SAUDA

INCREMENTO DE PRECIOS

+ 15%

A partir del 15 de Marzo de 2026

HERRAMIENTAS DE CORTE

CUTTING TOOLS

ÍNDICE | INDEX

SAUDA

FRESAS
END MILLS

Aluminio
CBN
Cobre
Acero
Fundición
Inoxidable
Exóticos
Grafito
Otras aplicaciones

Pag. 4

BROCAS
DRILLS

Brocas
Escariadores
Avellanadores

Pag. 186

MACHOS
TAPS

Juego de machos
Macho máquina recto
Macho máquina helicoidal

Pag. 215

FRESADO
MILLING

Plaquitas de fresado
Portaherramientas

Pag. 242

TALADRADADO
DRILLING

Cabezas de broca indexable
Brocas de refrigeración interior

Pag. 323

TRONZADO
PARTING

Perforación
Ranurado

Pag. 334

ROSCADO
THREADING

Plaquitas de perfil parcial en V
Métrica ISO
Plaquitas Withworth
Portaherramientas para roscar

Pag. 345

TORNEADO
TURNING

Exterior
Interior

Pag. 353

BROCHADO
BROACHING TOOLS

Herramientas de interiores
Plaquitas

Pag. 376

ALMACENAJE
WORKSPACE

Portaconos
Armarios de herramientas
Armarios industriales
Armarios archivador
Armarios ordenador
Carros de herramientas
Bancos de trabajo
Paneles perforados
Ganchos

Pag. 380

O. PRODUCTOS
OTHER PRODUCTS

Aflojatodo
Grasa lubricante
Aceite universal
Elevadores magnéticos
Gancho pesador
Separador de aceite

Pag. 402

Todos los datos reflejados en el catálogo podrán ser susceptibles de modificación a cualquier cambio en la tarifa.

SAUDA

Ángulo de hélice
Helix angle

5° | 15° | 20° | 30° | 35° | 35° 38°
38° | 42° | 45° | 50° | 60° | VARIABLE

Direcciones de mecanizado disponibles
Machining direction

Refrigeración externa
External coolant

Refrigeración interna
Internal coolant

Forma de punta
Point shape

r | r | 90° | 90° | 45° | 45°

Recubrimiento
Coating

ZFx-1 | TiAlN PLUS | TiAlN | UNILUBE CrN | AlCrN | TiSiN | ZRN
DLC | AlTiN | VP | TiN | TiCN

Aplicación
Application

TROCHOIDAL

Superficie pulida
Polished surface

POLISHED

Mecanizado alta calidad
High speed cutting

HSC

Materiales duros
Hard materials

HHC

Bajo esfuerzo de corte
Lower power cutting

LPC

Tolerancia
Tolerance

d1e8 | d2h6 | r±0,01 | r +0 -0,015 | r±0,03 | r±0,005
d1 +0 -0,01 | H7 TOLERANCE | H7 | ISO2 6H | 6HX

Número de dientes
No. of flutes

Ángulo de punta
Point angle

σ=118° | σ=140° | σ=135° | σ=90° | σ=120° | σ=142°

EXPLICACIÓN DE LOS SÍMBOLOS | SYMBOL EXPLANATION

Mango
Shank

DIN 6535 HA

Longitud de corte
Drill cutting length

3xD · 5xD · 8xD · 10xD · 15xD · 12xD · 20xD · 30xD · 40xD

Tipo de macho
Tap type

Type N · Type VA · Type GG · Type AL · Type H · Type UNI · GH 53 · GH 63

Tipo de rosca
Thread type

M · MF · G · UNC · UNF

Dimensiones según norma DIN
Dimensions according DIN

DIN 371 · DIN 374 · DIN 376 · DIN 2174 · DIN 5156

Ángulo de flanco
Flank type

55° P · 60° P

Forma de la punta y nº de hilos
Chamfer form and threads

C 2-3 · B 3,5-5

Agujeros pasantes
Throug holes

Agujeros ciegos
Blind holes

≤ 1,5xd · ≤ 2,5xd · ≤ 3xd

Ranuras de lubricación
Lubrication grooves

SN

Aplicación universal
Universal use

UNI

Acero
Steel

STEEL <65 HRC · STEEL <55 HRC

Acero inoxidable
Stainless steel

INOX

Fundición
Cast iron

GGG · GG

Materiales no férricos
Non-ferrous materials

COPPER · ALU <12% SI · PLASTIC · GOLD · GFK CFK

Materiales exóticos
Exotic materials

NI ALLOYS · TITAN INCONEL

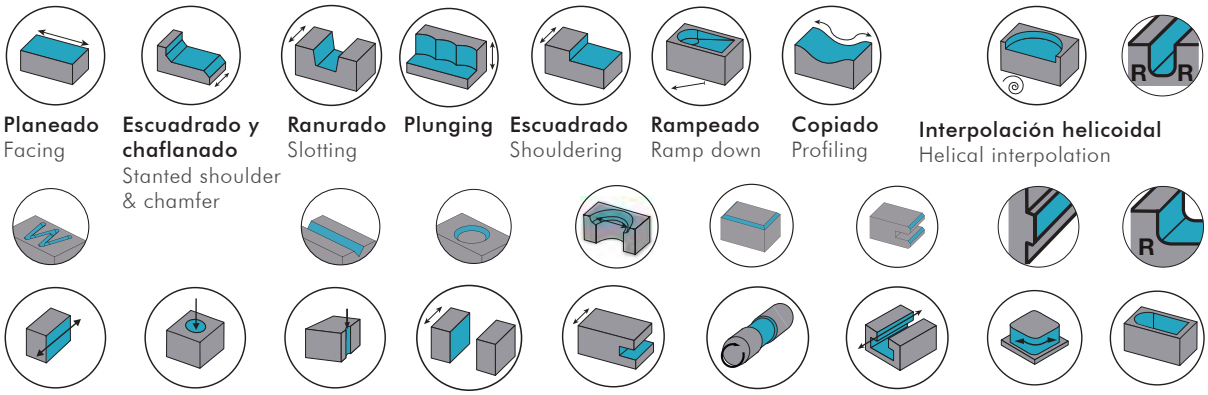
Acero templado
Hardened steel

HG

Grafito
Graphite

GRAPHITE

Fresado
Milling



FRESAS

END MILLS

MAT. MAT.	REFERENCIA REFERENCE	FOTO PHOTO	Nº DE FILOS No. FLUTES	TIPO DE FRESAS END MILL TYPE	PÁGINA PAGE
ALUMINIO ALUMINUM	F-100 F-111		6	**Fresa CFRP/GRP** CFRP/GRP end mill	10
	F-200		1	**Fresa plana** End mill	11
	F-201		1	**Fresa plana larga** Long end mill	12
	F-282		2	**Fresa plana alta velocidad** High speed end mill	13
	F-286		2	**Fresa 45º recubrimiento ZRN** 45º End mill ZRN coated	14
	F-287		2	**Fresa 45º recubrimiento ZRN larga** 45º End mill ZRN coated long	15
	F-288		2	**Fresa 45º serie larga** 45º End mill long series	16
	F-301		3	**Fresa plana alta velocidad (0,2µm)** High speed end mill (0,2µm)	17
	F-151		3	**Fresa metal duro tórica hélice variable** Solid carbide variable helix end mill	18
	F-305		3	**Fresa 45º recubrimiento ZRN** 45º End mill ZRN coated	19
	F-306		3	**Fresa 45º recubrimiento ZRN larga** 45º End mill ZRN coated long	20
	F-606		3	**Fresa plana de desbaste y semiacabado** Roughing and semi-finishing end mill	21
	F-604		3	**Fresa plana gran desbaste** Super roughing end mill	22
	F-303		3 & 4	**Fresa plana alta velocidad con cuello largo** Long neck high speed end mill	23
	F-283		2	**Fresa tórica** Corner radius end mill	24
	F-281		2	**Fresa tórica** Corner radius end mill	25
	F-284		3	**Fresa tórica alta velocidad (0,2µm)** High speed corner radius end mill (0,2µm)	27
	F-607		3	**Fresa tórica de desbaste y semiacabado** Roughing and semi-finishing corner radius end mill	28
	F-223		2	**Fresa esférica** Ball end mill	29
	F-275		2	**Fresa esférica 40º recurbimiento ZRN** 40º Corner radius end mill with coating ZRN	30
	F-276		3	**Fresa tórica 40º recurbimiento ZRN** 40º End mill with coating ZRN	31
CBN CBN	F-112		2	**Fresa CBN tórica <70 HRC** CBN corner radius end mill <70 HRC	33
	F-110		2	**Fresa CBN esférica <70 HRC** CBN ball end mill <70 HRC	34
COBRE COPPER	F-290		2	**Fresa tórica (0,2µm)** Corner radius end mill (0,2µm)	36
	F-295		3	**Fresa tórica (0,2µm)** Corner radius end mill (0,2µm)	37
	F-285		2	**Fresa esférica (0,2µm)** Ball end mill (0,2µm)	38
ACERO STEEL	F-901		2	**Microfresa plana HSC (0,2µm) <55 HRC** HSC micro end mill (0,2µm) <55 HRC	40
	F-812		2	**Fresa plana HSC/HHC <55 HRC** HSC/HHC end mill <55 HRC	41
	F-913		2	**Fresa plana de cuello largo <55 HRC (0,2µm)** Long neck end mill <55 HRC (0,2µm)	42
	F-202		2	**Fresa plana <55 HRC** End mill <55 HRC	44
	F-214		2	**Fresa plana <70 HRC** End mill <70 HRC	45
	F-204		2	**Fresa plana larga <55 HRC** Long end mill <55 HRC	46

SAUDA

MAT. MAT.	REFERENCIA REFERENCE	FOTO PHOTO	Nº DE FILOS No. FLUTES	TIPO DE FRESAS END MILL TYPE	PÁGINA PAGE
ACERO STEEL	F-218		2	**Fresa plana extra larga <55 HRC** Extra long end mill <55 HRC	47
	F-302		3	**Fresa plana <55 HRC** End mill <55 HRC	48
	F-332		3	**Fresa plana larga <55 HRC** Long end mill <55 HRC	49
	F-402		4	**Fresa plana <55 HRC** End mill <55 HRC	50
	F-401		4	**Fresa larga <70 HRC** Long End mill <70 HRC	51
	F-560		4	**Fresa 43º/45º < 56 HRC** Long End mill 43º/45º < 56 HRC	52
	F-452		4	**Fresa 35º/38º <60 HRC** End mill 35º/38º <60 HRC	53
	F-414		4	**Fresa plana <70 HRC** End mill <70 HRC	54
	F-404		4	**Fresa plana larga <55 HRC** Long end mill <55 HRC	55
	F-444		4	**Fresa plana extra larga <55 HRC** Extra long end mill <55 HRC	56
	F-418		3 & 4	**Fresa plana de desbaste <55 HRC** Roughing end mill <55 HRC	57
	F-419		4	**Fresa de 30º/32º <60 HRC** End mill 30º/32º <60 HRC	58
	F-502		4 & 6	**Fresa plana para acabado <65 HRC** Finishing end mill <65 HRC	59
	F-504		4 & 6	**Fresa plana larga para acabado <65 HRC** Long finishing end mill <65 HRC	60
	F-509		6	**Fresa plana extra larga para acabado <65 HRC** Extra long finishing end mill <65 HRC	61
	F-422 F-442		2	**Fresa tórica <65 HRC y serie larga** Corner radius end mill <65 HRC and long series	62
	F-423		2	**Fresa tórica < 62 HRC** Corner radius end mill < 62 HRC	63
	F-813		2	**Fresa tórica <65 HRC (0,2µm)** Corner radius end mill <65 HRC (0,2µm)	64
	F-216		2	**Fresa tórica con cuello cónico <65 HRC (0,2µm** Taper neck corner radius end mill <65 HRC (0,2µm)	65
	F-217		2	**Fresa tórica con cuello cónico <65 HRC** Taper neck corner radius end mill <65 HRC	66
	F-410		4	**Fresa tórica <50 HRC** Corner radius end mill <50 HRC	67
	F-411		4	**Fresa tórica <60 HRC** Corner radius end mill <60 HRC	69
	F-412		4	**Fresa tórica <65 HRC** Corner radius end mill <65 HRC	70
	F-413		4	**Fresa tórica larga <65 HRC** Corner radius long end mill <65 HRC	71
	F-620		6	**Fresa tórica larga <65 HRC (0,2µm)** Long corner radius end mill <65 HRC (0,2µm)	72
	F-921		2	**Microfresa esférica <55 HRC (0,2µm)** Ball micro end mill <55 HRC (0,2µm)	73
	F-823		2	**Fresa esférica larga <65 HRC (0,2µm)** Long ball end mill <65 HRC (0,2µm)	74
	F-221		2	**Fresa esférica <55 HRC** Ball end mill <55 HRC	77
	F-224		2	**Fresa esférica 70 HRC** Ball end mill 70 HRC	78
	F-230		2	**Fresa esférica larga 70 HRC** Long ball end mill 70 HRC	79
	F-231		2	**Fresa esférica larga <65 HRC** Long ball end mill <65 HRC	80
	F-222		2	**Fresa esférica para uso general <55HRC** Ball end mill for general use <55HRC	81

MAT. MAT.	REFERENCIA REFERENCE	FOTO PHOTO	Nº DE FILOS No. FLUTES	TIPO DE FRESAS END MILL TYPE	PÁGINA PAGE
ACERO STEEL	F-225		2	**Fresa esférica larga <65 HRC (0,2µm)** Long ball end mill <65 HRC (0,2µm)	82
	F-234		2	**Fresa esférica extra larga <55 HRC** Extra long ball end mill <55 HRC	83
	F-227		2	**Fresa esférica con cuello cónico <65 HRC** Taper neck ball end mill <65 HRC	84
	F-229		2	**Fresa esférica larga con cuello cónico <65 HRC** Long taper neck ball end mill <65 HRC	85
	F-228		2	**Fresa esférica extra larga con cuello cónico <65 HRC** Extra long taper neck ball end mill <65 HRC	86
	F-232		2	**Fresa esférica 3D 230º <65 HRC (0,2µm)** 3D 230º ball end mill <65 HRC (0,2µm)	87
	F-324		3	**Fresa esférica <65 HRC (0,2µm)** Ball end mill <65 HRC (0,2µm)	88
	F-424		4	**Fresa esférica <65 HRC (0,2µm)** Ball end mill <65 HRC (0,2µm)	89
	F-432		4	**Fresa esférica 3D 230º <65 HRC (0,2µm)** 3D 230º ball end mill <65 HRC (0,2µm)	90
	F-212		4	**Fresa TURBO HSC/HHC <65 HRC** HSC/HHC turbo end mill <65 HRC	91
	F-551		4	**Fresa "turbo" <65 HRC** "Turbo" end mill <65 HRC	92
FUND. C. IRON	F-417		3 & 4	**Fresa de desbaste <55 HRC** Roughing end mill <55 HRC	94
INOXIDABLE STAINLESS STEEL	F-1305		3	**Fresa de alto rendimiento <55 HRC** High performance end mill <55 HRC	96
	F-1403		4	**Fresa alto rendimiento <55 HRC** High performance end mill <55 HRC	97
	F-454		4	**Fresa plana <55 HRC** End mill <55 HRC	98
	F-455		4	**Fresa tórica <55 HRC** Corner radius end mill <55 HRC	99
	F-453		4	**Fresa de 38º/41º** 38º/41º end mill	100
	F-420		4	**Fresa de 38º/41º para desbaste** 38º/41º end mill	101
EXÓTICOS EXOTIC MATERIALS	F-388		3	**Fresa plana (0,2µm)** End mill (0,2µm)	103
	F-468		3	**Fresa tórica de hélice variable (0,2µm)** Variable helix end mill (0,2µm)	104
	F-488		4	**Fresa plana** End mill	105
	F-408		4	**Fresa de alto rendimiento con doble ángulo** High performance end mill with double helix angle	106
	F-407		4	**Fresa metal duro** Solid carbide end mill	107
	F-479		4	**Fresa tórica** End mill	108
	F-477		4	**Fresa tórica** Corner radius end mill	109
	F-478		4	**Fresa tórica** Corner radius end mill	110
	F-298		2	**Fresa esférica** Ball end mill	111
	F-498		4	**Fresa esférica (0,2µm)** Ball end mill (0,2µm)	112
	F-591		3	**Fresa cónica con punta esférica <55 HRC** Taper ball end mill <55 HRC	113

FRESAS | END MILLS

SAUDA

MAT. MAT.	REFERENCIA REFERENCE	FOTO PHOTO	Nº DE FILOS No. FLUTES	TIPO DE FRESAS END MILL TYPE	PÁGINA PAGE
GRAFITO GRAPHITE	F-702		2	**Fresa plana con mango largo** Long shank end mill	115
	F-704		4	**Fresa plana con mango largo** Long shank end mill	116
	F-706		6	**Fresa plana con mango largo** Long shank end mill	117
	F-712		2	**Fresa plana recubierta de diamante (0,2µm)** Diamond coated end mill (0,2µm)	118
	F-716		4	**Fresa plana recubierta de diamante (0,2µm)** Diamond coated end mill (0,2µm)	119
	F-718		2	**Fresa tórica recubierta de diamante (0,2µm)** Diamond coated corner radius end mill (0,2µm)	120
	F-724		4	**Fresa tórica recubierta de diamante (0,2µm)** Diamond coated corner radius end mill (0,2µm)	121
	F-714		4	**Fresa esférica recubierta de diamante (0,2µm)** Diamond coated ball end mill (0,2µm)	122
OTRAS APLICACIONES OTHER APPLICATIONS	F-555		4 & 5	**Fresa de alto rendimiento <65 HRC** High performance end mill <65 HRC	124
	F-552		3	**Fresa con rompevirutas para trocoidal** End mill with chipbreaker for trochoidal	127
	F-888		2	**Fresa cónica (0,2µm) <55 HRC** Taper end mill (0,2µm) <55 HRC	128
	F-595		2	**Fresa cónica (0,2µm) <55 HRC** Taper end mill (0,2µm) <55 HRC	129
	F-590		3	**Fresa cónica con punta esférica <55 HRC** Taper ball end mill <55 HRC	130
	F-460			**Chaflanador 60° <65 HRC** 60º beveling end mill <65 HRC	131
	F-490			**Chaflanador 90° <65 HRC** 90º beveling end mill <65 HRC	132
	F-480			**Fresa para radios cóncavos <65 HRC** End mill for concave radius <65 HRC	133
	F-845			**Fresa para chaflanes exteriores e interiores <65 HRC** End mill for internal and external bevels <65 HRC	134
	F-850			**Sierra circular paso fino <55 HRC** Fine toothing saw blade <55 HRC	135
	F-851			**Sierra circular paso basto <55 HRC** Large toothing saw blade <55 HRC	138

FRESAS ALUMINIO

ALUMINIUM END MILLS

SAUDA

ALUMINIO

F-100
F-111

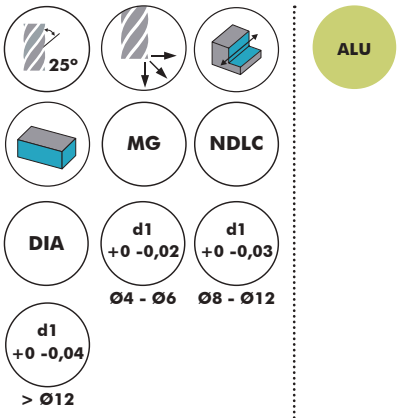
Fresa metal duro para desbaste de materiales CFRP/GFRP

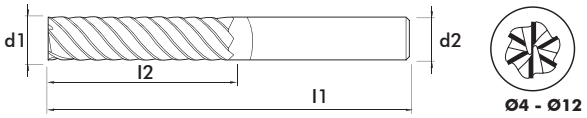
Solid carbide end mill for CFRP/GFRP rough milling

F-100 F-111

Fresa de metal duro integral, para desbaste 8~17F CFRP/GFRP. Diseño de hélice derecha e izquierda. NDLC: el recubrimiento Nano DLC proporciona una excepcional resistencia al desgaste y una buena vida útil de la herramienta. DIA: el recubrimiento de diamante proporciona una excepcional resistencia al desgaste y una buena vida útil de la herramienta.

Solid Carbide Endmills. For CFRP/GFRP rough milling 8~17F. Right helix and left helix design. NDLC - Nano DLC coating provides exceptional wear resistance and good tool life. DIA - Diamond coating provides exceptional wear resistance and good tool life.





F-100 Recubrimiento NDLC Nano DLC

NDLC Nano DLC coating

Ref.	d1	d2	l1	l2	€
100040200	4	6	60	12	**84,55**
100060200	6	6	60	18	**100,30**
100080200	8	8	60	24	**141,50**
100100200	10	10	75	30	**192,90**
100120200	12	12	100	36	**269,50**

F-111 Recubrimiento DIA DIamante

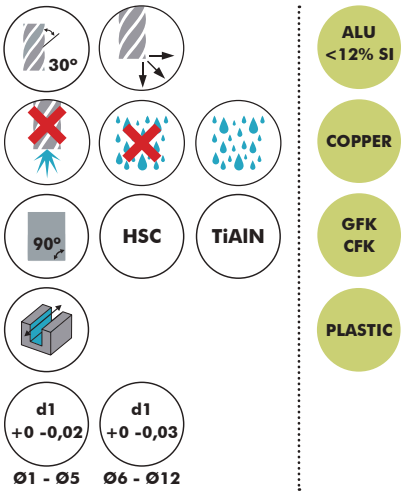
DIA Diamond coating

Ref.	d1	d2	l1	l2	€
111040200	4	6	60	12	**135,15**
111060200	6	6	60	18	**168,85**
111080200	8	8	60	24	**223,50**
111100200	10	10	75	30	**285,10**
111120200	12	12	100	36	**354,80**

Condiciones de corte | Cutting data pag. 141

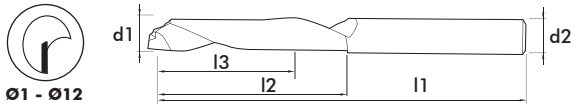
Fresa metal duro 1 labio

1 Fluted solid carbide end mill



Fresa de metal duro de un labio con corte a derechas para fresado de ABS, aluminio, materiales no férricos y materiales no metálicos. Ofrece una buena evacuación de viruta gracias al diseño de la hélice de 30º y tiene gran resistencia al desgaste por su grado WC ultrafino.

1 Fluted solid carbide end mill right hand cutting for ABS, aluminum, non-ferrous and non-metallic materials. Excellent chip removing by 30º helix flute design and very good wear resistance by applying ultra fine WC grade.



Ref.	d1	d2	l1	l2	l3	z	€
200010200	1,0	6	40	-	5	1	80,85
200012200	1,2	3	38	-	5	1	69,25
200015200	1,5	3	38	-	5	1	69,25
200015210	1,5	6	40	-	5	1	80,85
200020200	2,0	6	40	-	5	1	78,55
200020210	2,0	6	50	12	5	1	97,00
200020220	2,0	4	40	-	7	1	76,20
200020230	2,0	3	40	-	8	1	69,25
200020240	2,0	3	38	-	10	1	69,25
200030200	3,0	3	40	-	5	1	57,75
200030210	3,0	3	50	22	5	1	85,50
200030220	3,0	6	40	-	5	1	78,55
200030230	3,0	6	50	22	5	1	97,00
200030240	3,0	6	40	-	8	1	78,55
200030250	3,0	3	38	-	10	1	62,40
200030260	3,0	4	40	-	10	1	73,90
200030270	3,0	6	50	-	10	1	80,85
200030280	3,0	6	50	-	12	1	83,10
200040200	4,0	4	40	-	6	1	64,70
200040210	4,0	6	40	-	6	1	78,55
200040220	4,0	4	50	22	8	1	80,85
200040230	4,0	6	50	22	8	1	97,00

Ref.	d1	d2	l1	l2	l3	z	€
200040240	4	4	40	-	10	1	69,25
200040250	4	6	60	-	12	1	87,75
200040260	4	4	50	-	14	1	69,25
200050200	5	6	40	-	7	1	78,55
200050210	5	6	50	22	14	1	97,00
200050220	5	6	60	32	14	1	99,25
200050230	5	5	60	-	16	1	78,55
200060200	6	6	40	-	8	1	76,20
200060210	6	6	50	22	14	1	94,70
200060220	6	6	60	32	14	1	97,00
200060230	6	6	70	42	14	1	99,25
200060240	6	6	60	-	16	1	80,85
200060250	6	6	60	-	20	1	80,85
200060260	6	6	60	-	25	1	85,50
200080200	8	8	60	32	14	1	115,40
200080210	8	8	75	42	14	1	129,25
200080220	8	8	60	-	20	1	97,00
200080230	8	8	75	-	25	1	109,35
200080240	8	8	75	-	30	1	113,55
200100200	10	10	75	-	25	1	144,75
200120200	12	12	75	-	25	1	181,60

Condiciones de corte | Cutting data pag. 141

SAUDA

ALUMINIO

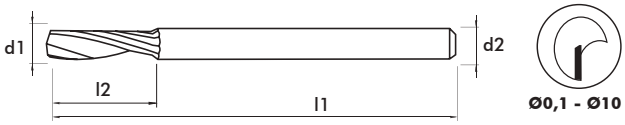
F-201

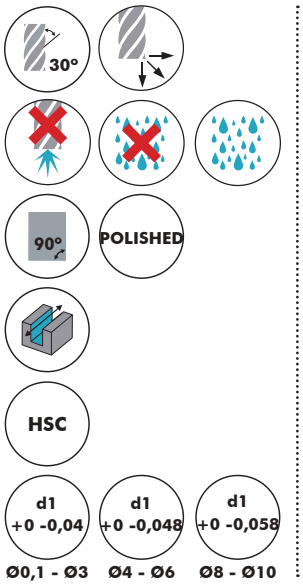
Fresa metal duro 1 labio para materiales plásticos

1 Fluted solid carbide end mill for plastic materials

Fresa de metal duro de un labio con corte a derechas para fresado de materiales plásticos, acrílicos, PP, PE, PA, PS, PC, PET y PPE. Ofrece una buena evacuación de viruta gracias al diseño de la hélice de 30º y tiene gran resistencia al desgaste por su grado WC ultrafino.

1 Fluted solid carbide end mill right hand cutting for plastic and acrylic materials, PP, PE, PA, PS, PC, PET and PPE . Excellent chip removing by 30º helix flute design and very good wear resistance by applying ultra fine WC grade.





PLASTIC

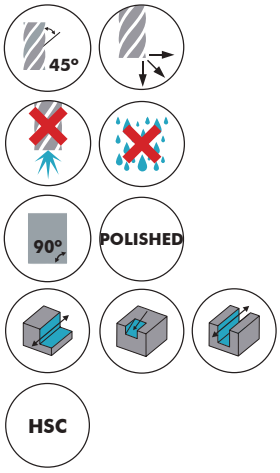
Ref.	d1	d2	l1	l2	z	€
201001200	0,1	3	30	0,3	1	**108,55**
201002200	0,2	3	30	0,6	1	**83,10**
201003200	0,3	3	30	1,0	1	**71,65**
201004200	0,4	3	30	1,0	1	**71,65**
201005200	0,5	3	30	1,5	1	**64,70**
201006200	0,6	3	30	3,0	1	**64,70**
201008200	0,8	3	30	5,0	1	**64,70**
201010200	1,0	3	30	4,0	1	**64,70**
201015200	1,5	3	30	6,0	1	**64,70**
201020200	2,0	3	30	6,0	1	**64,70**
201020210	2,0	4	50	6,0	1	**78,55**
201020220	2,0	6	50	6,0	1	**90,05**
201020230	2,0	3	30	8,0	1	**64,70**
201020240	2,0	3	38	11,0	1	**78,55**
201030200	3,0	3	30	6,0	1	**64,70**
201030210	3,0	6	50	6,0	1	**97,00**
201030220	3,0	3	38	11,0	1	**78,55**
201030230	3,0	4	50	11,0	1	**97,00**
201030240	3,0	6	50	11,0	1	**106,20**
201030250	3,0	3	50	22,0	1	**87,75**
201030260	3,0	6	60	22,0	1	**110,85**
201040200	4,0	4	50	8,0	1	**83,10**
201040210	4,0	6	50	8,0	1	**97,00**
201040220	4,0	4	50	12,0	1	**83,10**

Ref.	d1	d2	l1	l2	z	€
201040230	4	6	50	12	1	**97,00**
201040240	4	4	50	14	1	**83,10**
201040250	4	6	50	14	1	**99,25**
201040260	4	4	50	22	1	**92,30**
201040270	4	6	50	22	1	**106,20**
201040280	4	4	64	32	1	**97,00**
201050200	5	6	58	12	1	**103,90**
201050210	5	6	50	16	1	**103,90**
201050220	5	6	50	22	1	**103,90**
201060200	6	6	50	12	1	**99,25**
201060210	6	6	50	22	1	**103,90**
201060220	6	6	58	22	1	**106,20**
201060230	6	6	64	32	1	**117,80**
201060240	6	6	75	42	1	**131,65**
201060250	6	6	100	32	1	**129,25**
201080200	8	8	64	22	1	**124,70**
201080210	8	8	64	32	1	**136,20**
201080220	8	8	75	42	1	**157,00**
201080230	8	8	100	42	1	**170,85**
201080240	8	8	100	55	1	**180,05**
201100200	10	10	64	22	1	**182,35**
201100210	10	10	75	32	1	**196,20**
201100220	10	10	100	55	1	**223,95**
201100230	10	10	120	75	1	**251,55**

Condiciones de corte | Cutting data pag. 141

Fresa metal duro de 2 labios para aluminio "alta velocidad"

2 Fluted solid carbide end mill for aluminium high speed cutting



ALU <12% SI

COPPER

GFK CFK

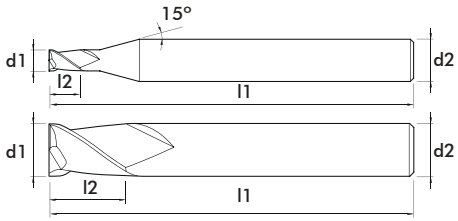
PLASTIC

GOLD

Fresa de metal duro de dos labios y hélice de 45º para aluminio, aleaciones de aluminio, materiales no férricos y materiales no metálicos. El diseño de los filos con diferentes longitudes cubre un amplio rango de aplicaciones, como desbaste y ranurado. Minimiza la adhesión de viruta gracias a su diseño con doble filo. Ofrece gran rendimiento en el mecanizado de alta velocidad gracias a su grado WC ultrafino (0,2 µm), que además permite alcanzar un excelente acabado superficial.

2 Fluted solid carbide 45º helix end mill for aluminum, aluminum alloys, non-ferrous and non-metallic materials. Various flute length design for covering wide range application, such as roughing and slotting operations. Minimize built up edge by double edge. Outstanding performance at high speed machining by ultrafine (0,2 µm) WC grade for excellent surface finish.

Ø1 - Ø20



Ref.	d1	d2	l1	l2	z	€
282010200	1,0	6	40	3,5	2	**40,50**
282020200	2,0	6	45	7,0	2	**29,05**
282025200	2,5	6	45	8,0	2	**37,80**
282030200	3,0	6	45	10,0	2	**29,05**
282040200	4,0	6	50	12,0	2	**29,05**
282050200	5,0	6	50	15,0	2	**30,20**
282060200	6,0	6	50	15,0	2	**30,20**
282080200	8,0	8	60	20,0	2	**48,60**
282100200	10,0	10	70	25,0	2	**67,00**
282120200	12,0	12	80	35,0	2	**100,30**
282160200	16,0	16	90	40,0	2	**196,70**
282200200	20,0	20	100	45,0	2	**299,90**

Condiciones de corte | Cutting data pag. 142

SAUDA

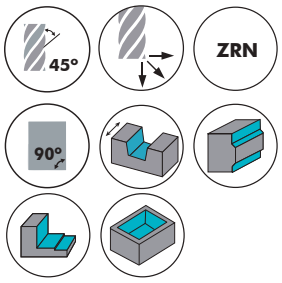
F-286

Fresa 2 labios 45° recubrimiento ZRN

45° 2 Fluted solid carbide end mill for aluminium ZRN coated

Fresa de metal duro de dos labios de corte para fresado de materiales aluminio, cobre, latón, bronce y termoplásticos. Hélice de 45º con corte al centro y recubrimiento ZRN.

Carbide end mill with two cutting edges for milling aluminium, copper, brass, bronze and thermoplastic materials. 45º helix with central cut and ZRN coating.



ALU

COPPER

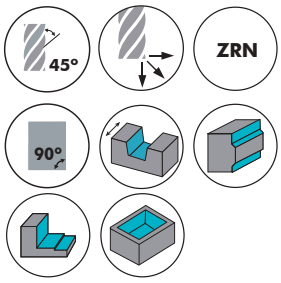
PLASTIC

Ref.	d1	d2	l1	l2	€
286030200	3	6	50	8	**25,40**
286040200	4	6	50	11	**25,40**
286050200	5	6	50	13	**25,40**
286060200	6	6	50	16	**25,40**
286080200	8	8	60	19	**33,30**
286100200	10	10	72	25	**47,10**
286120200	12	12	75	30	**64,15**
286140200	14	14	84	35	**86,00**
286160200	16	16	92	40	**119,30**
286200200	20	20	100	45	**173,60**

Condiciones de corte | Cutting data pag. 142

Fresa metal duro de 2 labios 45° serie larga recubrimiento ZRN

45° 2 Fluted solid carbide end mill for aluminium ZRN coated long series



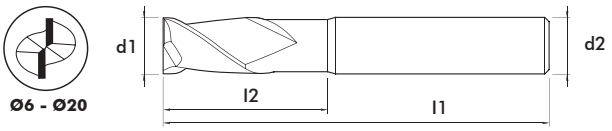
ALU

COPPER

PLASTIC

Fresa de metal duro de dos labios de corte para fresado de materiales aluminio, cobre, latón, bronce y termoplásticos. Hélice de 45º con corte al centro y recubrimiento ZRN. Serie larga.

Carbide end mill with two cutting edges for milling aluminium, copper, brass, bronze and thermoplastic materials. 45º helix with central cut and ZRN coating. Long series.



Ref.	d1	d2	l1	l2	€
287060200	6	6	25	80	**37,10**
287080200	8	8	35	90	**50,00**
287100200	10	10	45	100	**69,50**
287120200	12	12	50	100	**96,50**
287140200	14	14	65	165	**142,50**
287160200	16	16	75	150	**177,85**
287200200	20	20	80	150	**261,70**

Condiciones de corte | Cutting data pag. 142

SAUDA

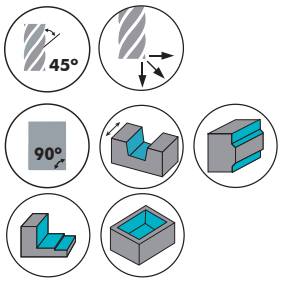
F-288

Fresa 2 labios 45° serie larga

45° 2 Fluted solid carbide end mill long series

Fresa de metal duro de dos labios de corte para fresado de materiales aluminio, cobre, latón, bronce y termoplásticos. Hélice de 45º con corte al centro. Serie larga.

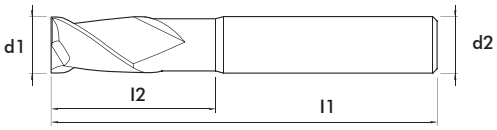
Carbide end mill with two cutting edges for milling aluminium, copper, brass, bronze and thermoplastic materials. 45º helix with central cut. Long series.



ALU

COPPER

PLASTIC



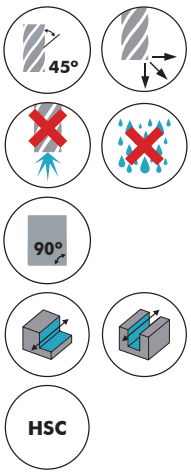
Ø3 - Ø20

Ref.	d1	d2	l1	l2	€
288060200	6	6	25	80	**29,50**
288080200	8	8	35	90	**39,95**
288100200	10	10	45	100	**57,70**
288120200	12	12	50	100	**81,20**
288140200	14	14	65	165	**125,20**
288160200	16	16	75	150	**158,20**
288200200	20	20	80	150	**235,00**

Condiciones de corte | Cutting data pag. 142

Fresa metal duro de 3 labios para aluminio "alta velocidad" (0,2µm)

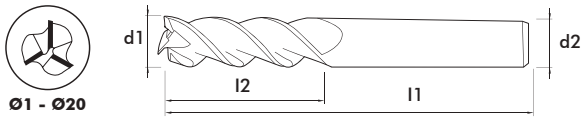
3 Fluted solid carbide end mill for aluminium high speed cutting (0,2µm)



ALU <12% SI
COPPER
GFK CFK
PLASTIC
GOLD
NI ALLOYS
TITAN INCONEL

Fresa de metal duro de tres labios y hélice de 45º para aluminio, aleaciones de aluminio, materiales no férricos y materiales no metálicos. El diseño de los filos con diferentes longitudes cubre un amplio rango de aplicaciones, está especialmente indicada para contorneado y acabado. Minimiza la adhesión de viruta gracias a su diseño con doble filo. Ofrece gran rendimiento en el mecanizado de alta velocidad gracias a su grado WC ultrafino (0,2 µm), que además permite alcanzar un excelente acabado superficial.

3 Fluted solid carbide 45º helix end mill for aluminum, aluminum alloy, non-ferrous and non-metallic materials. Various flute length design for covering wide range application, ideal for contouring and finishing operations. Minimize built up edge by double edge. Outstanding performance at high speed machining by ultrafine (0,2 µm) WC grade for excellent surface finish.



Ref.	d1	d2	l1	l2	z	€
301010200	1,0	6	40	3	3	**35,45**
301015200	1,5	6	40	4	3	**33,50**
301020200	2,0	6	45	5	3	**29,25**
301025200	2,5	6	45	8	3	**37,80**
301030200	3,0	6	50	12	3	**32,15**
301030210	3,0	6	55	20	3	**36,20**
301040200	4,0	6	45	11	3	**29,25**
301040210	4,0	6	55	20	3	**36,20**
301040220	4,0	6	65	30	3	**49,00**
301050200	5,0	6	50	13	3	**31,20**
301050210	5,0	6	55	20	3	**33,50**
301050220	5,0	6	65	30	3	**49,00**
301060200	6,0	6	50	15	3	**31,20**
301060210	6,0	6	60	25	3	**38,35**
301060220	6,0	6	70	30	3	**40,50**
301080200	8,0	8	60	20	3	**50,95**
301080210	8,0	8	65	25	3	**60,20**

Ref.	d1	d2	l1	l2	z	€
301080220	8,0	8	80	40	3	**70,30**
301080230	8,0	8	90	50	3	**76,30**
301100200	10,0	10	70	15	3	**70,10**
301100210	10,0	10	75	30	3	**83,85**
301100220	10,0	10	90	40	3	**96,40**
301100230	10,0	10	100	50	3	**103,60**
301100240	10,0	10	110	60	3	**115,20**
301120200	12,0	12	80	35	3	**105,35**
301120210	12,0	12	100	50	3	**119,65**
301120220	12,0	12	110	65	3	**125,30**
301140200	14,0	14	110	45	3	**207,55**
301160200	16,0	16	90	30	3	**203,90**
301160210	16,0	16	110	50	3	**215,50**
301160220	16,0	16	130	80	3	**295,25**
301200200	20,0	20	130	75	3	**442,80**
301200210	20,0	20	160	100	3	**463,90**
301200220	20,0	20	200	130	3	**698,15**

Condiciones de corte | Cutting data pag. 142

SAUDA

ALUMINIO

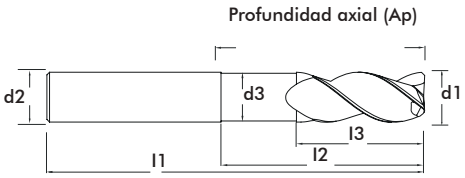
F-151

Fresa metal duro tórica de 3 labios para aluminio con hélice variable

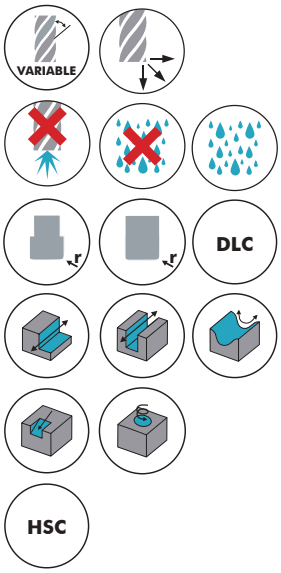
3 Fluted solid carbide variable helix end mill for aluminium

Fresa de metal duro tórica de tres labios con hélice variable, para aluminio. El diseño con ángulo variable garantiza una gran estabilidad de mecanizado y alta velocidad de corte y avance lo que produce una bajada de los tiempos de mecanizado.

3 Fluted variable helix end mill. The variable angle design ensures high machining stability and high speed which provides lower machining times. Specially designed for aluminium machining.



Ø6 - Ø25



ALU <10% SI

COPPER

PLASTIC

GFK CFK

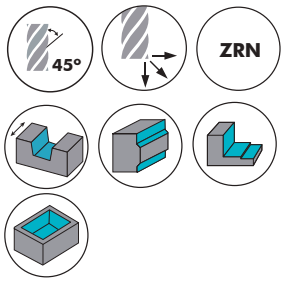
GOLD

Ref.	d1	d2	d3	l1	l2	l3	ap	r	€
151060200	6	6	5,8	54	18	7	18 mm	0,5	**50,95**
151080200	8	8	7,8	63	24	9	24 mm	0,5	**63,55**
151100200	10	10	9,8	72	30	11	30 mm	0,5	**83,70**
151100210	10	10	9,8	72	30	11	30 mm	1, 0	**88,10**
151100220	10	10	9,8	72	30	11	30 mm	1,5	**88,10**
151120200	12	12	11,8	83	36	13	36 mm	0,5	**114,20**
151120210	12	12	11,8	83	36	13	36 mm	1,0	**119,65**
151120220	12	12	11,8	83	36	13	36 mm	1,5	**119,65**
151160200	16	16	15,8	97	48	17	48 mm	1,0	**189,90**
151160210	16	16	15,8	97	48	17	48 mm	2,5	**201,20**
151160220	16	16	15,8	97	48	17	48 mm	4,0	**212,30**
151200200	20	20	19,8	111	60	21	60 mm	2,5	**278,50**
151200210	20	20	19,8	111	60	21	60 mm	4,0	**292,55**
151250200	25	25	19,8	132	79	26	79 mm	2,5	**477,40**
151250210	25	25	24,8	132	79	26	79 mm	4,0	**511,70**

Condiciones de corte | Cutting data pag. 143

Fresa 3 labios 45º recubrimiento ZRN

3 Fluted solid carbide end mill for aluminium ZRN coated



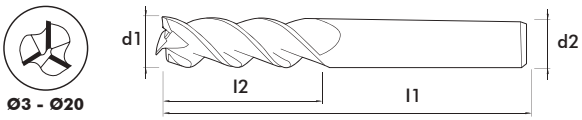
ALU

COPPER

PLASTIC

Fresa de metal duro de tres labios de corte para fresado de materiales aluminio, cobre, latón, bronce y termoplásticos. Hélice de 45º con corte al centro y recubrimiento ZRN.

Carbide end mill with three cutting edges for milling aluminium, copper, brass, bronze and thermoplastic materials. 45º helix with central cut and ZRN coating.



Ref.	d1	d2	l1	l2	€
305030200	3	6	50	8	**25,40**
305040200	4	6	50	11	**25,40**
305050200	5	6	50	13	**25,40**
305060200	6	6	50	16	**25,40**
305080200	8	8	60	19	**33,30**
305100200	10	10	72	25	**47,10**
305120200	12	12	75	30	**64,15**
305140200	14	14	84	35	**86,00**
305160200	16	16	92	40	**119,30**
305200200	20	20	100	45	**173,60**

Condiciones de corte | Cutting data pag. 142

SAUDA

ALUMINIO

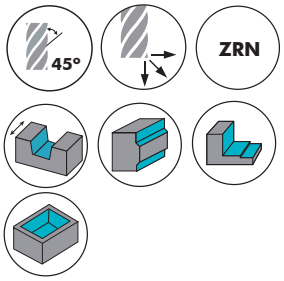
F-306

Fresa 3 labios 45° serie larga recubrimiento ZRN

45° 3Fluted solid carbide end mill. ZRN coated. Long series.

Fresa de metal duro de tres labios de corte para fresado de materiales aluminio, cobre, latón, bronce y termoplásticos. Hélice de 45º con corte al centro . Con recubrimiento ZRN. Serie larga.

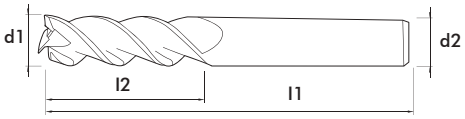
Carbide end mill with three cutting edges for milling aluminium, copper, brass, bronze and thermoplastic materials. 45º helix with central cut. ZRN coated. Long series.



ALU

COPPER

PLASTIC



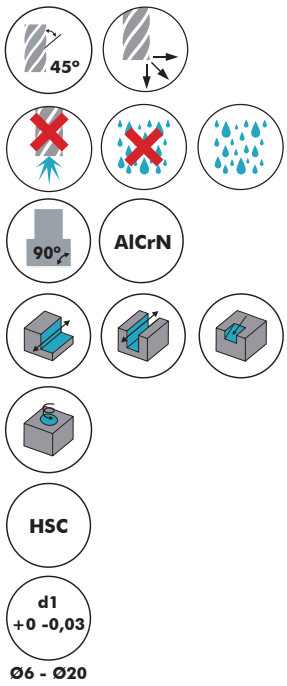
Ø6 - Ø20

Ref.	d1	d2	l1	l2	€
306060200	6	6	80	25	**37,10**
306080200	8	8	90	35	**50,00**
306100200	10	10	100	45	**69,50**
306120200	12	12	100	50	**96,50**
306140200	14	14	165	65	**142,50**
306160200	16	16	150	75	**177,85**
306200200	20	20	150	80	**261,70**

Condiciones de corte | Cutting data pag. 142

Fresa metal duro de 3 labios de desbaste y semi acabado para aluminio

3 Fluted solid carbide semi-finishing and roughing end mill for aluminium



ALU <12% SI

COPPER

PLASTIC

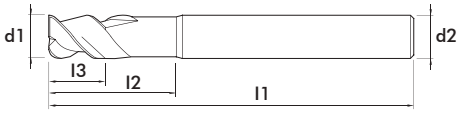
GFK CFK

GOLD

Fresa de metal duro de 3 labios y hélice de 45º recubierta de AlCrN para operaciones de desbaste y semi acabado en aluminio, aleaciones de aluminio, materiales no férricos y materiales no metálicos a alta velocidad. Mejora la resistencia al desgaste y evita el estrés en el filo en diferentes tipos de mecanizado. Minimiza la adhesión de viruta al filo gracias al rompevirutas y al canal de evacuación profundo. Su grado TRS ultrafino reduce la fractura a altos avances.

3 Fluted solid carbide 45º helix end mill with AlCrN coating for high speed semi finishing and roughing end mill for aluminum, Al alloys, non-ferrous and non-metallic materials. Improves wear resistance as well as avoids edge stress in various applications. Minimizes built up edge by chip breaker and deep po-cket design. Reduces fracturing at high feed by high TRS ultra fine WC grade.

Ø6 - Ø20



Ref.	d1	d2	l1	l2	l3	z	€
606060200	6	6	50	15	10	3	**60,60**
606060210	6	6	70	20	15	3	**67,20**
606080200	8	8	60	20	15	3	**81,30**
606080210	8	8	80	25	20	3	**100,90**
606100200	10	10	70	25	18	3	**109,80**
606100210	10	10	90	30	23	3	**133,80**
606120200	12	12	80	30	20	3	**140,00**
606120210	12	12	100	40	30	3	**161,30**
606160200	16	16	110	35	25	3	**321,40**
606160210	16	16	120	50	35	3	**358,75**
606200200	20	20	110	50	35	3	**431,00**
606200210	20	20	120	60	45	3	**482,65**

Condiciones de corte | Cutting data pag. 143

SAUDA

ALUMINIO

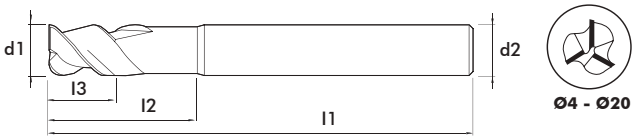
F-604

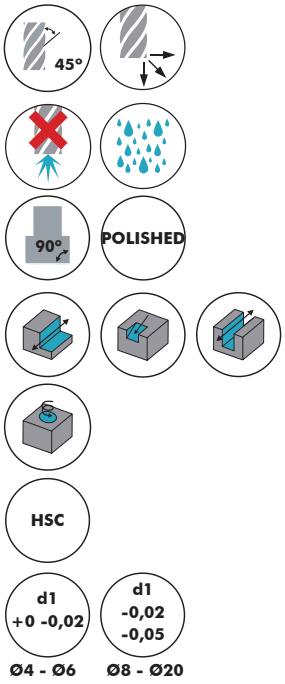
Fresa metal duro gran desbaste para aluminio

Solid carbide super roughing end mill for aluminium

Fresa de metal duro de tres labios y hélice de 45º para gran desbaste y semiacabado de aluminio, aleaciones de aluminio, materiales no férricos y materiales no metálicos. Minimiza la adhesión de viruta por su diseño con doble filo y las fracturas a altos avances gracias su grado TRS ultrafino. La geometría especial con el perfil WHE de esta herramienta permiten aumentar los avances de forma espectacular, con lo que se consigue reducir los tiempos de mecanizado.

3 Fluted solid carbide 45º helix end mill for roughing and semi finishing of aluminum, aluminum alloy, non-ferrous and non-metallic materials. Minimize built up edge by double edge and minimize fracturing at high feed by high TRS ultra fine WC grade. Geometry promoting high feed per tooth by profile type WHE getting shorter machining times.





ALU <12% SI

COPPER

GFK CFK

PLASTIC

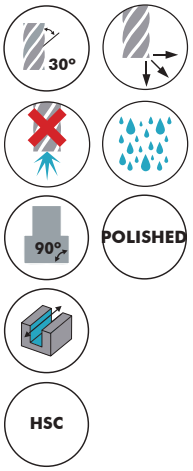
GOLD

Ref.	d1	d2	l1	l2	l3	z	€
604040200	4	6	60	15	10	3	**71,10**
604050200	5	6	60	20	15	3	**71,10**
604060200	6	6	65	21	16	3	**71,10**
604080200	8	8	70	27	21	3	**91,80**
604100200	10	10	75	31	26	3	**115,60**
604120200	12	12	80	38	30	3	**143,70**
604160200	16	16	100	45	36	3	**334,95**
604200200	20	20	110	55	41	3	**428,85**

Condiciones de corte | Cutting data pag. 143

Fresa metal duro de 3 y 4 labios para aluminio "alta velocidad"

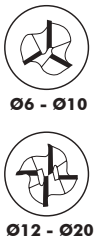
3 and 4 Fluted solid carbide end mill for aluminium high speed cutting

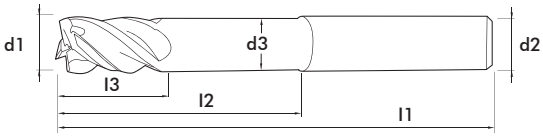


ALU <12% SI
COPPER
GFK CFK
PLASTIC
GOLD
NI ALLOYS
TITAN INCONEL

La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado a alta velocidad de aluminio <12% Si, aleaciones de magnesio y aleaciones de cobre, virutas largas y cortas. Podemos utilizar esta herramienta para operaciones de semi-acabado y acabado.
Los 3-4 labios, la geometría y los 30º de espiral de hélice permiten trabajar con unas muy altas condiciones de corte y obtener un muy buen acabado superficial.

The tool, material and coating are specially designed for high speed cutting HSC of aluminum <12% Si, magnesium alloys, copper alloys, long/short chipping. We may use this tool semi-finishing and finishing.
3-4 fluted, the positive polished geometry and 30º spiral angle allow big feed rates and very good finishing surface.





Ref.	d1	d2	d3	l1	l2	l3	z	€
303060200	6	6	5,7	70	30	12	3	**60,75**
303080200	8	8	7,7	80	35	14	3	**81,45**
303100200	10	10	9,7	90	45	16	3	**114,05**
303120200	12	12	11,5	100	55	18	4	**157,70**
303160200	16	16	15,5	115	65	20	4	**266,50**
303200200	20	20	19,5	125	75	22	4	**350,10**

Condiciones de corte | Cutting data pag. 142

SAUDA

ALUMINIO

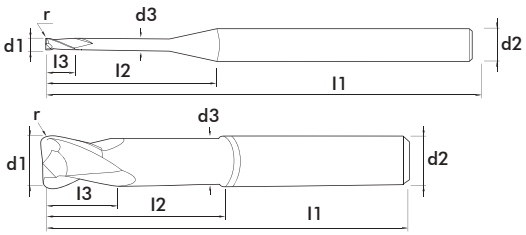
F-283

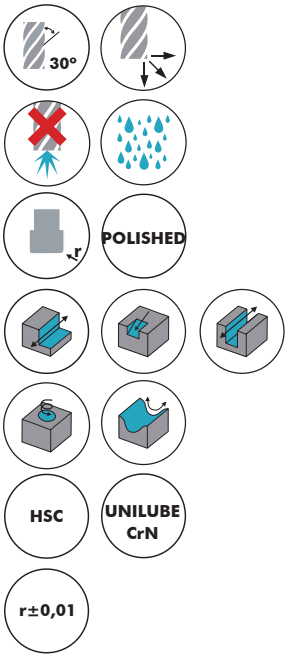
Fresa metal duro gran desbaste para aluminio tórica

2 Fluted solid carbide corner radius end mill for O-ring aluminium

Fresa de metal duro tórica para el mecanizado de aluminio <12% Si, aleaciones de magnesio y aleaciones de cobre tanto de viruta larga como viruta corta. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado a alta velocidad. Los 2 labios, la geometría y los 30º de espiral de hélice permiten grandes avances y gran volumen de extracción de virutas.

Solid carbide corner radius end mill for aluminum <12% Si, magnesium alloys and copper alloys, bath for long and short chips. The tool, material and surface are specially designed for high-speed-cutting HSC. 2 fluted, the positive polished geometry and 30º spiral angle allow big feed rates and high chip removal.





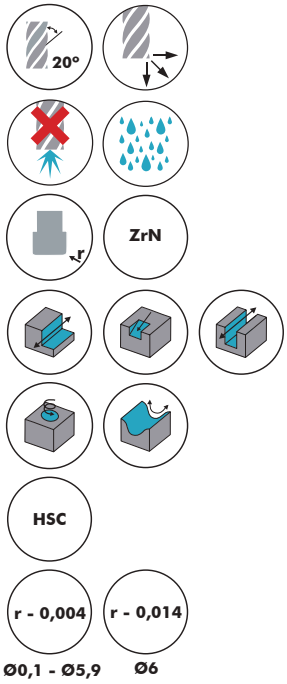
ALU <12% SI
COPPER
GFK CFK
PLASTIC
GOLD

Ref.	d1	r	d2	d3	l1	l2	l3	z	€
283010200	1	0,1	4	0,9	60	15	2	2	**62,25**
283020200	2	0,2	4	1,8	60	20	3	2	**62,25**
283030200	3	0,3	4	2,7	60	20	5	2	**62,25**
283040200	4	0,4	4	3,7	60	20	5	2	**59,25**
283050200	5	0,5	5	4,6	60	20	6	2	**61,50**
283060200	6	0,3	6	5,5	65	25	7	2	**61,50**
283060210	6	1,0	6	5,5	65	25	7	2	**61,50**
283080200	8	0,3	8	7,4	70	30	9	2	**81,45**
283080210	8	1,0	8	7,4	70	30	9	2	**81,45**
283100200	10	0,3	10	9,2	85	40	11	2	**103,65**
283100210	10	1,5	10	9,2	85	40	11	2	**103,65**
283120200	12	1,5	12	11,0	93	45	12	2	**157,70**
283120210	12	2,0	12	11,0	93	45	12	2	**157,70**
283120220	12	3,0	12	11,0	93	45	12	2	**157,70**
283160200	16	2,0	16	15,0	130	50	20	2	**262,40**
283160210	16	2,5	16	15,0	130	50	20	2	**262,40**
283160220	16	3,0	16	15,0	130	50	20	2	**262,40**
283160230	16	4,0	16	15,0	130	50	20	2	**262,40**
283200200	20	2,0	20	19,0	150	60	25	3	**354,55**
283200210	20	2,5	20	19,0	150	60	25	4	**354,55**
283200220	20	3,0	20	19,0	150	60	25	2	**354,55**
283200230	20	4,0	20	19,0	150	60	25	2	**354,55**

Condiciones de corte | Cutting data pag. 142

Microfresa metal duro para aluminio tórica

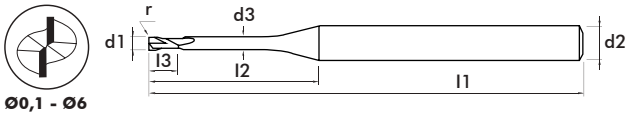
2 Fluted solid carbide corner radius end mill for O-ring aluminium



ALU <12% SI
COPPER
GFK CFK
PLASTIC
GOLD
NI ALLOYS
TITAN INCONEL

Fresa de metal duro tórica para el mecanizado de aluminio <12% Si, aleaciones de magnesio y aleaciones de cobre tanto de viruta larga como viruta corta. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado a alta velocidad. Con profundidad hasta 15 xD.

Solid carbide corner radius end mill for aluminum <12% Si, magnesium alloys and copper and brass alloys, bath for long and short chips. The tool, material and surface are specially designed for high-speed-cutting HSC.



Condiciones de corte | Cutting data pag. 144 - 145

Ref.	d1	r	d2	d3	l1	l2	l3	z	€
281001200	0,1	0,02	4	0,08	45	0,2	0,1	2	153,75
281001210	0,1	0,02	4	0,08	45	0,3	0,1	2	153,75
281001220	0,1	0,02	4	0,08	45	0,4	0,1	2	153,75
281002200	0,2	0,05	4	0,17	50	0,5	0,15	2	148,85
281002210	0,2	0,05	4	0,17	50	1,0	0,15	2	148,85
281002220	0,2	0,05	4	0,17	50	1,5	0,15	2	148,85
281002230	0,2	0,05	4	0,17	50	2,0	0,15	2	148,85
281003200	0,3	0,05	4	0,27	50	1,0	0,25	2	124,95
281003210	0,3	0,05	4	0,27	50	1,5	0,25	2	124,95
281003220	0,3	0,05	4	0,27	50	2,0	0,25	2	124,95
281003230	0,3	0,05	4	0,27	50	2,5	0,25	2	124,95
281003240	0,3	0,05	4	0,27	50	3,0	0,25	2	124,95
281004200	0,4	0,05	4	0,37	50	2,0	0,3	2	124,95
281004210	0,4	0,05	4	0,37	50	4,0	0,3	2	124,95
281004220	0,4	0,1	4	0,37	50	1,0	0,3	2	124,95
281004230	0,4	0,1	4	0,37	50	1,5	0,3	2	124,95
281004240	0,4	0,1	4	0,37	50	2,0	0,3	2	124,95
281004250	0,4	0,1	4	0,37	50	3,0	0,3	2	124,95
281004260	0,4	0,1	4	0,37	50	4,0	0,3	2	124,95
281005200	0,5	0,05	4	0,47	50	3,0	0,35	2	105,75
281005210	0,5	0,1	4	0,47	50	4,0	0,35	2	105,75
281005220	0,5	0,1	4	0,47	50	5,0	0,35	2	105,75
281005230	0,5	0,1	4	0,47	50	1,0	0,35	2	105,75
281005240	0,5	0,1	4	0,47	50	2,0	0,35	2	105,75
281005250	0,5	0,1	4	0,47	50	3,0	0,35	2	105,75
281005260	0,5	0,1	4	0,47	50	4,0	0,35	2	105,75
281005270	0,5	0,1	4	0,47	50	5,0	0,35	2	105,75
281005280	0,5	0,1	4	0,47	50	6,0	0,35	2	105,75
281006200	0,6	0,1	4	0,57	50	2,0	0,4	2	96,10
281006210	0,6	0,06	4	0,57	50	4,0	0,4	2	96,10

Ref.	d1	r	d2	d3	l1	l2	l3	z	€
281006220	0,6	0,06	4	0,57	50	6	0,4	2	96,10
281006230	0,6	0,06	4	0,57	50	8	0,4	2	96,10
281006240	0,6	0,1	4	0,57	50	2	0,4	2	96,10
281006250	0,6	0,1	4	0,57	50	3	0,4	2	96,10
281006260	0,6	0,1	4	0,57	50	4	0,4	2	96,10
281006270	0,6	0,1	4	0,57	50	5	0,4	2	96,10
281006280	0,6	0,1	4	0,57	50	6	0,4	2	96,10
281006290	0,6	0,1	4	0,57	50	8	0,4	2	96,10
281008200	0,8	0,08	4	0,77	50	4	0,5	2	96,10
281008210	0,8	0,08	4	0,77	50	6	0,5	2	96,10
281008220	0,8	0,08	4	0,77	50	8	0,5	2	96,10
281008230	0,8	0,08	4	0,77	50	10	0,5	2	96,10
281008240	0,8	0,2	4	0,77	50	2	0,5	2	96,10
281008250	0,8	0,2	4	0,77	50	4	0,5	2	96,10
281008260	0,8	0,2	4	0,77	50	5	0,5	2	96,10
281008270	0,8	0,2	4	0,77	50	6	0,5	2	96,10
281008280	0,8	0,2	4	0,77	50	8	0,5	2	96,10
281008290	0,8	0,2	4	0,77	50	10	0,5	2	96,10
281010200	1,0	0,1	4	0,96	50	3	0,8	2	96,10
281010210	1,0	0,1	4	0,96	50	5	0,8	2	96,10
281010220	1,0	0,1	4	0,96	50	7	0,8	2	96,10
281010230	1,0	0,1	4	0,96	50	10	0,8	2	96,10
281010240	1,0	0,1	4	0,96	55	12	0,8	2	96,10
281010250	1,0	0,1	4	0,96	55	15	0,8	2	96,10
281010260	1,0	0,1	4	0,96	60	20	0,8	2	96,10
281010270	1,0	0,2	4	0,96	50	2	0,8	2	96,10
281010280	1,0	0,2	4	0,96	50	3	0,8	2	96,10
281010290	1,0	0,2	4	0,96	50	4	0,8	2	96,10
281010300	1,0	0,2	4	0,96	50	5	0,8	2	96,10
281010310	1,0	0,2	4	0,96	50	6	0,8	2	96,10

SAUDA

F-281

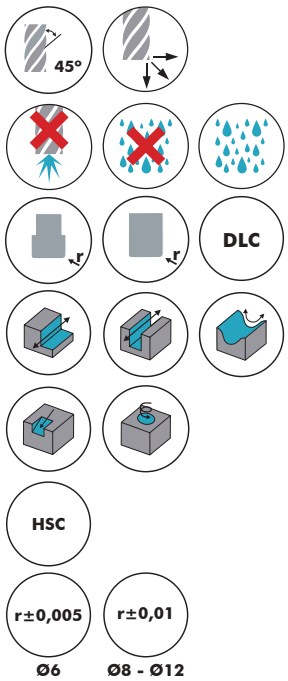
Ref.	d1	r	d2	d3	l1	l2	l3	z	€
281010320	1,0	0,2	4	0,96	50	7	0,80	2	**96,10**
281010330	1,0	0,2	4	0,96	50	8	0,80	2	**96,10**
281010340	1,0	0,2	4	0,96	50	9	0,80	2	**96,10**
281010350	1,0	0,2	4	0,96	50	10	0,80	2	**96,10**
281010360	1,0	0,2	4	0,96	55	12	0,80	2	**96,10**
281010370	1,0	0,2	4	0,96	55	15	0,80	2	**96,10**
281012200	1,2	0,2	4	1,15	50	6	1,00	2	**96,10**
281012210	1,2	0,2	4	1,15	55	12	1,00	2	**96,10**
281015200	1,5	0,15	4	1,44	50	4	1,35	2	**96,10**
281015210	1,5	0,15	4	1,44	50	6	1,35	2	**96,10**
281015220	1,5	0,15	4	1,44	50	8	1,35	2	**96,10**
281015230	1,5	0,15	4	1,44	50	10	1,35	2	**96,10**
281015240	1,5	0,15	4	1,44	55	12	1,35	2	**96,10**
281015250	1,5	0,15	4	1,44	55	16	1,35	2	**96,10**
281015260	1,5	0,15	4	1,44	60	20	1,35	2	**98,50**
281015270	1,5	0,2	4	1,44	50	4	1,35	2	**96,10**
281015280	1,5	0,2	4	1,44	50	6	1,35	2	**96,10**
281015290	1,5	0,2	4	1,44	50	8	1,35	2	**96,10**
281015300	1,5	0,2	4	1,44	50	10	1,35	2	**96,10**
281015310	1,5	0,2	4	1,44	55	12	1,35	2	**96,10**
281015320	1,5	0,2	4	1,44	55	14	1,35	2	**96,10**
281015330	1,5	0,2	4	1,44	55	16	1,35	2	**96,10**
281015340	1,5	0,2	4	1,44	60	18	1,35	2	**98,50**
281015350	1,5	0,2	4	1,44	60	20	1,35	2	**98,50**
281020200	2,0	0,2	4	1,92	50	4	1,70	2	**96,10**
281020210	2,0	0,2	4	1,92	50	6	1,70	2	**96,10**
281020220	2,0	0,2	4	1,92	50	8	1,70	2	**96,10**
281020230	2,0	0,2	4	1,92	50	10	1,70	2	**96,10**
281020240	2,0	0,2	4	1,92	55	12	1,70	2	**96,10**
281020250	2,0	0,2	4	1,92	55	15	1,70	2	**96,10**
281020260	2,0	0,2	4	1,92	60	20	1,70	2	**98,50**
281020270	2,0	0,2	4	1,92	65	25	1,70	2	**98,50**

Ref.	d1	r	d2	d3	l1	l2	l3	z	€
281020280	2	0,2	4	1,92	65	30	1,7	2	**98,50**
281020290	2	0,5	4	1,92	50	4	1,7	2	**96,10**
281020300	2	0,5	4	1,92	50	6	1,7	2	**96,10**
281020310	2	0,5	4	1,92	50	8	1,7	2	**96,10**
281020320	2	0,5	4	1,92	50	10	1,7	2	**96,10**
281020330	2	0,5	4	1,92	55	12	1,7	2	**96,10**
281020340	2	0,5	4	1,92	55	15	1,7	2	**96,10**
281020350	2	0,5	4	1,92	60	20	1,7	2	**98,50**
281030200	3	0,3	4	2,90	65	10	3,0	2	**100,90**
281030210	3	0,3	4	2,90	65	15	3,0	2	**100,90**
281030220	3	0,3	4	2,90	65	20	3,0	2	**100,90**
281030230	3	0,3	4	2,90	75	25	3,0	2	**113,00**
281030240	3	0,3	4	2,90	75	30	3,0	2	**113,00**
281030250	3	0,5	4	2,90	65	15	3,0	2	**100,90**
281030260	3	0,5	4	2,90	65	20	3,0	2	**100,90**
281040200	4	0,3	6	3,90	65	10	4,0	2	**105,75**
281040210	4	0,3	6	3,90	65	15	4,0	2	**105,75**
281040220	4	0,3	6	3,90	65	20	4,0	2	**105,75**
281040230	4	0,3	6	3,90	75	25	4,0	2	**108,15**
281040240	4	0,3	6	3,90	75	30	4,0	2	**108,15**
281040250	4	0,5	6	3,90	65	20	4,0	2	**105,75**
281040260	4	0,5	6	3,90	75	30	4,0	2	**108,15**
281050200	5	0,3	6	4,90	65	20	5,0	2	**105,75**
281050210	5	0,3	6	4,90	75	30	5,0	2	**108,15**
281050220	5	0,3	6	4,90	90	40	5,0	2	**115,30**
281060200	6	0,3	6	5,90	65	20	6,0	2	**105,75**
281060210	6	0,3	6	5,90	75	30	6,0	2	**108,15**
281060220	6	0,3	6	5,90	90	40	6,0	2	**115,30**
281060230	6	0,3	6	5,90	90	50	6,0	2	**115,30**
281060240	6	0,5	6	5,90	65	20	6,0	2	**105,75**
281060250	6	0,5	6	5,90	75	30	6,0	2	**108,15**
281060260	6	1,0	6	5,90	65	25	6,0	2	**108,15**

Condiciones de corte | Cutting data pag. 144 - 145

Fresa metal duro tórica de 3 labios para aluminio de alta velocidad (0,2µm)

3 Fluted solid carbide corner radius end mill for aluminum high speed cutting (0,2µm)



ALU <12% SI

COPPER

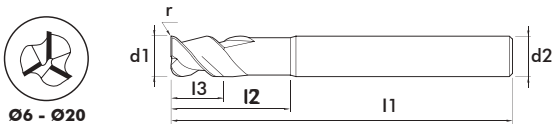
PLASTIC

GFK CFK

GOLD

Fresa de metal duro tórica de 3 labios y hélice de 45º recubierta de DLC para aluminio, aleaciones de aluminio, materiales no férricos y materiales no metálicos. Su hélice de tres filos cortos y a 45º hace posible mecanizar a altas velocidades de corte y avance. Minimiza la adhesión de viruta gracias a su diseño con doble filo. Ofrece gran rendimiento en el mecanizado de alta velocidad gracias a su grado WC ultrafino (0,2 µm), que además permite alcanzar un excelente acabado superficial.

3 Fluted solid carbide 45º helix end mill with DLC coating for aluminum, Al alloys, non-ferrous and non-metallic materials. High speed, feed applicable by 3 flute 45º helix and short flute design. Minimize built up edge by double edge. Outstanding performance at high speed machining by ultrafine (0,2 µm) WC grade for excellent surface finish.



Ref.	d1	r	d2	l1	l2	l3	z	€
284060200	6	0,5	6	50	-	15	3	**68,95**
284060210	6	0,5	6	70	20	7	3	**76,10**
284060220	6	1,0	6	50	-	15	3	**68,95**
284060230	6	1,0	6	70	20	7	3	**76,10**
284080200	8	0,5	8	60	-	20	3	**96,80**
284080210	8	0,5	8	80	25	9	3	**108,60**
284080220	8	1,0	8	60	-	20	3	**96,80**
284080230	8	1,0	8	80	25	9	3	**108,60**
284080240	8	2,0	8	60	-	20	3	**96,80**
284080250	8	2,0	8	80	25	9	3	**108,60**
284100200	10	1,0	10	70	-	25	3	**124,70**
284100210	10	1,0	10	100	30	11	3	**145,60**
284100220	10	15,0	10	70	-	25	3	**124,70**
284100230	10	15,0	10	100	30	11	3	**145,60**
284100240	10	2,0	10	70	-	25	3	**124,70**
284100250	10	2,0	10	100	30	11	3	**145,60**
284120200	12	1,0	12	75	-	30	3	**148,50**
284120210	12	1,0	12	110	36	13	3	**184,50**
284120220	12	1,5	12	110	36	13	3	**184,50**
284120230	12	2,0	12	75	-	30	3	**148,50**

Ref.	d1	r	d2	l1	l2	l3	z	€
284120240	12	2,0	12	110	36	13	3	**184,50**
284120250	12	2,5	12	110	36	13	3	**184,50**
284120260	12	3,0	12	75	-	30	3	**148,50**
284120270	12	3,0	12	110	36	13	3	**184,50**
284120280	12	4,0	12	75	-	30	3	**148,50**
284120290	12	4,0	12	110	36	13	3	**184,50**
284160200	16	1,0	16	90	-	35	3	**289,25**
284160210	16	1,0	16	130	50	17	3	**357,00**
284160220	16	2,0	16	90	-	35	3	**289,25**
284160230	16	2,0	16	130	50	17	3	**357,00**
284160240	16	2,5	16	130	50	17	3	**357,00**
284160250	16	3,0	16	90	-	35	3	**289,25**
284160260	16	3,0	16	130	50	17	3	**357,00**
284160270	16	4,0	16	90	-	35	3	**289,25**
284160280	16	4,0	16	130	50	17	3	**357,00**
284200200	20	2,0	20	150	60	21	3	**618,20**
284200210	20	2,5	20	150	60	21	3	**618,20**
284200220	20	3,0	20	150	60	21	3	**618,20**
284200230	20	4,0	20	150	60	21	3	**618,20**

Condiciones de corte | Cutting data pag. 144

SAUDA

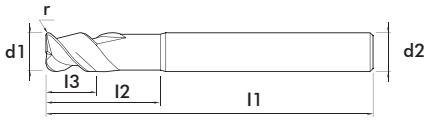
F-607

Fresa metal duro tórica de 3 labios de desbaste y semiacabado para alumino

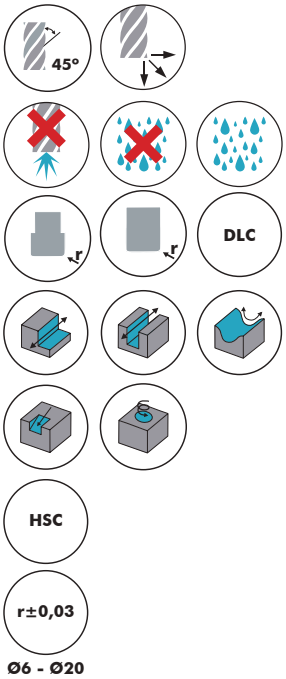
3 Fluted solid carbide semi-finishing and rouching corner radius end mill for aluminium

Fresa de metal duro tórica de 3 labios y hélice de 45º recubierta de AlCrN para operaciones de desbaste y semi acabado en aluminio, aleaciones de aluminio, materiales no férricos y materiales no metálicos a alta velocidad. Mejora la resistencia al desgaste y evita el estrés en el filo en diferentes tipos de mecanizado. Minimiza la adhesión de viruta al filo gracias al rompevirutas y al canal de evacuación profundo. Su grado TRS ultrafino reduce la fractura a altos avances.

3 Fluted solid carbide corner radius 45º helix end mill with AlCrN coating for high speed semi finishing and roughing end mill for aluminum, Al alloys, non-ferrous and non-metallic materials. Improves wear resistance as well as avoids edge stress in various applications. Minimizes built up edge by chip breaker and deep pocket design. Reduces fracturing at high feed by high TRS ultra fine WC grade.



Ø6 - Ø20

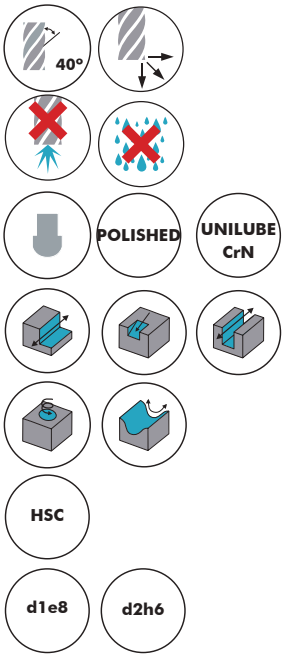


Ref.	d1	r	d2	l1	l2	l3	z	€
607060200	6	0,5	6	65	15	9	3	76,10
607060210	6	1,0	6	65	15	9	3	76,10
607080200	8	0,5	8	70	20	12	3	107,30
607080210	8	1,0	8	70	20	12	3	107,30
607100200	10	1,0	10	75	25	15	3	130,70
607100210	10	2,0	10	75	25	15	3	130,70
607120200	12	1,0	12	80	30	20	3	158,95
607120210	12	2,0	12	80	30	20	3	158,95
607120220	12	3,0	12	80	30	20	3	158,95
607160200	16	1,0	16	110	35	25	3	342,70
607160210	16	2,0	16	110	35	25	3	342,70
607160220	16	3,0	16	110	35	25	3	342,70
607200200	20	2,0	20	110	50	30	3	462,15
607200210	20	3,0	20	110	50	30	3	462,15

Condiciones de corte | Cutting data pag. 143

Fresa metal duro esférica para aluminio

Solid carbide ball nose 3D end mill for aluminium



ALU <12% SI

COPPER

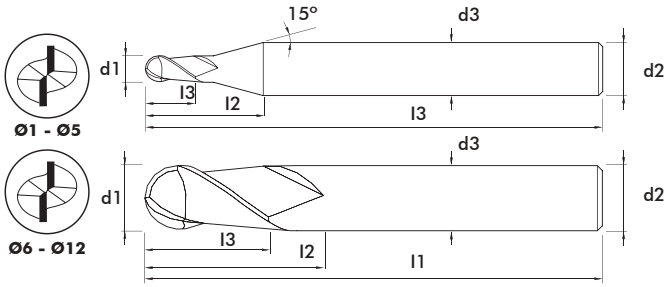
GFK CFK

PLASTIC

GOLD

Fresa esférica de metal duro para el mecanizado de aluminio, aleaciones de magnesio, aleaciones de cobre tanto de viruta larga como viruta corta. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado a alta velocidad. Los 2 labios, la geometría y los 40º de espiral de hélice permiten grandes avances y gran volumen de extracción de virutas.

Solid carbide ball nose end mill, for aluminum <12% Si, magnesium alloys and copper alloys, bath for long and shost chips. The tool, material and coating are specially designed for high-speed-cutting HSC. 2 fluted, the positive polished geometry and 40º spiral angle allow big feed rates and high chip removal.



Ref.	d1	d2	d3	l1	l2	l3	z	€
223010200	1	6	0,9	60	15	2	2	**48,95**
223020200	2	6	1,8	60	20	4	2	**40,70**
223030200	3	6	2,8	70	25	6	2	**39,70**
223040200	4	6	3,7	70	25	8	2	**39,70**
223050200	5	6	4,6	70	25	10	2	**39,70**
223060200	6	6	5,5	80	35	12	2	**33,95**
223080200	8	8	7,5	90	35	16	2	**48,00**
223100200	10	10	9,5	100	45	20	2	**70,25**
223120200	12	12	11,5	100	50	24	2	**96,30**
223160200	16	16	15,5	150	92	30	2	**188,80**
223200200	20	20	19,5	150	92	40	2	**285,45**

Condiciones de corte | Cutting data pag. 142

SAUDA

ALUMINIO

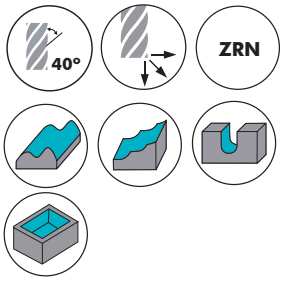
F-275

Fresa 2 labios 40° serie larga recubrimiento ZRN esférica

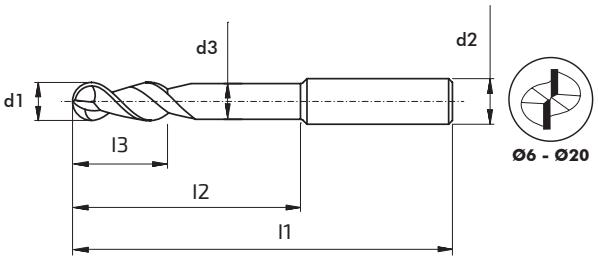
40° 2 Fluted solid carbide end mill. ZRN coated. Long series.

Fresa de metal duro de dos labios de corte para fresado de materiales aluminio, cobre, latón, bronce y termoplásticos. Hélice de 40º con corte al centro . Con recubrimiento ZRN. Serie larga.

Carbide end mill with two cutting edges rounded for milling aluminium, copper, brass, bronze and thermoplastic materials. 40º helix with central cut. ZRN coated. Long series.



ALU
COPPER
PLASTIC

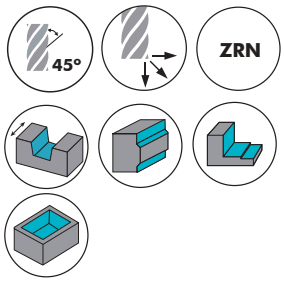


Ref.	d1	d2	d3	l1	l2	l3	€
275060200	6	6	5,5	80	12	35	**42,00**
275080200	8	8	7,5	90	15	35	**58,60**
275100200	10	10	9,5	100	20	45	**82,80**
275120200	12	12	11,5	100	24	50	**112,55**
275160200	16	16	15,5	150	30	92	**207,85**
275200200	20	20	19,5	150	40	92	**303,70**

Condiciones de corte | Cutting data pag. 142

Fresa 3 labios 45º recubrimiento ZRN serie larga tórica

3 Fluted solid carbide end mill for aluminium ZRN coated long series



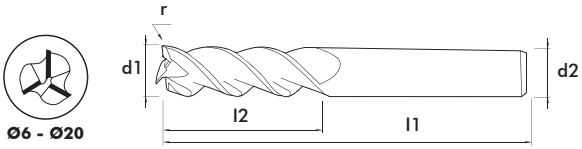
ALU

COPPER

PLASTIC

Fresa de metal duro de tres labios torica para fresado de materiales aluminio, cobre, latón, bronce y termoplásticos. Hélice de 45º con corte al centro y recubrimiento ZRN. Serie larga.

Carbide end mill with three cutting edges toric for milling aluminium, copper, brass, bronze and thermoplastic materials. 45º helix with central cut and ZRN coating. Long series.



Ref.	d1	r	d2	l1	l2	€
276060200	6	0,5	6	80	25	**48,15**
276060210	6	1,0	6	80	25	**48,15**
276080200	8	05	8	90	35	**65,90**
276080210	8	1,0	8	90	35	**65,90**
276100200	10	0,5	10	100	45	**93,40**
276100210	10	1,0	10	100	45	**93,40**
276100220	10	2,0	10	100	45	**93,40**
276100230	10	3,0	10	110	45	**93,40**
276120200	12	0,5	12	110	50	**127,10**
276120210	12	1,0	12	110	50	**127,10**
276120220	12	2,5	12	110	50	**127,10**
276120230	12	4	12	110	50	**127,10**
276160200	16	1,0	16	110	50	**203,00**
276160210	16	2,5	16	110	50	**203,00**
276160220	16	4,0	16	110	50	**203,00**
276200200	20	2,5	20	130	50	**302,90**
276200210	20	4,0	20	130	50	**302,90**

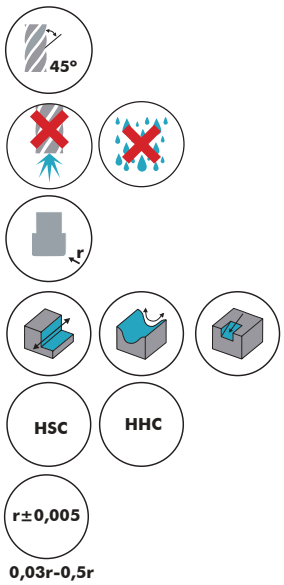
Condiciones de corte | Cutting data pag. 142

FRESAS CBN

CBN END MILLS

Fresa CBN 2 labios tórica <70 HRC

2 Fluted CBN corner radius end mill <70 HRC



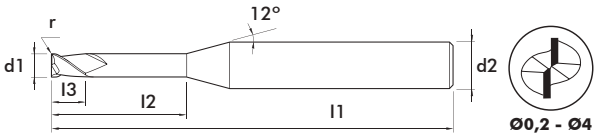
STEEL <70 HRC

HG

GRAPHITE

Fresa CBN tórica de 2 labios especial para el mecanizado de materiales extremadamente duros (70 HRC) a alta velocidad. Adecuada para mecanizar acero de moldes endurecido y grafito.

Special 2 fluted CBN corner radius end mill for milling extremely hard materials (70HRC) at high speed. Applicable finish processing for hardened mold steel and graphite.



