the seat position that the cutting insert is clamped in and are therefore important for the design of the milling cutter body. There are two angles: axial face angle γ_p (tool back rake) and radial face angle γ_f (tool side rake) – see picture 8.

Working angles are the setting angle κ_r, the orthogonal face angle γ_o and the rake angle of the cutting edge λ_s.

- **Orthogonal face angle** γ_o – affects not only the extent of plastic deformation of the cut chip but also the cutting force and temperature. The bigger the rake angle γ_o, the lower the cutting force and power demand of the spindle motor (and vice versa).
- **Setting angle** κ_r – determines the thickness of the chip at a specific feed per tooth f_z and axial depth of cut a_p. It therefore affects cutting forces, specifically load, wear and tool service life. Reducing the setting angle κ_r at a constant feed f_z causes a decrease in the chip thickness h.
- **Rake angle of cutting edge** λ_s – together with setting angle κ_r and face angle γ_o, this determines the point of first contact between the edge and work piece. That is why it affects the resistance of the edge to chipping during interrupted cut. At the same time, it affects the direction of chip evacuation.

Los **ángulos de construcción** determinan la orientación básica de la posición del asiento en el que se coloca la plaquita y por tanto es importante para el diseño de la fresa. Hay dos ángulos: ángulo axial γ_p (inclinación axial) y ángulo radial γ_f (inclinación lateral) – ver figura 8.

Los **ángulos de trabajo** son el ángulo de posición κ_r, el ángulo ortogonal γ_o y el ángulo de desprendimiento del filo de corte λ_s.

- **Ángulo ortogonal** γ_o – afecta no sólo a la deformación plástica de la viruta sino también a la fuerza de corte y a la temperatura. Cuanto mayor sea el ángulo ortogonal γ_o menor será la fuerza de corte y la demanda de potencia del motor de la máquina (y viceversa).
- **Ángulo de posición** κ_r – determina el espesor de viruta a un avance por diente f_z y una profundidad de corte a_p especificos. Afecta por tanto a las fuerzas de corte, carga específica, desgaste y vida útil de la herramienta. Reduciendo el ángulo de posición κ_r a un avance constante f_z se produce una disminución del espesor de viruta h.
- **Ángulo de desprendimiento del filo de corte** λ_s – junto con el ángulo de posición κ_r y el ángulo ortogonal γ_o, determina el punto del primer contacto entre el filo y la pieza. Por eso afecta a la resistencia del filo al astillamiento durante el corte interrumpido. Al mismo tiempo afecta también a la dirección de evacuación de viruta.

Les **angles de construction** servent à l'orientation de base du logement dans lequel la plaquette est fixée, sa fonction est importante pour la conception du corps de fraise. On parle de deux angles : l'angle axial γ_p (angle mesuré par rapport à l'axe fraise) et l'angle radial γ_f (angle mesuré en regardant la fraise en bout).

Les **angles de travail** sont l'angle d'attaque κ_r, l'angle de coupe orthogonal γ_o et l'angle d'inclinaison de l'arête de coupe λ_s.

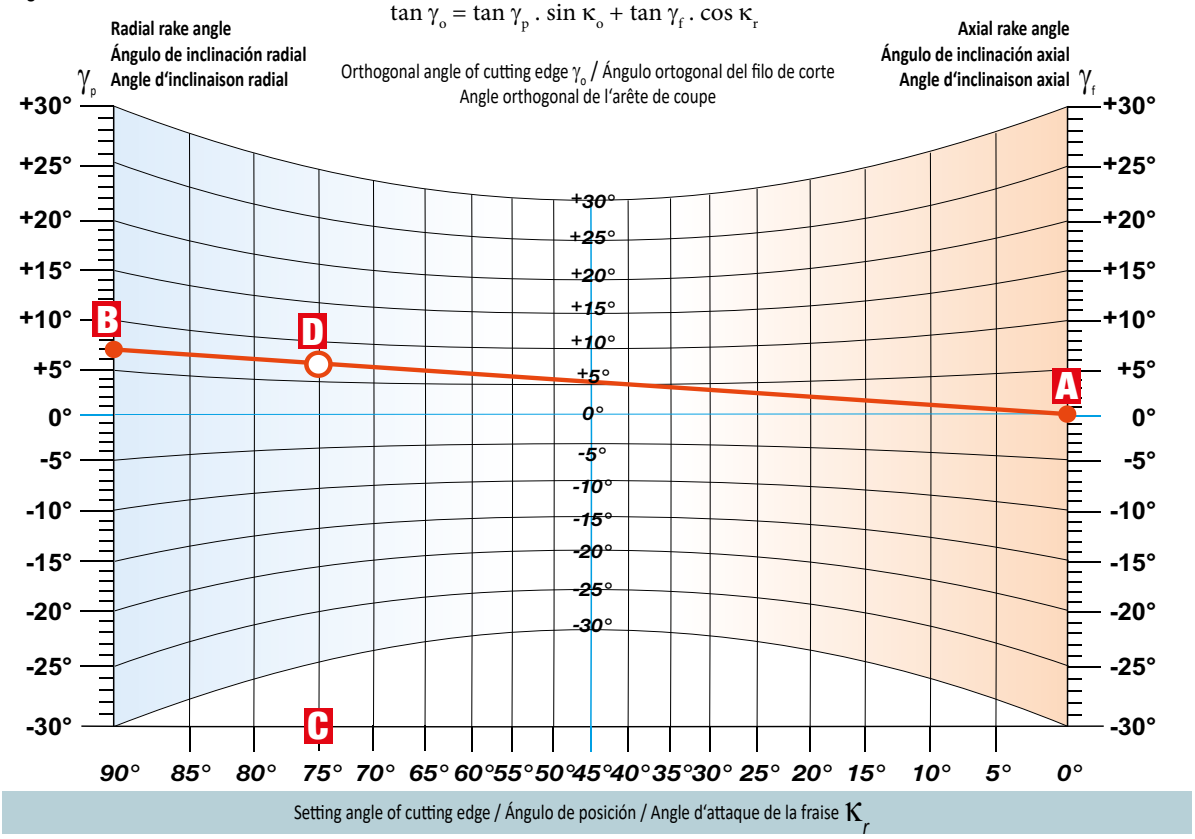
- **L'angle de coupe orthogonal** γ_o – affecte le degré de déformation plastique du copeau sectionné et aussi de la valeur de la force de coupe et de la température. Plus l'angle est important, plus faible seront la force de coupe et la puissance demandée à la machine, et vice versa.
- **L'angle d'attaque** κ_r – définit l'épaisseur du copeau pour une avance par dent spécifique f_z et la profondeur de coupe axiale a_p. Il affecte donc les forces de coupe, la charge spécifique, l'usure et la durée de vie. Un angle d'attaque faible κ_r pour une avance f_z constante affecte la diminution de f_z pour une profondeur de coupe h.
- **L'angle d'inclinaison de l'arête de coupe** λ_s – combiné à l'angle d'attaque κ_r et à l'angle en coupe orthogonal γ_o définit le point de contact de l'arête dans la pièce. C'est pourquoi il affecte la résistance de l'arête à l'écaillage en coupe interrompue. En même temps il affecte la direction de l'évacuation des copeaux.

NOMOGRAM FOR CALCULATING THE WORKING GEOMETRY OF MILLING CUTTERS
NOMOGRAMA PARA CALCULAR LA GEOMETRÍA DE TRABAJO DE LAS FRESAS
NOMOGRAMME DE CALCUL DE LA GÉOMÉTRIE DE TRAVAIL DES FRAISES

Picture / Figura / Image 9

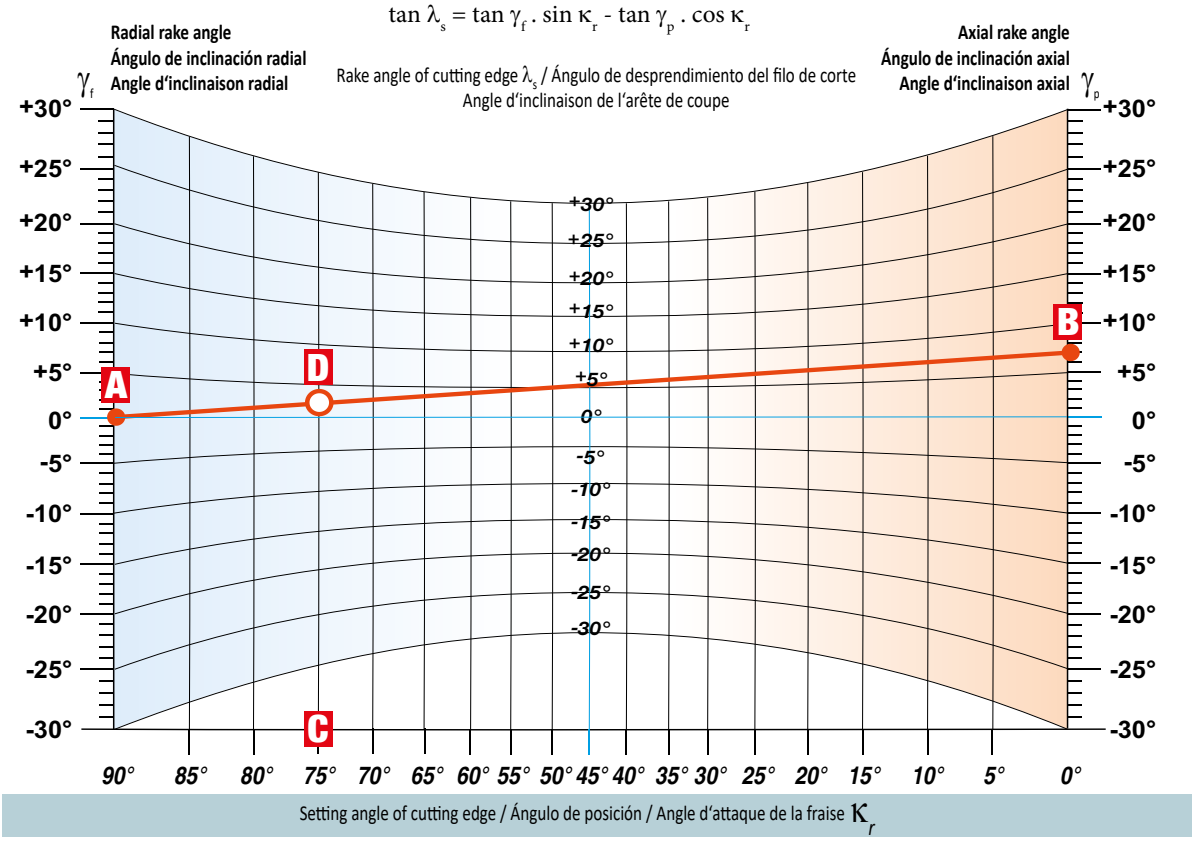
$$\tan \gamma_o = \tan \gamma_p \cdot \sin \kappa_o + \tan \gamma_f \cdot \cos \kappa_r$$

Orthogonal angle of cutting edge γ_o / Ángulo ortogonal del filo de corte
Angle orthogonal de l'arête de coupe



$$\tan \lambda_s = \tan \gamma_f \cdot \sin \kappa_r - \tan \gamma_p \cdot \cos \kappa_r$$

Rake angle of cutting edge λ_s / Ángulo de desprendimiento del filo de corte
Angle d'inclinaison de l'arête de coupe



NOMOGRAM FOR CALCULATING THE WORKING GEOMETRY OF MILLING CUTTERS
NOMOGRAMME DE CALCUL DE LA GÉOMÉTRIE DE TRAVAIL DES FRAISES
NOMOGRAMA PARA CALCULAR LA GEOMETRÍA DE TRABAJO DE LAS FRESAS

The exiting of the cutting edge from the cut is also accompanied by thermal stress, caused by a rapid reduction in temperature of the surface layer of the cutting edge and mechanical stress caused by elastic deformation relief of the surface layer of workpiece at a rapid drop in cutting force.

That is why we use the average value of chip thickness h_m for any calculations.

The chip thickness h fluctuates during one revolution depending on angle φ in accordance with the formula $h\varphi = f_z \times \sin\varphi$.

The maximum chip thickness equal to f_z is reached at the axis of the milling cutter. The average chip thickness h_m cut by one tooth during one revolution is equal to the height of the rectangle of the same area as the area under the sine curve relates to the radial depth of cut a_e. The average chip thickness h_m depends on the type of milling cutter and the cutting conditions, especially on the relation a_e/D, feed per tooth f_z and the setting angle κ_r. See picture 10. on the next page for an illustrative example.

La sortie de l'arête de coupe de la pièce est également accompagnée de contraintes thermiques provoquées par une diminution rapide de la température sur la couche superficielle de l'arête de coupe, ainsi que des contraintes mécaniques dues au relâchement de la déformation élastique sur la surface de la pièce lié à une chute brutale de la force de coupe.

C'est pourquoi nous utilisons la valeur moyenne de l'épaisseur de copeaux h_m pour tous les calculs.

L'épaisseur de copeaux h fluctue pendant une rotation d'outil en fonction de l'angle φ selon la formule $h\varphi = f_z \times \sin\varphi$.

L'épaisseur maximale des copeaux égale à fz est atteinte au niveau de l'axe de la fraise. L'épaisseur moyenne de copeau h_m coupé par une dent en un tour est égale à la hauteur du rectangle de la même aire que la surface sous la courbe sinusoïdale se rapportant à la profondeur de coupe radiale a_e. L'épaisseur moyenne de copeau h_m dépend du type de fraise et des conditions de coupe, en particulier du rapport a_e/D, de l'avance par dent f_z et l'angle d'attaque κ_r. Voir l'illustration 10 à la page suivante.

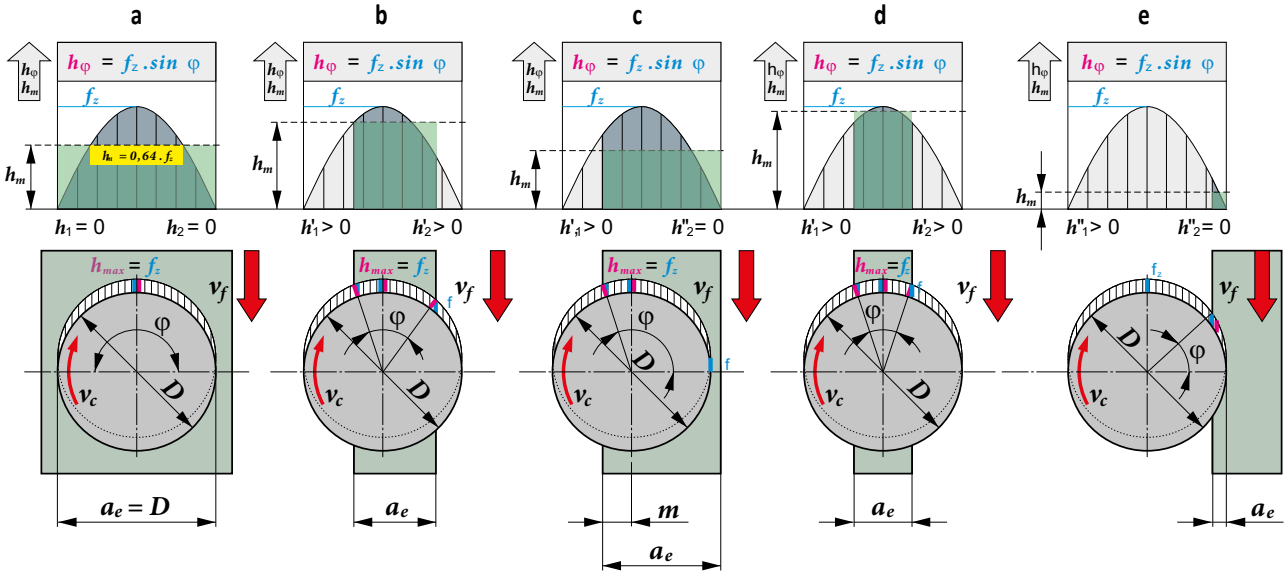
La salida del filo de corte del material va también acompañada de tensión térmica causada por una rápida disminución de la temperatura de la capa superficial del filo de corte, y tensión mecánica causada por el alivio de la deformación elástica en la capa superficial de la pieza por una rápida caida de la fuerza de corte.

Por eso utilizamos el valor de espesor medio de viruta h_m para cualquier cálculo.

El espesor de viruta h fluctúa durante una revolución dependiendo del ángulo φ en función de la fórmula $h\varphi = f_z \times \sin\varphi$.

El espesor máximo de viruta igual al avance f_z se alcanza en el eje de la fresa. El espesor medio de viruta h_m producida por un diente durante una revolución es igual a la altura del rectángulo de área igual al área bajo la curva sinoidal relativa a la profundidad de corte radial a_e. El espesor medio de viruta h_m depende del tipo de fresa y de las condiciones de corte, epecialmente en la relación a_e/D, avance por diente f_z y el ángulo de posición κ_r. Ver figura 10 en la siguiente página un ejemplo ilustrativo.

Picture / Figura / Image 10



The following formula can be used to calculate h_m (picture **10a**, **b**, **d**):

$$h_m = f_z . \sin \kappa_r \left(57.3 \frac{a_e}{D . \arcsin . \left[\frac{a_e}{D} \right]} \right)$$

The average chip thickness for machining with the center of the milling cutter (for example **10c, e**) is therefore calculated in accordance with formula:

L'épaisseur moyenne de copeau en condition d'usinage avec le centre de la fraise comme l'exemple **10c, e** est donc calculée selon la formule:

$$h_m = f_z . \sin \kappa_r . 114.6 . \left(\frac{a_e}{D . \arccos . \left[1 - \frac{2a_e}{D} \right]} \right)$$

The following formula can be used to calculate the feed f_z for the given value of h_m:

Pour le calcul de l'avance f_z pour une valeur de h_m donnée, la formule suivante peut être utilisée:

$$f_z = \frac{h_m}{\sin \kappa_r} . \left(\frac{D . \arccos . \left[1 - \frac{2a_e}{D} \right]}{114.6 . a_e} \right)$$

Se puede utilizar la siguiente fórmula para calcular el avance f_z para un valor dado de h_m (imagen **10a**, **b**, **d**):

El espesor medio de viruta para mecanizaar con el centro de la fresa por ejemplo **10c, e** se calcula por tanto con la siguiente fórmila:

Se puede utilizar la siguiente fórmula para calcular h_m:

CUTTING CONDITIONS WHEN MILLING
CONDICIONES DE CORTE EN FRESADO
CONDITIONS DE COUPE EN FRAISAGE

The following simplified formula can be used to calculate h_m (picture **10e**) if $a_e/D < 0,2$:

Se puede utilizar la siguiente fórmula simplificada para calcular h_m:

La formule simplifiée suivante peut être utilisée pour calculer h_m (image **10e**) si $a_e/D < 0,2$:

$$h_m = f_z \sin \kappa_r \sqrt{\frac{a_e}{D}}$$

The following formula can be used to calculate the feed f_z for the given value of h_m:

Se puede utilizar la siguiente fórmula para calcular el avance f_z para un valor dado de h_m:

La formule suivante peut être utilisée pour calculer l'avance par dent f_z pour la valeur donnée de h_m:

$$f_z = \frac{h_m}{\sin \kappa_r} \sqrt{\frac{D}{a_e}}$$

Where:

h_m	average chip thickness [in]
f_z	feed per tooth [in/tooth]
a_e	radial depth of cut [in]
D	diameter [in]
κ_r	setting angle of major edge [°]

Donde:

h_m	espesor medio de viruta [in]
f_z	avance por diente [in/diente]
a_e	profundidad de corte radial [in]
D	diámetro [in]
κ_r	ángulo de popsición del filo [°]

Avec:

h_m	épaisseur moyenne du copeau [in]
f_z	avance par dent [in/dent]
a_e	profondeur de coupe radiale [in]
D	diamètre [in]
κ_r	angle d'attaque de l'arête principale [°]

CALCULATING THE AVERAGE CHIP THICKNESS RANGE
CÁLCULO DE LAS GAMAS DE ESPESOR MEDIO DE VIRUTA
CALCUL DES PLAGES D'ÉPAISSEUR DE COPEAU MOYEN

There is an optimum average chip thickness range for each type of tool included in this catalogue. When using values lower than the stated range, there is a risk that the tool "will not cut", that there will be excessive wear, or even that the the insert will be severely damaged in the process. Exceeding the recommended value also risks damaging the insert due to tool overloading. The following table provides the cutter types together with the recommended average chip thickness range.

The ranges of recommended average chip thickness are listed directly in the individual groups.

The full range of chip thickness can only be used for groups P and K; the lower limit of chip thickness must be modified (taken as higher than listed) for groups M and S and in tough materials from group N. The upper limit must be lowered for groups H, S and slightly also for M group materials with higher mechanical strength. On the other hand, machining soft materials from group N allows the increase of the upper limit of recommended average chip thickness by c. 10 – 15 %.

Hay una gama de espesores medios de viruta óptimos para cada tipo de herramienta incluida en este catálogo. Al utilizar valores inferiores a los de partida, existe riesgo de que la herramienta "no corte", que haya un desgaste excesivo o incluso que la herramienta sea severamente dañada en el proceso. Utilizar valores superiores a los recomendados supone también un riesgo de dañar la plaquita debido a una sobrecarga. La siguiente tabla proporciona los tipos de herramienta junto con la gama de espesores medios de viruta recomendados.

Las gamas de espesores medios de viruta recomendados se indican directamente en los grupos individuales.

La gama completa de espesores de viruta se puede utilizar sólo para los grupos P y K; el límite inferior de espesor de viruta debe ser modificado (tomado como el superior de la lista) para los grupos M, S y materiales tenaces del grupo N. El límite superior se debe disminuir para los grupos H, S y ligeramente también para materiales del grupo M con una alta resistencia mecánica. Por otro lado, el mecanizado de materiales blandos del grupo N permite incrementar el límite superior de espesor medio de viruta recomendado en un 10 – 15 %.

CALCULATING THE AVERAGE CHIP THICKNESS RANGE
CÁLCULO DE LAS GAMAS DE ESPESOR MEDIO DE VIRUTA
CALCUL DES PLAGES D'ÉPAISSEUR DE COPEAU MOYEN

Il existe une plage optimum d'épaisseur de copeau moyen pour chaque outil présenté dans ce catalogue. Quand les valeurs sont plus faibles que celles préconisées, il y a un rique que l'outil "ne coupe pas", que l'usure soit excessive, ou même que la plaquette soit sévèrement endommagée par le process d'usinage. Le dépassement de la valeur recommandée risque également d'endommager la plaquette à cause d'une surcharge sur l'outil. Le tableau suivant indique les valeurs d'épaisseur de copeau moyen recommandées en fonction du type d'outil utilisé.

Les intervalles d'épaisseur moyenne recommandée sont présentés directement par groupe de matière.

L'intervalle complet d'épaisseur de copeau ne peut être utilisé que pour les groupes P et K; La limite inférieure d'épaisseur des copeaux doit être modifiée (prendre une valeur supérieure à celle indiquée) pour les groupes M et S et dans les matériaux durs du groupe N. La limite supérieure doit être abaissée pour les groupes H, S et légèrement aussi pour les matériaux du groupe M possédant une résistance mécanique plus élevée. En revanche, l'usinage des matériaux mous (ou à faible résistance mécanique) du groupe N permet d'augmenter la limite supérieure d'épaisseur recommandée des copeaux de l'ordre de 10 à 15%.

To achieve optimum application of any milling tool, it is recommended to check the chip thickness or choose (calculate) a suitable feed based on the recommended range of h_m. It is also necessary to take the geometry of the insert into account. The formula above can be used to calculate f_z, or the following formula can be used instead.

The value of coefficent c can be read from the following chart (picture 11):

Pour parvenir à une application optimale de n'importe quel outil de fraisage, il est donc recommandé de vérifier l'épaisseur du copeau ou de choisir (calculer) une avance appropriée en fonction de la plage recommandée de h_m. Il est également nécessaire de prendre en compte la géométrie de la plaquette. La formule ci-dessus peut être utilisée pour calculer f_z, ou la formule suivante peut être utilisée à la place.

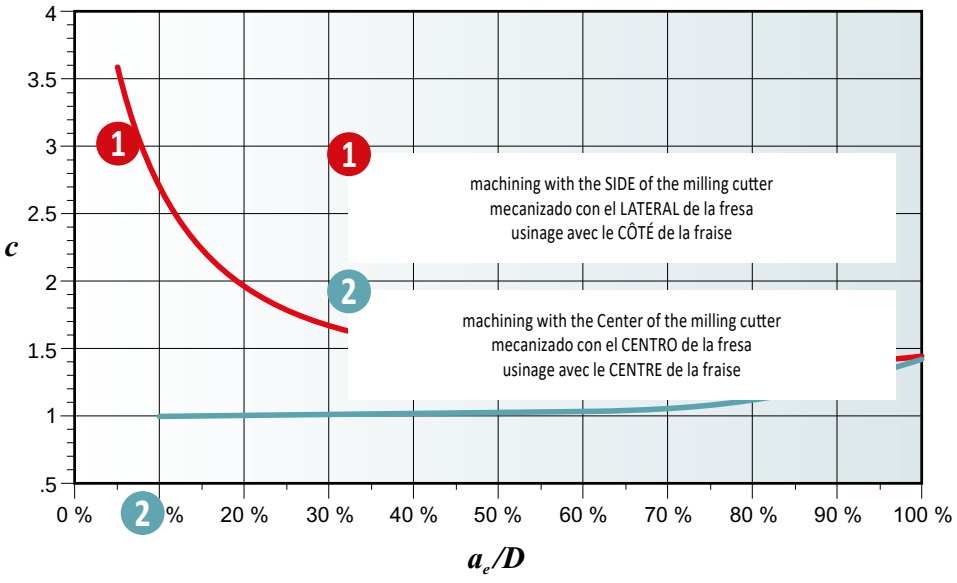
La valeur du coefficient c peut être lue à partir du tableau ci-dessous (image 11):

Para lograr una aplicación óptima de cualquier fresa, se recomienda por tanto comprobar el espesor de viruta o elegir (calcular) un avance adecuado basado en la gama recomendada de h_m. Es también necesario tener en cuenta la geometría de la plaquita. Se puede utilizar la fórmula de arriba para calcular fz, o bien utilizar la siguiente fórmula.

El valor del coeficiente c se puede leer en la siguiente tabla (figura 11):

$$f_z = \frac{h_m}{\sin . \kappa_r} . c$$

Picture / Figura / Image 11



And now for individual applications, or rather recommendations and explanations regarding machining of basic types of surfaces.

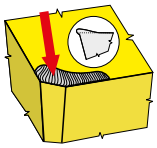
Et maintenant pour des technologies individuelles, ou plutôt des recommandations et explications concernant l'usinage de types de surfaces de base.

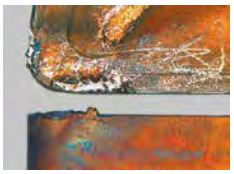
Para tecnologías individuales o recomendaciones y explicaciones relativas al mecanizado de tipos básicos de superficies.

Table 20
Tabla 20
Tableau 20

TYPES OF WEAR ON MILLING INSERTS
TIPOS DE DESGASTE EN PLAQUITAS DE FRESADO
TYPES D'USURE DES PLAQUETTES DE FRAISAGE

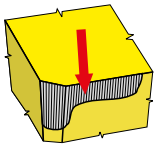
BUILT–UP EDGE / FILO DE APORTACIÓN / ARÊTE RAPPORTÉE





		It has no influence No influye N'a aucune influence
(MT)CVD / PVD	+ +	Any coating (decisive factor is anti-adhesion effect) Cualquier recubrimiento (el factor decisivo es el efecto anti-adherente) Tout revêtement (le facteur décisif est l'effet anti-adhérence)
f	↑	The higher the feed rate the less probability of built-up edge creation Cuanto mayor sea el avance menor probabilidad de formación de filo de aportación Plus l'avance est forte, moins la probabilité de générer une arête rapportée est grande
V	↓↑	Change (generally increase) the cutting speed Cambiar (generalmente aumentar) la velocidad de corte Modifier (souvent en l'augmentant) la vitesse de coupe
a_p		It has no influence No influye N'a aucune influence
	↓↑	Use more positive geometry (built up edge is not created when the rake angle is more than 40°) Utilizar una geometría más positiva (el filo de aportación no se crea cuando el ángulo de desprendimiento es mayor de 40°) Utiliser une géométrie plus positive (une arête rapportée n'apparaît jamais sur des angles de coupe de plus de 40°)
	-	Use a coolant with more effective anti-sticking properties (we do not recommend to use coolant for milling) Usar un refrigerante con propiedades anti-adherencia más efectivas (no se recomienda usar refrigerante en fresado) Utiliser un arrosage plus efficace quant à ses propriétés anti-adhérentse (nous recommandons de ne pas utiliser l'arrosage en fraisage)

FLANK WEAR / DESGASTE EN FLANCO (O EN INCIDENCIA) / USURE EN DÉPOUILLE



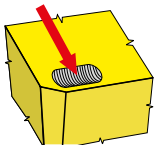


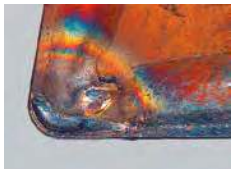
	↑	Use a more wear resistant substrate (H) Utilizar un sustrato más resistente al desgaste (H) Utiliser un substrat plus résistant à l'usure (H)
(MT)CVD / PVD	+ +	Any coating (decisive factor is hardness – TiC, TiCN) Cualquier recubrimiento (el factor decisivo es la dureza – TiC, TiCN) Tout revêtement (le facteur décisif est sa dureté – TiC, TiCN)
f	↑	Increase feed (especially if it is under .004 in) Incrementar el avance (especialmente si está por debajo de .004 in) Augmenter l'avance (particulièrement quand elle est inférieure à .004 in)
V	↓	Decrease cutting speed Reducir la velocidad de corte Diminuer la vitesse de coupe
a_p		It has no influence No influye N'a aucune influence
	↑	Increase the clearance angle Lo más importante es aumentar el ángulo de incidencia Le plus important est d'augmenter l'angle de dépouille
	+	It can help, but only with ideal working conditions Puede ayudar, pero sólo bajo condiciones de trabajo óptimas Cela peut aider mais seulement avec des conditions de travail idéales

Table 20
Tabla 20
Tableau 20

TYPES OF WEAR ON MILLING INSERTS
TIPOS DE DESGASTE EN PLAQUITAS DE FRESADO
TYPES D'USURE DES PLAQUETTES DE FRAISAGE

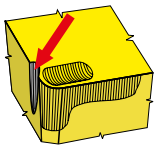
CRATERING / CRÁTER / USURE EN CRATÈRE

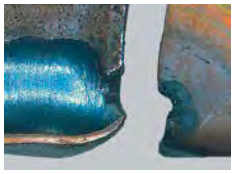




substrate	↑	Use a more wear resistant substrate (S) Utilizar un sustrato más resistente al desgaste (S) Utiliser un substrat plus résistant à l'usure (S)
(MT)CVD / PVD	+ +	CVD coating (decisive factor is oxidation resistance – α Al_2O_3) Recubrimiento CVD (el factor decisivo es la resistencia a la oxidación – α Al_2O_3) Revêtement CVD (le facteur décisif est sa résistance à l'oxydation – α Al_2O_3)
f	↑	Feed has infuence on shape and position of crater El avance influye en la forma y la posición del cráter L'avance influe sur la forme et la position du cratère
v	↓	Decrease cutting speed Reducir la velocidad de corte Diminuer la vitesse de coupe
a_p	↓	Minimal effect Mínimo efecto Effet minime
geometry	↑	Use more positive cutting geometry Utilizar una geometría de corte más positiva Utiliser une géométrie de coupe plus positive
drop	+ +	It can help, but only with ideal working conditions Puede ayudar, pero sólo bajo condiciones de trabajo óptimas Cela peut aider mais seulement avec des conditions de travail idéales

OXIDATION GROOVE ON THE MINOR EDGE / ENTALLA POR OXIDACIÓN / ENTAILLE PAR OXYDATION SUR L'ARÊTE SECONDAIRE



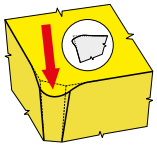


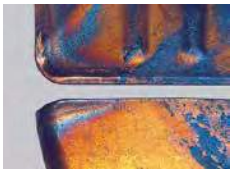
substrate	↑	Use a more wear resistant substrate (S) Utilizar un sustrato más resistente al desgaste (S) Utiliser un substrat plus résistant à l'usure (S)
(MT)CVD / PVD	+ +	CVD coating (decisive factor is oxidation resistance – α Al_2O_3) Recubrimiento CVD (el factor decisivo es la resistencia a la oxidación – α Al_2O_3) Revêtement CVD (le facteur décisif est sa résistance à l'oxydation – α Al_2O_3)
f	↓	Feed has infuence on shape and position of groove El avance influye en la forma y la posición de la entalla L'avance influe sur la forme et la position de l'entaille
v	↓	Decrease cutting speed Reducir la velocidad de corte Diminuer la vitesse de coupe
a_p	↓	Minimal effect Mínimo efecto Effet minime
geometry	↑	Use another (more positive) cutting geometry Utilizar otra (más positiva) geometría de corte Utiliser une autre géométrie de coupe (plus positive)
drop	+ +	It can help, but only with ideal working conditions Puede ayudar, pero sólo bajo condiciones de trabajo óptimas Cela peut aider mais seulement avec des conditions de travail idéales

Table 20
Tabla 20
Tableau 20

TYPES OF WEAR ON MILLING INSERTS
TIPOS DE DESGASTE EN PLAQUITAS DE FRESADO
TYPES D'USURE DES PLAQUETTES DE FRAISAGE

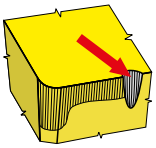
PLASTIC DEFORMATION / DEFORMACIÓN PLÁSTICA / DÉFORMATION PLASTIQUE





	↑	Using a more wear resistant substrate (decisive factor is content of Co) Utilizar un sustrato más resistente al desgaste (el factor decisivo es el contenido en Co) Utiliser un substrat plus résistant à l'usure (le taux de cobalt est décisif)
(MT)CVD / PVD	+	Any coating (decisive factor is friction) Cualquier recubrimiento (el factor decisivo es la fricción) Tout revêtement (le facteur décisif est le frottement)
f	↓	Decrease feed rate Reducir el avance Diminuer l'avance
v	↓	Decrease cutting speed Reducir la velocidad de corte Diminuer la vitesse de coupe
a_p	↓	Minimal effect Mínimo efecto Effet minime
	↑	Use another (more positive) cutting geometry Utilizar otra (más positiva) geometría de corte Utiliser une autre géométrie de coupe (plus positive)
	+ +	It can help, but only with ideal working conditions Puede ayudar, pero sólo bajo condiciones de trabajo óptimas Cela peut aider mais seulement avec des conditions de travail idéales

NOTCH WEAR / ENTALLADURA / USURE EN ENTAILLE



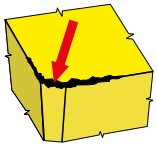


	↑↓	It depends on the character of the damage (abrasive – use more wear resistant substrate; breaking – use tougher substrate) Depende del caracter del problema (abrasivo – usar un sustrato más resistente al desgaste; rotura – usar un sustrato más tenaz) Dépend de la cause de l'usure (abrasion – utiliser un substrat plus résistant à l'usure; rupture – utiliser un substrat plus tenace)
(MT)CVD / PVD	+ +	CVD coating (decisive factor is oxidation resistance – α Al_2O_3) Recubrimiento CVD (el factor decisivo es la resistencia a la oxidación – α Al_2O_3) Revêtement CVD (le facteur décisif est sa résistance à l'oxydation – α Al_2O_3)
f	↓	Feed has infuence on intensity, but less than the cutting speed El avance influye en la intensidad, pero menos que la velocidad de corte L'avance influe sur l'intensité, mais moins que la vitesse de coupe
v	↓	Decrease cutting speed Reducir la velocidad de corte Diminuer la vitesse de coupe
a_p	↑↓	Use unequal depth of cut Utilizar una profundidad de corte desigual Faire varier la profondeur de coupe
	↓	Use less positive cutting geometry Utilizar una geometría de corte menos positiva Utiliser une géométrie moins positive
	+	It can help, but only with ideal working conditions Puede ayudar, pero sólo bajo condiciones de trabajo óptimas Cela peut aider mais seulement avec des conditions de travail idéales
		Use tool with smaller setting angle Utilizar una herramienta con menor ángulo de posición Utiliser un outil avec un angle d'attaque plus petit

Table 20
Tabla 20
Tableau 20

TYPES OF WEAR ON MILLING INSERTS
TIPOS DE DESGASTE EN PLAQUITAS DE FRESADO
TYPES D'USURE DES PLAQUETTES DE FRAISAGE

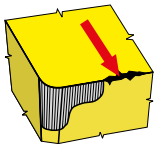
BRITTLE CRACKS AT THE CUTTING EDGE / ASTILLAMIENTO DEL FILO DE CORTE / ÉCAILLAGE DE L'ARÊTE DE COUPE





	↓	(H) grain has a great influence El sustrato (H) tiene un papel muy importante Choisir un substrat à grains plus gros (H)
(MT)CVD PVD	+	PVD coating recommended Se recomienda recubrimiento PVD Un revêtement PVD est recommandé
	↓	Feed has infuence on intensity, but less than the cutting speed El avance influye en la intensidad, pero menos que la velocidad de corte L'avance influe sur l'intensité, mais moins que la vitesse de coupe
	↑↓	It is about vibrations Influye en las vibraciones Il s'agit de vibrations
	↓	It has no influence No influye N'a aucune influence
	↑	Increase the rake angle to reduce cutting forces Incrementar el ángulo de desprendimiento para reducir las fuerzas de corte Augmenter l'angle d'inclinaison pour réduire les efforts de coupe
	-	No coolant (it is possible to use air to remove chips from cutting area) Sin refrigeración (se puede utilizar aire para evacuar virutas de la zona de corte) Pas d'arrosage (utiliser de l'air pour évacuer les copeaux hors de la zone de coupe)
		Use better working condition (a_e/D) Mejorar las condiciones de trabajo (a_e/D) Utiliser de meilleures conditions de travail (a_e/D)

FAILURE OF CUTTING EDGE / DESPRENDIMIENTO DEL FILO POR MARTILLEO DE VIRUTAS / AFFAIBLISSEMENT DE L'ARÊTE DE COUPE



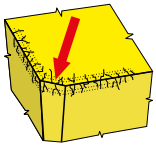


	↓	(H) grain has a great influence El sustrato (H) tiene un papel muy importante Choisir un substrat à grains plus gros (H)
(MT)CVD PVD	+	PVD coating recommended Se recomienda recubrimiento PVD Un revêtement PVD est recommandé
	↑↓	Good swarf control is very important Es muy importante una rotura de virutas correcta Un bon fractionnement du copeau est très important
	↑↓	It is about swarf control and vibration Influye en la rotura de virutas y las vibraciones Il s'agit d'évacuation copeaux et de vibrations
	↑↓	Reduces the force load (important for machining with long overhangs) Reduce la carga mecánica en el filo de corte (importante cuando se mecaniza con voladizos largos) Réduire la charge (important pour l'usinage avec de longs porte-à-faux)
	↓	Use less positive cutting geometry Utilizar una geometría de corte menos positiva Utiliser une géométrie moins positive
		It has no influence No influye N'a aucune influence
		Use better working conditions, reduce feed rate until insert is in cut Mejorar las condiciones de trabajo, reducir el avance al inicio del corte Utiliser de meilleures conditions de travail, réduire l'avance d'approche (à l'entrée)

Table 20
Tabla 20
Tableau 20

TYPES OF WEAR ON MILLING INSERTS
TIPOS DE DESGASTE EN PLAQUITAS DE FRESADO
TYPES D'USURE DES PLAQUETTES DE FRAISAGE

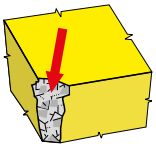
CREATION OF RACK CRACKS / MICRO-FISURAS TÉRMICAS / USURE EN PEIGNE (FISSURES)





	↓	(H) grain has a great influence El sustrato (H) tiene un papel muy importante Choisir un substrat à grains plus gros (H)
(MT)CVD / PVD	+ +	PVD coating recommended Se recomienda recubrimiento PVD Un revêtement PVD est recommandé
f	↓	Feed has infuence on intensity, but less than the cutting speed El avance influye en la intensidad, pero menos que la velocidad de corte L'avance influe sur l'intensité, mais moins que la vitesse de coupe
v	↓	Lower speed means lower temperature Menor velocidad significa menor temperatura Vitesse plus basse veut dire température moins élevée
a_p		It has no influence No influye N'a aucune influence
	↑	Use another (more positive) cutting geometry Utilizar otra (más positiva) geometría de corte Utiliser une autre géométrie de coupe (plus positive)
	- - -	No coolant (it is possible to use air to remove chips from cutting area) Sin refrigeración (se puede utilizar aire para evacuar virutas de la zona de corte) Pas d'arrosage (utiliser de l'air pour évacuer les copeaux hors de la zone de coupe)
		Use better working condition (a_e/D) Mejorar las condiciones de trabajo (a_e/D) Utiliser de meilleures conditions de travail (a_e/D)

INSERT FRACTURE / ROTURA DE PLAQUITA / RUPTURE DE PLAQUETTE





	↓	(H) grain has a great influence El sustrato (H) tiene un papel muy importante Choisir un substrat à grains plus gros (H)
(MT)CVD / PVD	+	PVD coating recommended Se recomienda recubrimiento PVD Un revêtement PVD est recommandé
f	↓	Very important to reduce cutting force La fuerza de corte es de gran importancia L'effort de coupe est très important
v	↑↓	It is about swarf control and vibration Influye en la evacuación de viruta y vibraciones Il s'agit d'évacuation copeaux et de vibrations
a_p	↓	Reduces the force load Reduce la carga mecánica en el filo de corte Réduire la charge
	↓	Use less positive cutting geometry Utilizar una geometría de corte menos positiva Utiliser une géométrie moins positive
		It has no influence No influye N'a aucune influence
		Use better working conditions Mejorar las condiciones de trabajo Utiliser de meilleures conditions de travail

Table 21
Tabela 21
Tableau 21

TROUBLESHOOTING
RESOLUCIÓN DE PROBLEMAS
PHÉNOMÈNES INDÉSIRABLES

POOR SURFACE QUALITY / MALA CALIDAD SUPERFICIAL / QUALITÉ DE SURFACE MAUVAISE



Description and cause:

Numerous causes depending on the workpiece material, cutting conditons (feed rate and cutting speed), the condition of the cutting edge, the extent and type of wear, and the condition and rigidity of the machine – tool – workpiece assembly.

- Incorrect tool chosen
- Incorrect chip thickness
- Incorrect cutting speed
- Coolant is needed
- High feed rate

Corrective measures:

- Use a finishing insert, or an insert with finishing segment
- Use an insert with suitable cutting geometry
- Reduce the feed rate
- Adjust (usually increase) the cutting speed
- Use coolant or lubrication (MQL)
- Eliminate vibrations
- Use a tool with which the position of the individual inserts can be adjusted more accurately
- Change the chip thickness (modify the machining conditions)

Descripción y causas

Numerosas causas dependiendo del material de la pieza, condiciones de corte (avance y velocidad de corte), estado del filo de corte, grado y tipo de desgaste y estado y rigidez de la máquina (montaje de la herramienta y de la pieza).

- Elección de herramienta incorrecta
- Espesor de viruta incorrecto
- Velocidad de corte incorrecta
- Es necesario refrigerante
- Avance demasiado alto

Medidas correctoras:

- Utilizar una plaquita de acabado
- Utilizar una plaquita con la geometría de corte adecuada
- Reducir el avance
- Ajustar (normalmente aumentar) la velocidad de corte
- Utilizar refrigerante o lubricación (MQL)
- Eliminar vibraciones
- Utilizar una herramienta en la que cada plaquita pueda ser ajustada individualmente con mayor precisión
- Cambiar el espedor de viruta (modificar las condiciones de mecanizado)

Description et cause :

Les causes sont nombreuses, elles dépendent du matériau à usiner, des conditions de coupe (avance et vitesse de coupe), de la condition de l'arête de coupe, du niveau et du type d'usure, de l'état et de la rigidité de la machine.

- Mauvais choix d'outil
- Mauvaise épaisseur du copeau
- Mauvaise vitesse de coupe
- Arrosage nécessaire
- Vitesse d'avance élevée

Solution :

- Utiliser une plaquette racleuse (Wiper)
- Utiliser une plaquette avec une géométrie correcte
- Réduire la vitesse d'avance
- Changer (en général augmenter) la vitesse de coupe
- Utiliser l'arrosage
- Améliorer la stabilité de l'outil et de la pièce et à usiner
- Changer la section du copeau
- Sélectionner une géométire plus coupante
- Utiliser une plaquette avec un plus gros rayon de pointe

VIBRATIONS / VIBRACIONES / VIBRATIONS



Description and cause:

This is a very common problem, which is mainly caused by an unbalanced workpiece or tool, unstable fixing of the machined part and high cutting forces.

- Low rigidity of machine-tool-workpiece assembly
- Excessive chip depth (both axial and radial)
- Run-out – poor workpiece or tool balance
- Large tool overhang

Corrective measures:

- Check the stability of the workpiece fixing
- Check the stability of the tool fixing
- Reduce the cutting depth
- Use a tool with smaller overhang
- Modify the cutting speed
- Reduce the chip thickness
  (change the cutting or machining conditions)
- Choose a suitable cutting geometry and tool material to minimize the cutting process force balance (as sharp and as positive as possible), i.e. use a tool with a lower cutting resistance
- When milling, use a tool with a smaller setting angle

Descripción y causa:

Este es un problema muy común, causado principalmente por una pieza o herramienta desequilibrada, una fijación inestable de la pieza o fuerzas de corte demasiado altas.

- Poca rigidez del montaje máquina-herramienta-pieza
- Demasiada profundidad (axial y radial)
- Desviación radial - pieza o herramienta mal equilibrada
- Gran voladizo de la herramienta

Medidas correctoras:

- Comprobar la estabilidad del montaje de la pieza
- Comprobar la estabilidad del montaje de la herramienta
- Reducir la profundidad de corte
- Reducir el voladizo
- Modificar la velocidad de corte
- Reducir el espesor de viruta (cambiar las condiciones de mecanizado)
- Utilizar una calidad y geometría adecuadas para minimizar el desequilibrio de las fuerzas de corte (tan viva y positiva como sea posible), es decir, una herramienta que genere fuerzas de corte más bajas.
- En fresado, utilizar una herramienta con un ángulo de posición menor

Description et cause :

Ceci est très fréquent. Les principales raisons sont le déséquilibre de la pièce ou de l'outil, la mauvaise stabilité de la pièce, des forces de coupe très fortes, du porte-à-faux de l'outil.

Solution :

- Améliorer la stabilité de l'outil et de la pièce et à usiner
- Réduire la profondeur de coupe
- Diminuer le porte-à-faux de l'outil
- Réduire la vitesse de coupe
- Utiliser un outil avec un angle d'attaque plus petit
- Réduire la section copeaux
- Utiliser un outil avec une plus faible résistance à la coupe
- Augmenter la vitesse d'avance
- Sélectionner une géométire plus coupante
- Utiliser une plaquette avec un plus gros rayon de pointe

BURRS / REBABAS / BAVURE



Description and cause:

This usually occurs on soft steels and plastic materials.

Corrective measures:

- Use a cutting insert with a sharp cutting edge
- Use a cutting insert with positive geometry
- Use a tool with a smaller setting angle

Descripción y causas:

Esto ocurre normalmente en aceros blandos y materiales plásticos.

Medidas correctoras:

- Utilizar una plaquita con filo de corte más vivo
- Utilizar una plaquita con geometría positiva
- Utilizar una herramienta con un ángulo de posición menor

Description et cause :

Ceci apparaît régulièrement en usinage de matériaux doux ou de matières plastiques.

Solution :

- Utiliser une plaquette avec une arête vive
- Utiliser une plaquette avec une géométrie positive
- Utiliser un outil avec un angle d'attaque plus petit

ERRORS IN DIMENSIONS AND SHAPE OF WORKPIECE / ERRORES EN DIMENSIONES Y FORMA DE LA PIEZA
INEXACTITUDE DES DIMENSIONS ET DE LA FORME DE LA PIÈCE



Description and cause:

Depends on a number of factors.

Corrective measures:

- Use a wear-resistant cutting insert
- Improve the stability of the cutter and workpiece
- Minimize tool overhang
- Use a workpiece with a suitable machining allowance

Descripción y causas:

Depende de muchos factores.

Medidas correctoras:

- Utilizar una plaquita más resistente al desgaste
- Mejorar la estabilidad de la herramienta y de la pieza
- Minimizar el voladizo
- Utilizar una pieza con mayor tolerancia al mecanizado

Description et cause :

Dépend d'un certain nombres de facteurs.

Solution :

- Utiliser une plaquette résistante à l'usure
- Améliorer la stabilité de l'outil et de la pièce usinée, diminuer le porte-à-faux de l'outil
- Utiliser une pièce avec une surépaisseur d'usinage mieux appropriée

INADEQUATE CHIP FORMATION / FORMACION DE VIRUTA INADECUADA / MAÎTRISE DES COPEAUX INACCEPTABLE



Description and cause:

Producing a chip with a suitable shape is very important to insert durability and service life of the tool. The workpiece material, the feed rate, the depth of cut and the cutting geometry all have an effect on chip forming. A chip that is too long is unacceptable for various reasons, while a chip that is too short is undesirable as it overloads the cutting edge and causes vibrations.

Corrective measures:

- Change the feed rate and depth of cut
- Use a more suitable cutting geometry
- Change the cutting conditions

Descripción y causas:

Conseguir una viruta con la forma adecuada es tan importante como la durabilidad de la herramienta. El material de la pieza, el avance, la profundidad de corte y la geometría de corte tienen un efecto en la formación de viruta. Una viruta demasiado larga es inaceptable por varias razones, mientras que una viruta demasiado corta no es deseable porque sobrecarga el filo de corte y produce vibraciones.

Medidas correctoras:

- Cambiar el avance y la profundidad de corte
- Utilizar una geometría de corte más adecuada
- Cambiar las condiciones de corte

Description et cause :

Une forme de copeau convenable est un critère important, comme la durée de vie de l'outil. Le matériau de la pièce à usiner, l'avance, la profondeur de coupe, la géométrie de coupe adaptée (brise-copeaux) agissent sur la forme correcte du copeau. Un copeau long est inacceptable cependant qu'un copeau trop court (écrasé) n'est pas souhaitable, ceci indique une trop forte charge sur l'arête et génère des vibrations.

Solution :

- Changer l'avance et la profondeur de coupe
- Utiliser une plaquette avec une géométrie correcte
- Changer les conditions de coupe

CHECK THE SEAT CONDITION OF THE CUTTING INSERT / COMPROBAR EL ESTADO DEL ASIENTO DE LA PLAQUITA VÉRIFICATION DE L'ÉTAT CORRECT DES LOGEMENTS DE PLAQUETTES

Before clamping a new cutting insert or changing the edge, it is necessary to clean the seat and check its condition or the condition of the anvil and wedge (especially the damage under the corner of the cutting insert).

Antes de montar una plaquita nueva o cambiar el filo de corte, es necesario limpiar el asiento y comprobar el estado de la plaquita de apoyo, especialmente la esquina que está bajo el filo de corte.

Avant le serrage d'une nouvelle plaquette ou avant de changer une arête (indexage ou rotation de la plaquette) il est nécessaire de nettoyer le logement, de vérifier l'état du système de fixation de la plaquette et du corps d'outil (particulièrement l'endroit sous la pointe de la plaquette).

CHECK AND SERVICE THE CLAMPING PARTS / COMPROBACIÓN Y SERVICIO DE LOS COMPONENTES DE FIJACIÓN DE LA PLAQUITA VÉRIFICATION DES PIÈCES DE RECHANGE

It is also important to check the clamping parts, including clamping levers, screws, wedges and clamps. Only use original, undamaged parts (found in the catalogue). Regularly lubricate the threads and the binding surface of screws using, for example, heat-resistant lubricant (MOLYKOTE). For assembly and disassembly, only use screwdrivers and wrenches specified in our catalogue or recommended by the tool manufacturer. Be careful not to over-tighten. To avoid this, we advise using a pre-set torque wrench.

Es también importante comprobar los componentes de la fijación de la plaquita, incluyendo palancas, tornillos, cuñas, apoyos y bridas. Utilizar sólamente repuestos originales nuevos (se encuentran en el catálogo). Lubricar regularmente las roscas y las áreas de contacto de los tornillos, utilizando por ejemplo lubricante resistente al calor (MOLYKOTE). Para el montaje y desmontaje, utilizar sólo los atornilladores y llaves especificadas en nuestro catálogo o recomendadas por el fabricante de la herramienta. Prestar atención al apriete correcto (proporcional) – se recomienda utilizar llaves dinamométricas.

Il est également important de vérifier l'état des pièces de rechange, incluant les leviers de serrage, les vis, les coins et les brides. Utiliser uniquement des pièces d'origine et non endommagées (présentes dans le catalogue). Graisser régulièrement les filets et les surfaces de contact des vis, par exemple en utilisant une graisse résistant à la température (MOLYKOTE). Pour le serrage et le déserrage, utiliser les tournevis et les clés spécifiés dans notre catalogue ou recommandés par le fabricant d'outils. Veiller à appliquer le couple de serrage correct (proportionnel) – il est conseillé d'utiliser un tournevis dynamométrique.

CHECK THE TIGHTENING / COMPROBAR EL APRIETE / VÉRIFICATION DU SERRAGE

Before tightening, check the fit of the cutting insert on the whole of the binding surface and in the radial and axial directions. Cutting inserts and tools must always be clean and undamaged.

Antes de apretar, comprobar la forma en que la plaquita asienta en el portaherramientas, tanto en la superficie plana bajo el filo como en las paredes axial y radial del asiento. Herramientas y plaquitas deben estar siempre limpias y sin daños.

Au serrage, vérifier l'appui de la plaquette sur la surface de contact avec le trou et dans les directions radiale et axiale. Les plaquettes et les outils doivent rester propres et intacts.

Table 23
Tabla 23
Tableau 23

FORMULAS
FORMULAS
FORMULES

Value **Valor** **Valeur**	**Unit** **Unidades** **Unité**	**Formula** **Formula** **Formule**
Number of revolutions Número de revoluciones Vitesse de rotation	[rev/min] [rev/min] [tour/min]	$n = \frac{v_c \cdot 12}{D \cdot \pi}$
Cutting speed Velocidad de corte Vitesse de coupe	[ft/min]	$v_c = \frac{\pi \cdot D \cdot n}{12}$
Feed per revolution Avance por revolución Avance par tour	[in/rev] [in/rev] [in/tour]	$f_{rev} = \frac{f_{min}}{n} = f_z \cdot z$
Feed per minute (speed of feed) Avance por minuto (velocidad de avance) Avance par minute (avance linéaire)	[in/min]	$f_{min} = v_f = f_{rev} \cdot n = f_z \cdot z \cdot n$
Feed per tooth Avance por diente Avance par dent	[in/tooth] [in/diente] [in/dent]	$f_z = \frac{f_{rev}}{z} = \frac{f_{min}}{n \cdot z}$

Note / Nota / Note

	Quantity **Cantidad** **Quantité**	**Unit** **Unidades** **Unité**
n	Number of revolutions Número de revoluciones Vitesse de rotation	[rev/min] [rev/min] [tour/min]
D	Diameter (of tool or work piece) Diámetro (de la herramienta o de la pieza) Diamètre (de l'outil ou de la pièce à usiner)	[in]
v_c	Cutting speed Velocidad de corte Vitesse de coupe	[sfm]
f_{rev}	Feed per revolution Avance por revolución Avance par tour	[in/rev] [in/rev] [in/tour]

	Quantity **Cantidad** **Quantité**	**Unit** **Unidades** **Unité**
f_{min}	Feed per minute (sometimes called speed of feed) Avance por minuto (tambien llamado velocidad de avance) Avance par minute (avance linéaire)	[in/min]
f_z	Feed per tooth Avance por diente Avance par dent	[in/tooth] [in/diente] [in/dent]
z	Number of teeth Número de dientes Nombre de dents	[-]

Table 23
Tabla 23
Tableau 23

FORMULAS
FORMULAS
FORMULES

Value **Valor** **Valeur**	**Unit** **Unidades** **Unité**	**Formula** **Formula** **Formule**
Chip cross section Sección de viruta Section copeau	[in²]	$A = f_z \cdot a_p$
Chip thickness (for insert with straight edge) Espesor de viruta (para plaquitas con filo recto) Épaisseur du copeau (pour plaquette avec arête droite)	[in]	$h = f_z \cdot \sin \kappa_r$
Chip thickness (for round cutting insert) Espesor de viruta (para plaquitas redondas) Épaisseur du copeau (pour plaquette ronde)	[in]	$h = f_z \cdot \sqrt{\frac{a_p}{d}}$
Metal removal rate Volumen de viruta Taux d'enlèvement de matière	[in³/min]	$Q = a_p \cdot a_e \cdot f_{min}$

Note / Nota / Note

	Quantity **Cantidad** **Quantité**	**Unit** **Unidades** **Unité**
A	Chip cross section Sección de viruta Section copeau	[in²]
f_z	Feed per tooth Avance por diente Avance par dent	[in/tooth] [in/diente] [in/dent]
a_p	Axial depth of cut (depth of cut) Profundidad de corte axial (profundidad de corte) Profondeur de coupe axiale	[in]
a_e	Radial depth of cut (width of cut) Profundidad de corte radial (ancho de corte) Profondeur de coupe radiale	[in]
κ_r	Major edge setting angle Ángulo de posición Angle d'attaque principal	[°]
d	Diameter of insert Diámetro de la plaquitas Diamètre pour plaquette	[in]

	Quantity **Cantidad** **Quantité**	**Unit** **Unidades** **Unité**
h	Chip thickness Espesor de viruta Épaisseur du copeau	[in]
v_c	Cutting speed Velocidad de corte Vitesse de coupe	[sfm]
f_{min}	Feed per minute (sometimes called speed of feed) Avance por minuto (tambien llamado velocidad de avance) Avance par minute (avance linéaire)	[in/min]
Q	Material removal rate per minute Volumen de viruta por minuto Taux d'enlèvement de matière par minute	[in³/min]

Table 23
Tabla 23
Tableau 23

FORMULAS
FORMULAS
FORMULES

Value **Valor** **Valeur**	**Unit** **Unidades** **Unité**	**Formula** **Formula** **Formule**
Power demand Consumo de potencia Puissance requise	[kW]	$P_c = \frac{a_p \cdot a_e \cdot f_{min} \cdot k_c \cdot k_\gamma}{}$
Approximate power demand Consumo de potencia aproximada Puissance requise approximative	[kW]	$P_c = \frac{a_p \cdot a_e \cdot f_{min}}{x}$

Note / Nota / Note

	Quantity **Cantidad** **Quantité**	**Unit** **Unidades** **Unité**
P_C	Power demand Consumo de potencia Puissance requise	[kW]
a_p	Axial depth of cut (depth of cut) Profundidad de corte axial (profundidad de corte) Profondeur de coupe axiale	[in]
a_e	Radial depth of cut (width of cut) Profundidad de corte radial (ancho de corte) Profondeur de coupe radiale	[in]
f_{min}	Feed per minute (sometimes called speed of feed) Avance por minuto (tambien llamado velocidad de avance) Avance par minute (avance linéaire)	[in/min]

	Quantity **Cantidad** **Quantité**	**Unit** **Unidades** **Unité**
k_c	Cutting force per mm² Fuerza de corte por mm² Force de coupe par mm²	[MPa]
$k\gamma$	Coefficient of influence of angle γ_0 Coeficiente de influencia del ángulo γ_0 Coefficient d'influence de l'angle γ_0	[°]
η	Machine efficiency usually η = 0,75 Eficiencia de máquina normalmente η = 0,75 Rendement machine généralement η = 0,75	[-]
x	Coefficient of influence of work piece material Coeficiente de inflluencia del material de la pieza Coefficient d'influence du matériau de la pièce usinée	[-]

Material Material Matériau	Steel Acero Acier	Cast iron Fundición Fonte	Al Al Aluminium
Coefficient x Coeficiente x Coefficient x	24 000	30 000	120 000

Table 24
Tabla 24
Tableau 24

RECOMMENDED TORQUE OF CLAMPING SCREWS
PAR DE APRIETE RECOMENDADO PARA TORNILLOS
COUPLES DE SERRAGE RECOMMANDÉS

Clamping screw Tornillo Vis de fixation	Torque Par Couple	Thread Rosca Filetage	Length Longitud Longueur
	[Nm]	–	[in]
US 20	.9	M 2	.118
US 2205-T07P	.9	M 2,2	.197
US 25	1.2	M 2,5	.197
US 2505-T08P	1.2	M 2,5	.197
US 2506-T07P	1.2	M 2,5	.236
US 3006-T09P	2	M 3	.236
US 3007-T09P	2	M 3	.276
US 3504-T09P	3	M 3,5	.157
US 3507-T15	3	M 3,5	.276
US 3509-T15	3	M 3,5	.354
US 3511-T15	3	M 3,5	.433
US 3512-T15P	3	M 3,5	.472
US 4008-T15P	3.5	M 4	.315
US 4011-T15P	3.5	M 4	.433
US 4511-T20	5	M 4,5	.433
US 5012-T15P	5	M 5	.472
US 70	5	M 4	.197
US 71	5	M 4	.276
US 72	5	M 4	.354
US 73	5	M 4	.433
CS 3007-T08P	1.2	M 3	.276
CS 4008-T15P	3	M 4	.315
CS 42506-T07P	1	M 2,5	.236
CS 43008-T08P	1.2	M 3	.315
CS 43509-T10P	2	M 3,5	.354
CS 44013-T15P	3	M 4	.512
CS 45016-T20P	5	M 5	.630
CS 46020-T25P	7.5	M 6	.787
CS 48025-T40P	15	M 8	.984
CS 5009-T20P	5	M 5	.354
CS 5013-T20P	5	M 5	.512
CS 5015-T20P	5	M 5	.591
CS 6020-T20P	7.5	M 6	.787
CS 8025-T30P	15	M 8	.984
US 2505-T07P	1.2	M 2,5	.197
US 2506-T07P	1.2	M 2,5	.236
US 3007-T09P	2	M 3	.276
US 3505-T09P	3	M 3,5	.197
US 4011A-T15P	3.5	M 4	.433
US 4011-T15P	3.5	M 4	.433

Clamping screw Tornillo Vis de fixation	Torque Par Couple	Thread Rosca Filetage	Length Longitud Longueur
	[Nm]	–	[in]
US 44012-T15P	3.5	M 4	.472
US 45011-T20P	5	M 5	.433
US 45012-T20P	5	M 5	.472
US 5011-T20P	5	M 5	.433
US 5018-T20P	5	M 5	.709
US 52506-T07P	.8	M 2,5	.236
US 54511-T15P	5	M 4,5	.433
US 62003A-T06P	.6	M 2	.118
US 62004A-T06P	.6	M 2	.157
US 62004-T06P	.6	M 2	.157
US 62505-T07P	1.2	M 2,5	.197
US 62506-T07P	1.2	M 2,5	.236
US 62506-T08P	1.2	M 2,5	.236
US 62508-T08P	1.2	M 2,5	.276
US 63009-T09P	1.2	M 3	.354
US 63509-T15P	3	M 3,5	.394
US 63510-T10P	2	M 3,5	.354
US 63511D-T15P	3	M 3,5	.433
US 63513-T15P	3	M 3,5	.472
US 64014-T15P	3.5	M 4	.551
US 65013-T20	5	M 5	.512
US 65014-T20P	5	M 5	.551
US 65017-T20P	5	M 5	.669
US 66015-T25P	7.5	M 6	.591
US 68020-T30P	15	M 8	.787
US 68026-T30P	15	M 8	1.024
US 74016-T15P	3.5	M 4	.630

Table 24
Tabla 24
Tableau 24

RECOMMENDED TORQUE OF CLAMPING SCREWS
PAR DE APRIETE RECOMENDADO PARA TORNILLOS
COUPLES DE SERRAGE RECOMMANDÉS

Torque screwdrivers / Atornilladores dinamométricos / Tournevis dynamométriques

Torque handle **Mango** **Tige dynamométrique** 	**Torque [Nm]** **Par [Nm]** **Couple [Nm]**	**Clamping screw thread** **Rosca del tornillo de fijación** **Pas de la vis de fixation**
MR-0,8-2,0 Vario	.5 – 2.0	M 2 – M 3
MR-1,0-5,0 Vario	.8 – 5.0	M 2,5 – M 5
MR-0,9 fix	.9	M 2
MR-2,0 fix	2.0	M 3
MR-3,0 fix	3.0	M 3,5
MR-3,5 fix	3.5	M 4
MR-5,0 fix	5.0	M 5

Replaceable shanks / Vástagos sustituibles / Poignées remplaçables

Replaceable shanks **Vástagos sustituibles** **Poignées remplaçables** 
D-T6
D-T6P
D-T7
D-T7P
D-T8
D-T8P
D-T9
D-T9P
D-T15
D-T15P
D-T20
D-T20P

Screw lubrication

Insert clamping screws are subject to high thermal stresses. It is recommended that all screws be lubricated with a high quality paste such as MOLYKOTE 1000. This paste can be ordered in the same way as any other spare part from Dormer Pramet.

Lubricación de tornillos

Los tornillos de fijación de plaquita están sometidos a una tensíon térmica muy alta. Se recomienda que durante su montaje, todos los tornillos estén lubricados con pasta de alta calidad como MOLYKOTE 1000. Esta pasta se puede pedir a Dormer Pramet de la misma forma que cualquier otro repuesto.

Lubrification des vis

Dans le respect des containtes thermiques élevées des vis de serrage, il est recommandé de les lubrifier avec une pâte haute qualité MOLYKOTE 1000. Cette pâte peut être recommandée de la même façon que les pièces détachées.

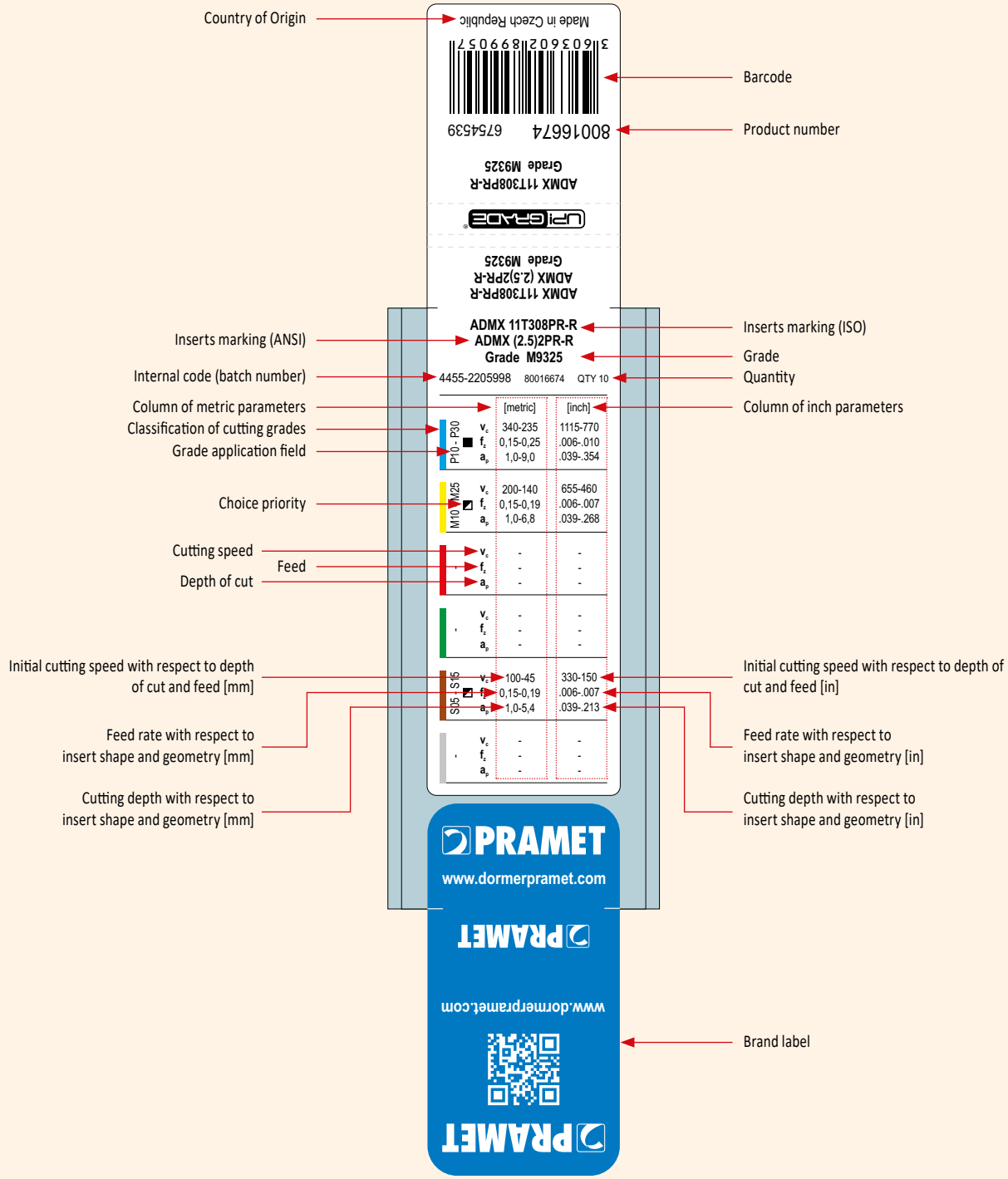

Country of Origin
Made in Czech Republic
Barcode
Product number
8001667 4
6754539
ADMX 11T308PR-R
Grade M9325
UP GRADE
ADMX 11T308PR-R
ADMX (2.5)2PR-R
Grade M9325
Inserts marking (ISO)
Inserts marking (ANSI)
ADMX 11T308PR-R
ADMX (2.5)2PR-R
Grade M9325
Grade
Internal code (batch number)
4455-2205998 80016674 QTY 10
Quantity
Column of metric parameters
Column of inch parameters
[metric] [inch]
Classification of cutting grades
Grade application field
P10 - P30
340-235 1115-770
0,15-0,25 .006-.010
1,0-9,0 .039-.354
Choice priority
M10 - M25
200-140 655-460
0,15-0,19 .006-.007
1,0-6,8 .039-.268
Cutting speed
Feed
Depth of cut
Initial cutting speed with respect to depth of cut and feed [mm]
S05 - S15
100-45 330-150
0,15-0,19 .006-.007
1,0-5,4 .039-.213
Initial cutting speed with respect to depth of cut and feed [in]
Feed rate with respect to insert shape and geometry [mm]
Feed rate with respect to insert shape and geometry [in]
Cutting depth with respect to insert shape and geometry [mm]
Cutting depth with respect to insert shape and geometry [in]
PRAMET
www.dormerpramet.com
Brand label

Figura 28

INFORMACIÓN TÉCNICA IMPRESA EN LA CAJA DE PLAQUITAS

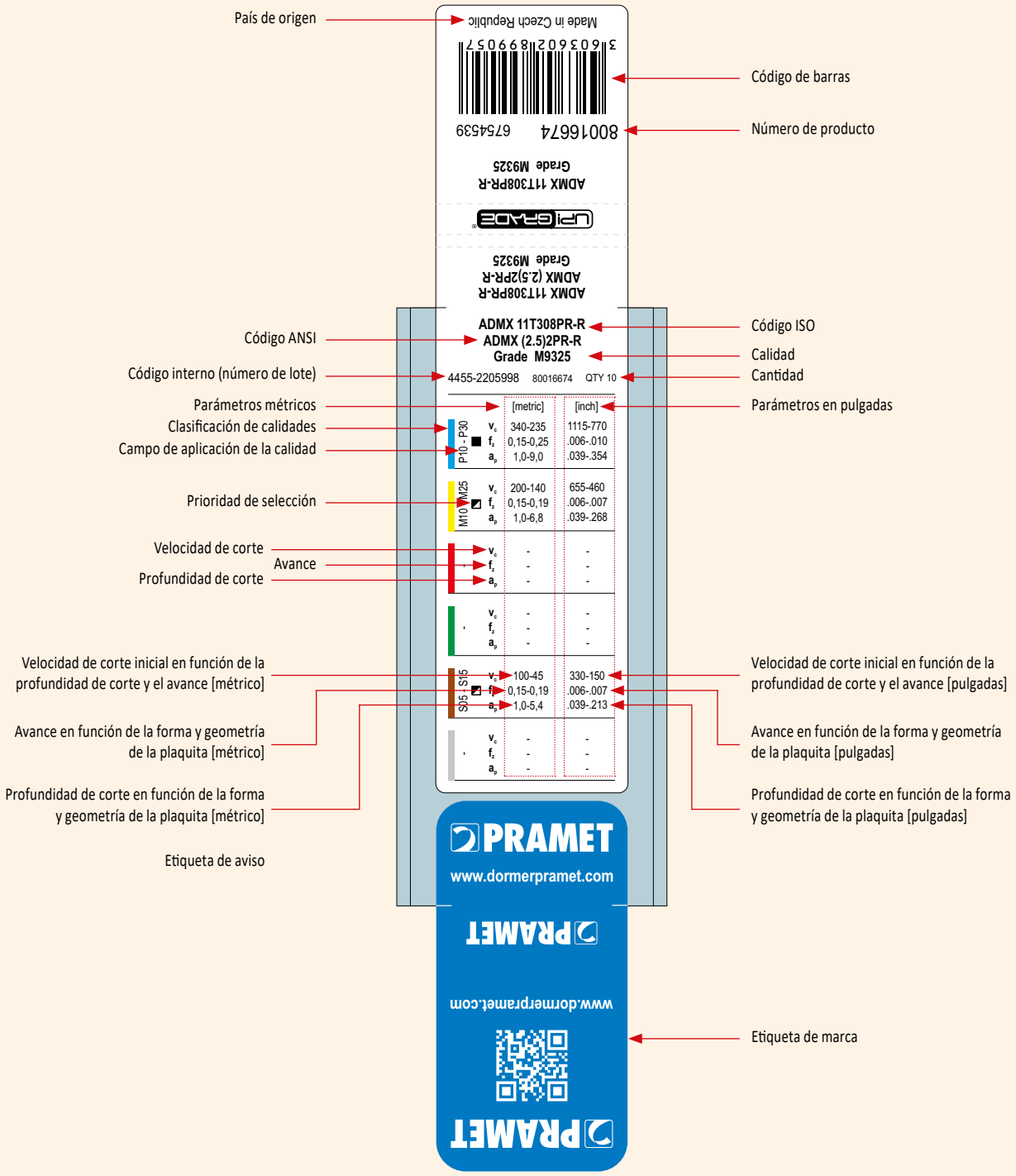
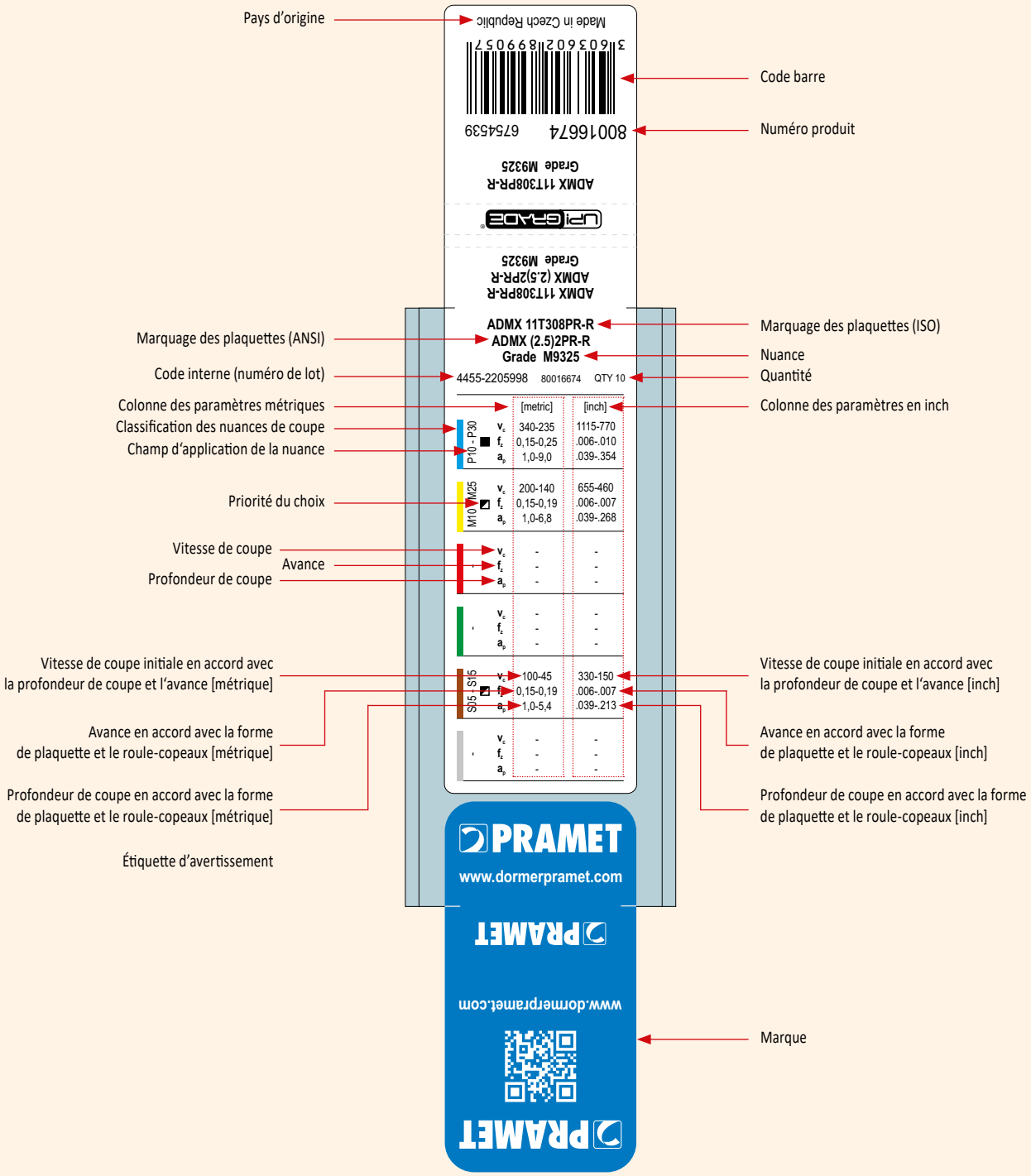


Tableau 28

INFORMATIONS FIGURANT SUR LES BOITES DE PLAQUETTES





HOLE-MAKING
TALADRADO
PERÇAGE – ALÉSAGE

CONTENTS
CONTENIDO
CONTENU

INSTRUCTIONS
INSTRUCCIONES
INSTRUCTIONS
D2-D7

CODE KEY DRILLS
LLAVE DE CÓDIGOS PARA BROCAS
CODIFICATION DES FORETS
D8 – D9

INDEXABLE DRILLS
BROCAS DE PLAQUITA INTERCAMBIABLE
FORETS A PLAQUETTES INDEXABLES
D10 – D15

INDEXABLE INSERTS
PLAQUITAS
PLAQUETTES INDEXABLES
D16 – D18

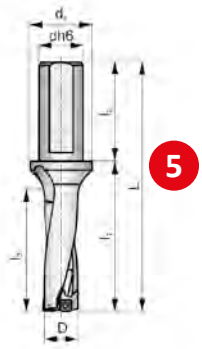
TECHNICAL INFORMATION
INFORMACIÓN TÉCNICA
INFORMATIONS TECHNIQUES
D19 – D37

1 **I803D** P M K N S 2

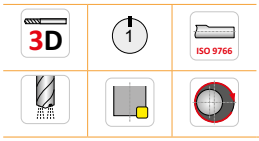
3 S



4



5



6



7

ANSI	D	h_{max}	L	l_1	l_2	l_3	dh6	d_1	-D	+D				lbs	
803D-0594-178-S100	.594	1.783	5.012	2.768	2.244	1.941	1.000	1.378	.012	.012	EP253253	IGI300	IGI313	.71	IHM001
803D-0625-187-S100	.625	1.875	5.102	2.858	2.244	2.047	1.000	1.378	.006	.016	EP253253	IGI300	IGI313	.73	IHM001
803D-0656-196-S100	.656	1.969	5.197	2.953	2.244	2.157	1.000	1.378	.006	.016	EP253253	IGI300	IGI313	.73	IHM001
803D-0[illegible]-S100	.687	2.061	5.287	3.043	2.244	2.244	1.000	1.378	.020	.020	EP[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
803D-0[illegible]-S100	.709	2.127	5.354	3.110	2.244	2.323	1.000	1.378	.014	.008	EP[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
803D-0750-225-S100	.750	2.250	5.476	3.232	2.244	2.425	1.000	1.378	.012	.014	EP253253	IGI301	IGI314	.79	IHM002
803D-0766-229-S100	.766	2.298	5.528	3.283	2.244	2.484	1.000	1.378	.008	.020	EP253253	IGI302	IGI315	.79	IHM003
803D-0787-236-S100	.787	2.361	5.591	3.346	2.244	2.559	1.000	1.378	.008	.020	EP253253	IGI302	IGI315	.82	IHM003

8 9 10 11 12 13 14 15

IGI300	XPET 0502AP	SCET 050204-UD
IGI301	XPET 0602AP	SCET 050204-UD
IGI302	XPET 0602AP	SCET 060204-UD
IGI303	XPET 0703AP	SCET 060204-UD
IGI304	XPET 0703AP	SCET 070308-UD
IGI305	XPET 0903AP	SCET 070308-UD
IGI306	XPET 0903AP	SCET 09T308-UD
IGI307	XPET 11T3AP	SCET 09T308-UD
IGI308	XPET 11T3AP	SCET 120408-UD
IGI309	XPET 12T3AP	SCET 120408-UD
IGI310	XPET 1504AP	SCET 120408-UD
IGI311	XPET 1504AP	SCET 150512-UD
IGI312	XPET 1904AP	SCET 150512-UD
IGI313	XPET 0502AP-SD	SCET 050204-SD
IGI314	XPET 0602AP-SD	SCET 050204-SD
IGI315	XPET 0602AP-SD	SCET 060204-SD
IGI316	XPET 0703AP-SD	SCET 060204-SD
IGI317	XPET 0703AP-SD	SCET 070308-SD

16

17

IHM001	US 2245-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
IHM002	US 2205-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
IHM003	US 2205-T07P	0.9	US 2205-T07P	0.9	FLAG T07P
IHM004	US 2506-T07P	1.2	US 2506-T07P	1.2	FLAG T07P

18

PAGE OVERVIEW – DRILLS
VISIÓN GENERAL – BROCAS
VUE D'ENSEMBLE – FORETS

1	Designation of drill Designación Désignation du foret
2	Material group recommendations Gupos de material Groupes de matériaux pour lesquels l'outil est indiqué
3	Clamping system of insert Sistema de fijación de la plaquita Système de fixation de la plaquette
4	Illustrative picture Esquema Ilustrativo Image pour illustration
5	Schematic drawing of tool Esquema de la herramienta Dessin schématique de l'outil
6	Basic parameters of drill Parámetros básicos Paramètres de base du foret
7	Possible applications Posibilidades tecnológicas de la herramienta Possibilités technologiques de l'outil
8	Tool code Codificación Code outil
9	Tool dimensions [in]; maximal depth of hole h_{max} [in] Dimensiones (in) y diámetros de herramienta [in]; máxima profundidad de agujero h_{max} [in] Dimensions [in] et diamètres de l'outil [in]; profondeur maximum de perçage h_{max} [in]
10	Radial setting [in] Ajuste radial [in] Réglage radial [in]
11	Adjustable sleeve Casquillo ajustable Bague excentrique
12	Group of compatible inserts with chip breaker UD [1), 2)] Grupo de plaquitas compatibles con rompevirutas UD [1), 2)] Groupe de plaquettes compatibles avec le brise-copeaux UD [1), 2)]
13	Group of compatible inserts with chip breaker SD [1), 2)] Grupo de plaquitas compatibles con rompevirutas SD [1), 2)] Groupe de plaquettes compatibles avec le brise-copeaux SD [1), 2)]
14	Weight [kg] Peso [kg] Poids [kg]
15	Group of spare parts [1)] Grupo de repuestos [1)] Groupe de pièces de rechange [1)]
16	Compatible inserts with chip breaker UD Plaquitas compatibles con rompevirutas UD Plaquettes compatibles avec le brise-copeaux UD
17	Compatible inserts with chip breaker SD Plaquitas compatibles con rompevirutas SD Plaquettes compatibles avec le brise-copeaux SD
18	Spare parts Repuestos Pièces de rechange

[1)] Code of Group of compatible inserts and spare parts is used only for purposes of this catalogue. It cannot be used for orders.

[2)] External (SCET) and internal (XPET) inserts must always have the same chip breaker (please note: UD chip breaker is not visibly included in designation of XPET inserts – e.g. XPET 0502AP); info needed for correct choice of chip breaker (UD vs SD) can be found on the insert packaging.

[1)] El código del grupo de plaquitas compatibles y repuestos se utiliza sólo para el uso de este catálogo. No puede ser utilizado para pedidos.

[2)] Las plaquitas exteriores (SCET) e interiores (XPET) deben tener siempre el mismo rompevirutas (tener en cuenta: el rompevirutas UD no esta visiblemente incluido en la designación de las plaquitas XPET – por ejemplo XPET 0502AP); la información necesaria para la elección correcta del rompevirutas (UD vs SD) se incluye en el lateral de la caja de plaquitas.

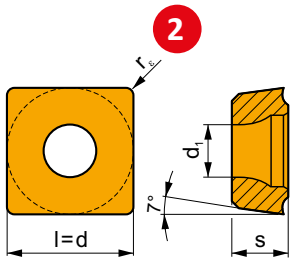
[1)] Le code du groupe de plaquettes compatibles, des pièces de rechange et des accessoires spéciaux n'est utilisable que pour naviquer dans ce catalogue. Il ne peut pas être utilisé pour des commandes.

[2)] Les plaquettes extérieures (SCET) et intérieures (XPET) doivent toujours avoir le même brise-copeaux (note: le brise-copeaux UD n'est pas visiblement inclus dans la désignation des plaquettes XPET – ex: XPET 0502AP); l'information nécessaire au choix correct du brise-copeaux (UD ou SD) est située dans la partie plaquettes.

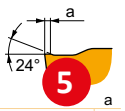
1 SCET

	d	d_1	l	s
0502	.219	.094	.219	.094
0602	.250	.114	.250	.094
0703	.312	.138	.312	.125
09T3	.375	.177	.375	.156
1204	.500	.220	.500	.187
1505	.625	.220	.625	.219

3



i		ANSI		P	M	K	N	S	H	?		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		SCET 050204-UD	**D8330**	■	□	■				●	+++	.016	.002	.004	–	–
			D9335	■	□	■				●	+++	.016	.002	.004	–	–
		SCET 060204-UD	**D8330**	■	□	■				●	+++	.016	.002	.006	–	–
			D9335	■	□	■				●	+++	.016	.002	.006	–	–
4	5	**SCET 07 UD** 6	**D 0** 7	■	□	■	8			9	10	11	.003	.007	–	–
			D 3	■	□	■							.003	.007	–	–
		SCET 09T308-UD	**D8330**	■	□	■				●	+++	.031	.003	.008	–	–
			D9335	■	□	■				●	+++	.031	.003	.008	–	–
		SCET 120408-UD	**D8330**	■	□	■				●	+++	.031	.004	.009	–	–
			D9335	■	□	■				●	+++	.031	.004	.009	–	–
		SCET 150512-UD	**D8330**	■	□	■				●	+++	.047	.004	.010	–	–
			D9335	■	□	■				●	+++	.047	.004	.010	–	–



	a
SCET 050204-UD	.005
SCET 060204-UD	.006
SCET 070308-UD	.006
SCET 09T308-UD	.006
SCET 120408-UD	.008
SCET 150512-UD	.008

1	Designation of insert Designación Désignation de la plaquette
2	Schematic drawing of insert Esquema de la plaquita Dessin schématique de la plaquette
3	Table with insert sizes [in] Tabla con tamaños de plaquita [in] Tableau des tailles de plaquettes [in]
4	Icons – specific features, cutting edge type and picture of representative insert Iconos – características específicas, tipo de filo de corte y foto representativa de la plaquita Icônes – caratéristiques spécifiques, type d'arête de coupe et photo d'une plaquette représentative
5	Profile of main cutting edge Perfil del filo de corte Profil de l'arête de coupe principale
6	ISO code of insert Codificación ISO de plaquitas Code ISO de la plaquette
7	Grade Calidad Nuance
8	Application area of insert Área de aplicación Domaine d'application de la plaquette
9	Suitability of insert use with respect to specific working conditions Uso de plaquitas en función de las condiciones de trabajo Possibilité d'utilisation de la plaquette en fonction des conditions de travail spécifiques
10	Influence of use of cutting fluids in continual cut Influencia del uso de fluidos de corte en corte contínuo Influence de l'usage du fluide en coupe continue
11	Insert radii [in] Radio de plaquita [in] Rayon de plaquette [in]
12	Maximum range of feed [in/rev] Gama máxima de avance [in/rot] Plage d'avances [in/tr]

ICONS AND SYMBOLS – DRILLING
ICONOS Y SÍMBOLOS – TALADRADO
ICÔNES ET SYMBOLES – PERÇAGE

Priority use
Uso prioritario
Utilisation prioritaire

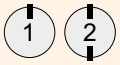
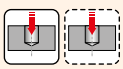
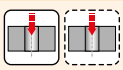
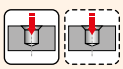
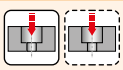
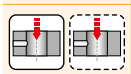
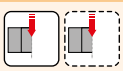
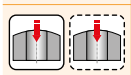
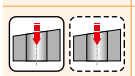
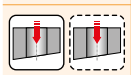
Possible use
Uso posible
Utilisation possible

Icon absence – tool is not recommended for specific operation or group of materials or it does not have specific feature

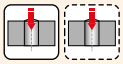
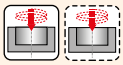
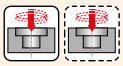
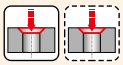
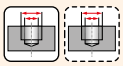
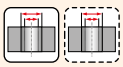
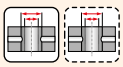
Ausencia de icono – la herramienta no se recomienda para la operación específica, grupo de materiales o no tiene ninguna característica específica

Absence d'icône – outil non recommandé pour l'opération spécifique ou pour le groupe de matériaux ou parce qu'il ne possède pas de caractéristiques spécifiques

Icons – drills / Iconos – broca / Icônes – forets

General features of tools / Características generales de las herramienta / Caractéristiques principales des outils			
	Material groups	Grupos de materiales	Groupe de matériaux
	Working length of drill	Longitud de trabajo de la broca	Longueur de travail du foret
	Number of effective cutting teeth per revolution	Número de dientes efectivos por revolución	Nombre d'arêtes de coupe effectives par révolution
	Universal shank	Mango universal	Queue universelle
	Internal cooling	Refrigeración interna	Arrosage interne
	Monoblock design	Diseño monoblock	Monobloc
	Possibility of use for eccentric machining	Posibilidad de de utilizar para mecanizado excéntrico	Utilisation possible pour usinage excentrique
Technological possibilities of tools / Posibilidades tecnológicas de la herramienta / Possibilités technologiques des outils			
	Blind hole drilling	Taladrado de agujero ciego	Perçage d'un trou borgne
	Through hole drilling	Taladrado de agujero pasante	Perçage d'un trou débouchant
	Drilling into center drilled hole	Taladrado de agujero con punto de centraje	Perçage dans un trou de centre
	Boring	Mandrinado	Alésage
	Drilling across an existing hole	Taladrado de agujeros cruzados	Perçage à travers un trou existant
	Interrupted cut	Corte interrumpido	Coupe interrompue
	Drilling onto curved surface	Taladrado en una superficie curva	Perçage sur une surface incurvée
	Drilling onto inclined surface	Taladrado en una superficie inclinada	Perçage sur une surface inclinée
	Drill exit on inclined surface	Salida de broca en superficie inclinada	Perçage avec sortie sur surface inclinée

ICONS AND SYMBOLS – DRILLING
ICONOS Y SÍMBOLOS – TALADRADO
ICÔNES ET SYMBOLES – PERÇAGE

	Welded joint drilling	Taladrado de cordón de soldadura	Perçage de points de soudure
	Drilling of stacked materials	Taladrado de paquetes	Perçage de matériaux empilés
	Helical interpolation drilling	Taladrado por interpolación helicoidal	Perçage par interpolation hélicoïdale
	Helical interpolation boring	Mandrinado por interpolación helicoidal	Alésage par interpolation hélicoïdale
	Chamfering (beveling)	Achaflanado	Chanfreinage (fraisurage)
	Blind hole boring	Mandrinado de agujero ciego	Alésage d'un trou borgne
	Through hole boring	Mandrinado de agujero pasante	Alésage d'un trou débouchant
	Boring through cross holes	Mandrinado con agujeros cruzados	Alésage à travers de trous existants
Others / Otros / Autres			
	Clamping torque of screw [Nm]	Par de apriete del tornillo [Nm]	Couple de serrage de la vis [Nm]

Icons and symbols – inserts / Iconos y símbolos – plaquitas / Icônes et symboles – plaquettes

Features / Características / Caractéristiques			
	Universal wide range option	Gama completa universal	Large gamme de solution universelle
	Heavy working conditions	Condiciones de trabajo pesadas	Conditions de travail très difficiles
	For tough machined materials (long chip)	Para materiales difíciles (viruta larga)	Pour matériaux tenaces (copeaux longs)
	Rounded edge with facet	Filo redondeado con faceta	Arête arrondie avec listel
Conditions of use / Condiciones de uso/ Conditions d'utilisation			
	Main application	Aplicación principal	Apllication principale
	Secondary application	Aplicación secundaria	Application secondaire
	Supplementary application	Aplicación suplementaria	Application supplémentaire
	Stable working conditions	Condiciones de trabajo estables	Conditions de travail stables
	Unstable working conditions	Condiciones de trabajo inestables	Conditions de travail instables

	Very unstable working conditions	Condiciones de trabajo muy inestables	Conditions de travail très instables
- – -	Very negative effect on tool life – cooling is not recommended	Efecto muy negativo en la vida de filo – no se recomienda refrigerante	Effet très négatif sur la durée de vie de l'outil – L'arrosage n'est pas recommandé
- -	Negative effect on tool life – cooling is not recommended	Efecto negativo en la vida de filo – no se recomienda refrigerante	Effet négatif sur la durée de vie de l'outil – L'arrosage n'est pas recommandé
-	Slightly negative effect on tool life	Efecto ligeramente negativo en la vida de filo	Effet légèrement négatif sur la durée de vie de l'outil
+ / -	Influence of cooling may be both positive and negative – decisive factor is specific working conditions	La influencia del refrigerante puede ser positiva o negativa – depende de las condiciones de trabajo	L'influence de l'arrosage peut être positive ou négative – les conditions spécifiques de travail sont le facteur décisif
+	Slightly positive effect on tool life	Efecto ligeramente positivo en la vida de filo	Effet légèrement positif sur la durée de vie de l'outil
+ +	Positive effect on tool life – cooling is recommended	Efecto positivo en la vida de filo – se recomienda refrigerante	Effet positif sur la durée de vie de l'outil – L'arrosage est recommandé
+ + +	Very positive effect on tool life – cooling is recommended	Efecto muy positivo en la vida de filo – se recomienda refrigerante	Effet très positif sur la durée de vie de l'outil – L'arrosage est recommandé

Icons – technical part / Iconos – parte técnica / Icônes – partie technique

f	Feed [in/rev]	Avance [in/rev]	Avance [in/tour]
01 – 05	Very high cutting speed, excellent system rigidity (stable working conditions)	Velocidad de corte muy alta (condiciones estables)	Vitesse de coupe très élevée, excellente rigidité du système (conditions de travail stables)
05 – 10	High cutting speed, high system rigidity (stable working conditions)	Velocidad de corte alta, alta rigidez del sistema (condiciones estables)	Vitesse de coupe élevée, bonne rigidité du système (conditions de travail stables)
10 – 20	High cutting speed, system rigidity slightly limited (depth of cut changing)	Velocidad de corte media, rigidez del sistema limitada (corte ligeramente interrumpido)	Vitesse de coupe élevée, rigidité du système légèrement limitée (variation de la profondeur de coupe)
20 – 30	Medium cutting speed, system rigidity limited (slightly interrupted cut)	Velocidad de corte media, rigidez del sistema limitada (corte ligeramente interrumpido)	Vitesse de coupe moyenne, rigidité du système limitée (coupe légèrement interrompue)
30 – 40	Low cutting speed, low system rigidity (interrupted cut)	Velocidad de corte baja, rigidez del sistema baja (corte interrumpido)	Vitesse de coupe faible, mauvaise rigidité du système (coupe interrompue)
40 – 50	Very low cutting speed, very low system rigidity (very unstable working conditions)	Velocidad de corte muy baja, rigidez del sistema muy baja (condiciones muy inestables)	Vitesse de coupe très faible, très mauvaise rigidité du système (conditions de travail très instables)

PRAMET

CODE KEY FOR DRILLS
MARCADO DE LAS BROCAS
CODIFICATION DES FORETS



Indexable drill* / Brocas con plaquitas* / Forets à plaquettes indexables*

1	2	3		4		5		6	7
8	04	D	–	1000	–	400	–	S	125

*Marking is valid for types produced from 2011 / *Marcaje válido para tipos producidos a partir de 2011
*Le marquage est valable pour les forets produits depuis 2011

1

Tool type
Tipo de herramienta
Type d'outil

8	Indexable drill Broca intercambiable Foret à plaquettes indexables

2

Approximate length
Longitud aproximada
Longueur approximative

02	2 × D
03	3 × D
04	4 × D

3

Variant
Variante
Version

D	Drill Broca Foret

4

Cutting diameter
Diámetro de corte
Diamètre de coupe

1000	1.000 in

5

Max. drilling depth
Profundidad de taladrado máx.
Profondeur de perçage max.