Ref.	d1	r	d2	l1	l2	l3	z	€
112002200	0,2	0,03	4	54	0,3	0,3	2	**435,15**
112003200	0,3	0,05	4	54	0,3	0,3	2	**283,15**
112004200	0,4	0,05	4	54	1,0	0,4	2	**260,60**
112005200	0,5	0,05	4	54	1,5	0,5	2	**255,85**
112006200	0,6	0,05	4	54	2,0	0,6	2	**249,75**
112008200	0,8	0,10	4	54	2,0	0,8	2	**244,50**
112010200	1,0	0,10	4	54	2,0	0,9	2	**250,00**
112012200	1,2	0,10	4	45	3,0	1,0	2	**267,00**
112015200	1,5	0,10	4	54	4,0	1,4	2	**273,60**
112020200	2,0	0,10	4	54	3,0	1,7	2	**330,00**
112020210	2,0	0,20	4	54	3,0	1,7	2	**339,55**
112030200	3,0	0,10	4	54	6,0	2,3	2	**483,90**
112030210	3,0	0,20	4	54	6,0	2,3	2	**493,40**
112030220	3,0	0,30	4	54	6,0	2,3	2	**502,95**
112040200	4,0	0,10	4	54	12,0	3,0	2	**823,15**
112040210	4,0	0,20	4	54	12,0	3,0	2	**834,55**
112040230	4,0	0,30	4	54	12,0	3,0	2	**845,90**
112040240	4,0	0,50	4	54	12,0	3,0	2	**857,60**

Condiciones de corte | Cutting data pag. 146

SAUDA

CBN

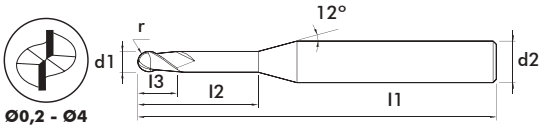
F-110

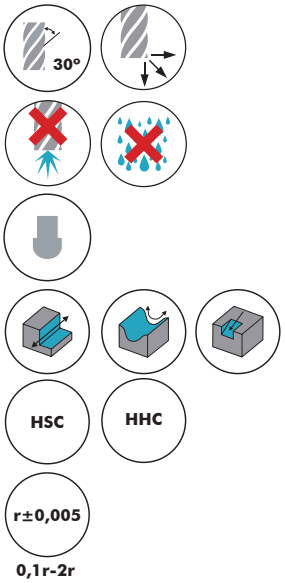
Fresa CBN 2 labios esférica <70 HRC

2 Fluted CBN ball end mill <70 HRC

Fresa CBN esférica de 2 labios especial para el mecanizado de materiales extremadamente duros (70 HRC) a alta velocidad. Adecuada para mecanizar acero de moldes endurecido y grafito.

Special 2 fluted CBN ball end mill for milling extremely hard materials (70HRC) at high speed. Applicable finish processing for hardened mold steel and graphite.





STEEL <70 HRC

HG

GRAPHITE

Ref.	d1	r	d2	l1	l2	l3	z	€
110002200	0,2	0,10	4	54	0,3	0,3	2	**415,55**
110003200	0,3	0,15	4	54	0,3	0,3	2	**269,35**
110004200	0,4	0,20	4	54	0,4	0,4	2	**257,45**
110005200	0,5	0,25	4	54	1,0	0,5	2	**247,90**
110006200	0,6	0,30	4	54	0,6	0,6	2	**242,60**
110008200	0,8	0,40	4	54	0,7	0,7	2	**238,65**
110010200	1,0	0,50	4	54	2,0	0,8	2	**241,00**
110012200	1,2	0,60	4	54	3,0	1,0	2	**258,50**
110015200	1,5	0,75	4	54	4,0	1,4	2	**268,85**
110020200	2,0	1,00	4	54	5,0	1,7	2	**399,90**
110030200	3,0	1,50	4	54	8,0	2,3	2	**602,80**
110040200	4,0	2,00	4	54	12,0	3,0	2	**845,90**

Condiciones de corte | Cutting data pag. 146

FRESAS COBRE

COPPER END MILLS

SAUDA

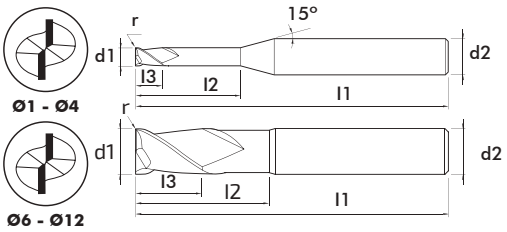
F-290

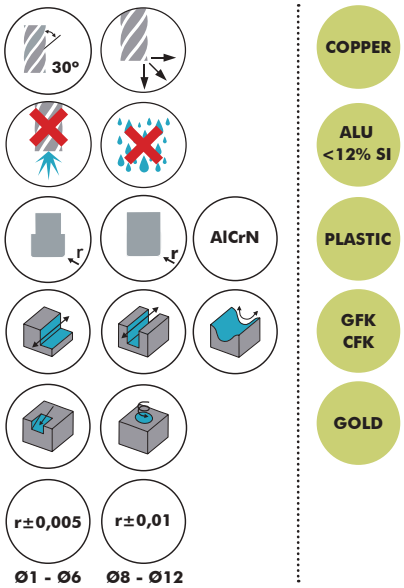
Fresa metal duro 2 labios tórica para cobre (0,2µm)

2 Fluted solid carbide corner radius end mill for copper (0,2µm)

Fresa de metal duro tórica de 2 labios y hélice de 30º para el mecanizado de cobre, aleaciones de cobre, materiales no férricos y materiales no metálicos. Mejora la resistencia al desgaste así como evita el estrés en el filo en diferentes aplicaciones. Evacúa la viruta eficientemente gracias a la profundidad del canal. Ofrece gran rendimiento en el mecanizado de alta velocidad gracias a su grado WC ultrafino (0,2 µm).

2 Fluted 30º helix solid carbide corner radius end mill for co-pper, copper alloys, non-ferrous and non-metallic materials. Improves wear resistance as well as avoids edge stress in various applications. Smooth chip outflow by deep chip pocket. Outstanding performance at high speed machining by ultrafine (0,2 µm).





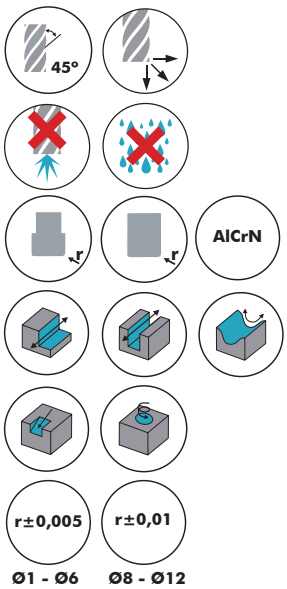
Ref.	d1	r	d2	l1	l2	l3	z	€
290010200	1,0	0,1	4	50	6	1,5	2	**46,50**
290010210	1,0	0,1	4	50	12	1,5	2	**48,80**
290010220	1,0	0,1	4	50	20	1,5	2	**50,95**
290015200	1,5	0,1	4	50	10	2,0	2	**48,80**
290015210	1,5	0,1	4	50	16	2,0	2	**48,80**
290015220	1,5	0,1	4	60	25	2,0	2	**53,25**
290015230	1,5	0,2	4	50	10	2,0	2	**48,80**
290015240	1,5	0,2	4	50	16	2,0	2	**48,80**
290015250	1,5	0,2	4	60	25	2,0	2	**53,25**
290020200	2,0	0,2	4	50	10	3,0	2	**48,80**
290020210	2,0	0,2	4	50	16	3,0	2	**48,80**
290020220	2,0	0,2	4	60	25	3,0	2	**53,25**
290020230	2,0	0,5	4	50	10	3,0	2	**48,80**
290020240	2,0	0,5	4	50	16	3,0	2	**48,80**
290020250	2,0	0,5	4	60	25	3,0	2	**53,25**
290025200	2,5	0,2	4	50	10	3,5	2	**48,80**
290025210	2,5	0,2	4	50	16	3,5	2	**48,80**
290025220	2,5	0,2	4	60	25	3,5	2	**53,25**
290025230	2,5	0,5	4	50	10	3,5	2	**48,80**
290025240	2,5	0,5	4	50	16	3,5	2	**48,80**
290025250	2,5	0,5	4	60	25	3,5	2	**53,25**
290030200	3,0	0,2	6	55	12	4,0	2	**49,20**
290030210	3,0	0,2	6	55	16	4,0	2	**49,20**
290030220	3,0	0,2	6	65	25	4,0	2	**55,60**

Ref.	d1	r	d2	l1	l2	l3	z	€
290030230	3,0	0,2	6	80	40	4,0	2	**67,20**
290030240	3	0,5	6	55	12	4	2	**49,20**
290030250	3	0,5	6	55	16	4	2	**49,20**
290030260	3	0,5	6	65	25	4	2	**55,60**
290030270	3	0,5	6	80	40	4	2	**67,20**
290040200	4	0,2	6	55	16	5	2	**49,20**
290040210	4	0,2	6	55	20	5	2	**51,30**
290040220	4	0,2	6	70	30	5	2	**58,70**
290040230	4	0,2	6	80	40	5	2	**67,20**
290040240	4	0,5	6	55	16	5	2	**49,20**
290040250	4	0,5	6	55	20	5	2	**51,30**
290040260	4	0,5	6	70	30	5	2	**60,00**
290040270	4	0,5	6	80	40	5	2	**67,20**
290060200	6	0,5	6	60	20	7	2	**51,70**
290060210	6	1,0	6	60	20	7	2	**51,70**
290060220	6	1,5	6	60	20	7	2	**51,70**
290080200	8	0,5	8	65	25	9	2	**62,55**
290080210	8	1,0	8	65	25	9	2	**62,55**
290080220	8	1,5	8	65	25	9	2	**62,55**
290100200	10	0,5	10	70	32	11	2	**89,65**
290100210	10	1,0	10	70	32	11	2	**89,65**
290100220	10	1,5	10	70	32	11	2	**89,65**
290120200	12	0,5	12	80	38	12	2	**108,40**
290120210	12	1,0	12	80	38	12	2	**108,40**
290120220	12	1,5	12	80	38	12	2	**108,40**

Condiciones de corte | Cutting data pag. 146

Fresa metal duro 3 labios tórica para cobre (0,2µm)

3 Fluted solid carbide corner radius end mill for copper



COPPER

ALU <12% SI

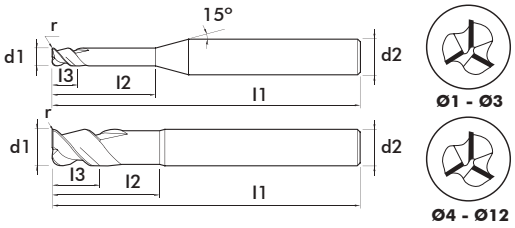
PLASTIC

GFK CFK

GOLD

Fresa de metal duro tórica de 3 labios para el mecanizado de cobre, aleaciones de cobre, materiales no férricos y materiales no metálicos. Mejora la resistencia al desgaste así como evita el estrés en el filo en diferentes aplicaciones. Su hélice de 3 labios y 45º permite alcanzar elevadas velocidades de corte y avances. Ofrece gran rendimiento en el mecanizado de alta velocidad gracias a su grado WC ultrafino (0,2 µm).

3 Fluted solid carbide corner radius end mill for copper, copper alloys, non-ferrous and non-metallic materials. Improves wear resistance as well as avoids edge stress in various applications. High speed, feed applicable by 3 flute 45º helix design. Outstanding performance at high speed machining by ultrafine (0,2 µm) grade.



Ref.	d1	r	d2	l1	l2	l3	z	€
295010200	1,0	0,1	4	45	6	1,5	3	**51,10**
295010210	1,0	0,2	4	45	6	1,5	3	**51,10**
295015200	1,5	0,1	4	45	8	2,0	3	**51,10**
295015210	1,5	0,2	4	45	8	2,0	3	**51,10**
295020200	2,0	0,1	4	45	10	3,0	3	**51,10**
295020210	2,0	0,2	4	45	10	3,0	3	**51,10**
295025200	2,5	0,1	4	45	12	3,5	3	**53,65**
295025210	2,5	0,2	4	45	12	3,5	3	**53,65**
295025220	2,5	0,5	4	45	12	3,5	3	**53,65**
295030200	3,0	0,2	4	50	16	4,0	3	**51,10**
295030210	3,0	0,3	4	50	16	4,0	3	**51,10**
295030220	3,0	0,5	4	50	16	4,0	3	**51,10**
295040200	4,0	0,2	4	50	16	6,0	3	**54,00**
295040210	4,0	0,3	4	50	16	6,0	3	**54,00**
295040220	4,0	0,5	4	50	16	6,0	3	**54,00**
295060200	6,0	0,3	6	55	20	9,0	3	**53,85**
295060210	6,0	0,5	6	55	20	9,0	3	**53,85**
295060220	6,0	1,0	6	55	20	9,0	3	**53,85**
295080200	8,0	0,3	8	65	25	12,0	3	**74,15**
295080210	8,0	0,5	8	65	25	12,0	3	**74,15**
295080220	8,0	1,0	8	65	25	12,0	3	**74,15**
295100200	10,0	0,5	10	70	30	15,0	3	**103,40**
295100210	10,0	1,0	10	70	30	15,0	3	**103,40**
295120200	12,0	0,5	12	80	35	20,0	3	**126,80**
295120210	12,0	1,0	12	80	35	20,0	3	**126,80**

Condiciones de corte | Cutting data pag. 146

SAUDA

COBRE

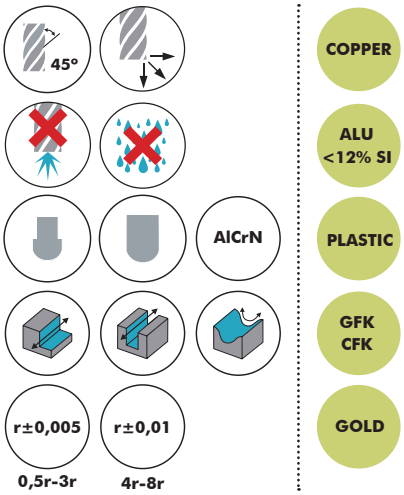
F-285

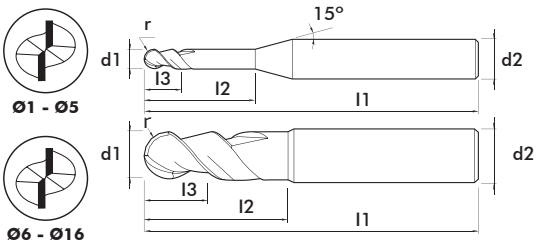
Fresa metal duro 2 labios esférica para cobre (0,2µm)

2 Fluted solid carbide ball end mill for copper (0,2µm)

Fresa de metal duro esférica de 2 labios para el mecanizado de cobre, aleaciones de cobre, materiales no férricos y materiales no metálicos. Mejora la resistencia al desgaste así como evita el estrés en el filo en diferentes aplicaciones. Su hélice de 45º permite alcanzar elevadas velocidades de corte y avances. Ofrece gran rendimiento en el mecanizado de alta velocidad gracias a su grado WC ultrafino (0,2 µm).

2 Fluted solid carbide rib ball end mill for copper, copper alloys, non-ferrous and non-metallic materials. Improves wear resistance as well as avoids edge stress in various applications. High speed, feed applicable by 45º helix design. Outstanding performance at high speed machining by ultrafine (0,2 µm) grade.





Ref.	d1	r	d2	l1	l2	l3	z	€
285010200	1,0	0,50	4	50	8	1,5	2	**44,55**
285010210	1,0	0,50	4	50	16	1,5	2	**46,50**
285015200	1,5	0,75	4	50	8	2,0	2	**44,55**
285015210	1,5	0,75	4	50	16	2,0	2	**46,50**
285020200	2,0	1,00	6	60	8	3,0	2	**47,45**
285020210	2,0	1,00	6	60	16	3,0	2	**47,45**
285020220	2,0	1,00	6	60	25	3,0	2	**50,75**
285025200	2,5	1,25	6	60	10	4,0	2	**47,45**
285025210	2,5	1,25	6	60	16	4,0	2	**47,45**
285030200	3,0	1,50	6	70	8	4,5	2	**54,60**
285030210	3,0	1,50	6	70	16	4,5	2	**56,15**
285030220	3,0	1,50	6	70	25	4,5	2	**59,45**
285030230	3,0	1,50	6	70	40	4,5	2	**74,00**
285040200	4,0	2,00	6	70	16	6,0	2	**56,15**
285040210	4,0	2,00	6	70	20	6,0	2	**56,15**
285040220	4,0	2,00	6	70	25	6,0	2	**59,45**
285040230	4,0	2,00	6	80	40	6,0	2	**74,00**
285050200	5,0	2,50	6	80	16	8,0	2	**60,60**
295050210	5,0	2,50	6	80	20	8,0	2	**60,60**
285050220	5,0	2,50	6	80	25	8,0	2	**60,60**
285060200	6,0	3,00	6	90	15	9,0	2	**64,70**
285060210	6,0	3,00	6	90	30	9,0	2	**67,60**
285060220	6,0	3,00	6	90	40	9,0	2	**70,50**
285080200	8,0	4,00	8	100	20	12,0	2	**91,00**
285100200	10,0	5,00	10	100	25	15,0	2	**120,05**
285120200	12,0	6,00	12	110	30	18,0	2	**159,35**
285160200	16,0	8,00	16	160	60	30,0	2	**358,20**

Condiciones de corte | Cutting data pag. 146

FRESAS ACERO

STEEL END MILLS

SAUDA

ACERO

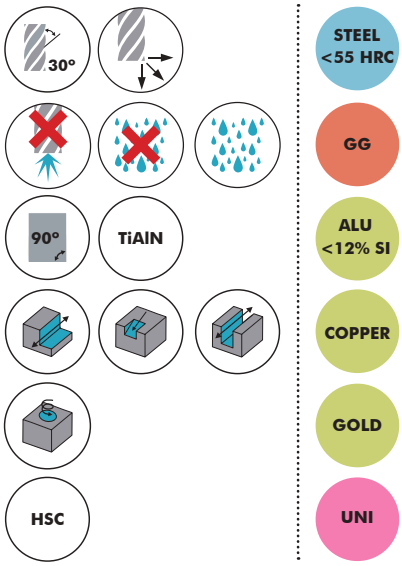
F-901

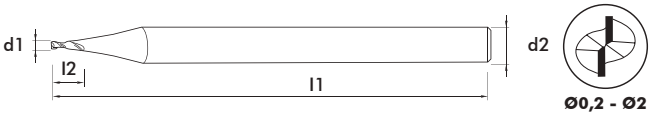
Microfresa metal duro 2 labios HSC <55 HRC (0,2µm)

2 Fluted solid carbide micro end mill for HSC <55 HRC (0,2µm)

Fresa de metal duro micro de 2 labios con corte al centro con recubrimiento TiAlN y ángulo espiral de 30º.
La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Podemos utilizarla para fresados a alta velocidad(HSC). Herramienta para uso general, para materiales hasta 55 HRC. También válida para materiales no férricos y aluminio.

Solid carbide miniature 2 fluted end mill with TiAlN coating and 30º helix. The positive geometry together with this coating help to get a soft cutting with a very long tool life.
For universal application, for high tense material up to 55 HRC. Also for non ferrous metals and aluminum, specially suited for HSC milling.



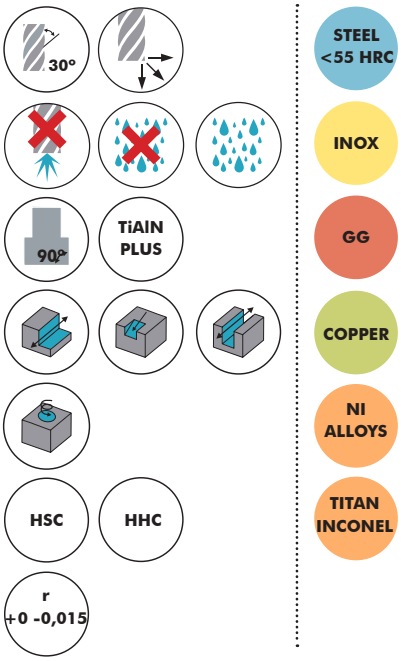


Ref.	d1	d2	l1	l2	z	€
901002200	0,2	4	50	0,4	2	**44,50**
901003200	0,3	4	50	0,6	2	**42,45**
901004200	0,4	4	50	0,8	2	**39,70**
901005200	0,5	4	50	1,0	2	**37,50**
901006200	0,6	4	50	1,2	2	**37,50**
901007200	0,7	4	50	1,4	2	**37,50**
901008200	0,8	4	50	1,6	2	**37,50**
901009200	0,9	4	50	1,8	2	**37,50**
901010200	1,0	4	50	3,0	2	**32,95**
901011200	1,1	4	50	3,0	2	**32,95**
901012200	1,2	4	50	3,0	2	**32,95**
901013200	1,3	4	50	3,0	2	**32,95**
901014200	1,4	4	50	3,0	2	**32,95**
901015200	1,5	4	50	4,0	2	**32,95**
901016200	1,6	4	50	4,0	2	**32,95**
901017200	1,7	4	50	4,0	2	**32,95**
901018200	1,8	4	50	4,0	2	**32,95**
901019200	1,9	4	50	4,0	2	**32,95**
901020200	2,0	4	50	6,0	2	**32,95**

Condiciones de corte | Cutting data pag. 147

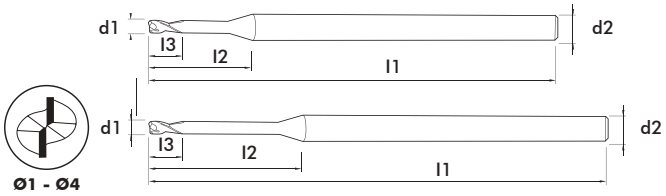
Fresa metal duro 2 labios HSC/HHC<55HRC

2 Fluted solid carbide end mill for HSC/HHC <55 HRC



Fresa de metal duro de cuello largo de 2 labios con corte al centro y recubrimiento TiAlN. Ángulo espiral de 30º. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado HSC (High Speed Cutting) + HHC (High Hard Cutting) <55 HRC. También podemos utilizar esta herramienta para aceros y materiales no férricos. El diámetro posterior al corte es menor que el diámetro de punta para evitar el desvío de la herramienta.

Solid carbide miniature end mills with TiAlN coating and 30º spiral angle. For universal use, for standard steel and non-ferrous materials. The tool, material and coating are specially designed for dry high speed cutting HSC and high hard cutting HHC <55 HRC large cone diameter for minimum deflection.



Ref.	d1	d2	l1	l2	l3	z	€
812010200	1,0	6	55	5	1,5	2	**41,40**
812010210	1,0	6	65	12	1,5	2	**43,45**
812015200	1,5	6	55	5	1,8	2	**41,40**
812015210	1,5	6	65	12	1,8	2	**43,45**
812020200	2,0	6	55	10	2,0	2	**41,40**
812020210	2,0	6	65	16	2,0	2	**43,45**
812030200	3,0	6	65	9	2,0	2	**43,45**
812030210	3,0	6	65	15	2,0	2	**43,45**
812040200	4,0	6	65	12	2,0	2	**43,45**
812040210	4,0	6	65	20	2,0	2	**43,45**

Condiciones de corte | Cutting data pag. 147

SAUDA

ACERO

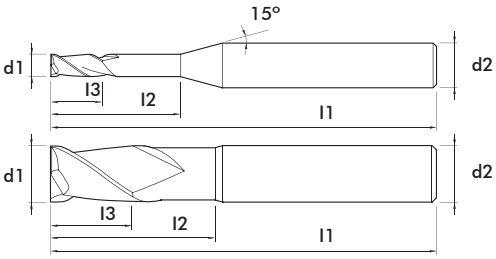
F-913

Fresa metal duro punta plana 2 labios <55 HRC (0,2µm)

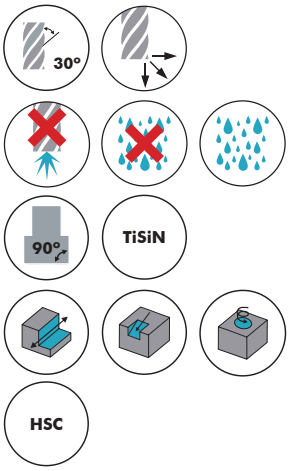
2 Fluted high speed rib end mill <55 HRC (0,2µm)

Fresa de punta plana de cuello largo rebajado y dos labios con recubrimiento TiSiN. Ángulo espiral de 30º. La herramienta, el material y el recubrimiento están especialmente diseñados para el mecanizado HSC <55 HRC. Ofrece una excelente resistencia al desgaste gracias a su recubrimiento PVD con base de Si. Elevada precisión en la tolerancia del filo. Espectacular rendimiento a altas velocidades gracias a su grado WC ultrafino (0,2 µm).

2 Fluted long neck rib end mil with TiSiN coating. 30º spiral angle. Good wear resistance by Si-based PVD coating. High precise edge tolerance. Outstanding performance at high speed machining by ultra fine 0,2 µm) WC grade.



Ø0,2 - Ø12



STEEL <55 HRC

INOX

GG

COPPER

NI ALLOYS

TITAN INCONEL

Ref.	d1	d2	l1	l2	l3	€
913001200	0,1	4	40	-	0,3	**80,55**
913001210	0,1	4	40	-	0,5	**80,55**
913002210	0,2	4	40	0,5	0,2	**51,70**
913002220	0,2	4	40	1	0,2	**51,70**
913002230	0,2	4	40	1,5	0,2	**51,70**
913002200	0,2	4	40	2	0,2	**51,70**
913003210	0,3	4	40	1	0,3	**44,90**
913003220	0,3	4	40	1,5	0,3	**44,90**
913003230	0,3	4	40	2	0,3	**44,90**
913003240	0,3	4	40	3	0,3	**44,90**
913003200	0,3	4	40	4	0,3	**54,80**
913003250	0,3	4	40	5	0,3	**54,80**
913004210	0,4	4	40	1	0,4	**44,90**
913004220	0,4	4	40	2	0,4	**44,90**
913004230	0,4	4	40	3	0,4	**44,90**
913004200	0,4	4	40	4	0,4	**44,90**
913004240	0,4	4	40	5	0,4	**44,90**
913004250	0,4	4	40	6	0,4	**44,90**
913004260	0,4	4	40	8	0,4	**44,90**
913004270	0,4	4	40	10	0,4	**54,80**
913005220	0,5	4	40	2	0,5	**39,90**
913005230	0,5	4	40	3	0,5	**39,90**
913005200	0,5	4	40	4	0,5	**39,90**
913005240	0,5	4	40	5	0,5	**39,90**
913005250	0,5	4	40	6	0,5	**39,90**
913005210	0,5	4	40	8	0,5	**39,90**
913005260	0,5	4	40	10	0,5	**46,90**
913005270	0,5	4	45	12	0,5	**57,10**
913005280	0,5	4	45	14	0,5	**57,10**
913006220	0,6	4	40	2	0,6	**39,90**

Ref.	d1	d2	l1	l2	l3	€
913006230	0,6	4	40	3	0,6	**39,90**
913006200	0,6	4	40	4	0,6	**39,90**
913006240	0,6	4	40	5	0,6	**39,90**
913006250	0,6	4	40	6	0,6	**39,90**
913006210	0,6	4	40	8	0,6	**39,90**
913006260	0,6	4	40	10	0,6	**39,90**
913006270	0,6	4	45	12	0,6	**46,90**
913006280	0,6	4	45	14	0,6	**57,10**
913006290	0,6	4	45	16	0,6	**57,10**
913007210	0,7	4	40	2	0,7	**37,95**
913007220	0,7	4	40	4	0,7	**37,95**
913007230	0,7	4	40	6	0,7	**37,95**
913007200	0,7	4	40	8	0,7	**37,95**
913007240	0,7	4	40	10	0,7	**37,95**
913007250	0,7	4	45	12	0,7	**47,65**
913008230	0,8	4	40	2	0,8	**37,95**
913008240	0,8	4	40	4	0,8	**37,95**
913008200	0,8	4	40	6	0,8	**37,95**
913008210	0,8	4	40	8	0,8	**37,95**
913008250	0,8	4	40	10	0,8	**37,95**
913008220	0,8	4	45	12	0,8	**39,90**
913008260	0,8	4	45	14	0,8	**49,80**
913009200	0,9	4	40	6	0,9	**37,95**
913009210	0,9	4	40	8	0,9	**37,95**
913009220	0,9	4	40	10	0,9	**37,95**
913010260	1,0	4	45	2	1,0	**32,90**
913010270	1,0	4	45	3	1,0	**32,90**
913010280	1,0	4	45	4	1,0	**32,90**
913010290	1,0	4	45	5	1,0	**32,90**
913010200	1,0	4	45	6	1,0	**32,90**

Ref.	d1	d2	l1	l2	l3	€
913010210	1,0	4	45	8	1,0	**32,90**
913010220	1,0	4	45	10	1,0	**35,65**
913010230	1,0	4	45	12	1,0	**35,65**
913010300	1,0	4	45	14	1,0	**35,65**
913010240	1,0	4	50	16	1,0	**35,65**
913010310	1,0	4	50	18	1,0	**35,65**
913010250	1,0	4	50	20	1,0	**35,65**
913010320	1,0	4	60	25	1,0	**39,90**
913010330	1,0	4	70	30	1,0	**53,85**
913012240	1,2	4	45	4	1,2	**32,90**
913012250	1,2	4	45	6	1,2	**32,90**
913012200	1,2	4	45	8	1,2	**32,90**
913012260	1,2	4	45	10	1,2	**35,65**
913012210	1,2	4	45	12	1,2	**35,65**
913012220	1,2	4	50	16	1,2	**35,65**
913012230	1,2	4	50	20	1,2	**35,65**
913012270	1,2	4	60	25	1,2	**39,90**
913012280	1,2	4	70	30	1,2	**53,85**
913014210	1,4	4	45	6	1,4	**35,65**
913014220	1,4	4	45	8	1,4	**35,65**
913014230	1,4	4	45	10	1,4	**35,65**
913014200	1,4	4	45	14	1,4	**35,65**
913014240	1,4	4	50	16	1,4	**35,65**
913014250	1,4	4	50	20	1,4	**35,65**
913015260	1,5	4	45	4	1,5	**32,90**
913015270	1,5	4	45	6	1,5	**32,90**
913015200	1,5	4	45	8	1,5	**32,90**
913015280	1,5	4	45	10	1,5	**32,90**
913015210	1,5	4	45	12	1,5	**35,65**
913015290	1,5	4	50	14	1,5	**35,65**
913015220	1,5	4	50	16	1,5	**35,65**
913015300	1,5	4	50	18	1,5	**35,65**
913015230	1,5	4	50	20	1,5	**35,65**
913015240	1,5	4	60	25	1,5	**39,90**
913015250	1,5	4	70	30	1,5	**53,85**
913016210	1,6	4	45	10	1,6	**35,65**
913016220	1,6	4	45	14	1,6	**35,65**
913016200	1,6	4	60	18	1,6	**35,65**
913018210	1,8	4	45	10	1,8	**35,65**
913018220	1,8	4	45	14	1,8	**35,65**
913018200	1,8	4	50	18	1,8	**35,65**
913020270	2,0	4	45	4	2,0	**32,90**
913020280	2,0	4	45	6	2,0	**32,90**
913020200	2,0	4	45	8	2,0	**32,90**
913020290	2,0	4	45	10	2,0	**32,90**
913020210	2,0	4	45	12	2,0	**32,90**
913020300	2,0	4	45	14	2,0	**32,90**
913020220	2,0	4	50	16	2,0	**32,90**
913020310	2,0	4	50	18	2,0	**32,90**
913020230	2,0	4	50	20	2,0	**32,90**
913020320	2,0	4	60	22	2,0	**35,65**
913020240	2,0	4	60	25	2,0	**35,65**
913020250	2,0	4	60	30	2,0	**40,70**
913020330	2,0	4	70	35	2,0	**44,15**
913020260	2,0	4	80	40	2,0	**48,20**
913020340	2,0	4	80	45	2,0	**57,90**
913020350	2,0	4	90	50	2,0	**67,40**

Ref.	d1	d2	l1	l2	l3	€
913025220	2,5	4	45	8	2,5	**35,65**
913025230	2,5	4	45	10	2,5	**35,65**
913025240	2,5	4	45	12	2,5	**35,65**
913025200	2,5	4	50	16	2,5	**35,65**
913025250	2,5	4	50	20	2,5	**35,65**
913025260	2,5	4	60	25	2,5	**35,65**
913025210	2,5	4	70	30	2,5	**40,70**
913025270	2,5	4	70	35	2,5	**44,15**
913025280	2,5	4	80	40	2,5	**48,20**
913025290	2,5	4	90	50	2,5	**58,10**
913030200	3,0	6	45	6	3,0	**37,40**
913030270	3,0	6	45	10	3,0	**37,40**
913030280	3,0	6	50	12	3,0	**37,40**
913030210	3,0	6	55	16	3,0	**37,40**
913030220	3,0	6	60	20	3,0	**41,25**
913030230	3,0	6	65	25	3,0	**41,25**
913030240	3,0	6	70	30	3,0	**50,55**
913030290	3,0	6	75	35	3,0	**58,10**
913030250	3,0	6	80	40	3,0	**60,00**
913030300	3,0	6	90	45	3,0	**62,35**
913030260	3,0	6	100	50	3,0	**66,60**
913030310	3,0	6	100	60	3,0	**76,70**
913040260	4,0	6	50	8	4,0	**39,50**
913040270	4,0	6	50	10	4,0	**39,50**
913040280	4,0	6	50	12	4,0	**39,50**
913040200	4,0	6	55	16	4,0	**39,50**
913040210	4,0	6	60	20	4,0	**43,20**
913040220	4,0	6	65	25	4,0	**43,20**
913040230	4,0	6	70	30	4,0	**50,55**
913040290	4,0	6	75	35	4,0	**58,10**
913040240	4,0	6	80	40	4,0	**60,00**
913040300	4,0	6	90	45	4,0	**62,35**
913040250	4,0	6	100	50	4,0	**66,60**
913040310	4,0	6	100	55	4,0	**76,70**
913040320	4,0	6	100	60	4,0	**84,05**
913050230	5,0	6	55	16	5,0	**43,20**
913050200	5,0	6	60	20	5,0	**43,20**
913050240	5,0	6	65	25	5,0	**50,55**
913050210	5,0	6	70	30	5,0	**50,55**
913050250	5,0	6	75	35	5,0	**58,10**
913050260	5,0	6	80	40	5,0	**60,00**
913050220	5,0	6	100	50	5,0	**66,60**
913050270	5,0	6	100	60	5,0	**76,70**
913060210	6,0	6	60	20	10,0	**43,20**
913060200	6,0	6	75	30	10,0	**50,55**
913060220	6,0	6	80	40	10,0	**60,00**
913060230	6,0	6	90	50	10,0	**63,10**
913060240	6,0	6	110	60	10,0	**71,85**
913080210	8,0	8	65	20	12,0	**63,90**
913080200	8,0	8	80	30	12,0	**71,85**
913080220	8,0	8	100	40	12,0	**81,70**
913100210	10,0	10	70	25	15,0	**94,70**
913100200	10,0	10	80	35	15,0	**104,75**
913100220	10,0	10	100	45	15,0	**117,70**
913120200	12,0	12	80	30	18,0	**109,20**
913120210	12,0	12	100	40	18,0	**125,65**
913120220	12,0	12	120	50	18,0	**143,70**

Condiciones de corte | Cutting data pag. 148

SAUDA

ACERO

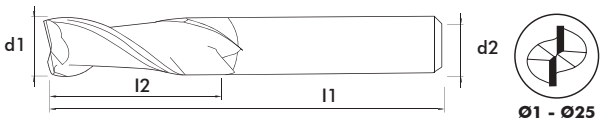
F-202

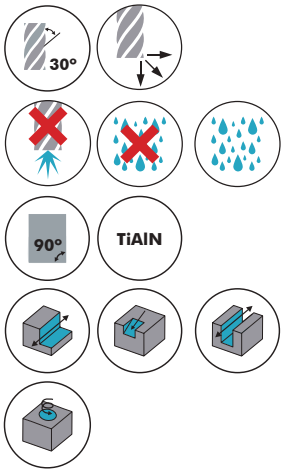
Fresa metal duro 2 labios <55HRC

2 Fluted solid carbide end mill <55 HRC

Fresa de metal duro de 2 labios con corte al centro con recubrimiento TiAlN. Ángulo espiral de 30º. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para uso general, para materiales hasta 55 HRC. También válida para materiales no férricos, fundición y aluminio. Fresa especialmente diseñada para ranurado y acabado.

2 Fluted cutting to centre solid carbide end mills plus TiAlN coating. 30º Spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Universal purpose. For high tense material. Also for aluminium and non-ferrous material. For materials up to 55 HRC. Tool especially designed for slotting and finishing.





STEEL <55 HRC
INOX
GG
ALU <12% Si
COPPER
GFK CFK
UNI

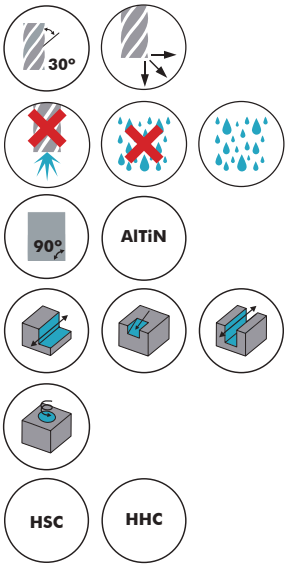
Ref.	d1	d2	l1	l2	z	€
202010200	1,0	3	38	3	2	**12,70**
202010210	1,0	4	50	3	2	**14,05**
202015200	1,5	3	38	4	2	**12,70**
202020200	2,0	3	38	6	2	**12,70**
202020210	2,0	4	50	6	2	**14,05**
202025200	2,5	3	38	8	2	**12,70**
202030200	3,0	3	38	8	2	**12,70**
202030210	3,0	4	50	8	2	**14,05**
202035200	3,5	4	50	10	2	**14,05**
202040200	4,0	4	50	11	2	**14,05**
202045200	4,5	6	50	13	2	**19,90**
202050200	5,0	5	50	13	2	**17,70**
202055200	5,5	6	50	13	2	**19,90**
202060200	6,0	6	50	16	2	**19,90**
202065200	6,5	8	60	16	2	**28,00**
202070200	7,0	8	60	16	2	**28,00**
202075200	7,5	8	60	19	2	**28,00**
202080200	8,0	8	60	19	2	**25,45**

Ref.	d1	d2	l1	l2	z	€
202085200	8,5	10	75	20	2	**41,40**
202090200	9,0	10	75	19	2	**41,40**
202095200	9,5	10	75	25	2	**41,40**
202097200	9,7	10	75	25	2	**41,40**
202100200	10,0	10	75	22	2	**37,65**
202105200	10,5	12	75	25	2	**56,70**
202110200	11,0	12	75	30	2	**56,70**
202115200	11,5	12	75	30	2	**56,70**
202120200	12,0	12	75	26	2	**51,50**
202130200	13,0	13	100	40	2	**79,20**
202140200	14,0	16	90	30	2	**72,00**
202150200	15,0	16	100	40	2	**112,75**
202160200	16,0	16	100	32	2	**102,50**
202170200	17,0	20	100	45	2	**138,55**
202180200	18,0	18	100	38	2	**131,95**
202190200	19,0	20	100	45	2	**157,10**
202200200	20,0	20	100	38	2	**149,65**
202250200	25,0	25	100	38	2	**243,80**

Condiciones de corte | Cutting data pag. 149

Fresa metal duro 2 labios <70 HRC

2 Fluted solid carbide end mill <70 HRC



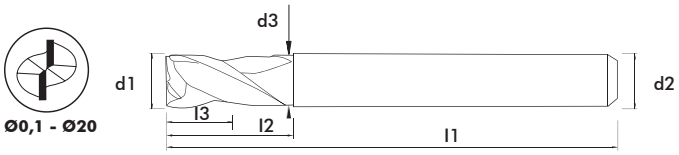
HG

STEEL <55 HRC

STEEL < 70 HRC

Fresa de metal duro de 2 labios, con corte al centro y recubrimiento AlTiN y ángulo de hélice de 30º. Especialmente diseñada para materiales endurecidos hasta 70 HRC. Adecuada para mecanizado en seco y HSC.

2 Fluted cutting to centre solid carbide end mill with AlTiN coating and 30º helix angle. Specially designed to machine high hardened materials up to HRC 70. Suitable for dry cutting and high speed cutting (HSC).



Ref.	d1	d2	d3	l1	l2	l3	z	€
214001200	0,1	4	-	40	-	0,2	2	**55,50**
214002200	0,2	4	-	40	-	0,4	2	**51,15**
214003200	0,3	4	-	40	-	0,5	2	**43,10**
214004200	0,4	4	-	40	-	0,7	2	**43,10**
214005200	0,5	4	-	40	-	1,0	2	**38,70**
214006200	0,6	4	-	40	-	1,2	2	**38,70**
214007200	0,7	4	-	40	-	1,4	2	**38,70**
214008200	0,8	4	-	40	-	1,6	2	**38,70**
214009200	0,9	4	-	40	-	2,0	2	**38,70**
214010200	1,0	6	-	40	-	1,5	2	**32,95**
214015200	1,5	6	-	40	-	2,2	2	**32,95**
214020200	2,0	6	1,9	40	6	3,0	2	**32,95**
214025200	2,5	6	2,4	40	6	4,0	2	**34,55**
214030200	3,0	6	2,9	45	7	4,0	2	**34,55**
214035200	3,5	6	3,3	45	9	6,0	2	**34,55**
214040200	4,0	6	3,8	45	9	6,0	2	**34,55**
214045200	4,5	6	4,3	45	10	6,0	2	**34,55**
214050200	5,0	6	4,8	50	11	6,0	2	**37,80**
214060200	6,0	6	5,8	50	14	7,0	2	**37,80**
214080200	8,0	8	7,8	60	18	9,0	2	**43,40**
214100200	10,0	10	9,7	75	25	12,0	2	**59,45**
214120200	12,0	12	11,7	75	30	15,0	2	**77,10**
214160200	16,0	16	15,7	90	38	18,0	2	**200,80**
214200200	20,0	20	19,7	100	45	24,0	2	**277,90**

Condiciones de corte | Cutting data pag. 150

SAUDA

ACERO

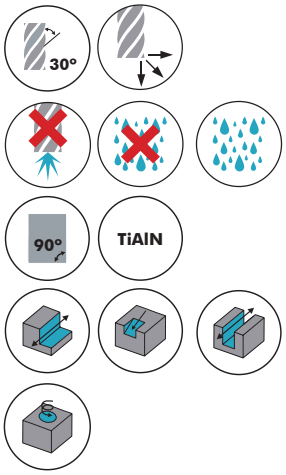
F-204

Fresa metal duro 2 labios <55 HRC

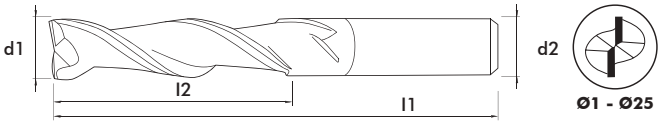
2 Fluted solid carbide long end mill <55 HRC

Fresa de metal duro de 2 labios con corte al centro con recubrimiento TiAlN serie larga. Ángulo espiral de 30º. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para uso general, para materiales hasta 55 HRC. También válida para materiales no férricos y aluminio.

2 Fluted cutting to centre solid carbide end mills plus TiAlN coating long type. 30º Spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Universal purpose. For high tense material. Also for aluminium and non-ferrous material. For hardened materials up to 55 HRC.



STEEL <55 HRC
INOX
GG
ALU <12% Si
COPPER
GFK CFK
UNI

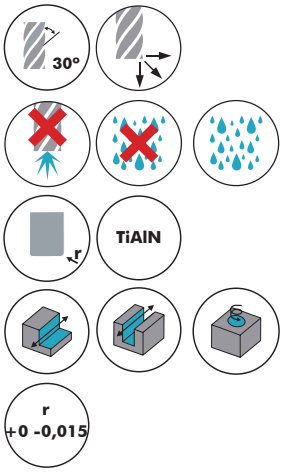


Ref.	d1	d2	l1	l2	€
204010200	1	3	60	5	18,30
204020200	2	3	60	10	18,30
204030200	3	3	60	15	18,30
204040200	4	4	80	20	19,70
204050200	5	5	80	25	24,35
204060200	6	6	80	25	28,30
204080200	8	8	90	35	39,10
204100200	10	10	100	45	56,20
204120200	12	12	100	50	78,75
204140200	14	14	150	65	122,70
204160200	16	16	150	65	154,15
204200200	20	20	150	70	229,80
204250200	25	25	150	75	439,65

Condiciones de corte | Cutting data pag. 149

Fresa metal duro extra larga 2 labios <55 HRC

2 Fluted solid carbide extra long end mill <55 HRC



STEEL <55 HRC

INOX

GG

ALU <12% SI

COPPER

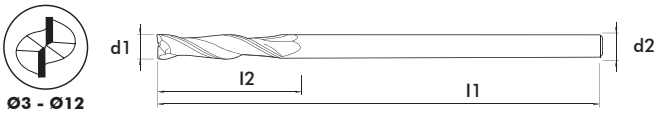
GFK CFK

PLASTIC

UNI

Fresa de metal duro de 2 labios con corte al centro con recubrimiento TiAlN serie extra larga con radio en punta. Ángulo espiral de 30º. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para uso general: para materiales hasta 55 HRC. También válida para materiales no férricos y aluminio.

2 Fluted cutting to centre solid carbide end mills plus TiAlN coating extra long type with corner radius. 30º Spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life.
Universal purpose. For high tense material. Also for aluminium and non-ferrous material. For hardened materials up to 55 HRC.



Ref.	d1	d2	l1	l2	€
218030200	3	3	75	25	19,55
218040200	4	4	100	25	23,80
218050200	5	5	100	25	26,60
218060100	6	6	100	25	30,05
218060110	6	6	100	40	34,60
218060120	6	6	150	25	41,45
218060130	6	6	150	40	47,80
218060200	6	6	200	25	69,95
218080100	8	8	100	45	45,85
218080110	8	8	150	25	54,70
218080120	8	8	150	45	63,00
218080200	8	8	200	25	114,20
218100100	10	10	150	38	77,10
218100110	10	10	150	50	85,45
218100120	10	10	150	65	96,00
218100200	10	10	200	50	125,85
218120100	12	12	150	38	108,50
218120120	12	12	150	50	119,45
218120130	12	12	150	75	131,50
218120140	12	12	200	38	133,05
218120200	12	12	200	50	157,65

Condiciones de corte | Cutting data pag. 149

SAUDA

ACERO

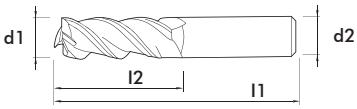
F-302

Fresa metal duro 3 labios <55 HRC

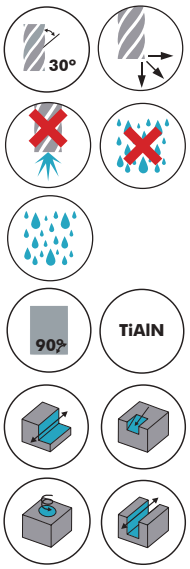
3 Fluted solid carbide end mill <55 HRC

Fresa de metal duro de 3 labios con corte al centro con recubrimiento TiAlN. Ángulo espiral de 30º. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para uso general: para materiales hasta 55 HRC. También válida para materiales no férricos, fundición y aluminio. Fresa especialmente diseñada para ranurado, contorneado y acabado.

3 Fluted cutting to centre solid carbide end mills plus TiAlN coating. 30º Spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Universal purpose. For high tense material. Also for aluminium and non-ferrous material. For materials up to 55 HRC. Tool especially designed for slotting, contouring and finishing.



Ø1 - Ø25



STEEL <55 HRC

INOX

GG

ALU <12% Si

COPPER

PLASTIC

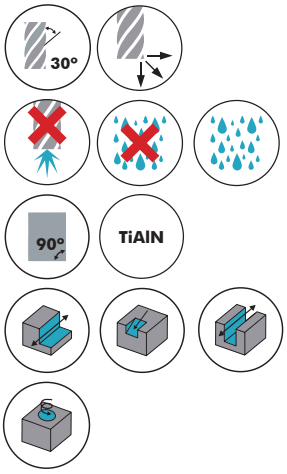
UNI

Ref.	d1	d2	l1	l2	z	€
302010200	1,0	3	38	3	3	**12,70**
302015200	1,5	3	38	4	3	**12,70**
302020200	2,0	3	38	6	3	**12,70**
302025200	2,5	3	38	8	3	**12,70**
302025210	2,5	4	38	8	3	**14,05**
302030200	3,0	3	38	8	3	**12,70**
302035200	3,5	4	50	11	3	**14,05**
302040200	4,0	4	50	11	3	**14,05**
302040210	4,0	6	50	11	3	**19,90**
302045200	4,5	5	50	13	3	**19,90**
302050200	5,0	5	50	13	3	**17,70**
302050210	5,0	6	50	13	3	**19,90**
302055200	5,5	6	50	16	3	**19,90**
302060200	6,0	6	50	16	3	**19,90**
302065200	6,5	8	60	19	3	**28,00**
302070200	7,0	8	60	19	3	**28,00**
302075200	7,5	8	60	19	3	**28,00**
302080200	8,0	8	60	19	3	**25,45**
302085200	8,5	10	75	22	3	**41,40**
302090200	9,0	10	75	22	3	**41,40**
302095200	9,5	10	75	22	3	**41,40**
302100200	10,0	10	75	22	3	**37,65**
302110200	11,0	12	75	26	3	**56,70**
302120200	12,0	12	75	26	3	**51,50**
302130200	13,0	14	90	30	3	**79,20**
302140200	14,0	14	90	30	3	**72,00**
302150200	15,0	16	100	32	3	**112,75**
302160200	16,0	16	100	32	3	**102,50**
302170200	17,0	18	100	38	3	**138,55**
302180200	18,0	18	100	38	3	**131,95**
302185200	18,5	20	100	38	3	**157,10**
302190200	19,0	20	100	38	3	**157,10**
302200200	20,0	20	100	38	3	**149,65**
302250200	25,0	25	100	38	3	**243,80**

Condiciones de corte | Cutting data pag. 151

Fresa metal duro extra larga 3 labios <55 HRC

3 Fluted solid carbide long end mill <55 HRC



STEEL <55 HRC

INOX

GG

ALU <12% Si

COPPER

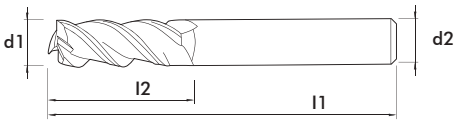
PLASTIC

UNI

Fresa de metal duro larga de 3 labios con corte al centro con recubrimiento TiAlN. Ángulo espiral de 30º. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para uso general: para materiales hasta 55 HRC. También válida para materiales no férricos, fundición y aluminio. Fresa especialmente diseñada para ranurado, contorneado y acabado.

3 Fluted cutting to centre solid carbide end mills long plus TiAlN coating. 30º Spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Universal purpose. For high tense material. Also for aluminium and non-ferrous material. For materials up to 55 HRC. Tool especially designed for slotting, contouring and finishing.

Ø1 - Ø25



Ref.	d1	d2	l1	l2	z	€
332010200	1	3	60	5	3	18,30
332020200	2	3	60	10	3	18,30
332030200	3	3	60	15	3	18,30
332040200	4	4	80	20	3	19,70
332050200	5	5	80	25	3	24,35
332060200	6	6	80	25	3	28,30
332080200	8	8	90	35	3	39,10
332100200	10	10	100	45	3	56,20
332120200	12	12	100	50	3	78,75
332140200	14	14	150	65	3	122,70
332160200	16	16	150	65	3	154,15
332200200	20	20	150	70	3	229,80
332250200	25	25	150	75	3	439,65

Condiciones de corte | Cutting data pag. 151

SAUDA

ACERO

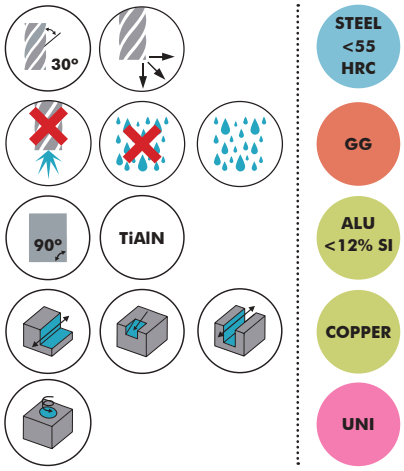
F-402

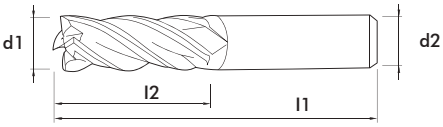
Fresa metal duro 4 labios <55 HRC

4 Fluted solid carbide end mill <55 HRC

Fresa de metal duro de 4 labios con corte al centro y recubrimiento TiAlN. Ángulo espiral de 30º. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para uso general: para materiales hasta 55 HRC. También válida para materiales no férricos, fundición y aluminio. Fresa especialmente diseñada para ranurado, contorneado y acabado.

4 Fluted cutting to centre solid carbide end mills plus TiAlN coating. 30º Spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Universal purpose. For high tense material. Also for aluminium and non-ferrous material. For materials up to 55 HRC. Tool especially designed for slotting, contouring and finishing.





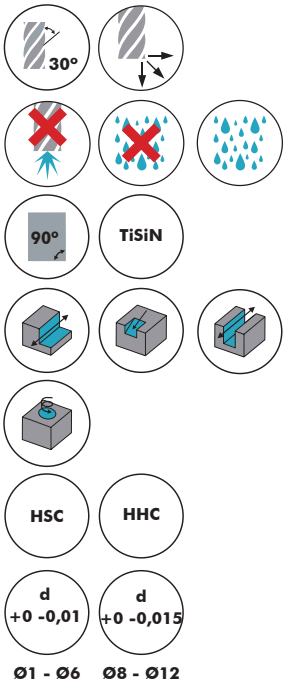
Ø1 - Ø25

Ref.	d1	d2	l1	l2	z	€
402010200	1,0	3	38	3	4	12,70
402015200	1,5	3	38	4	4	12,70
402020200	2,0	3	38	6	4	12,70
402025200	2,5	3	38	8	4	12,70
402030200	3,0	3	38	8	4	12,70
402035200	3,5	4	50	11	4	14,05
402040200	4,0	4	50	11	4	14,05
402045200	4,5	5	50	13	4	19,90
402050200	5,0	5	50	13	4	17,70
402055200	5,5	6	50	16	4	19,90
402060200	6,0	6	50	16	4	19,90
402065200	6,5	8	60	16	4	28,00
402070200	7,0	8	60	16	4	28,00
402075200	7,5	8	60	20	4	28,00
402080200	8,0	8	60	19	4	25,45
402085200	8,5	10	75	22	4	41,40
402090200	9,0	10	75	22	4	41,40
402095200	9,5	10	75	22	4	41,40
402100200	10,0	10	75	22	4	37,65
402110200	11,0	12	75	26	4	56,70
402120200	12,0	12	75	26	4	51,50
402130200	13,0	14	90	30	4	79,20
402140200	14,0	14	90	30	4	72,00
402150200	15,0	16	100	32	4	112,75
402160200	16,0	16	100	32	4	102,50
402165200	16,5	18	100	38	4	138,55
402170200	17,0	18	100	38	4	138,55
402180200	18,0	18	100	38	4	131,95
402185200	18,5	20	100	38	4	157,10
402190200	19,0	20	100	38	4	157,10
402200200	20,0	20	100	38	4	149,65
402250200	25,0	25	100	38	4	243,80

Condiciones de corte | Cutting data pag. 152

Fresa metal duro 4 labios larga < 70 HRC

4 Fluted solid carbide end mill long < 70 HRC

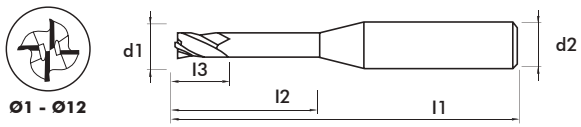


HG

STEEL
<65
HRC

Fresa de metal duro de 4 labios larga con cuello rebajado, con corte al centro y recubrimiento TiSiN, ángulo de hélice de 30º. Especialmente diseñada para materiales endurecidos hasta 70 HRC. Adecuada para mecanizado en seco y HSC.

4 Fluted cutting to centre solid carbide end mill with TiSiN coating and 30º helix angle. Specially designed to machine high hardened materials up to HRC 70. Suitable for dry cutting and high speed cutting (HSC).



Ref.	d1	d2	l1	l2	l3	z	€
401010200	1,0	4	45	3	1,5	4	37,30
401010210	1,0	4	45	4	1,5	4	37,30
401010220	1,0	4	45	6	1,5	4	37,30
401010230	1,0	4	45	8	1,5	4	37,30
401015200	1,5	4	45	4	2,3	4	37,30
401015210	1,5	4	45	6	2,3	4	37,30
401015220	1,5	4	45	8	2,3	4	37,30
401015230	1,5	4	45	10	2,3	4	40,80
401020200	2,0	4	45	6	3,0	4	37,30
401020210	2,0	4	45	8	3,0	4	37,30
401020220	2,0	4	45	10	3,0	4	41,50
401020230	2,0	4	45	12	3,0	4	41,50
401020240	2,0	4	50	16	3,0	4	41,50
401030200	3,0	6	50	8	4,5	4	44,05
401030210	3,0	6	50	10	4,5	4	44,05
401030220	3,0	6	50	12	4,5	4	44,05
401030230	3,0	6	60	16	4,5	4	44,05
401030240	3,0	6	60	20	4,5	4	46,25
401040200	4,0	6	50	10	6,0	4	44,05
401040210	4,0	6	50	12	6,0	4	44,05
401040220	4,0	6	60	16	6,0	4	44,05
401040230	4,0	6	60	20	6,0	4	48,40
401040240	4,0	6	65	25	6,0	4	48,40
401050200	5,0	6	70	30	8,0	4	56,25
401060200	6,0	6	70	30	9,0	4	56,25
401080200	8,0	8	80	30	12,0	4	82,10
401100200	10,0	10	100	35	15,0	4	122,30
401120200	12,0	12	110	40	18,0	4	142,30

Condiciones de corte | Cutting data pag. 153

SAUDA

ACERO

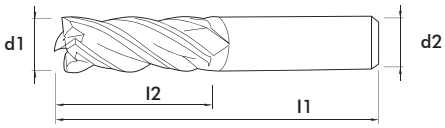
F-560

Fresa metal duro de 4 labios con hélice variable de 43º/45º < 56 HRC

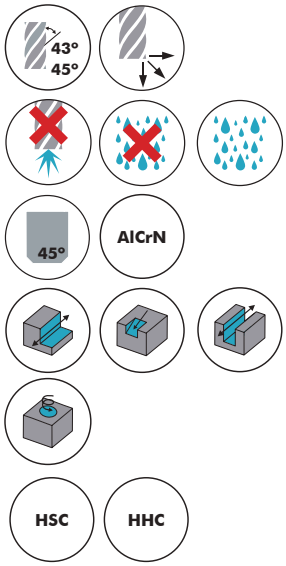
4 Fluted solid carbide 43º/45º variable helix end mill <56 HRC

Fresa de metal duro de 4 labios con hélice variable 43º/45º y recubriumiento AlCrN, la hélice en ángulo variable garantiza una gran estabilidad en el mecanizado y un alto rendimiento. Chaflán en esquina, cuello rebajado y weldon. Herramienta de alto rendimiento para acero hasta 56 HRC, acero inoxidable, fundición, cobre, aleaciones...

4 Fluted 43/45º variable helix end mill with AlCrN coating. Realiability and high performance are guaranted during machining. High performance suitable for steel up to 56 HRC, stainless steel, cast iron, copper, titanium alloys, etc.



Ø4 - Ø16



STEEL <56 HRC

GG

HG

INOX

COPPER

NI ALLOYS

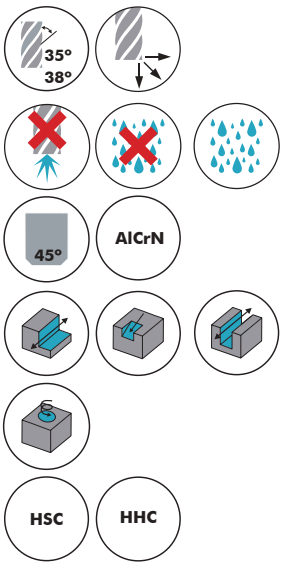
TITAN INCONEL

Ref.	d1	d2	l1	l2	U	C-45º	€
560040200	4	6	57	11	14	0,09	**34,90**
560050200	5	6	57	13	16	0,12	**34,90**
560060200	6	6	57	13	21	0,20	**34,90**
560080200	8	8	63	19	27	0,25	**43,75**
560100200	10	10	73	22	32	0,35	**62,15**
560120200	12	12	83	26	38	0,35	**85,00**
560140200	14	14	84	30	40	0,40	**107,80**
560160200	16	16	92	32	44	0,40	**150,40**

Condiciones de corte | Cutting data pag. 153

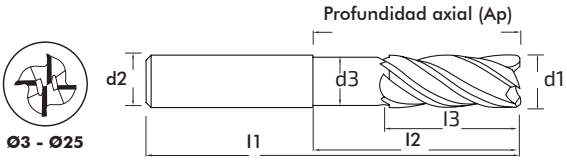
Fresa metal duro de 4 labios con hélice variable de 35º/38º < 60 HRC

4 Fluted solid carbide 35º/38º variable helix end mill < 60 HRC



Fresa metal duro de cuatro labios con hélice variable 35º/38º y recubrimiento AlCrN, la hélice en ángulo variable garantiza una gran estabilidad en el mecanizado y un alto rendimiento. Herramienta para acero hasta 60 HRC, fundición y templado.

4 Fluted 35º/38º variable helix end mill with AlCrN coating. Realiability and high performance are guaranted during machining. Suitable for steel up to 60 HRC, cast iron and hardened steel.



Ref.	d1	d2	d3	l1	l2	l3	ap	€
452030200	3	6	2,8	57	15,4	8	15 mm	**22,30**
452040200	4	6	3,8	57	17,3	11	17 mm	**22,30**
452050200	5	6	4,8	57	19,1	13	19 mm	**22,30**
452060200	6	6	5,8	57	21,0	13	21 mm	**22,30**
452080200	8	8	7,8	63	27,0	19	27 mm	**35,90**
452100200	10	10	9,8	72	32,0	22	32 mm	**52,45**
452120200	12	12	11,8	83	38,0	26	38 mm	**73,00**
452140200	14	14	13,8	83	38,0	26	38 mm	**101,70**
452160200	16	16	15,8	92	44,0	32	44 mm	**118,55**
452180200	18	18	17,8	92	44,0	32	44 mm	**158,80**
452200200	20	20	19,8	104	54,0	38	54 mm	**198,10**
452250200	25	25	24,8	121	65,0	45	65 mm	**338,25**

Condiciones de corte | Cutting data pag. 154

SAUDA

ACERO

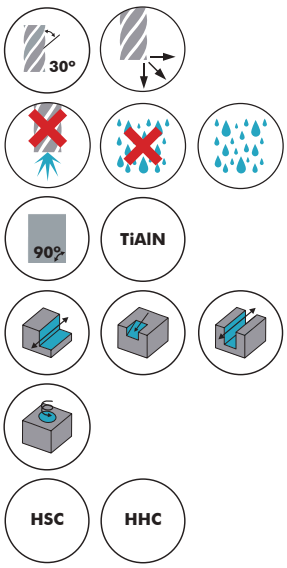
F-414

Fresa metal duro 4 labios <70 HRC

4 Fluted solid carbide end mill <70 HRC

Fresa de metal duro de 4 labios, con corte al centro y recubrimiento AlTiN y ángulo de hélice de 30º. Especialmente diseñada para materiales endurecidos hasta 70 HRC. Adecuada para mecanizado en seco y HSC.

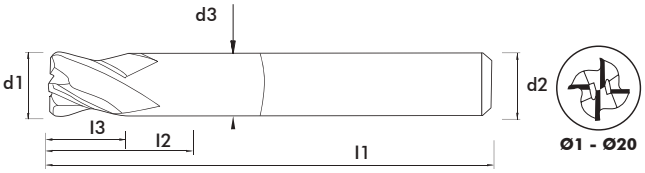
4 Fluted cutting to centre solid carbide end mill with AlTiN coating and 30º helix angle. Specially designed to machine high hardened materials up to HRC 70. Suitable for dry cutting and high speed cutting (HSC).



HG

STEEL <55 HRC

STEEL <70 HRC

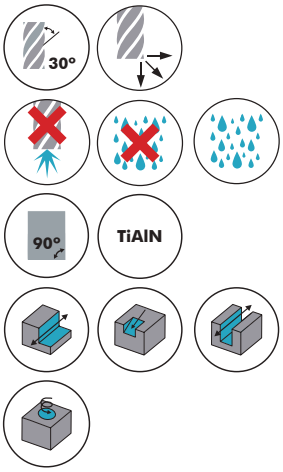


Ref.	d1	d2	d3	l1	l2	l3	z	€
414010200	1,0	6	-	40	-	1,5	4	**37,80**
414015200	1,5	6	-	40	-	2,2	4	**37,80**
414020200	2,0	6	1,9	40	6	3,0	4	**37,80**
414025200	2,5	6	2,4	40	6	4,0	4	**39,40**
414030200	3,0	6	2,9	45	7	4,0	4	**39,40**
414035200	3,5	6	3,3	45	9	5,0	4	**39,40**
414040200	4,0	6	3,8	45	9	5,0	4	**39,40**
414045200	4,5	6	4,3	45	10	6,0	4	**39,40**
414050200	5,0	6	4,8	50	11	6,0	4	**41,00**
414060200	6,0	6	5,8	50	14	7,0	4	**41,00**
414080200	8,0	8	7,8	60	18	9,0	4	**47,40**
414100200	10,0	10	9,7	75	25	12,0	4	**64,30**
414120200	12,0	12	11,7	75	30	15,0	4	**83,55**
414160200	16,0	16	15,7	90	38	18,0	4	**212,10**
414200200	20,0	20	19,7	100	45	24,0	4	**290,75**

Condiciones de corte | Cutting data pag. 154

Fresa metal duro 4 labios largas <55 HRC

4 Fluted solid carbide long end mill <55 HRC



STEEL <55 HRC

INOX

GG

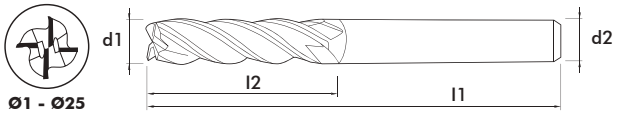
ALU <12% SI

COPPER

UNI

Fresa de metal duro larga de 4 labios con corte al centro y recubrimiento TiAlN. Ángulo espiral de 30º. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para uso general: para materiales hasta 55 HRC. También válida para materiales no férricos, fundición y aluminio. Fresa especialmente diseñada para contorneado y acabado.

Long 4 fluted cutting to centre solid carbide end mills long plus TiAlN coating. 30º Spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Universal purpose. For high tense material. Also for aluminium and non-ferrous material. For materials up to 55 HRC. Tool especially designed for contouring and finishing.



Ref.	d1	d2	l1	l2	z	€
404010200	1	3	60	5	4	18,30
404020200	2	3	60	10	4	18,30
404030200	3	3	60	15	4	18,30
404040200	4	4	80	20	4	19,70
404050200	5	5	80	25	4	24,35
404060200	6	6	80	25	4	28,30
404070200	7	8	90	35	4	43,00
404080200	8	8	90	35	4	39,10
404090200	9	10	100	45	4	61,95
404100200	10	10	100	45	4	56,20
404110200	11	12	100	50	4	95,95
404120200	12	12	100	50	4	78,75
404130200	13	14	150	65	4	199,70
404140200	14	14	150	65	4	122,70
404150200	15	16	150	65	4	199,70
404160200	16	16	150	65	4	154,15
404170200	17	20	150	70	4	225,50
404180200	18	20	150	70	4	205,85
404200200	20	20	150	70	4	229,80
404250200	25	25	150	75	4	439,65

Condiciones de corte | Cutting data pag. 152

SAUDA

ACERO

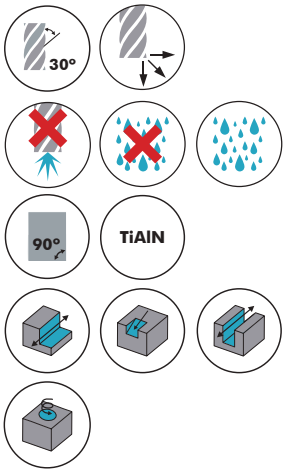
F-444

Fresa metal duro 4 labios extra larga <55 HRC

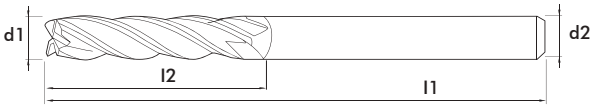
4 Fluted solid carbide extra long end mill <55 HRC

Fresa de metal duro de 4 labios extra larga con corte al centro y recubrimiento TiAlN. Ángulo espiral de 30º. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para uso general: para materiales hasta 55 HRC. También válida para materiales no férricos, fundición y aluminio. Fresa especialmente diseñada para contorneado y acabado.

4 Fluted cutting to centre solid carbide end mill extra long plus TiAlN coating. 30º Spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Universal purpose. For high tense material. Also for aluminium and non-ferrous material. For materials up to 55 HRC. Tool especially designed for contouring and finishing.



STEEL <55 HRC
INOX
GG
ALU <12% Si
COPPER
UNI



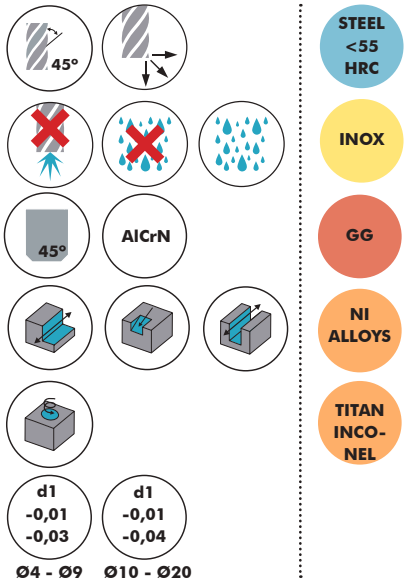
Ø3 - Ø20

Ref.	d1	d2	l1	l2	z	€
444030200	3	3	75	25	4	19,55
444030210	3	3	100	25	4	21,60
444040200	4	4	100	25	4	23,80
444050200	5	5	100	25	4	26,60
444060200	6	6	100	25	4	30,05
444060220	6	6	100	40	4	34,60
444060210	6	6	150	25	4	42,20
444060230	6	6	150	40	4	47,80
444080210	8	8	100	45	4	45,85
444080200	8	8	150	25	4	54,70
444080220	8	8	150	45	4	63,00
444100200	10	10	150	38	4	77,10
444100210	10	10	150	50	4	85,45
444100220	10	10	150	65	4	96,00
444120200	12	12	150	38	4	108,50
444120220	12	12	150	50	4	119,45
444120230	12	12	150	75	4	131,50
444120210	12	12	200	38	4	133,05
444140200	14	14	150	90	4	138,00
444140210	14	14	200	65	4	147,00
444160200	16	16	150	90	4	178,35
444160210	16	16	250	90	4	229,60
444200220	20	20	150	70	4	229,80
444200230	20	20	150	90	4	262,50
444200240	20	20	165	100	4	299,20
444200200	20	20	200	110	4	375,00
444200210	20	20	250	110	4	382,00
444250200	25	25	150	75	4	439,65

Condiciones de corte | Cutting data pag. 152

Fresa metal duro desbaste 3 y 4 labios "plus" <55 HRC

3 and 4 fluted solid carbide roughing "plus" end mill <55 HRC



STEEL <55 HRC

INOX

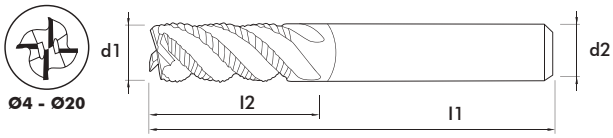
GG

NI ALLOYS

TITAN INCO-NEL

Fresa de metal duro de 3 y 4 labios alto rendimiento con corte al centro y recubrimiento AlCrN para desbaste. Ángulo espiral de 45º. Fresa especialmente diseñada para ranurado y contorneado en operaciones de desbaste. La geometría especial conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para uso general: para mecanizado de fundición, aceros, aceros aleados e inoxidables.

3 and 4 fluted solid carbide roughing high performance end mill with AlCrN coating. 45º Spiral angle. The geometry, coating and the substrate are specially designed for slotting and contouring on roughing operations. For milling of cast iron, malleable cast iron, steel, steel castings and stainless steel.



Ref.	d1	d2	l1	l2	z	€
418040200	4	6	50	10	3	**26,80**
418050200	5	6	50	13	3	**26,80**
418060200	6	6	55	16	3	**26,80**
418070200	7	8	65	18	3	**43,95**
418080200	8	8	65	19	3	**36,35**
418090200	9	10	70	22	4	**59,90**
418100200	10	10	70	22	4	**55,90**
418120200	12	12	80	25	4	**76,75**
418140200	14	14	90	30	4	**136,00**
418160200	16	16	90	32	4	**174,60**
418180200	18	18	100	38	4	**217,00**
418200200	20	20	110	38	4	**261,60**

Condiciones de corte | Cutting data pag. 155

SAUDA

ACERO

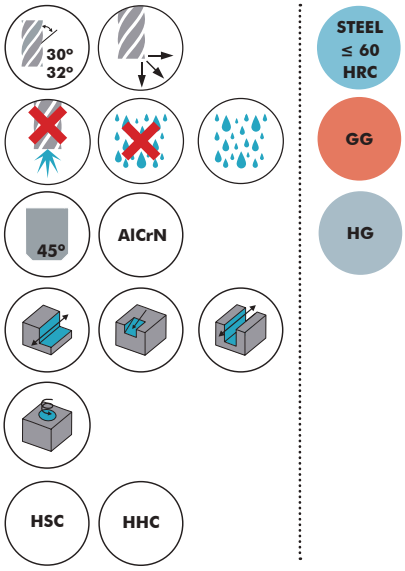
F-419

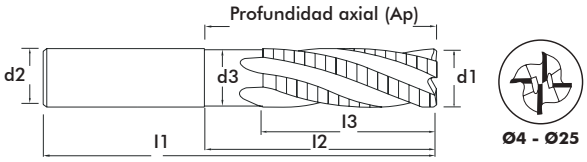
Fresa de 4 labios con hélice variable de 30º/32º para desbaste < 60 HRC

4 Fluted 30º/32º variable helix roughing end mill < 60 HRC

Fresa metal duro de cuatro labios con hélice variable 30º/32º y recubrimiento AlCrN, la hélice en ángulo variable garantiza una gran estabilidad en el mecanizado y un alto rendimiento. Herramienta para acero hasta 60 HRC, fundición y templado para desbaste.

4 Fluted 30º/32º variable helix end mill with AlCrN coating. Realiability and high performance are guaranted during machining. Suitable for steel up to 60 HRC, cast iron and hardened steel.



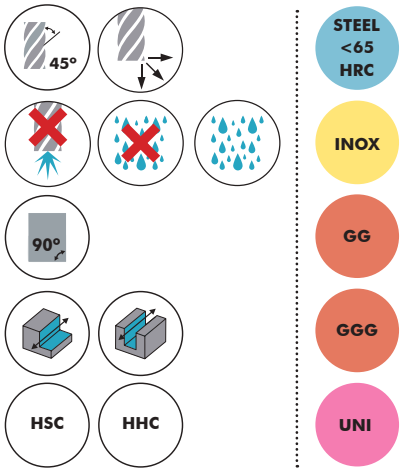


Ref.	d1	d2	d3	l1	l2	l3	ap	€
419040200	4	6	3,8	57	17,0	11	17 mm	**33,90**
419050200	5	6	4,8	57	19,3	13	19 mm	**33,90**
419060200	6	6	5,8	57	21,0	13	21 mm	**33,90**
419080200	8	8	7,8	63	27,0	19	27 mm	**47,70**
419100200	10	10	9,8	72	32,0	22	32 mm	**68,35**
419120200	12	12	11,8	83	38,0	26	38 mm	**88,85**
419160200	16	16	15,8	92	44,0	32	44 mm	**139,60**
419200200	20	20	19,8	104	54,0	38	54 mm	**227,10**
419250200	25	25	24,8	121	65,0	45	65 mm	**398,30**

Condiciones de corte | Cutting data pag. 155

Fresa metal duro para acabado HSC - HHC <65 HRC

Solid carbide finishing HSC - HHC end mill <65 HRC



STEEL <65 HRC

INOX

GG

GGG

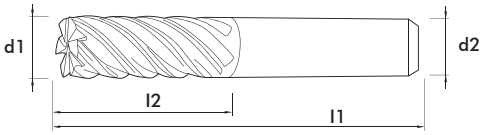
UNI

Fresa de metal duro de 4 y 6 labios con corte al centro y recubrimiento TiAlN para super acabado. Ángulo espiral de 45º. HSC (Mecanizado a alta velocidad) y HHC (Mecanizado de materiales templados) para materiales hasta 65 HRC. También válida para materiales no férricos, fundición y aluminio. Fresa especialmente diseñada para contorneado y acabado.

4 and6 Fluted solid carbide end mill for super finishing. 45º Spiral angle. HSC (High Speed Cutting) /HHC (High Hard Cutting) < 65 HRC. For universal application, specially suited for high temperature, stainless steel, as well as for casting and all non ferrous metals. Specially designed for contoruing and finishing operations.

Ø2 - Ø5

Ø6 - Ø25



Ref.	d1	d2	l1	l2	z	€
502020200	2	3	38	8	4	**29,70**
502030200	3	3	38	8	4	**29,70**
502040200	4	4	50	11	4	**29,70**
502050200	5	5	50	13	4	**29,70**
502060200	6	6	50	16	6	**29,70**
502080200	8	8	60	19	6	**36,75**
502100200	10	10	75	22	6	**51,20**
502120200	12	12	75	26	6	**75,00**
502140200	14	14	90	32	6	**96,80**
502160200	16	16	100	32	6	**132,05**
502180200	18	18	100	38	6	**153,30**
502200200	20	20	100	38	6	**191,20**
502250200	25	25	100	38	6	**325,90**

Condiciones de corte | Cutting data pag. 156 - 157

SAUDA

ACERO

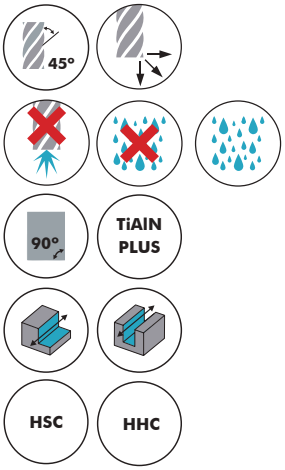
F-504

Fresa metal duro larga para acabado HSC - HHC <65 HRC

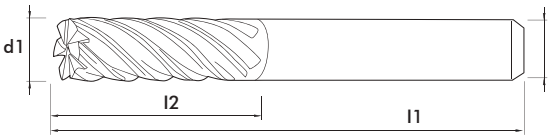
Long solid carbide finishing HSC - HHC end mill <65 HRC

Fresa de metal duro larga de 4 y 6 labios con corte al centro y recubrimiento TiAlN para super acabado. Ángulo espiral de 45º. HSC (Mecanizado a alta velocidad) y HHC (Mecanizado de materiales templados) para materiales hasta 65 HRC. También válida para materiales no férricos, fundición y aluminio. Fresa especialmente diseñada para contorneado y acabado.

4 and 6 Fluted solid carbide long end mill for super finishing. 45º Spiral angle. HSC (High Speed Cutting) /HHC (High Hard Cutting) < 65 HRC. For universal application, specially suited for high temperature, stainless steel, as well as for casting and all non ferrous metals. Specially designed for contoruing and finishing operations.



STEEL <65 HRC
INOX
GG
GGG
UNI



Ø3 - Ø5

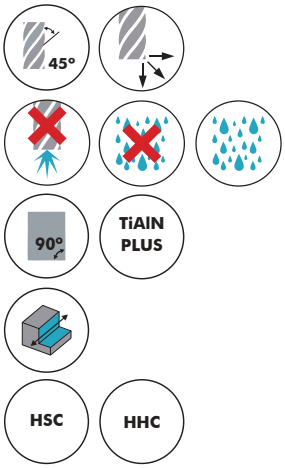
Ø6 - Ø25

Ref.	d1	d2	l1	l2	z	€
504030200	3	3	60	15	4	**32,15**
504040200	4	4	80	20	4	**34,75**
504050200	5	5	80	25	4	**36,50**
504060200	6	6	80	25	6	**36,50**
504080200	8	8	90	35	6	**53,30**
504100200	10	10	100	45	6	**72,15**
504120200	12	12	100	50	6	**103,05**
504140200	14	14	150	65	6	**140,10**
504160200	16	16	150	65	6	**180,00**
504200200	20	20	150	70	6	**266,15**
504250200	25	25	150	75	6	**511,65**

Condiciones de corte | Cutting data pag. 156 - 157

Fresa metal duro extra larga para acabado HSC - HHC <65 HRC

Extra long solid carbide HSC - HHC finishing end mill <65 HRC



STEEL <65 HRC

INOX

GG

GGG

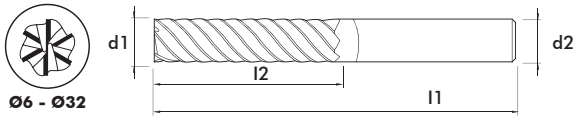
NI ALLOYS

TITAN INCONEL

UNI

Fresa de metal duro extra larga de 6 labios con corte al centro y recubrimiento TiAlN para super acabado. Ángulo espiral de 45º. HSC (Mecanizado a alta velocidad) y HHC (Mecanizado de materiales templados) para materiales hasta 65 HRC. También válida para materiales no férricos, fundición y aluminio. Fresa especialmente diseñada para contorneado y acabado.

6 Fluted solid carbide extra long end mill for super finishing. 45º Spiral angle. HSC (High Speed Cutting) /HHC (High Hard Cutting) < 65 HRC. For universal application, specially suited for high temperature, stainless steel, as well as for casting and all non ferrous metals. Specially designed for contouring and finishing operations.



Ref.	d1	d2	l1	l2	z	€
509030200	3	3	60	15	6	**23,30**
509040200	4	4	80	20	6	**26,20**
509050200	5	5	80	25	6	**30,10**
509060200	6	6	80	25	6	**36,50**
509080200	8	8	90	35	6	**53,30**
509100200	10	10	100	45	6	**72,15**
509120100	12	12	100	50	6	**103,05**
509120200	12	12	125	70	6	**127,60**
509140200	14	14	150	65	6	**140,10**
509160100	16	16	150	65	6	**180,00**
509160200	16	16	165	100	6	**205,40**
509200100	20	20	150	70	6	**266,15**
509200200	20	20	165	100	6	**307,00**
509200210	20	20	200	135	6	**392,40**
509250100	25	25	150	75	6	**511,65**
509250200	25	25	165	100	6	**592,40**
509250210	25	25	200	140	6	**664,30**
509320200	32	32	165	100	6	**830,35**
509320210	32	32	210	150	6	**996,30**

Condiciones de corte | Cutting data pag. 156 - 157

SAUDA

ACERO

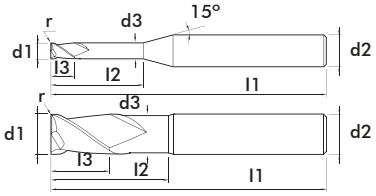
F-422
F-442

Fresa metal duro tórica 2 labios HSC - HHC <65 HRC

2 Fluted HSC - HHC solid carbide radius end mill <65 HRC

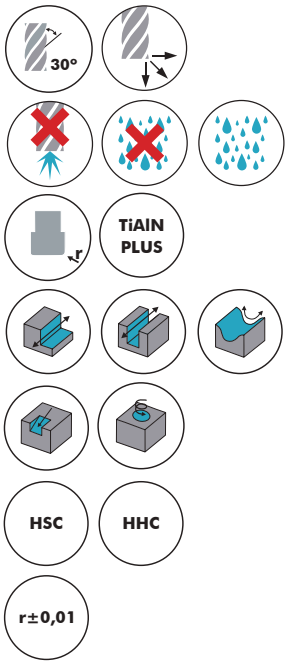
Fresa metal duro de 2 labios tórica y recubrimiento TiAlN. Para mecanizado HSC y HHC. 30º de hélice. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado a alta velocidad (HSC) y materiales duros (HHC). Para máquinas CNC con 3 y 5 ejes. También podemos trabajar en seco. Para aceros hasta 65 HRC. También válida para materiales no férricos, materiales termo resistentes, aleaciones exóticas y fundiciones. Fresa especialmente diseñada para trabajos 3D.