400	4.000 in

6

Type of shank
Tipo de mango
Type de queue

S	ISO 9766

7

Shank diameter
Diámetro del mango
Diamètre de queue

125	1.250 in

INDEXABLE DRILLS OVERVIEW
VISION GENERAL DE LAS BROCAS INDEXABLES
FORETS A PLAQUETTES INDEXABLES

Working length / Longitud util Longueur utile	2D	3D	4D	XPET..AP	SCET..-UD	XPET..AP-SD	SCET..-SD
Picture / Foto Photo							
Coolant / Refrigeración Refroidissement				–	–	–	–
🕮	D10 – D11	D12 – D13	D14 – D15	D17	D16	D17	D16
Drill type / Tipo de broca Type de foret	802D	803D	804D	–	–	–	–
Drill tolerance / Tolerancia de la broca Tolérance de foret	± .002	± .002	± .002	–	–	–	–
Hole tolerance * / Tolerancia del agujero * Tolérance de perçage *	0 /+.008	0 /+.012	0 /+.016	–	–	–	–
Surface finish * / Acabado superficial * Finition de surface *	R_a 78.74 - 236.22µin	R_a 78.74 - 236.22µin	R_a 78.74 - 236.22µin	–	–	–	–
Diameter range / Campo de diámetros Plage de diamètres	15,0 – 40,0 mm .591 – 1.575 in	15,0 – 58,0 mm .591 – 2.283 in	17,0 – 58,0 mm .669 – 2.283 in	–	–	–	–
Application areas Área de aplicación Domaines d'application	P1			■	■	■	■
	P2			■	■	■	■
	P3			■	■	■	■
	P4			■	■	■	■
	M1			□	□	■	■
	M2			□	□	■	■
	M3			□	□	■	■
	M4			□	□	■	■
	K1			◪	■		
	K2			◪	■		
	K3			◪	■		
	K4			◪	■		
	N1					□	□
	N2					□	□
	N3					□	□
	N4					□	□
	S1					◪	◪
	S2					◪	◪
	S3					◪	◪
	S4					◪	◪

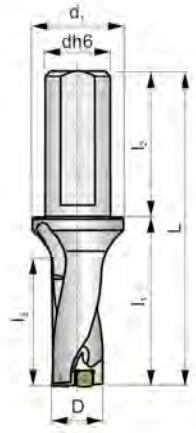
* The tolerance of drilled hole and surface finish are heavily dependent on machining conditions
* La tolerancia del agujero y el acabado superficial dependen en gran medida de las condiciones de mecanizado
* La tolérance du perçage et de la finition de surface dépendent fortement des caractéristiques de la machine

I802D

P M K N S

S





2D | 1 | ISO 9766

ANSI	D	h_{max}	L	l_1	l_2	l_3	dh6	d_1	-D	D+				lbs	
802D-0594-118-S100	.594	1.188	4.417	2.173	2.244	1.346	1.000	1.378	.012	.012	EP253253	IGI300	IGI313	.68	IHM001
802D-0625-125-S100	.625	1.250	4.480	2.236	2.244	1.425	1.000	1.378	.006	.016	EP253253	IGI300	IGI313	.71	IHM001
802D-0656-131-S100	.656	1.312	4.539	2.295	2.244	1.500	1.000	1.378	.006	.016	EP253253	IGI300	IGI313	.71	IHM001
802D-0687-137-S100	.687	1.374	4.602	2.358	2.244	1.559	1.000	1.378	.020	.020	EP253253	IGI301	IGI314	.73	IHM002
802D-0709-141-S100	.709	1.418	4.646	2.402	2.244	1.614	1.000	1.378	.014	.008	EP253253	IGI301	IGI314	.73	IHM002
802D-0750-150-S100	.750	1.500	4.728	2.484	2.244	1.677	1.000	1.378	.012	.014	EP253253	IGI301	IGI314	.73	IHM002
802D-0766-153-S100	.766	1.532	4.760	2.516	2.244	1.717	1.000	1.378	.008	.020	EP253253	IGI302	IGI315	.75	IHM003
802D-0787-157-S100	.787	1.574	4.803	2.559	2.244	1.772	1.000	1.378	.008	.020	EP253253	IGI302	IGI315	.75	IHM003
802D-0812-162-S100	.812	1.624	4.850	2.606	2.244	1.831	1.000	1.378	.004	.019	EP253253	IGI302	IGI315	.77	IHM003
802D-0827-165-S100	.827	1.654	4.882	2.638	2.244	1.870	1.000	1.378	.004	.019	EP253253	IGI302	IGI315	.77	IHM003
802D-0875-175-S100	.875	1.750	4.976	2.732	2.244	1.992	1.000	1.378	.011	.019	EP253253	IGI303	IGI316	.82	IHM004
802D-0906-181-S100	.906	1.812	5.039	2.795	2.244	2.067	1.000	1.378	.008	.019	EP253253	IGI304	IGI317	.79	IHM005
802D-0937-187-S100	.937	1.874	5.102	2.858	2.244	2.146	1.000	1.378	.004	.019	EP253253	IGI304	IGI317	.84	IHM005
802D-0984-196-S125	.984	1.969	5.315	2.953	2.362	2.165	1.250	1.654	.004	.019	EP324058	IGI304	IGI317	1.26	IHM005
802D-1000-200-S125	1.000	2.000	5.346	2.984	2.362	2.205	1.250	1.654	.004	.019	EP324058	IGI304	IGI317	1.28	IHM005
802D-1032-206-S125	1.032	2.064	5.409	3.047	2.362	2.283	1.250	1.654	.004	.019	EP324058	IGI305	IGI318	1.30	IHM006
802D-1062-212-S125	1.062	2.124	5.469	3.106	2.362	2.358	1.250	1.654	.020	.008	EP324058	IGI305	IGI318	1.30	IHM006
802D-1109-221-S125	1.109	2.218	5.563	3.201	2.362	2.476	1.250	1.654	.020	.014	EP324058	IGI306	IGI319	1.34	IHM007
802D-1125-225-S125	1.125	2.250	5.598	3.236	2.362	2.520	1.250	1.654	.020	.014	EP324058	IGI306	IGI319	1.37	IHM007
802D-1187-237-S125	1.187	2.374	5.720	3.358	2.362	2.669	1.250	1.654	.014	.020	EP324058	IGI306	IGI319	1.43	IHM007
802D-1250-250-S150	1.250	2.500	6.122	3.484	2.638	2.669	1.500	1.969	.006	.020	–	IGI307	IGI320	2.07	IHM008
802D-1312-262-S150	1.312	2.624	6.244	3.606	2.638	2.827	1.500	1.969	.020	.020	–	IGI307	IGI320	2.16	IHM008
802D-1375-275-S150	1.375	2.750	6.370	3.732	2.638	2.945	1.500	1.969	.008	.020	–	IGI308	IGI321	2.23	IHM009
802D-1437-287-S150	1.437	2.874	6.496	3.858	2.638	3.098	1.500	1.969	.004	.020	–	IGI308	IGI321	2.29	IHM009
802D-1500-300-S150	1.500	3.000	6.622	3.984	2.638	3.256	1.500	1.969	.006	.020	–	IGI308	IGI321	2.43	IHM009
802D-1750-350-S150	1.750	3.500	7.094	4.457	2.638	3.894	1.500	1.969	.020	.020	–	IGI309	IGI322	2.87	IHM010
802D-2000-400-S150	2.000	4.000	7.626	4.988	2.638	4.394	1.500	2.205	.006	.020	–	IGI310	IGI323	3.70	IHM010

IGI300	XPET 0502AP	SCET 050204-UD
IGI301	XPET 0602AP	SCET 050204-UD
IGI302	XPET 0602AP	SCET 060204-UD
IGI303	XPET 0703AP	SCET 060204-UD
IGI304	XPET 0703AP	SCET 070308-UD
IGI305	XPET 0903AP	SCET 070308-UD
IGI306	XPET 0903AP	SCET 09T308-UD
IGI307	XPET 11T3AP	SCET 09T308-UD
IGI308	XPET 11T3AP	SCET 120408-UD
IGI309	XPET 1504AP	SCET 120408-UD
IGI310	XPET 1504AP	SCET 150512-UD
IGI313	XPET 0502AP-SD	SCET 050204-SD
IGI314	XPET 0602AP-SD	SCET 050204-SD
IGI315	XPET 0602AP-SD	SCET 060204-SD
IGI316	XPET 0703AP-SD	SCET 060204-SD
IGI317	XPET 0703AP-SD	SCET 070308-SD
IGI318	XPET 0903AP-SD	SCET 070308-SD
IGI319	XPET 0903AP-SD	SCET 09T308-SD
IGI320	XPET 11T3AP-SD	SCET 09T308-SD
IGI321	XPET 11T3AP-SD	SCET 120408-SD
IGI322	XPET 1504AP-SD	SCET 120408-SD
IGI323	XPET 1504AP-SD	SCET 150512-SD

		Nm		Nm	
IHM001	US 2245-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
IHM002	US 2205-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
IHM003	US 2205-T07P	0.9	US 2205-T07P	0.9	FLAG T07P
IHM004	US 2506-T07P	1.2	US 2506-T07P	1.2	FLAG T07P
IHM005	US 2507-T08P	1.2	US 3007-T08P	2.0	FLAG T08P
IHM006	US 3007-T09P	2.0	US 3007-T09P	2.0	FLAG T09P
IHM007	US 3007-T09P	2.0	US 3009-T09P	2.0	FLAG T09P
IHM008	US 3510-T15P	3.0	US 3508-T15P	3.0	FLAG T15P
IHM009	US 3510-T15P	3.0	US 5012-T15P	5.0	FLAG T15P
IHM010	US 4011-T15P	4.0	US 5012-T15P	5.0	FLAG T15P

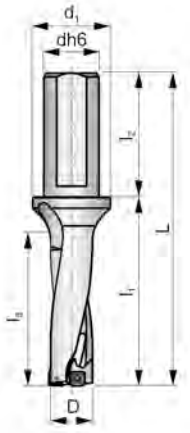
PRAMET

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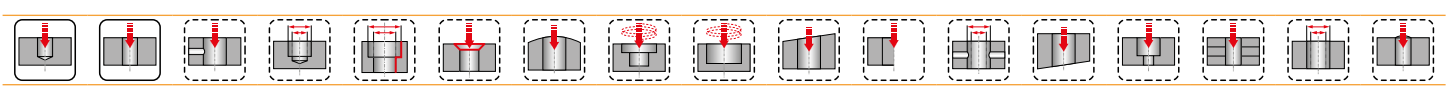
P M K N S

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3D | 1 | ISO 9766



ANSI	D	h_{max}	L	l_1	l_2	l_3	dh6	d_1	-D	D+				lbs	
803D-0594-178-S100	.594	1.783	5.012	2.768	2.244	1.941	1.000	1.378	.012	.012	EP253253	IGI300	IGI313	.71	IHM001
803D-0625-187-S100	.625	1.875	5.102	2.858	2.244	2.047	1.000	1.378	.006	.016	EP253253	IGI300	IGI313	.73	IHM001
803D-0656-196-S100	.656	1.969	5.197	2.953	2.244	2.157	1.000	1.378	.006	.016	EP253253	IGI300	IGI313	.73	IHM001
803D-0687-206-S100	.687	2.061	5.287	3.043	2.244	2.244	1.000	1.378	.020	.020	EP253253	IGI301	IGI314	.75	IHM002
803D-0709-212-S100	.709	2.127	5.354	3.110	2.244	2.323	1.000	1.378	.014	.008	EP253253	IGI301	IGI314	.77	IHM002
803D-0750-225-S100	.750	2.250	5.476	3.232	2.244	2.425	1.000	1.378	.012	.014	EP253253	IGI301	IGI314	.79	IHM002
803D-0766-229-S100	.766	2.298	5.528	3.283	2.244	2.484	1.000	1.378	.008	.020	EP253253	IGI302	IGI315	.79	IHM003
803D-0787-236-S100	.787	2.361	5.591	3.346	2.244	2.559	1.000	1.378	.008	.020	EP253253	IGI302	IGI315	.82	IHM003
803D-0812-243-S100	.812	2.436	5.665	3.421	2.244	2.646	1.000	1.378	.004	.019	EP253253	IGI302	IGI315	.82	IHM003
803D-0827-248-S100	.827	2.481	5.709	3.465	2.244	2.697	1.000	1.378	.004	.019	EP253253	IGI302	IGI315	.84	IHM003
803D-0875-262-S100	.875	2.625	5.854	3.610	2.244	2.866	1.000	1.378	.011	.019	EP253253	IGI303	IGI316	.88	IHM004
803D-0906-271-S100	.906	2.718	5.945	3.701	2.244	2.972	1.000	1.378	.008	.019	EP253253	IGI304	IGI317	.90	IHM005
803D-0922-276-S100	.922	2.766	5.996	3.752	2.244	3.031	1.000	1.378	.008	.019	EP253253	IGI304	IGI317	.95	IHM005
803D-0937-281-S100	.937	2.811	6.039	3.795	2.244	3.083	1.000	1.378	.004	.019	EP253253	IGI304	IGI317	.93	IHM005
803D-0984-295-S125	.984	2.952	6.299	3.937	2.362	3.150	1.250	1.654	.004	.019	EP324058	IGI304	IGI317	1.37	IHM005
803D-1000-300-S125	1.000	3.000	6.346	3.984	2.362	3.205	1.250	1.654	.004	.019	EP324058	IGI304	IGI317	1.39	IHM005
803D-1032-310-S125	1.032	3.096	6.441	4.079	2.362	3.315	1.250	1.654	.004	.019	EP324058	IGI305	IGI318	1.41	IHM006
803D-1062-318-S125	1.062	3.186	6.531	4.169	2.362	3.421	1.250	1.654	.020	.008	EP324058	IGI305	IGI318	1.43	IHM006
803D-1109-332-S125	1.109	3.327	6.673	4.311	2.362	3.587	1.250	1.654	.020	.014	EP324058	IGI306	IGI319	1.52	IHM007
803D-1125-337-S125	1.125	3.375	6.720	4.358	2.362	3.642	1.250	1.654	.020	.014	EP324058	IGI306	IGI319	1.52	IHM007
803D-1172-351-S125	1.172	3.516	6.862	4.500	2.362	3.807	1.250	1.654	.014	.020	EP324058	IGI306	IGI319	1.61	IHM007
803D-1187-356-S125	1.187	3.561	6.906	4.543	2.362	3.858	1.250	1.654	.014	.020	EP324058	IGI306	IGI319	1.63	IHM007
803D-1250-375-S150	1.250	3.750	7.370	4.732	2.638	3.921	1.500	1.969	.006	.020	–	IGI307	IGI320	2.31	IHM008
803D-1312-393-S150	1.312	3.936	7.559	4.921	2.638	4.138	1.500	1.969	.020	.020	–	IGI307	IGI320	2.45	IHM008
803D-1375-412-S150	1.375	4.125	7.748	5.110	2.638	4.319	1.500	1.969	.008	.020	–	IGI308	IGI321	2.56	IHM009
803D-1437-431-S150	1.437	4.311	7.933	5.295	2.638	4.535	1.500	1.969	.004	.020	–	IGI308	IGI321	2.62	IHM009
803D-1500-450-S150	1.500	4.500	8.122	5.484	2.638	4.756	1.500	1.969	.006	.020	–	IGI308	IGI321	2.80	IHM009
803D-1750-525-S150	1.750	5.250	8.843	6.205	2.638	5.642	1.500	1.969	.020	.020	–	IGI309	IGI322	3.48	IHM010
803D-2000-600-S150	2.000	6.000	9.626	6.988	2.638	6.394	1.500	2.205	.006	.020	–	IGI310	IGI323	4.70	IHM010

IGI300	XPET 0502AP	SCET 050204-UD
IGI301	XPET 0602AP	SCET 050204-UD
IGI302	XPET 0602AP	SCET 060204-UD
IGI303	XPET 0703AP	SCET 060204-UD
IGI304	XPET 0703AP	SCET 070308-UD
IGI305	XPET 0903AP	SCET 070308-UD
IGI306	XPET 0903AP	SCET 09T308-UD
IGI307	XPET 11T3AP	SCET 09T308-UD
IGI308	XPET 11T3AP	SCET 120408-UD
IGI309	XPET 1504AP	SCET 120408-UD
IGI310	XPET 1504AP	SCET 150512-UD
IGI311	XPET 1504AP	SCET 150512-UD
IGI312	XPET 1904AP	SCET 150512-UD
IGI313	XPET 0502AP-SD	SCET 050204-SD
IGI314	XPET 0602AP-SD	SCET 050204-SD
IGI315	XPET 0602AP-SD	SCET 060204-SD
IGI316	XPET 0703AP-SD	SCET 060204-SD
IGI317	XPET 0703AP-SD	SCET 070308-SD
IGI318	XPET 0903AP-SD	SCET 070308-SD
IGI319	XPET 0903AP-SD	SCET 09T308-SD
IGI320	XPET 11T3AP-SD	SCET 09T308-SD
IGI321	XPET 11T3AP-SD	SCET 120408-SD
IGI322	XPET 1504AP-SD	SCET 120408-SD
IGI323	XPET 1504AP-SD	SCET 150512-SD
IGI324	XPET 1504AP-SD	SCET 150512-SD
IGI325	XPET 1904AP-SD	SCET 150512-SD

		Nm		Nm	
IHM001	US 2245-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
IHM002	US 2205-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
IHM003	US 2205-T07P	0.9	US 2205-T07P	0.9	FLAG T07P
IHM004	US 2506-T07P	1.2	US 2506-T07P	1.2	FLAG T07P
IHM005	US 2507-T08P	1.2	US 3007-T08P	2.0	FLAG T08P
IHM006	US 3007-T09P	2.0	US 3007-T09P	2.0	FLAG T09P
IHM007	US 3007-T09P	2.0	US 3009-T09P	2.0	FLAG T09P
IHM008	US 3510-T15P	3.0	US 3508-T15P	3.0	FLAG T15P
IHM009	US 3510-T15P	3.0	US 5012-T15P	5.0	FLAG T15P
IHM010	US 4011-T15P	3.5	US 5012-T15P	5.0	FLAG T15P
IHM010	US 4011-T15P	4.0	US 5012-T15P	5.0	FLAG T15P

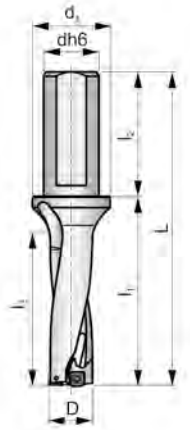
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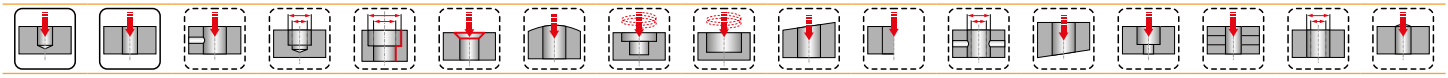
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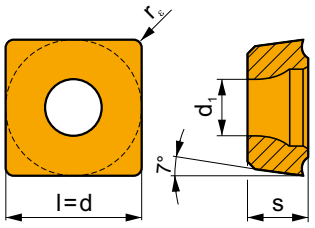
ANSI	D	h_{max}	L	l_1	l_2	l_3	dh6	d_1	-D	D+				lbs	
804D-0594-237-S100	.594	2.376	5.606	3.362	2.244	2.535	1.000	1.378	.012	.012	EP253253	IGI300	IGI313	.73	IHM001
804D-0625-250-S100	.625	2.500	5.728	3.484	2.244	2.673	1.000	1.378	.006	.016	EP253253	IGI300	IGI313	.75	IHM001
804D-0656-262-S100	.656	2.624	5.850	3.587	2.244	2.811	1.000	1.378	.006	.016	EP253253	IGI300	IGI313	.77	IHM001
804D-0687-274-S100	.687	2.748	5.976	3.732	2.244	2.933	1.000	1.378	.020	.020	EP253253	IGI301	IGI314	.79	IHM002
804D-0709-283-S100	.709	2.836	6.063	3.819	2.244	3.031	1.000	1.378	.014	.008	EP253253	IGI301	IGI314	.79	IHM002
804D-0750-300-S100	.750	3.000	6.228	3.984	2.244	3.217	1.000	1.378	.012	.014	EP253253	IGI301	IGI314	.82	IHM002
804D-0766-306-S100	.766	3.064	6.291	4.047	2.244	3.248	1.000	1.378	.008	.020	EP253253	IGI302	IGI315	.84	IHM003
804D-0787-314-S100	.787	3.148	6.378	4.134	2.244	3.346	1.000	1.378	.008	.020	EP253253	IGI302	IGI315	.86	IHM003
804D-0812-324-S100	.812	3.248	6.476	4.232	2.244	3.457	1.000	1.378	.004	.019	EP253253	IGI302	IGI315	.88	IHM003
804D-0827-330-S100	.827	3.308	6.535	4.291	2.244	3.524	1.000	1.378	.004	.019	EP253253	IGI302	IGI315	.90	IHM003
804D-0875-350-S100	.875	3.500	6.728	4.484	2.244	3.740	1.000	1.378	.011	.019	EP253253	IGI303	IGI316	.97	IHM004
804D-0922-368-S100	.922	3.688	6.917	4.673	2.244	3.953	1.000	1.378	.008	.019	EP253253	IGI304	IGI317	1.01	IHM005
804D-0937-374-S100	.937	3.748	6.976	4.732	2.244	4.020	1.000	1.378	.004	.019	EP253253	IGI304	IGI317	1.01	IHM005
804D-0984-393-S125	.984	3.936	7.283	4.921	2.362	4.134	1.250	1.654	.004	.019	EP324058	IGI304	IGI317	1.48	IHM005
804D-1000-400-S125	1.000	4.000	7.346	4.984	2.362	4.205	1.250	1.654	.004	.019	EP324058	IGI304	IGI317	1.52	IHM005
804D-1032-412-S125	1.032	4.128	7.476	5.114	2.362	4.350	1.250	1.654	.004	.019	EP324058	IGI305	IGI318	1.54	IHM006
804D-1062-424-S125	1.062	4.248	7.594	5.232	2.362	4.248	1.250	1.654	.020	.008	EP324058	IGI305	IGI318	1.59	IHM006
804D-1109-443-S125	1.109	4.437	7.783	5.421	2.362	4.697	1.250	1.654	.020	.014	EP324058	IGI306	IGI319	1.68	IHM007
804D-1125-450-S125	1.125	4.500	7.846	5.484	2.362	4.768	1.250	1.654	.020	.014	EP324058	IGI306	IGI319	1.70	IHM007
804D-1172-468-S125	1.172	4.688	8.035	5.673	2.362	4.980	1.250	1.654	.014	.020	EP324058	IGI306	IGI319	1.79	IHM007
804D-1187-474-S125	1.187	4.748	8.094	5.732	2.362	5.043	1.250	1.654	.014	.020	EP324058	IGI306	IGI319	1.83	IHM007
804D-1250-500-S150	1.250	5.000	8.622	5.984	2.638	5.169	1.500	1.969	.006	.020	–	IGI307	IGI320	2.54	IHM008
804D-1312-524-S150	1.312	5.248	8.870	6.232	2.638	5.449	1.500	1.969	.020	.020	–	IGI307	IGI320	2.73	IHM008
804D-1375-550-S150	1.375	5.500	9.122	6.484	2.638	5.693	1.500	1.969	.008	.020	–	IGI308	IGI321	2.87	IHM009
804D-1437-574-S150	1.437	5.748	9.370	6.732	2.638	5.748	1.500	1.969	.004	.020	–	IGI308	IGI321	2.98	IHM009
804D-1500-600-S150	1.500	6.000	9.622	6.984	2.638	6.256	1.500	1.969	.006	.020	–	IGI308	IGI321	3.20	IHM009
804D-1750-700-S150	1.750	7.000	10.622	7.984	2.638	7.421	1.500	1.969	.020	.020	–	IGI309	IGI322	4.12	IHM010
804D-2000-800-S150	2.000	8.000	11.622	8.984	2.638	8.390	1.500	2.205	.006	.020	–	IGI310	IGI323	5.67	IHM010

IGI300	XPET 0502AP	SCET 050204-UD
IGI301	XPET 0602AP	SCET 050204-UD
IGI302	XPET 0602AP	SCET 060204-UD
IGI303	XPET 0703AP	SCET 060204-UD
IGI304	XPET 0703AP	SCET 070308-UD
IGI305	XPET 0903AP	SCET 070308-UD
IGI306	XPET 0903AP	SCET 09T308-UD
IGI307	XPET 11T3AP	SCET 09T308-UD
IGI308	XPET 11T3AP	SCET 120408-UD
IGI309	XPET 1504AP	SCET 120408-UD
IGI310	XPET 1504AP	SCET 150512-UD
IGI311	XPET 1504AP	SCET 150512-UD
IGI312	XPET 1904AP	SCET 150512-UD
IGI313	XPET 0502AP-SD	SCET 050204-SD
IGI314	XPET 0602AP-SD	SCET 050204-SD
IGI315	XPET 0602AP-SD	SCET 060204-SD
IGI316	XPET 0703AP-SD	SCET 060204-SD
IGI317	XPET 0703AP-SD	SCET 070308-SD
IGI318	XPET 0903AP-SD	SCET 070308-SD
IGI319	XPET 0903AP-SD	SCET 09T308-SD
IGI320	XPET 11T3AP-SD	SCET 09T308-SD
IGI321	XPET 11T3AP-SD	SCET 120408-SD
IGI322	XPET 1504AP-SD	SCET 120408-SD
IGI323	XPET 1504AP-SD	SCET 150512-SD
IGI324	XPET 1504AP-SD	SCET 150512-SD
IGI325	XPET 1904AP-SD	SCET 150512-SD

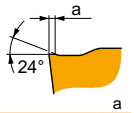
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IHM002	US 2205-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
IHM003	US 2205-T07P	0.9	US 2205-T07P	0.9	FLAG T07P
IHM004	US 2506-T07P	1.2	US 2506-T07P	1.2	FLAG T07P
IHM005	US 2507-T08P	1.2	US 3007-T08P	2.0	FLAG T08P
IHM006	US 3007-T09P	2.0	US 3007-T09P	2.0	FLAG T09P
IHM007	US 3007-T09P	2.0	US 3009-T09P	2.0	FLAG T09P
IHM008	US 3510-T15P	3.0	US 3508-T15P	3.0	FLAG T15P
IHM009	US 3510-T15P	3.0	US 5012-T15P	5.0	FLAG T15P
IHM010	US 4011-T15P	3.5	US 5012-T15P	5.0	FLAG T15P
IHM010	US 4011-T15P	4.0	US 5012-T15P	5.0	FLAG T15P

SCET

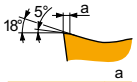
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0502	.219	.094	.219	.094
0602	.250	.114	.250	.094
0703	.312	.138	.312	.125
09T3	.375	.177	.375	.156
1204	.500	.220	.500	.187
1505	.625	.220	.625	.219



		ANSI		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
		SCET 050204-UD	**D8330**	■	□	■				●	+++	.016	.002	.004	–	–
			D9335	■	□	■				●	+++	.016	.002	.004	–	–
		SCET 060204-UD	**D8330**	■	□	■				●	+++	.016	.002	.006	–	–
			D9335	■	□	■				●	+++	.016	.002	.006	–	–
		SCET 070308-UD	**D8330**	■	□	■				●●	+++	.031	.003	.007	–	–
			D9335	■	□	■				●●	+++	.031	.003	.007	–	–
		SCET 09T308-UD	**D8330**	■	□	■				●●	+++	.031	.003	.008	–	–
			D9335	■	□	■				●●	+++	.031	.003	.008	–	–
		SCET 120408-UD	**D8330**	■	□	■				●●	+++	.031	.004	.009	–	–
			D9335	■	□	■				●●	+++	.031	.004	.009	–	–
		SCET 150512-UD	**D8330**	■	□	■				●●	+++	.047	.004	.010	–	–
			D9335	■	□	■				●●	+++	.047	.004	.010	–	–
		SCET 050204-SD	**D8330**	■	■		□	◪		●	+++	.016	.002	.004	–	–
			D9335	■	■			◪		●	+++	.016	.002	.004	–	–
		SCET 060204-SD	**D8330**	■	■		□	◪		●	+++	.016	.002	.006	–	–
			D9335	■	■			◪		●	+++	.016	.002	.006	–	–
		SCET 070308-SD	**D8330**	■	■		□	◪		●●	+++	.031	.003	.007	–	–
			D9335	■	■			◪		●●	+++	.031	.003	.007	–	–
		SCET 09T308-SD	**D8330**	■	■		□	◪		●●	+++	.031	.003	.008	–	–
			D9335	■	■			◪		●●	+++	.031	.003	.008	–	–
		SCET 120408-SD	**D8330**	■	■		□	◪		●●	+++	.031	.004	.009	–	–
			D9335	■	■			◪		●●	+++	.031	.004	.009	–	–
		SCET 150512-SD	**D8330**	■	■		□	◪		●●	+++	.047	.004	.010	–	–
			D9335	■	■			◪		●●	+++	.047	.004	.010	–	–



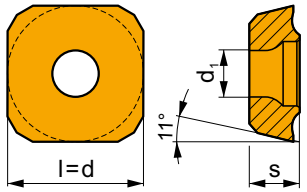
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SCET 09T308-UD	.006
SCET 120408-UD	.008
SCET 150512-UD	.008



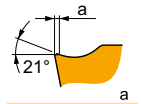
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SCET 09T308-SD	.004
SCET 120408-SD	.004
SCET 150512-SD	.004

XPET

	d	d_1	l	s
0502	.219	.094	.219	.094
0602	.250	.102	.250	.094
0703	.312	.114	.313	.125
0903	.375	.138	.375	.125
11T3	.453	.154	.453	.156
12T3	.500	.154	.500	.156
1504	.625	.177	.625	.187
1904	.750	.177	.750	.187

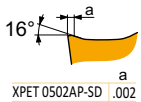


ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
XPET 0502AP	**D8345**	■	□	◪				+++	–	.002	.004	–	–
XPET 0602AP	**D8345**	■	□	◪				+++	–	.002	.006	–	–
XPET 0703AP	**D8345**	■	□	◪				+++	–	.003	.007	–	–
XPET 0903AP	**D8345**	■	□	◪				+++	–	.003	.008	–	–
XPET 11T3AP	**D8345**	■	□	◪				+++	–	.004	.009	–	–
XPET 12T3AP	**D8345**	■	□	◪				+++	–	.004	.009	–	–
XPET 1504AP	**D8345**	■	□	◪				+++	–	.004	.010	–	–
XPET 1904AP	**D8345**	■	□	◪				+++	–	.004	.010	–	–



	a
XPET 0502AP	.004
XPET 0602AP	.004
XPET 0703AP	.006
XPET 0903AP	.010
XPET 11T3AP	.010
XPET 12T3AP	.010
XPET 1504AP	.010
XPET 1904AP	.010

ANSI		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
XPET 0502AP-SD	**D8345**	■	■			◪		+++	–	.002	.004	–	–
XPET 0602AP-SD	**D8345**	■	■			◪		+++	–	.002	.006	–	–
XPET 0703AP-SD	**D8345**	■	■			◪		+++	–	.003	.007	–	–
XPET 0903AP-SD	**D8345**	■	■			◪		+++	–	.003	.008	–	–
XPET 11T3AP-SD	**D8345**	■	■			◪		+++	–	.004	.009	–	–
XPET 12T3AP-SD	**D8345**	■	■			◪		+++	–	.004	.009	–	–
XPET 1504AP-SD	**D8345**	■	■			◪		+++	–	.004	.010	–	–
XPET 1904AP-SD	**D8345**	■	■			◪		+++	–	.004	.010	–	–



	a
XPET 0502AP-SD	.002
XPET 0602AP-SD	.002
XPET 0703AP-SD	.003
XPET 0903AP-SD	.004
XPET 11T3AP-SD	.004
XPET 12T3AP-SD	.004
XPET 1504AP-SD	.004
XPET 1904AP-SD	.005

DRILLING
- TECHNICAL INFORMATION

TALADRADO
- APARTADO TÉCNICO

PERÇAGE
- INFORMATIONS TECHNIQUES

WORKPIECE MATERIALS – CLASSIFICATION
CLASIFICACIÓN DE MATERIALES MECANIZADOS

Correctly identifying the machined material is one of the most important factors when choosing the tool and the initial machining conditions. To facilitate this, the machined materials are divided into six basic groups, or into twenty–four subgroups, combining materials that qualitatively cause the same type of loading (pressure) on the cutting edge and therefore a similar type of wear.

Thus the first step is to assign the workpiece material to one of the (sub)groups – see table 5. below.

Identificar correctamente el material mecanizado es uno de los factores más importantes al momento de elegir la herramienta y la condiciones iniciales de mecanizado. Para facilitar esto, los materiales mecanizados se dividen en seis grupos básicos, o en veinticuatro subgrupos, combinando materiales que cualitativamente pueden causar el mismo tipo de carga (esfuerzo) en la arista de de corte y por lo tanto un tipo similar de desgaste. Así, el primer paso es asignar el material de la pieza a uno de los (sub) grupos - véase la tabla 5. a continuación.

Table 5

Tabla 5

Subgroup Sub-grupo		DORMER AMG	Subgroup definition	Definición de sub-grupo	Example Ejemplo	Correction factor / Factor de corrección
P	P1	1.1, 1.2	Steel and cast steel with very good (enhanced) machinability; automatic steel and low–carbon steel	Acero y fundición de acero con muy buena (mejorado) mecanización, acero automático y de acero bajo en carbono	9SMn28	1.33
	P2	1.3	Non–alloy and low–alloy cast steel and steel with a medium carbon content (0.25 < C < 0.55); rigidity of up to 900 MPa and hardness of 160 – 255 HB	Sin alear y de baja aleación de acero fundido y acero con un contenido de carbono medio (0,25 < C < 0,55); rigidez de hasta 900 MPa y una dureza de 160 – 255 HB	C45	1.00
	P3	1.4	Less machinable non–alloy and low–alloy cast steel and steel with a medium carbon content; rigidity of up to 1000 MPa and hardness of up to 300 HB	Menos mecanizable sin alear y de acero fundido de baja aleación y acero con un contenido de carbono medio; rigidez de hasta 1000 MPa y una dureza de hasta 300 HB	41CrAlMo7	0.80
	P4	1.5	Medium – to high-alloy cast steel and steel (usually with a carbon content of 0.55 < C); rigidity of up to 1270 MPa and hardness of up to 375 HB (resp. 40 HRC)	Medio – alto-aleación de acero fundido y acero (normalmente con un contenido de carbono de 0,55 < C); rigidez de hasta 1270 MPa y una dureza de hasta 375HB (resp. 40 HRC)	X210Cr12	0.60
M	M1	2.1	Ferritic corrosion–resistant steel	Acero resistente a la corrosión ferrítico	X6Cr17	1.09
	M2	(2.1, 2.4)	Martensitic corrosion–resistant steel	Acero resistente a la corrosión martensítico	X 45CrSi 9.3	1.06
	M3	2.2	Austenitic corrosion–resistant steel	Acero resistente a la corrosión austenítico	X 6CrNiTi 18 10	1.00
	M4	2.3, 2.4	Ferritic–austenitic (duplex) and super–austenitic corrosion–resistant steel	Ferrítico-austenítico (dúplex) y super-austenítico acero resistente a la corrosión	X 53 CrMnNiN21 9	0.93
K	K1	3.1, 3.2	Grey cast iron	Gris hierro fundido	GG–25	1.00
	K2	3.1, 3.2	Tempered cast iron	Hierro fundido templado	GTS 45–06	0.95
	K3	3.3	Ductile cast iron ferritic and ferrite–pearlite	Fundición ferrítico hierro y ferrita-perlita	GGG40	0.90
	K4	3.4	Ductile cast iron pearlite–ferritic, pearlite–sorbitic and pearlite	Fundición dúctil de perlita y ferrita, perlita-sorbitic y perlita	GGG–70	0.85
N	N1	7.1	Aluminium and its soft alloys (with a low Si content), particularly formed and cast (non–hardened); hardness of up to 100 HB	Aluminio y sus aleaciones blandas (con bajo contenido de Si), especialmente formado y yeso (no resistente); dureza de hasta 100 HB	AlMgSi1	1.00
	N2	7.2, 7.3, 7.4	Hard Al alloys, particularly cast and hardened (with a high Si content)	Duro aleaciones de Al, en particular emitidos y endurecidos (con un alto contenido de Si)	G–AlSi11	0.65
	N3	6.1, 6.2, 6.3	Soft Cu alloys, automatic brass and other types of soft brass and bronze	Aleaciones Cu suaves, latón automática y otros tipos de latón blando y bronce	G–CuSn5Zn5Pb	0.60
	N4	6.4	Less machinable and hard Cu alloys	Aleaciones Cu menos mecanizables y duros	G–CuAl10Fe	0.40
S	S1	4.1, 4.2, 4.3	Technically pure Ti, alloys α , α+β and β, refined and aged alloys	Técnicamente ti puro, aleaciones α, α+β y β, refinado y aleaciones viejas	TiAl6V4	1.75
	S2	(9.1)	Fe–based alloys	Aleaciones a base de hierro	X10NiCrAlTi3221	1.20
	S3	5.1, 5.2, 5.3	Ni–based alloys	Aleaciones a base de niquel	INCONEL 718	1.20
	S4	(9.1)	Co–based alloys	Aleaciones a base de cobalto	Haynes 25	0.75
H	H1	1.6	Highly rigid and hard tool steel and hardened and refined steel with a hardness of 40 – 50 HRC	Muy rígido y duro y acero para herramientas endurecido y acero refinado, con una dureza de 40 – 50 HRC	X30WCrV9.3	1.15
	H2	–	Hardened and white cast iron 350 – 600 HV	Hierro fundido templado y blanco 350 – 600 HV	G–X 260 NiCr 4 2	1.10
	H3	1.7	Hardened and refined steel with hardness in the 50 – 55 HRC range	Acero templado y refinada con dureza en el 50 – 55 gama HRC	X38CrMoV5.1	1.00
	H4	1.8	Hardened and refined (mostly tool) steel with hardness of more than 55 HRC	Endurecido y refinado (en su mayoría de la herramienta) de acero con dureza de más de 55 HRC	X210Cr12	0.95

CLASSIFICATION DES GROUPES DE MATÉRIAUX À USINER

L'identification du matériau à usiner est l'un des facteurs les plus importants pour choisir l'outil et les conditions de coupe de départ. Pour simplifier ce choix, les matériaux usinés sont divisés en six groupes de base, ou vingt quatre sous-groupes. Dans chacun sont associés des matériaux qui causent le même type de charge sur l'arête de coupe et également un type d'usure similaire. C'est pourquoi la première étape consiste à identifier le matériau à usiner parmi les (sous-)groupes référencés - voir tableau N°5 ci-dessous.

Tableau 5

Subgrupo Sous-groupe		DORMER AMG	Définition du sous-groupe	Exemplo Exemple	Correção Standard Correction à la norme
P	P1	1.1, 1.2	Acier et acier coulé avec une usinabilité améliorée ; acier de construction et acier à faible teneur en carbone	9SMn28	1.33
	P2	1.3	Acier et acier coulé non allié et faiblement allié à moyenne teneur en carbone (0,25 < C < 0,55); résistance jusqu'à 900 MPa et dureté de 160 – 255 HB	C45	1.00
	P3	1.4	Acier et acier coulé non allié et faiblement allié à moyenne teneur en carbone plus difficiles à usiner; résistance jusqu'à 1000 MPa et dureté jusqu'à 300 HB	41CrAlMo7	0.80
	P4	1.5	Acier et acier coulé moyennement et fortement allié (généralement avec une teneur en carbonne 0,55 < C); résistance jusqu'à 1270 MPa et dureté jusqu'à 375 HB HRC)	X210Cr12	0.60
M	M1	2.1	Aciers inoxydables ferritiques résistants à la corrosion	X6Cr17	1.09
	M2	(2.1, 2.4)	Aciers inoxydables martensitiques résistants à la corrosion	X 45CrSi 9.3	1.06
	M3	2.2	Aciers inoxydables austénitiques résistants à la corrosion	X 6CrNiTi 18 10	1.00
	M4	2. , 2.4	Aciers inoxydables ferritiques-austénitiques (duplex) et super austénitiques résistants à la corrosion	X 53 CrMnNiN21 9	0.93
K	K1	3.1, 3.2	Fontes grises	GG–25	1.00
	K2	3.1, 3.2	Fontes trempées	GTS 45–06	0.95
	K3	3.3	Fontes ductiles ferritiques et ferritiques-perlitiques	GGG40	0.90
	K4	3.4	Fontes ductiles perlites-ferrites, perlites et de perlites sorbitiques	GGG–70	0.85
N	N1	7.1	L'aluminium et ses alliages doux (à faible teneur en Si), en particulier formés et coulés (non trempé); dureté jusqu'à 100 HB	AlMgSi1	1.00
	N2	7.2, 7.3, 7.4	Alliages Al durs, en particulier coulés et traités (à haute teneur en Si)	G–AlSi11	0.65
	N3	6.1, 6.2, 6.3	Alliages Cu doux, laiton automatique et autres types de laiton et de bronze tendre	G–CuSn5Zn5Pb	0.60
	N4	6.4	Alliages moins faciles à usiner et alliages durs Cu	G–CuAl10Fe	0.40
S	S1	4.1, 4.2, 4.3	Ti techniquement pur, alliages α, $\alpha+\beta$ et β, alliages affinés et vieillis	TiAl6V4	1.75
	S2	(9.1)	Alliages base Fe	X10NiCrAlTi3221	1.20
	S3	5.1, 5.2, 5.3	Alliages base Ni	INCONEL 718	1.00
	S4	(9.1)	Alliages base Co	Haynes 25	0.75
H	H1	1.6	Aciers à outils très résistants durs, trempés, affinés avec une dureté de 40 – 50 HRC	X30WCrV9.3	1.15
	H2	–	Fontes trempées et blanches 350 – 600 HV	G–X 260 NiCr 4 2	1.10
	H3	1.7	Aciers trempés et affinés avec une dureté dans la plage 50 – 55 HRC	X38CrMoV5.1	1.00
	H4	1.8	Aciers trempés et affinés (principalement acier à outil) avec une dureté de plus de 55 HRC	X210Cr12	0.95

DRILLING GRADES
CALIDADES DE TALADRADO
CODIFICATION DES NUANCES

D	8	3	3	0
Application Aplicación Application	Coating / Substrate Recubrimiento / Sustrato Revêtement / Substrat	Sequence number Número de secuencia Numéro de séquence	ISO range Gama ISO Plage ISO	

D	Drilling Taladrado Perçage
M	Milling Fresado Fraisage
T	Turning Torneado Tournage

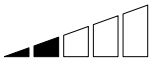
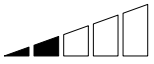
0 PVD **1 CVD**	Special application Aplicación especial Application spéciale
2 PVD **3 CVD**	Free Libre Libre
4 PVD **5 CVD**	Cast iron Fundición Fonte
6 PVD **7 CVD**	Group M, S Grupos M, S Groupes M, S
8 PVD **9 CVD**	Universal Universal Universel
B	CBN
C	Ceramic Cerámica Céramique
D	PCD
T	Cermet Cermet Cermet

1 – 9

	01 – 50
	**01 – 05**
	**05 – 10**
	**10 – 20**
	**20 – 30**
	**30 – 40**
	**40 – 50**

Table 2
Tabla 2
Tableau 2

DRILLING GRADES
DESCRIPCIÓN DE CALIDADES
CODIFICATION DES NUANCES

Grade Identification Calidad Désignation de la nuance	Area of Application Área de aplicación Domaine d'application	Application / Aplicación/ Application	Feed Avance Avance	Cutting speed Velocidad de corte Vitesse de coupe	Resistance to adverse Working Conditions Resistencia a condiciones de trabajo adversas Résistance aux chocs et aux conditions défavorables	Substrate Sustrato Substrat	Coating Recubrimiento Revêtement	Colour / Color Couleur	Coolant benefit / Refrigerante Bénéfice de l'arrosage	Drilling Taladrado Perçage	Boring Mandrinado Alésage
D9335	P20 - P35 M15 - M30 K15 - K35 S10 - S20 H10 - H20	■ ■ ■ ◪ □				FGM	MT-CVD		+ + +	✓	
D8330	P20 - P35 M15 - M30 K15 - K35 N10 - N25 S10 - S20 H10 - H20	■ ■ ■ □ ◪ □				submicron H	PVD		+ + +	✓	
D8345	P25 - P45 M15 - M35 K15 - K35 S15 - S25 H15 - H25	◪ ■ ■ ■ □				submicron H	PVD		+ + +	✓	

	Substrate / Sustrato Substrat		
submicron H	WC-Co based substrate fine grained (< 1 µm)	Sustrato de grano fino de base WC-Co (<1 µm)	Substrat base WC-Co à grains fins (< 1 µm)
FGM	Functionally graded substrate	Sustrato de grado funcional	Substrat gradient fonctionnel
	Coating / Recubrimiento Revêtement		
MT-CVD	Medium-temperature chemical method of coating	Método de recubrimiento químico a media temperatura	Revêtement par dépôt chimique en phase vapeur à température moyenne
PVD	Low-temperature physical method of coating	Método de recubrimiento físico a baja temperatura	Revêtement par dépôt physique en phase vapeur à basse température

PRAMET

Table 3
Tabla 3
Tableau 3

RECOMMENDED CUTTING CONDITIONS FOR INDEXABLE DRILLS
CONDICIONES DE CORTE RECOMENDADAS PARA BROCAS CON PLAQUITAS INTERCAMBIABLES
CONDITIONS DE COUPE RECOMMANDÉES POUR LES FORETS À PLAQUETTES INDEXABLES

802D, 803D (XPET..AP, SCET..-UD)

	Dormer AMG *	D9335		D8345			f					
			v_c		v_c		Ø .591	Ø .787	Ø .984	Ø 1.181	Ø 1.575	Ø 2.283
P1	1.1, 1.2	■	1099	■	886	■	.003	.003	.004	.004	.005	.006
P2	1.3	■	820	■	656	■	.004	.005	.006	.007	.008	.011
P3	1.4	■	656	■	525	■	.005	.006	.007	.008	.009	.013
P4	1.5	■	492	■	394	■	.005	.006	.006	.007	.009	.012
M1	2.1	□	459	□	426	□	.005	.006	.006	.007	.009	.012
M2	(2.1, 2.4)	□	443	□	410	□	.004	.005	.006	.007	.008	.011
M3	2.2	□	410	□	377	□	.003	.003	.004	.004	.005	.006
M4	2.3, 2.4	□	394	□	361	□	.003	.003	.004	.004	.005	.006
K1	3.1, 3.2	■	623	■	492	◪	.006	.006	.007	.008	.010	.013
K2	3.1, 3.2	■	607	■	476	◪	.006	.006	.007	.008	.010	.013
K3	3.3	■	574	■	443	◪	.006	.006	.007	.008	.010	.013
K4	3.4	■	541	■	426	◪	.006	.006	.007	.008	.010	.013

802D, 803D (XPET..AP-SD, SCET..-SD)

	Dormer AMG *	D9335		D8330		D8345	f					
			v_c		v_c		Ø .591	Ø .787	Ø .984	Ø 1.181	Ø 1.575	Ø 2.283
P1	1.1, 1.2	■	1099	■	886	■	.003	.004	.004	.004	.006	.007
P2	1.3	■	820	■	656	■	.004	.005	.006	.007	.008	.011
P3	1.4	■	656	■	525	■	.005	.006	.007	.008	.009	.013
P4	1.5	■	–	■	–	■	–	–	–	–	–	–
M1	2.1	■	459	■	426	■	.005	.006	.006	.007	.009	.012
M2	(2.1, 2.4)	■	443	■	410	■	.004	.005	.006	.007	.008	.011
M3	2.2	■	410	■	377	■	.003	.003	.004	.004	.005	.006
M4	2.3, 2.4	■	394	■	361	■	.003	.003	.004	.004	.005	.006
N1	7.1	□	1476	□	1312	□	.005	.006	.007	.008	.009	.013
N2	7.2, 7.3, 7.4	□	968	□	853	□	.005	.006	.007	.008	.009	.013
N3	6.1, 6.2, 6.3	□	886	□	787	□	.005	.006	.007	.008	.009	.013
N4	6.4	□	590	□	525	□	.005	.006	.006	.007	.009	.012
S1	4.1, 4.2, 4.3	◪	213	◪	180	◪	.003	.004	.004	.004	.006	.007
S2	5.1, 5.2, 5.3	◪	148	◪	131	◪	.003	.004	.004	.004	.006	.007
S3	5.1, 5.2, 5.3	◪	115	◪	98	◪	.003	.003	.004	.004	.005	.006
S4	5.1, 5.2, 5.3	◪	98	◪	82	◪	.003	.003	.004	.004	.005	.006

* The material classification code used by Dormer is added here for cross reference purposes and should be used only as a guide.
* El código de clasificación de materiales utilizado por Dormer se ha añadido aquí como referencia y debe ser utilizado sólo como guía.
* Le code de classification des matériaux utilisé par Dormer est ajouté pour permettre une correspondance et peut être utilisé comme un guide.

Table 3
Tabla 3
Tableau 3

RECOMMENDED CUTTING CONDITIONS FOR INDEXABLE DRILLS
CONDICIONES DE CORTE RECOMENDADAS PARA BROCAS CON PLAQUITAS INTERCAMBIABLES
CONDITIONS DE COUPE RECOMMANDÉES POUR LES FORETS À PLAQUETTES INDEXABLES

804D (XPET..AP, SCET..-UD)

	Dormer AMG *	D9335		D8330		D8345	f					
			v_c		v_c		Ø .591	Ø .787	Ø .984	Ø 1.181	Ø 1.575	Ø 2.283
P1	1.1, 1.2	■	1099	■	886	■	.002	.003	.003	.004	.004	.006
P2	1.3	■	820	■	656	■	.004	.005	.006	.006	.007	.010
P3	1.4	■	656	■	525	■	.005	.006	.006	.007	.009	.012
P4	1.5	■	492	■	394	■	.004	.005	.006	.007	.008	.011
M1	2.1	□	459	□	426	□	.004	.005	.006	.007	.008	.011
M2	(2.1, 2.4)	□	443	□	410	□	.004	.005	.006	.006	.007	.010
M3	2.2	□	410	□	377	□	.002	.003	.003	.004	.004	.006
M4	2.3, 2.4	□	394	□	361	□	.002	.003	.003	.004	.004	.006
K1	3.1, 3.2	■	623	■	492	◪	.005	.006	.007	.008	.009	.013
K2	3.1, 3.2	■	607	■	476	◪	.005	.006	.007	.008	.009	.013
K3	3.3	■	574	■	443	◪	.005	.006	.007	.008	.009	.013
K4	3.4	■	541	■	426	◪	.005	.006	.007	.008	.009	.013

804D (XPET..AP-SD, SCET..-SD)

	Dormer AMG *	D9335		D8330		D8345	f					
			v_c		v_c		Ø .591	Ø .787	Ø .984	Ø 1.181	Ø 1.575	Ø 2.283
P1	1.1, 1.2	■	1099	■	886	■	.003	.003	.004	.004	.005	.006
P2	1.3	■	820	■	656	■	.004	.005	.006	.006	.007	.010
P3	1.4	■	656	■	525	■	.005	.006	.006	.007	.009	.012
P4	1.5	■	–	■	–	■	–	–	–	–	–	–
M1	2.1	■	459	■	426	■	.004	.005	.006	.007	.008	.011
M2	(2.1, 2.4)	■	443	■	410	■	.004	.005	.006	.006	.007	.010
M3	2.2	■	410	■	377	■	.002	.003	.003	.004	.004	.006
M4	2.3, 2.4	■	394	■	361	■	.002	.003	.003	.004	.004	.006
N1	7.1	□	1476	□	1312	□	.005	.006	.006	.007	.009	.012
N2	7.2, 7.3, 7.4	□	968	□	853	□	.005	.006	.006	.007	.009	.012
N3	6.1, 6.2, 6.3	□	886	□	787	□	.005	.006	.006	.007	.009	.012
N4	6.4	□	590	□	525	□	.004	.005	.006	.007	.008	.011
S1	4.1, 4.2, 4.3	◪	213	◪	180	◪	.003	.003	.004	.004	.005	.006
S2	5.1, 5.2, 5.3	◪	148	◪	131	◪	.003	.003	.004	.004	.005	.006
S3	5.1, 5.2, 5.3	◪	115	◪	98	◪	.002	.003	.003	.004	.004	.006
S4	5.1, 5.2, 5.3	◪	98	◪	82	◪	.002	.003	.003	.004	.004	.006

* The material classification code used by Dormer is added here for cross reference purposes and should be used only as a guide.
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* Le code de classification des matériaux utilisé par Dormer est ajouté pour permettre une correspondance et peut être utilisé comme un guide.

Table 3
Tabla 3
Tableau 3

RECOMMENDED CUTTING CONDITIONS FOR INDEXABLE DRILLS
CONDICIONES DE CORTE RECOMENDADAS PARA BROCAS CON PLAQUITAS INTERCAMBIABLES
CONDITIONS DE COUPE RECOMMANDÉES POUR LES FORETS À PLAQUETTES INDEXABLES

805D (XPET..AP, SCET..-UD)

	Dormer AMG *	D9335		D8330		D8345	f					
			v_c		v_c		Ø .591	Ø .787	Ø .984	Ø 1.181	Ø 1.575	Ø 2.283
P1	1.1, 1.2	■	886	■	705	■	.002	.003	.003	.004	.004	.006
P2	1.3	■	656	■	525	■	.004	.005	.006	.006	.007	.010
P3	1.4	■	525	■	426	■	.005	.006	.006	.007	.009	.012
P4	1.5	■	394	■	328	■	.004	.005	.006	.007	.008	.011
M1	2.1	□	361	□	344	□	.004	.005	.006	.007	.008	.011
M2	(2.1, 2.4)	□	361	□	328	□	.004	.005	.006	.006	.007	.010
M3	2.2	□	328	□	312	□	.002	.003	.003	.004	.004	.006
M4	2.3, 2.4	□	312	□	295	□	.002	.003	.003	.004	.004	.006
K1	3.1, 3.2	■	508	■	394	◪	.005	.006	.007	.008	.009	.013
K2	3.1, 3.2	■	476	■	377	◪	.005	.006	.007	.008	.009	.013
K3	3.3	■	459	■	361	◪	.005	.006	.007	.008	.009	.013
K4	3.4	■	426	■	344	◪	.005	.006	.007	.008	.009	.013

805D (XPET..AP-SD, SCET..-SD)

	Dormer AMG *	D9335		D8330		D8345	f					
			v_c		v_c		Ø .591	Ø .787	Ø .984	Ø 1.181	Ø 1.575	Ø 2.283
P1	1.1, 1.2	■	886	■	705	■	.003	.003	.004	.004	.005	.006
P2	1.3	■	656	■	525	■	.004	.005	.006	.006	.007	.010
P3	1.4	■	525	■	426	■	.005	.006	.006	.007	.009	.012
P4	1.5	■	–	■	–	■	–	–	–	–	–	–
M1	2.1	■	361	■	344	■	.004	.005	.006	.007	.008	.011
M2	(2.1, 2.4)	■	361	■	328	■	.004	.005	.006	.006	.007	.010
M3	2.2	■	328	■	312	■	.002	.003	.003	.004	.004	.006
M4	2.3, 2.4	■	312	■	295	■	.002	.003	.003	.004	.004	.006
N1	7.1	□	1181	□	1050	□	.005	.006	.006	.007	.009	.012
N2	7.2, 7.3, 7.4	□	771	□	689	□	.005	.006	.006	.007	.009	.012
N3	6.1, 6.2, 6.3	□	722	□	640	□	.005	.006	.006	.007	.009	.012
N4	6.4	□	476	□	426	□	.004	.005	.006	.007	.008	.011
S1	4.1, 4.2, 4.3	◪	164	◪	148	◪	.003	.003	.004	.004	.005	.006
S2	5.1, 5.2, 5.3	◪	115	◪	98	◪	.003	.003	.004	.004	.005	.006
S3	5.1, 5.2, 5.3	◪	98	◪	82	◪	.002	.003	.003	.004	.004	.006
S4	5.1, 5.2, 5.3	◪	82	◪	66	◪	.002	.003	.003	.004	.004	.006

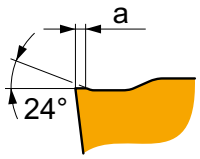
* The material classification code used by Dormer is added here for cross reference purposes and should be used only as a guide.
* El código de clasificación de materiales utilizado por Dormer se ha añadido aquí como referencia y debe ser utilizado sólo como guía.
* Le code de classification des matériaux utilisé par Dormer est ajouté pour permettre une correspondance et peut être utilisé comme un guide.

Table 4
Tabla 4
Tableau 4

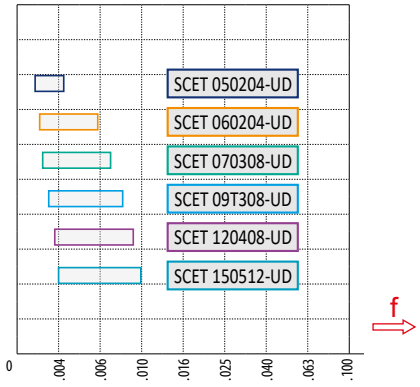
GEOMETRY OF CUTTING INSERTS
GEOMETRÍA DE PLAQUITAS DE CORTE
GÉOMÉTRIE DES PLAQUETTES

SCET . . . . . – UD





	a (in)
SCET 050204-UD	.005
SCET 060204-UD	.006
SCET 070308-UD	.006
SCET 09T308-UD	.006
SCET 120408-UD	.008
SCET 150512-UD	.008



P	M	K	N	S	H
■	□	■			

f ⇨ See diagram / Consultar diagrama / Voir diagramme

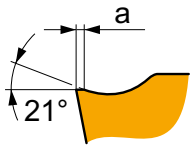




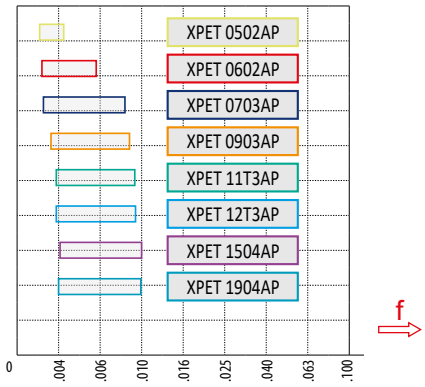
? SCET . . . . . – UD

XPET . . . . AP





	a (in)
XPET 0502AP	.004
XPET 0602AP	.004
XPET 0703AP	.006
XPET 0903AP	.010
XPET 11T3AP	.010
XPET 12T3AP	.010
XPET 1504AP	.010
XPET 1904AP	.010



P	M	K	N	S	H
■	□	◪			

f ⇨ See diagram / Consultar diagrama / Voir diagramme





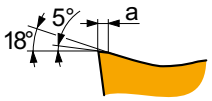
? XPET . . . . AP

Table 4
Tabla 4
Tableau 4

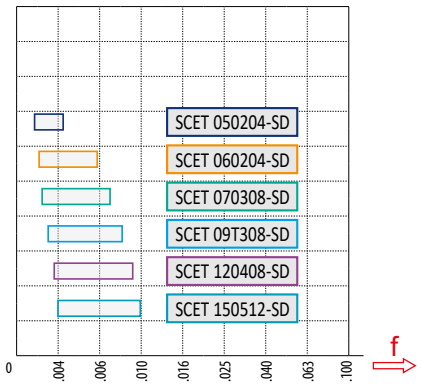
GEOMETRY OF CUTTING INSERTS
GEOMETRÍA DE PLAQUITAS DE CORTE
GÉOMÉTRIE DES PLAQUETTES

SCET . . . . . – SD



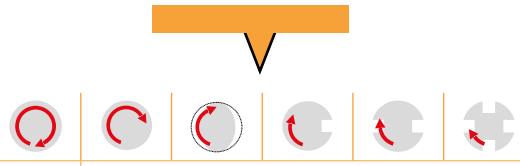


	a(in)
SCET 050204-SD	.002
SCET 060204-SD	.002
SCET 070308-SD	.003
SCET 09T308-SD	.004
SCET 120408-SD	.004
SCET 150512-SD	.004



P	M	K	N	S	H
■	■		□	◪	

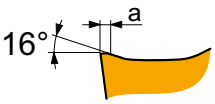
f ⇨ See diagram / Consultar diagrama / Voir diagramme



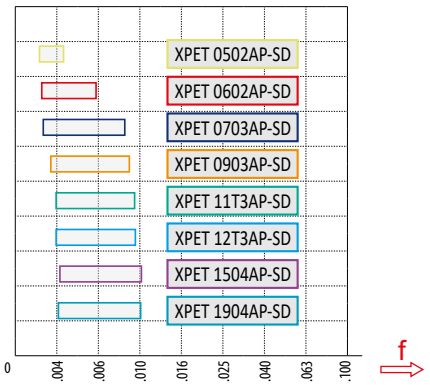
? SCET . . . . . – SD

XPET . . . .AP- SD



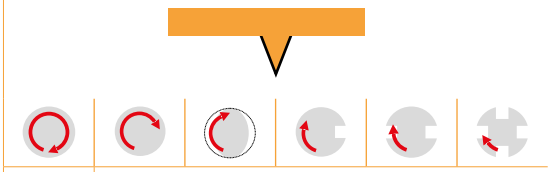


	a(in)
XPET 0502AP-SD	.002
XPET 0602AP-SD	.002
XPET 0703AP-SD	.003
XPET 0903AP-SD	.004
XPET 11T3AP-SD	.004
XPET 12T3AP-SD	.004
XPET 1504AP-SD	.004
XPET 1904AP-SD	.005



P	M	K	N	S	H
■	■		□	◪	

f ⇨ See diagram / Consultar diagrama / Voir diagramme



? XPET . . . . AP – SD

Table 5
Tabla 5
Tableau 5

FORMULAE FOR CALCULATION OF CUTTING PARAMETERS
FÓRMULAS DE CÁLCULO DE LOS PARÁMETROS DE CORTE
FORMULES DE CALCUL DES PARAMÈTRES DE COUPE

NOMENCLATURE AND FORMULA / NOMENCLATURA Y FÓRMULAS
NOMENCLATURES ET FORMULES

Parameter / Parámetro Paramètre	Formula / Fórmula Formule	Unit / Unidad Unité
RPM Velocidad del husillo Vitesse de rotation	$n = \frac{v_c \cdot 12}{D \cdot \pi}$	[1.min^{-1}]
Cutting speed Velocidad de corte Vitesse de coupe	$v_c = \frac{\pi \cdot D \cdot n}{12}$	[ft.min^{-1}]
Feed per minute (speed of feed) Velocida de avance Avance de table	$v_f = n \cdot f$	[in.min^{-1}]
Cross section area of the hole Área de sección transversal del orificio Section transversale du trou	$A = \frac{\pi \cdot D^2}{4}$	[in^2]
Metal removal rate Volumen de viruta Taux d'enlèvement de métal	$Q = f_{min} \cdot A$	[in^3.min^{-1}]
Machining time Tiempo de mecanizado Durée d'usinage	$T_c = \frac{L + h}{f_{min}}$	[min/pcs] [min/pieza] [min/pièce]

D	Diameter of drill	[in]	D	Diámetro de la broca	[in]
f	Feed per revolution	[in/rev]	f	Avance por revolución	[in/rev]
h	Distance from drill point to workpiece before feeding	[in]	h	Distancia desde el punto de taladrado hasta la pieza que se trabaja antes de avanzar	[in]
L	Depth of hole	[in]	L	Profundidad del orificio	[in]

D	Diamètre du foret	[in]
f	Avance par rotation	[tr/min]
h	Distance entre la pointe du foret et la pièce à usiner avant l'avance	[in]
L	Profondeur du trou	[in]

Table 6
Tabla 6
Tableau 6

RECOMMENDED TIGHTENING TORQUES FOR SCREWS
PARES DE APRIETE RECOMENDADOS PARA LOS TORNILLOS
COUPLES DE SERRAGE RECOMMANDÉS POUR LES VIS

						
US 2245-T07P	0.9	FLAG T07P	M 2.2	5.3	D-T7P	MR-0.8-2.0 vario
US 2205-T07P	0.9	FLAG T07P	M2.2	5.4	D-T7P	MR-0.8-2.0 vario
US 2506-T07P	1.2	FLAG T07P	M 2.5	6	D-T7P	MR-0.8-2.0 vario
US 2507-T08P	1.2	FLAG T08P	M 2.5	7	D-T8P	MR-0.8-2.0 vario
US 3007-T08P	2.0	FLAG T08P	M 3	7	D-T8P	MR-1.0-5.0 vario
US 3007-T09P	2.0	FLAG T09P	M 3	7.4	D-T9P	MR-1.0-5.0 vario
US 3009-T09P	2.0	FLAG T09P	M 3	8.7	D-T9P	MR-1.0-5.0 vario
US 3508-T15P	3.0	FLAG T15P	M 3.5	8.3	D-T15P	MR-1.0-5.0 vario
US 3510-T15P	3.0	FLAG T15P	M 3.5	10.6	D-T15P	MR-1.0-5.0 vario
US 4011-T15P	3.5	FLAG T15P	M 4	10.7	D-T15P	MR-1.0-5.0 vario
US 5012-T15P	5.0	FLAG T15P	M 5	12.2	D-T15P	MR-1.0-5.0 vario

Radial adjustment

Hole diameter adjustment and set-up recommendation
Radial adjustment is possible with indexable drills to achieve a smaller or larger hole diameter than the actual drill.
Radial adjustment values are available in the main drill data tables.

Rotating tool
For drilling holes with accuracy IT10 and higher, adjustable holders are recommended when using 802D, 803D, 804D and 805D drills.

Stationary tool
When mounting the drill make sure the drill centre line and workpiece centre are aligned. To achieve a larger hole diameter displace the drill so that the peripheral insert moves in a + away from the workpiece center line (see diagram below).

Ajustement radial

Ajustement du diamètre du trou et recommandations de réglage
Il est possible de régler radialement un foret à plaquettes afin d'obtenir un trou de diamètre plus petit ou plus grand que le diamètre de foret. Les valeurs d'ajustement radial sont présentées dans le tableau des caractéristiques générales des forets.

Outil rotatif
Un support ajustable est recommandé pour le réglage du diamètre d'un trou d'une précision IT10 ou plus avec les forets rotatifs de la série 80xD.

Outil fixe
Lors du montage du foret, s'assurer que le centre du foret et le centre de la pièce à usiner sont alignés. Pour un diamètre de trou plus important, déplacer le foret afin que la plaquette périphérique parte de l'axe central de la pièce.

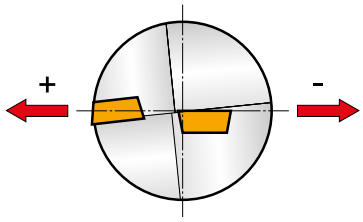
Ajuste radial

Ajuste del diámetro del orificio y recomendaciones de colocación
Las brocas de plaquita se pueden desplazar fuera del centro para lograr un diámetro del orificio más pequeño o más grande que con la broca. Los valores de ajuste radial se encuentran en la tabla principal de datos de las brocas.

Herramienta giratoria
Para taladrar agujeros con tolerancia IT10 y superior con brocas 802D, 803D, 804D y 805D, se recomienda utilizar soportes ajustables.

Herramienta fija
Al montar la broca, asegúrese de que la línea del centro de la broca y la línea del centro de la pieza que se trabajará están alineadas. Para lograr un diámetro del orificio mayor, desplace la broca de forma que la plaquita periférica se mueva en ese sentido desde la línea del centro de la pieza que se trabajará.

Picture / Imagen / Image 1



Tool life

Inserts should be changed when flank wear measures .008 – .016 in at the largest point.
Cutting data recommendations in this catalogue are aimed at achieving tool life of 23 feet drilling depth on the peripheral insert. (20 – 30 mins contact).

Vida útil de la herramienta

No se deberían utilizar plaquitas con un desgaste del flanco superior a .008 – .016 in medidos en el punto mayor.
Las recomendaciones acerca de la velocidad de corte que se mencionan en este catálogo se basan en la vida útil de la herramienta en función de plaquitas periféricas de agujeros perforados con una longitud total de 23 feet (durabilidad 20 – 30 min).

Duree de vie d'outil

Les plaquettes ne doivent pas être utilisées lorsque l'usure de flanc excède .008 – .016 in au point le plus important.
Les recommandations de vitesse de coupe mentionnées dans ce catalogue sont basées sur une durée de vie de plaquette périphérique représentant une longueur totale de trou percé de 23 feet (durabilité 20 – 30 min.)

EP

ADJUSTABLE SLEEVE
CASQUILLO AJUSTABLE
BAGUE EXCENTRIQUE

Table 7 / Tabla 7 / Tableau 7

Shank dia. / Diám. del mango Diam. de queue	Drill dia. / Diám. broca Diam. de foret	Range / Rango Plage
.984	.591 – .954	.016 – -.008
1.260	.965 – 1.575	.016 – -.008

For Milling Machines
Diameter adjustment range

Ajuste del diámetro – para centro de mecanizado
Rango de ajuste del diámetro

Ajustement de diamètre pour centre d'usinage
Plage d'ajustement de diamètre

Picture / Imagen / Image 2

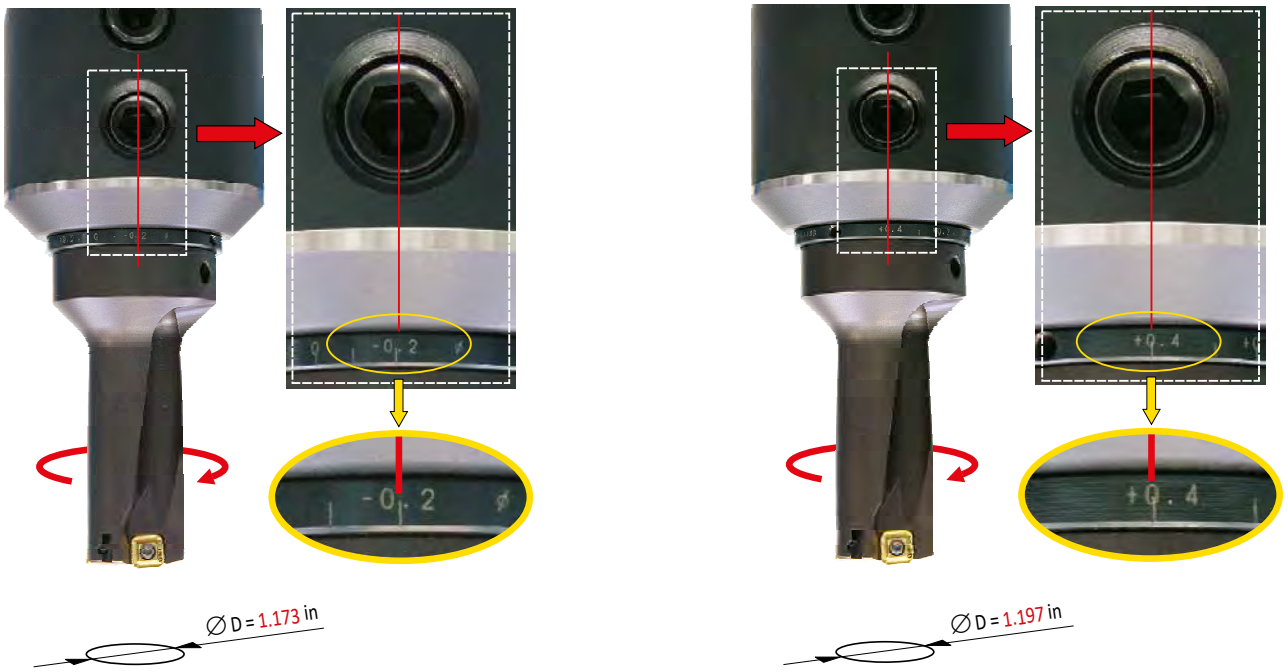
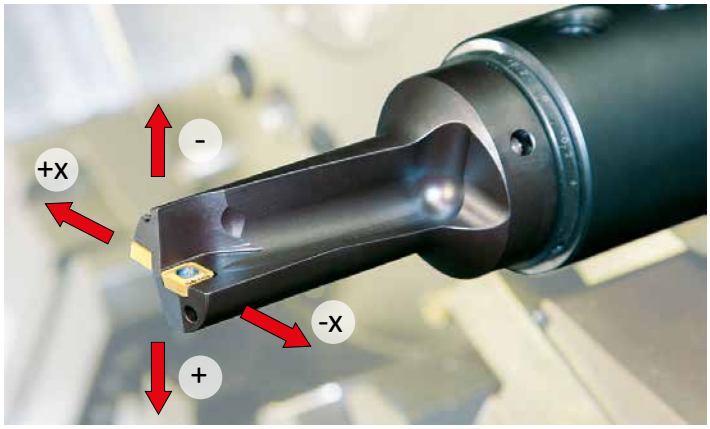


Table 8 / Tabla 8 /Tableau 8

Shank dia. / Diám. del mango Diam. de queue	**Drill dia. / Diám. broca Diam. de foret**	**Range / Rango Plage**
.984	.591 – .954	.008 – -.006
1.260	.965 – 1.575	.008 – -.006

Center height adjustment
– for lathe operation
Ajuste de altura centro
– para funcionamiento de torno
Ajustement de hauteur/centrage
– pour les opérations de tournage

Picture 3
Imagen 3
Image 3

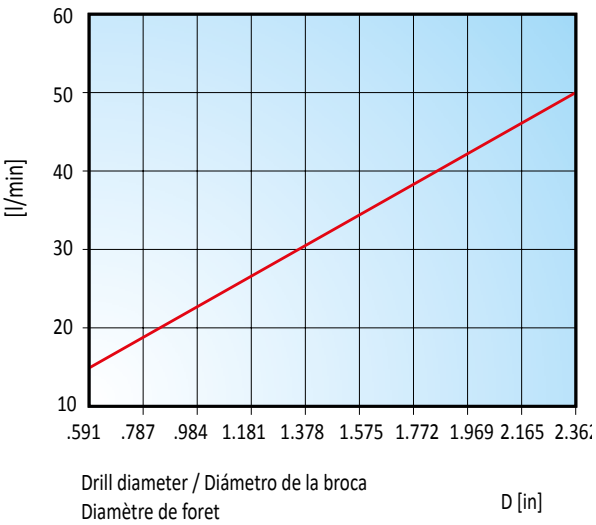


Center height adjustment range
Rango de ajuste de altura centro
Plage d'ajustement de hauteur et de centrage

Recommended pressure of supplied cutting fluid
Presion recomendada del liquido de corte suministrado
Pression recommandée du liquide de coupe

Table / Tabla / Tableau 9

Drill diameter Diámetro de la broca Diamètre de foret	D [in]	Pressure of cutting fluid **p** / Presión del liquido de corte **p** / Pression du liquide de coupe **p**	
		Drill length / Longitud de la broca / Longueur de foret	
		2.0 - 2.5 D	**3.0 - 5.0 D**
.591 – .984		87 psi	174 psi
1.024 – 1.575		65 psi	130 psi
> 1.575		44 psi	87 psi



Coolant volume requirement

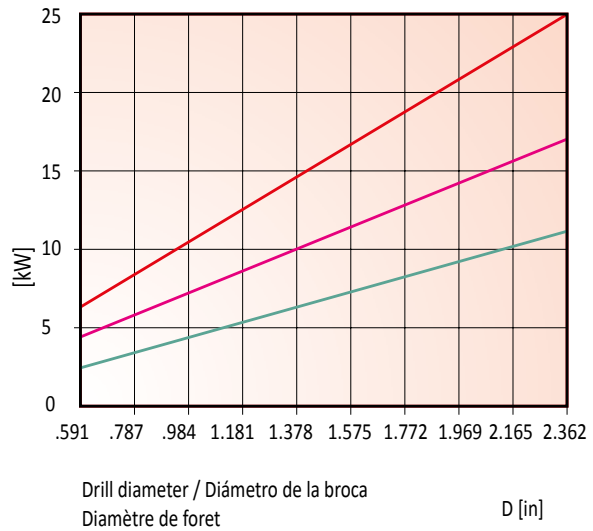
DRY DRILLING
Pressurised air through the drill is recommended when drilling without coolant in cast iron and steel

Requisito de volumen de refrigerante

TALADRADO EN SECO
Se puede taladrar fundición o acero sin refrigerante, aunque se necesitará aire presurizado a través de la broca al realizar el taladrado.

Débit de liquide de refroidissement nécessaire

PERÇAGE À SEC
Il est possible de percer sans liquide de refroidissement dans la fonte et l'acier, à condition d'utiliser de l'air comprimé à travers le foret.



Net power consumption
Consumo eléctrico neto
Puissance consommée nette

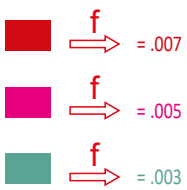
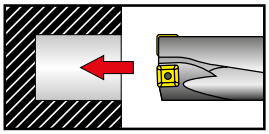
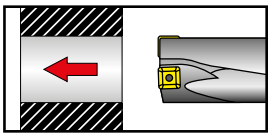
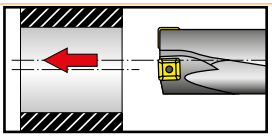
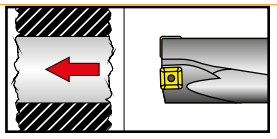
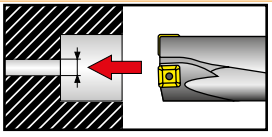
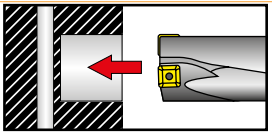
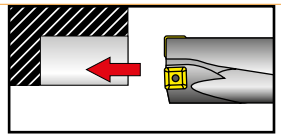
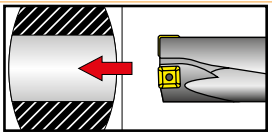
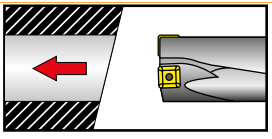
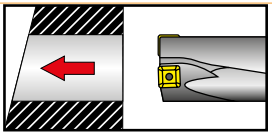
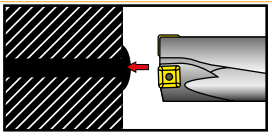
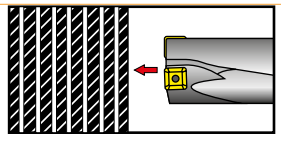


Table 10
Tabla 10
Tableau N°10

COMMON MACHINING DATA
CARACTERISTICAS COMUNES DE TRABAJO
DONNÉES D'USINAGE GÉNÉRALES

	**BLIND HOLE DRILLING** For drilling holes deeper than 1D internal cooling is necessary.	**TALADRADO DE AGUJERO CIEGO** Para agujeros con una profundidad mayor de 1xD es necesario refrigerante.	**PERÇAGE D'UN TROU BORGNE** L'arrosage est nécessaire pour un trou plus profond que 1xD
	**THROUGH HOLE DRILLING** A disc can be produced when the indexable drill exits the material. This disc can be ejected at high speed when the workpiece is rotating. It is essential that the machine is adequately guarded to ensure operator safety	**TALADRADO DE AGUJERO PASANTE** Se puede producir un disco a la salida de la broca de plaquitas que puede ser proyectado a gran velocidad cuando la pieza esta girando. Es esencial que la máquina esté protegida adecuadamente para garantizar la seguridad del operario.	**PERÇAGE D'UN TROU DÉBOUCHANT** Une rondelle peut être produite lors de la sortie du foret hors de la pièce. Pour la sécurité de l'opérateur, il est essentiel d'équiper la machine de dispositifs de protection.
	**OFF-CENTER DRILLING** Decrease the feed to lower recommended values for particular inserts. See inserts description pages for indexable drills. Do not exceed radial adjustment values.	**BROCA DESCENTRADA** Reducir el avance al mínimo recomendado para las plaquitas utilizadas. Ver la descripción de las plaquitas. No exceder los valores de ajuste radial.	**PERÇAGE EXCENTRÉ** Diminuer l'avance jusqu'au plus bas de celle recommandée pour les plaquettes sélectionnées. Voir les pages géométries de plaquettes. Ne pas dépasser les valeurs de réglage radial.
	**STARTING ON UNEVEN AND CAST SURFACES** Decrease the feed by 50% on entrance for indexable drills until both inserts are engaged.	**INICIO DEL TALADRADO EN SUPERFICIES IRREGULARES** Reducir el avance un 50% a la entrada hasta que las dos plaquitas estén dentro del agujero.	**ALÉSAGE SUR DES SURFACES IRREGULIÈRES ET MOULÉES** Diminuer l'avance à la pénétration des forets à plaquettes indexables, jusqu'à ce que les deux plaquettes soient engagées.
	**BORING AND DRILLING INTO PILOT HOLES** If a pre-drilled hole is larger than 1/4 drill diameter, decrease the feed.	**TALADRADO Y MANDRINADO CON AGUJERO PILOTO** Si el agujero piloto es mayor de 1/4 del diámetro de la broca, reducir el avance.	**ALÉSAGE ET PERÇAGE DANS UN TROU PRÉ-PERCÉ** Si le trou pré-percé est supérieur à 1/4 du diamètre de foret, diminuer l'avance.
	**DRILLING CROSS HOLES** Decrease the feed by 50% when drilling across an existing hole. The diameter of existing hole should not be larger than .25 x D.	**TALADRADO CON AGUJEROS CRUZADOS** Reducir el avance un 50% al taladrar a través de un agujero existente. El diámetro de los agujeros cruzados no debe ser mayor de .25xD.	**PERÇAGE A TRAVERS UN TROU EXISTANT** Diminuer l'avance de 50% lors d'un perçage à travers un trou existant. Le diamètre du trou existant ne doit pas dépasser .25xD .
	**INTERRUPTED CUT AND PLUNGING** Decrease the feed to lower recommended feed values for particular insert. See inserts description site for indexable drills.	**CORTE INTERRUMPIDO Y PLUNGING** Reducir el avance al mínimo recomendado para las plaquitas utilizadas. Ver la descripción de las plaquitas.	**COUPE INTERROMPUE ET TRÉFLAGE** Diminuer l'avance jusqu'au plus bas de celle recommandée pour les plaquettes sélectionnées. Voir les pages géométries de plaquettes.
	**DRILLING ON CURVED SURFACE** Drilling on the center line can be done with reduced feed rate down to 50% during entrance and exit.	**TALADRADO EN SUPERFICIES CURVAS** Se puede taladrar con el centro reduciendo el avance al 50% durante la entrada y la salida.	**PERÇAGE SUR SURFACE INCURVÉE** Le perçage centré peut être effectué avec une avance réduite à 50% en entrée et en sortie.
	**DRILLING ON ANGLED SURFACES** Decrease the feed by 50% on entrance for indexable drills until both inserts are engaged if the angle of entry is more than 5°.	**TALADRADO EN SUPERFICIES INCLINADAS** Reducir el avance un 50% a la entrada hasta que las dos plaquitas estén dentro del agujero si el ángulo de entrada es mayor de 5°.	**PERÇAGE SUR DES SURFACES INCLINÉES** Diminuer l'avance de 50% à la pénétration des forets à plaquettes indexées, jusqu'à ce que les deux plaquettes soient engagées si l'angle d'entrée est supérieur à 5°.
	**EXIT ON ANGLED SURFACE** Decrease the feed by 50% on exit if angle of exit is more than 5°.	**SALIDA EN SUPERFICIES INCLINADAS** Reducir el avance un 50% a la salida si el ángulo de salida es mayor de 5°.	**SORTIE DE SURFACE INCLINÉE** Diminuer l'avance de 50%, si l'angle de sortie est supérieur à 5°.
	**STARTING ON A WELDED SEAM** Facing is recommended before drilling. Decrease the feed by 50% during drilling of the welded material.	**ENTRADA EN SOLDADURA** Se recomienda fresar previamente. Reducir el avance un 50% durante el taladrado del material de soldadura.	**AMORÇAGE SUR UN POINT DE SOUDURE** Un dressage est recommandé avant le perçage. Diminuer l'avance de 50% pendant le perçage du matériau soudé.
	**DRILLING OF STACKED MATERIALS** Avoid spaces larger than .008 in between layers. The component must be securely fixed. If necessary reduce the feed.	**TALADRADO DE PAQUETES** Evitar que el espacio entre piezas sea mayor de .008 in. El paquete debe estar sujeto con mucha seguridad. Reducir el avance si es necesario.	**PERÇAGE DE MATÉRIAUX EMPILÉS** Éviter des interstices de plus de .008 in entre les éléments. Le composant doit être correctement fixé. Réduire l'avance si nécessaire.

TROUBLESHOOTING FOR INDEXABLE DRILLS
RESOLUCION DE PROBLEMAS CON BROCAS DE PLAQUITAS INTERCAMBIABLES
RÉSOLUTION DES PROBLÈMES

LOW PERFORMANCE OF DRIVING MOTOR (LOW SPINDLE POWER) BAJO RENDIMIENTO DEL MOTOR DE IMPULSIÓN (MOMENTO DE TORSIÓN BAJO EN EL EJE) MANQUE DE PUISSANCE DE LA BROCHE	a) reduce cutting speed = reduction of spindle RPM b) reduce feed rate
	a) reducción de la velocidad de corte; reducción de las revoluciones del eje b) reducción del avance
	a) réduire la vitesse de coupe = réduire la vitesse de rotation de la broche b) réduire l'avance
EXCESSIVE WEAR OF PERIPHERAL INSERT DESGASTE EXCESIVO DEL FILO DE LA PLAQUITA DE CORTE PERIFÉRICA USURE EXCESSIVE DE L'ARÊTE DE LA PLAQUETTE DE COUPE PÉRIPHÉRIQUE	a) reduce cutting speed = reduction of spindle RPM b) choose a more wear resistant grade c) increase coolant volume and pressure
	a) reduzca la velocidad de corte; reduzca las revoluciones del eje b) escoja una calidad de plaquita más resistente al desgaste c) aumente el volumen y la presión del líquido de corte
	a) réduire la vitesse de coupe = réduire la vitesse de rotation de la broche b) choisir une nuance de plaquette plus résistante à l'usure c) augmenter le débit et la pression du liquide de coupe
CHIPPING OF PERIPHERAL INSERT DESPORTILLADO DE LA PLAQUITA PERIFERICA PASTILHA PERIFÉRICA LASCADA ÉCAILLAGE DE LA PLAQUETTE PÉRIPHÉRIQUE	a) reduce feed rate until peripheral insert is fully engaged b) choose a tougher insert grade c) reduce cutting speed
	a) reduzca el avance durante el taladrado (sobre todo en superficies de entrada irregulares de las piezas a mecanizar) b) escoja una plaquita más resistente al desgaste c) reduzca la velocidad de corte
	a) réduire l'avance jusqu'à l'engagement complet de la plaquette périphérique b) choisir une nuance de plaquette plus tenace c) réduire la vitesse de coupe

Table 11
Tabla 11
Tableau N°11

TROUBLESHOOTING FOR INDEXABLE DRILLS
RESOLUCION DE PROBLEMAS CON BROCAS DE PLAQUITAS INTERCAMBIABLES
RÉSOLUTION DES PROBLÈMES

CHIPPING OF CENTER INSERT DESPORTILLADO DE LA PLAQUITA CENTRAL PASTILHA CENTRAL LASCADA ÉCAILLAGE DE LA PLAQUETTE CENTRALE	a) reduce feed rate during entry b) check the drill and workpiece clamping
	a) reduzca el avance al entrar b) compruebe la fijación de la broca y de la pieza a mecanizar
	a) réduire l'avance à l'entrée b) vérifier le serrage du foret et de la pièce à usiner
CONTINUOUS, BADLY FORMED CHIP VIRUTA DEFORMADA DE FORMA CONTINUADA APARA CONTINUAMENTE MAL FORMADA COPEAU CONTINU MAL FORMÉ	a) adjust feed rate b) increase cutting speed and simultaneously reduce feed rate
	a) cambie el avance b) aumente la velocidad de corte y reduzca a la vez el avance
	a) ajuster l'avance b) augmenter la vitesse de coupe tout en réduisant l'avance.
SWARF CONGESTION IN THE FLUTES ATASCO DE PEQUEÑAS VIRUTAS EN LAS HENDIDURAS PERIFÉRICAS AGLOMERAÇÃO DE PEQUENAS APARAS NAS RANHURAS PERIFÉRICAS ACCUMULATION DE COPEAUX COURTS DANS LES GOUJURES	a) increase coolant volume and pressure b) reduce cutting speed c) adjust feed rate
	a) aumente el volumen y la presión del líquido de corte b) reduzca la velocidad de corte c) cambie el avance
	a) augmenter le débit et la pression du liquide de coupe b) réduire la vitesse de coupe c) ajuster l'avance

Table 12
Tabla 12
Tableau N°12

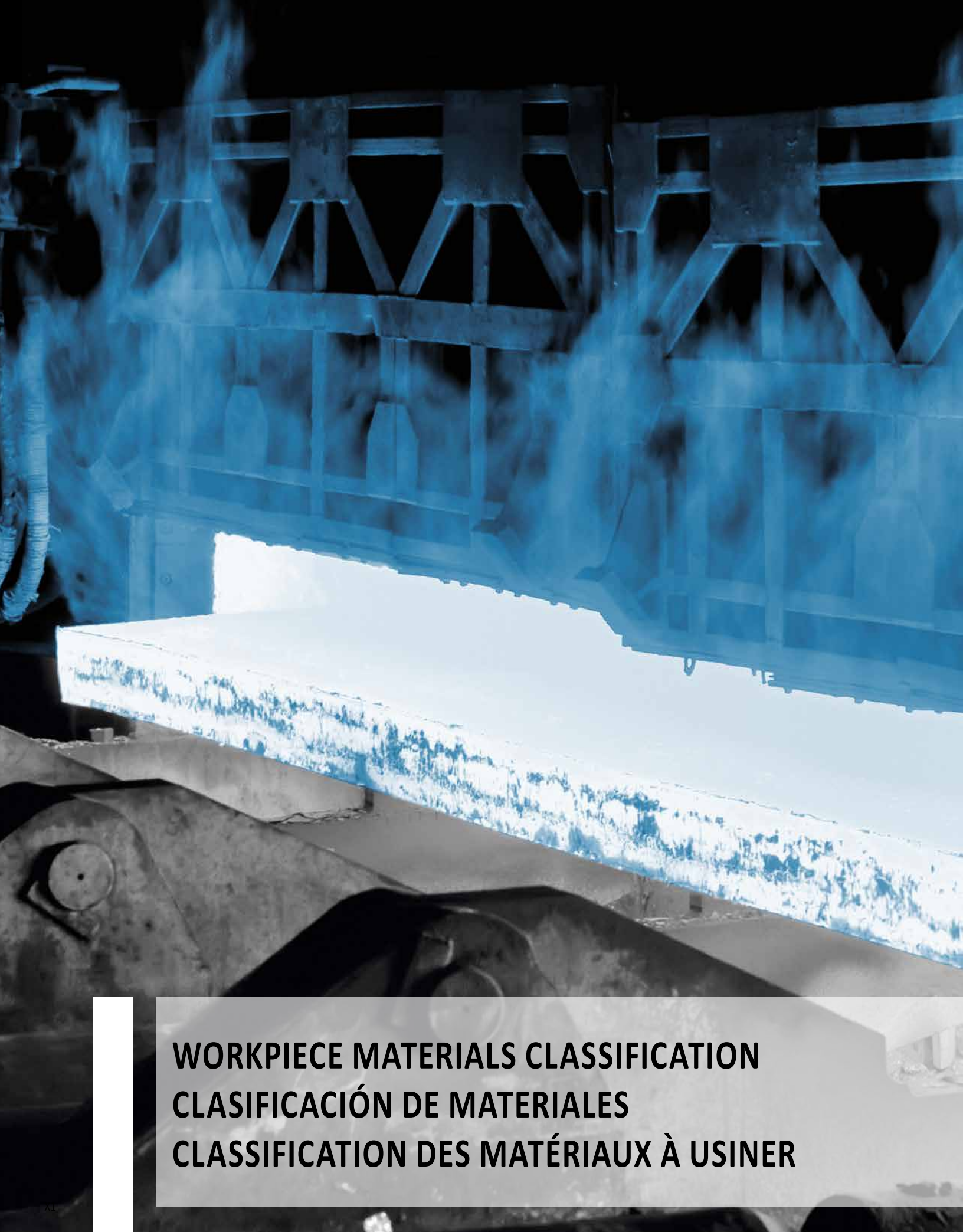
RECOMMENDED DRILL SIZES FOR TAPPING
MEDIDAS DE BROCAS CON MACHO DE ROSCAR RECOMENDADAS
DIAMÈTRES DES FORETS RECOMMANDÉS AVANT TARAUDAGE

Metric ISO threads Roscas ISO métricas Filets métriques ISO		Recommended drill diameter for [in] Diámetro de broca recomendado [in] Diamètre de foret recommandé pour [in]	
Thread Rosca Filet	Pitch Paso Pas	Cutting Tap Macho de corte Taraud de coupe	Fluteless Tap Macho de laminación Taraud par déformation
M16 × 1.0	1.00	.591	.610
M16 × 0.75	0.75	.602	–
M17 × 1.0	1.00	.630	–
M18	2.50	.610	.661
M18 × 2.0	2.00	.630	–
M18 × 1.5	1.50	.650	.681
M18 × 1.0	1.00	.669	–
M20	2.50	.689	.740
M20 × 2.0	2.00	.709	–
M20 × 1.5	1.50	.711	.760
M20 × 1.0	1.00	.748	–
M22	2.50	.768	.819
M22 × 2.0	2.00	.787	–
M22 × 1.5	1.50	.807	.839
M22 × 1.0	1.00	.827	–
M24	3.00	.827	.886
M24 × 2.0	2.00	.866	–
M24 × 1.5	1.50	.886	.917
M27	3.00	.945	–
M27 × 2.0	2.00	.984	–
M30	3.50	1.043	–
M30 × 2.0	2.00	1.102	–
M33	3.50	1.161	–
M36	4.00	1.260	–
M36 × 3.0	3.00	1.299	–
M39	4.00	1.378	–
M42	4.50	1.476	–
M42 × 3.0	3.00	1.535	–
M45	4.50	1.594	–
M48	5.00	1.693	–
M48 × 3.0	3.00	1.772	–
M52	5.00	1.850	–
M52 × 3.0	3.00	1.890	–

Inch threads UNF Roscas pulgadas UNF Filet unifié (pouces) UNF		Recommended drill diameter for [in] Diámetro de broca recomendado [in] Diamètre de foret recommandé pour [in]	
Thread Rosca Filet	No. of threads / 1" N.º de roscas / 1" No. de filets / 1"	Cutting Tap Macho de corte Taraud de coupe	Fluteless Tap Macho de laminación Taraud par déformation
3/4	16	.689	.720
7/8	14	.807	.839
1	12	.921	.957
1 1/8	12	1.043	–
1 1/4	12	1.173	–
1 3/8	12	1.299	–
1 1/2	12	1.417	–

Inch threads UNC Roscas pulgadas UNC Filets en pouce UNF		Recommended drill diameter for [in] Diámetro de broca recomendado [in] Diamètre de foret recommandé pour [in]	
Thread Rosca Filet	No. of threads / 1" N.º de roscas / 1" No. de filets / 1"	Cutting Tap Macho de corte Taraud de coupe	Fluteless Tap Macho de laminación Taraud par déformation
3/4	10	.657	.701
7/8	9	.768	.819
1	8	.874	.937
1 1/8	7	.984	–
1 1/4	7	1.110	–
1 3/8	6	1.220	–
1 1/2	6	1.339	–
1 3/4	5	1.555	–
2	4 1/2	1.780	–
2 1/4	4 1/2	2.031	–
2 1/2	4	2.252	–

Whitworth pipe threads Roscas Whitworth en tubo Filets Whitworth		Recommended drill diameter for [in] Diámetro de broca recomendado [in] Diamètre de foret recommandé pour [in]	
Thread Rosca Filet	No. of threads / 1" N.º de roscas / 1" No. de filets / 1"	Cutting Tap Macho de corte Taraud de coupe	Fluteless Tap Macho de laminación Taraud par déformation
G 3/8	19	.591	.630
G 1/2	14	.748	.787
G 5/8	14	.827	.866
G 3/4	14	.965	1.004
G 7/8	14	1.114	1.154
G 1	11	1.213	1.260
G 1 1/8	11	1.398	–
G 1 1/4	11	1.555	–
G 1 3/8	11	1.646	–
G 1 1/2	11	1.783	–
G 1 3/4	11	2.008	–
G 2	11	2.244	–



WORKPIECE MATERIALS CLASSIFICATION
CLASIFICACIÓN DE MATERIALES
CLASSIFICATION DES MATÉRIAUX À USINER

International equivalents / Equivalentes internacionales / Équivalences internationales

ISO 513	Subgroup / Subgrupo / Sous-groupe	USA	CZ	PRC	EU	ISO	F	J	D	D	PL	RUS	GB	E
		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
P	1	Gr.A	10 000		S 185	Fe 310	A 33		ST 33.1			St 0	S 185	S 185
	1	Gr.A	10 004	Q 195	S 185	Fe 310-0	A 33		St 33-2	1.0035	St 0 S	St 0	15 HR, HS	AE 235 B
	1		10 216		Fe B22		Fe E24		IG			A I		
	1	1213	11 109		11SMn28	Type 2	S 250	SUM 22	9SMn28	1.0715	A 10X		230M07	11SMn28
	1	Gr.1108	11 110	Y12	10S20		10F1		10S20	1.0721	A11	A12	210M15	10S20
	1		11 120	Y20			20F2		22S20	1.0724				
	2	1140	11 140	Y35	35S20	35S20	35 MF 6		35S20		A 35	A 30	212M36	35 MnS 6
	1	Gr.1005	11 300					SWRM6	D6-2	1.0314		05kp		
	1	1008	11 301		FeP 02	Cr 04		SPCD	USt 13	1.0333			2HR,HS,CR,CS	
	1		11 304	08 F	FeP 03					USt 14	1.0336			
	1	A619	11 305		FeP04	Cr 04	ES	SPCE	St14	1.0338	08J	08Ju	1 HR,HS,CR,CS	DC04
	1		11 320			Cr 03	Fd 4		St 14	1.0322	08X	08kp		
	1	1008	11 321		DC 01	Cr 01	FeP 01	SPCC	St 12			08Ju	DC 01/FeP 01	DC 01
	1		11 325					SPCE						AP 04
	1		11 330			Cr 0		SPC Cl.2	St 3			08J	Cr 2	
	1	366	11 331		FeP01/DC01	CR1	DC01/FeP01	SPCC	St2	1.0330			3CR	FeP01/DC01
	1	Gr.C	11 343	A3	S235JRG1		A34-2	SS 330	St34-2	1.0028	St3SX	16D	CEW2BK	S235JRG1
	1	1120	11 353					STKM12A	St35	1.0308	R35	10	CFS3	
	1	Gr.55	11 364		P235GH		A 37 AP,CP	SPV 450	H 1	1.0345	St 36 K	12K	141-360	F.6304
	1	Gr. A	11 366		P235GH	P 3	A 37 AP	SGV 410	H I	1.0345	St 36K	12K	141-360	A 37RCI
	1		11 368			P 5	A 37 AP	SGV 410	ASt 35			15 K		A 37 RBII
	1	Gr.1	11 369				A37FP	STPL380	ASt35			15K		A37RBII
	1	Gr.C	11 373		S235JRG1	Fe360 B	S235JRG1	STKM12A	USt37-2	1.0036	St3SX	St3kp	Fe360B	S235JRG1
	1	Gr.36	11 375	Q235C	S235JRG2	Fe360B	E24-2NE	SS330	S235JRG2		St3S	St3sp	S235JRG-2	S235JRG2
	1	Gr.58	11 378		Fe37B1, FN, FU	Fe 360C	E 24-3		St 37-3		St 3W	16D	40 D	AE 235D
	1		11 379		S235JRG2Cu				RSt 37-2 Cu3	1.0167	St 3 SCu			
	1	Gr.55	11 381				A37FP		ASt35					A37RBII
	1	Gr.A	11 416		P265GH	F 5	A 42 AP	SG 295	H II	1.0425	St 41K	16K	151-400	A 42RCII
	1	Gr.60	11 418		P265GH	F7	A 42F	SG 295	St 45.8			20K	161-430	A 42RBII
	1	Gr.60	11 419		P310NB		A 42 FP1		ASt 41	1.0437			224-400	A 42 RBII
	1	1020	11 423				E 28-2	SS 41	USt 42.2		St 3 SX	VSt 4 kp,ps	43/25 HR,HS	
	1	Gr.D	11 425	Q225A	S275JR		E28-2	SS400	RSt42-2		St4V	St4	161-430	AE275B
	1	Gr.70	11 428				E 28-3	SM 400 C	St 42-3		St 4 W	VSt 4 sp	43 C	AE 275 D
	1	X 42	11 431				A 42 F	SLA 2	ASt 41	1.0426	St 3M	20K	400-22	F.6310
	1		11 443		Fe 42B	Fe 430B	E 28-2		St 44-2	1.0044		St 4sp	43B,C	
	1	1035	11 453					STKM 13B	St 45		R 45		430	
	1	Gr.F	11 474		P 295 NH	P 11	A 48 CP		H IV	1.0445		16 GS	223-490	
	1	Gr.B, C	11 478		P 295 GH	P 11	A 48 FP	SG 365	ASt 45			14G2	224-460 B	P 295 GH
	1	X 46	11 481		P295GH		A 48 AP,FP	SPV 315	ASt 45	1.0436		18K	430 LT	A 47 RCI
	1	Gr.50 type1 až 4	11 483	16Mn	S355J2G3	Fe510D	E36-3	SM490	ST52-3	1.0570	G355	S345	50C	S355J2G3
	1		11 484				A 48FP1							
	2	Gr.50	11 500	Q275	E295	Fe490	A50	SS490	St50-2	1.0050	St5	S285	43/35HS	A490-2
	1	Gr.15180	11 523	16Mn	Fe510	Fe510	E36-3	SM520C	St52-3	1.0570	16G2	17GS	50/35HR	S355J2G3
	1		11 529		S355J2G3Cu				St 52-3 Cu3	1.0585	1862 A-Cu	1062 BD		
	1	Gr.A	11 531		Fe 510 D2		A 52 FP		ASt 52	1.0577			224-460	AE 355 D
	2	1050	11 550		S355JOCu	R50-NBK		STKM 16 A	ST 55	1.0507	R 55	BSt 5 ps	CDS 7	
	2	Gr.65	11 600		E355	Fe590	E335	SM570	E335	1.0060	MSt6	St6sp	E335	Fe590-2FN
	3		11 700		E360	Fe690	A70		St70-2	1.0070	St7	S375	E360	E360
	1	Gr. 1010,1011,M1010	12 010	10	2C10	C10	XC10	S9CK	C10	1.1121	10	08	045A10	C10k
	1		12 011									08		
	1		12 014								E2	10880		
	1		12 014								E2	10880		
	1	Gr.1016	12 020	15	C15E	C15E4	C18RR		C15	1.1141			080M15	C16k

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		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
P	1	Gr.A	12 021			TS 5		STB 340	St 35.8	1.0305	K 10	10		
	1	Gr.B	12 022			TS 14		STB 410	St 45.8	1.0405	K 18	20	430	
	1	Gr.1015	12 023	15	C15E	C15E4	XC15	S15C	C15	1.1141	15	15	040A15	
	1	1020	12 024	20	C 22	C 25	XC 18	S 22C	C 22	1.0402	20	20	070M20	
	3	Gr.1025	12 030	25	2C25	C25E4	XC25	S28C	C25	1.0406	25	25	070M26	C25k
	1	1030	12 031	30	C 30	C 30 E4	XC 32	S 30 C	Ck 30	1.0528		30	080M32	
	3	Gr.1035	12 040	35	C35	C35E4	C35	S35C	C35	1.0501	35	35	40HS	C35
	3	1040	12 041	40	C 40	C 40E4	XC 42 HI	S 40C	Ck 40	1.0511	40	40	080M40	C 40
	1		12 042	35 B	C 35 BKD		38 B3	SWRCHB 234	35 B2					F.1295
	2	Gr.1043	12 050	45	C45	C60E4	C45	S45C	C45	1.0503	45	45	50HS	C45k
	2	1050	12 051	50	C 50	C50E4	XC 48 H1	S 50 C	Ck 50	1.1206		50	080M50	1 C 50
	3	Gr.1055	12 060	55	C55	C55E4	C54	S55C	C55	1.0535	55	50	50	C55
	4	1060	12 061	60	2 C 60	C 60 E4	C 60	S 58 C	Ck 60	1.0601	60	60	60 HS,CS	C60
	2	Gr.1070	12 071		1 CS67		C 68	S 70C-CSP	Ck 67			65	080A67	
	2	Gr.1078	12 081	75	1CS75	CS75	XC75		Ck75	1.1248	75	75	80HS	
	3	1086	12 090	85	2 CS 85	CS 85	C 90RR	SK 5-CSP	C 85E	1.1269	85	85	80HS,CS	
	2	Gr.1330	13 141	30Mn2	28Mn6	28Mn6	35M5	SCMn2	28Mn6	1.1165	30G2	30G2	120M36	30Mn5
	2	9250	13 151				45 S 7		46 Si 7	1.5024	45 S			46 Si 7
	4		13 180						80Mn4		65G	70G		
	3		13 240	35SiMn			38MS5		37MnSi5	1.5122	35SG	35SG		
	3		13 242						42MnV7	1.5223				
	4	9250	13 251		45Si7	Type 3	45S7		46Si7	1.5024	45S	50S2	250A53	F.1451
	4	Gr.9260H	13 270	60Si2Mn	60Si7		60S7	SUP6	60Si7	1.5028	60S2	60S2	251A58	60Si7
	3	52100	14 100	G Cr15	100Cr6	Type 1-0	100C6	SUJ 2	100Cr6		LH 15	Šch 15	534A99	F.1310
	2	52100	14 109	GCr 15	100Cr6	Type 1-0	100Cr6	SUJ 2	100Cr6	1.3505	LH 15	ŠCh15	535 A99	100Cr6
	1	5015	14 120	15Cr	15Cr2	37Cr4	12C8	SCr 415	15Cr3	1.7015	15 H	15Ch	523M15	
	2	Gr.5135	14 140	35Cr	37Cr4	TYPE 2	37Cr4	SCr435H	37Cr4	1.7034	40H	38ChA	530A36	37Cr4
	3		14 160				55 C 3					50ChG		
	3	Gr.2	14 209	Cr9SiMn	100CrMn6	TYPE 3	100CM6	SUJ3	100CrMn6	1.3520	LH15SG	ŠCh15SG	535A99	100CrMn6
	1	No.5115	14 220	15CrMn	16MnCr5	TYPE 5	16MC5		16MnCr5	1.7131	15HG	18ChG	527M17	16MnCr5
	1	5120	14 221	20CrMn	20MnCr5	Type 7	20MC5	SMnC 420 H	20MnCr5	1.7147	18HGT	18ChG		F.150.D
	1		14 223									18ChGT		
	3		14 230									27ChGR		
	3		14 231									30ChGT		
	3	Gr.1340H	14 240	35Mn2				SMn438	36Mn5	1.5067		35G2		
	3	9260	14 260	60Si2CrA			54SiCr6	SUP7	54SiCr6	1.7102	60S2	60S2ChA	250A61	
	3		14 331								30HGS	30ChGSA		
	3		14 340						34CrAI6	1.8504		38Ch2Ju		
	3		14 341								37HS	38ChS		
	1	Gr.A	15 020		16Mo3	F26,P26,TS26	15D3	STBA12	15Mo3	1.5415	16M		240	16Mo3
	1	Gr.P12	15 121	12CrMo	13CrMo4-5	F32,P32,TS26	15CD4-5	SFVAF12	13CrMo4-4	1.7335	15HM	12ChM	620-440	14CrMo45
	1		15 124		18CrMo4	18CrMo4	18CrMo4	SCM418	18CrMo4		18HGM	20ChM	708H20	18CrMo4-1
	1	Gr.P24	15 128		13MoCrV6	TS33,P33,F33			14MoV6-3	1.7715	13HMF		660-460	13MoCrV6
	2	4130	15 130	30CrMo	25CrMo4	25CrMo4	25CD4	SCM 430	25CrMo4		25 HM	20ChM	708A25	25CrMo4
	3	4130	15 131	30CrMo	34CrMo4KD		25CD4	SCM 420	34CrMo4	1.7220	26HM	30ChM	708A25	AM 34CrMo4
	2	Gr.4140	15 142	42CrMo	41CrMo4	TYPE 3	42CD4	SCM440	41CrMo4	1.7225	40HM	38ChM	708M40	42CrMo4
	1	Gr.1	15 217	09CuPCrNi-A	S355JOWP	Fe 355W-1A	E 36W-A3	SPA-H	9CrNiCuP 324	1.8962	10 H		WR 50A,B,C	
	1	Gr.6118	15 221									15ChF		
	1	Gr.B	15 223										CDS 109	
	2		15 230							1.7361				
	3		15 231						27MnCrV4	1.8162				
	2		15 236	25Cr2MoVA					24CrMoV55	1.7733		25Ch1MF		
	2	6135	15 240									40ChFA		

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		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
P	2		15 241						42CrV6					
	2	Gr.6150	15 260	50CrVA	51CrV4	TYPE 13	51CrV4	SUP 10	50CrV4	1.8159	50HF	50ChFA	735A50	51CrV4
	3		15 261						58CrV4	1.8159				
	1	Gr.P22	15 313	12CrMo	10CrMo9-10	P34, TS34,F34	10CD9.10	SCMV4	10CrMo9-10	1.7380	10H2M		622	12CrMo910
	3		15 320						24CrMoV55	1.7733		20ChMFL	671-850	
	1		15 323						17CrMoV10	1.7766				
	2		15 330						30CrMoV9	1.7707	30H2MF	30Ch3MF		31CrMoV10
	3	Cl. A	15 340	38CrMoAl			40CAD 6.12	SACM 645	41CrAlMo7	1.8509	38HMJ	38Ch2MJuA	905M39	41CrAlMo7
	3		15 341			42CrMo4		SCM 4	42CrMo4					
	1		15 412						10CrMo11	1.7276				
	1		15 423						20CrMoV 1 3 5	1.7779				
	1	Gr.4320	16 220	12CrNi2	15NiCr6		16NC6		15CrNi6	1.5713	15HN	12ChN2	815M17	16NiCr4
	1		16 222				1,5 Ni							
	1	3120	16 231				20NC6		19CrNi8			20Ch2N4A	822M17	
	3	3135	16 240				35NC6	SNC 236	36NiCr6	1.5710		40ChN		
	1		16 320									12ChN3	En 33	
	3	Gr.9840	16 341		36CrNiMo4		40NCD3	SCNM439	36CrNiMo4		36HNM	40ChN2MA	817A37	35NiCrMo4
	3	4340	16 342		34CrNiMo6	36CrNiMo6	35NCD6	SNCM 447	34CrNiMo6			40ChNMA	817M40	
	3	4340	16 343		34CrNiMo6	Type 3	35NCD6	SNCM 447	34CrNiMo6	1.6582	34 HNM	38Ch2N2MA	817M40	34CrNiMo6
	1	E3310X	16 420				13NiCr14	SNC815	14NiCr14	1.5752		12Ch2N4A	655H13	
	3		16 431						26NiCrMo8-5	1.6931				
	3		16 440				30NC12	SNC 836	31NiCr14	1.5755	37HN3A	30ChN3A		
	3	4340	16 444		34CrNiMo6	Type 3	35NCD6	SNCM 447	34CrNiMo6		34HNM	36Ch2N2MFA	817M40	34CrNiMo6
	3		16 532								30HGSNA	30ChGSN2A		
	3		16 540									34ChN3MA		
	3		16 640				40NC17		35NiCr18				835M30	
	1		16 720								18H2N4WA	18Ch2N4MA		
	1		19 065						C35W3					
	2		19 083				Y342		C45W3	1.1730				F5131
	2		19 103				Y355	SK7	C60W3	1.1740	N5			
	2		19 125				Y3 65	SK 7	C67W	1.1744	N6			
	2	W 1-7	19 132	T 7	CT 70	C 70 U	C70 E2U	SK 6	C 70 W2		N7	U7-1		F.5103
	2		19 133	T7	CT70	C70U	Y170	SK6	C70W	1.1620	N7	U7		C70U
	2	W1Gr.A	19 152	T8	CT80	C80U	Y180	SK5	C80W2	1.1625	N8	U8-1	BW1A	C80U
	2	W5	19 191	T10A	CT105	C105U	C105E2U	SK3	C105W1	1.1645	N10E	U101	BW1B	C102U
	2	W 110	19 192	T 10	CT 105	C 90 U	C 105 E2U	SK 3	C 105 W2		N 10	U 10-1		F.5117
	3		19 221	T11	CT120	C120U	Y2120		C110W2	1.1654	N12	U12-1	BW1C	F-5123
	4	W 112	19 255		CT 120	TC 120	C120 E3U	SK 2	C125 W	1.1663	N 12	U 13-1		C120 U
	3	02	19 312		90MnV8	90MnCrV8	90MnV8		90MnCrV8	1.2842	NMV	9G2V	B02	90 MnCrV 8
	3	02	19 313		90MnV8	90MnCrV8	90MnV8		90MnCrV8		NMV	9GF2	BO 2	90MnCrV8
	3		19 340		60SiMn7		60Si8		70SI7					
	2	W 210	19 356		100 V2	TCV 105	C 105 E2 UV1	SKS 43	100 V1	1.2833	NV		BW 2	100 V2
	3		19 418						80CrV5		NCV 1	8Ch		80CrV2
	3		19 419						80CrV2		NCV 1	8Ch		80CrV2
	4		19 420	Cr 06			Y2 140 C	SKS 8	140Cr2	1.2008	NC 5	13Ch		140Cr2
	3	L2	19 421		107CrV3				115CrV3	1.2210				120CrV2
	3		19 422						145Cr6		NC 6			
	2	L 2	19 423					SKC 11	90Cr3	1.2056		9ChF		
	2		19 426	9CV2					85Cr7			9Ch1		
	3		19 434		X21Cr13		X20Cr13		X20Cr13 1.2082	1.2082				X20Cr13 F5261
	3		19 435		X41Cr13	X40Cr14	X40Cr14	SUS 420 J2	X42Cr13		4H13	40Ch13	420S45	F.5263
	4	D3	19 436		X210Cr12	C210Cr12	Z200C12	SKD1	X210Cr12	1.2080	NC11	Ch12	BD3	X210Cr12
	4		19 437		X210CrW 12-1	X210CrW12	X210CrW 12-1		X210CrW12					2313

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		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
P	3		19 452				Y60SC7		58SiCr8	1.2103				
	1		19 487						21MnCr5	1.2162				
	4		19 512				45CDV6		48CrMoV 6 7					
	4		19 520		35CrMo8	35CrMo7	40CrMnMo8		40CrMnMo7		WLB			40CrMnMo7
	2	H10	19 541		30CrMoV12-11	32CrMoV12-28	32CDV12-28	SKD7	X32CrMoV33	1.2365	WLV	3Ch3M3F	BH10	30CrMoV12
	3	H11	19 552	4Cr5MoSiV	X37CrMoV5-1	X37CrMoV5 1	Z38CDV5	SKD6	X38CrMoV5.1	1.2343	WCL	4Ch5MFS	BH11	X37CrMoSiV5
	3	H11	19 553	4Cr5MoSiV	X37CrMoV5-1	X37CrMoV5 1	Z38CDV5	SKD6	X38CrMoV5.1	1.2343	WCL	4Ch5MFS	BH11	
	3	H13	19 554	4Cr5MoSiV1	X40CrMoV511	40CrMoV5 1	X40CrMoV5	SKF61	X40CrMoV51	1.2344	WCLV	4Ch5MF1S	BH 13	X37CrMoSiV5
	3	H 42	19 561											
	3	A 2	19 571	Cr5Mo1V	X100CrMoV 5 1	X100CrMoV5	Z100CDV5	SKD 12	X100CrMoV 5 1		NCLV	9Ch5VF	BA 2	F.5227
	3	D 2	19 572		X160CrMoV 12 1		Z160CDV12	SKD 11	x165cRmOv 12			Ch12 MF		F.5211
	4	A7	19 581											
	3		19 614						55NiCr10	1.2718				F.5224
	3		19 642		40NiCrMoV16				35NiMo16				BP 30	35NiCrMo16
	3		19 655		40NiCrMo16	45NiCrMo16	40NCDV16		X45NiMo4II1.2	1.2767				
	3	L 6	19 662	5CrNiMo	55NiCrMoV7		55NCDV7	SKT 4	55NiCrMoV6	1.2711	WNL	5ChNM	BH 224/5	F.520.S
	3	L6	19 663		55NiCrMoV7	55NiCrMoV7	55NCDV7	SKT4	56NiCrMoV7	1.2714	WNLV	5ChNV	BH224/5	55NiCrMoV7
	4		19 675						28NiCrMoV10	1.2740				
	4		19 680						X50NiCrWV 13-13					
	3	F 1	19 710	W				SKS 7M	120 W 4	1.2414	NW 1			F.5238
	3		19 711					SKS 2	120 WV 4	1.2516		ChV 1	BF 1	F.520C
	3		19 712						110WCrV5			ChV6		
	3	F 2	19 714					SKS 11	X 130W5			ChV 4F		
	2		19 720	30W4Cr2VA	X30WCrV 5 3	30WCrV5	X32WCrV5	SKD 4	30WCrV 5.3					
	3	H21	19 721	3Cr2W8V	X30WCrV93	X30WCrV9-3	Z30WCV9	SKD5	X30WCrV9.3	1.2581	WWW	3Ch2V8F	BH21	X30WCrV9
	3		19 723								WWN 1		BH 21A	
	3	S1	19 732		45WCrSiV8	50WCrV8	45WCV20		45WCrV7	1.2542	NZ2	50ChV2SF	BS1	45 WCrSiV8
	3	S 1	19 733		55WCrV8	60WCrV8	55WC20		60WCrV7		NZ 3	5ChV2S	BS 1	60WCrSiV8
	3		19 740						30 WCrV 151	1.2564	WWS 1			F.527
	3		19 802					SKH6	S 12-1-2	1.3318	SW12	R12F3		
	4		19 810				Z130WV 13.4		S 12-1-4	1.3302	SW12	R9F5		
	3	T1	19 824	W18Cr4V	HSv18-0-1	HS 18-0-1	Z80WCV18-04-01	SKH 2	HS 18-0-1	1.3355	SW18	R18	BT1	HS 18-0-1
	4	M2	19 830	W6Mo5Cr4V2	HS 6-5-2	HS 6-5-2	Z85WDCV06-05-04-02	SKH51	HS 6-5-2	1.3343	SW7M	R6M5	BM2	HS 6-5-2
	4		19 852	W6Mo5Cr4V2Co5	HS 6-5-2-5	HS 6-5-2-5	Z85WDKCV06-05-04-02	SKH55	HS 6-5-2-5	1.3243	SK5M	R6M5K5	BM35	HS 6-5-2-5
	4	T 4	19 855	W18Cr4VCo4	HS18-1-1-5		Z 80WKCV 18-05-04-01	SKH 3	HS 18-1-2-5			R18k5F2	BT 4	F.5530
	4		19 856									R9K5		
	4	T 15	19 858	W12Cr4V5Co5	HS12-1-5-5	HS12-1-5-5	HS 12-1-5-5	SKH 10	HS 12-1-4-5	1.3202	SK 5V	R13F4K5	BT 15	HS12-1-5-5
	4		19 861		HS 10-4-3-10		Z130WKCDV	SKH57	HS 10-4-3-10	1.3207	SK10V	R12F3K10M3-Š	BT42	HS 10-4-3-10
	1	Gr.N1	422630		C18D	20-40	20-40M	SC37	GS38	1.0416	LII400	15L-I	AM1	
	1	Gr.N 1	422633				A 42 C-M	SC 360	GS-38.3	1.0416	L II 400	15 L-III	AM 1	
	1	N 1	422640			23-45	A 48 M1	SC 46	GS-45	1.0443	LII 400	25 L	161-430 A	
	1	Gr.WCA	422643			33-45	FB-M	SC450	GS-45	1.0443	L20	20L	430A	
	1	Gr.N-2	422650			26-52	E26-52-M	SC480	GS-52	1.0551	LII500	30L	161Gr400A	
	2		422653											
	2	Gr.80-40	422660	ZG 310-570		30-57	30M6M	SCC 3	GS-60	1.0553	LII 600	45L2	A 3	
	2	Gr.105-85	422670				E26-52-M	SCC5	GS-62	1.0554		55L	AW3	
	2	Gr.80-40	422709				35M5	SCMn2	GS-20Mn5		L20G	35G	Gr.A	AM30Mn5
	1	Gr.A	422712				20 M 6 M	SCW 480	GS-20Mn5		L 20G	20 GL	161-540 A	F.8310
	1	WCC	422713		G17Mn5		20 M5M		GS-16Mn5				G17Mn5	G17Mn5
	1	LCB	422714		G-21 Mn5			SCA 1	GS-20Mn5	1.1133	L20G	20GL	Gr.A	AM 22Mn5
	3		422715	Z640Mn			35M5	SCMn3	GS-36Mn5	1.1167		35G2		36Mn5
	3		422719										Gr.A	
	3		422724									30ChGSFL		

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		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
P	3		422726								L35HGS	35ChGSL		
	1		422733						GS 24CrV42					
	1	Gr.WC6	422744		GS-17CrMo55		15CD5-05M	SCPH 21	GS-17CrMo55		L18HM	20ChMFL	621	AM-18CrMo05-05
	1	Gr.9	422745		G17CrMoV511		15CDV4-10M	SCPH23	GS-17CrMo511		L15HMF			
	3		422750									40 ChNL		
	1	C 5	422771				Z15CD 505-M	SCPH 61				20Ch5ML	625	AM-X18CrMo5
	4		422992									R9		

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		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
M	1	Type 403	17 020	0Cr13	X6Cr13	TYPE 1	Z6C13	SUS410S	X7Cr14	1.4000	0H13	08Ch13	403S17	X6Cr13
	1	Type 410	17 021	1Cr12	X10Cr13	Type3	Z12C13	SUS 410	X10Cr13	1.4006	1H13	12Ch13	410S2	X12Cr13
	2	Type 420	17 022	2Cr13	X20Cr13	Type 4	X20Cr13	SUS420J1	X20Cr13	1.4021	2H13	12Ch13	420S37	X20Cr13
	2	Type 420	17 023	3Cr13	X30Cr13	Type 5	Z30Cr13	SUS420J2	X30Cr13	1.4028	3H13	30Ch13	420S45	2304-03
	2	Type 420	17 024	4C13	X39Cr13	Type 6	Z40C13		X39Cr13	1.4031	4H13	40Ch13	X39Cr13	X39Cr13
	2		17 029							1.4034				
	1	Type 430	17 040	1Cr15	X6Cr17	Type 8	Z8C17	SUS 430	X6Cr17	1.4016	H17	12Ch17	430S18	X6Cr17
	1	Type 430	17 041	1Cr15	X8Cr17	TYPE 8	Z8C17	SUS430	X6Cr17	1.4016	H17	12Ch17	430S15	X6Cr17
	2	440 C	17 042								H18	95Ch18		
	1	Type 501, 502	17 102	10MoCr50	5CrMo16	TS 37	Z10CD5-05	SFVAB 5 A,B	12CrMo1 9 5	1.7362	H5M	15Ch5M	625	F.240B
	1		17 113		X10CrAlSi7		Z8CA7		X10CrAlSi7	1.4713		15Ch6Sju		X10CrAl7
	2	HNV 3	17 115	4Cr9Si2	X 45CrSi8	TYPE 1	Z 45CS9	SUH 1	X 45CrSi 9.3	1.4718	H9S2	40Ch9S2	401S45	F.3220
	2	Gr.F9	17 116			TS38		SFVAF9	X12CrMo9-1				629-470	
	2	TYPE 405	17 125	OCr13Al	X10CrAl13	TYPE H3	Z 13C13		X10CrAl13	1.4724	H13JS	10Ch13SJu		F.3152
	2		17 134			TS40	Z21CDV12		X20CrMoV121		23H11MNF			
	2	446	17 153	1Cr25Ti			Z10C24	SUH446	X8CrTi25			15Ch25T		
	3	Type 304	17 240	OCr18Ni9	X5CrNi18-10	Type11	X5CrNi18-10	SUS304	X5CrNi18-10	1.4301	OH18N9	08Ch18N10	304S31	X5CrNi1810
	3	302	17 241					SUS 302	X12CrNi 18 8	1.4300	1H18N9			
	3	Gr.302	17 242				Z10CN1809		X12CrNi188		1H18N9	17Ch18N9	302S25	
	3	321	17 246	1Cr18Ni9Ti	X10CrNiTi18-10	TYPE 15	Z6CNT18-10	SUS321	X12CrNiTi189	1.4878	1H18N9T	08Ch18N10T	321S12	X6CrNiTi1810
	3	Type 321	17 247	0Cr18Ni10Ti	X 6CrNiTi 18-10	TYPE 15	Z 6CNT 18-10	SUS 321	X 6CrNiTi 18 10	1.4541		08Ch18N10T	321S31	F.3523
	3	Type 321	17 248	0Cr18Ni10Ti	X6CrNiTi18-10	Type 15	Z6CNT18-10	SUS321	X6CrNiTi1810	1.4541	0H18N10T	08Ch18N10T	321S31	X6CrNiTi18-10
	3	304 L	17 249	00Cr19Ni10	X2CrNi 18 10	Type 15	Z3CN 18-11	SUS 304	X2CrNi 19 11	1.4306		03Ch18N11	304S11	X2CrNi 18 10
	3	TYPE 309	17 251	1Cr20Ni14Si2	X 15CrNiSi 20 12	TYPE H13	Z 17CNS 20 12	SUH 309	X 15CrNiSi 20 12	1.4828	H20N12S2	20Ch20N14S2	309S24	F.3312
	3	330	17 253	1Cr16Ni35	X12NiCrSi35-16	H17	Z12NCS37.18	SUH330	X12NiCrSi36-16		H16N36S2			X12CrNiSi36-16
	4		17 254									12Ch21N5T		
	3	310S	17 255	1Cr25Ni20Si2	X8CrNi25-21	H16	Z8CN25-20	SUS310S	X8CrNi25-21	1.4845	H25N20S2	20Ch23N18	310S31	X15CrNiSi25-20
	3	Ev9	17 322									4Cr14Ni14W2Mo	331S42	
	3		17 335									ChN35 VT		
	3	TP316H	17 341			TS 63	Z6CND17-13B		X6CrNiMo1713	1.4919			316S51	X5CrNiMo17122
	3	TYPE 316	17 346	0Cr17Ni12Mo2	X 5CrNiMo 17 12 2	TYPE 20	Z 6CND 17.11	SUS 316	X 5CrNiMo 17 12 2	1.4401			316S31	X 5CrNiMo 17 12 2
	3		17 347											
	3	316Ti	17 348	0Cr18Ni12Mo2Ti	X6CrNiMoTi17-12-2	21	Z6CNDT17-12	SUS316Ti	X6CrNiMoTi17-12-2		H17N13M2T	10Ch17N13M2T	321S12	X6CrNiMoTi17122
	3	316 L	17 349	00Cr17Ni14Mo2	X2CrNiMo 17-12-2	Type 19	Z3CND 18-12-02	SUS 316	X2CrNiMo 17 13 2	1.4404	00H17N14M2	03Ch17N14M2	316S11	X2CrNiMo 17 13 2
	3	TP316L	17 350	00Cr17Ni14Mo2	X2CrNiMo18-14-3	TYPE 19a	Z3CND 17-12-03	SUS 316L	X2CrNiMo18-14-3	1.4435		03Ch17N14M2	316S14	X2CrNiMo18143
	4	TYPE 635	17 351			TYPE 7								

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International equivalents / Equivalentes internacionales / Équivalences internationales

ISO 513	Subgrupo / Subgroup / Sous-groupe	USA	CZ	PRC	EU	ISO	F	J	D	D	PL	RUS	GB	E
		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
M	4	TYPE 635	17 351.9			TYPE 7								
	3	316	17 352	0Cr17Ni12Mo2	X3CrNiMo 17-13-3	Type 20a	Z7CND 18-12-3	SUS 316	X5CrNiMo 17 13 3	1.4436			316S31	X5CrNiMo 17 13 3
	3	316Ti	17 356	1Cr18Ni12Mo3Ti				316Ti	X10CrNiMoT18-12		H17N13M2T	08Ch17N13M2T	320S33	
	3		17 436						X40MnCr18	1.3817				
	3	Gr.202	17 460							1.3965	1H17N4G9	12Ch17G9AN4		
	4	EV 12	17 465	5Cr21Mn9Ni4N	X 53 CrMnNiN21 9	Type 9	Z 52 CMN 21.09	SUH 35	X 53 CrMnNiN21 9	1.4871	50 H21G9N4	55Ch20G9AN4	349S54	F.3217
	3	NILO 36	17 536						Ni 36	1.3912	FeNi36Pr	36N	NILO 36	
	4		17 618.4				Z120M12		X120Mn12	1.3401		110G13L		
	1		422904	ZG1Cr13			Z6CN12-1M	SCS1	GX8CrNi13	1.4008		10Ch12NPL	410C21	
	1	Gr.CA-15	422905	ZG1Cr13			Z12C13-M	SCS 1	G-X12Cr13		LOH 13	15 Ch13L	410C21	F.8401
	2	Gr.CA-40	422906	Z G2Cr13			Z20C13-M	SCS 2	G-X20Cr14	1.4027	LH 14	20Ch13 1	420C24	F.8387
	2	Gr.CB30	422911	ZG1Cr17			Z20CN17-2		G-X22CrNi17				ANC 2	
	2		422912						G-X40CrSi17					
	2	Gr.HC	422913				Z40C28 M	SCH 2	G-X40CrSi23		LH 26		452C11	
	2	Gr.HC	422914	Z GCr28			Z40C28-M	SCH 2	G-X70Cr29		LH 26	75Ch28L	452C11	
	2	Gr.CA28MnV	422916		G-X22CrMoV12-1				G-X22CrMoV12-1	1.4922		20Ch12WNMFL		
	2		422917		GX8CrNi12		Z6CN12-1M		GX8CrNi12			20Ch12WNMFL		
	4	B-1 až 4	422920	ZGMn13-1-4			Z120M12M	SCHMnH1 až 3	G-X120Mn13	1.3802	C120G13	110G13L	BW 10	AM-X120Mn12
	4	Gr.C	422921				Z120M12-M	SCMnH 11			L120G13H			
	3	CF-16F	422931	ZG1Cr18Ni9			Z6CN 18-10M	SCS 12	G-X10CrNi 18 8	1.4312	LH18N9	10Ch18N9L	302C25	
	3	CF 20	422932				Z 25CN 20-10 M		G X25CrNiSi 18 9	1.4825			302C35	
	3	CF-8C	422933				Z6CNNb1810-M	SCS21	G-X7CrNiNb189		LH18N9T	10Ch18N9TL	347C17	AM-X7CrNiNb2010
	3	HF	422934					SCH 12	G X40CrNiSi 22 9	1.4826	LH23N18C	40Ch24N12SL	309C30	
	3	HH	422936				Z40CN 25-12 M	SCH 13A	G-X40CrNiSi 25 12	1.4837		40Ch24N12SL	309C35	
	2		422938									12Ch21N5G2STL		
	3	CF 3 MN	422941				Z 6CNDNb 18 12-M	SCS 22			LH18N10M2T	10Ch18N12M3T	318C17	
	3	CF-8M	422942				Z6CND 18-12 M	SCS 14	G-X10CrNiMo 18 9	1.4410	LH18N10M2		315C16	
	3	HE	422944					SCH 17					309C40	
	3	HK	422952				Z40CN 25-20 M	SCH 22	G-X40CrNiSi 25 20	1.4848	LH25N19S2	20Ch25N19S2L	310C40	F.8452
	3		422953								LH21N5	12Ch21N5G2SL		
	3	HU	422955					SCH 20	G-X40NiCrSi 35 25				331C40	
	3	CN-7M	422958				Z 6NCDV 25-20-04 M	SCS 15	G X7CrNiMoCuNb 18 18					

International equivalents / Equivalentes internacionales / Équivalences internationales

ISO 513	Subgroup / Subgrupo / Sous-groupe	USA	CZ	PRC	EU	ISO	F	J	D	D	PL	RUS	GB	E
		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
K	3		422303				FGS 370-71	FCD 370	GGG-35.3		Zs 35022	VČ 38-17	Gr.350/22	FGE 38-17
	3	Gr.60-40-18	422304			400-12	FGS400-12	FCD40	GGG40		Zs40015	VČ40	Gr.420-12	FGE 42-12
	3	65-45-12	422305		GJS 500-7	500-7	FGS 500-7	FCD 500	GGG-50		Zs 50007	VČ 50-2	500/7	FGE 50-7
	4	Gr.80-55-06	422306			600-3	FGS600-3	FCD60	GGG60		Zs60003	VČ60	Gr.600/3	FGE60-2
	4	100-70-03	422307		GJS-700-2	700-2	FGS 700-2	FCD 700	GGG-70		Zs70002	VČ 70-3	Gr.700/2	FGE 70-2
	4	Gr.120-90-02	422308			800-2	FGS800-2	FCD80	GGG80		ZS80002	VČ80	Gr.800/2	FGE 80-2
	1	Class 20B	422410			Gr.100	Ft10	FC-100	GG10		Zl100	SČ10		FG10
	1	C1.25B	422415				FGL 150	FC 150	GG-15		Zl 150	SČ 15	Gr.150	FG 15
	1	Class 30B	422420		FG20	Gr.200	Ft20	FC-20	GG20		Zl200	SČ20	Gr.220	FG20
	1	C1.35B	422425				FGL 250	FC 250	GG-25		Zl 250	SČ 25		FG 26
	1	No. 45	422430			Gr.300	Ft 30	FC 300	GG-30		Z1 300	SČ 30	Gr. 300	FG 30
	1	Class50B	422435				Ft35	FC35	GG35		Zl350	SČ35	Gr.350	FGG35
	1		422456				FBO					AČS-15	1C	
	1		422465								ZlSi5	ŽČS5		
	1	Type D, C1.III	422472									ŽČCh 2		
	1		422481								ZlAl7Cr	ŽČJu7Ch2		
	2		422532				MN 32-8	FCMB 310			Zcc 32000	KČ 33-8	B 310/10	Type B
	2	Gr.32510	422533			B-35-10	MN35-10	FCMB35	GTS35-10		Zcc35010	KČ35-10	B35-12	Type A
	2		422534											
	2		422536			W35-04	MB35-7	FCMN34	GTW35-04		Zcb 35004		W35-04	Type B
	2		422540			W 40-05	MB 400-5	FCMW 370	GTW 40-05		Zcb 40005		W 40-05	42 2540
	2	Gr.45006	422545			P45-06	MN 450-6	FCMP 440	GTS 45-06		Zcp 45006	KČ 45-7	P45-06	Type E
	2	6004	422555			P55-04	MN 550-4	FCMP 540	GTS 55-04		Zcp55004	KČ 55-4	P55-04	Type C

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International equivalents / Equivalentes internacionales / Équivalences internationales

ISO 513	Subgroup / Subgrupo / Sous-groupe	USA	CZ	PRC	EU	ISO	F	J	D	D	PL	RUS	GB	E
		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
N	4	C110000	423001		Cu-ETP	Cu-ETP	Cu-a1	C1100	E2-Cu58		Cu99,9E	Cu99,9	C101	
	4	C110000	423001		Cu-ETP	Cu-ETP	Cu-a1	C1100	E2-Cu58		Cu99,9E	Cu99,9	C101	
	4	C110000	423001		Cu-ETP	Cu-ETP	Cu-a1	C1100	E2-Cu58		Cu99,9E	Cu99,9	C101	
	4	C110000	423001		Cu-ETP	Cu-ETP	Cu-a1	C1100	E2-Cu58		Cu99,9E	Cu99,9	C101	
	4	C110000	423001		Cu-ETP	Cu-ETP	Cu-a1	C1100	E2-Cu58		Cu99,9E	Cu99,9	C101	
	4	C110000	423001		Cu-ETP	Cu-ETP	Cu-a1	C1100	E2-Cu58		Cu99,9E	Cu99,9	C101	
	4	C110000	423001		Cu-ETP	Cu-ETP	Cu-a1	C1100	E2-Cu58		Cu99,9E	Cu99,9	C101	
	4	C110000	423001		Cu-ETP	Cu-ETP	Cu-a1	C1100	E2-Cu58		Cu99,9E	Cu99,9	C101	
	4	C110000	423001		Cu-ETP	Cu-ETP	Cu-a1	C1100	E2-Cu58		Cu99,9E	Cu99,9	C101	
	4		423004					C1821			Cu99,7G	M2		
	4	C 14200	423005						C-Cu		Cu 99,56	M3	C107	
	4	C51900	423016		CuSn6	CuSn6	CuSn6P	C5191	CuSn6		CuSn6	BrOF6,5-0,15	PB102	
	4	C52100	423018		CuSn8	CuSn8	CuSn9P	C5212	CuSn8		CuSn8	BrOF-0,2	PB104	CuSn8P
	4	C60800	423042		CuAl5As	CuAl5	CuAl6		CuAl5As		CuAl5As	BrA5		CuAl5
	4		423044			CuAl9Mn2			CuAl9Mn2			BrAMc9-2		CuAl9Mn2
	4	C61900	423045			CuAl8Fe3						BrAZ9-4		
	4		423046		CuAl10Fe3Mn2	CuAl10Fe3			CuAl10Fe3Mn2		CuAl10Fe3Mn2	BrZMc10-3-1,5		CuAl10Fe3Mn2
	4	C63000	423047		CuAl10Ni5Fe4	CuAl10Ni5Fe4	CuAl9Ni5Fe3	C6301	CuAl10Ni5Fe4		CuAl10Ni5Fe4	BrAZN10-4-4	CA104	CuAl10Fe5Ni5
	4		423048											
	4	C65500	423053		CuSi3Mn1	CuSi3Mn1					CuSi3Mn1	BrKMc3-1	CS101	CuSi3Mn1
	3	C16200	423058			CuCd1					CuCd1	BrKd1	C108	
	3		423064						CuNi30Mn					
	4		423065			CuNi44Mn1	CuNi44Mn		CuNi44Mn1		CuNi44Mn1	MNMc43-0,5		CuNi44Mn1
	3		423115			CuSn5								
	3	C90700	423119		CuSn10-C	CuSn10	CuSn8		G-CuSn10		CuSn10		CT1	CuSn10
	4		423120		CuSn11P-C	CuSn10P			CuSn10P		CuSn10P	Br O10F1	PB1	
	4		423120		CuSn11P-C	CuSn10P			CuSn10P		CuSn10P	Br O10F1	PB1	
	3	C92700	423121					C2	G-CuPb5Sn					
	3	C93700	423122		CuSn10Pb10-C	CuPb10Sn10	CuSn10Pb10	LBC3	G-CuPb10Sn		CuPb10Sn10	BrO10S10	LB2	CuPb10Sn10
	4	C91700	423123		CuSn12-C	CuSn12	CuSn12		G-CuSn12				PB2	CuSn12
	4	C91700	423123		CuSn12-C	CuSn12	CuSn12		G-CuSn12				PB2	CuSn12
	4	C91700	423123		CuSn12-C	CuSn12	CuSn12		G-CuSn12				PB2	CuSn12
	3	C83600	423135		CuSn5Zn5Pb5-C	CuPb5Sn5Zn5	CuSn5Pb5Zn5	BC6	G-CuSn5Zn5Pb		CuSn5Zn5Pb5	BrO5C5S5	LG2	CuSn5Zn5Pb5
	3	C83600	423135		CuSn5Zn5Pb5-C	CuPb5Sn5Zn5	CuSn5Pb5Zn5	BC6	G-CuSn5Zn5Pb		CuSn5Zn5Pb5	BrO5C5S5	LG2	CuSn5Zn5Pb5
	3	C83600	423135		CuSn5Zn5Pb5-C	CuPb5Sn5Zn5	CuSn5Pb5Zn5	BC6	G-CuSn5Zn5Pb		CuSn5Zn5Pb5	BrO5C5S5	LG2	CuSn5Zn5Pb5
	3	C90500	423138			CuSn10Zn2		BC3	G-CuSn10Zn		CuSn10Zn2	BrO10C2	B1	CuSn10Zn2
	3	C90500	423138			CuSn10Zn2		BC3	G-CuSn10Zn		CuSn10Zn2	BrO10C2	B1	CuSn10Zn2
	4		423144									BrA9Mc2L		
	4		423144									BrA9Mc2L		
	4	C95200	423145		CuAl10Fe2-C	CuAl10Fe3	CuAl10Fe3	AlBC1	G-CuAl10Fe		CuAl10Fe3	BrA9Z3L	AB1	CuAl10Fe3
	4	C95200	423145		CuAl10Fe2-C	CuAl10Fe3	CuAl10Fe3	AlBC1	G-CuAl10Fe		CuAl10Fe3	BrA9Z3L	AB1	CuAl10Fe3
	4		423146								CuAl10Fe3Mn2	BrA10Zn3Mc2		
	4		423146								CuAl10Fe3Mn2	BrA10Zn3Mc2		
	4	C95500	423147		CuAl10Fe5Ni5-C	CuAl10Fe5Ni5	CuAl10Fe5Ni5	AlBC3	G-CuAl10Ni		CuAl10Fe4Ni4	BrAl10Z4N4L	AB2	CuAl10Fe4Ni5
	4	C95500	423147		CuAl10Fe5Ni5-C	CuAl10Fe5Ni5	CuAl10Fe5Ni5	AlBC3	G-CuAl10Ni		CuAl10Fe4Ni4	BrAl10Z4N4L	AB2	CuAl10Fe4Ni5
	3		423183						G-CuPb22Sn					
	3		423184			CuPb30		KJ3	CuPb30			BrS30		
	3	Cu-5Zn	423200		CuZn5	Cu-Zn5	CuZn5	C21000	CuZn5		CuZn5	L 96	CZ125	CuZn5
	3	C22000	423201		CuZn10	CuZn10	CuZn10	C2200	CuZn10		CuZn10	L90	CZ101	CuZn10
	3	C23000	423202		CuZn15	CuZn15	CuZn15	C2300	CuZn15		CuZn15	L85	CZ102	CuZn15
	3	C24000	423203		CuZn20	CuZn20	CuZn20	C2400	CuZn20		CuZn20	L80	CZ103	CuZn20
	3	C26000	423210		CuZn30	CuZn30	CuZn30	C2600	CuZn30		CuZn30	L70	CZ106	CuZn30
	4		423212		CuZn33		CuZn33	C2680	CuZn33		CuZn33	L68		CuZn33

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ISO 513	Subgroup / Subgrupo / Sous-groupe	USA	CZ	PRC	EU	ISO	F	J	D	D	PL	RUS	GB	E
		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
N	3	C27400	423213		CuZn36	CuZn37	CuZn36	C2720	CuZn37		CuZn37	L63	CZ108	CuZn37
	4	C34000	423214		CuZn35Pb1	CuZn35Pb1	CuZn35Pb2	C3501	CuZn36Pb1,5		CuZn36Pb1,5	LS63-2	CZ 118	CuZn35Pb2
	4	C28000	423220		CuZn40	CuZn40	CuZn40	C2801	CuZn40		CuZn40	L60	CZ109	CuZn40
	4	C36500	423221		CuZn37Pb1	CuZn37Pb1	CuZn39Pb0,8	C3501	CuZn39Pb0,5			LS60-1	CZ123	CuZn40Pb
	4	C37000	423222		CuZn38Pb1	CuZn39Pb1		C3710	CuZn38Pb1,5		CuZn38Pb1,5	LS 59-1	CZ129	CuZn39Pb1
	4	C37700	423223		CuZn39Pb2	CuZn40Pb2	CuZn39Pb2	C3771	CuZn40Pb2		CuZn40Pb2	LS 60-2	CZ 120	CuZn39Pb2
	4		423231			CuZn39AlFeMn		C6782	CuZn40Al1		CuZn39Al1Fe1Mn1			CuZn39Al1FeMn
	4		423234		CuZn40Mn2Fe1				CuZn40Mn2		CuZn40Mn1,5	Lmc58-2	CZ136	
	4	C46400	423237		CuZn38Sn1AS	CuZn38Sn1	CuZn38Sn1	C4640	CuZn38Sn1		CuZn38Sn1	LO60-1	CZ 112	CuZn38Sn1
	4		423256			CuNi15Zn21	CuNi15Zn22				CuNi15Zn21	MNC15-20	NS105	CuNi15Zn21
	4	C87500	423303		CuZn16Si4-C			SzBC2	G-CuZn15Si4		CuZn16Si3,5	LC15K4		
	4	C86200	423311		CuZn25Al5Mn4Fe3-C	CuZn25Al6Fe3Mn3	CuZn19Al6 Y20	HBsC4	G-CuZn25Al5			LC23AŽ3Mc		CuZn25Al6FeMn3
	3		423313		CuZn33Pb2-C	CuZn33Pb2	CuZn33Pb-Y20	YBsC2	G-CuZn33Pb				SCB3	CuZn33Pb
	3		423319											
	4	C86500	423320											
	4	C85800	423321		CuZn37Al1-C		CuZn40 Y40	YBsC3	G-CuZn37Al1			LC40S	DCB1	CuZn40Pb
	4	C86400	423322		CuZn32Al2Mn2Fe1-C	CuZn35AlFeMn	CuZn30AlFeMn	HBsC1	G-CuZn34Al2		CuZn38Al2Mn1Fe		HTB1	CuZn35AlFeMn
	1		424002		AW-Al99,8 (A)	Al99,8 (A)	1080A	1080A	Al99,8		Al99,8	AD000	1080A	Al-99,8 (A)
	1		424003		AW-Al99,7	Al99,7	1070A	1070	Al99,7		Al99,7	AD00		Al-99,7
	1	1350	424004		AW-EAl99,5	E-Al99,5			E-Al		Al99,5E	ADOE	1350	Al 99,5E
	1	A91060	424005		AW-Al99,5	Al99,5	1050A	1050	Al99,5		Al99,5	ADO	1050A	Al-99,5
	2	A92017	424201		AW-AlCu4MgSi	AlCuMgSi	2017A	2017	AlCuMg1		AlCuMg1	D1		Al-4CuMg
	2	2024	424203		Al-P2024	AlCu4Mg1	2024	2024	AlCuMg2		AlCu4Mg2	D16	2024	Al-4Cu1Mg
	2		424206								AlCu2SiMn	AK6		
	2	A92618	424218		AW-AlCu2Mg1,5Ni		2618A	2618			AlCu2Mg2Ni1	AK-1	2618A	Al-2CuMgNi
	2	A97075	424222		Al-P7075	AlZn6MgCu	7075	7075	AlZnMgCu1,5		AlZn6Mg2Cu	V95	7075	Al-6ZnMgCu
	2	A94032	424237		AW-AlSi12,2MgCuNi		4032	4032						Al-12SiNi
	2	AlcladA9024	424253				2024-F		AlCuMg2pl			D16P		
	2		424254		AW-AlCu4PbMg	AlCu4PbMg	2030		AlCuMgPb					
	2	A02420	424315			Al-Cu4Ni2Mg2	A-U4NT	AC5A	G-AlCu4NiMg			AL1	AlCu4Ni2Mg2	Al-4Cu2NiMg
	2	A04130	424330		AC-AlSi12(a)	Al-Si12	A-S12U	AC3A	G-AlSi11		AlSi11	AK12	LM20	Al-12Si1Cu
	2	A-0359.0	424331		AC-AlSi10Mg (A)	Al-Si10Mg	A-S10G	ADC3	G-AlSi10Mg		AlSi9Mg	AK9		
	2	A03560	424332		AC-AlSi7Mg	Al-Si7Mg(FE)	A-S7G				AlSi7Mg	AK7	LM25	Al-7SiMg
	2		424336		AC-AlSi12CuNiMg		A-S11UNG	AC8A			AlSi13Mg1CuNi	AK12M2MgN	LM13	Al-12SiNi
	2		424337				A-S9GU							
	2	A03080	424357			Al-SiCu3	A-S5U3G	AC2A	G-AlSiCu4		AlSiCu4	AK5M4	LM21	Al-6Si4Cu
	2	A02130	424361				A-U8S							Al-7CuSi
	2		424380									Al 5		
	2		424386				A-S18UNG	AC9A					LM28	
	1	A96061	ONZ 424400		Al-P6082	AlSi1MgMn	6082	6061	AlMgSi1		AlSi1MgMn	AD35	6082	Al-1SiMgMn
	1		ON 424406		AW-Al99,98Mg0,5				AlRMg0,5					
	1	A95052	424412		AW-AlMg2	AlMg2	5052	5052	AlMg2,5		AlMg2	AlMg2	5251	Al-2,5Mg
	1	A95154	424413		AW-AlMg3	AlMg3	5154 A	5154	AlMg2,7Mn		AlMg3	AMg3	5454	Al-3Mg
	2	A95083	424415		AW-AlMg4	AlMg4,5Mn0,7	5183	5082	AlMg4,5		AlMg4,5Mn	AMg4,5	5083	Al-5Mg
	1	A93003	ONZ 424432		AW-AlMn1	AlMn1	3103	3003	AlMn1		AlMn1	Amc	3103	Al-1Mn
	2		424515		AC-AlMg5Si	AlMg5Si1	A-G6		G-AlMg5Si		AlMg5Si1	AMg5K	LM5	
	2		424518											
	2	A05200	424519		AC-AlMg9	AlMg10	A-G10SY4	ADC5	GD-AlMg9			AMg10	LM10	

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		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
S	2	904 L,UNSV0890A	Uranus B6				Z2NCDU25-20		X1NiCrMoCu25 20 5	1.4539				
	2	660	Z8NCTV25-15BFF				E-Z 6 NCTDV 25.15		X5NiCrTi 2615	1.4980				
	2	B 163	Incoloy 800 HT				Z10NC32-21		X10NiCrAlTi3221	1.4876				
	2		G-X40NiCrSi38 18					SCH15	G-X40NiCrSi38 18	1.487			330C11	
	2	N 08330	X5NiCrAlTi 31 20						X5NiCrAlTi 31 20	1.496				
	2	330	X12NiCrSi 36 16				Z12NCS35-16	SUH330	X12NiCrSi 36 16	1.4864				
	2	N 08800	X2NiCrAlTi 32 20						X2NiCrAlTi 32 20	1.456			NA 15	
	2	N 08831	X1NiCrMoCu 32 28 7						X1NiCrMoCu 32 28 7	1,456				
	2	N08028	X1NiCrMoCuN 31 27 4				Z1NCDU31-27-03		X1NiCrMoCuN 31 27 4	1.4563				
	2	AMS 5732 – 5737	A -286						X 5 Ni CrTi 25 15					
	2		X40CoCrNi20 20				Z42CNKDWNb		X40CoCrNi20 20	1,498				
	3		Ni70Cu30			NiCu30	NiCu32Fe1,5Mn		NiCu30Fe		NiCu30	NMZMc28-2,5-1,5		
	3		NiFe17CuCr						NiFe16CuCr					
	3		NiFe48						NiFe47		NiFe49Pr			
	3	ALLOY 59	NiCr21Mo16Al											
	3	INCONEL alloy 686	NiCr21Mo16W											
	3	NIMONIC alloy 90 (HEV6)	NiCrCo18Ti											
	3	NIMONIC alloy 105	NiCo20Cr15MoAlTi											
	3	UNS N10276	NiMoCr15W				NiMo16Cr16							
	3		NiCr22Mo9Nb				NC22DNb							
	3	MAR-M509	CoCr23Ni10W7Ta4											
	3		Hastelloy C-4						NiMo16CrTi	2,461				
	3	AMS 5754	Hastelloy X				NC22FeD			2.4603				
	3	AMS 5396	Hastelloy B				ND37FeV		S-NiMo30	2.4800				
	3	AMS 5750	Hastelloy C & C 276				ND16C15		G-NiMo30	2.481				
	3		Nimonic C-263							2.4650				
	3		Nimonic 90				Nc20ATV		NiCr20Co18Ti	2.4632				
	3	AMS 5754 E	Nimonic PE 13				NC22FeD		NiCr22Fe18Mo	2.4665				
	3		Nimonic 115				NCK15ATD		NiCo15Cr15MoAlTi	2.4636				
	3		Nimonic 263/C263				NCK20D		NiCr15Co19MoTi	2.4650				
	3		Nimonic 105				NCKD20ATV		NiCo20C15MoAlTi	2.4634				
	3		Nimonic PK33				NC19KDUV		NiCr20Co16MoTi					
	3	UNS N07080	Nimonic 80A_				NC20TA		NiCr20TiAk	2.4631		EI –437 B	HR401,601	
	3	AMS 5661 A	Nimonic 901				ZSNCDT42		NiCr15MoTi	LW2 4662				
	3	AMS 5753	Nimonic PK 25				NKOD20ATU		NiCr18CoMo	2.4666				
	3		Nimonic PE 16				NW11AC		NiFe33Cr17Mo					
	3		Nimonic 75				NC20T		NiCr20Ti	2.4630			HR5,203-4	
	3	SAE 5391 A	Nimocast 842				NC13AD		S-NiCr13Al6MoNb	LW2.4670				
	3	AMS 5665	Inconel 600				NC15Fe		NiCr15Fe	2.4816				
	3	AMS 5715	Inconel 601						NiCr23Fe	2.4851				
	3	N06617	Inconel 617			-	-		-					
	3	5666	Inconel 625				NC22FeDNB		NiCr22Mo9Nb	2.4856				
	3		Inconel 690				NC 30 Fe		NiCr29Fe	2.464				
	3	AMS 5702	Inconel 706				38C16NBT							
	3	AMS 5391	Inconel 713				NC12AD		S-NiCr13Al6MoNb	LW2.4670				
	3	AMS 5589	Inconel 718				NC19FeNB		NiCr19Fe19NbMo	LW2.4668			HR8	
	3	AMS5541	Inconel 722				NC16FeTi		NiCr16FeTi					
	3	AMS 5667	Inconel X-750				NC15FeTNbA							
	3	AMS 5582	Inconel X-750				NC16FeTNb		NiCr16FeTi	2.4669				
	3		Inconel 751						NiCr16Fe7TiAl	2,469				
	3		Incoloy 825				NC21FeDU		NiCr21Mo	2.4858				
	3	AMS 5660	Incoloy 901				ZSNCDT42		NiFe35Cr14MoTi	LW2.4662				
	3	AMS 5399	René 41				NC19KDT		NiCr19Co11MoTi	2.4973				

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		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
S	3		René 95				NC14K8							
	3		Monel 400				NU30		NiCu30Fe	2.4360				
	3	4676	Monel K-500				NU 30 AT		NiCu30Al	2.438			NA 18	
	3	AMS 5751	Udimet 500				NCK19DAT		NiCr18Co18MoTi	2.4983				
	3		Udimet 710				NCK18TDA							
	3		Udimet 700				NCK20AT		NiCo15CrMoAlTi	2.4636				
	3	5383	Udimet 718				NC19FeN		NiCr19Fe19NbMo	LW2.4668				
	3		Udimet 720				NC18K15TDA							
	3	AMS 5544	Waspaloy				NC20K14		NiCr19Fe19NbMo	LW2.4668				
	4	AMS 5759	Haynes 25				KC20WN			LW2.4964				
	4	AMS 5772	Haynes 188				KC22WN							
	4	5537C	Air Resist 213				KC20WN		CoCr20W15Ni					
	4	AMS 5772	Jetalloy 209				KC22WN		CoCr22W14Ni					
	1	R 52250	Ti 1 Pd						Ti 1 Pd	3,723			TP 1	
	1		TiAl 3 V 2.5						TiAl 3 V 2.5	3,720				
	1	AMS R56401	TiAl6V4ELI						TiAl6V4ELI				TA11	
	1	AMS R54520	TiAl5Sn2.5				T-A5E		TiAl5Sn2.5	3.7115			TA14/17	
	1		TiAl5Sn2						TiAl5Sn2	3,712				
	1	R 54620	TiAl6Sn2Zr4Mo2Si						TiAl6Sn2Zr4Mo2Si	3,715				
	1	AMS R56400	TiAl6V4				T-A6V		TiAl6V4	3.7165			TA10-13/TA28	
	1		TiAl6V6Sn2						TiAl6V6Sn2	3,718				
	1		TiAl4Mo4Sn2Si0,5				T-A4DE		TiAl4Mo4Sn2Si0,5	3,719			TA 45-51/TA 57	

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		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
H	4	Gr.1010,1011,M1010	12 010.4	10	2C10	C10	XC10	S9CK	C10	1.1121	10	08	045A10	C10k
	4	Gr.1016	12 020.4	15	C15E	C15E4	C18RR		C15	1.1141			080M15	C16k
	4	Gr.1015	12 023.4	15	C15E	C15E4	XC15	S15C	C15	1.1141	15	15	040A15	
	4	1020	12 024.4	20	C 22	C 25	XC 18	S 22C	C 22	1.0402	20	20	070M20	
	4	Gr.1070	12 071.4		1 CS67		C 68	S 70C-CSP	Ck 67			65	080A67	
	4	52100	14 100.4	G Cr15	100Cr6	Type 1-0	100C6	SUJ 2	100Cr6		LH 15	Šch 15	534A99	F.1311
	4	52100	14 109.4	GCr 15	100Cr6	Type 1-0	100Cr6	SUJ 2	100Cr6	1.3505	LH 15	ŠCh15	535 A99	100Cr6
	4	5015	14 120.4	15Cr	15Cr2	37Cr4	12C8	SCr 415	15Cr3	1.7015	15 H	15Ch	523M15	
	4	Gr.2	14 209.4	Cr9SiMn	100CrMn6	TYPE 3	100CM6	SUJ3	100CrMn6	1.3520	LH15SG	ŠCh15SG	535A99	100CrMn6
	4	No.5115	14 220.4	15CrMn	16MnCr5	TYPE 5	16MC5		16MnCr5	1.7131	15HG	18ChG	527M17	16MnCr5
	4	5120	14 221.4	20CrMn	20MnCr5	Type 7	20MC5	SMnC 420 H	20MnCr5	1.7147	18HGT	18ChG		F.150.D
	4		14 223.4									18ChGT		
	4		14 231.4									30ChGT		
	4	9260	14 260	60Si2CrA			54SiCr6	SUP7	54SiCr6	1.7102	60S2	60S2ChA	250A61	
	4	Cl. A	15 340.4	38CrMoAl			40CAD 6.12	SACM 645	41CrAlMo7	1.8509	38HMJ	38Ch2MJuA	905M39	41CrAlMo7
	4	Gr.4320	16 220.4	12CrNi2	15NiCr6		16NC6		15CrNi6	1.5713	15HN	12ChN2	815M17	16NiCr4
	4	3120	16 231.4				20NC6		19CrNi8			20Ch2N4A	822M17	
	4	E3310X	16 420.4				13NiCr14	SNC815	14NiCr14	1.5752		12Ch2N4A	655H13	
	4		16 532.4								30HGSNA	30ChGSN2A		
	4		16 720.4								18H2N4WA	18Ch2N4MA		
	3	Type 420	17 023.4	3Cr13	X30Cr13	Type 5	Z30Cr13	SUS420J2	X30Cr13	1.4028	3H13	30Ch13	420S45	2304-03
	3	Type 420	17 024.4	4C13	X39Cr13	Type 6	Z40C13		X39Cr13	1.4031	4H13	40Ch13	X39Cr13	X39Cr13

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		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
H	3		17 029.4							1.4034				
	4	440 C	17 042.4								H18	95Ch18		
	4		19 083.4				Y342		C45W3	1.1730				F5131
	4		19 103.4				Y355	SK7	C60W3	1.1740	N5			
	4		19 125.9				Y3 65	SK 7	C67W	1.1744	N6			
	4	W 1-7	19 132.4	T 7	CT 70	C 70 U	C70 E2U	SK 6	C 70 W2		N7	U7-1		F.5103
	4		19 133.4	T7	CT70	C70U	Y170	SK6	C70W	1.1620	N7	U7		C70U
	4	W1Gr.A	19 152.4	T8	CT80	C80U	Y180	SK5	C80W2	1.1625	N8	U8-1	BW1A	C80U
	4	W5	19 191.4	T10A	CT105	C105U	C105E2U	SK3	C105W1	1.1645	N10E	U101	BW1B	C102U
	4	W 110	19 192.4	T 10	CT 105	C 90 U	C 105 E2U	SK 3	C 105 W2		N 10	U 10-1		F.5117
	4		19 221.4	T11	CT120	C120U	Y2120		C110W2	1.1654	N12	U12-1	BW1C	F-5123
	4	W 112	19 255.4		CT 120	TC 120	C120 E3U	SK 2	C125 W	1.1663	N 12	U 13-1		C120 U
	4	02	19 312.4		90MnV8	90MnCrV8	90MnV8		90MnCrV8	1.2842	NMV	9G2V	B02	90 MnCrV 8
	4	02	19 313.4		90MnV8	90MnCrV8	90MnV8		90MnCrV8		NMV	9GF2	BO 2	90MnCrV8
	4		19 340.4		60SiMn7		60Si8		70Sl7					
	4	W 210	19 356.4		100 V2	TCV 105	C 105 E2 UV1	SKS 43	100 V1	1.2833	NV		BW 2	100 V2
	4		19 418.4						80CrV5		NCV 1	8Ch		80CrV2
	4		19 419.4						80CrV2		NCV 1	8Ch		80CrV2
	4		19 420.4	Cr 06			Y2 140 C	SKS 8	140Cr2	1.2008	NC 5	13Ch		140Cr2
	4	L2	19 421.4		107CrV3				115CrV3	1.2210				120CrV2
	4		19 422.4						145Cr6		NC 6			
	4	L 2	19 423.4					SKC 11	90Cr3	1.2056		9ChF		
	4		19 426.4	9CV2					85Cr7			9Ch1		
	1		19 434.4		X21Cr13		X20Cr13		X20Cr13 1.2082	1.2082				X20Cr13 F5261
	3		19 435.4		X41Cr13	X40Cr14	X40Cr14	SUS 420 J2	X42Cr13		4H13	40Ch13	420S45	F.5263
	4	D3	19 436.4		X210Cr12	C210Cr12	Z200C12	SKD1	X210Cr12	1.2080	NC11	Ch12	BD3	X210Cr12
	4		19 437.4		X210CrW 12-1	X210CrW12	X210CrW 12-1		X210CrW12					2313
	4		19 452.4				Y60SC7		58SiCr8	1.2103				
	4		19 487.4						21MnCr5	1.2162				
	1	L7	19 501		100CrMo7		100CD7	SUJ4	100CrMo7	1.2303				F.520.F
	4	L7	19 501.4		100CrMo7		100CD7	SUJ4	100CrMo7	1.2303				F.520.F
	3		19 512.4				45CDV6		48CrMoV 6 7					
	3		19 520.4		35CrMo8	35CrMo7	40CrMnMo8		40CrMnMo7		WLB			40CrMnMo7
	1	H10	19 541.4		30CrMoV12-11	32CrMoV12-28	32CDV12-28	SKD7	X32CrMoV33	1.2365	WLV	3Ch3M3F	BH10	30CrMoV12
	3	H11	19 552.4	4Cr5MoSiV	X37CrMoV5-1	X37CrMoV5 1	Z38CDV5	SKD6	X38CrMoV5.1	1.2343	WCL	4Ch5MFS	BH11	X37CrMoSiV5
	3	H11	19 553.9	4Cr5MoSiV	X37CrMoV5-1	X37CrMoV5 1	Z38CDV5	SKD6	X38CrMoV5.1	1.2343	WCL	4Ch5MFS	BH11	
	3	H13	19 554.4	4Cr5MoSiV1	X40CrMoV511	40CrMoV5 1	X40CrMoV5	SKF61	X40CrMoV51	1.2344	WCLV	4Ch5MF1S	BH 13	X37CrMoSiV5
	4	H 42	19 561.4											
	4	A 2	19 571.4	Cr5Mo1V	X100CrMoV 5 1	X100CrMoV5	Z100CDV5	SKD 12	X100CrMoV 5 1		NCLV	9Ch5VF	BA 2	F.5227
	4	A7	19 581.4											
	4		19 614.4						55NiCr11	1.2719				F.5224
	1		19 642.4		40NiCrMoV16				35NiMo16				BP 30	35NiCrMo16
	3		19 655.4		40NiCrMo16	45NiCrMo16	40NCDV16		X45NiMo4II1.2	1.2767				
	3	L 6	19 662.4	5CrNiMo	55NiCrMoV7		55NCDV7	SKT 4	55NiCrMoV6	1.2711	WNL	5ChNM	BH 224/5	F.520.S
	1		19 675.4						28NiCrMoV10	1.2740				
	1		19 678						28NiMo17	1.2747				
	1		19 678.4						28NiMo17	1.2747				
	4	F 1	19 710.4	W				SKS 7M	120 W 4	1.2414	NW 1			F.5238
	4		19 712.4						110WCrV5			ChV6		
	4	F 2	19 714.4					SKS 11	X 130W5			ChV 4F		
	1		19 720.4	30W4Cr2VA	X30WCrV 5 3	30WCrV5	X32WCrV5	SKD 4	30WCrV 5.3					
	1	H21	19 721.4	3Cr2W8V	X30WCrV93	X30WCrV9-3	Z30WCV9	SKD5	X30WCrV9.3	1.2581	WWW	3Ch2V8F	BH21	X30WCrV9
	1		19 723.4								WWN 1		BH 21A	

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		AISI/SAE	ČSN	GB	EN	ISO	AFNOR	JIS	DIN	W.-nr	PN	GOST	BS	
H	4	S1	19 732.4		45WCrSiV8	50WCrV8	45WCV20		45WCrV7	1.2542	NZ2	50ChV2SF	BS1	45 WCrSiV8
	4	S 1	19 733.4		55WCrV8	60WCrV8	55WC20		60WCrV7		NZ 3	5ChV2S	BS 1	60WCrSiV8
	1		19 740.4						30 WCrV 151	1.2564	WWS 1			F.527
	4		19 802.4					SKH6	S 12-1-2	1.3318	SW12	R12F3		
	4		19 810.4				Z130WV 13.4		S 12-1-4	1.3302	SW12	R9F5		
	4	T1	19 824.4	W18Cr4V	HSv18-0-1	HS 18-0-1	Z80WCV18-04-01	SKH 2	HS 18-0-1	1.3355	SW18	R18	BT1	HS 18-0-1
	4	M2	19 830.4	W6Mo5Cr4V2	HS 6-5-2	HS 6-5-2	Z85WDCV06-05-04-02	SKH51	HS 6-5-2	1.3343	SW7M	R6M5	BM2	HS 6-5-2
	4		19 852.4	W6Mo5Cr4V2Co5	HS 6-5-2-5	HS 6-5-2-5	Z85WDKCV06-05-04-02	SKH55	HS 6-5-2-5	1.3243	SK5M	R6M5K5	BM35	HS 6-5-2-5
	4	T 4	19 855.4	W18Cr4VCo4	HS18-1-1-5		Z 80WKCV 18-05-04-01	SKH 3	HS 18-1-2-5			R18k5F2	BT 4	F.5530
	4		19 856.4									R9K5		
	4	T 15	19 858.4	W12Cr4V5Co5	HS12-1-5-5	HS12-1-5-5	HS 12-1-5-5	SKH 10	HS 12-1-4-5	1.3202	SK 5V	R13F4K5	BT 15	HS12-1-5-5
	4		19 861.4		HS 10-4-3-10		Z130WKCDV	SKH57	HS 10-4-3-10	1.3207	SK10V	R12F3K10M3-Š	BT42	HS 10-4-3-10
	4		42 2880.6									JuND4		
	4		42 2881.6									JuND8		
	4		42 2887.6						AlNiCo18/9					
	4		42 2891.6						AlNiCo 3515			JuN14DK25A		
	4		42 2893.6						AlNiCo 30/10					
	4		42 2895.6						AlNiCo44/5			JuN13DK24S		
	4		42 2992.4									R9		
	2		422478									ŽČCh3		
	2	Gr.1	422483								ZlSi15	ČS15	Si14	
	2		422484									ŽČJu30		
	2		422491									ŽČCh16		
	2	Ni-Hard 2	G-X 260 NiCr 4 2						G-X 260 NiCr 4 2	0,962			Grade 2 A	
	2	Ni-Hard 1	G-X 330 NiCr 4 2						G-X 330 NiCr 4 2	0,963			Grade 2 B	
	2	Ni-Hard 2	G-X 260 NiCr 4 2						G-X 260 NiCr 4 2	0,962			Grade 2 A	
	2	Ni-Hard 1	G-X 330 NiCr 4 2						G-X 330 NiCr 4 2	0,963			Grade 2 B	
	2	Ni-Hard 4	G-X 300 CrNiSi 9 5 2						G-X 300 CrNiSi 9 5 2	0,963				
	2		G-X 300 CrMo 15 3						G-X 300 CrMo 15 3	0,964				
	2		G-X 300 CrMoNi 15 2 1						G-X 300 CrMoNi 15 2 1	0,964				
	2		G-X 260 CrMoNi 20 2 1						G-X 260 CrMoNi 20 2 1	0,965				
	2	A 532 III A 25% Cr	G-X 260 Cr 27						G-X 260 Cr 27	0,965			Grade 3 D	

PRAMET

PRAMET

HARDNESS CONVERSION TABLE
TABLA DE CONVERSIÓN DE DUREZA
TABLE DE CONVERSION DE DURETÉ

Strength Resistencia Résistance [MPa]	Hardness / Dureza / Dureté			
	BRINELL	VICKERS	ROCKWELL	ROCKWELL
R_m	HB	HV	HRB	HRC
285	86	90	1190	–
320	95	100	56,2	–
350	105	110	62,3	–
385	114	120	66,7	–
415	124	130	71,2	–
450	133	140	75,0	–
480	143	150	78,7	–
510	152	160	81,7	–
545	162	170	85,8	–
575	171	180	87,1	–
610	181	190	89,5	–
640	190	200	91,5	–
675	199	210	93,5	–
705	209	220	95	–
740	219	230	96,7	–
770	228	240	98,1	–
800	238	250	99,5	–
820	242	255	–	23,1
850	252	265	–	24,8
880	261	275	–	26,4
900	266	280	–	27,1
930	276	290	–	28,5
950	280	295	–	29,2
995	295	310	–	31,0
1030	304	320	–	32,2
1060	314	330	–	33,3
1095	323	340	–	34,4
1125	333	350	–	35,5
1155	342	360	–	36,6

Strength Resistencia Résistance [MPa]	Hardness / Dureza / Dureté			
	BRINELL	VICKERS	ROCKWELL	ROCKWELL
R_m	HB	HV	HRB	HRC
1190	352	370	–	37,7
1220	361	380	–	38,8
1255	371	390	–	39,8
1290	380	400	–	40,8
1320	390	410	–	41,8
1350	399	420	–	42,7
1385	409	430	–	43,6
1420	418	440	–	44,5
1455	428	450	–	45,3
1485	437	460	–	46,1
1520	447	470	–	46,9
1555	456	480	–	47,7
1595	466	490	–	48,4
1630	475	500	–	49,1
1665	485	510	–	49,8
1700	494	520	–	50,5
1740	504	530	–	51,1
1775	513	540	–	51,7
1810	523	550	–	52,3
1845	532	560	–	53,0
1880	542	570	–	53,6
1920	551	580	–	54,1
1955	561	590	–	54,7
1995	570	600	–	55,2
2030	580	610	–	55,7
2070	589	620	–	56,3
2105	599	630	–	56,8
2145	608	640	–	57,3
2180	618	650	–	57,8

ANSI	ISO	EDP
ADEX 070204FR-FA:HF7	ADEX 070204FR-FA:HF7	7606835
ADEX 070204FR-FA:M0315	ADEX 070204FR-FA:M0315	7606837
ADEX 070206SR-HF:M6330	ADEX 070206SR-HF:M6330	7606877
ADEX 070206SR-HF:M8330	ADEX 070206SR-HF:M8330	7606875
ADEX 070206SR-HF:M8340	ADEX 070206SR-HF:M8340	7606876
ADEX 070208FR-FA:HF7	ADEX 070208FR-FA:HF7	7606836
ADEX 11T304FR-FA:HF7	ADEX 11T304FR-FA:HF7	6753137
ADEX 11T304FR-FA:M0315	ADEX 11T304FR-FA:M0315	6800782
ADEX 11T308FR-FA:HF7	ADEX 11T308FR-FA:HF7	6753138
ADEX 11T308FR-FA:M0315	ADEX 11T308FR-FA:M0315	6800783
ADEX 11T308SR-HF:8215	ADEX 11T308SR-HF:8215	6800779
ADEX 11T308SR-HF:8230	ADEX 11T308SR-HF:8230	6800780
ADEX 11T308SR-HF:M6330	ADEX 11T308SR-HF:M6330	7601275
ADEX 11T308SR-HF:M8310	ADEX 11T308SR-HF:M8310	6922512
ADEX 11T308SR-HF:M8330	ADEX 11T308SR-HF:M8330	7447737
ADEX 11T308SR-HF:M8340	ADEX 11T308SR-HF:M8340	6800781
ADEX 11T308SR-HF:M9340	ADEX 11T308SR-HF:M9340	7048985
ADEX 11T308SR-HF2:8230	ADEX 11T308SR-HF2:8230	7056742
ADEX 11T308SR-HF2:M8310	ADEX 11T308SR-HF2:M8310	7056741
ADEX 11T308SR-HF2:M8330	ADEX 11T308SR-HF2:M8330	7447738
ADEX 11T308SR-HF2:M8340	ADEX 11T308SR-HF2:M8340	7056745
ADEX 11T308SR-HF2:M9325	ADEX 11T308SR-HF2:M9325	7056743
ADEX 11T308SR-HF2:M9340	ADEX 11T308SR-HF2:M9340	7056744
ADEX 11T312FR-FA:HF7	ADEX 11T312FR-FA:HF7	7155957
ADEX 11T312FR-FA:M0315	ADEX 11T312FR-FA:M0315	7155958
ADEX 11T316FR-FA:HF7	ADEX 11T316FR-FA:HF7	6754620
ADEX 160604FR-FA:HF7	ADEX 160604FR-FA:HF7	6838381
ADEX 160604FR-FA:M0315	ADEX 160604FR-FA:M0315	6838384
ADEX 160608FR-FA:HF7	ADEX 160608FR-FA:HF7	6752632
ADEX 160608FR-FA:M0315	ADEX 160608FR-FA:M0315	6838385
ADEX 160608SR-FM:8215	ADEX 160608SR-FM:8215	6753382
ADEX 160608SR-FM:M8310	ADEX 160608SR-FM:M8310	6922511
ADEX 160608SR-FM:M8330	ADEX 160608SR-FM:M8330	7447739
ADEX 160608SR-FM:M8340	ADEX 160608SR-FM:M8340	6800797
ADEX 160612SR-HF:8215	ADEX 160612SR-HF:8215	6838414
ADEX 160612SR-HF:8230	ADEX 160612SR-HF:8230	6838415
ADEX 160612SR-HF:M8310	ADEX 160612SR-HF:M8310	6922513
ADEX 160612SR-HF:M8330	ADEX 160612SR-HF:M8330	7447790
ADEX 160612SR-HF:M8340	ADEX 160612SR-HF:M8340	6838416
ADEX 160612SR-HF:M9340	ADEX 160612SR-HF:M9340	7048986
ADEX 160612SR-HF2:8230	ADEX 160612SR-HF2:8230	7056747
ADEX 160612SR-HF2:M8310	ADEX 160612SR-HF2:M8310	7056746
ADEX 160612SR-HF2:M8330	ADEX 160612SR-HF2:M8330	7447791
ADEX 160612SR-HF2:M8340	ADEX 160612SR-HF2:M8340	7056750
ADEX 160612SR-HF2:M9325	ADEX 160612SR-HF2:M9325	7056748
ADEX 160612SR-HF2:M9340	ADEX 160612SR-HF2:M9340	7056749
ADEX 160616FR-FA:HF7	ADEX 160616FR-FA:HF7	6838382
ADEX 160616FR-FA:M0315	ADEX 160616FR-FA:M0315	6838386
ADEX 160630FR-FA:HF7	ADEX 160630FR-FA:HF7	6838383
ADKT 1505PDER-M:M8330	ADKT 1505PDER-M:M8330	7447792
ADKT 1505PDER-M:M8340	ADKT 1505PDER-M:M8340	6800798
ADKT 1505PDER-M:M9325	ADKT 1505PDER-M:M9325	6754542
ADKX 15T304ER-F:M8330	ADKX 15T304ER-F:M8330	7447793
ADKX 15T304ER-F:M8345	ADKX 15T304ER-F:M8345	6756223
ADKX 15T308ER-F:M8330	ADKX 15T308ER-F:M8330	7447794
ADKX 15T308ER-F:M8345	ADKX 15T308ER-F:M8345	6756225
ADKX 15T330ER-F:M8330	ADKX 15T330ER-F:M8330	7447795
ADKX 15T330ER-F:M8345	ADKX 15T330ER-F:M8345	6756227
ADKX 15T340ER-F:M8330	ADKX 15T340ER-F:M8330	7447796
ADKX 15T340ER-F:M8345	ADKX 15T340ER-F:M8345	6756229
ADKX 15T360ER-F:M8330	ADKX 15T360ER-F:M8330	7447797
ADMX 070202SR-F:M8330	ADMX 070202SR-F:M8330	7799486
ADMX 070202SR-F:M8340	ADMX 070202SR-F:M8340	7799487
ADMX 070202SR-M:8215	ADMX 070202SR-M:8215	6798615
ADMX 070202SR-M:M8330	ADMX 070202SR-M:M8330	7447798
ADMX 070202SR-M:M8340	ADMX 070202SR-M:M8340	6798617
ADMX 070204SR-F:M6330	ADMX 070204SR-F:M6330	7799521
ADMX 070204SR-F:M8310	ADMX 070204SR-F:M8310	7799488
ADMX 070204SR-F:M8330	ADMX 070204SR-F:M8330	7799489
ADMX 070204SR-F:M8340	ADMX 070204SR-F:M8340	7799520
ADMX 070204SR-F:M9340	ADMX 070204SR-F:M9340	7799522
ADMX 070204SR-M:8215	ADMX 070204SR-M:8215	6798618
ADMX 070204SR-M:8230	ADMX 070204SR-M:8230	6798619
ADMX 070204SR-M:M6330	ADMX 070204SR-M:M6330	6925504
ADMX 070204SR-M:M8310	ADMX 070204SR-M:M8310	6922514
ADMX 070204SR-M:M8330	ADMX 070204SR-M:M8330	7447799
ADMX 070204SR-M:M8340	ADMX 070204SR-M:M8340	6798620
ADMX 070204SR-M:M9340	ADMX 070204SR-M:M9340	6798621
ADMX 070208SR-F:M6330	ADMX 070208SR-F:M6330	7799607
ADMX 070208SR-F:M8310	ADMX 070208SR-F:M8310	7799604
ADMX 070208SR-F:M8330	ADMX 070208SR-F:M8330	7799605
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ADMX 070208SR-M:8230	ADMX 070208SR-M:8230	6798623
ADMX 070208SR-M:M6330	ADMX 070208SR-M:M6330	7601277
ADMX 070208SR-M:M8310	ADMX 070208SR-M:M8310	6922515
ADMX 070208SR-M:M8330	ADMX 070208SR-M:M8330	7447800
ADMX 070208SR-M:M8340	ADMX 070208SR-M:M8340	6798624
ADMX 070208SR-M:M9340	ADMX 070208SR-M:M9340	6798625
ADMX 070212SR-M:M8340	ADMX 070212SR-M:M8340	7799771
ADMX 070216SR-M:M8310	ADMX 070216SR-M:M8310	7799774
ADMX 070216SR-M:M8330	ADMX 070216SR-M:M8330	7799772
ADMX 070216SR-M:M8340	ADMX 070216SR-M:M8340	7799773
ADMX 070220SR-M:M6330	ADMX 070220SR-M:M6330	7056847
ADMX 070220SR-M:M8310	ADMX 070220SR-M:M8310	7048987
ADMX 070220SR-M:M8330	ADMX 070220SR-M:M8330	7447801
ADMX 070220SR-M:M8340	ADMX 070220SR-M:M8340	6939771
ADMX 11T302SR-M:M8330	ADMX 11T302SR-M:M8330	7447802
ADMX 11T302SR-M:M8340	ADMX 11T302SR-M:M8340	6800753
ADMX 11T304SR-F:8215	ADMX 11T304SR-F:8215	6753383
ADMX 11T304SR-F:8230	ADMX 11T304SR-F:8230	6753123
ADMX 11T304SR-F:M8310	ADMX 11T304SR-F:M8310	6922516
ADMX 11T304SR-F:M8330	ADMX 11T304SR-F:M8330	7447803
ADMX 11T304SR-F:M8340	ADMX 11T304SR-F:M8340	6800784
ADMX 11T304SR-F:M9340	ADMX 11T304SR-F:M9340	6754588
ADMX 11T304SR-M:8215	ADMX 11T304SR-M:8215	6753384
ADMX 11T304SR-M:8230	ADMX 11T304SR-M:8230	6753125
ADMX 11T304SR-M:M8310	ADMX 11T304SR-M:M8310	6922517
ADMX 11T304SR-M:M8330	ADMX 11T304SR-M:M8330	7447804
ADMX 11T304SR-M:M8340	ADMX 11T304SR-M:M8340	6800785
ADMX 11T304SR-M:M9325	ADMX 11T304SR-M:M9325	6754538
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ADMX 11T304SR-MM:M6330	ADMX 11T304SR-MM:M6330	6925507
ADMX 11T304SR-MM:M8340	ADMX 11T304SR-MM:M8340	6925540
ADMX 11T304SR-MM:M9340	ADMX 11T304SR-MM:M9340	7051464
ADMX 11T308PR-R:8215	ADMX 11T308PR-R:8215	6753385
ADMX 11T308PR-R:M5315	ADMX 11T308PR-R:M5315	6754621
ADMX 11T308PR-R:M8310	ADMX 11T308PR-R:M8310	6922518
ADMX 11T308PR-R:M8330	ADMX 11T308PR-R:M8330	7447805
ADMX 11T308PR-R:M8340	ADMX 11T308PR-R:M8340	6800786
ADMX 11T308PR-R:M9315	ADMX 11T308PR-R:M9315	6754549
ADMX 11T308PR-R:M9325	ADMX 11T308PR-R:M9325	6754539
ADMX 11T308SR-F:8215	ADMX 11T308SR-F:8215	6753386
ADMX 11T308SR-F:8230	ADMX 11T308SR-F:8230	6753127
ADMX 11T308SR-F:M8330	ADMX 11T308SR-F:M8330	7447806
ADMX 11T308SR-F:M8340	ADMX 11T308SR-F:M8340	6800787
ADMX 11T308SR-F:M9340	ADMX 11T308SR-F:M9340	6754590
ADMX 11T308SR-M:8215	ADMX 11T308SR-M:8215	6753387
ADMX 11T308SR-M:8230	ADMX 11T308SR-M:8230	6753130
ADMX 11T308SR-M:M5315	ADMX 11T308SR-M:M5315	6754622
ADMX 11T308SR-M:M8310	ADMX 11T308SR-M:M8310	6922519
ADMX 11T308SR-M:M8330	ADMX 11T308SR-M:M8330	7447807
ADMX 11T308SR-M:M8340	ADMX 11T308SR-M:M8340	6800788
ADMX 11T308SR-M:M9315	ADMX 11T308SR-M:M9315	6754550
ADMX 11T308SR-M:M9325	ADMX 11T308SR-M:M9325	6754540
ADMX 11T308SR-M:M9340	ADMX 11T308SR-M:M9340	6754591
ADMX 11T308SR-MF:M6330	ADMX 11T308SR-MF:M6330	6925506
ADMX 11T308SR-MF:M8340	ADMX 11T308SR-MF:M8340	6925539
ADMX 11T308SR-MF:M9340	ADMX 11T308SR-MF:M9340	7051433
ADMX 11T308SR-MM:M6330	ADMX 11T308SR-MM:M6330	6925508
ADMX 11T308SR-MM:M8340	ADMX 11T308SR-MM:M8340	6925541
ADMX 11T308SR-MM:M8345	ADMX 11T308SR-MM:M8345	7051437
ADMX 11T308SR-MM:M9340	ADMX 11T308SR-MM:M9340	7051465
ADMX 11T310SR-M:M8330	ADMX 11T310SR-M:M8330	7447808
ADMX 11T310SR-M:M8340	ADMX 11T310SR-M:M8340	6800755
ADMX 11T312SR-M:8215	ADMX 11T312SR-M:8215	6800757
ADMX 11T312SR-M:M8330	ADMX 11T312SR-M:M8330	7447809
ADMX 11T312SR-M:M8340	ADMX 11T312SR-M:M8340	6800758
ADMX 11T312SR-MM:M6330	ADMX 11T312SR-MM:M6330	6925509
ADMX 11T312SR-MM:M8340	ADMX 11T312SR-MM:M8340	6925542
ADMX 11T312SR-MM:M8345	ADMX 11T312SR-MM:M8345	7051438
ADMX 11T312SR-MM:M9340	ADMX 11T312SR-MM:M9340	7051466
ADMX 11T316PR-R:8215	ADMX 11T316PR-R:8215	6800775
ADMX 11T316PR-R:M8330	ADMX 11T316PR-R:M8330	7447810
ADMX 11T316PR-R:M8340	ADMX 11T316PR-R:M8340	6800777
ADMX 11T316PR-R:M9325	ADMX 11T316PR-R:M9325	6800778
ADMX 11T316SR-M:8215	ADMX 11T316SR-M:8215	6753388
ADMX 11T316SR-M:8230	ADMX 11T316SR-M:8230	6753135
ADMX 11T316SR-M:M6330	ADMX 11T316SR-M:M6330	7601278
ADMX 11T316SR-M:M8310	ADMX 11T316SR-M:M8310	6922520
ADMX 11T316SR-M:M8330	ADMX 11T316SR-M:M8330	7447811
ADMX 11T316SR-M:M8340	ADMX 11T316SR-M:M8340	6800789
ADMX 11T320SR-M:M6330	ADMX 11T320SR-M:M6330	7601279
ADMX 11T320SR-M:M8330	ADMX 11T320SR-M:M8330	7447812
ADMX 11T320SR-M:M8340	ADMX 11T320SR-M:M8340	6800770
ADMX 11T325SR-M:M6330	ADMX 11T325SR-M:M6330	7601330
ADMX 11T325SR-M:M8330	ADMX 11T325SR-M:M8330	7447813
ADMX 11T325SR-M:M8340	ADMX 11T325SR-M:M8340	6800772
ADMX 11T330SR-M:M6330	ADMX 11T330SR-M:M6330	7601331
ADMX 11T330SR-M:M8330	ADMX 11T330SR-M:M8330	7447814
ADMX 11T330SR-M:M8340	ADMX 11T330SR-M:M8340	6800774
ADMX 160604SR-M:8215	ADMX 160604SR-M:8215	6838387
ADMX 160604SR-M:8230	ADMX 160604SR-M:8230	6838388
ADMX 160604SR-M:M8330	ADMX 160604SR-M:M8330	7447815
ADMX 160604SR-M:M8340	ADMX 160604SR-M:M8340	6838389
ADMX 160604SR-MM:M6330	ADMX 160604SR-MM:M6330	6925521
ADMX 160604SR-MM:M8340	ADMX 160604SR-MM:M8340	6925544
ADMX 160604SR-MM:M9340	ADMX 160604SR-MM:M9340	7051467
ADMX 160608PR-R:8215	ADMX 160608PR-R:8215	6753389
ADMX 160608PR-R:8230	ADMX 160608PR-R:8230	6752623
ADMX 160608PR-R:M5315	ADMX 160608PR-R:M5315	6754623
ADMX 160608PR-R:M8310	ADMX 160608PR-R:M8310	6922521
ADMX 160608PR-R:M8330	ADMX 160608PR-R:M8330	7447816
ADMX 160608PR-R:M8340	ADMX 160608PR-R:M8340	6800799
ADMX 160608PR-R:M9315	ADMX 160608PR-R:M9315	6754548
ADMX 160608PR-R:M9325	ADMX 160608PR-R:M9325	6754543
ADMX 160608SR-F:8215	ADMX 160608SR-F:8215	6753390
ADMX 160608SR-F:8230	ADMX 160608SR-F:8230	6752580
ADMX 160608SR-F:M8310	ADMX 160608SR-F:M8310	6922522
ADMX 160608SR-F:M8330	ADMX 160608SR-F:M8330	7447817
ADMX 160608SR-F:M8340	ADMX 160608SR-F:M8340	6800810
ADMX 160608SR-F:M9340	ADMX 160608SR-F:M9340	6754592
ADMX 160608SR-M:8215	ADMX 160608SR-M:8215	6753391
ADMX 160608SR-M:8230	ADMX 160608SR-M:8230	6752561
ADMX 160608SR-M:M5315	ADMX 160608SR-M:M5315	6754624
ADMX 160608SR-M:M8310	ADMX 160608SR-M:M8310	6922523
ADMX 160608SR-M:M8330	ADMX 160608SR-M:M8330	7447818
ADMX 160608SR-M:M8340	ADMX 160608SR-M:M8340	6800811
ADMX 160608SR-M:M9315	ADMX 160608SR-M:M9315	6754547
ADMX 160608SR-M:M9325	ADMX 160608SR-M:M9325	6754544
ADMX 160608SR-M:M9340	ADMX 160608SR-M:M9340	6754593
ADMX 160608SR-MF:M6330	ADMX 160608SR-MF:M6330	6925520
ADMX 160608SR-MF:M8340	ADMX 160608SR-MF:M8340	6925543
ADMX 160608SR-MF:M9340	ADMX 160608SR-MF:M9340	7051434
ADMX 160608SR-MM:M6330	ADMX 160608SR-MM:M6330	6925522
ADMX 160608SR-MM:M8340	ADMX 160608SR-MM:M8340	6925545
ADMX 160608SR-MM:M8345	ADMX 160608SR-MM:M8345	7051439
ADMX 160608SR-MM:M9340	ADMX 160608SR-MM:M9340	7051468
ADMX 160616PR-R:M5315	ADMX 160616PR-R:M5315	6838408
ADMX 160616PR-R:M8330	ADMX 160616PR-R:M8330	7447819
ADMX 160616PR-R:M8340	ADMX 160616PR-R:M8340	6838413
ADMX 160616PR-R:M9315	ADMX 160616PR-R:M9315	6838409
ADMX 160616PR-R:M9325	ADMX 160616PR-R:M9325	6838410
ADMX 160616SR-M:8215	ADMX 160616SR-M:8215	6753392
ADMX 160616SR-M:8230	ADMX 160616SR-M:8230	6752581
ADMX 160616SR-M:M8310	ADMX 160616SR-M:M8310	6922524
ADMX 160616SR-M:M8330	ADMX 160616SR-M:M8330	7447820
ADMX 160616SR-M:M8340	ADMX 160616SR-M:M8340	6800812
ADMX 160616SR-M:M9325	ADMX 160616SR-M:M9325	6754545
ADMX 160616SR-MM:M6330	ADMX 160616SR-MM:M6330	6925523
ADMX 160616SR-MM:M8340	ADMX 160616SR-MM:M8340	6925546
ADMX 160616SR-MM:M8345	ADMX 160616SR-MM:M8345	7051460
ADMX 160616SR-MM:M9340	ADMX 160616SR-MM:M9340	7051469
ADMX 160620SR-M:M6330	ADMX 160620SR-M:M6330	7601332
ADMX 160620SR-M:M8330	ADMX 160620SR-M:M8330	7447821
ADMX 160620SR-M:M8340	ADMX 160620SR-M:M8340	6838401
ADMX 160630SR-M:M8330	ADMX 160630SR-M:M8330	7447822
ADMX 160630SR-M:M8340	ADMX 160630SR-M:M8340	6838403

ANSI	ISO	EDP
ADMX 160632SR-M:8230	ADMX 160632SR-M:8230	6752579
ADMX 160632SR-M:M6330	ADMX 160632SR-M:M6330	7601333
ADMX 160632SR-M:M8330	ADMX 160632SR-M:M8330	7447823
ADMX 160632SR-M:M8340	ADMX 160632SR-M:M8340	6800813
ADMX 160632SR-M:M9325	ADMX 160632SR-M:M9325	6754546
ADMX 160640SR-M:M6330	ADMX 160640SR-M:M6330	7601334
ADMX 160640SR-M:M8330	ADMX 160640SR-M:M8330	7447824
ADMX 160640SR-M:M8340	ADMX 160640SR-M:M8340	6838405
ADMX 160650SR-M:M8330	ADMX 160650SR-M:M8330	7447825
ADMX 160650SR-M:M8340	ADMX 160650SR-M:M8340	6838407
ANHX 10T320SR-F:M8310	ANHX 10T320SR-F:M8310	7451999
ANHX 10T320SR-F:M8330	ANHX 10T320SR-F:M8330	7452020
ANHX 10T320SR-F:M8340	ANHX 10T320SR-F:M8340	7452021
APET 150412EN:8230	APET 150412EN:8230	6752538
APET 150412EN:M8330	APET 150412EN:M8330	7447826
APET 150412SN:M8330	APET 150412SN:M8330	7447827
APET 150412SN:M8340	APET 150412SN:M8340	6800814
APET 160408FR-FA:HF7	APET 160408FR-FA:HF7	6752087
APEW 150412ER:M8330	APEW 150412ER:M8330	7447828
APEW 150412SR:M8330	APEW 150412SR:M8330	7447829
APEW 150412SR:M8340	APEW 150412SR:M8340	6835882
APKT 1003PDER-M:8215	APKT 1003PDER-M:8215	6753394
APKT 1003PDER-M:8230	APKT 1003PDER-M:8230	6752540
APKT 1003PDER-M:M8330	APKT 1003PDER-M:M8330	7447830
APKT 1003PDER-M:M8340	APKT 1003PDER-M:M8340	6800815
APKT 1003PDER-M:M9315	APKT 1003PDER-M:M9315	6754682
APKT 1003PDER-M:M9325	APKT 1003PDER-M:M9325	6754535
APKT 1003PDER-M:M9340	APKT 1003PDER-M:M9340	6754683
APKT 1003PDFR-FA:HF7	APKT 1003PDFR-FA:HF7	6757896
APKT 160404-HM:M8340	APKT 160404-HM:M8340	6800816
APKT 160416-HM:M8340	APKT 160416-HM:M8340	6800817
APKT 160431-HM:M8340	APKT 160431-HM:M8340	6800818
APKT 1604PDR-GM:8230	APKT 1604PDR-GM:8230	6752541
APKT 1604PDR-GM:M8330	APKT 1604PDR-GM:M8330	7447831
APKT 1604PDR-GM:M8340	APKT 1604PDR-GM:M8340	6800819
APKT 1604PDR-GM:M9315	APKT 1604PDR-GM:M9315	6754632
APKT 1604PDR-GM:M9325	APKT 1604PDR-GM:M9325	6754536
APKT 1604PDR-GM:M9340	APKT 1604PDR-GM:M9340	6754633
APKT 1604PDR-HM:8215	APKT 1604PDR-HM:8215	6753395
APKT 1604PDR-HM:8230	APKT 1604PDR-HM:8230	6752543
APKT 1604PDR-HM:M5315	APKT 1604PDR-HM:M5315	6754625
APKT 1604PDR-HM:M8330	APKT 1604PDR-HM:M8330	7447832
APKT 1604PDR-HM:M8340	APKT 1604PDR-HM:M8340	6800820
APKT 1604PDR-HM:M9315	APKT 1604PDR-HM:M9315	6754692
APKT 1604PDR-HM:M9325	APKT 1604PDR-HM:M9325	6754537
APKX 1103PDER-M:M8340	APKX 1103PDER-M:M8340	6835883
APKX 150516-M:M8340	APKX 150516-M:M8340	6835884
APKX 150532-M:M8340	APKX 150532-M:M8340	6835885
APKX 1505PDER-F:M8340	APKX 1505PDER-F:M8340	6800821
APKX 1505PDER-M:M8340	APKX 1505PDER-M:M8340	6800822
APKX 1505PDSR-R:M8340	APKX 1505PDSR-R:M8340	6800823
APMT 1604PDER-F:M8330	APMT 1604PDER-F:M8330	7447833
APMT 1604PDER-FM:M8330	APMT 1604PDER-FM:M8330	7447834
APMT 1604PDER-FM:M8345	APMT 1604PDER-FM:M8345	7156043
APMT 1604PDER-R:M8330	APMT 1604PDER-R:M8330	7447835
APMT 1604PDER-R:M8345	APMT 1604PDER-R:M8345	7156045
APMT 1604PDSR-R:M8330	APMT 1604PDSR-R:M8330	7447836
APMT 1604PDSR-R:M8345	APMT 1604PDSR-R:M8345	7156047
BNGX 10T308SR-HM:8215	BNGX 10T308SR-HM:8215	7451997
BNGX 10T308SR-HM:M8310	BNGX 10T308SR-HM:M8310	7451996
BNGX 10T308SR-HM:M8330	BNGX 10T308SR-HM:M8330	7451998
BNGX 10T308SR-M:8215	BNGX 10T308SR-M:8215	7451991
BNGX 10T308SR-M:M6330	BNGX 10T308SR-M:M6330	7601335
BNGX 10T308SR-M:M8310	BNGX 10T308SR-M:M8310	7451990
BNGX 10T308SR-M:M8330	BNGX 10T308SR-M:M8330	7451992
BNGX 10T308SR-M:M8340	BNGX 10T308SR-M:M8340	7451993
BNGX 10T308SR-M:M8345	BNGX 10T308SR-M:M8345	7451994
BNGX 10T308SR-M:M9325	BNGX 10T308SR-M:M9325	7451995
BNGX 10T308SR-MM:M6330	BNGX 10T308SR-MM:M6330	7253609
BNGX 10T308SR-MM:M8310	BNGX 10T308SR-MM:M8310	7474618
BNGX 10T308SR-MM:M8330	BNGX 10T308SR-MM:M8330	7474619
BNGX 10T308SR-MM:M8340	BNGX 10T308SR-MM:M8340	7253607
BNGX 10T308SR-MM:M8345	BNGX 10T308SR-MM:M8345	7253608
BNGX 10T308SR-MM:M9325	BNGX 10T308SR-MM:M9325	7253620
BNGX 10T308SR-MM:M9340	BNGX 10T308SR-MM:M9340	7253621
CCGT 2.520.5F-AL:T0315	CCGT 080302F-AL:T0315	6756210
CCGT 2.520.5-SF3:T6310	CCGT 080302E-SF3:T6310	7168529
CCGT 2.520.5-SF3:T8315	CCGT 080302E-SF3:T8315	7168540
CCGT 2.521F-AL:HF7	CCGT 080304F-AL:HF7	6756212
CCGT 2.521F-AL:T0315	CCGT 080304F-AL:T0315	6756213
CCGT 2.521-SF3:H07	CCGT 080304E-SF3:H07	7168541
CCGT 2.521-SF3:T6310	CCGT 080304E-SF3:T6310	7168542
CCGT 2.521-SF3:T8315	CCGT 080304E-SF3:T8315	7168543
CCGT 21.50.2-SF3:T6310	CCGT 060201E-SF3:T6310	7600312
CCGT 21.50.5F-AL:HF7	CCGT 060202F-AL:HF7	6751796
CCGT 21.50.5F-AL:T0315	CCGT 060202F-AL:T0315	6756135
CCGT 21.50.5L-SI:T8330	CCGT 060202EL-SI:T8330	6754378
CCGT 21.50.5R-SI:T8330	CCGT 060202ER-SI:T8330	6754379
CCGT 21.50.5-SF3:H07	CCGT 060202E-SF3:H07	7168523
CCGT 21.50.5-SF3:T6310	CCGT 060202E-SF3:T6310	7168524
CCGT 21.50.5-SF3:T8315	CCGT 060202E-SF3:T8315	7168525
CCGT 21.51F-AL:HF7	CCGT 060204F-AL:HF7	6751797
CCGT 21.51F-AL:T0315	CCGT 060204F-AL:T0315	6756136
CCGT 21.51L-SI:T8315	CCGT 060204EL-SI:T8315	6922722
CCGT 21.51L-SI:T8330	CCGT 060204EL-SI:T8330	6754380
CCGT 21.51-NF1:H07	CCGT 060204E-NF1:H07	7166214
CCGT 21.51-NF1:T6310	CCGT 060204E-NF1:T6310	7166215
CCGT 21.51-NF1:T7325	CCGT 060204E-NF1:T7325	7166216
CCGT 21.51R-SI:T8315	CCGT 060204ER-SI:T8315	6922723
CCGT 21.51R-SI:T8330	CCGT 060204ER-SI:T8330	6754381
CCGT 21.51-SF3:H07	CCGT 060204E-SF3:H07	7168526
CCGT 21.51-SF3:T6310	CCGT 060204E-SF3:T6310	7168527
CCGT 21.51-SF3:T8315	CCGT 060204E-SF3:T8315	7168528
CCGT 21.52-NF1:T6310	CCGT 060208E-NF1:T6310	7166218
CCGT 21.52-NF1:T7325	CCGT 060208E-NF1:T7325	7166219
CCGT 32.50.2-SF3:T6310	CCGT 09T301E-SF3:T6310	7600313
CCGT 32.50.5F-AL:HF7	CCGT 09T302F-AL:HF7	6752084
CCGT 32.50.5F-AL:T0315	CCGT 09T302F-AL:T0315	6756137
CCGT 32.50.5-FF2:T7325	CCGT 09T302E-FF2:T7325	7156678
CCGT 32.50.5-FF2:T9325	CCGT 09T302E-FF2:T9325	7156679
CCGT 32.50.5-SF3:H07	CCGT 09T302E-SF3:H07	7168544
CCGT 32.50.5-SF3:T6310	CCGT 09T302E-SF3:T6310	7168545
CCGT 32.50.5-SF3:T8315	CCGT 09T302E-SF3:T8315	7168546
CCGT 32.51F-AL:HF7	CCGT 09T304F-AL:HF7	6751705
CCGT 32.51F-AL:T0315	CCGT 09T304F-AL:T0315	6756138
CCGT 32.51L-SI:T8315	CCGT 09T304EL-SI:T8315	6922720
CCGT 32.51L-SI:T8330	CCGT 09T304EL-SI:T8330	6754382
CCGT 32.51-NF1:H07	CCGT 09T304E-NF1:H07	7167400
CCGT 32.51-NF1:T6310	CCGT 09T304E-NF1:T6310	7167401
CCGT 32.51-NF1:T7325	CCGT 09T304E-NF1:T7325	7167402
CCGT 32.51R-SI:T8315	CCGT 09T304ER-SI:T8315	6922721
CCGT 32.51R-SI:T8330	CCGT 09T304ER-SI:T8330	6754383
CCGT 32.51-SF3:H07	CCGT 09T304E-SF3:H07	7168547
CCGT 32.51-SF3:T6310	CCGT 09T304E-SF3:T6310	7168548
CCGT 32.51-SF3:T8315	CCGT 09T304E-SF3:T8315	7168549
CCGT 32.52F-AL:HF7	CCGT 09T308F-AL:HF7	6751799
CCGT 32.52F-AL:T0315	CCGT 09T308F-AL:T0315	6756139
CCGT 32.52-NF1:T6310	CCGT 09T308E-NF1:T6310	7167404
CCGT 32.52-NF1:T7325	CCGT 09T308E-NF1:T7325	7167405
CCGT 32.52-SF3:H07	CCGT 09T308E-SF3:H07	7168550
CCGT 32.52-SF3:T6310	CCGT 09T308E-SF3:T6310	7168551
CCGT 32.52-SF3:T8315	CCGT 09T308E-SF3:T8315	7168552
CCGT 431F-AL:HF7	CCGT 120404F-AL:HF7	6751703
CCGT 431F-AL:T0315	CCGT 120404F-AL:T0315	6756140
CCGT 431-SF3:T6310	CCGT 120404E-SF3:T6310	7600314
CCGT 432F-AL:HF7	CCGT 120408F-AL:HF7	6751701
CCGT 432F-AL:T0315	CCGT 120408F-AL:T0315	6756141
CCGT 432L-SI:T8330	CCGT 120408EL-SI:T8330	6754384
CCGT 432R-SI:T8330	CCGT 120408ER-SI:T8330	6754385
CCGT 432-SF3:H07	CCGT 120408E-SF3:H07	7168553
CCGT 432-SF3:T6310	CCGT 120408E-SF3:T6310	7168554
CCGT 432-SF3:T8315	CCGT 120408E-SF3:T8315	7168555
CCGW 21.51E:TB310	CCGW 060204-B:TB310	6755919
CCGW 21.51S00420:TB310	CCGW 060204S01020B:TB310	6755685
CCGW 32.51E:TB310	CCGW 09T304E-B:TB310	6755920
CCGW 32.51S00420:TB310	CCGW 09T304S01020B:TB310	6755921
CCMT 060202E-FM:T8330	CCMT 060202E-FM:T8330	6754280
CCMT 060204E-FM:T8330	CCMT 060204E-FM:T8330	6754281
CCMT 060208E-FM:T8330	CCMT 060208E-FM:T8330	6754282
CCMT 09T302E-FM:T8330	CCMT 09T302E-FM:T8330	6753648
CCMT 09T304E-FM:T8330	CCMT 09T304E-FM:T8330	6754283
CCMT 09T308E-FM:T8330	CCMT 09T308E-FM:T8330	6754284
CCMT 1.821-FM2:T9315	CCMT 080304E-FM2:T9315	6922867
CCMT 2.520.5-FF2:T7325	CCMT 080302E-FF2:T7325	7156709
CCMT 2.520.5-FF2:T8330	CCMT 080302E-FF2:T8330	7156710
CCMT 2.520.5-FF2:T9325	CCMT 080302E-FF2:T9325	6755932
CCMT 2.520.5-FF2:TT010	CCMT 080302E-FF2:TT010	6756300
CCMT 2.521-FF2:T7325	CCMT 080304E-FF2:T7325	7156711
CCMT 2.521-FF2:T8330	CCMT 080304E-FF2:T8330	7156712
CCMT 2.521-FF2:T9325	CCMT 080304E-FF2:T9325	6755933
CCMT 2.521-FF2:TT010	CCMT 080304E-FF2:TT010	6756301
CCMT 2.521-FM2:T8330	CCMT 080304E-FM2:T8330	7156864
CCMT 2.521-FM2:T9325	CCMT 080304E-FM2:T9325	6756077
CCMT 2.521-FM2:T9335	CCMT 080304E-FM2:T9335	6756078
CCMT 2.521-NF2:T5315	CCMT 080304E-NF2:T5315	6756079
CCMT 2.521-NF2:T7325	CCMT 080304E-NF2:T7325	7156167
CCMT 2.521-NF2:T7335	CCMT 080304E-NF2:T7335	6756082
CCMT 2.521-NF2:T9315	CCMT 080304E-NF2:T9315	6756080
CCMT 2.521-NF2:T9325	CCMT 080304E-NF2:T9325	6756081
CCMT 2.521-NF2:T9335	CCMT 080304E-NF2:T9335	7167455
CCMT 2.522-FF2:T7325	CCMT 080308E-FF2:T7325	7156713
CCMT 2.522-FF2:T8330	CCMT 080308E-FF2:T8330	7156714
CCMT 2.522-FF2:T9325	CCMT 080308E-FF2:T9325	7156715
CCMT 2.522-FM2:T8330	CCMT 080308E-FM2:T8330	7156865
CCMT 2.522-FM2:T9325	CCMT 080308E-FM2:T9325	6756083
CCMT 2.522-FM2:T9335	CCMT 080308E-FM2:T9335	6756084
CCMT 2.522-NF2:H07	CCMT 080308E-NF2:H07	7167456
CCMT 2.522-NF2:T5315	CCMT 080308E-NF2:T5315	6756085
CCMT 2.522-NF2:T7325	CCMT 080308E-NF2:T7325	7156168
CCMT 2.522-NF2:T7335	CCMT 080308E-NF2:T7335	6756087
CCMT 2.522-NF2:T9325	CCMT 080308E-NF2:T9325	6756086
CCMT 21.50.5-FF:T8315	CCMT 060202E-FF:T8315	6753662
CCMT 21.50.5-FF:T8330	CCMT 060202E-FF:T8330	6754257
CCMT 21.50.5-FF:T9315	CCMT 060202E-FF:T9315	7454479
CCMT 21.50.5-FF2:T7325	CCMT 060202E-FF2:T7325	7156700
CCMT 21.50.5-FF2:T8330	CCMT 060202E-FF2:T8330	7156701
CCMT 21.50.5-FF2:T9315	CCMT 060202E-FF2:T9315	7156702
CCMT 21.50.5-FF2:T9325	CCMT 060202E-FF2:T9325	7156703
CCMT 21.50.5-FF2:TT010	CCMT 060202E-FF2:TT010	7080612
CCMT 21.50.5-FM:T7325	CCMT 060202E-FM:T7325	7156160
CCMT 21.50.5-FM:T7335	CCMT 060202E-FM:T7335	6754732
CCMT 21.50.5-FM:T8315	CCMT 060202E-FM:T8315	6753571
CCMT 21.50.5-FM:T9315	CCMT 060202E-FM:T9315	6922865
CCMT 21.50.5-FM:T9325	CCMT 060202E-FM:T9325	6753864
CCMT 21.50.5-NF2:H07	CCMT 060202E-NF2:H07	7167422
CCMT 21.50.5-NF2:T6310	CCMT 060202E-NF2:T6310	7167423
CCMT 21.50.5-NF2:T7325	CCMT 060202E-NF2:T7325	7167424
CCMT 21.50.5-NF2:T8330	CCMT 060202E-NF2:T8330	7167425
CCMT 21.50.5-NF2:T9325	CCMT 060202E-NF2:T9325	7167426
CCMT 21.50.5-RF:T7335	CCMT 060202E-RF:T7335	6756021
CCMT 21.50.5-UR:T7325	CCMT 060202E-UR:T7325	7156161
CCMT 21.50.5-UR:T7335	CCMT 060202E-UR:T7335	6754733
CCMT 21.50.5-UR:T8315	CCMT 060202E-UR:T8315	6753572
CCMT 21.50.5-UR:T8330	CCMT 060202E-UR:T8330	6754226
CCMT 21.50.5-UR:T9315	CCMT 060202E-UR:T9315	6922866
CCMT 21.50.5-UR:T9325	CCMT 060202E-UR:T9325	6753865
CCMT 21.50.5-UR:TT310	CCMT 060202E-UR:TT310	6756274
CCMT 21.51-FF:T8315	CCMT 060204E-FF:T8315	6753663
CCMT 21.51-FF:T8330	CCMT 060204E-FF:T8330	6754258
CCMT 21.51-FF:T9315	CCMT 060204E-FF:T9315	7454480
CCMT 21.51-FF2:T7325	CCMT 060204E-FF2:T7325	7156704
CCMT 21.51-FF2:T8330	CCMT 060204E-FF2:T8330	7156705
CCMT 21.51-FF2:T9315	CCMT 060204E-FF2:T9315	7156706
CCMT 21.51-FF2:T9325	CCMT 060204E-FF2:T9325	7156707
CCMT 21.51-FF2:T9335	CCMT 060204E-FF2:T9335	7156708
CCMT 21.51-FF2:TT010	CCMT 060204E-FF2:TT010	7080613
CCMT 21.51-FM:T7325	CCMT 060204E-FM:T7325	7156162
CCMT 21.51-FM:T7335	CCMT 060204E-FM:T7335	6754734
CCMT 21.51-FM:T8315	CCMT 060204E-FM:T8315	6753573
CCMT 21.51-FM:T9315	CCMT 060204E-FM:T9315	6753709
CCMT 21.51-FM:T9325	CCMT 060204E-FM:T9325	6753762
CCMT 21.51-NF2:H07	CCMT 060204E-NF2:H07	7167427
CCMT 21.51-NF2:T6310	CCMT 060204E-NF2:T6310	7167428
CCMT 21.51-NF2:T7325	CCMT 060204E-NF2:T7325	7167429
CCMT 21.51-NF2:T8330	CCMT 060204E-NF2:T8330	7167450
CCMT 21.51-NF2:T9315	CCMT 060204E-NF2:T9315	7167451
CCMT 21.51-NF2:T9325	CCMT 060204E-NF2:T9325	7167452
CCMT 21.51-NF2:T9335	CCMT 060204E-NF2:T9335	7167453
CCMT 21.51-RF:6630	CCMT 060204E-RF:6630	6756022
CCMT 21.51-RF:T5315	CCMT 060204E-RF:T5315	6756024
CCMT 21.51-RF:T7335	CCMT 060204E-RF:T7335	6756023

ANSI	ISO	EDP
CCMT 21.51-UR:T5315	CCMT 060204E-UR:T5315	6755833
CCMT 21.51-UR:T7325	CCMT 060204E-UR:T7325	7156163
CCMT 21.51-UR:T7335	CCMT 060204E-UR:T7335	6754735
CCMT 21.51-UR:T8315	CCMT 060204E-UR:T8315	6753574
CCMT 21.51-UR:T8330	CCMT 060204E-UR:T8330	6754227
CCMT 21.51-UR:T9315	CCMT 060204E-UR:T9315	6753710
CCMT 21.51-UR:T9325	CCMT 060204E-UR:T9325	6753763
CCMT 21.51-UR:TT310	CCMT 060204E-UR:TT310	6756252
CCMT 21.51W-FM:T7325	CCMT 060204W-FM:T7325	7156164
CCMT 21.51W-FM:T8330	CCMT 060204W-FM:T8330	7033978
CCMT 21.51W-FM:T9315	CCMT 060204W-FM:T9315	7033979
CCMT 21.51W-FM:T9325	CCMT 060204W-FM:T9325	7034000
CCMT 21.51W-UR:TT310	CCMT 060204W-UR:TT310	6756253
CCMT 21.52-FM:T7325	CCMT 060208E-FM:T7325	7156165
CCMT 21.52-FM:T9315	CCMT 060208E-FM:T9315	6753804
CCMT 21.52-FM:T9325	CCMT 060208E-FM:T9325	6753868
CCMT 21.52-UR:T5315	CCMT 060208E-UR:T5315	6755834
CCMT 21.52-UR:T7325	CCMT 060208E-UR:T7325	7156166
CCMT 21.52-UR:T8330	CCMT 060208E-UR:T8330	6754228
CCMT 21.52-UR:T9315	CCMT 060208E-UR:T9315	6754677
CCMT 21.52-UR:T9325	CCMT 060208E-UR:T9325	6754667
CCMT 32.50.5-FM:T7325	CCMT 09T302E-FM:T7325	7156169
CCMT 32.50.5-FM:T7335	CCMT 09T302E-FM:T7335	6754736
CCMT 32.50.5-FM:T8315	CCMT 09T302E-FM:T8315	6753575
CCMT 32.50.5-FM:T8330	CCMT 09T302E-FM:T8330	6753648
CCMT 32.50.5-FM:T9315	CCMT 09T302E-FM:T9315	6922864
CCMT 32.50.5-FM:T9325	CCMT 09T302E-FM:T9325	6753869
CCMT 32.50.5-UR:T6310	CCMT 09T302E-UR:T6310	7763056
CCMT 32.50.5-UR:T8330	CCMT 09T302E-UR:T8330	7763057
CCMT 32.50.5-UR:TT310	CCMT 09T302E-UR:TT310	6756254
CCMT 32.51-FF:T8315	CCMT 09T304E-FF:T8315	6753577
CCMT 32.51-FF:T8330	CCMT 09T304E-FF:T8330	6754259
CCMT 32.51-FF:T9315	CCMT 09T304E-FF:T9315	7454481
CCMT 32.51-FF2:T7325	CCMT 09T304E-FF2:T7325	7156716
CCMT 32.51-FF2:T8330	CCMT 09T304E-FF2:T8330	7156717
CCMT 32.51-FF2:T9315	CCMT 09T304E-FF2:T9315	7156718
CCMT 32.51-FF2:T9325	CCMT 09T304E-FF2:T9325	7156719
CCMT 32.51-FF2:T9335	CCMT 09T304E-FF2:T9335	7156720
CCMT 32.51-FF2:TT010	CCMT 09T304E-FF2:TT010	7080610
CCMT 32.51-FM:T7325	CCMT 09T304E-FM:T7325	7156170
CCMT 32.51-FM:T7335	CCMT 09T304E-FM:T7335	6754737
CCMT 32.51-FM:T8315	CCMT 09T304E-FM:T8315	6753578
CCMT 32.51-FM:T9315	CCMT 09T304E-FM:T9315	6753711
CCMT 32.51-FM:T9325	CCMT 09T304E-FM:T9325	6753764
CCMT 32.51-FM2:T6310	CCMT 09T304E-FM2:T6310	7156866
CCMT 32.51-FM2:T8330	CCMT 09T304E-FM2:T8330	7156867
CCMT 32.51-FM2:T9315	CCMT 09T304E-FM2:T9315	7156868
CCMT 32.51-FM2:T9325	CCMT 09T304E-FM2:T9325	7156869
CCMT 32.51-NF2:H07	CCMT 09T304E-NF2:H07	7167458
CCMT 32.51-NF2:T6310	CCMT 09T304E-NF2:T6310	7167459
CCMT 32.51-NF2:T7325	CCMT 09T304E-NF2:T7325	7167460
CCMT 32.51-NF2:T8330	CCMT 09T304E-NF2:T8330	7167461
CCMT 32.51-NF2:T9315	CCMT 09T304E-NF2:T9315	7167462
CCMT 32.51-NF2:T9325	CCMT 09T304E-NF2:T9325	7167463
CCMT 32.51-NF2:T9335	CCMT 09T304E-NF2:T9335	7167464
CCMT 32.51-RF:6630	CCMT 09T304E-RF:6630	6756025
CCMT 32.51-RF:T7335	CCMT 09T304E-RF:T7335	6756026
CCMT 32.51-RM:T5305	CCMT 09T304E-RM:T5305	6755715
CCMT 32.51-RM:T5315	CCMT 09T304E-RM:T5315	6755835
CCMT 32.51-RM:T7335	CCMT 09T304E-RM:T7335	6754738
CCMT 32.51-RM:T8330	CCMT 09T304E-RM:T8330	6754390
CCMT 32.51-RM:T9315	CCMT 09T304E-RM:T9315	6753712
CCMT 32.51-RM:T9325	CCMT 09T304E-RM:T9325	6753765
CCMT 32.51-UR:T5315	CCMT 09T304E-UR:T5315	6755836
CCMT 32.51-UR:T7325	CCMT 09T304E-UR:T7325	7156171
CCMT 32.51-UR:T7335	CCMT 09T304E-UR:T7335	6754739
CCMT 32.51-UR:T8315	CCMT 09T304E-UR:T8315	6753579
CCMT 32.51-UR:T8330	CCMT 09T304E-UR:T8330	6754229
CCMT 32.51-UR:T9310	CCMT 09T304E-UR:T9310	6755616
CCMT 32.51-UR:T9315	CCMT 09T304E-UR:T9315	6753713
CCMT 32.51-UR:T9325	CCMT 09T304E-UR:T9325	6753766
CCMT 32.51-UR:TT310	CCMT 09T304E-UR:TT310	6756255
CCMT 32.51W-FM:T7325	CCMT 09T304W-FM:T7325	7156172
CCMT 32.51W-FM:T8330	CCMT 09T304W-FM:T8330	7034001
CCMT 32.51W-FM:T9315	CCMT 09T304W-FM:T9315	7034002
CCMT 32.51W-FM:T9325	CCMT 09T304W-FM:T9325	7034003

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CCMT 32.52-FF2:T7325	CCMT 09T308E-FF2:T7325	7156721
CCMT 32.52-FF2:T8330	CCMT 09T308E-FF2:T8330	7156722
CCMT 32.52-FF2:T9315	CCMT 09T308E-FF2:T9315	7156723
CCMT 32.52-FF2:T9325	CCMT 09T308E-FF2:T9325	7156724
CCMT 32.52-FF2:TT010	CCMT 09T308E-FF2:TT010	7080611
CCMT 32.52-FM:T7325	CCMT 09T308E-FM:T7325	7156173
CCMT 32.52-FM:T7335	CCMT 09T308E-FM:T7335	6754740
CCMT 32.52-FM:T8315	CCMT 09T308E-FM:T8315	6753580
CCMT 32.52-FM:T9315	CCMT 09T308E-FM:T9315	6753714
CCMT 32.52-FM:T9325	CCMT 09T308E-FM:T9325	6753767
CCMT 32.52-FM2:T6310	CCMT 09T308E-FM2:T6310	7156870
CCMT 32.52-FM2:T7325	CCMT 09T308E-FM2:T7325	7156871
CCMT 32.52-FM2:T8330	CCMT 09T308E-FM2:T8330	7156872
CCMT 32.52-FM2:T9315	CCMT 09T308E-FM2:T9315	7156873
CCMT 32.52-FM2:T9325	CCMT 09T308E-FM2:T9325	7156874
CCMT 32.52-FM2:T9335	CCMT 09T308E-FM2:T9335	7156875
CCMT 32.52-NF2:H07	CCMT 09T308E-NF2:H07	7167465
CCMT 32.52-NF2:T6310	CCMT 09T308E-NF2:T6310	7167466
CCMT 32.52-NF2:T7325	CCMT 09T308E-NF2:T7325	7167467
CCMT 32.52-NF2:T8330	CCMT 09T308E-NF2:T8330	7167468
CCMT 32.52-NF2:T9315	CCMT 09T308E-NF2:T9315	7167469
CCMT 32.52-NF2:T9325	CCMT 09T308E-NF2:T9325	7167470
CCMT 32.52-NF2:T9335	CCMT 09T308E-NF2:T9335	7167471
CCMT 32.52-RF:6630	CCMT 09T308E-RF:6630	6756027
CCMT 32.52-RF:T5315	CCMT 09T308E-RF:T5315	6756029
CCMT 32.52-RF:T7335	CCMT 09T308E-RF:T7335	6756028
CCMT 32.52-RM:T5305	CCMT 09T308E-RM:T5305	6755716
CCMT 32.52-RM:T5315	CCMT 09T308E-RM:T5315	6755837
CCMT 32.52-RM:T7335	CCMT 09T308E-RM:T7335	6754741
CCMT 32.52-RM:T8330	CCMT 09T308E-RM:T8330	6754391
CCMT 32.52-RM:T9315	CCMT 09T308E-RM:T9315	6753715
CCMT 32.52-RM:T9325	CCMT 09T308E-RM:T9325	6753768
CCMT 32.52-UR:T5315	CCMT 09T308E-UR:T5315	6755838
CCMT 32.52-UR:T7325	CCMT 09T308E-UR:T7325	7156174
CCMT 32.52-UR:T7335	CCMT 09T308E-UR:T7335	6754742
CCMT 32.52-UR:T8315	CCMT 09T308E-UR:T8315	6753581
CCMT 32.52-UR:T8330	CCMT 09T308E-UR:T8330	6754230
CCMT 32.52-UR:T9310	CCMT 09T308E-UR:T9310	6755617
CCMT 32.52-UR:T9315	CCMT 09T308E-UR:T9315	6753807
CCMT 32.52-UR:T9325	CCMT 09T308E-UR:T9325	6753769
CCMT 32.52-UR:TT310	CCMT 09T308E-UR:TT310	6756256
CCMT 32.52W-FM:T8330	CCMT 09T308W-FM:T8330	7034004
CCMT 32.52W-FM:T9315	CCMT 09T308W-FM:T9315	7034005
CCMT 32.52W-FM:T9325	CCMT 09T308W-FM:T9325	7034006
CCMT 32.52W-UR:TT310	CCMT 09T308W-UR:TT310	6756259
CCMT 431-FM:T7325	CCMT 120404E-FM:T7325	7156176
CCMT 431-FM:T7335	CCMT 120404E-FM:T7335	6754743
CCMT 431-FM:T8315	CCMT 120404E-FM:T8315	6753582
CCMT 431-FM:T8330	CCMT 120404E-FM:T8330	6754285
CCMT 431-FM:T9315	CCMT 120404E-FM:T9315	6753805
CCMT 431-FM:T9325	CCMT 120404E-FM:T9325	6753770
CCMT 431-RM3:T7325	CCMT 120404E-RM3:T7325	7248701
CCMT 431-RM3:T9315	CCMT 120404E-RM3:T9315	7248702
CCMT 431-RM3:T9325	CCMT 120404E-RM3:T9325	7248703
CCMT 431-UR:T5315	CCMT 120404E-UR:T5315	6755839
CCMT 431-UR:T7325	CCMT 120404E-UR:T7325	7156177
CCMT 431-UR:T8330	CCMT 120404E-UR:T8330	6754231
CCMT 431-UR:T9315	CCMT 120404E-UR:T9315	6753806
CCMT 431-UR:T9325	CCMT 120404E-UR:T9325	6753871
CCMT 432-FM:T7325	CCMT 120408E-FM:T7325	7156178
CCMT 432-FM:T7335	CCMT 120408E-FM:T7335	6754744
CCMT 432-FM:T8315	CCMT 120408E-FM:T8315	6753583
CCMT 432-FM:T8330	CCMT 120408E-FM:T8330	6754286
CCMT 432-FM:T9315	CCMT 120408E-FM:T9315	6753716
CCMT 432-FM:T9325	CCMT 120408E-FM:T9325	6753772
CCMT 432-FM2:T7325	CCMT 120408E-FM2:T7325	7156876
CCMT 432-FM2:T8330	CCMT 120408E-FM2:T8330	7156877
CCMT 432-FM2:T9325	CCMT 120408E-FM2:T9325	7156878
CCMT 432-FM2:T9335	CCMT 120408E-FM2:T9335	7156879
CCMT 432-RF:6630	CCMT 120408E-RF:6630	6756030
CCMT 432-RF:T5315	CCMT 120408E-RF:T5315	6756032
CCMT 432-RF:T7335	CCMT 120408E-RF:T7335	6756031
CCMT 432-RM:T5305	CCMT 120408E-RM:T5305	6755717
CCMT 432-RM:T5315	CCMT 120408E-RM:T5315	6755840
CCMT 432-RM:T7335	CCMT 120408E-RM:T7335	6754745
CCMT 432-RM:T8330	CCMT 120408E-RM:T8330	6754392

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CCMT 432-RM:T9315	CCMT 120408E-RM:T9315	6753717
CCMT 432-RM:T9325	CCMT 120408E-RM:T9325	6753771
CCMT 432-RM3:T6310	CCMT 120408E-RM3:T6310	7248704
CCMT 432-RM3:T7325	CCMT 120408E-RM3:T7325	7248705
CCMT 432-RM3:T9315	CCMT 120408E-RM3:T9315	7248706
CCMT 432-RM3:T9325	CCMT 120408E-RM3:T9325	7248707
CCMT 432-UR:T5315	CCMT 120408E-UR:T5315	6755841
CCMT 432-UR:T7325	CCMT 120408E-UR:T7325	7156179
CCMT 432-UR:T7335	CCMT 120408E-UR:T7335	6754746
CCMT 432-UR:T8330	CCMT 120408E-UR:T8330	6754232
CCMT 432-UR:T9315	CCMT 120408E-UR:T9315	6753808
CCMT 432-UR:T9325	CCMT 120408E-UR:T9325	6753774
CCMT 433-FM:T8330	CCMT 120412E-FM:T8330	6754287
CCMT 433-FM:T9325	CCMT 120412E-FM:T9325	6753872
CCMT 433-RM:T8330	CCMT 120412E-RM:T8330	6754393
CCMT 433-RM:T9315	CCMT 120412E-RM:T9315	6753810
CCMT 433-RM:T9325	CCMT 120412E-RM:T9325	6753873
CCMT 433-RM3:T7325	CCMT 120412E-RM3:T7325	7248708
CCMT 433-RM3:T9315	CCMT 120412E-RM3:T9315	7248709
CCMT 433-UR:T5315	CCMT 120412E-UR:T5315	6755842
CCMT 433-UR:T7325	CCMT 120412E-UR:T7325	7156181
CCMT 433-UR:T8330	CCMT 120412E-UR:T8330	6754233
CCMT 433-UR:T9315	CCMT 120412E-UR:T9315	6753811
CCMT 433-UR:T9325	CCMT 120412E-UR:T9325	6753874
CCMW 21.50.5:T5305	CCMW 060202:T5305	6755718
CCMW 21.50.5:T6310	CCMW 060202:T6310	7168643
CCMW 21.51:T5305	CCMW 060204:T5305	6755719
CCMW 21.51:T5315	CCMW 060204:T5315	6922806
CCMW 21.51:T6310	CCMW 060204:T6310	7168644
CCMW 32.51:T5305	CCMW 09T304:T5305	6755720
CCMW 32.51:T5315	CCMW 09T304:T5315	6922807
CCMW 32.51:T6310	CCMW 09T304:T6310	7168641
CCMW 32.52:T5305	CCMW 09T308:T5305	6755721
CCMW 32.52:T5315	CCMW 09T308:T5315	6922808
CCMW 32.52:T6310	CCMW 09T308:T6310	7168642
CCMW 431:T5305	CCMW 120404:T5305	6755722
CCMW 431:T5315	CCMW 120404:T5315	6922809
CCMW 431:T6310	CCMW 120404:T6310	7168645
CCMW 432:T5305	CCMW 120408:T5305	6755723
CCMW 432:T5315	CCMW 120408:T5315	6922810
CCMW 432:T6310	CCMW 120408:T6310	7168646
CNG 432 T00420:TC100	CNGN 120408 T01020:TC100	6755429
CNG 452 T00420:TC100	CNGN 120708 T01020:TC100	6755413
CNG 453 T00420:TC100	CNGN 120712 T01020:TC100	6755430
CNGA 431 T00820:TC100	CNGA 120404 T02020:TC100	6755458
CNGA 431S00420:TB310	CNGA 120404S01020B:TB310	6755923
CNGA 432 T00420:TC100	CNGA 120408 T01020:TC100	6755427
CNGA 432S00420:TB310	CNGA 120408S01020B:TB310	6755688
CNGA 433 T00420:TC100	CNGA 120412 T01020:TC100	6755428
CNGG 430.5-SF:H07	CNGG 120402E-SF:H07	6921011
CNGG 430.5-SF:T6310	CNGG 120402E-SF:T6310	6919707
CNGG 430.5-SF:T8315	CNGG 120402E-SF:T8315	6919708
CNGG 430.5-SF:T8330	CNGG 120402E-SF:T8330	6919709
CNHX 050205ER-WM:M4310	CNHX 050205ER-WM:M4310	7639195
CNHX 050205ER-WM:M8330	CNHX 050205ER-WM:M8330	7639196
CNHX 050210ER-WM:M4310	CNHX 050210ER-WM:M4310	7639197
CNHX 050210ER-WM:M8330	CNHX 050210ER-WM:M8330	7639198
CNM 563:M8330	CNM 563:M8330	7447876
CNM 563:M8340	CNM 563:M8340	6800828
CNMA 431:T5305	CNMA 120404:T5305	6755726
CNMA 431:T5315	CNMA 120404:T5315	6922784
CNMA 432:T5305	CNMA 120408:T5305	6755727
CNMA 432:T5315	CNMA 120408:T5315	6755801
CNMA 432:T6310	CNMA 120408:T6310	6922854
CNMA 432S:T5305	CNMA 120408S:T5305	6755729
CNMA 433:T5305	CNMA 120412:T5305	6755731
CNMA 433:T5315	CNMA 120412:T5315	6755802
CNMA 433:T6310	CNMA 120412:T6310	6922855
CNMA 433S:T5305	CNMA 120412S:T5305	6755734
CNMA 434:T5305	CNMA 120416:T5305	6755735
CNMA 434:T5315	CNMA 120416:T5315	6922785
CNMA 543:T5305	CNMA 160612:T5305	6755736
CNMA 543:T5315	CNMA 160612:T5315	6922786
CNMA 543:T6310	CNMA 160612:T6310	7168657
CNMA 543S:T5305	CNMA 160612S:T5305	6755738
CNMA 544:T5305	CNMA 160616:T5305	6922787