2 Fluted solid carbide end mill with corner radius and TiAlN coating for HSC and HHC mechining. 30º Spiral angle. Specially for tool maker, mould maker. Also for aircraft / turbine construction. The tool, material and coating are specially designed for HSC and HHC. For CNC machines with 3 and 5 axes. Reduces milling time rapidly. Also for dry milling. Universal purpose for normal and high tense materials, for 3D operations.



Ø2 - Ø5

Ø6 - Ø16



STEEL <65 HRC

INOX

GG

GGG

Condiciones de corte | Cutting data pag. 157

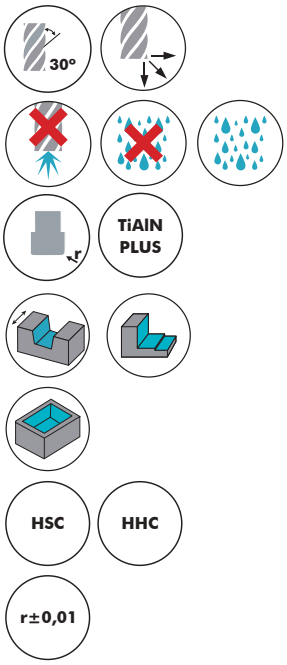
Ref.	d1	r	d2	d3	l1	l2	l3	z	€
422020200	2	0,2	6	1,8	57	21	4	2	49,90
422030200	3	0,3	6	2,8	57	21	6	2	49,90
422030210	3	0,5	6	1,8	80	15	4	2	49,90
422040200	4	0,4	6	3,6	57	21	6	2	49,90
422040210	4	1,0	6	3,6	57	21	6	2	49,90
422050200	5	0,2	6	4,7	57	21	6	2	49,90
422060200	6	0,3	6	5,5	57	21	7	2	49,90
422060210	6	0,5	6	5,5	57	21	7	2	49,90
422060220	6	1,0	6	5,5	57	21	7	2	49,90
422060230	6	1,5	6	5,5	57	21	7	2	49,90
422060240	6	1,6	6	5,5	57	21	7	2	49,90
422060250	6	2,0	6	5,5	57	21	7	2	49,90
422080200	8	0,5	8	7,4	63	27	9	2	61,50
422080210	8	1,0	8	7,4	63	27	9	2	61,50
422080220	8	1,5	8	7,4	63	27	9	2	61,50
422080230	8	2,0	8	7,4	63	27	9	2	61,50
422100200	10	0,5	10	9,2	72	32	11	2	79,95
422100210	10	1,05	10	9,2	72	32	11	2	79,95
422100220	10	1,5	10	9,2	72	32	11	2	79,95
422100230	10	2,0	10	9,2	72	32	11	2	79,95
422120200	12	0,5	12	11,0	83	38	12	2	115,90
422120210	12	1,0	12	11,0	83	38	12	2	115,90
422120220	12	1,5	12	11,0	83	38	12	2	115,90
422120230	12	2,0	12	11,0	83	38	12	2	115,90
422160200	16	0,5	16	15,0	92	44	16	2	198,65
422160210	16	1,0	16	15,0	92	44	16	2	198,65

Serie larga | Long series

Ref.	d1	r	d2	l1	l2	l3	z	€
442030230	3	0,5	6	80	15	15	2	43,50
442040200	4	0,2	6	80	20	4	2	43,50
442100230	10	1	10	100	45	45	2	83,80

Fresa metal duro tórica 2 labios HSC - HHC <62 HRC

2 Fluted HSC - HHC solid carbide radius end mill <62 HRC



STEEL <62 HRC

INOX

GG

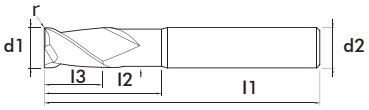
GGG

COPPER

Fresa metal duro de 2 labios tórica y recubrimiento TiAlN. Para mecanizado HSC y HHC. 30º de hélice. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado a alta velocidad (HSC) y materiales duros (HHC). Para máquinas CNC con 3 y 5 ejes. También podemos trabajar en seco. Para aceros hasta 62 HRC. También válida para materiales no férricos, materiales termo resistentes, aleaciones exóticas y fundiciones. Fresa especialmente diseñada para trabajos 3D.

2 Fluted solid carbide end mill with corner radius and TiAlN coating for HSC and HHC mechining. 30º Spiral angle. Specially for tool maker, mould maker. Also for aircraft / turbine construction. The tool, material and coating are specially designed for HSC and HHC. For CNC machines with 3 and 5 axes. Reduces milling time rapidly. Also for dry milling. Universal purpose for normal and high tense materials, for 3D operations.

Ø2 - Ø16



Ref.	d1	r	d2	l1	l2	€
423020200	2	0,2	6	50	6	**29,00**
423020210	2	0,5	6	50	6	**29,00**
423030200	3	0,2	6	50	8	**29,00**
423030210	3	0,5	6	50	8	**29,00**
423040200	4	0,2	6	50	11	**29,00**
423040210	4	0,5	6	50	11	**29,00**
423040220	4	1,0	6	50	11	**29,00**
423050200	5	0,2	6	50	12	**29,00**
423050210	5	0,5	6	50	12	**29,00**
423050220	5	1,0	6	50	12	**29,00**
423060200	6	0,2	6	50	12	**29,00**
423060210	6	0,5	6	50	13	**29,00**
423060220	6	1,0	6	50	13	**29,00**
423060230	6	1,5	6	50	13	**29,00**
423060240	6	2,0	6	50	13	**29,00**
423080200	8	0,2	8	60	15	**39,90**
423080210	8	0,5	8	60	15	**39,90**
423080220	8	1,0	8	60	15	**39,90**

Ref.	d1	r	d2	l1	l2	€
423080230	8	1,5	8	60	15	**39,90**
423080240	8	2,0	8	60	15	**39,90**
423100200	10	0,5	10	72	20	**54,90**
423100210	10	1,0	10	72	20	**54,90**
423100220	10	1,5	10	72	20	**54,90**
423100230	10	2,0	10	72	20	**54,90**
423100240	10	3,0	10	72	20	**54,90**
423120200	12	0,5	12	75	24	**77,60**
423120210	12	1,0	12	75	24	**77,60**
423120220	12	1,5	12	75	24	**77,60**
423120230	12	2,0	12	75	24	**77,60**
423120240	12	3,0	12	75	24	**77,60**
423160200	16	0,5	16	92	30	**145,60**
423160210	16	1,0	16	92	30	**145,60**
423160220	16	2,0	16	92	30	**145,60**
423160230	16	3,0	16	92	30	**145,60**
423160240	16	4,0	16	92	30	**145,60**

Condiciones de corte | Cutting data pag. 157

SAUDA

ACERO

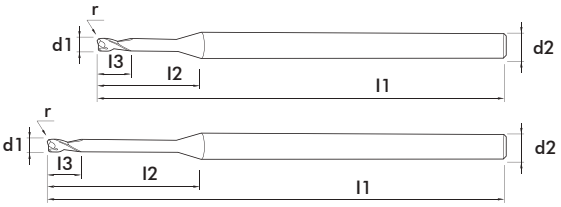
F-813

Fresa metal duro tórica 2 labios HSC/HCC <65 HRC (0,2µm)

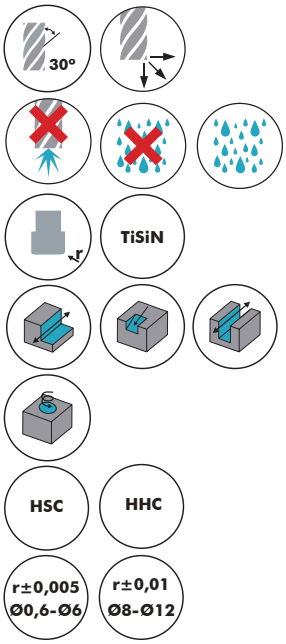
2 Fluted solid carbide corner radius end mill for HSC/HHC <65 HRC (0,2µm)

Fresa de metal duro de cuello largo de 2 labios con corte al centro y radio en punta con recubrimiento TiSiN. Ángulo espiral de 30º. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado HSC (High Speed Cutting) + HHC (High Hard Cutting) < 65 HRC. También podemos utilizar esta herramienta para aceros y materiales no férricos. El diámetro posterior al corte es menor que el diámetro de punta para evitar el desvío de la herramienta.

Solid carbide miniature end mills with corner radius, 30º spiral angle and TiSiN coating. For universal use, for standard steel and non-ferrous materials. The tool, material and coating are specially designed for dry high speed cutting HSC and high hard cutting HHC < 65 HRC large cone diameter for minimum deflection. With corner radius for minimize the wear out.



Ø0,6 - Ø12



STEEL <65 HRC

INOX

GG

COPPER

NI ALLOYS

TITAN INCONEL

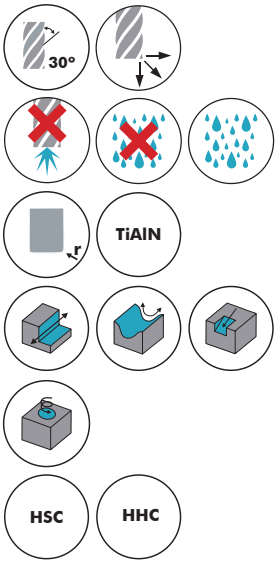
Condiciones de corte | Cutting data pag. 158

Ref.	d1	r	d2	l1	l2	l3	€
813006200	0,6	0,05	4	45	4	0,7	48,60
813006210	0,6	0,05	4	45	6	0,7	50,75
813008200	0,8	0,10	4	45	4	1,0	46,70
813008210	0,8	0,10	4	45	8	1,0	46,70
813010200	1,0	0,20	4	45	4	1,2	44,35
813010210	1,0	0,20	4	50	10	1,2	46,50
813010220	1,0	0,20	4	50	20	1,2	48,40
813012200	1,2	0,20	4	45	6	1,5	44,35
813012210	1,2	0,20	4	50	10	1,5	46,50
813012220	1,2	0,20	4	50	20	1,5	48,40
813015200	1,5	0,20	4	50	10	1,8	46,50
813015210	1,5	0,20	4	50	16	1,8	46,50
813015220	1,5	0,20	4	50	20	1,8	48,40
813015230	1,5	0,20	4	60	25	1,8	52,50
813020200	2,0	0,20	4	50	10	2,5	46,50
813020210	2,0	0,20	4	50	16	2,5	48,40
813020220	2,0	0,20	4	60	20	2,5	48,40
813020230	2,0	0,20	4	70	25	2,5	52,50
813020240	2,0	0,20	4	50	30	2,5	56,15
813025200	2,5	0,20	4	50	10	3,0	44,35
813025210	2,5	0,20	4	50	20	3,0	48,40
813030200	3,0	0,30	6	50	10	3,5	45,70
813030210	3,0	0,30	6	60	20	3,5	49,95
813030220	3,0	0,30	6	70	30	3,5	57,10
813030230	3,0	0,30	6	80	40	3,5	69,50
813040200	4,0	0,50	6	60	20	4,5	49,95
813040210	4,0	0,50	6	70	30	4,5	57,10
813040220	4,0	0,50	6	80	40	4,5	69,50
813050200	5,0	0,20	6	60	15	6,0	47,85
813050210	5,0	0,20	6	70	30	6,0	57,10
813050220	5,0	0,20	6	80	40	6,0	69,50
813050230	5,0	0,50	6	60	15	6,0	47,85
813050240	5	0,5	6	70	30	6	57,10

Ref.	d1	r	d2	l1	l2	l3	€
813050250	5	0,5	6	80	40	6	69,50
813060200	6	0,3	6	60	20	7	50,35
813060210	6	0,3	6	90	40	7	66,20
813060220	6	0,5	6	60	20	7	50,35
813060230	6	0,5	6	90	40	7	66,20
813060240	6	1	6	60	20	7	50,35
813060250	6	1	6	90	40	7	66,20
813060260	6	1,5	6	60	20	7	50,35
813060270	6	1,5	6	90	40	7	66,20
813080200	8	0,5	8	100	40	9	83,85
813080210	8	1	8	65	22	9	61,40
813080220	8	1	8	100	40	9	83,85
813080230	8	1,5	8	65	22	9	61,40
813080240	8	1,5	8	100	40	9	83,85
813100200	10	0,5	10	70	24	11	87,90
813100210	10	0,5	10	100	45	11	117,70
813100220	10	1	10	70	24	11	87,90
813100230	10	1	10	100	45	11	117,70
813100240	10	1,5	10	70	24	11	87,90
813100250	10	1,5	10	100	45	11	117,70
813100260	10	2	10	70	24	11	87,90
813100270	10	2	10	100	45	11	117,70
813120200	12	0,5	12	80	26	13	106,30
813120210	12	0,5	12	110	50	13	151,60
813120220	12	1	12	80	26	13	106,30
813120230	12	1	12	110	50	13	151,60
813120240	12	1,5	12	80	26	13	106,30
813120250	12	1,5	12	110	50	13	151,60
813120260	12	2	12	80	26	13	106,30
813120270	12	2	12	110	50	13	151,60
813120280	12	3	12	80	26	13	106,30
813120290	12	3	12	110	50	13	151,60

Fresa metal duro de 2 labios tórica con cuello cónico <65 HRC (0,2µm)

2 Fluted taper neck corner radius end mill <65 HRC (0,2µm)



STEEL <65 HRC

ALU <12% SI

COPPER

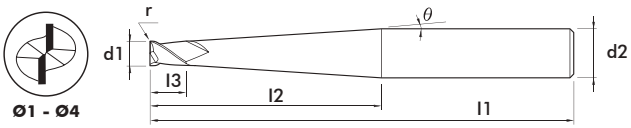
NI ALLOYS

TITAN INCONEL

HG

Fresa de alta calidad tórica de 2 labios con recubrimiento TiSiN. Ofrece una excelente resistencia al desgaste gracias a su recubrimiento PVD con base de Si. Tolerancia de filo de alta precisión. Espectacular rendimiento en el mecanizado a altas velocidades gracias a su grado WC ultrafino (0,2 µm). Indicada para fresado de aceros pre endurecidos y endurecidos (50-65 HRC).

2 Fluted high quality taper neck corner radius end mill with TiSiN coating. Good wear resistance by Si-based PVD coating. High precise edge tolerance. Outstanding performance at high speed machining by ultrafine (0,2 µm) WC grade. End mill for pre-hardened and hardened steel (HRC 50-65).



Ref.	d1	r	d2	l1	l2	l3	θ	z	€
216010200	1,0	0,1	4	50	10	1,0	1	2	50,75
216010210	1,0	0,1	4	60	20	1,0	1	2	57,10
216010220	1,0	0,1	4	70	30	1,0	1	2	63,50
216010230	1,0	0,2	4	50	10	1,0	1	2	50,75
216010240	1,0	0,2	4	60	20	1,0	1	2	57,10
216010250	1,0	0,2	4	70	30	1,0	1	2	63,50
216010260	1,0	0,3	4	50	10	1,0	1	2	50,75
216010270	1,0	0,3	4	60	20	1,0	1	2	57,10
216010280	1,0	0,3	4	70	30	1,0	1	2	63,50
216015200	1,5	0,2	4	50	10	1,5	1	2	50,75
216015210	1,5	0,2	4	60	20	1,5	1	2	57,10
216015220	1,5	0,2	4	70	30	1,5	1	2	63,50
216015230	1,5	0,3	4	50	10	1,5	1	2	50,75
216015240	1,5	0,3	4	60	20	1,5	1	2	57,10
216015250	1,5	0,3	4	70	30	1,5	1	2	63,50
216015260	1,5	0,5	4	50	10	1,5	1	2	50,75
216015270	1,5	0,5	4	60	20	1,5	1	2	57,10
216015280	1,5	0,5	4	70	30	1,5	1	2	63,50
216020200	2,0	0,2	4	60	20	2,0	1	2	57,10
216020210	2,0	0,2	4	70	30	2,0	1	2	63,50
216020220	2,0	0,2	4	80	40	2,0	1	2	71,65
216020230	2,0	0,3	4	60	20	2,0	1	2	57,10
216020240	2,0	0,3	4	70	30	2,0	1	2	63,50
216020250	2,0	0,3	4	80	40	2,0	1	2	71,65
216020260	2,0	0,5	4	60	20	2,0	1	2	57,10
216020270	2,0	0,5	4	70	30	2,0	1	2	63,50
216020280	2,0	0,5	4	80	40	2,0	1	2	71,65
216030200	3,0	0,2	6	70	30	3,0	1	2	73,00
216030210	3,0	0,2	6	80	40	3,0	1	2	78,20
216030220	3,0	0,2	6	90	50	3,0	1	2	91,20

Ref.	d1	r	d2	l1	l2	l3	θ	z	€
216030230	3,0	0,2	6	100	60	3,0	1	2	96,80
216030240	3,0	0,3	6	70	30	3,0	1	2	73,00
216030250	3,0	0,3	6	80	40	3,0	1	2	78,20
216030260	3,0	0,3	6	90	50	3,0	1	2	91,20
216030270	3,0	0,3	6	100	60	3,0	1	2	96,80
216030280	3,0	0,5	6	70	30	3,0	1	2	73,00
216030290	3,0	0,5	6	80	40	3,0	1	2	78,20
216030300	3,0	0,5	6	90	50	3,0	1	2	91,20
216030310	3,0	0,5	6	100	60	3,0	1	2	96,80
216030320	3,0	1,0	6	70	30	3,0	1	2	73,00
216030330	3,0	1,0	6	80	40	3,0	1	2	78,20
216030340	3,0	1,0	6	90	50	3,0	1	2	91,20
216030350	3,0	1,0	6	100	60	3,0	1	2	96,80
216040200	4,0	0,2	6	70	30	4,0	1	2	73,00
216040210	4,0	0,2	6	80	40	4,0	1	2	78,20
216040220	4,0	0,2	6	90	50	4,0	1	2	91,20
216040230	4,0	0,2	6	100	60	4,0	1	2	96,80
216040240	4,0	0,3	6	70	30	4,0	1	2	73,00
216040250	4,0	0,3	6	80	40	4,0	1	2	78,20
216040260	4,0	0,3	6	90	50	4,0	1	2	91,20
216040270	4,0	0,3	6	100	60	4,0	1	2	96,80
216040280	4,0	0,5	6	70	30	4,0	1	2	73,00
216040290	4,0	0,5	6	80	40	4,0	1	2	78,20
216040300	4,0	0,5	6	90	50	4,0	1	2	91,20
216040310	4,0	0,5	6	100	60	4,0	1	2	96,80
216040320	4,0	1,0	6	70	30	4,0	1	2	73,00
216040330	4,0	1,0	6	80	40	4,0	1	2	78,20
216040340	4,0	1,0	6	90	50	4,0	1	2	91,20
216040350	4,0	1,0	6	100	60	4,0	1	2	96,80

Condiciones de corte | Cutting data pag. 159

SAUDA

ACERO

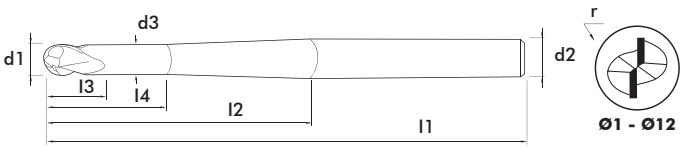
F-217

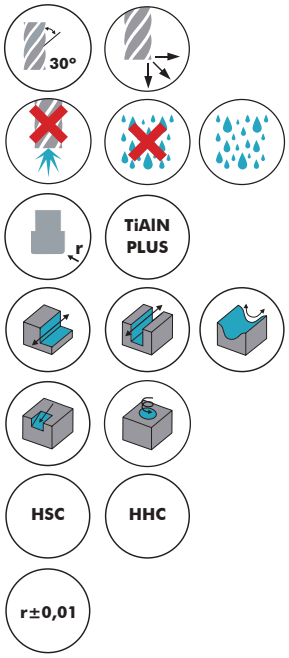
Fresa de metal duro tórica cónica HSC/HCC <65 HRC

High performance HSC/HHC solid carbide conical corner radius end mill <65 HRC

Fresa metal duro con 2 labios tórica, mango reforzado y recubrimiento TiAlN. 30º de hélice. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado a alta velocidad (HSC) y materiales duros (HHC). Para máquinas CNC con 3 y 5 ejes. También podemos trabajar en seco. Para aceros hasta 65 HRC. También válida para materiales no férricos, materiales termo resistentes, aleaciones exóticas y fundiciones. Fresa especialmente diseñada para trabajos 3D.

2 Fluted solid carbide end mill with corner radius and TiAlN coating. 30º Spiral angle. Specially for tool and mould manufacturers. Also for aircraft and turbine construction. The tool, material and coating are specially designed for HSC and HHC. For CNC machines with 3 and 5 axes. Reduces milling time rapidly. Also for dry milling. Universal purpose for normal and high tense materials, for 3D operations.





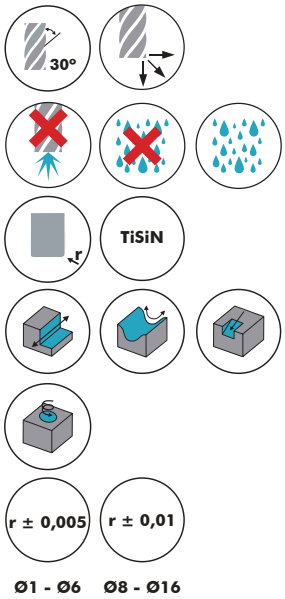
STEEL <65 HRC
INOX
GG
GGG
NI ALLOYS
TITAN INCONEL

Ref.	d1	r	d2	d3	l1	l2	l3	l4	z	€
217010200	1	0,25	6	0,8	100	40	2	6	2	**67,15**
217020200	2	0,30	6	1,8	100	40	2	8	2	**67,15**
217020210	2	0,50	6	1,8	100	40	2	8	2	**67,15**
217030200	3	0,50	6	2,8	100	40	2	12	2	**67,15**
217040200	4	0,50	6	3,8	100	40	3	16	2	**67,15**
217040210	4	1,00	6	3,8	100	40	3	16	2	**67,15**
217050200	5	0,50	6	4,8	100	40	4	20	2	**67,15**
217060200	6	1,00	8	4,8	100	50	4	25	2	**86,40**
217060210	6	2,00	8	5,8	100	50	4	25	2	**86,40**
217080200	8	1,00	10	7,8	120	60	4	32	2	**112,50**
217080210	8	2,00	10	0,8	120	60	4	32	2	**112,50**
217100200	10	1,50	12	1,8	160	80	6	40	2	**161,70**
217100210	10	3,00	12	1,8	160	80	6	40	2	**161,70**
217120200	12	1,50	16	2,8	200	100	8	50	2	**199,85**
217120210	12	4,00	16	3,8	200	100	8	50	2	**199,85**

Condiciones de corte | Cutting data pag. 157

Fresa metal duro tórica 4 labios < 50 HRC

4 Fluted corner radius solid carbide end mill < 50 HRC

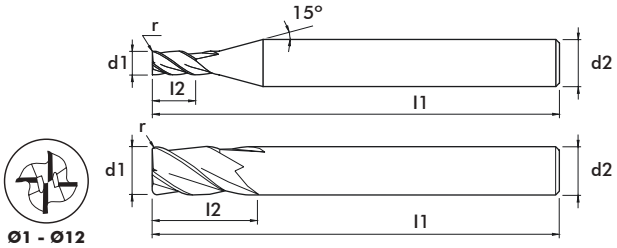


STEEL <50 HRC

INOX

Fresa metal duro de 4 labios tórica con recubrimiento TiSiN para acero hasta 50 HRC.

4 Fluted solid carbide end mill with corner radius and TiSiN coating for steel up to 50 HRC.



Ref.	d1	r	d2	l1	l2	z	€
410010200	1,0	0,05	4	45	2,5	4	39,90
410010210	1,0	0,10	4	45	2,5	4	39,90
410010220	1,0	0,20	4	45	2,5	4	39,90
410010230	1,0	0,30	4	45	2,5	4	39,90
410015200	1,5	0,05	4	45	4,0	4	39,90
410015210	1,5	0,10	4	45	4,0	4	39,90
410015220	1,5	0,20	4	45	4,0	4	39,90
410015230	1,5	0,30	4	45	4,0	4	39,90
410015240	1,5	0,50	4	45	4,0	4	39,90
410020200	2,0	0,05	4	45	6,0	4	39,90
410020210	2,0	0,10	4	45	6,0	4	39,90
410020220	2,0	0,20	4	45	6,0	4	39,90
410020230	2,0	0,30	4	45	6,0	4	39,90
410020240	2,0	0,50	4	45	6,0	4	39,90
410025200	2,5	0,10	4	50	6,0	4	43,80
410025210	2,5	0,20	4	50	6,0	4	43,80
410025220	2,5	0,30	4	50	6,0	4	43,80
410025230	2,5	0,50	4	50	6,0	4	43,80
410030200	3,0	0,10	6	60	8,0	4	52,30
410030210	3,0	0,20	6	60	8,0	4	52,30
410030220	3,0	0,30	6	60	8,0	4	52,30
410030230	3,0	0,50	6	60	8,0	4	52,30
410030240	3,0	1,00	6	60	8,0	4	52,30
410040200	4,0	0,10	4	60	9,0	4	47,85
410040210	4,0	0,10	4	80	9,0	4	49,60
410040220	4,0	0,10	6	70	10,0	4	52,30
410040230	4,0	0,20	4	60	9,0	4	47,85
410040240	4,0	0,20	4	80	9,0	4	49,60
410040250	4,0	0,20	6	70	10,0	4	52,30
410040260	4,0	0,30	4	60	9,0	4	47,85

Ref.	d1	r	d2	l1	l2	z	€
410040270	4	0,3	4	80	9	4	49,60
410040280	4	0,3	6	70	10	4	52,30
410040290	4	0,5	4	60	9	4	47,85
410040300	4	0,5	4	80	9	4	49,60
410040310	4	0,5	6	70	10	4	52,30
410040320	4	1,0	4	60	9	4	47,85
410040330	4	1,0	4	80	9	4	49,60
410040340	4	1,0	6	70	10	4	52,30
410050200	5	0,1	6	75	13	4	55,20
410050210	5	0,2	6	75	13	4	55,20
410050220	5	0,3	6	75	13	4	55,20
410050230	5	0,5	6	75	13	4	55,20
410050240	5	1,0	6	75	13	4	55,20
410060200	6	0,1	6	60	11	4	51,90
410060210	6	0,1	6	80	13	4	57,70
410060220	6	0,2	6	60	11	4	51,90
410060230	6	0,2	6	80	13	4	57,70
410060240	6	0,3	6	60	11	4	51,90
410060250	6	0,3	6	80	13	4	57,70
410060260	6	0,5	6	60	11	4	51,90
410060270	6	0,5	6	80	13	4	57,70
410060280	6	1,0	6	60	11	4	51,90
410060290	6	1,0	6	80	13	4	57,70
410060300	6	1,5	6	60	11	4	51,90
410060310	6	1,5	6	80	13	4	57,70
410060320	6	2,0	6	60	11	4	51,90
410060330	6	2,0	6	80	13	4	57,70
410080200	8	0,1	8	70	16	4	75,70
410080210	8	0,1	8	90	19	4	84,40
410080220	8	0,2	8	70	16	4	75,70

Condiciones de corte | Cutting data pag. 159

SAUDA

F-410

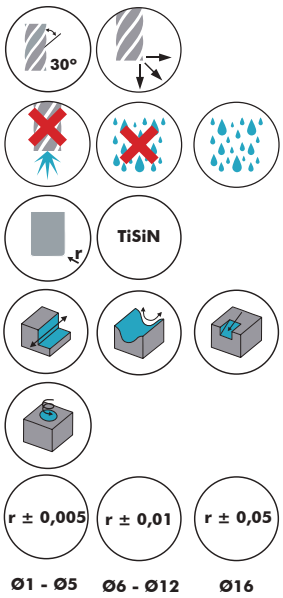
Ref.	d1	r	d2	l1	l2	z	€
410080230	8	0,2	8	90	19	4	**84,40**
410080240	8	0,3	8	70	16	4	**75,70**
410080250	8	0,3	8	90	19	4	**84,40**
410080260	8	0,5	8	70	16	4	**75,70**
410080270	8	0,5	8	90	19	4	**84,40**
410080280	8	0,5	8	110	19	4	**101,30**
410080290	8	1,0	8	70	16	4	**75,70**
410080300	8	1,0	8	90	19	4	**84,40**
410080310	8	1,0	8	110	19	4	**101,30**
410080320	8	1,5	8	70	16	4	**75,70**
410080330	8	1,5	8	90	19	4	**84,40**
410080340	8	1,5	8	110	19	4	**101,30**
410080350	8	2,0	8	70	16	4	**75,70**
410080360	8	2,0	8	90	19	4	**84,40**
410080370	8	2,0	8	110	19	4	**101,30**
410080380	8	2,5	8	90	19	4	**92,75**
410100200	10	0,1	10	75	19	4	**109,20**
410100210	10	0,1	10	100	22	4	**121,20**
410100220	10	0,2	10	75	19	4	**109,20**
410100230	10	0,2	10	100	22	4	**121,20**
410100240	10	0,3	10	75	19	4	**109,20**
410100250	10	0,3	10	100	22	4	**121,20**
410100260	10	0,5	10	75	19	4	**109,20**
410100270	10	0,5	10	100	22	4	**121,20**
410100280	10	0,5	10	120	22	4	**145,60**
410100290	10	1,0	10	75	19	4	**109,20**
410100300	10	1,0	10	100	22	4	**121,20**
410100310	10	1,0	10	120	22	4	**145,60**
410100320	10	1,5	10	75	19	4	**109,20**
410100330	10	1,5	10	100	22	4	**121,20**
410100340	10	1,5	10	120	22	4	**145,60**
410100350	10	2,0	10	75	19	4	**109,20**
410100360	10	2,0	10	100	22	4	**121,20**

Ref.	d1	r	d2	l1	l2	z	€
410100370	10	2,0	10	120	22	4	**145,60**
410100380	10	2,5	10	75	19	4	**109,20**
410100390	10	2,5	10	100	22	4	**121,20**
410100400	10	2,5	10	120	22	4	**145,60**
410120200	12	3,0	12	100	22	4	**133,20**
410120210	12	0,2	12	80	22	4	**132,25**
410120220	12	0,2	12	110	26	4	**146,95**
410120230	12	0,3	12	80	22	4	**132,25**
410120240	12	0,3	12	110	26	4	**146,95**
410120250	12	0,5	12	80	22	4	**132,25**
410120260	12	0,5	12	110	26	4	**146,95**
410120270	12	0,5	12	130	26	4	**176,40**
410120280	12	1,0	12	80	22	4	**132,25**
410120290	12	1,0	12	110	26	4	**146,95**
410120300	12	1,0	12	130	26	4	**176,40**
410120310	12	1,5	12	80	22	4	**132,25**
410120320	12	1,5	12	110	26	4	**146,95**
410120330	12	1,5	12	130	26	4	**176,40**
410120340	12	2,0	12	80	22	4	**132,25**
410120350	12	2,0	12	110	26	4	**146,95**
410120360	12	2,0	12	130	26	4	**176,40**
410120370	12	2,5	12	80	22	4	**132,25**
410120380	12	2,5	12	110	26	4	**146,95**
410120390	12	2,5	12	130	26	4	**176,40**
410120400	12	3,0	12	80	22	4	**132,25**
410120410	12	3,0	12	110	26	4	**146,95**
410120420	12	3,0	12	130	26	4	**176,40**
410120430	12	3,5	12	110	26	4	**161,50**
410120440	12	4,0	12	110	26	4	**161,50**
410160200	16	0,5	16	110	32	4	**287,90**
410160210	16	0,5	16	160	32	4	**403,10**
410160220	16	1,0	16	110	32	4	**287,90**
410160230	16	1,0	16	160	32	4	**403,10**

Condiciones de corte | Cutting data pag. 159

Fresa metal duro tórica 4 labios < 60 HRC

4 Fluted corner radius solid carbide end mill < 60 HRC



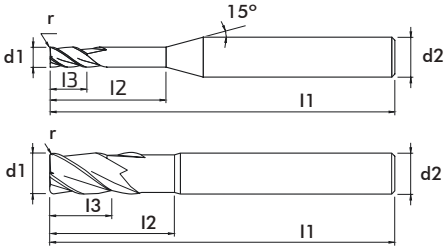
STEEL <60 HRC

INOX

Fresa metal duro de 4 labios tórica con recubrimiento TiSiN para acero hasta 60 HRC. Diseñada para trabajar a baja velocidad de corte y alto avance. Es adecuada para aplicaciones de mecanizado pesado y desbaste. Tiene gran resistencia al desgaste gracias a su grado WC ultrafino.

4 Fluted solid carbide end mill with corner radius and TiSiN coating for steel up to 60 HRC. Designed for low speed with high feed condition. Suitable for heavy duty and roughing application. Minimize fracturing at high feed by high TRS ultra fine WC grade.

Ø1 - Ø16



Ref.	d1	r	d2	l1	l2	l3	z	€
411010200	1,0	0,2	4	50	2,5	1,0	4	**45,90**
411015200	1,5	0,5	4	50	4,0	1,5	4	**45,90**
411020200	2,0	0,5	6	50	6,0	2,0	4	**53,25**
411030200	3,0	0,5	6	50	8,0	3,0	4	**53,25**
411040200	4,0	0,5	6	60	12,0	4,0	4	**53,25**
411040210	4,0	0,5	6	60	16,0	4,0	4	**53,25**
411040220	4,0	1,0	6	60	12,0	4,0	4	**53,25**
411040230	4,0	1,0	6	60	16,0	4,0	4	**53,25**
411050200	5,0	0,5	6	60	15,0	5,0	4	**53,25**
411050210	5,0	1,0	6	60	15,0	5,0	4	**53,25**
411060200	6,0	0,3	6	60	15,0	6,0	4	**53,25**
411060210	6,0	0,5	6	60	15,0	6,0	4	**53,25**
411060220	6,0	1,0	6	60	15,0	6,0	4	**53,25**
411060230	6,0	1,5	6	60	15,0	6,0	4	**53,25**
411080200	8,0	0,3	8	60	16,0	8,0	4	**83,45**
411080210	8,0	0,5	8	60	16,0	8,0	4	**83,45**
411080220	8,0	0,5	8	80	20,0	8,0	4	**94,30**
411080230	8,0	0,5	8	110	30,0	8,0	4	**120,60**
411080240	8,0	1,0	8	60	16,0	8,0	4	**83,45**
411080250	8,0	1,0	8	80	20,0	8,0	4	**94,30**
411080260	8,0	1,0	8	110	30,0	8,0	4	**120,60**
411080270	8,0	2,0	8	60	16,0	8,0	4	**83,45**
411080280	8,0	2,0	8	80	20,0	8,0	4	**94,30**
411080290	8,0	2,0	8	110	30,0	8,0	4	**120,60**

Ref.	d1	r	d2	l1	l2	l3	z	€
411100200	10,0	0,3	10	70	20	10	20	**114,05**
411100210	10,0	0,5	10	70	20	10	20	**114,05**
411100220	10,0	0,5	10	90	25	10	25	**127,20**
411100230	10,0	0,5	10	120	30	10	30	**160,10**
411100240	10,0	1,0	10	70	20	10	20	**114,05**
411100250	10,0	1,0	10	90	25	10	25	**127,20**
411100260	10,0	1,0	10	120	30	10	30	**160,10**
411100270	10,0	2,0	10	70	20	10	20	**114,05**
411100280	10,0	2,0	10	90	25	10	25	**127,20**
411100290	10,0	2,0	10	120	30	10	30	**160,10**
411120200	12,0	0,5	12	80	25	12	25	**135,90**
411120210	12,0	0,5	12	100	30	12	30	**158,00**
411120220	12,0	0,5	12	130	35	12	35	**188,60**
411120230	12,0	1,0	12	80	25	12	25	**135,90**
411120240	12,0	1,0	12	100	30	12	30	**158,00**
411120250	12,0	1,0	12	130	35	12	35	**188,60**
411120260	12,0	2,0	12	80	25	12	25	**135,90**
411120270	12,0	2,0	12	100	30	12	30	**158,00**
411120280	12,0	2,0	12	130	35	12	35	**188,60**
411120290	12,0	3,0	12	80	25	12	25	**135,90**
411160200	16,0	1,0	16	110	30	16	30	**299,50**
411160210	16,0	1,0	16	160	40	16	40	**426,50**
411160220	16,0	2,0	16	110	30	16	30	**299,50**
411160230	16,0	2,0	16	160	40	16	40	**426,50**

Condiciones de corte | Cutting data pag. 160

SAUDA

ACERO

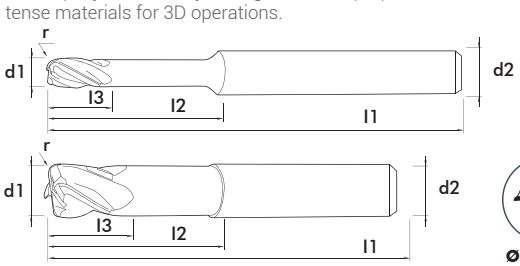
F-412

Fresa metal duro tórica 4 labios HSC-HHC <65 HRC

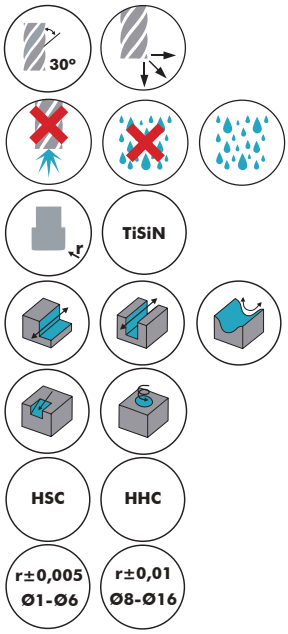
Corner radius HSC-HHC solid carbide end mill <65 HRC

Fresa metal duro de 4 labios tórica y recubrimiento TiSiN. 30º de hélice. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado a alta velocidad (HSC) y materiales duros (HHC). Para máquinas CNC con 3 y 5 ejes. También podemos trabajar en seco. Para aceros hasta 65 HRC. También válida para materiales no férricos, materiales termo resistentes, aleaciones exóticas y fundiciones. Fresa especialmente diseñada para trabajos 3D.

4 Fluted solid carbide end mill with corner radius and TiSiN coating. 30º Spiral angle. Specially for tool maker, mould maker. Also for aircraft / turbine construction. The tool, material and coating are specially designed for HSC and HHC. For CNC machines with 3 and 5 axes. Reduces milling time rapidly. Also for dry milling. Universal purpose for normal and high tense materials for 3D operations.



Ø1 - Ø16



STEEL <65 HRC

INOX

GG

GGG

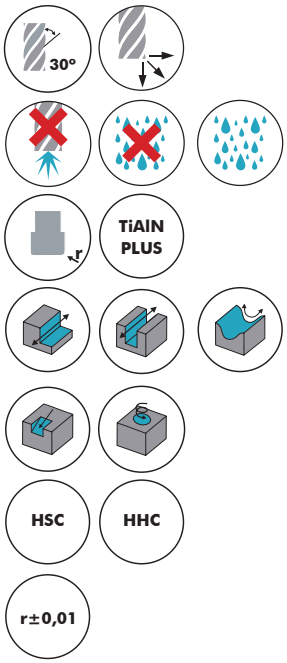
Condiciones de corte | Cutting data pag. 160

Ref.	d1	r	d2	l1	l2	l3	z	€
412010200	1,0	0,2	4	50	10	1	4	47,05
412010210	1,0	0,2	4	50	20	1	4	48,80
412012200	1,2	0,2	4	50	10	1,2	4	47,05
412012210	1,2	0,2	4	50	20	1,2	4	48,80
412015200	1,5	0,2	4	50	10	1,5	4	47,05
412015210	1,5	0,2	4	50	20	1,5	4	48,80
412020200	2,0	0,2	4	50	10	2	4	47,05
412020210	2,0	0,2	4	50	20	2	4	47,05
412025200	2,5	0,2	4	50	10	2,5	4	47,05
412025210	2,5	0,2	4	50	20	2,5	4	47,05
412030200	3,0	0,3	6	50	10	3	4	45,90
412030210	3,0	0,3	6	60	20	3	4	50,15
412030220	3,0	0,3	6	70	30	3	4	57,30
412030230	3,0	0,3	6	80	40	3	4	67,00
412040200	4,0	0,5	6	60	20	4	4	50,55
412040205	4,0	0,5	6	70	30	4	4	57,90
412040210	4,0	0,5	6	80	40	4	4	67,60
412040220	4,0	1,0	6	60	20	4	4	50,55
412040230	4,0	1,0	6	70	30	4	4	57,90
412040240	4,0	1,0	6	80	40	4	4	67,60
412050200	5,0	0,2	6	60	16	5	4	50,55
412050210	5,0	0,2	6	70	30	5	4	57,90
412050220	5,0	0,2	6	80	40	5	4	67,60
412050230	5,0	0,5	6	60	16	5	4	50,55
412050240	5,0	0,5	6	70	30	5	4	57,90
412050250	5,0	0,5	6	80	40	5	4	67,60
412060200	6,0	0,3	6	60	20	7	4	50,55
412060205	6,0	0,3	6	80	40	7	4	67,60
412060206	6,0	0,3	6	100	50	7	4	83,45
412060210	6,0	0,5	6	60	20	7	4	50,55
412060215	6,0	0,5	6	80	40	7	4	67,60
412060216	6,0	0,5	6	100	50	7	4	83,45
412060220	6,0	1,0	6	60	20	7	4	50,55
412060225	6,0	1,0	6	80	40	7	4	67,60

Ref.	d1	r	d2	l1	l2	l3	z	€
412060226	6,0	1,0	6	100	50	7	4	83,45
412060230	6,0	1,5	6	60	20	7	4	50,55
412060235	6,0	1,5	6	80	40	7	4	67,60
412060236	6,0	1,5	6	100	50	7	4	83,45
412060240	6,0	1,6	6	60	20	8	4	67,60
412060250	6,0	2,0	6	60	20	8	4	67,60
412080200	8,0	0,5	8	65	22	9	4	76,30
412080205	8,0	0,5	8	100	40	9	4	98,35
412080210	8,0	1,0	8	65	22	9	4	76,30
412080215	8,0	1,0	8	100	40	9	4	98,35
412080220	8,0	1,5	8	65	22	9	4	76,30
412080225	8,0	1,5	8	100	40	9	4	98,35
412080230	8,0	2,0	8	65	22	9	4	76,30
412100200	10,0	0,5	10	70	24	11	4	106,50
412100205	10,0	0,5	10	100	40	11	4	137,10
412100210	10,0	1,0	10	70	24	11	4	106,50
412100215	10,0	1,0	10	100	40	11	4	137,10
412100220	10,0	1,5	10	70	24	11	4	106,50
412100225	10,0	1,5	10	100	40	11	4	137,10
412100230	10,0	2,0	10	70	24	11	4	106,50
412100235	10,0	2,5	10	70	24	11	4	106,50
412120200	12,0	0,5	12	80	26	13	4	130,70
412120205	12,0	0,5	12	110	40	13	4	165,55
412120210	12,0	1,0	12	80	26	13	4	130,70
412120215	12,0	1,0	12	110	40	13	4	165,55
412120220	12,0	1,5	12	80	26	13	4	130,70
412120225	12,0	1,5	12	110	40	13	4	165,55
412120230	12,0	2,0	12	80	26	13	4	130,70
412120235	12,0	3,0	12	80	26	13	4	130,70
412160200	16,0	0,5	16	92	44	16	4	156,50
412160210	16,0	1,0	16	92	44	16	4	156,50
412160220	16,0	1,5	16	92	44	16	4	156,50
412160230	16,0	2,0	16	92	44	16	4	156,50
412160240	16,0	3,0	16	92	44	16	4	156,50

Fresa de metal duro tórica larga para acabado HSC/HCC <65 HRC

Long HSC-HHC solic carbide corner radius end mill <65 HRC



STEEL <65 HRC

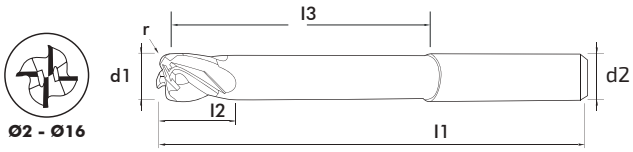
INOX

GG

GGG

Fresa metal duro con 4 labios larga tórica y recubrimiento TiAlN. 30º de hélice. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado a alta velocidad (HSC) y materiales duros (HHC). Para máquinas CNC con 3 y 5 ejes. También podemos trabajar en seco. Para aceros hasta 65 HRC. También válida para materiales no férricos, materiales termo resistentes, aleaciones exóticas y fundiciones. Fresa especialmente diseñada para trabajos 3D.

4 Fluted solid carbide long end mill with corner radius and TiAlN coating. 30º Spiral angle. Specially for tool maker and mould maker. Also for aircraft / turbine construction. The tool, material and coating are specially designed for HSC and HHC. For CNC machines with 3 and 5 axes. Reduces milling time rapidly. Also for dry milling. Universal purpose for normal and high tense materials for 3D operations.



Ref.	d1	r	d2	l1	l2	l3	z	€
413020200	2	0,2	6	80	2	10	4	**39,45**
413020210	2	0,2	6	80	10	10	4	**43,50**
413020220	2	0,5	6	80	2	10	4	**39,45**
413020230	2	0,5	6	80	10	10	4	**43,50**
413030200	3	0,2	6	80	3	15	4	**39,45**
413030210	3	0,2	6	80	15	15	4	**43,50**
413030220	3	0,5	6	80	3	15	4	**29,00**
413030230	3	0,5	6	80	15	15	4	**43,50**
413040200	4	0,2	6	80	4	20	4	**39,45**
413040210	4	0,2	6	80	20	20	4	**43,50**
413040220	4	0,5	6	80	4	20	4	**39,45**
413040230	4	0,5	6	80	20	20	4	**43,50**
413040240	4	1,0	6	80	4	20	4	**39,45**
413040250	4	1,0	6	80	20	20	4	**43,50**
413050200	5	0,2	6	80	7	25	4	**39,45**
413050210	5	0,2	6	80	25	25	4	**43,50**
413050220	5	0,5	6	80	7	25	4	**29,00**
413050230	5	0,5	6	80	25	25	4	**43,50**
413050240	5	1,0	6	80	7	25	4	**39,45**
413050250	5	1,0	6	80	25	25	4	**43,50**
413060150	6	0,2	6	80	13	13	4	**39,45**
413060160	6	0,2	6	80	25	25	4	**43,50**
413060200	6	0,5	6	80	13	44	4	**39,45**
413060205	6	0,5	6	80	25	25	4	**43,50**
413060210	6	1,0	6	80	13	44	4	**39,45**
413060215	6	1,0	6	80	25	25	4	**43,50**
413060220	6	1,5	6	80	13	44	4	**39,45**
413060230	6	2,0	6	80	13	44	4	**39,45**

Ref.	d1	r	d2	l1	l2	l3	z	€
413060240	6	2,0	6	80	25	25	4	**43,50**
413080150	8	0,5	8	90	19	54	4	**54,10**
413080160	8	0,5	8	90	35	35	4	**61,25**
413080200	8	1,0	8	90	19	54	4	**54,10**
413080205	8	1,0	8	90	35	35	4	**61,25**
413080210	8	1,5	8	90	19	54	4	**54,10**
413080220	8	2,0	8	90	19	54	4	**54,10**
413080230	8	2,0	8	90	35	35	4	**61,25**
413100150	10	0,5	10	100	22	22	4	**75,55**
413100160	10	0,5	10	100	45	45	4	**83,80**
413100200	10	1,0	10	100	22	60	4	**75,55**
413100205	10	1,0	10	100	45	45	4	**83,80**
413100210	10	1,5	10	100	22	60	4	**75,55**
413100220	10	2,0	10	100	22	60	4	**75,53**
413100230	10	2,0	10	100	45	45	4	**83,80**
413100240	10	3,0	10	100	22	22	4	**75,55**
413100250	10	3,0	10	100	45	45	4	**83,80**
413120150	12	0,5	12	100	26	26	4	**106,20**
413120160	12	0,5	12	100	50	50	4	**116,25**
413120200	12	1,0	12	100	26	75	4	**106,20**
413120205	12	1,0	12	100	50	50	4	**116,25**
413120210	12	2,0	12	100	26	75	4	**106,20**
413120220	12	2,0	12	100	26	75	4	**106,20**
413120230	12	2,0	12	100	50	50	4	**116,25**
413120240	12	3,0	12	100	26	26	4	**106,20**
413120250	12	3,0	12	100	50	50	4	**116,25**
413160200	16	2,0	16	150	75	92	4	**299,20**

Condiciones de corte | Cutting data pag. 160

SAUDA

ACERO

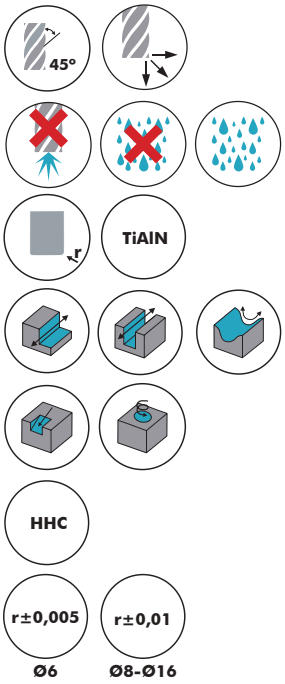
F-620

Fresa metal duro tórica 6 labios larga <50 HRC (0,2µm)

6 Fluted solid carbide corner radius long end mill <50 HRC (0,2µm)

Fresa de metal duro tórica de 6 labios larga con recubrimiento TiSiN para aceros preendurecidos y endurecidos hasta 50HRC. Ofrece una excelente resistencia al desgaste gracias a su recubrimiento PVD con base de Si. La hélice de 45º está diseñada para optimizar las condiciones de corte. Mejora la resistencia al desgaste gracias a un filo más largo y a la alta calidad superficial. Espectacular rendimiento en el mecanizado a altas velocidades gracias a su grado WC ultrafino (0,2 µm).

6 Fluted solid carbide corner radius long end mill with TiSiN coating for pre-hardened and hardened steel (HRC 50). Good wear resistance by Si-based PVD coating. 45º helix design for high speed and feed condition. Improved wear resistance with longer edge and excellent work surface finish. Outstanding performance at high speed machining by ultrafine (0,2 µm) WC grade.

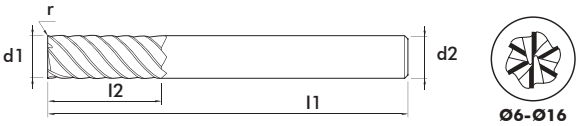


STEEL <55 HRC

GG

GGG

UNI

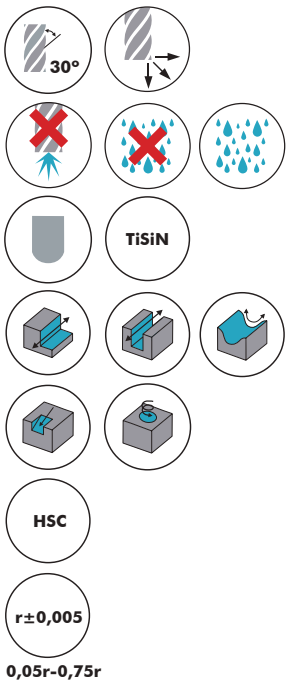


Ref.	d1	r	d2	l1	l2	€
620060200	6	0,3	6	60	15	67,20
620060210	6	0,3	6	80	15	76,50
620060220	6	0,5	6	60	15	67,20
620060230	6	0,5	6	80	15	76,50
620060240	6	1,0	6	60	15	67,20
620060250	6	1,0	6	80	15	76,50
620080200	8	0,5	8	70	20	98,75
620080210	8	0,5	8	90	20	108,60
620080220	8	1,0	8	70	20	98,75
620080230	8	1,0	8	90	20	108,60
620100200	10	0,5	10	75	25	130,70
620100210	10	0,5	10	100	25	146,60
620100220	10	1,0	10	75	25	130,70
620100230	10	1,0	10	100	25	146,60
620120200	12	0,5	12	80	30	153,55
620120210	12	0,5	12	110	30	175,00
620120220	12	1,0	12	80	30	153,55
620120230	12	1,0	12	110	30	175,00
620160200	16	0,5	16	110	50	333,00
620160210	16	1,0	16	110	50	333,00

Condiciones de corte | Cutting data pag. 161

Micro-fresa metal duro punta esférica 2 labios HSC <55 HRC (0,2µm)

2 Fluted HSC solid carbide ball nose micro end mill <55 HRC (0,2µm)



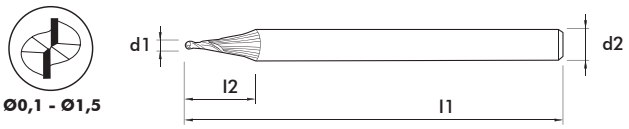
STEEL <55 HRC

INOX

GG

Micro-fresa esférica de metal duro de 2 labios con recubrimiento TiSiN. Ángulo espiral de 30º. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta de bola especial para contornos 3D. La herramienta, material y recubrimiento están especialmente diseñados para mecanizado HSC de materiales hasta 55 HRC, también para uso general.

2 Fluted solid carbide micro ball nose end mill with TiSiN coating and 30º spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Ball nose end mill for 3D milling in deep contour pocketing operations: The tool, material and coating are specially designed for high speed cutting HSC.



Ref.	d1	d2	l1	l2	z	€
921001200	0,1	4	0,2	40	2	**97,00**
921002200	0,2	4	0,4	40	2	**59,65**
921003200	0,3	4	0,6	40	2	**53,45**
921004200	0,4	4	0,8	40	2	**51,30**
921005200	0,5	4	1,0	45	2	**46,90**
921006200	0,6	4	1,2	45	2	**42,40**
921007200	0,7	4	1,5	45	2	**42,40**
921008200	0,8	4	2,0	45	2	**38,75**
921009200	0,9	4	2,0	45	2	**38,75**
921010200	1,0	4	2,5	50	2	**36,80**
921012200	1,2	4	3,0	50	2	**36,80**
921015200	1,5	4	4,0	50	2	**36,80**

Condiciones de corte | Cutting data pag. 161

SAUDA

ACERO

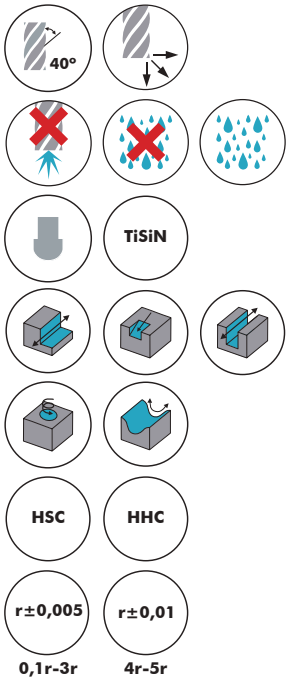
F-823

Fresa metal duro punta esférica larga 2 labios HSC/HHC <65 HRC (0,2µm)

2 Fluted long HSC/HHC solid carbide ball nose end mill <65 HRC (0,2µm)

Fresa de bola metal duro de cuello largo rebajado de 2 labios con recubrimiento TiSiN. Ángulo espiral de 30º. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado HSC (High Speed Cutting) + HHC (High Hard Cutting) < 65 HRC. También podemos utilizar esta herramienta para aceros y materiales no férricos. El diámetro posterior al corte es menor que el diámetro de punta para evitar el desvío de la herramienta. Herramienta de bola especial para contornos 3D.

2 Fluted solid carbide long ball nose end mill with TiSiN coating. 30º Spiral angle. The tool, material and coating are specially designed for dry high speed cutting HSC and high hard cutting HHC < 65 HRC. Large core diameter for minimum deflection. With corner radius for minimize the wear out. Ball nose end mill for 3D milling in deep contour pocketing operations.

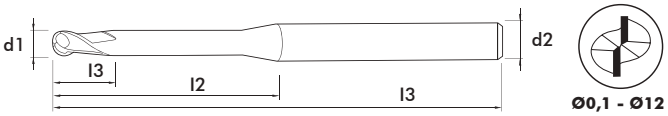


STEEL <65 HRC

INOX

GG

GGG



Ref.	d1	d2	l1	l2	l3	z	€
823001200	0,1	4	40	-	0,3	2	102,40
823001210	0,1	4	40	-	0,5	2	102,40
823002210	0,2	4	40	0,5	0,2	2	64,70
823002220	0,2	4	40	1,0	0,2	2	64,70
823002230	0,2	4	40	1,5	0,2	2	64,70
823002200	0,2	4	40	2,0	0,2	2	64,70
823003210	0,3	4	40	1,0	0,3	2	60,80
823003220	0,3	4	40	1,5	0,3	2	60,80
823003230	0,3	4	40	2,0	0,3	2	60,80
823003240	0,3	4	40	3,0	0,3	2	60,80
823003200	0,3	4	40	4,0	0,3	2	71,25
823003250	0,3	4	40	5,0	0,3	2	71,25
823004210	0,4	4	40	1,0	0,4	2	58,50
823004220	0,4	4	40	2,0	0,4	2	58,50
823004230	0,4	4	40	3,0	0,4	2	58,50
823004200	0,4	4	40	4,0	0,4	2	58,50
823004240	0,4	4	40	5,0	0,4	2	58,50
823004250	0,4	4	40	6,0	0,4	2	58,50
823004260	0,4	4	40	8,0	0,4	2	58,50
823004270	0,4	4	40	10,0	0,4	2	68,15
823005220	0,5	4	45	1,0	0,5	2	53,45
823005230	0,5	4	45	2,0	0,5	2	53,45
823005240	0,5	4	45	3,0	0,5	2	53,45
823005200	0,5	4	45	4,0	0,5	2	53,45
823005250	0,5	4	45	5,0	0,5	2	55,00
823005260	0,5	4	45	6,0	0,5	2	55,00
823005210	0,5	4	45	8,0	0,5	2	55,00
823005270	0,5	4	45	10,0	0,5	2	55,00
823005280	0,5	4	45	12,0	0,5	2	65,05
823005290	0,5	4	45	14,0	0,5	2	65,05

Ref.	d1	d2	l1	l2	l3	z	€
823006260	0,6	4	45	1	0,6	2	50,15
823006220	0,6	4	45	2	0,6	2	50,15
823006230	0,6	4	45	3	0,6	2	50,15
823006200	0,6	4	45	4	0,6	2	50,15
823006240	0,6	4	45	5	0,6	2	50,15
823006250	0,6	4	45	6	0,6	2	50,15
823006210	0,6	4	45	8	0,6	2	51,70
823006270	0,6	4	45	10	0,6	2	51,70
823006280	0,6	4	45	12	0,6	2	51,70
823006290	0,6	4	45	14	0,6	2	61,60
823006300	0,6	4	45	16	0,6	2	61,60
823007210	0,7	4	45	2	0,7	2	51,70
823007220	0,7	4	45	4	0,7	2	51,70
823007200	0,7	4	45	8	0,7	2	51,70
823007230	0,7	4	45	10	0,7	2	61,60
823007240	0,7	4	45	12	0,7	2	61,60
823008240	0,8	4	45	2	0,8	2	46,90
823008250	0,8	4	45	4	0,8	2	46,90
823008200	0,8	4	45	6	0,8	2	46,90
823008210	0,8	4	45	8	0,8	2	46,90
823008260	0,8	4	45	10	0,8	2	46,90
823008220	0,8	4	45	12	0,8	2	46,90
823008270	0,8	4	45	14	0,8	2	56,95
823008230	0,8	4	45	16	0,8	2	56,95
823009200	0,9	4	45	4	0,9	2	46,90
823010260	1,0	4	50	2	1,0	2	41,65
823010270	1,0	6	50	2	1,0	2	49,20
823010280	1,0	4	50	3	1,0	2	41,65
823010290	1,0	6	50	3	1,0	2	49,20
823010300	1,0	4	50	4	1,0	2	41,65

Ref.	d1	d2	l1	l2	l3	z	€
823010310	1,0	6	50	4	1,0	2	**49,20**
823010320	1,0	4	50	5	1,0	2	**41,65**
823010330	1,0	6	50	5	1,0	2	**49,20**
823010200	1,0	4	50	6	1,0	2	**41,65**
823010340	1,0	6	50	6	1,0	2	**49,20**
823010210	1,0	4	50	8	1,0	2	**41,65**
823010350	1,0	6	50	8	1,0	2	**49,20**
823010220	1,0	4	50	10	1,0	2	**43,40**
823010360	1,0	6	50	10	1,0	2	**49,20**
823010230	1,0	4	50	12	1,0	2	**43,40**
823010370	1,0	6	50	12	1,0	2	**49,20**
823010380	1,0	4	50	14	1,0	2	**43,40**
823010390	1,0	6	50	14	1,0	2	**49,20**
823010240	1,0	4	50	16	1,0	2	**43,40**
823010400	1,0	6	60	16	1,0	2	**51,70**
823010410	1,0	4	50	18	1,0	2	**43,40**
823010420	1,0	6	60	18	1,0	2	**51,70**
823010250	1,0	4	50	20	1,0	2	**43,40**
823010430	1,0	6	60	20	1,0	2	**51,70**
823010440	1,0	4	60	22	1,0	2	**47,85**
823010450	1,0	6	65	22	1,0	2	**55,00**
823010460	1,0	4	60	25	1,0	2	**57,30**
823012240	1,2	4	45	4	1,2	2	**43,40**
823012250	1,2	6	50	4	1,2	2	**49,20**
823012260	1,2	4	45	6	1,2	2	**43,40**
823012270	1,2	6	50	6	1,2	2	**49,20**
823012200	1,2	4	45	8	1,2	2	**43,40**
823012280	1,2	6	50	8	1,2	2	**49,20**
823012290	1,2	4	50	10	1,2	2	**43,40**
823012300	1,2	6	50	10	1,2	2	**49,20**
823012210	1,2	4	50	12	1,2	2	**43,40**
823012310	1,2	6	50	12	1,2	2	**49,20**
823012220	1,2	4	50	16	1,2	2	**43,40**
823012320	1,2	6	60	16	1,2	2	**51,70**
823012230	1,2	4	50	20	1,2	2	**43,40**
823012330	1,2	6	60	20	1,2	2	**51,70**
823012340	1,2	4	60	24	1,2	2	**47,85**
823012350	1,2	6	65	24	1,2	2	**55,00**
823014210	1,4	4	45	6	1,4	2	**43,40**

Ref.	d1	d2	l1	l2	l3	z	€
823014220	1,4	4	45	8	1,4	2	**43,40**
823014200	1,4	4	50	12	1,4	2	**43,40**
823014230	1,4	4	50	16	1,4	2	**43,40**
823015260	1,5	4	45	3	1,5	2	**41,65**
823015270	1,5	6	50	3	1,5	2	**49,20**
823015280	1,5	4	45	4	1,5	2	**41,65**
823015290	1,5	6	50	4	1,5	2	**49,20**
823015300	1,5	4	45	6	1,5	2	**41,65**
823015310	1,5	6	50	6	1,5	2	**49,20**
823015200	1,5	4	45	8	1,5	2	**41,65**
823015320	1,5	6	50	8	1,5	2	**49,20**
823015330	1,5	4	50	10	1,5	2	**43,40**
823015340	1,5	6	50	10	1,5	2	**49,20**
823015210	1,5	4	50	12	1,5	2	**43,40**
823015350	1,5	6	50	12	1,5	2	**49,20**
823015360	1,5	4	50	14	1,5	2	**43,40**
823015370	1,5	6	50	14	1,5	2	**49,20**
823015220	1,5	4	50	16	1,5	2	**43,40**
823015380	1,5	6	60	16	1,5	2	**51,70**
823015390	1,5	4	50	18	1,5	2	**43,40**
823015400	1,5	6	60	18	1,5	2	**51,70**
823015230	1,5	4	50	20	1,5	2	**43,40**
823015410	1,5	6	60	20	1,5	2	**51,70**
823015420	1,5	4	60	22	1,5	2	**47,85**
823015430	1,5	6	65	22	1,5	2	**55,00**
823015240	1,5	4	60	25	1,5	2	**47,85**
823015440	1,5	6	65	25	1,5	2	**55,00**
823015250	1,5	4	70	30	1,5	2	**52,30**
823015450	1,5	6	70	30	1,5	2	**62,75**
823015460	1,5	4	70	35	1,5	2	**62,00**
823016210	1,6	4	45	6	1,6	2	**50,15**
823016220	1,6	4	45	8	1,6	2	**50,15**
823016230	1,6	4	50	12	1,6	2	**50,15**
823016200	1,6	4	50	16	1,6	2	**50,15**
823016240	1,6	4	50	20	1,6	2	**50,15**
823018200	1,8	4	45	6	1,8	2	**50,15**
823018210	1,8	4	45	8	1,8	2	**50,15**
823018220	1,8	4	50	12	1,8	2	**50,15**
823018230	1,8	4	50	16	1,8	2	**50,15**

Condiciones de corte | Cutting data pag. 162

SAUDA

ACERO

F-823

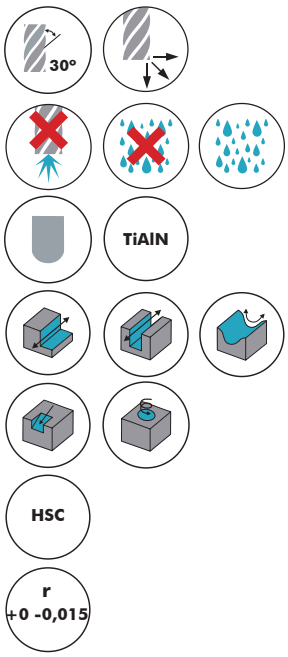
Ref.	d1	d2	l1	l2	l3	z	€
823018240	1,8	4	50	20	1,8	2	**50,15**
823020270	2,0	4	45	4	2,0	2	**41,65**
823020280	2,0	6	50	4	2,0	2	**49,20**
823020290	2,0	4	45	6	2,0	2	**41,65**
823020300	2,0	6	50	6	2,0	2	**49,20**
823020200	2,0	4	45	8	2,0	2	**41,65**
823020310	2,0	6	50	8	2,0	2	**49,20**
823020320	2,0	4	50	10	2,0	2	**41,65**
823020330	2,0	6	50	10	2,0	2	**49,20**
823020210	2,0	4	50	12	2,0	2	**41,65**
823020340	2,0	6	50	12	2,0	2	**49,20**
823020350	2,0	4	50	14	2,0	2	**41,65**
823020360	2,0	6	50	14	2,0	2	**49,20**
823020220	2,0	4	50	16	2,0	2	**41,65**
823020370	2,0	6	60	16	2,0	2	**51,70**
823020380	2,0	4	50	18	2,0	2	**41,65**
823020390	2,0	6	60	18	2,0	2	**51,70**
823020230	2,0	4	50	20	2,0	2	**44,75**
823020400	2,0	6	60	20	2,0	2	**51,70**
823020410	2,0	4	60	22	2,0	2	**44,75**
823020420	2,0	6	65	22	2,0	2	**55,00**
823020240	2,0	4	60	25	2,0	2	**44,75**
823020430	2,0	6	65	25	2,0	2	**55,00**
823020250	2,0	4	70	30	2,0	2	**52,50**
823020440	2,0	6	70	30	2,0	2	**62,75**
823020450	2,0	4	70	35	2,0	2	**52,50**
823020460	2,0	6	75	35	2,0	2	**68,95**
823020260	2,0	4	80	40	2,0	2	**59,05**
823020470	2,0	6	80	40	2,0	2	**75,30**
823020480	2,0	4	80	45	2,0	2	**68,75**
823025220	2,5	4	45	8	2,5	2	**44,75**
823025230	2,5	4	50	10	2,5	2	**44,75**
823025200	2,5	4	50	16	2,5	2	**44,75**
823025240	2,5	4	60	20	2,5	2	**44,75**
823025250	2,5	4	60	25	2,5	2	**48,80**
823025210	2,5	4	70	30	2,5	2	**52,90**
823025260	2,5	4	70	35	2,5	2	**52,90**
823030270	3,0	6	50	6	3,0	2	**49,20**
823030200	3,0	6	50	8	3,0	2	**49,20**

Ref.	d1	d2	l1	l2	l3	z	€
823030280	3	6	50	10	3	2	**49,20**
823030290	3	6	50	12	3	2	**49,20**
823030210	3	6	60	16	3	2	**51,70**
823030220	3	6	60	20	3	2	**51,70**
823030230	3	6	65	25	3	2	**55,00**
823030240	3	6	70	30	3	2	**62,75**
823030300	3	6	75	35	3	2	**68,95**
823030250	3	6	80	40	3	2	**75,30**
823030310	3	6	90	45	3	2	**79,40**
823030260	3	6	100	50	3	2	**85,80**
823030320	3	6	100	60	3	2	**95,45**
823040260	4	6	50	8	4	2	**49,20**
823040270	4	6	50	10	4	2	**49,20**
823040280	4	6	50	12	4	2	**49,20**
823040200	4	6	60	16	4	2	**51,70**
823040210	4	6	60	20	4	2	**51,70**
823040220	4	6	65	25	4	2	**55,00**
823040230	4	6	70	30	4	2	**62,75**
823040290	4	6	75	35	4	2	**68,95**
823040240	4	6	80	40	4	2	**75,30**
823040300	4	6	90	45	4	2	**79,40**
823040250	4	6	100	50	4	2	**85,80**
823040310	4	6	100	55	4	2	**95,45**
823040320	4	6	100	60	4	2	**95,45**
823050200	5	6	60	20	6	2	**55,00**
823050230	5	6	70	25	6	2	**62,75**
823050210	5	6	75	30	6	2	**68,95**
823050240	5	6	80	40	6	2	**75,30**
823050250	5	6	90	45	6	2	**79,40**
823050220	5	6	100	50	6	2	**85,80**
823050260	5	6	100	60	6	2	**95,45**
823060210	6	6	55	15	10	2	**47,25**
823060200	6	6	110	30	10	2	**75,30**
823080210	8	8	60	25	12	2	**64,90**
823080200	8	8	100	30	12	2	**87,70**
823100210	10	10	70	30	16	2	**85,00**
823100200	10	10	100	35	16	2	**115,60**
823120200	12	12	75	30	18	2	**110,75**
823120210	12	12	110	40	18	2	**153,55**

Condiciones de corte | Cutting data pag. 162

Fresa metal duro punta esférica 2 labios HSC <55 HRC

2 Fluted HSC solid carbide ball nose end mill <55 HRC



STEEL <55 HRC

GG

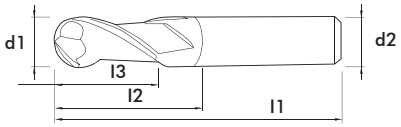
INOX

UNI

Fresa esférica metal duro de 2 labios con recubrimiento TiAlN. Ángulo espiral de 30º. La geometría positiva conjuntamente con este recubrimiento ayuda a tener un corte muy suave y prolongar la vida del filo de corte. Herramienta de bola especial para contornos 3D. La herramienta, material y recubrimiento están especialmente diseñadas para mecanizado HSC para materiales hasta 55 HRC, también para uso general.

2 Fluted solid carbide ball nose end mill with TiAlN coating and 30º spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Ball nose end mill for 3D milling in deep contour pocketing operations: tool, material and coating are specially designed for high speed cutting HSC up to 55 HRC.

Ø1 - Ø20



Ref.	d1	d2	l1	l2	z	€
221010200	1,0	3	38	2	2	**14,00**
221010210	1,0	4	38	2	2	**15,05**
221015200	1,5	3	38	3	2	**14,00**
221020200	2,0	3	38	4	2	**14,00**
221020210	2,0	4	38	4	2	**15,05**
221025200	2,5	3	38	5	2	**14,00**
221030200	3,0	3	38	6	2	**14,00**
221030210	3,0	4	38	6	2	**15,05**
221040200	4,0	4	50	8	2	**15,05**
221050200	5,0	5	50	10	2	**19,05**
221060200	6,0	6	50	12	2	**21,35**
221070200	7,0	8	60	14	2	**30,05**
221080200	8,0	8	60	15	2	**27,30**
221090200	9,0	10	75	18	2	**44,40**
221100200	10,0	10	75	20	2	**40,40**
221120200	12,0	12	75	20	2	**55,30**
221140200	14,0	14	90	25	2	**79,20**
221160200	16,0	16	100	25	2	**112,75**
221180200	18,0	18	100	30	2	**142,15**
221200200	20,0	20	100	30	2	**164,60**

Condiciones de corte | Cutting data pag. 163 - 164 - 165 - 166

SAUDA

ACERO

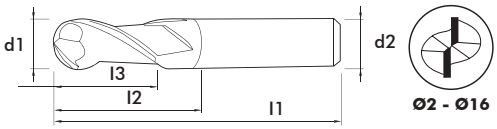
F-230

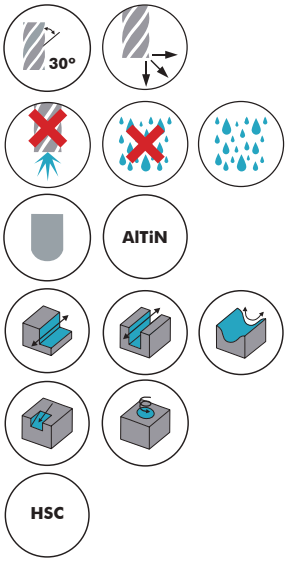
Fresa metal duro punta esférica 2 labios HSC 70 HRC

2 Fluted HSC solid carbide ball nose end mill 70 HRC

Fresa esférica metal duro de 2 labios. Ángulo espiral de 30º. La geometría positiva conjuntamente con este recubrimiento ayuda a tener un corte muy suave y prolongar la vida del filo de corte. Herramienta de bola especial para contornos 3D. La herramienta, material y recubrimiento están especialmente diseñadas para mecanizado HSC para materiales 70 HRC, también para uso general.

2 Fluted solid carbide ball nose end mill and 30º spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Ball nose end mill for 3D milling in deep contour pocketing operations: tool, material and coating are specially designed for high speed cutting HSC 70 HRC.





STEEL <55 HRC

GG

INOX

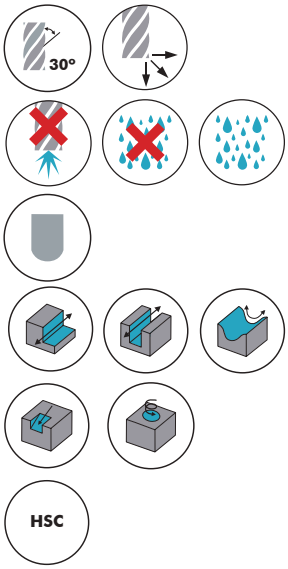
UNI

Ref.	d1	d2	l1	l2	l3	€
230020200	2	6	60	20	3	**46,65**
230030200	3	6	60	20	5	**46,65**
230040200	4	6	60	20	6	**46,65**
230050200	5	6	60	20	10	**46,65**
230060200	6	6	60	20	12	**46,65**
230080200	8	8	80	20	12	**66,60**
230100200	10	10	75	22	10	**74,85**
230120200	12	12	75	24	12	**88,20**
230160200	16	16	92	60	20	**172,50**

Condiciones de corte | Cutting data pag. 162

Fresa metal duro larga punta esférica 2 labios HSC 70 HRC

2 Fluted long HSC solid carbide ball nose end mill 70 HRC



STEEL <65 HRC

INOX

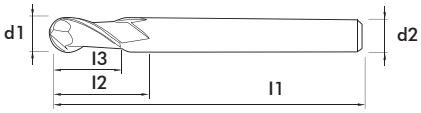
GG

GGG

Fresa esférica metal duro de 2 labios. Ángulo hélice de 30º. La geometría positiva conjuntamente con este recubrimiento ayuda a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta de bola especial para contornos 3D. La herramienta, material y recubrimiento están especialmente diseñadas para mecanizado HSC y materiales hasta 65 HRC (HHC).

2 Fluted solid carbide ball nose end mill with TiAlN coating and 30º spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Ball nose end mill for 3D milling in deep contour pocketing operations: the tool, material and coating are specially designed for high speed cutting HSC and HHC high hard cutting up to 65 HRC.

Ø2 - Ø16



Ref.	d1	d2	l1	l2	l3	€
231020200	2	6	80	40	3	**56,50**
231030200	3	6	80	40	5	**56,50**
231040200	4	6	80	40	6	**56,50**
231050200	5	6	80	20	10	**56,50**
231060200	6	6	80	20	12	**56,50**
231080200	8	8	100	20	12	**80,40**
231100200	10	10	100	22	10	**90,75**
231120200	12	12	100	24	12	**124,15**
231160200	16	16	150	40	20	**236,70**

Condiciones de corte | Cutting data pag. 162

SAUDA

ACERO

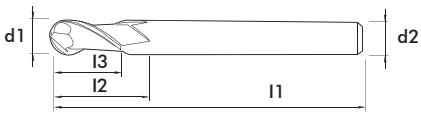
F-224

Fresa metal duro larga punta esférica 2 labios HSC/HHC <65 HRC

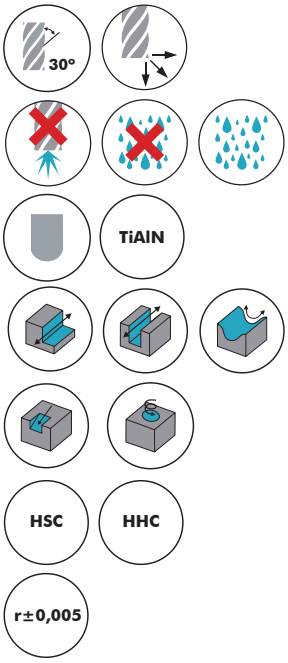
2 Fluted long HSC/HHC solid carbide ball nose end mill <65 HRC

Fresa esférica metal duro de 2 labios con recubrimiento TiAlN. Ángulo hélice de 30º. La geometría positiva conjuntamente con este recubrimiento ayuda a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta de bola especial para contornos 3D. La herramienta, material y recubrimiento están especialmente diseñadas para mecanizado HSC y materiales hasta 65 HRC (HHC).

2 Fluted solid carbide ball nose end mill with TiAlN coating and 30º spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Ball nose end mill for 3D milling in deep contour pocketing operations: the tool, material and coating are specially designed for high speed cutting HSC and HHC high hard cutting up to 65 HRC.



Ø1 - Ø20

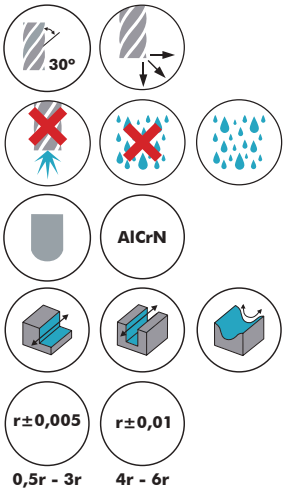


Ref.	d1	d2	l1	l2	z	€
224010200	1,0	6	70	2,5	2	**21,30**
224015200	1,5	6	70	4,0	2	**21,30**
224020200	2,0	6	100	5,0	2	**21,30**
224025200	2,5	6	100	6,0	2	**21,30**
224030200	3,0	6	100	8,0	2	**21,30**
224040200	4,0	6	90	8,0	2	**22,90**
224050200	5,0	6	75	10,0	2	**28,40**
224060200	6,0	6	80	12,0	2	**32,95**
224080200	8,0	8	110	14,0	2	**45,60**
224100200	10,0	10	100	18,0	2	**65,55**
224120200	12,0	12	110	22,0	2	**91,80**
224160200	16,0	16	160	30,0	2	**181,65**
224200200	20,0	20	160	38,0	2	**267,90**

Condiciones de corte | Cutting data pag. 163 - 164 - 165 - 166

Fresa metal duro esférica 2 labios para uso general

2 Fluted solid carbide ball end mill for general use

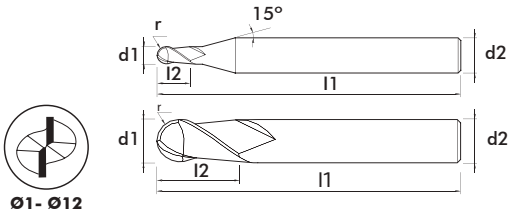


STEEL <55 HRC

UNI

Fresa de metal duro esférica de 2 labios y hélice de 30º para uso general. Su recubrimiento AlCrN permite usarla en varios materiales hasta 52 HRC, acero preendurecido, acero al carbono y acero para moldes. Tiene tolerancia en el filo de alta precisión y minimiza la fractura gracias a su grado TRS ultrafino.

2 Fluted 30º helix solid carbide ball end mill for general use. AlCrN coated optimum for various work materials up to HRC52, pre-hardened steel, carbon steel and mold steel. High precise edge tolerance. Minimizes fracturing by high TRS ultra fine WC grade.



Ref.	d1	d2	l1	l2	€
222010200	1,0	6	50	2,5	**32,90**
222015200	1,5	6	50	4,0	**32,90**
222020200	2,0	6	50	5,0	**32,90**
222025200	2,5	4	50	6,0	**29,80**
222030200	3,0	6	60	8,0	**33,30**
222040200	4,0	6	70	8,0	**33,90**
222050200	5,0	6	75	10,0	**38,55**
222060200	6,0	6	80	12,0	**38,55**
222080200	8,0	8	90	14,0	**56,95**
222100200	10,0	10	100	18,0	**78,80**
222120200	12,0	12	110	22,0	**104,20**

Condiciones de corte | Cutting data pag. 167

SAUDA

ACERO

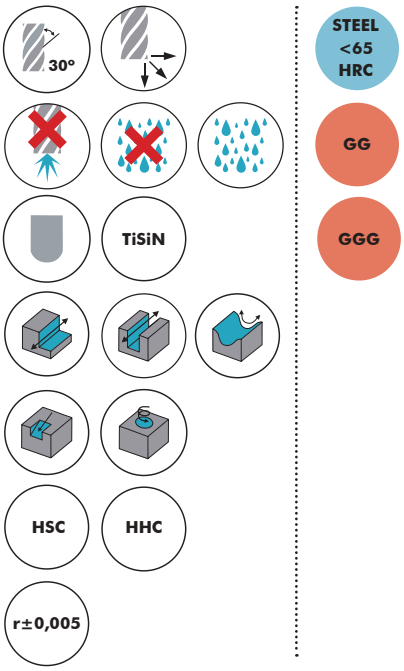
F-225

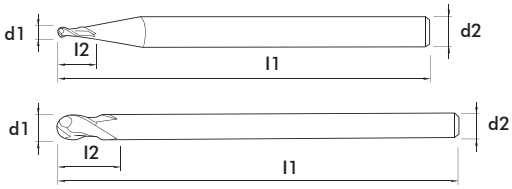
Fresa metal duro larga punta esférica 2 labios HSC/HHC <65 HRC (0,2µm)

2 Fluted long HSC/HHC solid carbide ball nose end mill <65 HRC (0,2µm)

Fresa de bola metal duro 2 labios de alto rendimiento con recubrimiento TiSiN. Ángulo hélice de 30º. Su geometría positiva junto con este recubrimiento facilitan un corte muy suave prolongando la vida del filo de corte. La herramienta, material y recubrimiento están especialmente diseñadas para mecanizado HSC y para materiales hasta 65 HRC (HHC). Fresa especialmente diseñada para trabajos 3D.