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CNMA 544:T5315	CNMA 160616:T5315	6922788
CNMA 643:T5305	CNMA 190612:T5305	6755739
CNMA 643:T5315	CNMA 190612:T5315	6922789
CNMA 643:T6310	CNMA 190612:T6310	7168658
CNMA 644:T5305	CNMA 190616:T5305	6755740
CNMA 644:T5315	CNMA 190616:T5315	6922790
CNMA 644S:T5305	CNMA 190616S:T5305	6755741
CNMG 120404E-FM:T8330	CNMG 120404E-FM:T8330	6754185
CNMG 120408E-FM:T8330	CNMG 120408E-FM:T8330	6754187
CNMG 120412E-RM:T8330	CNMG 120412E-RM:T8330	6755122
CNMG 321-FM:T7325	CNMG 090304E-FM:T7325	7156182
CNMG 321-FM:T8330	CNMG 090304E-FM:T8330	6754183
CNMG 321-FM:T9315	CNMG 090304E-FM:T9315	6753812
CNMG 321-FM:T9325	CNMG 090304E-FM:T9325	6753875
CNMG 321-NF:T6310	CNMG 090304E-NF:T6310	6922831
CNMG 321-NF:T7335	CNMG 090304E-NF:T7335	6834619
CNMG 321-NF:T8315	CNMG 090304E-NF:T8315	6834640
CNMG 321-NF:T8330	CNMG 090304E-NF:T8330	6834641
CNMG 321-NF:T9325	CNMG 090304E-NF:T9325	6834642
CNMG 322-FM:T7325	CNMG 090308E-FM:T7325	7156183
CNMG 322-FM:T8330	CNMG 090308E-FM:T8330	6754184
CNMG 322-FM:T9315	CNMG 090308E-FM:T9315	6753813
CNMG 322-FM:T9325	CNMG 090308E-FM:T9325	6753876
CNMG 322-M:T9315	CNMG 090308E-M:T9315	6753814
CNMG 322-M:T9325	CNMG 090308E-M:T9325	6753877
CNMG 322-M:T9335	CNMG 090308E-M:T9335	6754854
CNMG 322-NF:T6310	CNMG 090308E-NF:T6310	6922832
CNMG 322-NF:T7335	CNMG 090308E-NF:T7335	6834643
CNMG 322-NF:T8330	CNMG 090308E-NF:T8330	6834645
CNMG 322-NF:T9325	CNMG 090308E-NF:T9325	6834646
CNMG 322-NMR:T7325	CNMG 090308E-NMR:T7325	7156184
CNMG 322-NMR:T7335	CNMG 090308E-NMR:T7335	7038025
CNMG 322-NMR:T9325	CNMG 090308E-NMR:T9325	7038024
CNMG 431-FF:T7325	CNMG 120404E-FF:T7325	7156501
CNMG 431-FF:T8315	CNMG 120404E-FF:T8315	6753584
CNMG 431-FM:T7325	CNMG 120404E-FM:T7325	7156185
CNMG 431-FM:T7335	CNMG 120404E-FM:T7335	6754747
CNMG 431-FM:T8315	CNMG 120404E-FM:T8315	6753585
CNMG 431-FM:T9310	CNMG 120404E-FM:T9310	6755025
CNMG 431-FM:T9315	CNMG 120404E-FM:T9315	6753820
CNMG 431-FM:T9325	CNMG 120404E-FM:T9325	6753878
CNMG 431-FM:TT310	CNMG 120404E-FM:TT310	6798556
CNMG 431L-SI:T7325	CNMG 120404EL-SI:T7325	7156186
CNMG 431L-SI:T7335	CNMG 120404EL-SI:T7335	6754748
CNMG 431L-SI:T8315	CNMG 120404EL-SI:T8315	6922724
CNMG 431L-SI:T8330	CNMG 120404EL-SI:T8330	6754360
CNMG 431L-SI:T9325	CNMG 120404EL-SI:T9325	6753879
CNMG 431-M:T5315	CNMG 120404E-M:T5315	6755793
CNMG 431-M:T9310	CNMG 120404E-M:T9310	6755026
CNMG 431-M:T9315	CNMG 120404E-M:T9315	6753718
CNMG 431-M:T9325	CNMG 120404E-M:T9325	6753880
CNMG 431-M:T9335	CNMG 120404E-M:T9335	6754855
CNMG 431-NF:HF7	CNMG 120404E-NF:HF7	6834647
CNMG 431-NF:T6310	CNMG 120404E-NF:T6310	6922833
CNMG 431-NF:T7325	CNMG 120404E-NF:T7325	7156187
CNMG 431-NF:T7335	CNMG 120404E-NF:T7335	6834648
CNMG 431-NF:T8315	CNMG 120404E-NF:T8315	6834649
CNMG 431-NF:T8330	CNMG 120404E-NF:T8330	6834650
CNMG 431-NF:T9315	CNMG 120404E-NF:T9315	6834651
CNMG 431-NF:T9325	CNMG 120404E-NF:T9325	6834652
CNMG 431-NM:T7325	CNMG 120404E-NM:T7325	7156188
CNMG 431-NM:T7335	CNMG 120404E-NM:T7335	6754749
CNMG 431-NM:T8315	CNMG 120404E-NM:T8315	6922662
CNMG 431-NM:T8330	CNMG 120404E-NM:T8330	6754186
CNMG 431-NM:T9315	CNMG 120404E-NM:T9315	6922868
CNMG 431-NM:T9325	CNMG 120404E-NM:T9325	6753881
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CNMG 431-NMR:T9325	CNMG 120404E-NMR:T9325	7038028
CNMG 431R-SI:6630	CNMG 120404ER-SI:6630	6751899
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CNMG 431R-SI:T7335	CNMG 120404ER-SI:T7335	6754750
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CNMG 431-SF:H07	CNMG 120404E-SF:H07	6921012
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CNMG 431-SF:T7335	CNMG 120404E-SF:T7335	6919752
CNMG 431-SF:T8315	CNMG 120404E-SF:T8315	6919753
CNMG 431-SF:T8330	CNMG 120404E-SF:T8330	6919754
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CNMG 431-SM:T6310	CNMG 120404E-SM:T6310	6915781
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CNMG 431-SM:T7335	CNMG 120404E-SM:T7335	6915782
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ANSI	ISO	EDP
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CNMG 433-RM:T9310	CNMG 120412E-RM:T9310	6755031
CNMG 433-RM:T9315	CNMG 120412E-RM:T9315	6753725
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CNMG 544-NRM:T7335	CNMG 160616-NRM:T7335	7273519
CNMG 544-NRM:T9315	CNMG 160616-NRM:T9315	7273517
CNMG 544-R:T5305	CNMG 160616E-R:T5305	6755792
CNMG 544-RM:T5305	CNMG 160616E-RM:T5305	6755809
CNMG 544-RM:T5315	CNMG 160616E-RM:T5315	6755805
CNMG 544-RM:T7325	CNMG 160616E-RM:T7325	7156222
CNMG 544-RM:T7335	CNMG 160616E-RM:T7335	6922690
CNMG 544-RM:T9310	CNMG 160616E-RM:T9310	6755035
CNMG 544-RM:T9315	CNMG 160616E-RM:T9315	6753825
CNMG 544-RM:T9325	CNMG 160616E-RM:T9325	6753904
CNMG 544-RM:T9335	CNMG 160616E-RM:T9335	6754869
CNMG 642-M:6630	CNMG 190608E-M:6630	6751543
CNMG 642-M:T9315	CNMG 190608E-M:T9315	6753826
CNMG 642-M:T9325	CNMG 190608E-M:T9325	6753905
CNMG 642-M:T9335	CNMG 190608E-M:T9335	6754870
CNMG 642-NMR:T6310	CNMG 190608E-NMR:T6310	7454463
CNMG 642-NMR:T7325	CNMG 190608E-NMR:T7325	7156223
CNMG 642-NMR:T7335	CNMG 190608E-NMR:T7335	7038052
CNMG 642-NMR:T9315	CNMG 190608E-NMR:T9315	7038050
CNMG 642-NMR:T9325	CNMG 190608E-NMR:T9325	7038051
CNMG 642-NRM:T7325	CNMG 190608-NRM:T7325	7273521
CNMG 642-NRM:T7335	CNMG 190608-NRM:T7335	7273522
CNMG 642-NRM:T9315	CNMG 190608-NRM:T9315	7273520
CNMG 642-R:T5315	CNMG 190608E-R:T5315	6922754
CNMG 642-RM:T5305	CNMG 190608E-RM:T5305	6755810
CNMG 642-RM:T5315	CNMG 190608E-RM:T5315	6755806
CNMG 642-RM:T7335	CNMG 190608E-RM:T7335	6922691
CNMG 642-RM:T9315	CNMG 190608E-RM:T9315	6753827
CNMG 642-RM:T9325	CNMG 190608E-RM:T9325	6753906
CNMG 642-RM:T9335	CNMG 190608E-RM:T9335	6754871
CNMG 643-M:6630	CNMG 190612E-M:6630	6751545
CNMG 643-M:6640	CNMG 190612E-M:6640	6751546
CNMG 643-M:T9310	CNMG 190612E-M:T9310	6755036
CNMG 643-M:T9315	CNMG 190612E-M:T9315	6753828
CNMG 643-M:T9325	CNMG 190612E-M:T9325	6753795
CNMG 643-M:T9335	CNMG 190612E-M:T9335	6754872
CNMG 643-NM:T7325	CNMG 190612E-NM:T7325	7156225
CNMG 643-NM:T7335	CNMG 190612E-NM:T7335	6754758
CNMG 643-NM:T8315	CNMG 190612E-NM:T8315	6922667
CNMG 643-NM:T8330	CNMG 190612E-NM:T8330	6755109
CNMG 643-NM:T9325	CNMG 190612E-NM:T9325	6753907
CNMG 643-NMR:T6310	CNMG 190612E-NMR:T6310	7462039
CNMG 643-NMR:T7325	CNMG 190612E-NMR:T7325	7156226
CNMG 643-NMR:T7335	CNMG 190612E-NMR:T7335	7038056
CNMG 643-NMR:T8330	CNMG 190612E-NMR:T8330	7038053
CNMG 643-NMR:T9315	CNMG 190612E-NMR:T9315	7038054
CNMG 643-NMR:T9325	CNMG 190612E-NMR:T9325	7038055
CNMG 643-NRM:T7325	CNMG 190612-NRM:T7325	7273524
CNMG 643-NRM:T7335	CNMG 190612-NRM:T7335	7273525
CNMG 643-NRM:T9315	CNMG 190612-NRM:T9315	7273523
CNMG 643-R:6630	CNMG 190612E-R:6630	6751547
CNMG 643-R:6640	CNMG 190612E-R:6640	6751548
CNMG 643-R:T5305	CNMG 190612E-R:T5305	6755811
CNMG 643-R:T5315	CNMG 190612E-R:T5315	6922755
CNMG 643-R:T9315	CNMG 190612E-R:T9315	6922871
CNMG 643-R:T9325	CNMG 190612E-R:T9325	6753796
CNMG 643-R:T9335	CNMG 190612E-R:T9335	6754873
CNMG 643-RM:T5305	CNMG 190612E-RM:T5305	6755812
CNMG 643-RM:T5315	CNMG 190612E-RM:T5315	6755807
CNMG 643-RM:T6310	CNMG 190612E-RM:T6310	6922774
CNMG 643-RM:T7325	CNMG 190612E-RM:T7325	7156227
CNMG 643-RM:T7335	CNMG 190612E-RM:T7335	6922692
CNMG 643-RM:T8330	CNMG 190612E-RM:T8330	6755126
CNMG 643-RM:T9310	CNMG 190612E-RM:T9310	6755037
CNMG 643-RM:T9315	CNMG 190612E-RM:T9315	6754069
CNMG 643-RM:T9325	CNMG 190612E-RM:T9325	6753908
CNMG 643-RM:T9335	CNMG 190612E-RM:T9335	6754874
CNMG 643-SM:T6310	CNMG 190612E-SM:T6310	6915813
CNMG 643-SM:T7325	CNMG 190612E-SM:T7325	7156228
CNMG 643-SM:T7335	CNMG 190612E-SM:T7335	6915814
CNMG 643-SM:T9315	CNMG 190612E-SM:T9315	6915815
CNMG 643-SM:T9325	CNMG 190612E-SM:T9325	6915816
CNMG 644-M:T9310	CNMG 190616E-M:T9310	6755038
CNMG 644-M:T9315	CNMG 190616E-M:T9315	6753727
CNMG 644-M:T9325	CNMG 190616E-M:T9325	6753909
CNMG 644-M:T9335	CNMG 190616E-M:T9335	6754875
CNMG 644-NMR:T7325	CNMG 190616E-NMR:T7325	7156229
CNMG 644-NMR:T7335	CNMG 190616E-NMR:T7335	7038059
CNMG 644-NMR:T9315	CNMG 190616E-NMR:T9315	7038057
CNMG 644-NMR:T9325	CNMG 190616E-NMR:T9325	7038058
CNMG 644-NRM:T7325	CNMG 190616-NRM:T7325	7271033
CNMG 644-NRM:T7335	CNMG 190616-NRM:T7335	7271034
CNMG 644-NRM:T9315	CNMG 190616-NRM:T9315	7271032
CNMG 644-R:6630	CNMG 190616E-R:6630	6751549
CNMG 644-R:6640	CNMG 190616E-R:6640	6751550
CNMG 644-R:T5305	CNMG 190616E-R:T5305	6755813
CNMG 644-R:T5315	CNMG 190616E-R:T5315	6922756
CNMG 644-R:T9310	CNMG 190616E-R:T9310	6922946
CNMG 644-R:T9315	CNMG 190616E-R:T9315	6753728
CNMG 644-R:T9325	CNMG 190616E-R:T9325	6753797
CNMG 644-R:T9335	CNMG 190616E-R:T9335	6754876
CNMG 644-RM:T5305	CNMG 190616E-RM:T5305	6755814
CNMG 644-RM:T5315	CNMG 190616E-RM:T5315	6755808

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CNMG 644-RM:T6310	CNMG 190616E-RM:T6310	6922775
CNMG 644-RM:T7325	CNMG 190616E-RM:T7325	7156230
CNMG 644-RM:T7335	CNMG 190616E-RM:T7335	6922693
CNMG 644-RM:T9310	CNMG 190616E-RM:T9310	6755039
CNMG 644-RM:T9315	CNMG 190616E-RM:T9315	6754078
CNMG 644-RM:T9325	CNMG 190616E-RM:T9325	6753910
CNMG 644-RM:T9335	CNMG 190616E-RM:T9335	6754877
CNMG 866-NRM:T7325	CNMG 250924-NRM:T7325	7273542
CNMG 866-NRM:T7335	CNMG 250924-NRM:T7335	7273543
CNMG 866-NRM:T9315	CNMG 250924-NRM:T9315	7273541
CNMG 866-RM:T7325	CNMG 250924E-RM:T7325	7156231
CNMG 866-RM:T7335	CNMG 250924E-RM:T7335	6922694
CNMG 866-RM:T9226	CNMG 250924E-RM:T9226	6931844
CNMG 866-RM:T9315	CNMG 250924E-RM:T9315	6754081
CNMG 866-RM:T9325	CNMG 250924E-RM:T9325	6753911
CNMG 866-RM:T9335	CNMG 250924E-RM:T9335	6754878
CNMM 432-NR:6630	CNMM 120408E-NR:6630	6751596
CNMM 432-NR:6640	CNMM 120408E-NR:6640	6751597
CNMM 432-NR:T7325	CNMM 120408E-NR:T7325	7156232
CNMM 432-NR:T7335	CNMM 120408E-NR:T7335	6754759
CNMM 432-NR:T8330	CNMM 120408E-NR:T8330	6754205
CNMM 432-NR:T9315	CNMM 120408E-NR:T9315	6922872
CNMM 432-NR:T9325	CNMM 120408E-NR:T9325	6753912
CNMM 432-NR2:T7325	CNMM 120408E-NR2:T7325	7156233
CNMM 432-NR2:T7335	CNMM 120408E-NR2:T7335	6754760
CNMM 432-NR2:T8330	CNMM 120408E-NR2:T8330	6755133
CNMM 432-NR2:T9315	CNMM 120408E-NR2:T9315	6922873
CNMM 432-NR2:T9325	CNMM 120408E-NR2:T9325	6753913
CNMM 432-OR:T8330	CNMM 120408E-OR:T8330	6755146
CNMM 432-OR:T9315	CNMM 120408E-OR:T9315	6754083
CNMM 432-OR:T9325	CNMM 120408E-OR:T9325	6753914
CNMM 432-OR:T9335	CNMM 120408E-OR:T9335	6754879
CNMM 433-NR:T7325	CNMM 120412E-NR:T7325	7156234
CNMM 433-NR:T7335	CNMM 120412E-NR:T7335	6754761
CNMM 433-NR:T8330	CNMM 120412E-NR:T8330	6754206
CNMM 433-NR:T9325	CNMM 120412E-NR:T9325	6753915
CNMM 433-NR2:T7335	CNMM 120412E-NR2:T7335	6754762
CNMM 433-NR2:T8330	CNMM 120412E-NR2:T8330	6755134
CNMM 433-NR2:T9315	CNMM 120412E-NR2:T9315	6922875
CNMM 433-NR2:T9325	CNMM 120412E-NR2:T9325	6753916
CNMM 433-OR:T9315	CNMM 120412E-OR:T9315	6754084
CNMM 433-OR:T9325	CNMM 120412E-OR:T9325	6753917
CNMM 433-OR:T9335	CNMM 120412E-OR:T9335	6754880
CNMM 434-OR:T9325	CNMM 120416E-OR:T9325	6754484
CNMM 434-OR:T9335	CNMM 120416E-OR:T9335	6754881
CNMM 542-NR2:T8330	CNMM 160608E-NR2:T8330	6755135
CNMM 542-NR2:T9325	CNMM 160608E-NR2:T9325	6753918
CNMM 542-OR:T9315	CNMM 160608E-OR:T9315	6754093
CNMM 542-OR:T9325	CNMM 160608E-OR:T9325	6753919
CNMM 542-OR:T9335	CNMM 160608E-OR:T9335	6754882
CNMM 543-DR:T9315	CNMM 160612E-DR:T9315	6922876
CNMM 543-DR:T9325	CNMM 160612E-DR:T9325	6753920
CNMM 543-DR:T9335	CNMM 160612E-DR:T9335	6754883
CNMM 543-NR2:T7325	CNMM 160612E-NR2:T7325	7156237
CNMM 543-NR2:T7335	CNMM 160612E-NR2:T7335	6754764
CNMM 543-NR2:T8330	CNMM 160612E-NR2:T8330	6755136
CNMM 543-NR2:T9315	CNMM 160612E-NR2:T9315	6922877
CNMM 543-NR2:T9325	CNMM 160612E-NR2:T9325	6753921
CNMM 543-OR:T8330	CNMM 160612E-OR:T8330	6755147
CNMM 543-OR:T9315	CNMM 160612E-OR:T9315	6754097
CNMM 543-OR:T9325	CNMM 160612E-OR:T9325	6753922
CNMM 544-NR2:T7325	CNMM 160616E-NR2:T7325	7156238
CNMM 544-NR2:T7335	CNMM 160616E-NR2:T7335	6754765
CNMM 544-NR2:T9325	CNMM 160616E-NR2:T9325	6753923
CNMM 544-OR:T9315	CNMM 160616E-OR:T9315	6754098
CNMM 544-OR:T9325	CNMM 160616E-OR:T9325	6753924
CNMM 642-DR:T9315	CNMM 190608E-DR:T9315	6922878
CNMM 642-DR:T9325	CNMM 190608E-DR:T9325	6753925
CNMM 643-DR:6630	CNMM 190612E-DR:6630	6751599
CNMM 643-DR:T9315	CNMM 190612E-DR:T9315	6922879
CNMM 643-DR:T9325	CNMM 190612E-DR:T9325	6753926
CNMM 643-DR:T9335	CNMM 190612E-DR:T9335	6754885
CNMM 643-NR2:T7325	CNMM 190612E-NR2:T7325	7156239
CNMM 643-NR2:T7335	CNMM 190612E-NR2:T7335	6754766
CNMM 643-NR2:T8330	CNMM 190612E-NR2:T8330	6755137
CNMM 643-NR2:T9325	CNMM 190612E-NR2:T9325	6753927

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CNMM 643-OR:6630	CNMM 190612E-OR:6630	6752101
CNMM 643-OR:T8330	CNMM 190612E-OR:T8330	6755148
CNMM 643-OR:T9315	CNMM 190612E-OR:T9315	6754108
CNMM 643-OR:T9325	CNMM 190612E-OR:T9325	6753928
CNMM 643-OR:T9335	CNMM 190612E-OR:T9335	6754886
CNMM 644-DR:T9325	CNMM 190616E-DR:T9325	6753929
CNMM 644-DR:T9335	CNMM 190616E-DR:T9335	6754887
CNMM 644-HR:6630	CNMM 190616E-HR:6630	6751594
CNMM 644-HR:6640	CNMM 190616E-HR:6640	6751586
CNMM 644-HR:T8345	CNMM 190616E-HR:T8345	6753678
CNMM 644-HR:T9325	CNMM 190616E-HR:T9325	6753798
CNMM 644-HR:T9335	CNMM 190616E-HR:T9335	6754888
CNMM 644-HR2:T9226	CNMM 190616-HR2:T9226	7036347
CNMM 644-HR2:T9315	CNMM 190616-HR2:T9315	7036346
CNMM 644-HR2:T9335	CNMM 190616-HR2:T9335	7036348
CNMM 644-NR2:T7325	CNMM 190616E-NR2:T7325	7156240
CNMM 644-NR2:T7335	CNMM 190616E-NR2:T7335	6754767
CNMM 644-NR2:T8330	CNMM 190616E-NR2:T8330	6755138
CNMM 644-NR2:T9315	CNMM 190616E-NR2:T9315	6922883
CNMM 644-NR2:T9325	CNMM 190616E-NR2:T9325	6753930
CNMM 644-OR:6630	CNMM 190616E-OR:6630	6752090
CNMM 644-OR:T8330	CNMM 190616E-OR:T8330	6755149
CNMM 644-OR:T8345	CNMM 190616E-OR:T8345	6753680
CNMM 644-OR:T9315	CNMM 190616E-OR:T9315	6753729
CNMM 644-OR:T9325	CNMM 190616E-OR:T9325	6753799
CNMM 644-OR:T9335	CNMM 190616E-OR:T9335	6754889
CNMM 644-OR1:6630	CNMM 190616E-OR1:6630	6752024
CNMM 644-OR1:T9325	CNMM 190616E-OR1:T9325	6753800
CNMM 644-OR1:T9335	CNMM 190616E-OR1:T9335	6754890
CNMM 646-HR:6630	CNMM 190624E-HR:6630	6751593
CNMM 646-HR:T8345	CNMM 190624E-HR:T8345	6753679
CNMM 646-HR:T9315	CNMM 190624E-HR:T9315	6922884
CNMM 646-HR:T9325	CNMM 190624E-HR:T9325	6753801
CNMM 646-HR:T9335	CNMM 190624E-HR:T9335	6754891
CNMM 646-HR2:T9226	CNMM 190624-HR2:T9226	7036350
CNMM 646-HR2:T9315	CNMM 190624-HR2:T9315	7036349
CNMM 646-HR2:T9335	CNMM 190624-HR2:T9335	7036351
CNMM 646-NR2:T7335	CNMM 190624E-NR2:T7335	6754768
CNMM 646-NR2:T9325	CNMM 190624E-NR2:T9325	6753931
CNMM 646-OR:T9315	CNMM 190624E-OR:T9315	6754110
CNMM 646-OR:T9325	CNMM 190624E-OR:T9325	6753932
CNMM 866-923:T8330	CNMM 250924S-923:T8330	6754254
CNMM 866-923:T9335	CNMM 250924S-923:T9335	6754894
CNMM 866-HR:6630	CNMM 250924E-HR:6630	6751615
CNMM 866-HR:6640	CNMM 250924E-HR:6640	6751616
CNMM 866-HR:T8345	CNMM 250924E-HR:T8345	6753681
CNMM 866-HR:T9315	CNMM 250924E-HR:T9315	6933562
CNMM 866-HR:T9325	CNMM 250924E-HR:T9325	6753802
CNMM 866-HR:T9335	CNMM 250924E-HR:T9335	6754892
CNMM 866-HR2:T9315	CNMM 250924-HR2:T9315	7015714
CNMM 866-HR2:T9335	CNMM 250924-HR2:T9335	7015716
CNMM 866-NR2:T7325	CNMM 250924E-NR2:T7325	7156242
CNMM 866-NR2:T7335	CNMM 250924E-NR2:T7335	6754769
CNMM 866-NR2:T8330	CNMM 250924E-NR2:T8330	6755139
CNMM 866-NR2:T9315	CNMM 250924E-NR2:T9315	6933563
CNMM 866-NR2:T9325	CNMM 250924E-NR2:T9325	6754485
CNMM 866-NRM:T7325	CNMM 250924-NRM:T7325	7273560
CNMM 866-NRM:T7335	CNMM 250924-NRM:T7335	7273561
CNMM 866-NRM:T9315	CNMM 250924-NRM:T9315	7273559
CNMM 866-OR:6630	CNMM 250924E-OR:6630	6752128
CNMM 866-OR:T8330	CNMM 250924E-OR:T8330	6755150
CNMM 866-OR:T9315	CNMM 250924E-OR:T9315	6753730
CNMM 866-OR:T9325	CNMM 250924E-OR:T9325	6754486
CNMM 866-OR:T9335	CNMM 250924E-OR:T9335	6754893
CNMX 6-10SN-RF:T9315	CNMX 1911405N-RF:T9315	6798532
CNMX 6-10SN-RF:T9325	CNMX 1911405N-RF:T9325	6798533
CNMX 6-10SN-TF:T5315	CNMX 1911405N-TF:T5315	6798530
CNMX 6-10SN-TF:T9310	CNMX 1911405N-TF:T9310	6798526
CNMX 6-10SN-TF:T9315	CNMX 1911405N-TF:T9315	6798527
CNMX 6-10SN-TF:T9325	CNMX 1911405N-TF:T9325	6798528
CNMX 6510SN-RF:T5315	CNMX 1907405N-RF:T5315	6755943
CNMX 6510SN-RF:T9315	CNMX 1907405N-RF:T9315	6755944
CPGX 2.521FL-JQ:TT010	CPGX 080304FL-JQ:TT010	7080619
CPGX 2.521FL-JR:TT010	CPGX 080304FL-JR:TT010	7080620
CPGX 2.521FR-JQ:TT010	CPGX 080304FR-JQ:TT010	7080621
CPGX 2.521FR-JR:TT010	CPGX 080304FR-JR:TT010	7080622

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CPGX 21.50.5FL-JZ:TT010	CPGX 060202FL-JZ:TT010	7080615
CPGX 21.50.5FR-JZ:TT010	CPGX 060202FR-JZ:TT010	7080616
CPGX 21.51FL-JR:TT010	CPGX 060204FL-JR:TT010	7080617
CPGX 21.51FR-JR:TT010	CPGX 060204FR-JR:TT010	7080618
CPGX 32.51FL-JQ:TT010	CPGX 09T304FL-JQ:TT010	7080614
DCGT 21.50.2-SF3:T6310	DCGT 070201E-SF3:T6310	7600315
DCGT 21.50.5F-AL:HF7	DCGT 070202F-AL:HF7	6752064
DCGT 21.50.5F-AL:T0315	DCGT 070202F-AL:T0315	6756145
DCGT 21.50.5-SF3:H07	DCGT 070202E-SF3:H07	7168556
DCGT 21.50.5-SF3:T6310	DCGT 070202E-SF3:T6310	7168557
DCGT 21.50.5-SF3:T8315	DCGT 070202E-SF3:T8315	7168558
DCGT 21.51F-AL:HF7	DCGT 070204F-AL:HF7	6751734
DCGT 21.51F-AL:T0315	DCGT 070204F-AL:T0315	6756146
DCGT 21.51-SF3:H07	DCGT 070204E-SF3:H07	7168559
DCGT 21.51-SF3:T6310	DCGT 070204E-SF3:T6310	7168560
DCGT 21.51-SF3:T8315	DCGT 070204E-SF3:T8315	7168561
DCGT 32.50.2-SF3:T6310	DCGT 11T301E-SF3:T6310	7600316
DCGT 32.50.5F-AL:HF7	DCGT 11T302F-AL:HF7	6752066
DCGT 32.50.5F-AL:T0315	DCGT 11T302F-AL:T0315	6756147
DCGT 32.50.5-FF2:T7325	DCGT 11T302E-FF2:T7325	7156725
DCGT 32.50.5-FF2:T8330	DCGT 11T302E-FF2:T8330	7156726
DCGT 32.50.5-FF2:T9325	DCGT 11T302E-FF2:T9325	7156727
DCGT 32.50.5-FF2:TT010	DCGT 11T302E-FF2:TT010	7080623
DCGT 32.50.5-SF3:H07	DCGT 11T302E-SF3:H07	7168562
DCGT 32.50.5-SF3:T6310	DCGT 11T302E-SF3:T6310	7168563
DCGT 32.51F-AL:HF7	DCGT 11T304F-AL:HF7	6751736
DCGT 32.51F-AL:T0315	DCGT 11T304F-AL:T0315	6756148
DCGT 32.51L-SI:T8330	DCGT 11T304EL-SI:T8330	6926941
DCGT 32.51-NF1:T6310	DCGT 11T304E-NF1:T6310	7167407
DCGT 32.51-NF1:T7325	DCGT 11T304E-NF1:T7325	7167408
DCGT 32.51R-SI:T8330	DCGT 11T304ER-SI:T8330	6926942
DCGT 32.51-SF3:H07	DCGT 11T304E-SF3:H07	7168564
DCGT 32.51-SF3:T6310	DCGT 11T304E-SF3:T6310	7168565
DCGT 32.51-SF3:T8315	DCGT 11T304E-SF3:T8315	7168566
DCGT 32.52F-AL:HF7	DCGT 11T308F-AL:HF7	6752068
DCGT 32.52F-AL:T0315	DCGT 11T308F-AL:T0315	6756149
DCGT 32.52L-SI:T8330	DCGT 11T308EL-SI:T8330	6926943
DCGT 32.52-NF1:T6310	DCGT 11T308E-NF1:T6310	7167410
DCGT 32.52-NF1:T7325	DCGT 11T308E-NF1:T7325	7167411
DCGT 32.52R-SI:T8330	DCGT 11T308ER-SI:T8330	6926944
DCGT 32.52-SF3:H07	DCGT 11T308E-SF3:H07	7168567
DCGT 32.52-SF3:T6310	DCGT 11T308E-SF3:T6310	7168568
DCGT 32.52-SF3:T8315	DCGT 11T308E-SF3:T8315	7168569
DCGW 32.51S00420:TB310	DCGW 11T304S01020B:TB310	6755686
DCGW 32.52S00420:TB310	DCGW 11T308S01020B:TB310	6755924
DCMT 11T302E-FM:T8330	DCMT 11T302E-FM:T8330	6753651
DCMT 11T304E-FM:T8330	DCMT 11T304E-FM:T8330	6754288
DCMT 11T308E-FM:T8330	DCMT 11T308E-FM:T8330	6754289
DCMT 21.50.5-FF2:T7325	DCMT 070202E-FF2:T7325	7156728
DCMT 21.50.5-FF2:T8330	DCMT 070202E-FF2:T8330	7156729
DCMT 21.50.5-FF2:T9325	DCMT 070202E-FF2:T9325	7156730
DCMT 21.50.5-FF2:TT010	DCMT 070202E-FF2:TT010	7080626
DCMT 21.50.5-FM:T7325	DCMT 070202E-FM:T7325	7156243
DCMT 21.50.5-FM:T8315	DCMT 070202E-FM:T8315	6753612
DCMT 21.50.5-FM:T8330	DCMT 070202E-FM:T8330	6753649
DCMT 21.50.5-FM:T9315	DCMT 070202E-FM:T9315	6922888
DCMT 21.50.5-FM:T9325	DCMT 070202E-FM:T9325	6753773
DCMT 21.50.5-UR:T7325	DCMT 070202E-UR:T7325	7156244
DCMT 21.50.5-UR:T8315	DCMT 070202E-UR:T8315	6753591
DCMT 21.50.5-UR:T8330	DCMT 070202E-UR:T8330	6754237
DCMT 21.50.5-UR:T9315	DCMT 070202E-UR:T9315	6922889
DCMT 21.50.5-UR:T9325	DCMT 070202E-UR:T9325	6753933
DCMT 21.51-FF2:T7325	DCMT 070204E-FF2:T7325	7156731
DCMT 21.51-FF2:T8330	DCMT 070204E-FF2:T8330	7156732
DCMT 21.51-FF2:T9315	DCMT 070204E-FF2:T9315	7156733
DCMT 21.51-FF2:T9325	DCMT 070204E-FF2:T9325	7156734
DCMT 21.51-FM:T7325	DCMT 070204E-FM:T7325	7156245
DCMT 21.51-FM:T7335	DCMT 070204E-FM:T7335	6754770
DCMT 21.51-FM:T8315	DCMT 070204E-FM:T8315	6753592
DCMT 21.51-FM:T8330	DCMT 070204E-FM:T8330	6753650
DCMT 21.51-FM:T9315	DCMT 070204E-FM:T9315	6754056
DCMT 21.51-FM:T9325	DCMT 070204E-FM:T9325	6753775
DCMT 21.51-FM2:T6310	DCMT 070204E-FM2:T6310	7156880
DCMT 21.51-FM2:T7325	DCMT 070204E-FM2:T7325	7156881
DCMT 21.51-FM2:T8330	DCMT 070204E-FM2:T8330	7156882
DCMT 21.51-FM2:T9315	DCMT 070204E-FM2:T9315	7156883

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DCMT 21.51-FM2:T9325	DCMT 070204E-FM2:T9325	7156884
DCMT 21.51-UR:T7325	DCMT 070204E-UR:T7325	7156246
DCMT 21.51-UR:T8315	DCMT 070204E-UR:T8315	6753593
DCMT 21.51-UR:T8330	DCMT 070204E-UR:T8330	6754238
DCMT 21.51-UR:T9315	DCMT 070204E-UR:T9315	6754057
DCMT 21.51-UR:T9325	DCMT 070204E-UR:T9325	6753777
DCMT 21.51-UR:TT310	DCMT 070204E-UR:TT310	6756260
DCMT 21.52-FF2:T7325	DCMT 070208E-FF2:T7325	7156735
DCMT 21.52-FF2:T8330	DCMT 070208E-FF2:T8330	7156736
DCMT 21.52-FF2:T9315	DCMT 070208E-FF2:T9315	7156737
DCMT 21.52-FF2:T9325	DCMT 070208E-FF2:T9325	7156738
DCMT 32.50.5-FF:T8315	DCMT 11T302E-FF:T8315	6753590
DCMT 32.50.5-FF:T8330	DCMT 11T302E-FF:T8330	6754260
DCMT 32.50.5-FF:T9315	DCMT 11T302E-FF:T9315	7454482
DCMT 32.50.5-FM:T7325	DCMT 11T302E-FM:T7325	7156247
DCMT 32.50.5-FM:T8315	DCMT 11T302E-FM:T8315	6753594
DCMT 32.50.5-FM:T9315	DCMT 11T302E-FM:T9315	6922886
DCMT 32.50.5-FM:T9325	DCMT 11T302E-FM:T9325	6753934
DCMT 32.50.5-UR:T7325	DCMT 11T302E-UR:T7325	7156248
DCMT 32.50.5-UR:T8330	DCMT 11T302E-UR:T8330	6754234
DCMT 32.50.5-UR:T9315	DCMT 11T302E-UR:T9315	6922887
DCMT 32.50.5-UR:T9325	DCMT 11T302E-UR:T9325	6753935
DCMT 32.50.5-UR:TT310	DCMT 11T302E-UR:TT310	6756275
DCMT 32.51-FF:T8315	DCMT 11T304E-FF:T8315	6753595
DCMT 32.51-FF:T8330	DCMT 11T304E-FF:T8330	6754261
DCMT 32.51-FF:T9315	DCMT 11T304E-FF:T9315	7454483
DCMT 32.51-FF2:T7325	DCMT 11T304E-FF2:T7325	7156739
DCMT 32.51-FF2:T8330	DCMT 11T304E-FF2:T8330	7156740
DCMT 32.51-FF2:T9315	DCMT 11T304E-FF2:T9315	7156741
DCMT 32.51-FF2:T9325	DCMT 11T304E-FF2:T9325	7156742
DCMT 32.51-FF2:T9335	DCMT 11T304E-FF2:T9335	7156743
DCMT 32.51-FF2:TT010	DCMT 11T304E-FF2:TT010	7080624
DCMT 32.51-FM:T7325	DCMT 11T304E-FM:T7325	7156249
DCMT 32.51-FM:T7335	DCMT 11T304E-FM:T7335	6754771
DCMT 32.51-FM:T8315	DCMT 11T304E-FM:T8315	6753596
DCMT 32.51-FM:T9310	DCMT 11T304E-FM:T9310	7763100
DCMT 32.51-FM:T9315	DCMT 11T304E-FM:T9315	6753731
DCMT 32.51-FM:T9325	DCMT 11T304E-FM:T9325	6753779
DCMT 32.51-FM2:T6310	DCMT 11T304E-FM2:T6310	7156885
DCMT 32.51-FM2:T7325	DCMT 11T304E-FM2:T7325	7156886
DCMT 32.51-FM2:T8330	DCMT 11T304E-FM2:T8330	7156887
DCMT 32.51-FM2:T9315	DCMT 11T304E-FM2:T9315	7156888
DCMT 32.51-FM2:T9325	DCMT 11T304E-FM2:T9325	7156889
DCMT 32.51-FM2:T9335	DCMT 11T304E-FM2:T9335	7156890
DCMT 32.51-RF:6630	DCMT 11T304E-RF:6630	6756033
DCMT 32.51-RF:T5315	DCMT 11T304E-RF:T5315	6756035
DCMT 32.51-RF:T7335	DCMT 11T304E-RF:T7335	6756034
DCMT 32.51-RM:T5305	DCMT 11T304E-RM:T5305	6755815
DCMT 32.51-RM:T5315	DCMT 11T304E-RM:T5315	6755846
DCMT 32.51-RM:T7335	DCMT 11T304E-RM:T7335	6754772
DCMT 32.51-RM:T8330	DCMT 11T304E-RM:T8330	6754394
DCMT 32.51-RM:T9315	DCMT 11T304E-RM:T9315	6753732
DCMT 32.51-RM:T9325	DCMT 11T304E-RM:T9325	6753782
DCMT 32.51-UR:T5315	DCMT 11T304E-UR:T5315	6755847
DCMT 32.51-UR:T7325	DCMT 11T304E-UR:T7325	7156250
DCMT 32.51-UR:T7335	DCMT 11T304E-UR:T7335	6754773
DCMT 32.51-UR:T8315	DCMT 11T304E-UR:T8315	6753597
DCMT 32.51-UR:T8330	DCMT 11T304E-UR:T8330	6754235
DCMT 32.51-UR:T9315	DCMT 11T304E-UR:T9315	6753733
DCMT 32.51-UR:T9325	DCMT 11T304E-UR:T9325	6753784
DCMT 32.51-UR:TT310	DCMT 11T304E-UR:TT310	6756261
DCMT 32.52-FF:T8315	DCMT 11T308E-FF:T8315	6753598
DCMT 32.52-FF:T8330	DCMT 11T308E-FF:T8330	6754262
DCMT 32.52-FF:T9315	DCMT 11T308E-FF:T9315	7454484
DCMT 32.52-FF2:T7325	DCMT 11T308E-FF2:T7325	7156744
DCMT 32.52-FF2:T8330	DCMT 11T308E-FF2:T8330	7156745
DCMT 32.52-FF2:T9315	DCMT 11T308E-FF2:T9315	7156746
DCMT 32.52-FF2:T9325	DCMT 11T308E-FF2:T9325	7156747
DCMT 32.52-FF2:TT010	DCMT 11T308E-FF2:TT010	7080625
DCMT 32.52-FM:T7325	DCMT 11T308E-FM:T7325	7156251
DCMT 32.52-FM:T7335	DCMT 11T308E-FM:T7335	6754774
DCMT 32.52-FM:T8315	DCMT 11T308E-FM:T8315	6753599
DCMT 32.52-FM:T9310	DCMT 11T308E-FM:T9310	7763101
DCMT 32.52-FM:T9315	DCMT 11T308E-FM:T9315	6753734
DCMT 32.52-FM:T9325	DCMT 11T308E-FM:T9325	6753785
DCMT 32.52-FM2:T6310	DCMT 11T308E-FM2:T6310	7156891

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DCMT 32.52-FM2:T7325	DCMT 11T308E-FM2:T7325	7156892
DCMT 32.52-FM2:T8330	DCMT 11T308E-FM2:T8330	7156893
DCMT 32.52-FM2:T9315	DCMT 11T308E-FM2:T9315	7156894
DCMT 32.52-FM2:T9325	DCMT 11T308E-FM2:T9325	7156895
DCMT 32.52-FM2:T9335	DCMT 11T308E-FM2:T9335	7156896
DCMT 32.52-RF:6630	DCMT 11T308E-RF:6630	6756036
DCMT 32.52-RF:T5315	DCMT 11T308E-RF:T5315	6756038
DCMT 32.52-RF:T7335	DCMT 11T308E-RF:T7335	6756037
DCMT 32.52-RM:T5305	DCMT 11T308E-RM:T5305	6755816
DCMT 32.52-RM:T5315	DCMT 11T308E-RM:T5315	6755848
DCMT 32.52-RM:T7335	DCMT 11T308E-RM:T7335	6754775
DCMT 32.52-RM:T8330	DCMT 11T308E-RM:T8330	6754395
DCMT 32.52-RM:T9315	DCMT 11T308E-RM:T9315	6753735
DCMT 32.52-RM:T9325	DCMT 11T308E-RM:T9325	6753786
DCMT 32.52-UR:T5315	DCMT 11T308E-UR:T5315	6755849
DCMT 32.52-UR:T7325	DCMT 11T308E-UR:T7325	7156252
DCMT 32.52-UR:T7335	DCMT 11T308E-UR:T7335	6754776
DCMT 32.52-UR:T8315	DCMT 11T308E-UR:T8315	6753600
DCMT 32.52-UR:T8330	DCMT 11T308E-UR:T8330	6754236
DCMT 32.52-UR:T9315	DCMT 11T308E-UR:T9315	6753736
DCMT 32.52-UR:T9325	DCMT 11T308E-UR:T9325	6753787
DCMT 32.52-UR:TT310	DCMT 11T308E-UR:TT310	6756276
DCMT 32.53-FM:T8330	DCMT 11T312E-FM:T8330	6754290
DCMT 32.53-FM:T9315	DCMT 11T312E-FM:T9315	6754059
DCMT 32.53-FM:T9325	DCMT 11T312E-FM:T9325	6753936
DCMT 32.53-FM2:T9325	DCMT 11T312E-FM2:T9325	7156899
DCMT 32.53-RM:T7335	DCMT 11T312E-RM:T7335	6754777
DCMT 32.53-RM:T8330	DCMT 11T312E-RM:T8330	6754396
DCMT 32.53-RM:T9315	DCMT 11T312E-RM:T9315	6754060
DCMT 32.53-RM:T9325	DCMT 11T312E-RM:T9325	6753937
DCMT 32.53-UR:T9315	DCMT 11T312E-UR:T9315	6754061
DCMT 32.53-UR:T9325	DCMT 11T312E-UR:T9325	6753938
DCMT 432-FM2:T9315	DCMT 150408E-FM2:T9315	7156900
DCMT 432-FM2:T9325	DCMT 150408E-FM2:T9325	7156901
DCMT 432-FM2:T9335	DCMT 150408E-FM2:T9335	7156902
DCMT 432-RM:T8330	DCMT 150408E-RM:T8330	6755614
DCMT 432-RM:T9315	DCMT 150408E-RM:T9315	6922890
DCMT 432-RM:T9325	DCMT 150408E-RM:T9325	6755615
DCMW 21.50.5:T5305	DCMW 070202:T5305	6755817
DCMW 21.50.5:T6310	DCMW 070202:T6310	7168649
DCMW 21.51:T5305	DCMW 070204:T5305	6755818
DCMW 21.51:T5315	DCMW 070204:T5315	6922812
DCMW 21.51:T6310	DCMW 070204:T6310	7168650
DCMW 32.51:T5305	DCMW 11T304:T5305	6755819
DCMW 32.51:T5315	DCMW 11T304:T5315	6922813
DCMW 32.51:T6310	DCMW 11T304:T6310	7168647
DCMW 32.51FN:PD1	DCMW 11T304FN:PD1	6751869
DCMW 32.52:T5305	DCMW 11T308:T5305	6755820
DCMW 32.52:T5315	DCMW 11T308:T5315	6922814
DCMW 32.52:T6310	DCMW 11T308:T6310	7168648
DCMW 32.52FN:PD1	DCMW 11T308FN:PD1	6751821
DCMX 32.51W-FM:T7325	DCMX 11T304W-FM:T7325	7156255
DCMX 32.51W-FM:T8330	DCMX 11T304W-FM:T8330	7034016
DCMX 32.51W-FM:T9315	DCMX 11T304W-FM:T9315	7034017
DCMX 32.51W-FM:T9325	DCMX 11T304W-FM:T9325	7034018
DCMX 32.52W-FM:T7325	DCMX 11T308W-FM:T7325	7156256
DCMX 32.52W-FM:T8330	DCMX 11T308W-FM:T8330	7034019
DCMX 32.52W-FM:T9315	DCMX 11T308W-FM:T9315	7034020
DCMX 32.52W-FM:T9325	DCMX 11T308W-FM:T9325	7034021
DNG 432 T00420:TC100	DNGN 150408 T01020:TC100	6755414
DNGA 431 S00820:TC100	DNGA 150408 S02020:TC100	6755433
DNGA 431 T00420:TC100	DNGA 150404 T01020:TC100	6755431
DNGA 432 T00520:TC100	DNGA 150408 T00520:TC100	6755432
DNGA 442S00420:TB310	DNGA 150608S01020B:TB310	6755925
DNMA 431:T5305	DNMA 150404:T5305	6755821
DNMA 432:T5305	DNMA 150408:T5305	6755822
DNMA 432:T5315	DNMA 150408:T5315	6922792
DNMA 441:T5305	DNMA 150604:T5305	6755823
DNMA 441:T5315	DNMA 150604:T5315	6922793
DNMA 441:T6310	DNMA 150604:T6310	6922856
DNMA 442:T5305	DNMA 150608:T5305	6755824
DNMA 442:T5315	DNMA 150608:T5315	6922794
DNMA 442:T6310	DNMA 150608:T6310	6922857
DNMA 443:T5305	DNMA 150612:T5305	6755825
DNMA 443:T5315	DNMA 150612:T5315	6922795
DNMG 330.5-FF:T8315	DNMG 110402E-FF:T8315	6753601

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DNMG 331-FF:T8315	DNMG 110404E-FF:T8315	6753602
DNMG 331-FF:T8330	DNMG 110404E-FF:T8330	6922776
DNMG 331-FM:T7325	DNMG 110404E-FM:T7325	7156257
DNMG 331-FM:T8315	DNMG 110404E-FM:T8315	6753603
DNMG 331-FM:T8330	DNMG 110404E-FM:T8330	6754207
DNMG 331-FM:T9310	DNMG 110404E-FM:T9310	6755040
DNMG 331-FM:T9315	DNMG 110404E-FM:T9315	6753862
DNMG 331-FM:T9325	DNMG 110404E-FM:T9325	6753939
DNMG 331L-SI:T7335	DNMG 110404EL-SI:T7335	6754778
DNMG 331L-SI:T8330	DNMG 110404EL-SI:T8330	6754354
DNMG 331L-SI:T9325	DNMG 110404EL-SI:T9325	6753940
DNMG 331-M:T5315	DNMG 110404E-M:T5315	6755744
DNMG 331-M:T9315	DNMG 110404E-M:T9315	6753866
DNMG 331-M:T9325	DNMG 110404E-M:T9325	6753941
DNMG 331-M:T9335	DNMG 110404E-M:T9335	6754895
DNMG 331-NF:T6310	DNMG 110404E-NF:T6310	6922836
DNMG 331-NF:T7325	DNMG 110404E-NF:T7325	7156259
DNMG 331-NF:T7335	DNMG 110404E-NF:T7335	6834663
DNMG 331-NF:T8330	DNMG 110404E-NF:T8330	6834664
DNMG 331-NF:T9315	DNMG 110404E-NF:T9315	6834665
DNMG 331-NF:T9325	DNMG 110404E-NF:T9325	6834666
DNMG 331-NM:T7325	DNMG 110404E-NM:T7325	7156260
DNMG 331-NM:T7335	DNMG 110404E-NM:T7335	6754779
DNMG 331-NM:T8315	DNMG 110404E-NM:T8315	6922668
DNMG 331-NM:T8330	DNMG 110404E-NM:T8330	6755110
DNMG 331-NM:T9325	DNMG 110404E-NM:T9325	6753942
DNMG 331-NMR:T7325	DNMG 110404E-NMR:T7325	7156261
DNMG 331-NMR:T9315	DNMG 110404E-NMR:T9315	7038060
DNMG 331-NMR:T9325	DNMG 110404E-NMR:T9325	7038061
DNMG 331R-SI:T7325	DNMG 110404ER-SI:T7325	7156262
DNMG 331R-SI:T7335	DNMG 110404ER-SI:T7335	6754780
DNMG 331R-SI:T8330	DNMG 110404ER-SI:T8330	6754355
DNMG 331R-SI:T9325	DNMG 110404ER-SI:T9325	6753943
DNMG 331-SF:T6310	DNMG 110404E-SF:T6310	6919763
DNMG 331-SF:T7325	DNMG 110404E-SF:T7325	7156263
DNMG 331-SF:T8315	DNMG 110404E-SF:T8315	6919765
DNMG 331-SF:T8330	DNMG 110404E-SF:T8330	6919766
DNMG 331-SF:T9315	DNMG 110404E-SF:T9315	7035052
DNMG 331-SF:T9325	DNMG 110404E-SF:T9325	7035053
DNMG 331-SM:T6310	DNMG 110404E-SM:T6310	6915817
DNMG 331-SM:T7325	DNMG 110404E-SM:T7325	7156264
DNMG 331-SM:T7335	DNMG 110404E-SM:T7335	6915818
DNMG 331-SM:T8330	DNMG 110404E-SM:T8330	6915819
DNMG 331-SM:T9325	DNMG 110404E-SM:T9325	6915820
DNMG 332-FF:T8315	DNMG 110408E-FF:T8315	6753604
DNMG 332-FM:T7325	DNMG 110408E-FM:T7325	7156265
DNMG 332-FM:T8315	DNMG 110408E-FM:T8315	6753605
DNMG 332-FM:T8330	DNMG 110408E-FM:T8330	6754208
DNMG 332-FM:T9310	DNMG 110408E-FM:T9310	6755041
DNMG 332-FM:T9315	DNMG 110408E-FM:T9315	6753737
DNMG 332-FM:T9325	DNMG 110408E-FM:T9325	6753944
DNMG 332L-SI:T7325	DNMG 110408EL-SI:T7325	7156266
DNMG 332L-SI:T8330	DNMG 110408EL-SI:T8330	6754356
DNMG 332L-SI:T9325	DNMG 110408EL-SI:T9325	6753945
DNMG 332-M:T5315	DNMG 110408E-M:T5315	6755745
DNMG 332-M:T9315	DNMG 110408E-M:T9315	6753867
DNMG 332-M:T9325	DNMG 110408E-M:T9325	6753946
DNMG 332-M:T9335	DNMG 110408E-M:T9335	6754896
DNMG 332-NF:T6310	DNMG 110408E-NF:T6310	6922837
DNMG 332-NF:T7325	DNMG 110408E-NF:T7325	7156267
DNMG 332-NF:T7335	DNMG 110408E-NF:T7335	6834667
DNMG 332-NF:T8330	DNMG 110408E-NF:T8330	6834668
DNMG 332-NF:T9315	DNMG 110408E-NF:T9315	6834669
DNMG 332-NF:T9325	DNMG 110408E-NF:T9325	6834670
DNMG 332-NM:T7325	DNMG 110408E-NM:T7325	7156268
DNMG 332-NM:T7335	DNMG 110408E-NM:T7335	6754782
DNMG 332-NM:T8315	DNMG 110408E-NM:T8315	6922669
DNMG 332-NM:T8330	DNMG 110408E-NM:T8330	6755111
DNMG 332-NM:T9325	DNMG 110408E-NM:T9325	6753947
DNMG 332-NMR:T7325	DNMG 110408E-NMR:T7325	7156269
DNMG 332-NMR:T9315	DNMG 110408E-NMR:T9315	7038062
DNMG 332-NMR:T9325	DNMG 110408E-NMR:T9325	7038063
DNMG 332-RM:T9315	DNMG 110408E-RM:T9315	6753870
DNMG 332-RM:T9325	DNMG 110408E-RM:T9325	6753948
DNMG 332-RM:T9335	DNMG 110408E-RM:T9335	6754897
DNMG 332R-SI:T7335	DNMG 110408ER-SI:T7335	6754783

ANSI	ISO	EDP
DNMG 332R-SI:T8330	DNMG 110408ER-SI:T8330	6754357
DNMG 332R-SI:T9325	DNMG 110408ER-SI:T9325	6753949
DNMG 332-SF:T6310	DNMG 110408E-SF:T6310	6919767
DNMG 332-SF:T7325	DNMG 110408E-SF:T7325	7156272
DNMG 332-SF:T7335	DNMG 110408E-SF:T7335	6919768
DNMG 332-SF:T8315	DNMG 110408E-SF:T8315	6919769
DNMG 332-SF:T8330	DNMG 110408E-SF:T8330	6919770
DNMG 332-SF:T9325	DNMG 110408E-SF:T9325	7035055
DNMG 332-SM:T6310	DNMG 110408E-SM:T6310	6915821
DNMG 332-SM:T7325	DNMG 110408E-SM:T7325	7156273
DNMG 332-SM:T7335	DNMG 110408E-SM:T7335	6915822
DNMG 332-SM:T8330	DNMG 110408E-SM:T8330	6915823
DNMG 332-SM:T9325	DNMG 110408E-SM:T9325	6915825
DNMG 333-M:T9315	DNMG 110412E-M:T9315	6753882
DNMG 333-M:T9325	DNMG 110412E-M:T9325	6753950
DNMG 333-M:T9335	DNMG 110412E-M:T9335	6754898
DNMG 333-NMR:T7325	DNMG 110412E-NMR:T7325	7156274
DNMG 333-NMR:T9315	DNMG 110412E-NMR:T9315	7038064
DNMG 333-NMR:T9325	DNMG 110412E-NMR:T9325	7038065
DNMG 333-RM:T9315	DNMG 110412E-RM:T9315	6753885
DNMG 333-RM:T9325	DNMG 110412E-RM:T9325	6753951
DNMG 431-FF:T8315	DNMG 150404E-FF:T8315	6753606
DNMG 431-FM:T7325	DNMG 150404E-FM:T7325	7156276
DNMG 431-FM:T8330	DNMG 150404E-FM:T8330	6754203
DNMG 431-FM:T9315	DNMG 150404E-FM:T9315	6753887
DNMG 431-FM:T9325	DNMG 150404E-FM:T9325	6753952
DNMG 431L-SI:T8330	DNMG 150404EL-SI:T8330	7168618
DNMG 431L-SI:T9325	DNMG 150404EL-SI:T9325	7035030
DNMG 431-M:T5315	DNMG 150404E-M:T5315	7035037
DNMG 431-M:T9315	DNMG 150404E-M:T9315	6754064
DNMG 431-M:T9325	DNMG 150404E-M:T9325	6753953
DNMG 431-M:T9335	DNMG 150404E-M:T9335	6754900
DNMG 431-NF:T6310	DNMG 150404E-NF:T6310	6922838
DNMG 431-NF:T7325	DNMG 150404E-NF:T7325	7156277
DNMG 431-NF:T7335	DNMG 150404E-NF:T7335	6834671
DNMG 431-NF:T8330	DNMG 150404E-NF:T8330	6834672
DNMG 431-NF:T9315	DNMG 150404E-NF:T9315	6834673
DNMG 431-NF:T9325	DNMG 150404E-NF:T9325	6834674
DNMG 431-NMR:T7325	DNMG 150404E-NMR:T7325	7156278
DNMG 431-NMR:T7335	DNMG 150404E-NMR:T7335	7038067
DNMG 431-NMR:T9325	DNMG 150404E-NMR:T9325	7038066
DNMG 431R-SI:T8330	DNMG 150404ER-SI:T8330	7168619
DNMG 431R-SI:T9325	DNMG 150404ER-SI:T9325	7035031
DNMG 431-SF:T6310	DNMG 150404E-SF:T6310	6919771
DNMG 431-SF:T8315	DNMG 150404E-SF:T8315	6919772
DNMG 431-SF:T8330	DNMG 150404E-SF:T8330	6919773
DNMG 431-SF:T9325	DNMG 150404E-SF:T9325	7035056
DNMG 431-SM:T6310	DNMG 150404E-SM:T6310	7168666
DNMG 432-FM:T7325	DNMG 150408E-FM:T7325	7156279
DNMG 432-FM:T8330	DNMG 150408E-FM:T8330	6754204
DNMG 432-FM:T9315	DNMG 150408E-FM:T9315	6754065
DNMG 432-FM:T9325	DNMG 150408E-FM:T9325	6753954
DNMG 432L-SI:T7335	DNMG 150408EL-SI:T7335	6754784
DNMG 432L-SI:T8330	DNMG 150408EL-SI:T8330	6754358
DNMG 432L-SI:T9325	DNMG 150408EL-SI:T9325	6753955
DNMG 432-M:T5315	DNMG 150408E-M:T5315	7035038
DNMG 432-M:T9315	DNMG 150408E-M:T9315	6754066
DNMG 432-M:T9325	DNMG 150408E-M:T9325	6753956
DNMG 432-M:T9335	DNMG 150408E-M:T9335	6754901
DNMG 432-NF:T6310	DNMG 150408E-NF:T6310	6922839
DNMG 432-NF:T7325	DNMG 150408E-NF:T7325	7156281
DNMG 432-NF:T7335	DNMG 150408E-NF:T7335	6834675
DNMG 432-NF:T8330	DNMG 150408E-NF:T8330	6834676
DNMG 432-NF:T9315	DNMG 150408E-NF:T9315	6834677
DNMG 432-NF:T9325	DNMG 150408E-NF:T9325	6834678
DNMG 432-NM:T7335	DNMG 150408E-NM:T7335	7035032
DNMG 432-NM:T8330	DNMG 150408E-NM:T8330	7168640
DNMG 432-NM:T9325	DNMG 150408E-NM:T9325	7035036
DNMG 432-NMR:T7325	DNMG 150408E-NMR:T7325	7156282
DNMG 432-NMR:T7335	DNMG 150408E-NMR:T7335	7038071
DNMG 432-NMR:T8330	DNMG 150408E-NMR:T8330	7038068
DNMG 432-NMR:T9315	DNMG 150408E-NMR:T9315	7038069
DNMG 432-NMR:T9325	DNMG 150408E-NMR:T9325	7038070
DNMG 432-NRM:T7325	DNMG 150408-NRM:T7325	7595915
DNMG 432-NRM:T7335	DNMG 150408-NRM:T7335	7595916
DNMG 432-NRM:T9315	DNMG 150408-NRM:T9315	7595917
DNMG 432-R:T5315	DNMG 150408E-R:T5315	7035040
DNMG 432-RM:T9315	DNMG 150408E-RM:T9315	7035034
DNMG 432-RM:T9325	DNMG 150408E-RM:T9325	7035035
DNMG 432-RM:T9335	DNMG 150408E-RM:T9335	7035033
DNMG 432R-SI:T7335	DNMG 150408ER-SI:T7335	6754785
DNMG 432R-SI:T8330	DNMG 150408ER-SI:T8330	6754359
DNMG 432R-SI:T9325	DNMG 150408ER-SI:T9325	6753957
DNMG 432-SF:T6310	DNMG 150408E-SF:T6310	6919774
DNMG 432-SF:T8315	DNMG 150408E-SF:T8315	6919775
DNMG 432-SF:T8330	DNMG 150408E-SF:T8330	6919776
DNMG 432-SF:T9325	DNMG 150408E-SF:T9325	7035057
DNMG 432-SM:T6310	DNMG 150408E-SM:T6310	7168667
DNMG 433-M:T5315	DNMG 150412E-M:T5315	7035039
DNMG 433-M:T9315	DNMG 150412E-M:T9315	6922891
DNMG 433-M:T9325	DNMG 150412E-M:T9325	6753958
DNMG 433-RM:T7325	DNMG 150412E-RM:T7325	7156284
DNMG 433-RM:T9315	DNMG 150412E-RM:T9315	6754067
DNMG 433-RM:T9325	DNMG 150412E-RM:T9325	6753959
DNMG 433-RM:T9335	DNMG 150412E-RM:T9335	6754903
DNMG 441-FF:T7325	DNMG 150604E-FF:T7325	7156503
DNMG 441-FF:T8315	DNMG 150604E-FF:T8315	6753607
DNMG 441-FM:T7325	DNMG 150604E-FM:T7325	7156285
DNMG 441-FM:T7335	DNMG 150604E-FM:T7335	6754786
DNMG 441-FM:T8315	DNMG 150604E-FM:T8315	6753608
DNMG 441-FM:T8330	DNMG 150604E-FM:T8330	6754202
DNMG 441-FM:T9310	DNMG 150604E-FM:T9310	6755042
DNMG 441-FM:T9315	DNMG 150604E-FM:T9315	6753738
DNMG 441-FM:T9325	DNMG 150604E-FM:T9325	6753960
DNMG 441-FM:TT310	DNMG 150604E-FM:TT310	6798558
DNMG 441L-SI:6630	DNMG 150604EL-SI:6630	6752018
DNMG 441L-SI:T7325	DNMG 150604EL-SI:T7325	7156286
DNMG 441L-SI:T7335	DNMG 150604EL-SI:T7335	6754787
DNMG 441L-SI:T8315	DNMG 150604EL-SI:T8315	6922728
DNMG 441L-SI:T8330	DNMG 150604EL-SI:T8330	6754364
DNMG 441L-SI:T9325	DNMG 150604EL-SI:T9325	6753961
DNMG 441-M:T5315	DNMG 150604E-M:T5315	6755746
DNMG 441-M:T9315	DNMG 150604E-M:T9315	6754068
DNMG 441-M:T9325	DNMG 150604E-M:T9325	6753962
DNMG 441-M:T9335	DNMG 150604E-M:T9335	6754904
DNMG 441-NF:HF7	DNMG 150604E-NF:HF7	6834679
DNMG 441-NF:T6310	DNMG 150604E-NF:T6310	6922840
DNMG 441-NF:T7325	DNMG 150604E-NF:T7325	7156287
DNMG 441-NF:T7335	DNMG 150604E-NF:T7335	6834680
DNMG 441-NF:T8315	DNMG 150604E-NF:T8315	6834681
DNMG 441-NF:T8330	DNMG 150604E-NF:T8330	6834682
DNMG 441-NF:T9315	DNMG 150604E-NF:T9315	6834683
DNMG 441-NF:T9325	DNMG 150604E-NF:T9325	6834684
DNMG 441-NM:T7325	DNMG 150604E-NM:T7325	7156288
DNMG 441-NM:T7335	DNMG 150604E-NM:T7335	6754788
DNMG 441-NM:T8315	DNMG 150604E-NM:T8315	6922670
DNMG 441-NM:T8330	DNMG 150604E-NM:T8330	6755112
DNMG 441-NM:T9315	DNMG 150604E-NM:T9315	6922892
DNMG 441-NM:T9325	DNMG 150604E-NM:T9325	6753963
DNMG 441-NMR:T7325	DNMG 150604E-NMR:T7325	7156289
DNMG 441-NMR:T7335	DNMG 150604E-NMR:T7335	7038075
DNMG 441-NMR:T8330	DNMG 150604E-NMR:T8330	7038072
DNMG 441-NMR:T9315	DNMG 150604E-NMR:T9315	7038073
DNMG 441-NMR:T9325	DNMG 150604E-NMR:T9325	7038074
DNMG 441-NRM:T7325	DNMG 150604-NRM:T7325	7595918
DNMG 441-NRM:T7335	DNMG 150604-NRM:T7335	7595919
DNMG 441-NRM:T9315	DNMG 150604-NRM:T9315	7595930
DNMG 441R-SI:6630	DNMG 150604ER-SI:6630	6752017
DNMG 441R-SI:T7325	DNMG 150604ER-SI:T7325	7156290
DNMG 441R-SI:T7335	DNMG 150604ER-SI:T7335	6754789
DNMG 441R-SI:T8315	DNMG 150604ER-SI:T8315	6922729
DNMG 441R-SI:T8330	DNMG 150604ER-SI:T8330	6754365
DNMG 441R-SI:T9325	DNMG 150604ER-SI:T9325	6753788
DNMG 441-SF:H07	DNMG 150604E-SF:H07	6921014
DNMG 441-SF:T6310	DNMG 150604E-SF:T6310	6919778
DNMG 441-SF:T7325	DNMG 150604E-SF:T7325	7156291
DNMG 441-SF:T7335	DNMG 150604E-SF:T7335	6919779
DNMG 441-SF:T8315	DNMG 150604E-SF:T8315	6919780
DNMG 441-SF:T8330	DNMG 150604E-SF:T8330	6919781
DNMG 441-SF:T9315	DNMG 150604E-SF:T9315	7035058
DNMG 441-SF:T9325	DNMG 150604E-SF:T9325	7035059
DNMG 441-SM:T6310	DNMG 150604E-SM:T6310	6915826
DNMG 441-SM:T7325	DNMG 150604E-SM:T7325	7156292
DNMG 441-SM:T7335	DNMG 150604E-SM:T7335	6915827
DNMG 441-SM:T8330	DNMG 150604E-SM:T8330	6915828
DNMG 441-SM:T9315	DNMG 150604E-SM:T9315	6915829
DNMG 441-SM:T9325	DNMG 150604E-SM:T9325	6915830
DNMG 442-FF:T7325	DNMG 150608E-FF:T7325	7156504
DNMG 442-FF:T8315	DNMG 150608E-FF:T8315	6753609
DNMG 442-FM:T7325	DNMG 150608E-FM:T7325	7156293
DNMG 442-FM:T7335	DNMG 150608E-FM:T7335	6754790
DNMG 442-FM:T8315	DNMG 150608E-FM:T8315	6753610
DNMG 442-FM:T8330	DNMG 150608E-FM:T8330	6754201
DNMG 442-FM:T9310	DNMG 150608E-FM:T9310	6755043
DNMG 442-FM:T9315	DNMG 150608E-FM:T9315	6753739
DNMG 442-FM:T9325	DNMG 150608E-FM:T9325	6753964
DNMG 442-FM:TT310	DNMG 150608E-FM:TT310	6798559
DNMG 442L-SI:6630	DNMG 150608EL-SI:6630	6752012
DNMG 442L-SI:T7325	DNMG 150608EL-SI:T7325	7156294
DNMG 442L-SI:T7335	DNMG 150608EL-SI:T7335	6754791
DNMG 442L-SI:T8315	DNMG 150608EL-SI:T8315	6922730
DNMG 442L-SI:T8330	DNMG 150608EL-SI:T8330	6754366
DNMG 442L-SI:T9325	DNMG 150608EL-SI:T9325	6753789
DNMG 442-M:6630	DNMG 150608E-M:6630	6751587
DNMG 442-M:T5315	DNMG 150608E-M:T5315	6755747
DNMG 442-M:T9310	DNMG 150608E-M:T9310	6755047
DNMG 442-M:T9315	DNMG 150608E-M:T9315	6753740
DNMG 442-M:T9325	DNMG 150608E-M:T9325	6753803
DNMG 442-M:T9335	DNMG 150608E-M:T9335	6754905
DNMG 442-NF:HF7	DNMG 150608E-NF:HF7	6834685
DNMG 442-NF:T6310	DNMG 150608E-NF:T6310	6922841
DNMG 442-NF:T7325	DNMG 150608E-NF:T7325	7156295
DNMG 442-NF:T7335	DNMG 150608E-NF:T7335	6834686
DNMG 442-NF:T8315	DNMG 150608E-NF:T8315	6834687
DNMG 442-NF:T8330	DNMG 150608E-NF:T8330	6834688
DNMG 442-NF:T9315	DNMG 150608E-NF:T9315	6834689
DNMG 442-NF:T9325	DNMG 150608E-NF:T9325	6834690
DNMG 442-NM:T7325	DNMG 150608E-NM:T7325	7156296
DNMG 442-NM:T7335	DNMG 150608E-NM:T7335	6754792
DNMG 442-NM:T8315	DNMG 150608E-NM:T8315	6922671
DNMG 442-NM:T8330	DNMG 150608E-NM:T8330	6754200
DNMG 442-NM:T9315	DNMG 150608E-NM:T9315	6922893
DNMG 442-NM:T9325	DNMG 150608E-NM:T9325	6753965
DNMG 442-NMR:T6310	DNMG 150608E-NMR:T6310	7454464
DNMG 442-NMR:T7325	DNMG 150608E-NMR:T7325	7156297
DNMG 442-NMR:T7335	DNMG 150608E-NMR:T7335	7038079
DNMG 442-NMR:T8330	DNMG 150608E-NMR:T8330	7038076
DNMG 442-NMR:T9315	DNMG 150608E-NMR:T9315	7038077
DNMG 442-NMR:T9325	DNMG 150608E-NMR:T9325	7038078
DNMG 442-NRM:T7325	DNMG 150608-NRM:T7325	7595931
DNMG 442-NRM:T7335	DNMG 150608-NRM:T7335	7595932
DNMG 442-NRM:T9315	DNMG 150608-NRM:T9315	7595933
DNMG 442-R:6630	DNMG 150608E-R:6630	6751589
DNMG 442-R:T5305	DNMG 150608E-R:T5305	6755826
DNMG 442-R:T5315	DNMG 150608E-R:T5315	6922757
DNMG 442-R:T9310	DNMG 150608E-R:T9310	6922947
DNMG 442-R:T9315	DNMG 150608E-R:T9315	6922894
DNMG 442-R:T9325	DNMG 150608E-R:T9325	6753790
DNMG 442-RM:T5305	DNMG 150608E-RM:T5305	6755827
DNMG 442-RM:T5315	DNMG 150608E-RM:T5315	6755748
DNMG 442-RM:T7325	DNMG 150608E-RM:T7325	7156298
DNMG 442-RM:T7335	DNMG 150608E-RM:T7335	6922696
DNMG 442-RM:T8315	DNMG 150608E-RM:T8315	6753611
DNMG 442-RM:T8330	DNMG 150608E-RM:T8330	6755127
DNMG 442-RM:T9310	DNMG 150608E-RM:T9310	6755044
DNMG 442-RM:T9315	DNMG 150608E-RM:T9315	6753741
DNMG 442-RM:T9325	DNMG 150608E-RM:T9325	6753966
DNMG 442-RM:T9335	DNMG 150608E-RM:T9335	6754906
DNMG 442R-SI:6630	DNMG 150608ER-SI:6630	6752019
DNMG 442R-SI:T7325	DNMG 150608ER-SI:T7325	7156299
DNMG 442R-SI:T7335	DNMG 150608ER-SI:T7335	6754793
DNMG 442R-SI:T8315	DNMG 150608ER-SI:T8315	6922731
DNMG 442R-SI:T8330	DNMG 150608ER-SI:T8330	6754367
DNMG 442R-SI:T9325	DNMG 150608ER-SI:T9325	6753791
DNMG 442-SF:H07	DNMG 150608E-SF:H07	6921015
DNMG 442-SF:T6310	DNMG 150608E-SF:T6310	6919783
DNMG 442-SF:T7325	DNMG 150608E-SF:T7325	7156300
DNMG 442-SF:T7335	DNMG 150608E-SF:T7335	6919784

ANSI	ISO	EDP
DNMG 442-SF:T8315	DNMG 150608E-SF:T8315	6919785
DNMG 442-SF:T8330	DNMG 150608E-SF:T8330	6919786
DNMG 442-SF:T9315	DNMG 150608E-SF:T9315	7035060
DNMG 442-SF:T9325	DNMG 150608E-SF:T9325	7035061
DNMG 442-SM:T6310	DNMG 150608E-SM:T6310	6915831
DNMG 442-SM:T7325	DNMG 150608E-SM:T7325	7156301
DNMG 442-SM:T7335	DNMG 150608E-SM:T7335	6915832
DNMG 442-SM:T8330	DNMG 150608E-SM:T8330	6915833
DNMG 442-SM:T9315	DNMG 150608E-SM:T9315	6915834
DNMG 442-SM:T9325	DNMG 150608E-SM:T9325	6915835
DNMG 442W-MR:T5315	DNMG 150608W-MR:T5315	7035043
DNMG 442W-MR:T9315	DNMG 150608W-MR:T9315	6850885
DNMG 442W-MR:T9325	DNMG 150608W-MR:T9325	6850886
DNMG 443-FM:T7325	DNMG 150612E-FM:T7325	7156302
DNMG 443-FM:T8330	DNMG 150612E-FM:T8330	6754199
DNMG 443-FM:T9310	DNMG 150612E-FM:T9310	7763102
DNMG 443-FM:T9315	DNMG 150612E-FM:T9315	6754070
DNMG 443-FM:T9325	DNMG 150612E-FM:T9325	6753967
DNMG 443-M:T5315	DNMG 150612E-M:T5315	6755749
DNMG 443-M:T9310	DNMG 150612E-M:T9310	6755045
DNMG 443-M:T9315	DNMG 150612E-M:T9315	6754071
DNMG 443-M:T9325	DNMG 150612E-M:T9325	6753968
DNMG 443-M:T9335	DNMG 150612E-M:T9335	6754907
DNMG 443-NF:T6310	DNMG 150612E-NF:T6310	6922842
DNMG 443-NF:T8330	DNMG 150612E-NF:T8330	6834691
DNMG 443-NF:T9325	DNMG 150612E-NF:T9325	6834693
DNMG 443-NM:T7325	DNMG 150612E-NM:T7325	7156303
DNMG 443-NM:T7335	DNMG 150612E-NM:T7335	6754794
DNMG 443-NM:T8315	DNMG 150612E-NM:T8315	6922672
DNMG 443-NM:T9325	DNMG 150612E-NM:T9325	6753969
DNMG 443-NMR:T7325	DNMG 150612E-NMR:T7325	7156304
DNMG 443-NMR:T7335	DNMG 150612E-NMR:T7335	7038083
DNMG 443-NMR:T8330	DNMG 150612E-NMR:T8330	7038080
DNMG 443-NMR:T9315	DNMG 150612E-NMR:T9315	7038081
DNMG 443-NMR:T9325	DNMG 150612E-NMR:T9325	7038082
DNMG 443-NRM:T7325	DNMG 150612-NRM:T7325	7595934
DNMG 443-NRM:T7335	DNMG 150612-NRM:T7335	7595935
DNMG 443-NRM:T9315	DNMG 150612-NRM:T9315	7595936
DNMG 443-R:6630	DNMG 150612E-R:6630	6751591
DNMG 443-R:T5305	DNMG 150612E-R:T5305	6755828
DNMG 443-R:T5315	DNMG 150612E-R:T5315	6922758
DNMG 443-R:T9310	DNMG 150612E-R:T9310	6922948
DNMG 443-R:T9315	DNMG 150612E-R:T9315	6754072
DNMG 443-R:T9325	DNMG 150612E-R:T9325	6753792
DNMG 443-RM:T5305	DNMG 150612E-RM:T5305	6755829
DNMG 443-RM:T5315	DNMG 150612E-RM:T5315	6755750
DNMG 443-RM:T7325	DNMG 150612E-RM:T7325	7156305
DNMG 443-RM:T7335	DNMG 150612E-RM:T7335	6922697
DNMG 443-RM:T8330	DNMG 150612E-RM:T8330	6755128
DNMG 443-RM:T9310	DNMG 150612E-RM:T9310	6755046
DNMG 443-RM:T9315	DNMG 150612E-RM:T9315	6754073
DNMG 443-RM:T9325	DNMG 150612E-RM:T9325	6753970
DNMG 443-RM:T9335	DNMG 150612E-RM:T9335	6754908
DNMG 443-SF:T6310	DNMG 150612E-SF:T6310	6919787
DNMG 443-SF:T7325	DNMG 150612E-SF:T7325	7156306
DNMG 443-SF:T9315	DNMG 150612E-SF:T9315	7035062
DNMG 443-SM:T6310	DNMG 150612E-SM:T6310	6915836
DNMG 443-SM:T7325	DNMG 150612E-SM:T7325	7156307
DNMG 443-SM:T7335	DNMG 150612E-SM:T7335	6915837
DNMG 443-SM:T8330	DNMG 150612E-SM:T8330	6915838
DNMG 443-SM:T9315	DNMG 150612E-SM:T9315	6915839
DNMG 443-SM:T9325	DNMG 150612E-SM:T9325	6915840
DNMG 443W-MR:T9310	DNMG 150612W-MR:T9310	7035045
DNMG 443W-MR:T9315	DNMG 150612W-MR:T9315	6850887
DNMG 443W-MR:T9325	DNMG 150612W-MR:T9325	6850888
DNMG 444-FM:T9315	DNMG 150616E-FM:T9315	6922829
DNMG 444-FM:T9325	DNMG 150616E-FM:T9325	6922830
DNMG 444-R:T9325	DNMG 150616E-R:T9325	6922759
DNMG 444-RM:T5315	DNMG 150616E-RM:T5315	6755751
DNMG 444-RM:T9315	DNMG 150616E-RM:T9315	6754074
DNMG 444-RM:T9325	DNMG 150616E-RM:T9325	6753971
DNMG 444-RM:T9335	DNMG 150616E-RM:T9335	6754909
DNMM 432-NR:T9325	DNMM 150408E-NR:T9325	6753972
DNMM 442-NR:T7325	DNMM 150608E-NR:T7325	7156310
DNMM 442-NR:T8330	DNMM 150608E-NR:T8330	6754198
DNMM 442-NR:T9325	DNMM 150608E-NR:T9325	6753973

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DNMM 442-NR2:T9325	DNMM 150608E-NR2:T9325	6753974
DNMM 442-OR:T9325	DNMM 150608E-OR:T9325	6753975
DNMM 443-OR:T9315	DNMM 150612E-OR:T9315	6754075
DNMM 443-OR:T9325	DNMM 150612E-OR:T9325	6753976
DNMM 443-OR:T9335	DNMM 150612E-OR:T9335	6754911
DNMM 444-OR:T9325	DNMM 150616E-OR:T9325	6753977
DNMX 441W-NM:T7325	DNMX 150604W-NM:T7325	7156312
DNMX 441W-NM:T7335	DNMX 150604W-NM:T7335	7034022
DNMX 441W-NM:T9315	DNMX 150604W-NM:T9315	7034023
DNMX 441W-NM:T9325	DNMX 150604W-NM:T9325	7034024
DNMX 442W-NM:T7325	DNMX 150608W-NM:T7325	7156313
DNMX 442W-NM:T7335	DNMX 150608W-NM:T7335	7034025
DNMX 442W-NM:T9315	DNMX 150608W-NM:T9315	7034026
DNMX 442W-NM:T9325	DNMX 150608W-NM:T9325	7034027
ECGT 2.520.5-SF2:H07	ECGT 080302E-SF2:H07	7168492
ECGT 2.520.5-SF2:T6310	ECGT 080302E-SF2:T6310	7168493
ECGT 2.521-SF2:H07	ECGT 080304E-SF2:H07	7168494
ECGT 2.521-SF2:T6310	ECGT 080304E-SF2:T6310	7168495
ECGT 2.521-SF3:H07	ECGT 080304E-SF3:H07	7168572
ECGT 2.521-SF3:T6310	ECGT 080304E-SF3:T6310	7168573
ECGT 21.50.5-SF2:H07	ECGT 060202E-SF2:H07	7168198
ECGT 21.50.5-SF2:T6310	ECGT 060202E-SF2:T6310	7168199
ECGT 21.50.5-SF3:H07	ECGT 060202E-SF3:H07	7168570
ECGT 21.50.5-SF3:T6310	ECGT 060202E-SF3:T6310	7168571
ECGT 21.51-SF2:H07	ECGT 060204E-SF2:H07	7168490
ECGT 21.51-SF2:T6310	ECGT 060204E-SF2:T6310	7168491
ECMT 2.521-FM2:T5315	ECMT 080304E-FM2:T5315	6755936
ECMT 2.521-FM2:T7325	ECMT 080304E-FM2:T7325	7156905
ECMT 2.521-FM2:T8330	ECMT 080304E-FM2:T8330	7156906
ECMT 2.521-FM2:T9315	ECMT 080304E-FM2:T9315	6922896
ECMT 2.521-FM2:T9325	ECMT 080304E-FM2:T9325	6755937
ECMT 2.521-FM2:T9335	ECMT 080304E-FM2:T9335	6755938
ECMT 2.522-FM2:T7325	ECMT 080308E-FM2:T7325	7156907
ECMT 2.522-FM2:T8330	ECMT 080308E-FM2:T8330	7156908
ECMT 2.522-FM2:T9315	ECMT 080308E-FM2:T9315	6922897
ECMT 2.522-FM2:T9325	ECMT 080308E-FM2:T9325	6755939
ECMT 2.522-FM2:T9335	ECMT 080308E-FM2:T9335	6755940
ECMT 21.51-FM2:T7325	ECMT 060204E-FM2:T7325	7156903
ECMT 21.51-FM2:T8330	ECMT 060204E-FM2:T8330	7156904
ECMT 21.51-FM2:T9315	ECMT 060204E-FM2:T9315	6922895
ECMT 21.51-FM2:T9325	ECMT 060204E-FM2:T9325	6755934
ECMT 21.51-FM2:T9335	ECMT 060204E-FM2:T9335	6755935
ECMW 2.521:H07	ECMW 080304:H07	7168664
ECMW 2.522:H07	ECMW 080308:H07	7168665
ECMW 21.51:H07	ECMW 060204:H07	7168663
EPGX1.81.50.5FL-JZ:TT010	EPGX 050202FL-JZ:TT010	7080627
EPGX1.81.50.5FR-JZ:TT010	EPGX 050202FR-JZ:TT010	7080628
EPMT 1.81.50.5-NF2:H07	EPMT 050202E-NF2:H07	7167482
EPMT 1.81.50.5-NF2:T7325	EPMT 050202E-NF2:T7325	7156314
EPMT 1.81.50.5-NF2:T7335	EPMT 050202E-NF2:T7335	6755942
EPMT 1.81.50.5-NF2:T9315	EPMT 050202E-NF2:T9315	6922898
EPMT 1.81.50.5-NF2:T9325	EPMT 050202E-NF2:T9325	6755941
EPMT 1.81.50.5-NF2:T9335	EPMT 050202E-NF2:T9335	7167484
EPMT 1.81.50.5-NF2:TT010	EPMT 050202E-NF2:TT010	6756302
GL2-D200G02L06-PM:G8330	GL2-D200G02L06-PM:G8330	7802886
GL2-D200G02L06-PM:T7325	GL2-D200G02L06-PM:T7325	7802888
GL2-D200G02L06-PR:G8330	GL2-D200G02L06-PR:G8330	7802912
GL2-D200G02L12-PM:G8330	GL2-D200G02L12-PM:G8330	7802884
GL2-D200G02L12-PR:G8330	GL2-D200G02L12-PR:G8330	7802914
GL2-D200G02R06-PM:G8330	GL2-D200G02R06-PM:G8330	7802887
GL2-D200G02R06-PM:T7325	GL2-D200G02R06-PM:T7325	7802889
GL2-D200G02R06-PR:G8330	GL2-D200G02R06-PR:G8330	7802913
GL2-D200G02R12-PM:G8330	GL2-D200G02R12-PM:G8330	7802885
GL2-D200G02R12-PR:G8330	GL2-D200G02R12-PR:G8330	7802915
GL2-D200M02-PM:G8330	GL2-D200M02-PM:G8330	7802882
GL2-D200M02-PM:T7325	GL2-D200M02-PM:T7325	7802883
GL2-D200M02-PR:G8330	GL2-D200M02-PR:G8330	7802910
GL2-D200M02-PR:T7325	GL2-D200M02-PR:T7325	7802911
GL3-D250G02-PM:G8330	GL3-D250G02-PM:G8330	7802916
GL3-D300G02L06-PM:G8330	GL3-D300G02L06-PM:G8330	7802921
GL3-D300G02L06-PM:T7325	GL3-D300G02L06-PM:T7325	7802923
GL3-D300G02L06-PR:G8330	GL3-D300G02L06-PR:G8330	7802927
GL3-D300G02L12-PM:G8330	GL3-D300G02L12-PM:G8330	7802919
GL3-D300G02L12-PR:G8330	GL3-D300G02L12-PR:G8330	7802929
GL3-D300G02R06-PM:G8330	GL3-D300G02R06-PM:G8330	7802922
GL3-D300G02R06-PM:T7325	GL3-D300G02R06-PM:T7325	7802924

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GL3-D300G02R06-PR:G8330	GL3-D300G02R06-PR:G8330	7802928
GL3-D300G02R12-PM:G8330	GL3-D300G02R12-PM:G8330	7802920
GL3-D300G02R12-PR:G8330	GL3-D300G02R12-PR:G8330	7802930
GL3-D300M02-PM:G8330	GL3-D300M02-PM:G8330	7802917
GL3-D300M02-PM:T7325	GL3-D300M02-PM:T7325	7802918
GL3-D300M02-PR:G8330	GL3-D300M02-PR:G8330	7802925
GL3-D300M02-PR:T7325	GL3-D300M02-PR:T7325	7802926
GL4-D400G02L06-PM:G8330	GL4-D400G02L06-PM:G8330	7802935
GL4-D400G02L06-PM:T7325	GL4-D400G02L06-PM:T7325	7802937
GL4-D400G02L06-PR:G8330	GL4-D400G02L06-PR:G8330	7802941
GL4-D400G02L12-PM:G8330	GL4-D400G02L12-PM:G8330	7802933
GL4-D400G02L12-PR:G8330	GL4-D400G02L12-PR:G8330	7802943
GL4-D400G02R06-PM:G8330	GL4-D400G02R06-PM:G8330	7802936
GL4-D400G02R06-PM:T7325	GL4-D400G02R06-PM:T7325	7802938
GL4-D400G02R06-PR:G8330	GL4-D400G02R06-PR:G8330	7802942
GL4-D400G02R12-PM:G8330	GL4-D400G02R12-PM:G8330	7802934
GL4-D400G02R12-PR:G8330	GL4-D400G02R12-PR:G8330	7802944
GL4-D400M02-PM:G8330	GL4-D400M02-PM:G8330	7802931
GL4-D400M02-PM:T7325	GL4-D400M02-PM:T7325	7802932
GL4-D400M02-PR:G8330	GL4-D400M02-PR:G8330	7802939
GL4-D400M02-PR:T7325	GL4-D400M02-PR:T7325	7802940
GL5-D500M03-PM:G8330	GL5-D500M03-PM:G8330	7802945
GL5-D500M04-PR:G8330	GL5-D500M04-PR:G8330	7802946
GL6-D600M03-PM:G8330	GL6-D600M03-PM:G8330	7802947
GL6-D600M04-PR:G8330	GL6-D600M04-PR:G8330	7802948
HNEF 090508EN-M:M5315	HNEF 090508EN-M:M5315	6756169
HNEF 090508EN-M:M9325	HNEF 090508EN-M:M9325	6756170
HNEF 0905DNFN-F:8215	HNEF 0905DNFN-F:8215	6756108
HNEF 0905DNFN-F:M5315	HNEF 0905DNFN-F:M5315	6756109
HNEF 0905DNFN-F:M9325	HNEF 0905DNFN-F:M9325	6756110
HNEF 0905ZZL-W:8215	HNEF 0905ZZL-W:8215	6756107
HNEF 0905ZZR-W:8215	HNEF 0905ZZR-W:8215	6756248
HNEF 0905ZZR-W:M5315	HNEF 0905ZZR-W:M5315	6756250
HNEF 0905ZZR-W:M8310	HNEF 0905ZZR-W:M8310	6756249
HNGX 0604ANSN-F:8215	HNGX 0604ANSN-F:8215	6753670
HNGX 0604ANSN-F:M6330	HNGX 0604ANSN-F:M6330	7601336
HNGX 0604ANSN-F:M8310	HNGX 0604ANSN-F:M8310	6922525
HNGX 0604ANSN-F:M8330	HNGX 0604ANSN-F:M8330	7447877
HNGX 0604ANSN-F:M8340	HNGX 0604ANSN-F:M8340	6800829
HNGX 0604ANSN-F:M9340	HNGX 0604ANSN-F:M9340	6755627
HNGX 0604ANSN-M:8215	HNGX 0604ANSN-M:8215	6753676
HNGX 0604ANSN-M:M5315	HNGX 0604ANSN-M:M5315	6753673
HNGX 0604ANSN-M:M6330	HNGX 0604ANSN-M:M6330	7601337
HNGX 0604ANSN-M:M8310	HNGX 0604ANSN-M:M8310	6922526
HNGX 0604ANSN-M:M8330	HNGX 0604ANSN-M:M8330	7447878
HNGX 0604ANSN-M:M8340	HNGX 0604ANSN-M:M8340	6800830
HNGX 0604ANSN-M:M9315	HNGX 0604ANSN-M:M9315	6753674
HNGX 0604ANSN-M:M9325	HNGX 0604ANSN-M:M9325	6753675
HNGX 0604ANSN-M:M9340	HNGX 0604ANSN-M:M9340	6755628
HNGX 0604ANSN-R:8215	HNGX 0604ANSN-R:8215	6753659
HNGX 0604ANSN-R:M5315	HNGX 0604ANSN-R:M5315	6753656
HNGX 0604ANSN-R:M8310	HNGX 0604ANSN-R:M8310	6922527
HNGX 0604ANSN-R:M8330	HNGX 0604ANSN-R:M8330	7447879
HNGX 0604ANSN-R:M8340	HNGX 0604ANSN-R:M8340	6800831
HNGX 0604ANSN-R:M9325	HNGX 0604ANSN-R:M9325	6753658
HNGX 0906ANEN-FF:8215	HNGX 0906ANEN-FF:8215	6755670
HNGX 0906ANEN-FF:M8330	HNGX 0906ANEN-FF:M8330	7447890
HNGX 0906ANEN-FF:M9340	HNGX 0906ANEN-FF:M9340	6755645
HNGX 0906ANSN-F:8215	HNGX 0906ANSN-F:8215	6753399
HNGX 0906ANSN-F:M6330	HNGX 0906ANSN-F:M6330	7601338
HNGX 0906ANSN-F:M8310	HNGX 0906ANSN-F:M8310	6922528
HNGX 0906ANSN-F:M8330	HNGX 0906ANSN-F:M8330	7447891
HNGX 0906ANSN-F:M8340	HNGX 0906ANSN-F:M8340	6800832
HNGX 0906ANSN-M:8215	HNGX 0906ANSN-M:8215	6753400
HNGX 0906ANSN-M:8230	HNGX 0906ANSN-M:8230	6753242
HNGX 0906ANSN-M:M5315	HNGX 0906ANSN-M:M5315	6753667
HNGX 0906ANSN-M:M6330	HNGX 0906ANSN-M:M6330	7077577
HNGX 0906ANSN-M:M8310	HNGX 0906ANSN-M:M8310	6922529
HNGX 0906ANSN-M:M8330	HNGX 0906ANSN-M:M8330	7447892
HNGX 0906ANSN-M:M8340	HNGX 0906ANSN-M:M8340	6800833
HNGX 0906ANSN-M:M9315	HNGX 0906ANSN-M:M9315	6753668
HNGX 0906ANSN-M:M9325	HNGX 0906ANSN-M:M9325	6753669
HNGX 0906ANSN-M:M9340	HNGX 0906ANSN-M:M9340	6755630
HNGX 0906ANSN-R:8215	HNGX 0906ANSN-R:8215	6753401
HNGX 0906ANSN-R:8230	HNGX 0906ANSN-R:8230	6753244
HNGX 0906ANSN-R:M5315	HNGX 0906ANSN-R:M5315	6753664

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HNGX 0906ANSN-R:M8310	HNGX 0906ANSN-R:M8310	6922530
HNGX 0906ANSN-R:M8330	HNGX 0906ANSN-R:M8330	7447893
HNGX 0906ANSN-R:M8340	HNGX 0906ANSN-R:M8340	6800834
HNGX 0906ANSN-R:M9315	HNGX 0906ANSN-R:M9315	6753665
HNGX 0906ANSN-R:M9325	HNGX 0906ANSN-R:M9325	6753666
HNMF 090516SN-R:8215	HNMF 090516SN-R:8215	6756172
HNMF 090516SN-R:M5315	HNMF 090516SN-R:M5315	6756173
HNMF 090516SN-R:M9325	HNMF 090516SN-R:M9325	6756174
HZ 1006-60 C11:333TN	HZ 1006-60 C11:333TN	6755403
HZ 1006-60 D10:333TN	HZ 1006-60 D10:333TN	6755947
HZ 1006-60 H7:333TN	HZ 1006-60 H7:333TN	6755406
HZ 1006-60 P9:333TN	HZ 1006-60 P9:333TN	6755948
HZ 1006-80 C11:333TN	HZ 1006-80 C11:333TN	6755404
HZ 1006-80 D10:333TN	HZ 1006-80 D10:333TN	6755949
HZ 1006-80 H7:333TN	HZ 1006-80 H7:333TN	6755405
HZ 1006-80 P9:333TN	HZ 1006-80 P9:333TN	6755950
HZ 1309-100 C11:333TN	HZ 1309-100 C11:333TN	6755408
HZ 1309-100 D10:333TN	HZ 1309-100 D10:333TN	6755951
HZ 1309-100 H7:333TN	HZ 1309-100 H7:333TN	6755407
HZ 1309-100 P9:333TN	HZ 1309-100 P9:333TN	6755952
HZ 1309-120 C11:333TN	HZ 1309-120 C11:333TN	6755409
HZ 1309-120 D10:333TN	HZ 1309-120 D10:333TN	6755953
HZ 1309-120 H7:333TN	HZ 1309-120 H7:333TN	6755410
HZ 1309-120 P9:333TN	HZ 1309-120 P9:333TN	6755954
HZ/2 14-14 C11:333TN	HZ/2 14-14 C11:333TN	6755462
HZ/2 14-14 H7:333TN	HZ/2 14-14 H7:333TN	6755460
HZ/2 14-14 P9:333TN	HZ/2 14-14 P9:333TN	6755955
HZ/2 16-16 C11:333TN	HZ/2 16-16 C11:333TN	6755459
HZ/2 16-16 H7:333TN	HZ/2 16-16 H7:333TN	6755461
HZ/2 16-16 P9:333TN	HZ/2 16-16 P9:333TN	6755956
HZ/2 18-18 C11:333TN	HZ/2 18-18 C11:333TN	6755487
HZ/2 18-18 H7:333TN	HZ/2 18-18 H7:333TN	6755488
HZ/2 18-18 P9:333TN	HZ/2 18-18 P9:333TN	6755957
HZ/2 20-20 C11:333TN	HZ/2 20-20 C11:333TN	6755489
HZ/2 20-20 H7:333TN	HZ/2 20-20 H7:333TN	6755490
HZ/2 20-20 P9:333TN	HZ/2 20-20 P9:333TN	6755958
HZ90 0604-30 C11:333TN	HZ90 0604-30 C11:333TN	6755478
HZ90 0604-30 D10:333TN	HZ90 0604-30 D10:333TN	6755484
HZ90 0604-30 H7:333TN	HZ90 0604-30 H7:333TN	6755479
HZ90 0604-30 P9:333TN	HZ90 0604-30 P9:333TN	6755959
HZ90 0604-40 C11:333TN	HZ90 0604-40 C11:333TN	6755480
HZ90 0604-40 D10:333TN	HZ90 0604-40 D10:333TN	6755485
HZ90 0604-40 H7:333TN	HZ90 0604-40 H7:333TN	6755481
HZ90 0604-40 P9:333TN	HZ90 0604-40 P9:333TN	6755960
HZ90 0604-50 C11:333TN	HZ90 0604-50 C11:333TN	6755482
HZ90 0604-50 D10:333TN	HZ90 0604-50 D10:333TN	6755486
HZ90 0604-50 H7:333TN	HZ90 0604-50 H7:333TN	6755483
HZ90 0604-50 P9:333TN	HZ90 0604-50 P9:333TN	6755961
KNUX 160405EL-72:T5315	KNUX 160405EL-72:T5315	6755759
KNUX 160405EL-72:T9325	KNUX 160405EL-72:T9325	6753978
KNUX 160405EL-72:T9335	KNUX 160405EL-72:T9335	6754913
KNUX 160405ER-72:T5315	KNUX 160405ER-72:T5315	6755760
KNUX 160405ER-72:T9325	KNUX 160405ER-72:T9325	6753829
KNUX 160405ER-72:T9335	KNUX 160405ER-72:T9335	6754914
KNUX 160405L-22:T5315	KNUX 160405L-22:T5315	7455426
KNUX 160405L-22:T7325	KNUX 160405L-22:T7325	7455480
KNUX 160405L-22:T7335	KNUX 160405L-22:T7335	7455429
KNUX 160405L-22:T9325	KNUX 160405L-22:T9325	7455427
KNUX 160405L-22:T9335	KNUX 160405L-22:T9335	7455428
KNUX 160405L-32:T5315	KNUX 160405L-32:T5315	7455481
KNUX 160405L-32:T7325	KNUX 160405L-32:T7325	7455485
KNUX 160405L-32:T7335	KNUX 160405L-32:T7335	7455484
KNUX 160405L-32:T9325	KNUX 160405L-32:T9325	7455482
KNUX 160405L-32:T9335	KNUX 160405L-32:T9335	7455483
KNUX 160405R-22:T5315	KNUX 160405R-22:T5315	7455486
KNUX 160405R-22:T7325	KNUX 160405R-22:T7325	7455490
KNUX 160405R-22:T7335	KNUX 160405R-22:T7335	7455489
KNUX 160405R-22:T9325	KNUX 160405R-22:T9325	7455487
KNUX 160405R-22:T9335	KNUX 160405R-22:T9335	7455488
KNUX 160405R-32:T5315	KNUX 160405R-32:T5315	7455491
KNUX 160405R-32:T7325	KNUX 160405R-32:T7325	7455495
KNUX 160405R-32:T7335	KNUX 160405R-32:T7335	7455494
KNUX 160405R-32:T9325	KNUX 160405R-32:T9325	7455492
KNUX 160405R-32:T9335	KNUX 160405R-32:T9335	7455493
KNUX 160405SL-73:6640	KNUX 160405SL-73:6640	6751685
KNUX 160405SR-73:6640	KNUX 160405SR-73:6640	6751686

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KNUX 160410L-22:T9335	KNUX 160410L-22:T9335	7455496
KNUX 160410L-32:T9325	KNUX 160410L-32:T9325	7455497
KNUX 160410L-32:T9335	KNUX 160410L-32:T9335	7455498
KNUX 160410R-22:T9335	KNUX 160410R-22:T9335	7455499
KNUX 160410R-32:T9325	KNUX 160410R-32:T9325	7455500
KNUX 160410R-32:T9335	KNUX 160410R-32:T9335	7455501
KNUX 160410SL-73:6640	KNUX 160410SL-73:6640	6751725
KNUX 160410SR-73:6640	KNUX 160410SR-73:6640	6751726
KNUX 160410SR-73:T5315	KNUX 160410SR-73:T5315	6755764
KNUX 160415SL-74:6640	KNUX 160415SL-74:6640	6751727
KNUX 160415SR-74:6640	KNUX 160415SR-74:6640	6751728
LC 0806-KP:M4310	LC 0806-KP:M4310	7637582
LC 0806-KP:M8310	LC 0806-KP:M8310	6922531
LC 0806-KP:M8330	LC 0806-KP:M8330	7637583
LC 0806-KPF:M4310	LC 0806-KPF:M4310	7637584
LC 0810-KP:M4310	LC 0810-KP:M4310	7637585
LC 0810-KP:M8310	LC 0810-KP:M8310	6922532
LC 1008-KP:M4310	LC 1008-KP:M4310	7637586
LC 1008-KP:M8310	LC 1008-KP:M8310	6922533
LC 1008-KP:M8330	LC 1008-KP:M8330	7637587
LC 1008-KPF:M4310	LC 1008-KPF:M4310	7637588
LC 1010-KP:M4310	LC 1010-KP:M4310	7637589
LC 1010-KP:M8310	LC 1010-KP:M8310	6922534
LC 1010-KP:M8330	LC 1010-KP:M8330	7637600
LC 1210-KP:M4310	LC 1210-KP:M4310	7637601
LC 1210-KP:M8310	LC 1210-KP:M8310	6922535
LC 1210-KP:M8330	LC 1210-KP:M8330	7637602
LC 1210-KPF:M4310	LC 1210-KPF:M4310	7637603
LC 1210-KPF:M8330	LC 1210-KPF:M8330	7637604
LC 1220-KP:M4310	LC 1220-KP:M4310	7637605
LC 1220-RE:M4310	LC 1220-RE:M4310	7637649
LC 1230-RE:M4310	LC 1230-RE:M4310	7637720
LC 1245-CH:M4310	LC 1245-CH:M4310	7637721
LC 1610-KP:M4310	LC 1610-KP:M4310	7637606
LC 1610-KP:M8310	LC 1610-KP:M8310	6922536
LC 1610-KP:M8330	LC 1610-KP:M8330	7637607
LC 1613-KP:M4310	LC 1613-KP:M4310	7637608
LC 1613-KP:M8310	LC 1613-KP:M8310	6922537
LC 1613-KPF:M4310	LC 1613-KPF:M4310	7637609
LC 1630-KP:M4310	LC 1630-KP:M4310	7637610
LC 2010-KP:M4310	LC 2010-KP:M4310	7637611
LC 2010-KP:M8310	LC 2010-KP:M8310	6922538
LC 2010-KP:M8330	LC 2010-KP:M8330	7637612
LC 2016-KP:M4310	LC 2016-KP:M4310	7637613
LC 2016-KP:M8310	LC 2016-KP:M8310	6922539
LC 2016-KPF:M4310	LC 2016-KPF:M4310	7637614
LC 2040-KP:M8330	LC 2040-KP:M8330	7637615
LCMF 022002-F1:T8330	LCMF 022002-F1:T8330	6754263
LCMF 022002L6-M2:T8330	LCMF 022002L6-M2:T8330	6754697
LCMF 022002-M2:T8330	LCMF 022002-M2:T8330	6754250
LCMF 022002R6-M2:T8330	LCMF 022002R6-M2:T8330	6754696
LCMF 0220MO-MP:T8330	LCMF 0220MO-MP:T8330	6755611
LCMF 031302-F:T8330	LCMF 031302-F:T8330	6754704
LCMF 031302-F-04:T8330	LCMF 031302-F-04:T8330	6926959
LCMF 031304-CM:T8330	LCMF 031304-CM:T8330	6754705
LCMF 031304-CM-04:T8330	LCMF 031304-CM-04:T8330	6755612
LCMF 031304-F:T8330	LCMF 031304-F:T8330	6754264
LCMF 031304-F-04:T8330	LCMF 031304-F-04:T8330	6754251
LCMF 0313MO-MP:T8330	LCMF 0313MO-MP:T8330	6754265
LCMF 0313MO-MP-04:T8330	LCMF 0313MO-MP-04:T8330	6926958
LCMF 031602-CM:T8330	LCMF 031602-CM:T8330	6754706
LCMF 031602-F:T8330	LCMF 031602-F:T8330	6754266
LCMF 031602L15-CM:T8330	LCMF 031602L15-CM:T8330	6755652
LCMF 031602L6-CM:T8330	LCMF 031602L6-CM:T8330	6755651
LCMF 031602-M:T8330	LCMF 031602-M:T8330	6754267
LCMF 031602R15-CM:T8330	LCMF 031602R15-CM:T8330	6755650
LCMF 031602R6-CM:T8330	LCMF 031602R6-CM:T8330	6755649
LCMF 031604-CM:T8330	LCMF 031604-CM:T8330	6754707
LCMF 031604-F:T8330	LCMF 031604-F:T8330	6754268
LCMF 031604-M:T8330	LCMF 031604-M:T8330	6754269
LCMF 0316MO-MP:T8330	LCMF 0316MO-MP:T8330	6754270
LCMF 041304-CM:T8330	LCMF 041304-CM:T8330	6754708
LCMF 041304-F:T8330	LCMF 041304-F:T8330	6754271
LCMF 041304-F:T9325	LCMF 041304-F:T9325	6754668
LCMF 0413MO-MP:T8330	LCMF 0413MO-MP:T8330	6754272
LCMF 041602-CM:T8330	LCMF 041602-CM:T8330	6754709

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LCMF 041602L15-CM:T8330	LCMF 041602L15-CM:T8330	6755656
LCMF 041602L6-CM:T8330	LCMF 041602L6-CM:T8330	6755655
LCMF 041602R15-CM:T8330	LCMF 041602R15-CM:T8330	6755654
LCMF 041602R6-CM:T8330	LCMF 041602R6-CM:T8330	6755653
LCMF 041604-CM:T8330	LCMF 041604-CM:T8330	6754710
LCMF 041604-F:T8330	LCMF 041604-F:T8330	6754273
LCMF 041604-F:T9325	LCMF 041604-F:T9325	6754669
LCMF 041604-M:T8330	LCMF 041604-M:T8330	6754274
LCMF 041604-M:T9325	LCMF 041604-M:T9325	6754671
LCMF 041608-F:T8330	LCMF 041608-F:T8330	6754307
LCMF 041608-F:T9325	LCMF 041608-F:T9325	6754672
LCMF 041608-M:T8330	LCMF 041608-M:T8330	6754308
LCMF 041608-M:T9325	LCMF 041608-M:T9325	6754678
LCMF 0416MO-MP:T8330	LCMF 0416MO-MP:T8330	6754309
LCMF 0416MO-MP:T9325	LCMF 0416MO-MP:T9325	6754680
LCMF 051604-CM:T8330	LCMF 051604-CM:T8330	6754711
LCMF 051608-F:T8330	LCMF 051608-F:T8330	6754310
LCMF 051608-F:T9325	LCMF 051608-F:T9325	6754681
LCMF 051608-M:T8330	LCMF 051608-M:T8330	6754311
LCMF 051608-M:T9325	LCMF 051608-M:T9325	6754684
LCMF 0516MO-MP:T8330	LCMF 0516MO-MP:T8330	6754312
LCMF 0516MO-MP:T9325	LCMF 0516MO-MP:T9325	6754685
LCMF 061604-CM:T8330	LCMF 061604-CM:T8330	6754712
LCMF 061608-F:T8330	LCMF 061608-F:T8330	6754313
LCMF 061608-F:T9325	LCMF 061608-F:T9325	6754686
LCMF 061608-M:T8330	LCMF 061608-M:T8330	6754314
LCMF 061608-M:T9325	LCMF 061608-M:T9325	6754687
LCMF 0616MO-MP:T8330	LCMF 0616MO-MP:T8330	6754315
LCMF 0616MO-MP:T9325	LCMF 0616MO-MP:T9325	6754689
LCMF 083008-F:T8330	LCMF 083008-F:T8330	6755609
LCMF 083012-F:T8330	LCMF 083012-F:T8330	6754256
LCMF 0830MO-MP:T8330	LCMF 0830MO-MP:T8330	6755613
LCMR 031304-F:T8330	LCMR 031304-F:T8330	6754713
LCMR 0313MO-MP:T8330	LCMR 0313MO-MP:T8330	6754715
LCMR 031602-CM:T8330	LCMR 031602-CM:T8330	6754725
LCMR 031604-F:T8330	LCMR 031604-F:T8330	6754717
LCMR 031604-M:T8330	LCMR 031604-M:T8330	6754721
LCMR 0316MO-MP:T8330	LCMR 0316MO-MP:T8330	6754727
LCMR 041304-F:T8330	LCMR 041304-F:T8330	6754714
LCMR 0413MO-MP:T8330	LCMR 0413MO-MP:T8330	6754716
LCMR 041604-CM:T8330	LCMR 041604-CM:T8330	6754726
LCMR 041604-F:T8330	LCMR 041604-F:T8330	6754718
LCMR 041604-M:T8330	LCMR 041604-M:T8330	6754722
LCMR 0416MO-MP:T8330	LCMR 0416MO-MP:T8330	6754728
LCMR 051604-F:T8330	LCMR 051604-F:T8330	6754719
LCMR 051604-M:T8330	LCMR 051604-M:T8330	6754723
LCMR 0516MO-MP:T8330	LCMR 0516MO-MP:T8330	6754729
LCMR 061608-F:T8330	LCMR 061608-F:T8330	6754720
LCMR 061608-M:T8330	LCMR 061608-M:T8330	6754724
LCMR 0616MO-MP:T8330	LCMR 0616MO-MP:T8330	6754730
LCMR 083008-F:T8330	LCMR 083008-F:T8330	6755610
LDGN 130560-R25:6640	LDGN 130560-R25:6640	6753291
LDGN 130560-R30:6640	LDGN 130560-R30:6640	6753292
LDGN 130560-R35:6640	LDGN 130560-R35:6640	6753293
LDGN 130560-R40:6640	LDGN 130560-R40:6640	6753294
LDGN 130560-R45:6640	LDGN 130560-R45:6640	6753295
LFMX 1.5-.16ENF1:T8330	LFMX 1.5-.16ENF1:T8330	6755607
LFMX 1.6-.16ENF1:T8330	LFMX 1.6-.16ENF1:T8330	6755608
LFMX 1.6-.16SNF2:T8330	LFMX 1.6-.16SNF2:T8330	6754320
LFMX 2.0-.16ENF1:T8330	LFMX 2.0-.16ENF1:T8330	6754321
LFMX 2.0-.16SL12M2:T8330	LFMX 2.0-.16SL12M2:T8330	6754322
LFMX 2.0-.16SL6M2:T8330	LFMX 2.0-.16SL6M2:T8330	6754323
LFMX 2.0-.16SNF2:6640	LFMX 2.0-.16SNF2:6640	6752157
LFMX 2.0-.16SNF2:T8330	LFMX 2.0-.16SNF2:T8330	6754324
LFMX 2.0-.16SNM2:6640	LFMX 2.0-.16SNM2:6640	6752158
LFMX 2.0-.16SNM2:T8330	LFMX 2.0-.16SNM2:T8330	6754325
LFMX 2.0-.16SR12M2:T8330	LFMX 2.0-.16SR12M2:T8330	6754326
LFMX 2.0-.16SR6M2:T8330	LFMX 2.0-.16SR6M2:T8330	6754334
LFMX 2.2-.16SNM2:6640	LFMX 2.2-.16SNM2:6640	6752023
LFMX 2.2-.16SNM2:T8330	LFMX 2.2-.16SNM2:T8330	6754335
LFMX 3.1-.20ENF1:T8330	LFMX 3.1-.20ENF1:T8330	6754336
LFMX 3.1-.20SL8M2:T8330	LFMX 3.1-.20SL8M2:T8330	6754337
LFMX 3.1-.20SNF2:6640	LFMX 3.1-.20SNF2:6640	6752366
LFMX 3.1-.20SNF2:T8330	LFMX 3.1-.20SNF2:T8330	6754338
LFMX 3.1-.20SNM2:6640	LFMX 3.1-.20SNM2:6640	6752416
LFMX 3.1-.20SNM2:T8330	LFMX 3.1-.20SNM2:T8330	6754339