2 Fluted high performance solid carbide ball nose end mill with TiSiN coating. 30º Spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. The tool, material and coating are specially designed for high speed cutting HSC and HHC high hard cutting up to 65 HRC.



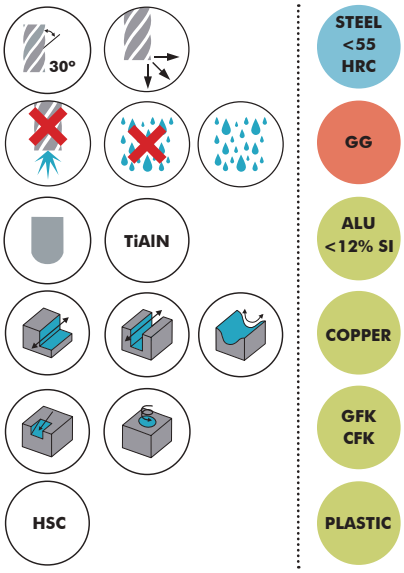


Ref.	d1	d2	l1	l2	z	€
225010200	1,00	6	75	3	2	**57,50**
225020200	2,00	6	75	4	2	**57,50**
225030200	3,00	6	75	5	2	**57,50**
225040200	4,00	6	75	6	2	**57,50**
225050200	5,00	6	100	9	2	**69,70**
225060200	6,00	6	100	9	2	**69,70**
225063500	6,35	8	90	11	2	**96,60**
225080200	8,00	8	100	16	2	**96,60**
225095200	9,50	10	100	16	2	**126,50**
225100200	10,00	10	100	20	2	**126,50**
225120200	12,00	12	100	24	2	**162,05**

Condiciones de corte | Cutting data pag. 163 - 164 - 165 - 166

Fresa metal duro punta esférica extra larga 2 labios HSC/HHC <55 HRC

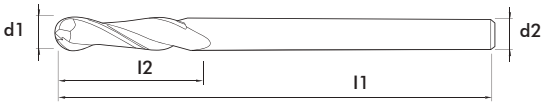
2 Fluted long HSC solid carbide ball nose end mill <55 HRC



Fresa esférica metal duro de 2 labios larga con recubrimiento TiAlN. Ángulo hélice de 30º. La geometría positiva conjuntamente con este recubrimiento ayuda a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta de bola especial para contornos 3D. La herramienta, material y recubrimiento están especialmente diseñados para mecanizado HSC y materiales hasta 55 HRC, también para uso general y materiales no férricos.

2 Fluted solid carbide long ball nose end mill with TiAlN coating and 30º spiral angle. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Ball nose end mill for 3D milling in deep contour pocketing operations: the tool, material and coating are specially designed for high speed cutting HSC up to 55 HRC. Also for non ferrous materials.

Ø3 - Ø25



Ref.	d1	d2	l1	l2	z	€
234030200	3	3	75	6	2	**22,85**
234030210	3	3	100	6	2	**22,85**
234040200	4	4	100	6	2	**26,10**
234050200	5	5	100	6	2	**31,70**
234060200	6	6	100	15	2	**35,90**
234060210	6	6	150	15	2	**47,85**
234060220	6	6	200	30	2	**68,10**
234080200	8	8	150	25	2	**61,60**
234080210	8	8	200	50	2	**91,45**
234100200	10	10	150	25	2	**87,40**
234100210	10	10	200	50	2	**122,70**
234120200	12	12	150	25	2	**127,80**
234120210	12	12	200	25	2	**149,80**
234140200	14	14	200	50	2	**200,10**
234160200	16	16	200	50	2	**262,75**
234200200	20	20	200	50	2	**431,15**
234250200	25	25	200	50	2	**599,95**

Condiciones de corte | Cutting data pag. 163 - 164 - 165 - 166

SAUDA

ACERO

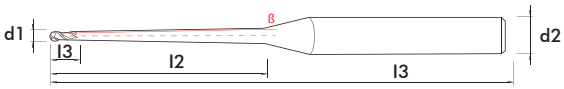
F-227

Fresa metal duro larga punta esférica cónica HSC/HHC <65 HRC

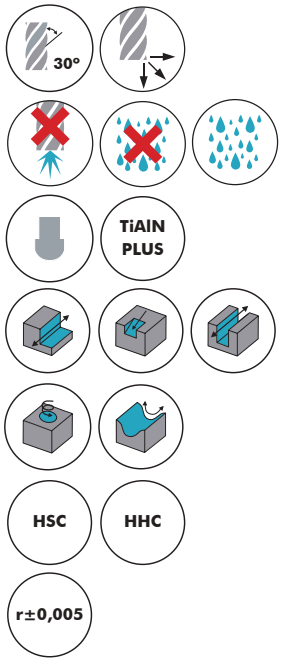
High performance conical HSC/HHC solid carbide ball nose end mill <65 HRC

Fresa esférica de metal duro de cuello largo rebajado y 2 labios con recubrimiento TiAlN. Ángulo espiral de 30º. Mango reforzado de Ø 6mm. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado HSC (High Speed Cutting) + HHC (High Hard Cutting) < 65 HRC. También podemos utilizar esta herramienta para aceros <1200N/mm2 y materiales no férricos. Herramienta de bola especial para contornos 3D.

2 Fluted solid carbide ball nose end mill 30º Spiral angle. For HSC (High Speed Cutting) + HHC (High Hard Cutting) < 65 HRC. Also for universal use, for standard steel <1200N/mm2. The tool, material and coating are specially designed for dry high speed cutting HSC and high hard cutting HHC. Ball nose end mill for 3D milling in deep contour pocketing operations.



Ø1 - Ø5



STEEL <65 HRC

INOX

GG

GGG

NI ALLOYS

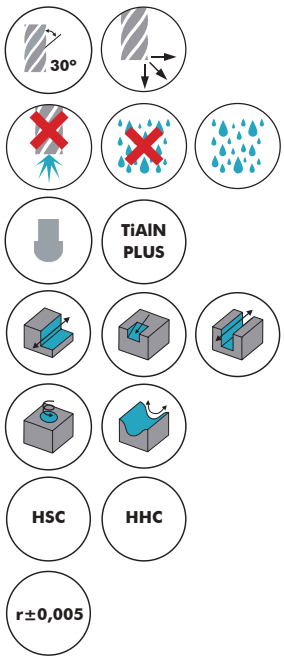
TITAN INCONEL

Ref.	d1	d2	l1	l2	l3	ß	€
227010200	1,0	6	60	20	2	1,5º	**36,65**
227015200	1,5	6	60	20	3	1,5º	**36,65**
227020200	2,0	6	60	20	3	6,7º	**36,65**
227020210	2,0	6	60	25	6	6,0º	**36,65**
227025200	2,5	6	60	25	5	1,0º	**36,65**
227030200	3,0	6	60	20	7	6,6º	**36,65**
227040200	4,0	6	60	25	8	3,3º	**36,65**
227050200	5,0	6	60	25	9	1,8º	**36,65**

Condiciones de corte | Cutting data pag. 163 - 164 - 165 - 166

Fresa metal duro larga punta esférica cónica HSC/HHC <65 HRC

High performance long conical HSC/HHC solid carbide ball nose end mill <65 HRC



STEEL <65 HRC

INOX

GG

GGG

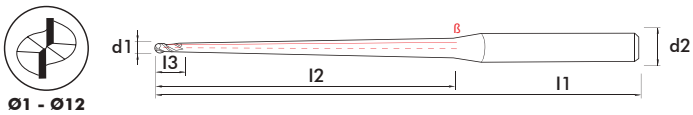
NI ALLOYS

TITAN INCONEL

UNI

Fresa esférica de metal duro de cuello extra largo rebajado y 2 labios con recubrimiento TiAlN. Ángulo espiral de 30º La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado HSC (High Speed Cutting) + HHC (High Hard Cutting) < 65 HRC. También podemos utilizar esta herramienta para aceros <1200N/mm2 y materiales no férricos. Herramienta de bola especial para contornos 3D.

2 Fluted long solid carbide ball nose end mill. 30º Spiral angle. For HSC (High Speed Cutting) + HHC (High Hard Cutting) < 65 HRC. Also for universal use, for standard steel < 1200N/mm2. The tool, material and coating are specially designed for dry high speed cutting HSC and high hard cutting HHC. Ball nose end mill for 3D milling in deep contour pocketing operations.



Ref.	d1	d2	l1	l2	l3	ß	€
229010200	1,0	6	80	40	1,5	3,7º	45,40
229015200	1,5	6	80	40	2	3,4º	45,40
229020100	2,0	6	80	40	3	3,1º	45,40
229020200	2,0	6	100	60	3	0,5º	49,70
229020210	2,0	6	100	60	3	1,0º	49,70
229020220	2,0	6	100	60	3	1,5º	49,70
229020230	2,0	6	100	57	3	2,0º	49,70
229030100	3,0	6	100	50	4	1,8º	49,70
229030200	3,0	6	100	60	4	0,5º	49,70
229030210	3,0	6	100	60	4	1,0º	49,70
229030220	3,0	6	100	57	4	1,5º	49,70
229030230	3,0	6	100	43	4	2,0º	49,70
229040100	4,0	6	100	50	5	1,3º	49,70
229040200	4,0	6	100	60	5	0,5º	49,70
229040210	4,0	6	100	57	5	1,0º	49,70
229040220	4,0	6	100	38	5	1,5º	49,70
229040230	4,0	6	100	29	5	2,0º	49,70
229040240	4,0	8	100	50	8	2,7º	68,20
229050200	5,0	8	90	41	12	3,0º	62,80
229050210	5,0	6	100	50	6	0,6º	49,70
229060200	6,0	8	90	33	14	3,0º	62,80
229060210	6,0	8	100	50	8	1,4º	65,30
229060220	6,0	10	100	50	12	3,0º	94,95
229080200	8,0	10	100	40	15	4,6º	94,95
229080210	8,0	12	100	50	15	3,3º	129,55
229080220	8,0	10	150	70	10	1,9º	140,20
229100200	10,0	12	100	50	20	1,9º	129,55
229100210	10,0	16	150	60	20	4,3º	259,35
229120220	12,0	12	130	65	15	1,3º	156,55
229120200	12,0	16	150	60	20	2,9º	259,35

Condiciones de corte | Cutting data pag. 163 - 164 - 165 - 166

SAUDA

ACERO

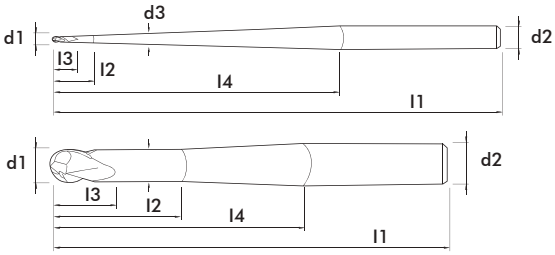
F-228

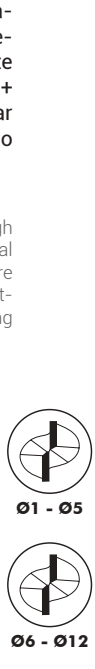
Fresa metal duro extra larga punta esférica cónica HSC/HHC <65 HRC

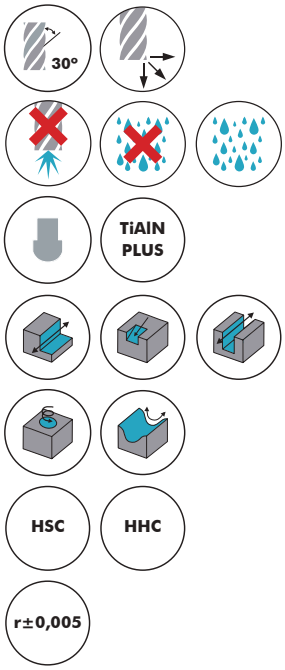
High performance extra long conical HSC/HHC solid carbide ball nose end mill <65 HRC

Fresa esférica de metal duro de cuello largo rebajado y 2 labios con recubrimiento TiAlN. Ángulo espiral de 30º. La herramienta, material y el recubrimiento están especialmente diseñados para el mecanizado HSC (High Speed Cutting) + HHC (High Hard Cutting) < 65 HRC. También podemos utilizar esta herramienta para aceros < 1200N/mm2 y materiales no férricos. Herramienta de bola especial para contornos 3D.

2 Fluted solid carbide ball nose end mill 30º Spiral angle, for HSC (High Speed Cutting) + HHC (High Hard Cutting) < 65 HRC. Also for universal use, for standard steel <1200N/mm2. The tool, material and coating are specially designed for dry high speed cutting HSC and high hard cutting HHC. Ball nose end mill for 3D milling in deep contour pocketing operations.





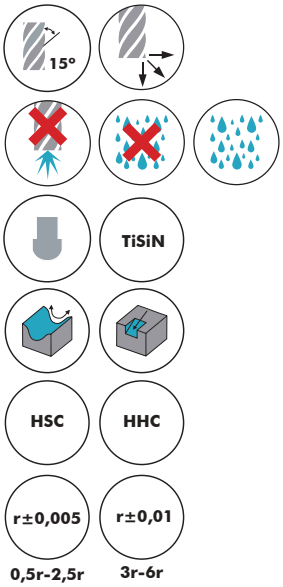


STEEL <65 HRC
INOX
GGG
GG
NI ALLOYS
TITAN INCONEL

Ref.	d1	d2	d3	l1	l2	l3	l4	z	€
228010200	1,0	6	0,80	100	6	2,0	40	2	**88,50**
228015200	1,5	6	1,45	120	5	2,3	75	2	**88,85**
228020200	2,0	6	1,90	70	16	2,0	33	2	**88,50**
228020210	2,0	6	1,80	100	8	3,0	40	2	**88,50**
228020220	2,0	6	1,80	120	8	3,0	60	2	**88,50**
228030200	3,0	6	2,90	70	18	3,0	33	2	**88,50**
228030210	3,0	6	2,80	100	12	4,0	40	2	**88,50**
228030220	3,0	6	2,90	120	12	4,0	60	2	**88,50**
228040200	4,0	6	3,80	100	16	5,0	40	2	**88,50**
228040210	4,0	6	3,80	120	16	5,0	60	2	**94,20**
228040220	4,0	6	3,80	160	-	4,0	94	2	**232,80**
228050200	5,0	6	4,80	100	20	6,0	40	2	**88,50**
228060200	6,0	8	5,80	100	25	6,0	50	2	**119,00**
228060210	6,0	8	5,80	120	25	6,0	50	2	**126,20**
228060220	6,0	10	-	150	-	9,0	60	2	**172,80**
228080200	8,0	10	7,80	120	32	7,0	60	2	**160,05**
228080210	8,0	10	-	150	-	12,0	60	2	**172,80**
228100200	10,0	12	9,80	160	40	9,0	80	2	**238,95**
228120200	12,0	16	11,80	160	50	12,0	100	2	**420,55**
228120210	12,0	16	11,80	200	50	12,0	100	2	**479,80**

Fresa metal duro esférica de 2 labios 3D corte 230° <65 HRC (0,2µm)

2 Fluted spherical end mill for 3D cut 230° <65 HRC (0,2µm



STEEL <65 HRC

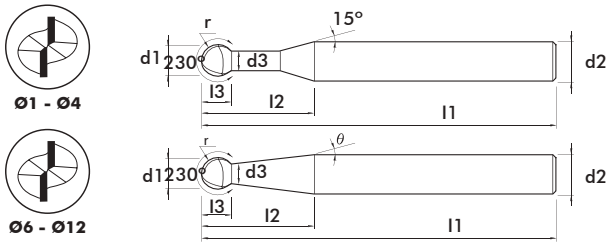
INOX

TITAN INCONEL

HG

Fresa de alta calidad de 2 labios con punta de bola de 230º con recubrimiento TiSiN para mecanizados de 3D. Ofrece una excelente resistencia al desgaste gracias a su recubrimiento PVD con base de Si. Espectacular rendimiento a altas velocidades gracias a su grado WC ultrafino (0,2 µm). Indicada para fresado de aceros pre endurecidos y endurecidos (50-65 HRC).

2 Fluted high quality 230º ball shape with TiSiN coating for wide range of 3D machining. Good wear resistance by Si-based PVD coating. Outstanding performance at high speed machining by ultrafine (0,2 µm) WC grade. For pre-hardened and hardened steel (HRC 50-65).



Ref.	d1	r	d2	d3	l1	l2	l3	θ	z	€
232010200	1,0	0,50	6	0,91	60	6	0,7	0	2	**60,80**
232015200	1,5	0,75	6	1,36	60	6	1,0	0	2	**60,80**
232020200	2,0	1,00	6	1,80	60	10	1,4	0	2	**60,80**
232030200	3,0	1,50	6	2,70	70	15	2,1	0	2	**64,70**
232040200	4,0	2,00	6	3,60	70	20	2,8	0	2	**64,90**
232060200	6,0	3,00	6	5,40	90	15	4,2	0	2	**84,80**
232080200	8,0	4,00	8	7,20	100	28	5,7	1	2	**131,50**
232100200	10,0	5,00	10	9,00	110	35	7,1	1	2	**175,00**
232120200	12,0	6,00	12	10,80	120	42	8,5	1	2	**236,80**

Condiciones de corte | Cutting data pag. 167

SAUDA

ACERO

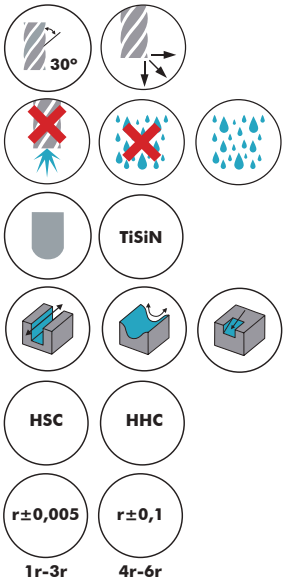
F-324

Fresa de metal duro esférica de 3 labios < 65hrc (0,2µm)

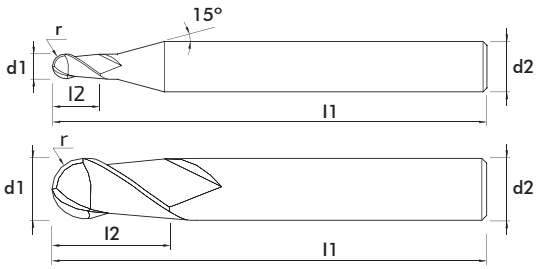
3 Fluted ball end mill < 65 HRC (0,2µm)

Fresa de metal duro de 3 labios con recubrimiento TiSiN. Ofrece una excelente resistencia al desgaste gracias a su recubrimiento PVD con base de Si. Tolerancia de filo de alta precisión. Sus tres filos de corte permiten trabajar a alta velocidad de corte y avance. Ofrece un espectacular rendimiento en el mecanizado a altas velocidades gracias a su grado WC ultrafino (0,2 µm). Indicada para fresado de aceros pre endurecidos y endurecidos (50-65 HRC).

3 Fluted ball end mill with TiSiN coating. Good wear resistance by Si-based PVD coating. High precise edge tolerance. High precise edge tolerance. High speed, feed applicable by 3 flute ball edge. Outstanding performance at high speed machining by ultrafine (0,2 µm) WC grade. End mill for pre-hardened and hardened steel (HRC 50-65).



STEEL <65 HRC
NI ALLOYS
TITAN INCONEL
HG
UNI



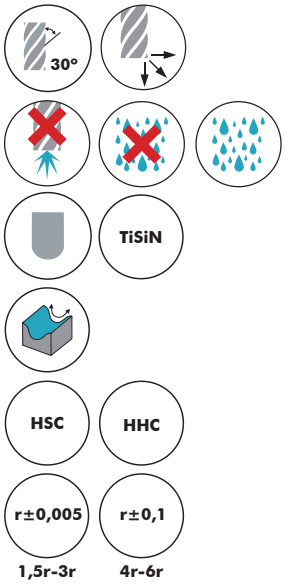
Ø2 - Ø12

Ref.	d1	r	d2	l1	l2	z	€
324020200	2	1,0	6	50	5	3	**48,00**
324030200	3	1,5	6	65	8	3	**50,15**
324040200	4	2,0	6	70	8	3	**50,15**
324050200	5	2,5	6	75	10	3	**55,40**
324060200	6	3,0	6	80	12	3	**55,40**
324080200	8	4,0	8	90	14	3	**88,50**
324100200	10	5,0	10	100	18	3	**121,00**
324120200	12	6,0	12	110	22	3	**158,20**

Condiciones de corte | Cutting data pag. 168

Fresa de metal duro esférica 4 labios <65 HRC (0,2µm)

4 Fluted solid carbide ball end mill < 65 HRC (0,2µm)



STEEL <65 HRC

INOX

GG

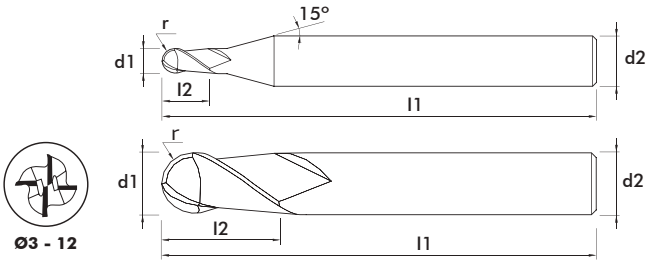
GGG

HG

UNI

Fresa de metal duro de 4 labios con recubrimiento TiSiN. Ofrece una excelente resistencia al desgaste gracias a su recubrimiento PVD con base de Si. Tolerancia de filo de alta precisión. Sus cuatro filos de corte permiten trabajar a alta velocidad de corte y avance. Ofrece un espectacular rendimiento en el mecanizado a altas velocidades gracias a su grado WC ultrafino (0,2 µm). Indicada para fresado de aceros pre endurecidos y endurecidos (50-65 HRC).

4 Fluted solide carbide ball end mill with TiSiN coating. Good wear resistance by Si-based PVD coating. High precise edge tolerance. High speed, feed applicable by 4 flute ball edge. Outstanding performance at high speed machining by ultrafine (0,2 µm) WC grade. For pre-hardened and hardened steel (HRC 50-65).



Ref.	d1	r	d2	l1	l2	z	€
424030200	3	1,5	6	60	8	4	**50,15**
424040200	4	2,0	6	70	8	4	**50,15**
424050200	5	2,5	6	80	10	4	**55,40**
424060200	6	3,0	6	90	12	4	**58,30**
424080200	8	4,0	8	100	14	4	**93,50**
424100200	10	5,0	10	100	18	4	**121,00**
424120200	12	6,0	12	110	22	4	**158,20**

Condiciones de corte | Cutting data pag. 169

SAUDA

ACERO

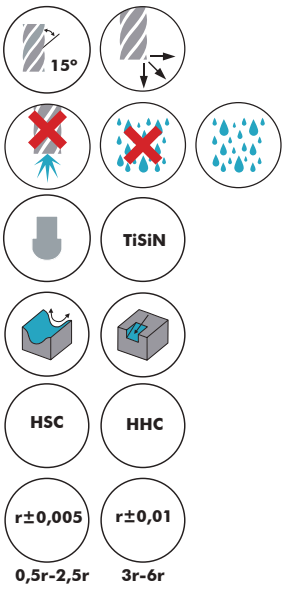
F-432

Fresa metal duro esférica de 4 labios 3d corte 230° <65 HRC (0,2µm)

4 Fluted spherical end mill for 3D cut 230° <65 HRC (0,2µm)

Fresa de alta calidad de 4 labios con punta de bola de 230º con recubrimiento TiSiN para mecanizados de 3D. Ofrece una excelente resistencia al desgaste gracias a su recubrimiento PVD con base de Si. Espectacular rendimiento en el mecanizado a altas velocidades gracias a su grado WC ultrafino (0,2 µm). Indicada para fresado de aceros pre endurecidos y endurecidos (50-65 HRC).

4 Fluted high quality 230º ball shape with TiSiN coating for wide range 3D machining. Good wear resistance by Si-based PVD coating. Outstanding performance at high speed machining by ultrafine (0,2 µm) WC grade. For pre-hardened and hardened steel (HRC 50-65).

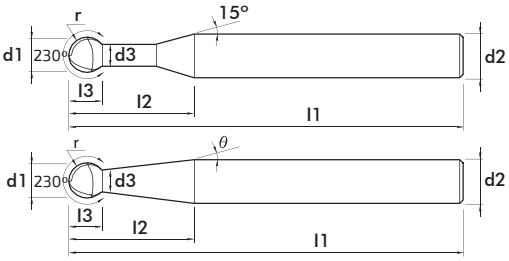


STEEL <65 HRC

INOX

TITAN INCONEL

HG



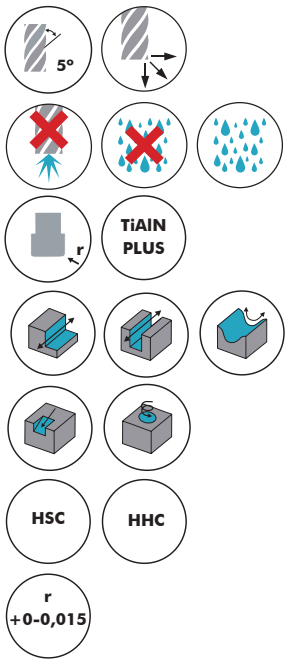
Ø1 - Ø12

Ref.	d1	r	d2	d3	l1	l2	l3	θ	z	€
432010200	1,0	0,50	6	0,91	60	6	0,7	0	4	**67,00**
432015200	1,5	0,75	6	1,36	60	8	1,0	0	4	**67,00**
432020200	2,0	1,00	6	1,80	60	10	1,4	0	4	**67,00**
432030200	3,0	1,50	6	2,70	70	15	2,1	0	4	**71,10**
432040200	4,0	2,00	6	3,60	70	20	2,8	0	4	**71,10**
432060200	6,0	3,00	6	5,40	90	15	4,2	0	4	**93,15**
432080200	8,0	4,00	8	7,20	100	28	5,7	1	4	**145,00**
432100200	10,0	5,00	10	9,00	110	35	7,1	1	4	**193,05**
432120200	12,0	6,00	12	10,80	120	42	8,5	1	4	**261,00**

Condiciones de corte | Cutting data pag. 167

Fresa metal duro turbo HSC/HHC < 65HRC

High performance HSC / HHC solid carbide turbo end mill < 65 HRC



STEEL <65 HRC

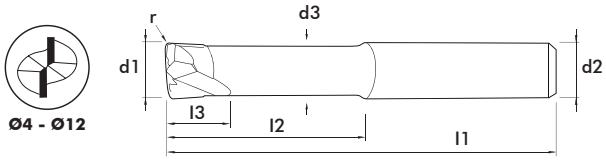
INOX

GG

GGG

Fresa de metal duro TURBO de 2 labios con recubrimiento TiAlN. Ángulo espiral de 5º. Mango rebajado. El substrato, recubrimiento y geometría están especialmente diseñados para alta velocidad de arranque de viruta. Podemos trabajar con avances por diente muy altos y pasadas axiales pequeñas. Especial para grandes volúmenes de extracción de viruta (cm3/min). Se reducen los tiempos de mecanizado. También podemos trabajar en seco. Para aceros hasta 65 HRC. También válida para materiales no férricos, materiales termo resistentes, aleaciones exóticas y fundiciones.

2 Fluted solid carbide TURBO end mill with TiAlN coating. 5º Spiral angle. Clearance shank. Excellent performance tool: substrate, coating and geometry are specially designed for high High Speed Cutting – We can work with really big feed rates with small Ap. Specially to remove big volume of chips (cm3/min). For tool makers and mould makers. Reduces milling time rapidly. Also for dry milling. Universal purpose for normal and high tense materials.



Ref.	d1	r	d2	d3	l1	l2	l3	z	€
212040200	4	0,4	6	3,4	57	20	1,5	2	**61,85**
212050200	5	0,5	6	4,2	57	20	2,0	2	**61,85**
212060200	6	0,6	6	5,0	57	25	2,5	2	**61,85**
212080200	8	0,8	8	6,7	63	25	3,0	2	**81,40**
212100200	10	1,0	10	8,5	72	35	3,5	2	**124,85**
212120200	12	1,2	12	10,0	83	40	4,0	2	**138,85**

Condiciones de corte | Cutting data pag. 169

SAUDA

ACERO

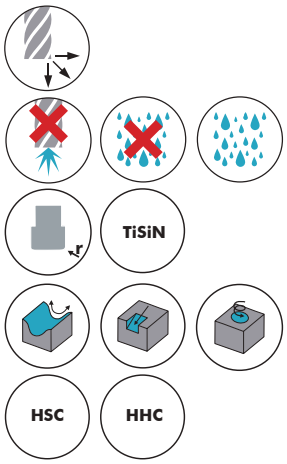
F-551

Fresa metal duro "turbo" <65 HRC

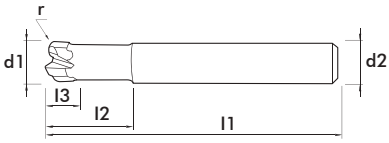
Solid carbide "turbo" end mill < 65 HRC

Fresa de metal duro "TURBO" de 4 labios con recubrimiento TiSiN. La geometría de esta fresa permite trabajar a alto avance con pasadas axiales pequeñas. Especialmente indicada para grandes volúmenes de extracción de viruta. Puede trabajar con o sin refrigeración.

4 Fluted solid carbide "TURBO" end mill with TiSiN coating. Special geometry allows high feed rates with small axial steps. Specially recommended for high chip-removal volume rates. It can work with or without coolant.



STEEL <65 HRC
INOX
GG
GGG
NI ALLOYS
TITAN INCONEL
HG
UNI



Ø3 - Ø12

Ref.	d1	r	d2	l1	l2	l3	z	€
551030200	3	0,5	3	60	8	1,5	4	**49,30**
551030210	3	0,5	3	80	20	1,5	4	**61,40**
551040200	4	0,5	4	60	8	2,0	4	**49,30**
551040210	4	0,5	4	80	20	2,0	4	**61,40**
551060200	6	1,0	6	60	14	3,0	4	**49,30**
551060210	6	1,0	6	80	30	3,0	4	**61,40**
551080200	8	2,0	8	63	18	4,0	4	**62,95**
551080210	8	2,0	8	80	40	4,0	4	**77,40**
551100200	10	2,0	10	72	20	5,0	4	**75,85**
551100210	10	2,0	10	100	50	5,0	4	**93,30**
551120200	12	2,0	12	83	22	6,0	4	**105,30**
551120210	12	2,0	12	110	50	6,0	4	**129,50**

Condiciones de corte | Cutting data pag. 170

FRESAS FUNDICIÓN

CAST IRON END MILLS

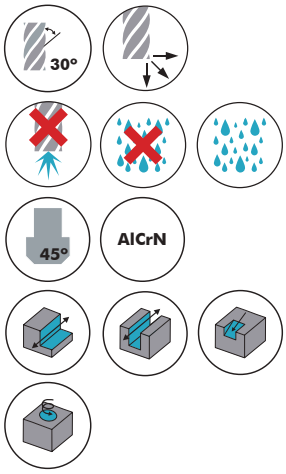
F-417

Fresa metal duro desbaste 3 y 4 labios "plus" <55 HRC

3 and 4 Fluted solid carbide roughing end mill "plus" <55 HRC

Fresa de metal duro de 3 y 4 labios de alto rendimiento con recubrimiento AlCrN para desbaste. Ángulo espiral de 30º. Mejora la resistencia al desgaste, evita el estrés en el filo y reduce el tiempo de mecanizado gracias al buen control de viruta. Permite mecanizar a alta velocidad, por lo que maximiza la eficiencia del trabajo. Indicada para el mecanizado de fundición, acero para herramientas y acero aleado.

3 and 4 fluted high performance end mill with AlCrN coating for roughing operations. 30º Spiral angle. Improves wear resistance as well as avoids edge stress and reduces machining time by excellent chip control. Maximizes work efficiency by high speed machining. Recommended for cast iron, tool steel and alloy steel.

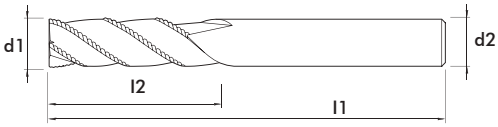


STEEL <55 HRC

GG

GGG

UNI



Ø4 - Ø8

Ø9 - Ø20

Ref.	d1	d2	l1	l2	z	€
417040200	4	6	50	10	3	**63,90**
417050200	5	6	50	13	3	**63,90**
417060200	6	6	55	15	3	**67,60**
417070200	7	8	65	18	3	**98,75**
417080200	8	8	65	19	3	**92,95**
417090200	9	10	70	22	4	**125,30**
417100200	10	10	70	22	4	**119,30**
417120200	12	12	80	26	4	**144,05**
417160200	16	16	90	32	4	**351,00**
417200200	20	20	110	38	4	**448,80**

Condiciones de corte | Cutting data pag. 171

FRESAS INOXIDABLE

STAINLESS STEEL END MILLS

SAUDA

INOX.

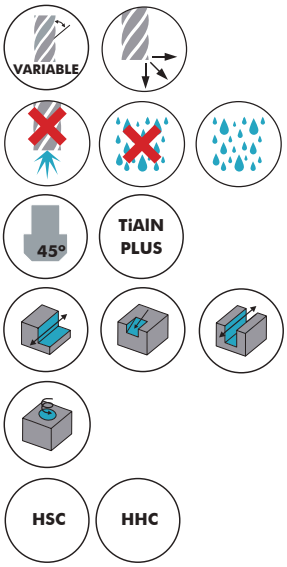
F-1305

Fresa metal duro 3 labios de alto rendimiento < 55 HRC doble grado 35º/38º

3 Fluted high performance solid carbide end mill < 55HRC

Fresa de metal duro de 3 labios con corte al centro con recubrimiento TiSiN y hélice variable. Fresa de muy alto rendimiento especialmente diseñada para desbastar y acabar. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para inoxidable y también apta para uso general: para materiales hasta 55 HRC.

3 Fluted cutting to centre solid carbide end mills plus TiSiN coating. Variable helix. Tool especially designed for finishing and roughing. An exceptional tool for the moulding industry. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Universal purpose, for high tense material, up to 55 HRC.

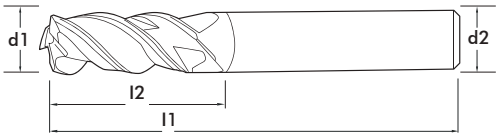


INOX

STEEL <55 HRC

NI ALLOYS

TITAN INCONEL



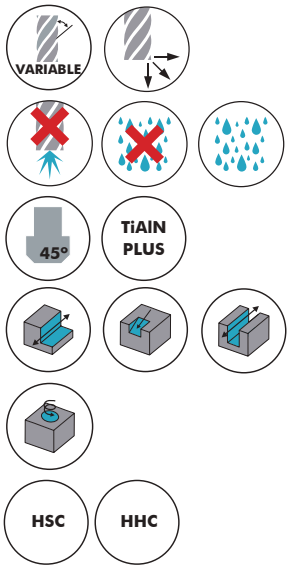
Ø3 - Ø20

Ref.	d1	d2	l1	l2	z	€
1305030200	3	6	50	8	3	**23,60**
1305040200	4	6	50	11	3	**23,60**
1305050200	5	6	50	13	3	**23,60**
1305060200	6	6	50	16	3	**23,60**
1305080200	8	8	60	19	3	**29,70**
1305100200	10	10	73	22	3	**43,90**
1305120200	12	12	75	26	3	**59,90**
1305140200	14	14	85	30	3	**81,80**
1305160200	16	16	93	32	3	**116,60**
1305200200	20	20	100	38	3	**171,90**

Condiciones de corte | Cutting data pag. 171

Fresa metal duro 4 labios de alto rendimiento < 55 HRC doble grado 35°/38°

4 Fluted high performance solid carbide end mill < 55HRC



INOX

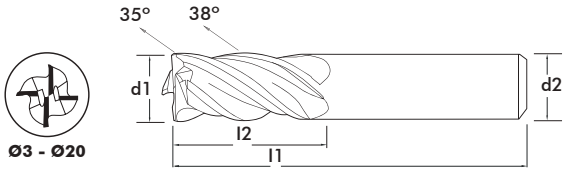
STEEL <55 HRC

NI ALLOYS

TITAN INCONEL

Fresa de metal duro de 4 labios con corte al centro con recubrimiento TiSiN y hélice variable. Fresa de muy alto rendimiento especialmente diseñada para desbastar y acabar. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para inoxidable y también apta para uso general: para materiales hasta 55 HRC.

4 Fluted cutting to centre solid carbide end mills plus TiSiN coating. Variable helix. Tool especially designed for finishing and roughing. An exceptional tool for the moulding industry. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life. Universal purpose, for high tense material, up to 55 HRC.



Ref.	d1	d2	l1	l2	z	€
1403030200	3	6	50	8	4	**23,60**
1403040200	4	6	50	11	4	**23,60**
1403050200	5	6	50	13	4	**23,60**
1403060200	6	6	50	16	4	**23,60**
1403080200	8	8	60	19	4	**29,70**
1403100200	10	10	73	22	4	**43,90**
1403120200	12	12	75	26	4	**59,90**
1403140200	14	14	85	30	4	**81,80**
1403160200	16	16	93	32	4	**116,60**
1403200200	20	20	100	38	4	**171,90**

Condiciones de corte | Cutting data pag. 171

SAUDA

INOX.

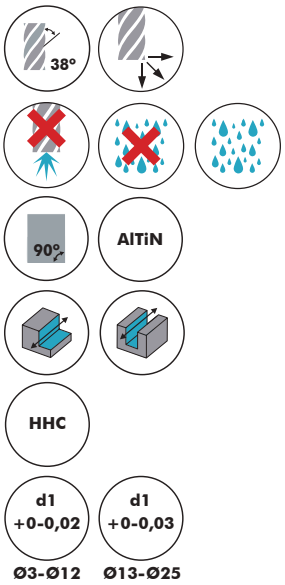
F-454

Fresa metal duro plana de 4 labios

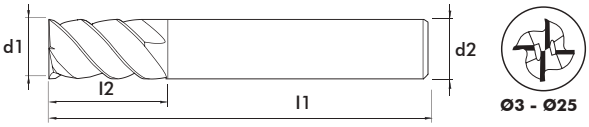
4 Fluted solid carbide end mill

Fresa de metal duro plana de 4 labios y hélice de 38º con recubrimiento AlTiN. Ofrece alta precisión y excelente acabado superficial gracias a su geometría de cuatro filos desiguales. Su diseño único y patentado disminuye las vibraciones y permite lograr una profundidad axial de 1xD en operaciones de ranurado.

4 Fluted 38º helix solid carbide end mill with AlTiN coating. It provides high precision and excellent surface due to each 4 flutes broken index geometry. The unique patented design decrease chatter and resonance and can achieve an axial depth 1xD in slotting operations.



INOX
STEEL <55 HRC
GG
GGG
NI ALLOYS
TITAN INCONEL
UNI

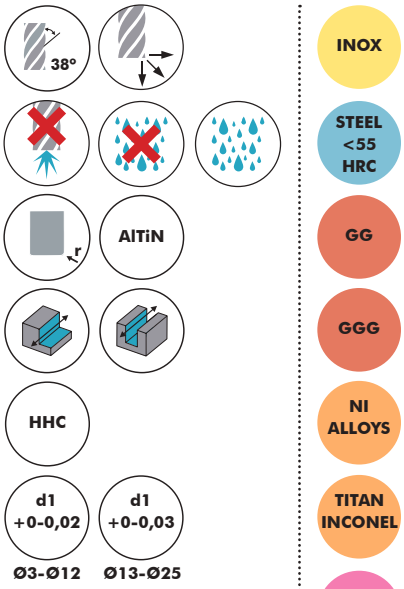


Ref.	d1	d2	l1	l2	€
454030200	3	6	50	8	30,65
454040200	4	6	50	11	30,65
454050200	5	6	50	13	30,65
454060200	6	6	50	13	30,65
454070200	7	8	60	16	42,45
454080200	8	8	60	19	42,45
454090200	9	10	70	19	58,20
454100200	10	10	70	22	58,20
454110200	11	12	75	22	77,80
454120200	12	12	75	26	77,80
454130200	13	12	80	26	89,45
454140200	14	14	80	26	125,70
454160200	16	16	90	32	179,35
454180200	18	18	100	32	253,65
454200200	20	20	100	38	284,65
454250200	25	25	120	45	490,60

Condiciones de corte | Cutting data pag. 172 - 173

Fresa metal duro tórica de 4 labios

4 Fluted solid carbide corner radius end mill



INOX

STEEL <55 HRC

GG

GGG

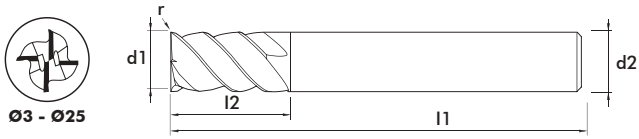
NI ALLOYS

TITAN INCONEL

UNI

Fresa de metal duro tórica de 4 labios y hélice de 38º con recubrimiento AlTiN. Ofrece alta precisión y excelente acabado superficial gracias a su geometría de cuatro filos desiguales. La punta con radio evita el astillamiento del material en el mecanizado de alto rendimiento.

4 Fluted 38º helix solid carbide corner radius end mill with AlTiN coating. It provides high precision and excellent surface due to each 4 flutes broken index geometry. It has corner radius against chipping in high performance machining.



Ref.	d1	r	d2	l1	l2	€
455030200	3	0,1	6	50	8	**32,15**
455040200	4	0,2	6	50	11	**32,15**
455050200	5	0,2	6	50	13	**32,15**
455060200	6	0,2	6	50	13	**32,15**
455070200	7	0,2	8	60	16	**44,55**
455080200	8	0,2	8	60	19	**44,55**
455090200	9	0,2	10	70	19	**61,10**
455100200	10	0,3	10	70	22	**61,10**
455110200	11	0,3	12	75	22	**81,70**
455120200	12	0,3	12	75	26	**81,70**
455130200	13	0,3	12	80	26	**93,90**
455140200	14	0,3	14	80	26	**132,00**
455160200	16	0,3	16	90	32	**188,30**
455180200	18	0,3	18	100	32	**266,40**
455200200	20	0,3	20	100	38	**298,80**
455250200	25	0,3	25	120	45	**515,10**

Condiciones de corte | Cutting data pag. 172 - 173

SAUDA

INOX.

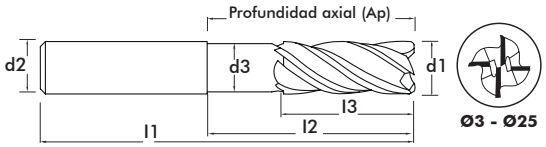
F-453

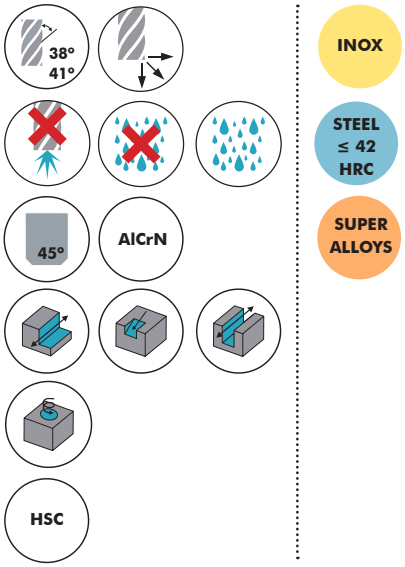
Fresa de 4 labios con hélice variable de 38°/41° para inoxidable

4 Fluted 38°/41° helix end mill

Fresa metal duro de cuatro labios con hélice variable 38°/41° y recubrimiento AlCrN, la hélice en ángulo variable garantiza una gran estabilidad en el mecanizado y un alto rendimiento. Herramienta para inoxidable.

4 Fluted 38°/41° variable helix end mill with AlCrN coating. Realiability and high performance are guaranted during machining.
For INOX.



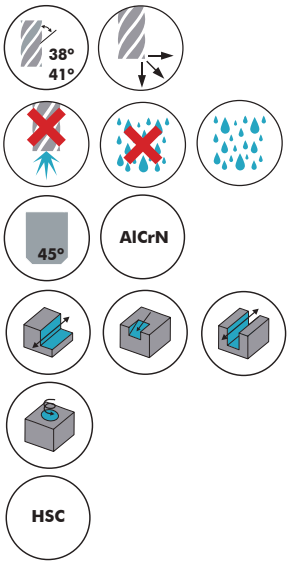


Ref.	d1	d2	d3	l1	l2	l3	ap	€
453030200	3	6	2,8	57	15	8	15 mm	**24,10**
453040200	4	6	3,8	57	17	11	17 mm	**24,10**
453050200	5	6	4,8	57	19	13	19 mm	**24,10**
453060200	6	6	5,8	57	21	13	21 mm	**24,10**
453080200	8	8	7,8	63	27	19	27 mm	**38,00**
453100200	10	10	9,8	72	32	22	32 mm	**54,50**
453120200	12	12	11,8	83	38	26	38 mm	**75,10**
453140200	14	14	13,8	83	38	26	38 mm	**98,55**
453160200	16	16	15,8	92	44	32	44 mm	**120,60**
453180200	18	18	17,8	92	44	32	44 mm	**160,85**
453200200	20	20	19,8	104	54	38	54 mm	**202,20**
453250200	25	25	24,8	121	65	45	65 mm	**357,65**

Condiciones de corte | Cutting data pag. 173

Fresa de 4 labios con hélice variable de 38°/41° para desbaste inoxidable

4 Fluted 38°/41° helix end mill



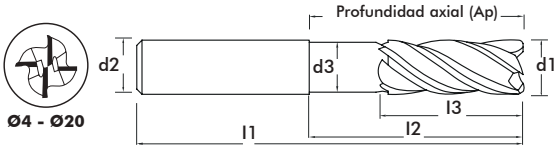
INOX

STEEL ≤ 42 HRC

SUPER ALLOYS

Fresa metal duro de cuatro labios con hélice variable 38°/41° y recubrimiento AlCrN, la hélice en ángulo variable garantiza una gran estabilidad en el mecanizado y un alto rendimiento. Herramienta para inoxidable.

4 Fluted 38°/41° variable helix end mill with AlCrN coating. Realiability and high performance are guaranted during machining.
For INOX.



Ref.	d1	d2	d3	l1	l2	l3	ap	€
420040200	4	6	3,8	57	17,0	11	17 mm	**31,10**
420050200	5	6	4,8	57	19,3	13	19 mm	**31,10**
420060200	6	6	5,8	57	21,0	13	21 mm	**31,10**
420080200	8	8	7,8	63	27,0	19	27 mm	**44,95**
420100200	10	10	9,8	72	32,0	22	32 mm	**65,65**
420120200	12	12	11,8	83	38,0	26	38 mm	**86,10**
420140200	14	14	13,8	83	44,0	32	38 mm	**114,00**
420160200	16	16	15,8	92	54,0	38	44 mm	**136,90**
420180200	18	18	17,8	92	65,0	45	44 mm	**227,10**
420200200	20	20	19,8	104	38,0	16	54 mm	**398,30**

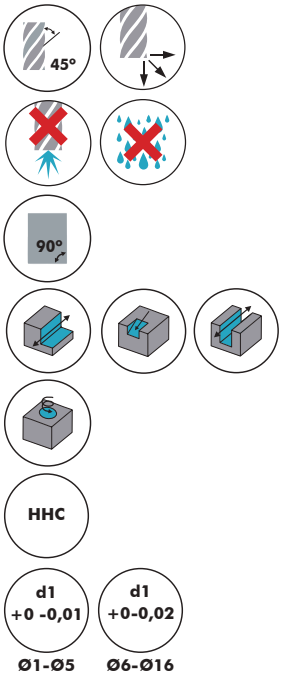
Condiciones de corte | Cutting data pag. 173

FRESAS MATERIALES EXÓTICOS

EXOTIC MATERIALS END MILLS

Fresa metal duro plana de 3 labios para materiales exóticos (0,2 µm)

3 Fluted solid carbide end mill for exotic materials (0,2µm)



NI ALLOYS

TITAN INCONEL

STEEL <65 HRC

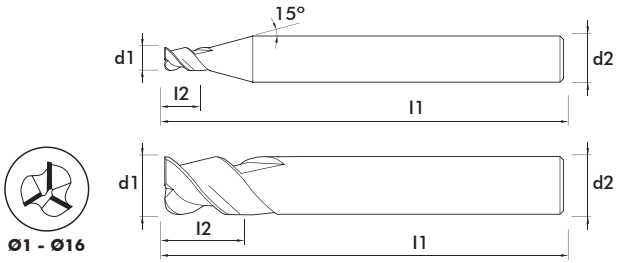
INOX

HG

UNI

Fresa de metal duro plana de 3 labios y hélice de 45º con recubrimiento TiSiN especial para aleaciones de acero, aleaciones con base Ti/Ni, inconel y materiales difíciles de mecanizar. Tiene buena resistencia al desgaste gracias a su recubrimiento PVD con base Si. Proporciona un excelente acabado superficial gracias a los 3 filos de corte y a la fácil evacuación de viruta. Su geometría con hélice de 45º está diseñada para trabajar a alta velocidad de corte y avance. Ofrece un espectacular rendimiento en el mecanizado a altas velocidades gracias a su grado WC ultrafino (0,2 µm).

3 Fluted 45º hélix solid carbide end mill with TiSiN coating. Recommended for alloy steel, Ti/Ni base alloys, inconel and hard to cut materials. It has good wear resistance by Si-based PVD coating. Excellent work surface finish by 3 flutes and deep chip pocket.45º helix design for high speed, feed condition. Outstanding performance at high speed machining by ultrafine (0,2 µm) WC grade.



Ref.	d1	d2	l1	l2	z	€
388010200	1,0	6	45	2,5	3	**40,10**
388015200	1,5	6	45	4,0	3	**40,10**
388020200	2,0	6	45	5,0	3	**40,10**
388030200	3,0	6	45	8,0	3	**40,10**
388040200	4,0	6	50	10,0	3	**42,00**
388050200	5,0	6	50	12,0	3	**42,00**
388060200	6,0	6	50	12,0	3	**42,00**
388080200	8,0	8	60	19,0	3	**62,00**
388100200	10,0	10	70	22,0	3	**80,20**
388120200	12,0	12	80	26,0	3	**95,30**
388160200	16,0	16	100	36,0	3	**255,60**

Condiciones de corte | Cutting data pag. 174

SAUDA

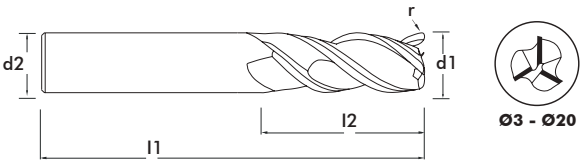
F-468

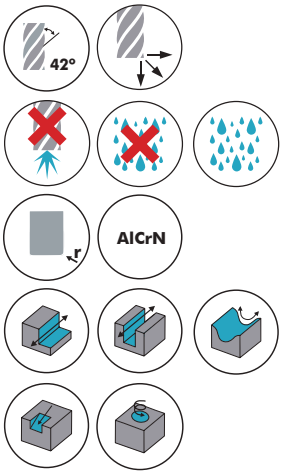
Fresa metal duro tórica de 3 labios con hélice variable

3 Fluted solid carbide corner radius variable helixend mill

Fresa de metal duro tórica de 4 labios y hélice variable con recubrimiento AlCrN especial para aleaciones de acero, aleaciones con base Ti/Ni, INCONEL y materiales difíciles de mecanizar. Mejora la resistencia al desgaste evitando el estrés en el filo. Minimiza las vibraciones gracias a su diseño con indexado irregular.

3 Fluted variable helix solid carbide corner radius end mill with AlCrN coating. Recommended for alloy steel, Ti/Ni base alloys, inconel and hard to cut materials. Improves wear resistance as well as avoids edge stress. Minimizes chattering by unequal flute spacing design.





Ø3-Ø20

NI ALLOYS

TITAN INCONEL

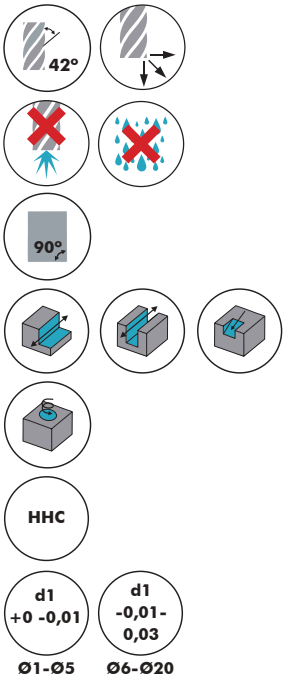
INOX

Ref.	d1	r	d2	l1	l2	€
468030200	3	0,3	6	57	9	**47,80**
468040200	4	0,3	6	57	12	**47,80**
468050200	5	0,3	6	57	15	**47,80**
468060200	6	0,5	6	57	19	**47,80**
468080200	8	0,5	8	63	20	**60,40**
468100200	10	0,5	10	72	27	**83,25**
468120200	12	0,5	12	83	30	**106,65**
468160200	16	1,0	16	92	38	**167,05**
468200200	20	1,0	20	104	46	**245,50**

Condiciones de corte | Cutting data pag. 174

Fresa metal duro plana de 4 labios para materiales exóticos

4 Fluted solid carbide end mill for exotic materials



NI ALLOYS

TITAN INCONEL

STEEL <65 HRC

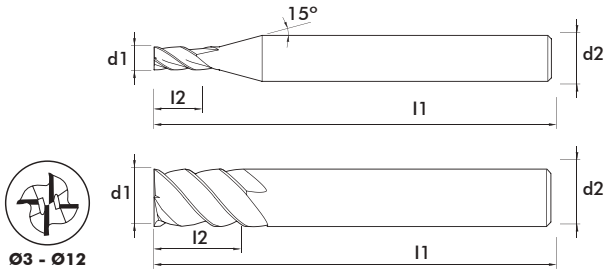
INOX

HG

UNI

Fresa de metal duro plana de 4 labios y hélice de 42º con recubrimiento AlCrN especial para aleaciones de acero, aleaciones con base Ti/Ni, inconel y materiales difíciles de mecanizar. Mejora la resistencia al desgaste evitando el estrés en el filo. Minimiza las vibraciones gracias a su diseño con espacio desigual entre los filos. Proporciona un excelente acabado superficial gracias a los 4 filos de corte y a la fácil evacuación de viruta.

4 Fluted 42º helix solid carbide end mill with AlCrN coating. Recommended for alloy steel, Ti/Ni base alloys, inconel and hard to cut materials. Improves wear resistance as well as avoids edge stress. Minimizes chattering by unequal flute spacing design. Excellent work surface finish by 4 flutes and deep chip pocket.



Ref.	d1	d2	l1	l2	z	€
488010200	1,0	4	50	1,5	4	**38,15**
488015200	1,5	4	50	2,5	4	**38,15**
488020200	2,0	4	50	3,0	4	**38,15**
488025200	2,5	4	50	3,5	4	**38,15**
488030200	3,0	6	60	4,5	4	**40,70**
488040200	4,0	6	60	6,0	4	**40,70**
488050200	5,0	6	60	7,5	4	**42,20**
488060200	6,0	6	60	15,0	4	**42,20**
488080200	8,0	8	70	20,0	4	**72,60**
488100200	10,0	10	80	25,0	4	**103,60**
488120200	12,0	12	90	30,0	4	**124,30**
488160200	16,0	16	100	24,0	4	**248,60**
488200200	20,0	20	100	30,0	4	**352,20**

Condiciones de corte | Cutting data pag. 175

SAUDA

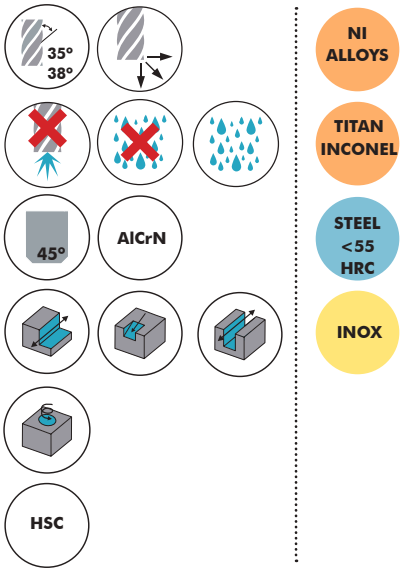
F-408

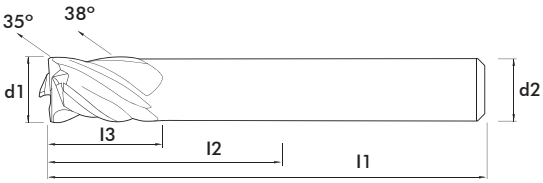
Fresa metal duro alto rendimiento con doble ángulo de hélice

4 Fluted high performance solid carbide end mill with double helix angle

Fresa de metal duro larga de muy alto rendimiento de 4 labios con corte al centro y recubrimiento TiAlN. Ángulo espiral de 35º/38º versión reforzada. Fresa especialmente diseñada para ranurado, contorneado y acabado de materiales exóticos. Permite trabajar con parámetros de corte más altos. La geometría especial conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para uso general: para materiales hasta 55 HRC.

4 fluted cutting to centre long high performance solid carbide end mill plus TiAlN coating. 35º/38º Spiral angle, reinforced version. Tool specially designed for slotting, contouring and finishing exotic materials. Due to the double helix angle we avoid the vibrations and get extremely high performance. The special geometry together with this coating will help you to get a soft cutting with a very long tool life. Also for universal purpose. For materials up to 55 HRC.





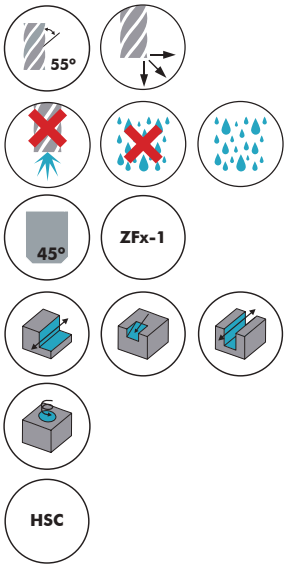
Ø6 - Ø12

Ref.	d1	d2	l1	l2	l3	z	€
408030200	3	6	57	20	8	4	31,75
408040200	4	6	57	20	11	4	31,75
408050200	5	6	57	21	13	4	31,75
408060200	6	6	57	21	13	4	31,75
408080200	8	8	63	27	19	4	38,80
408100200	10	10	73	32	22	4	56,30
408120200	12	12	83	38	26	4	79,85
408140200	14	14	84	40	30	4	142,40
408160200	16	16	92	44	32	4	142,40
408200200	20	20	104	55	38	4	209,70

Condiciones de corte | Cutting data pag. 175

Fresa metal duro 4 labios para materiales exóticos

4 Fluted high performance solid carbide end mill for exotic materials



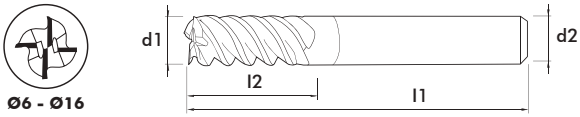
NI ALLOYS

TITAN INCONEL

INOX

Fresa de metal duro de muy alto rendimiento de 4 labios con corte al centro con recubrimiento ZFx1. Ángulo espiral de 55º. Fresa especialmente diseñada para ranurado, contorneado y acabado de materiales exóticos. La geometría positiva conjuntamente con este recubrimiento nos ayudará a tener un corte muy suave y a prolongar la vida del filo de corte. Herramienta para uso general: para materiales hasta 55 HRC.

4 Fluted cutting to centre high performance solid carbide end mills plus ZFx1 coating. 55º Spiral angle. Tool especially designed for slotting, contouring and finishing of exotic materials. The positive geometry together with this coating will help you to get a soft cutting with a very long tool life.
Also for universal purpose. For materials up to < 55 HRC.



Ref.	d1	d2	l1	l2	z	€
407060200	6	6	57	13	4	**46,20**
407080200	8	8	63	19	4	**48,15**
407100200	10	10	72	22	4	**73,15**
407120200	12	12	83	26	4	**84,65**
407160200	16	16	92	32	4	**190,60**

Condiciones de corte | Cutting data pag. 175

SAUDA

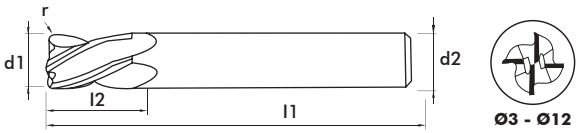
F-479

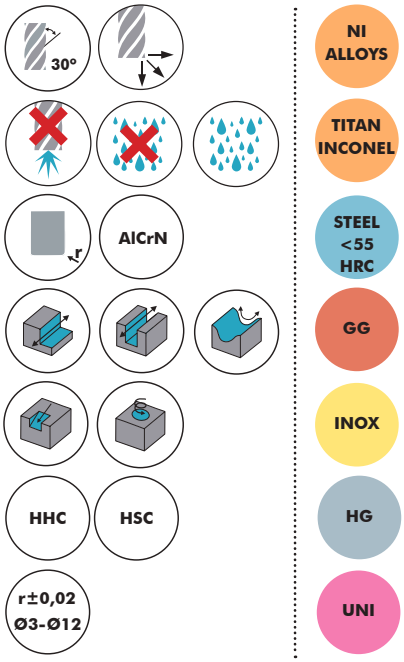
Fresa metal duro tórica de 4 labios para materiales exóticos

4 Fluted solid carbide corner radius end mill for exotic materials

Fresa de metal duro tórica de 4 labios y hélice de 30º con recubrimiento AlTiN especial para aleaciones de acero, aleaciones con base Ti/Ni, INCONEL y materiales difíciles de mecanizar.

4 Fluted 30º helix solid carbide corner radius end mill with AlTiN coating. Recommended for alloy steel, Ti/Ni base alloys, inconel and hard to cut materials.



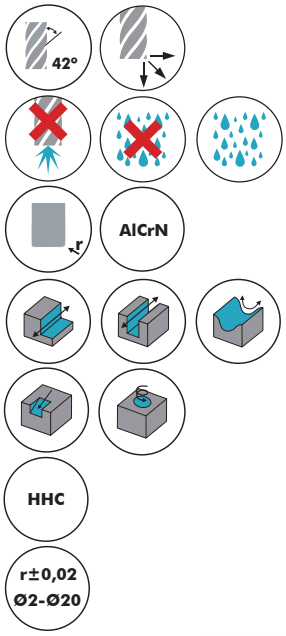


Ref.	d1	r	d2	l1	l2	z	€
479030200	3	0,2	4	60	8	4	39,60
479030210	3	0,2	6	60	8	4	37,55
479030220	3	0,5	4	60	8	4	39,60
479030230	3	0,5	6	60	8	4	37,55
479040200	4	0,2	4	70	11	4	39,60
479040210	4	0,2	6	70	11	4	37,55
479040220	4	0,5	4	70	11	4	39,60
479040230	4	0,5	6	70	11	4	37,55
479040240	4	1,0	4	70	11	4	39,60
479040250	4	1,0	6	70	11	4	37,55
479050200	5	0,2	6	80	13	4	42,50
479050210	5	0,5	6	80	13	4	42,50
479050220	5	1,0	6	80	13	4	42,50
479060200	6	0,2	6	90	13	4	48,00
479060210	6	0,5	6	90	13	4	48,00
479060220	6	1,0	6	90	13	4	48,00
479080200	8	0,5	8	100	19	4	58,95
479080210	8	1,0	8	100	19	4	58,95
479080220	8	1,5	8	100	19	4	58,95
479080230	8	2,0	8	100	19	4	58,95
479100200	10	0,5	10	100	22	4	85,35
479100210	10	1,0	10	100	22	4	85,35
479100220	10	1,5	10	100	22	4	85,35
479100230	10	2,0	10	100	22	4	85,35
479100240	10	2,5	10	100	22	4	85,35
479120200	12	0,5	12	110	26	4	102,00
479120210	12	1,0	12	110	26	4	102,00
479120220	12	1,5	12	110	26	4	102,00
479120230	12	2,0	12	110	26	4	102,00
479120240	12	2,5	12	110	26	4	102,00
479120250	12	3,0	12	110	26	4	102,00

Condiciones de corte | Cutting data pag. 175

Fresa metal duro tórica de 4 labios para materiales exóticos

4 Fluted solid carbide corner radius end mill for exotic materials



TITAN INCONEL

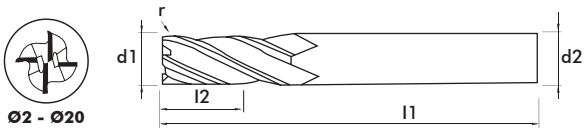
STEEL <55 HRC

INOX

HG

Fresa de metal duro tórica de 4 labios y hélice variable con recubrimiento AlTiN para acero al carbono, aleaciones de acero, inoxidable y materiales difíciles de mecanizar. La hélice variable ofrece alta precisión y excelente calidad superficial y una Ap de 1xD.

4 Fluted variable helix solid carbide corner radius end mill with AlTiN coating. Recommended for carbon steel alloy steel, stainless steel and hard to cut materials. It offers high precision and excellent surface due to variable helix geometry with Ap 1xD.



Ref.	d1	r	d2	l1	l2	z	€
477020200	2	0,1	4	45	5	4	35,90
477020210	2	0,2	4	45	5	4	35,90
477030200	3	0,2	6	50	8	4	32,20
477030210	3	0,3	6	50	8	4	32,20
477030220	3	0,5	6	50	8	4	32,20
477040200	4	0,3	6	50	10	4	32,20
477040210	4	0,5	6	50	10	4	32,20
477040220	4	1,0	6	50	10	4	32,20
477050200	5	0,5	6	50	13	4	35,80
477050210	5	1,0	6	50	13	4	35,80
477060200	6	0,5	6	50	13	4	35,80
477060210	6	1,0	6	50	13	4	35,80
477060220	6	1,5	6	50	13	4	35,80
477080200	8	0,5	8	60	19	4	44,55
477080210	8	1,0	8	60	19	4	44,55
477080220	8	1,5	8	60	19	4	44,55
477080230	8	2,0	8	60	19	4	44,55
477100200	10	0,5	10	70	22	4	61,10
477100210	10	1,0	10	70	22	4	61,10
477100220	10	1,5	10	70	22	4	61,10
477100230	10	2,0	10	70	22	4	61,10
477120200	12	0,5	12	75	26	4	81,65
477120210	12	1,0	12	75	26	4	81,70
477120220	12	1,5	12	75	26	4	81,70
477120230	12	2,0	12	75	26	4	81,70
477120240	12	3,0	12	75	26	4	81,70
477160200	16	1,5	16	90	32	4	188,30
477160210	16	2,0	16	90	32	4	188,30
477160220	16	3,0	16	90	32	4	188,30
477200200	20	3,0	20	100	38	4	299,25
477200210	20	4,0	20	100	38	4	314,20
477200220	20	5,0	20	100	38	4	329,90

Condiciones de corte | Cutting data pag. 176 - 177

SAUDA

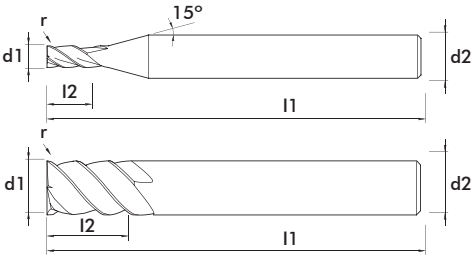
F-478

Fresa metal duro tórica de 4 labios para materiales exóticos

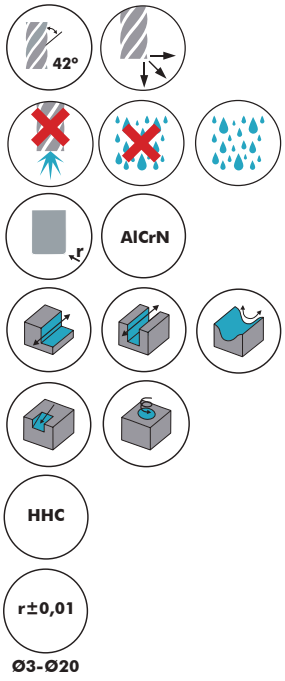
4 Fluted solid carbide corner radius end mill for exotic materials

Fresa de metal duro tórica de 4 labios y hélice de 42º con recubrimiento AlCrN especial para aleaciones de acero, aleaciones con base Ti/Ni, INCONEL y materiales difíciles de mecanizar. Mejora la resistencia al desgaste evitando el estrés en el filo. Minimiza las vibraciones gracias a su diseño con espacio desigual entre los filos.

4 Fluted 42º helix solid carbide corner radius end mill with AlCrN coating. Recommended for alloy steel, Ti/Ni base alloys, inconel and hard to cut materials. Improves wear resistance as well as avoids edge stress. Minimizes chattering by unequal flute spacing design.



Ø3 - Ø20



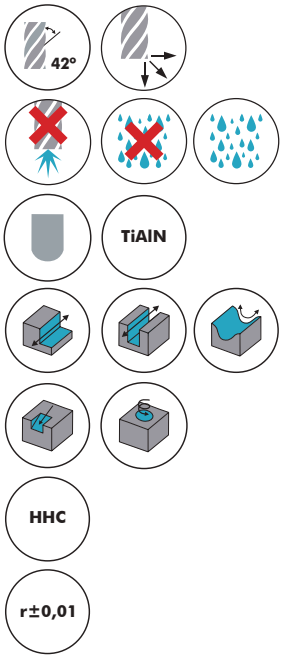
NI ALLOYS
TITAN INCONEL
STEEL <65 HRC
INOX
HG
UNI

Ref.	d1	r	d2	l1	l2	z	€
478030200	3	0,2	6	60	10	4	55,80
478040200	4	0,2	6	60	12	4	55,80
478050200	5	0,5	6	60	15	4	55,80
478060200	6	0,5	6	60	15	4	55,80
478060210	6	1,0	6	60	15	4	55,80
478080200	8	0,5	8	80	20	4	83,45
478080210	8	1,0	8	80	20	4	83,45
478100200	10	0,5	10	80	25	4	120,05
478100210	10	1,0	10	80	25	4	120,05
478100220	10	1,5	10	80	25	4	120,05
478100230	10	2,0	10	80	25	4	120,05
478120200	12	0,5	12	100	30	4	145,40
478120210	12	1,0	12	100	30	4	145,40
478120220	12	1,5	12	100	30	4	145,40
478120230	12	2,0	12	100	30	4	145,40
478160200	16	1,0	16	110	42	4	284,80
478200200	20	1,0	20	110	48	4	380,65

Condiciones de corte | Cutting data pag. 177 - 178

Fresa metal duro esférica de 2 labios para materiales exóticos

2 Fluted solid carbide ball end mill for exotic materials



NI ALLOYS

TITAN INCONEL

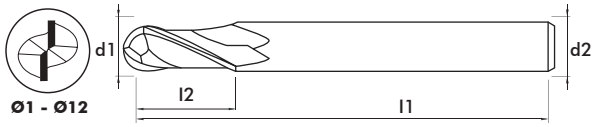
STEEL <55 HRC

INOX

HG

Fresa de metal duro esférica de 2 labios y hélice de 38º con recubrimiento TiAlN especial para aleaciones de acero, aleaciones con base Ti/Ni, inconel y materiales difíciles de mecanizar.

2 Fluted 38º hélix solid carbide ball end mill with TiAlN coating. Recommended for alloy steel, Ti/Ni base alloys, inconel and hard to cut materials.



Ref.	d1	d2	l1	l2	z	€
298010200	1	6	50	3	2	32,95
298020200	2	6	50	6	2	32,95
298030200	3	6	50	8	2	32,95
298030210	3	6	70	8	2	34,05
298040200	4	6	50	10	2	34,20
298040210	4	6	70	10	2	35,40
298050200	5	6	50	13	2	36,20
298050210	5	6	80	13	2	38,10
298060200	6	6	50	13	2	36,50
298060210	6	6	90	13	2	38,10
298080200	8	8	60	19	2	50,40
298080210	8	8	100	19	2	55,80
298100200	10	10	70	22	2	56,70
298100210	10	10	100	22	2	72,00
298120200	12	12	75	26	2	83,75
298120210	12	12	110	26	2	95,60

Condiciones de corte | Cutting data pag. 178

SAUDA

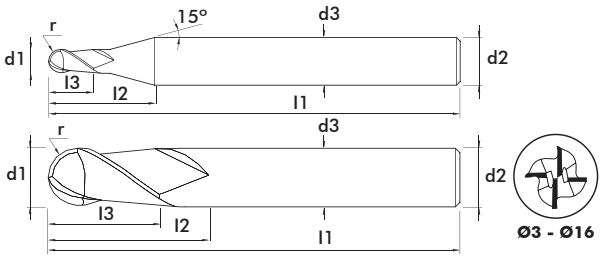
F-498

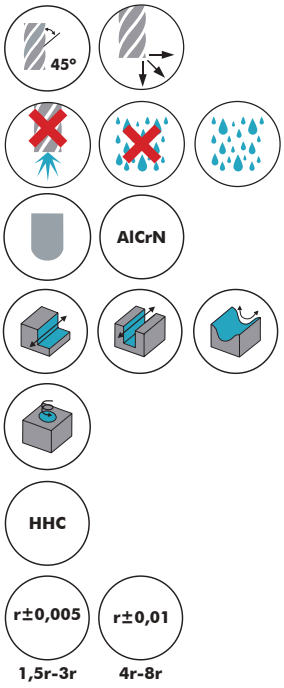
Fresa metal duro esférica de 4 labios para materiales exóticos (0,2µm)

4 Fluted solid carbide ball end mill
for exotic materials (0,2µm)

Fresa de metal duro esférica de 4 labios y hélice de 45º con recubrimiento AlCrN especial para aleaciones de acero, aleaciones con base Ti/Ni, inconel y materiales difíciles de mecanizar. Mejora la resistencia al desgaste evitando el estrés en el filo. Proporciona un excelente acabado superficial gracias a los 4 filos de corte y a la fácil evacuación de viruta.

4 Fluted 45º hélix solid carbide ball end mill with AlCrN coating. Recommended for alloy steel, Ti/Ni base alloys, inconel and hard to cut materials. Improves wear resistance as well as avoids edge stress. Excellent work surface finish by 4 flutes and deep chip pocket.





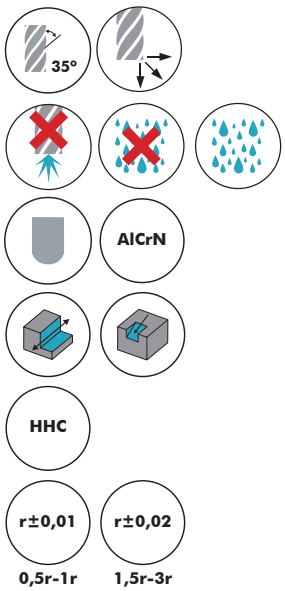
NI ALLOYS
TITAN INCONEL
STEEL <65 HRC
INOX
HG

Ref.	d1	r	d2	l1	l2	z	€
498030200	3	1,5	6	60	8	4	**56,75**
498040200	4	2,0	6	70	8	4	**58,70**
498050200	5	2,5	6	80	10	4	**62,75**
498060200	6	3,0	6	90	12	4	**67,20**
498080200	8	4,0	8	100	14	4	**94,70**
498100200	10	5,0	10	100	18	4	**129,35**
498120200	12	6,0	12	110	22	4	**169,00**
498160200	16	8,0	16	130	30	4	**303,20**

Condiciones de corte | Cutting data pag. 179

Fresa metal duro cónica con punta esférica de 3 labios

3 Fluted solid carbide taper ball end mill



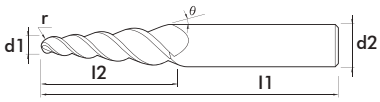
NI ALLOYS

TITAN INCONEL

Fresa de metal duro cónica de 3 labios y hélice de 35º con punta esférica para el mecanizado de inconel aleaciones de Cr/Ni y aleaciones de Al. Indicada para trabajos en máquinas de 3 y 5 ejes del sector aeronáutico, como aspas de turbina, rotores, impulsores y llantas. Mejora la resistencia al desgaste y evita el estrés en el filo en las diferentes operaciones de mecanizado. Con la misma herramienta se puede hacer desbaste y acabado.

3 Fluted solid carbide taper ball 35º helix end mill for inconel, Al alloys and Cr/Ni alloys. Suitable for special components with 3 axes and 5 axes sector such as impellers, blisks, tire profiles and turbine blades. Improves wear resistance as well as avoids edge stress in various applications. Available for simultaneous machining of roughing and finishing with only one tool.

Ø1 - Ø6



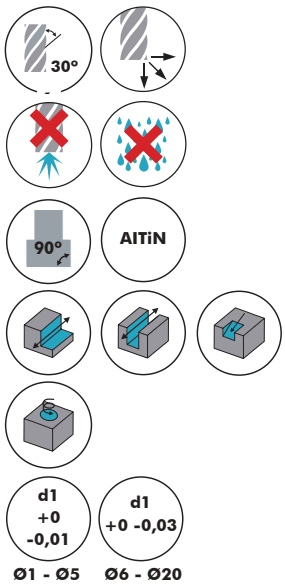
Ref.	d1	r	d2	l1	l2	θ	z	€
591010200	1	0,5	6	60	20	1º	3	**85,20**
591010210	1	0,5	6	60	20	3º	3	**85,20**
591010220	1	0,5	6	60	20	5º	3	**85,20**
591010230	1	0,5	6	60	20	7º	3	**85,20**
591020200	2	1,0	6	60	20	1º	3	**85,20**
591020210	2	1,0	6	60	20	3º	3	**85,20**
591020220	2	1,0	8	75	30	5º	3	**114,25**
591020230	2	1,0	8	70	25	7º	3	**114,25**
591030200	3	1,5	6	75	32	1º	3	**96,80**
591030210	3	1,5	6	80	39	3º	3	**104,55**
591030220	3	1,5	8	75	30	5º	3	**114,25**
591030230	3	1,5	10	80	30	7º	3	**151,00**
591040200	4	2,0	6	75	32	1º	3	**96,80**
591040210	4	2,0	8	80	32	3º	3	**114,25**
591040220	4	2,0	10	80	32	5º	3	**151,00**
591040230	4	2,0	10	80	26	7º	3	**143,30**
591060200	6	3,0	8	75	32	1º	3	**114,25**
591060210	6	3,0	10	90	40	3º	3	**162,65**
591060220	6	3,0	12	80	32	5º	3	**178,15**
591060230	6	3,0	12	80	27	7º	3	**178,15**

FRESAS GRAFITO

GRAPHITE END MILLS

Fresa metal duro 2 labios mango largo para grafito

3 Fluted solid carbide long shank end mill for graphite



GRAPHITE

STEEL <55 HRC

GG

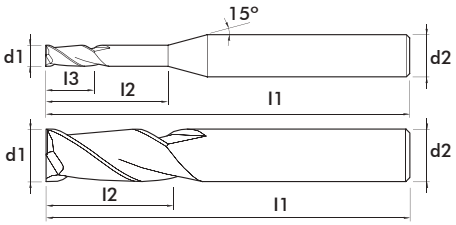
GGG

Fresa de metal duro de 2 labios y mango largo para varios tipos de materiales, como grafito, acero endurecido, acero preendurecido, acero para herramientas y fundición. Ofrece un excelente rendimiento empleando poca fuerza de corte gracias a su recubrimiento AlTiN. El filo de corte largo está optimizado para el mecanizado de paredes profundas en el grafito. Es adecuada para varias aplicaciones de aleaciones de acero hasta 48 HRC por su grado WC ultrafino.

2 Fluted solid carbide long shank end mill for various work materials, graphite, hardened steel, pre-hardened steel, tool steel and cast iron. Excellent performance with low cutting force by AlTiN coating. Long flute length optimized for deep side wall machining of graphite. Applied ultra fine WC grade optimized for various alloy steels applications up to HRC48.

Ø1 - Ø4

Ø5 - Ø20



Ref.	d1	d2	l1	l2	l3	z	€
702010200	1,0	4	60	15	5	2	**48,40**
702015200	1,5	4	60	20	8	2	**46,70**
702020200	2,0	4	70	25	10	2	**50,35**
702030200	3,0	4	75	25	15	2	**46,70**
702040200	4,0	6	100	40	20	2	**72,20**
702050200	5,0	5	100	-	25	2	**70,90**
702060200	6,0	6	110	-	30	2	**67,60**
702060210	6,0	6	150	-	30	2	**85,60**
702080200	8,0	8	150	-	40	2	**110,95**
702100200	10,0	10	150	-	45	2	**138,80**
702100210	10,0	10	200	-	50	2	**179,30**
702120200	12,0	12	150	-	60	2	**174,85**
702120210	12,0	12	200	-	60	2	**207,00**
702160200	16,0	16	160	-	70	2	**293,90**
702160210	16,0	16	200	-	70	2	**353,15**
702200200	20,0	20	200	-	90	2	**653,60**
702200210	20,0	20	320	-	120	2	**1.074,90**

Condiciones de corte | Cutting data pag. 180

SAUDA

GRAFITO

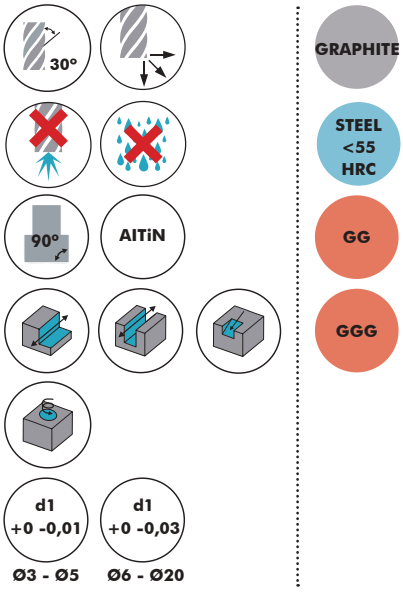
F-704

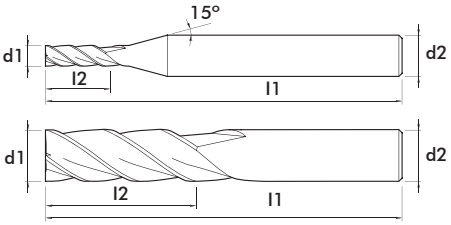
Fresa metal duro 4 labios mango largo para grafito

4 Fluted solid carbide long shank end mill for graphite

Fresa de metal duro de 4 labios y mango largo para varios tipos de materiales, como grafito, acero endurecido, acero preendurecido, acero para herramientas y fundición. Ofrece un excelente rendimiento empleando poca fuerza de corte gracias a su recubrimiento AlTiN. El filo de corte largo está optimizado para el mecanizado de paredes profundas en el grafito. Es adecuada para varias aplicaciones de aleaciones de acero hasta 48 HRC por su grado WC ultrafino.

4 Fluted solid carbide long shank end mill for various work materials, graphite, hardened steel, pre-hardened steel, tool steel and cast iron. Excellent performance with low cutting force by AlTiN coating. Long flute length optimized for deep side wall machining of graphite. Applied ultra fine WC grade optimized for various alloy steels applications up to HRC48.





Ø3 - Ø5

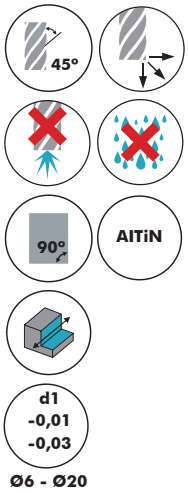
Ø6 - Ø20

Ref.	d1	d2	l1	l2	z	€
704030200	3	6	100	15	4	**71,85**
704040200	4	6	100	20	4	**74,15**
704050200	5	6	100	20	4	**74,15**
704060200	6	6	110	30	4	**71,85**
704060210	6	6	150	30	4	**101,45**
704080200	8	8	150	40	4	**119,50**
704080210	8	8	200	40	4	**133,80**
704100200	10	10	150	50	4	**138,80**
704100210	10	10	200	50	4	**179,30**
704120200	12	12	150	60	4	**174,85**
704120210	12	12	200	60	4	**211,25**
704160200	16	16	160	70	4	**302,80**
704160210	16	16	200	80	4	**353,15**
704200200	20	20	160	75	4	**478,20**
704200210	20	20	200	90	4	**653,60**
704200220	20	20	320	100	4	**1.074,90**

Condiciones de corte | Cutting data pag. 180

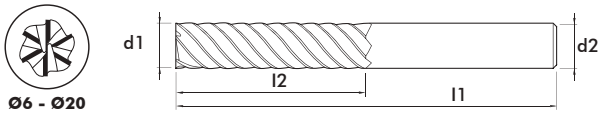
Fresa metal duro 6 labios mango largo para grafito

6 Fluted solid carbide long shank end mill for graphite



Fresa de metal duro de 6 labios y hélice de 45º con mango largo para varios tipos de materiales, como grafito, acero endurecido, acero preendurecido, acero para herramientas y fundición. Ofrece un excelente rendimiento empleando poca fuerza de corte gracias a su recubrimiento AlTiN. El filo de corte largo está optimizado para el mecanizado de paredes profundas en el grafito. Es adecuada para varias aplicaciones de aleaciones de acero hasta 50 HRC por su grado WC ultrafino.

6 Fluted 45º helix solid carbide long shank end mill for various work materials, graphite, hardened steel, pre-hardened steel, tool steel and cast iron. Excellent performance with low cutting force by AlTiN coating. Long flute length optimized for deep side wall machining of graphite. Applied ultra fine WC grade optimized for various alloy steels applications up to HRC50.



Ref.	d1	d2	l1	l2	z	€
706060200	6	6	110	30	6	**95,65**
706080200	8	8	110	40	6	**158,80**
706100200	10	10	120	50	6	**168,85**
706100210	10	10	150	50	6	**204,25**
706120200	12	12	130	60	6	**180,45**
706120210	12	12	160	60	6	**206,60**
706160200	16	16	200	90	6	**405,40**
706160210	16	16	250	90	6	**702,00**
706200200	20	20	200	100	6	**717,30**
706200210	20	20	250	100	6	**1.030,95**
706200220	20	20	320	100	6	**1.184,45**

Condiciones de corte | Cutting data pag. 180

SAUDA

GRAFITO

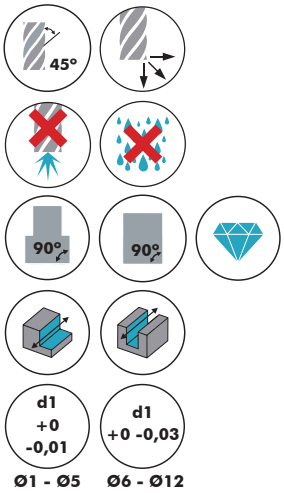
F-712

Fresa metal duro 2 labios recubierta de diamante para grafito (0,2µm)

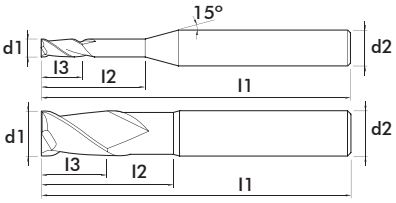
2 Fluted solid carbide diamond coated end mill for graphite (0,2µm)

Fresa de metal duro de 2 labios y hélice de 30º recubierta de diamante para grafito, plástico reforzado, fibra de carbono, materiales no férricos y materiales no metálicos. Tiene una excelente resistencia al desgaste gracias a su recubrimiento CVD de diamante. Ofrece además muy buen rendimiento en diferentes operaciones de mecanizado.

2 Fluted 30º helix solid carbide diamond coated end mill for graphite, reinforced plastic, carbon fiber, non-ferrous and non-metallic materials. Excellent wear resistance by applying qualified CVD diamond coating. It also offers very good performance at different machining operations.



GRAPHITE
ALU <12% SI
COPPER
PLASTIC
GFK CFK
GOLD



Ø1 - Ø3

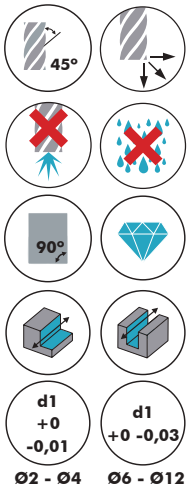
Ø4 - Ø12

Ref.	d1	d2	l1	l2	l3	z	€
712010200	1,0	4	60	15	3	2	**74,55**
712015200	1,5	4	60	15	6	2	**74,55**
712020200	2,0	4	80	15	8	2	**74,55**
712020210	2,0	4	80	30	8	2	**80,35**
712030200	3,0	4	80	20	12	2	**74,55**
712030210	3,0	4	80	30	12	2	**80,35**
712040200	4,0	4	80	-	16	2	**72,05**
712050200	5,0	6	105	-	20	2	**116,55**
712060200	6,0	6	105	-	25	2	**116,55**
712060210	6,0	6	150	-	25	2	**126,45**
712080200	8,0	8	150	40	25	2	**168,25**
712100200	10,0	10	160	50	25	2	**238,50**
712120200	12,0	12	160	60	25	2	**299,10**

Condiciones de corte | Cutting data pag. 180

Fresa metal duro 4 labios recubierta de **diamante** para grafito (0,2µm)

4 Fluted solid carbide diamond coated end mill for graphite



GRAPHITE

ALU
<12% SI

COPPER

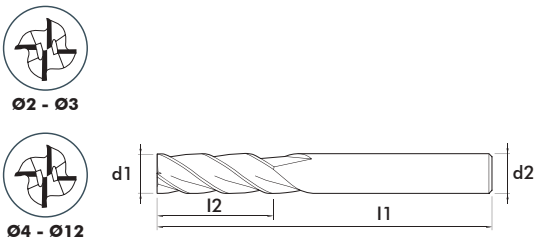
PLASTIC

GFK
CFK

GOLD

Fresa de metal duro de 4 labios y hélice de 30º recubierta de diamante para grafito, plástico reforzado, fibra de carbono, materiales no férricos y materiales no metálicos. Tiene una excelente resistencia al desgaste gracias a su recubrimiento CVD de diamante. Ofrece además muy buen rendimiento en diferentes operaciones de mecanizado.

4 Fluted 30º helix solid carbide diamond coated end mill for graphite, reinforced plastic, carbon fiber, non-ferrous and non-metallic materials. Excellent wear resistance by applying qualified CVD diamond coating. It also offers very good performance at different machining operations.



Ref.	d1	d2	l1	l2	z	€
716020200	2	4	60	10	4	**94,50**
716030200	3	4	60	15	4	**94,50**
716040200	4	4	80	20	4	**102,60**
716060200	6	6	105	25	4	**130,30**
716060210	6	6	150	25	4	**148,30**
716080200	8	8	105	35	4	**195,75**
716080210	8	8	150	35	4	**213,35**
716100200	10	10	80	25	4	**255,20**
716100210	10	10	105	40	4	**279,20**
716120200	12	12	80	25	4	**317,15**
716120210	12	12	105	45	4	**349,10**

Condiciones de corte | Cutting data pag. 181

SAUDA

GRAFITO

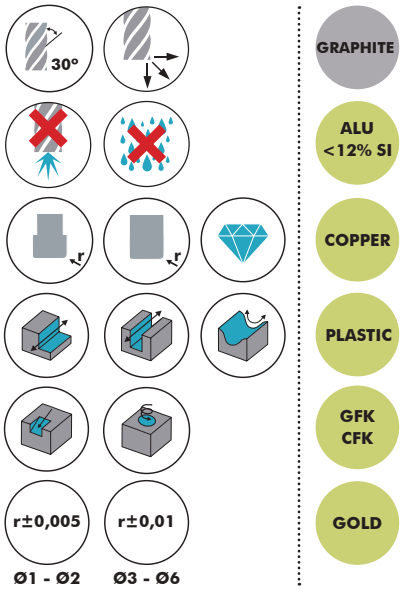
F-718

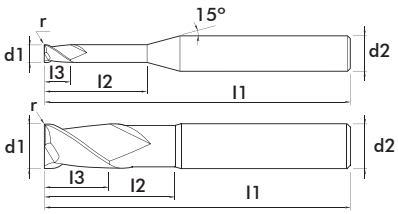
Fresa metal duro 2 labios recubierta de diamante para grafito (0,2µm)

2 Fluted solid carbide diamond coated end mill for graphite (0,2µm)

Fresa de metal duro tórica de 2 labios y hélice de 30º recubierta de diamante para grafito, plástico reforzado, fibra de carbono, materiales no férricos y materiales no metálicos. Tiene una excelente resistencia al desgaste gracias a su recubrimiento CVD de diamante. Ofrece además muy buen rendimiento en diferentes operaciones de mecanizado.

2 Fluted 30º helix solid carbide diamond coated corner radius end mill for graphite, reinforced plastic, carbon fiber, non-ferrous and non-metallic materials. Excellent wear resistance by applying qualified CVD diamond coating. It also offers very good performance at different machining operations.





Ø1 - Ø3

Ø4 - Ø6

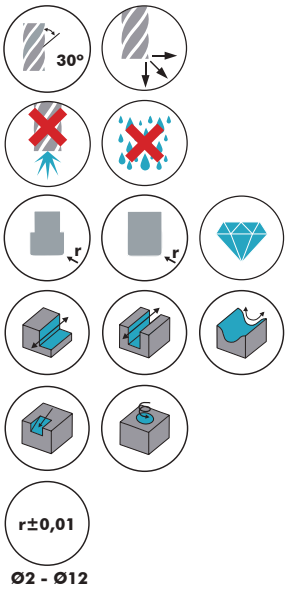
Ref.	d1	r	d2	l1	l2	l3	z	€
718010200	1,0	0,05	4	60	10	2,0	2	**97,60**
718010210	1,0	0,05	4	60	20	2,0	2	**101,85**
718010220	1,0	0,10	4	60	10	2,0	2	**97,60**
718010230	1,0	0,10	4	60	20	2,0	2	**101,85**
718010240	1,0	0,20	4	60	10	2,0	2	**97,60**
718010250	1,0	0,20	4	60	20	2,0	2	**101,85**
718015200	1,5	0,05	4	60	10	3,0	2	**101,85**
718015210	1,5	0,05	4	60	20	3,0	2	**106,10**
718015220	1,5	0,10	4	60	10	3,0	2	**101,85**
718015230	1,5	0,10	4	60	20	3,0	2	**106,10**
718015240	1,5	0,15	4	60	10	3,0	2	**101,85**
718015250	1,5	0,15	4	60	20	3,0	2	**106,10**
718015260	1,5	0,20	4	60	10	3,0	2	**101,85**
718015270	1,5	0,20	4	60	20	3,0	2	**106,10**
718015280	1,5	0,30	4	60	10	3,0	2	**101,85**
718015290	1,5	0,30	4	60	20	3,0	2	**106,10**
718020200	2,0	0,05	4	60	18	3,5	2	**101,85**
718020210	2,0	0,05	4	60	25	3,5	2	**106,10**
718020220	2,0	0,20	4	60	18	3,5	2	**101,85**
718020230	2,0	0,20	4	60	25	3,5	2	**106,10**
718020240	2,0	0,30	4	60	18	3,5	2	**101,85**
718020250	2,0	0,30	4	60	25	3,5	2	**106,10**

Ref.	d1	r	d2	l1	l2	l3	z	€
718020260	2,0	0,50	4	60	18	3,5	2	**101,85**
718020270	2	0,50	4	60	25	3,5	2	**106,10**
718030200	3	0,05	4	80	20	4,0	2	**106,50**
718030210	3	0,05	4	80	30	4,0	2	**111,35**
718030220	3	0,20	4	80	20	4,0	2	**106,50**
718030230	3	0,20	4	80	30	4,0	2	**111,35**
718030240	3	0,30	4	80	20	4,0	2	**106,50**
718030250	3	0,30	4	80	30	4,0	2	**111,35**
718030260	3	0,50	4	80	20	4,0	2	**106,50**
718030270	3	0,50	4	80	30	4,0	2	**111,35**
718030280	3	1,00	4	80	20	4,0	2	**106,50**
718030290	3	1,00	4	80	30	4,0	2	**111,35**
718040200	4	0,05	4	80	25	5,0	2	**110,55**
718040210	4	0,20	4	80	25	5,0	2	**110,55**
718040220	4	0,50	4	80	25	5,0	2	**110,55**
718040230	4	1,00	4	80	25	5,0	2	**110,55**
718050200	5	0,05	6	105	30	6,0	2	**146,60**
718050210	5	0,20	6	105	30	6,0	2	**146,60**
718050220	5	0,50	6	105	30	6,0	2	**146,60**
718060200	6	0,05	6	105	30	7,0	2	**146,60**
718060210	6	0,20	6	105	30	7,0	2	**146,60**
718060220	6	0,50	6	105	30	7,0	2	**146,60**
718060230	6	1,00	6	105	30	7,0	2	**146,60**

Condiciones de corte | Cutting data pag. 181

Fresa metal duro 4 labios tórica recubierta de diamante para grafito (0,2µm)

4 Fluted solid carbide diamond coated corner radius end mill for graphite (0,2µm)



GRAPHITE

ALU <12% SI

COPPER

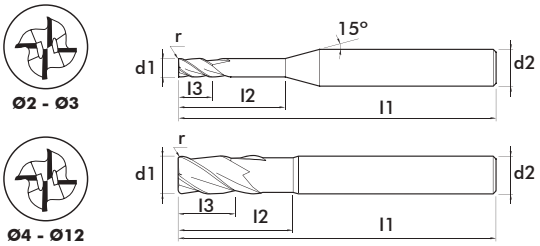
PLASTIC

GFK CFK

GOLD

Fresa de metal duro tórica de 4 labios y hélice de 30º recubierta de diamante para grafito, plástico reforzado, fibra de carbono, materiales no férricos y materiales no metálicos. Tiene una excelente resistencia al desgaste gracias a su recubrimiento CVD de diamante. Ofrece además muy buen rendimiento en diferentes operaciones de mecanizado.

4 Fluted 30º helix solid carbide diamond coated corner radius end mill for graphite, reinforced plastic, carbon fiber, non-ferrous and non-metallic materials. Excellent wear resistance by applying qualified CVD diamond coating. It also offers very good performance at different machining operations.



Ref.	d1	r	d2	l1	l2	l3	z	€
724020200	2	0,05	4	60	18	3,5	4	**112,10**
724020210	2	0,20	4	60	18	3,5	4	**112,10**
724020220	2	0,30	4	60	18	3,5	4	**112,10**
724020230	2	0,50	4	60	18	3,5	4	**112,10**
724030200	3	0,05	4	80	20	4,0	4	**117,15**
724030210	3	0,20	4	80	20	4,0	4	**117,15**
724030220	3	0,30	4	80	20	4,0	4	**117,15**
724030230	3	0,50	4	80	20	4,0	4	**117,15**
724030240	3	1,00	4	80	20	4,0	4	**117,15**
724040200	4	0,50	4	100	20	6,0	4	**122,95**
724040210	4	1,00	4	100	20	6,0	4	**122,95**
724060200	6	0,50	6	105	25	9,0	4	**154,10**
724060210	6	1,00	6	105	25	9,0	4	**154,10**
724080200	8	0,50	8	105	30	12,0	4	**210,45**
724080210	8	1,00	8	105	30	12,0	4	**210,45**
724100200	10	0,50	10	105	35	15,0	4	**283,45**
724100210	10	1,00	10	105	35	15,0	4	**283,45**
724120200	12	0,50	12	105	40	18,0	4	**346,75**
724120210	12	1,00	12	105	40	18,0	4	**346,75**

Condiciones de corte | Cutting data pag. 181

SAUDA

GRAFITO

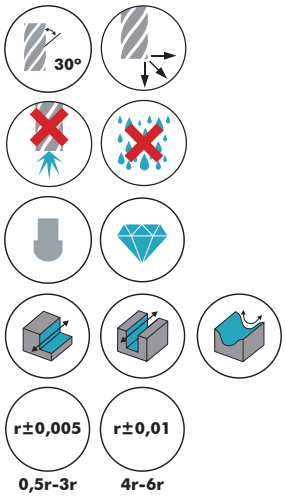
F-714

Fresa metal duro 4 labios esférica recubierta de diamante para grafito (0,2µm)

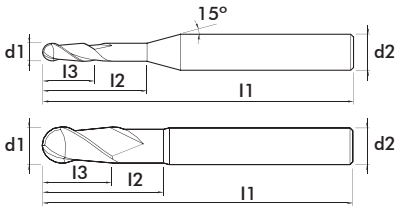
4 Fluted solid carbide diamond coated ball end mill for graphite (0,2µm)

Fresa de metal duro esférica de 4 labios y hélice de 30º recubierta de diamante para grafito, plástico reforzado, fibra de carbono, materiales no férricos y materiales no metálicos. Tiene una excelente resistencia al desgaste gracias a su recubrimiento CVD de diamante. Ofrece además muy buen rendimiento en diferentes operaciones de mecanizado.

4 Fluted 30º helix solid carbide diamond coated ball end mill for graphite, reinforced plastic, carbon fiber, non-ferrous and non-metallic materials. Excellent wear resistance by applying qualified CVD diamond coating. It also offers very good performance at different machining operations.



GRAPHITE
ALU <12% SI
COPPER
PLASTIC
GFK CFK
GOLD



Ø1 - Ø12

Ref.	d1	d2	r	l1	l2	l3	z	€
714010200	1,0	4	0,50	60	15	3	4	**86,20**
714015200	1,5	4	0,75	60	15	5	4	**86,20**
714020200	2,0	4	1,00	80	20	6	4	**85,00**
714030200	3,0	4	1,50	100	20	8	4	**92,00**
714040200	4,0	4	2,00	100	-	16	4	**99,35**
714060200	6,0	6	3,00	105	25	16	4	**119,65**
714080200	8,0	8	4,00	105	30	20	4	**146,60**
714080210	8,0	8	4,00	150	35	20	4	**170,95**
714120200	12,0	12	6,00	160	50	25	4	**307,85**

Condiciones de corte | Cutting data pag. 181

FRESAS OTRAS APLICACIONES

OTHER APPLICATION END MILLS

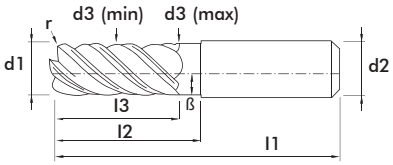
F-555

Fresa de metal duro alto rendimiento <65HRC

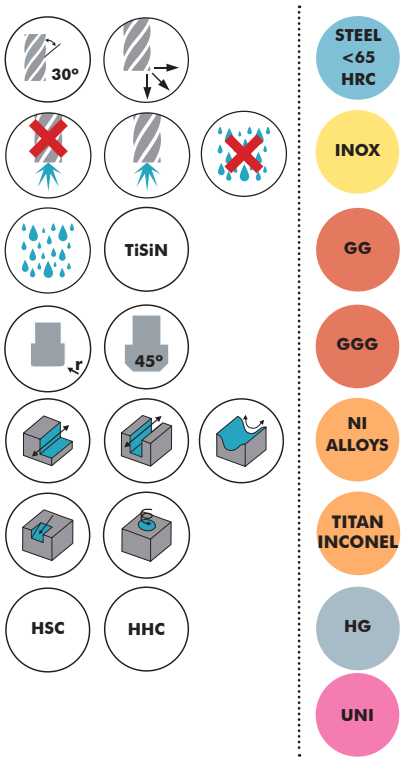
HIgh performance solid carbide end mill <65 HRC

Fresa de metal duro alto rendimiento de 5 labios con recubrimiento TiSiN. Está especialmente diseñada para un alto avance en operaciones de contorneado. Los tres ángulos distintos de la hélice permiten mecanizar contorneando con toda la longitud útil de corte de la herramienta.
Esta herramienta está disponible con radio o chaflán, ambas con o sin refrigeración interna.

5 Fluted high performance solid carbide end mill with TiSiN coating. Specially designed for high feed rates in contouring operations. 3 Different helix angle allow to make a good use of the whole cutting lenght of the tool.
This tool is available with radius or bevel, both with or without internal coolant.

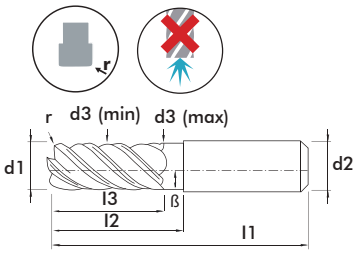


Ø6 - Ø20



Con radio sin refrigeración interna

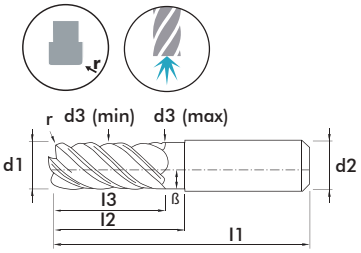
Ref.	d1	r	d2	l1	l2	l3	ß	d3 (min)	d3 (max)	z	€
555060200	6	0,5	6	53,0	14	-	-	-	-	5	**44,80**
555060210	6	0,5	6	65,0	32	14	1º	5,4	5,8	5	**51,90**
555060220	6	0,5	6	65,0	42	14	1º	5,0	5,8	5	**54,55**
555060230	6	0,5	6	81,5	51	14	1º	4,7	5,8	5	**62,00**
555080200	8	0,5	8	53,0	18	18	-	-	-	5	**58,30**
555080210	8	0,5	8	65,0	42	18	1º	7,2	7,8	5	**62,70**
555080220	8	0,5	8	81,5	58	18	1º	6,6	7,8	5	**71,50**
555080230	8	0,5	8	109,0	71	18	1º	6,1	7,8	5	**82,00**
555100200	10	0,5	10	65,0	22	22	-	-	-	5	**76,00**
555100210	10	0,5	10	81,5	51	22	1º	9,0	9,8	5	**85,75**
555100220	10	0,5	10	109,0	71	22	1º	8,3	9,8	5	**101,35**
555100230	10	0,5	10	109,0	82	22	1º	7,9	9,8	5	**102,95**
555120200	12	1,0	12	81,5	26	26	-	-	-	5	**124,80**
555120210	12	1,0	12	81,5	51	26	1º	11,1	11,8	5	**134,70**
555120220	12	1,0	12	109,0	71	26	1º	10,4	11,8	5	**156,70**
555120230	12	1,0	12	109,0	86	26	1º	9,9	11,8	5	**159,10**
555160200	16	2,0	16	81,5	38	38	-	-	-	5	**172,00**
555160210	16	2,0	16	109,0	61	38	1º	15,2	15,8	5	**190,95**
555160220	16	2,0	16	109,0	76	38	1º	14,7	15,8	5	**193,90**
555160230	16	2,0	16	150,0	101	38	1º	13,8	15,8	5	**268,70**
555200200	20	2,0	20	100,0	45	45	-	-	-	5	**259,35**
555200210	20	2,0	20	109,0	71	45	1º	19,1	19,8	5	**286,95**
555200220	20	2,0	20	130,0	86	45	1º	18,6	19,8	5	**307,20**
555200230	20	2,0	20	150,0	101	45	1º	18,0	19,8	5	**399,10**



Condiciones de corte | Cutting data pag. 182 - 183

Con radio con refrigeración interna

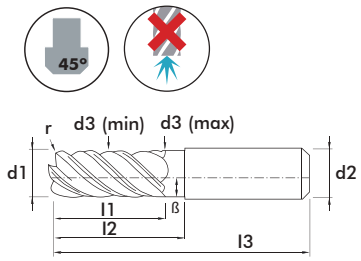
Ref.	d1	r	d2	l1	l2	l3	ß	d3 (min)	d3 (max)	z	€
555060205	6	0,5	6	53,0	14	14	-	-	-	4	**54,15**
555060215	6	0,5	6	65,0	32	14	1º	5,4	5,8	5	**63,90**
555060225	6	0,5	6	65,0	42	14	1º	5,0	5,8	5	**66,55**
555060235	6	0,5	6	81,5	51	14	1º	4,7	5,8	5	**74,00**
555080205	8	0,5	8	53,0	18	18	-	-	-	4	**70,30**
555080215	8	0,5	8	65,0	42	18	1º	7,2	7,8	5	**78,70**
555080225	8	0,5	8	81,5	58	18	1º	6,6	7,8	5	**87,50**
555080235	8	0,5	8	109,0	71	18	1º	6,1	7,8	5	**98,00**
555100205	10	0,5	10	65,0	22	22	-	-	-	5	**94,70**
555100215	10	0,5	10	81,5	51	22	1º	9,0	9,8	5	**104,40**
555100225	10	0,5	10	109,0	71	22	1º	8,3	9,8	5	**126,70**
555100235	10	0,5	10	109,0	82	22	1º	7,9	9,8	5	**128,30**
555120205	12	1,0	12	81,5	26	26	-	-	-	5	**150,15**
555120215	12	1,0	12	81,5	51	26	1º	11,1	11,8	5	**160,00**
555120225	12	1,0	12	109,0	71	26	1º	10,4	11,8	5	**188,70**
555120235	12	1,0	12	109,0	86	26	1º	9,9	11,8	5	**191,10**
555160205	16	2,0	16	81,5	38	38	-	-	-	5	**205,35**
555160215	16	2,0	16	109,0	61	38	1º	15,2	15,8	5	**234,95**
555160225	16	2,0	16	109,0	76	38	1º	14,7	15,8	5	**237,90**
555160235	16	2,0	16	150,0	101	38	1º	13,8	15,8	5	**312,70**
555200205	20	2,0	20	100,0	45	45	-	-	-	5	**308,55**
555200215	20	2,0	20	109,0	71	45	1º	19,1	19,8	5	**352,95**
555200225	20	2,0	20	130,0	86	45	1º	18,6	19,8	5	**377,90**
555200235	20	2,0	20	150,0	101	45	1º	18,0	19,8	5	**462,95**



Condiciones de corte | Cutting data pag. 182 - 183

Con chaflán sin refrigeración interna

Ref.	d1	r	d2	l1	l2	l3	ß	d3 (min)	d3 (max)	z	€
555060300	6	0,10	6	53,0	14	14	-	-	-	4	**38,15**
555060310	6	0,10	6	65,0	32	14	1º	5,4	5,8	5	**44,15**
555060320	6	0,10	6	65,0	42	14	1º	5,0	5,8	5	**46,40**
555060330	6	0,10	6	81,5	51	14	1º	4,7	5,8	5	**52,70**
555080300	8	0,10	8	53,0	18	18	-	-	-	4	**49,55**
555080310	8	0,10	8	65,0	42	18	1º	7,2	7,8	5	**53,35**
555080320	8	0,10	8	81,5	58	18	1º	6,6	7,8	5	**60,80**
555080330	8	0,10	8	109,0	71	18	1º	6,1	7,8	5	**69,90**
555100300	10	0,15	10	65,0	22	22	-	-	-	5	**64,70**
555100310	10	0,15	10	81,5	51	22	1º	9,0	9,8	5	**72,95**
555100320	10	0,15	10	109,0	71	22	1º	8,3	9,8	5	**86,15**
555100330	10	0,15	10	109,0	82	22	1º	7,9	9,8	5	**87,60**
555120300	12	0,20	12	81,5	26	26	-	-	-	5	**106,15**
555120310	12	0,20	12	81,5	51	26	1º	11,1	11,8	5	**114,55**
555120320	12	0,20	12	109,0	71	26	1º	10,4	11,8	5	**133,30**
555120330	12	0,20	12	109,0	86	26	1º	9,9	11,8	5	**134,00**
555160300	16	0,20	16	81,5	38	38	-	-	-	5	**146,20**
555160310	16	0,20	16	109,0	61	38	1º	15,2	15,8	5	**162,40**
555160320	16	0,20	16	109,0	76	38	1º	14,7	15,8	5	**164,80**
555160330	16	0,20	16	150,0	101	38	1º	13,8	15,8	5	**228,40**
555200300	20	0,30	20	100,0	45	45	-	-	-	5	**222,25**
555200310	20	0,30	20	109,0	71	45	1º	19,1	19,8	5	**245,95**
555200320	20	0,30	20	130,0	86	45	1º	18,6	19,8	5	**263,35**
555200330	20	0,30	20	150,0	101	45	1º	18,0	19,8	5	**342,05**

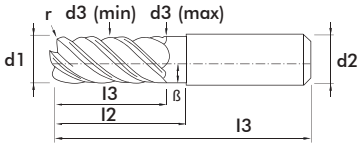


Condiciones de corte | Cutting data pag. 182 - 183

F-555

Con radio con refrigeración interna

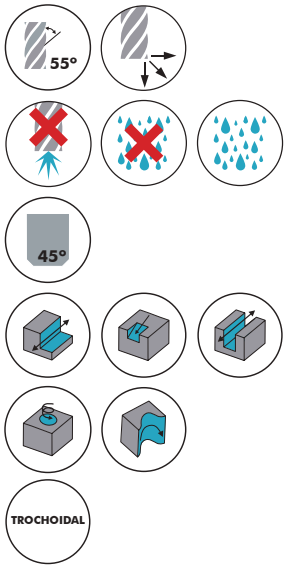
Ref.	d1	r	d2	l1	l2	l3	ß	d3 (min)	d3 (max)	z	€
555060305	6	0,10	6	53,0	14	14	-	-	-	4	**46,00**
555060315	6	0,10	6	65,0	32	14	1º	5,4	5,8	5	**54,30**
555060325	6	0,10	6	65,0	42	14	1º	5,0	5,8	5	**56,55**
555060335	6	0,10	6	81,5	51	14	1º	4,7	5,8	5	**62,95**
555080305	8	0,10	8	53,0	18	18	-	-	-	4	**59,75**
555080315	8	0,10	8	65,0	42	18	1º	7,2	7,8	5	**66,80**
555080325	8	0,10	8	81,5	58	18	1º	6,6	7,8	5	**74,30**
555080335	8	0,10	8	109,0	71	18	1º	6,1	7,8	5	**83,35**
555100305	10	0,15	10	65,0	22	22	-	-	-	5	**80,70**
555100315	10	0,15	10	81,5	51	22	1º	9,0	9,8	5	**88,95**
555100325	10	0,15	10	109,0	71	22	1º	8,3	9,8	5	**107,70**
555100335	10	0,15	10	109,0	82	22	1º	7,9	9,8	5	**109,35**
555120305	12	0,20	12	81,5	26	26	-	-	-	5	**127,75**
555120315	12	0,20	12	81,5	51	26	1º	11,1	11,8	5	**136,00**
555120325	12	0,20	12	109,0	71	26	1º	10,4	11,8	5	**160,40**
555120335	12	0,20	12	109,0	86	26	1º	9,9	11,8	5	**162,55**
555160305	16	0,20	16	81,5	38	38	-	-	-	5	**174,55**
555160315	16	0,20	16	109,0	61	38	1º	15,2	15,8	5	**199,75**
555160325	16	0,20	16	109,0	76	38	1º	14,7	15,8	5	**202,30**
555160335	16	0,20	16	150,0	101	38	1º	13,8	15,8	5	**265,90**
555200305	20	0,30	20	100,0	45	45	-	-	-	5	**264,40**
555200315	20	0,30	20	109,0	71	45	1º	19,1	19,8	5	**302,55**
555200325	20	0,30	20	130,0	86	45	1º	18,6	19,8	5	**323,90**
555200335	20	0,30	20	150,0	101	45	1º	18,0	19,8	5	**396,75**



Condiciones de corte | Cutting data pag. 182 - 183

Fresa metal duro 5 labios con rompevirutas para mecanizado trocoidal

5 Fluted solid carbide end mill with chipbreaker for trochoidal milling



STEEL

INOX

SUPER ALLOYS

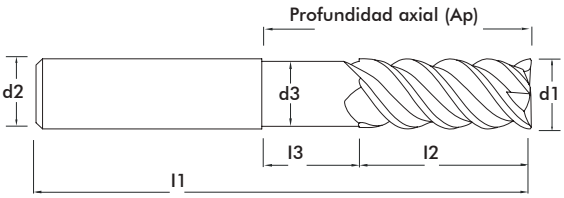
GG

HG

Fresa metal duro de 5 labios, diseñada específicamente para el mecanizado trocoidal. Sus 5 labios nos permiten alcanzar condiciones de corte elevadas, garantizando un alto rendimiento.

5 Fluted solid carbide end mill with chipbreakers for trochoidal milling. Its 5 flutes allow us to achieve high cutting conditions, which guarantees high performance.

Ø6 - Ø20



Ref.	d1	d2	d3	l1	l2	l3	ap	€
552060200	6	6	5,8	62	18	7	25 mm	**51,20**
552080200	8	6	7,6	68	24	6	30 mm	**72,10**
552100200	10	6	9,5	80	30	5	35 mm	**92,40**
552120200	12	8	11,5	93	36	9	45 mm	**131,10**
552160200	16	10	15,5	108	48	7	55 mm	**176,70**
552200200	20	12	19,5	126	60	10	70 mm	**362,60**

Condiciones de corte | Cutting data pag. 183

SAUDA

O. APLIC.

F-888

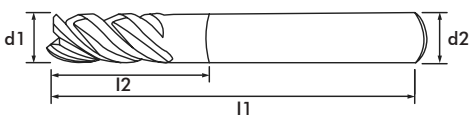
Trocoidal
Trochoidal

Fresa trocoidal Z5 alto rendimiento

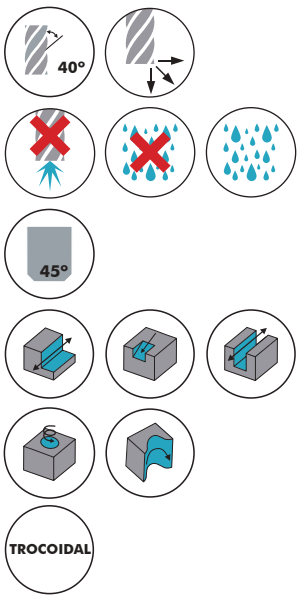
5 Fluted solid carbide end mill with chipbreaker for trochoidal milling

Fresa trocoidal Z5 de alto rendimiento con helice de 40º, chaflán en esquina, acero endurecido hasta 56 HRC. Recubimiento ALTIN-NANO para acero, acero inoxidable, fundición, cobre, aleación de titanio, etc.

5 Fluted solid carbide end mill with chipbreakers for trochoidal milling. Its 5 flutes allow us to achieve high cutting conditions, which guarantees high performance.



Ø6 - Ø20



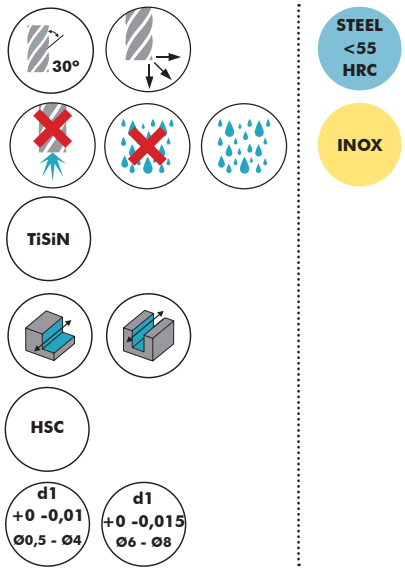
STEEL
INOX
SUPER ALLOYS
GG
HG

Ref.	d1	d2	l1	l2	U	C-45º	€
888060200	6	6	62	18	25	0,1	**35,95**
888080200	8	8	70	24	30	0,15	**44,50**
888100200	10	10	80	30	35	0,2	**64,10**
888120200	12	12	94	36	45	0,2	**90,00**
888160200	16	16	110	48	55	0,4	**161,75**
888200200	20	20	126	60	70	0,4	**234,35**

Condiciones de corte | Cutting data pag. 184

Fresa metal duro cónica de 2 labios (0,2µm)

2 Fluted solid carbide taper end mill (0,2µm)

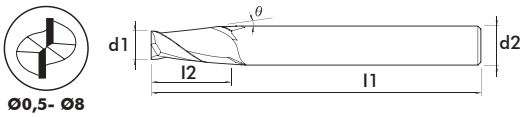


STEEL <55 HRC

INOX

Fresa de metal duro cónica de 2 labios y hélice de 30º recubierta de TiSiN para el mecanizado de acero preendurecido y acero endurecido hasta 50 HRC. Ofrece buena resistencia al desgaste gracias a su recubrimiento PVD con base Si. Tiene tolerancia en el filo de alta precisión y deja muy buen acabado superficial. Espectacular rendimiento en el mecanizado a altas velocidades gracias a su grado WC ultrafino (0,2 µm).

2 Fluted 30º helix solid carbide taper end mill with TiSiN coating for pre-hardened steel and hardened steel up to HRC 50. Good wear resistance by Si-based PVD coating. High precise edge tolerance and very nice work surface finish. Outstanding performance at high speed machining by ultrafine (0,2 µm) WC grade.



Condiciones de corte | Cutting data pag. 184

Ref.	d1	d2	l1	l2	θ	z	€
595005200	0,5	4	40	2,0	1º	2	55,60
595005210	0,5	4	40	2,0	3º	2	55,60
595005220	0,5	4	40	2,0	5º	2	55,60
595005230	0,5	4	40	2,5	7º	2	55,60
595010200	1,0	4	45	4,0	1º	2	55,60
595010210	1,0	4	45	4,0	3º	2	55,60
595010220	1,0	4	45	4,0	5º	2	55,60
595010230	1,0	4	45	4,0	7º	2	55,60
595015200	1,5	4	45	5,0	1º	2	55,60
595015210	1,5	4	45	8,0	3º	2	55,60
595015220	1,5	4	50	10,0	5º	2	55,60
595015230	1,5	4	50	10,0	7º	2	55,60
595020200	2,0	4	45	6,0	1º	2	55,60
595020210	2,0	4	50	10,0	3º	2	55,60
595020220	2,0	4	50	10,0	5º	2	55,60
595020230	2,0	6	50	10,0	7º	2	60,60
595025200	2,5	6	50	10,0	1º	2	60,60
595025210	2,5	6	50	12,0	3º	2	60,60
595025220	2,5	6	50	12,0	5º	2	60,60
595025230	2,5	6	50	12,0	7º	2	60,60
595030200	3,0	6	50	12,0	1º	2	60,60
595030210	3,0	6	50	12,0	3º	2	60,60
595030220	3,0	6	50	12,0	5º	2	60,60
595030230	3,0	6	50	12,0	7º	2	60,60
595040200	4,0	6	60	15,0	1º	2	65,25
595040210	4,0	6	60	18,0	3º	2	65,25
595040220	4,0	8	65	23,0	5º	2	98,20
595060200	6,0	8	65	20,0	1º	2	92,20
595060210	6,0	8	65	19,0	3º	2	92,20
595060220	6,0	10	75	23,0	5º	2	98,20
595060230	6,0	12	75	24,0	7º	2	149,10
595080200	8,0	10	90	35,0	1º	2	109,20
595080210	8,0	12	90	35,0	3º	2	149,10
595080220	8,0	16	100	45,0	5º	2	258,85
595080230	8,0	16	90	32,0	7º	2	232,50

SAUDA

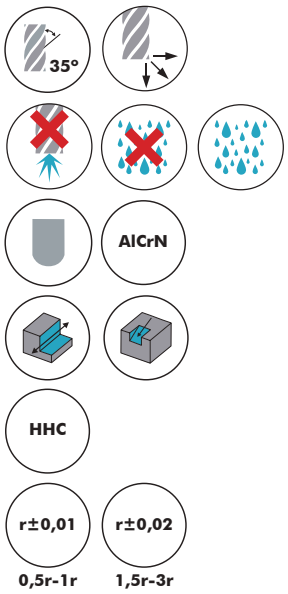
F-590

Fresa metal duro cónica con punta esférica de 3 labios

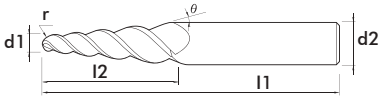
3 Fluted solid carbide taper ball end mill

Fresa de metal duro cónica de 3 labios y hélice de 35º con punta esférica recubierta de AlCrN para el mecanizado de acero preendurecido, fundición y materiales no metálicos. Indicada para trabajos en máquinas de 3 y 5 ejes del sector aeronáutico, como aspas de turbina, rotores, impulsores y llantas. Mejora la resistencia al desgaste y evita el estrés en el filo en las diferentes operaciones de mecanizado. Con la misma herramienta se puede hacer desbaste y acabado.

3 Fluted solid carbide taper ball 35º helix end mill with AlCrN coating for pre-hardened steel, cast iron and non-metallic materials. Suitable for special components with 3 axes and 5 axes sector such as impellers, blisks, tire profiles and turbine blades. Improves wear resistance as well as avoids edge stress in various applications. Available for simultaneous machining of roughing and finishing with only one tool.



STEEL <55 HRC
GG
GGG
ALU <12% SI
COPPER
PLASTIC
GFK CFK
GOLD

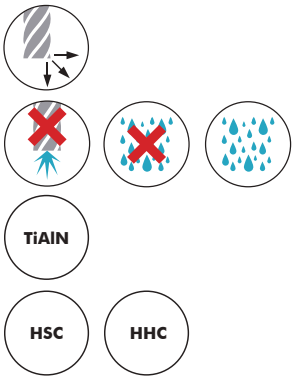


Ø1 - Ø6

Ref.	d1	r	d2	l1	l2	θ	z	€
590010200	1	0,5	6	60	20	1º	3	96,80
590010210	1	0,5	6	60	20	3º	3	96,80
590010220	1	0,5	6	60	20	5º	3	96,80
590010230	1	0,5	6	60	20	7º	3	96,80
590020200	2	1,0	6	60	20	1º	3	96,80
590020210	2	1,0	6	60	20	3º	3	96,80
590020220	2	1,0	8	75	30	5º	3	127,60
590020230	2	1,0	8	70	25	7º	3	127,60
590030200	3	1,5	6	75	32	1º	3	108,60
590030210	3	1,5	8	80	39	3º	3	127,60
590030220	3	1,5	8	75	30	5º	3	127,60
590030230	3	1,5	10	80	30	7º	3	165,55
590040200	4	4,0	6	75	32	1º	3	108,60
590040210	4	4,0	8	80	32	3º	3	127,60
590040220	4	4,0	10	80	32	5º	3	165,55
590040230	4	4,0	10	80	26	7º	3	157,60
590060200	6	3,0	8	75	32	1º	3	127,60
590060210	6	3,0	10	90	40	3º	3	177,55
590060220	6	3,0	12	80	32	5º	3	193,40
590060230	6	3,0	12	80	27	7º	3	193,40

Chaflanador metal duro 60° HSC < 65 HRC

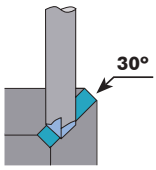
60° HSC Solid carbide beveling end mill < 65 HRC

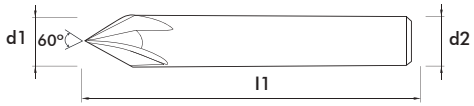


STEEL <65 HRC
INOX
GG
GGG
ALU <12% SI
COPPER
NI ALLOYS
TITAN INCONEL
UNI

Chaflanador de metal duro 60º con mango cilíndrico (mirar dibujo adjunto), para obtener chaflanes a 30º. Adecuada para el mecanizado a alta velocidad (HSC). Apta para uso general y para materiales hasta 65 HRC.

60º Solid carbide beveling end mill with cylindrical shank (see attached drawing) to get 30º chamfers. Suitable for HSC machining. For general use and materials up to 65 HRC.





Ref.	d1	d2	l1	Z	€
460040200	4	4	54	4	27,00
460060200	6	6	57	4	30,85
460080200	8	8	63	5	38,55
460100200	10	10	72	6	46,25
460120200	12	12	83	6	67,40
460160200	16	16	92	6	107,80

Condiciones de corte | Cutting data pag. 185

SAUDA

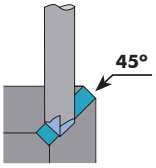
F-490

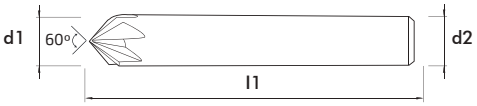
Chaflanador metal duro 90º HSC < 65HRC

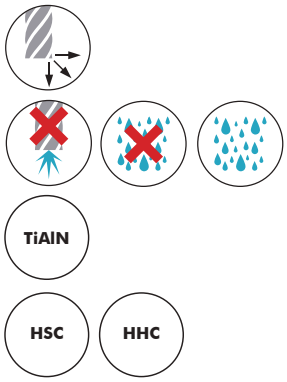
90º HSC Solid carbide beveling end mill < 65 HRC

Chaflanador de metal duro 90º con mango cilíndrico (mirar dibujo adjunto), para obtener chaflanes a 45º. Adecuada para el mecanizado a alta velocidad (HSC). Apta para uso general y para materiales hasta 65 HRC.

90º Solid carbide beveling end mill with cylindrical shank (see attached drawing) to get 45º chamfers. Suitable for HSC machining. For general use and materials up to 65 HRC.







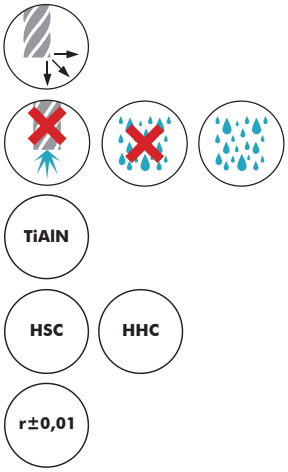
STEEL <65 HRC
INOX
GG
GGG
ALU <12% SI
COPPER
NI ALLOYS
TITAN INCONEL
UNI

Ref.	d1	d2	l1	z	€
490040200	4	4	54	4	27,00
490060200	6	6	57	4	30,85
490080200	8	8	63	4	38,55
490100200	10	10	72	6	46,25
490120200	12	12	83	6	67,40
490160200	16	16	92	6	107,80

Condiciones de corte | Cutting data pag. 185

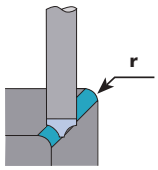
Fresa metal duro para radios cóncavos HSC < 65 HRC

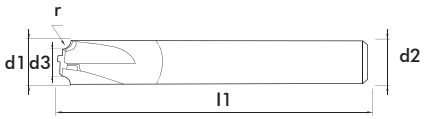
HSC Solid carbide end mill for concave radius < 65 HRC



Fresa de metal duro mango cilíndrico para hacer radios cóncavos en las aristas de las piezas (mirar dibujo adjunto). Recubrimiento TiAlN. Para uso general, alta velocidad y materiales hasta 65 HRC.

Solid carbide end mill for concave radius on workpiece edges (see attached drawing) with TiAlN coating. For general use, HSC and materials up to 65 HRC.





Ref.	r	d1	d2	d3	l1	z	€
480005200	0,5	10	10	9	75	4	**190,30**
480010200	1,0	10	10	8	75	4	**190,30**
480015200	1,5	10	10	7	75	4	**190,30**
480020200	2,0	10	10	6	75	4	**190,30**
480025200	2,5	10	10	5	75	4	**195,40**
480030200	3,0	12	12	6	75	4	**195,40**
480040200	4,0	16	16	8	75	4	**216,00**
480050200	5,0	16	16	6	80	4	**306,55**

Condiciones de corte | Cutting data pag. 185

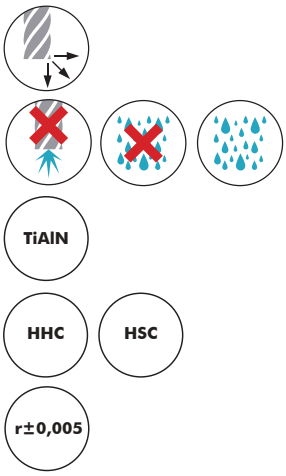
F-845

Fresa metal duro para chaflanes interiores y exteriores < 65HRC

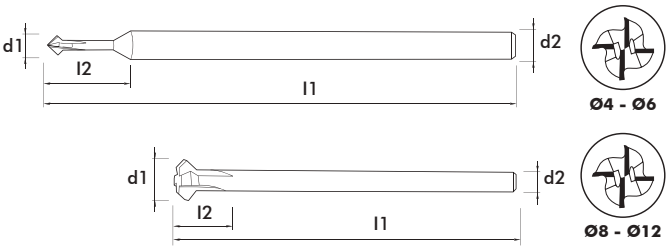
Solid carbide end mill for internal and external bevels < 65HRC

Chaflanador de metal duro 90º con mango cilíndrico. Herramienta diseñada para biselado doble: interior y exterior por la misma entrada (mirar dibujo adjunto), para obtener chaflanes a 45º. Adecuada para el mecanizado a alta velocidad (HSC). Apta para uso general y para materiales hasta 65 HRC. Podemos ahorrarnos un giro dependiendo de la pieza a mecanizar.

Solid carbide long end mill for 90º internal and external bevels with cylindrical shank (see attached drawing) to get 45º chamfer. Very good for dry milling through TiAlN coating. We can save clamping of the work piece with this tool. The positive geometry together with this coating will help you the get a soft cutting with a very long tool life. Universal purpose. For high tense material up to 65 HRC.



STEEL <65 HRC
INOX
GG
GGG
ALU <12% SI
COPPER
NI ALLOYS
TITAN INCONEL
UNI



Ref.	d1	d2	l1	l2	z	€
845040200	4	6	100	20	4	**69,30**
845060200	6	6	100	20	4	**74,60**
845080200	8	6	100	20	4	**97,20**
845100200	10	6	100	40	4	**119,00**
845120200	12	6	100	40	4	**142,35**

Condiciones de corte | Cutting data pag. 185

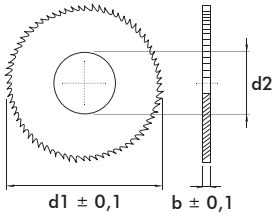
Sierra circular metal duro paso fino

Solid carbide fine toothing saw blade

DIN 1837 | STEEL <55 HRC | INOX | GG | GGG | ALU <12% SI | COPPER | NI ALLOYS | TITAN INCONEL | UNI

Fresa de disco metal duro paso fino. Ángulo de corte: 6º. Para mecanizar acero, fundición gris, fundición nodular, bronce, aluminio, plástico, grafito y fibra de carbono.

Solid carbide fine toothing saw blade. Clearance ground on both sides (secondary edges) rake angle 6 degrees. For steel, cast iron, malleable cast iron, brass, aluminum, plastic, and carbon-fibre.



d1	b	d2	z	€
20	0,10	5	80	**66,05**
20	0,15	5	80	**51,10**
20	0,20	5	80	**40,85**
20	0,25	5	64	**40,85**
20	0,30	5	64	**40,85**
20	0,40	5	64	**42,50**
20	0,50	5	48	**44,80**
20	0,60	5	48	**44,80**
20	0,70	5	48	**32,30**
20	0,80	5	48	**51,80**
20	0,90	5	40	**40,20**
20	1,00	5	40	**59,05**
20	1,10	5	40	**38,90**
20	1,20	5	40	**62,70**
20	1,30	5	40	**66,05**
20	1,40	5	40	**53,40**
20	1,60	5	40	**74,90**
20	1,80	5	32	**61,50**
20	2,00	5	32	**88,35**
20	2,50	5	32	**64,10**
20	3,00	5	32	**89,00**
20	5,00	5	24	**121,40**
20	6,00	5	24	**145,70**

Condiciones de corte | Cutting data pag. 185

d1	b	d2	z	€
25	0,10	8	80	**51,60**
25	0,15	8	80	**52,75**
25	0,20	8	80	**31,80**
25	0,25	8	80	**42,50**
25	0,30	8	80	**42,50**
25	0,40	8	64	**46,45**
25	0,50	8	64	**53,60**
25	0,60	8	64	**40,20**
25	0,70	8	48	**44,10**
25	0,80	8	48	**66,05**
25	0,90	8	48	**71,40**
25	1,00	8	48	**71,40**
25	1,10	8	48	**48,30**
25	1,20	8	48	**79,95**
25	1,30	8	40	**53,10**
25	1,40	8	40	**55,20**
25	1,50	8	40	**55,20**
25	1,60	8	40	**98,25**
25	1,70	8	40	**98,25**
25	1,80	8	40	**63,00**
25	2,00	8	40	**112,50**
25	2,50	8	40	**97,80**
25	3,00	8	32	**90,50**
25	3,50	8	32	**107,30**
25	4,00	8	32	**122,00**
25	5,00	8	32	**172,40**
25	6,00	8	24	**176,30**

F-850

d1	b	d2	z	€
30	0,10	8	100	**81,70**
30	0,15	8	100	**64,55**
30	0,20	8	100	**54,40**
30	0,25	8	100	**54,40**
30	0,30	8	80	**54,40**
30	0,40	8	80	**56,25**
30	0,50	8	80	**57,90**
30	0,60	8	64	**62,70**
30	0,70	8	64	**73,05**
30	0,80	8	64	**74,80**
30	0,90	8	64	**49,50**
30	1,00	8	64	**81,70**
30	1,10	8	64	**88,35**
30	1,20	8	48	**91,85**
30	1,30	8	48	**75,00**
30	1,40	8	48	**105,40**
30	1,50	8	48	**67,40**
30	1,60	8	48	**113,90**
30	1,70	8	48	**118,90**
30	1,80	8	48	**120,80**
30	2,50	8	40	**147,85**
30	3,00	8	40	**166,50**
30	3,50	8	40	**122,00**
30	6,00	8	32	**193,40**

d1	b	d2	z	€
40	0,10	10	128	**77,40**
40	0,15	10	128	**64,20**
40	0,20	10	128	**74,90**
40	0,25	10	100	**56,10**
40	0,30	10	100	**74,90**
40	0,40	10	100	**78,55**
40	0,50	10	80	**83,20**
40	0,60	10	80	**85,80**
40	0,70	10	80	**97,00**
40	0,80	10	80	**98,70**
40	0,90	10	64	**101,75**
40	1,00	10	64	**105,40**
40	1,10	10	64	**109,00**
40	1,20	10	64	**112,50**
40	1,30	10	64	**85,20**
40	1,40	10	64	**121,35**
40	1,50	10	64	**124,85**
40	1,60	10	64	**128,50**
40	1,70	10	48	**84,00**
40	1,80	10	48	**104,10**
40	2,00	10	48	**146,10**
40	2,50	10	48	**185,65**
40	3,00	10	48	**159,90**
40	3,50	10	48	**147,90**
40	4,00	10	40	**197,10**
40	6,00	10	40	**268,80**

d1	b	d2	z	€
50	0,20	13	128	**86,00**
50	0,25	13	128	**108,90**
50	0,50	13	100	**77,40**
50	0,60	13	100	**103,50**
50	0,70	13	80	**109,00**
50	0,80	13	80	**117,85**
50	0,90	13	80	**90,80**
50	1,00	13	80	**124,85**
50	1,10	13	80	**79,50**
50	1,20	13	80	**132,10**
50	1,30	13	64	**91,70**
50	1,40	13	64	**151,80**
50	1,50	13	64	**158,80**
50	1,60	13	64	**162,55**
50	1,70	13	64	**164,20**
50	1,80	13	64	**108,20**
50	1,90	13	64	**130,70**
50	2,00	13	64	**182,00**
50	2,50	13	64	**221,35**
50	3,00	13	48	**256,90**
50	3,50	13	48	**292,60**
50	4,00	13	48	**192,00**
50	5,00	13	48	**234,00**
50	6,00	13	40	**332,30**

d1	b	d2	z	€
63	0,20	16	160	**103,10**
63	0,25	16	160	**153,00**
63	0,30	16	128	**141,10**
63	0,40	16	128	**141,10**
63	0,50	16	128	**137,45**
63	0,60	16	100	**141,10**
63	0,70	16	100	**158,80**
63	0,80	16	100	**166,50**
63	0,90	16	100	**107,30**
63	1,00	16	100	**176,65**
63	1,10	16	80	**117,00**
63	1,20	16	80	**193,70**
63	1,30	16	80	**198,80**
63	1,40	16	80	**202,30**
63	1,50	16	80	**207,00**
63	1,60	16	80	**217,60**
63	1,70	16	80	**141,30**
63	1,80	16	80	**231,95**
63	2,00	16	80	**244,70**
63	2,50	16	64	**295,55**
63	3,00	16	64	**334,75**
63	3,50	16	64	**388,90**
63	4,00	16	64	**431,60**
63	5,00	16	48	**388,10**
63	6,00	16	48	**453,90**

d1	b	d2	z	€
80	0,3	22	160	**203,70**
80	0,4	22	160	**257,05**
80	0,5	22	128	**232,20**
80	0,6	22	128	**225,10**
80	0,7	22	128	**151,40**
80	0,8	22	128	**244,70**
80	0,9	22	100	**158,10**
80	1,0	22	100	**255,65**
80	1,1	22	100	**262,65**
80	1,2	22	100	**273,60**
80	1,3	22	100	**212,30**
80	1,4	22	100	**220,40**
80	1,5	22	100	**298,20**
80	1,6	22	100	**188,70**
80	1,7	22	80	**248,30**
80	1,8	22	80	**250,70**
80	2,0	22	80	**356,20**
80	2,5	22	80	**421,10**
80	3,0	22	80	**358,10**
80	3,5	22	64	**416,30**
80	4,0	22	64	**627,10**

d1	b	d2	z	€
100	0,5	22	160	**424,70**
100	0,6	22	160	**306,30**
100	0,7	22	128	**392,25**
100	0,8	22	128	**346,30**
100	1,0	22	128	**339,30**
100	1,2	22	128	**276,30**
100	1,4	22	100	**404,50**
100	1,5	22	100	**418,15**
100	1,6	22	100	**431,90**
100	1,9	22	100	**383,70**
100	2,0	22	100	**521,05**
100	3,0	22	80	**726,60**
100	4,0	22	80	**698,10**
100	6,0	22	64	**806,60**

Condiciones de corte | Cutting data pag. 185

d1	b	d2	z	€
125	0,6	22	160	**471,80**
125	0,8	22	160	**455,60**
125	0,9	22	160	**447,50**
125	1,0	22	160	**418,40**
125	1,2	22	128	**444,20**
125	1,4	22	128	**395,60**
125	1,5	22	128	**664,80**
125	2,0	22	128	**602,00**
125	2,5	22	100	**948,30**
125	3,0	22	100	**692,10**
125	3,5	22	100	**795,50**
125	5,0	22	80	**999,00**

SAUDA

F-851

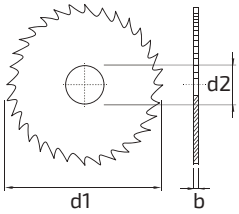
Sierra metal duro paso basto

Solid carbide large toothing saw blade

Fresa de disco metal duro paso grueso. Ángulo de corte: 8º. Para mecanizar acero, fundición gris, fundición nodular, bronce, aluminio, plásticos, grafito y fibra de carbono.

Solid carbide large toothing saw blade. Clearance ground on both sides (secondary edges) rake angle 8 degrees. For steel, cast iron, malleable cast iron, brass, aluminum, graphite, plastics, glass- and carbon-fibre.

DIN 1837 | STEEL <55 HRC | INOX | GG | GGG | ALU <12% SI | COPPER | NI ALLOYS | TITAN INCONEL | UNI



d1	b	d2	z	€
25	0,20	8	20	**42,50**
25	0,30	8	20	**26,30**
25	0,40	8	20	**46,45**
25	0,50	8	20	**40,20**
25	0,60	8	20	**53,60**
25	0,70	8	20	**59,05**
25	0,80	8	20	**66,05**
25	0,90	8	20	**71,40**
25	1,00	8	20	**71,40**
25	1,20	8	20	**49,50**
25	1,50	8	20	**89,15**
25	1,80	8	20	**76,10**
25	2,00	8	20	**112,50**
25	2,50	8	20	**130,80**
25	3,00	8	20	**109,10**
25	4,00	8	20	**147,30**
25	5,00	8	20	**146,10**

d1	b	d2	z	€
30	0,20	8	30	**54,40**
30	0,30	8	30	**40,70**
30	0,40	8	30	**34,80**
30	0,50	8	30	**35,90**
30	0,60	8	30	**38,40**
30	0,80	8	24	**74,80**
30	1,00	8	24	**81,70**
30	1,20	8	24	**68,70**
30	1,50	8	24	**108,90**
30	1,60	8	24	**85,10**
30	1,80	8	24	**120,80**
30	2,00	8	24	**129,20**
30	2,50	8	24	**147,85**
30	3,00	8	24	**103,10**
30	4,00	8	24	**138,80**
30	5,00	8	24	**166,10**
30	6,00	8	24	**193,40**

d1	b	d2	z	€
40	0,20	10	40	**74,90**
40	0,25	10	40	**56,10**
40	0,30	10	40	**74,90**
40	0,50	10	40	**83,20**
40	0,80	10	32	**98,70**
40	0,90	10	32	**63,00**
40	1,00	10	32	**105,40**
40	1,20	10	32	**112,50**
40	1,50	10	32	**124,85**
40	1,60	10	32	**128,50**
40	1,80	10	32	**104,10**
40	2,00	10	32	**146,10**
40	2,50	10	32	**138,60**
40	3,00	10	32	**214,20**
40	4,00	10	32	**197,10**
40	5,00	10	32	**193,40**
40	6,00	10	32	**222,80**

d1	b	d2	z	€
50	0,50	13	48	**77,40**
50	0,60	13	48	**103,50**
50	0,70	13	40	**109,00**
50	0,80	13	40	**117,85**
50	1,00	13	40	**124,85**
50	1,20	13	40	**132,10**
50	1,50	13	32	**158,80**
50	1,60	13	32	**162,55**
50	1,80	13	32	**108,20**
50	2,00	13	32	**182,00**
50	2,50	13	32	**221,35**
50	3,00	13	24	**256,90**
50	4,00	13	24	**192,00**
50	5,00	13	24	**282,50**
50	6,00	13	20	**275,30**

d1	b	d2	z	€
63	0,4	16	64	**141,10**
63	0,5	16	64	**137,45**
63	0,6	16	48	**141,10**
63	0,7	16	48	**158,80**
63	0,8	16	48	**166,50**
63	0,9	16	48	**107,30**
63	1,0	16	48	**176,65**
63	1,2	16	40	**193,70**
63	1,5	16	40	**207,00**
63	1,6	16	40	**217,60**
63	1,8	16	40	**143,60**
63	2,0	16	40	**244,70**
63	2,5	16	32	**182,90**
63	3,0	16	32	**334,75**
63	4,0	16	32	**322,10**
63	5,0	16	24	**388,10**
63	6,0	16	24	**376,20**

d1	b	d2	z	€
80	0,6	22	64	**225,10**
80	0,7	22	64	**151,40**
80	0,8	22	64	**244,70**
80	1,0	22	48	**255,65**
80	1,2	22	48	**273,60**
80	1,5	22	48	**298,20**
80	1,6	22	48	**305,10**
80	1,8	22	40	**250,70**
80	2,0	22	40	**356,20**
80	2,5	22	40	**421,10**
80	3,0	22	40	**479,75**
80	5,0	22	32	**461,60**
80	6,0	22	32	**549,30**

d1	b	d2	z	€
100	0,6	22	80	**253,80**
100	0,8	22	64	**346,30**
100	0,9	22	64	**352,70**
100	1,0	22	64	**339,30**
100	1,2	22	64	**370,20**
100	1,5	22	48	**418,15**
100	1,6	22	48	**322,40**
100	2,0	22	48	**521,05**
100	3,0	22	48	**726,60**
100	4,0	22	40	**578,70**
100	6,0	22	32	**806,60**

d1	b	d2	z	€
125	0,8	22	80	**377,60**
125	1,0	22	80	**346,80**
125	1,2	22	64	**595,15**
125	1,6	22	64	**690,35**
125	2,0	22	64	**806,65**
125	3,0	22	48	**1119,00**
125	4,0	22	48	**1092,50**
125	5,0	22	40	**1208,60**
125	6,0	22	40	**1.221,90**

Condiciones de corte | Cutting data pag. 185

FRESAS
Condiciones de corte

END MILLS
Cutting Data

F-100 | F-111 - pag. 10

MATERIAL	CFRP			GFRP		
Vc	140 - 200 m/min			90 - 140 m/min		
Dia [mm]	**ap [mm]**	**ae [mm]**	**fz [mm/tooth]**	**ap [mm]**	**ae [mm]**	**fz [mm/tooth]**
6	2xd	0.35xd	0.020	2xd	0.35xd	0.020
8	2xd	0.35xd	0.030	2xd	0.35xd	0.030
10	2xd	0.35xd	0.030	2xd	0.35xd	0.030
12	2xd	0.35xd	0.035	2xd	0.35xd	0.035

Ød	Tolerancia
Ø < 3	0 ~ 0.02
3 ≤ Ø ≤ 10	-0.01 ~ -0.03
Ø > 10	-0.01 ~ -0.04

F-200 - pag. 11

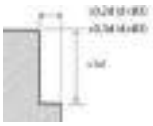
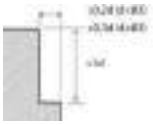
MATERIAL	Aleaciones de aluminio <6% Si *Al alloys <6% Si*		Acero de aluminio 6-12% Si *Al alloys 6-12% Si*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
1,5	32.000	2.000	23.000	1.300
2,0	32.000	2.200	23.000	1.500
3,0	25.000	2.400	18.000	1.700
4,0	20.000	2.400	15.000	1.800
5,0	15.000	2.200	12.000	1.800
6,0	13.500	2.300	10.000	1.800
8,0	10.000	2.400	7.800	1.900
10,0	8.000	2.400	6.000	2.000
12,0	7.000	2.200	5.000	1.900
Profundidad de corte *Depth of cut*				

F-201 - pag. 12

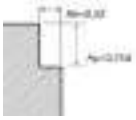
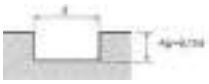
MATERIAL	0,1 - 2,0	3,0 - 6,0	8,0 - 12,0
Aluminio *Aluminium*	2.000 - 4.000	1.000 - 3.600	900 - 2.000
Cobre *Copper*	1.000 - 1.500	800 - 1.200	500 - 800
	fx = 0,01 x d1		

CONDICIONES DE CORTE
CUTTING DATA

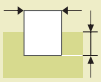
F-282 - pag. 13 | **F-303** - pag. 23 | **F-283** - pag. 24 | **F-223** - pag. 29
F-286 - pag. 14 | **F-287** - pag. 15 | **F-288** - pag. 16 | **F-275** - pag. 30
F-276 - pag. 31

MATERIAL	Aleaciones de aluminio <6% Si *Al alloys <6% Si*				Acero de aluminio 6-12% Si *Al alloys 6-12% Si*			
Vc	300 m/min		240 m/min		240 m/min		200 m/min	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
1	34.000	500	34.000	400	34.000	400	34.000	300
2	34.000	950	32.300	720	32.300	720	32.300	470
3	27.200	1.200	21.300	800	21.300	800	21.300	510
4	20.400	1.300	16.000	850	16.000	850	16.000	550
5	16.200	1.400	13.000	850	13.000	850	13.000	600
6	13.600	1.600	11.000	940	11.000	940	11.000	640
8	10.200	1.600	8.000	1.000	8.000	1.000	8.000	680
10	8.100	1.600	6.500	1.000	6.500	1.000	6.500	680
12	6.800	1.600	5.400	1.000	5.400	1.000	5.400	680
16	5.100	1.600	4.100	1.000	4.100	1.000	4.100	610
20	4.100	1.300	3.200	850	3.200	850	3.200	560
Profundidad de corte *Depth of cut*			max. 12 mm				max. 12 mm	

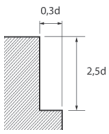
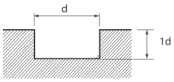
F-301 - pag. 17 | **F-305** - pag. 19 | **F-306** - pag. 20

MATERIAL	Aleaciones de aluminio <6% Si *Al alloys <6% Si*		
d1 [mm]	n [rpm]	F [mm/min]	
1	25.500	930	770
2	25.500	1.800	1.530
3	18.400	2.000	1.700
4	14.000	2.000	1.700
5	11.000	2.000	1.700
6	9.200	2.000	1.700
8	7.000	2.000	1.700
10	5.500	2.000	1.700
12	4.400	2.000	1.700
16	3.200	1.900	1.530
20	2.000	1.700	1.360
Profundidad de corte *Depth of cut*			

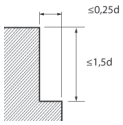
F-151 - pag. 18

Materiales	d1		RPM				
			fz	10.000	15.000	20.000	30.000
			Vf (mm/min)				
Aluminio de construcción para aviación AlMgSiCu/6061 AlCu4MgSi/2017 AlCu2Mg1, 5Ni/2618	6	ae 1xD	0,060	1.800	2.700	3.600	54.00
	8		0,075	2.250	3.375	4.500	6.750
	10		0,095	2.850	4.275	5.700	8.550
	12		0,115	3.450	5.175	6.100	10.350
	16		0,125	3.750	5.625	7.500	11.250
	20		0,130	3.900	2.850	7.800	11.700
	25		0,140	4.200	6.300	8.400	12.600
Fundición de aleación de aluminio AlMgSi1/6082 Cast Alluminium, G - AlSiIIMg	6	ae 0,5xD	0,060	1.800	2.700	3.600	5.400
	8		0,075	2.250	3.375	4.500	6.750
	10		0,095	2.850	4.275	5.700	8.550
	12		0,115	3.450	5.175	6.900	10.350
	16		0,125	3.750	5.625	7.500	11.250
	20		0,130	3.900	2.850	7.800	11.700
	25		0,140	4.200	6.300	8.400	12.600

F-606 - pag. 21 | F-607 - pag. 28

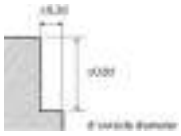
MATERIAL	Aleaciones de aluminio <12% Si *Al alloys <12% Si*		Cobre *Copper*	
Vc	80 - 150 m/min		80 m/min	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
4	9.000	1.200	5.000	320
6	8.000	1.200	4.200	320
8	6.000	1.200	3.200	320
10	4.800	1.200	2.600	320
12	4.000	1.200	2.100	320
16	3.000	1.200	1.600	320
20	2.400	1.200	1.300	320
Profundidad de corte *Depth of cut*				

F-604 - pag. 22

MATERIAL	Aleaciones de aluminio <6% Si *Al alloys <6% Si*		Aleaciones de aluminio <6-12% Si *Al alloys <6-12% Si*	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
4	30.000	4.200	16.000	1.800
5	27.000	4.900	14.400	2.000
6	24.300	5.500	11.700	2.100
8	18.000	5.400	9.000	2.200
10	14.400	5.200	7.200	2.100
12	11.700	4.800	5.900	1.900
16	9.000	4.600	4.500	1.800
20	7.200	4.300	3.600	1.700
Profundidad de corte *Depth of cut*				

CONDICIONES DE CORTE
CUTTING DATA

F-284 - pag. 27

MATERIAL	Aleaciones de aluminio <6% Si *Al alloys <6% Si*			
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
6	20.000	8.400	20.000	6.600
8	18.000	7.500	18.000	5.400
10	15.000	6.000	15.000	4.000
12	13.000	5.400	13.000	3.200
16	10.000	5.400	10.000	3.200
20	8.000	5.000	8.000	3.000
Profundidad de corte *Depth of cut*				

F-281 - pag. 25

MATERIAL		Aluminio, cobre y bronce *Aluminum, copper and brass*			
d1 [mm]	**l2** [mm]	**n** [rpm]	**Vf** [mm/min]	**Fz** [mm]	**Ap** [mm]
0,1	0,2	70.000	1.400	0,010	0,010
0,1	0,3	70.000	1.120	0,008	0,008
0,1	0,4	70.000	700	0,005	0,005
0,2	0,5	60.000	1.900	0,016	0,020
0,2	1,0	60.000	1.900	0,016	0,014
0,2	1,5	60.000	1.440	0,012	0,010
0,2	2,0	60.000	1.200	0,010	0,006
0,3	1,0	58.000	2.400	0,021	0,018
0,3	1,5	56.000	2.240	0,020	0,015
0,3	2,0	52.000	2.050	0,020	0,012
0,3	2,5	48.000	1.728	0,018	0,010
0,3	3,0	45.000	1.450	0,016	0,008
0,3	5,0	38.000	900	0,012	0,005
0,4	1,0	52.000	2.600	0,025	0,030
0,4	1,5	50.000	2.300	0,023	0,028
0,4	2,0	48.000	2.000	0,021	0,026
0,4	3,0	45.000	1.800	0,020	0,018
0,4	4,0	43.000	1.600	0,019	0,010
0,4	6,0	43.000	1.600	0,019	0,005
0,5	1,0	52.000	2.600	0,250	0,030
0,5	2,0	48.000	2.880	0,030	0,020
0,5	3,0	42.000	2.200	0,026	0,018
0,5	4,0	42.000	2.200	0,026	0,016
0,5	5,0	42.000	2.200	0,026	0,013
0,5	6,0	40.000	1.840	0,023	0,010
0,6	2,0	42.000	2.800	0,033	0,025
0,6	3,0	42.000	2.772	0,033	0,022

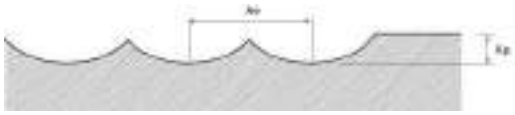
F-281 - pag. 25

MATERIAL		Aluminio, cobre y bronce *Aluminum, copper and brass*			
d1 [mm]	l2 [mm]	n [rpm]	Vf [mm/min]	Fz [mm]	Ap [mm]
0,6	4	42000	2.800	0,033	0,022
0,6	5	42000	2.772	0,033	0,018
0,6	6	42000	2.800	0,033	0,015
0,6	8	42000	2.800	0,033	0,010
0,7	6	36000	2.600	0,027	0,040
0,7	10	34000	1.800	0,022	0,030
0,8	2	52000	4.160	0,040	0,060
0,8	4	48000	2.700	0,028	0,040
0,8	5	48000	2.688	0,028	0,036
0,8	6	48000	2.700	0,028	0,034
0,8	8	48000	2.700	0,028	0,030
0,8	10	42000	2.200	0,026	0,022
0,9	6	36000	2.600	0,036	0,035
0,9	12	34000	2.250	0,033	0,025
1,0	2	45000	4.500	0,050	0,070
1,0	3	44000	3.500	0,040	0,065
1,0	4	40000	3.200	0,040	0,040
1,0	5	38000	2.900	0,038	0,040
1,0	6	38000	3.040	0,040	0,040
1,0	7	38000	2.900	0,038	0,040
1,0	8	38000	3.040	0,040	0,030
1,0	9	38000	2.736	0,036	0,028
1,0	10	38000	2.700	0,036	0,025
1,0	12	33000	2.200	0,033	0,025
1,0	15	33000	1.850	0,028	0,015
1,,0	20	26000	1.350	0,010	0,010
1,0	25	21000	750	0,018	0,008
1,2	6	38000	2.900	0,038	0,040
1,2	8	38000	2.900	0,038	0,040
1,2	10	38000	2.700	0,036	0,025
1,2	12	33000	2.200	0,033	0,025
1,2	18	24000	1.250	0,026	0,010
1,2	25	21000	750	0,018	0,008
1,4	8	38000	2.900	0,038	0,045
1,4	16	33000	1.700	0,026	0,030
1,5	4	33000	2.400	0,036	0,060
1,5	6	32000	2.300	0,036	0,060
1,5	8	31000	2.200	0,036	0,055
1,5	10	31000	2.200	0,036	0,055
1,5	12	30000	2.100	0,036	0,050

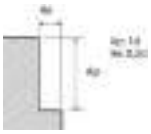
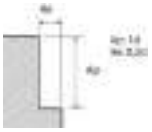
MATERIAL		Aluminio, cobre y bronce *Aluminum, copper and brass*			
d1 [mm]	l2 [mm]	n [rpm]	Vf [mm/min]	Fz [mm]	Ap [mm]
1,5	14	28.000	1.848	0,033	0,040
1,5	16	26.000	1.700	0,033	0,035
1,5	18	26.000	1.560	0,030	0,030
1,5	20	26.000	1.350	0,026	0,030
1,5	25	24.000	1.000	0,021	0,025
1,6	8	31.000	2.200	0,036	0,060
1,6	16	26.000	1.700	0,033	0,037
1,8	10	31.000	2.200	0,036	0,060
1,8	20	26.000	1.700	0,033	0,037
2,0	5	25.000	3.200	0,065	0,200
2,0	6	25.000	3.000	0,060	0,160
2,0	8	25.000	3.000	0,060	0,140
2,0	10	24.000	2.800	0,060	0,100
2,0	12	22.000	2.600	0,060	0,080
2,0	15	22.000	2.600	0,060	0,080
2,0	20	22.000	2.600	0,060	0,050
2,0	25	20.000	2.000	0,050	0,025
2,0	30	20.000	2.000	0,050	0,016
2,5	10	24.000	2.800	0,060	0,100
2,5	20	22.000	2.600	0,060	0,060
3,0	5	20.000	2.600	0,066	0,300
3,0	10	20.000	2.600	0,066	0,210
3,0	15	20.000	2.600	0,066	0,120
3,0	20	17.000	2.000	0,060	0,120
3,0	25	17.000	2.000	0,060	0,100
3,0	30	14.000	2.000	0,060	0,080
4,0	10	15.000	3.000	0,100	0,300
4,0	15	15.000	3.000	0,100	0,250
4,0	20	13.000	2.300	0,090	0,200
4,0	25	13.000	2.300	0,090	0,130
4,0	30	11.000	1.800	0,090	0,100
5,0	10	11.000	2.600	0,120	0,400
5,0	20	11.000	2.600	0,120	0,380
5,0	30	11.000	2.600	0,120	0,200
5,0	40	10.000	2.000	0,110	0,120
6,0	10	11.000	2.600	0,120	0,400
6,0	20	10.000	3.000	0,150	0,300
6,0	30	10.000	2.800	0,140	0,250
6,0	40	8.000	2.000	0,130	0,240
6,0	50	7.000	1.800	0,130	0,160

CONDICIONES DE CORTE
CUTTING DATA

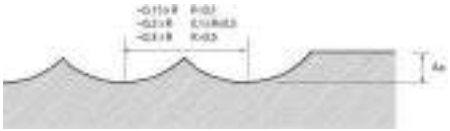
F-112 - pag. 33 | F-110 - pag. 34

MATERIAL	Acero preendurecido y acero endurecido < 52 HRC *Prehardened and hardened steel < 52 HRC*				Acero endurecido 52-56 HRC *Herdened steel 52-56 HRC*				Acero endurecido 62-68 HRC *Herdened steel 62-68 HRC*			
d1 [mm]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]
0,2	0,010	0,003	60.000	400	0,008	0,003	60.000	360	0,007	0,003	55.000	330
0,3	0,010	0,006	50.000	450	0,010	0,006	50.000	400	0,010	0,006	45.000	300
0,4	0,013	0,007	45.000	540	0,012	0,007	45.000	500	0,012	0,007	40.000	430
0,5	0,012	0,007	35.000	500	0,012	0,007	35.000	450	0,012	0,007	30.000	330
0,6	0,020	0,010	38.000	720	0,020	0,010	38.000	630	0,020	0,010	35.000	500
0,8	0,025	0,013	35.000	760	0,025	0,013	35.000	700	0,025	0,013	32.000	530
1,0	0,030	0,014	30.000	720	0,025	0,014	30.000	600	0,025	0,014	26.000	450
1,2	0,030	0,020	35.000	1.100	0,030	0,020	35.000	1.000	0,025	0,020	32.000	900
1,5	0,030	0,025	33.000	1.000	0,030	0,025	33.000	900	0,025	0,025	27.000	800
2,0	0,030	0,020	32.000	1.000	0,030	0,020	32.000	800	0,030	0,020	30.000	700
3,0	0,040	0,030	25.000	1.000	0,040	0,030	25.000	900	0,030	0,030	20.000	660
4,0	0,080	0,030	25.000	1.200	0,050	0,030	25.000	1.100	0,040	0,030	20.000	800
Profundidad de corte *Depth of cut*												

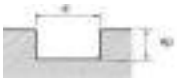
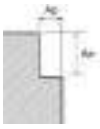
F-290 - pag. 36 | F-295 - pag. 37

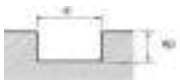
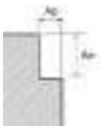
MATERIAL	Aleaciones de aluminio <6% Si *Al alloys <6% Si*				Acero de aluminio 6-12% Si *Al alloys 6-12% Si*			
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
1	24.000	690	24.000	520	12.700	200	12.700	130
2	20.600	800	20.600	590	9.600	230	9.600	200
3	16.800	900	16.800	620	6.400	260	6.400	260
4	12.400	1.000	12.400	650	4.800	290	4.800	300
6	8.300	1.120	8.300	760	3.200	320	3.200	320
8	6.400	1.200	6.400	800	2.400	370	2.400	370
10	5.100	1.360	5.100	920	1.900	380	1.900	380
12	4.200	1.400	4.200	960	1.600	400	1.600	410
Profundidad de corte *Depth of cut*								

F-285 - pag. 38

MATERIAL	Aleaciones de aluminio <6% Si *Al alloys <6% Si*		Cobre *Copper*	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
1,0	43.200	1.300	43.200	900
1,5	31.500	1.200	31.500	1.000
2,0	21.600	10.000	21.600	1.100
3,0	14.400	840	14.400	1.100
4,0	11.000	840	10.800	1.100
5,0	8.700	840	8.700	1.100
6,0	7.200	840	7.200	1.100
8,0	5.400	810	5.400	1.100
10,0	4.300	810	4.300	1.000
12,0	3.600	810	3.600	950
16,0	2.700	810	2.700	950
Profundidad de corte *Depth of cut*				

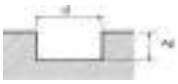
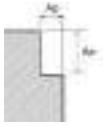
F-901 - pag. 40 | F-812 - pag. 41

MATERIAL	Aleaciones de aluminio <6% Si *Al alloys <6% Si*				Acero de aluminio 6-12% Si *Al alloys 6-12% Si*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
0,2	0,060	0,020	50.000	2.300	0,054	0,018	45.000	2.070
0,3	0,063	0,021	50.000	2.300	0,057	0,019	45.000	2.070
0,4	0,120	0,040	40.000	2.400	0,108	0,036	36.000	2.160
0,5	0,060	0,020	36.000	1.940	0,054	0,018	32.400	1.750
0,6	0,072	0,024	36.000	2.450	0,065	0,022	32.400	2.200
0,8	0,096	0,032	36.000	2.450	0,086	0,029	32.400	2.200
1,0	0,300	0,100	36.000	3.240	0,270	0,090	32.400	2.915
1,2	0,120	0,040	28.800	2.360	0,108	0,036	25.920	2.125
1,4	0,165	0,055	25.200	2.070	0,149	0,050	22.680	1.860
1,5	0,180	0,060	25.200	2.070	0,162	0,054	22.680	1.860
1,6	0,195	0,065	23.400	2.100	0,176	0,059	21.060	1.895
1,8	0,210	0,070	23.400	2.100	0,189	0,063	18.900	1.700
2,0	0,420	0,140	21.000	3.150	0,378	0,126	17.010	2.550
3,0	0,630	0,210	16.000	2.400	0,567	0,189	12.960	1.945
4,0	0,840	0,280	11.500	2.300	0,756	0,252	9.315	1.865
Profundidad de corte *Depth of cut*								

MATERIAL	Aleaciones de aluminio <6% Si *Al alloys <6% Si*				Acero de aluminio 6-12% Si *Al alloys 6-12% Si*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
0,2	0,048	0,016	42.500	1.700	0,390	0,013	37.500	1.350
0,3	0,050	0,017	42.500	1.700	0,041	0,014	35.700	1.285
0,4	0,096	0,032	34.000	1.835	0,078	0,026	30.000	1.440
0,5	0,048	0,016	30.600	1.650	0,039	0,013	27.000	1.300
0,6	0,058	0,019	30.600	2.080	0,047	0,016	27.000	1.620
0,8	0,077	0,026	30.600	2.080	0,062	0,021	27.000	1.620
1,0	0,240	0,080	30.600	2.510	0,195	0,065	27.000	1.945
1,2	0,096	0,032	24.480	2.010	0,78	0,026	21.600	1.550
1,4	0,132	0,044	21.420	1.750	0,107	0,036	18.900	1.360
1,5	0,144	0,048	21.420	1.750	0,117	0,039	18.900	1.360
1,6	0,156	0,052	19.890	1.790	0,127	0,042	17.550	1.400
1,8	0,168	0,056	19.890	1.790	0,137	0,046	17.550	1.400
2,0	0,336	0,112	17.850	2.680	0,273	0,091	15.750	1.890
3,0	0,504	0,168	13.600	2.040	0,410	0,137	12.000	1.440
4,0	0,672	0,224	9.775	1.955	0,546	0,182	8.625	1.380
Profundidad de corte *Depth of cut*								