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LFMX 3.1-.20SR8M2:T8330	LFMX 3.1-.20SR8M2:T8330	6754340
LFMX 3.1-.20TNF2:6640	LFMX 3.1-.20TNF2:6640	6752368
LFMX 3.1-.20TNF2:T8330	LFMX 3.1-.20TNF2:T8330	6754341
LFMX 3.1-.20TNM2:6640	LFMX 3.1-.20TNM2:6640	6752417
LFMX 3.1-.20TNM2:T8330	LFMX 3.1-.20TNM2:T8330	6754342
LFMX 4.1-.20ENF1:T8330	LFMX 4.1-.20ENF1:T8330	6754343
LFMX 4.1-.20SL8M2:T8330	LFMX 4.1-.20SL8M2:T8330	6754344
LFMX 4.1-.20SNF2:T8330	LFMX 4.1-.20SNF2:T8330	6754345
LFMX 4.1-.20SNM2:6640	LFMX 4.1-.20SNM2:6640	6752419
LFMX 4.1-.20SNM2:T8330	LFMX 4.1-.20SNM2:T8330	6754346
LFMX 4.1-.20SR8M2:T8330	LFMX 4.1-.20SR8M2:T8330	6754347
LFMX 4.1-.20TNF2:T8330	LFMX 4.1-.20TNF2:T8330	6754348
LFMX 4.1-.20TNM2:6640	LFMX 4.1-.20TNM2:6640	6752418
LFMX 4.1-.20TNM2:T8330	LFMX 4.1-.20TNM2:T8330	6754349
LFMX 5.1-.20SNF2:T8330	LFMX 5.1-.20SNF2:T8330	6754350
LFMX 5.1-.20SNM2:6640	LFMX 5.1-.20SNM2:6640	6752009
LFMX 5.1-.20SNM2:T8330	LFMX 5.1-.20SNM2:T8330	6754351
LFMX 6.35-.20SNF2:T8330	LFMX 6.35-.20SNF2:T8330	6754352
LFMX 6.35-.20SNM2:6640	LFMX 6.35-.20SNM2:6640	6752010
LFMX 6.35-.20SNM2:T8330	LFMX 6.35-.20SNM2:T8330	6754353
LFUX 030800TL:6640	LFUX 030800TL:6640	6751720
LFUX 030800TL:T8330	LFUX 030800TL:T8330	6754329
LFUX 030800TR:6640	LFUX 030800TR:6640	6751721
LFUX 030800TR:T8330	LFUX 030800TR:T8330	6754327
LFUX 030802TN:6640	LFUX 030802TN:6640	6751687
LFUX 030802TN:T8330	LFUX 030802TN:T8330	6754328
LFUX 040800TR:6640	LFUX 040800TR:6640	6751722
LFUX 040800TR:T8330	LFUX 040800TR:T8330	6754330
LFUX 040802TN:6640	LFUX 040802TN:6640	6751688
LFUX 040802TN:T8330	LFUX 040802TN:T8330	6754331
LFUX 050802TN:6640	LFUX 050802TN:6640	6751689
LFUX 050802TN:T8330	LFUX 050802TN:T8330	6754332
LFUX 060802TN:6640	LFUX 060802TN:6640	6751723
LFUX 060802TN:T8330	LFUX 060802TN:T8330	6754333
LNET 160616SR-M:M8330	LNET 160616SR-M:M8330	7447894
LNET 160616SR-M:M8340	LNET 160616SR-M:M8340	6801305
LNET 160616SR-R:M8330	LNET 160616SR-R:M8330	7447895
LNET 160616SR-R:M8340	LNET 160616SR-R:M8340	6801306
LNEX 1513DPSR-KR:M5326	LNEX 1513DPSR-KR:M5326	6872877
LNEX 1513DPSR-M:M8326	LNEX 1513DPSR-M:M8326	6872941
LNEX 1513DPSR-M:M8346	LNEX 1513DPSR-M:M8346	6872942
LNEX 1513DPSR-M:M9325	LNEX 1513DPSR-M:M9325	7045821
LNGF 300715-MM-S01:T6310	LNGF 300715-MM-S01:T6310	7317920
LNGF 300715-MM-S01:T7325	LNGF 300715-MM-S01:T7325	7317921
LNGF 300715-MM-S01:T9315	LNGF 300715-MM-S01:T9315	7317922
LNGF 300715-MM-S02:T7325	LNGF 300715-MM-S02:T7325	7317923
LNGF 300715-MM-S03:T7325	LNGF 300715-MM-S03:T7325	7317924
LNGF 300715-PM:6630	LNGF 300715-PM:6630	6752833
LNGF 300715-PM:T6310	LNGF 300715-PM:T6310	7346979
LNGF 300715-PM:T7325	LNGF 300715-PM:T7325	7347210
LNGF 300715-PM:T9226	LNGF 300715-PM:T9226	6931824
LNGF 300715-PM:T9315	LNGF 300715-PM:T9315	7347211
LNGF 300715-PM-S02:T7325	LNGF 300715-PM-S02:T7325	7347212
LNGF 300715-PM-S03:T7325	LNGF 300715-PM-S03:T7325	7347213
LNGF 361220-MM-S01:T6310	LNGF 361220-MM-S01:T6310	7317925
LNGF 361220-MM-S01:T7325	LNGF 361220-MM-S01:T7325	7317926
LNGF 361220-MM-S01:T9315	LNGF 361220-MM-S01:T9315	7317927
LNGF 361220-MM-S02:T7325	LNGF 361220-MM-S02:T7325	7317928
LNGF 361220-MM-S02:T9315	LNGF 361220-MM-S02:T9315	7347214
LNGF 361220-MM-S03:T7325	LNGF 361220-MM-S03:T7325	7317929
LNGF 361220-MM-S03:T9315	LNGF 361220-MM-S03:T9315	7347459
LNGF 361220-MM-S04:H07	LNGF 361220-MM-S04:H07	7317930
LNGF 361220-PM:6630	LNGF 361220-PM:6630	6752848
LNGF 361220-PM-S01:T7325	LNGF 361220-PM-S01:T7325	7347215
LNGF 361220-PM-S01:T9315	LNGF 361220-PM-S01:T9315	7347216
LNGF 361220-PM-S02:T7325	LNGF 361220-PM-S02:T7325	7347217
LNGF 361220-PM-S03:T7325	LNGF 361220-PM-S03:T7325	7347218
LNGF 401035-MM-S01:T6310	LNGF 401035-MM-S01:T6310	7317931
LNGF 401035-MM-S01:T7325	LNGF 401035-MM-S01:T7325	7317932
LNGF 401035-MM-S01:T9315	LNGF 401035-MM-S01:T9315	7317933
LNGF 401035-MM-S02:T7325	LNGF 401035-MM-S02:T7325	7317934
LNGF 401035-MM-S03:T7325	LNGF 401035-MM-S03:T7325	7317935
LNGF 401035-PM-S01:6630	LNGF 401035-PM-S01:6630	6752818
LNGF 401035-PM-S01:T7325	LNGF 401035-PM-S01:T7325	7347219
LNGF 401035-PM-S01:T9226	LNGF 401035-PM-S01:T9226	6931826
LNGF 401035-PM-S01:T9315	LNGF 401035-PM-S01:T9315	7347220

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LNGF 401035-PM-S02:T7325	LNGF 401035-PM-S02:T7325	7347221
LNGF 401035-PM-S03:T7325	LNGF 401035-PM-S03:T7325	7347222
LNGU 120525ER-M:M8330	LNGU 120525ER-M:M8330	7447896
LNGU 120525ER-M:M8340	LNGU 120525ER-M:M8340	6798598
LNGU 120530ER-M:M8330	LNGU 120530ER-M:M8330	7447897
LNGU 120530ER-M:M8340	LNGU 120530ER-M:M8340	6798600
LNGU 160708FR-FA:HF7	LNGU 160708FR-FA:HF7	6941432
LNGU 160708SR-M:8215	LNGU 160708SR-M:8215	6753702
LNGU 160708SR-M:8230	LNGU 160708SR-M:8230	6753703
LNGU 160708SR-M:M8340	LNGU 160708SR-M:M8340	6800835
LNGU 160708SR-M:M9315	LNGU 160708SR-M:M9315	6753700
LNGU 160708SR-M:M9325	LNGU 160708SR-M:M9325	6753701
LNGX 120504ER-F:8215	LNGX 120504ER-F:8215	6798582
LNGX 120504ER-F:M8330	LNGX 120504ER-F:M8330	7447898
LNGX 120504ER-F:M8340	LNGX 120504ER-F:M8340	6798584
LNGX 120504ER-M:M8330	LNGX 120504ER-M:M8330	7447899
LNGX 120504ER-M:M8340	LNGX 120504ER-M:M8340	6798590
LNGX 120504ER-MF:M6330	LNGX 120504ER-MF:M6330	6925524
LNGX 120504ER-MF:M8340	LNGX 120504ER-MF:M8340	6925547
LNGX 120504ER-MF:M9340	LNGX 120504ER-MF:M9340	7051435
LNGX 120504FR-FA:HF7	LNGX 120504FR-FA:HF7	6798579
LNGX 120508ER-F:8215	LNGX 120508ER-F:8215	6798585
LNGX 120508ER-F:M8310	LNGX 120508ER-F:M8310	6922540
LNGX 120508ER-F:M8330	LNGX 120508ER-F:M8330	7447900
LNGX 120508ER-F:M8340	LNGX 120508ER-F:M8340	6798587
LNGX 120508ER-M:8215	LNGX 120508ER-M:8215	6753697
LNGX 120508ER-M:8230	LNGX 120508ER-M:8230	6753698
LNGX 120508ER-M:M8310	LNGX 120508ER-M:M8310	6922541
LNGX 120508ER-M:M8330	LNGX 120508ER-M:M8330	7447901
LNGX 120508ER-M:M8340	LNGX 120508ER-M:M8340	6798588
LNGX 120508ER-M:M9315	LNGX 120508ER-M:M9315	6753695
LNGX 120508ER-M:M9325	LNGX 120508ER-M:M9325	6753696
LNGX 120508ER-M:M9340	LNGX 120508ER-M:M9340	6755626
LNGX 120508ER-MF:M6330	LNGX 120508ER-MF:M6330	6925525
LNGX 120508ER-MF:M8340	LNGX 120508ER-MF:M8340	6925548
LNGX 120508ER-MF:M9340	LNGX 120508ER-MF:M9340	7051436
LNGX 120508FR-FA:HF7	LNGX 120508FR-FA:HF7	6798580
LNGX 120508FR-FA:M0315	LNGX 120508FR-FA:M0315	6798581
LNGX 120508SR-MM:M6330	LNGX 120508SR-MM:M6330	6925526
LNGX 120508SR-MM:M8340	LNGX 120508SR-MM:M8340	6925549
LNGX 120508SR-MM:M8345	LNGX 120508SR-MM:M8345	7051461
LNGX 120508SR-MM:M9340	LNGX 120508SR-MM:M9340	7051470
LNGX 120508SR-R:8215	LNGX 120508SR-R:8215	6798601
LNGX 120508SR-R:M5315	LNGX 120508SR-R:M5315	6798604
LNGX 120508SR-R:M8310	LNGX 120508SR-R:M8310	6922542
LNGX 120508SR-R:M8330	LNGX 120508SR-R:M8330	7447902
LNGX 120508SR-R:M8340	LNGX 120508SR-R:M8340	6798603
LNGX 120508SR-R:M9315	LNGX 120508SR-R:M9315	6798605
LNGX 120508SR-R:M9325	LNGX 120508SR-R:M9325	6798606
LNGX 120508SR-R:M9340	LNGX 120508SR-R:M9340	6798607
LNGX 120510ER-M:M8330	LNGX 120510ER-M:M8330	7447903
LNGX 120510ER-M:M8340	LNGX 120510ER-M:M8340	6939769
LNGX 120512ER-M:M8330	LNGX 120512ER-M:M8330	7447904
LNGX 120512ER-M:M8340	LNGX 120512ER-M:M8340	6798592
LNGX 120516ER-M:M8330	LNGX 120516ER-M:M8330	7447905
LNGX 120516ER-M:M8340	LNGX 120516ER-M:M8340	6798594
LNGX 120516SR-R:8215	LNGX 120516SR-R:8215	6798608
LNGX 120516SR-R:M8330	LNGX 120516SR-R:M8330	7447906
LNGX 120516SR-R:M8340	LNGX 120516SR-R:M8340	6798610
LNGX 120516SR-R:M9325	LNGX 120516SR-R:M9325	6798611
LNGX 120520ER-M:M8310	LNGX 120520ER-M:M8310	7048988
LNGX 120520ER-M:M8330	LNGX 120520ER-M:M8330	7447907
LNGX 120520ER-M:M8340	LNGX 120520ER-M:M8340	6798596
LNMT 311240:T9315	LNMT 311240:T9315	7074720
LNMT 311240SN-M:T9315	LNMT 311240SN-M:T9315	7661699
LNMU 160708ER-F:8215	LNMU 160708ER-F:8215	6941357
LNMU 160708ER-F:M8330	LNMU 160708ER-F:M8330	7447908
LNMU 160708ER-F:M8340	LNMU 160708ER-F:M8340	6941358
LNMU 160708SR-M:8215	LNMU 160708SR-M:8215	6941410
LNMU 160708SR-M:M6330	LNMU 160708SR-M:M6330	6941436
LNMU 160708SR-M:M8330	LNMU 160708SR-M:M8330	7447909
LNMU 160708SR-M:M8340	LNMU 160708SR-M:M8340	6941411
LNMU 160708SR-M:M9325	LNMU 160708SR-M:M9325	6941413
LNMU 160708SR-R:M5315	LNMU 160708SR-R:M5315	6941426
LNMU 160708SR-R:M8310	LNMU 160708SR-R:M8310	6941420
LNMU 160708SR-R:M8330	LNMU 160708SR-R:M8330	7447910

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LNMU 160708SR-R:M8340	LNMU 160708SR-R:M8340	6941421
LNMU 160708SR-R:M9315	LNMU 160708SR-R:M9315	6941424
LNMU 160708SR-R:M9325	LNMU 160708SR-R:M9325	6941425
LNMU 160716SR-R:M8310	LNMU 160716SR-R:M8310	6941429
LNMU 160716SR-R:M8330	LNMU 160716SR-R:M8330	7447911
LNMU 160716SR-R:M8340	LNMU 160716SR-R:M8340	6941430
LNMU 160716SR-R:M9315	LNMU 160716SR-R:M9315	6941427
LNMU 160716SR-R:M9325	LNMU 160716SR-R:M9325	6941428
LNMU 160720SR-M:M8330	LNMU 160720SR-M:M8330	7447912
LNMU 160720SR-M:M8340	LNMU 160720SR-M:M8340	6941414
LNMU 160730SR-M:M8330	LNMU 160730SR-M:M8330	7447913
LNMU 160730SR-M:M8340	LNMU 160730SR-M:M8340	6941416
LNMU 160740SR-M:M8330	LNMU 160740SR-M:M8330	7447914
LNMU 160740SR-M:M8340	LNMU 160740SR-M:M8340	6941418
LNMX 191940SN-RF:T9315	LNMX 191940SN-RF:T9315	6753325
LNMX 191940SN-RM:T9310	LNMX 191940SN-RM:T9310	6753305
LNMX 191940SN-RM:T9315	LNMX 191940SN-RM:T9315	6753306
LNMX 191940SN-RM:T9325	LNMX 191940SN-RM:T9325	6753307
LNMX 191940SN-RR:T5315	LNMX 191940SN-RR:T5315	6798520
LNMX 191940SN-RR:T9315	LNMX 191940SN-RR:T9315	6798517
LNMX 191940SN-RR2:T5315	LNMX 191940SN-RR2:T5315	6798515
LNMX 191940SN-TF:T5315	LNMX 191940SN-TF:T5315	6798525
LNMX 191940SN-TF:T9310	LNMX 191940SN-TF:T9310	6798521
LNMX 191940SN-TF:T9315	LNMX 191940SN-TF:T9315	6798522
LNMX 191940SN-TF:T9325	LNMX 191940SN-TF:T9325	6798523
LNMX 301940SN-RF:T9315	LNMX 301940SN-RF:T9315	6753309
LNMX 301940SN-RM:T9310	LNMX 301940SN-RM:T9310	6753311
LNMX 301940SN-RM:T9315	LNMX 301940SN-RM:T9315	6753312
LNMX 301940SN-RM:T9325	LNMX 301940SN-RM:T9325	6753313
LNMX 301940SN-RR:T9325	LNMX 301940SN-RR:T9325	6753316
LNMX 301940SN-TF:T5315	LNMX 301940SN-TF:T5315	6798510
LNMX 301940SN-TF:T9310	LNMX 301940SN-TF:T9310	6798496
LNMX 301940SN-TF:T9315	LNMX 301940SN-TF:T9315	6798497
LNMX 501432E:T9335	LNMX 501432E:T9335	6754915
LNMX 50-2284000:T9315	LNMX 50-2284000:T9315	7026644
LNUX 191940SN-DF:T9325	LNUX 191940SN-DF:T9325	6753830
LNUX 301940SN-DM:T9325	LNUX 301940SN-DM:T9325	6753979
LNUX 40-1129002:T9226	LNUX 40-1129002:T9226	6931860
LNUX 40-1129002:T9325	LNUX 40-1129002:T9325	6753980
LNUX 40-1129002:T9335	LNUX 40-1129002:T9335	6754916
LNUX 40-1129003:6630	LNUX 40-1129003:6630	6752120
LNUX 40-1129003:T9226	LNUX 40-1129003:T9226	6931861
LNUX 40-1129003:T9325	LNUX 40-1129003:T9325	6753981
LNUX 40-1129003:T9335	LNUX 40-1129003:T9335	6754917
LNUX 50-1275000:6630	LNUX 50-1275000:6630	6752126
LNUX 50-1275000:T9325	LNUX 50-1275000:T9325	6753982
LNXR 381240-PM:T9315	LNXR 381240-PM:T9315	7347223
LNXR 381240-PR:6630	LNXR 381240-PR:6630	6752820
ODEW 0605ZZN:M8330	ODEW 0605ZZN:M8330	7447915
ODKT 0505ADFR-F:M8310	ODKT 0505ADFR-F:M8310	7342891
ODKT 0505ADSR-FM:M6330	ODKT 0505ADSR-FM:M6330	7455503
ODKT 0505ADSR-FM:M8310	ODKT 0505ADSR-FM:M8310	7342892
ODKT 0505ADSR-FM:M8330	ODKT 0505ADSR-FM:M8330	7447916
ODKT 0505ADSR-FM:M8345	ODKT 0505ADSR-FM:M8345	7342894
ODKT 0505ADSR-FM:M9340	ODKT 0505ADSR-FM:M9340	7342895
ODMT 0504ZZN:8230	ODMT 0504ZZN:8230	6752534
ODMT 0504ZZN:M5315	ODMT 0504ZZN:M5315	6754626
ODMT 0504ZZN:M8340	ODMT 0504ZZN:M8340	6800836
ODMT 050508SN-R:M8330	ODMT 050508SN-R:M8330	7447917
ODMT 050508SN-R:M9340	ODMT 050508SN-R:M9340	7342897
ODMT 0505ADSR-FM:M8340	ODMT 0505ADSR-FM:M8340	7342898
ODMT 0505ADSR-FM:M9340	ODMT 0505ADSR-FM:M9340	7342899
ODMT 0605ZZN:8230	ODMT 0605ZZN:8230	6752532
ODMT 0605ZZN:M5315	ODMT 0605ZZN:M5315	6754627
ODMT 0605ZZN:M8330	ODMT 0605ZZN:M8330	7447918
ODMT 0605ZZN:M8340	ODMT 0605ZZN:M8340	6800837
ODMT 0605ZZN:M9315	ODMT 0605ZZN:M9315	6754555
ODMT 0605ZZN:M9325	ODMT 0605ZZN:M9325	6754560
ODMX 0605ZZ:8230	ODMX 0605ZZ:8230	6752531
OEHT 0604AEER-MF:M6330	OEHT 0604AEER-MF:M6330	6931676
OEHT 0604AEER-MF:M8310	OEHT 0604AEER-MF:M8310	6931579
OEHT 0604AEER-MF:M8330	OEHT 0604AEER-MF:M8330	7447919
OEHT 0604AEER-MF:M8340	OEHT 0604AEER-MF:M8340	6931650
OEHT 0604AEER-MM:M6330	OEHT 0604AEER-MM:M6330	6931677
OEHT 0604AEER-MM:M8310	OEHT 0604AEER-MM:M8310	6931653
OEHT 0604AEER-MM:M8330	OEHT 0604AEER-MM:M8330	7447920

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OEHT 0604AEER-MM:M8340	OEHT 0604AEER-MM:M8340	6931654
OEHT 0604AEER-MM:M8345	OEHT 0604AEER-MM:M8345	7051462
OEHT 0604AEER-MM:M9325	OEHT 0604AEER-MM:M9325	6931652
OEHT 0604AEER-MM:M9340	OEHT 0604AEER-MM:M9340	7051471
OEHT 0604AEFR-FA:HF7	OEHT 0604AEFR-FA:HF7	6931668
OEHT 0604AEFR-FA:M0315	OEHT 0604AEFR-FA:M0315	6931669
OEHT 0604AESR-M:M6330	OEHT 0604AESR-M:M6330	7056846
OEHT 0604AESR-M:M8310	OEHT 0604AESR-M:M8310	6931657
OEHT 0604AESR-M:M8330	OEHT 0604AESR-M:M8330	7447921
OEHT 0604AESR-M:M8340	OEHT 0604AESR-M:M8340	6931658
OEHT 0604AESR-M:M9325	OEHT 0604AESR-M:M9325	6931656
OEHT 0604AESR-M:M9340	OEHT 0604AESR-M:M9340	7051431
OEHT 0906AEER-MM:M8310	OEHT 0906AEER-MM:M8310	7056758
OEHT 0906AEER-MM:M8330	OEHT 0906AEER-MM:M8330	7447922
OEHT 0906AEER-MM:M8340	OEHT 0906AEER-MM:M8340	7056759
OEHT 0906AESR-M:M8310	OEHT 0906AESR-M:M8310	7056792
OEHT 0906AESR-M:M8330	OEHT 0906AESR-M:M8330	7447923
OEHT 0906AESR-M:M8340	OEHT 0906AESR-M:M8340	7056793
OEHT 0906AESR-M:M9325	OEHT 0906AESR-M:M9325	7056794
OFKR 0704SN-M:M8330	OFKR 0704SN-M:M8330	7447924
OFKR 0704SN-M:M8340	OFKR 0704SN-M:M8340	6800838
PDKT 090530ER-FM:8215	PDKT 090530ER-FM:8215	6755683
PDKT 090530ER-FM:8230	PDKT 090530ER-FM:8230	6755684
PDKT 090530ER-FM:M6330	PDKT 090530ER-FM:M6330	6925531
PDKT 090530ER-FM:M8310	PDKT 090530ER-FM:M8310	6922543
PDKT 090530ER-FM:M8330	PDKT 090530ER-FM:M8330	7447925
PDKT 090530ER-FM:M8345	PDKT 090530ER-FM:M8345	6756071
PDKT 090530ER-FM:M9325	PDKT 090530ER-FM:M9325	7048989
PDKX 0905ZEER-FM:M6330	PDKX 0905ZEER-FM:M6330	7056845
PDKX 0905ZEER-FM:M8345	PDKX 0905ZEER-FM:M8345	6756072
PDKX 0905ZEER-FM:M9340	PDKX 0905ZEER-FM:M9340	6756073
PDMW 090530SR:M8310	PDMW 090530SR:M8310	6922544
PDMW 090530SR:M8345	PDMW 090530SR:M8345	6756074
PDMW 090530SR:M9315	PDMW 090530SR:M9315	6922556
PDMW 090530SR:M9325	PDMW 090530SR:M9325	6756075
PDMX 0905ZEER-M:8215	PDMX 0905ZEER-M:8215	6756188
PDMX 0905ZEER-M:M8330	PDMX 0905ZEER-M:M8330	7447926
PDMX 0905ZEER-M:M8345	PDMX 0905ZEER-M:M8345	6756190
PDMX 0905ZEER-M:M9340	PDMX 0905ZEER-M:M9340	6756191
PDMX 0905ZESR-R:8215	PDMX 0905ZESR-R:8215	6755681
PDMX 0905ZESR-R:M8330	PDMX 0905ZESR-R:M8330	7447927
PDMX 0905ZESR-R:M8345	PDMX 0905ZESR-R:M8345	6756076
PDMX 0905ZESR-R:M9325	PDMX 0905ZESR-R:M9325	7049050
PNMQ 1308DNSN:M8330	PNMQ 1308DNSN:M8330	7447928
PNMQ 1308DNSN:M8345	PNMQ 1308DNSN:M8345	6756181
PNMQ 1308DNSN:M9340	PNMQ 1308DNSN:M9340	6756182
PNMU 1308DNSR-M:8215	PNMU 1308DNSR-M:8215	6756162
PNMU 1308DNSR-M:M8330	PNMU 1308DNSR-M:M8330	7447929
PNMU 1308DNSR-M:M8345	PNMU 1308DNSR-M:M8345	6756164
PNMU 1308DNSR-M:M9315	PNMU 1308DNSR-M:M9315	6922558
PNMU 1308DNSR-M:M9340	PNMU 1308DNSR-M:M9340	6756165
PPH 0800-CL1:2003	PPH 0800-CL1:2003	7156080
PPH 0800-CL4:8215	PPH 0800-CL4:8215	7156088
PPH 1000-CL1:2003	PPH 1000-CL1:2003	7156081
PPH 1000-CL4:8215	PPH 1000-CL4:8215	7156089
PPH 1200-CL1:2003	PPH 1200-CL1:2003	7156082
PPH 1200-CL4:8215	PPH 1200-CL4:8215	7156090
PPH 1600-CL1:2003	PPH 1600-CL1:2003	7156083
PPH 1600-CL4:8215	PPH 1600-CL4:8215	7156091
PPH 2000-CL1:2003	PPH 2000-CL1:2003	7156084
PPH 2000-CL4:8215	PPH 2000-CL4:8215	7156092
PPH 2500-CL1:2003	PPH 2500-CL1:2003	7156085
PPH 2500-CL4:8215	PPH 2500-CL4:8215	7156093
PPH 3000-CL1:2003	PPH 3000-CL1:2003	7156086
PPH 3000-CL4:8215	PPH 3000-CL4:8215	7156094
PPH 3200-CL1:2003	PPH 3200-CL1:2003	7156087
PPH 3200-CL4:8215	PPH 3200-CL4:8215	7156095
PPHE 1000-SM1:8215	PPHE 1000-SM1:8215	7156096
PPHE 1200-SM1:8215	PPHE 1200-SM1:8215	7156097
PPHE 1600-SM1:8215	PPHE 1600-SM1:8215	7156098
PPHE 2000-SM1:8215	PPHE 2000-SM1:8215	7156099
PPHF 080004-CE1:M8330	PPHF 080004-CE1:M8330	7447933
PPHF 100005-CE1:M8330	PPHF 100005-CE1:M8330	7447934
PPHF 120006-CE1:M8330	PPHF 120006-CE1:M8330	7447935
PPHF 160008-CE1:M8330	PPHF 160008-CE1:M8330	7447936
PPHF 200010-CE1:M8330	PPHF 200010-CE1:M8330	7447937

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PPHF 250012-CE1:M8330	PPHF 250012-CE1:M8330	7447938
PPHT 080003-A2:2003	PPHT 080003-A2:2003	7156106
PPHT 080005-A2:2003	PPHT 080005-A2:2003	7156107
PPHT 080008-A2:2003	PPHT 080008-A2:2003	7156108
PPHT 080010-A2:2003	PPHT 080010-A2:2003	7156109
PPHT 100005-A2:2003	PPHT 100005-A2:2003	7156110
PPHT 100008-A2:2003	PPHT 100008-A2:2003	7156111
PPHT 100010-A2:2003	PPHT 100010-A2:2003	7156112
PPHT 120005-A2:2003	PPHT 120005-A2:2003	7156113
PPHT 120010-A2:2003	PPHT 120010-A2:2003	7156114
PPHT 120020-A2:2003	PPHT 120020-A2:2003	7156115
PPHT 160010-A2:2003	PPHT 160010-A2:2003	7156116
PPHT 160013-A2:2003	PPHT 160013-A2:2003	7156117
PPHT 160020-A2:2003	PPHT 160020-A2:2003	7156118
PPHT 160030-A2:2003	PPHT 160030-A2:2003	7156119
PPHT 200010-A2:2003	PPHT 200010-A2:2003	7156120
PPHT 200016-A2:2003	PPHT 200016-A2:2003	7156121
PPHT 200030-A2:2003	PPHT 200030-A2:2003	7156122
PPHT 200040-A2:2003	PPHT 200040-A2:2003	7156123
PPHT 250020-A2:2003	PPHT 250020-A2:2003	7156124
RC 08:M4310	RC 08:M4310	7637781
RC 08:M8310	RC 08:M8310	6922545
RC 08:M8330	RC 08:M8330	7637782
RC 08-F:M4310	RC 08-F:M4310	7637783
RC 10:M4310	RC 10:M4310	7637784
RC 10:M8310	RC 10:M8310	6922546
RC 10:M8330	RC 10:M8330	7637785
RC 10-F:M4310	RC 10-F:M4310	7637786
RC 12:M4310	RC 12:M4310	7637787
RC 12:M8310	RC 12:M8310	6922547
RC 12:M8330	RC 12:M8330	7637788
RC 12-F:M4310	RC 12-F:M4310	7637789
RC 16:M4310	RC 16:M4310	7637790
RC 16:M8310	RC 16:M8310	6922548
RC 16:M8330	RC 16:M8330	7637791
RC 16-F:M4310	RC 16-F:M4310	7637792
RC 16-F:M8330	RC 16-F:M8330	7637793
RC 20:M4310	RC 20:M4310	7637794
RC 20:M8310	RC 20:M8310	6922549
RC 20:M8330	RC 20:M8330	7637795
RC 20-F:M4310	RC 20-F:M4310	7637796
RC 20-F:M8330	RC 20-F:M8330	7637797
RC 25:M4310	RC 25:M4310	7637798
RC 25:M8310	RC 25:M8310	6922550
RC 25:M8330	RC 25:M8330	7637799
RC 32:M4310	RC 32:M4310	7637800
RC 32:M8330	RC 32:M8330	7637801
RCGT 0803MOF-AL:HF7	RCGT 0803MOF-AL:HF7	6751738
RCGT 0803MOF-AL:T0315	RCGT 0803MOF-AL:T0315	6756150
RCGT 1003MOF-AL:HF7	RCGT 1003MOF-AL:HF7	6751740
RCGT 1003MOF-AL:T0315	RCGT 1003MOF-AL:T0315	6756151
RCGX 060600 K15015:TC100	RCGX 060600 K15015:TC100	6755435
RCGX 090700 K15015:TC100	RCGX 090700 K15015:TC100	6755436
RCGX 120700 K15015:TC100	RCGX 120700 K15015:TC100	6755437
RCMH 3209MO-RM2:T9310	RCMH 3209MO-RM2:T9310	6755601
RCMT 0602MOE-FM:T7325	RCMT 0602MOE-FM:T7325	7156315
RCMT 0602MOE-FM:T8330	RCMT 0602MOE-FM:T8330	6754291
RCMT 0602MOE-FM:T9315	RCMT 0602MOE-FM:T9315	6754029
RCMT 0602MOE-FM:T9325	RCMT 0602MOE-FM:T9325	6753983
RCMT 0602MOE-UR:T6310	RCMT 0602MOE-UR:T6310	7168659
RCMT 0602MOE-UR:T7325	RCMT 0602MOE-UR:T7325	7156316
RCMT 0602MOE-UR:T8330	RCMT 0602MOE-UR:T8330	6754246
RCMT 0602MOE-UR:T9315	RCMT 0602MOE-UR:T9315	6922899
RCMT 0602MOE-UR:T9325	RCMT 0602MOE-UR:T9325	6754665
RCMT 0803MOE-FM:T7325	RCMT 0803MOE-FM:T7325	7156317
RCMT 0803MOE-FM:T8330	RCMT 0803MOE-FM:T8330	6754292
RCMT 0803MOE-FM:T9315	RCMT 0803MOE-FM:T9315	6754034
RCMT 0803MOE-FM:T9325	RCMT 0803MOE-FM:T9325	6753984
RCMT 0803MOE-RM3:T7325	RCMT 0803MOE-RM3:T7325	7248711
RCMT 0803MOE-RM3:T9315	RCMT 0803MOE-RM3:T9315	7248712
RCMT 0803MOE-UR:T6310	RCMT 0803MOE-UR:T6310	7168660
RCMT 0803MOE-UR:T7325	RCMT 0803MOE-UR:T7325	7156318
RCMT 0803MOE-UR:T8330	RCMT 0803MOE-UR:T8330	6754247
RCMT 0803MOE-UR:T9315	RCMT 0803MOE-UR:T9315	6754676
RCMT 0803MOE-UR:T9325	RCMT 0803MOE-UR:T9325	6754666
RCMT 10T3MOE-FM:T7325	RCMT 10T3MOE-FM:T7325	7156319

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RCMT 10T3MOE-FM:T8330	RCMT 10T3MOE-FM:T8330	6754293
RCMT 10T3MOE-FM:T9315	RCMT 10T3MOE-FM:T9315	6754037
RCMT 10T3MOE-FM:T9325	RCMT 10T3MOE-FM:T9325	6753985
RCMT 10T3MOE-UR:T6310	RCMT 10T3MOE-UR:T6310	7168661
RCMT 10T3MOE-UR:T7325	RCMT 10T3MOE-UR:T7325	7156320
RCMT 10T3MOE-UR:T8330	RCMT 10T3MOE-UR:T8330	6754248
RCMT 10T3MOE-UR:T9315	RCMT 10T3MOE-UR:T9315	6754679
RCMT 10T3MOE-UR:T9325	RCMT 10T3MOE-UR:T9325	6754690
RCMT 10T3MOSN-F:M6330	RCMT 10T3MOSN-F:M6330	7445881
RCMT 10T3MOSN-F:M8310	RCMT 10T3MOSN-F:M8310	7445758
RCMT 10T3MOSN-F:M8330	RCMT 10T3MOSN-F:M8330	7445759
RCMT 10T3MOSN-F:M8340	RCMT 10T3MOSN-F:M8340	7445880
RCMT 10T3MOSN-M:M6330	RCMT 10T3MOSN-M:M6330	7445886
RCMT 10T3MOSN-M:M8310	RCMT 10T3MOSN-M:M8310	7445882
RCMT 10T3MOSN-M:M8330	RCMT 10T3MOSN-M:M8330	7445883
RCMT 10T3MOSN-M:M8340	RCMT 10T3MOSN-M:M8340	7445884
RCMT 10T3MOSN-M:M8345	RCMT 10T3MOSN-M:M8345	7445885
RCMT 10T3MOSN-M:M9325	RCMT 10T3MOSN-M:M9325	7445887
RCMT 10T3MOSN-M:M9340	RCMT 10T3MOSN-M:M9340	7445888
RCMT 10T3MOSN-R:M5315	RCMT 10T3MOSN-R:M5315	7445892
RCMT 10T3MOSN-R:M8310	RCMT 10T3MOSN-R:M8310	7445889
RCMT 10T3MOSN-R:M8330	RCMT 10T3MOSN-R:M8330	7445890
RCMT 10T3MOSN-R:M8340	RCMT 10T3MOSN-R:M8340	7445891
RCMT 10T3MOSN-R:M9325	RCMT 10T3MOSN-R:M9325	7445893
RCMT 1204MOE-FM:T7325	RCMT 1204MOE-FM:T7325	7156321
RCMT 1204MOE-FM:T8330	RCMT 1204MOE-FM:T8330	6754294
RCMT 1204MOE-FM:T9315	RCMT 1204MOE-FM:T9315	6754049
RCMT 1204MOE-FM:T9325	RCMT 1204MOE-FM:T9325	6753986
RCMT 1204MOEN-F:8215	RCMT 1204MOEN-F:8215	6755677
RCMT 1204MOEN-F:M8310	RCMT 1204MOEN-F:M8310	6756236
RCMT 1204MOEN-F:M8330	RCMT 1204MOEN-F:M8330	7447939
RCMT 1204MOEN-R:M8310	RCMT 1204MOEN-R:M8310	6922551
RCMT 1204MOEN-R:M8330	RCMT 1204MOEN-R:M8330	7447950
RCMT 1204MOEN-R:M9315	RCMT 1204MOEN-R:M9315	6922559
RCMT 1204MOE-RM3:H07	RCMT 1204MOE-RM3:H07	7248713
RCMT 1204MOE-RM3:T7325	RCMT 1204MOE-RM3:T7325	7248714
RCMT 1204MOE-RM3:T8330	RCMT 1204MOE-RM3:T8330	7248715
RCMT 1204MOE-RM3:T9315	RCMT 1204MOE-RM3:T9315	7248716
RCMT 1204MOE-UR:T6310	RCMT 1204MOE-UR:T6310	7168662
RCMT 1204MOE-UR:T7325	RCMT 1204MOE-UR:T7325	7156322
RCMT 1204MOE-UR:T8330	RCMT 1204MOE-UR:T8330	6754249
RCMT 1204MOE-UR:T9315	RCMT 1204MOE-UR:T9315	6922900
RCMT 1204MOE-UR:T9325	RCMT 1204MOE-UR:T9325	6754691
RCMT 1204MOSN-M:M6330	RCMT 1204MOSN-M:M6330	6925534
RCMT 1204MOSN-M:M8310	RCMT 1204MOSN-M:M8310	6922552
RCMT 1204MOSN-M:M8330	RCMT 1204MOSN-M:M8330	7447951
RCMT 1204MOSN-M:M8345	RCMT 1204MOSN-M:M8345	6756049
RCMT 1204MOSN-M:M9325	RCMT 1204MOSN-M:M9325	6756050
RCMT 1204MOSN-M:M9340	RCMT 1204MOSN-M:M9340	6756051
RCMT 1204MOSN-R:M8345	RCMT 1204MOSN-R:M8345	6756054
RCMT 1204MOSN-R:M9315	RCMT 1204MOSN-R:M9315	6922560
RCMT 1606MOEN-F:M8310	RCMT 1606MOEN-F:M8310	6756237
RCMT 1606MOEN-F:M8330	RCMT 1606MOEN-F:M8330	7447952
RCMT 1606MOE-RM3:T7325	RCMT 1606MOE-RM3:T7325	7248717
RCMT 1606MOE-RM3:T8330	RCMT 1606MOE-RM3:T8330	7248718
RCMT 1606MOE-RM3:T9315	RCMT 1606MOE-RM3:T9315	7248719
RCMT 1606MOS-37:T9315	RCMT 1606MOS-37:T9315	6753742
RCMT 1606MOS-37:T9325	RCMT 1606MOS-37:T9325	6753831
RCMT 1606MOSN-M:M6330	RCMT 1606MOSN-M:M6330	6925535
RCMT 1606MOSN-M:M8330	RCMT 1606MOSN-M:M8330	7447953
RCMT 1606MOSN-M:M8345	RCMT 1606MOSN-M:M8345	6756056
RCMT 1606MOSN-M:M9325	RCMT 1606MOSN-M:M9325	6755679
RCMT 1606MOSN-M:M9340	RCMT 1606MOSN-M:M9340	6755680
RCMT 1606MOSN-R:M8310	RCMT 1606MOSN-R:M8310	6922553
RCMT 1606MOSN-R:M8330	RCMT 1606MOSN-R:M8330	7447954
RCMT 1606MOSN-R:M8345	RCMT 1606MOSN-R:M8345	6756057
RCMT 1606MOSN-R:M9325	RCMT 1606MOSN-R:M9325	6922561
RCMT 2006MOS-371:T9315	RCMT 2006MOS-371:T9315	6922901
RCMT 2006MOS-371:T9325	RCMT 2006MOS-371:T9325	6753987
RCMT 2006MOSN-F:M8330	RCMT 2006MOSN-F:M8330	7447955
RCMT 2006MOSN-M:M6330	RCMT 2006MOSN-M:M6330	7607720
RCMT 2006MOSN-M:M8330	RCMT 2006MOSN-M:M8330	7447956
RCMT 2006MOSN-M:M8345	RCMT 2006MOSN-M:M8345	6756061
RCMT 2006MOSN-M:M9315	RCMT 2006MOSN-M:M9315	6756062
RCMT 2006MOSN-M:M9325	RCMT 2006MOSN-M:M9325	6756004
RCMT 2006MOSN-M:M9340	RCMT 2006MOSN-M:M9340	6756063

ANSI	ISO	EDP
RCMT 2006MOSN-R:M8330	RCMT 2006MOSN-R:M8330	7447957
RCMT 2006MOSN-R:M8345	RCMT 2006MOSN-R:M8345	6756064
RCMT 2006MOSN-R:M9325	RCMT 2006MOSN-R:M9325	6922562
RCMT 2507MOE-RM3:H07	RCMT 2507MOE-RM3:H07	7248720
RCMT 2507MOS-372:T9325	RCMT 2507MOS-372:T9325	6753988
RCMT 3009MO-RR4:T9310	RCMT 3009MO-RR4:T9310	6755593
RCMT 3009MO-RR4:T9315	RCMT 3009MO-RR4:T9315	6755594
RCMW 0602MO:T5305	RCMW 0602MO:T5305	6755830
RCMW 0602MO:T5315	RCMW 0602MO:T5315	6922815
RCMW 0803MO:T5305	RCMW 0803MO:T5305	6755831
RCMW 0803MO:T5315	RCMW 0803MO:T5315	6922816
RCMW 10T3MO:T5305	RCMW 10T3MO:T5305	6755832
RCMW 10T3MO:T5315	RCMW 10T3MO:T5315	6922817
RCMW 1204MO:T5305	RCMW 1204MO:T5305	6755843
RCMW 1204MO:T5315	RCMW 1204MO:T5315	6922818
RCMX 1003MOS-31:T9325	RCMX 1003MOS-31:T9325	6753989
RCMX 1003MOS-31:T9335	RCMX 1003MOS-31:T9335	6754918
RCMX 1204MOS-321:T9315	RCMX 1204MOS-321:T9315	6922902
RCMX 1204MOS-321:T9325	RCMX 1204MOS-321:T9325	6753990
RCMX 1204MOS-321:T9335	RCMX 1204MOS-321:T9335	6754919
RCMX 1606MOS-331:6630	RCMX 1606MOS-331:6630	6751660
RCMX 1606MOS-331:T9315	RCMX 1606MOS-331:T9315	6753760
RCMX 1606MOS-331:T9325	RCMX 1606MOS-331:T9325	6753832
RCMX 1606MOS-331:T9335	RCMX 1606MOS-331:T9335	6754920
RCMX 1606MOS-37:T9315	RCMX 1606MOS-37:T9315	6754055
RCMX 1606MOS-37:T9325	RCMX 1606MOS-37:T9325	6753991
RCMX 2006MO-RF1:T5305	RCMX 2006MO-RF1:T5305	6755844
RCMX 2006MO-RF1:T9310	RCMX 2006MO-RF1:T9310	6755576
RCMX 2006MO-RF1:T9315	RCMX 2006MO-RF1:T9315	6755577
RCMX 2006MO-RF1:T9325	RCMX 2006MO-RF1:T9325	6755578
RCMX 2006MO-RF1:T9335	RCMX 2006MO-RF1:T9335	6754921
RCMX 2006MO-RM1:T9310	RCMX 2006MO-RM1:T9310	6755579
RCMX 2006MO-RM1:T9315	RCMX 2006MO-RM1:T9315	6755580
RCMX 2006MO-RM1:T9325	RCMX 2006MO-RM1:T9325	6755581
RCMX 2006MO-RM1:T9335	RCMX 2006MO-RM1:T9335	6754922
RCMX 2006MOS-341:6630	RCMX 2006MOS-341:6630	6751662
RCMX 2006MOS-341:6640	RCMX 2006MOS-341:6640	6751663
RCMX 2006MOS-37:6630	RCMX 2006MOS-37:6630	6752008
RCMX 2507MO-RF1:T8345	RCMX 2507MO-RF1:T8345	6754447
RCMX 2507MO-RF1:T9310	RCMX 2507MO-RF1:T9310	6755582
RCMX 2507MO-RF1:T9315	RCMX 2507MO-RF1:T9315	6755583
RCMX 2507MO-RF1:T9325	RCMX 2507MO-RF1:T9325	6755584
RCMX 2507MO-RF1:T9335	RCMX 2507MO-RF1:T9335	6754923
RCMX 2507MO-RM1:T9310	RCMX 2507MO-RM1:T9310	6755585
RCMX 2507MO-RM1:T9315	RCMX 2507MO-RM1:T9315	6755586
RCMX 2507MO-RM1:T9325	RCMX 2507MO-RM1:T9325	6755587
RCMX 2507MO-RM1:T9335	RCMX 2507MO-RM1:T9335	6754924
RCMX 2507MO-RM2:T9310	RCMX 2507MO-RM2:T9310	6755588
RCMX 2507MO-RM2:T9315	RCMX 2507MO-RM2:T9315	6755589
RCMX 2507MO-RM2:T9325	RCMX 2507MO-RM2:T9325	6755590
RCMX 2507MOS-351:6630	RCMX 2507MOS-351:6630	6751664
RCMX 2507MOS-351:6640	RCMX 2507MOS-351:6640	6751665
RCMX 2507MOS-37:6630	RCMX 2507MOS-37:6630	6751666
RCMX 3209MO-RM2:T5315	RCMX 3209MO-RM2:T5315	6802056
RCMX 3209MO-RM2:T9310	RCMX 3209MO-RM2:T9310	6755595
RCMX 3209MO-RM2:T9315	RCMX 3209MO-RM2:T9315	6755596
RCMX 3209MO-RM2:T9325	RCMX 3209MO-RM2:T9325	6755597
RCMX 3209MO-RM2:T9335	RCMX 3209MO-RM2:T9335	6754925
RCMX 3209MO-RR2:T9315	RCMX 3209MO-RR2:T9315	6755605
RCMX 3209MO-RR2:T9316	RCMX 3209MO-RR2:T9316	6874329
RCMX 3209MOS-361:6640	RCMX 3209MOS-361:6640	6751668
RDET 0802MOSN:M8340	RDET 0802MOSN:M8340	6800839
RDET 1003MOSN:8230	RDET 1003MOSN:8230	6755631
RDET 1003MOSN:M8340	RDET 1003MOSN:M8340	6800840
RDET 12T3MOSN:M8340	RDET 12T3MOSN:M8340	6800842
RDEX 1204MOSN-12:8230	RDEX 1204MOSN-12:8230	6755637
RDEX 1204MOSN-12:M8340	RDEX 1204MOSN-12:M8340	6800843
RDEX 1604MOSN-12:M8340	RDEX 1604MOSN-12:M8340	6800844
RDGT 0702MOT:M8310	RDGT 0702MOT:M8310	6756257
RDGT 0702MOT:M8325	RDGT 0702MOT:M8325	6755999
RDGT 0702MOT:M8345	RDGT 0702MOT:M8345	6755946
RDGT 1003MOT:M6330	RDGT 1003MOT:M6330	7601340
RDGT 1003MOT:M8310	RDGT 1003MOT:M8310	6756258
RDGT 1003MOT:M8325	RDGT 1003MOT:M8325	6756000
RDGT 1003MOT:M8345	RDGT 1003MOT:M8345	6755962
RDGT 1003MOT:M9340	RDGT 1003MOT:M9340	6755646

ANSI	ISO	EDP
RDGT 120500FN-F:M8310	RDGT 120500FN-F:M8310	7342900
RDGT 120500SN-FM:M8330	RDGT 120500SN-FM:M8330	7447958
RDGT 120500SN-FM:M8345	RDGT 120500SN-FM:M8345	7342902
RDGT 12T3MOT:M6330	RDGT 12T3MOT:M6330	7601341
RDGT 12T3MOT:M8310	RDGT 12T3MOT:M8310	6756279
RDGT 12T3MOT:M8325	RDGT 12T3MOT:M8325	6756001
RDGT 12T3MOT:M8345	RDGT 12T3MOT:M8345	6755963
RDGT 12T3MOT:M9340	RDGT 12T3MOT:M9340	6755647
RDGT 1604MOT:M6330	RDGT 1604MOT:M6330	7601342
RDGT 1604MOT:M8310	RDGT 1604MOT:M8310	6756280
RDGT 1604MOT:M8325	RDGT 1604MOT:M8325	6756002
RDGT 1604MOT:M8345	RDGT 1604MOT:M8345	6755964
RDGT 1604MOT:M9340	RDGT 1604MOT:M9340	6755648
RDHT 0702MO-FA:HF7	RDHT 0702MO-FA:HF7	6751849
RDHT 07T1MO-FA:HF7	RDHT 07T1MO-FA:HF7	6751850
RDHT 1003MO-FA:HF7	RDHT 1003MO-FA:HF7	6751851
RDHT 12T3MO-FA:HF7	RDHT 12T3MO-FA:HF7	6751852
RDHT 1604MO-FA:HF7	RDHT 1604MO-FA:HF7	6751853
RDHW 12T3M0ENF6-91:2003	RDHW 12T3M0ENF6-91:2003	7391483
RDHX 0501MOE:M8310	RDHX 0501MOE:M8310	6756281
RDHX 0702MOT:M4303	RDHX 0702MOT:M4303	7637288
RDHX 0702MOT:M8310	RDHX 0702MOT:M8310	6755668
RDHX 0702MOT:M8325	RDHX 0702MOT:M8325	6756003
RDHX 07T1MOT:M8310	RDHX 07T1MOT:M8310	6756282
RDHX 07T1MOT:M8325	RDHX 07T1MOT:M8325	6756007
RDHX 1003MOT:5040	RDHX 1003MOT:5040	6752056
RDHX 1003MOT:M4303	RDHX 1003MOT:M4303	7637289
RDHX 1003MOT:M8310	RDHX 1003MOT:M8310	6755669
RDHX 1003MOT:M8325	RDHX 1003MOT:M8325	6756005
RDHX 1003MOT:M8345	RDHX 1003MOT:M8345	6755965
RDHX 12T3MOT:M4303	RDHX 12T3MOT:M4303	7637287
RDHX 12T3MOT:M8310	RDHX 12T3MOT:M8310	6756221
RDHX 12T3MOT:M8325	RDHX 12T3MOT:M8325	6756006
RDHX 12T3MOT:M8345	RDHX 12T3MOT:M8345	6755966
RDHX 1604MOT:M8310	RDHX 1604MOT:M8310	6756283
RDHX 1604MOT:M8325	RDHX 1604MOT:M8325	6756008
RDHX 1604MOT:M8345	RDHX 1604MOT:M8345	6755967
RDHX 1604MOT:M9325	RDHX 1604MOT:M9325	7455502
RDHX 2006MOT:M8310	RDHX 2006MOT:M8310	6756284
RDHX 2006MOT:M8325	RDHX 2006MOT:M8325	6756009
RDMT 0702MOT:M8325	RDMT 0702MOT:M8325	7343096
RDMT 1003MOT:M8325	RDMT 1003MOT:M8325	7343097
RDMT 1003MOT:M8345	RDMT 1003MOT:M8345	7343098
RDMT 120500SN-R:M8330	RDMT 120500SN-R:M8330	7447959
RDMT 120500SN-R:M8340	RDMT 120500SN-R:M8340	7342904
RDMT 120500SN-R:M9340	RDMT 120500SN-R:M9340	7342905
RDMT 12T3MOT:M8325	RDMT 12T3MOT:M8325	7343099
RDMT 12T3MOT:M8345	RDMT 12T3MOT:M8345	7343110
RDMT 1604MOT:M8325	RDMT 1604MOT:M8325	7343111
RDMT 1604MOT:M8345	RDMT 1604MOT:M8345	7343112
RDMX 1003MOT:M8310	RDMX 1003MOT:M8310	6801016
RDMX 1003MOT:M8325	RDMX 1003MOT:M8325	6801018
RDMX 1003MOT:M8345	RDMX 1003MOT:M8345	6801019
RDMX 12T3MOT:M8310	RDMX 12T3MOT:M8310	6801017
RDMX 12T3MOT:M8325	RDMX 12T3MOT:M8325	6801040
RDMX 12T3MOT:M8345	RDMX 12T3MOT:M8345	6801041
RDMX 1604MOT:M8310	RDMX 1604MOT:M8310	6801044
RDMX 1604MOT:M8325	RDMX 1604MOT:M8325	6801042
RDMX 1604MOT:M8345	RDMX 1604MOT:M8345	6801043
REHT 1604M0EN-MM:M6330	REHT 1604M0EN-MM:M6330	6931678
REHT 1604M0EN-MM:M8310	REHT 1604M0EN-MM:M8310	6931661
REHT 1604M0EN-MM:M8330	REHT 1604M0EN-MM:M8330	7447960
REHT 1604M0EN-MM:M8340	REHT 1604M0EN-MM:M8340	6931662
REHT 1604M0EN-MM:M8345	REHT 1604M0EN-MM:M8345	7051463
REHT 1604M0EN-MM:M9325	REHT 1604M0EN-MM:M9325	6931660
REHT 1604M0EN-MM:M9340	REHT 1604M0EN-MM:M9340	7051472
REHT 1604M0SN-M:M8310	REHT 1604M0SN-M:M8310	6931665
REHT 1604M0SN-M:M8330	REHT 1604M0SN-M:M8330	7447961
REHT 1604M0SN-M:M8340	REHT 1604M0SN-M:M8340	6931666
REHT 1604M0SN-M:M9325	REHT 1604M0SN-M:M9325	6931664
REHT 2406M0EN-MM:M8330	REHT 2406M0EN-MM:M8330	7447962
REHT 2406M0EN-MM:M8340	REHT 2406M0EN-MM:M8340	7056797
REHT 2406M0EN-MM:M9325	REHT 2406M0EN-MM:M9325	7056798
REHT 2406M0SN-M:M8330	REHT 2406M0SN-M:M8330	7447963
REHT 2406M0SN-M:M8340	REHT 2406M0SN-M:M8340	7056801
RNG 32 T00420:TC100	RNGN 090300 T01020:TC100	6755415

ANSI	ISO	EDP
RNG 43 T00420:TC100	RNGN 120400 T01020:TC100	6755416
RNG 45 T00420:TC100	RNGN 120700 T01020:TC100	6755417
RNG 45 T06015:TC100	RNGN 120700 T15015:TC100	6755418
RNGH 381200-MM:T6310	RNGH 381200-MM:T6310	7317936
RNGH 381200-MM:T7325	RNGH 381200-MM:T7325	7317937
RNGH 381200-MM:T9315	RNGH 381200-MM:T9315	7317938
RNGH 381200-MR:6640	RNGH 381200-MR:6640	6752651
RNGH 381200-MR:T7325	RNGH 381200-MR:T7325	7347224
RNGH 381200-MR:T9226	RNGH 381200-MR:T9226	6931830
RNGH 381200-MR:T9315	RNGH 381200-MR:T9315	7347225
RNGH 5018MO-MM:M9340	RNGH 5018MO-MM:M9340	7317939
RNGH 5018MO-MM:T6310	RNGH 5018MO-MM:T6310	7317940
RNGH 5018MO-MM:T7325	RNGH 5018MO-MM:T7325	7317941
RNGH 5018MO-MM:T9315	RNGH 5018MO-MM:T9315	7317942
RNGH 5018MO-MR:M9340	RNGH 5018MO-MR:M9340	7347226
RNGH 5018MO-MR:T7325	RNGH 5018MO-MR:T7325	7347227
RNGH 5018MO-MR:T9335	RNGH 5018MO-MR:T9335	7347228
RNMG 43-08:T5305	RNMG 120400E-08:T5305	6755850
RNMG 43-08:T9315	RNMG 120400E-08:T9315	6754063
RNMG 43-08:T9325	RNMG 120400E-08:T9325	6753994
RNMG 54-08:T5305	RNMG 150600E-08:T5305	6755851
RNMG 54-08:T9315	RNMG 150600E-08:T9315	6754529
RNMG 54-08:T9325	RNMG 150600E-08:T9325	6753995
RNMG 64-08:T9315	RNMG 190600E-08:T9315	6754530
RNMG 64-08:T9325	RNMG 190600E-08:T9325	6753996
RNMG 86-081:T9315	RNMG 250900E-081:T9315	6754531
RNMG 86-081:T9325	RNMG 250900E-081:T9325	6753997
ROEX 56EN:S30	ROEX 1509MOEN:S30	7559851
RPET 1204MOSN:8215	RPET 1204MOSN:8215	6753403
RPET 1204MOSN:M8330	RPET 1204MOSN:M8330	7447964
RPET 1204MOSN:M8340	RPET 1204MOSN:M8340	6800845
RPET 1505MOS-M:M8330	RPET 1505MOS-M:M8330	7447965
RPET 1505MOS-M:M8340	RPET 1505MOS-M:M8340	6800846
RPEW 1204MOSN:M8330	RPEW 1204MOSN:M8330	7447966
RPEW 1204MOSN:M8340	RPEW 1204MOSN:M8340	6835886
RPEW 1505MOS:8215	RPEW 1505MOS:8215	6755639
RPEW 1505MOS:M8330	RPEW 1505MOS:M8330	7447967
RPEX 1204MOSN-12:M8330	RPEX 1204MOSN-12:M8330	7447968
RPEX 1204MOSN-12:M8340	RPEX 1204MOSN-12:M8340	6800847
SBKX 2207DZER:M8326	SBKX 2207DZER:M8326	6801307
SBMR 2207DZSR:M8326	SBMR 2207DZSR:M8326	6801308
SBMR 2207DZSR:M8346	SBMR 2207DZSR:M8346	6801309
SBMR 2207DZSR:M9325	SBMR 2207DZSR:M9325	7045689
SBMR 2207DZSR-R:M5326	SBMR 2207DZSR-R:M5326	6801279
SBMR 2207DZSR-R:M8326	SBMR 2207DZSR-R:M8326	6801310
SBMR 2207DZSR-R:M8346	SBMR 2207DZSR-R:M8346	6801311
SCET 050204-SD:D8330	SCET 050204-SD:D8330	6920783
SCET 050204-SD:D9335	SCET 050204-SD:D9335	6920784
SCET 050204-UD:D8330	SCET 050204-UD:D8330	6754634
SCET 050204-UD:D9335	SCET 050204-UD:D9335	6754650
SCET 060204-SD:D8330	SCET 060204-SD:D8330	6920785
SCET 060204-SD:D9335	SCET 060204-SD:D9335	6920786
SCET 060204-UD:D8330	SCET 060204-UD:D8330	6754635
SCET 060204-UD:D9335	SCET 060204-UD:D9335	6754651
SCET 070308-SD:D8330	SCET 070308-SD:D8330	6920787
SCET 070308-SD:D9335	SCET 070308-SD:D9335	6920788
SCET 070308-UD:D8330	SCET 070308-UD:D8330	6754636
SCET 070308-UD:D9335	SCET 070308-UD:D9335	6754652
SCET 09T308-SD:D8330	SCET 09T308-SD:D8330	6920789
SCET 09T308-SD:D9335	SCET 09T308-SD:D9335	6920800
SCET 09T308-UD:D8330	SCET 09T308-UD:D8330	6754637
SCET 09T308-UD:D9335	SCET 09T308-UD:D9335	6754586
SCET 120408-SD:D8330	SCET 120408-SD:D8330	6920801
SCET 120408-SD:D9335	SCET 120408-SD:D9335	6920802
SCET 120408-UD:D8330	SCET 120408-UD:D8330	6754631
SCET 120408-UD:D9335	SCET 120408-UD:D9335	6754584
SCET 150512-SD:D8330	SCET 150512-SD:D8330	6920803
SCET 150512-SD:D9335	SCET 150512-SD:D9335	6920804
SCET 150512-UD:D8330	SCET 150512-UD:D8330	6754731
SCET 150512-UD:D9335	SCET 150512-UD:D9335	6754585
SCGT 32.51-SF3:H07	SCGT 09T304E-SF3:H07	7168574
SCGT 32.51-SF3:T6310	SCGT 09T304E-SF3:T6310	7168575
SCGT 32.51-SF3:T8315	SCGT 09T304E-SF3:T8315	7168576
SCGT 32.52-NF1:H07	SCGT 09T308E-NF1:H07	7167412
SCGT 32.52-NF1:T6310	SCGT 09T308E-NF1:T6310	7167413
SCGT 32.52-NF1:T7325	SCGT 09T308E-NF1:T7325	7167414

ANSI	ISO	EDP
SCGT 32.52-SF3:T6310	SCGT 09T308E-SF3:T6310	7168577
SCGT 32.52-SF3:T8315	SCGT 09T308E-SF3:T8315	7168578
SCGT 432F-AL:HF7	SCGT 120408F-AL:HF7	6752103
SCGT 432F-AL:T0315	SCGT 120408F-AL:T0315	6756152
SCGT 432-NF1:H07	SCGT 120408E-NF1:H07	7167415
SCGT 432-NF1:T6310	SCGT 120408E-NF1:T6310	7167416
SCGT 432-NF1:T7325	SCGT 120408E-NF1:T7325	7167417
SCKR 09T340EN-F:M8330	SCKR 09T340EN-F:M8330	7447969
SCKR 12T360EN-F:M8330	SCKR 12T360EN-F:M8330	7447970
SCMT 1268-DR4:T9335	SCMT 380932E-DR4:T9335	6754928
SCMT 1268-OR:6635	SCMT 380932E-OR:6635	6752234
SCMT 1268-OR:T9226	SCMT 380932E-OR:T9226	6931866
SCMT 1268-OR:T9315	SCMT 380932E-OR:T9315	6933566
SCMT 1268-OR:T9325	SCMT 380932E-OR:T9325	6754003
SCMT 1268-OR:T9335	SCMT 380932E-OR:T9335	6754929
SCMT 1268-SR:T9335	SCMT 380932E-SR:T9335	6754930
SCMT 32.51-FF2:T8330	SCMT 09T304E-FF2:T8330	7156749
SCMT 32.51-FF2:T9325	SCMT 09T304E-FF2:T9325	7156750
SCMT 32.51-FM:T7325	SCMT 09T304E-FM:T7325	7156323
SCMT 32.51-FM:T7335	SCMT 09T304E-FM:T7335	6754798
SCMT 32.51-FM:T8315	SCMT 09T304E-FM:T8315	6753613
SCMT 32.51-FM:T8330	SCMT 09T304E-FM:T8330	6754275
SCMT 32.51-FM:T9315	SCMT 09T304E-FM:T9315	6754030
SCMT 32.51-FM:T9325	SCMT 09T304E-FM:T9325	6753998
SCMT 32.51-FM2:T7325	SCMT 09T304E-FM2:T7325	7156909
SCMT 32.51-FM2:T8330	SCMT 09T304E-FM2:T8330	7156910
SCMT 32.51-FM2:T9325	SCMT 09T304E-FM2:T9325	7156911
SCMT 32.51-UR:T7325	SCMT 09T304E-UR:T7325	7156324
SCMT 32.51-UR:T8330	SCMT 09T304E-UR:T8330	6754239
SCMT 32.51-UR:T9315	SCMT 09T304E-UR:T9315	6754675
SCMT 32.51-UR:T9325	SCMT 09T304E-UR:T9325	6754662
SCMT 32.52-FF2:T8330	SCMT 09T308E-FF2:T8330	7156752
SCMT 32.52-FF2:T9325	SCMT 09T308E-FF2:T9325	7156753
SCMT 32.52-FM:T7325	SCMT 09T308E-FM:T7325	7156325
SCMT 32.52-FM:T7335	SCMT 09T308E-FM:T7335	6754799
SCMT 32.52-FM:T8315	SCMT 09T308E-FM:T8315	6753614
SCMT 32.52-FM:T8330	SCMT 09T308E-FM:T8330	6754276
SCMT 32.52-FM:T9315	SCMT 09T308E-FM:T9315	6754031
SCMT 32.52-FM:T9325	SCMT 09T308E-FM:T9325	6753833
SCMT 32.52-FM2:T7325	SCMT 09T308E-FM2:T7325	7156912
SCMT 32.52-FM2:T8330	SCMT 09T308E-FM2:T8330	7156913
SCMT 32.52-FM2:T9315	SCMT 09T308E-FM2:T9315	7156914
SCMT 32.52-FM2:T9325	SCMT 09T308E-FM2:T9325	7156915
SCMT 32.52-FM2:T9335	SCMT 09T308E-FM2:T9335	7156916
SCMT 32.52-RF:6630	SCMT 09T308E-RF:6630	6756039
SCMT 32.52-RF:T5315	SCMT 09T308E-RF:T5315	6756041
SCMT 32.52-RF:T7335	SCMT 09T308E-RF:T7335	6756040
SCMT 32.52-RM:T5315	SCMT 09T308E-RM:T5315	6755762
SCMT 32.52-RM:T7335	SCMT 09T308E-RM:T7335	6754800
SCMT 32.52-RM:T8330	SCMT 09T308E-RM:T8330	6754397
SCMT 32.52-RM:T9315	SCMT 09T308E-RM:T9315	6754032
SCMT 32.52-RM:T9325	SCMT 09T308E-RM:T9325	6753834
SCMT 32.52-UR:T5315	SCMT 09T308E-UR:T5315	6755763
SCMT 32.52-UR:T7325	SCMT 09T308E-UR:T7325	7156326
SCMT 32.52-UR:T8330	SCMT 09T308E-UR:T8330	6754240
SCMT 32.52-UR:T9315	SCMT 09T308E-UR:T9315	6754674
SCMT 32.52-UR:T9325	SCMT 09T308E-UR:T9325	6754688
SCMT 32.52-UR:TT310	SCMT 09T308E-UR:TT310	6756262
SCMT 431-FM:T7325	SCMT 120404E-FM:T7325	7156327
SCMT 431-FM:T8315	SCMT 120404E-FM:T8315	6753615
SCMT 431-FM:T8330	SCMT 120404E-FM:T8330	6754277
SCMT 431-FM:T9315	SCMT 120404E-FM:T9315	6754033
SCMT 431-FM:T9325	SCMT 120404E-FM:T9325	6753999
SCMT 432-FM:T7325	SCMT 120408E-FM:T7325	7156328
SCMT 432-FM:T7335	SCMT 120408E-FM:T7335	6754801
SCMT 432-FM:T8315	SCMT 120408E-FM:T8315	6753616
SCMT 432-FM:T8330	SCMT 120408E-FM:T8330	6754278
SCMT 432-FM:T9315	SCMT 120408E-FM:T9315	6753743
SCMT 432-FM:T9325	SCMT 120408E-FM:T9325	6753835
SCMT 432-RF:6630	SCMT 120408E-RF:6630	6756042
SCMT 432-RF:T5315	SCMT 120408E-RF:T5315	6756044
SCMT 432-RF:T7335	SCMT 120408E-RF:T7335	6756043
SCMT 432-RM:T5305	SCMT 120408E-RM:T5305	6755853
SCMT 432-RM:T5315	SCMT 120408E-RM:T5315	6755765
SCMT 432-RM:T7335	SCMT 120408E-RM:T7335	6754802
SCMT 432-RM:T8330	SCMT 120408E-RM:T8330	6754398
SCMT 432-RM:T9315	SCMT 120408E-RM:T9315	6753744
SCMT 432-RM:T9325	SCMT 120408E-RM:T9325	6753836
SCMT 432-RM3:T6310	SCMT 120408E-RM3:T6310	7248721
SCMT 432-RM3:T7325	SCMT 120408E-RM3:T7325	7248722
SCMT 432-RM3:T8330	SCMT 120408E-RM3:T8330	7248723
SCMT 432-RM3:T9315	SCMT 120408E-RM3:T9315	7248724
SCMT 432-RM3:T9325	SCMT 120408E-RM3:T9325	7248725
SCMT 432-RM3:T9335	SCMT 120408E-RM3:T9335	7248726
SCMT 432-UR:T5315	SCMT 120408E-UR:T5315	6755766
SCMT 432-UR:T7325	SCMT 120408E-UR:T7325	7156329
SCMT 432-UR:T8330	SCMT 120408E-UR:T8330	6754241
SCMT 432-UR:T9315	SCMT 120408E-UR:T9315	6754673
SCMT 432-UR:T9325	SCMT 120408E-UR:T9325	6754663
SCMT 433-FM:T7325	SCMT 120412E-FM:T7325	7156330
SCMT 433-FM:T8330	SCMT 120412E-FM:T8330	6754279
SCMT 433-FM:T9315	SCMT 120412E-FM:T9315	6754035
SCMT 433-FM:T9325	SCMT 120412E-FM:T9325	6754000
SCMT 433-RM3:T7325	SCMT 120412E-RM3:T7325	7248727
SCMT 433-RM3:T9325	SCMT 120412E-RM3:T9325	7248728
SCMT 433-UR:T8330	SCMT 120412E-UR:T8330	6754242
SCMT 433-UR:T9325	SCMT 120412E-UR:T9325	6754664
SCMT 866-OR:T9226	SCMT 250924E-OR:T9226	6931863
SCMT 866-OR:T9315	SCMT 250924E-OR:T9315	6933565
SCMT 866-OR:T9325	SCMT 250924E-OR:T9325	6754001
SCMT 866-OR:T9335	SCMT 250924E-OR:T9335	6754926
SCMT 866-SR:T9325	SCMT 250924E-SR:T9325	6754002
SCMT 866-SR:T9335	SCMT 250924E-SR:T9335	6754927
SCMW 32.51:T5305	SCMW 09T304:T5305	6755854
SCMW 32.51:T5315	SCMW 09T304:T5315	6922819
SCMW 32.52:T5305	SCMW 09T308:T5305	6755855
SCMW 32.52:T5315	SCMW 09T308:T5315	6922820
SCMW 432:T5305	SCMW 120408:T5305	6755856
SCMW 432:T5315	SCMW 120408:T5315	6922821
SDEW 322EN:M8330	SDEW 090308EN:M8330	7447971
SDEW 322EN:M8340	SDEW 090308EN:M8340	6800848
SDEW 322SN:8215	SDEW 090308SN:8215	6753404
SDEW 322SN:M8330	SDEW 090308SN:M8330	7447972
SDEW 322SN:M8340	SDEW 090308SN:M8340	6800849
SDEX 322FN-74:M8330	SDEX 090308FN-74:M8330	7447973
SDGX 120508EN-FM:M8330	SDGX 120508EN-FM:M8330	7447974
SDGX 120508EN-FM:M8345	SDGX 120508EN-FM:M8345	6756068
SDKT 1205AESN-FM:M6330	SDKT 1205AESN-FM:M6330	7601343
SDKT 1205AESN-FM:M8330	SDKT 1205AESN-FM:M8330	7447975
SDKT 1205AESN-FM:M8345	SDKT 1205AESN-FM:M8345	7342907
SDKT 1205PDFR-F:8215	SDKT 1205PDFR-F:8215	7342908
SDKT 1205PDSR-FM:M8330	SDKT 1205PDSR-FM:M8330	7447976
SDKT 1205PDSR-FM:M8345	SDKT 1205PDSR-FM:M8345	7342910
SDMT 120508PR-R:M8330	SDMT 120508PR-R:M8330	7447977
SDMT 120508PR-R:M8340	SDMT 120508PR-R:M8340	6800850
SDMT 120508PR-R:M9315	SDMT 120508PR-R:M9315	6754610
SDMT 120508PR-R:M9325	SDMT 120508PR-R:M9325	6754561
SDMT 120508SN-F:M8310	SDMT 120508SN-F:M8310	7342912
SDMT 120508SN-F:M8330	SDMT 120508SN-F:M8330	7447981
SDMT 120508SN-FM:M8345	SDMT 120508SN-FM:M8345	7342913
SDMT 120508SN-R:M8330	SDMT 120508SN-R:M8330	7447982
SDMT 120508SN-R:M8345	SDMT 120508SN-R:M8345	7342915
SDMT 120508SN-R:M9340	SDMT 120508SN-R:M9340	7342916
SDMT 120508SR-F:M8330	SDMT 120508SR-F:M8330	7447978
SDMT 120508SR-F:M8340	SDMT 120508SR-F:M8340	6800851
SDMT 120508SR-M:8215	SDMT 120508SR-M:8215	6753405
SDMT 120508SR-M:M8330	SDMT 120508SR-M:M8330	7447979
SDMT 120508SR-M:M8340	SDMT 120508SR-M:M8340	6800852
SDMT 120508SR-M:M9325	SDMT 120508SR-M:M9325	6754562
SDMT 1205AESN-R:M8330	SDMT 1205AESN-R:M8330	7447980
SDMT 1205AESN-R:M8340	SDMT 1205AESN-R:M8340	7342918
SDMX 120508EN-M:M8330	SDMX 120508EN-M:M8330	7447983
SDMX 120508EN-M:M8345	SDMX 120508EN-M:M8345	6756070
SEEN 42AFFN:M8330	SEEN 1203AFFN:M8330	7450962
SEEN 42AFFN:M8340	SEEN 1203AFFN:M8340	6800853
SEEN 42AFSN:8215	SEEN 1203AFSN:8215	6753406
SEEN 42AFSN:M8330	SEEN 1203AFSN:M8330	7450963
SEEN 42AFSN:M8340	SEEN 1203AFSN:M8340	6800854
SEEN 42AFSN:M9315	SEEN 1203AFSN:M9315	6754611
SEEN 42AFSN:M9325	SEEN 1203AFSN:M9325	6754563
SEEN 42AFSN:M9340	SEEN 1203AFSN:M9340	6754595
SEEN 53AFSN:M8330	SEEN 1504AFSN:M8330	7450966
SEEN 53AFSN:M8340	SEEN 1504AFSN:M8340	6800857
SEEN 53AFSN:M9315	SEEN 1504AFSN:M9315	6754612
SEEN 53AFSN:M9325	SEEN 1504AFSN:M9325	6754564
SEER 42AFEN:M8330	SEER 1203AFEN:M8330	7450967
SEER 42AFEN:M8340	SEER 1203AFEN:M8340	6941439
SEER 42AFSN:M8330	SEER 1203AFSN:M8330	7450968
SEER 42AFSN:M8340	SEER 1203AFSN:M8340	6800858
SEER 42AFSN:M9325	SEER 1203AFSN:M9325	6754565
SEER 42AFSN:M9340	SEER 1203AFSN:M9340	6754597
SEER 43AFEN:M8330	SEER 1204AFEN:M8330	7450969
SEER 43AFSN:M8330	SEER 1204AFSN:M8330	7451000
SEER 43AFSN:M8340	SEER 1204AFSN:M8340	6800859
SEER 53AFEN:M8330	SEER 1504AFEN:M8330	7451001
SEER 53AFSN:M8330	SEER 1504AFSN:M8330	7451002
SEER 53AFSN:M8340	SEER 1504AFSN:M8340	6800860
SEER 53AFSN:M9325	SEER 1504AFSN:M9325	6754566
SEET 09T3AFEN:8215	SEET 09T3AFEN:8215	6755671
SEET 09T3AFEN:M6330	SEET 09T3AFEN:M6330	6925530
SEET 09T3AFEN:M8330	SEET 09T3AFEN:M8330	7451003
SEET 09T3AFEN:M8340	SEET 09T3AFEN:M8340	6800861
SEET 09T3AFEN:M9325	SEET 09T3AFEN:M9325	6755674
SEET 09T3AFEN:M9340	SEET 09T3AFEN:M9340	6755675
SEET 1204AFEN:M8330	SEET 1204AFEN:M8330	7451004
SEET 1204AFFN-FA:HF7	SEET 1204AFFN-FA:HF7	6751838
SEET 1204AFFN-FA:M0315	SEET 1204AFFN-FA:M0315	6756272
SEET 1204AFSN:8215	SEET 1204AFSN:8215	6753407
SEET 1204AFSN:M8330	SEET 1204AFSN:M8330	7451005
SEET 1204AFSN:M8340	SEET 1204AFSN:M8340	6800862
SEET 1204AFSN:M9325	SEET 1204AFSN:M9325	6754567
SEET 1204AFSN:M9340	SEET 1204AFSN:M9340	6754600
SEET 12T3M-PM:M6330	SEET 12T3M-PM:M6330	7601344
SEET 12T3M-PM:M8330	SEET 12T3M-PM:M8330	7451006
SEET 12T3M-PM:M8340	SEET 12T3M-PM:M8340	6800863
SEET 12T3M-PM:M9325	SEET 12T3M-PM:M9325	6754568
SEET 12T3M-PM:M9340	SEET 12T3M-PM:M9340	6754599
SEEW 1204AFEN:M8330	SEEW 1204AFEN:M8330	7451007
SEEW 1204AFEN:M8340	SEEW 1204AFEN:M8340	6800864
SEEW 1204AFSN:8215	SEEW 1204AFSN:8215	6753408
SEEW 1204AFSN:M8330	SEEW 1204AFSN:M8330	7451008
SEEW 1204AFSN:M8340	SEEW 1204AFSN:M8340	6800865
SEEW 1204AFSN:M9325	SEEW 1204AFSN:M9325	6754569
SEMT 09T3AFSN:8215	SEMT 09T3AFSN:8215	6753409
SEMT 09T3AFSN:M8330	SEMT 09T3AFSN:M8330	7451009
SEMT 09T3AFSN:M8340	SEMT 09T3AFSN:M8340	6800866
SEMT 09T3AFSN:M9325	SEMT 09T3AFSN:M9325	6754570
SFCN 42EFFR:H10	SFCN 1203EFFR:H10	6751635
SFCN 42EFFR:M0315	SFCN 1203EFFR:M0315	6756273
SNET 130512SR-M:M8330	SNET 130512SR-M:M8330	7451010
SNET 130512SR-M:M8340	SNET 130512SR-M:M8340	6801304
SNG 322 T00420:TC100	SNGN 090308 T01020:TC100	6755439
SNG 323 T00420:TC100	SNGN 090312 T01020:TC100	6755473
SNG 431 T00420:TC100	SNGN 120404 T01020:TC100	6755440
SNG 432 T00420:TC100	SNGN 120408 T01020:TC100	6755441
SNG 452 T00420:TC100	SNGN 120708 T01020:TC100	6755442
SNG 453 T00420:TC100	SNGN 120712 T01020:TC100	6755443
SNGA 432 T00425:TC100	SNGA 120408 T01025:TC100	6755474
SNGA 433 T00420:TC100	SNGA 120412 T01020:TC100	6755419
SNGX 110416SR-M:8215	SNGX 110416SR-M:8215	7799778
SNGX 110416SR-M:M8310	SNGX 110416SR-M:M8310	7799777
SNGX 110416SR-M:M8330	SNGX 110416SR-M:M8330	7799779
SNGX 110416SR-M:M8340	SNGX 110416SR-M:M8340	7799790
SNGX 110416SR-M:M9325	SNGX 110416SR-M:M9325	7799791
SNGX 110416SR-M:M9340	SNGX 110416SR-M:M9340	7799792
SNGX 110416SR-MM:M6330	SNGX 110416SR-MM:M6330	7799794
SNGX 110416SR-MM:M8340	SNGX 110416SR-MM:M8340	7799795
SNGX 110416SR-MM:M8345	SNGX 110416SR-MM:M8345	7799796
SNGX 110416SR-MM:M9340	SNGX 110416SR-MM:M9340	7799797
SNGX 130512PN-R:M5326	SNGX 130512PN-R:M5326	6801303
SNGX 130512PN-R:M8330	SNGX 130512PN-R:M8330	7451011
SNGX 130512PN-R:M8340	SNGX 130512PN-R:M8340	6801320
SNGX 130512SN-M:M8330	SNGX 130512SN-M:M8330	7451012
SNGX 130512SN-M:M8340	SNGX 130512SN-M:M8340	6801321
SNHF 43ENSR-M:M8330	SNHF 1204ENSR-M:M8330	7451013
SNHF 43ENSR-M:M8340	SNHF 1204ENSR-M:M8340	6800867
SNHF 53ENSR-M:M8330	SNHF 1504ENSR-M:M8330	7451014
SNHF 53ENSR-M:M8340	SNHF 1504ENSR-M:M8340	6800868

ANSI	ISO	EDP
SNHN 43ENEN:8215	SNHN 1204ENEN:8215	6753410
SNHN 43ENEN:M8330	SNHN 1204ENEN:M8330	7451015
SNHN 43ENEN:M8340	SNHN 1204ENEN:M8340	6800869
SNHN 43ENEN:M9325	SNHN 1204ENEN:M9325	6754572
SNHN 43ENEN:S26	SNHN 1204ENEN:S26	6751637
SNHN 53ENEN:8215	SNHN 1504ENEN:8215	6753411
SNHN 53ENEN:M8330	SNHN 1504ENEN:M8330	7451016
SNHN 53ENEN:S26	SNHN 1504ENEN:S26	6751639
SNKT 1205AZSR-M:M8330	SNKT 1205AZSR-M:M8330	7451023
SNKT 1205AZSR-M:M8340	SNKT 1205AZSR-M:M8340	6800884
SNKX 43ENFN:H10	SNKX 1204ENFN:H10	6751641
SNKX 53ENFN:H10	SNKX 1504ENFN:H10	6751642
SNMA 150608-R09:6640	SNMA 150608-R09:6640	7818826
SNMA 150608-R105:6640	SNMA 150608-R105:6640	7818897
SNMA 150608-R11:6640	SNMA 150608-R11:6640	7818827
SNMA 150608-R120:6640	SNMA 150608-R120:6640	7818898
SNMA 150608-R13:6640	SNMA 150608-R13:6640	7818828
SNMA 150608-R15:6640	SNMA 150608-R15:6640	7818829
SNMA 150608-R18:6640	SNMA 150608-R18:6640	7818880
SNMA 150608-R20:6640	SNMA 150608-R20:6640	7818881
SNMA 150608-R22:6640	SNMA 150608-R22:6640	7818882
SNMA 150608-R25:6640	SNMA 150608-R25:6640	7818883
SNMA 150608-R27:6640	SNMA 150608-R27:6640	7818884
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SNMA 150608-R35:6640	SNMA 150608-R35:6640	7818886
SNMA 150608-R40:6640	SNMA 150608-R40:6640	7818887
SNMA 150608-R42:6640	SNMA 150608-R42:6640	7818888
SNMA 150608-R45:6640	SNMA 150608-R45:6640	7818889
SNMA 150608-R50:6640	SNMA 150608-R50:6640	7818890
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SNMA 150608-R65:6640	SNMA 150608-R65:6640	7818892
SNMA 150608-R70:6640	SNMA 150608-R70:6640	7818893
SNMA 150608-R75:6640	SNMA 150608-R75:6640	7818894
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SNMA 250924-R60:T9335	SNMA 250924-R60:T9335	6801269
SNMA 432:T5305	SNMA 120408:T5305	6755857
SNMA 432:T5315	SNMA 120408:T5315	6755767
SNMA 432:T6310	SNMA 120408:T6310	6922858
SNMA 433:T5305	SNMA 120412:T5305	6755858
SNMA 433:T5315	SNMA 120412:T5315	6755768
SNMA 433S:T5305	SNMA 120412S:T5305	6755859
SNMA 543:T5305	SNMA 150612:T5305	6755860
SNMA 543:T5315	SNMA 150612:T5315	6922796
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SNMA 644S:T5305	SNMA 190616S:T5305	6755862
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SNMA 856:T5315	SNMA 250724:T5315	6922799
SNMA 856S:T5305	SNMA 250724S:T5305	6755864
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SNMA 866S:T5305	SNMA 250924S:T5305	6755866
SNMG 431-FM:T6310	SNMG 120404E-FM:T6310	6922777
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SNMG 431-FM:T8315	SNMG 120404E-FM:T8315	6753617
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SNMG 431-FM:T9325	SNMG 120404E-FM:T9325	6754004
SNMG 431-NF:T6310	SNMG 120404E-NF:T6310	6922843
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SNMG 431-NF:T7335	SNMG 120404E-NF:T7335	6834694
SNMG 431-NF:T8330	SNMG 120404E-NF:T8330	6834695
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SNMG 432-FM:T9325	SNMG 120408E-FM:T9325	6754005
SNMG 432-KR:T5305	SNMG 120408E-KR:T5305	6755867
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SNMG 432-M:T5305	SNMG 120408E-M:T5305	6755868
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SNMG 432-NRM:T7335	SNMG 120408-NRM:T7335	7273528
SNMG 432-NRM:T9315	SNMG 120408-NRM:T9315	7273526
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SNMG 432-RM:T9325	SNMG 120408E-RM:T9325	6754007
SNMG 432-RM:T9335	SNMG 120408E-RM:T9335	6754933
SNMG 432-SF:H07	SNMG 120408E-SF:H07	6921016
SNMG 432-SF:T6310	SNMG 120408E-SF:T6310	6919790
SNMG 432-SF:T7325	SNMG 120408E-SF:T7325	7156512
SNMG 432-SF:T7335	SNMG 120408E-SF:T7335	6919791
SNMG 432-SF:T8315	SNMG 120408E-SF:T8315	6919792
SNMG 432-SF:T8330	SNMG 120408E-SF:T8330	6919793
SNMG 432-SF:T9325	SNMG 120408E-SF:T9325	7035065
SNMG 432-SM:T6310	SNMG 120408E-SM:T6310	6915841
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SNMG 432-SM:T7335	SNMG 120408E-SM:T7335	6915842
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SNMG 543-NRM:T7325	SNMG 150612-NRM:T7325	7273533
SNMG 543-NRM:T7335	SNMG 150612-NRM:T7335	7273534
SNMG 543-NRM:T9315	SNMG 150612-NRM:T9315	7273532
SNMG 543-R:T5305	SNMG 150612E-R:T5305	6755875
SNMG 543-R:T5315	SNMG 150612E-R:T5315	6922760
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SNMG 544-R:T5315	SNMG 150616E-R:T5315	6922761
SNMG 544-R:T9325	SNMG 150616E-R:T9325	6754020
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SNMG 544-RM:T9315	SNMG 150616E-RM:T9315	6754048
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SNMG 643-M:6630	SNMG 190612E-M:6630	6751577
SNMG 643-M:T9315	SNMG 190612E-M:T9315	6754050
SNMG 643-M:T9325	SNMG 190612E-M:T9325	6754022

ANSI	ISO	EDP
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SNMG 643-R:6630	SNMG 190612E-R:6630	6751579
SNMG 643-R:6640	SNMG 190612E-R:6640	6751580
SNMG 643-R:T9310	SNMG 190612E-R:T9310	6922954
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SNMG 643-RM:T9335	SNMG 190612E-RM:T9335	6754943
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SNMG 643-SM:T7325	SNMG 190612E-SM:T7325	7156353
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SNMG 856-NRM:T7325	SNMG 250724-NRM:T7325	7273545
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SNMM 432-NR2:T9325	SNMM 120408E-NR2:T9325	6754123
SNMM 432-OR:T9315	SNMM 120408E-OR:T9315	6754089
SNMM 432-OR:T9325	SNMM 120408E-OR:T9325	6754124
SNMM 432-OR:T9335	SNMM 120408E-OR:T9335	6754947
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SNMM 433-NR2:T7335	SNMM 120412E-NR2:T7335	6754807
SNMM 433-NR2:T8330	SNMM 120412E-NR2:T8330	6755141
SNMM 433-NR2:T9325	SNMM 120412E-NR2:T9325	6754126
SNMM 433-OR:T9315	SNMM 120412E-OR:T9315	6754532
SNMM 433-OR:T9325	SNMM 120412E-OR:T9325	6754127
SNMM 434-OR:T9325	SNMM 120416E-OR:T9325	6754128
SNMM 542-OR:T9325	SNMM 150608E-OR:T9325	6754129
SNMM 542-OR:T9335	SNMM 150608E-OR:T9335	6754949
SNMM 543-DR:T9325	SNMM 150612E-DR:T9325	6754130
SNMM 543-DR:T9335	SNMM 150612E-DR:T9335	6754950
SNMM 543-NR2:T7325	SNMM 150612E-NR2:T7325	7156361
SNMM 543-NR2:T7335	SNMM 150612E-NR2:T7335	6754808
SNMM 543-NR2:T8330	SNMM 150612E-NR2:T8330	6755142
SNMM 543-NR2:T9325	SNMM 150612E-NR2:T9325	6754131
SNMM 543-OR:T9325	SNMM 150612E-OR:T9325	6754132
SNMM 543-OR:T9335	SNMM 150612E-OR:T9335	6754951
SNMM 544-NR2:T7335	SNMM 150616E-NR2:T7335	6754809
SNMM 544-NR2:T9325	SNMM 150616E-NR2:T9325	6754133
SNMM 544-OR:T9315	SNMM 150616E-OR:T9315	6754091
SNMM 544-OR:T9325	SNMM 150616E-OR:T9325	6754134
SNMM 643-DR:6640	SNMM 190612E-DR:6640	6751658
SNMM 643-DR:T9325	SNMM 190612E-DR:T9325	6754135
SNMM 643-DR:T9335	SNMM 190612E-DR:T9335	6754952
SNMM 643-NR2:T7335	SNMM 190612E-NR2:T7335	6754810
SNMM 643-NR2:T9325	SNMM 190612E-NR2:T9325	6754136
SNMM 643-OR:T8330	SNMM 190612E-OR:T8330	6755151
SNMM 643-OR:T9315	SNMM 190612E-OR:T9315	6754092
SNMM 643-OR:T9325	SNMM 190612E-OR:T9325	6754138
SNMM 643-OR:T9335	SNMM 190612E-OR:T9335	6754953
SNMM 644-923:T8330	SNMM 190616S-923:T8330	6754255
SNMM 644-923:T8345	SNMM 190616S-923:T8345	6753692
SNMM 644-923:T9335	SNMM 190616S-923:T9335	6754958
SNMM 644-DR:T9325	SNMM 190616E-DR:T9325	6754139
SNMM 644-DR:T9335	SNMM 190616E-DR:T9335	6754954
SNMM 644-HR:6630	SNMM 190616E-HR:6630	6751613
SNMM 644-HR:T8345	SNMM 190616E-HR:T8345	6753682
SNMM 644-HR:T9325	SNMM 190616E-HR:T9325	6754140
SNMM 644-HR:T9335	SNMM 190616E-HR:T9335	6754955
SNMM 644-HR2:T9335	SNMM 190616-HR2:T9335	7036354
SNMM 644-NR2:T7325	SNMM 190616E-NR2:T7325	7156364
SNMM 644-NR2:T7335	SNMM 190616E-NR2:T7335	6754811
SNMM 644-NR2:T8330	SNMM 190616E-NR2:T8330	6755143
SNMM 644-NR2:T9315	SNMM 190616E-NR2:T9315	6922916
SNMM 644-NR2:T9325	SNMM 190616E-NR2:T9325	6754142
SNMM 644-OR:6630	SNMM 190616E-OR:6630	6752091
SNMM 644-OR:T8330	SNMM 190616E-OR:T8330	6755152
SNMM 644-OR:T8345	SNMM 190616E-OR:T8345	6753690
SNMM 644-OR:T9315	SNMM 190616E-OR:T9315	6753746
SNMM 644-OR:T9325	SNMM 190616E-OR:T9325	6753839
SNMM 644-OR:T9335	SNMM 190616E-OR:T9335	6754956
SNMM 644-OR1:6630	SNMM 190616E-OR1:6630	6752025
SNMM 644-OR1:T9325	SNMM 190616E-OR1:T9325	6753840
SNMM 644-OR1:T9335	SNMM 190616E-OR1:T9335	6754957
SNMM 646-HR:T8345	SNMM 190624E-HR:T8345	6753683
SNMM 646-HR:T9315	SNMM 190624E-HR:T9315	6922918
SNMM 646-HR:T9325	SNMM 190624E-HR:T9325	6754145
SNMM 646-HR:T9335	SNMM 190624E-HR:T9335	6754959
SNMM 646-HR2:T9315	SNMM 190624-HR2:T9315	7036355
SNMM 646-HR2:T9335	SNMM 190624-HR2:T9335	7036357
SNMM 646-NR2:T7325	SNMM 190624E-NR2:T7325	7156365
SNMM 646-NR2:T7335	SNMM 190624E-NR2:T7335	6754812
SNMM 646-NR2:T9325	SNMM 190624E-NR2:T9325	6754146
SNMM 646-OR:T9315	SNMM 190624E-OR:T9315	6754094
SNMM 646-OR:T9325	SNMM 190624E-OR:T9325	6754147
SNMM 854-HR:T8345	SNMM 250716E-HR:T8345	6753684
SNMM 854-HR:T9325	SNMM 250716E-HR:T9325	6754148
SNMM 854-HR:T9335	SNMM 250716E-HR:T9335	6754960
SNMM 854-NRM:T7325	SNMM 250716-NRM:T7325	7273551
SNMM 854-NRM:T7335	SNMM 250716-NRM:T7335	7273552
SNMM 854-NRM:T9315	SNMM 250716-NRM:T9315	7273550
SNMM 854-OR:T9226	SNMM 250716E-OR:T9226	6931871
SNMM 854-OR:T9325	SNMM 250716E-OR:T9325	6754149
SNMM 856-923:T8330	SNMM 250724S-923:T8330	6754253
SNMM 856-923:T9315	SNMM 250724S-923:T9315	6933591
SNMM 856-923:T9335	SNMM 250724S-923:T9335	6754965
SNMM 856-HR:6630	SNMM 250724E-HR:6630	6751562
SNMM 856-HR:6640	SNMM 250724E-HR:6640	6751563
SNMM 856-HR:T8345	SNMM 250724E-HR:T8345	6753685
SNMM 856-HR:T9315	SNMM 250724E-HR:T9315	6933569
SNMM 856-HR:T9325	SNMM 250724E-HR:T9325	6753841
SNMM 856-HR:T9335	SNMM 250724E-HR:T9335	6754963
SNMM 856-HR2:T9226	SNMM 250724-HR2:T9226	7015719
SNMM 856-HR2:T9315	SNMM 250724-HR2:T9315	7015718
SNMM 856-HR2:T9335	SNMM 250724-HR2:T9335	7015750
SNMM 856-NR2:T7335	SNMM 250724E-NR2:T7335	6754813
SNMM 856-NR2:T8330	SNMM 250724E-NR2:T8330	6755144
SNMM 856-NR2:T9226	SNMM 250724E-NR2:T9226	6931873
SNMM 856-NR2:T9315	SNMM 250724E-NR2:T9315	6933590
SNMM 856-NR2:T9325	SNMM 250724E-NR2:T9325	6754150
SNMM 856-NRM:T7325	SNMM 250724-NRM:T7325	7273554
SNMM 856-NRM:T7335	SNMM 250724-NRM:T7335	7273555
SNMM 856-NRM:T9315	SNMM 250724-NRM:T9315	7273553
SNMM 856-OR:6630	SNMM 250724E-OR:6630	6752093
SNMM 856-OR:T8330	SNMM 250724E-OR:T8330	6755153
SNMM 856-OR:T8345	SNMM 250724E-OR:T8345	6753691
SNMM 856-OR:T9315	SNMM 250724E-OR:T9315	6754096
SNMM 856-OR:T9325	SNMM 250724E-OR:T9325	6754151
SNMM 856-OR:T9335	SNMM 250724E-OR:T9335	6754964
SNMM 856-SR:6640	SNMM 250724S-SR:6640	6752118
SNMM 856-SR:T9226	SNMM 250724S-SR:T9226	6931876
SNMM 856-SR:T9325	SNMM 250724S-SR:T9325	6754152
SNMM 858-HR:T9325	SNMM 250732E-HR:T9325	6754153
SNMM 858-HR2:T9315	SNMM 250732-HR2:T9315	7036358
SNMM 866-923:T8330	SNMM 250924S-923:T8330	6754252
SNMM 866-923:T8345	SNMM 250924S-923:T8345	6753694
SNMM 866-923:T9226	SNMM 250924S-923:T9226	6931881
SNMM 866-923:T9315	SNMM 250924S-923:T9315	6933594
SNMM 866-923:T9335	SNMM 250924S-923:T9335	6754969
SNMM 866-HR:6630	SNMM 250924E-HR:6630	6752029
SNMM 866-HR:T8345	SNMM 250924E-HR:T8345	6753686
SNMM 866-HR:T9315	SNMM 250924E-HR:T9315	6933592
SNMM 866-HR:T9325	SNMM 250924E-HR:T9325	6753842
SNMM 866-HR:T9335	SNMM 250924E-HR:T9335	6753298
SNMM 866-HR2:T9226	SNMM 250924-HR2:T9226	7015752
SNMM 866-HR2:T9315	SNMM 250924-HR2:T9315	7015751
SNMM 866-HR2:T9335	SNMM 250924-HR2:T9335	7015753
SNMM 866-NR2:T7325	SNMM 250924E-NR2:T7325	7156367
SNMM 866-NR2:T7335	SNMM 250924E-NR2:T7335	6754814
SNMM 866-NR2:T9226	SNMM 250924E-NR2:T9226	6931879
SNMM 866-NR2:T9315	SNMM 250924E-NR2:T9315	6933593
SNMM 866-NR2:T9325	SNMM 250924E-NR2:T9325	6754154
SNMM 866-NRM:T7325	SNMM 250924-NRM:T7325	7273557
SNMM 866-NRM:T7335	SNMM 250924-NRM:T7335	7273558
SNMM 866-NRM:T9315	SNMM 250924-NRM:T9315	7273556
SNMM 866-OR:T8330	SNMM 250924E-OR:T8330	6755154
SNMM 866-OR:T9226	SNMM 250924E-OR:T9226	6931880
SNMM 866-OR:T9315	SNMM 250924E-OR:T9315	6753747
SNMM 866-OR:T9325	SNMM 250924E-OR:T9325	6754155
SNMM 866-OR:T9335	SNMM 250924E-OR:T9335	6754968
SNMM 866-SR:6630	SNMM 250924S-SR:6630	6752129
SNMM 866-SR:T9335	SNMM 250924S-SR:T9335	6754970
SNMM 868-923:T9226	SNMM 250932S-923:T9226	6931884
SNMM 868-HR:T9325	SNMM 250932E-HR:T9325	6754157
SNMM 868-HR2:T9315	SNMM 250932-HR2:T9315	7036361
SNMM 868-HR2:T9335	SNMM 250932-HR2:T9335	7036363
SNMT 1205AZSR-M:8215	SNMT 1205AZSR-M:8215	6753416
SNMT 1205AZSR-M:M8330	SNMT 1205AZSR-M:M8330	7451024
SNMT 1205AZSR-M:M8340	SNMT 1205AZSR-M:M8340	6800885
SNMT 1205AZSR-M:M9315	SNMT 1205AZSR-M:M9315	6754614
SNMT 1205AZSR-M:M9325	SNMT 1205AZSR-M:M9325	6754575
SNMT 1205AZSR-R:8215	SNMT 1205AZSR-R:8215	6753417
SNMT 1205AZSR-R:M5315	SNMT 1205AZSR-R:M5315	6754628
SNMT 1205AZSR-R:M8330	SNMT 1205AZSR-R:M8330	7451025
SNMT 1205AZSR-R:M8340	SNMT 1205AZSR-R:M8340	6800886
SNMT 1205AZSR-R:M9315	SNMT 1205AZSR-R:M9315	6754615
SNMT 1205AZSR-R:M9325	SNMT 1205AZSR-R:M9325	6754576
SNMX 150708-R09:6640	SNMX 150708-R09:6640	7817078
SNMX 150708-R100:6640	SNMX 150708-R100:6640	7817119
SNMX 150708-R105:6640	SNMX 150708-R105:6640	7817120

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SNMX 150708-R11:6640	SNMX 150708-R11:6640	7817079
SNMX 150708-R13:6640	SNMX 150708-R13:6640	7817100
SNMX 150708-R15:6640	SNMX 150708-R15:6640	7817101
SNMX 150708-R18:6640	SNMX 150708-R18:6640	7817102
SNMX 150708-R20:6640	SNMX 150708-R20:6640	7817103
SNMX 150708-R22:6640	SNMX 150708-R22:6640	7817104
SNMX 150708-R25:6640	SNMX 150708-R25:6640	7817105
SNMX 150708-R27:6640	SNMX 150708-R27:6640	7817106
SNMX 150708-R30:6640	SNMX 150708-R30:6640	7817107
SNMX 150708-R35:6640	SNMX 150708-R35:6640	7817108
SNMX 150708-R40:6640	SNMX 150708-R40:6640	7817109
SNMX 150708-R42:6640	SNMX 150708-R42:6640	7817110
SNMX 150708-R45:6640	SNMX 150708-R45:6640	7817111
SNMX 150708-R50:6640	SNMX 150708-R50:6640	7817112
SNMX 150708-R60:6640	SNMX 150708-R60:6640	7817113
SNMX 150708-R65:6640	SNMX 150708-R65:6640	7817114
SNMX 150708-R70:6640	SNMX 150708-R70:6640	7817115
SNMX 150708-R75:6640	SNMX 150708-R75:6640	7817116
SNMX 150708-R80:6640	SNMX 150708-R80:6640	7817117
SNMX 150708-R90:6640	SNMX 150708-R90:6640	7817118
SNMX 15-R00:T9335	SNMX 15-R00:T9335	6801215
SNMX 15-R07:6640	SNMX 15-R07:6640	6752182
SNMX 15-R07:T9335	SNMX 15-R07:T9335	6801216
SNMX 15-R09:6640	SNMX 15-R09:6640	6753569
SNMX 15-R09:T9335	SNMX 15-R09:T9335	6801217
SNMX 15-R11:6640	SNMX 15-R11:6640	6753560
SNMX 15-R11:T9335	SNMX 15-R11:T9335	6801218
SNMX 15-R13:6640	SNMX 15-R13:6640	6753556
SNMX 15-R13:T9335	SNMX 15-R13:T9335	6801219
SNMX 15-R15:6640	SNMX 15-R15:6640	6753557
SNMX 15-R15:T9335	SNMX 15-R15:T9335	6803675
SNMX 15-R18:6640	SNMX 15-R18:6640	6753565
SNMX 15-R18:T9335	SNMX 15-R18:T9335	6801220
SNMX 15-R20:6640	SNMX 15-R20:6640	6753566
SNMX 15-R20:T9335	SNMX 15-R20:T9335	6801221
SNMX 15-R22:6640	SNMX 15-R22:6640	6753567
SNMX 15-R22:T9335	SNMX 15-R22:T9335	6801222
SNMX 15-R25:6640	SNMX 15-R25:6640	6753570
SNMX 15-R25:T9335	SNMX 15-R25:T9335	6801223
SNMX 15-R27:6640	SNMX 15-R27:6640	6753641
SNMX 15-R27:T9335	SNMX 15-R27:T9335	6801224
SNMX 15-R30:6640	SNMX 15-R30:6640	6753642
SNMX 15-R30:T9335	SNMX 15-R30:T9335	6801225
SNMX 15-R35:6640	SNMX 15-R35:6640	6753705
SNMX 15-R35:T9335	SNMX 15-R35:T9335	6801226
SNMX 15-R40:6640	SNMX 15-R40:6640	6753706
SNMX 15-R40:T9335	SNMX 15-R40:T9335	6803676
SNMX 15-R45:6640	SNMX 15-R45:6640	6755491
SNMX 15-R45:T9335	SNMX 15-R45:T9335	6801227
SNMX 15-R50:6640	SNMX 15-R50:6640	6755492
SNMX 15-R50:T9335	SNMX 15-R50:T9335	6801228
SNMX 15-R60:6640	SNMX 15-R60:6640	6752133
SNMX 15-R60:T9335	SNMX 15-R60:T9335	6801229
SNMX 15-R90:6640	SNMX 15-R90:6640	7660879
SNMX 191140SN-RF:T9315	SNMX 191140SN-RF:T9315	6753322
SNMX 191140SN-RF:T9325	SNMX 191140SN-RF:T9325	6753323
SNMX 191140SN-TF:T5315	SNMX 191140SN-TF:T5315	6798541
SNMX 191140SN-TF:T9315	SNMX 191140SN-TF:T9315	6803654
SNMX 191140SN-TF:T9325	SNMX 191140SN-TF:T9325	6798539
SNMX 19-R00:T9335	SNMX 19-R00:T9335	6801237
SNMX 19-R10:6640	SNMX 19-R10:6640	6753707
SNMX 19-R10:T9335	SNMX 19-R10:T9335	6801230
SNMX 19-R110:6640	SNMX 19-R110:6640	6752896
SNMX 19-R110:T9335	SNMX 19-R110:T9335	6801238
SNMX 19-R12:6640	SNMX 19-R12:6640	6754646
SNMX 19-R12:T9335	SNMX 19-R12:T9335	6801231
SNMX 19-R15:6640	SNMX 19-R15:6640	6755001
SNMX 19-R15:T9335	SNMX 19-R15:T9335	6801232
SNMX 19-R18:T9335	SNMX 19-R18:T9335	6801233
SNMX 19-R20:6640	SNMX 19-R20:6640	6754647
SNMX 19-R20:T9335	SNMX 19-R20:T9335	6803677
SNMX 19-R22:T9335	SNMX 19-R22:T9335	6801234
SNMX 19-R25:6640	SNMX 19-R25:6640	6753558
SNMX 19-R25:T9335	SNMX 19-R25:T9335	6803678
SNMX 19-R30:6640	SNMX 19-R30:6640	6754999
SNMX 19-R30:T9335	SNMX 19-R30:T9335	6801235

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SNMX 19-R35:6640	SNMX 19-R35:6640	6755000
SNMX 19-R35:T9335	SNMX 19-R35:T9335	6803679
SNMX 19-R40:6640	SNMX 19-R40:6640	6752365
SNMX 19-R40:T9335	SNMX 19-R40:T9335	6801239
SNMX 19-R45:6640	SNMX 19-R45:6640	6755661
SNMX 19-R45:T9335	SNMX 19-R45:T9335	6801236
SNMX 19-R50:6640	SNMX 19-R50:6640	6752121
SNMX 19-R50:T9335	SNMX 19-R50:T9335	6801240
SNMX 19-R55:6640	SNMX 19-R55:6640	6754648
SNMX 19-R55:T9335	SNMX 19-R55:T9335	6801241
SNMX 19-R60:6640	SNMX 19-R60:6640	6754649
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SNMX 19-R65:6640	SNMX 19-R65:6640	6752122
SNMX 19-R65:T9335	SNMX 19-R65:T9335	6801243
SNMX 19-R75:T9335	SNMX 19-R75:T9335	6801265
SNMX 19-R80:6640	SNMX 19-R80:6640	6752235
SNMX 19-R80:T9335	SNMX 19-R80:T9335	6801244
SNMX 19-R85:T9335	SNMX 19-R85:T9335	6801266
SNMX 19-R90:6640	SNMX 19-R90:6640	6752123
SNMX 19-R90:T9335	SNMX 19-R90:T9335	6801245
SNMX 251224-R00:T9335	SNMX 251224-R00:T9335	6801246
SNMX 251224-R100:T9335	SNMX 251224-R100:T9335	6801247
SNMX 251224-R120:T9335	SNMX 251224-R120:T9335	6801248
SNMX 251224-R25:T9335	SNMX 251224-R25:T9335	6801250
SNMX 251224-R30:T9335	SNMX 251224-R30:T9335	6801251
SNMX 251224-R35:T9335	SNMX 251224-R35:T9335	6801252
SNMX 251224-R40:T9335	SNMX 251224-R40:T9335	6801253
SNMX 251224-R55:T9335	SNMX 251224-R55:T9335	6801254
SNMX 251224-R80:T9335	SNMX 251224-R80:T9335	6801255
SNMX 251224S-SR:6630	SNMX 251224S-SR:6630	6751659
SNMX 251224S-SR:T8345	SNMX 251224S-SR:T8345	6753687
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SNMX 251224S-SR:T9335	SNMX 251224S-SR:T9335	6754972
SNMX 25-R00:T9335	SNMX 25-R00:T9335	6801256
SNMX 25-R100:6640	SNMX 25-R100:6640	6753182
SNMX 25-R100:T9335	SNMX 25-R100:T9335	6801257
SNMX 25-R120:6640	SNMX 25-R120:6640	6753183
SNMX 25-R120:T9335	SNMX 25-R120:T9335	6801258
SNMX 25-R140:6640	SNMX 25-R140:6640	6753184
SNMX 25-R140:T9335	SNMX 25-R140:T9335	6801259
SNMX 25-R160:6640	SNMX 25-R160:6640	6753185
SNMX 25-R160:T9335	SNMX 25-R160:T9335	6801260
SNMX 25-R180:T9335	SNMX 25-R180:T9335	6801261
SNMX 25-R200:6640	SNMX 25-R200:6640	6753187
SNMX 25-R200:T9335	SNMX 25-R200:T9335	6801262
SNMX 25-R50:T9335	SNMX 25-R50:T9335	6801263
SNMX 25-R80:6640	SNMX 25-R80:6640	6753181
SNMX 25-R80:T9335	SNMX 25-R80:T9335	6801264
SNU 432:M8330	SNUN 120408:M8330	7451026
SNU 433:M8330	SNUN 120412:M8330	7451027
SNU 433:S26	SNUN 120412:S26	6751819
SNU 533:M8330	SNUN 150412:M8330	7451028
SOMT 050204SR-M:8215	SOMT 050204SR-M:8215	7343036
SOMT 050204SR-M:M6330	SOMT 050204SR-M:M6330	7343037
SOMT 050204SR-M:M8330	SOMT 050204SR-M:M8330	7451032
SOMT 050204SR-M:M8340	SOMT 050204SR-M:M8340	7343038
SOMT 050208SR-M:8215	SOMT 050208SR-M:8215	7343090
SOMT 050208SR-M:M6330	SOMT 050208SR-M:M6330	7343091
SOMT 050208SR-M:M8330	SOMT 050208SR-M:M8330	7451033
SOMT 050208SR-M:M8340	SOMT 050208SR-M:M8340	7343092
SOMT 09T304-MI:8215	SOMT 09T304-MI:8215	6753418
SOMT 09T304-MI:M8310	SOMT 09T304-MI:M8310	6756266
SOMT 09T304-MI:M8330	SOMT 09T304-MI:M8330	7451029
SOMT 09T304-MI:M8340	SOMT 09T304-MI:M8340	6800887
SOMT 09T304-MI:M9315	SOMT 09T304-MI:M9315	6754616
SOMT 09T304-MI:M9340	SOMT 09T304-MI:M9340	6754603
SOMT 09T304-P:M8330	SOMT 09T304-P:M8330	7451030
SOMT 09T304-P:M8340	SOMT 09T304-P:M8340	6800888
SOMT 09T304-P:M9325	SOMT 09T304-P:M9325	6754577
SOMT 09T308-M:8215	SOMT 09T308-M:8215	6753419
SOMT 09T308-M:8230	SOMT 09T308-M:8230	6753371
SOMT 09T308-M:M5315	SOMT 09T308-M:M5315	6754629
SOMT 09T308-M:M8330	SOMT 09T308-M:M8330	7451031
SOMT 09T308-M:M8340	SOMT 09T308-M:M8340	6800889
SOMT 09T308-M:M9315	SOMT 09T308-M:M9315	6754617
SPET 120408S:M8330	SPET 120408S:M8330	7451034