CONDICIONES DE CORTE
CUTTING DATA

F-913 - pag. 42

MATERIAL		Ae [mm]	Acero aleado <325 HB *Alloy steel <325 HB*			Acero preendurecido y endurecido 35-45 HRC *Prehardened and hardened steel 35-45 HRC*			Acero endurecido 45-55 HRC *Hardened steel 45-55 HRC*		
d1 [mm]	l2 [mm]		Ap [mm]	n [rpm]	F [mm/min]	Ap [mm]	n [rpm]	F [mm/min]	Ap [mm]	n [rpm]	F [mm/min]
0,2	2	0,004	0,003	45.200	210	0,002	45.200	180	0,002	35.500	120
0,3	4	0,001	0,001	20.400	80	0,001	20.400	70	0,001	16.300	50
0,4	4	0,002	0,003	31.200	280	0,002	28.100	220	0,001	21.100	140
0,5	4	0,002	0,005	26.500	300	0,004	20.700	220	0,002	17.700	150
0,8	8	0,007	0,010	17.300	370	0,008	15.200	270	0,005	10.800	180
1,0	6	0,136	0,040	24.400	770	0,030	19.500	480	0,025	15.200	370
1,0	10	0,009	0,010	14.200	370	0,008	11.800	280	0,006	10.000	190
1,0	20	0,002	0,003	9.600	140	0,002	8.800	120	0,001	6.900	80
1,5	8	0,120	0,040	15.100	620	0,035	11.300	400	0,025	9,150	275
1,5	16	0,006	0,009	8.200	260	0,008	7.200	200	0,005	5.900	130
1,5	30	0,002	0,005	6.500	130	0,004	6.000	110	0,002	4.800	80
2,0	8	0,060	0,060	13.500	765	0,005	10.100	500	0,035	7.900	350
2,0	20	0,016	0,022	7.500	360	0,015	6.000	260	0,012	5.000	170
2,0	40	0,002	0,004	4.500	130	0,003	4.200	110	0,002	3.000	60
2,5	30	0,012	0,015	5.300	300	0,012	4.500	230	0,008	3.700	150
3,0	16	0,440	0,080	7.350	685	0,060	5.550	470	0,040	4.450	330
3,0	30	0,024	0,030	4.800	370	0,020	4.200	270	0,015	3.200	180
3,0	50	0,011	0,015	4.200	260	0,010	3.600	200	0,008	2.800	130
4,0	16	0,800	0,450	5.950	775	0,078	4.300	500	0,055	3.500	345
4,0	30	0,080	0,050	3.700	440	0,045	3.100	310	0,025	2.300	210
4,0	50	0,032	0,035	3.200	310	0,025	2.600	230	0,020	2.100	160
5,0	30	0,200	0,100	3.200	480	0,070	2.400	320	0,060	1.800	200
6,0	30	0,500	0,100	2.100	390	0,070	1.600	240	0,050	1.200	150
8,0	30	0,200	0,100	2.000	410	0,800	1.500	250	0,060	1.100	160
10,0	35	0,240	0,120	2.000	400	0,700	1.300	220	0,050	900	150
Profundidad de corte *Depth of cut*											

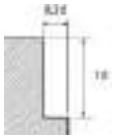
F-202 - pag. 44 | F-204 - pag. 46 | F-218 - pag. 47

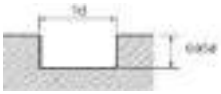
MATERIAL	Acero no aleado <500 N/mm² *Unalloyed steel <500 N/mm²*		Acero no aleado 500-700 N/mm² *Unalloyed steel 500-700 N/mm²*		Acero no aleado >700 N/mm² *Unalloyed steel >700 N/mm²*		Acero aleado <1.400 N/mm² *Alloyed Steel <1.400 N/mm²*		Acero aleado > 1.400 N/mm² *Alloyed Steel <1.400 N/mm²*		Acero inoxidable *Stainless steel*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
1	47.745	2.385	38.195	1.530	23.875	955	19.100	570	12.730	380	1.635	485
2	23.875	1.195	19.100	765	11.935	475	9.550	285	6.365	190	8.115	245
3	15.915	795	12.730	510	7.960	320	6.365	190	4.245	125	5.410	160
4	11.935	955	9.550	570	5.970	360	4.775	190	3.185	125	4.060	160
5	9.550	765	7.640	460	4.775	285	3.820	155	2.545	100	3.245	130
6	7.955	795	6.635	510	3.980	240	3.185	125	2.120	85	2.705	110
7	6.820	680	5.455	435	3.410	205	2.730	110	1.820	75	2.230	95
8	5.965	595	4.775	380	2.985	180	2.385	95	1.590	65	2.030	80
9	5.305	635	4.245	425	2.655	210	2.120	105	1.415	70	1.805	90
10	4.775	670	3.820	460	2.385	240	1.910	115	1.270	75	1.625	95
11	4.340	610	3.470	415	2.170	215	1.735	105	1.155	70	1.475	90
12	3.980	555	3.185	380	1.990	200	1.590	95	1.060	65	1.355	80
14	3.410	475	2.730	325	1.705	170	1.365	95	910	65	1.160	80
16	2.985	420	2.385	285	1.490	150	1.195	95	795	65	1.015	80
18	2.655	370	2.120	255	1.325	135	1.060	95	705	65	900	80
20	2.385	380	1.910	265	1.195	145	955	95	635	65	810	80
Profundidad de corte *Depth of cut*												

MATERIAL	Acero no aleado <500 N/mm² *Unalloyed steel <500 N/mm²*		Acero no aleado 500-700 N/mm² *Unalloyed steel 500-700 N/mm²*		Acero no aleado >700 N/mm² *Unalloyed steel >700 N/mm²*		Acero aleado <1.400 N/mm² *Alloyed Steel <1.400 N/mm²*		Acero aleado > 1.400 N/mm² *Alloyed Steel <1.400 N/mm²*		Acero inoxidable *Stainless steel*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
1	35.015	1.750	28.650	1.145	23.875	1.195	20.690	830	55.705	2.230	143.240	5.730
2	17.505	875	14.325	570	11.935	595	10.345	415	27.850	1.115	71.620	2.865
3	11.670	585	9.550	380	7.960	400	6.895	275	18.570	740	47.745	1.910
4	8.755	700	7.160	430	5.970	595	5.170	415	13.925	1.115	35.810	3.580
5	7.000	560	5.730	345	4.775	480	4.140	330	11.140	890	28.650	2.865
6	5.835	585	4.775	285	3.980	475	3.450	275	9.285	740	23.875	2.865
7	5.000	500	4.095	245	3.410	410	2.955	235	7.960	635	20.460	2.455
8	4.375	440	3.580	215	2.985	360	2.585	205	6.960	555	17.905	2.150
9	3.890	430	3.185	225	2.655	370	2.300	230	6.190	620	15.915	2.545
10	3.500	420	2.865	230	2.385	380	2.070	250	5.570	670	14.325	2.865
11	3.185	380	2.605	210	2.170	345	1.880	225	5.065	610	13.020	2.605
12	2.920	350	2.385	190	1.990	320	1.725	205	4.640	555	11.935	2.385
14	2.500	325	2.045	185	1.705	290	1.480	205	3.980	555	10.230	2.455
16	2.190	305	1.790	180	1.490	270	1.295	205	3.480	555	8.950	2.505
18	1.945	290	1.590	175	1.325	265	1.150	205	3.095	555	7.960	2.545
20	1.750	280	1.430	170	1.195	285	1.035	230	2.785	555	7.160	2.580
Profundidad de corte *Depth of cut*												

CONDICIONES DE CORTE
CUTTING DATA

F-214 - pag. 45

MATERIAL	Acero endurecido 30-40 HRC *Hardened steel 30-40 HRC*		Acero endurecido 40-50 HRC *Hardened steel 40-50 HRC*		Acero endurecido 50-55 HRC *Hardened steel 50-55 HRC*		Acero endurecido 55-60 HRC *Hardened steel 55-60 HRC*		Acero endurecido 60-65 HRC *Hardened steel 60-65 HRC*		Acero endurecido 65-70 HRC *Hardened steel 65-70 HRC*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
1	48.000	1.050	38.000	820	25.500	510	20.500	310	16.000	190	12.500	125
2	33.300	1.200	26.000	970	17.500	600	14.500	370	11.000	230	9.500	165
3	21.800	1.200	17.300	970	11.500	600	9.500	370	7.500	230	6.400	165
4	16.700	1.250	13.200	1.000	8.800	625	7.200	385	5.600	240	4.750	170
5	15.700	1.450	12.500	1.150	8.300	710	6.400	410	5.100	260	4.450	190
6	13.100	1.350	10.350	1.100	6.900	690	5.300	400	4.200	255	3.700	185
8	9.880	1.320	7.800	1.030	5.200	635	4.000	365	3.200	235	2.800	170
10	7.800	1.200	6.150	970	4.100	590	3.200	340	2.550	220	2.200	160
12	6.650	1.200	5.250	970	3.500	590	2.650	340	2.100	220	1.860	160
16	4.900	1.050	3.900	840	2.600	520	2.000	300	1.600	190	1.400	140
20	3.900	950	3.100	750	2.050	475	1.600	275	1.300	175	1.100	125
12	3.979	557	3.183	382	1.989	199	1.592	96	1.061	64	1.353	81
14	3.410	477	2.728	327	1.705	171	1.364	95	909	64	1.160	81
16	2.984	418	2.387	286	1.492	149	1.194	96	796	64	1.015	81
18	2.653	371	2.122	255	1.326	133	1.061	95	707	64	902	81
20	2.387	382	1.910	267	1.194	143	955	96	637	64	812	81
Profundidad de corte *Depth of cut*												

MATERIAL	Acero endurecido 30-40 HRC *Hardened steel 30-40 HRC*		Acero endurecido 40-50 HRC *Hardened steel 40-50 HRC*		Acero endurecido 50-55 HRC *Hardened steel 50-55 HRC*		Acero endurecido 55-60 HRC *Hardened steel 55-60 HRC*		Acero endurecido 60-65 HRC *Hardened steel 60-65 HRC*		Acero endurecido 65-70 HRC *Hardened steel 65-70 HRC*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
0,2	50.000	130	45.000	115	40.000	95	33.000	60	33.000	45	26.400	30
0,3	50.000	190	45.000	140	40.000	115	33.000	70	25.000	50	20.000	35
0,4	50.000	235	45.000	180	40.000	140	33.000	90	25.000	55	20.000	40
0,5	50.000	370	45.000	280	40.000	220	33.000	140	25.000	85	20.000	60
0,6	50.000	470	45.000	360	40.000	285	30.000	160	25.000	105	20.000	75
0,8	50.000	600	40.000	440	30.000	295	25.000	185	19.000	110	15.200	80
0,9	49.000	655	39.000	520	27.800	330	22.700	205	17.500	125	14.000	90
1,0	48.000	750	38.000	570	25.500	360	20.500	215	16.000	135	12.500	85
2,0	33.300	850	26.000	680	17.500	420	14.500	260	11.000	160	9.500	115
3,0	21.800	850	17.300	680	11.500	420	9.500	260	7.500	160	16.400	115
4,0	16.700	880	13.200	700	8.800	440	7.200	270	5.600	170	4.750	118
5,0	15.700	1.000	12.500	805	8.300	500	6.400	285	5.100	180	4.450	132
6,0	13.200	950	10.350	770	6.900	480	5.300	280	4.200	180	3.700	130
8,0	9.880	930	7.800	720	5.200	445	4.000	255	3.200	165	2.800	120
10,0	7.800	850	6.150	680	4.100	415	3.200	240	2.550	155	2.200	112
12,0	6.650	850	5.250	680	3.500	415	2.650	240	2.100	155	1.860	112
16,0	4.900	730	3.900	580	2.600	365	2.000	210	1.600	135	1.400	95
20,0	3.900	660	3.100	525	2.050	335	1.600	195	1.300	125	1.100	85
Profundidad de corte *Depth of cut*												

CONDICIONES DE CORTE
CUTTING DATA

F-302 - pag. 48 | F-332 - pag. 49

MATERIAL	Acero no aleado <500 N/mm² *Unalloyed steel <500 N/mm²*		Acero no aleado 500-700 N/mm² *Unalloyed steel 500-700 N/mm²*		Acero no aleado >700 N/mm² *Unalloyed steel >700 N/mm*		Acero aleado <1.400 N/mm² *Alloyed steel <1.400 N/mm²*		Acero aleado >1.400 N/mm² *Alloyed steel >1.400 N/mm²*		Acero inoxidable *Stainless steel*	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
1	47.745	3.580	38.195	2.290	23.875	1.430	19.100	860	12.730	570	16.235	730
2	23.875	1.790	19.100	1.145	11.935	715	9.550	430	6.365	285	8.115	365
3	15.915	1.195	12.730	765	7.960	475	6.365	285	4.245	190	5.410	245
4	11.935	1.430	9.550	860	5.970	535	4.775	285	3.185	190	4.060	245
5	9.550	1.145	7.640	690	4.775	430	3.820	230	2.545	155	3.245	195
6	7.960	1.195	6.365	765	3.980	360	3.185	190	2.120	125	2.705	160
7	6.820	1.020	5.455	655	3.410	305	2.730	165	1.820	110	2.320	140
8	5.970	895	4.775	570	2.985	270	2.385	145	1.590	95	2.030	120
9	5.305	955	4.245	635	2.655	320	2.120	160	1.415	105	1.805	135
10	4.775	1.000	3.820	690	2.385	360	1.910	170	1.270	115	1.625	145
11	4.340	910	3.470	625	2.170	325	1.735	155	1.155	105	1.475	135
12	3.980	835	3.185	570	1.990	300	1.590	145	1.060	95	1.355	120
14	3.410	715	2.730	490	1.705	255	1.365	145	910	95	1.160	120
16	2.985	625	2.385	430	1.490	225	1.195	145	795	95	1.015	120
18	2.655	555	2.120	380	1.325	200	1.060	145	705	95	900	120
20	2.385	570	1.910	400	1.195	215	955	145	635	95	810	120
Profundidad de corte *Depth of cut*												

MATERIAL	Fundición GG <500 N/mm² *Cast iron <500 N/mm²*		Fundición GG >500 N/mm² *Cast iron GG >500 N/mm²*		Fundición GGG <200 HB *Cast iron GGG <200 HB*		Fundición GGG >200 HB *Cast iron GGG >200 HB*		Cobre *Copper*		Aleaciones de aluminio *Al alloys*	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
1	35.015	2.625	28.650	1.720	23.875	1.790	20.690	1.240	55.705	3.340	143.240	8.595
2	17.505	1.315	14.325	860	11.935	895	10.345	620	27.850	1.670	71.620	4.295
3	11.670	875	9.550	570	7.960	595	6.895	415	18.570	1.115	47.745	2.865
4	8.755	1.050	7.160	645	5.970	895	5.170	620	13.925	1.670	35.810	5.370
5	7.000	840	5.730	515	4.775	715	4.140	495	11.140	1.335	28.650	4.295
6	5.835	875	4.775	430	3.980	715	3.450	415	9.285	1.115	23.875	4.295
7	5.000	750	4.095	370	3.410	615	2.955	355	7.960	955	20.460	3.685
8	4.375	655	3.580	320	2.985	535	2.585	310	6.960	835	17.905	3.225
9	3.890	640	3.185	335	2.655	555	2.300	345	6.190	930	15.915	3.820
10	3.500	630	2.865	345	2.385	570	2.070	370	5.570	1.000	14.325	4.295
11	3.185	570	2.605	310	2.170	520	1.880	340	5.065	910	13.020	3.905
12	2.920	525	2.385	285	1.990	475	1.725	310	4.640	835	11.935	3.580
14	2.500	490	2.045	275	1.705	435	1.480	310	3.980	835	10.230	3.685
16	2.190	460	1.790	270	1.490	400	1.295	310	3.480	835	8.950	3.760
18	1.945	440	1.590	265	1.325	400	1.150	310	3.095	835	7.960	3.820
20	1.750	420	1.430	260	1.195	430	1.035	340	2.785	835	7.160	3.865
Profundidad de corte *Depth of cut*												

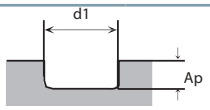
CONDICIONES DE CORTE
CUTTING DATA

F-402 - pag. 50 | F-404 - pag. 55 | F-444 - pag. 52

MATERIAL	Acero no aleado <500 N/mm² *Unalloyed steel <500 N/mm²*		Acero no aleado 500-700 N/mm² *Unalloyed steel 500-700 N/mm²*		Acero no aleado >700 N/mm² *Unalloyed steel >700 N/mm*		Acero aleado <1.400 N/mm² *Alloyed steel <1.400 N/mm²*		Acero aleado >1.400 N/mm² *Alloyed steel >1.400 N/mm²*		Acero inoxidable *Stainless steel*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
1	47.745	4.775	38.195	3.055	23.875	1.910	19.100	1.145	12.730	765	16.235	975
2	23.875	2.385	19.100	1.530	11.935	955	9.550	570	6.365	380	8.115	485
3	15.915	1.590	12.730	1.020	7.960	635	6.365	380	4.245	255	5.410	325
4	11.935	1.910	9.550	1.145	5.970	715	4.775	380	3.185	255	4.060	325
5	9.550	1.530	7.640	915	4.775	570	3.820	305	2.545	205	3.245	260
6	7.960	1.590	6.365	1.020	3.980	475	3.185	255	2.120	170	2.705	215
7	6.820	1.365	5.455	870	3.410	410	2.730	220	1.820	145	2.320	185
8	5.970	1.195	4.775	765	2.985	360	2.385	190	1.590	125	2.030	160
9	5.305	1.270	4.245	850	2.655	425	2.120	210	1.415	140	1.805	180
10	4.775	1.335	3.820	915	2.385	475	1.910	230	1.270	155	1.625	195
11	4.340	1.215	3.470	830	2.170	435	1.735	210	1.155	140	1.475	175
12	3.980	1.115	3.185	765	1.990	400	1.590	190	1.060	125	1.355	160
14	3.410	955	2.730	655	1.705	340	1.365	190	910	125	1.160	160
16	2.985	835	2.385	570	1.490	300	1.195	190	795	125	1.015	160
18	2.655	740	2.120	510	1.325	265	1.060	190	705	125	900	160
20	2.385	765	1.910	535	1.195	285	955	190	635	125	810	160
Profundidad de corte *Depth of cut*												

MATERIAL	Fundición GG <500 N/mm² *Cast iron <500 N/mm²*		Fundición GG >500 N/mm² *Cast iron GG >500 N/mm²*		Fundición GGG <200 HB *Cast iron GGG <200 HB*		Fundición GGG >200 HB *Cast iron GGG >200 HB*		Cobre *Copper*		Aleaciones de aluminio *Al alloys*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
1	35.015	3.500	28.650	2.290	23.875	2.385	20.690	1.655	55.705	4.455	143.240	11.460
2	17.505	1.750	14.325	1.145	11.935	1.195	10.345	830	27.850	2.230	71.620	5.730
3	11.670	1.165	9.550	765	7.960	795	6.895	550	18.570	1.485	47.745	3.820
4	8.755	1.400	7.160	860	5.970	1.195	5.170	830	13.925	2.230	35.810	7.160
5	7.000	1.120	5.730	690	4.775	955	4.140	660	11.140	1.785	28.650	5.730
6	5.835	1.165	4.775	570	3.980	955	3.450	550	9.285	1.485	23.875	5.730
7	5.000	1.000	4.095	490	3.410	820	2.955	470	7.960	1.270	20.460	4.910
8	4.375	875	3.580	430	2.985	715	2.585	415	6.960	1.115	17.905	4.295
9	3.890	855	3.185	445	2.655	740	2.300	460	6.190	1.240	15.915	5.095
10	3.500	840	2.865	460	2.385	765	2.070	495	5.570	1.335	14.325	5.730
11	3.185	765	2.605	415	2.170	695	1.880	450	5.065	1.215	13.020	5.210
12	2.920	700	2.385	380	1.990	635	1.725	415	4.640	1.115	11.935	4.775
14	2.500	650	2.045	370	1.705	580	1.480	415	3.980	1.115	10.230	4.910
16	2.190	610	1.790	360	1.490	535	1.295	415	3.480	1.115	8.950	5.015
18	1.945	585	1.590	350	1.325	530	1.150	415	3.095	1.115	7.960	5.095
20	1.750	560	1.430	345	1.195	570	1.035	455	2.785	1.115	7.160	5.155
Profundidad de corte *Depth of cut*												

F-401 - pag. 51

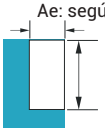
MATERIAL	Acero preendurecido < 45 HRC *Prehardened steel < 45 HRC*			Acero endurecido 45-55 HRC *Stainless steel / Tí alloys*			Acero endurecido 55-65 HRC *Hardened steel 55-65 HRC*		
d1 [mm]	**Ap** [rpm]	**n** [rpm]	**F** [mm/min]	**Ap** [rpm]	**n** [rpm]	**F** [mm/min]	**Ap** [rpm]	**n** [rpm]	**F** [mm/min]
1,0	0.010~0.050	12.000~25.000	75	0.003~0.030	10.000~20.000	300~1.800	0.002~0.040	8.000~18.000	200~1.200
1,5	0.020~0.060	9.000~23.000	90	0.010~0.030	8.000~20.000	400~1.600	0.005~0.040	7.000~18.000	200~1.200
2,0	0.030~0.080	7.000~20.000	100	0.015~0.050	6.000~18.000	400~1.600	0.010~0.050	5.000~15.000	200~1.200
3,0	0.050~0.100	5.000~16.000	155	0.020~0.060	5.000~15.000	400~1.600	0.015~0.070	4.000~10.000	200~1.200
4,0	0.050~0.150	4.500~14.000	185	0.025~0.080	4.000~10.000	400~2.000	0.025~0.070	3.000~.8000	200~1.200
5,0	0.050~0.120	3.500~12.000	200	0.040~0.100	3.000~8.000	400~1.000	0.030~0.080	2.500~6.000	250~800
6,0	0.050~0.120	3.500~12.000	210	0.040~0.120	3.000~8.000	400~1.000	0.030~0.080	2.500~6.000	250~800
8,0	0.060~0.150	4.500~10.000	210	0.050~0.120	2.500~7.000	350~900	0.040~0.100	2.000~5.000	300~700
10,0	0.080~0.150	4.000~8.000	165	0.060~0.120	2.000~5.000	300~800	0.040~0.100	2.000~4500	300~700
12,0	0.080~0.200	3.500~7.000	130	0.070~0.180	2.000~4.000	300~800	0.050~0.120	1.500~4.000	300~650
Profundidad de corte *Depth of cut*									

F-560 - pag. 52

Material	Resistencia a la tracción N/mm²	Dureza	Vc (m/min) Profundidad de pasada radial (Ae)					fz (mm/diente) Diámetro de la fresa								
			5%	10%	30%	50%	100% Ranurado	3	4	6	8	10	12	16	20	25
			2,3	1,8	1,1	1	1	← Multiplicar fz por este factor según la Ae								
Acero de fácil mecanización y acero de baja aleación	> 500 ≤ 900	≤ 28	518	412	228	130	130	0,015	0,02	0,033	0,046	0,056	0,066	0,077	0,10	0,12
Acero de media y alta aleación, acero aleado y acero para herramientas de fácil mecanización	> 900 ≤ 1200	≤ 38	328	228	127	100	100	0,015	0,02	0,033	0,046	0,056	0,066	0,077	0,10	0,12
Acero para herramientas y acero para moldes	> 1200 ≤ 1400	≤ 44	201	164	109	73	73	0,015	0,02	0,033	0,046	0,056	0,066	0,077	0,10	0,12
Acero templado	> 1400 ≤ 1900	≤ 54	118	-	-	-	-	0,012	0,016	0,030	0,038	0,040	0,055	0,064	0,08	0,095
Acero templado	> 1900	≤ 64	70	-	-	-	-	0,010	0,013	0,025	0,032	0,034	0,046	0,054	0,067	0,08
Fundición gris	upto 240 HB		475	402	274	137	137	0,015	0,02	0,033	0,046	0,056	0,066	0,077	0,10	0,12
Fundición maleable	> 240 HB		274	191	122	84	84	0,015	0,02	0,033	0,046	0,056	0,066	0,077	0,10	0,12

Material	Dureza	Vc (m/min) Profundidad de pasada radial (Ae)					fz (mm/diente) Diámetro de la fresa							
		5%	10%	30%	50%	100% Ranurado	3	4	6	8	10	12	16	20
		2,3	1,8	1,1	1	1	← Multiplicar fz por este factor según la Ae							
Acero inoxidable - Fácil mecanización 430F, 301, 303, 410, 416 recocido, 420F, 430F	≤ 28	320	220	120	100	100	0,015	0,02	0,036	0,046	0,056	0,066	0,078	0,12
Acero inoxidable - Mecanización media 301, 302, 303 maleable, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7 PH"	≤ 28	198	137	76	60	60	0,013	0,017	0,031	0,038	0,046	0,055	0,066	0,76
Acero inoxidale - Difícil mecanización 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8MO, Nitronic"	≤ 28	182	122	69	53	53	0,013	0,017	0,025	0,030	0,040	0,045	0,061	0,72

Ae: según la tabla



Profundidad radial (Ae) 1xD

CONDICIONES DE CORTE
CUTTING DATA

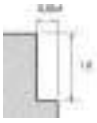
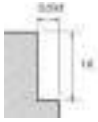
F-452 - pag. 53

Material	Resistencia a la tracción N/mm²	Dureza	Vc (m/min)					fz (mm/diente)								
			Profundidad de pasada radial (Ae)					Diámetro de la fresa								
			5%	10%	30%	50%	100% Ranurado	3	4	6	8	10	12	16	20	25
			2,3	1,8	1,1	1	1	Multiplicar fz por este factor según la Ae								
Acero de fácil mecanización y acero de baja aleación	> 500 ≤ 900	≤ 28	518	412	228	130	130	0,015	0,02	0,033	0,046	0,056	0,066	0,077	0,10	0,12
Acero de media y alta aleación, acero aleado y acero para herramientas de fácil mecanización	> 900 ≤ 1200	≤ 38	328	228	127	100	100	0,015	0,02	0,033	0,046	0,056	0,066	0,077	0,10	0,12
Acero para herramientas y acero para moldes	> 1200 ≤ 1400	≤ 44	201	164	109	73	73	0,015	0,02	0,033	0,046	0,056	0,066	0,077	0,10	0,12
Acero templado	> 1400 ≤ 1900	≤ 54	118	-	-	-	-	0,012	0,016	0,030	0,038	0,040	0,055	0,064	0,08	0,095
Acero templado	> 1900	≤ 64	70	-	-	-	-	0,010	0,013	0,025	0,032	0,034	0,046	0,054	0,067	0,08
Fundición gris	upto 240 HB		475	402	274	137	137	0,015	0,02	0,033	0,046	0,056	0,066	0,077	0,10	0,12
Fundición maleable	> 240 HB		274	191	122	84	84	0,015	0,02	0,033	0,046	0,056	0,066	0,077	0,10	0,12

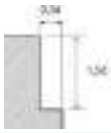
Ae: según la tabla

Profundidad radial (Ae) 1xD

F-414 - pag. 54

MATERIAL	Acero endurecido 30-40 HRC *Hardened steel 35-40 HRC*		Acero endurecido 40-50 HRC *Hardened steel 40-50 HRC*		Acero endurecido 50-55 HRC *Hardened steel 50-55 HRC*		Acero endurecido 55-60 HRC *Hardened steel 50-60 HRC*		Acero endurecido 60-65 HRC *Hardened steel 60-65 HRC*		Acero endurecido 65-70 HRC *Hardened steel 65-70 HRC*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
1	48.000	1.480	38.000	1.050	25.500	710	20.500	430	16.000	270	12.500	175
2	33.300	1.750	26.000	1.250	17.500	840	14.500	520	11.000	320	9.500	230
3	21.800	1.750	17.300	1.250	11.500	840	9.500	520	7.500	320	6.400	230
4	16.700	1.800	13.200	1.300	8.800	880	7.200	540	5.600	335	4.750	240
5	15.700	2.000	12.500	1.500	8.300	1.000	6.400	580	5.100	370	4.450	270
6	13.100	1.950	10.350	1.400	6.900	950	5.300	560	4.200	350	3.700	260
8	9.880	1.880	7.800	1.350	5.200	900	4.000	520	3.200	330	2.800	240
10	7.800	1.750	6.150	1.260	4.100	840	3.200	480	2.550	310	2.200	220
12	6.650	1.750	5.250	1.260	3.500	840	2.650	480	2.100	300	1.860	220
16	4.900	1.500	3.900	1.100	2.600	730	2.000	420	1.600	270	1.400	200
20	3.900	1.300	3.100	970	2.050	650	1.600	380	1.300	250	1.100	180
Profundidad de corte *Depth of cut*												

F-418 - pag. 57

MATERIAL	Acero al carbono <750 N/mm² *Carbon steel <750 N/mm²*		Acero aleado <30 HRC *Alloy steel <30 HRC*		Acero endurecido 30-38 HRC *Prehardened steel 30-38 HRC*		Acero inoxidable 38-45 HRC *Stainless steel 38-45 HRC*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
4	5.800	600	4.800	300	4.100	200	3.200	150
5	5.800	600	4.800	310	3.700	230	2.800	170
6	4.800	600	4.200	330	3.200	250	2.400	200
8	3.700	600	3.100	380	2.400	290	1.800	220
10	3.000	600	2.500	400	1.800	300	1.500	250
12	2.400	600	2.100	410	1.600	310	1.300	250
14	1.850	600	1.600	440	1.200	330	1.000	250
20	1.500	550	1.300	430	900	320	750	240
Profundidad de corte *Depth of cut*								

MATERIAL	Acero al carbono <750 N/mm² *Carbon steel <750 N/mm²*		Aleación de acero <30 HRC *Alloy steel <30 HRC*		Acero preendurecido 30-38 HRC *Prehardened steel 30-38 HRC*		Acero inoxidable 38-45 HRC *Stainless steel 38-45 HRC*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
4	4.600	500	4.400	230	3.200	160	2.800	130
5	4.600	500	4.000	250	2.900	180	2.500	150
6	4.100	500	3.500	280	2.700	210	2.200	170
8	3.100	500	2.500	310	2.100	240	1.700	210
10	2.500	500	2.100	330	1.600	250	1.300	210
12	2.100	500	1.700	350	1.400	270	1.100	220
14	1.600	500	1.300	360	1.000	290	800	230
20	1.300	480	1.000	360	800	270	650	210
Profundidad de corte *Depth of cut*								

F-419 - pag. 58

Material	Resistencia a la tracción N/mm²	Dureza	Vc (m/min) Profundidad de pasada radial (Ae)					fz (mm/diente) Diámetro de la fresa							
			5%	10%	30%	50%	100% Ranurado	4	6	8	10	12	16	20	25
			2,3	1,8	1,1	1	1 ←	Multiplicar fz por este factor según la Ae							
Acero de fácil mecanización y acero de baja aleación	> 500 ≤ 900	≤ 28	-	-	-	-	104	0,22	0,036	0,051	0,062	0,073	0,085	0,11	0,132
Acero de media y alta aleación, acero aleado y acero para herramientas de fácil mecanización	> 900 ≤ 1200	≤ 38	-	-	-	-	80	0,22	0,036	0,051	0,062	0,073	0,085	0,11	0,132
Acero para herramientas y acero para moldes	> 1200 ≤ 1400	≤ 44	-	-	-	-	58	0,22	0,036	0,051	0,062	0,073	0,085	0,11	0,132
Acero templado	> 1400 ≤ 1900	≤ 54	94	-	-	-	-	0,18	0,033	0,042	0,044	0,061	0,070	0,088	0,105
Acero templado	> 1900	≤ 64	56	-	-	-	-	0,15	0,028	0,035	0,037	0,051	0,059	0,074	0,088
Fundición gris	upto 240 HB		-	-	-	-	110	0,022	0,036	0,051	0,062	0,073	0,085	0,11	0,132
Fundición maleable	> 240 HB	≤ 64	-	-	-	-	105	0,022	0,036	0,057	0,062	0,073	0,085	0,11	0,132

CONDICIONES DE CORTE
CUTTING DATA

F-502 - pag. 59 | F-504 - pag. 60 | F-509 - pag. 61

Desbaste / Roughing

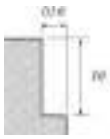
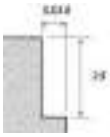
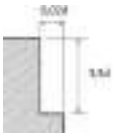
MATERIAL	Acero <1.000 N/mm² *Steel <1.000 N/mm²*		Acero 1.000-1.600 N/mm² *Steel 1.000-1.600 N/mm²*		Fundición GG <200 HB *Cast iron GG <200 HB*		Fundición GGG 200-300 HB *Cast iron GGG 200-300 HB*		Acero inoxidable *Stainless steel*		Titanio *Titanium*	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
2	25.465	6.110	15.915	3.150	24.985	5.995	17.505	3.360	14.960	2.244	11.775	1.765
3	16.975	4.075	10.610	2.100	16.660	4.000	11.670	2.240	9.975	1.496	7.850	1.180
4	12.730	3.055	7.960	1.575	12.495	3.000	8.755	1.680	7.480	1.122	5.890	880
5	10.185	2.445	6.365	1.260	9.995	2.400	7.000	1.345	5.985	898	4.710	705
6	8.490	2.035	5.305	1.050	8.330	2.000	5.835	1.120	4.985	748	3.925	590
8	6.365	2.290	3.980	1.240	6.245	2.250	4.375	1.260	3.740	561	2.945	440
10	5.095	2.445	3.185	1.300	4.995	2.400	3.500	1.345	2.290	898	2.355	705
12	4.245	2.545	2.655	1.355	4.165	2.500	2.920	1.400	2.495	897	1.965	705
14	3.640	2.185	2.275	1.160	3.570	2.140	2.500	1.200	2.135	769	1.680	605
16	3.185	1.910	1.990	1.015	3.125	1.875	2.190	1.050	1.870	673	1.470	530
18	2.830	1.865	1.770	955	2.775	1.830	1.945	1.015	1.660	698	1.310	550
20	2.545	1.835	1.590	955	2.500	1.800	1.750	1.010	1.495	718	1.180	565
25	2.035	1.590	1.270	840	2.000	1.560	1.400	840	1.195	575	940	450
Profundidad de corte *Depth of cut*												

Acabado / Finishing

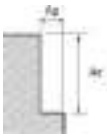
MATERIAL	Acero <1.000 N/mm² *Steel <1.000 N/mm²*		Acero 1.000-1.600 N/mm² *Steel 1.000-1.600 N/mm²*		Fundición GG <200 HB *Cast iron GG <200 HB*		Fundición GGG 200-300 HB *Cast iron GGG 200-300 HB*		Acero inoxidable *Stainless steel*		Titanio *Titanium*	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
2	29.920	7.180	20.690	4.095	29.920	7.180	21.170	4.065	17.985	2.700	14.005	2.100
3	19.945	4.075	13.790	2.730	19.945	4.785	14.110	2.710	11.990	1.800	9.335	1.400
4	14.960	3.590	10.345	2.050	14.960	3.590	10.585	2.030	8.990	1.350	7.000	1.050
5	11.970	2.870	8.275	1.640	11.970	2.870	8.465	1.625	7.195	1.080	5.600	840
6	9.975	2.395	6.895	1.365	9.975	2.395	7.055	1.355	5.995	900	4.670	700
8	7.480	2.695	5.170	1.615	7.480	2.695	5.290	1.525	4.495	675	3.500	525
10	5.985	2.870	4.140	1.690	5.985	2.870	4.235	1.625	3.595	1.080	2.800	840
12	4.985	2.990	3.450	1.760	4.985	2.990	3.530	1.695	2.995	1.080	2.335	840
14	4.275	2.565	2.955	1.510	4.275	2.565	3.025	1.450	2.570	925	2.000	720
16	3.740	2.245	2.585	1.320	3.740	2.245	2.645	1.270	2.250	810	1.750	630
18	3.325	2.195	2.300	1.240	3.325	2.195	2.350	1.230	2.000	840	1.555	655
20	2.990	2.155	2.070	1.240	2.990	2.155	2.115	1.220	1.800	860	1.400	670
25	2.395	1.865	1.655	1.090	2.395	1.865	1.695	1.015	1.440	690	1.120	540
Profundidad de corte *Depth of cut*												

F-502 - pag. 57 | F-504 - pag. 60 | F-509 - pag. 61

Acabado / Finishing

MATERIAL	Acero preendurecido <35 HRC *Prehardened steel <35 HRC*		Acero preendurecido 35-45 HRC *Prehardened steel 35-45 HRC*		Acero endurecido 46-55 HRC *Herdened steel 46-55 HRC*		Acero endurecido 56-65 HRC *Hardened steel 56-65 HRC*		Acero endurecido 66-70 HRC *Hardened steel 66-70 HRC*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
2	42.175	10.120	41.380	9.930	34.220	8.210	26.260	6.300	19.100	4.585
3	28.115	6.750	27.585	6.620	22.810	5.475	17.505	4.200	12.730	3.055
4	21.090	5.060	20.690	4.965	17.110	4.105	13.130	3.150	9.550	2.290
5	16.870	4.050	16.550	3.970	13.685	3.285	10.505	2.520	7.640	1.835
6	14.060	3.375	13.790	3.310	11.405	2.735	8.755	2.100	6.365	1.530
8	10.545	3.795	10.345	3.725	8.555	3.080	6.565	2.365	4.775	1.720
10	8.435	4.050	8.275	3.970	6.845	3.285	5.250	2.520	3.820	1.835
12	7.030	4.215	6.895	4.140	5.700	3.420	4.375	2.625	3.185	1.910
14	6.025	3.615	5.910	3.545	4.890	2.935	3.750	2.250	2.730	1.635
16	5.270	3.165	5.170	3.105	4.275	2.565	3.285	1.970	2.385	1.430
18	4.680	3.095	4.600	3.035	3.800	2.510	2.920	1.925	2.120	1.400
20	4.220	3.035	4.140	2.980	3.420	2.465	2.625	1.890	1.910	1.375
25	3.375	2.630	3.310	2.580	2.735	2.135	2.100	1.640	1.530	1.190
Profundidad de corte *Depth of cut*										

F-422 | F-442 - pag. 62 | F-423 - pag. 63 | F-217 - pag. 66

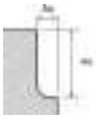
MATERIAL	Acero <1.200 N/mm² *Steel <1.200 N/mm²*		Acero 1.200-1.600 N/mm² *Steel 1.200-1.600 N/mm²*		Acero endurecido <54 HRC *Hardened steel <68 HRC*		Acero templado <68 HRC *Hardened steel <68 HRC*		Aleaciones Cr-Ni <900 N/mm² *Cr-Ni alloys <900 N/mm²*		Aleaciones Ti <850 N/mm² *Ti alloys <850 N/mm²*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
1	37.500	3.200	35.000	3.000	26.500	2.200	13.600	1.200	56.000	4.650	48.000	3.950
2	37.500	3.100	35.000	2.900	26.500	2.100	13.500	1.100	56.000	4.550	48.000	3.850
3	37.500	3.000	35.000	2.800	26.500	2.000	13.400	1.000	56.000	4.450	48.000	3.700
4	28.000	2.550	27.000	2.350	19.500	1.800	10.000	900	42.000	3.750	36.000	3.250
5	225.00	2.250	21.000	2.100	16.000	1.600	7.500	800	33.500	3.300	29.000	2.900
6	19.000	1.900	17.500	1.900	13.000	1.400	6.500	700	28.000	3.050	24.000	2.600
8	14.000	1.400	11.000	1.750	10.000	1.300	5.000	650	21.000	2.700	1.800	2.350
10	11.000	1.750	10.500	1.500	8.000	1.100	4.000	550	17.000	2.350	14.500	2.000
12	9.500	1.500	8.500	1.400	6.500	1.050	3.500	500	14.000	2.250	12.000	1.900
16	6.400	1.250	6.550	1.175	4.850	850	2.500	435	10.500	1.850	9.000	1.650
Profundidad de corte *Depth of cut*												

CONDICIONES DE CORTE
CUTTING DATA

F-813 - pag. 64

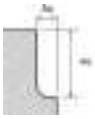
MATERIAL		Cobre *Copper*				Acero endurecido 35-45 HRC *Hardened steel 35-45 HRC*			
d1 [mm]	d2 [mm]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]
0,6	6	0,031	0,038	14.300	250	0,009	0,003	14.300	210
0,8	4	0,112	0,168	15.000	460	0,099	0,012	14.800	380
0,8	8	0,026	0,085	11.000	260	0,077	0,004	11.000	230
1	4	0,171	0,344	12.000	830	0,230	0,012	12.000	700
1	10	0,041	0,268	7.500	330	0,107	0,004	7.500	270
1	20	0,015	0,191	6.000	200	0,023	0,026	6.000	160
1,2	10	0,046	0,344	5.800	380	0,061	0,009	5.800	320
1,5	10	0,128	0,482	7.200	760	0,245	0,003	7.200	640
1,5	20	0,036	0,306	5.100	410	0,092	0,006	5.100	350
2	16	0,158	0,612	8.000	830	0,383	0,027	8.000	700
2	30	0,043	0,383	5.100	570	0,115	0,004	5.100	470
2,5	10	0,288	0,727	9.000	1.030	0,459	0,044	9.000	870
3	10	0,332	0,723	9.000	1.360	0,536	0,089	9.000	980
3	30	0,119	0,587	6.000	740	0,323	0,043	6.000	610
4	30	0,170	1,052	5.000	780	0,583	0,024	5.000	650
5	30	0,297	1,530	4.600	850	0,900	0,046	4.600	710
6	20	0,522	1,908	5.200	1.200	1,179	0,414	5.200	1.060
6	40	0,491	1,782	4.000	1.000	1,134	0,356	4.000	790
8	22	0,459	2,210	4.800	1.100	1,320	0,364	4.800	940
8	40	0,432	1,980	3.600	840	1,150	0,314	3.600	700
10	24	0,390	2,510	4.000	900	1,430	0,310	3.900	800
10	45	0,368	2,120	3.000	710	1,160	0,267	3.000	590
12	26	0,328	2,620	3.300	760	1,760	0,260	3.300	670
12	50	0,309	2,100	2.500	600	1,220	0,224	2.500	500

Profundidad de corte
Depth of cut

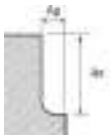


MATERIAL		Acero endurecido 45-55 HRC *Hardened steel*				Acero endurecido 55-65 HRC *Hardened steel 55-65 HRC*			
d1 [mm]	d2 [mm]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]
0,6	6	0,009	0,003	11.800	160	0,009	0,001	7.600	20
0,8	4	0,099	0,013	12.800	300	0,099	0,006	8.600	35
0,8	8	0,077	0,003	9.300	160	0,077	0,002	6.500	15
1	4	0,230	0,030	10.200	570	0,230	0,014	7.200	70
1	10	0,107	0,011	6.500	230	0,107	0,005	4.600	25
1	20	0,023	0,004	5.200	140	0,023	0,002	3.700	15
1,2	10	0,061	0,007	5.200	260	0,061	0,003	3.800	30
1,5	10	0,245	0,036	6.600	550	0,245	0,020	5.100	70
1,5	20	0,092	0,005	4.700	300	0,092	0,003	3.600	40
2	16	0,383	0,037	7.200	630	0,383	0,012	5.900	90
2	30	0,115	0,004	4.700	430	0,115	0,002	3.700	60
2,5	10	0,459	0,064	8.500	820	0,459	0,041	7.100	130
3	10	0,536	0,089	8.500	760	0,536	0,064	7.600	170
3	30	0,323	0,043	5.500	470	0,323	0,025	5.100	100
4	30	0,583	0,036	4.100	570	0,583	0,026	3.500	130
5	30	0,900	0,065	3.300	470	0,900	0,048	2.800	145
6	20	1,179	0,162	3.100	900	1,179	0,126	2.700	340
6	40	1,134	0,142	2.300	660	1,134	0,107	2.000	265
8	22	1,320	0,143	2.800	790	1,320	0,111	2.400	300
8	40	1,150	0,125	2.100	580	1,150	0,094	1.700	235
10	24	1,430	0,121	2.400	670	1,430	0,094	2.000	255
10	45	1,160	0,106	1.700	490	1,160	0,080	1.500	200
12	26	1,760	0,102	2.000	560	1,760	0,079	1.700	215
12	50	1,220	0,089	1.500	420	1,220	0,067	1.200	165

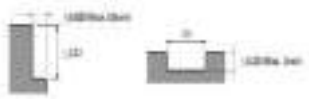
Profundidad de corte
Depth of cut



F-216 - pag. 65

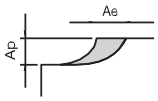
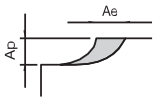
MATERIAL		Acero preendurecido y acero endurecido < 45 HRC *Prehardened and hardened steel < 45 HRC*				Acero endurecido < 55 HRC *Herdened steel < 55 HRC*				Cobre / Aluminio *Copper / Aluminium*			
d1 [mm]	l2 [mm]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]
1	10	0,35	0,05	18.000	1.000	0,35	0,05	14.000	700	0,50	0,15	18.000	1.200
1	20	0,10	0,03	14.000	700	0,06	0,03	11.000	500	0,30	0,08	14.000	850
1	30	0,03	0,02	10.000	480	0,02	0,02	8.000	300	0,09	0,05	10.000	600
1,5	10	0,55	0,10	16.000	1.300	0,55	0,10	12.800	900	0,60	0,30	16.000	1.500
1,5	20	0,30	0,05	14.000	800	0,20	0,05	11.200	550	0,50	0,16	14.000	900
1,5	10	0,05	0,03	12.000	450	0,03	0,03	9.600	300	0,15	0,09	12.000	550
2	20	0,70	0,07	12.000	1.200	0,70	0,07	9.600	850	0,70	0,20	12.000	1.400
2	30	0,30	0,04	10.000	750	0,30	0,03	8.000	500	0,70	0,13	12.000	900
2	40	0,20	0,03	8.000	400	0,20	0,02	6.400	300	0,50	0,10	10.000	500
3	30	1,05	0,10	9.000	1.200	1,05	0,07	7.200	850	1,10	0,30	8.000	1.400
3	40	0,60	0,07	9.000	1.000	0,60	0,05	7.200	700	0,90	0,21	9.000	1.200
3	50	0,35	0,05	8.000	640	0,35	0,04	6.400	450	0,80	0,15	9.000	750
3	60	0,20	0,03	8.000	480	0,20	0,02	6.400	300	0,70	0,10	8.000	550
4	30	2,00	0,15	8.000	1.400	2,00	0,14	6.500	1.000	2,00	0,60	8.000	1.600
4	40	1,20	0,12	8.000	1.200	1,20	0,10	5.800	850	1,60	0,40	8.000	1.400
4	50	0,70	0,10	7.000	800	0,70	0,08	4.800	600	1,20	0,30	8.000	1.000
4	60	0,40	0,08	7.000	600	0,40	0,04	4.800	400	0,80	0,20	7.000	800
Profundidad de corte *Depth of cut*													

F-410 - pag. 67

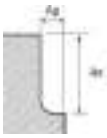
MATERIAL	Acero al carbono < 30 HRC *Carbon steel < 30 HRC*		Acero aleado 30-45 HRC *Alloy steel 30-45 HRC*		Acero inoxidable *Stainless steel*		Acero endurecido 45-55 HRC *Hardened Steels 45-55 HRC*		Acero endurecido 55-60 HRC *Hardened Steels 55-60 HRC*	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
1	5.100	70	4.500	60	3.600	40	3.000	25	2.200	10
2	4.200	80	3.600	70	2.900	50	2.200	35	1.800	15
3	3.600	90	2.900	80	2.200	60	.1800	40	1.500	25
4	2.900	120	2.300	90	1.800	70	.1400	50	1.200	30
5	2.500	150	2.000	120	1.500	90	1.300	60	1.000	30
6	2.100	170	1.700	150	1.300	110	1.100	70	900	40
8	1.600	190	1.300	150	1.000	130	900	70	680	40
10	1.400	190	1.100	150	800	110	700	70	550	40
12	1.100	150	900	120	700	90	570	60	450	30
12	900	120	700	90	500	70	420	43	340	26
Profundidad de corte *Depth of cut*										

CONDICIONES DE CORTE
CUTTING DATA

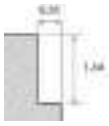
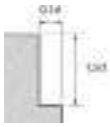
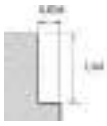
F-411 - pag. 69

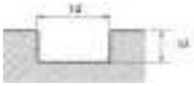
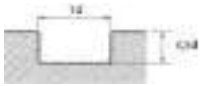
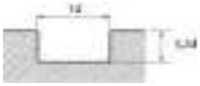
MATERIAL	Acero al carbono < 30 HRC *Carbon steel < 30 HRC*				Acero aleado 30-45 HRC *Alloy steel 30-45 HRC*				Acero endurecido 45-55 HRC *Hardened steel 45-55 HRC*				Acero endurecido 55-60 HRC *Hardened steel 55-60 HRC*			
d1 [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]
1	37.000	9.000	0,400	0,040	33.000	7.200	0,400	0,025	27.000	6.500	0,400	0,020	22.000	2.600	0,400	0,015
2	33.000	10.000	0,800	0,080	27.000	8.400	0,800	0,050	24.000	7.500	0,800	0,040	16.000	3.000	0,800	0,030
3	22.000	11.000	1,200	0,120	18.000	9.000	1,200	0,080	16.000	8.500	1,200	0,060	11.000	3.300	1,200	0,050
4	17.000	12.000	1,500	0,150	14.000	9.500	1,500	0,120	12.000	8.800	1,500	0,080	8.000	3.500	1,500	0,070
5	13.000	13.000	2,000	0,200	11.000	10.000	2,000	0,150	9.600	9.500	2,000	0,100	6.400	3.800	2,000	0,080
6	11.000	13.000	2,500	0,250	9.000	11.000	2,000	0,150	8.000	9.600	2,500	0,100	5.300	3.800	2,500	0,100
8	8.200	13.000	3,000	0,300	7.000	11.000	3,000	0,200	6.000	9.600	3,000	0,150	4.000	3.800	3,000	0,130
10	6.500	13.000	4,500	0,300	55.00	11.000	4,500	0,200	4.800	9.500	4,500	0,150	3.200	3.800	4,500	0,130
12	5.500	12.000	5,500	0,300	5.000	10.000	5,500	0,200	4.100	9.000	4,500	0,250	2.700	3.500	4,500	0,200
16	4.100	10.000	7,500	0,450	3.400	8.800	7,500	0,300	3.000	7.800	7,500	0,250	2.000	3.200	7,500	0,200
Profundidad de corte *Depth of cut*																

F-412 - pag. 70 | F-413 - pag. 71

MATERIAL	Acero preendurecido y acero endurecido < 45 HRC *Prehardened and hardened steel < 45 HRC*				Acero endurecido < 55 HRC *Herdened steel < 55 HRC*				Acero endurecido < 65 HRC *Herdened steel < 65 HRC*			
d1 [mm]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]
1	0,107	0,009	7.500	430	0,085	0,008	6.500	430	0,043	0,005	4.600	300
1,2	0,153	0,014	7.700	680	0,128	0,008	6.200	510	0,043	0,005	5.400	680
1,5	0,275	0,025	7.200	710	0,252	0,022	6.600	660	0,138	0,009	5.000	250
2	0,344	0,039	7.800	880	0,344	0,037	7.200	820	0,153	0,015	5.900	360
2,5	0,230	0,041	6.600	1.000	0,191	0,026	6.400	570	0,077	0,019	5.400	250
3	0,493	0,049	7.100	1.300	0,493	0,031	6.700	1.300	0,271	0,019	5.400	470
4	0,800	0,060	6.200	1.200	0,800	0,047	5.200	1.120	0,560	0,022	4.500	630
6	1,148	0,085	2.500	680	0,638	0,085	1.400	400	0,468	0,034	1.200	300
8	2,540	0,184	4.000	1.600	1,320	0,184	2.400	680	1,320	0,087	2.000	650
10	2,730	0,210	3.200	1.750	1,430	0,220	1.900	540	1,450	0,094	1.600	460
12	2,700	0,230	2.500	1.800	1,490	0,240	1.500	430	1,500	0,110	1.300	450
Profundidad de corte *Depth of cut*												

F-620 - pag. 72

MATERIAL	Acero preendurecido <30 HRC *Prehardened steel <30 HRC*		Acero preendurecido 30-45 HRC *Prehardened steel 30-45 HRC*		Acero inox./ Aleaciones de Ti *Stainless steel/Ti alloys*		Acero endurecido 45-55 HRC *Hardened steel 45-55 HRC*		Inconel *Inconel*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
6	4.700	880	3.000	510	3.000	480	1.900	265	1.700	185
8	3.500	880	2.200	530	2.200	480	1.400	265	1.300	180
10	2.800	800	1.800	450	1.100	260	1.100	260	1.000	160
12	2.300	800	1.500	510	1.500	420	1.000	260	900	140
16	1.800	640	1.100	400	1.100	360	700	200	650	100
Profundidad de corte *Depth of cut*										

MATERIAL	Acero preendurecido <30 HRC *Prehardened steel <30 HRC*		Acero preendurecido 30-45 HRC *Prehardened steel 30-45 HRC*		Acero inox./ Aleaciones de Ti *Stainless steel/ Ti alloys*		Acero endurecido 45-55 HRC *Hardened steel 45-55 HRC*		Inconel *Inconel*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
6	4.000	640	2.200	320	2.200	160	1.300	130	800	75
8	3.000	640	1.600	320	1.600	160	1.000	140	600	70
10	2.400	580	1.300	290	1.300	140	800	130	500	65
12	2.000	580	1.000	290	1.000	140	650	130	400	60
16	1.600	480	800	220	800	120	500	100	300	40
Profundidad de corte *Depth of cut*										

F-921 - pag. 73

MATERIAL	Acero preendurecido y acero endurecido < 45 HRC *Prehardened and hardened steel < 45 HRC*				Acero endurecido < 55 HRC *Herdened steel < 55 HRC*				Cobre *Copper*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
0,1	0,040	0,004	40.000	250	0,030	0,003	30.000	180	0,040	0,008	40.000	250
0,2	0,035	0,015	50.000	230	0,030	0,080	41.300	240	0,005	0,004	50.000	400
0,3	0,065	0,022	50.000	620	0,045	0,020	41.300	530	0,010	0,010	50.000	680
0,4	0,100	0,035	50.000	800	0,080	0,028	41.300	600	0,010	0,010	50.000	790
0,5	0,120	0,040	46.000	950	0,080	0,030	30.300	700	0,018	0,018	52.000	1.050
0,6	0,145	0,050	45.500	920	0,110	0,040	37.500	720	0,020	0,020	54.000	1.210
0,8	0,150	0,060	42.000	980	0,150	0,050	33.500	800	0,030	0,030	48.000	1.570
1,0	0,204	0,080	33.600	1.000	0,160	0,064	28.000	800	0,020	0,020	32.800	1.300
1,2	0,141	0,077	25.600	640	0,112	0,061	20.160	520	0,014	0,014	21.760	1.120
1,5	0,260	0,120	27.200	800	0,208	0,096	20.800	640	0,042	0,042	21.600	1.500
Profundidad de corte *Depth of cut*												

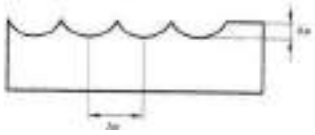
En operaciones de ranurado disminuir el avance más del 50% | *In slotting operations decrease feed rate more than 50%*

CONDICIONES DE CORTE
CUTTING DATA

F-823 - pag. 74

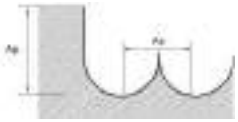
MATERIAL	Acero preendurecido y acero endurecido < 45 HRC *Prehardened and hardened steel < 45 HRC*				Acero endurecido < 55 HRC *Herdened steel < 55 HRC*				Acero endurecido < 65 HRC *Herdened steel < 65 HRC*			
d1 [mm]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]	Ae [mm]	Ap [mm]	n [rpm]	F [mm/min]
0,2	0,004	0,003	42.000	230	0,004	0,003	42.000	180	0,003	0,003	42.000	150
0,3	0,007	0,006	34.000	300	0,005	0,005	28.000	220	0,005	0,004	28.000	180
0,4	0,010	0,010	37.000	400	0,010	0,009	27.000	260	0,010	0,008	27.000	220
0,5	0,008	0,008	29.000	460	0,010	0,007	26.000	370	0,009	0,006	26.000	180
0,6	0,043	0,012	24.000	420	0,042	0,008	22.000	330	0,040	0,007	22.000	280
0,8	0,068	0,028	24.000	530	0,068	0,020	18.000	350	0,065	0,015	18.000	290
1,0	0,056	0,020	13.600	500	0,056	0,014	12.500	380	0,050	0,008	11.400	260
1,5	0,110	0,022	10.100	420	0,110	0,020	8.000	360	0,110	0,012	8.000	340
2,0	0,110	0,060	13.300	500	0,110	0,055	10.600	500	0,110	0,035	10.600	410
3,0	0,320	0,145	10.300	1.230	0,310	0,120	7.100	940	0,300	0,080	4.800	550
4,0	0,320	0,200	7.400	1.150	0,300	0,150	5.500	880	0,300	0,130	5.500	680
5,0	0,550	0,300	7.000	1.150	0,550	0,220	5.000	900	0,500	0,200	5.000	680
6,0	0,650	0,300	6.000	1.400	0,650	0,220	4.200	980	0,600	0,220	3.700	660
8,0	0,750	0,300	5.800	940	0,600	0,160	4.000	720	0,600	0,200	3.600	600
10,0	0,850	0,350	4.500	900	0,600	0,150	3.800	680	0,600	0,200	3.200	540
Profundidad de corte *Depth of cut*												

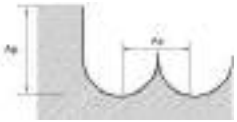
F-230 - pag. 79 | F-231 - pag. 80

MATERIAL	Acero preendurecido y acero endurecido 40 - 50 HRC *Prehardened and hardened steel 40 - 50 HRC*				Acero endurecido 50 - 60 HRC *Herdened steel 50 - 60 HRC*				Acero endurecido 60 - 70 HRC *Herdened steel 60 - 70 HRC*			
d1 [mm]	Rotating [min⁻¹]	Feed [mm/min]	Ap [mm]	Ae [mm]	Rotating [min⁻¹]	Feed [mm/min]	Ap [mm]	Ae [mm]	Rotating [min⁻¹]	Feed [mm/min]	Ap [mm]	F [mm/min]
2.0	33000	3100	0.02	0.07	26000	2100	0.02	0.07	24000	2000	0.02	0.07
3.0	29000	4100	0.03	0.1	23000	2900	0.03	0.1	21000	2600	0.03	0.1
4.0	22000	3900	0.04	0.15	17000	2500	0.04	0.15	15500	2100	0.04	0.15
5.0	17500	3500	0.05	0.15	13500	2200	0.05	0.15	13000	2000	0.05	0.15
6.0	15000	3100	0.06	0.2	11500	1700	0.06	0.2	10500	1500	0.06	0.2
8.0	11000	2500	0.08	0.25	8600	1600	0.08	0.25	8000	1400	0.08	0.25
10	9000	2000	0.1	0.3	7000	1400	0.1	0.3	6000	1200	0.1	0.3
12	7500	1800	0.1	0.35	5700	1300	0.1	0.35	5300	1200	0.1	0.35
16	5500	1800	0.1	0.4	4300	1300	0.1	0.4	4000	1200	0.1	0.4
Profundidad de corte *Depth of cut*												

F-221 - pag. 77 | **F-224** - pag. 78 | **F-225** - pag. 82 | **F-234** - pag. 83 | **F-227** - pag. 84 | **F-229** - pag. 85

Desbaste convencial / Conventional roughing

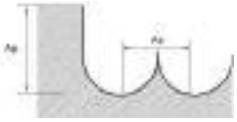
MATERIAL	Acero aleado < 1.200 N/mm² *Alloy steel < 1.200 N/mm²*				Acero aleado 1.200 - 1.450 N/mm² *Alloy steel 1.200 - 1:450 N/mm²*				Acero endurecido 45-55 HRC *Hardened steel 45-55 HRC*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
1	0,300	0,070	38.195	750	0,300	0,070	38.195	750	0,250	0,055	33.420	400
2	0,600	0,140	19.100	1.200	0,600	0,140	19.100	1.200	0,500	0,110	16.710	600
3	0,900	0,210	12.730	1.600	0,900	0,210	12.730	1.600	0,750	0,165	11.140	1.000
4	1,200	0,280	9.550	1.700	1,200	0,280	9.550	1.400	1,000	0,220	8.355	900
5	1,500	0,350	7.640	1.900	1,500	0,350	7.640	1.600	1,250	0,275	6.685	1.000
6	1,800	0,420	6.365	2.100	1,800	0,420	6.365	1.700	1,500	0,330	5.570	1.200
8	2,400	0,560	4.775	2.200	2,400	0,560	4.775	1.800	2,000	0,440	4.175	1.250
10	3,000	0,700	3.820	2.000	3,000	0,700	3.820	1.800	2,500	0,550	3.340	1.100
12	3,600	0,840	3.185	1.800	3,600	0,840	3.185	1.600	3,000	0,660	2.785	1.000
14	4,200	0,980	2.730	1.700	4,200	0,980	2.730	1.500	3,500	0,770	2.385	950
16	4,800	1,120	2.385	1.600	4,800	1,120	2.385	1.400	4,000	0,880	2.090	900
20	6,000	1,400	1.190	1.500	6,000	1,400	1.910	1.300	5,000	1,100	1.670	800
Profundidad de corte *Depth of cut*												

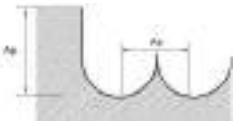
MATERIAL	Acero endurecido 55-65 HRC *Hardened steel 55-65 HRC*				Acero endurecido 65-70 HRC *Hardened steel 65-70 HRC*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
1	0,250	0,035	28.645	400	0,200	0,025	2.0690	330
2	0,500	0,070	14.325	500	0,400	0,050	10.345	330
3	0,750	0,105	9.550	650	0,600	0,075	6.895	340
4	1,000	0,140	7.160	800	0,800	0,100	5.170	400
5	1,250	0,175	5.730	800	1,000	0,125	4.140	500
6	1,500	0,210	4.775	900	1,200	0,150	3.450	600
8	2,000	0,280	3.580	800	1,600	0,200	2.585	550
10	2,500	0,350	2.865	900	2,000	0,250	2.070	600
12	3,000	0,420	2.385	800	2,400	0,300	1.725	550
14	3,500	0,490	2.045	800	2,800	0,350	1.475	500
16	4,000	0,560	1.790	700	3,200	0,400	1.295	500
20	5,000	0,700	1.430	700	4,000	0,500	1.035	450
Profundidad de corte *Depth of cut*								

CONDICIONES DE CORTE
CUTTING DATA

F-221 - pag. 77 | **F-224** - pag. 78 | **F-225** - pag. 82 | **F-234** - pag. 83 | **F-227** - pag. 84 | **F-229** - pag. 85

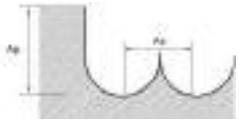
Acabado alta velocidad / HSC finishing

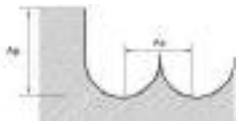
MATERIAL	Acero aleado < 1.200 N/mm² *Alloy steel < 1.200 N/mm²*				Acero aleado 1.200 - 1.450 N/mm² *Alloy steel 1.200 - 1:450 N/mm²*				Acero endurecido 45-55 HRC *Hardened steel 45-55 HRC*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
1	0,300	0,070	79.575	3.200	0,300	0,070	95.490	3.200	0,250	0,055	68.435	3.000
2	0,600	0,140	39.790	2.800	0,600	0,140	47.745	2.800	0,500	0,110	34.220	2.300
3	0,900	0,210	26.525	3.200	0,900	0,210	31.830	3.200	0,750	0,165	22.810	2.200
4	1,200	0,280	19.895	3.400	1,200	0,280	23.875	2.900	1,000	0,220	17.110	2.500
5	1,500	0,350	15.915	3.600	1,500	0,350	19.100	3.000	1,250	0,275	13.685	2.600
6	1,800	0,420	13.260	4.000	1,800	0,420	15.915	3.300	1,500	0,330	11.405	2.700
8	2,400	0,560	9.945	4.100	2,400	0,560	11.935	3.500	2,000	0,440	8.555	2.600
10	3,000	0,700	7.955	3.900	3,000	0,700	9.550	3.400	2,500	0,550	6.845	2.500
12	3,600	0,840	6.630	3.500	3,600	0,840	7.960	3.000	3,000	0,660	5.705	2.200
14	4,200	0,980	5.685	3.400	4,200	0,980	6.820	2.900	3,500	0,770	4.890	2.100
16	4,800	1,120	4.975	3.300	4,800	1,120	5.970	2.800	4,000	0,880	4.275	2.000
20	6,000	1,400	3.980	3.100	6,000	1,400	4.775	2.600	5,000	1,100	3.420	1.900
Profundidad de corte *Depth of cut*												

MATERIAL	Acero endurecido 55-65 HRC *Hardened steel 55-65 HRC*				Acero endurecido 65-70 HRC *Hardened steel 65-70 HRC*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
1	0,250	0,035	66.845	1.100	0,200	0,025	44.565	800
2	0,500	0,070	33.420	1.000	0,400	0,050	22.280	800
3	0,750	0,105	22.280	1.700	0,600	0,075	14.855	1.000
4	1,000	0,140	16.710	1.600	0,800	0,100	11.140	900
5	1,250	0,175	13.370	1.800	1,000	0,125	8.910	1.200
6	1,500	0,210	11.140	2.000	1,200	0,150	7.425	1.400
8	2,000	0,280	8.355	1.900	1,600	0,200	5.570	1.300
10	2,500	0,350	6.685	2.000	2,000	0,250	4.455	1.350
12	3,000	0,420	5.570	1.800	2,400	0,300	3.715	1.200
14	3,500	0,490	4.775	1.700	2,800	0,350	3.185	1.150
16	4,000	0,560	4.175	1.600	3,200	0,400	2.785	1.100
20	5,000	0,700	3.340	1.400	4,000	0,500	2.230	1.000
Profundidad de corte *Depth of cut*								

F-221 - pag. 77 | **F-224** - pag. 78 | **F-225** - pag. 82 | **F-234** - pag. 83 | **F-227** - pag. 84 | **F-229** - pag. 85

Desbaste convencial / Conventional roughing

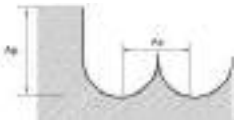
MATERIAL	Acero aleado < 1.200 N/mm² *Alloy steel < 1.200 N/mm²*				Acero aleado 1.200 - 1.450 N/mm² *Alloy steel 1.200 - 1.450 N/mm²*				Acero endurecido 45-55 HRC *Hardened steel 45-55 HRC*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
1	0,035	0,075	41.380	1.900	0,035	0,075	41.380	0,030	0,030	0,065	33420	1.500
2	0,070	0,150	20.690	2.300	0,070	0,150	20.690	0,060	0,060	0,130	16710	1.900
3	0,105	0,225	13.790	2.700	0,105	0,225	13.790	0,090	0,090	0,195	11140	1.700
4	0,140	0,300	10.345	2.600	0,140	0,300	10.345	0,120	0,120	0,260	8355	1.600
5	0,175	0,375	8.275	2.400	0,175	0,375	8.275	0,150	0,150	0,325	6685	1.700
6	0,210	0,450	6.895	2.100	0,210	0,450	6.895	0,180	0,180	0,390	5570	1.800
8	0,280	0,600	5.170	2.000	0,280	0,600	5.170	0,240	0,240	0,520	4180	1.400
10	0,350	0,750	4.140	1.700	0,350	0,750	4.140	0,300	0,300	0,650	3340	1.200
12	0,420	0,900	3.450	1.500	0,420	0,900	3.450	0,360	0,360	0,780	2785	1.100
14	0,490	1,050	2.955	1.400	0,490	1,050	2.955	0,420	0,420	0,910	2385	1.000
16	0,560	1,200	2.585	1.300	0,560	1,200	2.585	0,480	0,480	1,040	2090	900
20	0,700	1,500	2.070	1.200	0,700	1,500	2.070	0,600	0,600	1,300	1670	750
Profundidad de corte *Depth of cut*												

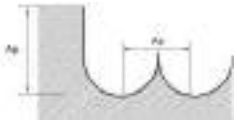
MATERIAL	Acero endurecido 55-65 HRC *Hardened steel 55-65 HRC*				Acero endurecido 65-70 HRC *Hardened steel 65-70 HRC*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
1	0,030	0,050	33.420	1100	0,025	0,030	28.965	1.200
2	0,060	0,100	16.710	2000	0,050	0,060	14.480	1.400
3	0,090	0,150	11.140	1500	0,075	0,090	9.655	1.200
4	0,120	0,200	8.355	1500	0,100	0,120	7.240	1.100
5	0,150	0,250	6.685	1600	0,125	0,150	5.790	1.200
6	0,180	0,300	5.570	1600	0,150	0,180	4.830	1.300
8	0,240	0,400	4.180	1300	0,200	0,240	3.620	1.000
10	0,300	0,500	3.340	1100	0,250	0,300	2.895	900
12	0,360	0,600	2.785	1000	0,300	0,360	2.415	800
14	0,420	0,700	2.385	900	0,350	0,420	2.070	700
16	0,480	0,800	2.090	800	0,400	0,480	1.810	650
20	0,600	1,000	1.670	700	0,500	0,600	1.450	600
Profundidad de corte *Depth of cut*								

CONDICIONES DE CORTE
CUTTING DATA

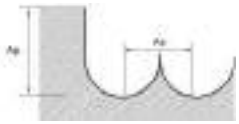
F-221 - pag. 77 | **F-224** - pag. 78 | **F-225** - pag. 82 | **F-234** - pag. 83 | **F-227** - pag. 84 | **F-229** - pag. 85

Acabado alta velocidad / HSC finishing

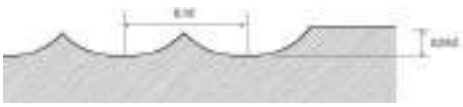
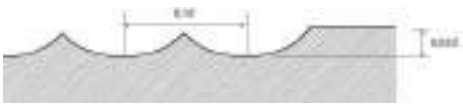
MATERIAL	Acero aleado < 1.200 N/mm² *Alloy steel < 1.200 N/mm²*				Acero aleado 1.200 - 1.450 N/mm² *Alloy steel 1.200 - 1:450 N/mm²*				Acero endurecido 45-55 HRC *Hardened steel 45-55 HRC*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
1	0,035	0,075	95.490	1.900	0,035	0,075	95.490	1.900	0,030	0,065	84.350	1.500
2	0,070	0,150	47.745	2.300	0,070	0,150	47.745	2.300	0,060	0,130	4.2175	1.900
3	0,105	0,225	31.830	2.700	0,105	0,225	31.830	2.700	0,090	0,195	2.8115	1.700
4	0,140	0,300	23.875	2.600	0,140	0,300	23.875	2.600	0,120	0,260	21.090	1.600
5	0,175	0,375	19.100	2.400	0,175	0,375	19.100	2.400	0,150	0,325	16.870	1.700
6	0,210	0,450	15.915	2.100	0,210	0,450	15.915	2.100	0,180	0,390	14.060	1.800
8	0,280	0,600	11.935	2.000	0,280	0,600	11.935	2.000	0,240	0,520	10.545	1.400
10	0,350	0,750	9.550	1.700	0,350	0,750	9.550	1.700	0,300	0,650	8.435	1.200
.12	0,420	0,900	7.960	1.500	0,420	0,900	7.960	1.500	0,360	0,780	7.030	1.100
14	0,490	1,050	6.820	1.400	0,490	1,050	6.820	1.400	0,420	0,910	6.025	1.000
16	0,560	1,200	5.970	1.300	0,560	1,200	5.970	1.300	0,480	1,040	5.270	900
20	0,700	1,500	4.775	1.200	0,700	1,500	4.775	1.200	0,600	1,300	4.220	750
Profundidad de corte *Depth of cut*												

MATERIAL	Acero endurecido 55-65 HRC *Hardened steel 55-65 HRC*				Acero endurecido 65-70 HRC *Hardened steel 65-70 HRC*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
1	0,030	0,050	71.620	1.100	0,025	0,030	55.705	1.200
2	0,060	0,100	35.810	2.000	0,050	0,060	27.850	1.400
3	0,090	0,150	23.875	1.500	0,075	0,090	18.570	1.200
4	0,120	0,200	17.905	1.500	0,100	0,120	13.925	1.100
5	0,150	0,250	14.325	1.600	0,125	0,150	11.140	1.200
6	0,180	0,300	11.935	1.600	0,150	0,180	9.285	1.300
8	0,240	0,400	8.950	1.300	0,200	0,240	6.960	1.000
10	0,300	0,500	7.160	1.100	0,250	0,300	5.570	900
12	0,360	0,600	5.970	1.000	0,300	0,360	4.640	800
14	0,420	0,700	5.115	900	0,350	0,420	3.980	700
16	0,480	0,800	4.475	800	0,400	0,480	3.480	650
20	0,600	1,000	3.580	700	0,500	0,600	2.785	600
Profundidad de corte *Depth of cut*								

F-222 - pag. 81

MATERIAL	Acero preendurecido y acero endurecido < 45 HRC *Prehardened and hardened steel < 45 HRC*				Acero endurecido < 55 HRC *Herdened steel < 55 HRC*				Cobre *Copper*			
d1 [mm]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]	**Ae** [mm]	**Ap** [mm]	**n** [rpm]	**F** [mm/min]
0,1	0,040	0,004	40.000	225	0,030	0,003	30.000	160	0,040	0,008	40.000	225
0,2	0,035	0,015	50.000	205	0,030	0,080	41.300	215	0,005	0,004	50.000	360
0,3	0,065	0,022	50.000	560	0,045	0,020	41.300	475	0,010	0,010	50.000	610
0,4	0,100	0,035	50.000	720	0,080	0,028	41.300	540	0,014	0,010	50.000	710
0,5	0,120	0,040	46.000	855	0,080	0,030	38.300	630	0,017	0,018	52.000	945
0,6	0,145	0,050	45.500	830	0,110	0,040	37.500	650	0,020	0,020	54.000	1.090
0,8	0,150	0,060	42.000	880	0,150	0,050	33.500	720	0,025	0,030	48.000	1.415
1,0	0,204	0,080	33.600	900	0,160	0,064	28.000	720	0,032	0,020	32.800	1.170
1,2	0,141	0,077	25.600	575	0,112	0,061	20.160	470	0,032	0,014	21.760	1.010
1,5	0,260	0,120	27.200	720	0,208	0,096	20.800	575	0,054	0,042	21.600	1.350
Profundidad de corte *Depth of cut*												

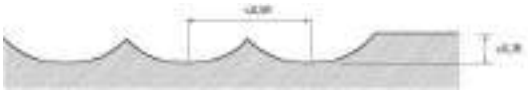
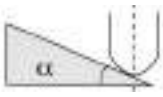
F-232 - pag. 87 | F-432 - pag. 90

MATERIAL	Acero <30 HRC *Steel <30 HRC*		Acero preendurecido 30-38 HRC *Prehardened steel 30-38 HRC*		Acero endurecido 38-45 HRC/Acero Inoxidable *Hardened steel 38-45 HRC/ Stainless steel*		Acero endurecido 45-55 HRC *Hardened steel 45-55 HRC*		Acero endurecido 55 - 60 HRC *Hardened steel 55 - 60 HRC*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
1,0	25.600	680	25.600	680	25.600	680	25.600	680	25.600	610
1,5	22.000	850	22.000	850	22.000	850	22.000	850	22.000	750
2,0	19.200	1.080	19.200	1.080	19.200	1.080	19.200	1.080	17.600	960
4,0	12.400	1.440	11.200	1.160	10.800	1.160	10.000	1.080	8.800	920
6,0	8.400	1.480	7.600	1.240	7.200	1.240	6.800	1.200	5.900	1.040
8,0	6.400	1.120	5.700	960	5.500	960	5.100	880	4.400	790
10,0	5.100	880	4.600	785	4.400	785	4.000	720	3.600	640
12,0	4.800	840	3.800	640	3.640	640	3.400	600	3.000	540
Profundidad de corte *Depth of cut*										

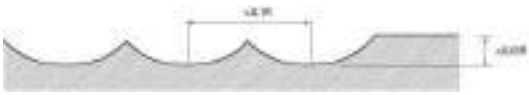
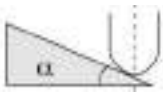
CONDICIONES DE CORTE
CUTTING DATA

F-324 - pag. 88

Desbaste / Roughing

MATERIAL	Acero preendurecido < 45 HRC *Prehardened steel < 45 HRC*				Acero endurecido 45-55 HRC / Acero inoxidable *Hardened steel 45-55 HRC / Stainless steel*			
	α ≤ 15°		α ≤ 15°		α ≤ 15°		α ≤ 15°	
d1 [mm]	n [mm]	F [mm]	n [rpm]	F [mm/min]	n [mm]	F [mm]	n [rpm]	F [mm/min]
2	28.800	2.700	22.500	1.100	16.200	1.300	14.400	580
3	22.800	3.000	18.000	1.200	13.100	1.500	11.400	630
4	16.700	3.300	13.000	1.300	10.000	1.600	8.300	670
5	14.200	3.500	11.000	1.300	8.500	1.700	7.100	700
6	11.700	3.600	9.000	1.400	6.900	1.700	5.800	720
8	9.000	4.500	7.000	1.800	5.400	2.100	4.300	830
10	7.200	4.500	5.900	1.800	4.300	2.000	3.400	780
12	5.900	4.100	4.800	1.600	3.600	1.900	2.900	760
Profundidad de corte *Depth of cut*								

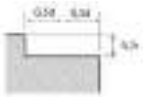
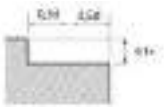
Acabado / Finishing

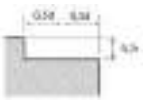
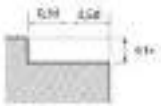
MATERIAL	Acero preendurecido < 45 HRC *Prehardened steel < 45 HRC*				Acero endurecido 45-55 HRC / Acero inoxidable *Hardened steel 45-55 HRC / Stainless steel*			
	α ≤ 15°		α ≤ 15°		α ≤ 15°		α ≤ 15°	
d1 [mm]	n [mm]	F [mm]	n [rpm]	F [mm/min]	n [mm]	F [mm]	n [rpm]	F [mm/min]
2	28.800	2.900	28.800	1.400	22.500	1.800	18.000	700
3	22.900	3.700	23.400	1.600	18.900	2.100	14.900	800
4	23.000	4.500	18.000	1.800	15.300	2.400	11.700	900
5	21.000	5.000	15.800	1.900	13.500	2.500	10.400	1.000
6	18.000	5.500	13.500	2.000	11.700	2.900	9.000	1.100
8	13.500	6.800	10.000	2.400	9.000	3.400	6.800	1.300
10	10.800	6.800	8.100	2.400	7.200	3.400	5.400	1.300
12	9.000	6.300	6.800	2.300	6.000	3.200	4.500	1.200
Profundidad de corte *Depth of cut*								

F-424 - pag. 89

MATERIAL	Acero preendurecido y endurecido < 45 HRC *Prehardened steel < 45 HRC*		Acero endurecido 45-55 HRC *Hardened steel 45-55 HRC*		Acero endurecido 55-62 HRC *Prehardened steel 55-62 HRC*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
3	26.400	1.600 - 4.800	16.000	960 - 2.720	10.400	640 - 1.200
4	20.000	1.600 - 4.800	13.600	960 - 2.720	8.000	640 - 1.200
5	18.400	1.600 - 4.800	12.000	960 - 2.720	7.200	640 - 1.200
6	16.000	1.440 - 4.400	10.400	960 - 2.960	6.600	560 - 1.200
8	12.000	1.760 - 4.000	8.000	1.120 - 2.720	5.000	560 - 1.040
10	9.600	1.840 - 3.680	6.400	1.200 - 2.400	4.000	560 - 800
12	8.000	1.520 - 3.280	5.300	1.040 - 2.160	3.300	560 - 800
Profundidad de corte *Depth of cut*						

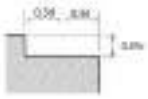
F-212 - pag. 91

MATERIAL	Acero al carbono <800 N/mm² *Carbon steel <800 N/mm²*			Acero aleado <1.200 N/mm² *Alloy steel <1.200 N/mm²*			Acero inox./ Aleaciones de Ti *Stainless steel/Ti alloys*		
d1 [mm]	**Ap [mm]**	**n [rpm]**	**F [mm/min]**	**Ap [mm]**	**n [rpm]**	**F [mm/min]**	**Ap [mm]**	**n [rpm]**	**F [mm/min]**
4	0,2	15.120	30.240	0,16	12.730	19.100	0,12	11.140	11.140
6	0,3	10.080	15.120	0,24	8.490	12.730	0,18	7.425	7.425
8	0,4	7.560	7.560	0,32	6.365	9.550	0,24	5.570	5.570
10	0,5	6.050	4.840	0,4	5.095	7.640	0,3	4.455	4.455
12	0,6	5.040	12.095	0,48	4.245	6.365	0,36	3.715	3.715
Profundidad de corte *Depth of cut*									

MATERIAL	Acero 52 - 56 HRC *Steel 52 - 56 HRC*			Fundición gris GG *Cast iron GG*			Fundición nodular GGG *Cast iron GGG*		
d1 [mm]	**Ap [mm]**	**n [rpm]**	**F [mm/min]**	**Ap [mm]**	**n [rpm]**	**F [mm/min]**	**Ap [mm]**	**n [rpm]**	**F [mm/min]**
4	0,08	8355	6685	0,2	19.100	45.835	0,16	14.325	24.350
6	0,12	5570	4455	0,3	12.730	60.555	0,24	9.550	16.235
8	0,16	4180	3340	0,4	9.550	22.915	0,32	7.160	12.175
10	0,20	3340	2675	0,5	7.640	18.335	0,40	5.730	9.740
12	0,24	2785	2230	0,6	6.365	15.280	0,48	4.775	8.115
Profundidad de corte *Depth of cut*									

CONDICIONES DE CORTE
CUTTING DATA

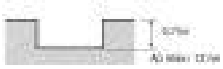
F-551 - pag. 92
Fresado convencial/ Conventional milling

MATERIAL	Acero preendurecido < 40 HRC *Prehardened < 40 HRC*		Acero endurecido 40 - 50 HRC *Hardened steel 40 - 50 HRC*		Acero endurecido 50 - 55 HRC *Hardened steel 50 - 55 HRC*		Acero endurecido 55-60 HRC *Hardened steel 55-60 HRC*		Acero endurecido 60-65 HRC *Hardened steel 60-65 HRC*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
3	9.550	6.500	6.900	4.150	4.550	2.750	2.850	1.150	1.900	610
4	7.950	7.000	5.750	4.600	4.000	3.200	2.550	1.350	1.750	700
6	5.800	7.650	4.100	4.900	2.900	3.500	1.850	1.850	1.350	795
8	4.350	7.650	3.050	4.900	2.200	3.500	1.400	1.850	995	795
10	3.500	7.650	2.450	4.900	1.750	3.500	1.100	1.850	795	795
12	2.900	7.650	2.050	4.900	1.450	3.500	925	1.850	665	795
Profundidad de corte *Depth of cut*										

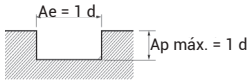
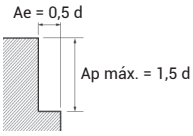
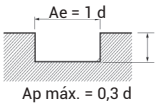
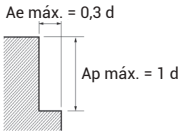
Fresado alta velocidad / HSC milling

MATERIAL	Acero preendurecido < 40 HRC *Prehardened < 40 HRC*		Acero endurecido 40 - 50 HRC *Hardened steel 40 - 50 HRC*		Acero endurecido 50 - 55 HRC *Hardened steel 50 - 55 HRC*		Acero endurecido 55-60 HRC *Hardened steel 55-60 HRC*		Acero endurecido 60-65 HRC *Hardened steel 60-65 HRC*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
3	22.000	16.000	17.000	10.000	12.500	8.000	9.500	4.600	6.900	2.500
4	17.000	17.500	13.000	12.000	11.000	9.200	8.000	5.500	5.600	2.900
6	13.500	18.500	10.500	13.800	9.000	11.000	6.400	6.400	4.500	3.600
8	10.000	18.500	8.000	14.000	6.800	11.000	4.800	6.700	3.400	4.100
10	8.000	18.500	6.400	14.000	5.400	11.000	3.800	6.800	2.700	2.800
12	6.600	18.500	5.300	14.000	4500	11.000	3.200	7.000	2.250	3.600
Profundidad de corte *Depth of cut*										

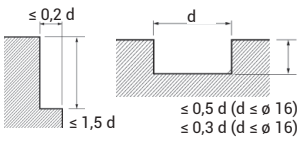
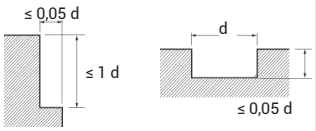
F-417 - pag. 94

MATERIAL	Fundición GG / GGG < 750 N/mm² *Cast iron GG/GGG < 750 N/mm²*		Acero para herramientas < 30 HRC *Tool steel < 30 HRC*		Acero para herramientas / Acero preendurecido 30-38 HRC *Tool steel / Prehardened steel 30-38 HRC*		Acero para herramientas 38 - 45 HRC *Tool steel 38 - 45 HRC*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
4	4.400	430	3.700	220	2.700	175	2.340	135
6	3.600	430	3.000	240	2.300	185	1.920	150
8	2.700	430	2.200	270	1.800	210	1.440	180
10	2.200	430	1.800	290	1.400	220	1.160	185
12	1.800	430	1.500	300	1.200	230	960	190
16	1.400	430	1.100	310	900	250	720	200
20	1.100	410	900	310	700	240	560	185
Profundidad de corte *Depth of cut*								

F-1305 - pag. 96

MATERIAL	Acero inoxidable < 185 HB *Stainless steel < 185 HB*		Acero inoxidable 185 - 275 HB *Stainless steel 185 - 275 HB*		Acero inoxidable 275 - 325 HB *Stainless steel 275 - 325 HB*		Aleaciones de Ti < 295 HB *Ti alloys < 295 HB*		Aleaciones de alta temperatura < 300 HB *High temperature alloys < 300 HB*		Acero endurecido 30 - 45 HRC *Hardened steel 30 - 45 HRC*			
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
3	13.585	190	9.705	130	8.085	95	9.705	170	2.590	40	6.900	550	8.495	680
4	10.190	305	7.245	220	6.050	180	7.245	220	1.910	55	5.175	415	6.370	510
5	8.150	325	5.820	225	4.850	190	5.820	265	1.550	55	4.140	415	5.095	610
6	6.795	420	4.850	265	4.045	225	4.850	305	1.295	55	3.450	415	4.245	850
8	5.095	475	3.640	305	3.030	265	3.640	340	970	75	2.588	415	3.185	765
10	4.075	475	2.910	305	2.425	265	2.910	340	775	75	2.070	415	2.550	715
12	3.395	475	2.425	305	2.020	265	2.425	340	645	75	1.725	415	2.125	765
14	2.910	475	2.080	305	1.735	265	2.080	340	555	75	1.480	415	1.820	730
16	2.545	475	1.820	305	1.515	265	1.820	340	485	75	1.295	415	1.590	700
18	2.265	285	1.615	285	1.350	225	1.615	305	430	75	1.150	370	1.415	680
20	2.040	285	1.455	285	1.215	225	1.455	305	390	75	1.035	415	1.275	660
25	1.630	280	1.160	280	970	225	1.160	305	305	55	830	400	1.020	610
Profundidad de corte *Depth of cut*														

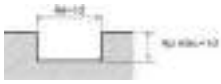
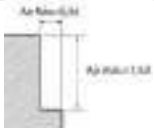
F-1403 - pag. 97

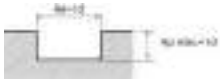
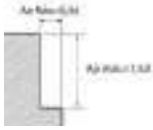
MATERIAL	Aceroal carbono / Aleaciones de acero< 45 HRC *Carbon steel / Alloy steel < 45 HRC*		Acero inoxidable / Aleaciones de titanio *Stainless steel / Ti alloys*		Acero endurecido 45 - 55 HRC *Hardened steel 45 - 55 HRC*		Inconel *Inconel*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
1	7.040	110	6.160	75	3.850	35	1.870	15
2	6.160	120	5.280	90	3.190	40	1.540	20
3	5.280	220	4.400	100	2.420	50	1.540	30
4	4.400	220	3.630	155	1.980	45	1.320	40
5	3.520	255	2.970	185	1.650	100	1.100	50
6	3.190	275	2.640	200	1.540	100	990	50
8	2.420	300	1.980	210	1.100	110	792	45
10	1.8270	285	1.540	210	990	120	660	45
12	1.540	250	1.320	165	770	100	550	40
16	1.100	175	990	130	605	65	396	35
20	990	185	770	145	440	75	330	30
Profundidad de corte *Depth of cut*								

En operaciones de ranurado, usar un 80 - 100 % de la velocidad y un 60 - 80 % del avance
In slotting operations use 80 - 100 % of speed and 60 - 80 % of feed rates

CONDICIONES DE CORTE
CUTTING DATA

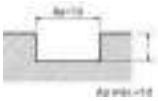
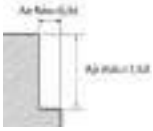
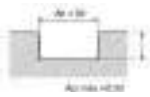
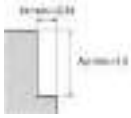
F-454 - pag. 98 | F-455 - pag. 99

MATERIAL	Acero al carbono de baja aleación < 175 HB *Low carbon steel < 175 HB*		Acero al carbono de baja aleación 175 - 275 HB *Low carbon steel 175 - 275 HB*		Acero aleado < 275 HB *Alloy steel < 275 HB*		Acero para moldes < 275 HB *Mold steel < 275 HB*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
3	16.500	335	13.585	275	11.320	230	5.820	120
4	12.340	325	10.190	325	8.520	340	4.380	175
5	9.895	500	9.150	415	6.790	345	3.490	175
6	8.250	585	6.795	485	5.660	405	2.910	205
8	6.185	755	5.095	620	4.245	515	2.185	265
10	4.950	955	4.075	785	3.395	655	1.745	335
12	4.125	765	3.395	795	2.830	660	1.455	340
14	3.535	890	2.910	735	2.425	590	1.250	315
16	3.095	815	2.545	670	2.125	560	1.090	290
18	2.750	810	2.265	665	1.885	555	970	285
20	2.475	805	1.040	660	1.700	550	875	285
25	1.975	630	1.630	520	1.360	435	700	230
Profundidad de corte *Depth of cut*								

MATERIAL	Acero inoxidable <185 HB *Steinless steel <185 HB*		Fundición gris GG 200 - 300 HB *Cast iron GG 200 - 300 HB*		Fundición GGG < 300 HB *Cast iron GGG < 300 HB*		Acero inoxidable < 185 HB *Stainless steel < 185 HB*		Acero inoxidable 185 - 275 HB *Stainless steel 185 - 275 HB*		Acero inoxidable 275 - 325 HB *Stainless steel 275 - 325 HB*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
3	15.360	300	7.765	160	4.850	95	13.585	250	9.705	175	8.085	125
4	11.550	460	5.810	230	3.660	180	10.190	405	7.245	290	6.050	240
5	9.215	470	4.655	235	2.910	190	8.150	430	5.820	300	4.850	250
6	7.680	545	3.880	175	2.425	225	6.795	560	4.850	355	4.045	300
8	5.760	700	2.910	355	1.820	265	5.095	635	3.640	405	3.030	355
10	4.610	890	2.330	450	1.455	265	4.075	635	2.910	405	2.425	355
12	3.840	895	1.940	450	1.215	265	3.395	635	2.425	405	2.020	355
14	3.290	830	1.665	420	1.040	265	2.910	635	2.080	405	1.735	355
16	2.880	760	1.455	385	910	265	2.545	635	1.820	405	1.515	355
18	2.560	755	1.295	380	810	225	2.265	560	1.615	380	1.350	300
20	2.305	750	1.165	380	730	225	2.040	560	1.455	380	1.215	300
25	1.850	600	930	300	585	225	1.630	560	1.160	370	970	300
Profundidad de corte *Depth of cut*												

CONDICIONES DE CORTE
CUTTING DATA

F-454 - pag. 98 | F-455 - pag. 99

MATERIAL	Aleaciones de Ti < 295 HB *Ti alloys < 295 HB*		Aleaciones de alta temperatura < 300 HB *High temperature alloys < 300 HB*		Acero endurecido 30 - 45 HRC *Hardened steel 30 - 45 HRC*				Acero endurecido 30 - 45 HRC (HSC) *Hardened steel 30 - 45 HRC (HSC)*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
3	9.705	225	2.590	50	6.900	550	8.495	680	18.050	2.165
4	7.245	290	1.910	75	5.175	415	6.370	510	13.535	1.625
5	5.820	355	1.550	75	4.140	330	5.095	610	10.830	1.730
6	4.850	405	1.295	75	3.450	415	4.245	850	9.025	2.165
8	3.640	455	970	100	2.588	415	3.185	765	6.770	1.895
10	2.910	455	775	100	2.070	415	2.550	715	5.415	1.730
12	2.425	455	645	100	1.725	415	2.125	765	4.510	1.985
14	2.080	455	555	100	1.480	415	1.820	730	3.865	1.855
16	1.820	455	485	100	1.295	415	1.590	700	3.385	1.895
18	1.615	405	430	100	1.150	370	1.415	680	3.010	1.805
20	1.455	405	390	100	1.035	415	1.275	660	2.705	1.840
25	1.160	405	305	75	830	400	1.020	610	2.165	1.645
Profundidad de corte *Depth of cut*										

F-453 - pag. 100

Material	Dureza	Vc (m/min) Profundidad de pasada radial (Ae) 5%	10%	30%	50%	100% Ranurado	fz (mm/diente) Diámetro de la fresa 3	4	6	8	10	12	16	20
		2,3	1,8	1,1	1	1	← Multiplicar fz por este factor según la Ae							
Acero inoxidable - Fácil mecanización 430F, 301, 303, 410, 416 recocido, 420F, 430F	≤ 28	320	220	120	100	100	0,015	0,02	0,036	0,046	0,056	0,066	0,078	0,12
Acero inoxidable - Mecanización media 301, 302, 303 maleable, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7 PH"	≤ 28	198	137	76	60	60	0,013	0,017	0,031	0,038	0,046	0,055	0,066	0,76
Acero inoxidale - Difícil mecanización 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8MO, Nitronic"	≤ 28	182	122	69	53	53	0,013	0,017	0,025	0,030	0,040	0,045	0,061	0,72

Ae: según la tabla

Profundidad radial (Ae) 1xD

F-420 - pag. 101

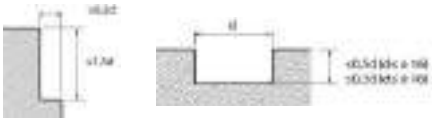
Material	Dureza	Vc (m/min) Profundidad de pasada radial (Ae) 5%	10%	30%	50%	100% Ranurado	fz (mm/diente) Diámetro de la fresa 3	4	6	8	10	12	16	20
		2,3	1,8	1,1	1	1	← Multiplicar fz por este factor según la Ae							
Acero inoxidable - Fácil mecanización 430F, 301, 303, 410, 416 recocido, 420F, 430F	≤ 28	272	187	102	85	85	0,017	0,025	0,042	0,053	0,065	0,077	0,090	0,139
Acero inoxidable - Mecanización media 301, 302, 303 maleable, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7 PH"	≤ 28	168	116	65	51	51	0,015	0,02	0,036	0,044	0,053	0,064	0,077	0,088
Acero inoxidale - Difícil mecanización 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8MO, Nitronic"	≤ 28	155	104	59	45	45	0,015	0,02	0,029	0,035	0,046	0,052	0,071	0,084

Ae: según la tabla

Profundidad radial (Ae) 1xD

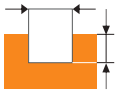
CONDICIONES DE CORTE
CUTTING DATA

F-388 - pag. 103

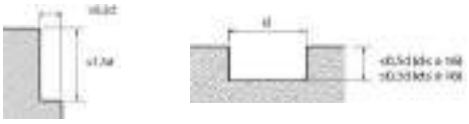
MATERIAL	Acero al carbono / Aleaciones de acero < 45 HRC *Carbon steel / Alloy steel < 45 HRC*		Acero inoxidable / Aleaciones de titanio *Stainless steel / Tí alloys*		Acero endurecido 45 - 55 HRC *Hardened steel 45 - 55 HRC*		Inconel *Inconel*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
1	6.400	100	5.600	70	3.500	30	1.700	15
2	5.600	110	4.800	80	2.900	35	1.400	20
3	4.800	200	4.000	90	2.200	45	1.400	25
4	4.000	200	3.300	140	1.800	70	1.200	35
5	3.200	230	2.700	170	1.500	90	1.000	45
6	2.900	250	2.400	180	1.400	90	900	45
8	2.200	270	1.800	190	1.000	100	720	40
10	1.700	260	1.400	190	900	110	600	40
12	1.400	230	1.200	150	700	90	500	35
16	1.000	160	900	120	550	60	360	30
20	900	170	700	130	400	70	300	25
Profundidad de corte *Depth of cut*								

F-468 - pag. 104

Material	HB	Ap	Ae	Vc	fz (mm/diente) Diámetro de la fresa 3	6	8	10	12	16	20
Acero inoxidable (fácil mecanización) 303, 416, 420F, 430F, 440F	< 250	1,5 1,0 1,5 1,0	0,5 1,0 0,5 1,0	183 146	0,008 0,008	0,023 0,023	0,039 0,039	0,049 0,049	0,059 0,059	0,069 0,069	0,077 0,077
Acero inoxidable (difícil mecanización) 304, 304L, 316, 316L	< 275	1,5 1,0 1,5 1,0	0,5 1,0 0,5 1,0	120 96	0,007 0,007	0,018 0,018	0,031 0,031	0,039 0,039	0,047 0,047	0,055 0,055	0,062 0,062
Acero inoxidable (PH) 13-18PH, 15-5PH, 17-4PH, 450	< 325	1,5 1,0 1,5 1,0	0,5 1,0 0,5 1,0	110 88	0,007 0,007	0,018 0,018	0,031 0,031	0,039 0,039	0,047 0,047	0,055 0,055	0,062 0,062
Superlaciones de níquel, cobalto y hierro, Inconel 601, 617, 625, Incoloy 800, Monel 400	< 300	1,5 1,0 1,5 1,0	0,5 1,0 0,5 1,0	24 19	0,006 0,006	0,02 0,02	0,027 0,027	0,034 0,034	0,04 0,04	0,047 0,047	0,053 0,053
Superlaciones de níquel, cobalto y hierro, Inconel 718, 750X, Incology 925, Wasploy, Hastelloy, Rene	< 300	1,5 1,0 1,5 1,0	0,5 1,0 0,5 1,0	19 15	0,004 0,004	0,011 0,011	0,019 0,019	0,023 0,023	0,028 0,028	0,033 0,033	0,037 0,037
Aleaciones de titanio Titanio puro, Ti6Al4V, Ti6Al2Sn4Zr2Mo	< 300	1,5 1,0 1,5 1,0	0,5 1,0 0,5 1,0	66 52	0,007 0,009	0,018 0,018	0,031 0,025	0,039 0,031	0,047 0,038	0,055 0,045	0,062 0,054
Aleaciones de titanio Ti5Al5V5Mo3Cr, Ti74l4Mo, Ti3Al8V6Cr4Zr4Mo	< 300	1,5 1,0 1,5 1,0	0,5 1,0 0,5 1,0	24 18	0,007 0,007	0,018 0,018	0,031 0,031	0,039 0,039	0,047 0,047	0,055 0,055	0,062 0,062



F-488 - pag. 105 | F-408 - pag. 106 | F-407 - pag. 107

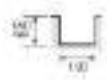
MATERIAL	Acero al carbono / Aleaciones de acero < 45 HRC *Carbon steel / Alloy steel < 45 HRC*		Acero inoxidable / Aleaciones de titanio *Stainless steel / Ti alloys*		Acero endurecido 45 - 55 HRC *Hardened steel 45 - 55 HRC*		Inconel *Inconel*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
1	7.040	110	6.160	75	3.850	35	1.870	15
2	6.160	120	5.280	90	3.190	40	1.540	20
3	5.280	220	4.400	100	2.420	50	1.540	30
4	4.400	220	3.630	155	1.980	45	1.320	40
5	3.520	255	2.970	185	1.650	100	1.100	50
6	3.190	275	2.640	200	1.540	100	990	50
8	2.420	300	1.980	210	1.100	110	792	45
10	1.870	285	1.540	210	990	120	660	45
12	1.540	250	1.320	165	770	100	550	40
16	1.100	175	990	130	605	65	396	35
20	990	185	770	145	440	75	330	30
Profundidad de corte *Depth of cut*								

F-479 - pag. 108

MATERIAL	Acero aleado < 30 HRC *Alloy steel < 30 HRC*		Acero aleado 30 - 45 HRC *Alloy Steel 30 - 45 HRC*		Acero templado 45 - 55 HRC *Hardened steel 45 - 55 HRC*	
d1 [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
3	6.950	195	4.500	150	3.300	100
4	5.600	240	3.600	170	2.700	105
5	4.800	250	3.050	210	2.350	125
6	4.150	250	2.650	210	2.050	125
8	3.150	265	2.000	210	1.600	125
10	2.150	265	1.700	210	1.250	125
12	1.800	210	1.500	185	1.050	105
16	1.880	185	1.100	140	840	90
20	1.300	130	860	105	625	65
Profundidad de corte *Depth of cut*						

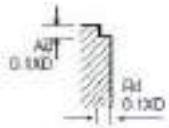
CONDICIONES DE CORTE
CUTTING DATA

F-477 - pag. 109

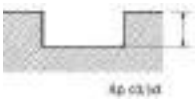
MATERIAL	Acero al carbono <175 HB *Carbon steel <175 HB*		Acero al carbono 175 - 275 HB *Carbon steel 175 - 275 HB*		Acero aleado <275 HB *Alloy steel <275 HB*		Acero para moldes <275 HB *Molsd & die steel <275 HB*		Fundición nodular < 300HB *Ductile cast iron < 300 HB*		Fundición maleable < 300HB *Malleable cast iron < 300 HB*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
3	16.500	335	13.585	276	11.320	230	5.820	250	15360	300	7.765	158
4	12.340	326	10.190	326	8.520	340	4.380	405	11.550	462	5.810	232
5	9.895	502	8.150	413	6.790	345	3.490	430	9.215	468	4.655	236
6	8.250	586	6.795	483	5.660	403	2.910	560	7.680	546	3.880	276
8	6.185	754	5.095	620	4.245	517	2.185	635	5.760	702	2.910	354
10	4.950	955	4.075	786	3.395	656	1.745	635	4.610	889	2.330	449
12	4.125	963	3.395	793	2.830	661	1.455	635	3.840	897	1.940	453
14	3.535	890	2.910	733	2.425	592	1.250	635	3.290	829	1.665	419
16	3.095	817	2.545	672	2.125	561	1.090	635	2.880	761	1.455	384
18	2.750	809	2.265	667	1.885	556	970	560	2.560	754	1.295	381
20	2.475	804	2.040	662	1.700	552	875	560	2.305	749	1.165	378
25	1.975	631	1.630	521	1.360	435	700	560	1.850	600	930	300
Profundidad de corte *Depth of cut*												

MATERIAL	Acero inoxidable serie 300 < 275 HB *CStainless steel 300 series < 275 HB*		Acero inoxidable serie 400 < 185 HB *Stainless steel 400 series < 185 HB*		Acero inoxidable serie PH < 325 HB *Stainless steel PH series < 325 HB*		Aleaciones de Titanio *Titanium alloys*		Aleaciones templadas < 300 HB *High temp alloys < 300 HB*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
3	9.705	175	13.585	250	8.085	125	9.705	225	2.590	50
4	7.245	290	10.190	407	6.050	242	7.245	290	1.910	76
5	5.820	300	8.150	430	4.850	250	5.820	355	1.550	75
6	4.850	355	6.795	560	4.045	300	4.850	405	1.295	75
8	3.460	405	5.095	635	3.030	355	3.640	455	970	100
10	2.910	405	4.075	635	2.425	355	2.910	455	775	100
12	2.425	405	3.395	635	2.020	355	2.425	455	645	100
14	2.080	405	2.910	635	1.735	355	2.080	455	555	100
16	1.820	405	2.545	635	1.515	355	1.820	455	485	100
18	1.615	380	2.265	560	1.350	300	1.615	405	430	100
20	1.455	380	2.040	560	1.215	300	1.455	405	390	100
25	1.160	370	1.630	560	970	300	1.160	405	305	73
Profundidad de corte *Depth of cut*										

F-477 - pag. 109

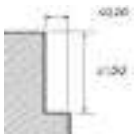
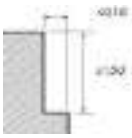
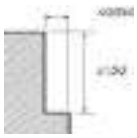
MATERIAL	Acero templado 30 - 45 HRC *Hardened steel 30 - 45 HRC*		Acero templado 30 - 45 HRC *Hardened steel 30 - 45 HRC*		Acero templado 30 - 45 HRC *Hardened steel 30 - 45 HRC*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
3	6.900	552	18.047	2.166	8.493	679
4	5.175	414	13.535	1.624	6.369	510
5	4.140	331	10.828	1.732	5.096	611
6	3.450	414	9.023	2.166	4.246	849
8	2.588	414	6.768	1.895	3.185	764
10	2.070	414	5.414	1.732	2.548	713
12	1.725	414	4.512	1.985	2.123	764
14	1.479	414	3.867	1.856	1.820	728
16	1.294	414	3.384	1.895	1.592	701
18	1.150	368	3.008	1.805	1.415	679
20	1.035	414	2.707	1.841	1.274	662
25	828	397	2.166	1.646	1.019	611
Profundidad de corte *Depth of cut*						

F-478 - pag. 110

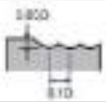
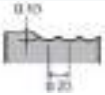
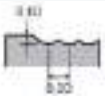
MATERIAL	Acero aleado < 30 HRC *Alloy steel < 30 HRC*		Acero preendurecido y endurecido 40 - 50 HRC *Prehardened and hardened steel 40 - 50 HRC*		Acero endurecido/ Acero inoxidable 28-45 HRC *Hardened steel/ Stainless steel 28-45 HRC*		Acero endurecido/ Aleaciones de Ti 45-55 HRC *Hardened steel/ Ti alloys 45-55 HRC*		Inconel *Inconel*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
3	7.700	620	7.100	470	6.700	420	6.500	400	2.300	110
4	5.800	700	5.300	470	5.000	460	4.900	440	1.700	120
5	4.600	680	4.200	490	4.000	490	3.900	480	1.300	130
6	3.800	570	3.600	520	3.300	510	3.200	490	1.100	130
8	2.900	500	2.700	500	2.500	470	2.400	450	850	140
10	2.300	490	2.100	430	2.000	430	2.000	410	690	130
12	1.900	430	1.800	410	1.700	400	1.600	400	570	130
16	1.400	400	1.400	330	1.300	330	1.200	330	420	100
20	1.200	340	1.100	320	1.000	300	1.000	300	340	100
Profundidad de corte *Depth of cut*										

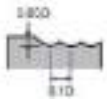
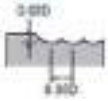
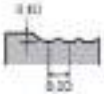
CONDICIONES DE CORTE
CUTTING DATA

F-478 - pag. 110

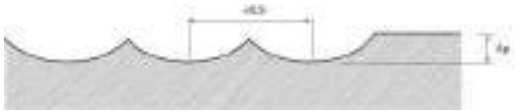
MATERIAL	Acero aleado < 30 HRC *Alloy steel < 30 HRC*		Acero preendurecido y endurecido 40 - 50 HRC *Prehardened and hardened steel 40 - 50 HRC*		Acero endurecido/ Acero inoxidable 28-45 HRC *Hardened steel/ Stainless steel 28-45 HRC*		Acero endurecido/ Aleaciones de Ti 45-55 HRC *Hardened steel/ Ti alloys 45-55 HRC*		Inconel *Inconel*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
3	8.600	800	7.300	560	6.900	550	6.700	490	3.400	200
4	6.700	900	5.800	610	5.400	640	5.300	570	2.700	220
5	7.200	1200	5.500	950	4.700	650	4.500	700	4.300	600
6	4.700	1100	4.000	800	3.800	750	3.600	630	1.900	230
8	3.600	1000	3.000	730	2.800	730	2.700	600	1.400	200
10	2.900	950	2.400	650	2.300	640	2.200	570	1.100	190
12	2.400	900	2.000	650	1.900	600	1.800	550	1.000	190
16	1.800	850	1.500	570	1.400	500	1.400	450	700	190
20	1.400	680	1.200	530	1.100	460	1.100	410	600	180
Profundidad de corte *Depth of cut*										

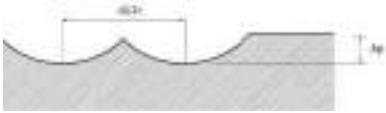
F-298 - pag. 111

MATERIAL	Acero al carbono 150-250 HB *Carbon steel 150-250 HB*		Acero aleado 25-35 HRC *Carbon steel 175 - 275 HB*		Acero templado 35-45 HRC *Hardened steel 35-45 HRC*		Acero templado 45-55 HRC *Hardened steel 45-55 HRC*		Acero inoxidable *Stainless steel*		Aleaciones de Ti y Ni *Ti & Ni alloys*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
2	19100	770	12800	370	10200	270	8900	190	8900	210	6400	120
4	10800	1100	7200	550	5700	400	5000	280	5000	310	3600	180
6	7700	1300	5200	660	4100	480	3600	330	3600	380	2600	210
8	6000	1400	4000	700	3200	510	2800	360	2800	400	2000	230
10	4800	1400	3200	700	2600	520	2300	370	2300	410	1600	230
12	4000	1400	2700	710	2200	530	1900	370	1900	410	1400	240
Profundidad de corte *Depth of cut*												

MATERIAL	Acero al carbono 150-250 HB *Carbon steel 1 50-250 HB*		Acero aleado 25-35 HRC *Alloy steel 25-35 HRC*		Acero templado 35-45 HRC *Hardened steel 35-45 HRC*		Acero templado 45-55 HRC *Hardened steel 45-55 HRC*		Acero inoxidable *Stainless steel*	
d1 [mm]	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**	**n [rpm]**	**F [mm/min]**
2	2100	2100	39800	1300	35700	960	23700	640	35700	960
4	2700	2700	19900	1700	17900	1300	11900	830	17900	1300
6	3000	3000	13300	1900	11900	1400	7900	920	11900	1400
8	3100	3100	10000	2000	9000	1500	6000	960	9000	1500
10	3100	3100	8000	2000	7200	1500	4800	960	7200	1500
12	3100	3100	6700	2000	6000	1500	4000	960	6000	1500
Profundidad de corte *Depth of cut*										

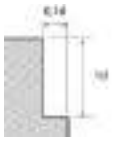
F-498 - pag. 112

MATERIAL	Acero aleado / Acero preendurecido *Alloy steel / Prehardened steel*					Acero preendurecido *Prehardened steel*				
	α ≤ 15°		α ≤ 15°			α ≤ 15°		α ≤ 15°		
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	Ap [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	Ap [mm]
3	14.500	5.000	12.100	2.300	0,2	13.600	3.350	10.000	1.600	0,2
4	15.000	4.950	11.500	2.250	0,3	13.000	3.300	90.000	1.550	0,3
5	15.500	4.900	11.000	2.200	0,4	12.500	3.300	8.500	1.500	0,4
6	16.000	4.800	10.600	2.100	0,5	12.000	3.200	8.000	1.400	0,5
8	12.000	4.300	8.000	1.900	0,8	9.000	3.200	6.000	1.400	0,8
10	9.600	4.100	6.400	1.800	1,0	7.200	3.000	4.800	1.300	1,0
12	8.000	4.000	5.300	1.800	1,2	6.000	3.000	4.000	1.300	1,2
16	6.000	3.200	4.000	1.400	1,6	4.500	2.500	3.000	1.100	1,6
Profundidad de corte *Depth of cut*										

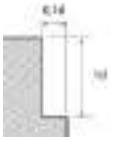
MATERIAL	Inconel *Incocnel*				
	α ≤ 15°		α ≤ 15°		
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	Ap [mm]
3	4.600	620	3.100	270	0,1
4	4.200	580	2.800	250	0,2
5	3.800	560	2.500	230	0,3
6	3.200	500	2.100	210	0,3
8	2.400	430	1.600	190	0,4
10	2.000	420	1.300	180	0,5
12	1.200	350	1.100	150	0,6
16	700	300	800	130	0,8
Profundidad de corte *Depth of cut*					

CONDICIONES DE CORTE
CUTTING DATA

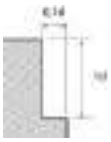
F-702 - pag. 115

MATERIAL	Grafito *Graphite*	
d1 [mm]	**n** [rpm]	**F** [mm/min]
1	8.000	160
2	8.000	250
3	8.000	380
4	8.000	510
5	8.000	640
6	8.000	770
8	8.000	1.000
10	8.000	1.250
12	8.000	1.500
16	8.000	1.600
20	8.000	1.600
Profundidad de corte *Depth of cut*		

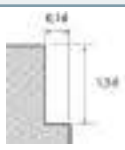
F-704 - pag. 116

MATERIAL	Grafito *Graphite*	
d1 [mm]	**n** [rpm]	**F** [mm/min]
3	8.000	430
4	8.000	570
5	8.000	720
6	8.000	860
8	8.000	1.100
10	8.000	1.400
12	7.000	1.400
16	7.000	1.500
20	7.000	1.500
Profundidad de corte *Depth of cut*		

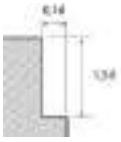
F-706 - pag. 117

MATERIAL	Grafito *Graphite*	
d1 [mm]	**n** [rpm]	**F** [mm/min]
6	8.000	960
8	8.000	1.300
10	8.000	1.600
12	7.000	1.600
16	7.000	1.800
20	7.000	1.800
Profundidad de corte *Depth of cut*		

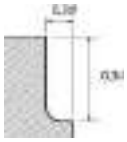
F-712 - pag. 118

MATERIAL	Grafito *Graphite*	
d1 [mm]	**n** [rpm]	**F** [mm/min]
1	40.000	400
2	30.000	470
3	21.000	640
4	16.000	540
5	12.500	560
6	10.500	590
8	8.000	610
10	6.400	640
12	5.300	630
Profundidad de corte *Depth of cut*		

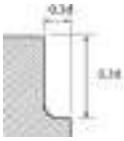
F-716 - pag. 119

MATERIAL	Grafito *Graphite*	
d1 [mm]	**n** [rpm]	**F** [mm/min]
2	30.000	800
3	21.000	1.200
4	16.000	1.200
6	10.500	1.200
8	8.000	1.250
10	6.400	1.300
12	5.300	1.300
Profundidad de corte *Depth of cut*		

F-718 - pag. 120

MATERIAL	Grafito *Graphite*	
d1 [mm]	**n** [rpm]	**F** [mm/min]
1	40.000	900
2	36.000	900
3	32.000	1.300
4	26.000	1.500
5	24.000	1.100
6	21.000	1.100
Profundidad de corte *Depth of cut*		

F-724 - pag. 121

MATERIAL	Grafito *Graphite*	
d1 [mm]	**n** [rpm]	**F** [mm/min]
1	40.000	900
2	36.000	900
3	32.000	1.300
4	26.000	1.500
5	24.000	1.100
6	21.000	1.100
Profundidad de corte *Depth of cut*		

F-714 - pag. 122

MATERIAL	Grafito *Graphite*	
d1 [mm]	**n** [rpm]	**F** [mm/min]
1	40.000	2.000
2	40.000	2.200
3	30.000	2.400
4	24.000	2.600
6	16.000	2.600
8	12.000	2.800
12	8.000	3.000
Profundidad de corte *Depth of cut*		

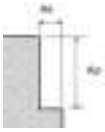
CONDICIONES DE CORTE
CUTTING DATA

F-555 - pag. 124

MATERIAL		Acero aleado / Fundición GG < 28 HRC *Alloy steel / Cast iron GG < 28 HRC*		Acero aleado / Fundición GGG 28 - 45 HRC *Alloy steel / Cast iron GGG 28 - 45 HRC*		Acero endurecido > 45 HRC *Hardened steel > 45 HRC*		Acero inoxidable *Stainless steel*		Inconel *Inconel*		Aleaciones de Titanio *Ti alloys*	
d1 [mm]	**l2** [mm]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]	**n** [rpm]	**F** [mm/min]
6	14	15.915	6.365	10.610	4.245	9.285	2.600	10.610	1.275	3.315	165	5.970	1.670
6	32	14.590	5.105	9.945	3.480	7.960	895	9.945	1.120	3.980	250	9.285	580
6	42	9.285	1.045	8.620	970	6.630	415	7.960	500	3.980	170	9.285	580
6	51	7.960	500	6.630	415	5.440	340	6.630	415	3.980	170	9.285	580
8	18	11.935	5.250	7.960	3.500	6.965	2.230	7.960	1.910	2.485	250	4.475	1.430
8	42	10.940	4.375	7.460	2.985	5.970	1.195	7.460	1.490	2.985	375	6.965	1.395
8	58	6.965	1.395	6.465	1.295	4.975	620	5.970	745	2.985	240	6.965	870
8	71	5.970	745	4.975	620	4.080	510	4.975	620	2.985	240	6.965	870
10	22	9.550	6.325	6.365	4.215	5.570	2.645	6.365	2.305	1.990	350	3.580	1.700
10	51	8.755	4.160	5.970	2.835	4.775	1.435	5.970	1.790	2.385	415	5.570	1.670
10	71	5.570	1.670	5.175	1.555	3.980	695	4.775	835	2.385	300	5.570	975
10	82	4.775	835	3.980	695	3.265	570	3.980	695	2.385	300	5.570	975
12	26	7.960	5.770	5.305	3.845	4.640	2.550	5.305	2.385	1.660	330	2.985	1.640
12	51	7.295	4.010	4.975	2.735	3.980	1.195	4.975	1.495	1.990	400	4.640	1.390
12	71	4.640	1.390	4.310	1.295	3.315	580	3.980	695	1.990	350	4.640	810
12	86	3.980	695	3.315	580	2.720	475	3.315	580	1.990	350	4.640	810
16	38	5.970	5.375	3.980	3.580	3.480	2.260	3.980	2.190	1.245	280	2.240	1.455
16	61	5.470	3.555	3.730	2.425	2.985	1.195	3.730	1.490	1.490	335	3.480	1.390
16	76	3.480	1.390	3.235	1.295	2.485	560	2.985	670	1.490	355	3.480	785
16	101	2.985	670	2.485	560	2.040	460	2.485	560	1.490	355	3.480	785
20	45	4.775	5.370	3.185	3.585	2.785	2.365	3.185	2.190	995	300	1.790	1.520
20	71	4.375	3.720	2.985	2.535	2.385	1.195	2.985	1.495	1.195	360	2.785	1.395
20	86	2.785	1.395	2.585	1.295	1.990	595	2.385	715	1.195	300	2.785	835
20	101	2.385	715	1.990	595	1.630	490	1.990	595	1.195	300	2.785	835

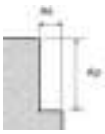
Profundidad de corte
Depth of cut

Desbaste
Roughing



	Ap	Ae
short	2xd	%5 to %10 x d
medium	2xd	%5 to %7 x d
long	1,5xd	%4 to %6 x d
extra long	1,5xd	%2 to %4 x d

Desbaste
Roughing



	Ap	Ae
short	2xd	%3 x d
medium	2xd	%2 x d
long	2xd	%1 x d
extra long	2xd	%1 x d

F-555 - pag. 124

MATERIAL		Acero aleado / Fundición GGG 28 - 45 HRC *Alloy steel / Cast iron GGG 28 - 45 HRC*			
d1 [mm]	l2 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
6	14	4.775	335	6.100	1.172
6	32	4.775	415	5.040	1.010
6	42	4.775	415	4.375	700
6	51	4.775	415	3.980	715
8	18	3.580	360	4.575	1.024
8	42	3.580	450	3.780	985
8	58	3.580	450	3.285	560
8	71	3.580	450	2.985	595
10	22	2.865	500	3.660	1.170
10	51	2.865	500	3.025	910
10	71	2.865	500	2.625	525
10	82	2.865	500	2.385	380
Profundidad de corte *Depth of cut*		*Ø hole < Ø tool x 1,75 helix 2*			

MATERIAL		Acero aleado / Fundición GGG 28 - 45 HRC *Alloy steel / Cast iron GGG 28 - 45 HRC*			
d1 [mm]	l2 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
12	26	2.385	335	3.050	1.100
12	51	2.385	415	2.520	880
12	71	2.385	415	2.190	525
12	86	2.385	415	1.990	400
16	38	1.790	360	2.290	915
16	61	1.790	450	1.890	700
16	76	1.790	450	1.640	460
16	101	1.790	450	1.490	360
20	45	1.430	500	1.830	840
20	71	1.430	500	1.510	695
20	86	1.430	500	1.315	475
20	101	1.430	500	1.195	380
Profundidad de corte *Depth of cut*		*Ø hole < Ø tool x 1,75 helix 2*			

F-552 - pag. 127

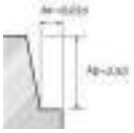
Material		ae x d1	ap x d1	Vc (m/min)	Diameter (d1) (mm)	6	8	10	12	16	20
Acero de carbono *Carbon steels* 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536 HRC ≤ 27 N/mm2 ≤ 900	Trochoidal	≤ 0,06	≤ 3	377 (300 - 400)	RPM	20.011	15.008	12.006	10.005	7.504	6.003
					Fz	0,03	0,04	0,05	0,06	0,08	0,1
					Feed (mm/min)	2.401	2.401	2.401	2.401	2.401	2.401
Aleación de acero *Alloy Steels* 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100 HRC ≤ 40 N/mm2 ≤ 1260	Trochoidal	≤ 0,06	≤ 3	252 (200 - 300)	RPM	13.376	10.032	10.032	6.688	5.016	4.013
					Fz	0,03	0,04	0,04	0,06	0,08	0,1
					Feed (mm/min)	1.605	1.605	1.605	1.605	1.605	1.605
Acero Inoxidable (libre mecanizado) *Stainless steel (Free Machining)* 303, 416, 420F, 430F, 440F	Trochoidal	≤ 0,06	≤ 3	252 (200 - 300)	RPM	13.376	10.032	8.025	6.688	5.016	4.013
					Fz	0,03	0,04	0,05	0,06	0,08	0,1
					Feed (mm/min)	1.605	1.605	1.605	1.605	1.605	1.605

CONDICIONES DE CORTE
CUTTING DATA

F-888 - pag. 128

Material		ae x d1	ap x d1	Vc (m/min)	Diameter (d1) (mm)	6	8	10	12	16	20
Acero de carbono *Carbon steels* 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536 HRC ≤ 27 N/mm2 ≤ 900	Trochoidal	≤ 0,06	≤ 3	377	RPM	20.011	15.008	12.006	10.005	7.504	6.003
					Fz	0,0300	0,04	0,05	0,06	0,08	0,1
				(300 - 400)	Feed (mm/min)	2.401	2.401	2.401	2.401	2.401	2.401
Aleación de acero *Alloy Steels* 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 50100 HRC ≤ 40 N/mm2 ≤ 1260	Trochoidal	≤ 0,06	≤ 3	252	RPM	13.376	10.032	10.032	6.688	5.016	4.013
					Fz	0,0300	0,04	0,04	0,06	0,08	0,1
				(200 - 300)	Feed (mm/min)	1.605	1.605	1.605	1.605	1.605	1.605
Acero Inoxidable (libre mecanizado) *Stainless steel (Free Machining)* 303, 416, 420F, 430F, 440F	Trochoidal	≤ 0,06	≤ 3	252	RPM	13.376	10.032	8.025	6.688	5.016	4.013
					Fz	0,0300	0,04	0,05	0,06	0,08	0,1
				(200 - 300)	Feed (mm/min)	1.605	1.605	1.605	1.605	1.605	1.605

F-595 - pag. 129

MATERIAL	Acero al carbono < 750 N/mm² *Carbon steel < 750 N/mm²*		Acero aleado < 30 HRC *Alloy steel < 30 HRC*		Acero preendurecido y endurecido 30 - 38 HRC *Prehardened and hardened steel 30 - 38 HRC*		Acero endurecido/ Acero inoxidable 38 - 45 HRC *Hardened steel/ Stainless steel 38 - 45 HRC*		Acero endurecido 45 - 55 HRC *Hardened steel 45 - 55 HRC*	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
1	14.000	140	14.000	120	11.700	80	10.800	80	9.500	35
1,5	9.500	140	9.500	120	8.000	80	7.400	80	6.300	35
2	7.200	140	7.200	120	6.000	80	5.600	80	4.700	35
2,5	5.600	130	5.600	115	4.800	80	4.500	80	3.800	35
3	4.700	130	4.700	115	4.000	80	3.700	80	3.200	35
4	3.500	130	3.500	115	3.000	80	2.800	75	2.300	35
5	2.800	130	2.800	115	2.400	80	2.200	75	1.900	35
6	2.300	130	2.300	115	2.000	80	1.800	75	1.600	35
8	1.800	130	1.800	115	1.500	80	1.400	75	1.200	35
10	1.400	130	1.400	110	1.200	80	1.100	75	950	35
Profundidad de corte *Depth of cut*										

F-460 - pag. 131 | F-490 - pag. 132 | F-480 - pag. 133 | F-845 - pag. 134

MATERIAL	Acero no aleado <500 N/mm² *Unalloyed steel <500 N/mm²*		Acero no aleado 500-700 N/mm² *Unalloyed steel 500-700 N/mm²*		Acero no aleado >700 N/mm² *Unalloyed steel >700 N/mm²*		Acero aleado <1.400 N/mm² *Alloy steel <1.400 N/mm²*		Acero aleado >1.400 N/mm² *Alloy steel >1.400 N/mm²*		Acero inoxidable *Stainless steel*	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
4	11.935	955	9.550	570	5.970	360	4.775	190	3.185	125	4.060	160
6	7.955	795	6.365	510	3.980	240	3.185	125	2.120	85	2.705	110
8	5.965	595	4.775	380	2.985	180	2.385	95	1.590	65	2.030	80
10	4.775	670	3.820	460	2.385	240	1.910	115	1.270	75	1.625	95
12	3.980	555	3.185	380	1.990	200	1.590	95	1.060	65	1.355	80
16	2.985	420	2.385	285	1.490	150	1.195	95	795	65	1.015	80

MATERIAL	Fundición GG <500 N/mm² *Cast iron GG <500 N/mm²*		Fundición GG >500 N/mm² *Cast iron GG >500 N/mm²*		Fundición GGG <200 HB *Cast iron GGG <200 HB*		Fundición GGG >200 HB *Cast iron GGG >200 HB*		Cobre *Copper*		Aleaciones de aluminio *Al alloys*	
d1 [mm]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]	n [rpm]	F [mm/min]
4	8.755	700	7.160	430	5.970	360	5.170	415	13.925	1.115	35.810	3.580
6	5.835	585	4.775	285	3.980	240	3.450	275	9.285	740	23.875	2.865
8	4.375	440	3.580	215	2.985	180	2.585	205	6.960	555	17.905	2.150
10	3.500	420	2.865	230	2.385	240	2.070	250	5.570	670	14.325	2.865
12	2.920	350	2.385	190	1.990	200	1.725	205	4.640	555	11.935	2.385
16	2.190	305	1.790	180	1.490	150	1.295	205	3.480	555	8.950	2.505

F-850 - pag. 135 | F-851 - pag. 138

MATERIAL	Vc [mm]	Fz [mm]	Refrigeración *Refrigeration*
Acero <800 N/mm²	100 - 180	0,01 - 0,04	Emulsión, aceite de corte / *Emulsion, cutting oil*
Acero 600-1.000 N/mm²	50 - 120	0,05 - 0,03	Emulsión, aceite de corte / *Emulsion, cutting oil*
Acero inoxidable	40 - 100	0,01 - 0,04	Emulsión, aceite de corte / *Emulsion, cutting oil*
Fundición GG, Fundición GGG	50 - 130	0,01 - 0,08	Emulsión, aceite de corte / *Emulsion, cutting oil*
Aluminio, aleaciones de Al	100 - 400	0,01 - 0,10	Emulsión, aceite de corte / *Emulsion, cutting oil*
Latón, bronce, cobre	80 - 300	0,02 - 0,08	Emulsión, aceite de corte/ *Emulsion, cutting oil*
Materiales plásticos	300 - 700	0,03 - 0,08	Aire comprimido / *Compresed air*
Grafito	50 - 150	0,03 - 0,10	Refrigeración por absorción / *Absorption refrigeration*

BROCAS

DRILLS

REFERENCIA REFERENCE	FOTO PHOTO	TIPO DE FRESAS END MILL TYPE	PÁGINA PAGE
B-111		**Broca DIN 6539** DIN 6539 twist drill	188
B-112		**Broca DIN 338** DIN 338 twist drill	189
B-175		**Broca 3xD sin refrigeración interna** 3xD twist drill without internal coolant	190
B-179		**Broca 5xD sin refrigeración interna** 5xD twist drill without internal coolant	191
B-510		**Broca 5xD sin refrigeración interna** 5xD twist drill without internal coolant	192
B-177		**Broca 3xD con refrigeración interna** 3xD twist drill with internal coolant	193
B-173		**Broca 5xD con refrigeración interna** 5xD twist drill with internal coolant	194
B-820		**Broca 8xD con refrigeración interna** 8xD twist drill with internal coolant	195
B-1220		**Broca 12xD con refrigeración interna** 12xD twist drill with internal coolant	196
B-1520		**Broca 15xD con refrigeración interna** 15xD twist drill with internal coolant	197
B-2020		**Broca 20xD con refrigeración interna** 20xD twist drill with internal coolant	198
B-2520		**Broca 25xD con refrigeración interna** 25xD twist drill with internal coolant	199
B-3020		**Broca 30xD con refrigeración interna** 30xD twist drill with internal coolant	200
B-320		**Broca 3xD acero inoxidable con refrigeración interna** 3xD drill for stainless steel with internal coolant	201
B-520		**Broca 5xD acero inoxidable con refrigeración interna** 5xD drill for stainless steel with internal coolant	202
B-330		**Broca HHC para materiales 50-68** HRCHHC drill for 50-68 HRC materials	203
B-500		**Rompemachos** Jammed tap removal	204
B-601		**Escariador 10°** 10° reamer	205
B-610		**Escariador helicoidal 60°** 60° helix reamer	206
A-205		**Avellanador 90° < 60 HRC** 90° countersink < 60 HRC	207

SAUDA

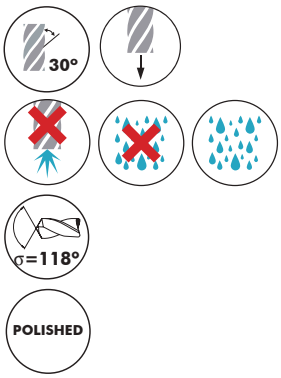
B-111

Broca metal duro DIN 6539

Solid carbide twist drill DIN 6539

Broca de metal duro (K10/20) corta, tipo N, DIN 6539. Broca rectificada con superficie pulida, corte a derecha y punta afilada con precisión a 118º. El ángulo de corte lateral a 30º, el espesor del alma y la hélice son normales. Se recomienda su uso en condiciones lo más estables posibles y con una presión de refrigerante alta.

Solid carbide short drill (K10/20), N type, DIN 6539. Polished surface, right hand cut and 118º precision sharped point. Helix angle 30º. Its use is recommended in stable conditions and with high pressure coolant.



STEEL <55 HRC
INOX
GG
GGG
COPPER
ALU <12% SI
NI ALLOYS
TITAN INCONEL
UNI

Ejemplo de pedido			Ref. final
B111	**030**	210	B111030210
	d1=3		
B111	**120**	210	B111120210
	d1=12,0		

Condiciones de corte | Cutting data pag. 209

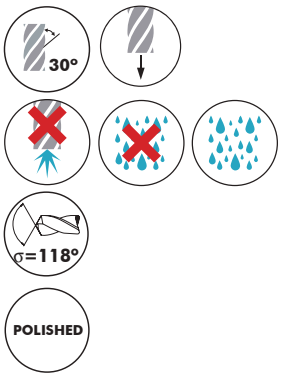
d1 h8	l1	l2	€
1,0	26	6	**6,80**
1,1	28	7	**7,00**
1,2	30	8	**7,40**
1,3	30	8	**7,70**
1,4	32	9	**5,65**
1,5	32	9	**6,90**
1,6	34	10	**6,00**
1,7	34	10	**7,60**
1,8	36	11	**6,15**
1,9	36	11	**6,15**
2,0	38	12	**8,25**
2,1	38	12	**8,25**
2,2	40	13	**8,25**
2,3	40	13	**8,55**
2,4	43	14	**8,25**
2,5	43	14	**8,25**
2,6	43	14	**8,25**
2,7	46	16	**12,05**
2,8	46	16	**12,05**
2,9	46	16	**12,05**
3,0	46	16	**12,05**
3,1	49	18	**12,05**

d1 h8	l1	l2	€
3,2	49	18	**12,05**
3,3	49	18	**15,00**
3,4	52	20	**12,70**
3,5	52	20	**12,70**
3,6	52	20	**13,75**
3,7	52	20	**13,75**
3,8	55	22	**14,90**
3,9	55	22	**15,00**
4,0	55	22	**15,00**
4,1	55	22	**16,45**
4,2	55	22	**16,45**
4,3	58	24	**16,45**
4,4	58	24	**16,45**
4,5	58	24	**16,45**
4,6	58	24	**17,55**
4,7	58	24	**17,55**
4,8	62	26	**17,55**
4,9	62	26	**17,55**
5,0	62	26	**17,55**
5,1	62	26	**20,40**
5,2	62	26	**22,60**
5,3	62	26	**22,60**

d1 h8	l1	l2	€
5,4	66	12	**24,35**
5,5	66	14	**22,60**
5,6	66	16	**23,30**
5,7	66	16	**23,60**
5,8	66	18	**23,80**
5,9	66	18	**24,30**
6,0	66	20	**23,80**
6,5	70	20	**40,80**
6,8	74	22	**37,80**
7,0	74	22	**41,10**
7,5	74	24	**42,25**
8,0	79	24	**48,60**
8,5	79	27	**60,20**
9,0	84	27	**63,35**
9,5	84	30	**67,60**
10,0	89	30	**72,90**
10,2	89	30	**93,20**
10,5	89	33	**84,50**
11,0	95	33	**92,95**
12,0	102	33	**105,60**

Broca metal duro DIN 338

Solid carbide twist drill DIN 338



STEEL <55 HRC
INOX
GG
GGG
COPPER
ALU <12% SI
NI ALLOYS
TITAN INCONEL
UNI

Broca de metal duro (K10/20) normal, tipo N, DIN 338. Broca rectificada con superficie pulida, corte a derecha y punta afilada con precisión a 118º. El ángulo de corte lateral a 30º, el espesor del alma y la hélice son normales. Se recomienda su uso en condiciones lo más estables posibles y con una presión de refrigerante alta.

Solid carbide short drill (K10/20), N type, DIN 338. Polished surface, right hand cut and 118º precision sharped point. Helix angle 30º. Its use is recommended in stable conditions and with high pressure coolant.

Ejemplo de pedido			Ref. final
B112	**030**	210	B112030210
	d1=3		
B112	**120**	210	B112120210
	d1=12,0		

Condiciones de corte | Cutting data pag. 209

d1 h8	l1	l2	€
1,0	34	6	**9,80**
1,1	36	7	**6,00**
1,2	38	8	**9,25**
1,3	38	8	**9,65**
1,4	40	9	**7,10**
1,5	40	9	**7,00**
1,6	43	10	**7,40**
1,7	43	10	**9,50**
1,8	46	11	**7,70**
1,9	46	11	**7,70**
2,0	49	12	**10,00**
2,1	49	12	**11,45**
2,2	53	13	**12,70**
2,3	53	13	**12,70**
2,4	57	14	**12,70**
2,5	57	14	**12,70**
2,6	57	14	**17,55**
2,7	61	16	**17,55**
2,8	61	16	**17,50**
2,9	61	16	**17,55**
3,0	61	16	**16,45**
3,1	65	18	**16,45**

d1 h8	l1	l2	€
3,2	65	36	**16,45**
3,3	65	36	**18,60**
3,4	70	39	**18,80**
3,5	70	39	**17,55**
3,6	70	39	**20,10**
3,7	70	39	**20,10**
3,8	75	43	**20,10**
3,9	75	43	**20,10**
4,0	75	43	**20,10**
4,1	75	43	**21,30**
4,2	75	43	**21,30**
4,3	80	47	**25,90**
4,4	80	47	**25,90**
4,5	80	47	**25,20**
4,6	80	47	**28,95**
4,7	80	47	**28,95**
4,8	86	52	**28,95**
4,9	86	52	**28,95**
5,0	86	52	**27,70**
5,1	86	52	**33,30**
5,2	86	52	**37,35**
5,3	86	52	**36,20**

d1 h8	l1	l2	€
5,4	93	57	**39,50**
5,5	93	57	**37,80**
5,6	93	57	**38,30**
5,7	93	57	**38,90**
5,8	93	57	**37,15**
5,9	93	57	**40,75**
6,0	93	57	**39,10**
6,5	101	63	**48,60**
6,8	109	69	**58,05**
7,0	109	69	**58,05**
7,5	109	69	**58,05**
8,0	117	75	**67,60**
8,5	117	75	**79,20**
9,0	125	81	**82,40**
9,5	125	81	**90,85**
10,0	133	87	**101,35**
10,2	133	87	**115,80**
10,5	133	87	**118,30**
11,0	142	94	**141,50**
12,0	151	101	**164,70**

SAUDA

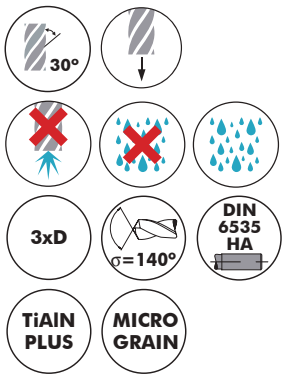
B-175

Broca metal duro 3xD sin refrigeración interna

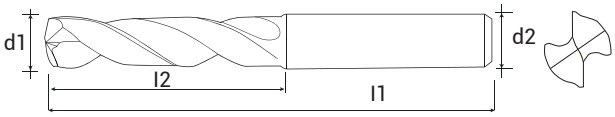
Solid carbide 3xD twist drill without internal coolant

Broca metal duro integral 3xD con recubrimiento TiAlN, sin refrigeración interior y con corte a derecha. Ángulo de punta 140º, ángulo de espiral 30º. Geometría de corte especial para taladro directo sin punteado previo que a la vez garantiza una perfecta concentricidad. Afilado especial de los canales para disminuir el coeficiente de fricción, mejorando la extracción de viruta. Permite trabajar tanto en seco como con refrigeración externa.

Solid carbide 3xD twist drill, without internal coolant and with TiAlN coating. Cylindrical shank, right hand cut. Point angle 140°, helix angle 30°. Special profile chip flute geometry. High performance spiral twist drill for highest bore hole quality and economical output. Drilling is possible both with and without external coolant.



STEEL <55 HRC
INOX
GG
GGG
NI ALLOYS
TITAN INCONEL
UNI



Ejemplo de pedido			Ref. final
B175	**030**	210	B175030210
	d1=3		
B175	**142**	210	B175142210
	d1=14,2		

Condiciones de corte | Cutting data pag. 210

d1 m7	d2 h6	l1	l2	€
1,0	4	55	7	**30,10**
1,1	4	55	7	**30,10**
1,2	4	55	7	**30,10**
1,3	4	55	7	**30,10**
1,4	4	55	7	**30,10**
1,5	4	55	14	**30,10**
1,6	4	55	14	**30,10**
1,7	4	55	14	**30,10**
1,8	4	55	14	**30,10**
1,9	4	55	14	**30,10**
2,0	4	55	20	**30,10**
2,1	4	55	20	**30,10**
2,2	4	55	20	**30,10**
2,3	4	55	20	**30,10**
2,4	4	55	20	**30,10**
2,5	4	55	20	**30,10**
2,6	4	55	20	**30,10**
2,7	4	55	20	**30,10**
2,8	4	55	20	**30,10**
2,9	4	55	20	**30,10**
3,0	6	62	20	**30,10**
3,1	6	62	20	**30,10**
3,2	6	62	20	**30,10**
3,3	6	62	20	**30,10**
3,4	6	62	20	**30,10**
3,5	6	62	20	**30,10**
3,6	6	62	20	**30,10**
3,7	6	62	20	**30,10**
3,8	6	66	24	**30,10**
3,9	6	66	24	**30,10**
4,0	6	66	24	**30,10**
4,1	6	66	24	**30,10**
4,2	6	66	24	**30,10**
4,3	6	66	24	**30,10**
4,4	6	66	24	**30,10**

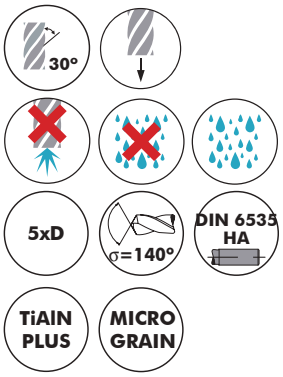
d1 m7	d2 h6	l1	l2	€
4,5	6	66	24	**30,10**
4,6	6	66	24	**30,10**
4,7	6	66	24	**30,10**
4,8	6	66	28	**30,10**
4,9	6	66	28	**30,10**
5,0	6	66	28	**30,10**
5,1	6	66	28	**30,10**
5,2	6	66	28	**30,10**
5,3	6	66	28	**30,10**
5,4	6	66	28	**30,10**
5,5	6	66	28	**30,10**
5,6	6	66	28	**30,10**
5,7	6	66	28	**30,10**
5,8	6	66	28	**30,10**
5,9	6	66	28	**30,10**
6,0	6	66	28	**30,10**
6,1	8	79	34	**42,40**
6,2	8	79	34	**42,40**
6,3	8	79	34	**42,40**
6,4	8	79	34	**42,40**
6,5	8	79	34	**42,40**
6,6	8	79	34	**42,40**
6,7	8	79	34	**42,40**
6,8	8	79	34	**42,40**
6,9	8	79	34	**42,40**
7,0	8	79	34	**42,40**
7,1	8	79	41	**42,40**
7,2	8	79	41	**42,40**
7,3	8	79	41	**42,40**
7,4	8	79	41	**42,40**
7,5	8	79	41	**42,40**
7,6	8	79	41	**42,40**
7,7	8	79	41	**42,40**
7,8	8	79	41	**42,40**
7,9	8	79	41	**42,40**

d1 m7	d2 h6	l1	l2	€
8,0	8	79	41	**42,40**
8,1	10	89	47	**61,70**
8,2	10	89	47	**61,70**
8,3	10	89	47	**61,70**
8,4	10	89	47	**61,70**
8,5	10	89	47	**61,70**
8,6	10	89	47	**61,70**
8,7	10	89	47	**61,70**
8,8	10	89	47	**61,70**
8,9	10	89	47	**61,70**
9,0	10	89	47	**61,70**
9,1	10	89	47	**61,70**
9,2	10	89	47	**61,70**
9,3	10	89	47	**61,70**
9,4	10	89	47	**61,70**
9,5	10	89	47	**61,70**
9,6	10	89	47	**61,70**
9,7	10	89	47	**61,70**
9,8	10	89	47	**61,70**
9,9	10	89	47	**61,70**
10,0	10	89	47	**61,70**
10,1	12	102	55	**84,60**
10,2	12	102	55	**84,60**
10,3	12	102	55	**84,60**
10,4	12	102	55	**84,60**
10,5	12	102	55	**84,60**
10,6	12	102	55	**84,60**
10,7	12	102	55	**84,60**
10,8	12	102	55	**84,60**
10,9	12	102	55	**84,60**
11,0	12	102	55	**84,60**
11,1	12	102	55	**84,60**
11,2	12	102	55	**84,60**
11,3	12	102	55	**84,60**
11,4	12	102	55	**84,60**

d1 m7	d2 h6	l1	l2	€
11,5	12	102	55	**84,60**
11,6	12	102	55	**84,60**
11,7	12	102	55	**84,60**
11,8	12	102	55	**84,60**
11,9	12	102	55	**84,60**
12,0	12	102	55	**84,60**
12,2	14	107	60	**119,00**
12,5	14	107	60	**119,00**
12,8	14	107	60	**119,00**
13,0	14	107	60	**119,00**
13,2	14	107	60	**119,00**
13,5	14	107	60	**119,00**
13,8	14	107	60	**119,00**
14,0	14	107	60	**119,00**
14,2	16	115	65	**160,70**
14,5	16	115	65	**160,70**
14,8	16	115	65	**160,70**
15,0	16	115	65	**160,70**
15,2	16	115	65	**160,70**
15,5	16	115	65	**160,70**
15,8	16	115	65	**160,70**
16,0	16	115	65	**160,70**
16,5	18	123	73	**215,10**
16,8	18	123	73	**215,10**
17,0	18	123	73	**215,10**
17,5	18	123	73	**215,10**
17,8	18	123	73	**215,10**
18,0	18	123	73	**215,10**
18,5	20	131	79	**262,60**
19,0	20	131	79	**262,60**
19,5	20	131	79	**262,60**
19,8	20	131	79	**262,60**
20,0	20	131	79	**262,60**

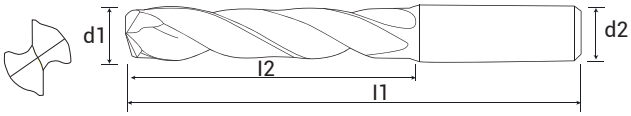
Broca metal duro 5xD sin refrigeración interna

Solid carbide 5xD twist drill without internal coolant



Broca metal duro integral 5xD con recubrimiento TiAlN, sin refrigeración interior y con corte a derecha. Ángulo de punta 140º, ángulo de espiral 30º. Geometría de corte especial para taladro directo sin punteado previo que a la vez garantiza una perfecta concentricidad. Afilado especial de los canales para disminuir el coeficiente de fricción, mejorando la extracción de viruta. Permite trabajar tanto en seco como con refrigeración externa.

Solid carbide 5xD twist drill, without internal coolant and with TiAlN coating. Cylindrical shank, right hand cut. Point angle 140°, helix angle 30°. Special profile chip flute geometry. High performance spiral twist drill for highest bore hole quality and economical output. Drilling is possible both with and without external coolant.



Ejemplo de pedido			Ref. final
B179	**030**	210	B179030210
	d1=3		
B179	**120**	210	B179120210
	d1=12,0		

Condiciones de corte | Cutting data pag. 210

d1 m7	d2 h6	l1	l2	€
3,0	6	66	28	**36,20**
3,1	6	66	28	**36,20**
3,2	6	66	28	**36,20**
3,3	6	66	28	**36,20**
3,4	6	66	28	**36,20**
3,5	6	66	28	**36,20**
3,6	6	66	28	**36,20**
3,7	6	66	28	**36,20**
3,8	6	74	36	**36,20**
3,9	6	74	36	**36,20**
4,0	6	74	36	**36,20**
4,1	6	74	36	**36,20**
4,2	6	74	36	**36,20**
4,3	6	74	36	**36,20**
4,4	6	74	36	**36,20**
4,5	6	74	36	**36,20**
4,6	6	74	36	**36,20**
4,7	6	74	36	**36,20**
4,8	6	82	44	**36,20**
4,9	6	82	44	**36,20**
5,0	6	82	44	**36,20**
5,1	6	82	44	**36,20**
5,2	6	82	44	**36,20**
5,3	6	82	44	**36,20**
5,4	6	82	44	**36,20**
5,5	6	82	44	**36,20**
5,6	6	82	44	**36,20**
5,7	6	82	44	**36,20**
5,8	6	82	44	**36,20**

d1 m7	d2 h6	l1	l2	€
5,9	6	82	44	**36,20**
6,0	6	82	44	**36,20**
6,1	8	91	44	**49,15**
6,2	8	91	44	**49,15**
6,3	8	91	44	**49,15**
6,4	8	91	53	**49,15**
6,5	8	91	53	**49,15**
6,6	8	91	53	**49,15**
6,7	8	91	53	**49,15**
6,8	8	91	53	**49,15**
6,9	8	91	53	**49,15**
7,0	8	91	53	**49,15**
7,1	8	91	53	**49,15**
7,2	8	91	53	**49,15**
7,3	8	91	53	**49,15**
7,4	8	91	53	**49,15**
7,5	8	91	53	**49,15**
7,6	8	91	53	**49,15**
7,7	8	91	53	**49,15**
7,8	8	91	53	**49,15**
7,9	8	91	53	**49,15**
8,0	8	91	53	**49,15**
8,1	10	103	53	**72,80**
8,2	10	103	53	**72,80**
8,3	10	103	53	**72,80**
8,4	10	103	61	**72,80**
8,5	10	103	61	**72,80**
8,6	10	103	61	**72,80**
8,7	10	103	61	**72,80**

d1 m7	d2 h6	l1	l2	€
8,8	10	103	61	**72,80**
8,9	10	103	61	**72,80**
9,0	10	103	61	**72,80**
9,1	10	103	61	**72,80**
9,2	10	103	61	**72,80**
9,3	10	103	61	**72,80**
9,4	10	103	61	**72,80**
9,5	10	103	61	**72,80**
9,6	10	103	61	**72,80**
9,7	10	103	61	**72,80**
9,8	10	103	61	**72,80**
9,9	10	103	61	**72,80**
10,0	10	103	61	**72,80**
10,1	12	118	61	**98,65**
10,2	12	118	71	**98,65**
10,3	12	118	71	**98,65**
10,4	12	118	71	**98,65**
10,5	12	118	71	**98,65**
10,6	12	118	71	**98,65**
10,7	12	118	71	**98,65**
10,8	12	118	71	**98,65**
10,9	12	118	71	**98,65**
11,0	12	118	71	**98,65**
11,1	12	118	71	**98,65**
11,2	12	118	71	**98,65**
11,3	12	118	71	**98,65**
11,4	12	118	71	**98,65**
11,5	12	118	71	**98,65**
11,6	12	118	71	**98,65**

d1 m7	d2 h6	l1	l2	€
11,7	12	118	71	**98,65**
11,8	12	118	71	**98,65**
11,9	12	118	71	**98,65**
12,0	12	118	71	**98,65**
12,2	14	124	71	**132,95**
12,5	14	124	77	**132,95**
12,7	14	124	77	**132,95**
13,0	14	124	77	**132,95**
13,5	14	124	77	**132,95**
13,7	14	124	77	**132,95**
14,0	14	124	77	**132,95**
14,2	16	133	77	**179,10**
14,5	16	133	83	**179,10**
14,7	16	133	83	**179,10**
15,0	16	133	83	**179,10**
15,2	16	133	83	**179,10**
15,5	16	133	83	**179,10**
15,7	16	133	83	**179,10**
16,0	16	133	83	**179,10**
16,5	18	143	93	**242,65**
17,0	18	143	93	**242,65**
17,5	18	143	93	**242,65**
18,0	18	143	93	**242,65**
18,5	20	153	101	**325,20**
19,0	20	153	101	**325,20**
19,5	20	153	101	**325,20**
20,0	20	153	101	**325,20**

SAUDA

B-510

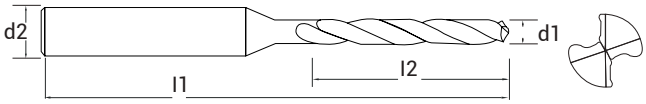
BROCAS

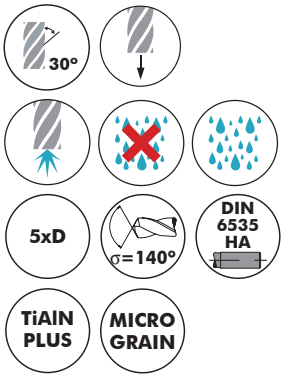
Microbroca 5xD sin refrigeración interior

5xD Without internal spiral coolant holes

Microbroca de metal duro integral 5 xD con recubrimiento TiAlN, sin refrigeración interior y corte a derechas. Ángulo de la punta 135º. Fabricado de alta precisión que garantiza una concentricidad de 0,005 mm.

5 xD Without internal sipral coolant holes with TiAlN coating, without internal cooling and right-hand cutting. Tip angle 135º. Manufactured with high precision that guarantees concentricity.





STEEL <55 HRC
INOX
GG
GGG
NI ALLOYS
TITAN INCONEL
UNI

Ejemplo de pedido			Ref. final
B510	**004**	210	B510004210
	d1=0,4		
B510	**255**	210	B510255210
	d2=2,55		

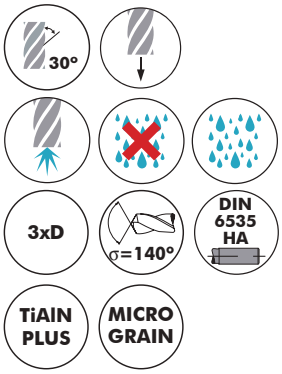
Condiciones de corte | Cutting data pag. 211

d1 m7	d2 h6	l1	l2	€
0,40	3	38	3,6	**45,60**
0,45	3	38	3,8	**45,60**
0,50	3	38	4,0	**45,60**
0,55	3	38	4,6	**45,60**
0,60	3	38	4,8	**45,60**
0,65	3	38	5,0	**45,60**
0,70	3	38	6,0	**45,60**
0,75	3	38	6,2	**45,60**
0,80	3	38	6,4	**45,60**
0,85	3	38	6,7	**45,60**
0,90	3	38	7,0	**45,60**
0,95	3	38	7,25	**45,60**
1,00	3	38	7,50	**37,55**
1,05	3	38	7,75	**37,55**
1,10	3	38	8,0	**37,55**
1,15	3	38	8,25	**37,55**
1,20	3	38	8,50	**37,55**
1,25	3	38	8,75	**37,55**
1,30	3	38	9,0	**37,55**
1,35	3	38	9,5	**37,55**
1,40	3	38	10,0	**37,55**
1,45	3	38	10,5	**37,55**
1,50	3	38	11,0	**37,55**
1,55	3	38	11,25	**37,55**
1,60	3	38	11,50	**37,55**
1,65	3	38	11,75	**37,55**

d1 m7	d2 h6	l1	l2	€
1,70	3	38	12,00	**37,55**
1,75	3	38	12,25	**37,55**
1,80	3	38	12,50	**37,55**
1,85	3	38	12,75	**37,55**
1,90	3	38	13,00	**37,55**
1,95	3	38	13,50	**37,55**
2,00	3	46	14,00	**37,75**
2,05	3	46	14,50	**37,75**
2,10	3	46	15,00	**37,75**
2,15	3	46	15,50	**37,75**
2,20	3	46	16,0	**37,75**
2,25	3	46	16,50	**37,75**
2,30	3	46	17,00	**37,75**
2,35	3	46	17,50	**37,75**
2,40	3	46	18,00	**37,75**
2,45	3	46	18,50	**37,75**
2,50	3	50	19,00	**37,75**
2,55	3	50	19,50	**38,10**
2,60	3	50	20,00	**38,10**
2,65	3	50	20,50	**38,10**
2,70	3	50	21,00	**38,10**
2,75	3	50	21,50	**38,10**
2,80	3	50	22,00	**38,10**
2,85	3	50	22,50	**38,10**
2,90	3	50	23,00	**38,10**
2,95	3	50	23,50	**38,10**

Broca metal duro 3xD con refrigeración interna

Solid carbide 3xD twist drill with internal coolant



STEEL <55 HRC

INOX

GG

GGG

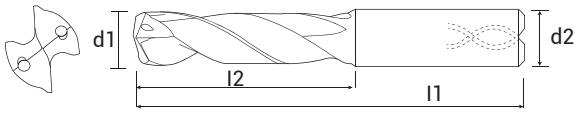
NI ALLOYS

TITAN INCONEL

UNI

Broca metal duro integral 3xD con recubrimiento TiAlN, con refrigeración interior y con corte a derecha. Ángulo de punta 140º, ángulo de espiral 30º. Geometría de corte especial para taladro directo sin punteado previo que a la vez garantiza una perfecta concentricidad. Afilado especial de los canales para disminuir el coeficiente de fricción, mejorando la extracción de viruta. Permite trabajar tanto en seco como con refrigeración externa.

Solid carbide 3xD twist drill, with internal coolant and TiAlN coating. Cylindrical shank, right hand cut. Point angle 140°, helix angle 30°. Special profile chip flute geometry. High performance spiral twist drill for highest bore hole quality and economical output. Drilling is possible both with and without external coolant.



Ejemplo de pedido			Ref. final
B177	**030**	210	B177030210
	d1=3		
B177	**120**	210	B177120210
	d1=12,0		

Condiciones de corte | Cutting data pag. 210

d1 m7	d2 h6	l1	l2	€
3,0	6	62	20	**33,70**
3,1	6	62	20	**33,70**
3,2	6	62	20	**33,70**
3,3	6	62	20	**33,70**
3,4	6	62	20	**33,70**
3,5	6	62	20	**33,70**
3,6	6	62	20	**33,70**
3,7	6	62	20	**33,70**
3,8	6	66	24	**33,70**
3,9	6	66	24	**33,70**
4,0	6	66	24	**33,70**
4,1	6	66	24	**33,70**
4,2	6	66	24	**33,70**
4,3	6	66	24	**33,70**
4,4	6	66	24	**33,70**
4,5	6	66	24	**33,70**
4,6	6	66	24	**33,70**
4,7	6	66	24	**33,70**
4,8	6	66	28	**33,70**
4,9	6	66	28	**33,70**
5,0	6	66	28	**33,70**
5,1	6	66	28	**33,70**
5,2	6	66	28	**33,70**
5,3	6	66	28	**33,70**
5,4	6	66	28	**33,70**
5,5	6	66	28	**33,70**
5,6	6	66	28	**33,70**
5,7	6	66	28	**33,70**
5,8	6	66	28	**33,70**
5,9	6	66	28	**33,70**

d1 m7	d2 h6	l1	l2	€
6,0	6	66	28	**33,70**
6,1	8	79	34	**49,75**
6,2	8	79	34	**49,75**
6,3	8	79	34	**49,75**
6,4	8	79	34	**49,75**
6,5	8	79	34	**49,75**
6,6	8	79	34	**49,75**
6,7	8	79	34	**49,75**
6,8	8	79	34	**49,75**
6,9	8	79	34	**49,75**
7,0	8	79	34	**49,75**
7,1	8	79	41	**49,75**
7,2	8	79	41	**49,75**
7,3	8	79	41	**49,75**
7,4	8	79	41	**49,75**
7,5	8	79	41	**49,75**
7,6	8	79	41	**49,75**
7,7	8	79	41	**49,75**
7,8	8	79	41	**49,75**
7,9	8	79	41	**49,75**
8,0	8	79	41	**49,75**
8,1	10	89	47	**70,90**
8,2	10	89	47	**70,90**
8,3	10	89	47	**70,90**
8,4	10	89	47	**70,90**
8,5	10	89	47	**70,90**
8,6	10	89	47	**70,90**
8,7	10	89	47	**70,90**
8,8	10	89	47	**70,90**
8,9	10	89	47	**70,90**

d1 m7	d2 h6	l1	l2	€
9,0	10	89	47	**70,90**
9,1	10	89	47	**70,90**
9,2	10	89	47	**70,90**
9,3	10	89	47	**70,90**
9,4	10	89	47	**70,90**
9,5	10	89	47	**70,90**
9,6	10	89	47	**70,90**
9,7	10	89	47	**70,90**
9,8	10	89	47	**70,90**
9,9	10	89	47	**70,90**
10,0	10	89	47	**70,90**
10,1	12	102	55	**99,60**
10,2	12	102	55	**99,60**
10,3	12	102	55	**99,60**
10,4	12	102	55	**99,60**
10,5	12	102	55	**99,60**
10,6	12	102	55	**99,60**
10,7	12	102	55	**99,60**
10,8	12	102	55	**99,60**
10,9	12	102	55	**99,60**
11,0	12	102	55	**99,60**
11,1	12	102	55	**99,60**
11,2	12	102	55	**99,60**
11,3	12	102	55	**99,60**
11,4	12	102	55	**99,60**
11,5	12	102	55	**99,60**
11,6	12	102	55	**99,60**
11,7	12	102	55	**99,60**
11,8	12	102	55	**99,60**
11,9	12	102	55	**99,60**

d1 m7	d2 h6	l1	l2	€
12,0	12	102	55	**99,60**
12,5	14	107	60	**139,15**
12,8	14	107	60	**139,15**
13,0	14	107	60	**139,15**
13,5	14	107	60	**139,15**
13,8	14	107	60	**139,15**
14,0	14	107	60	**139,15**
14,5	16	115	65	**195,80**
14,8	16	115	65	**195,80**
15,0	16	115	65	**195,80**
15,5	16	115	65	**195,80**
15,8	16	115	65	**195,80**
16,0	16	115	65	**195,80**
16,5	18	123	73	**262,60**
16,8	18	123	73	**262,60**
17,0	18	123	73	**262,60**
17,5	18	123	73	**262,60**
17,8	18	123	73	**262,60**
18,0	18	123	73	**262,60**
18,5	20	131	79	**319,80**
19,0	20	131	79	**319,80**
19,5	20	131	79	**319,80**
19,8	20	131	79	**319,80**
20,0	20	131	79	**319,80**

SAUDA

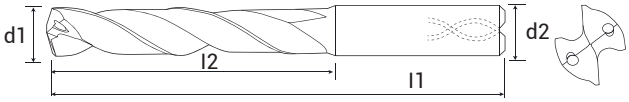
B-173

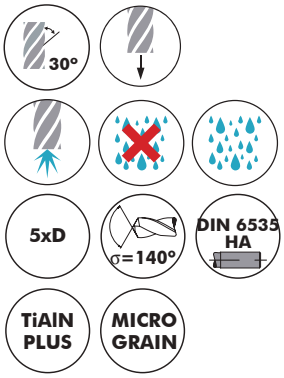
Broca metal duro 5xD con refrigeración interna

Solid carbide 5xD twist drill with internal coolant

Broca metal duro integral 5xD con recubrimiento TiAlN, con refrigeración interior y con corte a derecha. Ángulo de punta 140º, ángulo de espiral 30º. Geometría de corte especial para taladro directo sin punteado previo que a la vez garantiza una perfecta concentricidad. Afilado especial de los canales para disminuir el coeficiente de fricción, mejorando la extracción de viruta. Permite trabajar tanto en seco como con refrigeración externa.

Solid carbide 5xD twist drill, with internal coolant and TiAlN coating. Cylindrical shank, right hand cut. Point angle 140°, helix angle 30°. Special profile chip flute geometry. High performance spiral twist drill for highest bore hole quality and economical output. Drilling is possible both with and without external coolant.





STEEL <55 HRC
INOX
GG
GGG
NI ALLOYS
TITAN INCONEL
UNI

Ejemplo de pedido			Ref. final
B173	**030**	210	B173030210
	d1=3		
B173	**120**	210	B173120210
	d1=12,0		

Condiciones de corte | Cutting data pag. 210

d1 m7	d2 h6	l1	l2	€
2,5	3	57	21	**40,40**
3,0	6	66	28	**39,45**
3,1	6	66	28	**39,45**
3,2	6	66	28	**39,45**
3,3	6	66	28	**39,45**
3,4	6	66	28	**39,45**
3,5	6	66	28	**39,45**
3,6	6	66	28	**39,45**
3,7	6	66	28	**39,45**
3,8	6	74	36	**39,45**
3,9	6	74	36	**39,45**
4,0	6	74	36	**39,45**
4,1	6	74	36	**39,45**
4,2	6	74	36	**39,45**
4,3	6	74	36	**39,45**
4,4	6	74	36	**39,45**
4,5	6	74	36	**39,45**
4,6	6	74	36	**39,45**
4,7	6	74	36	**39,45**
4,8	6	82	44	**39,45**
4,9	6	82	44	**39,45**
5,0	6	82	44	**39,45**
5,1	6	82	44	**39,45**
5,2	6	82	44	**39,45**
5,3	6	82	44	**39,45**
5,4	6	82	44	**39,45**
5,5	6	82	44	**39,45**
5,6	6	82	44	**39,45**
5,7	6	82	44	**39,45**
5,8	6	82	44	**39,45**
5,9	6	82	44	**39,45**

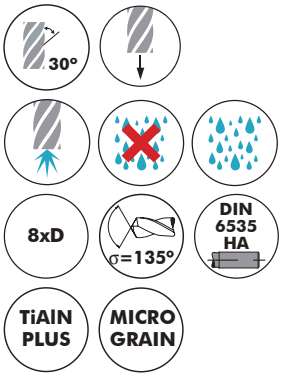
d1 m7	d2 h6	l1	l2	€
6,0	6	82	44	**39,45**
6,1	8	91	53	**56,90**
6,2	8	91	53	**56,90**
6,3	8	91	53	**56,90**
6,4	8	91	53	**56,90**
6,5	8	91	53	**56,90**
6,6	8	91	53	**56,90**
6,7	8	91	53	**56,90**
6,8	8	91	53	**56,90**
6,9	8	91	53	**56,90**
7,0	8	91	53	**56,90**
7,1	8	91	53	**56,90**
7,2	8	91	53	**56,90**
7,3	8	91	53	**56,90**
7,4	8	91	53	**56,90**
7,5	8	91	53	**56,90**
7,6	8	91	53	**56,90**
7,7	8	91	53	**56,90**
7,8	8	91	53	**56,90**
7,9	8	91	53	**56,90**
8,0	8	91	53	**56,90**
8,1	10	103	61	**83,20**
8,2	10	103	61	**83,20**
8,3	10	103	61	**83,20**
8,4	10	103	61	**83,20**
8,5	10	103	61	**83,20**
8,6	10	103	61	**83,20**
8,7	10	103	61	**83,20**
8,8	10	103	61	**83,20**
8,9	10	103	61	**83,20**
9,0	10	103	61	**83,20**

d1 m7	d2 h6	l1	l2	€
9,1	10	103	61	**83,20**
9,2	10	103	61	**83,20**
9,3	10	103	61	**83,20**
9,4	10	103	61	**83,20**
9,5	10	103	61	**83,20**
9,6	10	103	61	**83,20**
9,7	10	103	61	**83,20**
9,8	10	103	61	**83,20**
9,9	10	103	61	**83,20**
10,0	10	103	61	**83,20**
10,1	12	118	71	**116,90**
10,2	12	118	71	**116,90**
10,3	12	118	71	**116,90**
10,4	12	118	71	**116,90**
10,5	12	118	71	**116,90**
10,6	12	118	71	**116,90**
10,7	12	118	71	**116,90**
10,8	12	118	71	**116,90**
10,9	12	118	71	**116,90**
11,0	12	118	71	**116,90**
11,1	12	118	71	**116,90**
11,2	12	118	71	**116,90**
11,3	12	118	71	**116,90**
11,4	12	118	71	**116,90**
11,5	12	118	71	**116,90**
11,6	12	118	71	**116,90**
11,7	12	118	71	**116,90**
11,8	12	118	71	**116,90**
11,9	12	118	71	**116,90**
12,0	12	118	71	**116,90**
12,2	14	124	77	**161,60**

d1 m7	d2 h6	l1	l2	€
12,5	14	124	77	**161,60**
12,8	14	124	77	**161,60**
13,0	14	124	77	**161,60**
13,2	14	124	77	**161,60**
13,5	14	124	77	**161,60**
13,8	14	124	77	**161,60**
14,0	14	124	77	**161,60**
14,5	16	133	83	**212,00**
14,8	16	133	83	**212,00**
15,0	16	133	83	**212,00**
15,5	16	133	83	**212,00**
15,8	16	133	83	**212,00**
16,0	16	133	83	**212,00**
16,5	18	143	93	**295,30**
16,8	18	143	93	**295,30**
17,0	18	143	93	**295,30**
17,5	18	143	93	**295,30**
17,8	18	143	93	**295,30**
18,0	18	143	93	**295,30**
18,5	20	153	101	**388,20**
19,0	20	153	101	**388,20**
19,5	20	153	101	**388,20**
20,0	20	153	101	**388,20**

Broca metal duro 8xD con refrigeración interna

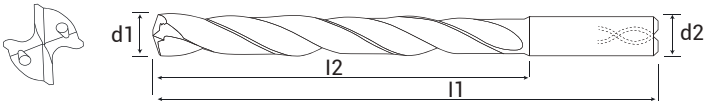
Solid carbide 8xD twist drill with internal coolant



STEEL <55 HRC
INOX
GG
GGG
NI ALLOYS
TITAN INCONEL
ALU <12% SI
UNI

Broca metal duro integral 8xD con recubrimiento TiAlN, con refrigeración interior y con corte a derecha. Ángulo de punta 135º, ángulo de espiral 30º. Geometría de corte especial para taladro directo sin punteado previo que a la vez garantiza una perfecta concentricidad. Afilado especial de los canales para disminuir el coeficiente de fricción, mejorando la extracción de viruta. Permite trabajar tanto en seco como con refrigeración externa.