ANSI	ISO	EDP
SPET 120408S:M8340	SPET 120408S:M8340	6800890
SPET 1204ADEN:8230	SPET 1204ADEN:8230	6752568
SPET 1204ADEN:M8330	SPET 1204ADEN:M8330	7451035
SPET 1204ADEN:M8340	SPET 1204ADEN:M8340	6800891
SPET 1204ADSN:M8330	SPET 1204ADSN:M8330	7451036
SPET 1204ADSN:M8340	SPET 1204ADSN:M8340	6800892
SPEW 1204ADEN:M8330	SPEW 1204ADEN:M8330	7451037
SPEW 1204ADEN:M8340	SPEW 1204ADEN:M8340	6800893
SPEW 1204ADSN:M8330	SPEW 1204ADSN:M8330	7451038
SPEW 1204ADSN:M8340	SPEW 1204ADSN:M8340	6800894
SPG 322:M8340	SPGN 090308:M8340	6800895
SPG 421:M8330	SPGN 120304:M8330	7451039
SPG 421:M8340	SPGN 120304:M8340	6803596
SPG 422 T00420:TC100	SPGN 120308 T01020:TC100	6755444
SPG 422:M8330	SPGN 120308:M8330	7451040
SPG 532:M8330	SPGN 150408:M8330	7451041
SPG 533:M8330	SPGN 150412:M8330	7451042
SPGN 84DZSR:M8326	SPGN 2506DZSR:M8326	6801312
SPGN 84DZSR:M8346	SPGN 2506DZSR:M8346	6801313
SPKN 42EDER:H10	SPKN 1203EDER:H10	6751713
SPKN 42EDER:M8330	SPKN 1203EDER:M8330	7451043
SPKN 42EDER:M8340	SPKN 1203EDER:M8340	6803598
SPKN 42EDER:S26	SPKN 1203EDER:S26	6751714
SPKN 42EDSL:M8330	SPKN 1203EDSL:M8330	7451044
SPKN 42EDSR:8215	SPKN 1203EDSR:8215	6753420
SPKN 42EDSR:8230	SPKN 1203EDSR:8230	6752564
SPKN 42EDSR:H10	SPKN 1203EDSR:H10	6751715
SPKN 42EDSR:M8330	SPKN 1203EDSR:M8330	7451045
SPKN 42EDSR:M8340	SPKN 1203EDSR:M8340	6803599
SPKN 42EDSR:M9325	SPKN 1203EDSR:M9325	6754578
SPKN 42EDSR:S26	SPKN 1203EDSR:S26	6751716
SPKN 53EDEL:M8330	SPKN 1504EDEL:M8330	7451046
SPKN 53EDER:H10	SPKN 1504EDER:H10	6751717
SPKN 53EDER:M8330	SPKN 1504EDER:M8330	7451047
SPKN 53EDER:M8340	SPKN 1504EDER:M8340	6803600
SPKN 53EDSL:M8340	SPKN 1504EDSL:M8340	6803601
SPKN 53EDSR:8215	SPKN 1504EDSR:8215	6753421
SPKN 53EDSR:H10	SPKN 1504EDSR:H10	6751718
SPKN 53EDSR:M5315	SPKN 1504EDSR:M5315	6945809
SPKN 53EDSR:M8330	SPKN 1504EDSR:M8330	7451048
SPKN 53EDSR:M8340	SPKN 1504EDSR:M8340	6803602
SPKN 53EDSR:M9315	SPKN 1504EDSR:M9315	6754619
SPKN 53EDSR:M9325	SPKN 1504EDSR:M9325	6754579
SPKN 53EDSR:S26	SPKN 1504EDSR:S26	6751719
SPKR 42EDSR:M8330	SPKR 1203EDSR:M8330	7451049
SPKR 42EDSR:M8340	SPKR 1203EDSR:M8340	6803603
SPKR 42EDSR:M9340	SPKR 1203EDSR:M9340	6754604
SPKR 53EDSR:M8330	SPKR 1504EDSR:M8330	7451050
SPKR 53EDSR:M8340	SPKR 1504EDSR:M8340	6803604
SPKX 42EDFR:H10	SPKX 1203EDFR:H10	6751645
SPKX 53EDFR:H10	SPKX 1504EDFR:H10	6751646
SPMR 321-46:T9325	SPMR 090304E-46:T9325	6754159
SPMR 322-46:T9325	SPMR 090308E-46:T9325	6754160
SPMR 421-48:6630	SPMR 120304E-48:6630	6751744
SPMR 421-48:T9325	SPMR 120304E-48:T9325	6754161
SPMR 421-48:T9335	SPMR 120304E-48:T9335	6754973
SPMR 422-48:6630	SPMR 120308E-48:6630	6751684
SPMR 422-48:6640	SPMR 120308E-48:6640	6751690
SPMR 422-48:T9325	SPMR 120308E-48:T9325	6754162
SPMR 422-48:T9335	SPMR 120308E-48:T9335	6754974
SPMR 423-48:T9325	SPMR 120312E-48:T9325	6754163
SPU 421:M8330	SPUN 120304:M8330	7451051
SPU 422:6640	SPUN 120308:6640	6751607
SPU 422:H10	SPUN 120308:H10	6751650
SPU 422:M8330	SPUN 120308:M8330	7451052
SPU 422:S26	SPUN 120308:S26	6751791
SPU 423:6640	SPUN 120312:6640	6751608
SPU 423:M8330	SPUN 120312:M8330	7451053
SPU 532:6640	SPUN 150408:6640	6751609
SPU 533:6640	SPUN 150412:6640	6751610
SPU 533:M8330	SPUN 150412:M8330	7451054
SPU 632:6640	SPUN 190408:6640	6752052
SPU 632:M8330	SPUN 190408:M8330	7451055
SPU 633:6640	SPUN 190412:6640	6751611
SPU 633:M8330	SPUN 190412:M8330	7451056
SPU 634:6640	SPUN 190416:6640	6751612

ANSI	ISO	EDP
SPU 844S:M8326	SPUN 250616S:M8326	6801314
SPU 845S:6640	SPUN 250620S:6640	6751618
SPU 845S:M5326	SPUN 250620S:M5326	6801301
SPU 845S:M8326	SPUN 250620S:M8326	6801316
SPU 845S:M8346	SPUN 250620S:M8346	6801317
SPU 845S:S26	SPUN 250620S:S26	6751794
SPUB-63-B:6640	SPUB 19-R12:6640	7817023
SPUB-63-B:T9335	SPUB 19-R12:T9335	7817052
SPUB-63-C:6640	SPUB 19-R15:6640	7817024
SPUB-63-C:T9335	SPUB 19-R15:T9335	7817053
SPUB-63-D:6640	SPUB 19-R20:6640	7817025
SPUB-63-D:T9335	SPUB 19-R20:T9335	7817054
SPUB-63-E:6640	SPUB 19-R25:6640	7817026
SPUB-63-E:T9335	SPUB 19-R25:T9335	7817055
SPUB-63-F:6640	SPUB 19-R30:6640	7817027
SPUB-63-F:T9335	SPUB 19-R30:T9335	7817056
SPUB-63-G:6640	SPUB 19-R40:6640	7817028
SPUB-63-G:T9335	SPUB 19-R40:T9335	7817057
SPUB-63-H:6640	SPUB 19-R50:6640	7817029
SPUB-63-H:T9335	SPUB 19-R50:T9335	7817058
SPUB-63-I:6640	SPUB 19-R63:6640	7817050
SPUB-63-I:T9335	SPUB 19-R63:T9335	7817059
SPUB-63-M:6640	SPUB 19-R00:6640	7817022
SPUB-63-M:T9335	SPUB 19-R00:T9335	7817051
TBMR 2707PZSR:M5326	TBMR 2707PZSR:M5326	6801302
TBMR 2707PZSR:M8326	TBMR 2707PZSR:M8326	6801318
TBMR 2707PZSR:M8346	TBMR 2707PZSR:M8346	6801319
TCGT 1.21.20.5-FF2:T8330	TCGT 06T102E-FF2:T8330	7156754
TCGT 1.21.20.5-FF2:TT010	TCGT 06T102E-FF2:TT010	7080629
TCGT 1.81.50.5F-AL:HF7	TCGT 090202F-AL:HF7	6751860
TCGT 1.81.50.5F-AL:T0315	TCGT 090202F-AL:T0315	6756153
TCGT 1.81.50.5-FF2:TT010	TCGT 090202E-FF2:TT010	7080630
TCGT 1.81.51F-AL:HF7	TCGT 090204F-AL:HF7	6751861
TCGT 1.81.51F-AL:T0315	TCGT 090204F-AL:T0315	6756154
TCGT 110202EL-SI:T8330	TCGT 110202EL-SI:T8330	6754386
TCGT 21.50.5F-AL:HF7	TCGT 110202F-AL:HF7	6751862
TCGT 21.50.5F-AL:T0315	TCGT 110202F-AL:T0315	6756155
TCGT 21.50.5L-SI:T8315	TCGT 110202EL-SI:T8315	6922732
TCGT 21.50.5R-SI:T8315	TCGT 110202ER-SI:T8315	6922733
TCGT 21.50.5R-SI:T8330	TCGT 110202ER-SI:T8330	6754387
TCGT 21.50.5-SF3:T6310	TCGT 110202E-SF3:T6310	7168579
TCGT 21.50.5-SF3:T8315	TCGT 110202E-SF3:T8315	7168580
TCGT 21.51F-AL:HF7	TCGT 110204F-AL:HF7	6751863
TCGT 21.51F-AL:T0315	TCGT 110204F-AL:T0315	6756156
TCGT 21.51L-SI:T8315	TCGT 110204EL-SI:T8315	6922734
TCGT 21.51L-SI:T8330	TCGT 110204EL-SI:T8330	6754388
TCGT 21.51-NF1:H07	TCGT 110204E-NF1:H07	7167418
TCGT 21.51-NF1:T6310	TCGT 110204E-NF1:T6310	7167419
TCGT 21.51-NF1:T7325	TCGT 110204E-NF1:T7325	7167420
TCGT 21.51R-SI:T8330	TCGT 110204ER-SI:T8330	6754389
TCGT 21.51-SF3:H07	TCGT 110204E-SF3:H07	7168581
TCGT 21.51-SF3:T6310	TCGT 110204E-SF3:T6310	7168582
TCGT 21.51-SF3:T8315	TCGT 110204E-SF3:T8315	7168583
TCGT 21.52F-AL:HF7	TCGT 110208F-AL:HF7	6751864
TCGT 32.51F-AL:HF7	TCGT 16T304F-AL:HF7	6751803
TCGT 32.51F-AL:T0315	TCGT 16T304F-AL:T0315	6756158
TCGT 32.51-SF3:H07	TCGT 16T304E-SF3:H07	7168584
TCGT 32.51-SF3:T6310	TCGT 16T304E-SF3:T6310	7168585
TCGT 32.51-SF3:T8315	TCGT 16T304E-SF3:T8315	7168586
TCGT 32.52F-AL:HF7	TCGT 16T308F-AL:HF7	6751804
TCGT 32.52F-AL:T0315	TCGT 16T308F-AL:T0315	6756159
TCGT 32.52-SF3:H07	TCGT 16T308E-SF3:H07	7168587
TCGT 32.52-SF3:T6310	TCGT 16T308E-SF3:T6310	7168588
TCGT 32.52-SF3:T8315	TCGT 16T308E-SF3:T8315	7168589
TCGT 32.53-SF3:T6310	TCGT 16T312E-SF3:T6310	7600317
TCGW 21.51E:TB310	TCGW 110204E-C:TB310	6755926
TCGW 21.51S00420:TB310	TCGW 110204S01020C:TB310	6755687
TCGW 21.52S00420:TB310	TCGW 110208S01020C:TB310	6755927
TCMT 1.21.20.5-FF2:T8330	TCMT 06T102E-FF2:T8330	7156755
TCMT 1.21.20.5-FF2:T9315	TCMT 06T102E-FF2:T9315	6756192
TCMT 1.21.21-FF2:T7325	TCMT 06T104E-FF2:T7325	7156756
TCMT 1.21.21-FF2:T8330	TCMT 06T104E-FF2:T8330	7156757
TCMT 1.21.21-FF2:T9315	TCMT 06T104E-FF2:T9315	6922919
TCMT 1.21.21-FF2:T9325	TCMT 06T104E-FF2:T9325	6756101
TCMT 1.81.51-FF2:T5315	TCMT 090204E-FF2:T5315	6756144
TCMT 1.81.51-FF2:T7325	TCMT 090204E-FF2:T7325	7156758

ANSI	ISO	EDP
TCMT 1.81.51-FF2:T8330	TCMT 090204E-FF2:T8330	7156759
TCMT 1.81.51-FF2:T9315	TCMT 090204E-FF2:T9315	6922920
TCMT 1.81.51-FF2:T9325	TCMT 090204E-FF2:T9325	6756120
TCMT 110202E-FM:T8330	TCMT 110202E-FM:T8330	6754295
TCMT 110204E-FM:T9325	TCMT 110204E-FM:T9325	6753843
TCMT 21.50.5-FM:T7325	TCMT 110202E-FM:T7325	7156368
TCMT 21.50.5-FM:T7335	TCMT 110202E-FM:T7335	6754815
TCMT 21.50.5-FM:T8315	TCMT 110202E-FM:T8315	6753620
TCMT 21.50.5-FM:T9315	TCMT 110202E-FM:T9315	6922921
TCMT 21.50.5-FM:T9325	TCMT 110202E-FM:T9325	6754099
TCMT 21.51-FF2:T7325	TCMT 110204E-FF2:T7325	7156760
TCMT 21.51-FF2:T8330	TCMT 110204E-FF2:T8330	7156761
TCMT 21.51-FF2:T9315	TCMT 110204E-FF2:T9315	7156762
TCMT 21.51-FF2:T9325	TCMT 110204E-FF2:T9325	7156763
TCMT 21.51-FF2:T9335	TCMT 110204E-FF2:T9335	7156764
TCMT 21.51-FM:T7325	TCMT 110204E-FM:T7325	7156369
TCMT 21.51-FM:T7335	TCMT 110204E-FM:T7335	6754816
TCMT 21.51-FM:T8315	TCMT 110204E-FM:T8315	6753621
TCMT 21.51-FM:T8330	TCMT 110204E-FM:T8330	6754296
TCMT 21.51-FM:T9315	TCMT 110204E-FM:T9315	6754076
TCMT 21.51-FM2:T8330	TCMT 110204E-FM2:T8330	7156917
TCMT 21.51-FM2:T9325	TCMT 110204E-FM2:T9325	7156918
TCMT 21.51-UR:T7325	TCMT 110204E-UR:T7325	7156370
TCMT 21.51-UR:T8330	TCMT 110204E-UR:T8330	6754243
TCMT 21.51-UR:T9315	TCMT 110204E-UR:T9315	6754077
TCMT 21.51-UR:T9325	TCMT 110204E-UR:T9325	6754100
TCMT 21.52-FF2:T7325	TCMT 110208E-FF2:T7325	7156765
TCMT 21.52-FF2:T8330	TCMT 110208E-FF2:T8330	7156766
TCMT 21.52-FF2:T9315	TCMT 110208E-FF2:T9315	7156767
TCMT 21.52-FF2:T9325	TCMT 110208E-FF2:T9325	7156768
TCMT 21.52-FM:T7325	TCMT 110208E-FM:T7325	7156371
TCMT 21.52-FM:T8330	TCMT 110208E-FM:T8330	6755667
TCMT 21.52-FM:T9315	TCMT 110208E-FM:T9315	6922922
TCMT 21.52-FM:T9325	TCMT 110208E-FM:T9325	6755666
TCMT 21.52-FM2:T8330	TCMT 110208E-FM2:T8330	7156919
TCMT 21.52-FM2:T9325	TCMT 110208E-FM2:T9325	7156920
TCMT 21.52-FM2:T9335	TCMT 110208E-FM2:T9335	7156921
TCMT 32.51-FF2:T7325	TCMT 16T304E-FF2:T7325	7156769
TCMT 32.51-FF2:T8330	TCMT 16T304E-FF2:T8330	7156770
TCMT 32.51-FF2:T9315	TCMT 16T304E-FF2:T9315	7156771
TCMT 32.51-FF2:T9325	TCMT 16T304E-FF2:T9325	7156772
TCMT 32.51-FF2:T9335	TCMT 16T304E-FF2:T9335	7156773
TCMT 32.51-FF2:TT010	TCMT 16T304E-FF2:TT010	7080631
TCMT 32.51-FM:T7325	TCMT 16T304E-FM:T7325	7156372
TCMT 32.51-FM:T7335	TCMT 16T304E-FM:T7335	6754817
TCMT 32.51-FM:T8315	TCMT 16T304E-FM:T8315	6753622
TCMT 32.51-FM:T8330	TCMT 16T304E-FM:T8330	6754297
TCMT 32.51-FM:T9315	TCMT 16T304E-FM:T9315	6754079
TCMT 32.51-FM:T9325	TCMT 16T304E-FM:T9325	6754101
TCMT 32.51-RM3:T6310	TCMT 16T304E-RM3:T6310	7248729
TCMT 32.51-RM3:T7325	TCMT 16T304E-RM3:T7325	7248730
TCMT 32.51-RM3:T8330	TCMT 16T304E-RM3:T8330	7248731
TCMT 32.51-RM3:T9315	TCMT 16T304E-RM3:T9315	7248732
TCMT 32.51-RM3:T9325	TCMT 16T304E-RM3:T9325	7248733
TCMT 32.51-RM3:T9335	TCMT 16T304E-RM3:T9335	7248734
TCMT 32.51-UR:T7325	TCMT 16T304E-UR:T7325	7156373
TCMT 32.51-UR:T8330	TCMT 16T304E-UR:T8330	6754244
TCMT 32.51-UR:T9315	TCMT 16T304E-UR:T9315	6754080
TCMT 32.51-UR:T9325	TCMT 16T304E-UR:T9325	6754102
TCMT 32.51-UR:TT310	TCMT 16T304E-UR:TT310	6756263
TCMT 32.52-FF2:T7325	TCMT 16T308E-FF2:T7325	7156774
TCMT 32.52-FF2:T8330	TCMT 16T308E-FF2:T8330	7156775
TCMT 32.52-FF2:T9315	TCMT 16T308E-FF2:T9315	7156776
TCMT 32.52-FF2:T9325	TCMT 16T308E-FF2:T9325	7156777
TCMT 32.52-FF2:T9335	TCMT 16T308E-FF2:T9335	7156778
TCMT 32.52-FM:T7325	TCMT 16T308E-FM:T7325	7156374
TCMT 32.52-FM:T7335	TCMT 16T308E-FM:T7335	6754818
TCMT 32.52-FM:T8315	TCMT 16T308E-FM:T8315	6753623
TCMT 32.52-FM:T8330	TCMT 16T308E-FM:T8330	6754298
TCMT 32.52-FM:T9315	TCMT 16T308E-FM:T9315	6754082
TCMT 32.52-FM:T9325	TCMT 16T308E-FM:T9325	6753844
TCMT 32.52-FM2:T7325	TCMT 16T308E-FM2:T7325	7156922
TCMT 32.52-FM2:T8330	TCMT 16T308E-FM2:T8330	7156923
TCMT 32.52-FM2:T9325	TCMT 16T308E-FM2:T9325	7156924
TCMT 32.52-FM2:T9335	TCMT 16T308E-FM2:T9335	7156925
TCMT 32.52-RF:6630	TCMT 16T308E-RF:6630	6756045

ANSI	ISO	EDP
TCMT 32.52-RM:T5305	TCMT 16T308E-RM:T5305	6755880
TCMT 32.52-RM:T5315	TCMT 16T308E-RM:T5315	6755781
TCMT 32.52-RM:T7335	TCMT 16T308E-RM:T7335	6754819
TCMT 32.52-RM:T8330	TCMT 16T308E-RM:T8330	6754399
TCMT 32.52-RM:T9315	TCMT 16T308E-RM:T9315	6754086
TCMT 32.52-RM:T9325	TCMT 16T308E-RM:T9325	6754103
TCMT 32.52-RM3:T6310	TCMT 16T308E-RM3:T6310	7248735
TCMT 32.52-RM3:T7325	TCMT 16T308E-RM3:T7325	7248736
TCMT 32.52-RM3:T8330	TCMT 16T308E-RM3:T8330	7248737
TCMT 32.52-RM3:T9315	TCMT 16T308E-RM3:T9315	7248738
TCMT 32.52-RM3:T9325	TCMT 16T308E-RM3:T9325	7248739
TCMT 32.52-RM3:T9335	TCMT 16T308E-RM3:T9335	7248740
TCMT 32.52-UR:T5315	TCMT 16T308E-UR:T5315	6755782
TCMT 32.52-UR:T7325	TCMT 16T308E-UR:T7325	7156375
TCMT 32.52-UR:T8330	TCMT 16T308E-UR:T8330	6754245
TCMT 32.52-UR:T9315	TCMT 16T308E-UR:T9315	6754087
TCMT 32.52-UR:T9325	TCMT 16T308E-UR:T9325	6753845
TCMT 32.53-RM:T5305	TCMT 16T312E-RM:T5305	6755881
TCMT 32.53-RM:T5315	TCMT 16T312E-RM:T5315	6755783
TCMT 32.53-RM:T8330	TCMT 16T312E-RM:T8330	6754400
TCMT 32.53-RM:T9315	TCMT 16T312E-RM:T9315	6754088
TCMT 32.53-RM:T9325	TCMT 16T312E-RM:T9325	6754104
TCMW 21.51:T5305	TCMW 110204:T5305	6755882
TCMW 21.51:T5315	TCMW 110204:T5315	6922822
TCMW 32.51:T5305	TCMW 16T304:T5305	6755883
TCMW 32.51:T5315	TCMW 16T304:T5315	6922823
TCMW 32.51:T6310	TCMW 16T304:T6310	7168651
TCMW 32.52:T5305	TCMW 16T308:T5305	6755884
TCMW 32.52:T5315	TCMW 16T308:T5315	6922824
TCMW 32.52:T6310	TCMW 16T308:T6310	7168652
TN 11NL050M:T8030	TN 11NL050M:T8030	6755368
TN 11NL075M:T8030	TN 11NL075M:T8030	6755369
TN 11NL090ZZ:T8330	TN 11NL090ZZ:T8330	6755971
TN 11NL100M:T8030	TN 11NL100M:T8030	6755370
TN 11NL110ZZ:T8330	TN 11NL110ZZ:T8330	6755972
TN 11NL125M:T8030	TN 11NL125M:T8030	6755371
TN 11NL140W:T8030	TN 11NL140W:T8030	6755378
TN 11NL150M:T8010	TN 11NL150M:T8010	7575391
TN 11NL150M:T8030	TN 11NL150M:T8030	6755372
TN 11NL190W:T8030	TN 11NL190W:T8030	6755379
TN 11NL200M:T8010	TN 11NL200M:T8010	7575392
TN 11NL200M:T8030	TN 11NL200M:T8030	6755395
TN 11NLA55:T8030	TN 11NLA55:T8030	6755527
TN 11NLA60:T8030	TN 11NLA60:T8030	6755514
TN 11NL-R050:T8330	TN 11NL-R050:T8330	6755973
TN 11NR050M:T8010	TN 11NR050M:T8010	7575393
TN 11NR050M:T8030	TN 11NR050M:T8030	6755373
TN 11NR075M:T8010	TN 11NR075M:T8010	7575394
TN 11NR075M:T8030	TN 11NR075M:T8030	6755374
TN 11NR090ZZ:T8330	TN 11NR090ZZ:T8330	6755974
TN 11NR100M:T8010	TN 11NR100M:T8010	7575395
TN 11NR100M:T8030	TN 11NR100M:T8030	6755375
TN 11NR100M-P1:T8030	TN 11NR100M-P1:T8030	6755543
TN 11NR110ZZ:T8330	TN 11NR110ZZ:T8330	6755975
TN 11NR125M:T8010	TN 11NR125M:T8010	7575396
TN 11NR125M:T8030	TN 11NR125M:T8030	6755376
TN 11NR140NPT:T8030	TN 11NR140NPT:T8030	6755498
TN 11NR140W:T8010	TN 11NR140W:T8010	7575430
TN 11NR140W:T8030	TN 11NR140W:T8030	6755380
TN 11NR140W-P1:T8030	TN 11NR140W-P1:T8030	6755544
TN 11NR150M:T8010	TN 11NR150M:T8010	7575397
TN 11NR150M:T8030	TN 11NR150M:T8030	6755377
TN 11NR150M-P1:T8030	TN 11NR150M-P1:T8030	6755545
TN 11NR180NPT:T8030	TN 11NR180NPT:T8030	6755499
TN 11NR190W:T8010	TN 11NR190W:T8010	7575431
TN 11NR190W:T8030	TN 11NR190W:T8030	6755381
TN 11NR190W-P1:T8030	TN 11NR190W-P1:T8030	6755546
TN 11NR200M:T8010	TN 11NR200M:T8010	7575398
TN 11NR200M:T8030	TN 11NR200M:T8030	6755394
TN 11NRA55:T8030	TN 11NRA55:T8030	6755526
TN 11NRA60:T8010	TN 11NRA60:T8010	7575364
TN 11NRA60:T8030	TN 11NRA60:T8030	6755513
TN 11NR-R050:T8330	TN 11NR-R050:T8330	6755976
TN 16EL050M:T8030	TN 16EL050M:T8030	6755196
TN 16EL060RD:T8030	TN 16EL060RD:T8030	7800272
TN 16EL060STACME:T8030	TN 16EL060STACME:T8030	7800302

ANSI	ISO	EDP
TN 16EL075M:T8030	TN 16EL075M:T8030	6755197
TN 16EL080ACME:T8030	TN 16EL080ACME:T8030	7800278
TN 16EL080M:T8030	TN 16EL080M:T8030	6755392
TN 16EL080RD:T8030	TN 16EL080RD:T8030	7800271
TN 16EL080STACME:T8030	TN 16EL080STACME:T8030	7800298
TN 16EL080UN:T8030	TN 16EL080UN:T8030	6755268
TN 16EL080W:T8030	TN 16EL080W:T8030	6755220
TN 16EL090UN:T8030	TN 16EL090UN:T8030	6755269
TN 16EL090W:T8030	TN 16EL090W:T8030	6755221
TN 16EL090ZZ:T8330	TN 16EL090ZZ:T8330	6755079
TN 16EL100ACME:T8030	TN 16EL100ACME:T8030	7800277
TN 16EL100M:T8010	TN 16EL100M:T8010	7575370
TN 16EL100M:T8030	TN 16EL100M:T8030	6755198
TN 16EL100RD:T8030	TN 16EL100RD:T8030	7800270
TN 16EL100STACME:T8030	TN 16EL100STACME:T8030	7800294
TN 16EL100UN:T8030	TN 16EL100UN:T8030	6755270
TN 16EL100W:T8030	TN 16EL100W:T8030	6755222
TN 16EL110BSPT:T8030	TN 16EL110BSPT:T8030	7800313
TN 16EL110UN:T8030	TN 16EL110UN:T8030	6755271
TN 16EL110W:T8030	TN 16EL110W:T8030	6755223
TN 16EL110ZZ:T8330	TN 16EL110ZZ:T8330	6755080
TN 16EL120ACME:T8030	TN 16EL120ACME:T8030	7800276
TN 16EL120STACME:T8030	TN 16EL120STACME:T8030	7800290
TN 16EL120UN:T8030	TN 16EL120UN:T8030	6755272
TN 16EL120UNJ:T8030	TN 16EL120UNJ:T8030	7800330
TN 16EL120W:T8030	TN 16EL120W:T8030	6755224
TN 16EL125M:T8010	TN 16EL125M:T8010	7575371
TN 16EL125M:T8030	TN 16EL125M:T8030	6755199
TN 16EL130ZZ:T8330	TN 16EL130ZZ:T8330	6755081
TN 16EL140BSPT:T8030	TN 16EL140BSPT:T8030	7800315
TN 16EL140UN:T8030	TN 16EL140UN:T8030	6755273
TN 16EL140W:T8030	TN 16EL140W:T8030	6755225
TN 16EL150M:T8010	TN 16EL150M:T8010	7575372
TN 16EL150M:T8030	TN 16EL150M:T8030	6755200
TN 16EL150TR:T8030	TN 16EL150TR:T8030	6755327
TN 16EL160STACME:T8030	TN 16EL160STACME:T8030	7800286
TN 16EL160UN:T8030	TN 16EL160UN:T8030	6755274
TN 16EL160UNJ:T8030	TN 16EL160UNJ:T8030	7800329
TN 16EL160W:T8030	TN 16EL160W:T8030	6755226
TN 16EL160ZZ:T8330	TN 16EL160ZZ:T8330	6755082
TN 16EL175M:T8010	TN 16EL175M:T8010	7575373
TN 16EL175M:T8030	TN 16EL175M:T8030	6755201
TN 16EL180UN:T8030	TN 16EL180UN:T8030	6755275
TN 16EL180UNJ:T8030	TN 16EL180UNJ:T8030	7800328
TN 16EL185ZZ:T8330	TN 16EL185ZZ:T8330	6755083
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TN 16EL190W:T8030	TN 16EL190W:T8030	6755227
TN 16EL200M:T8010	TN 16EL200M:T8010	7575374
TN 16EL200M:T8030	TN 16EL200M:T8030	6755202
TN 16EL200TR:T8030	TN 16EL200TR:T8030	6755328
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TN 16EL200UNJ:T8030	TN 16EL200UNJ:T8030	7800327
TN 16EL200W:T8030	TN 16EL200W:T8030	6755228
TN 16EL215ZZ:T8330	TN 16EL215ZZ:T8330	6755084
TN 16EL240UN:T8030	TN 16EL240UN:T8030	6755277
TN 16EL240UNJ:T8030	TN 16EL240UNJ:T8030	7800326
TN 16EL240W:T8030	TN 16EL240W:T8030	7800267
TN 16EL250M:T8010	TN 16EL250M:T8010	7575375
TN 16EL250M:T8030	TN 16EL250M:T8030	6755203
TN 16EL260W:T8030	TN 16EL260W:T8030	7800263
TN 16EL265ZZ:T8330	TN 16EL265ZZ:T8330	6755085
TN 16EL280BSPT:T8030	TN 16EL280BSPT:T8030	7800306
TN 16EL280UN:T8030	TN 16EL280UN:T8030	6755278
TN 16EL280UNJ:T8030	TN 16EL280UNJ:T8030	7800325
TN 16EL280W:T8030	TN 16EL280W:T8030	6755229
TN 16EL300M:T8010	TN 16EL300M:T8010	7575376
TN 16EL300M:T8030	TN 16EL300M:T8030	6755204
TN 16EL300TR:T8030	TN 16EL300TR:T8030	6755329
TN 16EL320UN:T8030	TN 16EL320UN:T8030	6755279
TN 16EL320UNJ:T8030	TN 16EL320UNJ:T8030	7800324
TN 16EL350M:T8030	TN 16EL350M:T8030	7800240
TN 16ELA55:T8030	TN 16ELA55:T8030	6755538
TN 16ELA60:T8030	TN 16ELA60:T8030	6755534
TN 16ELAG55:T8030	TN 16ELAG55:T8030	6755536
TN 16ELAG60:T8010	TN 16ELAG60:T8010	7575319
TN 16ELAG60:T8030	TN 16ELAG60:T8030	6755510
TN 16ELG55:T8030	TN 16ELG55:T8030	6755537
TN 16ELG60:T8030	TN 16ELG60:T8030	6755535
TN 16EL-R050:T8330	TN 16EL-R050:T8330	6755977
TN 16EL-R100:T8330	TN 16EL-R100:T8330	6755978
TN 16ER050M:T8010	TN 16ER050M:T8010	7575377
TN 16ER050M:T8030	TN 16ER050M:T8030	6755176
TN 16ER050M-AL:HF7	TN 16ER050M-AL:HF7	7800243
TN 16ER060RD:T8030	TN 16ER060RD:T8030	6755347
TN 16ER060STACME:T8030	TN 16ER060STACME:T8030	7800301
TN 16ER075M:T8010	TN 16ER075M:T8010	7575378
TN 16ER075M:T8030	TN 16ER075M:T8030	6755177
TN 16ER075M-AL:HF7	TN 16ER075M-AL:HF7	7800244
TN 16ER080ACME:T8030	TN 16ER080ACME:T8030	6755357
TN 16ER080API-RD01:T8030	TN 16ER080API-RD01:T8030	6755161
TN 16ER080M:T8010	TN 16ER080M:T8010	7575379
TN 16ER080M:T8030	TN 16ER080M:T8030	6755393
TN 16ER080M-AL:HF7	TN 16ER080M-AL:HF7	7800245
TN 16ER080NPT:T8030	TN 16ER080NPT:T8030	6755497
TN 16ER080RD:T8030	TN 16ER080RD:T8030	6755348
TN 16ER080STACME:T8030	TN 16ER080STACME:T8030	7800297
TN 16ER080UN:T8030	TN 16ER080UN:T8030	6755280
TN 16ER080UN-P1:T8030	TN 16ER080UN-P1:T8030	6755547
TN 16ER080W:T8030	TN 16ER080W:T8030	6755230
TN 16ER090UN:T8030	TN 16ER090UN:T8030	6755281
TN 16ER090W:T8030	TN 16ER090W:T8030	6755231
TN 16ER090ZZ:T8330	TN 16ER090ZZ:T8330	6755086
TN 16ER100ACME:T8030	TN 16ER100ACME:T8030	6755358
TN 16ER100API-RD01:T8030	TN 16ER100API-RD01:T8030	6755160
TN 16ER100M:T8010	TN 16ER100M:T8010	7575380
TN 16ER100M:T8030	TN 16ER100M:T8030	6755167
TN 16ER100M-AL:HF7	TN 16ER100M-AL:HF7	7800246
TN 16ER100MJ:T8030	TN 16ER100MJ:T8030	7800331
TN 16ER100M-P1:T8030	TN 16ER100M-P1:T8030	6755548
TN 16ER100RD:T8030	TN 16ER100RD:T8030	6755349
TN 16ER100STACME:T8030	TN 16ER100STACME:T8030	7800293
TN 16ER100UN:T8030	TN 16ER100UN:T8030	6755282
TN 16ER100W:T8030	TN 16ER100W:T8030	6755367
TN 16ER110BSPT:T8030	TN 16ER110BSPT:T8030	6755503
TN 16ER110UN:T8030	TN 16ER110UN:T8030	6755283
TN 16ER110W:T8010	TN 16ER110W:T8010	7575427
TN 16ER110W:T8030	TN 16ER110W:T8030	6755165
TN 16ER110W-P1:T8030	TN 16ER110W-P1:T8030	6755549
TN 16ER110ZZ:T8330	TN 16ER110ZZ:T8330	6755087
TN 16ER115NPT:T8010	TN 16ER115NPT:T8010	7575419
TN 16ER115NPT:T8030	TN 16ER115NPT:T8030	6755493
TN 16ER115UN:T8030	TN 16ER115UN:T8030	6755384
TN 16ER120ACME:T8030	TN 16ER120ACME:T8030	6755359
TN 16ER120STACME:T8030	TN 16ER120STACME:T8030	7800289
TN 16ER120UN:T8030	TN 16ER120UN:T8030	6755284
TN 16ER120UNJ:T8030	TN 16ER120UNJ:T8030	7800323
TN 16ER120UN-P1:T8030	TN 16ER120UN-P1:T8030	6755550
TN 16ER120W:T8030	TN 16ER120W:T8030	6755232
TN 16ER125M:T8010	TN 16ER125M:T8010	7575381
TN 16ER125M:T8030	TN 16ER125M:T8030	6755172
TN 16ER125M-AL:HF7	TN 16ER125M-AL:HF7	7800247
TN 16ER125M-P1:T8030	TN 16ER125M-P1:T8030	6755551
TN 16ER130UN:T8030	TN 16ER130UN:T8030	6755285
TN 16ER130ZZ:T8330	TN 16ER130ZZ:T8330	6755088
TN 16ER140BSPT:T8030	TN 16ER140BSPT:T8030	6755504
TN 16ER140NPT:T8010	TN 16ER140NPT:T8010	7575420
TN 16ER140NPT:T8030	TN 16ER140NPT:T8030	6755494
TN 16ER140UN:T8030	TN 16ER140UN:T8030	6755286
TN 16ER140UN-P1:T8030	TN 16ER140UN-P1:T8030	6755552
TN 16ER140W:T8010	TN 16ER140W:T8010	7575428
TN 16ER140W:T8030	TN 16ER140W:T8030	6755169
TN 16ER140W-P1:T8030	TN 16ER140W-P1:T8030	6755553
TN 16ER150M:T8010	TN 16ER150M:T8010	7575382
TN 16ER150M:T8030	TN 16ER150M:T8030	6755164
TN 16ER150M-AL:HF7	TN 16ER150M-AL:HF7	7800248
TN 16ER150MJ:T8030	TN 16ER150MJ:T8030	7800332
TN 16ER150M-P1:T8030	TN 16ER150M-P1:T8030	6755554
TN 16ER150TR:T8030	TN 16ER150TR:T8030	6755330
TN 16ER160STACME:T8030	TN 16ER160STACME:T8030	7800285
TN 16ER160UN:T8030	TN 16ER160UN:T8030	6755287
TN 16ER160UNJ:T8030	TN 16ER160UNJ:T8030	7800322
TN 16ER160UN-P1:T8030	TN 16ER160UN-P1:T8030	6755555
TN 16ER160W:T8030	TN 16ER160W:T8030	6755233
TN 16ER160ZZ:T8330	TN 16ER160ZZ:T8330	6755089
TN 16ER175M:T8010	TN 16ER175M:T8010	7575383
TN 16ER175M:T8030	TN 16ER175M:T8030	6755173
TN 16ER175M-AL:HF7	TN 16ER175M-AL:HF7	7800249
TN 16ER175M-P1:T8030	TN 16ER175M-P1:T8030	6755556
TN 16ER180NPT:T8030	TN 16ER180NPT:T8030	6755495
TN 16ER180UN:T8030	TN 16ER180UN:T8030	6755288
TN 16ER180UNJ:T8030	TN 16ER180UNJ:T8030	7800321
TN 16ER180UN-P1:T8030	TN 16ER180UN-P1:T8030	6755557
TN 16ER180W:T8030	TN 16ER180W:T8030	6755234
TN 16ER185ZZ:T8330	TN 16ER185ZZ:T8330	6755090
TN 16ER190BSPT:T8030	TN 16ER190BSPT:T8030	7800309
TN 16ER190W:T8010	TN 16ER190W:T8010	7575429
TN 16ER190W:T8030	TN 16ER190W:T8030	6755235
TN 16ER190W-P1:T8030	TN 16ER190W-P1:T8030	6755558
TN 16ER200M:T8010	TN 16ER200M:T8010	7575384
TN 16ER200M:T8030	TN 16ER200M:T8030	6755168
TN 16ER200M-AL:HF7	TN 16ER200M-AL:HF7	7800250
TN 16ER200M-P1:T8030	TN 16ER200M-P1:T8030	6755559
TN 16ER200TR:T8030	TN 16ER200TR:T8030	6755331
TN 16ER200UN:T8010	TN 16ER200UN:T8010	7575423
TN 16ER200UN:T8030	TN 16ER200UN:T8030	6755289
TN 16ER200UNJ:T8030	TN 16ER200UNJ:T8030	7800320
TN 16ER200UN-P1:T8030	TN 16ER200UN-P1:T8030	6755560
TN 16ER200W:T8030	TN 16ER200W:T8030	6755236
TN 16ER215ZZ:T8330	TN 16ER215ZZ:T8330	6755091
TN 16ER240UN:T8030	TN 16ER240UN:T8030	6755290
TN 16ER240UNJ:T8030	TN 16ER240UNJ:T8030	7800319
TN 16ER240W:T8030	TN 16ER240W:T8030	7800266
TN 16ER250M:T8010	TN 16ER250M:T8010	7575385
TN 16ER250M:T8030	TN 16ER250M:T8030	6755175
TN 16ER250M-AL:HF7	TN 16ER250M-AL:HF7	7800251
TN 16ER250M-P1:T8030	TN 16ER250M-P1:T8030	6755561
TN 16ER260W:T8030	TN 16ER260W:T8030	7800262
TN 16ER265ZZ:T8330	TN 16ER265ZZ:T8330	6755092
TN 16ER270NPT:T8030	TN 16ER270NPT:T8030	6755496
TN 16ER280BSPT:T8030	TN 16ER280BSPT:T8030	7800305
TN 16ER280UN:T8030	TN 16ER280UN:T8030	6755291
TN 16ER280UNJ:T8030	TN 16ER280UNJ:T8030	7800318
TN 16ER280W:T8030	TN 16ER280W:T8030	6755237
TN 16ER300M:T8010	TN 16ER300M:T8010	7575386
TN 16ER300M:T8030	TN 16ER300M:T8030	6755166
TN 16ER300M-AL:HF7	TN 16ER300M-AL:HF7	7800252
TN 16ER300M-P1:T8030	TN 16ER300M-P1:T8030	6755562
TN 16ER300TR:T8030	TN 16ER300TR:T8030	6755332
TN 16ER320UN:T8030	TN 16ER320UN:T8030	6755292
TN 16ER320UNJ:T8030	TN 16ER320UNJ:T8030	7800317
TN 16ER350M:T8030	TN 16ER350M:T8030	7800209
TN 16ERA55:T8030	TN 16ERA55:T8030	6755523
TN 16ERA60:T8010	TN 16ERA60:T8010	7575360
TN 16ERA60:T8030	TN 16ERA60:T8030	6755508
TN 16ERAG55:T8010	TN 16ERAG55:T8010	7575316
TN 16ERAG55:T8030	TN 16ERAG55:T8030	6755521
TN 16ERAG60:T8010	TN 16ERAG60:T8010	7575361
TN 16ERAG60:T8030	TN 16ERAG60:T8030	6755507
TN 16ERG55:T8030	TN 16ERG55:T8030	6755522
TN 16ERG60:T8010	TN 16ERG60:T8010	7575362
TN 16ERG60:T8030	TN 16ERG60:T8030	6755509
TN 16ER-R050:T8330	TN 16ER-R050:T8330	6755979
TN 16ER-R100:T8330	TN 16ER-R100:T8330	6755980
TN 16NL050M:T8030	TN 16NL050M:T8030	6755178
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TN 16NL060STACME:T8030	TN 16NL060STACME:T8030	7800304
TN 16NL075M:T8030	TN 16NL075M:T8030	6755179
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TN 16NL080RD:T8030	TN 16NL080RD:T8030	7800274
TN 16NL080STACME:T8030	TN 16NL080STACME:T8030	7800300
TN 16NL080UN:T8030	TN 16NL080UN:T8030	6755293
TN 16NL080W:T8030	TN 16NL080W:T8030	6755238
TN 16NL090W:T8030	TN 16NL090W:T8030	6755239
TN 16NL090ZZ:T8330	TN 16NL090ZZ:T8330	6755093
TN 16NL100ACME:T8030	TN 16NL100ACME:T8030	7800282
TN 16NL100M:T8010	TN 16NL100M:T8010	7575399
TN 16NL100M:T8030	TN 16NL100M:T8030	6755180
TN 16NL100RD:T8030	TN 16NL100RD:T8030	7800273

ANSI	ISO	EDP
TN 16NL100STACME:T8030	TN 16NL100STACME:T8030	7800296
TN 16NL100UN:T8030	TN 16NL100UN:T8030	6755294
TN 16NL100W:T8030	TN 16NL100W:T8030	6755240
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TN 16NL110UN:T8030	TN 16NL110UN:T8030	6755295
TN 16NL110W:T8030	TN 16NL110W:T8030	6755241
TN 16NL110ZZ:T8330	TN 16NL110ZZ:T8330	6755094
TN 16NL120ACME:T8030	TN 16NL120ACME:T8030	7800281
TN 16NL120STACME:T8030	TN 16NL120STACME:T8030	7800292
TN 16NL120UN:T8030	TN 16NL120UN:T8030	6755296
TN 16NL120W:T8030	TN 16NL120W:T8030	6755242
TN 16NL125M:T8010	TN 16NL125M:T8010	7575400
TN 16NL125M:T8030	TN 16NL125M:T8030	6755181
TN 16NL130ZZ:T8330	TN 16NL130ZZ:T8330	6755097
TN 16NL140BSPT:T8030	TN 16NL140BSPT:T8030	7800316
TN 16NL140UN:T8030	TN 16NL140UN:T8030	6755297
TN 16NL140W:T8030	TN 16NL140W:T8030	6755243
TN 16NL150M:T8010	TN 16NL150M:T8010	7575401
TN 16NL150M:T8030	TN 16NL150M:T8030	6755182
TN 16NL150TR:T8030	TN 16NL150TR:T8030	6755333
TN 16NL160STACME:T8030	TN 16NL160STACME:T8030	7800288
TN 16NL160UN:T8030	TN 16NL160UN:T8030	6755298
TN 16NL160W:T8030	TN 16NL160W:T8030	6755244
TN 16NL160ZZ:T8330	TN 16NL160ZZ:T8330	6755095
TN 16NL175M:T8010	TN 16NL175M:T8010	7575402
TN 16NL175M:T8030	TN 16NL175M:T8030	6755183
TN 16NL180UN:T8030	TN 16NL180UN:T8030	6755299
TN 16NL185ZZ:T8330	TN 16NL185ZZ:T8330	6755096
TN 16NL190BSPT:T8030	TN 16NL190BSPT:T8030	7800312
TN 16NL190W:T8030	TN 16NL190W:T8030	6755245
TN 16NL200M:T8010	TN 16NL200M:T8010	7575403
TN 16NL200M:T8030	TN 16NL200M:T8030	6755184
TN 16NL200TR:T8030	TN 16NL200TR:T8030	6755334
TN 16NL200UN:T8030	TN 16NL200UN:T8030	6755300
TN 16NL200W:T8030	TN 16NL200W:T8030	6755246
TN 16NL215ZZ:T8330	TN 16NL215ZZ:T8330	6755098
TN 16NL240UN:T8030	TN 16NL240UN:T8030	6755301
TN 16NL240W:T8030	TN 16NL240W:T8030	7800269
TN 16NL250M:T8010	TN 16NL250M:T8010	7575404
TN 16NL250M:T8030	TN 16NL250M:T8030	6755185
TN 16NL260W:T8030	TN 16NL260W:T8030	7800265
TN 16NL265ZZ:T8330	TN 16NL265ZZ:T8330	6755099
TN 16NL280BSPT:T8030	TN 16NL280BSPT:T8030	7800308
TN 16NL280UN:T8030	TN 16NL280UN:T8030	6755302
TN 16NL280W:T8030	TN 16NL280W:T8030	6755247
TN 16NL300M:T8010	TN 16NL300M:T8010	7575405
TN 16NL300M:T8030	TN 16NL300M:T8030	6755186
TN 16NL300TR:T8030	TN 16NL300TR:T8030	6755335
TN 16NL320UN:T8030	TN 16NL320UN:T8030	6755303
TN 16NL350M:T8030	TN 16NL350M:T8030	7800242
TN 16NLA55:T8030	TN 16NLA55:T8030	6755542
TN 16NLA60:T8030	TN 16NLA60:T8030	6755540
TN 16NLAG55:T8030	TN 16NLAG55:T8030	6755531
TN 16NLAG60:T8010	TN 16NLAG60:T8010	7575365
TN 16NLAG60:T8030	TN 16NLAG60:T8030	6755518
TN 16NLG55:T8030	TN 16NLG55:T8030	6755541
TN 16NLG60:T8030	TN 16NLG60:T8030	6755539
TN 16NL-R100:T8330	TN 16NL-R100:T8330	6755981
TN 16NR050M:T8010	TN 16NR050M:T8010	7575406
TN 16NR050M:T8030	TN 16NR050M:T8030	6755187
TN 16NR050M-AL:HF7	TN 16NR050M-AL:HF7	7800253
TN 16NR060RD:T8030	TN 16NR060RD:T8030	6755350
TN 16NR060STACME:T8030	TN 16NR060STACME:T8030	7800303
TN 16NR075M:T8010	TN 16NR075M:T8010	7575407
TN 16NR075M:T8030	TN 16NR075M:T8030	6755188
TN 16NR075M-AL:HF7	TN 16NR075M-AL:HF7	7800254
TN 16NR080ACME:T8030	TN 16NR080ACME:T8030	6755360
TN 16NR080API-RD01:T8030	TN 16NR080API-RD01:T8030	6755163
TN 16NR080NPT:T8030	TN 16NR080NPT:T8030	6755502
TN 16NR080RD:T8030	TN 16NR080RD:T8030	6755351
TN 16NR080STACME:T8030	TN 16NR080STACME:T8030	7800299
TN 16NR080UN:T8010	TN 16NR080UN:T8010	7575424
TN 16NR080UN:T8030	TN 16NR080UN:T8030	6755304
TN 16NR080UN-P1:T8030	TN 16NR080UN-P1:T8030	6755563
TN 16NR080W:T8030	TN 16NR080W:T8030	6755248
TN 16NR090W:T8030	TN 16NR090W:T8030	6755249

ANSI	ISO	EDP
TN 16NR090ZZ:T8330	TN 16NR090ZZ:T8330	6755100
TN 16NR100ACME:T8030	TN 16NR100ACME:T8030	7800280
TN 16NR100API-RD01:T8030	TN 16NR100API-RD01:T8030	6755162
TN 16NR100M:T8010	TN 16NR100M:T8010	7575408
TN 16NR100M:T8030	TN 16NR100M:T8030	6755189
TN 16NR100M-AL:HF7	TN 16NR100M-AL:HF7	7800255
TN 16NR100M-P1:T8030	TN 16NR100M-P1:T8030	6755564
TN 16NR100RD:T8030	TN 16NR100RD:T8030	6755352
TN 16NR100STACME:T8030	TN 16NR100STACME:T8030	7800295
TN 16NR100UN:T8030	TN 16NR100UN:T8030	6755305
TN 16NR100W:T8030	TN 16NR100W:T8030	6755250
TN 16NR110BSPT:T8030	TN 16NR110BSPT:T8030	6755505
TN 16NR110UN:T8030	TN 16NR110UN:T8030	6755306
TN 16NR110W:T8010	TN 16NR110W:T8010	7575432
TN 16NR110W:T8030	TN 16NR110W:T8030	6755171
TN 16NR110W-P1:T8030	TN 16NR110W-P1:T8030	6755565
TN 16NR110ZZ:T8330	TN 16NR110ZZ:T8330	6755101
TN 16NR115NPT:T8010	TN 16NR115NPT:T8010	7575421
TN 16NR115NPT:T8030	TN 16NR115NPT:T8030	6755500
TN 16NR115UN:T8030	TN 16NR115UN:T8030	6755385
TN 16NR120ACME:T8030	TN 16NR120ACME:T8030	7800279
TN 16NR120STACME:T8030	TN 16NR120STACME:T8030	7800291
TN 16NR120UN:T8010	TN 16NR120UN:T8010	7575425
TN 16NR120UN:T8030	TN 16NR120UN:T8030	6755307
TN 16NR120UN-P1:T8030	TN 16NR120UN-P1:T8030	6755566
TN 16NR120W:T8030	TN 16NR120W:T8030	6755251
TN 16NR125M:T8010	TN 16NR125M:T8010	7575409
TN 16NR125M:T8030	TN 16NR125M:T8030	6755190
TN 16NR125M-AL:HF7	TN 16NR125M-AL:HF7	7800256
TN 16NR130UN:T8030	TN 16NR130UN:T8030	6755308
TN 16NR130ZZ:T8330	TN 16NR130ZZ:T8330	6755102
TN 16NR140BSPT:T8030	TN 16NR140BSPT:T8030	6755506
TN 16NR140NPT:T8010	TN 16NR140NPT:T8010	7575422
TN 16NR140NPT:T8030	TN 16NR140NPT:T8030	6755501
TN 16NR140UN:T8030	TN 16NR140UN:T8030	6755309
TN 16NR140UN-P1:T8030	TN 16NR140UN-P1:T8030	6755567
TN 16NR140W:T8010	TN 16NR140W:T8010	7575433
TN 16NR140W:T8030	TN 16NR140W:T8030	6755170
TN 16NR140W-P1:T8030	TN 16NR140W-P1:T8030	6755568
TN 16NR150M:T8010	TN 16NR150M:T8010	7575410
TN 16NR150M:T8030	TN 16NR150M:T8030	6755191
TN 16NR150M-AL:HF7	TN 16NR150M-AL:HF7	7800257
TN 16NR150M-P1:T8030	TN 16NR150M-P1:T8030	6755569
TN 16NR150TR:T8030	TN 16NR150TR:T8030	6755336
TN 16NR160STACME:T8030	TN 16NR160STACME:T8030	7800287
TN 16NR160UN:T8030	TN 16NR160UN:T8030	6755310
TN 16NR160UN-P1:T8030	TN 16NR160UN-P1:T8030	6755570
TN 16NR160W:T8030	TN 16NR160W:T8030	6755252
TN 16NR160ZZ:T8330	TN 16NR160ZZ:T8330	6755103
TN 16NR175M:T8010	TN 16NR175M:T8010	7575411
TN 16NR175M:T8030	TN 16NR175M:T8030	6755192
TN 16NR175M-AL:HF7	TN 16NR175M-AL:HF7	7800258
TN 16NR180UN:T8030	TN 16NR180UN:T8030	6755311
TN 16NR180UN-P1:T8030	TN 16NR180UN-P1:T8030	6755571
TN 16NR185ZZ:T8330	TN 16NR185ZZ:T8330	6755104
TN 16NR190BSPT:T8030	TN 16NR190BSPT:T8030	7800311
TN 16NR190W:T8010	TN 16NR190W:T8010	7575434
TN 16NR190W:T8030	TN 16NR190W:T8030	6755253
TN 16NR200M:T8010	TN 16NR200M:T8010	7575412
TN 16NR200M:T8030	TN 16NR200M:T8030	6755193
TN 16NR200M-AL:HF7	TN 16NR200M-AL:HF7	7800259
TN 16NR200M-P1:T8030	TN 16NR200M-P1:T8030	6755572
TN 16NR200TR:T8030	TN 16NR200TR:T8030	6755337
TN 16NR200UN:T8010	TN 16NR200UN:T8010	7575426
TN 16NR200UN:T8030	TN 16NR200UN:T8030	6755312
TN 16NR200UN-P1:T8030	TN 16NR200UN-P1:T8030	6755573
TN 16NR200W:T8030	TN 16NR200W:T8030	6755254
TN 16NR215ZZ:T8330	TN 16NR215ZZ:T8330	6755105
TN 16NR240UN:T8030	TN 16NR240UN:T8030	6755313
TN 16NR240W:T8030	TN 16NR240W:T8030	7800268
TN 16NR250M:T8010	TN 16NR250M:T8010	7575413
TN 16NR250M:T8030	TN 16NR250M:T8030	6755194
TN 16NR250M-AL:HF7	TN 16NR250M-AL:HF7	7800260
TN 16NR250M-P1:T8030	TN 16NR250M-P1:T8030	6755574
TN 16NR260W:T8030	TN 16NR260W:T8030	7800264
TN 16NR265ZZ:T8330	TN 16NR265ZZ:T8330	6755106

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TN 16NR280BSPT:T8030	TN 16NR280BSPT:T8030	7800307
TN 16NR280UN:T8030	TN 16NR280UN:T8030	6755314
TN 16NR280W:T8030	TN 16NR280W:T8030	6755255
TN 16NR300M:T8010	TN 16NR300M:T8010	7575414
TN 16NR300M:T8030	TN 16NR300M:T8030	6755195
TN 16NR300M-AL:HF7	TN 16NR300M-AL:HF7	7800261
TN 16NR300M-P1:T8030	TN 16NR300M-P1:T8030	6755575
TN 16NR300TR:T8030	TN 16NR300TR:T8030	6755338
TN 16NR320UN:T8030	TN 16NR320UN:T8030	6755315
TN 16NR350M:T8030	TN 16NR350M:T8030	7800241
TN 16NRA55:T8030	TN 16NRA55:T8030	6755530
TN 16NRA60:T8010	TN 16NRA60:T8010	7575366
TN 16NRA60:T8030	TN 16NRA60:T8030	6755517
TN 16NRAG55:T8010	TN 16NRAG55:T8010	7575318
TN 16NRAG55:T8030	TN 16NRAG55:T8030	6755528
TN 16NRAG60:T8010	TN 16NRAG60:T8010	7575367
TN 16NRAG60:T8030	TN 16NRAG60:T8030	6755515
TN 16NRG55:T8030	TN 16NRG55:T8030	6755529
TN 16NRG60:T8010	TN 16NRG60:T8010	7575368
TN 16NRG60:T8030	TN 16NRG60:T8030	6755516
TN 16NR-R100:T8330	TN 16NR-R100:T8330	6755982
TN 22EL050ACME:T8030	TN 22EL050ACME:T8030	6755361
TN 22EL050UN:T8030	TN 22EL050UN:T8030	6755316
TN 22EL050W:T8030	TN 22EL050W:T8030	6755256
TN 22EL060ACME:T8030	TN 22EL060ACME:T8030	6755362
TN 22EL060RD:T8030	TN 22EL060RD:T8030	6755353
TN 22EL060UN:T8030	TN 22EL060UN:T8030	6755317
TN 22EL060W:T8030	TN 22EL060W:T8030	6755257
TN 22EL070UN:T8030	TN 22EL070UN:T8030	6755318
TN 22EL070W:T8030	TN 22EL070W:T8030	6755258
TN 22EL265ZZ:T8330	TN 22EL265ZZ:T8330	6755983
TN 22EL315ZZ:T8330	TN 22EL315ZZ:T8330	6755984
TN 22EL350M:T8030	TN 22EL350M:T8030	6755205
TN 22EL400M:T8030	TN 22EL400M:T8030	6755206
TN 22EL400TR:T8030	TN 22EL400TR:T8030	6755339
TN 22EL415ZZ:T8330	TN 22EL415ZZ:T8330	6755985
TN 22EL450M:T8030	TN 22EL450M:T8030	6755207
TN 22EL500M:T8030	TN 22EL500M:T8030	6755208
TN 22EL500TR:T8030	TN 22EL500TR:T8030	6755340
TN 22ELN55:T8030	TN 22ELN55:T8030	6755525
TN 22ELN60:T8030	TN 22ELN60:T8030	6755512
TN 22EL-R150:T8330	TN 22EL-R150:T8330	6755986
TN 22EN350-500M:T8030	TN 22EN350-500M:T8030	6755657
TN 22EN550-800M:T8030	TN 22EN550-800M:T8030	6755658
TN 22EN600TR:T8030	TN 22EN600TR:T8030	6755388
TN 22EN700TR:T8030	TN 22EN700TR:T8030	6755390
TN 22ER050ACME:T8030	TN 22ER050ACME:T8030	6755363
TN 22ER050UN:T8030	TN 22ER050UN:T8030	6755319
TN 22ER050W:T8030	TN 22ER050W:T8030	6755259
TN 22ER060ACME:T8030	TN 22ER060ACME:T8030	6755364
TN 22ER060RD:T8030	TN 22ER060RD:T8030	6755354
TN 22ER060UN:T8030	TN 22ER060UN:T8030	6755320
TN 22ER060W:T8030	TN 22ER060W:T8030	6755260
TN 22ER070UN:T8030	TN 22ER070UN:T8030	6755321
TN 22ER070W:T8030	TN 22ER070W:T8030	6755261
TN 22ER265ZZ:T8330	TN 22ER265ZZ:T8330	6755987
TN 22ER315ZZ:T8330	TN 22ER315ZZ:T8330	6755988
TN 22ER350M:T8010	TN 22ER350M:T8010	7575387
TN 22ER350M:T8030	TN 22ER350M:T8030	6755209
TN 22ER400M:T8010	TN 22ER400M:T8010	7575388
TN 22ER400M:T8030	TN 22ER400M:T8030	6755210
TN 22ER400TR:T8030	TN 22ER400TR:T8030	6755341
TN 22ER415ZZ:T8330	TN 22ER415ZZ:T8330	6755989
TN 22ER450M:T8010	TN 22ER450M:T8010	7575389
TN 22ER450M:T8030	TN 22ER450M:T8030	6755211
TN 22ER500M:T8010	TN 22ER500M:T8010	7575390
TN 22ER500M:T8030	TN 22ER500M:T8030	6755212
TN 22ER500TR:T8030	TN 22ER500TR:T8030	6755342
TN 22ERN55:T8010	TN 22ERN55:T8010	7575317
TN 22ERN55:T8030	TN 22ERN55:T8030	6755524
TN 22ERN60:T8010	TN 22ERN60:T8010	7575363
TN 22ERN60:T8030	TN 22ERN60:T8030	6755511
TN 22ER-R150:T8330	TN 22ER-R150:T8330	6755990
TN 22NL050ACME:T8030	TN 22NL050ACME:T8030	6755365
TN 22NL050W:T8030	TN 22NL050W:T8030	6755262
TN 22NL060ACME:T8030	TN 22NL060ACME:T8030	7800284

ANSI	ISO	EDP
TN 22NL060RD:T8030	TN 22NL060RD:T8030	6755355
TN 22NL060UN:T8030	TN 22NL060UN:T8030	6755322
TN 22NL060W:T8030	TN 22NL060W:T8030	6755263
TN 22NL070UN:T8030	TN 22NL070UN:T8030	6755323
TN 22NL070W:T8030	TN 22NL070W:T8030	6755264
TN 22NL265ZZ:T8330	TN 22NL265ZZ:T8330	6755991
TN 22NL315ZZ:T8330	TN 22NL315ZZ:T8330	6755992
TN 22NL350M:T8030	TN 22NL350M:T8030	6755213
TN 22NL400M:T8030	TN 22NL400M:T8030	6755214
TN 22NL400TR:T8030	TN 22NL400TR:T8030	6755343
TN 22NL415ZZ:T8330	TN 22NL415ZZ:T8330	6755993
TN 22NL500M:T8030	TN 22NL500M:T8030	6755215
TN 22NL500TR:T8030	TN 22NL500TR:T8030	6755344
TN 22NLN55:T8030	TN 22NLN55:T8030	6755533
TN 22NLN60:T8030	TN 22NLN60:T8030	6755520
TN 22NL-R150:T8330	TN 22NL-R150:T8330	6755994
TN 22NN350-500M:T8030	TN 22NN350-500M:T8030	6755659
TN 22NN550-800M:T8030	TN 22NN550-800M:T8030	6755660
TN 22NN600TR:T8030	TN 22NN600TR:T8030	6755389
TN 22NN700TR:T8030	TN 22NN700TR:T8030	6755391
TN 22NR050ACME:T8030	TN 22NR050ACME:T8030	6755366
TN 22NR050UN:T8030	TN 22NR050UN:T8030	6755324
TN 22NR050W:T8030	TN 22NR050W:T8030	6755265
TN 22NR060ACME:T8030	TN 22NR060ACME:T8030	6755174
TN 22NR060RD:T8030	TN 22NR060RD:T8030	6755356
TN 22NR060UN:T8030	TN 22NR060UN:T8030	6755325
TN 22NR060W:T8030	TN 22NR060W:T8030	6755266
TN 22NR070UN:T8030	TN 22NR070UN:T8030	6755326
TN 22NR070W:T8030	TN 22NR070W:T8030	6755267
TN 22NR265ZZ:T8330	TN 22NR265ZZ:T8330	6755995
TN 22NR315ZZ:T8330	TN 22NR315ZZ:T8330	6755996
TN 22NR350M:T8010	TN 22NR350M:T8010	7575415
TN 22NR350M:T8030	TN 22NR350M:T8030	6755216
TN 22NR400M:T8010	TN 22NR400M:T8010	7575416
TN 22NR400M:T8030	TN 22NR400M:T8030	6755217
TN 22NR400TR:T8030	TN 22NR400TR:T8030	6755345
TN 22NR415ZZ:T8330	TN 22NR415ZZ:T8330	6755997
TN 22NR450M:T8010	TN 22NR450M:T8010	7575417
TN 22NR450M:T8030	TN 22NR450M:T8030	6755218
TN 22NR500M:T8010	TN 22NR500M:T8010	7575418
TN 22NR500M:T8030	TN 22NR500M:T8030	6755219
TN 22NR500TR:T8030	TN 22NR500TR:T8030	6755346
TN 22NRN55:T8030	TN 22NRN55:T8030	6755532
TN 22NRN60:T8010	TN 22NRN60:T8010	7575369
TN 22NRN60:T8030	TN 22NRN60:T8030	6755519
TN 22NR-R150:T8330	TN 22NR-R150:T8330	6755998
TNG 332 T00420:TC100	TNGN 160408 T01020:TC100	6755422
TNG 333 T00420:TC100	TNGN 160412 T01020:TC100	6755411
TNG 352 T00820:TC100	TNGN 160708 T02020:TC100	6755449
TNGA 332 T00420:TC100	TNGA 160408 T01020:TC100	6755446
TNGA 332S00420:TB310	TNGA 160408S01020C:TB310	6755928
TNGA 333 T00420:TC100	TNGA 160412 T01020:TC100	6755421
TNGJ 220720-PF-S01:T9315	TNGJ 220720-PF-S01:T9315	7347229
TNGJ 220720-PF-S02:T7325	TNGJ 220720-PF-S02:T7325	7347230
TNGJ 220720-PM-S01:T9315	TNGJ 220720-PM-S01:T9315	7347231
TNGJ 220720-PM-S02:T7325	TNGJ 220720-PM-S02:T7325	7347232
TNGJ 220720-PM-S02:T9226	TNGJ 220720-PM-S02:T9226	6931833
TNGJ 220720-PM-S02:T9315	TNGJ 220720-PM-S02:T9315	7347233
TNGJ 281025-PF-S01:6630	TNGJ 281025-PF-S01:6630	6752812
TNGJ 281025-PF-S01:T9226	TNGJ 281025-PF-S01:T9226	6931834
TNGJ 281025-PF-S01:T9315	TNGJ 281025-PF-S01:T9315	7347234
TNGJ 281025-PF-S02:T7325	TNGJ 281025-PF-S02:T7325	7347235
TNGJ 281025-PF-S03:T7325	TNGJ 281025-PF-S03:T7325	7347236
TNGX 100402SR-F:M8330	TNGX 100402SR-F:M8330	7451058
TNGX 100402SR-F:M8340	TNGX 100402SR-F:M8340	7178538
TNGX 100404FR-FA:HF7	TNGX 100404FR-FA:HF7	7178567
TNGX 100404FR-FA:M0315	TNGX 100404FR-FA:M0315	7178569
TNGX 100404SR-F:8215	TNGX 100404SR-F:8215	7178552
TNGX 100404SR-F:M6330	TNGX 100404SR-F:M6330	7342921
TNGX 100404SR-F:M8330	TNGX 100404SR-F:M8330	7451059
TNGX 100404SR-F:M8340	TNGX 100404SR-F:M8340	7178551
TNGX 100404SR-F:M9340	TNGX 100404SR-F:M9340	7178550
TNGX 100404SR-M:8215	TNGX 100404SR-M:8215	7178558
TNGX 100404SR-M:M6330	TNGX 100404SR-M:M6330	7601345
TNGX 100404SR-M:M8330	TNGX 100404SR-M:M8330	7451100
TNGX 100404SR-M:M8340	TNGX 100404SR-M:M8340	7178560
TNGX 100404SR-M:M8345	TNGX 100404SR-M:M8345	7216248
TNGX 100404SR-M:M9340	TNGX 100404SR-M:M9340	7178561
TNGX 100408FR-FA:HF7	TNGX 100408FR-FA:HF7	7178568
TNGX 100408FR-FA:M0315	TNGX 100408FR-FA:M0315	7178570
TNGX 100408SR-F:8215	TNGX 100408SR-F:8215	7178557
TNGX 100408SR-F:M6330	TNGX 100408SR-F:M6330	7342922
TNGX 100408SR-F:M8330	TNGX 100408SR-F:M8330	7451101
TNGX 100408SR-F:M8340	TNGX 100408SR-F:M8340	7178554
TNGX 100408SR-F:M9340	TNGX 100408SR-F:M9340	7178556
TNGX 100408SR-M:8215	TNGX 100408SR-M:8215	7178562
TNGX 100408SR-M:M6330	TNGX 100408SR-M:M6330	7342923
TNGX 100408SR-M:M8310	TNGX 100408SR-M:M8310	7178565
TNGX 100408SR-M:M8330	TNGX 100408SR-M:M8330	7451102
TNGX 100408SR-M:M8340	TNGX 100408SR-M:M8340	7178564
TNGX 100408SR-M:M8345	TNGX 100408SR-M:M8345	7216249
TNGX 100408SR-M:M9340	TNGX 100408SR-M:M9340	7178566
TNGX 100412SR-M:M8330	TNGX 100412SR-M:M8330	7799438
TNGX 100412SR-M:M8340	TNGX 100412SR-M:M8340	7799439
TNGX 100416SR-M:M8310	TNGX 100416SR-M:M8310	7799480
TNGX 100416SR-M:M8330	TNGX 100416SR-M:M8330	7799481
TNGX 100416SR-M:M8340	TNGX 100416SR-M:M8340	7799482
TNJF 1204ANEN:M5315	TNJF 1204ANEN:M5315	6754630
TNJF 1204ANEN:M8330	TNJF 1204ANEN:M8330	7451103
TNMA 331:T5305	TNMA 160404:T5305	6755885
TNMA 331:T5315	TNMA 160404:T5315	6922800
TNMA 332:T5305	TNMA 160408:T5305	6755886
TNMA 332:T5315	TNMA 160408:T5315	6755784
TNMA 332:T6310	TNMA 160408:T6310	6922859
TNMA 332S:T5305	TNMA 160408S:T5305	6755887
TNMA 333:T5305	TNMA 160412:T5305	6755888
TNMA 333:T5315	TNMA 160412:T5315	6922801
TNMA 333:T6310	TNMA 160412:T6310	6922860
TNMA 432:T5305	TNMA 220408:T5305	6755889
TNMA 432:T5315	TNMA 220408:T5315	6922802
TNMA 432:T6310	TNMA 220408:T6310	6922861
TNMA 433:T5305	TNMA 220412:T5305	6755890
TNMA 433:T5315	TNMA 220412:T5315	6922803
TNMG 331-FF:T7325	TNMG 160404E-FF:T7325	7156505
TNMG 331-FF:T8315	TNMG 160404E-FF:T8315	6753624
TNMG 331-FF:T8330	TNMG 160404E-FF:T8330	6922782
TNMG 331-FM:T7325	TNMG 160404E-FM:T7325	7156376
TNMG 331-FM:T7335	TNMG 160404E-FM:T7335	6754820
TNMG 331-FM:T8315	TNMG 160404E-FM:T8315	6753625
TNMG 331-FM:T8330	TNMG 160404E-FM:T8330	6754192
TNMG 331-FM:T9310	TNMG 160404E-FM:T9310	6755056
TNMG 331-FM:T9315	TNMG 160404E-FM:T9315	6754408
TNMG 331-FM:T9325	TNMG 160404E-FM:T9325	6754105
TNMG 331-FM:TT310	TNMG 160404E-FM:TT310	6798571
TNMG 331L-SI:6630	TNMG 160404EL-SI:6630	6752015
TNMG 331L-SI:T7325	TNMG 160404EL-SI:T7325	7156377
TNMG 331L-SI:T7335	TNMG 160404EL-SI:T7335	6754821
TNMG 331L-SI:T8315	TNMG 160404EL-SI:T8315	6922736
TNMG 331L-SI:T8330	TNMG 160404EL-SI:T8330	6754368
TNMG 331L-SI:T9325	TNMG 160404EL-SI:T9325	6754106
TNMG 331-M:T5315	TNMG 160404E-M:T5315	6755697
TNMG 331-M:T9315	TNMG 160404E-M:T9315	6754409
TNMG 331-M:T9325	TNMG 160404E-M:T9325	6754107
TNMG 331-M:T9335	TNMG 160404E-M:T9335	6754976
TNMG 331-NF:HF7	TNMG 160404E-NF:HF7	6834704
TNMG 331-NF:T6310	TNMG 160404E-NF:T6310	6922845
TNMG 331-NF:T7325	TNMG 160404E-NF:T7325	7156378
TNMG 331-NF:T7335	TNMG 160404E-NF:T7335	6834705
TNMG 331-NF:T8315	TNMG 160404E-NF:T8315	6834706
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TNMG 331-NF:T9325	TNMG 160404E-NF:T9325	6834709
TNMG 331-NM:T7325	TNMG 160404E-NM:T7325	7156379
TNMG 331-NM:T7335	TNMG 160404E-NM:T7335	6754822
TNMG 331-NM:T8315	TNMG 160404E-NM:T8315	6922675
TNMG 331-NM:T8330	TNMG 160404E-NM:T8330	6755114
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TNMG 331-NMR:T6310	TNMG 160404E-NMR:T6310	7454470
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TNMG 331-NMR:T7335	TNMG 160404E-NMR:T7335	7038104
TNMG 331-NMR:T8330	TNMG 160404E-NMR:T8330	7038101
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TNMG 331-NMR:T9325	TNMG 160404E-NMR:T9325	7038103
TNMG 331R-SI:6630	TNMG 160404ER-SI:6630	6751901
TNMG 331R-SI:T7325	TNMG 160404ER-SI:T7325	7156381
TNMG 331R-SI:T7335	TNMG 160404ER-SI:T7335	6754823
TNMG 331R-SI:T8315	TNMG 160404ER-SI:T8315	6922737
TNMG 331R-SI:T8330	TNMG 160404ER-SI:T8330	6754369
TNMG 331R-SI:T9325	TNMG 160404ER-SI:T9325	6753846
TNMG 331-SF:H07	TNMG 160404E-SF:H07	6921017
TNMG 331-SF:T6310	TNMG 160404E-SF:T6310	6919798
TNMG 331-SF:T7325	TNMG 160404E-SF:T7325	7156382
TNMG 331-SF:T7335	TNMG 160404E-SF:T7335	6919799
TNMG 331-SF:T8315	TNMG 160404E-SF:T8315	6919800
TNMG 331-SF:T8330	TNMG 160404E-SF:T8330	6919801
TNMG 331-SF:T9315	TNMG 160404E-SF:T9315	7035066
TNMG 331-SF:T9325	TNMG 160404E-SF:T9325	7035067
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TNMG 332-FF:T7325	TNMG 160408E-FF:T7325	7156506
TNMG 332-FF:T8315	TNMG 160408E-FF:T8315	6753626
TNMG 332-FM:T7325	TNMG 160408E-FM:T7325	7156384
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TNMG 332-FM:TT310	TNMG 160408E-FM:TT310	6798572
TNMG 332-KR:T5305	TNMG 160408E-KR:T5305	6755892
TNMG 332-KR:T5315	TNMG 160408E-KR:T5315	6755698
TNMG 332L-SI:6630	TNMG 160408EL-SI:6630	6752016
TNMG 332L-SI:T7325	TNMG 160408EL-SI:T7325	7156385
TNMG 332L-SI:T7335	TNMG 160408EL-SI:T7335	6754825
TNMG 332L-SI:T8315	TNMG 160408EL-SI:T8315	6922738
TNMG 332L-SI:T8330	TNMG 160408EL-SI:T8330	6754370
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TNMG 332-M:6630	TNMG 160408E-M:6630	6751551
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TNMG 332-M:T9310	TNMG 160408E-M:T9310	6755058
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TNMG 332-M:T9325	TNMG 160408E-M:T9325	6753847
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TNMG 332-NF:T7325	TNMG 160408E-NF:T7325	7156386
TNMG 332-NF:T7335	TNMG 160408E-NF:T7335	6834711
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TNMG 332-NF:T9315	TNMG 160408E-NF:T9315	6834714
TNMG 332-NF:T9325	TNMG 160408E-NF:T9325	6834715
TNMG 332-NM:T7325	TNMG 160408E-NM:T7325	7156387
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TNMG 332-NM:T8330	TNMG 160408E-NM:T8330	6755115
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TNMG 332-NM:T9325	TNMG 160408E-NM:T9325	6754113
TNMG 332-NMR:T6310	TNMG 160408E-NMR:T6310	7454471
TNMG 332-NMR:T7325	TNMG 160408E-NMR:T7325	7156388
TNMG 332-NMR:T7335	TNMG 160408E-NMR:T7335	7038108
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TNMG 332-NMR:T9315	TNMG 160408E-NMR:T9315	7038106
TNMG 332-NMR:T9325	TNMG 160408E-NMR:T9325	7038107
TNMG 332-R:T5305	TNMG 160408E-R:T5305	6922763
TNMG 332-R:T5315	TNMG 160408E-R:T5315	6922764
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TNMG 332-R:T9325	TNMG 160408E-R:T9325	6753848
TNMG 332-R:T9335	TNMG 160408E-R:T9335	6754978
TNMG 332-RM:T5305	TNMG 160408E-RM:T5305	6755894
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TNMG 332-RM:T7325	TNMG 160408E-RM:T7325	7156389
TNMG 332-RM:T7335	TNMG 160408E-RM:T7335	6922707

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TNMG 332-RM:T9325	TNMG 160408E-RM:T9325	6754114
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TNMG 332R-SI:6630	TNMG 160408ER-SI:6630	6751902
TNMG 332R-SI:T7325	TNMG 160408ER-SI:T7325	7156390
TNMG 332R-SI:T7335	TNMG 160408ER-SI:T7335	6754827
TNMG 332R-SI:T8315	TNMG 160408ER-SI:T8315	6922739
TNMG 332R-SI:T8330	TNMG 160408ER-SI:T8330	6754371
TNMG 332R-SI:T9325	TNMG 160408ER-SI:T9325	6754115
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TNMG 332-SF:T7335	TNMG 160408E-SF:T7335	6919804
TNMG 332-SF:T8315	TNMG 160408E-SF:T8315	6919805
TNMG 332-SF:T8330	TNMG 160408E-SF:T8330	6919806
TNMG 332-SF:T9315	TNMG 160408E-SF:T9315	7035068
TNMG 332-SF:T9325	TNMG 160408E-SF:T9325	7035069
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TNMG 332-SM:T9315	TNMG 160408E-SM:T9315	6915862
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TNMG 333-FM:T7325	TNMG 160412E-FM:T7325	7156393
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TNMG 333-M:T9325	TNMG 160412E-M:T9325	6754117
TNMG 333-M:T9335	TNMG 160412E-M:T9335	6754980
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TNMG 333-R:T9315	TNMG 160412E-R:T9315	6922924
TNMG 333-R:T9325	TNMG 160412E-R:T9325	6754118
TNMG 333-R:T9335	TNMG 160412E-R:T9335	6754981
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TNMG 333-RM:T5315	TNMG 160412E-RM:T5315	6755702
TNMG 333-RM:T7325	TNMG 160412E-RM:T7325	7156395
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TNMG 333-RM:T9335	TNMG 160412E-RM:T9335	6754982
TNMG 333-SF:T6310	TNMG 160412E-SF:T6310	7763104
TNMG 333-SF:T7325	TNMG 160412E-SF:T7325	7156514
TNMG 333-SF:T9325	TNMG 160412E-SF:T9325	7763105
TNMG 333-SM:T6310	TNMG 160412E-SM:T6310	7763106
TNMG 333-SM:T7325	TNMG 160412E-SM:T7325	7156396
TNMG 333-SM:T7335	TNMG 160412E-SM:T7335	6915864
TNMG 333-SM:T9325	TNMG 160412E-SM:T9325	6915865
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TNMG 431-FM:T9325	TNMG 220404E-FM:T9325	6926950
TNMG 431-SF:T6310	TNMG 220404E-SF:T6310	7763107
TNMG 431-SF:T7325	TNMG 220404E-SF:T7325	7763108
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TNMG 431-SM:T7325	TNMG 220404E-SM:T7325	7156397
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TNMG 431-SM:T9325	TNMG 220404E-SM:T9325	6915868
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TNMG 432-M:T5305	TNMG 220408E-M:T5305	6755895
TNMG 432-M:T5315	TNMG 220408E-M:T5315	6755703
TNMG 432-M:T9310	TNMG 220408E-M:T9310	6755060
TNMG 432-M:T9315	TNMG 220408E-M:T9315	6754415
TNMG 432-M:T9325	TNMG 220408E-M:T9325	6753850
TNMG 432-M:T9335	TNMG 220408E-M:T9335	6754983

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TNMG 432-NM:T8330	TNMG 220408E-NM:T8330	6754209
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TNMG 432-NM:T9325	TNMG 220408E-NM:T9325	6754119
TNMG 432-NMR:T6310	TNMG 220408E-NMR:T6310	7454472
TNMG 432-NMR:T7325	TNMG 220408E-NMR:T7325	7156399
TNMG 432-NMR:T7335	TNMG 220408E-NMR:T7335	7038114
TNMG 432-NMR:T8330	TNMG 220408E-NMR:T8330	7038111
TNMG 432-NMR:T9315	TNMG 220408E-NMR:T9315	7038112
TNMG 432-NMR:T9325	TNMG 220408E-NMR:T9325	7038113
TNMG 432-R:T9315	TNMG 220408E-R:T9315	6922926
TNMG 432-R:T9325	TNMG 220408E-R:T9325	6754120
TNMG 432-R:T9335	TNMG 220408E-R:T9335	6922766
TNMG 432-RM:T5305	TNMG 220408E-RM:T5305	6755896
TNMG 432-RM:T5315	TNMG 220408E-RM:T5315	6755704
TNMG 432-RM:T7325	TNMG 220408E-RM:T7325	7156400
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TNMG 432-SM:T9325	TNMG 220408E-SM:T9325	6915873
TNMG 433-M:6630	TNMG 220412E-M:6630	6751553
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TNMG 433-M:T9315	TNMG 220412E-M:T9315	6754417
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TNMG 433-NM:T7335	TNMG 220412E-NM:T7335	6754829
TNMG 433-NM:T9325	TNMG 220412E-NM:T9325	6754137
TNMG 433-NMR:T6310	TNMG 220412E-NMR:T6310	7454473
TNMG 433-NMR:T7325	TNMG 220412E-NMR:T7325	7156403
TNMG 433-NMR:T9315	TNMG 220412E-NMR:T9315	7038115
TNMG 433-NMR:T9325	TNMG 220412E-NMR:T9325	7038116
TNMG 433-R:T9310	TNMG 220412E-R:T9310	6922959
TNMG 433-R:T9315	TNMG 220412E-R:T9315	6922927
TNMG 433-R:T9325	TNMG 220412E-R:T9325	6754141
TNMG 433-RM:T5305	TNMG 220412E-RM:T5305	6755898
TNMG 433-RM:T5315	TNMG 220412E-RM:T5315	6755706
TNMG 433-RM:T7325	TNMG 220412E-RM:T7325	7156404
TNMG 433-RM:T7335	TNMG 220412E-RM:T7335	6922710
TNMG 433-RM:T9315	TNMG 220412E-RM:T9315	6754418
TNMG 433-RM:T9325	TNMG 220412E-RM:T9325	6754143
TNMG 433-RM:T9335	TNMG 220412E-RM:T9335	6754986
TNMG 433-SF:T6310	TNMG 220412E-SF:T6310	7763110
TNMG 433-SF:T7325	TNMG 220412E-SF:T7325	7763111
TNMG 433-SF:T9325	TNMG 220412E-SF:T9325	7763112
TNMG 433-SM:T6310	TNMG 220412E-SM:T6310	7763113
TNMG 433-SM:T7325	TNMG 220412E-SM:T7325	7156405
TNMG 433-SM:T7335	TNMG 220412E-SM:T7335	6915874
TNMG 433-SM:T9315	TNMG 220412E-SM:T9315	6915875
TNMG 433-SM:T9325	TNMG 220412E-SM:T9325	6915876
TNMG 434-R:T9315	TNMG 220416E-R:T9315	6922928
TNMG 434-R:T9325	TNMG 220416E-R:T9325	6754144
TNMG 434-RM:T7325	TNMG 220416E-RM:T7325	7156406
TNMG 434-RM:T9315	TNMG 220416E-RM:T9315	6754419
TNMG 434-RM:T9325	TNMG 220416E-RM:T9325	6754176
TNMG 434-RM:T9335	TNMG 220416E-RM:T9335	6754987
TNMG 543-RM:T7325	TNMG 270612E-RM:T7325	7156517
TNMG 543-RM:T9325	TNMG 270612E-RM:T9325	6926955
TNMG 544-RM:T7325	TNMG 270616E-RM:T7325	7156407
TNMG 544-RM:T9226	TNMG 270616E-RM:T9226	6931886
TNMG 544-RM:T9315	TNMG 270616E-RM:T9315	6754534
TNMG 544-RM:T9325	TNMG 270616E-RM:T9325	6754177
TNMG 544-RM:T9335	TNMG 270616E-RM:T9335	6754988
TNMG 546-RM:T7325	TNMG 270624E-RM:T7325	7156408

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TNMG 548-RM:T9335	TNMG 270632E-RM:T9335	6926956
TNMG 666-RM:T9226	TNMG 330924E-RM:T9226	6931888
TNMG 666-RM:T9335	TNMG 330924E-RM:T9335	6754990
TNMM 332-DR:T9325	TNMM 160408E-DR:T9325	6754164
TNMM 332-NR2:T9325	TNMM 160408E-NR2:T9325	6754165
TNMM 332-OR:T9315	TNMM 160408E-OR:T9315	6754420
TNMM 332-OR:T9325	TNMM 160408E-OR:T9325	6754166
TNMM 333-OR:T9325	TNMM 160412E-OR:T9325	6754167
TNMM 432-DR:T9325	TNMM 220408E-DR:T9325	6754168
TNMM 432-DR:T9335	TNMM 220408E-DR:T9335	6754991
TNMM 432-NR2:T7325	TNMM 220408E-NR2:T7325	7156410
TNMM 432-NR2:T9325	TNMM 220408E-NR2:T9325	6754169
TNMM 432-OR:T9315	TNMM 220408E-OR:T9315	6754422
TNMM 432-OR:T9325	TNMM 220408E-OR:T9325	6754170
TNMM 432-OR:T9335	TNMM 220408E-OR:T9335	6754992
TNMM 433-DR:T9315	TNMM 220412E-DR:T9315	6922930
TNMM 433-DR:T9325	TNMM 220412E-DR:T9325	6754171
TNMM 433-DR:T9335	TNMM 220412E-DR:T9335	6754993
TNMM 433L:T9335	TNMM 220412EL:T9335	6754994
TNMM 433-NR2:T7325	TNMM 220412E-NR2:T7325	7156411
TNMM 433-NR2:T8330	TNMM 220412E-NR2:T8330	6755145
TNMM 433-NR2:T9325	TNMM 220412E-NR2:T9325	6754172
TNMM 433-OR:T9325	TNMM 220412E-OR:T9325	6754173
TNMM 433-OR:T9335	TNMM 220412E-OR:T9335	6754995
TNMM 433R:T9335	TNMM 220412ER:T9335	6754996
TNMM 434-DR:T9325	TNMM 220416E-DR:T9325	6754174
TNMM 544-DR:T9325	TNMM 270616E-DR:T9325	6754179
TNMM 544-DR:T9335	TNMM 270616E-DR:T9335	6754997
TNMM 544-HR:T9325	TNMM 270616E-HR:T9325	6754180
TNMM 544-HR:T9335	TNMM 270616E-HR:T9335	6754998
TNMM 546-HR:T9226	TNMM 270624E-HR:T9226	6931891
TPCN 32PDSN:M8330	TPCN 1603PDSN:M8330	7451104
TPCN 32PDSN:M8340	TPCN 1603PDSN:M8340	6803605
TPG 221 T00420:TC100	TPGN 110304 T01020:TC100	6755450
TPG 222 T00420:TC100	TPGN 110308 T01020:TC100	6755423
TPG 321 T00420:TC100	TPGN 160304 T01020:TC100	6755424
TPG 322 T00420:TC100	TPGN 160308 T01020:TC100	6755425
TPG 323 T00420:TC100	TPGN 160312 T01020:TC100	6755426
TPGX 1.81.51FL-JQ:TT010	TPGX 090204FL-JQ:TT010	7080635
TPGX 21.51FL-JQ:TT010	TPGX 110204FL-JQ:TT010	7080636
TPGX 21.51FR-JQ:TT010	TPGX 110204FR-JQ:TT010	7080637
TPGX 32.51FL-JR:TT010	TPGX 16T304FL-JR:TT010	7080632
TPGX1.81.50.5FL-JZ:TT010	TPGX 090202FL-JZ:TT010	7080633
TPGX1.81.50.5FR-JZ:TT010	TPGX 090202FR-JZ:TT010	7080634
TPKN 32PDER:M8330	TPKN 1603PDER:M8330	7451105
TPKN 32PDER:M8340	TPKN 1603PDER:M8340	6803606
TPKN 32PDSR:M8330	TPKN 1603PDSR:M8330	7451106
TPKN 32PDSR:M8340	TPKN 1603PDSR:M8340	6803607
TPKN 32PDSR:S26	TPKN 1603PDSR:S26	6751622
TPKN 43PDER:8215	TPKN 2204PDER:8215	6753422
TPKN 43PDER:M8330	TPKN 2204PDER:M8330	7451107
TPKN 43PDER:M8340	TPKN 2204PDER:M8340	6803608
TPKN 43PDSR:8230	TPKN 2204PDSR:8230	6752577
TPKN 43PDSR:H10	TPKN 2204PDSR:H10	6751654
TPKN 43PDSR:M5315	TPKN 2204PDSR:M5315	6835888
TPKN 43PDSR:M8310	TPKN 2204PDSR:M8310	7178578
TPKN 43PDSR:M8330	TPKN 2204PDSR:M8330	7451108
TPKN 43PDSR:M8340	TPKN 2204PDSR:M8340	6803609
TPKN 43PDSR:M9325	TPKN 2204PDSR:M9325	6754581
TPKN 43PDSR:S26	TPKN 2204PDSR:S26	6751623
TPKN 43PDSR:S45	TPKN 2204PDSR:S45	6751655
TPKR 32PDSR:M8330	TPKR 1603PDSR:M8330	7451109
TPKR 32PDSR:M8340	TPKR 1603PDSR:M8340	6803610
TPKR 43PDSR:M8330	TPKR 2204PDSR:M8330	7451110
TPKR 43PDSR:M8340	TPKR 2204PDSR:M8340	6803611
TPKR 43PDSR:M9325	TPKR 2204PDSR:M9325	6754582
TPKR 43PDSR:M9340	TPKR 2204PDSR:M9340	6754607
TPMR 221-46:6640	TPMR 110304E-46:6640	6751745
TPMR 221-46:T9325	TPMR 110304E-46:T9325	6754404
TPMR 221-46:T9335	TPMR 110304E-46:T9335	6755002
TPMR 221-PF2:TT010	TPMR 110304-PF2:TT010	7168745
TPMR 222-46:6640	TPMR 110308E-46:6640	6751746
TPMR 222-46:T9325	TPMR 110308E-46:T9325	6754405
TPMR 222-46:T9335	TPMR 110308E-46:T9335	6755003

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TPMR 321-47:6630	TPMR 160304E-47:6630	6751691
TPMR 321-47:6640	TPMR 160304E-47:6640	6751692
TPMR 321-47:T9325	TPMR 160304E-47:T9325	6753851
TPMR 321-47:T9335	TPMR 160304E-47:T9335	6755004
TPMR 321-PF2:TT010	TPMR 160304-PF2:TT010	7168746
TPMR 322-47:6630	TPMR 160308E-47:6630	6751693
TPMR 322-47:6640	TPMR 160308E-47:6640	6751694
TPMR 322-47:T9325	TPMR 160308E-47:T9325	6753852
TPMR 322-47:T9335	TPMR 160308E-47:T9335	6755005
TPMR 322-61:T9325	TPMR 160308E-61:T9325	6754406
TPMR 322-61:T9335	TPMR 160308E-61:T9335	6755006
TPMR 323-47:T9325	TPMR 160312E-47:T9325	6754407
TPMR 323-47:T9335	TPMR 160312E-47:T9335	6755007
TPU 221:6640	TPUN 110304:6640	6751554
TPU 221:H10	TPUN 110304:H10	6751651
TPU 221:M8330	TPUN 110304:M8330	7451111
TPU 222:6640	TPUN 110308:6640	6751555
TPU 222:M8330	TPUN 110308:M8330	7451112
TPU 321:6640	TPUN 160304:6640	6751560
TPU 321:8215	TPUN 160304:8215	6753423
TPU 321:H10	TPUN 160304:H10	6751783
TPU 321:M8330	TPUN 160304:M8330	7451113
TPU 321:S26	TPUN 160304:S26	6751784
TPU 322:6640	TPUN 160308:6640	6751583
TPU 322:8215	TPUN 160308:8215	6753424
TPU 322:H10	TPUN 160308:H10	6751785
TPU 322:M8330	TPUN 160308:M8330	7451114
TPU 322:S26	TPUN 160308:S26	6751786
TPU 323:6640	TPUN 160312:6640	6751567
TPU 323:H10	TPUN 160312:H10	6751652
TPU 323:M8330	TPUN 160312:M8330	7451115
TPU 432:6640	TPUN 220408:6640	6751571
TPU 432:8215	TPUN 220408:8215	6753425
TPU 432:H10	TPUN 220408:H10	6751653
TPU 432:M8330	TPUN 220408:M8330	7451116
TPU 432:S26	TPUN 220408:S26	6751788
TPU 433:6640	TPUN 220412:6640	6751572
TPU 433:H10	TPUN 220412:H10	6751789
TPU 433:M8330	TPUN 220412:M8330	7451117
TPU 433:S26	TPUN 220412:S26	6751790
TPU 544S:6640	TPUN 270616S:6640	6751573
TPU 645S:6640	TPUN 330620S:6640	6751574
VBGW 331S00420:TB310	VBGW 160404S01020B:TB310	6755929
VBGW 332S00420:TB310	VBGW 160408S01020B:TB310	6755930
VBMT 21.50.5-UR:TT310	VBMT 110202E-UR:TT310	6756277
VBMT 21.51-UR:T7325	VBMT 110204E-UR:T7325	7156412
VBMT 21.51-UR:T8330	VBMT 110204E-UR:T8330	6754221
VBMT 21.51-UR:T9315	VBMT 110204E-UR:T9315	6754473
VBMT 21.51-UR:T9325	VBMT 110204E-UR:T9325	6754425
VBMT 21.51-UR:TT310	VBMT 110204E-UR:TT310	6756264
VBMT 220.5-FM:T7325	VBMT 110302E-FM:T7325	7156413
VBMT 220.5-FM:T8315	VBMT 110302E-FM:T8315	6753628
VBMT 220.5-FM:T8330	VBMT 110302E-FM:T8330	6753652
VBMT 220.5-FM:T9325	VBMT 110302E-FM:T9325	6754426
VBMT 221-FM:T7325	VBMT 110304E-FM:T7325	7156414
VBMT 221-FM:T7335	VBMT 110304E-FM:T7335	6754830
VBMT 221-FM:T8315	VBMT 110304E-FM:T8315	6753629
VBMT 221-FM:T8330	VBMT 110304E-FM:T8330	6753653
VBMT 221-FM:T9315	VBMT 110304E-FM:T9315	6754474
VBMT 221-FM:T9325	VBMT 110304E-FM:T9325	6754427
VBMT 222-FM:T7325	VBMT 110308E-FM:T7325	7156415
VBMT 222-FM:T8330	VBMT 110308E-FM:T8330	6753654
VBMT 222-FM:T9315	VBMT 110308E-FM:T9315	6754475
VBMT 222-FM:T9325	VBMT 110308E-FM:T9325	6754428
VBMT 330.5-FM:T7325	VBMT 160402E-FM:T7325	7156416
VBMT 330.5-FM:T8330	VBMT 160402E-FM:T8330	6753655
VBMT 330.5-FM:T9315	VBMT 160402E-FM:T9315	6922931
VBMT 330.5-FM:T9325	VBMT 160402E-FM:T9325	6754429
VBMT 330.5-UR:T8330	VBMT 160402E-UR:T8330	6754222
VBMT 331-FF2:T7325	VBMT 160404E-FF2:T7325	7156779
VBMT 331-FF2:T8330	VBMT 160404E-FF2:T8330	7156780
VBMT 331-FF2:T9315	VBMT 160404E-FF2:T9315	7156781
VBMT 331-FF2:T9325	VBMT 160404E-FF2:T9325	7156782
VBMT 331-FF2:T9335	VBMT 160404E-FF2:T9335	7156783
VBMT 331-FM:T5315	VBMT 160404E-FM:T5315	6755709
VBMT 331-FM:T7325	VBMT 160404E-FM:T7325	7156417
VBMT 331-FM:T7335	VBMT 160404E-FM:T7335	6754831
VBMT 331-FM:T8315	VBMT 160404E-FM:T8315	6753630
VBMT 331-FM:T8330	VBMT 160404E-FM:T8330	6754299
VBMT 331-FM:T9315	VBMT 160404E-FM:T9315	6753750
VBMT 331-FM:T9325	VBMT 160404E-FM:T9325	6754430
VBMT 331-FM2:T6310	VBMT 160404E-FM2:T6310	7156926
VBMT 331-FM2:T7325	VBMT 160404E-FM2:T7325	7156927
VBMT 331-FM2:T8330	VBMT 160404E-FM2:T8330	7156928
VBMT 331-FM2:T9315	VBMT 160404E-FM2:T9315	7156929
VBMT 331-FM2:T9325	VBMT 160404E-FM2:T9325	7156930
VBMT 331-FM2:T9335	VBMT 160404E-FM2:T9335	7156931
VBMT 331-RM:T5305	VBMT 160404E-RM:T5305	6755900
VBMT 331-RM:T5315	VBMT 160404E-RM:T5315	6755710
VBMT 331-RM:T7335	VBMT 160404E-RM:T7335	6754832
VBMT 331-RM:T8330	VBMT 160404E-RM:T8330	6754401
VBMT 331-RM:T9315	VBMT 160404E-RM:T9315	6753751
VBMT 331-RM:T9325	VBMT 160404E-RM:T9325	6753853
VBMT 331-UR:T5315	VBMT 160404E-UR:T5315	6755711
VBMT 331-UR:T7325	VBMT 160404E-UR:T7325	7156418
VBMT 331-UR:T8330	VBMT 160404E-UR:T8330	6754223
VBMT 331-UR:T9310	VBMT 160404E-UR:T9310	6755078
VBMT 331-UR:T9315	VBMT 160404E-UR:T9315	6753752
VBMT 331-UR:T9325	VBMT 160404E-UR:T9325	6753854
VBMT 331-UR:TT310	VBMT 160404E-UR:TT310	6756265
VBMT 332-FM:T5315	VBMT 160408E-FM:T5315	6755712
VBMT 332-FM:T7325	VBMT 160408E-FM:T7325	7156419
VBMT 332-FM:T7335	VBMT 160408E-FM:T7335	6754833
VBMT 332-FM:T8315	VBMT 160408E-FM:T8315	6753631
VBMT 332-FM:T8330	VBMT 160408E-FM:T8330	6754300
VBMT 332-FM:T9310	VBMT 160408E-FM:T9310	7763114
VBMT 332-FM:T9315	VBMT 160408E-FM:T9315	6753753
VBMT 332-FM:T9325	VBMT 160408E-FM:T9325	6753855
VBMT 332-FM2:T6310	VBMT 160408E-FM2:T6310	7156932
VBMT 332-FM2:T7325	VBMT 160408E-FM2:T7325	7156933
VBMT 332-FM2:T8330	VBMT 160408E-FM2:T8330	7156934
VBMT 332-FM2:T9315	VBMT 160408E-FM2:T9315	7156935
VBMT 332-FM2:T9325	VBMT 160408E-FM2:T9325	7156936
VBMT 332-FM2:T9335	VBMT 160408E-FM2:T9335	7156937
VBMT 332-RM:T5305	VBMT 160408E-RM:T5305	6755901
VBMT 332-RM:T5315	VBMT 160408E-RM:T5315	6755713
VBMT 332-RM:T7335	VBMT 160408E-RM:T7335	6754834
VBMT 332-RM:T8330	VBMT 160408E-RM:T8330	6754402
VBMT 332-RM:T9315	VBMT 160408E-RM:T9315	6753754
VBMT 332-RM:T9325	VBMT 160408E-RM:T9325	6753856
VBMT 332-UR:T5315	VBMT 160408E-UR:T5315	6755714
VBMT 332-UR:T7325	VBMT 160408E-UR:T7325	7156420
VBMT 332-UR:T8330	VBMT 160408E-UR:T8330	6754224
VBMT 332-UR:T9310	VBMT 160408E-UR:T9310	6755076
VBMT 332-UR:T9315	VBMT 160408E-UR:T9315	6754476
VBMT 332-UR:T9325	VBMT 160408E-UR:T9325	6753857
VBMT 332-UR:TT310	VBMT 160408E-UR:TT310	6756278
VBMT 333-FM:T7325	VBMT 160412E-FM:T7325	7156421
VBMT 333-FM:T8330	VBMT 160412E-FM:T8330	6754301
VBMT 333-FM:T9315	VBMT 160412E-FM:T9315	6754479
VBMT 333-FM:T9325	VBMT 160412E-FM:T9325	6754431
VBMT 333-FM2:T8330	VBMT 160412E-FM2:T8330	7156938
VBMT 333-FM2:T9315	VBMT 160412E-FM2:T9315	7156939
VBMT 333-FM2:T9325	VBMT 160412E-FM2:T9325	7156940
VBMT 333-RM:T7335	VBMT 160412E-RM:T7335	6754835
VBMT 333-RM:T8330	VBMT 160412E-RM:T8330	6754403
VBMT 333-RM:T9315	VBMT 160412E-RM:T9315	6754478
VBMT 333-RM:T9325	VBMT 160412E-RM:T9325	6754432
VBMT 333-UR:T7325	VBMT 160412E-UR:T7325	7156422
VBMT 333-UR:T8330	VBMT 160412E-UR:T8330	6754225
VBMT 333-UR:T9310	VBMT 160412E-UR:T9310	6755077
VBMT 333-UR:T9315	VBMT 160412E-UR:T9315	6754477
VBMT 333-UR:T9325	VBMT 160412E-UR:T9325	6754433
VCGT 1.21.50.5F-AL:HF7	VCGT 070202F-AL:HF7	6756194
VCGT 1.21.50.5-FF2:T8315	VCGT 070202E-FF2:T8315	7156784
VCGT 1.21.50.5-FF2:T8330	VCGT 070202E-FF2:T8330	7156785
VCGT 1.21.50.5-SF3:H07	VCGT 070202E-SF3:H07	7168590
VCGT 1.21.50.5-SF3:T6310	VCGT 070202E-SF3:T6310	7168591
VCGT 1.21.51-FF2:T8315	VCGT 070204E-FF2:T8315	7156786
VCGT 1.21.51-FF2:T8330	VCGT 070204E-FF2:T8330	7156787
VCGT 1.21.51-SF3:T6310	VCGT 070204E-SF3:T6310	7168592
VCGT 2.520.2-SF2:H07	VCGT 130301E-SF2:H07	7168496
VCGT 2.520.2-SF2:T6310	VCGT 130301E-SF2:T6310	7168497
VCGT 2.520.5F-AL:HF7	VCGT 130302F-AL:HF7	6756198
VCGT 2.520.5F-AL:T0315	VCGT 130302F-AL:T0315	6756199
VCGT 2.520.5-FF2:T5315	VCGT 130302E-FF2:T5315	6756089
VCGT 2.520.5-FF2:T7325	VCGT 130302E-FF2:T7325	7156788
VCGT 2.520.5-FF2:T8330	VCGT 130302E-FF2:T8330	7156789
VCGT 2.520.5-FF2:T9315	VCGT 130302E-FF2:T9315	7156790
VCGT 2.520.5-FF2:T9325	VCGT 130302E-FF2:T9325	6756090
VCGT 2.520.5-FF2:TT010	VCGT 130302E-FF2:TT010	6756303
VCGT 2.520.5-NF2:H07	VCGT 130302E-NF2:H07	7167515
VCGT 2.520.5-NF2:T6310	VCGT 130302E-NF2:T6310	7763115
VCGT 2.520.5-NF2:T7325	VCGT 130302E-NF2:T7325	7156423
VCGT 2.520.5-NF2:T7335	VCGT 130302E-NF2:T7335	6756092
VCGT 2.520.5-NF2:T9315	VCGT 130302E-NF2:T9315	7167517
VCGT 2.520.5-NF2:T9325	VCGT 130302E-NF2:T9325	6756091
VCGT 2.520.5-NF2:T9335	VCGT 130302E-NF2:T9335	7167518
VCGT 2.520.5-NF2:TT010	VCGT 130302E-NF2:TT010	6756304
VCGT 2.520.5-SF2:H07	VCGT 130302E-SF2:H07	7168498
VCGT 2.520.5-SF2:HF7	VCGT 130302E-SF2:HF7	6756088
VCGT 2.520.5-SF2:T6310	VCGT 130302E-SF2:T6310	7168499
VCGT 2.520.5-SF3:H07	VCGT 130302E-SF3:H07	7168599
VCGT 2.520.5-SF3:T6310	VCGT 130302E-SF3:T6310	7168600
VCGT 2.520.5-SF3:T8315	VCGT 130302E-SF3:T8315	7168601
VCGT 2.521F-AL:HF7	VCGT 130304F-AL:HF7	6756201
VCGT 2.521F-AL:T0315	VCGT 130304F-AL:T0315	6756202
VCGT 2.521-FF2:T5315	VCGT 130304E-FF2:T5315	6756094
VCGT 2.521-FF2:T7325	VCGT 130304E-FF2:T7325	7156791
VCGT 2.521-FF2:T8330	VCGT 130304E-FF2:T8330	7156792
VCGT 2.521-FF2:T9315	VCGT 130304E-FF2:T9315	6756095
VCGT 2.521-FF2:T9325	VCGT 130304E-FF2:T9325	6756096
VCGT 2.521-FF2:TT010	VCGT 130304E-FF2:TT010	6756305
VCGT 2.521-NF2:H07	VCGT 130304E-NF2:H07	7167519
VCGT 2.521-NF2:T5315	VCGT 130304E-NF2:T5315	6756097
VCGT 2.521-NF2:T6310	VCGT 130304E-NF2:T6310	7167520
VCGT 2.521-NF2:T7325	VCGT 130304E-NF2:T7325	7156424
VCGT 2.521-NF2:T7335	VCGT 130304E-NF2:T7335	6756099
VCGT 2.521-NF2:T9315	VCGT 130304E-NF2:T9315	7167522
VCGT 2.521-NF2:T9325	VCGT 130304E-NF2:T9325	6756098
VCGT 2.521-NF2:T9335	VCGT 130304E-NF2:T9335	7167523
VCGT 2.521-NF2:TT010	VCGT 130304E-NF2:TT010	6756306
VCGT 2.521-SF2:H07	VCGT 130304E-SF2:H07	7168500
VCGT 2.521-SF2:HF7	VCGT 130304E-SF2:HF7	6756093
VCGT 2.521-SF2:T6310	VCGT 130304E-SF2:T6310	7168501
VCGT 2.521-SF3:H07	VCGT 130304E-SF3:H07	7168602
VCGT 2.521-SF3:T6310	VCGT 130304E-SF3:T6310	7168603
VCGT 2.521-SF3:T8315	VCGT 130304E-SF3:T8315	7168604
VCGT 2.522F-AL:HF7	VCGT 130308F-AL:HF7	6756204
VCGT 2.522F-AL:T0315	VCGT 130308F-AL:T0315	6756205
VCGT 2.522-FF2:T7325	VCGT 130308E-FF2:T7325	7156793
VCGT 2.522-FF2:T9315	VCGT 130308E-FF2:T9315	7156794
VCGT 2.522-FF2:T9325	VCGT 130308E-FF2:T9325	6756102
VCGT 2.522-FF2:TT010	VCGT 130308E-FF2:TT010	6756307
VCGT 2.522-FM2:T8330	VCGT 130308E-FM2:T8330	7156941
VCGT 2.522-FM2:T9325	VCGT 130308E-FM2:T9325	6756103
VCGT 2.522-NF2:T5315	VCGT 130308E-NF2:T5315	6756104
VCGT 2.522-NF2:T6310	VCGT 130308E-NF2:T6310	7763116
VCGT 2.522-NF2:T7325	VCGT 130308E-NF2:T7325	7156425
VCGT 2.522-NF2:T7335	VCGT 130308E-NF2:T7335	6756106
VCGT 2.522-NF2:T9315	VCGT 130308E-NF2:T9315	7167525
VCGT 2.522-NF2:T9325	VCGT 130308E-NF2:T9325	6756105
VCGT 2.522-NF2:T9335	VCGT 130308E-NF2:T9335	7167526
VCGT 2.522-NF2:TT010	VCGT 130308E-NF2:TT010	6756308
VCGT 2.522-SF2:H07	VCGT 130308E-SF2:H07	7168502
VCGT 2.522-SF2:HF7	VCGT 130308E-SF2:HF7	6756100
VCGT 2.522-SF2:T6310	VCGT 130308E-SF2:T6310	7168503
VCGT 2.522-SF3:H07	VCGT 130308E-SF3:H07	7168605
VCGT 2.522-SF3:T6310	VCGT 130308E-SF3:T6310	7168606
VCGT 2.522-SF3:T8315	VCGT 130308E-SF3:T8315	7168607
VCGT 21.50.2-SF3:T6310	VCGT 110201E-SF3:T6310	7600318
VCGT 21.50.5-SF3:H07	VCGT 110202E-SF3:H07	7168593
VCGT 21.50.5-SF3:T6310	VCGT 110202E-SF3:T6310	7168594
VCGT 21.50.5-SF3:T8315	VCGT 110202E-SF3:T8315	7168595
VCGT 21.51-SF3:H07	VCGT 110204E-SF3:H07	7168596
VCGT 21.51-SF3:T6310	VCGT 110204E-SF3:T6310	7168597
VCGT 21.51-SF3:T8315	VCGT 110204E-SF3:T8315	7168598
VCGT 220.2-SF3:T6310	VCGT 110301E-SF3:T6310	7600319

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VCGT 220.5F-AL:HF7	VCGT 110302F-AL:HF7	6752080
VCGT 220.5F-AL:T0315	VCGT 110302F-AL:T0315	6756160
VCGT 220.5-SF3:T6310	VCGT 110302E-SF3:T6310	7600320
VCGT 220515F-FA:HF7	VCGT 220515F-FA:HF7	6751854
VCGT 220520F-FA:HF7	VCGT 220520F-FA:HF7	6751855
VCGT 220530F-FA:HF7	VCGT 220530F-FA:HF7	6751856
VCGT 221F-AL:HF7	VCGT 110304F-AL:HF7	6751806
VCGT 221F-AL:T0315	VCGT 110304F-AL:T0315	6756161
VCGT 221-SF3:T6310	VCGT 110304E-SF3:T6310	7600321
VCGT 330.5F-AL:HF7	VCGT 160402F-AL:HF7	6752053
VCGT 330.5F-AL:T0315	VCGT 160402F-AL:T0315	6756171
VCGT 330.5-SF3:T6310	VCGT 160402E-SF3:T6310	7600322
VCGT 331F-AL:HF7	VCGT 160404F-AL:HF7	6751808
VCGT 331F-AL:T0315	VCGT 160404F-AL:T0315	6756175
VCGT 331-SF3:H07	VCGT 160404E-SF3:H07	7168608
VCGT 331-SF3:T6310	VCGT 160404E-SF3:T6310	7168609
VCGT 331-SF3:T8315	VCGT 160404E-SF3:T8315	7168610
VCGT 332F-AL:HF7	VCGT 160408F-AL:HF7	6751810
VCGT 332F-AL:T0315	VCGT 160408F-AL:T0315	6756176
VCGT 332-SF3:H07	VCGT 160408E-SF3:H07	7168611
VCGT 332-SF3:T6310	VCGT 160408E-SF3:T6310	7168612
VCGT 332-SF3:T8315	VCGT 160408E-SF3:T8315	7168613
VCGT 333F-AL:HF7	VCGT 160412F-AL:HF7	6751812
VCGT 333F-AL:T0315	VCGT 160412F-AL:T0315	6756178
VCGT 333-SF3:H07	VCGT 160412E-SF3:H07	7168614
VCGT 333-SF3:T6310	VCGT 160412E-SF3:T6310	7168615
VCGW 2.520.5:T5305	VCGW 130302:T5305	6756218
VCGW 2.521:T5305	VCGW 130304:T5305	6756219
VCGW 2.522:T5305	VCGW 130308:T5305	6756220
VCGX 2.520.2FL-FF2:T6310	VCGX 130301FL-FF2:T6310	7156797
VCGX 2.520.2FL-FF2:T8315	VCGX 130301FL-FF2:T8315	6756216
VCGX 2.520.2FR-FF2:T6310	VCGX 130301FR-FF2:T6310	7156798
VCGX 2.520.2FR-FF2:T8315	VCGX 130301FR-FF2:T8315	6756217
VCGX 2.520.2FR-FF2:TT010	VCGX 130301FR-FF2:TT010	6756311
VCGX 2.520FL-FF2:T6310	VCGX 130300FL-FF2:T6310	7156795
VCGX 2.520FL-FF2:T8315	VCGX 130300FL-FF2:T8315	6756214
VCGX 2.520FL-FF2:TT010	VCGX 130300FL-FF2:TT010	6756309
VCGX 2.520FR-FF2:T6310	VCGX 130300FR-FF2:T6310	7156796
VCGX 2.520FR-FF2:T8315	VCGX 130300FR-FF2:T8315	6756215
VCGX 2.520FR-FF2:TT010	VCGX 130300FR-FF2:TT010	6756310
VCMT 221-UR:T7325	VCMT 110304E-UR:T7325	7156426
VCMT 221-UR:T8330	VCMT 110304E-UR:T8330	6755622
VCMT 221-UR:T9315	VCMT 110304E-UR:T9315	6922932
VCMT 221-UR:T9325	VCMT 110304E-UR:T9325	6755623
VCMT 222-UR:T7325	VCMT 110308E-UR:T7325	7156427
VCMT 222-UR:T8330	VCMT 110308E-UR:T8330	6755624
VCMT 222-UR:T9315	VCMT 110308E-UR:T9315	6922933
VCMT 222-UR:T9325	VCMT 110308E-UR:T9325	6755625
VCMT 331-FM:T7325	VCMT 160404E-FM:T7325	7156428
VCMT 331-FM:T8330	VCMT 160404E-FM:T8330	6755662
VCMT 331-FM:T9315	VCMT 160404E-FM:T9315	6922934
VCMT 331-FM:T9325	VCMT 160404E-FM:T9325	6755663
VCMT 331-UR:T7325	VCMT 160404E-UR:T7325	7156429
VCMT 331-UR:T8330	VCMT 160404E-UR:T8330	6755618
VCMT 331-UR:T9315	VCMT 160404E-UR:T9315	6922935
VCMT 331-UR:T9325	VCMT 160404E-UR:T9325	6755619
VCMT 332-FM:T7325	VCMT 160408E-FM:T7325	7156430
VCMT 332-FM:T8330	VCMT 160408E-FM:T8330	6755664
VCMT 332-FM:T9315	VCMT 160408E-FM:T9315	6922936
VCMT 332-FM:T9325	VCMT 160408E-FM:T9325	6755665
VCMT 332-UR:T7325	VCMT 160408E-UR:T7325	7156431
VCMT 332-UR:T8330	VCMT 160408E-UR:T8330	6755620
VCMT 332-UR:T9315	VCMT 160408E-UR:T9315	6922937
VCMT 332-UR:T9325	VCMT 160408E-UR:T9325	6755621
VCMW 220.5:T5305	VCMW 110302:T5305	6755902
VCMW 220.5:T5315	VCMW 110302:T5315	6922825
VCMW 220.5:T6310	VCMW 110302:T6310	7168653
VCMW 221:T5305	VCMW 110304:T5305	6755903
VCMW 221:T5315	VCMW 110304:T5315	6922826
VCMW 221:T6310	VCMW 110304:T6310	7168654
VCMW 331:T5305	VCMW 160404:T5305	6755904
VCMW 331:T5315	VCMW 160404:T5315	6922827
VCMW 331:T6310	VCMW 160404:T6310	7168655
VCMW 331FN:PD1	VCMW 160404FN:PD1	6751824
VCMW 332:T5305	VCMW 160408:T5305	6755905
VCMW 332:T5315	VCMW 160408:T5315	6922828

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VCMW 332:T6310	VCMW 160408:T6310	7168656
VCMW 332FN:PD1	VCMW 160408FN:PD1	6751865
VNGA 331 T00420:TC100	VNGA 160404 T01020:TC100	6755451
VNGA 331S00420:TB310	VNGA 160404S01020B:TB310	6755931
VNGA 332 T00420:TC100	VNGA 160408 T01020:TC100	6755452
VNGA 332S00420:TB310	VNGA 160408S01020B:TB310	6755689
VNMG 331-FF:T7325	VNMG 160404E-FF:T7325	7156507
VNMG 331-FF:T8315	VNMG 160404E-FF:T8315	6753632
VNMG 331-FF:T8330	VNMG 160404E-FF:T8330	6922783
VNMG 331-FM:T7325	VNMG 160404E-FM:T7325	7156432
VNMG 331-FM:T8330	VNMG 160404E-FM:T8330	6754212
VNMG 331-FM:T9310	VNMG 160404E-FM:T9310	6755063
VNMG 331-FM:T9315	VNMG 160404E-FM:T9315	6754480
VNMG 331-FM:T9325	VNMG 160404E-FM:T9325	6754434
VNMG 331-M:T5315	VNMG 160404E-M:T5315	6755724
VNMG 331-M:T9315	VNMG 160404E-M:T9315	6754481
VNMG 331-M:T9325	VNMG 160404E-M:T9325	6754435
VNMG 331-M:T9335	VNMG 160404E-M:T9335	6755008
VNMG 331-NF:T6310	VNMG 160404E-NF:T6310	6922852
VNMG 331-NF:T7325	VNMG 160404E-NF:T7325	7156433
VNMG 331-NF:T7335	VNMG 160404E-NF:T7335	6834716
VNMG 331-NF:T8315	VNMG 160404E-NF:T8315	6834717
VNMG 331-NF:T8330	VNMG 160404E-NF:T8330	6834718
VNMG 331-NF:T9315	VNMG 160404E-NF:T9315	6834719
VNMG 331-NF:T9325	VNMG 160404E-NF:T9325	6834720
VNMG 331-NM:T7325	VNMG 160404E-NM:T7325	7156434
VNMG 331-NM:T7335	VNMG 160404E-NM:T7335	6754836
VNMG 331-NM:T8315	VNMG 160404E-NM:T8315	6922678
VNMG 331-NM:T8330	VNMG 160404E-NM:T8330	6755119
VNMG 331-NM:T9325	VNMG 160404E-NM:T9325	6754436
VNMG 331-NMR:T7325	VNMG 160404E-NMR:T7325	7156435
VNMG 331-NMR:T7335	VNMG 160404E-NMR:T7335	7038118
VNMG 331-NMR:T9325	VNMG 160404E-NMR:T9325	7038117
VNMG 331-SF:T6310	VNMG 160404E-SF:T6310	6919810
VNMG 331-SF:T7325	VNMG 160404E-SF:T7325	7156436
VNMG 331-SF:T8315	VNMG 160404E-SF:T8315	6919811
VNMG 331-SF:T8330	VNMG 160404E-SF:T8330	6919812
VNMG 331-SF:T9315	VNMG 160404E-SF:T9315	7035070
VNMG 331-SF:T9325	VNMG 160404E-SF:T9325	7035071
VNMG 331-SM:T6310	VNMG 160404E-SM:T6310	6915877
VNMG 331-SM:T7325	VNMG 160404E-SM:T7325	7156437
VNMG 331-SM:T7335	VNMG 160404E-SM:T7335	6915878
VNMG 331-SM:T8330	VNMG 160404E-SM:T8330	6915879
VNMG 331-SM:T9315	VNMG 160404E-SM:T9315	6915880
VNMG 331-SM:T9325	VNMG 160404E-SM:T9325	6915881
VNMG 332-FM:T7325	VNMG 160408E-FM:T7325	7156438
VNMG 332-FM:T8330	VNMG 160408E-FM:T8330	6754213
VNMG 332-FM:T9310	VNMG 160408E-FM:T9310	6755064
VNMG 332-FM:T9315	VNMG 160408E-FM:T9315	6754482
VNMG 332-FM:T9325	VNMG 160408E-FM:T9325	6754437
VNMG 332-M:T5305	VNMG 160408E-M:T5305	6755906
VNMG 332-M:T5315	VNMG 160408E-M:T5315	6755725
VNMG 332-M:T9310	VNMG 160408E-M:T9310	6755065
VNMG 332-M:T9315	VNMG 160408E-M:T9315	6753755
VNMG 332-M:T9325	VNMG 160408E-M:T9325	6754438
VNMG 332-M:T9335	VNMG 160408E-M:T9335	6755009
VNMG 332-NF:T6310	VNMG 160408E-NF:T6310	6922853
VNMG 332-NF:T7325	VNMG 160408E-NF:T7325	7156439
VNMG 332-NF:T7335	VNMG 160408E-NF:T7335	6834721
VNMG 332-NF:T8315	VNMG 160408E-NF:T8315	6834722
VNMG 332-NF:T8330	VNMG 160408E-NF:T8330	6834723
VNMG 332-NF:T9315	VNMG 160408E-NF:T9315	6834724
VNMG 332-NF:T9325	VNMG 160408E-NF:T9325	6834725
VNMG 332-NM:T7325	VNMG 160408E-NM:T7325	7156440
VNMG 332-NM:T7335	VNMG 160408E-NM:T7335	6754837
VNMG 332-NM:T8315	VNMG 160408E-NM:T8315	6922679
VNMG 332-NM:T8330	VNMG 160408E-NM:T8330	6755120
VNMG 332-NM:T9325	VNMG 160408E-NM:T9325	6754439
VNMG 332-NMR:T7325	VNMG 160408E-NMR:T7325	7156441
VNMG 332-NMR:T7335	VNMG 160408E-NMR:T7335	7038122
VNMG 332-NMR:T8330	VNMG 160408E-NMR:T8330	7038119
VNMG 332-NMR:T9315	VNMG 160408E-NMR:T9315	7038120
VNMG 332-NMR:T9325	VNMG 160408E-NMR:T9325	7038121
VNMG 332-SF:T6310	VNMG 160408E-SF:T6310	6919813
VNMG 332-SF:T8315	VNMG 160408E-SF:T8315	6919814
VNMG 332-SF:T8330	VNMG 160408E-SF:T8330	6919815

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VNMG 332-SF:T9315	VNMG 160408E-SF:T9315	7035072
VNMG 332-SF:T9325	VNMG 160408E-SF:T9325	7035073
VNMG 332-SM:T6310	VNMG 160408E-SM:T6310	6915882
VNMG 332-SM:T7325	VNMG 160408E-SM:T7325	7156442
VNMG 332-SM:T8330	VNMG 160408E-SM:T8330	6915884
VNMG 332-SM:T9315	VNMG 160408E-SM:T9315	6915885
VNMG 332-SM:T9325	VNMG 160408E-SM:T9325	6915886
VNMG 333-FM:T7325	VNMG 160412E-FM:T7325	7156443
VNMG 333-FM:T8330	VNMG 160412E-FM:T8330	6754214
VNMG 333-FM:T9315	VNMG 160412E-FM:T9315	6754483
VNMG 333-FM:T9325	VNMG 160412E-FM:T9325	6754440
VNMG 333-M:T9325	VNMG 160412E-M:T9325	6754441
VNMG 333-NMR:T7325	VNMG 160412E-NMR:T7325	7156444
VNMG 333-NMR:T8330	VNMG 160412E-NMR:T8330	7038123
VNMG 333-NMR:T9325	VNMG 160412E-NMR:T9325	7038124
VNMG 333-SF:T6310	VNMG 160412E-SF:T6310	6919816
VNMG 333-SF:T7325	VNMG 160412E-SF:T7325	7156515
VNMG 333-SM:T6310	VNMG 160412E-SM:T6310	6915887
WCGT 1.210.5-FF2:HF7	WCGT 020102E-FF2:HF7	6756166
WCGT 1.210.5-FF2:T8330	WCGT 020102E-FF2:T8330	7156799
WCGT 1.210.5-FF2:TT010	WCGT 020102E-FF2:TT010	6756312
WCGT 1.211-FF2:HF7	WCGT 020104E-FF2:HF7	6756167
WCGT 1.211-FF2:T8330	WCGT 020104E-FF2:T8330	7156800
WCGT 1.211-FF2:TT010	WCGT 020104E-FF2:TT010	6756313
WCGT 32.50.5F-AL:HF7	WCGT 06T302F-AL:HF7	6751857
WCGT 32.51F-AL:HF7	WCGT 06T304F-AL:HF7	6751858
WCGT 32.51F-AL:T0315	WCGT 06T304F-AL:T0315	6756206
WCGT 32.52F-AL:HF7	WCGT 06T308F-AL:HF7	6751859
WCGT 433F-AL:HF7	WCGT 080412F-AL:HF7	6752407
WCGT 433F-AL:T0315	WCGT 080412F-AL:T0315	6756208
WCGX 1.210.5FL-JZ:TT010	WCGX 020102FL-JZ:TT010	7080640
WCMT 2.522-47:D8330	WCMT 050308E-47:D8330	6754638
WCMT 2.522-UM:D8330	WCMT 050308E-UM:D8330	6754642
WCMT 32.51-FM:T7325	WCMT 06T304E-FM:T7325	7156446
WCMT 32.51-FM:T7335	WCMT 06T304E-FM:T7335	6754838
WCMT 32.51-FM:T8315	WCMT 06T304E-FM:T8315	6753633
WCMT 32.51-FM:T8330	WCMT 06T304E-FM:T8330	6754302
WCMT 32.51-FM:T9315	WCMT 06T304E-FM:T9315	6754502
WCMT 32.51-FM:T9325	WCMT 06T304E-FM:T9325	6754442
WCMT 32.52-45:D8330	WCMT 06T308E-45:D8330	6754639
WCMT 32.52-FM:T7325	WCMT 06T308E-FM:T7325	7156447
WCMT 32.52-FM:T7335	WCMT 06T308E-FM:T7335	6754839
WCMT 32.52-FM:T8315	WCMT 06T308E-FM:T8315	6753634
WCMT 32.52-FM:T8330	WCMT 06T308E-FM:T8330	6754303
WCMT 32.52-FM:T9315	WCMT 06T308E-FM:T9315	6754503
WCMT 32.52-FM:T9325	WCMT 06T308E-FM:T9325	6754443
WCMT 32.52-RF:T7335	WCMT 06T308E-RF:T7335	6756046
WCMT 32.52-UR:T7325	WCMT 06T308E-UR:T7325	7156448
WCMT 32.52-UR:T9315	WCMT 06T308E-UR:T9315	6754670
WCMT 32.52-UR:T9325	WCMT 06T308E-UR:T9325	6754661
WCMT 431-FM:T7325	WCMT 080404E-FM:T7325	7156449
WCMT 431-FM:T8315	WCMT 080404E-FM:T8315	6753635
WCMT 431-FM:T8330	WCMT 080404E-FM:T8330	6754304
WCMT 431-FM:T9315	WCMT 080404E-FM:T9315	6754504
WCMT 431-FM:T9325	WCMT 080404E-FM:T9325	6754444
WCMT 432-FM:T7325	WCMT 080408E-FM:T7325	7156450
WCMT 432-FM:T7335	WCMT 080408E-FM:T7335	6754841
WCMT 432-FM:T8315	WCMT 080408E-FM:T8315	6753636
WCMT 432-FM:T8330	WCMT 080408E-FM:T8330	6754305
WCMT 432-FM:T9315	WCMT 080408E-FM:T9315	6754505
WCMT 432-FM:T9325	WCMT 080408E-FM:T9325	6754445
WCMT 433-FM:T8330	WCMT 080412E-FM:T8330	6754306
WCMT 433-FM:T9325	WCMT 080412E-FM:T9325	6754446
WCMT 433-RF:T7335	WCMT 080412E-RF:T7335	6756047
WCMX 06T308E-45:D8330	WCMX 06T308E-45:D8330	6754654
WNGA 432S00420:TB310	WNGA 080408S01020C:TB310	6755690
WNGA 432S00420W:TB310	WNGA080408S01020WC:TB310	6755691
WNGF 201380-MM-S01:T6310	WNGF 201380-MM-S01:T6310	7317943
WNGF 201380-MM-S01:T7325	WNGF 201380-MM-S01:T7325	7317944
WNGF 201380-MM-S01:T9315	WNGF 201380-MM-S01:T9315	7317945
WNGF 201380-MM-S02:T7325	WNGF 201380-MM-S02:T7325	7317946
WNGF 201380-MM-S03:M9340	WNGF 201380-MM-S03:M9340	7317947
WNGU 150935-PM-S02:6630	WNGU 150935-PM-S02:6630	6752835
WNGU 150935-PM-S02:T9226	WNGU 150935-PM-S02:T9226	6931835
WNHX 040305ER-WM:M4310	WNHX 040305ER-WM:M4310	7639270
WNHX 040305ER-WM:M8330	WNHX 040305ER-WM:M8330	7639271

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WNHX 040310ER-WM:M4310	WNHX 040310ER-WM:M4310	7639272
WNHX 040310ER-WM:M8330	WNHX 040310ER-WM:M8330	7639273
WNHX 040315ER-WM:M4310	WNHX 040315ER-WM:M4310	7639274
WNHX 040315ER-WM:M8330	WNHX 040315ER-WM:M8330	7639275
WNMA 431:T5305	WNMA 080404:T5305	6755907
WNMA 431:T5315	WNMA 080404:T5315	6922804
WNMA 432:T5305	WNMA 080408:T5305	6755908
WNMA 432:T5315	WNMA 080408:T5315	6755728
WNMA 432:T6310	WNMA 080408:T6310	6922862
WNMA 432S:T5305	WNMA 080408S:T5305	6755918
WNMA 433:T5305	WNMA 080412:T5305	6755909
WNMA 433:T5315	WNMA 080412:T5315	6755730
WNMA 433:T6310	WNMA 080412:T6310	6922863
WNMF 201380-PM-S01:6630	WNMF 201380-PM-S01:6630	6752814
WNMF 201380-PM-S01:T9226	WNMF 201380-PM-S01:T9226	6931836
WNMG 32.51-FM:T7325	WNMG 06T304E-FM:T7325	7156469
WNMG 32.51-FM:T8330	WNMG 06T304E-FM:T8330	6755156
WNMG 32.51-FM:T9325	WNMG 06T304E-FM:T9325	6755157
WNMG 32.52-FM:T8330	WNMG 06T308E-FM:T8330	6755158
WNMG 32.52-FM:T9325	WNMG 06T308E-FM:T9325	6755159
WNMG 330.5-FF:T8315	WNMG 060402E-FF:T8315	6753637
WNMG 331-FF:T8315	WNMG 060404E-FF:T8315	6753638
WNMG 331-FM:T7325	WNMG 060404E-FM:T7325	7156452
WNMG 331-FM:T8315	WNMG 060404E-FM:T8315	6753639
WNMG 331-FM:T8330	WNMG 060404E-FM:T8330	6754210
WNMG 331-FM:T9315	WNMG 060404E-FM:T9315	6754507
WNMG 331-FM:T9325	WNMG 060404E-FM:T9325	6754448
WNMG 331-FM:TT310	WNMG 060404E-FM:TT310	6798573
WNMG 331L-SI:T8330	WNMG 060404EL-SI:T8330	6754372
WNMG 331L-SI:T9325	WNMG 060404EL-SI:T9325	6754449
WNMG 331-M:T5315	WNMG 060404E-M:T5315	6755732
WNMG 331-M:T9315	WNMG 060404E-M:T9315	6754508
WNMG 331-M:T9325	WNMG 060404E-M:T9325	6754450
WNMG 331-M:T9335	WNMG 060404E-M:T9335	6755011
WNMG 331-NF:T6310	WNMG 060404E-NF:T6310	6922847
WNMG 331-NF:T7325	WNMG 060404E-NF:T7325	7156454
WNMG 331-NF:T7335	WNMG 060404E-NF:T7335	6834726
WNMG 331-NF:T8315	WNMG 060404E-NF:T8315	6834727
WNMG 331-NF:T8330	WNMG 060404E-NF:T8330	6834728
WNMG 331-NF:T9315	WNMG 060404E-NF:T9315	6834729
WNMG 331-NF:T9325	WNMG 060404E-NF:T9325	6834730
WNMG 331-NM:T7325	WNMG 060404E-NM:T7325	7156455
WNMG 331-NM:T7335	WNMG 060404E-NM:T7335	6754842
WNMG 331-NM:T8315	WNMG 060404E-NM:T8315	6922680
WNMG 331-NM:T8330	WNMG 060404E-NM:T8330	6755116
WNMG 331-NM:T9325	WNMG 060404E-NM:T9325	6754451
WNMG 331-NMR:T6310	WNMG 060404E-NMR:T6310	7454474
WNMG 331-NMR:T7325	WNMG 060404E-NMR:T7325	7156456
WNMG 331-NMR:T8330	WNMG 060404E-NMR:T8330	7038125
WNMG 331-NMR:T9325	WNMG 060404E-NMR:T9325	7038126
WNMG 331R-SI:T8330	WNMG 060404ER-SI:T8330	6754373
WNMG 331R-SI:T9325	WNMG 060404ER-SI:T9325	6754452
WNMG 331-SF:H07	WNMG 060404E-SF:H07	6921019
WNMG 331-SF:T6310	WNMG 060404E-SF:T6310	6919819
WNMG 331-SF:T7325	WNMG 060404E-SF:T7325	7156458
WNMG 331-SF:T7335	WNMG 060404E-SF:T7335	6919820
WNMG 331-SF:T8315	WNMG 060404E-SF:T8315	6919821
WNMG 331-SF:T8330	WNMG 060404E-SF:T8330	6919822
WNMG 331-SF:T9325	WNMG 060404E-SF:T9325	7035074
WNMG 331-SM:T7325	WNMG 060404E-SM:T7325	7156459
WNMG 331-SM:T7335	WNMG 060404E-SM:T7335	6915889
WNMG 331-SM:T8330	WNMG 060404E-SM:T8330	6915890
WNMG 331-SM:T9315	WNMG 060404E-SM:T9315	6915891
WNMG 331-SM:T9325	WNMG 060404E-SM:T9325	6915892
WNMG 332-FM:T7325	WNMG 060408E-FM:T7325	7156460
WNMG 332-FM:T8330	WNMG 060408E-FM:T8330	6754211
WNMG 332-FM:T9315	WNMG 060408E-FM:T9315	6754509
WNMG 332-FM:T9325	WNMG 060408E-FM:T9325	6754453
WNMG 332-M:T5315	WNMG 060408E-M:T5315	6755733
WNMG 332-M:T9310	WNMG 060408E-M:T9310	6755066
WNMG 332-M:T9315	WNMG 060408E-M:T9315	6754510
WNMG 332-M:T9325	WNMG 060408E-M:T9325	6753858
WNMG 332-M:T9335	WNMG 060408E-M:T9335	6755012
WNMG 332-NF:T6310	WNMG 060408E-NF:T6310	6922848
WNMG 332-NF:T7325	WNMG 060408E-NF:T7325	7156461
WNMG 332-NF:T8330	WNMG 060408E-NF:T8330	6834731
WNMG 332-NF:T9315	WNMG 060408E-NF:T9315	6834732
WNMG 332-NF:T9325	WNMG 060408E-NF:T9325	6834733
WNMG 332-NM:T7325	WNMG 060408E-NM:T7325	7156462
WNMG 332-NM:T7335	WNMG 060408E-NM:T7335	6754843
WNMG 332-NM:T8315	WNMG 060408E-NM:T8315	6922681
WNMG 332-NM:T8330	WNMG 060408E-NM:T8330	6755117
WNMG 332-NM:T9315	WNMG 060408E-NM:T9315	6922938
WNMG 332-NM:T9325	WNMG 060408E-NM:T9325	6754454
WNMG 332-NMR:T6310	WNMG 060408E-NMR:T6310	7454475
WNMG 332-NMR:T7325	WNMG 060408E-NMR:T7325	7156463
WNMG 332-NMR:T7335	WNMG 060408E-NMR:T7335	7038129
WNMG 332-NMR:T9315	WNMG 060408E-NMR:T9315	7038127
WNMG 332-NMR:T9325	WNMG 060408E-NMR:T9325	7038128
WNMG 332-SF:H07	WNMG 060408E-SF:H07	6921020
WNMG 332-SF:T6310	WNMG 060408E-SF:T6310	6919824
WNMG 332-SF:T7335	WNMG 060408E-SF:T7335	6919825
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WNMG 332-SF:T8330	WNMG 060408E-SF:T8330	6919827
WNMG 332-SF:T9315	WNMG 060408E-SF:T9315	7763117
WNMG 332-SF:T9325	WNMG 060408E-SF:T9325	7035075
WNMG 332-SM:T6310	WNMG 060408E-SM:T6310	6915893
WNMG 332-SM:T7325	WNMG 060408E-SM:T7325	7156464
WNMG 332-SM:T7335	WNMG 060408E-SM:T7335	6915894
WNMG 332-SM:T8330	WNMG 060408E-SM:T8330	6915895
WNMG 332-SM:T9325	WNMG 060408E-SM:T9325	6915896
WNMG 332W-F:T9315	WNMG 060408W-F:T9315	6754511
WNMG 332W-F:T9325	WNMG 060408W-F:T9325	6754456
WNMG 332W-M:T9310	WNMG 060408W-M:T9310	6755067
WNMG 332W-M:T9315	WNMG 060408W-M:T9315	6754512
WNMG 332W-M:T9325	WNMG 060408W-M:T9325	6754457
WNMG 332W-MR:T9315	WNMG 060408W-MR:T9315	6850889
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WNMG 332W-NM:T7325	WNMG 060408W-NM:T7325	7156465
WNMG 332W-NM:T7335	WNMG 060408W-NM:T7335	7034028
WNMG 332W-NM:T9315	WNMG 060408W-NM:T9315	7034029
WNMG 332W-NM:T9325	WNMG 060408W-NM:T9325	7034030
WNMG 333-FM:T9315	WNMG 060412E-FM:T9315	6754513
WNMG 333-NM:T7325	WNMG 060412E-NM:T7325	7156466
WNMG 333-NM:T7335	WNMG 060412E-NM:T7335	6754844
WNMG 333-NM:T9315	WNMG 060412E-NM:T9315	6922939
WNMG 333-NM:T9325	WNMG 060412E-NM:T9325	6754455
WNMG 333-RM:T9310	WNMG 060412E-RM:T9310	7763118
WNMG 333-RM:T9315	WNMG 060412E-RM:T9315	6754514
WNMG 333-RM:T9325	WNMG 060412E-RM:T9325	6754458
WNMG 333-SM:T7325	WNMG 060412E-SM:T7325	7156468
WNMG 333-SM:T8330	WNMG 060412E-SM:T8330	6915898
WNMG 333-SM:T9325	WNMG 060412E-SM:T9325	6915899
WNMG 333W-M:T5315	WNMG 060412W-M:T5315	6755737
WNMG 333W-M:T9315	WNMG 060412W-M:T9315	6754515
WNMG 333W-M:T9325	WNMG 060412W-M:T9325	6754459
WNMG 431-FF:T7325	WNMG 080404E-FF:T7325	7156508
WNMG 431-FF:T8315	WNMG 080404E-FF:T8315	6753640
WNMG 431-FM:T7325	WNMG 080404E-FM:T7325	7156471
WNMG 431-FM:T7335	WNMG 080404E-FM:T7335	6754845
WNMG 431-FM:T8315	WNMG 080404E-FM:T8315	6753643
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WNMG 431-FM:T9315	WNMG 080404E-FM:T9315	6754516
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WNMG 431L-SI:T7335	WNMG 080404EL-SI:T7335	6922744
WNMG 431L-SI:T8315	WNMG 080404EL-SI:T8315	6922740
WNMG 431L-SI:T8330	WNMG 080404EL-SI:T8330	6754374
WNMG 431L-SI:T9325	WNMG 080404EL-SI:T9325	6754461
WNMG 431-M:T5315	WNMG 080404E-M:T5315	6755752
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WNMG 431-NF:HF7	WNMG 080404E-NF:HF7	6834734
WNMG 431-NF:T6310	WNMG 080404E-NF:T6310	6922849
WNMG 431-NF:T7325	WNMG 080404E-NF:T7325	7156473
WNMG 431-NF:T7335	WNMG 080404E-NF:T7335	6834735
WNMG 431-NF:T8315	WNMG 080404E-NF:T8315	6834736
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WNMG 431-NM:T7325	WNMG 080404E-NM:T7325	7156474
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WNMG 431-NM:T8330	WNMG 080404E-NM:T8330	6755118
WNMG 431-NM:T9315	WNMG 080404E-NM:T9315	6922940
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WNMG 431-NMR:T6310	WNMG 080404E-NMR:T6310	7454476
WNMG 431-NMR:T7325	WNMG 080404E-NMR:T7325	7156475
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WNMG 431-NMR:T9315	WNMG 080404E-NMR:T9315	7038131
WNMG 431-NMR:T9325	WNMG 080404E-NMR:T9325	7038132
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WNMG 431-NRM:T9315	WNMG 080404-NRM:T9315	7595939
WNMG 431R-SI:T7325	WNMG 080404ER-SI:T7325	7156476
WNMG 431R-SI:T7335	WNMG 080404ER-SI:T7335	6922745
WNMG 431R-SI:T8315	WNMG 080404ER-SI:T8315	6922741
WNMG 431R-SI:T8330	WNMG 080404ER-SI:T8330	6754375
WNMG 431R-SI:T9325	WNMG 080404ER-SI:T9325	6754464
WNMG 431-SF:H07	WNMG 080404E-SF:H07	6921021
WNMG 431-SF:T6310	WNMG 080404E-SF:T6310	6919829
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WNMG 431-SF:T8315	WNMG 080404E-SF:T8315	6919831
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WNMG 431W-F:T9325	WNMG 080404W-F:T9325	6754465
WNMG 431W-MR:T9315	WNMG 080404W-MR:T9315	6850891
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WNMG 431W-NM:T7325	WNMG 080404W-NM:T7325	7156479
WNMG 431W-NM:T7335	WNMG 080404W-NM:T7335	7034031
WNMG 431W-NM:T9315	WNMG 080404W-NM:T9315	7034032
WNMG 431W-NM:T9325	WNMG 080404W-NM:T9325	7034033
WNMG 432-FF:T7325	WNMG 080408E-FF:T7325	7156509
WNMG 432-FF:T8315	WNMG 080408E-FF:T8315	6753644
WNMG 432-FM:T7325	WNMG 080408E-FM:T7325	7156480
WNMG 432-FM:T7335	WNMG 080408E-FM:T7335	6754847
WNMG 432-FM:T8315	WNMG 080408E-FM:T8315	6753645
WNMG 432-FM:T8330	WNMG 080408E-FM:T8330	6754217
WNMG 432-FM:T9310	WNMG 080408E-FM:T9310	6755069
WNMG 432-FM:T9315	WNMG 080408E-FM:T9315	6754519
WNMG 432-FM:T9325	WNMG 080408E-FM:T9325	6754466
WNMG 432-KR:T5305	WNMG 080408E-KR:T5305	6922718
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WNMG 432L-SI:T7325	WNMG 080408EL-SI:T7325	7156481
WNMG 432L-SI:T7335	WNMG 080408EL-SI:T7335	6922746
WNMG 432L-SI:T8315	WNMG 080408EL-SI:T8315	6922742
WNMG 432L-SI:T8330	WNMG 080408EL-SI:T8330	6754376
WNMG 432L-SI:T9325	WNMG 080408EL-SI:T9325	6754467
WNMG 432-M:6630	WNMG 080408E-M:6630	6751556
WNMG 432-M:T5305	WNMG 080408E-M:T5305	6755910
WNMG 432-M:T5315	WNMG 080408E-M:T5315	6755753
WNMG 432-M:T8330	WNMG 080408E-M:T8330	6754218
WNMG 432-M:T9310	WNMG 080408E-M:T9310	6755070
WNMG 432-M:T9315	WNMG 080408E-M:T9315	6754520
WNMG 432-M:T9325	WNMG 080408E-M:T9325	6753859
WNMG 432-M:T9335	WNMG 080408E-M:T9335	6755015
WNMG 432-NF:HF7	WNMG 080408E-NF:HF7	6834740
WNMG 432-NF:T6310	WNMG 080408E-NF:T6310	6922850
WNMG 432-NF:T7325	WNMG 080408E-NF:T7325	7156482
WNMG 432-NF:T7335	WNMG 080408E-NF:T7335	6834741
WNMG 432-NF:T8315	WNMG 080408E-NF:T8315	6834742
WNMG 432-NF:T8330	WNMG 080408E-NF:T8330	6834743
WNMG 432-NF:T9315	WNMG 080408E-NF:T9315	6834744
WNMG 432-NF:T9325	WNMG 080408E-NF:T9325	6834745
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WNMG 432-NM:T7335	WNMG 080408E-NM:T7335	6754848

ANSI	ISO	EDP
WNMG 432-NM:T8315	WNMG 080408E-NM:T8315	6922683
WNMG 432-NM:T8330	WNMG 080408E-NM:T8330	6754219
WNMG 432-NM:T9315	WNMG 080408E-NM:T9315	6922941
WNMG 432-NM:T9325	WNMG 080408E-NM:T9325	6754468
WNMG 432-NMR:T6310	WNMG 080408E-NMR:T6310	7454477
WNMG 432-NMR:T7325	WNMG 080408E-NMR:T7325	7156484
WNMG 432-NMR:T7335	WNMG 080408E-NMR:T7335	7038137
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WNMG 432-NMR:T9325	WNMG 080408E-NMR:T9325	7038136
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WNMG 432-NRM:T7335	WNMG 080408-NRM:T7335	7595941
WNMG 432-NRM:T9315	WNMG 080408-NRM:T9315	7595942
WNMG 432-R:6630	WNMG 080408E-R:6630	6751558
WNMG 432-R:T5305	WNMG 080408E-R:T5305	6755911
WNMG 432-R:T5315	WNMG 080408E-R:T5315	6922767
WNMG 432-R:T9310	WNMG 080408E-R:T9310	6922961
WNMG 432-R:T9315	WNMG 080408E-R:T9315	6754521
WNMG 432-R:T9325	WNMG 080408E-R:T9325	6753860
WNMG 432-R:T9335	WNMG 080408E-R:T9335	6755016
WNMG 432-RM:T5305	WNMG 080408E-RM:T5305	6755912
WNMG 432-RM:T5315	WNMG 080408E-RM:T5315	6755754
WNMG 432-RM:T7325	WNMG 080408E-RM:T7325	7156485
WNMG 432-RM:T7335	WNMG 080408E-RM:T7335	6922713
WNMG 432-RM:T8315	WNMG 080408E-RM:T8315	6753646
WNMG 432-RM:T8330	WNMG 080408E-RM:T8330	6754182
WNMG 432-RM:T9310	WNMG 080408E-RM:T9310	6755071
WNMG 432-RM:T9315	WNMG 080408E-RM:T9315	6753756
WNMG 432-RM:T9325	WNMG 080408E-RM:T9325	6754469
WNMG 432-RM:T9335	WNMG 080408E-RM:T9335	6755017
WNMG 432R-SI:T7325	WNMG 080408ER-SI:T7325	7156486
WNMG 432R-SI:T7335	WNMG 080408ER-SI:T7335	6922747
WNMG 432R-SI:T8315	WNMG 080408ER-SI:T8315	6922743
WNMG 432R-SI:T8330	WNMG 080408ER-SI:T8330	6754377
WNMG 432R-SI:T9325	WNMG 080408ER-SI:T9325	6754470
WNMG 432-SF:H07	WNMG 080408E-SF:H07	6921022
WNMG 432-SF:T6310	WNMG 080408E-SF:T6310	6919834
WNMG 432-SF:T7325	WNMG 080408E-SF:T7325	7156487
WNMG 432-SF:T7335	WNMG 080408E-SF:T7335	6919835
WNMG 432-SF:T8315	WNMG 080408E-SF:T8315	6919836
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WNMG 432-SM:T9325	WNMG 080408E-SM:T9325	6915909
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WNMG 432W-M:T9325	WNMG 080408W-M:T9325	6754471
WNMG 432W-MR:T5315	WNMG 080408W-MR:T5315	6850893
WNMG 432W-MR:T9310	WNMG 080408W-MR:T9310	7035046
WNMG 432W-MR:T9315	WNMG 080408W-MR:T9315	6850894
WNMG 432W-MR:T9325	WNMG 080408W-MR:T9325	6850895
WNMG 432W-NM:T7325	WNMG 080408W-NM:T7325	7156489
WNMG 432W-NM:T7335	WNMG 080408W-NM:T7335	7034034
WNMG 432W-NM:T9315	WNMG 080408W-NM:T9315	7034035
WNMG 432W-NM:T9325	WNMG 080408W-NM:T9325	7034036
WNMG 433-FM:T7325	WNMG 080412E-FM:T7325	7156490
WNMG 433-FM:T7335	WNMG 080412E-FM:T7335	6754849
WNMG 433-FM:T8330	WNMG 080412E-FM:T8330	6754220
WNMG 433-FM:T9310	WNMG 080412E-FM:T9310	6755072
WNMG 433-FM:T9315	WNMG 080412E-FM:T9315	6754523
WNMG 433-FM:T9325	WNMG 080412E-FM:T9325	6754472
WNMG 433-KR:T5305	WNMG 080412E-KR:T5305	6755913
WNMG 433-KR:T5315	WNMG 080412E-KR:T5315	6755755
WNMG 433-M:T5305	WNMG 080412E-M:T5305	6755914
WNMG 433-M:T5315	WNMG 080412E-M:T5315	6755756
WNMG 433-M:T9310	WNMG 080412E-M:T9310	6755073
WNMG 433-M:T9315	WNMG 080412E-M:T9315	6753757
WNMG 433-M:T9325	WNMG 080412E-M:T9325	6754488
WNMG 433-M:T9335	WNMG 080412E-M:T9335	6755018
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WNMG 433-NF:T7325	WNMG 080412E-NF:T7325	7156491
WNMG 433-NF:T8330	WNMG 080412E-NF:T8330	6834747
WNMG 433-NF:T9315	WNMG 080412E-NF:T9315	6834748
WNMG 433-NF:T9325	WNMG 080412E-NF:T9325	6834749
WNMG 433-NM:T7325	WNMG 080412E-NM:T7325	7156492
WNMG 433-NM:T7335	WNMG 080412E-NM:T7335	6754850
WNMG 433-NM:T8315	WNMG 080412E-NM:T8315	6922684
WNMG 433-NM:T9325	WNMG 080412E-NM:T9325	6754489
WNMG 433-NMR:T6310	WNMG 080412E-NMR:T6310	7454478
WNMG 433-NMR:T7325	WNMG 080412E-NMR:T7325	7156493
WNMG 433-NMR:T7335	WNMG 080412E-NMR:T7335	7038141
WNMG 433-NMR:T8330	WNMG 080412E-NMR:T8330	7038138
WNMG 433-NMR:T9315	WNMG 080412E-NMR:T9315	7038139
WNMG 433-NMR:T9325	WNMG 080412E-NMR:T9325	7038140
WNMG 433-NRM:T7325	WNMG 080412-NRM:T7325	7595943
WNMG 433-NRM:T7335	WNMG 080412-NRM:T7335	7595944
WNMG 433-NRM:T9315	WNMG 080412-NRM:T9315	7595945
WNMG 433-R:T5305	WNMG 080412E-R:T5305	6755915
WNMG 433-R:T5315	WNMG 080412E-R:T5315	6922768
WNMG 433-R:T9310	WNMG 080412E-R:T9310	6922962
WNMG 433-R:T9315	WNMG 080412E-R:T9315	6753758
WNMG 433-R:T9325	WNMG 080412E-R:T9325	6754490
WNMG 433-R:T9335	WNMG 080412E-R:T9335	6922769
WNMG 433-RM:T5305	WNMG 080412E-RM:T5305	6755916
WNMG 433-RM:T5315	WNMG 080412E-RM:T5315	6755696
WNMG 433-RM:T7325	WNMG 080412E-RM:T7325	7156494
WNMG 433-RM:T7335	WNMG 080412E-RM:T7335	6922714
WNMG 433-RM:T8315	WNMG 080412E-RM:T8315	6753647
WNMG 433-RM:T9310	WNMG 080412E-RM:T9310	6755074
WNMG 433-RM:T9315	WNMG 080412E-RM:T9315	6754524
WNMG 433-RM:T9325	WNMG 080412E-RM:T9325	6754491
WNMG 433-RM:T9335	WNMG 080412E-RM:T9335	6755019
WNMG 433R-SI:T8330	WNMG 080412ER-SI:T8330	6926946
WNMG 433R-SI:T9325	WNMG 080412ER-SI:T9325	6926948
WNMG 433-SF:T7325	WNMG 080412E-SF:T7325	7156516
WNMG 433-SM:T6310	WNMG 080412E-SM:T6310	6915910
WNMG 433-SM:T7325	WNMG 080412E-SM:T7325	7156495
WNMG 433-SM:T7335	WNMG 080412E-SM:T7335	6915911
WNMG 433-SM:T8330	WNMG 080412E-SM:T8330	6915912
WNMG 433-SM:T9315	WNMG 080412E-SM:T9315	6915913
WNMG 433-SM:T9325	WNMG 080412E-SM:T9325	6915914
WNMG 433W-M:T9325	WNMG 080412W-M:T9325	6754492
WNMG 433W-MR:T5315	WNMG 080412W-MR:T5315	6850896
WNMG 433W-MR:T9310	WNMG 080412W-MR:T9310	7035047
WNMG 433W-MR:T9315	WNMG 080412W-MR:T9315	6850897
WNMG 433W-MR:T9325	WNMG 080412W-MR:T9325	6850898
WNMG 433W-NM:T7325	WNMG 080412W-NM:T7325	7156496
WNMG 433W-NM:T7335	WNMG 080412W-NM:T7335	7034037
WNMG 433W-NM:T9315	WNMG 080412W-NM:T9315	7034038
WNMG 433W-NM:T9325	WNMG 080412W-NM:T9325	7034039
WNMG 434-RM:T5305	WNMG 080416E-RM:T5305	6755917
WNMG 434-RM:T5315	WNMG 080416E-RM:T5315	6755758
WNMG 434-RM:T7335	WNMG 080416E-RM:T7335	6922715
WNMG 434-RM:T8330	WNMG 080416E-RM:T8330	6755132
WNMG 434-RM:T9310	WNMG 080416E-RM:T9310	6755075
WNMG 434-RM:T9315	WNMG 080416E-RM:T9315	6754526
WNMG 434-RM:T9325	WNMG 080416E-RM:T9325	6754493
WNMG 434-RM:T9335	WNMG 080416E-RM:T9335	6755020
WNMJ 201380-PR:T9226	WNMJ 201380-PR:T9226	6931837
WNMJ 201480-PR:6630	WNMJ 201480-PR:6630	6752795
WNMJ 201480-PR:T9226	WNMJ 201480-PR:T9226	6931838
WNMM 432-NR:T7325	WNMM 080408E-NR:T7325	7156498
WNMM 432-NR:T8330	WNMM 080408E-NR:T8330	6754215
WNMM 432-NR:T9325	WNMM 080408E-NR:T9325	6754494
WNMM 432-NR2:T7335	WNMM 080408E-NR2:T7335	6754852
WNMM 432-NR2:T9325	WNMM 080408E-NR2:T9325	6754495
WNMM 432-OR:T8330	WNMM 080408E-OR:T8330	6755155
WNMM 432-OR:T9325	WNMM 080408E-OR:T9325	6754496
WNMM 432-OR:T9335	WNMM 080408E-OR:T9335	6755021
WNMM 433-NR2:T7325	WNMM 080412E-NR2:T7325	7156500
WNMM 433-NR2:T9325	WNMM 080412E-NR2:T9325	6754497
WNMM 433-OR:T9325	WNMM 080412E-OR:T9325	6754498
WNMM 433-OR:T9335	WNMM 080412E-OR:T9335	6755022
WNMM 434-OR:T9325	WNMM 080416E-OR:T9325	6754499
WNMM 542-DR:6630	WNMM 100608E-DR:6630	6751781
WNMM 542-DR:T9325	WNMM 100608E-DR:T9325	6753861
WNMM 542-DR:T9335	WNMM 100608E-DR:T9335	6755023
WNMM 643-DR:6630	WNMM 130612E-DR:6630	6751782
WNMM 643-DR:T9325	WNMM 130612E-DR:T9325	6753863
WNMM 643-DR:T9335	WNMM 130612E-DR:T9335	6755024
WNMM 643-OR:T9325	WNMM 130612E-OR:T9325	6754500
WNMM 644-OR:T9325	WNMM 130616E-OR:T9325	6754501
WNXJ 150935-PM:6630	WNXJ 150935-PM:6630	6752846
WNXJ 201380-PR-S01:6630	WNXJ 201380-PR-S01:6630	6752844
X61 0602-080 L:6640	X61 0602-080 L:6640	7721535
X61 0602-080 L:G8330	X61 0602-080 L:G8330	7721536
X61 0602-080 L1:6640	X61 0602-080 L1:6640	7721537
X61 0602-080 R:6640	X61 0602-080 R:6640	7721538
X61 0602-080 R:G8330	X61 0602-080 R:G8330	7721539
X61 0602-080 R1:6640	X61 0602-080 R1:6640	7721590
X61 0602-090 L:6640	X61 0602-090 L:6640	7721591
X61 0602-090 L:G8330	X61 0602-090 L:G8330	7721592
X61 0602-090 L1:6640	X61 0602-090 L1:6640	7721593
X61 0602-090 R:6640	X61 0602-090 R:6640	7721594
X61 0602-090 R:G8330	X61 0602-090 R:G8330	7721595
X61 0602-090 R1:6640	X61 0602-090 R1:6640	7721596
X61 0602-100 L:6640	X61 0602-100 L:6640	7721597
X61 0602-100 L:G8330	X61 0602-100 L:G8330	7721598
X61 0602-100 R:6640	X61 0602-100 R:6640	7721599
X61 0602-100 R:G8330	X61 0602-100 R:G8330	7721600
X61 0602-110 L:6640	X61 0602-110 L:6640	7721601
X61 0602-110 L:G8330	X61 0602-110 L:G8330	7721602
X61 0602-110 L1:6640	X61 0602-110 L1:6640	7721603
X61 0602-110 R:6640	X61 0602-110 R:6640	7721604
X61 0602-110 R:G8330	X61 0602-110 R:G8330	7721605
X61 0602-110 R1:6640	X61 0602-110 R1:6640	7721606
X61 0602-130 L:6640	X61 0602-130 L:6640	7721607
X61 0602-130 L:G8330	X61 0602-130 L:G8330	7721608
X61 0602-130 L1:6640	X61 0602-130 L1:6640	7721609
X61 0602-130 R:6640	X61 0602-130 R:6640	7721610
X61 0602-130 R:G8330	X61 0602-130 R:G8330	7721611
X61 0602-130 R1:6640	X61 0602-130 R1:6640	7721612
X61 0602-150 L:6640	X61 0602-150 L:6640	7721613
X61 0602-150 L:G8330	X61 0602-150 L:G8330	7721661
X61 0602-150 R:6640	X61 0602-150 R:6640	7721614
X61 0602-150 R:G8330	X61 0602-150 R:G8330	7721662
X61 0602-160 L:6640	X61 0602-160 L:6640	7721615
X61 0602-160 L:G8330	X61 0602-160 L:G8330	7721616
X61 0602-160 L1:6640	X61 0602-160 L1:6640	7721617
X61 0602-160 R:6640	X61 0602-160 R:6640	7721618
X61 0602-160 R:G8330	X61 0602-160 R:G8330	7721619
X61 0602-160 R1:6640	X61 0602-160 R1:6640	7721620
X61 0602-185 L:6640	X61 0602-185 L:6640	7721621
X61 0602-185 L:G8330	X61 0602-185 L:G8330	7721622
X61 0602-185 L1:6640	X61 0602-185 L1:6640	7721623
X61 0602-185 R:6640	X61 0602-185 R:6640	7721624
X61 0602-185 R:G8330	X61 0602-185 R:G8330	7721625
X61 0602-185 R1:6640	X61 0602-185 R1:6640	7721626
X61 0602-200 L:G8330	X61 0602-200 L:G8330	7721627
X61 0602-200 R:G8330	X61 0602-200 R:G8330	7721628
X61 0602-215 L:6640	X61 0602-215 L:6640	7721629
X61 0602-215 L:G8330	X61 0602-215 L:G8330	7721630
X61 0602-215 L1:6640	X61 0602-215 L1:6640	7721631
X61 0602-215 R:6640	X61 0602-215 R:6640	7721632
X61 0602-215 R:G8330	X61 0602-215 R:G8330	7721633
X61 0602-215 R1:6640	X61 0602-215 R1:6640	7721634
X61 0602-250 L:G8330	X61 0602-250 L:G8330	7721635
X61 0602-250 R:G8330	X61 0602-250 R:G8330	7721636
X61 0602-265 L:6640	X61 0602-265 L:6640	7721637
X61 0602-265 L:G8330	X61 0602-265 L:G8330	7721638
X61 0602-265 R:6640	X61 0602-265 R:6640	7721639
X61 0602-265 R:G8330	X61 0602-265 R:G8330	7721640
X61 0602-300 L:6640	X61 0602-300 L:6640	7721641
X61 0602-300 L:G8330	X61 0602-300 L:G8330	7721642
X61 0602-300 R:6640	X61 0602-300 R:6640	7721643
X61 0602-300 R:G8330	X61 0602-300 R:G8330	7721644
X61 0602-315 L:6640	X61 0602-315 L:6640	7721645
X61 0602-315 L:G8330	X61 0602-315 L:G8330	7721646
X61 0602-315 R:6640	X61 0602-315 R:6640	7721647
X61 0602-315 R:G8330	X61 0602-315 R:G8330	7721648
X61 0602-R050 L1:6640	X61 0602-R050 L1:6640	7721649
X61 0602-R050 R1:6640	X61 0602-R050 R1:6640	7721650
X61 0602-R100 L:6640	X61 0602-R100 L:6640	7721651
X61 0602-R100 L:G8330	X61 0602-R100 L:G8330	7721652

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X61 0602-R100 L1:6640	X61 0602-R100 L1:6640	7721653
X61 0602-R100 R:6640	X61 0602-R100 R:6640	7721654
X61 0602-R100 R:G8330	X61 0602-R100 R:G8330	7721655
X61 0602-R100 R1:6640	X61 0602-R100 R1:6640	7721656
X61 0602-R150 L:6640	X61 0602-R150 L:6640	7721657
X61 0602-R150 L:G8330	X61 0602-R150 L:G8330	7721658
X61 0602-R150 R:6640	X61 0602-R150 R:6640	7721659
X61 0602-R150 R:G8330	X61 0602-R150 R:G8330	7721660
XDHW 070210EN:M8310	XDHW 070210EN:M8310	6756267
XDHW 070210EN:M8325	XDHW 070210EN:M8325	6756011
XDHW 070210SN:M8310	XDHW 070210SN:M8310	6756268
XDHW 070210SN:M8325	XDHW 070210SN:M8325	6756012
XDHW 10T310SN:M8310	XDHW 10T310SN:M8310	6756269
XDHW 10T310SN:M8325	XDHW 10T310SN:M8325	6756013
XEHT 0604AESR:M8310	XEHT 0604AESR:M8310	6931670
XEHT 0604AESR:M8330	XEHT 0604AESR:M8330	7451118
XEHT 0906AESR:M8310	XEHT 0906AESR:M8310	7056803
XEHT 0906AESR:M8330	XEHT 0906AESR:M8330	7451119
XNGX 0604ANSN:8215	XNGX 0604ANSN:8215	6753708
XNGX 0906ANSN:8215	XNGX 0906ANSN:8215	6753568
XNGX 0906ANSN:M8330	XNGX 0906ANSN:M8330	7451120
XNGX 1308DNSN:M8330	XNGX 1308DNSN:M8330	7606905
XOEN 12T304 RF:D720	XOEN 12T304 RF:D720	6755464
XOEN 12T308 RF:D720	XOEN 12T308 RF:D720	6755467
XOEN 12T308 RH:D720	XOEN 12T308 RH:D720	6755468
XP 16ER-FM:M8310	XP 16ER-FM:M8310	6756232
XP 16ER-FM:M8330	XP 16ER-FM:M8330	7451123
XP 16ER-FM:M8345	XP 16ER-FM:M8345	6756177
XP 20ER-FM:M8310	XP 20ER-FM:M8310	6756233
XP 20ER-FM:M8330	XP 20ER-FM:M8330	7451124
XP 20ER-FM:M8345	XP 20ER-FM:M8345	6756180
XP 25ER-FM:M8310	XP 25ER-FM:M8310	6756234
XP 25ER-FM:M8330	XP 25ER-FM:M8330	7451125
XP 25ER-FM:M8345	XP 25ER-FM:M8345	6756185
XP 32ER-FM:M8310	XP 32ER-FM:M8310	6756235
XP 32ER-FM:M8330	XP 32ER-FM:M8330	7451126
XP 32ER-FM:M8345	XP 32ER-FM:M8345	6756187
XPET 0502AP:D8345	XPET 0502AP:D8345	6754693
XPET 0502AP-SD:D8345	XPET 0502AP-SD:D8345	6920805
XPET 0602AP:D8345	XPET 0602AP:D8345	6754694
XPET 0602AP-SD:D8345	XPET 0602AP-SD:D8345	6920806
XPET 0703AP:D8345	XPET 0703AP:D8345	6754695
XPET 0703AP-SD:D8345	XPET 0703AP-SD:D8345	6920807
XPET 0903AP:D8345	XPET 0903AP:D8345	6754656
XPET 0903AP-SD:D8345	XPET 0903AP-SD:D8345	6920808
XPET 11T3AP:D8345	XPET 11T3AP:D8345	6754657
XPET 11T3AP-SD:D8345	XPET 11T3AP-SD:D8345	6920809
XPET 12T3AP:D8345	XPET 12T3AP:D8345	6754658
XPET 12T3AP-SD:D8345	XPET 12T3AP-SD:D8345	6920810
XPET 1504AP:D8345	XPET 1504AP:D8345	6754659
XPET 1504AP-SD:D8345	XPET 1504AP-SD:D8345	6920811
XPET 1904AP:D8345	XPET 1904AP:D8345	6754660
XPET 1904AP-SD:D8345	XPET 1904AP-SD:D8345	6920812
XPHT 160408F-FA:HF7	XPHT 160408F-FA:HF7	6752075
XPHT 160412E:8215	XPHT 160412E:8215	6753426
XPHT 160412E:M6330	XPHT 160412E:M6330	7451137
XPHT 160412E:M8330	XPHT 160412E:M8330	7451127
XPHT 160412E:M8340	XPHT 160412E:M8340	6835887
XPHT 160412S:8215	XPHT 160412S:8215	6753427
XPHT 160412S:8230	XPHT 160412S:8230	6752552
XPHT 160412S:M8330	XPHT 160412S:M8330	7451128
XPHT 160412S:M8340	XPHT 160412S:M8340	6803614
XPHT 160412S:M9325	XPHT 160412S:M9325	6754583
XPHT 160412S:M9340	XPHT 160412S:M9340	6754608
ZDCW 070304:M8310	ZDCW 070304:M8310	6922554
ZDCW 070304:M8325	ZDCW 070304:M8325	6756014
ZDCW 070304:M8345	ZDCW 070304:M8345	6755968
ZDCW 09T304:M8310	ZDCW 09T304:M8310	6756270
ZDCW 09T304:M8325	ZDCW 09T304:M8325	6756015
ZDCW 09T304:M8345	ZDCW 09T304:M8345	6755969
ZDEW 120408:M4303	ZDEW 120408:M4303	7637370
ZDEW 120408:M8310	ZDEW 120408:M8310	6756271
ZDEW 120408:M8325	ZDEW 120408:M8325	6756016
ZDEW 120408:M8345	ZDEW 120408:M8345	6755970
ZP 10ER-FM:M8310	ZP 10ER-FM:M8310	6756238
ZP 10ER-FM:M8345	ZP 10ER-FM:M8345	6756111

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ZP 12ER-FM:M8310	ZP 12ER-FM:M8310	6756239
ZP 12ER-FM:M8345	ZP 12ER-FM:M8345	6756112
ZP 12ER-M:M8330	ZP 12ER-M:M8330	7451129
ZP 12ER-M:M8340	ZP 12ER-M:M8340	6803615
ZP 12ER-M:M8345	ZP 12ER-M:M8345	6756117
ZP 16ER-FM:M8310	ZP 16ER-FM:M8310	6756240
ZP 16ER-FM:M8345	ZP 16ER-FM:M8345	6756113
ZP 16ER-M:M8330	ZP 16ER-M:M8330	7451130
ZP 16ER-M:M8340	ZP 16ER-M:M8340	6803616
ZP 16ER-M:M8345	ZP 16ER-M:M8345	6756121
ZP 16ER-R:M8345	ZP 16ER-R:M8345	6756124
ZP 20ER-F:M8310	ZP 20ER-F:M8310	6756241
ZP 20ER-FM:M8310	ZP 20ER-FM:M8310	6756242
ZP 20ER-FM:M8345	ZP 20ER-FM:M8345	6756114
ZP 20ER-M:M8330	ZP 20ER-M:M8330	7451131
ZP 20ER-M:M8345	ZP 20ER-M:M8345	6756126
ZP 20ER-R:M8345	ZP 20ER-R:M8345	6756127
ZP 25ER-FM:M8310	ZP 25ER-FM:M8310	6756243
ZP 25ER-FM:M8345	ZP 25ER-FM:M8345	6756115
ZP 25ER-M:M8330	ZP 25ER-M:M8330	7451132
ZP 25ER-M:M8345	ZP 25ER-M:M8345	6756129
ZP 25ER-R:M8345	ZP 25ER-R:M8345	6756130
ZP 32ER-FM:M8310	ZP 32ER-FM:M8310	6756244
ZP 32ER-FM:M8345	ZP 32ER-FM:M8345	6756116
ZP 32ER-M:M8330	ZP 32ER-M:M8330	7451133
ZP 32ER-M:M8345	ZP 32ER-M:M8345	6756132
ZP 32ER-R:M8330	ZP 32ER-R:M8330	7451134
ZP 32ER-R:M8345	ZP 32ER-R:M8345	6756134
ZP 40ER-R:M8345	ZP 40ER-R:M8345	6756142
ZP 50ER-F:M8310	ZP 50ER-F:M8310	6756245
ZP 50ER-R:M8345	ZP 50ER-R:M8345	6756143

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CKJNL 2020 K 16	CKJNL 2020 K 16	6757125
CKJNL 2525 M 16	CKJNL 2525 M 16	6756896
CKJNL 3225 P 16	CKJNL 3225 P 16	6757269
CKJNR 2020 K 16	CKJNR 2020 K 16	6756934
CKJNR 2525 M 16	CKJNR 2525 M 16	6756895
CKJNR 3225 P 16	CKJNR 3225 P 16	6757224
CSSPR 2525 M 12	CSSPR 2525 M 12	6756977
CTAPR 2020 K 16	CTAPR 2020 K 16	6756821
CTAPR 2525 M 16	CTAPR 2525 M 16	6756679
CTCPN 2509 K 11	CTCPN 2509 K 11	6757126
CTCPN 2514 M 16	CTCPN 2514 M 16	6756905
CTFPR 2525 M 16	CTFPR 2525 M 16	6757170
DCBNL 2020 K 12	DCBNL 2020 K 12	7028367
DCBNL 2525 M 12	DCBNL 2525 M 12	7028368
DCBNL 2525 M 16	DCBNL 2525 M 16	7028369
DCBNL 3225 P 12	DCBNL 3225 P 12	7028400
DCBNL 3225 P 16	DCBNL 3225 P 16	7028401
DCBNL 3232 P 19	DCBNL 3232 P 19	7028402
DCBNL 4040 S 19	DCBNL 4040 S 19	7028403
DCBNR 2020 K 12	DCBNR 2020 K 12	7028404
DCBNR 2525 M 12	DCBNR 2525 M 12	7028405
DCBNR 2525 M 16	DCBNR 2525 M 16	7028406
DCBNR 3225 P 12	DCBNR 3225 P 12	7028407
DCBNR 3225 P 16	DCBNR 3225 P 16	7028408
DCBNR 3232 P 19	DCBNR 3232 P 19	7028409
DCBNR 4040 S 19	DCBNR 4040 S 19	7028410
DCKNL 16 4D	DCKNL 16 4D	6788544
DCKNL 2020 K 12	DCKNL 2020 K 12	7028411
DCKNL 2525 M 12	DCKNL 2525 M 12	7028412
DCKNL 3225 P 12	DCKNL 3225 P 12	7028413
DCKNL 3232 P 16	DCKNL 3232 P 16	7028414
DCKNR 16 4D	DCKNR 16 4D	6788545
DCKNR 2020 K 12	DCKNR 2020 K 12	7028415
DCKNR 2525 M 12	DCKNR 2525 M 12	7028416
DCKNR 3225 P 12	DCKNR 3225 P 12	7028417
DCKNR 3232 P 16	DCKNR 3232 P 16	7028418
DCLNL 10 3A	DCLNL 10 3A	6788546
DCLNL 12 3C	DCLNL 12 3C	6788547
DCLNL 12 4B	DCLNL 12 4B	6788548
DCLNL 16 4D	DCLNL 16 4D	6788549
DCLNL 1616 H 09	DCLNL 1616 H 09	6757917
DCLNL 1616 H 12	DCLNL 1616 H 12	7028419
DCLNL 20 6D	DCLNL 20 6D	6788552
DCLNL 2020 K 09	DCLNL 2020 K 09	6757919
DCLNL 2020 K 12	DCLNL 2020 K 12	6757923
DCLNL 24 6D	DCLNL 24 6D	6788553
DCLNL 24 8E	DCLNL 24 8E	6788554
DCLNL 2525 M 09	DCLNL 2525 M 09	6757921
DCLNL 2525 M 12	DCLNL 2525 M 12	6757925
DCLNL 2525 M 16	DCLNL 2525 M 16	7028420
DCLNL 3225 P 12	DCLNL 3225 P 12	6757927
DCLNL 3225 P 16	DCLNL 3225 P 16	6757929
DCLNL 3232 P 19	DCLNL 3232 P 19	6757931
DCLNL 4040 S 19	DCLNL 4040 S 19	7028421
DCLNL 85 4D	DCLNL 85 4D	6788550
DCLNL 85 5D	DCLNL 85 5D	6788551
DCLNR 10 3A	DCLNR 10 3A	6788555
DCLNR 12 3C	DCLNR 12 3C	6788556
DCLNR 12 4B	DCLNR 12 4B	6788557
DCLNR 16 4D	DCLNR 16 4D	6788558
DCLNR 1616 H 09	DCLNR 1616 H 09	6757916
DCLNR 1616 H 12	DCLNR 1616 H 12	7028422
DCLNR 20 6D	DCLNR 20 6D	6788561
DCLNR 2020 K 09	DCLNR 2020 K 09	6757918
DCLNR 2020 K 12	DCLNR 2020 K 12	6757922
DCLNR 24 6D	DCLNR 24 6D	6788562
DCLNR 24 8E	DCLNR 24 8E	6788563
DCLNR 2525 M 09	DCLNR 2525 M 09	6757920
DCLNR 2525 M 12	DCLNR 2525 M 12	6757924
DCLNR 2525 M 16	DCLNR 2525 M 16	7028423
DCLNR 3225 P 12	DCLNR 3225 P 12	6757926
DCLNR 3225 P 16	DCLNR 3225 P 16	6757928
DCLNR 3232 P 19	DCLNR 3232 P 19	6757930
DCLNR 4040 S 19	DCLNR 4040 S 19	7028424
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DCLNR 85 5D	DCLNR 85 5D	6788560
DCRNL 12 4B	DCRNL 12 4B	6788532
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DCRNL 20 5D	DCRNL 20 5D	6788535
DCRNL 20 6D	DCRNL 20 6D	6788536
DCRNL 24 6D	DCRNL 24 6D	6788537
DCRNR 12 4B	DCRNR 12 4B	6788538
DCRNR 16 4D	DCRNR 16 4D	6788539
DCRNR 20 4D	DCRNR 20 4D	6788540
DCRNR 20 5D	DCRNR 20 5D	6788541
DCRNR 20 6D	DCRNR 20 6D	6788542
DCRNR 24 6D	DCRNR 24 6D	6788543
DDJNL 12 3C	DDJNL 12 3C	6788564
DDJNL 12 4B	DDJNL 12 4B	6788565
DDJNL 16 3D	DDJNL 16 3D	6788566
DDJNL 16 4D	DDJNL 16 4D	6788567
DDJNL 20 4D	DDJNL 20 4D	6788568
DDJNL 2020 K 11	DDJNL 2020 K 11	6758540
DDJNL 2020 K 15	DDJNL 2020 K 15	6757935
DDJNL 2525 M 11	DDJNL 2525 M 11	6758542
DDJNL 2525 M 15	DDJNL 2525 M 15	6757937
DDJNL 3225 P 15	DDJNL 3225 P 15	6757939
DDJNL 3232 P 15	DDJNL 3232 P 15	7028425
DDJNR 12 3C	DDJNR 12 3C	6788569
DDJNR 12 4B	DDJNR 12 4B	6788570
DDJNR 16 3D	DDJNR 16 3D	6788571
DDJNR 16 4D	DDJNR 16 4D	6788572
DDJNR 20 4D	DDJNR 20 4D	6788573
DDJNR 2020 K 11	DDJNR 2020 K 11	6758539
DDJNR 2020 K 15	DDJNR 2020 K 15	6757934
DDJNR 2525 M 11	DDJNR 2525 M 11	6758541
DDJNR 2525 M 15	DDJNR 2525 M 15	6757936
DDJNR 3225 P 15	DDJNR 3225 P 15	6757938
DDJNR 3232 P 15	DDJNR 3232 P 15	7028426
DDPNN 12 3B	DDPNN 12 3B	6788574
DDPNN 16 4D	DDPNN 16 4D	6788575
DK.FMH1.16	DK.FMH1.16	7386985
DK.FMH1.22	DK.FMH1.22	7386986
DK.FMH1.27	DK.FMH1.27	7386987
DK.FMH1.32	DK.FMH1.32	7386988
DK.FMH1.40	DK.FMH1.40	7386989
DK.FMH1.60	DK.FMH1.60	7387020
DKHL 4050 V	DKHL 4050 V	6757385
DKHL 5060 W	DKHL 5060 W	6757220
DKHL 6080 W-A	DKHL 6080 W-A	6758516
DKHR 4050 V	DKHR 4050 V	6757384
DKHR 5060 W	DKHR 5060 W	6757219
DKHR 6080 W-A	DKHR 6080 W-A	6758501
DKTL 5055 X A1	DKTL 5055 X A1	6759705
DKTL 5055 X A2	DKTL 5055 X A2	6759659
DKTR 5055 X A1	DKTR 5055 X A1	6759706
DKTR 5055 X A2	DKTR 5055 X A2	6759660
DR.FMH2.16	DR.FMH2.16	7228913
DR.FMH2.22	DR.FMH2.22	7228914
DR.FMH2.27	DR.FMH2.27	7228915
DR.FMH2.32	DR.FMH2.32	7228916
DR.FMH2.40	DR.FMH2.40	7228917
DRSNL 16 4D	DRSNL 16 4D	6788576
DRSNL 2525 M 12	DRSNL 2525 M 12	7028427
DRSNR 16 4D	DRSNR 16 4D	6788577
DRSNR 2525 M 12	DRSNR 2525 M 12	7028428
DSBNL 2020 K 12	DSBNL 2020 K 12	7028429
DSBNL 2525 M 12	DSBNL 2525 M 12	6757941
DSBNL 2525 M 15	DSBNL 2525 M 15	7028430
DSBNL 3225 P 15	DSBNL 3225 P 15	6757943
DSBNL 3232 P 19	DSBNL 3232 P 19	6757945
DSBNL 4040 S 19	DSBNL 4040 S 19	7028431
DSBNR 2020 K 12	DSBNR 2020 K 12	7028432
DSBNR 2525 M 12	DSBNR 2525 M 12	6757940
DSBNR 2525 M 15	DSBNR 2525 M 15	7028433
DSBNR 3225 P 15	DSBNR 3225 P 15	6757942
DSBNR 3232 P 19	DSBNR 3232 P 19	6757944
DSBNR 4040 S 19	DSBNR 4040 S 19	7028434
DSDNN 12 4B	DSDNN 12 4B	6788590
DSDNN 16 4D	DSDNN 16 4D	6788591
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DSDNN 20 6D	DSDNN 20 6D	6788593
DSDNN 24 8D	DSDNN 24 8D	6788594
DSDNN 2525 M 12	DSDNN 2525 M 12	7028435
DSDNN 2525 M 15	DSDNN 2525 M 15	7028436
DSDNN 3232 P 19	DSDNN 3232 P 19	7028437
DSDNN 4040 S 25	DSDNN 4040 S 25	7028438
DSKNL 16 4D	DSKNL 16 4D	6788595
DSKNL 20 5D	DSKNL 20 5D	6788596
DSKNL 2525 M 12	DSKNL 2525 M 12	7028439
DSKNL 3232 P 19	DSKNL 3232 P 19	7028440
DSKNR 16 4D	DSKNR 16 4D	6788597
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DSKNR 3232 P 19	DSKNR 3232 P 19	7028442
DSRNL 12 4B	DSRNL 12 4B	6788578
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DSRNL 20 5D	DSRNL 20 5D	6788580
DSRNL 20 6D	DSRNL 20 6D	6788581
DSRNL 24 6D	DSRNL 24 6D	6788582
DSRNL 24 8E	DSRNL 24 8E	6788583
DSRNR 12 4B	DSRNR 12 4B	6788584
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DSRNR 24 6D	DSRNR 24 6D	6788588
DSRNR 24 8E	DSRNR 24 8E	6788589
DSSNL 12 4B	DSSNL 12 4B	6788599
DSSNL 16 4D	DSSNL 16 4D	6788600
DSSNL 20 5D	DSSNL 20 5D	6788601
DSSNL 20 6D	DSSNL 20 6D	6788602
DSSNL 2020 K 12	DSSNL 2020 K 12	7028443
DSSNL 24 6E	DSSNL 24 6E	6788603
DSSNL 2525 M 12	DSSNL 2525 M 12	7028444
DSSNL 2525 M 15	DSSNL 2525 M 15	7028445
DSSNL 3225 P 15	DSSNL 3225 P 15	7028446
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DSSNR 20 5D	DSSNR 20 5D	6788606
DSSNR 20 6D	DSSNR 20 6D	6788607
DSSNR 2020 K 12	DSSNR 2020 K 12	7028449
DSSNR 24 6E	DSSNR 24 6E	6788608
DSSNR 2525 M 12	DSSNR 2525 M 12	7028450
DSSNR 2525 M 15	DSSNR 2525 M 15	7028451
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DSSNR 3232 P 19	DSSNR 3232 P 19	7028453
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DTFNL 2020 K 16	DTFNL 2020 K 16	7028455
DTFNL 2525 M 16	DTFNL 2525 M 16	7028456
DTFNL 2525 M 22	DTFNL 2525 M 22	7028457
DTFNR 2020 K 16	DTFNR 2020 K 16	7028458
DTFNR 2525 M 16	DTFNR 2525 M 16	7028459
DTFNR 2525 M 22	DTFNR 2525 M 22	7028460
DTGNL 12 3B	DTGNL 12 3B	6788609
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DTGNL 16 4D	DTGNL 16 4D	6788611
DTGNL 20 4D	DTGNL 20 4D	6788612
DTGNL 2020 K 16	DTGNL 2020 K 16	6757949
DTGNL 24 5D	DTGNL 24 5D	6788613
DTGNL 2525 M 16	DTGNL 2525 M 16	6757951
DTGNL 2525 M 22	DTGNL 2525 M 22	6757953
DTGNL 3232 P 22	DTGNL 3232 P 22	7028461
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DTGNR 20 4D	DTGNR 20 4D	6788617
DTGNR 2020 K 16	DTGNR 2020 K 16	6757948
DTGNR 24 5D	DTGNR 24 5D	6788618
DTGNR 2525 M 16	DTGNR 2525 M 16	6757950
DTGNR 2525 M 22	DTGNR 2525 M 22	6757952
DTGNR 3232 P 22	DTGNR 3232 P 22	7028462
DTJNL 12 3B	DTJNL 12 3B	6788520
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DTJNL 20 4D	DTJNL 20 4D	6788522
DTJNR 12 3B	DTJNR 12 3B	6788523

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DTJNR 20 4D	DTJNR 20 4D	6788525
DTTNL 12 3B	DTTNL 12 3B	6788619
DTTNL 16 4D	DTTNL 16 4D	6788620
DTTNR 12 3B	DTTNR 12 3B	6788621
DTTNR 16 4D	DTTNR 16 4D	6788622
DVJNL 12 3B	DVJNL 12 3B	6788526
DVJNL 16 3D	DVJNL 16 3D	6788527
DVJNL 20 3D	DVJNL 20 3D	6788528
DVJNL 2020 K 16	DVJNL 2020 K 16	7028463
DVJNL 2525 M 16	DVJNL 2525 M 16	7028464
DVJNL 3225 P 16	DVJNL 3225 P 16	7028465
DVJNR 12 3B	DVJNR 12 3B	6788529
DVJNR 16 3D	DVJNR 16 3D	6788530
DVJNR 20 3D	DVJNR 20 3D	6788531
DVJNR 2020 K 16	DVJNR 2020 K 16	7028466
DVJNR 2525 M 16	DVJNR 2525 M 16	7028467
DVJNR 3225 P 16	DVJNR 3225 P 16	7028468
DVPNL 2525 M 16	DVPNL 2525 M 16	7028469
DVPNL 3225 P 16	DVPNL 3225 P 16	7028470
DVPNR 2525 M 16	DVPNR 2525 M 16	7028471
DVPNR 3225 P 16	DVPNR 3225 P 16	7028472
DWLNL 10 3B	DWLNL 10 3B	6788623
DWLNL 12 3C	DWLNL 12 3C	6788624
DWLNL 12 4C	DWLNL 12 4C	6788625
DWLNL 16 3D	DWLNL 16 3D	6788626
DWLNL 16 4D	DWLNL 16 4D	6788627
DWLNL 1616 H 06	DWLNL 1616 H 06	7028473
DWLNL 20 4D	DWLNL 20 4D	6788628
DWLNL 2020 K 06	DWLNL 2020 K 06	7028474
DWLNL 2020 K 08	DWLNL 2020 K 08	6758090
DWLNL 2525 M 06	DWLNL 2525 M 06	7028475
DWLNL 2525 M 08	DWLNL 2525 M 08	6758092
DWLNL 3225 P 08	DWLNL 3225 P 08	6758094
DWLNL 3225 P 10	DWLNL 3225 P 10	6758517
DWLNL 3232 P 13	DWLNL 3232 P 13	6758518
DWLNL 4040 S 13	DWLNL 4040 S 13	6758519
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DWLNR 12 3C	DWLNR 12 3C	6788630
DWLNR 12 4C	DWLNR 12 4C	6788631
DWLNR 16 3D	DWLNR 16 3D	6788632
DWLNR 16 4D	DWLNR 16 4D	6788633
DWLNR 1616 H 06	DWLNR 1616 H 06	7028476
DWLNR 20 4D	DWLNR 20 4D	6788634
DWLNR 2020 K 06	DWLNR 2020 K 06	7028477
DWLNR 2020 K 08	DWLNR 2020 K 08	6758079
DWLNR 2525 M 06	DWLNR 2525 M 06	7028478
DWLNR 2525 M 08	DWLNR 2525 M 08	6758091
DWLNR 3225 P 08	DWLNR 3225 P 08	6758093
DWLNR 3225 P 10	DWLNR 3225 P 10	6758520
DWLNR 3232 P 13	DWLNR 3232 P 13	6758521
DWLNR 4040 S 13	DWLNR 4040 S 13	6758522
GFIL 10A 03	GFIL 10A 03	6790496
GFIL 10A 04	GFIL 10A 04	6790497
GFIL 12C 03	GFIL 12C 03	6790498
GFIL 12C 04	GFIL 12C 04	6790499
GFIL 12C 05	GFIL 12C 05	6790500
GFIL 12C 06	GFIL 12C 06	6790501
GFIL 1616 H 03	GFIL 1616 H 03	6757964
GFIL 1616 H 04	GFIL 1616 H 04	6757970
GFIL 16D 03	GFIL 16D 03	6790502
GFIL 16D 0313L 1.18-.670	GFIL 16D 0313L 1.18-.670	6790503
GFIL 16D 0313L 1.54-.940	GFIL 16D 0313L 1.54-.940	6790504
GFIL 16D 0313L 1.97-1.30	GFIL 16D 0313L 1.97-1.30	6790505
GFIL 16D 0313L 2.36-1.69	GFIL 16D 0313L 2.36-1.69	6790506
GFIL 16D 0313L 2.99-2.09	GFIL 16D 0313L 2.99-2.09	6790507
GFIL 16D 0316L 3.94-2.76	GFIL 16D 0316L 3.94-2.76	6790508
GFIL 16D 0316L 5.12-3.54	GFIL 16D 0316L 5.12-3.54	6790509

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GFIL 16D 03R 1.54-.940	GFIL 16D 03R 1.54-.940	6790512
GFIL 16D 03R 1.97-1.30	GFIL 16D 03R 1.97-1.30	6790513
GFIL 16D 03R 2.36-1.69	GFIL 16D 03R 2.36-1.69	6790514
GFIL 16D 03R 2.99-2.09	GFIL 16D 03R 2.99-2.09	6790515
GFIL 16D 03R 3.94-2.76	GFIL 16D 03R 3.94-2.76	6790516
GFIL 16D 03R 5.12-3.54	GFIL 16D 03R 5.12-3.54	6790517
GFIL 16D 03R 6.69-4.33	GFIL 16D 03R 6.69-4.33	6790518
GFIL 16D 04	GFIL 16D 04	6790519
GFIL 16D 04R 1.18-.670	GFIL 16D 04R 1.18-.670	6790520
GFIL 16D 04R 1.34-.826	GFIL 16D 04R 1.34-.826	6790521
GFIL 16D 04R 1.57-1.02	GFIL 16D 04R 1.57-1.02	6790522
GFIL 16D 04R 1.97-1.26	GFIL 16D 04R 1.97-1.26	6790523
GFIL 16D 04R 2.36-1.65	GFIL 16D 04R 2.36-1.65	6790524
GFIL 16D 04R 2.95-2.05	GFIL 16D 04R 2.95-2.05	6790525
GFIL 16D 04R 3.94-2.76	GFIL 16D 04R 3.94-2.76	6790526
GFIL 16D 04R 5.12-3.54	GFIL 16D 04R 5.12-3.54	6790527
GFIL 16D 04R 6.69-4.33	GFIL 16D 04R 6.69-4.33	6790528
GFIL 16D 04R 9.06-5.51	GFIL 16D 04R 9.06-5.51	6790529
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GFIL 16D 06	GFIL 16D 06	6790531
GFIL 16D 08	GFIL 16D 08	6790532
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GFIL 2020 K 04	GFIL 2020 K 04	6757972
GFIL 2020 K 05	GFIL 2020 K 05	6757976
GFIL 2020 K 06	GFIL 2020 K 06	6757980
GFIL 2525 M 03	GFIL 2525 M 03	6757968
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GFIL 2525 M 0313L 060043	GFIL 2525 M 0313L 060043	6760392
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GFIL 2525 M 0316L 100070	GFIL 2525 M 0316L 100070	6760394
GFIL 2525 M 0316L 130090	GFIL 2525 M 0316L 130090	6760395
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GFIL 2525 M 03R 050033-A	GFIL 2525 M 03R 050033-A	6758936
GFIL 2525 M 03R 060043-A	GFIL 2525 M 03R 060043-A	6758935
GFIL 2525 M 03R 076053-A	GFIL 2525 M 03R 076053-A	6758966
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GFIL 2525 M 03R 130090-A	GFIL 2525 M 03R 130090-A	6758964
GFIL 2525 M 03R 170110-A	GFIL 2525 M 03R 170110-A	6758963
GFIL 2525 M 04	GFIL 2525 M 04	6757974
GFIL 2525 M 04R 030017-A	GFIL 2525 M 04R 030017-A	6758962
GFIL 2525 M 04R 034021-A	GFIL 2525 M 04R 034021-A	6758961
GFIL 2525 M 04R 040026-A	GFIL 2525 M 04R 040026-A	6758960
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GFIL 2525 M 06	GFIL 2525 M 06	6757982
GFIL 2525 M 08	GFIL 2525 M 08	6759691
GFIL 3225 P 08	GFIL 3225 P 08	6759693
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GFIR 10A 03	GFIR 10A 03	6790534
GFIR 10A 04	GFIR 10A 04	6790535
GFIR 12C 03	GFIR 12C 03	6790536
GFIR 12C 04	GFIR 12C 04	6790537
GFIR 12C 05	GFIR 12C 05	6790538
GFIR 12C 06	GFIR 12C 06	6790539
GFIR 1616 H 03	GFIR 1616 H 03	6757963
GFIR 1616 H 04	GFIR 1616 H 04	6757969
GFIR 16D 03	GFIR 16D 03	6790540
GFIR 16D 0313R 1.18-.670	GFIR 16D 0313R 1.18-.670	6790541
GFIR 16D 0313R 1.54-.940	GFIR 16D 0313R 1.54-.940	6790542
GFIR 16D 0313R 1.97-1.30	GFIR 16D 0313R 1.97-1.30	6790543
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GFIR 16D 0313R 2.99-2.09	GFIR 16D 0313R 2.99-2.09	6790545
GFIR 16D 0316R 3.94-2.76	GFIR 16D 0316R 3.94-2.76	6790546
GFIR 16D 0316R 5.12-3.54	GFIR 16D 0316R 5.12-3.54	6790547
GFIR 16D 0316R 6.69-4.33	GFIR 16D 0316R 6.69-4.33	6790548
GFIR 16D 03L 1.18-.670	GFIR 16D 03L 1.18-.670	6790549
GFIR 16D 03L 1.54-.940	GFIR 16D 03L 1.54-.940	6790550
GFIR 16D 03L 1.97-1.30	GFIR 16D 03L 1.97-1.30	6790551
GFIR 16D 03L 2.36-1.69	GFIR 16D 03L 2.36-1.69	6790552
GFIR 16D 03L 2.99-2.09	GFIR 16D 03L 2.99-2.09	6790553
GFIR 16D 03L 3.94-2.76	GFIR 16D 03L 3.94-2.76	6790554
GFIR 16D 03L 5.12-3.54	GFIR 16D 03L 5.12-3.54	6790555
GFIR 16D 03L 6.69-4.33	GFIR 16D 03L 6.69-4.33	6790556
GFIR 16D 04	GFIR 16D 04	6790557
GFIR 16D 04L 1.18-.670	GFIR 16D 04L 1.18-.670	6790558
GFIR 16D 04L 1.34-.826	GFIR 16D 04L 1.34-.826	6790559
GFIR 16D 04L 1.57-1.02	GFIR 16D 04L 1.57-1.02	6790560
GFIR 16D 04L 1.97-1.26	GFIR 16D 04L 1.97-1.26	6790561
GFIR 16D 04L 2.36-1.65	GFIR 16D 04L 2.36-1.65	6790562
GFIR 16D 04L 2.95-2.05	GFIR 16D 04L 2.95-2.05	6790563
GFIR 16D 04L 3.94-2.76	GFIR 16D 04L 3.94-2.76	6790564
GFIR 16D 04L 5.12-3.54	GFIR 16D 04L 5.12-3.54	6790565
GFIR 16D 04L 6.69-4.33	GFIR 16D 04L 6.69-4.33	6790566
GFIR 16D 04L 9.06-5.51	GFIR 16D 04L 9.06-5.51	6790567
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GFIR 16D 08	GFIR 16D 08	6790570
GFIR 2020 K 03	GFIR 2020 K 03	6757965
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GFIR 2020 K 06	GFIR 2020 K 06	6757979
GFIR 2525 M 03	GFIR 2525 M 03	6757967
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GFIR 2525 M 0316R 100070	GFIR 2525 M 0316R 100070	6760402
GFIR 2525 M 0316R 130090	GFIR 2525 M 0316R 130090	6760403

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GFIR 2525 M 03L 100070-A	GFIR 2525 M 03L 100070-A	6758951
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GFIR 2525 M 04L 034021-A	GFIR 2525 M 04L 034021-A	6758947
GFIR 2525 M 04L 040026-A	GFIR 2525 M 04L 040026-A	6758946
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GFIR 2525 M 04L 100070-A	GFIR 2525 M 04L 100070-A	6758942
GFIR 2525 M 04L 130090-A	GFIR 2525 M 04L 130090-A	6758941
GFIR 2525 M 04L 170110-A	GFIR 2525 M 04L 170110-A	6758940
GFIR 2525 M 04L 230140-A	GFIR 2525 M 04L 230140-A	6758939
GFIR 2525 M 05	GFIR 2525 M 05	6757977
GFIR 2525 M 06	GFIR 2525 M 06	6757981
GFIR 2525 M 08	GFIR 2525 M 08	6759687
GFIR 3225 P 08	GFIR 3225 P 08	6759692
GFIR 85E 08	GFIR 85E 08	6790571
GFKL 10A 02	GFKL 10A 02	6790572
GFKL 12C 02	GFKL 12C 02	6790573
GFKL 1616 H 02	GFKL 1616 H 02	6758523
GFKL 16D 02	GFKL 16D 02	6790574
GFKL 2020 K 02	GFKL 2020 K 02	6758524
GFKL 2525 M 02	GFKL 2525 M 02	6758525
GFKR 10A 02	GFKR 10A 02	6790575
GFKR 12C 02	GFKR 12C 02	6790576
GFKR 1616 H 02	GFKR 1616 H 02	6758526
GFKR 16D 02	GFKR 16D 02	6790577
GFKR 2020 K 02	GFKR 2020 K 02	6758527
GFKR 2525 M 02	GFKR 2525 M 02	6758528
GFML 12C 0316	GFML 12C 0316	6790578
GFML 12C 0416	GFML 12C 0416	6790579
GFML 16D 0316	GFML 16D 0316	6790580
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GFML 16D 0516	GFML 16D 0516	6790582
GFML 16D 0616	GFML 16D 0616	6790583
GFML 2020 K 0316	GFML 2020 K 0316	6760365
GFML 2020 K 0416	GFML 2020 K 0416	6760366
GFML 2525 M 0316	GFML 2525 M 0316	6760367
GFML 2525 M 0413L 030017	GFML 2525 M 0413L 030017	6760405
GFML 2525 M 0413L 034021	GFML 2525 M 0413L 034021	6760406
GFML 2525 M 0413L 040026	GFML 2525 M 0413L 040026	6760407
GFML 2525 M 0413L 050032	GFML 2525 M 0413L 050032	6760408
GFML 2525 M 0413L 060042	GFML 2525 M 0413L 060042	6760409
GFML 2525 M 0413L 075052	GFML 2525 M 0413L 075052	6760410

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GFML 2525 M 0413R 034021	GFML 2525 M 0413R 034021	6761001
GFML 2525 M 0413R 040026	GFML 2525 M 0413R 040026	6761002
GFML 2525 M 0413R 050032	GFML 2525 M 0413R 050032	6761003
GFML 2525 M 0413R 060042	GFML 2525 M 0413R 060042	6761004
GFML 2525 M 0413R 075052	GFML 2525 M 0413R 075052	6761005
GFML 2525 M 0416	GFML 2525 M 0416	6760368
GFML 2525 M 0416L 100070	GFML 2525 M 0416L 100070	6760411
GFML 2525 M 0416L 130090	GFML 2525 M 0416L 130090	6760412
GFML 2525 M 0416L 170110	GFML 2525 M 0416L 170110	6760413
GFML 2525 M 0416L 230140	GFML 2525 M 0416L 230140	6760414
GFML 2525 M 0416R 100070	GFML 2525 M 0416R 100070	6761006
GFML 2525 M 0416R 130090	GFML 2525 M 0416R 130090	6761007
GFML 2525 M 0416R 170110	GFML 2525 M 0416R 170110	6761008
GFML 2525 M 0416R 230140	GFML 2525 M 0416R 230140	6761009
GFML 2525 M 0516	GFML 2525 M 0516	6760369
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GFMR 16D 0516	GFMR 16D 0516	6790591
GFMR 16D 0616	GFMR 16D 0616	6790592
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GFMR 2525 M 0413L 030017	GFMR 2525 M 0413L 030017	6760990
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GFMR 2525 M 0413R 060042	GFMR 2525 M 0413R 060042	6760419
GFMR 2525 M 0413R 075052	GFMR 2525 M 0413R 075052	6760420
GFMR 2525 M 0416	GFMR 2525 M 0416	6760377
GFMR 2525 M 0416L 100070	GFMR 2525 M 0416L 100070	6760996
GFMR 2525 M 0416L 130090	GFMR 2525 M 0416L 130090	6760997
GFMR 2525 M 0416L 170110	GFMR 2525 M 0416L 170110	6760998

ANSI	ISO	EDP
GFMR 2525 M 0416L 230140	GFMR 2525 M 0416L 230140	6760999
GFMR 2525 M 0416R 100070	GFMR 2525 M 0416R 100070	6760421
GFMR 2525 M 0416R 130090	GFMR 2525 M 0416R 130090	6760422
GFMR 2525 M 0416R 170110	GFMR 2525 M 0416R 170110	6760423
GFMR 2525 M 0416R 230140	GFMR 2525 M 0416R 230140	6760424
GFMR 2525 M 0516	GFMR 2525 M 0516	6760378
GFMR 2525 M 0616	GFMR 2525 M 0616	6760379
GFMR 3225 P 0516	GFMR 3225 P 0516	6760380
GFMR 3225 P 0616	GFMR 3225 P 0616	6760381
GFMR 3225 P 0830	GFMR 3225 P 0830	6760382
GFMR 85E 0516	GFMR 85E 0516	6790593
GFMR 85E 0616	GFMR 85E 0616	6790594
GFMR 85E 0830	GFMR 85E 0830	6790595
GGIL 16D 03L 1.18-.670	GGIL 16D 03L 1.18-.670	6790596
GGIL 16D 03L 1.54-.940	GGIL 16D 03L 1.54-.940	6790597
GGIL 16D 03L 1.97-1.30	GGIL 16D 03L 1.97-1.30	6790598
GGIL 16D 03L 2.36-1.69	GGIL 16D 03L 2.36-1.69	6790599
GGIL 16D 03L 2.99-2.09	GGIL 16D 03L 2.99-2.09	6790600
GGIL 16D 03L 3.94-2.76	GGIL 16D 03L 3.94-2.76	6790601
GGIL 16D 03L 5.12-3.54	GGIL 16D 03L 5.12-3.54	6790602
GGIL 16D 03L 6.69-4.33	GGIL 16D 03L 6.69-4.33	6790603
GGIL 2525 M 03L 030017	GGIL 2525 M 03L 030017	6758108
GGIL 2525 M 03L 039024	GGIL 2525 M 03L 039024	6758109
GGIL 2525 M 03L 050033	GGIL 2525 M 03L 050033	6758110
GGIL 2525 M 03L 060043	GGIL 2525 M 03L 060043	6758111
GGIL 2525 M 03L 076053	GGIL 2525 M 03L 076053	6758112
GGIL 2525 M 03L 100070	GGIL 2525 M 03L 100070	6758227
GGIL 2525 M 03L 130090	GGIL 2525 M 03L 130090	6758228
GGIL 2525 M 03L 170110	GGIL 2525 M 03L 170110	6758229
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GGIR 16D 03R 1.54-.940	GGIR 16D 03R 1.54-.940	6790605
GGIR 16D 03R 1.97-1.30	GGIR 16D 03R 1.97-1.30	6790606
GGIR 16D 03R 2.36-1.69	GGIR 16D 03R 2.36-1.69	6790607
GGIR 16D 03R 2.99-2.09	GGIR 16D 03R 2.99-2.09	6790608
GGIR 16D 03R 3.94-2.76	GGIR 16D 03R 3.94-2.76	6790609
GGIR 16D 03R 5.12-3.54	GGIR 16D 03R 5.12-3.54	6790610
GGIR 16D 03R 6.69-4.33	GGIR 16D 03R 6.69-4.33	6790611
GGIR 2525 M 03R 030017	GGIR 2525 M 03R 030017	6758103
GGIR 2525 M 03R 039024	GGIR 2525 M 03R 039024	6758104
GGIR 2525 M 03R 050033	GGIR 2525 M 03R 050033	6758105
GGIR 2525 M 03R 060043	GGIR 2525 M 03R 060043	6758106
GGIR 2525 M 03R 076053	GGIR 2525 M 03R 076053	6758107
GGIR 2525 M 03R 100070	GGIR 2525 M 03R 100070	6758224
GGIR 2525 M 03R 130090	GGIR 2525 M 03R 130090	6758225
GGIR 2525 M 03R 170110	GGIR 2525 M 03R 170110	6758226
GL2-S10CFL-.63-1.78	GL2-S10CFL-.63-1.78	7804075
GL2-S10CFR-.63-1.78	GL2-S10CFR-.63-1.78	7804076
GL2-S12CFL-.79-3.15	GL2-S12CFL-.79-3.15	7804077
GL2-S12CFR-.79-3.15	GL2-S12CFR-.79-3.15	7804078
GL2-S1616KFL-16-45	GL2-S1616KFL-16-45	7803124
GL2-S1616KFR-16-45	GL2-S1616KFR-16-45	7803125
GL2-S16DFL-.79-3.15	GL2-S16DFL-.79-3.15	7804079
GL2-S16DFR-.79-3.15	GL2-S16DFR-.79-3.15	7804140
GL2-S2020KFL-20-80	GL2-S2020KFL-20-80	7803126
GL2-S2020KFR-20-80	GL2-S2020KFR-20-80	7803127
GL2-S2525MFL-20-80	GL2-S2525MFL-20-80	7803128

ANSI	ISO	EDP
GL2-S2525MFR-20-80	GL2-S2525MFR-20-80	7803129
GL3-S10CFL-.63-1.78	GL3-S10CFL-.63-1.78	7804141
GL3-S10CFR-.63-1.78	GL3-S10CFR-.63-1.78	7804142
GL3-S12CFL-.79-3.15	GL3-S12CFL-.79-3.15	7804143
GL3-S12CFR-.79-3.15	GL3-S12CFR-.79-3.15	7804144
GL3-S1616KFL-16-45	GL3-S1616KFL-16-45	7803232
GL3-S1616KFR-16-45	GL3-S1616KFR-16-45	7803233
GL3-S16DFL-.79-3.15	GL3-S16DFL-.79-3.15	7804145
GL3-S16DFR-.79-3.15	GL3-S16DFR-.79-3.15	7804146
GL3-S16EFL-1.26-3.15	GL3-S16EFL-1.26-3.15	7804147
GL3-S16EFR-1.26-3.15	GL3-S16EFR-1.26-3.15	7804148
GL3-S2020KFL-20-80	GL3-S2020KFL-20-80	7803234
GL3-S2020KFR-20-80	GL3-S2020KFR-20-80	7803235
GL3-S2525MFL-20-80	GL3-S2525MFL-20-80	7803236
GL3-S2525MFR-20-80	GL3-S2525MFR-20-80	7803237
GL3-S2525PFL-32-80	GL3-S2525PFL-32-80	7803238
GL3-S2525PFR-32-80	GL3-S2525PFR-32-80	7803239
GL4-S12CFL-.79-3.15	GL4-S12CFL-.79-3.15	7804149
GL4-S12CFR-.79-3.15	GL4-S12CFR-.79-3.15	7804150
GL4-S16DFL-.79-3.15	GL4-S16DFL-.79-3.15	7804151
GL4-S16DFR-.79-3.15	GL4-S16DFR-.79-3.15	7804152
GL4-S16EFL-1.26-3.15	GL4-S16EFL-1.26-3.15	7804153
GL4-S16EFR-1.26-3.15	GL4-S16EFR-1.26-3.15	7804154
GL4-S2020KFL-20-80	GL4-S2020KFL-20-80	7803242
GL4-S2020KFR-20-80	GL4-S2020KFR-20-80	7803243
GL4-S2525MFL-20-80	GL4-S2525MFL-20-80	7803244
GL4-S2525MFR-20-80	GL4-S2525MFR-20-80	7803245
GL4-S2525PFL-32-80	GL4-S2525PFL-32-80	7803246
GL4-S2525PFR-32-80	GL4-S2525PFR-32-80	7803247
GL5-S12CFL-.79-3.15	GL5-S12CFL-.79-3.15	7804155
GL5-S12CFR-.79-3.15	GL5-S12CFR-.79-3.15	7804156
GL5-S16DFL-.79-3.15	GL5-S16DFL-.79-3.15	7804157
GL5-S16DFR-.79-3.15	GL5-S16DFR-.79-3.15	7804158
GL5-S2020KFL-20-80	GL5-S2020KFL-20-80	7803249
GL5-S2020KFR-20-80	GL5-S2020KFR-20-80	7803250
GL5-S2525MFL-20-80	GL5-S2525MFL-20-80	7803251
GL5-S2525MFR-20-80	GL5-S2525MFR-20-80	7803252
GL6-S12CFL-.79-3.15	GL6-S12CFL-.79-3.15	7804159
GL6-S12CFR-.79-3.15	GL6-S12CFR-.79-3.15	7804160
GL6-S16DFL-.79-3.15	GL6-S16DFL-.79-3.15	7804161
GL6-S16DFR-.79-3.15	GL6-S16DFR-.79-3.15	7804162
GL6-S2020KFL-20-80	GL6-S2020KFL-20-80	7803254
GL6-S2020KFR-20-80	GL6-S2020KFR-20-80	7803255
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HSK.100A-FMH2.16.060	HSK.100A-FMH2.16.060	7227083
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HSK.100A-FMH4.27.120	HSK.100A-FMH4.27.120	7227349
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HSK.100A-FMH4.50.235	HSK.100A-FMH4.50.235	7227352
HSK.100A-FMH4.60.255	HSK.100A-FMH4.60.255	7227353
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HSK.100A-IHA.M10.150	HSK.100A-IHA.M10.150	7227057
HSK.100A-IHA.M12.050	HSK.100A-IHA.M12.050	7227058
HSK.100A-IHA.M12.100	HSK.100A-IHA.M12.100	7227059
HSK.100A-IHA.M12.150	HSK.100A-IHA.M12.150	7227060
HSK.100A-IHA.M16.050	HSK.100A-IHA.M16.050	7227061
HSK.100A-IHA.M16.100	HSK.100A-IHA.M16.100	7227062
HSK.100A-IHA.M16.150	HSK.100A-IHA.M16.150	7227063
HSK.100A-IHA.M8.050	HSK.100A-IHA.M8.050	7227064
HSK.100A-MT.1.110	HSK.100A-MT.1.110	7227121
HSK.100A-MT.2.120	HSK.100A-MT.2.120	7227122

ANSI	ISO	EDP
HSK.100A-MT.3.150	HSK.100A-MT.3.150	7227123
HSK.100A-MT.4.170	HSK.100A-MT.4.170	7227124
HSK.100A-MT.5.200	HSK.100A-MT.5.200	7227125
HSK.100A-MTS.1.110	HSK.100A-MTS.1.110	7227130
HSK.100A-MTS.2.120	HSK.100A-MTS.2.120	7227131
HSK.100A-MTS.3.150	HSK.100A-MTS.3.150	7227132
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HSK.100A-MTS.5.200	HSK.100A-MTS.5.200	7227134
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HSK.100A-SC.06.085.C	HSK.100A-SC.06.085.C	7227315
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HSK.100A-SC.12.160.C	HSK.100A-SC.12.160.C	7227322
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HSK.100A-SC.14.095.C	HSK.100A-SC.14.095.C	7227323
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HSK.100A-SC.16.100.C	HSK.100A-SC.16.100.C	7227325
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HSK.100A-SC.18.100.C	HSK.100A-SC.18.100.C	7227327
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HSK.100A-SC.25.115.C	HSK.100A-SC.25.115.C	7227331
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HSK.100A-SC.25.160.C	HSK.100A-SC.25.160.C	7227332
HSK.100A-SC.25.200	HSK.100A-SC.25.200	7227303
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HSK.100A-SC.32.120.C	HSK.100A-SC.32.120.C	7227333
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HSK.100A-SC.32.160.C	HSK.100A-SC.32.160.C	7227334
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HSK.100A-SC.40.150	HSK.100A-SC.40.150	7227293
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HSK.100A-W.08.160	HSK.100A-W.08.160	7227006

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HSK.100A-W.18.100.C	HSK.100A-W.18.100.C	7227031
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HSK.100A-W.20.100	HSK.100A-W.20.100	7227017
HSK.100A-W.20.100.C	HSK.100A-W.20.100.C	7227032
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HSK.100A-W.25.100	HSK.100A-W.25.100	7227019
HSK.100A-W.25.100.C	HSK.100A-W.25.100.C	7227033
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HSK.100A-W.32.100.C	HSK.100A-W.32.100.C	7227034
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HSK.100A-W.40.160	HSK.100A-W.40.160	7227024
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HSK.63A-FMH1.16.100	HSK.63A-FMH1.16.100	7227098
HSK.63A-FMH1.16.160	HSK.63A-FMH1.16.160	7227099
HSK.63A-FMH1.22.050	HSK.63A-FMH1.22.050	7227100
HSK.63A-FMH1.22.100	HSK.63A-FMH1.22.100	7227101
HSK.63A-FMH1.22.160	HSK.63A-FMH1.22.160	7227102
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HSK.63A-FMH1.27.100	HSK.63A-FMH1.27.100	7227104
HSK.63A-FMH1.27.160	HSK.63A-FMH1.27.160	7227105
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HSK.63A-FMH1.32.100	HSK.63A-FMH1.32.100	7227107
HSK.63A-FMH1.32.160	HSK.63A-FMH1.32.160	7227108
HSK.63A-FMH1.40.060	HSK.63A-FMH1.40.060	7227109
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HSK.63A-FMH1.40.160	HSK.63A-FMH1.40.160	7227111
HSK.63A-FMH2.16.060	HSK.63A-FMH2.16.060	7227088
HSK.63A-FMH2.16.100	HSK.63A-FMH2.16.100	7227089
HSK.63A-FMH2.22.060	HSK.63A-FMH2.22.060	7227090
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HSK.63A-IHA.M12.150	HSK.63A-IHA.M12.150	7227073
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HSK.63A-IHA.M16.075	HSK.63A-IHA.M16.075	7227076
HSK.63A-IHA.M16.100	HSK.63A-IHA.M16.100	7227077
HSK.63A-IHA.M16.150	HSK.63A-IHA.M16.150	7227078
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HSK.63A-IHA.M8.025	HSK.63A-IHA.M8.025	7227080
HSK.63A-IHA.M8.050	HSK.63A-IHA.M8.050	7227081
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HSK.63A-MT.2.120	HSK.63A-MT.2.120	7227127
HSK.63A-MT.3.140	HSK.63A-MT.3.140	7227128
HSK.63A-MT.4.160	HSK.63A-MT.4.160	7227129
HSK.63A-MTS.1.100	HSK.63A-MTS.1.100	7227135

ANSI	ISO	EDP
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HSK.63A-MTS.4.160	HSK.63A-MTS.4.160	7227138
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HSK.63A-W.18.100.C	HSK.63A-W.18.100.C	7227049
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MS-EN-16 D	MS-EN-16 D	6790615
MS-EN-1616 H	MS-EN-1616 H	6756338
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MS-EN-3225 P	MS-EN-3225 P	6756330
MS-EN-3225 PS	MS-EN-3225 PS	6756838
MS-EN-85 E	MS-EN-85 E	6790616
MTJNL 2020 K 16	MTJNL 2020 K 16	6758419
MTJNL 2525 M 16	MTJNL 2525 M 16	6758421
MTJNL 3232 P 22	MTJNL 3232 P 22	6758423
MTJNR 2020 K 16	MTJNR 2020 K 16	6758418
MTJNR 2525 M 16	MTJNR 2525 M 16	6758420
MTJNR 3232 P 22	MTJNR 3232 P 22	6758422
MVJNL 2020 K 16-A	MVJNL 2020 K 16-A	6756761
MVJNL 2525 M 16-A	MVJNL 2525 M 16-A	6756762
MVJNL 3225 P 16-A	MVJNL 3225 P 16-A	6757319
MVJNR 2020 K 16-A	MVJNR 2020 K 16-A	6756763
MVJNR 2525 M 16-A	MVJNR 2525 M 16-A	6756764
MVJNR 3225 P 16-A	MVJNR 3225 P 16-A	6756765
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MWLNL 3225 P 08	MWLNL 3225 P 08	6757154
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PCBNR 3232 P 16	PCBNR 3232 P 16	6757041
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PCBNR 4040 S 25	PCBNR 4040 S 25	6757128
PCBNR 5050 T 25	PCBNR 5050 T 25	6757406
PCKNL 2020 K 12	PCKNL 2020 K 12	6757283
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PCKNL 3225 P 12	PCKNL 3225 P 12	6757284
PCKNL 3232 P 16	PCKNL 3232 P 16	6757285
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PCLNL 2020 K 12	PCLNL 2020 K 12	6756933
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PDJNL 2020 K 15	PDJNL 2020 K 15	6756743
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PDXNR 3225 P 15	PDXNR 3225 P 15	6757082

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PLBNL 6060 V 50-2	PLBNL 6060 V 50-2	7045478
PLBNR 6060 V 40-A	PLBNR 6060 V 40-A	6757240
PLBNR 6060 V 50	PLBNR 6060 V 50	6758284
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PRDCN 5050 S 32	PRDCN 5050 S 32	6757175
PRDCN 5050 T 32	PRDCN 5050 T 32	6758285
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PRSCL 3232 P 20	PRSCL 3232 P 20	6757180
PRSCL 4040 R 16	PRSCL 4040 R 16	6757906
PRSCL 4040 S 25	PRSCL 4040 S 25	6758533
PRSCR 3225 P 16	PRSCR 3225 P 16	6757185
PRSCR 3232 P 20	PRSCR 3232 P 20	6757174
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PRSCR 4040 S 25	PRSCR 4040 S 25	6758534
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PRSNR 4040 R 19	PRSNR 4040 R 19	6757278
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PSBNL 4040 R 19	PSBNL 4040 R 19	6756737
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PSSNL 5050 T 2509	PSSNL 5050 T 2509	6757889
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PSSNR 3225 P 15	PSSNR 3225 P 15	6757130
PSSNR 3232 P 19	PSSNR 3232 P 19	6756897
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PSSNR 5050 T 2509	PSSNR 5050 T 2509	6757888
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PXFNL 2525 S 19/15	PXFNL 2525 S 19/15	6759654
PXFNL 3232 S 25	PXFNL 3232 S 25	6760228
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PXFNR 2525 R 15/15	PXFNR 2525 R 15/15	6759651
PXFNR 2525 S 19	PXFNR 2525 S 19	6760225

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SCACR 1616 H 09	SCACR 1616 H 09	6756779
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SDPCN 12 3B	SDPCN 12 3B	6788672
SDPCN 16 3C	SDPCN 16 3C	6788673
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SEGCL 1616 H 08	SEGCL 1616 H 08	6760433
SEGCR 1212 N 08	SEGCR 1212 N 08	6760434
SEGCR 1616 H 08	SEGCR 1616 H 08	6760435
SEL 12 C16	SEL 12 C16	6790619
SEL 16 D16	SEL 16 D16	6790630
SEL 16 D22	SEL 16 D22	6790631
SEL 2020 K 16	SEL 2020 K 16	6756971
SEL 2525 M 16	SEL 2525 M 16	6756972
SEL 2525 M 22-A	SEL 2525 M 22-A	6757165
SEL 3225 P 16	SEL 3225 P 16	6757249
SEL 3225 P 22-A	SEL 3225 P 22-A	6757250
SEL 85 D16	SEL 85 D16	6790632
SEL 85 D22	SEL 85 D22	6790633
SEL-S 16 D22	SEL-S 16 D22	6790634
SEL-S 2525 M 22-A	SEL-S 2525 M 22-A	6757161
SEL-S 3225 P 22-A	SEL-S 3225 P 22-A	6757241
SEL-S 85 D22	SEL-S 85 D22	6790635
SER 12 C16	SER 12 C16	6790636
SER 16 D16	SER 16 D16	6790637
SER 16 D22	SER 16 D22	6790638
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SER 2525 M 16	SER 2525 M 16	6756940
SER 2525 M 22-A	SER 2525 M 22-A	6756923
SER 3225 P 16	SER 3225 P 16	6756973
SER 3225 P 22-A	SER 3225 P 22-A	6756981
SER 85 D16	SER 85 D16	6790639
SER 85 D22	SER 85 D22	6790640
SER-S 16 D22	SER-S 16 D22	6790641
SER-S 2525 M 22-A	SER-S 2525 M 22-A	6757114
SER-S 3225 P 22-A	SER-S 3225 P 22-A	6757316
SER-S 85 D22	SER-S 85 D22	6790642
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SRDCL 3225 P 08-A	SRDCL 3225 P 08-A	6760488
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SRDCN 2020 K 10-M-A	SRDCN 2020 K 10-M-A	6756588
SRDCN 2525 M 10-M-A	SRDCN 2525 M 10-M-A	6756589
SRDCN 2525 M 12-M-A	SRDCN 2525 M 12-M-A	6756590
SRDCN 3225 P 10-M	SRDCN 3225 P 10-M	6758436
SRDCN 3225 P 12-M	SRDCN 3225 P 12-M	6758437
SRDCN 3225 P 16-M	SRDCN 3225 P 16-M	6758444
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SSBCL 2525 M 12-M-A	SSBCL 2525 M 12-M-A	6756598
SSBCL 4040 S 25	SSBCL 4040 S 25	6757891
SSBCL 5050 T 25	SSBCL 5050 T 25	6757893
SSBCL 5050 T 38-A	SSBCL 5050 T 38-A	6759704
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SSBCR 1616 H 09	SSBCR 1616 H 09	6756784
SSBCR 2020 K 12-M-A	SSBCR 2020 K 12-M-A	6756599
SSBCR 2525 M 12-M-A	SSBCR 2525 M 12-M-A	6756600
SSBCR 4040 S 25	SSBCR 4040 S 25	6757890
SSBCR 5050 T 25	SSBCR 5050 T 25	6757892
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SSDCN 2525 M 12-M-A	SSDCN 2525 M 12-M-A	6756602
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STFCR 1616 H 11	STFCR 1616 H 11	6756805
STFCR 2020 K 11-A	STFCR 2020 K 11-A	6760493
STFCR 2020 K 16-M-A	STFCR 2020 K 16-M-A	6756609
STFCR 2525 M 16-M-A	STFCR 2525 M 16-M-A	6756610
STGCL 08 2	STGCL 08 2	6788676
STGCL 12 3B	STGCL 12 3B	6788677
STGCL 16 3D	STGCL 16 3D	6788678
STGCR 08 2	STGCR 08 2	6788679
STGCR 12 3B	STGCR 12 3B	6788680
STGCR 16 3D	STGCR 16 3D	6788681
STJCL 1616 H 11	STJCL 1616 H 11	6756791
STJCL 2020 K 16-M-A	STJCL 2020 K 16-M-A	6756611
STJCL 2525 M 16-M-A	STJCL 2525 M 16-M-A	6756612
STJCR 1616 H 11	STJCR 1616 H 11	6756806
STJCR 2020 K 16-M-A	STJCR 2020 K 16-M-A	6756613
STJCR 2525 M 16-M-A	STJCR 2525 M 16-M-A	6756614
SVACL 0808 K 13-DC	SVACL 0808 K 13-DC	6760606
SVACL 1010 L 13-DC	SVACL 1010 L 13-DC	6760832
SVACL 1212 L 13-DC	SVACL 1212 L 13-DC	6760609
SVACL 1616 M 13-DC	SVACL 1616 M 13-DC	6760833
SVACL 2020 M 13-DC	SVACL 2020 M 13-DC	6760835
SVACL 2525 M 13-DC	SVACL 2525 M 13-DC	6760611
SVACR 0808 K 13-DC	SVACR 0808 K 13-DC	6760831
SVACR 1010 L 13-DC	SVACR 1010 L 13-DC	6760607
SVACR 1212 L 13-DC	SVACR 1212 L 13-DC	6760608
SVACR 1616 M 13-DC	SVACR 1616 M 13-DC	6760610
SVACR 2020 M 13-DC	SVACR 2020 M 13-DC	6760834
SVACR 2525 M 13-DC	SVACR 2525 M 13-DC	6760836
SVGCL 0808 K 07	SVGCL 0808 K 07	6760750
SVGCL 1010 M 07	SVGCL 1010 M 07	6760751
SVGCL 1212 M 07	SVGCL 1212 M 07	6760752
SVGCL 1616 P 07	SVGCL 1616 P 07	6760767
SVGCR 0808 K 07	SVGCR 0808 K 07	6760747
SVGCR 1010 M 07	SVGCR 1010 M 07	6760748
SVGCR 1212 M 07	SVGCR 1212 M 07	6760749
SVGCR 1616 P 07	SVGCR 1616 P 07	6760766
SVHBL 12 3B	SVHBL 12 3B	6788682
SVHBL 16 3D	SVHBL 16 3D	6788683
SVHBL 1616 H 11	SVHBL 1616 H 11	6760327
SVHBR 12 3B	SVHBR 12 3B	6788684
SVHBR 16 3D	SVHBR 16 3D	6788685
SVHBR 1616 H 11	SVHBR 1616 H 11	6760328
SVHCL 2020 K 16-M-A	SVHCL 2020 K 16-M-A	6756615
SVHCL 2525 M 16-M-A	SVHCL 2525 M 16-M-A	6756616
SVHCR 2020 K 16-M-A	SVHCR 2020 K 16-M-A	6756617
SVHCR 2525 M 16-M-A	SVHCR 2525 M 16-M-A	6756618
SVJBL 10 2	SVJBL 10 2	6788687
SVJBL 12 2B	SVJBL 12 2B	6788686
SVJBL 12 3B	SVJBL 12 3B	6788690
SVJBL 1212 F 11	SVJBL 1212 F 11	6760329
SVJBL 16 3D	SVJBL 16 3D	6789414
SVJBL 1616 H 11	SVJBL 1616 H 11	6760330
SVJBL 20 3D	SVJBL 20 3D	6788695
SVJBR 10 2	SVJBR 10 2	6788689
SVJBR 12 2B	SVJBR 12 2B	6788688
SVJBR 12 3B	SVJBR 12 3B	6788693
SVJBR 1212 F 11	SVJBR 1212 F 11	6760331
SVJBR 16 3D	SVJBR 16 3D	6788694
SVJBR 1616 H 11	SVJBR 1616 H 11	6760332
SVJBR 20 3D	SVJBR 20 3D	6788692
SVJCL 0808 K 13-DC	SVJCL 0808 K 13-DC	6760596
SVJCL 1010 L 13-DC	SVJCL 1010 L 13-DC	6760598
SVJCL 1212 L 13-DC	SVJCL 1212 L 13-DC	6760600
SVJCL 1212 N 13	SVJCL 1212 N 13	6760436
SVJCL 1616 H 13	SVJCL 1616 H 13	6760437
SVJCL 1616 M 13-DC	SVJCL 1616 M 13-DC	6760602
SVJCL 2020 K 13	SVJCL 2020 K 13	6760438
SVJCL 2020 K 16-M-A	SVJCL 2020 K 16-M-A	6756619
SVJCL 2020 M 13-DC	SVJCL 2020 M 13-DC	6760604
SVJCL 2525 M 13	SVJCL 2525 M 13	6760439
SVJCL 2525 M 13-DC	SVJCL 2525 M 13-DC	6760830
SVJCL 2525 M 16-M-A	SVJCL 2525 M 16-M-A	6756620
SVJCL 3225 P 16-M-A	SVJCL 3225 P 16-M-A	6756621
SVJCR 0808 K 13-DC	SVJCR 0808 K 13-DC	6760829
SVJCR 1010 L 13-DC	SVJCR 1010 L 13-DC	6760597
SVJCR 1212 L 13-DC	SVJCR 1212 L 13-DC	6760599
SVJCR 1212 N 13	SVJCR 1212 N 13	6760440
SVJCR 1616 H 13	SVJCR 1616 H 13	6760441
SVJCR 1616 M 13-DC	SVJCR 1616 M 13-DC	6760601
SVJCR 2020 K 13	SVJCR 2020 K 13	6760442
SVJCR 2020 K 16-M-A	SVJCR 2020 K 16-M-A	6756622
SVJCR 2020 M 13-DC	SVJCR 2020 M 13-DC	6760603
SVJCR 2525 M 13	SVJCR 2525 M 13	6760443
SVJCR 2525 M 13-DC	SVJCR 2525 M 13-DC	6760605
SVJCR 2525 M 16-M-A	SVJCR 2525 M 16-M-A	6756623
SVJCR 3225 P 16-M-A	SVJCR 3225 P 16-M-A	6756624
SVPBL 1616 H 11	SVPBL 1616 H 11	6760333
SVPBL 2020 K 11	SVPBL 2020 K 11	6760334
SVPBR 1616 H 11	SVPBR 1616 H 11	6760335
SVPBR 2020 K 11	SVPBR 2020 K 11	6760336
SVPCL 2020 K 16-M-A	SVPCL 2020 K 16-M-A	6756625
SVPCL 2525 M 16-M-A	SVPCL 2525 M 16-M-A	6756626
SVPCL 3225 P 16-M-A	SVPCL 3225 P 16-M-A	6756627
SVPCR 2020 K 16-M-A	SVPCR 2020 K 16-M-A	6756628
SVPCR 2525 M 16-M-A	SVPCR 2525 M 16-M-A	6756629
SVPCR 3225 P 16-M-A	SVPCR 3225 P 16-M-A	6756630
SVVBN 08 2	SVVBN 08 2	6788696
SVVBN 12 2B	SVVBN 12 2B	6788697
SVVBN 12 3B	SVVBN 12 3B	6788698
SVVBN 1212 F 11	SVVBN 1212 F 11	6760337
SVVBN 16 3D	SVVBN 16 3D	6788699
SVVBN 1616 H 11	SVVBN 1616 H 11	6760338
SVVBN 20 3D	SVVBN 20 3D	6788700
SVVBN 2020 K 11	SVVBN 2020 K 11	6760339
SVVCN 1212 N 13	SVVCN 1212 N 13	6760444
SVVCN 1616 H 13	SVVCN 1616 H 13	6760445
SVVCN 2020 K 13	SVVCN 2020 K 13	6760446
SVVCN 2020 K 16-M-A	SVVCN 2020 K 16-M-A	6756631

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SVVCN 2525 M 13	SVVCN 2525 M 13	6760447
SVVCN 2525 M 16-M-A	SVVCN 2525 M 16-M-A	6756632
SVVCN 3225 P 16-M-A	SVVCN 3225 P 16-M-A	6756633
SVXBL 1212 F 11	SVXBL 1212 F 11	6760340
SVXBL 1616 H 11	SVXBL 1616 H 11	6760341
SVXBR 1212 F 11	SVXBR 1212 F 11	6760342
SVXBR 1616 H 11	SVXBR 1616 H 11	6760343
SVXCL 2020 K 13	SVXCL 2020 K 13	6760448
SVXCL 2020 K 16-M-A	SVXCL 2020 K 16-M-A	6756634
SVXCL 2525 M 16-M-A	SVXCL 2525 M 16-M-A	6756635
SVXCL 3225 P 16-M-A	SVXCL 3225 P 16-M-A	6756636
SVXCR 2020 K 13	SVXCR 2020 K 13	6760449
SVXCR 2020 K 16-M-A	SVXCR 2020 K 16-M-A	6756637
SVXCR 2525 M 16-M-A	SVXCR 2525 M 16-M-A	6756638
SVXCR 3225 P 16-M-A	SVXCR 3225 P 16-M-A	6756639
SWLCL 12 3B	SWLCL 12 3B	6820323
SWLCL 16 4D	SWLCL 16 4D	6820324
SWLCL 1616 H 06	SWLCL 1616 H 06	6756995
SWLCL 2020 K 06	SWLCL 2020 K 06	6756798
SWLCL 2525 M 08	SWLCL 2525 M 08	6757190
SWLCR 12 3B	SWLCR 12 3B	6820325
SWLCR 16 4D	SWLCR 16 4D	6820326
SWLCR 1616 H 06	SWLCR 1616 H 06	6756786
SWLCR 2020 K 06	SWLCR 2020 K 06	6756809
SWLCR 2525 M 08	SWLCR 2525 M 08	6756766
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VDI.30-AR.26	VDI.30-AR.26	7227857
VDI.30-B1.20.40	VDI.30-B1.20.40	7227765
VDI.30-B2.20.40	VDI.30-B2.20.40	7227768
VDI.30-B3.20.40	VDI.30-B3.20.40	7227821
VDI.30-B4.20.40	VDI.30-B4.20.40	7227824
VDI.30-B5.20.40	VDI.30-B5.20.40	7227827
VDI.30-B6.20.40	VDI.30-B6.20.40	7227830
VDI.30-B7.20.40	VDI.30-B7.20.40	7227833
VDI.30-B8.20.40	VDI.30-B8.20.40	7227836
VDI.30-C1.20	VDI.30-C1.20	7227839
VDI.30-C2.20	VDI.30-C2.20	7227842
VDI.30-C3.20	VDI.30-C3.20	7227845
VDI.30-C4.20	VDI.30-C4.20	7227848
VDI.30-D1.20	VDI.30-D1.20	7227851
VDI.30-D2.20	VDI.30-D2.20	7227854
VDI.30-E1.16	VDI.30-E1.16	7227876
VDI.30-E1.20	VDI.30-E1.20	7227877
VDI.30-E1.25	VDI.30-E1.25	7227878
VDI.30-E1.32	VDI.30-E1.32	7227879
VDI.30-E1.40	VDI.30-E1.40	7227880
VDI.30-E2.08	VDI.30-E2.08	7227892
VDI.30-E2.10	VDI.30-E2.10	7227893
VDI.30-E2.12	VDI.30-E2.12	7227894
VDI.30-E2.16	VDI.30-E2.16	7227895
VDI.30-E2.20	VDI.30-E2.20	7227896
VDI.30-E2.25	VDI.30-E2.25	7227897
VDI.30-E2.32	VDI.30-E2.32	7227898
VDI.30-F1.MT.1	VDI.30-F1.MT.1	7227914
VDI.30-F1.MT.2	VDI.30-F1.MT.2	7227915
VDI.30-F1.MT.3	VDI.30-F1.MT.3	7227916
VDI.40-AL.32	VDI.40-AL.32	7227861
VDI.40-AR.32	VDI.40-AR.32	7227858
VDI.40-B1.25.44	VDI.40-B1.25.44	7227766
VDI.40-B2.25.44	VDI.40-B2.25.44	7227769
VDI.40-B3.25.44	VDI.40-B3.25.44	7227822
VDI.40-B4.25.44	VDI.40-B4.25.44	7227825
VDI.40-B5.25.44	VDI.40-B5.25.44	7227828
VDI.40-B6.25.44	VDI.40-B6.25.44	7227831
VDI.40-B7.25.44	VDI.40-B7.25.44	7227834
VDI.40-B8.25.44	VDI.40-B8.25.44	7227837
VDI.40-C1.25	VDI.40-C1.25	7227840
VDI.40-C2.25	VDI.40-C2.25	7227843
VDI.40-C3.25	VDI.40-C3.25	7227846
VDI.40-C4.25	VDI.40-C4.25	7227849
VDI.40-D1.25	VDI.40-D1.25	7227852
VDI.40-D2.25	VDI.40-D2.25	7227855
VDI.40-E1.16	VDI.40-E1.16	7227881
VDI.40-E1.20	VDI.40-E1.20	7227882
VDI.40-E1.25	VDI.40-E1.25	7227883
VDI.40-E1.32	VDI.40-E1.32	7227884

ANSI	ISO	EDP
VDI.40-E1.40	VDI.40-E1.40	7227885
VDI.40-E2.08	VDI.40-E2.08	7227899
VDI.40-E2.10	VDI.40-E2.10	7227900
VDI.40-E2.12	VDI.40-E2.12	7227901
VDI.40-E2.16	VDI.40-E2.16	7227902
VDI.40-E2.20	VDI.40-E2.20	7227903
VDI.40-E2.25	VDI.40-E2.25	7227904
VDI.40-E2.32	VDI.40-E2.32	7227905
VDI.40-E2.40	VDI.40-E2.40	7227906
VDI.40-F1.MT.2	VDI.40-F1.MT.2	7227917
VDI.40-F1.MT.3	VDI.40-F1.MT.3	7227918
VDI.40-F1.MT.4	VDI.40-F1.MT.4	7227919
VDI.50-AL.32	VDI.50-AL.32	7227862
VDI.50-AR.32	VDI.50-AR.32	7227859
VDI.50-B1.32.55	VDI.50-B1.32.55	7227767
VDI.50-B2.32.55	VDI.50-B2.32.55	7227820
VDI.50-B3.32.55	VDI.50-B3.32.55	7227823
VDI.50-B4.32.55	VDI.50-B4.32.55	7227826
VDI.50-B5.32.55	VDI.50-B5.32.55	7227829
VDI.50-B6.32.55	VDI.50-B6.32.55	7227832
VDI.50-B7.32.55	VDI.50-B7.32.55	7227835
VDI.50-B8.32.55	VDI.50-B8.32.55	7227838
VDI.50-C1.32	VDI.50-C1.32	7227841
VDI.50-C2.32	VDI.50-C2.32	7227844
VDI.50-C3.32	VDI.50-C3.32	7227847
VDI.50-C4.32	VDI.50-C4.32	7227850
VDI.50-D1.32	VDI.50-D1.32	7227853
VDI.50-D2.32	VDI.50-D2.32	7227856
VDI.50-E1.16	VDI.50-E1.16	7227886
VDI.50-E1.20	VDI.50-E1.20	7227887
VDI.50-E1.25	VDI.50-E1.25	7227888
VDI.50-E1.32	VDI.50-E1.32	7227889
VDI.50-E1.40	VDI.50-E1.40	7227890
VDI.50-E1.50	VDI.50-E1.50	7227891
VDI.50-E2.12	VDI.50-E2.12	7227907
VDI.50-E2.16	VDI.50-E2.16	7227908
VDI.50-E2.20	VDI.50-E2.20	7227909
VDI.50-E2.25	VDI.50-E2.25	7227910
VDI.50-E2.32	VDI.50-E2.32	7227911
VDI.50-E2.40	VDI.50-E2.40	7227912
VDI.50-E2.50	VDI.50-E2.50	7227913
VDI.50-F1.MT.2	VDI.50-F1.MT.2	7227920
VDI.50-F1.MT.3	VDI.50-F1.MT.3	7227921
VDI.50-F1.MT.4	VDI.50-F1.MT.4	7227922
VDI.50-F1.MT.5	VDI.50-F1.MT.5	7227923
XLCDN 2525 R 15	XLCDN 2525 R 15	6759658
XLCFL 1612 H 03	XLCFL 1612 H 03	6756674
XLCFL 2016 K 03	XLCFL 2016 K 03	6756675
XLCFL 2016 K 04	XLCFL 2016 K 04	6757163
XLCFL 2520 K 03	XLCFL 2520 K 03	6757164
XLCFL 2520 K 04	XLCFL 2520 K 04	6756980
XLCFL 2520 K 05	XLCFL 2520 K 05	6756970
XLCFL 3225 P 05	XLCFL 3225 P 05	6757247
XLCFL 3225 P 06	XLCFL 3225 P 06	6757248
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XLCFR 3225 P 05	XLCFR 3225 P 05	6756672
XLCFR 3225 P 06	XLCFR 3225 P 06	6756673

ANSI	ISO	EDP
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062A2R106W062-ISAD11E-C	062A2R106W062-ISAD11E-C	6790625
062A2R197C062-ISAD11E-C	062A2R197C062-ISAD11E-C	6790626
062E2R118C062-ISBN10-C	062E2R118C062-ISBN10-C	7455279
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062N2R106C062-ISSD09	062N2R106C062-ISSD09	6789707
062N2R106W062-ISSD09	062N2R106W062-ISSD09	6789708
075A2R114C075-ISAD11E-C	075A2R114C075-ISAD11E-C	6790628
075A2R114C075-ISTN10-C	075A2R114C075-ISTN10-C	7276931
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075A3R114C075-ISAD11E-C	075A3R114C075-ISAD11E-C	6790702
075A3R114C075-ISTN10-C	075A3R114C075-ISTN10-C	7276932
075A3R125W075-ISTN10-C	075A3R125W075-ISTN10-C	7276926
075A3R126W075-ISAD11E-C	075A3R126W075-ISAD11E-C	6790703
075E2R175W075-ISRD10-C	075E2R175W075-ISRD10-C	6820353
075E2R250W075-ISRD10-C	075E2R250W075-ISRD10-C	6820354
075E2R325W100-ISRD10-C	075E2R325W100-ISRD10-C	6820355
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075E3R157C075-ISBN10-C	075E3R157C075-ISBN10-C	7455291
075E3R315C075-ISBN10-C	075E3R315C075-ISBN10-C	7455292
075N2R126W075-ISSE09-C	075N2R126W075-ISSE09-C	6789712
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08K2R050A12-SRC08-A	08K2R050A12-SRC08-A	6756718
1000C12R-IS45OE09Z-C	1000C12R-IS45OE09Z-C	7275075
1000C12R-IS57PN13	1000C12R-IS57PN13	6792993
1000C14R-IS45HN09CF	1000C14R-IS45HN09CF	6790728
100A05R-S57PN13	100A05R-S57PN13	6761667
100A05R-S90LN16-C	100A05R-S90LN16-C	6760312
100A05R-SMORC20-C	100A05R-SMORC20-C	7155925
100A06R-S19PD09-C	100A06R-S19PD09-C	6761262
100A06R-S45HN09C-CF	100A06R-S45HN09C-CF	6761571
100A06R-S45OE06Z-C	100A06R-S45OE06Z-C	6922504
100A06R-S45OE09Z-C	100A06R-S45OE09Z-C	7056832
100A06R-S90AD16E-C	100A06R-S90AD16E-C	6760187
100A06R-S90LN12-C	100A06R-S90LN12-C	6760293
100A06R-SMORC12-C	100A06R-SMORC12-C	7155899
100A06R-SMORC16-C	100A06R-SMORC16-C	7155922
100A06R-W90XO12	100A06R-W90XO12	6761754
100A07R-S45OD05-C	100A07R-S45OD05-C	7342887
100A07R-S45OD06D	100A07R-S45OD06D	6756818
100A07R-S45SN12Z-C	100A07R-S45SN12Z-C	6758342
100A07R-S90LN16-C	100A07R-S90LN16-C	6760313
100A07R-SCMORD16	100A07R-SCMORD16	6757638
100A08R-S19PD09-C	100A08R-S19PD09-C	6761263
100A08R-S45HN06C-C	100A08R-S45HN06C-C	6760273
100A08R-S45HN09C-CF	100A08R-S45HN09C-CF	6761572
100A08R-S45OE06Z-C	100A08R-S45OE06Z-C	6922505
100A08R-S45SE09F-C	100A08R-S45SE09F-C	6761669

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100A08R-S90AD16E-C	100A08R-S90AD16E-C	6760188
100A08R-S90LN12-C	100A08R-S90LN12-C	6760294
100A08R-S90SD12-C	100A08R-S90SD12-C	6760183
100A08R-SMOSN11-C	100A08R-SMOSN11-C	7799350
100A10R-C60HN09	100A10R-C60HN09	6761688
100A10R-S45HN09C-CF	100A10R-S45HN09C-CF	6761570
100A10R-S45SE09F-C	100A10R-S45SE09F-C	6761685
100A10R-S90SO09-C	100A10R-S90SO09-C	6758312
100A11R-S90AD11E-C	100A11R-S90AD11E-C	6760219
100A12R-S45HN06C-C	100A12R-S45HN06C-C	6760274
100A12R-W90XO12	100A12R-W90XO12	6761755
100A16R-C60HN09	100A16R-C60HN09	6761689
100A2R128W100-ISAD16E-C	100A2R128W100-ISAD16E-C	6798444
100A2R128W100-ISLN12-C	100A2R128W100-ISLN12-C	6792995
100A2R130C100-ISAD16E-C	100A2R130C100-ISAD16E-C	6798445
100A2R134C100-ISLN12-C	100A2R134C100-ISLN12-C	6792996
100A2R315C100-ISLN12-C	100A2R315C100-ISLN12-C	6792998
100A3R128W100-ISAD11E-C	100A3R128W100-ISAD11E-C	6790704
100A3R128W100-ISSO09-C	100A3R128W100-ISSO09-C	6789775
100A3R134C100-ISAD11E-C	100A3R134C100-ISAD11E-C	6790705
100A3R140C100-ISTN10-C	100A3R140C100-ISTN10-C	7276933
100A3R150W100-ISTN10-C	100A3R150W100-ISTN10-C	7276927
100A3R315C100-ISAD11E-C	100A3R315C100-ISAD11E-C	6790707
100A4R128W100-ISAD11E-C	100A4R128W100-ISAD11E-C	6790708
100A4R134C100-ISAD11E-C	100A4R134C100-ISAD11E-C	6790709
100A4R140C100-ISTN10-C	100A4R140C100-ISTN10-C	7276934
100A4R150W100-ISTN10-C	100A4R150W100-ISTN10-C	7276928
100B6R-S90AP16D	100B6R-S90AP16D	6757029
100B8R-S90AP16D	100B8R-S90AP16D	6757030
100E2R134C075-ISRC10-C	100E2R134C075-ISRC10-C	7455328
100E3R134C075-ISRC10-C	100E3R134C075-ISRC10-C	7455329
100E4R197C100-ISBN10-C	100E4R197C100-ISBN10-C	7455293
100E4R394C100-ISBN10-C	100E4R394C100-ISBN10-C	7455294
100E4R472C100-ISBN10-C	100E4R472C100-ISBN10-C	7455295
100E5R197C100-ISBN10-C	100E5R197C100-ISBN10-C	7455296
100G10N-S90SN12N10	100G10N-S90SN12N10	6758375
100G10N-S90SN12N12	100G10N-S90SN12N12	6758451
100G10N-S90SN12N6	100G10N-S90SN12N6	6758373
100G10N-S90SN12N8	100G10N-S90SN12N8	6758374
100J2R197W100-ISAD11E150	100J2R197W100-ISAD11E150	6790020
100N2R128W100-ISHN06C-C	100N2R128W100-ISHN06C-C	6792953
100N3R128C100-ISSD09	100N3R128C100-ISSD09	6789709
100N3R128W100-ISSD09	100N3R128W100-ISSD09	6789710
100N3R128W100-ISSE09-C	100N3R128W100-ISSE09-C	6789713
100T05R-S90AD16E80-C	100T05R-S90AD16E80-C	6922376
10A1R020B16-SAP10D-C	10A1R020B16-SAP10D-C	6758361
10A2R016A08-SAD07D-C	10A2R016A08-SAD07D-C	6798637
10A2R016A10-SAD07D-C	10A2R016A10-SAD07D-C	6798626

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10A2R018A08-SAD07D-CF	10A2R018A08-SAD07D-CF	7607332
10A2R018A10-SAD07D-CF	10A2R018A10-SAD07D-CF	7607333
10K2R030A12-SRC10-A	10K2R030A12-SRC10-A	6756691
10K2R060A16-SRC10-A	10K2R060A16-SRC10-A	6756719
10L2R030A10-SZP10	10L2R030A10-SZP10	7049114
10L2R050A16-SZP10	10L2R050A16-SZP10	6761626
10L2R050E02-SZP10	10L2R050E02-SZP10	6761646
10N1R027B16-SSD09-A	10N1R027B16-SSD09-A	6757762
10N1R030E02-SSD09-A	10N1R030E02-SSD09-A	6757761
110A06R-S90LN12-C	110A06R-S90LN12-C	6760295
115A08R-SMOSN11-C	115A08R-SMOSN11-C	7799351
1200C14R-IF60SB22X	1200C14R-IF60SB22X	6789687
1200C14R-IS45OE09Z-C	1200C14R-IS45OE09Z-C	7275076
1200C14R-IS57PN13	1200C14R-IS57PN13	6792992
1200C16R-IS45HN09CF	1200C16R-IS45HN09CF	6790729
125A05R-S45OE09Z-C	125A05R-S45OE09Z-C	7056833
125A06R-S45HN09C-CF	125A06R-S45HN09C-CF	6761575
125A06R-S57PN13	125A06R-S57PN13	6761673
125A06R-S90LN16-C	125A06R-S90LN16-C	6760314
125A06R-SMORC20-C	125A06R-SMORC20-C	6920717
125A07R-S45OE06Z-C	125A07R-S45OE06Z-C	6922506
125A07R-S45OE09Z-C	125A07R-S45OE09Z-C	7056834
125A07R-S90LN12-C	125A07R-S90LN12-C	6798612
125A07R-SMORC16-C	125A07R-SMORC16-C	6920715
125A08R-S19PD09-C	125A08R-S19PD09-C	7039765
125A08R-S45HN09C-CF	125A08R-S45HN09C-CF	7049097
125A08R-S45OD05-C	125A08R-S45OD05-C	7342888
125A08R-S45OD06D	125A08R-S45OD06D	6756819
125A08R-S45SN12Z-C	125A08R-S45SN12Z-C	6758343
125A08R-S90LN16-C	125A08R-S90LN16-C	6760315
125A08R-SMOSN11-C	125A08R-SMOSN11-C	7799352
125A08R-W90XO12	125A08R-W90XO12	6761756
125A09R-S45OE06Z-C	125A09R-S45OE06Z-C	6922507
125A09R-S45SE09F-C	125A09R-S45SE09F-C	6761670
125A09R-S90AD16E-C	125A09R-S90AD16E-C	6760189
125A09R-S90LN12-C	125A09R-S90LN12-C	6798613
125A09R-S90SD12-C	125A09R-S90SD12-C	6760184
125A10R-S19PD09-C	125A10R-S19PD09-C	6920711
125A10R-S45HN06C-C	125A10R-S45HN06C-C	6760275
125A10R-S45HN09C-CF	125A10R-S45HN09C-CF	6761574
125A12R-C60HN09	125A12R-C60HN09	6761690
125A12R-S45HN09C-CF	125A12R-S45HN09C-CF	6761573
125A12R-S45SE09F-C	125A12R-S45SE09F-C	6761699
125A12R-S90AD11E-C	125A12R-S90AD11E-C	6760220
125A12R-S90SO09-C	125A12R-S90SO09-C	6758313
125A15R-W90XO12	125A15R-W90XO12	6761758
125A16R-S45HN06C-C	125A16R-S45HN06C-C	6760276
125A20R-C60HN09	125A20R-C60HN09	6761691
125A2R134C125-ISLN12-C	125A2R134C125-ISLN12-C	6792999
125A2R354C125-ISLN12-C	125A2R354C125-ISLN12-C	6793011
125A3R130C125-ISAD16E-C	125A3R130C125-ISAD16E-C	6798446
125A3R150W125-ISAD16E-C	125A3R150W125-ISAD16E-C	6798447
125A3R150W125-ISLN12-C	125A3R150W125-ISLN12-C	6793012
125A3R354C125-ISAD11E-C	125A3R354C125-ISAD11E-C	6790711
125A4R146C125-ISTN10-C	125A4R146C125-ISTN10-C	7276935
125A4R150W125-ISAD11E-C	125A4R150W125-ISAD11E-C	6790712
125A4R150W125-ISSO09-C	125A4R150W125-ISSO09-C	6789776
125A4R150W125-ISTN10-C	125A4R150W125-ISTN10-C	7276929
125A5R134C125-ISAD11E-C	125A5R134C125-ISAD11E-C	6790714
125A5R146C125-ISTN10-C	125A5R146C125-ISTN10-C	7276936
125A5R150W125-ISAD11E-C	125A5R150W125-ISAD11E-C	6790715

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125A5R150W125-ISTN10-C	125A5R150W125-ISTN10-C	7276930
125B05R-F60SB22X	125B05R-F60SB22X	6759707
125B07R-F60SB22X	125B07R-F60SB22X	6758303
125B9R-S90AP16D	125B9R-S90AP16D	6757031
125E2R236C125-ISPD09-C	125E2R236C125-ISPD09-C	6792981
125E3R165C100-ISRC10-C	125E3R165C100-ISRC10-C	7455360
125E4R165C100-ISRC10-C	125E4R165C100-ISRC10-C	7455361
125E5R276C125-ISBN10-C	125E5R276C125-ISBN10-C	7455297
125E5R472C125-ISBN10-C	125E5R472C125-ISBN10-C	7455299
125E6R276C125-ISBN10-C	125E6R276C125-ISBN10-C	7455298
125H04N-S90CN10N18	125H04N-S90CN10N18	6760153
125H12N-S90SN12N10	125H12N-S90SN12N10	6758378
125H12N-S90SN12N12	125H12N-S90SN12N12	6758452
125H12N-S90SN12N6	125H12N-S90SN12N6	6758376
125H12N-S90SN12N8	125H12N-S90SN12N8	6758377
125J2R236W125-ISAD11E185	125J2R236W125-ISAD11E185	6790021
125N3R150W125-ISHN06C-C	125N3R150W125-ISHN06C-C	6792954
125N3R177C100-ISOD05-C	125N3R177C100-ISOD05-C	7546855
125N4R150W125-ISSE09-C	125N4R150W125-ISSE09-C	6789714
12A1R027B16-SAP10D-C	12A1R027B16-SAP10D-C	6758362
12A2R018A10-SAD07D-C	12A2R018A10-SAD07D-C	6798638
12A2R018A10-SSO05O-C	12A2R018A10-SSO05O-C	7342929
12A2R018A12-SAD07D-C	12A2R018A12-SAD07D-C	6798627
12A2R018A12-SSO05O-C	12A2R018A12-SSO05O-C	7342925
12A2R020A10-SCN05C-C	12A2R020A10-SCN05C-C	7636576
12A3R018A12-SAD07D-C	12A3R018A12-SAD07D-C	6798628
12A3R020A12-SAD07D-CF	12A3R020A12-SAD07D-CF	7607334
12K2R030A12-SLC12-A	12K2R030A12-SLC12-A	6756697
12K2R030A12-SRC12-A	12K2R030A12-SRC12-A	6756692
12K2R060A16-SRC12-A	12K2R060A16-SRC12-A	6756720
12L2R035A12-SZP12	12L2R035A12-SZP12	7049115
12L2R040B20-SZP12	12L2R040B20-SZP12	6761633
12L2R040E02-SZP12	12L2R040E02-SZP12	6761647
12L2R045A20-SZP12	12L2R045A20-SZP12	6761621
12L2R060B20-SZP12	12L2R060B20-SZP12	6761634
12L2R060E02-SZP12	12L2R060E02-SZP12	6761648
12L2R090E02-SZP12	12L2R090E02-SZP12	6761649
140A06R-S90LN16-C	140A06R-S90LN16-C	6760317
140A08R-S19PD09-C	140A08R-S19PD09-C	7049117
140A08R-S90AD16E-C	140A08R-S90AD16E-C	6800790
140B05R-F90TB27X	140B05R-F90TB27X	6759712
140B07R-F90TB27X	140B07R-F90TB27X	6758483
14A1R027B16-SAP10D-C	14A1R027B16-SAP10D-C	6758363
14A3R018A12-SAD07D-C	14A3R018A12-SAD07D-C	6798646
14A3R018A14-SAD07D-C	14A3R018A14-SAD07D-C	6798629
14A3R020A12-SAD07D-CF	14A3R020A12-SAD07D-CF	7607335
14A3R020A14-SAD07D-CF	14A3R020A14-SAD07D-CF	7607336
150A04R-IS45SE09F-C	150A04R-IS45SE09F-C	6789715
150A04R-IS90AD11E-C	150A04R-IS90AD11E-C	6790717
150A04R-IS90AD16E-C	150A04R-IS90AD16E-C	6798449
150A04R-IS90LN12-C	150A04R-IS90LN12-C	6793014
150A04R-IS90TN10-C	150A04R-IS90TN10-C	7276848
150A04R-ISMOSN11-C	150A04R-ISMOSN11-C	7800651

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150A05R-IS45HN06C-C	150A05R-IS45HN06C-C	6792926
150A05R-IS90SO09-C	150A05R-IS90SO09-C	6789777
150A05R-ISMOBN10-C	150A05R-ISMOBN10-C	7464859
150A05R-ISMORC10-C	150A05R-ISMORC10-C	7455508
150A06R-IS90AD11E-C	150A06R-IS90AD11E-C	6790718
150A06R-IS90TN10-C	150A06R-IS90TN10-C	7276849
150A07R-ISMOBN10-C	150A07R-ISMOBN10-C	7464890
150A3R160W125-ISAD16E-C	150A3R160W125-ISAD16E-C	6798480
150A4R160W125-ISAD16E-C	150A4R160W125-ISAD16E-C	6798481
150A4R160W125-ISLN12-C	150A4R160W125-ISLN12-C	6793016
150E3R236C125-ISPD09-C	150E3R236C125-ISPD09-C	6792949
150E4R315W125-ISZD12-C	150E4R315W125-ISZD12-C	6789770
150E4R551W125-ISZD12-C	150E4R551W125-ISZD12-C	6789771
150J3R276W125-ISAD11E220	150J3R276W125-ISAD11E220	6790022
150N3R177C125-ISOD05-C	150N3R177C125-ISOD05-C	7546856
150T03R-IS30XP16-C	150T03R-IS30XP16-C	6790025
150T03R-IS45XP16-C	150T03R-IS45XP16-C	6790026
150T03R-IS60XP16-C	150T03R-IS60XP16-C	6790027
15E2R040B16-SRD07	15E2R040B16-SRD07	6757611
15E2R060B16-SRD07	15E2R060B16-SRD07	6757612
15E2R080B20-SRD07	15E2R080B20-SRD07	6757613
15E2R100B20-SRD07	15E2R100B20-SRD07	6757614
15E2R120B25-SRD07	15E2R120B25-SRD07	6757615
160C06R-F60SB22X	160C06R-F60SB22X	6759708
160C06R-S45OE09Z-C	160C06R-S45OE09Z-C	7065600
160C07R-SMORC20-C	160C07R-SMORC20-C	7155926
160C08R-F60SB22X	160C08R-F60SB22X	6758304
160C08R-S45HN09C-CF	160C08R-S45HN09C-CF	7155951
160C08R-S45OE09Z-C	160C08R-S45OE09Z-C	7065601
160C08R-S57PN13	160C08R-S57PN13	6761674
160C08R-S90LN16-C	160C08R-S90LN16-C	7156001
160C08R-SMORC16-C	160C08R-SMORC16-C	7155923
160C09R-S45OD06D	160C09R-S45OD06D	6756820
160C09R-S45OE06Z-C	160C09R-S45OE06Z-C	6931703
160C10R-S45SE09F	160C10R-S45SE09F	6761671
160C10R-S45SN12Z	160C10R-S45SN12Z	6758357
160C10R-S90AD16E-C	160C10R-S90AD16E-C	7155929
160C10R-S90AP16D	160C10R-S90AP16D	6757032
160C10R-W90XO12	160C10R-W90XO12	6761759
160C12R-S45HN09C-CF	160C12R-S45HN09C-CF	7155952
160C12R-S45OE06Z-C	160C12R-S45OE06Z-C	6931704
160C12R-S90SD12	160C12R-S90SD12	6760185
160C14R-S45HN09C-CF	160C14R-S45HN09C-CF	7155953
160C14R-S45SE09F	160C14R-S45SE09F	6761700
160C16R-C60HN09	160C16R-C60HN09	6761692
160H05N-S90XN12N24	160H05N-S90XN12N24	6760157
160H06N-S90CN10N18	160H06N-S90CN10N18	6760152
160H15N-S90SN12N14	160H15N-S90SN12N14	6758383
160H16N-S90SN12N10	160H16N-S90SN12N10	6758381
160H16N-S90SN12N12	160H16N-S90SN12N12	6758382
160H16N-S90SN12N6	160H16N-S90SN12N6	6758379
160H16N-S90SN12N8	160H16N-S90SN12N8	6758380
16A2R024A14-SAD11E-C	16A2R024A14-SAD11E-C	6800792
16A2R024A16-SAD11E-C	16A2R024A16-SAD11E-C	6760210
16A2R027B16-SAD11E-C	16A2R027B16-SAD11E-C	6760196
16A2R030E02-SAD11E-C	16A2R030E02-SAD11E-C	6758928
16A2R032B16-SAP10D-C	16A2R032B16-SAP10D-C	6758364
16A2R050A16-SAD11E-C	16A2R050A16-SAD11E-C	6759683
16A3R019A14-SAD07D-C	16A3R019A14-SAD07D-C	6798639
16A3R019A16-SAD07D-C	16A3R019A16-SAD07D-C	6798630

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16A3R020A14-SCN05C-C	16A3R020A14-SCN05C-C	7636577
16A3R020A14-SSO05O-C	16A3R020A14-SSO05O-C	7343020
16A3R020A16-SSO05O-C	16A3R020A16-SSO05O-C	7342926
16A4R019A16-SAD07D-C	16A4R019A16-SAD07D-C	6798631
16E2R030A14-SBN10-C	16E2R030A14-SBN10-C	7452542
16E2R030A16-SBN10-C	16E2R030A16-SBN10-C	7259577
16E2R030A16-SZD07	16E2R030A16-SZD07	6760246
16E2R050A16-SBN10-C	16E2R050A16-SBN10-C	7452543
16E2R065A16-SZD07	16E2R065A16-SZD07	6760248
16K2R035A16-SLC16-A	16K2R035A16-SLC16-A	6756698
16K2R035A16-SRC16-A	16K2R035A16-SRC16-A	6756693
16K2R065A20-SRC16-A	16K2R065A20-SRC16-A	6756721
16K3R050A16-CXP16	16K3R050A16-CXP16	6761723
16K3R050A20-CXP16	16K3R050A20-CXP16	6761724
16K3R060B20-CXP16	16K3R060B20-CXP16	6761727
16L2R040A16-SZP16-C	16L2R040A16-SZP16-C	7049116
16L2R040B20-SZP16-C	16L2R040B20-SZP16-C	6761635
16L2R040E02-SZP16	16L2R040E02-SZP16	6761650
16L2R045A20-SZP16-C	16L2R045A20-SZP16-C	6761627
16L2R060B20-SZP16-C	16L2R060B20-SZP16-C	6761636
16L2R060E02-SZP16	16L2R060E02-SZP16	6761651
16L2R090E02-SZP16	16L2R090E02-SZP16	6761652
16N2R027A16-SSD09	16N2R027A16-SSD09	6757771
16N2R027B16-SSD09-A	16N2R027B16-SSD09-A	6757763
16N2R027B16-SSO09-C	16N2R027B16-SSO09-C	6758333
16N2R030E02-SSD09-A	16N2R030E02-SSD09-A	6757798
175C06R-F90TB27X	175C06R-F90TB27X	6759713
175C08R-F90TB27X	175C08R-F90TB27X	6758484
175C08R-S90LN16-C	175C08R-S90LN16-C	7156002
175C10R-S90AD16E-C	175C10R-S90AD16E-C	7155950
18A2R029A20-SAD11E-C	18A2R029A20-SAD11E-C	6760318
18A2R032B20-SAP10D-C	18A2R032B20-SAP10D-C	6758365
18A2R050A20-STN10-C	18A2R050A20-STN10-C	7178465
18A4R019A16-SAD07D-C	18A4R019A16-SAD07D-C	6798640
18A4R019A18-SAD07D-C	18A4R019A18-SAD07D-C	6798632
18E2R030A16-SBN10-C	18E2R030A16-SBN10-C	7452544
200A03R-IS90AD16E-C	200A03R-IS90AD16E-C	6798483
200A04R-IS19PD09-C	200A04R-IS19PD09-C	6792982
200A04R-IS45HN06C-C	200A04R-IS45HN06C-C	6792927
200A04R-IS45HN09C-CF	200A04R-IS45HN09C-CF	6790760
200A04R-IS45OD05-C	200A04R-IS45OD05-C	7546797
200A04R-IS45OE06Z-C	200A04R-IS45OE06Z-C	7216301
200A04R-IS90LN12-C	200A04R-IS90LN12-C	6793017
200A04R-ISMOZD12-C	200A04R-ISMOZD12-C	6789772
200A05R-IS45OD05-C	200A05R-IS45OD05-C	7546798
200A05R-IS45OE06Z-C	200A05R-IS45OE06Z-C	7216302
200A05R-IS45SE09F-C	200A05R-IS45SE09F-C	6789716
200A05R-IS90AD11E-C	200A05R-IS90AD11E-C	6790721
200A05R-IS90AD16E-C	200A05R-IS90AD16E-C	6798484
200A05R-IS90LN12-C	200A05R-IS90LN12-C	6793018
200A05R-IS90TN10-C	200A05R-IS90TN10-C	7276920
200A05R-ISCMORD12-C	200A05R-ISCMORD12-C	6820327
200A05R-ISMORC10-C	200A05R-ISMORC10-C	7455509
200A05R-ISMOSN11-C	200A05R-ISMOSN11-C	7800652
200A06R-IS45HN06C-C	200A06R-IS45HN06C-C	6792928
200A06R-IS90SO09-C	200A06R-IS90SO09-C	6789778
200A06R-ISMORC10-C	200A06R-ISMORC10-C	7455530
200A06R-ISMOSN11-C	200A06R-ISMOSN11-C	7800653
200A07R-IS90AD11E-C	200A07R-IS90AD11E-C	6790722
200A07R-IS90TN10-C	200A07R-IS90TN10-C	7276921
200C08R-F60SB22X	200C08R-F60SB22X	6759709
200C08R-S45OE09Z-C	200C08R-S45OE09Z-C	7065602
200C10R-F60SB22X	200C10R-F60SB22X	6758305
200C10R-S45HN09C-CF	200C10R-S45HN09C-CF	7155954
200C10R-S45OE09Z-C	200C10R-S45OE09Z-C	7065603
200C10R-S57PN13	200C10R-S57PN13	6761675
200C11R-S45OE06Z-C	200C11R-S45OE06Z-C	6931705
200C12R-S45SN12Z	200C12R-S45SN12Z	6758446

ANSI	ISO	EDP
200C12R-W90XO12	200C12R-W90XO12	6761761
200C14R-S45OE06Z-C	200C14R-S45OE06Z-C	6931706
200C20R-C60HN09	200C20R-C60HN09	6761694
200J06N-S90XN12N24	200J06N-S90XN12N24	6760156
200J06N-S90XN16N30	200J06N-S90XN16N30	6760160
200J07N-S90CN10N18	200J07N-S90CN10N18	6760151
200J18N-S90SN12N10	200J18N-S90SN12N10	6758455
200J18N-S90SN12N12	200J18N-S90SN12N12	6758456
200J18N-S90SN12N14	200J18N-S90SN12N14	6758457
200J18N-S90SN12N6	200J18N-S90SN12N6	6758453
200J18N-S90SN12N8	200J18N-S90SN12N8	6758454
200J3R394CA50-ISAD16E213	200J3R394CA50-ISAD16E213	7276988
200J3R551CA50-ISAD16E315	200J3R551CA50-ISAD16E315	7276989
200T03R-IS90AD11E146-C	200T03R-IS90AD11E146-C	6790023
200T03R-IS90AD16E163-C	200T03R-IS90AD16E163-C	7276982
200T04R-IS30XP16-C	200T04R-IS30XP16-C	6790028
200T04R-IS45XP16-C	200T04R-IS45XP16-C	6790029
200T04R-IS60XP16-C	200T04R-IS60XP16-C	6790070
20A2R029A20-SAD11E-C	20A2R029A20-SAD11E-C	6760211
20A2R029A20-STN10-C	20A2R029A20-STN10-C	7178466
20A2R032B20-SAD11E-C	20A2R032B20-SAD11E-C	6760205
20A2R032B20-SSO09-C	20A2R032B20-SSO09-C	6758358
20A2R032B20-STN10-C	20A2R032B20-STN10-C	7178494
20A2R070A20-SAD11E-C	20A2R070A20-SAD11E-C	6759684
20A3R020A18-SWN04C-C	20A3R020A18-SWN04C-C	7636661
20A3R029A18-SAD11E-C	20A3R029A18-SAD11E-C	6800795
20A3R029A20-SAD11E-C	20A3R029A20-SAD11E-C	6760212
20A3R029A20-STN10-C	20A3R029A20-STN10-C	7174636
20A3R032B20-SAD11E-C	20A3R032B20-SAD11E-C	6760206
20A3R032B20-SAP10D-C	20A3R032B20-SAP10D-C	6758366
20A3R032B20-STN10-C	20A3R032B20-STN10-C	7178495
20A3R035E03-SAD11E-C	20A3R035E03-SAD11E-C	6758929
20A4R020A18-SAD07D-C	20A4R020A18-SAD07D-C	6798641
20A4R020A18-SSO05O-C	20A4R020A18-SSO05O-C	7343021
20A4R020A20-SAD07D-C	20A4R020A20-SAD07D-C	6798633
20A4R020A20-SSO05O-C	20A4R020A20-SSO05O-C	7342927
20A4R032B20-SSO05O-C	20A4R032B20-SSO05O-C	7343022
20A5R020A18-SCN05C-C	20A5R020A18-SCN05C-C	7636578
20A5R020A20-SAD07D-C	20A5R020A20-SAD07D-C	6798634
20E2R040B20-SRD10	20E2R040B20-SRD10	6757616
20E2R060B20-SRD10	20E2R060B20-SRD10	6757617
20E2R080B25-SRD10	20E2R080B25-SRD10	6757618
20E2R100B25-SRD10	20E2R100B25-SRD10	6757619
20E2R120B25-SRD10	20E2R120B25-SRD10	6757620
20E3R040A18-SBN10-C	20E3R040A18-SBN10-C	7259579
20E3R040A20-SBN10-C	20E3R040A20-SBN10-C	7259578
20E3R040A20-SZD07	20E3R040A20-SZD07	6760249
20E3R080A20-SBN10-C	20E3R080A20-SBN10-C	7452545
20E3R080A20-SZD07	20E3R080A20-SZD07	6760250
20E4R040A20-SBN10-C	20E4R040A20-SBN10-C	7455018
20K2R045A20-SLC20-A	20K2R045A20-SLC20-A	6756699
20K2R045A20-SRC20-A	20K2R045A20-SRC20-A	6756694
20K2R080A25-SRC20-A	20K2R080A25-SRC20-A	6756722
20K3R050A20-CXP20	20K3R050A20-CXP20	6761728
20K3R060A25-CXP20	20K3R060A25-CXP20	6761729
20K3R070B25-CXP20	20K3R070B25-CXP20	6761731
20L2R050A20-SZP20-C	20L2R050A20-SZP20-C	6761622
20L2R050B25-SZP20-C	20L2R050B25-SZP20-C	6761637
20L2R050E03-SZP20	20L2R050E03-SZP20	6761653
20L2R055A25-SZP20-C	20L2R055A25-SZP20-C	6761628
20L2R055A32-SZP20-C	20L2R055A32-SZP20-C	6761629
20L2R070B25-SZP20-C	20L2R070B25-SZP20-C	6761638
20L2R070E03-SZP20	20L2R070E03-SZP20	6761654
20L2R100E03-SZP20	20L2R100E03-SZP20	6761655
20N2R032B20-SSE09-C	20N2R032B20-SSE09-C	6758314
210C08R-F90TB27X	210C08R-F90TB27X	6759714
210C10R-F90TB27X	210C10R-F90TB27X	6758485
22A3R029A20-SAD11E-C	22A3R029A20-SAD11E-C	6923283
22A3R050A25-STN10-C	22A3R050A25-STN10-C	7178467
2416-20R-E3-P	2416-20R-E3-P	6757683
2416-25R-E3-P	2416-25R-E3-P	6757801
2416-32R-E4-P	2416-32R-E4-P	6757684
2416-40R-E4-P	2416-40R-E4-P	6757743
250A04R-IS45OE06Z-C	250A04R-IS45OE06Z-C	7270034
250A04R-IS90AD16E-C	250A04R-IS90AD16E-C	6798485
250A04R-IS90LN12-C	250A04R-IS90LN12-C	6793019
250A04R-ISCMORD16-C	250A04R-ISCMORD16-C	6820340
250A05R-IS19PD09-C	250A05R-IS19PD09-C	6792980
250A05R-IS45OD05-C	250A05R-IS45OD05-C	7546799
250A05R-IS45SE09F-C	250A05R-IS45SE09F-C	6789717
250A05R-ISMOZD12-C	250A05R-ISMOZD12-C	6789773
250A06R-IS45HN06C-C	250A06R-IS45HN06C-C	6792929
250A06R-IS45HN09C-CF	250A06R-IS45HN09C-CF	6790761
250A06R-IS45OD05-C	250A06R-IS45OD05-C	7546850
250A06R-IS45OE06Z-C	250A06R-IS45OE06Z-C	7270035
250A06R-IS45SE09F-C	250A06R-IS45SE09F-C	6789718
250A06R-IS90AD11E-C	250A06R-IS90AD11E-C	6790723
250A06R-IS90AD16E-C	250A06R-IS90AD16E-C	6798486
250A06R-IS90LN12-C	250A06R-IS90LN12-C	6793020
250A06R-IS90TN10-C	250A06R-IS90TN10-C	7276922
250A06R-ISCMORD12-C	250A06R-ISCMORD12-C	6820328
250A06R-ISMORC10-C	250A06R-ISMORC10-C	7455531
250A06R-ISMOSN11-C	250A06R-ISMOSN11-C	7800654
250A07R-IS90SO09-C	250A07R-IS90SO09-C	6789779
250A07R-ISMORC10-C	250A07R-ISMORC10-C	7455532
250A08R-IS45HN06C-C	250A08R-IS45HN06C-C	6792950
250A08R-ISMOSN11-C	250A08R-ISMOSN11-C	7800655
250A09R-IS90AD11E-C	250A09R-IS90AD11E-C	6790724
250A09R-IS90TN10-C	250A09R-IS90TN10-C	7276923
250C09R-F60SB22X	250C09R-F60SB22X	6759710
250C12R-F60SB22X	250C12R-F60SB22X	6758306
250C12R-S45OE09Z-C	250C12R-S45OE09Z-C	7065604
250C12R-S57PN13	250C12R-S57PN13	6761676
250C14R-S45HN09C-CF	250C14R-S45HN09C-CF	7155955
250C16R-S45SN12Z	250C16R-S45SN12Z	6758447
250C16R-W90XO12	250C16R-W90XO12	6761763
250C24R-C60HN09	250C24R-C60HN09	6761696
250C40R-C60HN09	250C40R-C60HN09	6761697
250J08N-S90XN12N24	250J08N-S90XN12N24	6760155
250J08N-S90XN16N30	250J08N-S90XN16N30	6760159
250J09N-S90CN10N18	250J09N-S90CN10N18	6760150
250J3R551CA50-ISAD16E268	250J3R551CA50-ISAD16E268	7277020
250J3R610CA50-ISAD16E374	250J3R610CA50-ISAD16E374	7277021
250T04R-IS90AD16E163-C	250T04R-IS90AD16E163-C	7276983
250T04R-IS90AD16E268-C	250T04R-IS90AD16E268-C	7276984
2516-45-11	2516-45-11	6758330
2516-45-19	2516-45-19	6758331
25A2R033A25-SAD16E-C	25A2R033A25-SAD16E-C	6760181
25A2R034A25-SLN12-C	25A2R034A25-SLN12-C	6760296
25A2R038A25-SAD16E-C	25A2R038A25-SAD16E-C	6800793
25A2R042B25-SAD16E-C	25A2R042B25-SAD16E-C	6760169
25A2R042B25-SAP16D-C	25A2R042B25-SAP16D-C	6758369
25A2R042B25-SLN12-C	25A2R042B25-SLN12-C	6760300
25A2R043E03-SAD16E-C	25A2R043E03-SAD16E-C	6758505
25A2R080A25-SLN12-C	25A2R080A25-SLN12-C	6760297
25A3R034A25-SAD11E-C	25A3R034A25-SAD11E-C	6760213
25A3R034A25-STN10-C	25A3R034A25-STN10-C	7178468
25A3R040A25-CAD15-C	25A3R040A25-CAD15-C	6761703
25A3R042B25-SAD11E-C	25A3R042B25-SAD11E-C	6760197
25A3R042B25-SAP10D-C	25A3R042B25-SAP10D-C	6758448
25A3R042B25-SSO09-C	25A3R042B25-SSO09-C	6758359
25A3R042B25-STN10-C	25A3R042B25-STN10-C	7178496
25A3R080A25-SAD11E-C	25A3R080A25-SAD11E-C	6759682
25A4R020A22-SWN04C-C	25A4R020A22-SWN04C-C	7636662
25A4R034A25-SAD11E-C	25A4R034A25-SAD11E-C	6760214
25A4R034A25-STN10-C	25A4R034A25-STN10-C	7178469
25A4R040A25-SAD11E-C	25A4R040A25-SAD11E-C	7049093
25A4R042B25-SAD11E-C	25A4R042B25-SAD11E-C	6760207
25A4R042B25-STN10-C	25A4R042B25-STN10-C	7178497
25A4R043E03-SAD11E-C	25A4R043E03-SAD11E-C	6758930
25A5R024A25-SAD07D-C	25A5R024A25-SAD07D-C	6798635
25A5R024A25-SSO05O-C	25A5R024A25-SSO05O-C	7342928
25A5R042B25-SSO05O-C	25A5R042B25-SSO05O-C	7343023
25A6R024A25-SAD07D-C	25A6R024A25-SAD07D-C	6798636
25E2R034A20-SRC10-C	25E2R034A20-SRC10-C	7444097
25E2R080B25-SZD09-C	25E2R080B25-SZD09-C	6759694
25E2R140B25-SZD09-C	25E2R140B25-SZD09-C	6759695
25E2R240B25-SZD09-C	25E2R240B25-SZD09-C	6759696
25E3R034A20-SRC10-C	25E3R034A20-SRC10-C	7444098
25E3R050A25-SZD07	25E3R050A25-SZD07	6760247
25E3R100A25-SZD07	25E3R100A25-SZD07	6760245
25E4R050A22-SBN10-C	25E4R050A22-SBN10-C	7259720
25E4R050A25-SBN10-C	25E4R050A25-SBN10-C	7452546
25E4R100A25-SBN10-C	25E4R100A25-SBN10-C	7452547
25E5R050A25-SBN10-C	25E5R050A25-SBN10-C	7253577
25F1R030B25-SCC06-C	25F1R030B25-SCC06-C	6758317
25J2R50B25-SAD11E38-C	25J2R50B25-SAD11E38-C	6759643
25J2R55E03-SAD11E38-C	25J2R55E03-SAD11E38-C	6759647
25K2R045A25-SRC25-A	25K2R045A25-SRC25-A	6756695
25K3R060A25-CXP25	25K3R060A25-CXP25	6761732
25K3R080B25-CXP25	25K3R080B25-CXP25	6761734
25L2R060A25-SZP25-C	25L2R060A25-SZP25-C	6761630
25L2R060B25-SZP25-C	25L2R060B25-SZP25-C	6761639
25L2R065A32-SZP25-C	25L2R065A32-SZP25-C	6761631
25L2R080B25-SZP25-C	25L2R080B25-SZP25-C	6761640
25L2R080E03-SZP25	25L2R080E03-SZP25	6761656
25L2R110E04-SZP25	25L2R110E04-SZP25	6761657
25N2R042B25-SHN06C-C	25N2R042B25-SHN06C-C	6760283
25N3R042A25-SSD09	25N3R042A25-SSD09	6757772
25N3R042B25-SSD09-A	25N3R042B25-SSD09-A	6757764
25N3R042B25-SSE09-C	25N3R042B25-SSE09-C	6758315
25N3R042B25-SSO09-C	25N3R042B25-SSO09-C	6758334
25N3R043E03-SSD09-A	25N3R043E03-SSD09-A	6757829
260C10R-F90TB27X	260C10R-F90TB27X	6759715
260C12R-F90TB27X	260C12R-F90TB27X	6758486
300A05R-IS19PD09-C	300A05R-IS19PD09-C	6792983
300A05R-IS45OE06Z-C	300A05R-IS45OE06Z-C	7274857
300A05R-IS45OE09Z-C	300A05R-IS45OE09Z-C	7275038
300A05R-IS90AD16E-C	300A05R-IS90AD16E-C	6798487
300A05R-IS90LN12-C	300A05R-IS90LN12-C	6793021
300A05R-ISCMORD16-C	300A05R-ISCMORD16-C	6820341
300A05R-ISMOZD12-C	300A05R-ISMOZD12-C	6789774
300A06R-IS45HN09C-CF	300A06R-IS45HN09C-CF	6790762

ANSI	ISO	EDP
300A06R-IS45OD05-C	300A06R-IS45OD05-C	7546851
300A06R-IS45OE06Z-C	300A06R-IS45OE06Z-C	7274858
300A06R-IS45SE09F-C	300A06R-IS45SE09F-C	6789719
300A07R-IS45HN06C-C	300A07R-IS45HN06C-C	6792951
300A07R-IS90AD16E-C	300A07R-IS90AD16E-C	6798488
300A07R-IS90LN12-C	300A07R-IS90LN12-C	6793022
300A07R-ISCMORD12-C	300A07R-ISCMORD12-C	6820329
300A07R-ISMOSN11-C	300A07R-ISMOSN11-C	7800656
300A08R-IS45HN09C-CF	300A08R-IS45HN09C-CF	6790763
300A08R-IS45OD05-C	300A08R-IS45OD05-C	7546852
300A08R-IS45SE09F-C	300A08R-IS45SE09F-C	6789740
300A09R-IS90SO09-C	300A09R-IS90SO09-C	6789780
300A09R-ISMOSN11-C	300A09R-ISMOSN11-C	7800657
300A10R-IS45HN06C-C	300A10R-IS45HN06C-C	6792952
300A10R-IS90AD11E-C	300A10R-IS90AD11E-C	6790725
300A10R-IS90TN10-C	300A10R-IS90TN10-C	7276924
300F04N-IS90SN11N2.5	300F04N-IS90SN11N2.5	6789672
300F04N-IS90SN12N4	300F04N-IS90SN12N4	6789673
300F04N-IS90SN12N5	300F04N-IS90SN12N5	6789674
300J4R650CA50-ISAD16E425	300J4R650CA50-ISAD16E425	7277022
300T04R-IS90AD16E217-C	300T04R-IS90AD16E217-C	7276985
300T04R-IS90AD16E315-C	300T04R-IS90AD16E315-C	7276986
30A3R080A32-SAD11E-C	30A3R080A32-SAD11E-C	7049094
30A4R050A32-STN10-C	30A4R050A32-STN10-C	7178490
315C11R-F60SB22X	315C11R-F60SB22X	6759711
315C14R-F60SB22X	315C14R-F60SB22X	6758113
315C14R-S45OE09Z-C	315C14R-S45OE09Z-C	7065605
315C14R-S57PN13	315C14R-S57PN13	6761677
315C16R-S45HN09C-CF	315C16R-S45HN09C-CF	7155956
315C20R-W90XO12	315C20R-W90XO12	6761765
315J10N-S90XN12N24	315J10N-S90XN12N24	6760154
315J12N-S90CN10N18	315J12N-S90CN10N18	6760149
315K10N-S90XN16N30	315K10N-S90XN16N30	6760158
32A04R-S45SE09F-C	32A04R-S45SE09F-C	6761701
32A06R-S90SO05O-C	32A06R-S90SO05O-C	7343026
32A2R034A32-SLN12-C	32A2R034A32-SLN12-C	6760298
32A2R045A25-SVC22C	32A2R045A25-SVC22C	6757989
32A2R090A32-SLN12-C	32A2R090A32-SLN12-C	6760299
32A3R033A32-SAD16E-C	32A3R033A32-SAD16E-C	6760186
32A3R040B32-SAD16E-C	32A3R040B32-SAD16E-C	6760170
32A3R040B32-SAP16D-C	32A3R040B32-SAP16D-C	6758370
32A3R042B32-SLN12-C	32A3R042B32-SLN12-C	6760301
32A3R043E03-SAD16E-C	32A3R043E03-SAD16E-C	6758506
32A3R048A32-SAD16E-C	32A3R048A32-SAD16E-C	6800794
32A3R090A32-SAD11E-C	32A3R090A32-SAD11E-C	6759685
32A4R037A32-STN10-C	32A4R037A32-STN10-C	7178491
32A4R042B32-SAD11E-C	32A4R042B32-SAD11E-C	6760208
32A4R042B32-SSO09-C	32A4R042B32-SSO09-C	6758360
32A4R042B32-STN10-C	32A4R042B32-STN10-C	7178498
32A5R034A32-SAD11E-C	32A5R034A32-SAD11E-C	6760215
32A5R037A32-STN10-C	32A5R037A32-STN10-C	7178492
32A5R040A32-CAD15-C	32A5R040A32-CAD15-C	6761705
32A5R042B32-SAD11E-C	32A5R042B32-SAD11E-C	6760209
32A5R042B32-STN10-C	32A5R042B32-STN10-C	7178499
32A6R020A25-SWN04C-C	32A6R020A25-SWN04C-C	7636663
32A6R042B32-SSO05O-C	32A6R042B32-SSO05O-C	7343024
32E2R060A32-SPD09-C	32E2R060A32-SPD09-C	6920665
32E2R080B32-SZD09-C	32E2R080B32-SZD09-C	6759697
32E2R140B32-SZD09-C	32E2R140B32-SZD09-C	6759698
32E2R240B32-SZD09-C	32E2R240B32-SZD09-C	6759699
32E3R040M16-SSN11-C	32E3R040M16-SSN11-C	7799394

ANSI	ISO	EDP
32E3R042A25-SRC10-C	32E3R042A25-SRC10-C	7444200
32E3R070A32-SSN11-C	32E3R070A32-SSN11-C	7799390
32E3R120A32-SSN11-C	32E3R120A32-SSN11-C	7799391
32E4R042A25-SRC10-C	32E4R042A25-SRC10-C	7444099
32E5R070A32-SBN10-C	32E5R070A32-SBN10-C	7452548
32E5R120A32-SBN10-C	32E5R120A32-SBN10-C	7259721
32E6R070A32-SBN10-C	32E6R070A32-SBN10-C	7452549
32F1R038B32-SCC08-C	32F1R038B32-SCC08-C	6758318
32J2R60B32-SAD11E47-C	32J2R60B32-SAD11E47-C	6759644
32J2R65E04-SAD11E47-C	32J2R65E04-SAD11E47-C	6759648
32K2R060A32-SRC32-A	32K2R060A32-SRC32-A	6756696
32K3R080A32-CXP32	32K3R080A32-CXP32	6761735
32L2R070A32-SZP32-C	32L2R070A32-SZP32-C	6761632
32L2R070B32-SZP32-C	32L2R070B32-SZP32-C	6761641
32L2R100B32-SZP32-C	32L2R100B32-SZP32-C	6761642
32L2R100E04-SZP32	32L2R100E04-SZP32	6761658
32L2R150E04-SZP32	32L2R150E04-SZP32	6761659
32N3R042B32-SHN06C-C	32N3R042B32-SHN06C-C	6760284
32N3R045A25-SOD05-C	32N3R045A25-SOD05-C	7342889
32N4R042B32-SSE09-C	32N4R042B32-SSE09-C	6758316
35A5R025A32-SAD11E-C	35A5R025A32-SAD11E-C	7049095
35A5R080A32-STN10-C	35A5R080A32-STN10-C	7178493
35E3R040M16-SSN11-C	35E3R040M16-SSN11-C	7799395
35E3R050A32-SSN11-C	35E3R050A32-SSN11-C	7799393
35E5R050A32-SBN10-C	35E5R050A32-SBN10-C	7452550
35E6R050A32-SBN10-C	35E6R050A32-SBN10-C	7452551
35T03R-S15XP1607-C	35T03R-S15XP1607-C	6760360
35T03R-S25XP1612-C	35T03R-S25XP1612-C	6760347
35T03R-S30XP1614-C	35T03R-S30XP1614-C	6760355
35T03R-S35XP1616-C	35T03R-S35XP1616-C	6760354
35T03R-S40XP1618-C	35T03R-S40XP1618-C	6760362
35T03R-S45XP1620-C	35T03R-S45XP1620-C	6760353
35T03R-S50XP1622-C	35T03R-S50XP1622-C	6760361
35T03R-S55XP1623-C	35T03R-S55XP1623-C	6760363
35T03R-S60XP1625-C	35T03R-S60XP1625-C	6760364
400A05R-IS57PN13	400A05R-IS57PN13	6792988
400A06R-IS19PD09-C	400A06R-IS19PD09-C	6792984
400A06R-IS45HN09C-CF	400A06R-IS45HN09C-CF	6790764
400A06R-IS45OE06Z-C	400A06R-IS45OE06Z-C	7274859
400A06R-IS45OE09Z-C	400A06R-IS45OE09Z-C	7275039
400A06R-IS90AD16E-C	400A06R-IS90AD16E-C	6798489
400A06R-IS90LN12-C	400A06R-IS90LN12-C	6793023
400A06R-ISCMORD16-C	400A06R-ISCMORD16-C	6820342
400A07R-IS45OD05-C	400A07R-IS45OD05-C	7546853
400A08R-IS19PD09-C	400A08R-IS19PD09-C	6792985
400A08R-IS45HN06C-C	400A08R-IS45HN06C-C	6792922
400A08R-IS45HN09C-CF	400A08R-IS45HN09C-CF	6790765
400A08R-IS45OE06Z-C	400A08R-IS45OE06Z-C	7275030
400A08R-IS45SE09F-C	400A08R-IS45SE09F-C	6789741
400A08R-IS90AD16E-C	400A08R-IS90AD16E-C	6798490
400A08R-IS90LN12-C	400A08R-IS90LN12-C	6793024
400A08R-ISMOSN11-C	400A08R-ISMOSN11-C	7800658
400A10R-IS45HN09C-CF	400A10R-IS45HN09C-CF	6790766
400A10R-IS45SE09F-C	400A10R-IS45SE09F-C	6789742
400A10R-IS90SO09-C	400A10R-IS90SO09-C	6789781
400A11R-IS90AD11E-C	400A11R-IS90AD11E-C	6790726
400A12R-IS45HN06C-C	400A12R-IS45HN06C-C	6792923
400G05N-IS90SN12N4	400G05N-IS90SN12N4	6789676
400G05N-IS90SN12N5	400G05N-IS90SN12N5	6789677
400G05N-IS90SN12N6	400G05N-IS90SN12N6	6789678
400T05R-IS90AD16E315-C	400T05R-IS90AD16E315-C	7276987
40A03R-S45OD05-C	40A03R-S45OD05-C	7342880
40A03R-S45SN12Z-C	40A03R-S45SN12Z-C	6758338
40A03R-SMORC12-C	40A03R-SMORC12-C	7155895
40A03R-SMOZD09-C	40A03R-SMOZD09-C	6759665
40A04R-S45SE09F-C	40A04R-S45SE09F-C	6761698
40A04R-S90AD11E-C	40A04R-S90AD11E-C	6760198
40A04R-S90AD16E-C	40A04R-S90AD16E-C	6761295
40A04R-S90LN12-C	40A04R-S90LN12-C	6760288
40A04R-S90TN10-C	40A04R-S90TN10-C	7178521
40A04R-SMOSN11-C	40A04R-SMOSN11-C	7799318

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40A04R-SMOZD09-C	40A04R-SMOZD09-C	6759666
40A05R-S45HN06C-C	40A05R-S45HN06C-C	6760271
40A05R-S90AD11E-C	40A05R-S90AD11E-C	7049096
40A05R-S90SO09-C	40A05R-S90SO09-C	6758308
40A05R-SMOBN10-C	40A05R-SMOBN10-C	7464824
40A05R-SMORC10-C	40A05R-SMORC10-C	7444330
40A06R-C90AD15-C	40A06R-C90AD15-C	6761707
40A06R-S90AD11E-C	40A06R-S90AD11E-C	6760199
40A06R-S90TN10-C	40A06R-S90TN10-C	7178522
40A07R-SMOBN10-C	40A07R-SMOBN10-C	7464825
40A08R-S90SO05O-C	40A08R-S90SO05O-C	7343027
40A3R045A32-SVC22C	40A3R045A32-SVC22C	6757990
40A3R050B32-SAD16E-C	40A3R050B32-SAD16E-C	6760171
40A3R050B32-SAP16D-C	40A3R050B32-SAP16D-C	6758449
40A3R054E04-SAD16E-C	40A3R054E04-SAD16E-C	6758507
40A4R050B32-SAD16E-C	40A4R050B32-SAD16E-C	6760172
40A4R050B32-SAP16D-C	40A4R050B32-SAP16D-C	6758371
40A4R050B32-SLN12-C	40A4R050B32-SLN12-C	6760302
40A4R054E04-SAD16E-C	40A4R054E04-SAD16E-C	6758508
40A4R-S90AP16D	40A4R-S90AP16D	6757024
40A6R-S90AP10D	40A6R-S90AP10D	6757033
40A8R050B32-SSO05O-C	40A8R050B32-SSO05O-C	7343025
40E3R060A32-SPD09-C	40E3R060A32-SPD09-C	6920666
40E4R043M16-SSN11-C	40E4R043M16-SSN11-C	7799396
40E4R080B32-SZD12-C	40E4R080B32-SZD12-C	6759700
40E4R140B32-SZD12-C	40E4R140B32-SZD12-C	6759701
40E4R240B32-SZD12-C	40E4R240B32-SZD12-C	6759702
40F2R046B32-SCC09-C	40F2R046B32-SCC09-C	6758319
40J2R60B40-SAD11E47-C	40J2R60B40-SAD11E47-C	6759645
40J3R70B32-SAD11E56-C	40J3R70B32-SAD11E56-C	6800796
40J3R70B40-SAD11E56-C	40J3R70B40-SAD11E56-C	6759646
40J3R75E04-SAD11E56-C	40J3R75E04-SAD11E56-C	6759649
40J4R080XC5-CSD12X44	40J4R080XC5-CSD12X44	6761738
40J4R090H40-CSD12X44	40J4R090H40-CSD12X44	6761737
40L2R070B32-SZP40-C	40L2R070B32-SZP40-C	6761643
40L2R100B40-SZP40-C	40L2R100B40-SZP40-C	6761644
40N3R045A32-SOD05-C	40N3R045A32-SOD05-C	7342890
42A03R-S19PD09-C	42A03R-S19PD09-C	6761256
42A04R-SMOSN11-C	42A04R-SMOSN11-C	7799319
42A05R-SMOBN10-C	42A05R-SMOBN10-C	7464826
42A07R-SMOBN10-C	42A07R-SMOBN10-C	7464827
45T03R-S75XP1628-C	45T03R-S75XP1628-C	6760359
45T04R-S25XP1612-C	45T04R-S25XP1612-C	6760352
45T04R-S30XP1614-C	45T04R-S30XP1614-C	6760351
45T04R-S35XP1616-C	45T04R-S35XP1616-C	6760350
45T04R-S40XP1618-C	45T04R-S40XP1618-C	6760349
45T04R-S45XP1620-C	45T04R-S45XP1620-C	6760348
45T04R-S50XP1622-C	45T04R-S50XP1622-C	6760357
45T04R-S55XP1623-C	45T04R-S55XP1623-C	6760356
45T04R-S60XP1625-C	45T04R-S60XP1625-C	6760358
500A05R-IS45OE09Z-C	500A05R-IS45OE09Z-C	7275070
500A06R-IS45HN09C-CF	500A06R-IS45HN09C-CF	6790767
500A07R-IS45OE06Z-C	500A07R-IS45OE06Z-C	7275031
500A07R-IS45OE09Z-C	500A07R-IS45OE09Z-C	7275071
500A07R-IS90LN12-C	500A07R-IS90LN12-C	6793025
500A08R-IS45OD05-C	500A08R-IS45OD05-C	7546854
500A09R-IS45OE06Z-C	500A09R-IS45OE06Z-C	7275032
500A09R-IS45SE09F-C	500A09R-IS45SE09F-C	6789743
500A09R-IS90AD16E-C	500A09R-IS90AD16E-C	6798491
500A09R-IS90LN12-C	500A09R-IS90LN12-C	6793026
500A10R-IS45HN06C-C	500A10R-IS45HN06C-C	6792924
500A10R-IS45HN09C-CF	500A10R-IS45HN09C-CF	6790768
500A12R-IS45HN09C-CF	500A12R-IS45HN09C-CF	6790769

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500A12R-IS45SE09F-C	500A12R-IS45SE09F-C	6789744
500A12R-IS90AD11E-C	500A12R-IS90AD11E-C	6790727
500A12R-IS90SO09-C	500A12R-IS90SO09-C	6789782
500A16R-IS45HN06C-C	500A16R-IS45HN06C-C	6792925
500B06R-IS57PN13	500B06R-IS57PN13	6792989
500H06N-IS90SN12N4	500H06N-IS90SN12N4	6789679
500H06N-IS90SN12N5	500H06N-IS90SN12N5	6789680
50A03R-S90AD16E-C	50A03R-S90AD16E-C	6760174
50A03R-S90VC22C	50A03R-S90VC22C	6757986
50A04R-S19PD09-C	50A04R-S19PD09-C	6761257
50A04R-S45HN06C-C	50A04R-S45HN06C-C	6760272
50A04R-S45HN09C-CF	50A04R-S45HN09C-CF	6761566
50A04R-S45OD05-C	50A04R-S45OD05-C	7342881
50A04R-S45OE06Z-C	50A04R-S45OE06Z-C	6922478
50A04R-S45SN12Z-C	50A04R-S45SN12Z-C	6758339
50A04R-S90LN12-C	50A04R-S90LN12-C	6760289
50A04R-SMORC12-C	50A04R-SMORC12-C	7155896
50A04R-SMOZD12-C	50A04R-SMOZD12-C	6759667
50A04R-W90XO12	50A04R-W90XO12	6761751
50A05R-S19PD09-C	50A05R-S19PD09-C	6920667
50A05R-S45OD05-C	50A05R-S45OD05-C	7342882
50A05R-S45OE06Z-C	50A05R-S45OE06Z-C	6922479
50A05R-S45SE09F-C	50A05R-S45SE09F-C	6761683
50A05R-S90AD11E-C	50A05R-S90AD11E-C	6760200
50A05R-S90AD16E-C	50A05R-S90AD16E-C	6760173
50A05R-S90LN12-C	50A05R-S90LN12-C	6760290
50A05R-S90SD12-C	50A05R-S90SD12-C	6756789
50A05R-S90TN10-C	50A05R-S90TN10-C	7178523
50A05R-SCMORD12	50A05R-SCMORD12	6757895
50A05R-SMORC10-C	50A05R-SMORC10-C	7444331
50A05R-SMOSN11-C	50A05R-SMOSN11-C	7799340
50A05R-SMOZD09-C	50A05R-SMOZD09-C	7049098
50A06R-S45HN06C-C	50A06R-S45HN06C-C	6760269
50A06R-S90SO09-C	50A06R-S90SO09-C	6758309
50A06R-SMORC10-C	50A06R-SMORC10-C	7444332
50A06R-SMOSN11-C	50A06R-SMOSN11-C	7799341
50A06R-W90XO12	50A06R-W90XO12	6761757
50A07R-S90AD11E-C	50A07R-S90AD11E-C	6760201
50A07R-S90TN10-C	50A07R-S90TN10-C	7174637
50A08R-C90AD15-C	50A08R-C90AD15-C	6761709
50A5R-S90AP16D	50A5R-S90AP16D	6757025
50A7R-S90AP10D	50A7R-S90AP10D	6757034
50J3R100H50-SAD16E54-C	50J3R100H50-SAD16E54-C	6922377
50J3R140G50-SAD16E80-C	50J3R140G50-SAD16E80-C	6922378
50J3R140H50-SAD16E80-C	50J3R140H50-SAD16E80-C	6922379
50J3R140X50-SAD16E68-C	50J3R140X50-SAD16E68-C	6922410
50J4R106X50-SSAP37+21	50J4R106X50-SSAP37+21	6757754
50J4R106X50-SSAP58-A	50J4R106X50-SSAP58-A	6757749
50J4R110H50-SSAP37+21	50J4R110H50-SSAP37+21	6757755
50J4R110H50-SSAP58-A	50J4R110H50-SSAP58-A	6757752
50J4R124X50-SSAP55+21	50J4R124X50-SSAP55+21	6757817
50J4R124X50-SSAP76-A	50J4R124X50-SSAP76-A	6757750
50J4R128H50-SSAP55+21	50J4R128H50-SSAP55+21	6757756
50J4R128H50-SSAP76-A	50J4R128H50-SSAP76-A	6757816
50J5R065E04-CSD12X55	50J5R065E04-CSD12X55	6761741
50J5R080XC5-CSD12X55	50J5R080XC5-CSD12X55	6761742
50J5R100H50-CSD12X55	50J5R100H50-CSD12X55	6761740
50L2R100B50-SZP50-C	50L2R100B50-SZP50-C	6761645
50L2R100E05-SZP50	50L2R100E05-SZP50	6761660
50T03R-S90AD11E37-C	50T03R-S90AD11E37-C	6759650
50T03R-S90AD16E40-C	50T03R-S90AD16E40-C	6922411
50T05R-C90SD12X55	50T05R-C90SD12X55	6761739
52A04R-S19PD09-C	52A04R-S19PD09-C	6761258
52A04R-SCMORD16	52A04R-SCMORD16	6757565
52A04R-SMOZD12-C	52A04R-SMOZD12-C	6923288

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52A05R-SCMORD12	52A05R-SCMORD12	6757417
52A05R-SMORC10-C	52A05R-SMORC10-C	7444333
52A05R-SMORC12-C	52A05R-SMORC12-C	6920712
52A05R-SMOSN11-C	52A05R-SMOSN11-C	7799342
52A05R-SMOZD09-C	52A05R-SMOZD09-C	7049099
52A06R-SMORC10-C	52A06R-SMORC10-C	7444334
52A06R-SMOSN11-C	52A06R-SMOSN11-C	7799343
56A05R-S45OE06Z-C	56A05R-S45OE06Z-C	6922508
600A06R-IS45OE09Z-C	600A06R-IS45OE09Z-C	7275072
600A08R-IS45OE09Z-C	600A08R-IS45OE09Z-C	7216309
600A09R-IS45OE06Z-C	600A09R-IS45OE06Z-C	7275033
600A12R-IS45OE06Z-C	600A12R-IS45OE06Z-C	7275034
600B08R-IS45HN09CF	600B08R-IS45HN09CF	6790770
600B08R-IS57PN13	600B08R-IS57PN13	6792990
600B10R-IS45SE09F	600B10R-IS45SE09F	6789745
600B10R-IS90AD16E	600B10R-IS90AD16E	6798492
600B12R-IS45HN09CF	600B12R-IS45HN09CF	6790771
600B14R-IS45SE09F	600B14R-IS45SE09F	6789746
600H08N-IS90SN12N4	600H08N-IS90SN12N4	6789682
600H08N-IS90SN12N5	600H08N-IS90SN12N5	6789683
600H08N-IS90SN12N6	600H08N-IS90SN12N6	6789684
63A04R-S45OE06Z-C	63A04R-S45OE06Z-C	6922500
63A04R-S90AD16E-C	63A04R-S90AD16E-C	6760177
63A04R-S90LN12-C	63A04R-S90LN12-C	6760304
63A04R-S90LN16-C	63A04R-S90LN16-C	6760308
63A04R-S90VC22C	63A04R-S90VC22C	6757987
63A04R-SMORC16-C	63A04R-SMORC16-C	7155920
63A04R-SMOZD12-C	63A04R-SMOZD12-C	6759668
63A05R-S19PD09-C	63A05R-S19PD09-C	6761259
63A05R-S45OD05-C	63A05R-S45OD05-C	7342883
63A05R-S45OD06D	63A05R-S45OD06D	6756816
63A05R-S45SE09F-C	63A05R-S45SE09F-C	6761625
63A05R-S45SN12Z-C	63A05R-S45SN12Z-C	6758340
63A05R-S90LN16-C	63A05R-S90LN16-C	6760309
63A05R-SMORC12-C	63A05R-SMORC12-C	7155897
63A05R-SMOZD12-C	63A05R-SMOZD12-C	6759669
63A05R-W90XO12	63A05R-W90XO12	6761749
63A06R-S19PD09-C	63A06R-S19PD09-C	6920668
63A06R-S45HN06C-C	63A06R-S45HN06C-C	6760277
63A06R-S45HN09C-CF	63A06R-S45HN09C-CF	6761565
63A06R-S45OD05-C	63A06R-S45OD05-C	7342884
63A06R-S45OE06Z-C	63A06R-S45OE06Z-C	6922501
63A06R-S45SE09F-C	63A06R-S45SE09F-C	6761702
63A06R-S90AD11E-C	63A06R-S90AD11E-C	6760202
63A06R-S90AD16E-C	63A06R-S90AD16E-C	6760176
63A06R-S90LN12-C	63A06R-S90LN12-C	6760305
63A06R-S90SD12-C	63A06R-S90SD12-C	6756790
63A06R-S90TN10-C	63A06R-S90TN10-C	7178524
63A06R-SMORC10-C	63A06R-SMORC10-C	7444335
63A06R-SMOSN11-C	63A06R-SMOSN11-C	7799344
63A06R-SMOZD09-C	63A06R-SMOZD09-C	7049110
63A07R-S90SO09-C	63A07R-S90SO09-C	6758310
63A07R-SMORC10-C	63A07R-SMORC10-C	7444336
63A07R-W90XO12	63A07R-W90XO12	6761750
63A08R-S45HN06C-C	63A08R-S45HN06C-C	6760270
63A08R-SMOSN11-C	63A08R-SMOSN11-C	7799345
63A09R-S90AD11E-C	63A09R-S90AD11E-C	6760203
63A09R-S90TN10-C	63A09R-S90TN10-C	7178525
63A10R-C90AD15-C	63A10R-C90AD15-C	6761710
63A6R-S90AP16D	63A6R-S90AP16D	6757026
63A9R-S90AP10D	63A9R-S90AP10D	6757035
63J2R155G50-SLSN104-C	63J2R155G50-SLSN104-C	6760429
63J2R155H50-SLSN104-C	63J2R155H50-SLSN104-C	6760428
63J2R175X50-SLSN104-C	63J2R175X50-SLSN104-C	6760427
63J3R140H50-SAD16E68-C	63J3R140H50-SAD16E68-C	6922412
63J3R155G50-SAD16E95-C	63J3R155G50-SAD16E95-C	6922413
63J3R155H50-SAD16E95-C	63J3R155H50-SAD16E95-C	6922414
63J3R155X50-SAD16E80-C	63J3R155X50-SAD16E80-C	6922415
63J4R146X50-SSAP74+21	63J4R146X50-SSAP74+21	6757818

ANSI	ISO	EDP
63J4R146X50-SSAP95-A	63J4R146X50-SSAP95-A	6757815
63J4R150H50-SSAP74+21	63J4R150H50-SSAP74+21	6757757
63J4R150H50-SSAP95-A	63J4R150H50-SSAP95-A	6757790
63J6R095XC6-CSD12X66	63J6R095XC6-CSD12X66	6761745
63J6R110H50-CSD12X66	63J6R110H50-CSD12X66	6761744
63T04R-S90AD16E40-C	63T04R-S90AD16E40-C	6922416
63T04R-S90AD16E68-C	63T04R-S90AD16E68-C	6922417
63T06R-C90SD12X66	63T06R-C90SD12X66	6761743
66A05R-SCMORD16	66A05R-SCMORD16	6757418
66A05R-SMORC16-C	66A05R-SMORC16-C	6920714
66A05R-SMOZD12-C	66A05R-SMOZD12-C	6923289
66A06R-S19PD09-C	66A06R-S19PD09-C	6761260
66A06R-S19PD09-CF	66A06R-S19PD09-CF	6920710
66A06R-SCMORD12	66A06R-SCMORD12	6757635
66A06R-SMORC10-C	66A06R-SMORC10-C	7444337
66A06R-SMORC12-C	66A06R-SMORC12-C	6920713
66A06R-SMOSN11-C	66A06R-SMOSN11-C	7799346
66A06R-SMOZD09-C	66A06R-SMOZD09-C	7049111
66A07R-SMORC10-C	66A07R-SMORC10-C	7444338
66A08R-SMOSN11-C	66A08R-SMOSN11-C	7799347
70A06R-S45OE06Z-C	70A06R-S45OE06Z-C	6922509
800C08R-IS45OE09Z-C	800C08R-IS45OE09Z-C	7275073
800C10R-IS45HN09CF	800C10R-IS45HN09CF	6790772
800C10R-IS45OE09Z-C	800C10R-IS45OE09Z-C	7275074
800C10R-IS57PN13	800C10R-IS57PN13	6792991
800C11R-IS45OE06Z-C	800C11R-IS45OE06Z-C	7275035
800C14R-IS45OE06Z-C	800C14R-IS45OE06Z-C	7275036
80A04R-S90LN16-C	80A04R-S90LN16-C	6760310
80A04R-SMORC20-C	80A04R-SMORC20-C	7155924
80A05R-S19PD09-C	80A05R-S19PD09-C	6761261
80A05R-S45OE06Z-C	80A05R-S45OE06Z-C	6922502
80A05R-S45OE09Z-C	80A05R-S45OE09Z-C	7056831
80A05R-S90AD16E-C	80A05R-S90AD16E-C	6760178
80A05R-S90LN12-C	80A05R-S90LN12-C	6760291
80A05R-S90VC22C	80A05R-S90VC22C	6757988
80A05R-SMORC12-C	80A05R-SMORC12-C	7155898
80A05R-SMORC16-C	80A05R-SMORC16-C	7155921
80A05R-SMOZD12-C	80A05R-SMOZD12-C	6759670
80A06R-S19PD09-C	80A06R-S19PD09-C	6920669
80A06R-S45HN09C-CF	80A06R-S45HN09C-CF	6761569
80A06R-S45OD05-C	80A06R-S45OD05-C	7342885
80A06R-S45OD06D	80A06R-S45OD06D	6756817
80A06R-S45OE06Z-C	80A06R-S45OE06Z-C	6922503
80A06R-S45SE09F-C	80A06R-S45SE09F-C	6761668
80A06R-S45SN12Z-C	80A06R-S45SN12Z-C	6758341
80A06R-S90LN16-C	80A06R-S90LN16-C	6760311
80A06R-S90SD12-C	80A06R-S90SD12-C	6760182
80A06R-SCMORD16	80A06R-SCMORD16	6757637
80A06R-W90XO12	80A06R-W90XO12	6761752
80A07R-S45HN06C-C	80A07R-S45HN06C-C	6760278
80A07R-S90AD16E-C	80A07R-S90AD16E-C	6760175
80A07R-S90LN12-C	80A07R-S90LN12-C	6760292
80A07R-SMOSN11-C	80A07R-SMOSN11-C	7799348
80A08R-C60HN09	80A08R-C60HN09	6761686
80A08R-S45HN09C-CF	80A08R-S45HN09C-CF	6761568
80A08R-S45OD05-C	80A08R-S45OD05-C	7342886
80A08R-S45SE09F-C	80A08R-S45SE09F-C	6761684
80A09R-S90SO09-C	80A09R-S90SO09-C	6758311
80A09R-SMOSN11-C	80A09R-SMOSN11-C	7799349
80A09R-W90XO12	80A09R-W90XO12	6761753
80A10R-C90AD15-C	80A10R-C90AD15-C	6761711
80A10R-S45HN06C-C	80A10R-S45HN06C-C	6760279
80A10R-S90AD11E-C	80A10R-S90AD11E-C	6760204
80A10R-S90TN10-C	80A10R-S90TN10-C	7178526
80A12R-C60HN09	80A12R-C60HN09	6761687
80A14R-C90AD15-C	80A14R-C90AD15-C	6761712
80B07R-SCMORD12	80B07R-SCMORD12	6757636
80B5R-S90AP16D	80B5R-S90AP16D	6757027
80B7R-S90AP16D	80B7R-S90AP16D	6757028
80F8N-S90SN11N4	80F8N-S90SN11N4	6758320
80F8N-S90SN11N5	80F8N-S90SN11N5	6758321
80F8N-S90SN12N6	80F8N-S90SN12N6	6758372
80F8N-S90SN12N8	80F8N-S90SN12N8	6758450

ANSI	ISO	EDP
80J2R190G50-SLSN134-C	80J2R190G50-SLSN134-C	6760430
80J2R190H50-SLSN134-C	80J2R190H50-SLSN134-C	6760431
80J2R210X50-SLSN134-C	80J2R210X50-SLSN134-C	6760426
80J4R165G50-SAD16E108-C	80J4R165G50-SAD16E108-C	6922418
80J4R165H50-SAD16E108-C	80J4R165H50-SAD16E108-C	6922419
80J4R165X50-SAD16E95-C	80J4R165X50-SAD16E95-C	6922420
80J6R151X50-SSAP95-A	80J6R151X50-SSAP95-A	6757751
80J6R155H50-SSAP95-A	80J6R155H50-SSAP95-A	6757753
80J8R130H50-CSD12X88	80J8R130H50-CSD12X88	6761747
80T04R-S90AD16E55-C	80T04R-S90AD16E55-C	6922421
80T04R-S90AD16E80-C	80T04R-S90AD16E80-C	6922422
80T08R-C90SD12X88	80T08R-C90SD12X88	6761746
8N1R027B16-SSO09-C	8N1R027B16-SSO09-C	6758332
90A07R-S45OE06Z-C	90A07R-S45OE06Z-C	6922510
PPH-08/02-QC08-130HSCW	PPH-08/02-QC08-130HSCW	7024708
PPH-08/02-QC12-092	PPH-08/02-QC12-092	7024709
PPH-08/02-QC12-110	PPH-08/02-QC12-110	7024730
PPH-08/02-QC12-110HSCW	PPH-08/02-QC12-110HSCW	7024731
PPH-08/02-QC12-132	PPH-08/02-QC12-132	7024732
PPH-08/02-QC12-132HSCW	PPH-08/02-QC12-132HSCW	7024733
PPH-10/02-QC10-140HSCW	PPH-10/02-QC10-140HSCW	7024734
PPH-10/02-QC12-092	PPH-10/02-QC12-092	7024735
PPH-10/02-QC12-092HSCW	PPH-10/02-QC12-092HSCW	7024736
PPH-10/02-QC12-110	PPH-10/02-QC12-110	7024737
PPH-10/02-QC12-110HSCW	PPH-10/02-QC12-110HSCW	7024738
PPH-10/02-QC12-132	PPH-10/02-QC12-132	7024739
PPH-10/02-QC12-132HSCW	PPH-10/02-QC12-132HSCW	7024740
PPH-12/02-QC12-083	PPH-12/02-QC12-083	7024741
PPH-12/02-QC12-083HSCW	PPH-12/02-QC12-083HSCW	7024742
PPH-12/02-QC12-110	PPH-12/02-QC12-110	7024743
PPH-12/02-QC12-110HSCW	PPH-12/02-QC12-110HSCW	7024744
PPH-12/02-QC12-145	PPH-12/02-QC12-145	7024745
PPH-12/02-QC16-145	PPH-12/02-QC16-145	7024746
PPH-12/02-QC16-145HSCW	PPH-12/02-QC16-145HSCW	7024747
PPH-16/02-QC16-092	PPH-16/02-QC16-092	7024749
PPH-16/02-QC16-092HSCW	PPH-16/02-QC16-092HSCW	7024750
PPH-16/02-QC16-123	PPH-16/02-QC16-123	7024751
PPH-16/02-QC16-123HSCW	PPH-16/02-QC16-123HSCW	7024752
PPH-16/02-QC16-166	PPH-16/02-QC16-166	7024753
PPH-16/02-QC20-166	PPH-16/02-QC20-166	7024754
PPH-16/02-QC20-166HSCW	PPH-16/02-QC20-166HSCW	7024755
PPH-20/02-QC20-104	PPH-20/02-QC20-104	7024757
PPH-20/02-QC20-104HSCW	PPH-20/02-QC20-104HSCW	7024758
PPH-20/02-QC20-141	PPH-20/02-QC20-141	7024759
PPH-20/02-QC20-141HSCW	PPH-20/02-QC20-141HSCW	7024760
PPH-20/02-QC20-191	PPH-20/02-QC20-191	7024761
PPH-20/02-QC25-191	PPH-20/02-QC25-191	7024762
PPH-20/02-QC25-191HSCW	PPH-20/02-QC25-191HSCW	7024763
PPH-25/02-QC25-121	PPH-25/02-QC25-121	7024764
PPH-25/02-QC25-166	PPH-25/02-QC25-166	7024765
PPH-25/02-QC32-215	PPH-25/02-QC32-215	7024766
PPH-32/02-QC32-186	PPH-32/02-QC32-186	7024767
PPH-32/02-QC32-240	PPH-32/02-QC32-240	7024768

ANSI	ISO	EDP
802D-0594-118-S100	802D-0594-118-S100	6801090
802D-0625-125-S100	802D-0625-125-S100	6801091
802D-0656-131-S100	802D-0656-131-S100	6801092
802D-0687-137-S100	802D-0687-137-S100	6801093
802D-0709-141-S100	802D-0709-141-S100	6801094
802D-0750-150-S100	802D-0750-150-S100	6801095
802D-0766-153-S100	802D-0766-153-S100	6801096
802D-0787-157-S100	802D-0787-157-S100	6801097
802D-0812-162-S100	802D-0812-162-S100	6801098
802D-0827-165-S100	802D-0827-165-S100	6801099
802D-0875-175-S100	802D-0875-175-S100	6801100
802D-0906-181-S100	802D-0906-181-S100	6801101
802D-0922-184-S100	802D-0922-184-S100	6801102
802D-0937-187-S100	802D-0937-187-S100	6801103
802D-0984-196-S125	802D-0984-196-S125	6801104
802D-1000-200-S125	802D-1000-200-S125	6801105
802D-1032-206-S125	802D-1032-206-S125	6801106
802D-1062-212-S125	802D-1062-212-S125	6801107
802D-1109-221-S125	802D-1109-221-S125	6801108
802D-1125-225-S125	802D-1125-225-S125	6801109
802D-1172-234-S125	802D-1172-234-S125	6801110
802D-1187-237-S125	802D-1187-237-S125	6801111
802D-1250-250-S150	802D-1250-250-S150	6801112
802D-1312-262-S150	802D-1312-262-S150	6801113
802D-1344-268-S150	802D-1344-268-S150	6801114
802D-1375-275-S150	802D-1375-275-S150	6801115
802D-1437-287-S150	802D-1437-287-S150	6801116
802D-1500-300-S150	802D-1500-300-S150	6801117
802D-15-30-S25	802D-15-30-S25	6820734
802D-16-32-S25	802D-16-32-S25	6820735
802D-17-34-S25	802D-17-34-S25	6820736
802D-1750-350-S150	802D-1750-350-S150	6801118
802D-18-36-S25	802D-18-36-S25	6820737
802D-19-38-S25	802D-19-38-S25	6820738
802D-2000-400-S150	802D-2000-400-S150	6801119
802D-20-40-S25	802D-20-40-S25	6820739
802D-21-42-S25	802D-21-42-S25	6820770
802D-22-44-S25	802D-22-44-S25	6820771
802D-23-46-S25	802D-23-46-S25	6820772
802D-24-48-S25	802D-24-48-S25	6820773
802D-25-50-S32	802D-25-50-S32	6820774
802D-26-52-S32	802D-26-52-S32	6820775
802D-27-54-S32	802D-27-54-S32	6820776
802D-28-56-S32	802D-28-56-S32	6820777
802D-29-58-S32	802D-29-58-S32	6820778
802D-30-60-S32	802D-30-60-S32	6820779
802D-32-64-S32	802D-32-64-S32	6820780
802D-32-64-S40	802D-32-64-S40	6820781
802D-34-68-S32	802D-34-68-S32	6820782
802D-34-68-S40	802D-34-68-S40	6820783
802D-36-72-S32	802D-36-72-S32	6820784
802D-36-72-S40	802D-36-72-S40	6820785
802D-38-76-S32	802D-38-76-S32	6820786
802D-38-76-S40	802D-38-76-S40	6820787
802D-40-80-S32	802D-40-80-S32	6820788
802D-40-80-S40	802D-40-80-S40	6820789
803D-0594-178-S100	803D-0594-178-S100	6801120
803D-0625-187-S100	803D-0625-187-S100	6801121
803D-0656-196-S100	803D-0656-196-S100	6801122
803D-0687-206-S100	803D-0687-206-S100	6801123
803D-0709-212-S100	803D-0709-212-S100	6801124
803D-0750-225-S100	803D-0750-225-S100	6801125
803D-0766-229-S100	803D-0766-229-S100	6801126
803D-0787-236-S100	803D-0787-236-S100	6801127
803D-0812-243-S100	803D-0812-243-S100	6801128
803D-0827-248-S100	803D-0827-248-S100	6801129
803D-0875-262-S100	803D-0875-262-S100	6801130
803D-0906-271-S100	803D-0906-271-S100	6801131
803D-0922-276-S100	803D-0922-276-S100	6801132
803D-0937-281-S100	803D-0937-281-S100	6801133
803D-0984-295-S125	803D-0984-295-S125	6801134
803D-1000-300-S125	803D-1000-300-S125	6801135
803D-1032-310-S125	803D-1032-310-S125	6865420
803D-1062-318-S125	803D-1062-318-S125	6801137
803D-1109-332-S125	803D-1109-332-S125	6801138
803D-1125-337-S125	803D-1125-337-S125	6801139
803D-1172-351-S125	803D-1172-351-S125	6801140
803D-1187-356-S125	803D-1187-356-S125	6801141
803D-1250-375-S150	803D-1250-375-S150	6801142
803D-1312-393-S150	803D-1312-393-S150	6801143
803D-1344-403-S150	803D-1344-403-S150	6801144
803D-1375-412-S150	803D-1375-412-S150	6801145
803D-1437-431-S150	803D-1437-431-S150	6801146
803D-15,5-46,5-S25	803D-15,5-46,5-S25	6820790
803D-1500-450-S150	803D-1500-450-S150	6801147
803D-15-45-S25	803D-15-45-S25	6820791
803D-16,5-49,5-S25	803D-16,5-49,5-S25	6820792
803D-16-48-S25	803D-16-48-S25	6820793
803D-17,5-52,5-S25	803D-17,5-52,5-S25	6820794
803D-1750-525-S150	803D-1750-525-S150	6801148
803D-17-51-S25	803D-17-51-S25	6820795
803D-18,5-55,5-S25	803D-18,5-55,5-S25	6820796
803D-18-54-S25	803D-18-54-S25	6820797
803D-19,5-58,5-S25	803D-19,5-58,5-S25	6820798
803D-19-57-S25	803D-19-57-S25	6820799
803D-20,5-61,5-S25	803D-20,5-61,5-S25	6820800
803D-2000-600-S150	803D-2000-600-S150	6801149
803D-20-60-S25	803D-20-60-S25	6820801
803D-21,5-64,5-S25	803D-21,5-64,5-S25	6820802
803D-21-63-S25	803D-21-63-S25	6820803
803D-22,5-67,5-S25	803D-22,5-67,5-S25	6820804
803D-22-66-S25	803D-22-66-S25	6820805
803D-23,5-70,5-S25	803D-23,5-70,5-S25	6820806
803D-23-69-S25	803D-23-69-S25	6820807
803D-24,5-73,5-S25	803D-24,5-73,5-S25	6820808
803D-24-72-S25	803D-24-72-S25	6820809
803D-25,5-76,5-S32	803D-25,5-76,5-S32	6820810
803D-25-75-S32	803D-25-75-S32	6820811
803D-26,5-79,5-S32	803D-26,5-79,5-S32	6820812
803D-26-78-S32	803D-26-78-S32	6820813
803D-27-81-S32	803D-27-81-S32	6820814
803D-28-84-S32	803D-28-84-S32	6820815
803D-29-87-S32	803D-29-87-S32	6820816
803D-30-90-S32	803D-30-90-S32	6820817
803D-31-93-S32	803D-31-93-S32	6820818
803D-32-96-S32	803D-32-96-S32	6820819
803D-32-96-S40	803D-32-96-S40	6820820
803D-33-99-S32	803D-33-99-S32	6820821
803D-33-99-S40	803D-33-99-S40	6820822
803D-34-102-S32	803D-34-102-S32	6820823
803D-34-102-S40	803D-34-102-S40	6820824
803D-35-105-S32	803D-35-105-S32	6820825
803D-35-105-S40	803D-35-105-S40	6820826
803D-36-108-S32	803D-36-108-S32	6820827
803D-36-108-S40	803D-36-108-S40	6820828
803D-37-111-S32	803D-37-111-S32	6820829
803D-37-111-S40	803D-37-111-S40	6820830
803D-38-114-S32	803D-38-114-S32	6820831
803D-38-114-S40	803D-38-114-S40	6820832
803D-39-117-S32	803D-39-117-S32	6820833
803D-39-117-S40	803D-39-117-S40	6820834
803D-40-120-S32	803D-40-120-S32	6820835
803D-40-120-S40	803D-40-120-S40	6820836
803D-41-123-S40	803D-41-123-S40	6758967
803D-42-126-S40	803D-42-126-S40	6758974
803D-43-129-S40	803D-43-129-S40	6758975
803D-44-132-S40	803D-44-132-S40	6758976
803D-45-135-S40	803D-45-135-S40	6758977
803D-46-138-S40	803D-46-138-S40	6758978
803D-47-141-S40	803D-47-141-S40	6758979
803D-48-144-S40	803D-48-144-S40	6758980
803D-49-147-S40	803D-49-147-S40	6758968
803D-50-150-S40	803D-50-150-S40	6758981
803D-51-153-S40	803D-51-153-S40	6758982
803D-52-156-S40	803D-52-156-S40	6758983
803D-53-159-S40	803D-53-159-S40	6758984
803D-54-162-S40	803D-54-162-S40	6758985
803D-55-165-S40	803D-55-165-S40	6758986
803D-56-168-S40	803D-56-168-S40	6758987
803D-57-171-S40	803D-57-171-S40	6758988
803D-58-174-S40	803D-58-174-S40	6758969
804D-0594-237-S100	804D-0594-237-S100	6801150
804D-0625-250-S100	804D-0625-250-S100	6801151
804D-0656-262-S100	804D-0656-262-S100	6801152
804D-0687-274-S100	804D-0687-274-S100	6801153
804D-0709-283-S100	804D-0709-283-S100	6801154
804D-0750-300-S100	804D-0750-300-S100	6801155
804D-0766-306-S100	804D-0766-306-S100	6801156
804D-0787-314-S100	804D-0787-314-S100	6801157
804D-0812-324-S100	804D-0812-324-S100	6801158
804D-0827-330-S100	804D-0827-330-S100	6801159
804D-0875-350-S100	804D-0875-350-S100	6801160
804D-0906-362-S100	804D-0906-362-S100	6801161
804D-0922-368-S100	804D-0922-368-S100	6801162
804D-0937-374-S100	804D-0937-374-S100	6801163
804D-0984-393-S125	804D-0984-393-S125	6801164
804D-1000-400-S125	804D-1000-400-S125	6801165
804D-1032-412-S125	804D-1032-412-S125	6801166
804D-1062-424-S125	804D-1062-424-S125	6801167
804D-1109-443-S125	804D-1109-443-S125	6801168
804D-1125-450-S125	804D-1125-450-S125	6801169
804D-1172-468-S125	804D-1172-468-S125	6801170
804D-1187-474-S125	804D-1187-474-S125	6801171
804D-1250-500-S150	804D-1250-500-S150	6801172
804D-1312-524-S150	804D-1312-524-S150	6801173
804D-1344-537-S150	804D-1344-537-S150	6801174
804D-1375-550-S150	804D-1375-550-S150	6801175
804D-1437-574-S150	804D-1437-574-S150	6801176
804D-1500-600-S150	804D-1500-600-S150	6801177
804D-1750-700-S150	804D-1750-700-S150	6801178
804D-17-68-S25	804D-17-68-S25	6758989
804D-18-72-S25	804D-18-72-S25	6758990
804D-19-76-S25	804D-19-76-S25	6758991
804D-2000-800-S150	804D-2000-800-S150	6801179
804D-20-80-S25	804D-20-80-S25	6758970
804D-21-84-S25	804D-21-84-S25	6758992
804D-22-88-S25	804D-22-88-S25	6758993
804D-23-92-S25	804D-23-92-S25	6758994
804D-24-96-S25	804D-24-96-S25	6758995
804D-25-100-S32	804D-25-100-S32	6758996
804D-26-104-S32	804D-26-104-S32	6758971
804D-27-108-S32	804D-27-108-S32	6758997
804D-28-112-S32	804D-28-112-S32	6758998
804D-29-116-S32	804D-29-116-S32	6758999
804D-30-120-S32	804D-30-120-S32	6759000
804D-31-124-S32	804D-31-124-S32	6759001
804D-32-128-S32	804D-32-128-S32	6759002
804D-33-132-S32	804D-33-132-S32	6759003
804D-34-136-S32	804D-34-136-S32	6758972
804D-35-140-S32	804D-35-140-S32	6759004
804D-36-144-S32	804D-36-144-S32	6759005
804D-37-148-S32	804D-37-148-S32	6759006
804D-38-152-S32	804D-38-152-S32	6759007
804D-39-156-S32	804D-39-156-S32	6759008
804D-40-160-S32	804D-40-160-S32	6758973
804D-41-164-S40	804D-41-164-S40	6760972
804D-42-168-S40	804D-42-168-S40	6760973
804D-43-172-S40	804D-43-172-S40	6760974
804D-44-176-S40	804D-44-176-S40	6760975
804D-45-180-S40	804D-45-180-S40	6760976
804D-46-184-S40	804D-46-184-S40	6760977
804D-47-188-S40	804D-47-188-S40	6760978
804D-48-192-S40	804D-48-192-S40	6760979
804D-49-196-S40	804D-49-196-S40	6760980
804D-50-200-S40	804D-50-200-S40	6760981
804D-51-204-S40	804D-51-204-S40	6760982
804D-52-208-S40	804D-52-208-S40	6760983
804D-53-212-S40	804D-53-212-S40	6760984
804D-54-216-S40	804D-54-216-S40	6760985
804D-55-220-S40	804D-55-220-S40	6760986
804D-56-224-S40	804D-56-224-S40	6760987
804D-57-228-S40	804D-57-228-S40	6760988
804D-58-232-S40	804D-58-232-S40	6760989
805D-19-95-S25	805D-19-95-S25	6759009
805D-20-100-S25	805D-20-100-S25	6759010
805D-21-105-S25	805D-21-105-S25	6759011
805D-22-110-S25	805D-22-110-S25	6759012
805D-23-115-S25	805D-23-115-S25	6759013

ANSI	ISO	EDP
805D-24-120-S25	805D-24-120-S25	6759014
805D-25-125-S32	805D-25-125-S32	6759015
805D-26-130-S32	805D-26-130-S32	6759016
805D-27-135-S32	805D-27-135-S32	6759017
805D-28-140-S32	805D-28-140-S32	6759018
805D-29-145-S32	805D-29-145-S32	6759019
805D-30-150-S32	805D-30-150-S32	6759020
805D-31-155-S32	805D-31-155-S32	6759021

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Como profesional se puede juzgar la calidad del trabajo sólo mirarando la viruta. La viruta es una forma limpia y sin complicaciones, que en sí misma cuenta una historia. Es una señal clara y consistente y es por eso que la usamos como un símbolo por ser **simplemente fiables**.

Un copeau peut vous raconter une histoire de part sa forme et son fractionnement. En tant que professionnel, vous pouvez juger de la qualité d'un usinage rien qu'en le regardant. Le copeau envoie un message clair et évident, c'est pourquoi nous l'avons choisi comme symbole, efficace **tout simplement**.

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