Solid carbide 8xD twist drill, with internal coolant and TiAlN coating. Cylindrical shank, right hand cut. Point angle 135°, helix angle 30°. Special profile chip flute geometry. High performance spiral twist drill for highest bore hole quality and economical output. Drilling is possible both with and without external coolant.



Ejemplo de pedido			Ref. final
B820	**022**	210	B820022210
	d1=2,2		
B820	**120**	210	B820120210
	d1=12		

Condiciones de corte | Cutting data pag. 213

d1 m7	d2 h6	l1	l2	€
2,20	3	60	20,90	**50,45**
2,25	3	60	21,40	**50,45**
2,30	3	60	21,90	**50,45**
2,35	3	60	22,30	**50,45**
2,40	3	60	22,80	**50,45**
2,45	3	60	23,30	**50,45**
2,50	3	60	23,80	**50,45**
2,55	3	60	24,20	**50,45**
2,60	3	60	24,70	**50,45**
2,65	3	60	25,20	**50,45**
2,70	3	60	25,70	**50,45**
2,75	3	60	26,10	**50,45**
2,80	3	60	26,60	**50,45**
2,85	3	60	27,10	**50,45**
2,90	3	60	27,60	**50,45**
2,95	3	60	28,00	**50,45**
3,00	6	74	34,00	**62,80**
3,10	6	80	40,00	**62,80**
3,20	6	80	40,00	**62,80**
3,30	6	80	40,00	**62,80**
3,40	6	80	40,00	**62,80**
3,50	6	80	40,00	**62,80**
3,60	6	85	45,00	**62,80**
3,70	6	85	45,00	**62,80**
3,80	6	45	85	**62,80**

d1 m7	d2 h6	l1	l2	€
3,9	6	85	45	**62,80**
4,0	6	85	45	**62,80**
4,1	6	91	51	**62,80**
4,2	6	91	51	**62,80**
4,3	6	91	51	**62,80**
4,4	6	91	51	**62,80**
4,5	6	91	51	**62,80**
4,6	6	96	55	**62,80**
4,7	6	96	55	**62,80**
4,8	6	96	55	**62,80**
4,9	6	96	55	**62,80**
5,0	6	96	55	**62,80**
5,1	6	102	62	**62,80**
5,2	6	102	62	**62,80**
5,3	6	102	62	**62,80**
5,4	6	102	62	**62,80**
5,5	6	102	62	**62,80**
5,6	6	107	67	**62,80**
5,7	6	107	67	**62,80**
5,8	6	107	67	**62,80**
5,9	6	107	67	**62,80**
6,0	6	107	67	**62,80**
6,5	8	113	73	**92,40**
6,8	8	76	114	**92,40**
7,0	8	78	118	**92,40**

d1 m7	d2 h6	l1	l2	€
7,5	8	84	124	**92,40**
7,8	8	84	124	**92,40**
8,0	8	89	129	**133,70**
8,2	8	89	129	**133,70**
8,5	10	95	139	**133,70**
9,0	10	100	144	**133,70**
9,5	10	107	151	**215,20**
10,0	10	112	156	**215,20**
10,2	12	162	114	**215,20**
10,5	12	118	167	**215,20**
11,0	12	123	172	**215,20**
11,5	12	129	178	**287,55**
11,8	12	129	178	**287,55**
12,0	12	134	183	**287,55**
12,5	14	140	189	**287,55**
13,0	14	145	194	**366,40**
13,5	14	151	200	**366,40**
14,0	14	156	205	**366,40**
14,5	16	152	204	**366,40**
15,0	16	152	204	**484,95**
15,5	16	152	204	**484,95**
16,0	16	152	204	**484,95**
17,0	18	171	223	**352,85**
17,5	18	171	223	**352,85**
18,0	18	171	223	**352,85**

SAUDA

B-1220

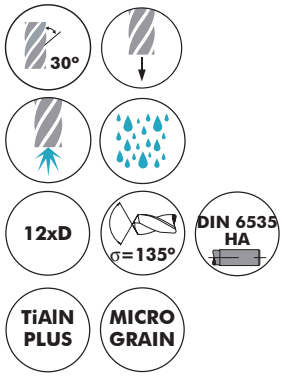
BROCAS

Broca metal duro 12xD con refrigeración interna

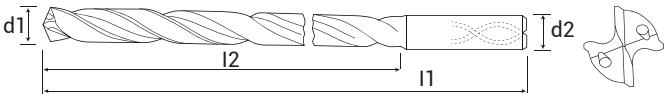
Solid carbide 12xD twist drill with internal coolant

Broca metal duro integral 12xD con recubrimiento TiAlN, con refrigeración interior y con corte a derecha. Ángulo de punta 135º, ángulo de espiral 30º. Geometría de corte especial para taladrado previo con broca 3xD, que garantiza una perfecta concentricidad. Afilado especial de los canales para disminuir el coeficiente de fricción, mejorando la extracción de viruta. Para trabajos con refrigeración externa.

Solid carbide 12xD twist drill, with internal coolant and TiAlN coating. Cylindrical shank, right hand cut. Point angle 135°, helix angle 30°. Special profile chip flute geometry. Before drilling, you have to use a 3xD drill. High performance spiral twist drill for highest bore hole quality and economical output. Drilling is possible both with and without external coolant.



STEEL <55 HRC
INOX
GG
GGG
NI ALLOYS
TITAN INCONEL
UNI



Ejemplo de pedido			Ref. final
B1220	**022**	210	B1220022210
	d1=2,2		
B1220	**120**	210	B1220120210
	d2=12		

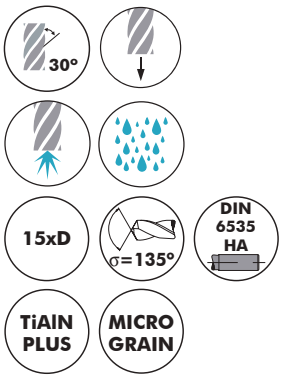
Condiciones de corte | Cutting data pag. 213

d1 m7	d2 h6	l1	l2	€
2,20	3	65	29,7	**82,80**
2,25	3	65	30,4	**82,80**
2,30	3	65	31,1	**82,80**
2,35	3	75	31,7	**82,80**
2,40	3	75	32,4	**82,80**
2,45	3	75	33,1	**82,80**
2,50	3	75	33,8	**82,80**
2,55	3	75	34,4	**82,80**
2,60	3	75	35,1	**82,80**
2,65	3	75	35,8	**82,80**
2,70	3	75	36,5	**82,80**
2,75	3	75	37,1	**82,80**
2,80	3	75	37,8	**82,80**
2,85	3	75	38,5	**82,80**
2,90	3	75	39,2	**82,80**
2,95	3	75	39,8	**82,80**
3,00	6	86	46	**152,40**
3,10	6	94	54	**152,40**
3,20	6	94	54	**152,40**
3,30	6	94	54	**152,40**
3,40	6	94	54	**152,40**
3,50	6	94	54	**152,40**
3,60	6	101	61	**152,40**
3,70	6	101	61	**152,40**
3,80	6	101	61	**152,40**
3,90	6	101	61	**152,40**
4,00	6	101	61	**152,40**
4,10	6	109	69	**160,60**
4,20	6	109	69	**160,60**
4,30	6	109	69	**160,60**

d1 m7	d2 h6	l1	l2	€
4,4	6	109	69	**160,60**
4,5	6	109	69	**160,60**
4,6	6	116	76	**161,00**
4,7	6	116	76	**161,00**
4,8	6	116	76	**161,00**
4,9	6	116	76	**161,00**
5,0	6	116	76	**161,00**
5,1	6	124	84	**172,00**
5,2	6	124	84	**172,00**
5,3	6	124	84	**172,00**
5,4	6	124	84	**172,00**
5,5	6	124	84	**172,00**
5,6	6	131	91	**186,10**
5,7	6	131	91	**186,10**
5,8	6	131	91	**186,10**
5,9	6	131	91	**186,10**
6,0	6	131	91	**186,10**
6,5	8	139	99	**273,95**
7,0	8	146	106	**273,95**
7,5	8	154	114	**273,95**
8,0	8	161	121	**276,45**
8,5	10	173	129	**435,60**
9,0	10	180	136	**435,60**
9,5	10	189	145	**435,60**
10,0	10	196	152	**435,60**
10,5	12	209	160	**615,75**
11,0	12	216	167	**615,75**
11,3	12	216	167	**615,75**
11,5	12	224	175	**615,75**
12,0	12	231	182	**314,25**

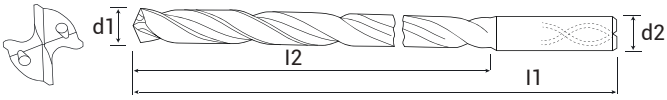
Broca metal duro 15xD con refrigeración interna

Solid carbide 15xD twist drill with internal coolant



Broca metal duro integral 15xD con recubrimiento TiAlN, con refrigeración interior y con corte a derecha. Ángulo de punta 135º, ángulo de espiral 30º. Geometría de corte especial para taladrado previo con broca 3xD, que garantiza una perfecta concentricidad. Afilado especial de los canales para disminuir el coeficiente de fricción, mejorando la extracción de viruta. Para trabajos con refrigeración interna.

Solid carbide 15xD twist drill, with internal coolant and TiAlN coating. Cylindrical shank, right hand cut. Point angle 135°, helix angle 30°. Special profile chip flute geometry. Before drilling, you have to use a 3xD drill. High performance spiral twist drill for highest bore hole quality and economical output. Drilling is possible both with and without internal coolant.



Ejemplo de pedido			Ref. final
B1520	**022**	210	B1520022210
	d1=2,2		
B1520	**100**	210	B1520100210
	d1=10		

Condiciones de corte | Cutting data pag. 213

d1 m7	d2 h6	l1	l2	€
2,20	3	79	39,6	**139,85**
2,25	3	80	40,5	**139,85**
2,30	3	80	41,4	**139,85**
2,35	3	81	42,3	**143,25**
2,40	3	82	43,2	**143,40**
2,45	3	83	44,1	**143,40**
2,50	3	84	45	**143,40**
2,55	3	85	45,9	**143,40**
2,60	3	86	46,8	**143,40**
2,65	3	86	47,7	**143,40**
2,70	3	87	48,6	**143,40**
2,75	3	88	49,5	**143,40**
2,80	3	89	50,4	**143,40**
2,85	3	90	51,3	**143,40**
2,90	3	91	52,2	**143,40**
2,95	3	92	53,1	**143,40**
3,00	6	95	55	**223,40**
3,10	6	104	64	**223,40**
3,20	6	104	64	**223,40**
3,30	6	104	64	**223,40**
3,40	6	104	64	**223,40**
3,50	6	104	64	**223,40**
3,60	6	113	73	**232,20**
3,70	6	113	73	**232,20**
3,80	6	113	73	**232,20**
3,90	6	113	73	**232,20**
4,00	6	113	73	**232,20**
4,10	6	122	82	**233,10**

d1 m7	d2 h6	l1	l2	€
4,20	6	122	82	**233,10**
4,30	6	122	82	**233,10**
4,40	6	122	82	**233,10**
4,50	6	122	82	**233,10**
4,60	6	131	91	**233,10**
4,70	6	131	91	**233,10**
4,80	6	131	91	**233,10**
4,90	6	131	91	**233,10**
5,00	6	131	91	**233,10**
5,10	6	140	100	**233,10**
5,20	6	140	100	**233,10**
5,30	6	140	100	**233,10**
5,40	6	140	100	**233,10**
5,50	6	140	100	**233,10**
5,60	6	149	109	**233,10**
5,70	6	149	109	**233,10**
5,80	6	149	109	**233,10**
5,90	6	149	109	**233,10**
6,00	6	149	109	**233,10**
6,50	8	158	118	**380,20**
7,00	8	167	127	**426,85**
7,50	8	176	136	**426,85**
8,00	8	185	145	**426,85**
8,50	10	198	154	**577,45**
9,00	10	207	163	**577,45**
9,50	10	217	173	**577,45**
10,00	10	226	182	**577,45**

SAUDA

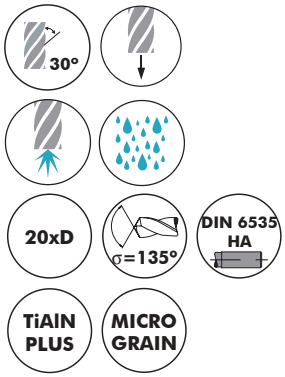
B-2020

Broca metal duro 20xD con refrigeración interna

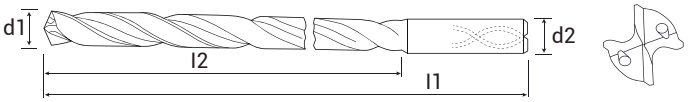
Solid carbide 20xD twist drill with internal coolant

Broca metal duro integral 20xD con recubrimiento TiAlN, con refrigeración interior y con corte a derecha. Ángulo de punta 135º, ángulo de espiral 30º. Geometría de corte especial para taladrado previo con broca 3xD, que garantiza una perfecta concentricidad. Afilado especial de los canales para disminuir el coeficiente de fricción, mejorando la extracción de viruta. Para trabajos con refrigeración interna.

Solid carbide 20xD twist drill, with internal coolant and TiAlN coating. Cylindrical shank, right hand cut. Point angle 135°, helix angle 30°. Special profile chip flute geometry. Before drilling, you have to use a 3xD drill. High performance spiral twist drill for highest bore hole quality and economical output. Drilling is possible both with and without internal coolant.



STEEL <55 HRC
INOX
GG
GGG
NI ALLOYS
TITAN INCONEL
UNI



Ejemplo de pedido			Ref. final
B2020	**022**	210	B2020022210
	d1=2,2		
B2020	**080**	210	B2020080210
	d2=8		

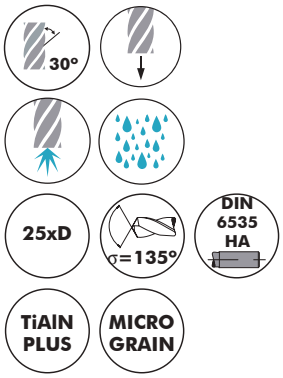
Condiciones de corte | Cutting data pag. 213

d1 m7	d2 h6	l1	l2	€
2,2	3	90	50,6	**186,60**
2,3	3	92	52,9	**186,60**
2,4	3	94	55,2	**186,60**
2,5	3	96	57,5	**186,60**
2,6	3	99	59,8	**186,60**
2,7	3	101	62,1	**186,60**
2,8	3	103	64,4	**186,60**
2,9	3	105	66,7	**187,70**
3,0	6	110	70	**382,80**
3,1	6	122	82	**383,70**
3,2	6	122	82	**383,70**
3,3	6	122	82	**383,70**
3,4	6	122	82	**383,70**
3,5	6	122	82	**383,70**
3,6	6	133	93	**383,70**
3,7	6	133	93	**383,70**
3,8	6	133	93	**383,70**
3,9	6	133	93	**383,70**
4,0	6	133	93	**383,70**
4,1	6	145	105	**383,70**
4,2	6	145	105	**383,70**
4,3	6	145	105	**383,70**

d1 m7	d2 h6	l1	l2	€
4,4	6	145	105	**383,70**
4,5	6	145	105	**383,70**
4,6	6	156	116	**383,70**
4,7	6	156	116	**383,70**
4,8	6	156	116	**383,70**
4,9	6	156	116	**383,70**
5,0	6	156	116	**383,70**
5,1	6	168	128	**410,60**
5,2	6	168	128	**410,60**
5,3	6	168	128	**410,60**
5,4	6	168	128	**410,60**
5,5	6	168	128	**410,60**
5,6	6	179	139	**410,60**
5,7	6	179	139	**410,60**
5,8	6	179	139	**410,60**
5,9	6	179	139	**410,60**
6,0	6	179	139	**410,60**
6,5	8	191	151	**455,50**
7,0	8	202	162	**455,50**
7,5	8	214	174	**455,50**
8,0	8	225	185	**455,50**
8,8	10	290	230	**455,50**

Broca metal duro 25xD con refrigeración interna

Solid carbide 25xD twist drill with internal coolant



STEEL <55 HRC

INOX

GG

GGG

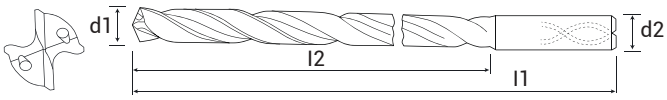
NI ALLOYS

TITAN INCONEL

UNI

Broca metal duro integral 25xD con recubrimiento TiAlN, con refrigeración interior y con corte a derecha. Ángulo de punta 135º, ángulo de espiral 30º. Geometría de corte especial para taladrado previo con broca 3xD, que garantiza una perfecta concentricidad. Afilado especial de los canales para disminuir el coeficiente de fricción, mejorando la extracción de viruta. Para trabajos con refrigeración interna.

Solid carbide 25xD twist drill, with internal coolant and TiAlN coating. Cylindrical shank, right hand cut. Point angle 135°, helix angle 30°. Special profile chip flute geometry. Before drilling, you have to use a 3xD drill. High performance spiral twist drill for highest bore hole quality and economical output. Drilling is possible both with and without internal coolant.



Ejemplo de pedido			Ref. final
B2520	**030**	210	B2520030210
	d1=3		
B2520	**041**	210	B2520041210
	d1=4,1		

Condiciones de corte | Cutting data pag. 213

d1 m7	d2 h6	l1	l2	€
3,0	6	125	85	**384,15**
3,1	6	139	99	**384,15**
3,2	6	139	99	**384,15**
3,3	6	139	99	**384,15**
3,4	6	139	99	**384,15**
3,5	6	139	99	**384,15**
3,6	6	153	113	**384,15**
3,7	6	153	113	**384,15**
3,8	6	153	113	**384,15**
3,9	6	153	113	**384,15**
4,0	6	153	113	**384,15**
4,1	6	167	127	**411,05**
4,2	6	167	127	**411,05**
4,3	6	167	127	**411,05**
4,4	6	167	127	**411,05**
4,5	6	167	127	**411,05**

d1 m7	d2 h6	l1	l2	€
4,6	6	181	141	**411,05**
4,7	6	181	141	**411,05**
4,8	6	181	141	**411,05**
4,9	6	181	141	**411,05**
5,0	6	181	141	**411,05**
5,1	6	195	155	**411,05**
5,2	6	195	155	**411,05**
5,3	6	195	155	**411,05**
5,4	6	195	155	**411,05**
5,5	6	195	155	**411,05**
5,6	6	209	169	**411,05**
5,7	6	209	169	**411,05**
5,8	6	209	169	**411,05**
5,9	6	209	169	**411,05**
6,0	6	209	169	**411,05**

SAUDA

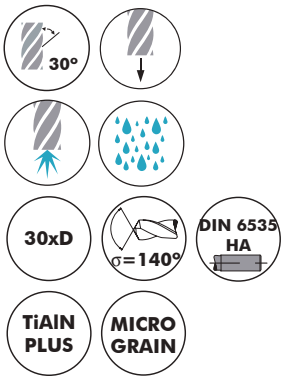
B-3020

Broca metal duro 30xD con refrigeración interna

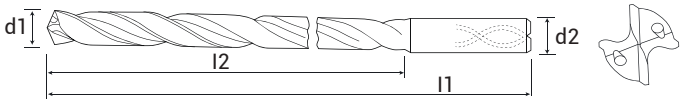
Solid carbide 30xD twist drill with internal coolant

Broca metal duro integral 30xD con recubrimiento TiAlN, con refrigeración interior y con corte a derecha. Ángulo de punta 140º, ángulo de espiral 30º. Geometría de corte especial para taladrado previo con broca 3xD, que garantiza una perfecta concentricidad. Afilado especial de los canales para disminuir el coeficiente de fricción, mejorando la extracción de viruta. Para trabajos con refrigeración interna.

Solid carbide 30xD twist drill, with internal coolant and TiAlN coating. Cylindrical shank, right hand cut. Point angle 140°, helix angle 30°. Special profile chip flute geometry. Before drilling, you have to use a 3xD drill. High performance spiral twist drill for highest bore hole quality and economical output. Drilling is possible both with and without internal coolant.



STEEL <55 HRC
INOX
GG
GGG
NI ALLOYS
TITAN INCONEL
UNI



Ejemplo de pedido			Ref. final
B3020	**030**	210	B3020030210
	d1=3		
B3020	**054**	210	B3020054210
	d2=5,4		

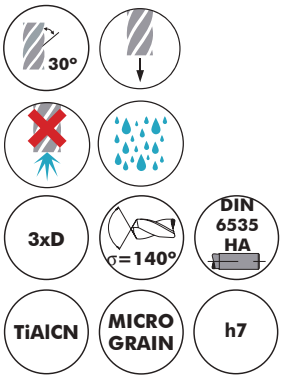
Condiciones de corte | Cutting data pag. 213

d1 m7	d2 h6	l1	l2	€
3,0	6	140	100	**455,05**
3,1	6	157	117	**455,05**
3,2	6	157	117	**455,05**
3,3	6	157	117	**455,05**
3,4	6	157	117	**455,05**
3,5	6	157	117	**455,05**
3,6	6	273	117	**482,10**
3,7	6	173	133	**482,10**
3,8	6	173	133	**482,10**
3,9	6	173	133	**482,10**
4,0	6	173	133	**482,10**
4,1	6	190	150	**482,10**
4,2	6	190	150	**482,10**
4,3	6	190	150	**482,10**
4,4	6	190	150	**482,10**
4,5	6	190	150	**482,10**

d1 m7	d2 h6	l1	l2	€
4,6	6	206	166	**482,10**
4,7	6	206	166	**482,10**
4,8	6	206	166	**482,10**
4,9	6	206	166	**482,10**
5,0	6	206	166	**482,10**
5,1	6	223	183	**482,10**
5,2	6	223	183	**482,10**
5,3	6	223	183	**482,10**
5,4	6	223	183	**482,10**
5,5	6	223	183	**482,10**
5,6	6	239	199	**482,10**
5,7	6	239	199	**482,10**
5,8	6	239	199	**482,10**
5,9	6	239	199	**482,10**
6,0	6	239	199	**482,10**

Broca metal duro 3xD para acero inoxidable con refrigeración interior

Solid carbide 3xD drill for stainless steel



INOX

STEEL <55 HRC

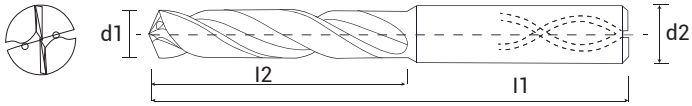
GG

GGG

TITAN INCONEL

Broca metal duro integral 3xD con recubrimiento TiAlCN y refrigeración interior para acero inoxidable. Ángulo de punta 135º, ángulo de espiral 30º.

Solid carbide 3xD drill with internal coolant and TiAlCN coating for stainless steel. Point angle 140º, helix angle 30º.



Ejemplo de pedido			Ref. final
B320	**030**	210	B320030210
	d1=3		
B320	**120**	210	B320120210
	d1=12		

Condiciones de corte | Cutting data pag. 211

d1 m7	d2 h6	l1	l2	€
2,7	3	55	11	**54,60**
3,0	6	62	20	**37,00**
3,1	6	62	20	**37,00**
3,2	6	62	20	**37,00**
3,3	6	62	20	**37,00**
3,4	6	62	20	**37,00**
3,5	6	62	20	**37,00**
3,6	6	62	20	**37,00**
3,7	6	62	20	**37,00**
3,8	6	66	24	**37,00**
3,9	6	66	24	**37,00**
4	6	66	24	**37,00**
4,1	6	66	24	**37,00**
4,2	6	66	24	**37,00**
4,3	6	66	24	**37,00**
4,4	6	66	24	**37,00**
4,5	6	66	24	**37,00**
4,6	6	66	24	**37,00**
4,7	6	66	24	**37,00**
4,8	6	66	26	**37,00**
4,9	6	66	26	**37,00**
5,0	6	66	26	**37,00**
5,1	6	66	26	**37,00**
5,2	6	66	26	**37,00**
5,3	6	66	26	**37,00**
5,4	6	66	26	**37,00**
5,5	6	66	26	**37,00**
5,6	6	66	26	**37,00**
5,7	6	66	26	**37,00**
5,8	6	66	26	**37,00**
5,9	6	66	26	**37,00**
6,0	6	66	26	**37,00**
6,1	8	79	34	**53,95**
6,2	8	79	34	**53,95**
6,3	8	79	34	**53,95**
6,4	8	79	34	**53,95**

d1 m7	d2 h6	l1	l2	€
6,5	8	79	34	**53,95**
6,6	8	79	34	**53,95**
6,7	8	79	34	**53,95**
6,8	8	79	34	**53,95**
6,9	8	79	34	**53,95**
7,0	8	79	34	**53,95**
7,1	8	79	39	**53,95**
7,2	8	79	39	**53,95**
7,3	8	79	39	**53,95**
7,4	8	79	39	**53,95**
7,5	8	79	39	**53,95**
7,6	8	79	39	**53,95**
7,7	8	79	39	**53,95**
7,8	8	79	39	**53,95**
7,9	8	79	39	**53,95**
8	8	79	39	**53,95**
8,1	10	89	45	**75,10**
8,2	10	89	45	**75,10**
8,3	10	89	45	**75,10**
8,4	10	89	45	**75,10**
8,5	10	89	45	**75,10**
8,6	10	89	45	**75,10**
8,7	10	89	45	**75,10**
8,8	10	89	45	**75,10**
8,9	10	89	45	**75,10**
9,0	10	89	45	**75,10**
9,1	10	89	45	**75,10**
9,2	10	89	45	**75,10**
9,3	10	89	45	**75,10**
9,4	10	89	45	**75,10**
9,5	10	89	45	**75,10**
9,6	10	89	45	**75,10**
9,7	10	89	45	**75,10**
9,8	10	89	45	**75,10**
9,9	10	89	45	**75,10**
10,0	10	89	53	**75,10**

d1 m7	d2 h6	l1	l2	€
10,1	12	102	53	**103,80**
10,2	12	102	53	**103,80**
10,3	12	102	53	**103,80**
10,4	12	102	53	**103,80**
10,5	12	102	53	**103,80**
10,6	12	102	53	**103,80**
10,7	12	102	53	**103,80**
10,8	12	102	53	**103,80**
10,9	12	102	53	**103,80**
11,0	12	102	53	**103,80**
11,1	12	102	53	**103,80**
11,2	12	102	53	**103,80**
11,3	12	102	53	**103,80**
11,4	12	102	53	**103,80**
11,5	12	102	53	**103,80**
11,6	12	102	53	**103,80**
11,7	12	102	53	**103,80**
11,8	12	102	53	**103,80**
11,9	12	102	53	**103,80**
12,0	12	102	53	**103,80**
12,5	14	107	58	**146,60**
12,7	14	107	58	**146,60**
13,0	14	107	58	**146,60**
13,5	14	107	58	**146,60**
14,0	14	107	58	**146,60**
14,5	16	115	63	**193,90**
15,0	16	115	63	**193,90**
15,5	16	115	63	**193,90**
16,0	16	115	63	**193,90**
16,5	18	123	71	**257,80**
17,0	18	123	71	**257,80**
17,5	18	123	71	**257,80**
18,0	18	123	71	**257,80**
18,5	20	131	77	**322,90**
19,0	20	131	77	**322,90**
19,5	20	131	77	**322,90**
20,0	20	131	77	**322,90**

SAUDA

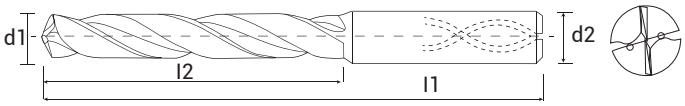
B-520

Broca metal duro 5xD para acero inoxidable con refrigeración interior

Solid carbide 5xD drill for stainless steel

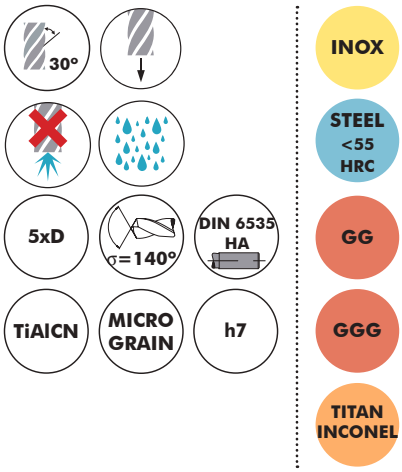
Broca metal duro integral 5xD con recubrimiento TiAlCN y refrigeración interior para acero inoxidable. Ángulo de punta 140º, ángulo de espiral 30º.

Solid carbide 5xD drill with internal coolant and TiAlCN coating for stainless steel. Point angle 140º, helix angle 30º.



Ejemplo de pedido			Ref. final
B520	**030**	210	B520030210
	d1=3		
B520	**120**	210	B520120210
	d1=12		

Condiciones de corte | Cutting data pag. 211



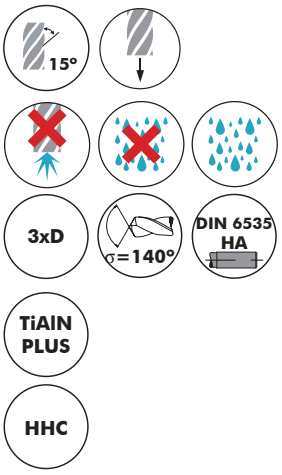
d1 m7	d2 h6	l1	l2	€
3,0	6	66	26	**43,65**
3,1	6	66	26	**43,65**
3,2	6	66	26	**43,65**
3,3	6	66	26	**43,65**
3,4	6	66	26	**43,65**
3,5	6	66	26	**43,65**
3,6	6	66	26	**43,65**
3,7	6	66	26	**43,65**
3,8	6	74	35	**43,65**
3,9	6	74	35	**43,65**
4,0	6	74	35	**43,65**
4,1	6	74	35	**43,65**
4,2	6	74	35	**43,65**
4,3	6	74	35	**43,65**
4,4	6	74	35	**43,65**
4,5	6	74	35	**43,65**
4,6	6	74	35	**43,65**
4,7	6	74	35	**43,65**
4,8	6	82	43	**43,65**
4,9	6	82	43	**43,65**
5,0	6	82	43	**43,65**
5,1	6	82	43	**43,65**
5,2	6	82	43	**43,65**
5,3	6	82	43	**43,65**
5,4	6	82	43	**43,65**
5,5	6	82	43	**43,65**
5,6	6	82	43	**43,65**
5,7	6	82	43	**43,65**
5,8	6	82	43	**43,65**
5,9	6	82	43	**43,65**
6,0	6	82	52	**43,65**
6,1	8	91	52	**60,40**
6,2	8	91	52	**60,40**
6,3	8	91	52	**60,40**
6,4	8	91	52	**60,40**
6,5	8	91	52	**60,40**

d1 m7	d2 h6	l1	l2	€
6,6	8	91	52	**60,40**
6,7	8	91	52	**60,40**
6,8	8	91	52	**60,40**
6,9	8	91	52	**60,40**
7,0	8	91	52	**60,40**
7,1	8	91	52	**60,40**
7,2	8	91	52	**60,40**
7,3	8	91	52	**60,40**
7,4	8	91	52	**60,40**
7,5	8	91	52	**60,40**
7,6	8	91	52	**60,40**
7,7	8	91	52	**60,40**
7,8	8	91	52	**60,40**
7,9	8	91	52	**60,40**
8,0	8	91	52	**60,40**
8,1	10	103	60	**83,75**
8,2	10	103	60	**83,75**
8,3	10	103	60	**83,75**
8,4	10	103	60	**83,75**
8,5	10	103	60	**83,75**
8,6	10	103	60	**83,75**
8,7	10	103	60	**83,75**
8,8	10	103	60	**83,75**
8,9	10	103	60	**83,75**
9,0	10	103	60	**83,75**
9,1	10	103	60	**83,75**
9,2	10	103	60	**83,75**
9,3	10	103	60	**83,75**
9,4	10	103	60	**83,75**
9,5	10	103	60	**83,75**
9,6	10	103	60	**83,75**
9,7	10	103	60	**83,75**
9,8	10	103	60	**83,75**
9,9	10	103	60	**83,75**
10	10	103	60	**83,75**
10,1	12	118	70	**119,50**

d1 m7	d2 h6	l1	l2	€
10,2	12	118	70	**119,50**
10,3	12	118	70	**119,50**
10,4	12	118	70	**119,50**
10,5	12	118	70	**119,50**
10,6	12	118	70	**119,50**
10,7	12	118	70	**119,50**
10,8	12	118	70	**119,50**
10,9	12	118	70	**119,50**
11,0	12	118	70	**119,50**
11,1	12	118	70	**119,50**
11,2	12	118	70	**119,50**
11,3	12	118	70	**119,50**
11,4	12	118	70	**119,50**
11,5	12	118	70	**119,50**
11,6	12	118	70	**119,50**
11,7	12	118	70	**119,50**
11,8	12	118	70	**119,50**
11,9	12	118	70	**119,50**
12,0	12	118	70	**119,50**
12,5	14	124	76	**176,15**
12,7	14	124	76	**176,15**
13,0	14	124	76	**176,15**
13,5	14	124	76	**176,15**
14,0	14	124	76	**176,15**
14,5	16	133	82	**224,25**
15,0	16	133	82	**224,25**
15,5	16	133	82	**224,25**
16,0	16	133	82	**224,25**
17,0	18	143	92	**299,65**
17,5	18	143	92	**299,65**
18,0	18	143	92	**299,65**
18,5	20	153	100	**393,10**
19,0	20	153	100	**393,10**
19,5	20	153	100	**393,10**
20,0	20	153	100	**393,10**

Broca metal duro HHC para materiales entre 50-68 HRC

Solid carbide HHC twist drill for 50-68 HRC materiales

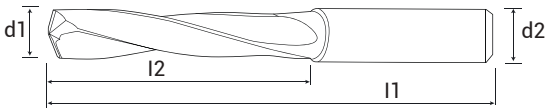


STEEL <65 HRC

HG

Broca metal duro integral 3xD con recubrimiento TiAlN sin refrigeración interior y con corte a derecha. Ángulo de punta 140º. Ángulo de espiral 15º. Para materiales templados entre 50 y 68 HRC. Es una alternativa a la electroerosión, ofrece la máxima tolerancia (0,01 mm) y tiene alta resistencia a la torsión.

Solid carbide 3xD twist drill without internal coolant and with TiAlN coating and right hand cut. Point angle 140º, helix angle 15º. For hardened materials between 50 and 68 HRC. This drill is a wire cutting alternative, offers maximum tolerance (0,01 mm) and has high torque resistence.



Ejemplo de pedido			Ref. final
B330	**030**	210	B330030210
	d1=3		
B330	**120**	210	B330120210
	d1=12,0		

Condiciones de corte | Cutting data pag. 212

d1 m7	d2 h6	l1	l2	€
3,0	6	62	20	**197,70**
3,4	6	62	20	**197,70**
4,0	6	66	24	**243,05**
4,3	6	66	24	**249,25**
5,0	6	66	28	**270,60**
5,1	6	66	28	**288,80**
6,0	6	66	28	**364,70**
7,0	8	79	34	**413,30**
8,0	8	79	41	**468,25**
8,6	10	89	47	**544,10**
10,0	10	89	47	**711,30**
12,0	12	102	55	**887,35**

SAUDA

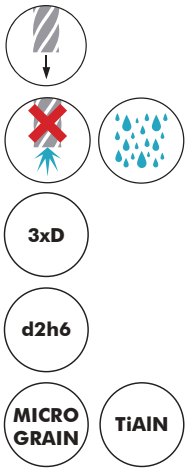
B-500

Broca metal duro rompemachos

Solid carbide drill for removing jammed taps

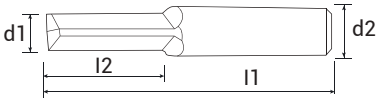
Herramienta de metal duro con recubrimiento TiAlN diseñada para eliminar de forma simple y económica el problema de roturas de machos en piezas de alto valor.
1. La pieza ha de estar bien amarrada.
2. La parte superior del macho no puede sobresalir en la pieza.
3. Puntear repetidamente el macho (1000-1500rpm). En caso de usar una máquina CNC, elegir el avance bajo (1000-1800rpm).
4. El macho puede extraerse en un centro CNC usando refrigeración o en un taladro manual de columna.
5. Eliminar las virutas con aire comprimido o con una punta de trazar.
6. Roscar de nuevo con un nuevo macho.
7. Comprobar las dimensiones de la nueva rosca.

Solid carbide tool with TiAlN coating for removing jammed taps on high value pieces.
1. The workpiece has to be clamped very stable and safe.
2. The overlapping part of the tap has to be made plane with the workpiece.
3. Centering of the drill by multiple tip-centering. In case of tip-centering with an NC machine please choose a lower cutting feed.
4. The remove of a tap can be made with an NC machine with lubrication also by hand with a bench drilling or column drilling machine.
5. Remove of remaining chippings with compressed air or with a scriber.
6. New thread cutting with a new tap.
7. After finishing the new thread please test the size accuracy.



HSS

HG



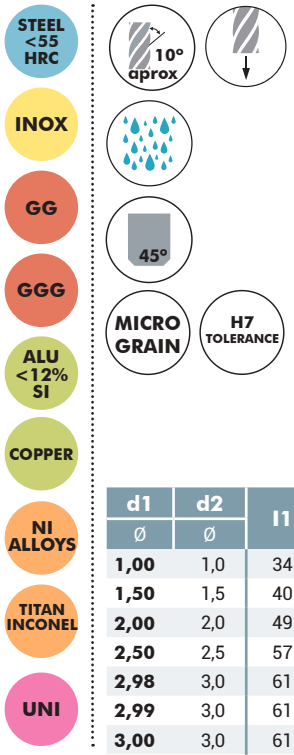
Ejemplo de pedido			Ref. final
B500	**050**	210	B500050210
	M 5		
B500	**120**	210	B500120210
	M 12		

Condiciones de corte | Cutting data pag. 212

Rosca	d1	d2	l1	l2	€
M 4	3,3	4	46	14	**87,10**
M 5	4,2	5	50	19	**87,10**
M 6	5,0	6	50	23	**102,30**
M 8	6,8	8	60	23	**137,40**
M 10	8,5	10	80	25	**173,95**
M 12	10,2	12	80	35	**213,70**
M 16	14,0	14	100	40	**360,90**
M 20	17,5	18	100	50	**628,10**

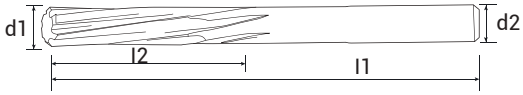
Escariador metal duro H7 10°

10° Solid carbide reamer H7



Escariador de metal duro H7 sin recubrir forma B.
Corte a derechas con la hélice de 10° a izquierda.
Tolerancia 0/+0,004 mm.

Uncoated solid carbide reamer form B H7.
Right hand cutting 10°, left hand helix.
Tolerance 0/+0,004 mm.



Ejemplo de pedido			Ref. final
B601	**030**	210	B601030210
	d1=3		
B601	**120**	210	B601120210
	d1=12,0		

Condiciones de corte | Cutting data pag. 212

d1 Ø	d2 Ø	l1	l2	z	€
1,00	1,0	34	5,5	4	**42,55**
1,50	1,5	40	8	4	**37,95**
2,00	2,0	49	11	4	**44,00**
2,50	2,5	57	14	4	**50,65**
2,98	3,0	61	12	4	**47,90**
2,99	3,0	61	12	4	**47,90**
3,00	3,0	61	12	4	**47,90**
3,01	3,0	61	12	4	**47,90**
3,02	3,0	61	12	4	**47,90**
3,50	3,5	70	18	4	**50,95**
3,98	4,0	75	12	4	**50,95**
3,99	4,0	75	12	4	**50,95**
4,00	4,0	75	19	4	**63,70**
4,00L	4,0	105	16	4	**50,95**
4,01	4,0	75	12	4	**50,95**
4,02	4,0	75	12	4	**53,90**
4,02L	4,0	77	21	4	**56,10**
4,50	4,0	80	12	4	**56,10**
4,98	5,0	86	16	4	**56,10**
4,99	5,0	86	16	4	**70,15**
5,00	5,0	86	16	4	**56,10**
5,00L	5,0	115	30	4	**56,10**
5,01	5,0	86	16	4	**56,10**
5,02	5,0	86	16	4	**56,10**
5,10	5,0	86	16	4	**56,10**
5,20	6,0	86	16	4	**59,90**
5,30	6,0	86	16	4	**59,90**
5,50	6,0	86	16	4	**59,90**
5,98	6,0	86	16	4	**59,90**
5,99	6	86	16	4	**75,90**
6,00	6	86	16	4	**59,90**
6,00L	6	130	30	4	**59,90**
6,01	6	86	16	4	**59,90**
6,02	6	86	16	4	**75,05**
6,10	6	86	16	4	**75,05**
6,20	6	86	16	4	**37,52**
6,30	6	86	16	4	**37,52**

d1 Ø	d2 Ø	l1	l2	z	€
6,40	6	86	16	6	**75,05**
6,50	8	86	16	6	**78,50**
7,00	8	86	16	6	**78,50**
7,00L	8	140	30	6	**102,50**
7,50	8	86	16	6	**78,50**
7,98	8	86	16	6	**78,50**
7,99	8	86	16	6	**78,50**
8,00	8	86	16	6	**78,50**
8,00L	8	117	33	6	**96,50**
8,00LL	8	160	30	6	**120,65**
8,01	8	86	16	6	**78,50**
8,01L	8	117	33	6	**96,50**
8,02	8	86	16	6	**89,85**
8,02	8	86	16	6	**104,50**
8,10	8	117	33	6	**118,65**
8,20	8	117	33	6	**118,65**
8,30	8	117	33	6	**118,65**
8,50	8	90	20	6	**89,85**
8,50L	8	117	33	6	**118,65**
8,98	10	90	20	6	**89,85**
8,99	10	90	20	6	**89,85**
9,00	10	90	20	6	**89,85**
9,00L	10	125	36	6	**123,10**
9,00LL	10	160	30	6	**153,85**
9,50	10	90	20	6	**103,85**
9,50L	10	125	36	6	**126,45**
9,98	10	90	20	6	**103,85**
9,99	10	90	20	6	**103,85**
10,00	10	90	20	6	**103,85**
10,00L	10	133	38	6	**128,80**
10,00LL	10	190	30	6	**163,10**
10,01	10	90	20	6	**103,85**
10,01L	10	133	38	6	**130,80**
10,02	10	90	20	6	**103,85**
10,02L	10	133	38	6	**130,80**
10,10	10	133	38	6	**130,80**
10,20	10	133	38	6	**146,90**

d1 Ø	d2 Ø	l1	l2	z	€
10,30	10	133	38	6	**146,90**
10,50	10	90	20	6	**113,00**
10,50L	10	190	20	6	**146,90**
11,00	12	90	20	6	**113,00**
11,00L	12	151	44	6	**163,15**
11,50	12	90	20	6	**125,50**
11,50L	12	151	44	6	**163,15**
11,98	12	90	20	6	**125,50**
11,99	12	90	20	6	**125,50**
12,00	12	90	20	6	**125,50**
12,00L	12	151	44	6	**163,15**
12,00LL	12	220	35	6	**203,95**
12,01	12	90	20	6	**125,50**
12,01L	12	151	44	6	**163,15**
12,02	12	90	20	6	**125,50**
12,02L	12	151	44	6	**163,15**
12,50	12	151	44	6	**163,15**
13,00	12	151	44	6	**195,60**
13,00L	12	220	35	6	**246,50**
13,01	12	151	44	6	**195,60**
13,02	12	151	44	6	**195,60**
14,00	14	160	47	6	**294,60**
14,00L	14	220	35	6	**366,25**
14,01	14	160	47	6	**294,60**
14,02	14	160	47	6	**294,60**
15,00	14	162	50	6	**319,65**
15,00L	16	220	35	6	**397,10**
15,01	14	162	50	6	**319,65**
15,02	14	162	50	6	**319,65**
16,00	16	170	52	6	**370,90**
16,00L	16	230	40	6	**464,90**
16,01	16	170	52	6	**370,90**
16,02	16	170	52	6	**370,90**
18,00	18	182	56	6	**491,10**
18,00L	18	230	40	6	**612,70**
20,00	20	195	60	6	**630,40**
20,00L	20	230	40	4	**752,70**

SAUDA

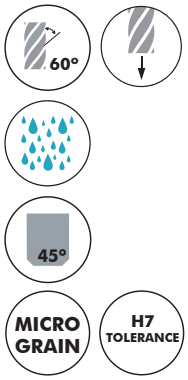
B-610

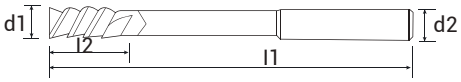
Escariador de metal duro hélice 60°

60° Solid carbide reamer

Escariador de metal duro sin recubrir.
Corte a derechas con la hélice de 60º.
Tolerancia 0/+0,005 mm.

Solid carbide reamer.
Right hand cutting with 60º helix.
Tolerante 0/+0,005 mm.





Ejemplo de pedido			Ref. final
B610	**030**	210	B610030210
	d1=3		
B610	**120**	210	B610120210
	d2=12,0		

Condiciones de corte | Cutting data pag. 214

d1	d2	l1	l2	z	€
3	4	70	12	4	**64,30**
4	4	75	12	4	**64,30**
5	6	80	16	4	**64,30**
6	6	80	16	4	**64,30**
8	8	100	20	4	**73,30**
10	10	110	25	4	**101,85**
12	12	120	28	4	**136,35**
14	14	145	30	4	**110,60**
16	16	155	35	6	**158,05**
18	18	170	38	6	**210,05**
20	20	180	40	6	**267,40**

Avellanador metal duro 90° < 60 HRC

Solid carbide countersink 90° < 60 HRC

45°

TiAlN PLUS

MICRO GRAIN

HSC

STEEL <55 HRC

INOX

GG

GGG

COPPER

ALU <12% SI

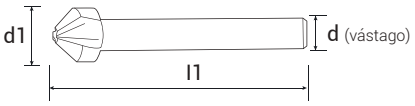
NI ALLOYS

TITAN INCONEL

UNI

Avellanador metal duro recubierto con TiAlN para materiales hasta 60 HRC con 3 labios de corte.
Para avellanado de aceros, fundición gris, aluminio, aleaciones de aluminio con Si y aceros inoxidables.
Desarrollo especial del avellanador para evitar vibraciones.

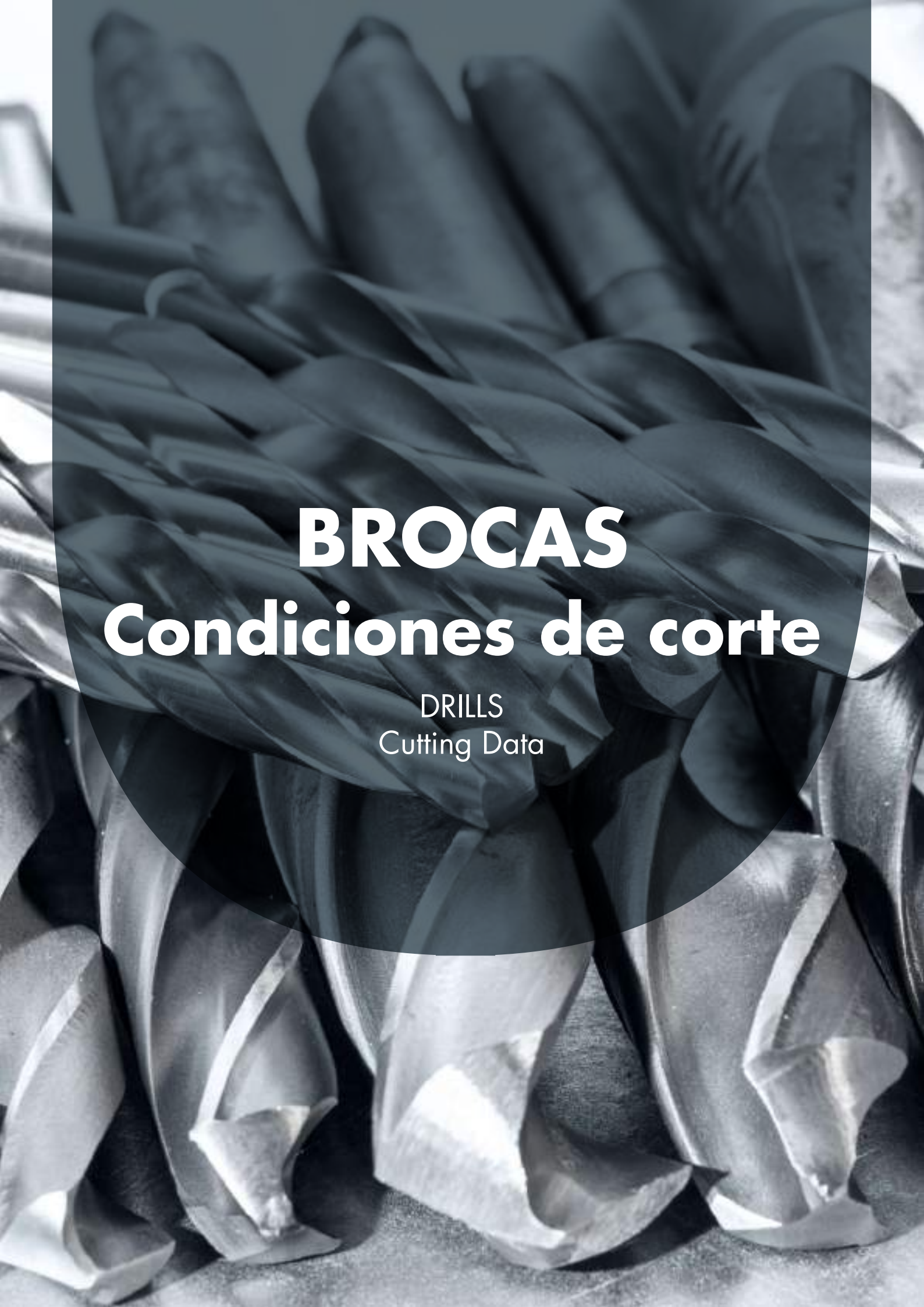
Solid carbide countersink 90° with TiAlN coating for materials up to 60 HRC.
3 Cutting edges.
For countersinking of high-strenght steel, grey cast iron, silicious aluminium
alloys and stainless steel.
Special design avoids vibrations.



Ejemplo de pedido			Ref. final
A205	**165**	210	A205165210
	d1=16,5		
A205	**250**	210	A205250210
	d1=25,0		

Condiciones de corte | Cutting data pag. 214

d1	d (min.)	d (vástago)	l1	z	€
6,3	1,5	5	45	3	**155,30**
8,3	2,0	6	50	3	**157,50**
10,4	2,5	6	50	3	**161,30**
12,4	2,8	8	56	3	**178,00**
16,5	3,2	10	60	3	**197,20**
20,5	3,5	10	63	3	**272,90**
25,0	3,8	10	67	3	**421,25**
31,0	4,2	12	71	3	**582,80**



BROCAS
Condiciones de corte

DRILLS
Cutting Data

B-111 - pag. 188

MATERIAL	Vc [m/min]	f [mm]	
		ø 1-8 [mm]	ø 8,5-12 [mm]
Acero < 850 N/mm² *Steel < 850 N/mm²*	30	0,020	0,045
Acero 850-1000 N/mm² *Steel 850-1000 N/mm²*	25	0,020	0,045
Acero 1000-1400 N/mm² *Steel 1000-1400 N/mm²*	20	0,020	0,045
Acero inoxidable *Stainless steel*	20	0,020	0,045
Materiales de hierro fundido *Cast iron*	80	0,020	0,045
Aluminio, aleaciones de Al y Mg *Aluminum, Al and Mg alloys*	250	0,020	0,045
Cobre, latón, bronce *Copper, brass, bronze*	85	0,020	0,045
Aleaciones de Ti y aceros especiales *Ti alloys and special steels*	55	0,020	0,045

B-112 - pag. 189

MATERIAL	Vc [m/min]	f [mm]	
		ø 1-8 [mm]	ø 8,5-12 [mm]
Acero < 850 N/mm² *Steel < 850 N/mm²*	35	0,020	0,045
Acero 850-1000 N/mm² *Steel 850-1000 N/mm²*	25	0,020	0,045
Acero 1000-1400 N/mm² *Steel 1000-1400 N/mm²*	12	0,020	0,045
Acero inoxidable *Stainless steel*	20	0,020	0,045
Materiales de hierro fundido *Cast iron*	50	0,020	0,045
Aluminio, aleaciones de Al y Mg *Aluminum, Al and Mg alloys*	150	0,020	0,045
Cobre, latón, bronce *Copper, brass, bronze*	80	0,020	0,045
Aleaciones de Ti y aceros especiales *Ti alloys and special steels*	25	0,020	0,045

CONDICIONES DE CORTE
CUTTING DATA

B-175 - pag. 190 | B-177 - pag. 193

MATERIAL	Vc [m/min]	f [mm]				
		ø 3-5 [mm]	ø 5-8 [mm]	ø 8-12 [mm]	ø 12-16 [mm]	ø 16-12 [mm]
Acero no aleado/fundición *Unalloyed steel/casting*	60 - 100	0,10 - 0,18	0,16 - 0,24	0,20 - 0,30	0,20 - 0,33	0,25 - 0,40
Acero aleado *Alloy steel*	45 - 80	0,08 - 0,15	0,10 - 0,18	0,12 - 0,22	0,15 - 0,28	0,20 - 0,35
Acero inoxidable *Stainless steel*	30 - 50	0,06 - 0,10	0,08 - 0,15	0,12 - 0,20	0,10 - 0,20	0,16 - 0,28
Acero inoxidable (aleación CrNi) *Stainless steel (CrNi alloy)*	25 - 35	0,5 - 0,10	0,08 - 0,15	0,12 - 0,20	0,10 - 0,20	0,16 - 0,28
Fundición gris GG *Cast iron GG*	70 - 120	0,15 - 0,30	0,12 - 0,30	0,20 - 0,40	0,25 - 0,40	0,40 - 0,50
Fundición nodular GGG *Spheroidal graphite GGG*	70 - 90	0,10 - 0,20	0,10 - 0,20	0,18 - 0,32	0,28 - 0,39	0,35 - 0,55
Aluminio forjado *Forged aluminium*	50 - 350	0,15 - 0,25	0,20 - 0,30	0,25 - 0,40	0,35 - 0,50	0,40 - 0,60
Aleación de aluminio < 10% Si *Aluminium alloys <10% Si*	100 - 250	0,15 - 0,25	0,20 - 0,30	0,25 - 0,40	0,35 - 0,50	0,40 - 0,60
Aleación de aluminio >10% Si *Aluminium alloys >10% Si*	100 - 200	0,12 - 0,20	0,18 - 0,22	0,20 - 0,28	0,26 - 0,30	0,25 - 0,32
Cobre, bronce, latón, viruta corta *Copper, bronze, brass, short-chipping*	60 - 200	0,07 - 0,15	0,10 - 0,20	0,20 - 0,30	0,25 - 0,40	0,35 - 0,50
Aleación de titanio *Titanium alloys*	20 - 40	0,02 - 0,06	0,05 - 0,08	0,08 - 0,14	0,10 - 0,16	0,10 - 0,20
Materiales duros *Hard materials*	15 - 35	0,04 - 0,07	0,05 - 0,07	0,09 - 0,12	0,11 - 0,14	0,11 - 0,15

B-179 - pag. 191
B-173 - pag. 194

MATERIAL	Vc [m/min]	f [mm]				
		ø 3-5 [mm]	ø 5-8 [mm]	ø 8-12 [mm]	ø 12-16 [mm]	ø 16-12 [mm]
Acero no aleado/fundición *Unalloyed steel/casting*	50 - 80	0,10 - 0,18	0,16 - 0,24	0,20 - 0,30	0,20 - 0,33	0,25 - 0,40
Acero aleado *Alloy steel*	35 - 65	0,08 - 0,15	0,10 - 0,18	0,12 - 0,22	0,15 - 0,28	0,20 - 0,35
Acero inoxidable *Stainless steel*	25 - 40	0,06 - 0,10	0,08 - 0,15	0,12 - 0,20	0,10 - 0,20	0,16 - 0,28
Acero inoxidable (aleación CrNi) *Stainless steel (CrNi alloy)*	20 - 30	0,50 - 0,10	0,08 - 0,15	0,12 - 0,20	0,10 - 0,20	0,16 - 0,28
Fundición gris GG *Cast iron GG*	55 - 95	0,15 - 0,30	0,12 - 0,30	0,20 - 0,40	0,25 - 0,40	0,40 - 0,50
Fundición nodular GGG *Spheroidal graphite GGG*	55 - 70	0,10 - 0,20	0,10 - 0,20	0,18 - 0,32	0,28 - 0,39	0,35 - 0,55
Aluminio forjado *Forged aluminium*	35 - 280	0,15 - 0,25	0,20 - 0,30	0,25 - 0,40	0,35 - 0,50	0,40 - 0,60
Aleación de aluminio < 10% Si *Aluminium alloys <10% Si*	80 - 200	0,15 - 0,25	0,20 - 0,30	0,25 - 0,40	0,35 - 0,50	0,40 - 0,60
Aleación de aluminio >10% Si *Aluminium alloys >10% Si*	80 - 160	0,12 - 0,20	0,18 - 0,22	0,20 - 0,28	0,26 - 0,30	0,25 - 0,32
Cobre, bronce, latón, viruta corta *Copper, bronze, brass, short-chipping*	50 - 160	0,07 - 0,15	0,10 - 0,20	0,20 - 0,30	0,25 - 0,40	0,35 - 0,50
Aleación de titanio *Titanium alloys*	15 - 30	0,02 - 0,06	0,05 - 0,08	0,08 - 0,14	0,10 - 0,16	0,10 - 0,20
Materiales duros *Hard materials*	10 - 30	0,04 - 0,07	0,05 - 0,07	0,09 - 0,12	0,11 - 0,14	0,11 - 0,15

Material		Microbrocas B - 510 - pag. 192					
		2,2 - 2,5		2,51 - 2,80		2,81 - 3	
		Vc (m/min)	f (mm/rev)	Vc (m/min)	f (mm/rev)	Vc (m/min)	f (mm/rev)
Acero sin aleación y acero de carbono *Non Alloy Steels & Carbon Steels*	180 - 260 HB	50 - 100	0,12	50 - 100	0,13	50 - 100	0,153
Hierro fundido *Cast Irons*	< 350 N/mm2	100 - 200	0,15	50 - 101	0,12	50 - 102	2,12
Acero endurecido *Hardened Steels*	< 50 HRC	25 - 50	0,01	25 - 50	0,011	25 - 50	0,015
Acero Inoxidable *Stainless Steels*	< 200 HB	30 - 60	0,1	30 - 60	0,11	30 - 60	0,13
Aleación de aluminio *Aluminium Alloys*	Forjado *Wrought*	80 - 150	0,12	80 - 150	0,17	100 - 200	0,2
Aleación de aluminio *Aluminium Alloys*	Fundido *Cast*	80 - 150	0,12	80 - 150	0,13	80 - 150	0,15

Material	Resisten-cia	HRC	Día	B - 320 - pag. 201				B - 520 - pag. 202			
				Vc (m/min)			fz (mm/min)	Vc (m/min)			fz (mm/min)
				Min	Ideal	Max		Min	Ideal	Max	
Aceros *Steels*	> 400 ≤ 750	≤ 20	3 - 5,6	80	90	130	0,12	80	90	130	0,12
			5,7 - 8,3	80	90	130	0,16	80	90	130	0,16
			8,4 - 11,5	80	90	130	0,2	80	90	130	0,2
			12 - 16	80	90	130	0,23	80	90	130	0,23
			16,5 - 20	80	90	130	0,25	80	90	130	0,25
Aceros *Steels*	>750 ≤ 850	≤ 28	3 - 5,6	75	85	95	0,1	75	85	95	0,1
			5,7 - 8,3	75	85	95	0,12	75	85	95	0,12
			8,4 - 11,5	75	85	95	0,16	75	85	95	0,16
			12 - 16	75	85	95	0,21	75	85	95	0,21
			16,5 - 20	75	85	95	0,23	75	85	95	0,23
Acero Inoxidable *Stainless steel*	< 850		3 - 5,6	35	40	45	0,09	35	40	45	0,09
			5,7 - 8,3	35	40	45	0,12	35	40	45	0,12
			8,4 - 11,5	35	40	45	0,15	35	40	45	0,15
			12 - 16	35	40	45	0,18	35	40	45	0,18
			16,5 - 20	35	40	45	0,2	35	40	45	0,2
Acero Inoxidable *Stainless steel*	> 850		3 - 5,6	30	35	40	0,08	30	35	40	0,08
			5,7 - 8,3	30	35	40	0,11	30	35	40	0,11
			8,4 - 11,5	30	35	40	0,14	30	35	40	0,14
			12 - 16	30	35	40	0,16	30	35	40	0,16
			16,5 - 20	30	35	40	0,18	30	35	40	0,18
Titanio *Titanium*	> 850		3 - 5,6	25	30	35	0,06	25	30	35	0,06
			5,7 - 8,3	25	30	35	0,1	25	30	35	0,1
			8,4 - 11,5	25	30	35	0,13	25	30	35	0,13
			12 - 16	25	30	35	0,15	25	30	35	0,15
			16,5 - 20	25	30	35	0,16	25	30	35	0,16

CONDICIONES DE CORTE
CUTTING DATA

B-330 - pag. 203

MATERIAL	Vc [m/min]	f [mm] ø 3-12 [mm]
Acero < 52 HRC *Steel < 52 HRC*	18	0,040
Acero 52-56 HRC *Steel 52-56 HRC*	12	0,040
Acero 56-60 HRC *Steel 56-60 HRC*	12	0,040
Acero > 60 HRC *Steel > 60 HRC*	11	0,040

B-500 - pag. 204

MATERIAL	Vc [m/min]	f [mm]			
		ø 3,3-6,8 [mm]	ø 6,8-10,2 [mm]	ø 10,2-14,0 [mm]	ø 14-17,5 [mm]
Acero endurecido 60-65 HRC *Hardened steel 60-65 HRC*	10 - 12	0,04 - 0,08	0,08 - 0,11	0,11 - 0,14	0,15 - 0,17

B-601 - pag. 205 | B-610 - pag. 206

MATERIAL	Vc [m/min]	f [mm]	
		ø 3-10 [mm]	ø 10-20 [mm]
Acero aleado < 1.000 N/mm² *Alloy steel < 1.000 N/mm²*	8 - 12	0,15 - 0,25	0,20 - 0,40
Acero aleado 1.000 - 1.400 N/mm² *Alloy steel 1.000 - 1.400 N/mm²*	6 - 10	0,12 - 0,20	0,15 - 0,30
Hierro fundido 40 - 50 N/mm² *Casting 40 - 50 N/mm²*	8 - 12	0,15 - 0,25	0,20 - 0,40
Hierro fundido 50 - 70 N/mm² *Casting 50 - 70 N/mm²*	6 - 10	0,12 - 0,20	0,15 - 0,30
Fundición < 200 HB *Cast iron < 200 HB*	8 - 15	0,20 - 0,30	0,30 - 0,50
Fundición > 200 HB *Cast iron > 200 HB*	6 - 12	0,15 - 0,25	0,20 - 0,40
Aleaciones de aluminio *Aluminium alloys*	15 - 30	0,20 - 0,30	0,30 - 0,50

A-205 - pag. 207

MATERIAL	Vc [m/min]	f [mm]		
		ø 3-10 [mm]	ø 10-25 [mm]	ø 25-31 [mm]
Acero < 800 N/mm² *Alloy < 800 N/mm²*	45 - 75	0,08 - 0,10	0,08 - 0,10	0,10 - 0,20
Acero > 800 N/mm² *Alloy > 800 N/mm²*	30 - 45	0,04 - 0,08	0,04 - 0,08	0,08 - 0,10
Acero inoxidable *Stainless steel*	22 - 40	0,04 - 0,08	0,04 - 0,08	0,08 - 0,10
Acero termo resistente *Heat resistant steel*	12 - 24	0,03 - 0,06	0,03 - 0,06	0,06 - 0,08
Fundición gris/nodular *Cast iron/Spheroidal graphite*	22 - 45	0,08 - 0,12	0,08 - 0,12	0,12 - 0,16
HHC < 55 HRC *HHC < 55 HRC*	25 - 45	0,05 - 0,10	0,05 - 0,10	0,10 - 0,15
Aluminio y aleaciones de aluminio *Aluminium and aluminium alloys*	75 - 150	0,10 - 0,20	0,10 - 0,20	0,16 - 0,25
Latón, bronce, cobre *Brass, bronze, copper*	38 - 75	0,08 - 0,12	0,08 - 0,12	0,12 - 0,16
Plásticos *Plastics*	38 - 75	0,08 - 0,12	0,08 - 0,12	0,12 - 0,20

CONDICIONES DE CORTE
CUTTING DATA

Material		B - 820 - pag. 195 B - 1220 - pag. 196								B - 1520 - pag. 197 B - 2020 - pag. 198 B - 2520 - pag. 199 B - 3020 - pag. 200	
		3 - 6		6 - 10		10 - 14		14 - 20		3 - 6	
		Vc (m/min)	f (mm/rev)	Vc (m/min)	f (mm/rev)	Vc (m/min)	f (mm/rev)	Vc (m/min)	f (mm/rev)	Vc (m/min)	f (mm/rev)
Acero templado *Mild Steel*	≤ 1.800 HB	100 (50-120)	0,20 (0,15-0,25)	130 (80-140)	0,25 (0,2-0,35)	150 (90-170)	0,3 (0,2-0,4)	160 (100-180)	0,35 (0,2-0,4)	85 (35-100)	0,2 (0,15-0,25)
Acero de carbono *Carbon Steel* Aleación de acero *Alloy Steel*	180 - 280 HB	90 (50-100)	0,20 (0,15-0,25)	110 (70-120)	0,25 (0,2-0,35)	130 (80-140)	0,25 (0,2-0,4)	140 (100-150)	0,3 (0,2-0,4)	80 (40-95)	0,2 (0,15-0,25)
	280 - 350 HB	80 (40-90)	0,20 (0,15-0,3)	90 (60-110)	0,25 (0,15-0,3)	110 (70-130)	0,25 (0,15-0,4)	120 (90-140)	0,3 (0,2-0,4)	75 (35-80)	0,15 (0,15-0,2)
Acero Inoxidable *Stainless Steels*	≤ 200 HB	50 (20-100)	0,1 (0,05-0,15)	60 (40-120)	0,2 (0,1-0,25)	70 (50-120)	0,25 (0,15-0,3)	80 (60-120)	0,25 (0,15-0,3)	50 (20-80)	0,1 (0,05-0,15)
Hierro fundido *Cast Iron*	Resistencia de tracción Tensile Strength ≤ 350 N/mm²	100 (70-120)	0,25 (0,15-0,3)	130 (100-140)	0,3 (0,2-0,35)	150 110-160)	0,35 (0,25-0,4)	160 (120-170)	0,35 (0,25-0,4)	70 (40-85)	0,25 (0,15-0,3)
Hierro fundido dúctil *Ductile Cast Iron*	Resistencia de tracción Tensile Strength ≤ 450 N/mm²	60 (30-80)	0,2 (0,15-0,25)	70 (40-90)	0,2 (0,15-0,3)	90 (50-110)	0,25 (0,2-0,4)	100 (60-110)	0,3 (0,2-0,4)	65 (35-80)	0,2 (0,15-0,25)
Aleación resistente al calor *Heat Resistant Alloy*	-	20 (10-25)	0,1 (0,05-0,15)	25 (15-30)	0,12 (0,05-0,15)	25 (15-30)	0,15 (0,1-0,2)	30 (25-35)	0,15 (0,1-0,2)	20 (10-25)	0,1 (0,5-0,15)

Fórmulas
Drilling

Velocidad de corte
Cutting speed

$$Vc = \frac{\pi \times D \times n}{1.000} \quad \text{(m/min)}$$

Velocidad del cabezal
Spindle speed

$$n = \frac{1000 \times Vc}{\pi \times D} \quad \text{(rev/min)}$$

Velocidad de avance
Feed speed

$$vf = f \times n \quad \text{(mm/min)}$$

Alimentación por revolución
Feed per rev

$$f = \frac{Vf}{n} \quad \text{(rev/min)}$$

Vc= Velocidad de corte (m/min)
Cutting speed

n= Velocidad del cabezal (rev/min)
Spindle speed

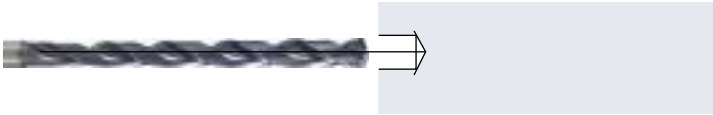
Vf= Velocidad de avance (mm/min)
Feed speed

D= Diámetro de perforación (mm)
Drill diameter

f= Alimentación por revolcuión (mm/rev)
Feed per rev

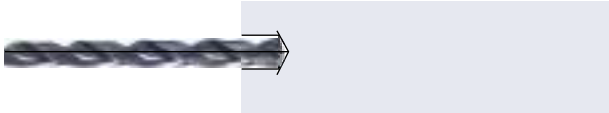
CONDICIONES DE CORTE
CUTTING DATA

Perforación del taladro piloto
Pilot Hole Drilling



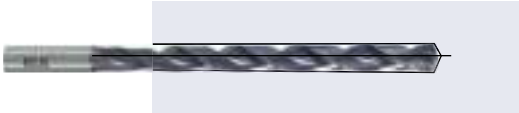
- Todas las perforadoras deben utilizar un orificio piloto
  All deep hole drills must utilize a pilot hole
- Realizar una perforación con un taladro 3xd a una profundidad mínima de pilotaje de 1,5 ~ 2 x d
  Machine a pilot hole with a 3xd drill to a minimum pilot depth of 1,5 ~ 2 x d

Perforación inicial
Initial Drilling



- Introducir el taladro piloto a 20% RPM y con el 50% de avance
  Enter the pilot hole at 20% RPM Value and with 50% of the feed rate

Perforación del taladro piloto
Pilot Hole Drilling



- Empezar a aplicar una presión alta y aumentar las RPM al 100%. Perforar continuamente hasta la profundidad de perforación deseada.
  Start high coolant pressure and increase RPM to 100% value. Drill continously till the desired hole depth.
- Para agujeros con salida en línea, reducir la velocidad de avance al 30% aproximadamente 1 mm antes.
  For through holes with inlined exit, reduce the feed rate to 30% about 1 mm prior to break-through.

Reacción de la broca
Drill reaction

- Después de alcanzar la profundidad de perforación deseada, reducir el RPM al 10% y retirar.
  After reaching the desired hole depth reduce RPM to 10% & withdraw the frill.

MACHOS

TAPS

SAUDA

M-250

Juego de machos de mano universal

Universal hand tap set

Juego de machos de roscar a mano HSS-G de métrica ISO-DIN 13. Para uso universal.

HSS-G hand tap set, metric ISO-DIN 13. For general use.

TYPE N

DIN 13

UNI

STEEL

GG

ALU

Ref.	d1 [mm]	l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	€
250020200	M 2,0 * 0,40	36	8	2,8	2,1	**24,45**
250025200	M 2,5 * 0,45	40	9	2,8	2,1	**24,45**
250030200	M 3,0 * 0,50	40	11	3,5	2,7	**12,50**
250035200	M 3,5 * 0,60	45	13	4,0	3,0	**18,20**
250040200	M 4,0 * 0,70	45	13	4,5	3,4	**12,50**
250045200	M 4,5 * 0,75	50	16	6,0	4,9	**18,20**
250050200	M 5,0 * 0,80	50	16	6,0	4,9	**14,05**
250060200	M 6,0 * 1,00	50	19	6,0	4,9	**14,05**
250070200	M 7,0 * 1,00	50	19	6,0	4,9	**22,90**
250080200	M 8,0 * 1,25	56	22	6,0	4,9	**18,20**
250090200	M 9,0 * 1,25	63	22	7,0	5,5	**30,70**
250100200	M 10,0 * 1,50	70	24	7,0	5,5	**23,95**
250110200	M 11,0 * 1,50	70	24	8,0	6,2	**39,00**
250120200	M 12,0 * 1,75	75	29	9,0	7,0	**31,20**
250140200	M 14,0 * 2,00	80	30	11,0	9,0	**35,90**
250160200	M 16,0 * 2,00	80	32	12,0	9,0	**44,75**
250180200	M 18,0 * 2,50	95	40	14,0	11,0	**58,80**
250200200	M 20,0 * 2,50	95	40	16,0	12,0	**67,60**
250220200	M 22,0 * 2,50	100	40	18,0	14,5	**83,75**
250240200	M 24,0 * 3,00	110	50	18,0	14,5	**104,00**
250270200	M 27,0 * 3,00	110	50	20,0	16,0	**161,20**
250300200	M 30,0 * 3,50	125	56	22,0	18,0	**218,40**
250330200	M 33,0 * 3,50	125	56	25,0	20,0	**280,80**
250360200	M 36,0 * 4,00	150	63	28,0	22,0	**332,80**
250390200	M 39,0 * 4,00	150	63	32,0	24,0	**426,40**
250420200	M 42,0 * 4,50	150	63	32,0	24,0	**478,40**
250450200	M 45,0 * 4,50	160	70	36,0	29,0	**582,40**
250480200	M 48,0 * 5,00	180	75	36,0	29,0	**816,40**
250520200	M 52,0 * 5,00	180	75	40,0	32,0	**816,40**
250560200	M 56,0 * 5,50	200	85	45,0	35,0	**1055,60**
250600200	M 60,0 * 5,50	200	85	45,0	35,0	**1404,00**
250640200	M 64,0 * 6,00	220	90	50,0	39,0	**1560,00**
250680200	M 68,0 * 6,00	220	90	50,0	39,0	**1950,00**

Juego de machos de mano NOGRIP

NOGRIP hand tap set

M | TYPE VA | HSSE | DIN 13 | VP

INOX | STEEL | GG | ALU

Juego de machos de roscar a mano Nogrip de HSSE Co5 y métrica ISO-DIN 13 para materiales duros. Con guía de centraje para mecanizar agujeros ciegos y pasantes.

Nogrip HSSE Co5 hand tap set, metric ISO-DIN 13 for hard materials. With cylindrical pilots for blind and through holes.

Ref.	d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	€
260020200	M 2	0,40	36	8	2,5	2,1	3	**64,25**
260030200	M 3	0,50	40	11	3,5	2,7	3	**43,20**
260040200	M 4	0,70	45	13	4,5	3,4	3	**43,70**
260050200	M 5	0,80	50	16	6,0	4,9	3	**46,30**
260060200	M 6	1,00	50	19	6,0	4,9	3	**46,30**
260080200	M 8	1,25	56	22	6,0	4,9	3	**62,95**
260100200	M 10	1,50	70	24	7,0	5,5	3	**82,20**
260120200	M 12	1,75	75	29	9,0	7,0	4	**101,95**
260140200	M 14	2,00	80	30	11,0	9,0	4	**112,40**
260160200	M 16	2,00	80	32	12,0	9,0	4	**147,15**
260180200	M 18	2,50	95	40	14,0	11,0	4	**236,75**
260200200	M 20	2,50	95	40	16,0	12,0	4	**262,85**

SAUDA

M-270

Juego de machos de mano recubiertos de TiCN

Ticn coated hand tap set

Juego de machos de roscar a mano de HSSE Co5 recubiertos de TiCN con métrica ISO-DIN 13 para materiales duros. Con guía de centraje para mecanizar agujeros ciegos y pasantes.

TiCN coated HSSE Co5 hand tap set, metric ISO-DIN 13 for hard materials. With cylindrical pilots for blind and through holes.

M | TYPE VA | HSSE | DIN 13 | TiCN

INOX | STEEL | GG | ALU

Ref.	d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	€
270030200	M 3	0,50	40	11	3,5	2,7	3	**85,30**
270040200	M 4	0,70	45	13	4,5	3,4	3	**92,30**
270050200	M 5	0,80	50	16	6,0	4,9	3	**93,60**
270060200	M 6	1,00	50	19	6,0	4,9	3	**93,60**
270080200	M 8	1,25	56	22	6,0	4,9	3	**139,65**
270100200	M 10	1,50	70	24	7,0	5,5	3	**165,15**
270120200	M 12	1,75	75	29	9,0	7,0	4	**230,50**
270140200	M 14	2,00	80	30	11,0	9,0	4	**241,10**
270160200	M 16	2,00	80	32	12,0	9,0	4	**287,50**
270180200	M 18	2,50	95	40	14,0	11,0	4	**382,05**
270200200	M 20	2,50	95	40	16,0	12,0	4	**584,95**

VAB00VP/4
VAB00TC/4

Macho máquina recto rosca métrica tipo VA

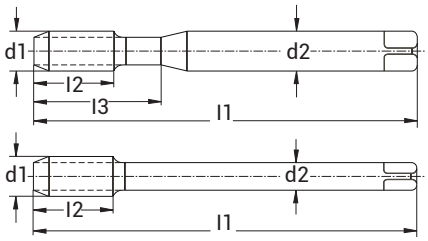
Traight fluted metric thread VA type machine tap

M | Type VA | ISO2 6H | HSSE | DIN13 | 60° P | B 3,5-5 | VP | TiCN

STEEL <1300N/mm² | INOX | ALU 0,5-15% SI | COPPER | NI ALLOYS

Macho de máquina HSS recto tipo VA con rosca métrica disponible vaporizado y recubierto de TiCN. Recomendado para inoxidable y aceros de alta tensión de rotura.

Straight fluted HSS machine tap VA type with metric thread. Available both VP and TiCN coated. Recommended for stainless materials and steels of higher tensile strength.



DIN 371 — M3 - M10

DIN 376 — M12 - M30

VAB00VP VAB00TC

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	l3 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	VAB00VP/4 [VP] Ref.	VAB00VP/4 [VP] €	VAB00TC/4 [TiCN] Ref.	VAB00TC/4 [TiCN] €
M 3	0,50	56	9	18	3,5	2,7	3	2,50	601020	**16,50**	603020	**28,00**
M 4	0,70	63	12	21	4,5	3,4	3	3,30	601022	**16,50**	603022	**28,00**
M 5	0,80	70	13	25	6,0	4,9	3	4,20	601023	**16,50**	603023	**28,00**
M 6	1,00	80	15	30	6,0	4,9	3	5,00	601024	**16,50**	603024	**28,00**
M 8	1,25	90	18	35	8,0	6,2	3	6,80	601026	**21,90**	603026	**35,90**
M10	1,50	100	20	39	10,0	8,0	3	8,50	601028	**26,30**	603028	**44,20**
M12	1,75	110	23	-	9	7,0	3	10,20	601030	**34,15**	603030	**56,00**
M14	2,00	110	25	-	11	9,0	3	12,00	601031	**43,80**	603031	**66,95**
M16	2,00	110	25	-	12	9,0	3	14,00	601032	**53,80**	603032	**80,95**
M18	2,50	125	30	-	14	11,0	3	15,50	601033	**70,90**	603033	**110,30**
M20	2,50	140	30	-	16	12,0	3	17,50	601034	**81,80**	603034	**125,15**
M22	2,50	140	30	-	18	14,5	3	19,50	601036	**105,90**	603036	**154,90**
M24	3,00	160	36	-	18	14,5	4	21,00	601038	**114,65**	603038	**174,15**
M27	3,00	160	36	-	20	16,0	4	24,00	601039	**136,50**	603039	**208,30**
M30	3,50	180	40	-	22	18,0	4	26,50	601071	**189,00**	603071	**253,80**

Condiciones de corte | Cutting data pag. 240 - 241

SAUDA

VAC40VP/4
VAC40TC/4

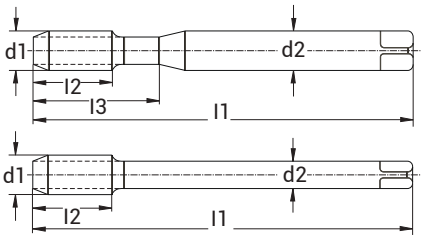
Macho máquina helicoidal rosca métrica tipo VA

Helix fluted metric thread VA type machine tap

VAC40VP VAC40TC

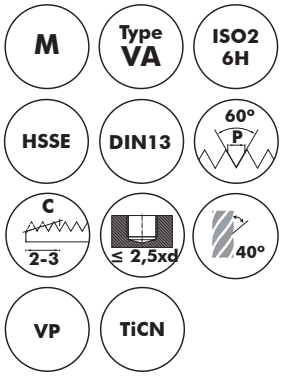
Macho de máquina HSS helicoidal tipo VA con rosca métrica disponible vaporizado y recubierto de TiCN. Recomendado para acero inoxidable y aceros de alta tensión de rotura.

Helix fluted HSS machine tap VA type with metric thread. Available both VP and TiCN coated. Recommended for stainless materials and steels of higher tensile strength.



DIN 371
M3 - M10

DIN 376
M12 - M30



WEXO® KOMPETENZ IN PRÄZISION

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	l3 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	VAC40VP/4 [VP]		VAC40TC/4 [TiCN]	
									Ref.	€	Ref.	€
M 3	0,50	56	5	18	3,5	2,7	3	2,50	601120	**17,25**	603120	**28,45**
M 4	0,70	63	7	21	4,5	3,4	3	3,30	601122	**17,25**	603122	**28,45**
M 5	0,80	70	8	25	6,0	4,9	3	4,20	601123	**17,95**	603123	**28,90**
M 6	1,00	80	10	30	6,0	4,9	3	5,00	601124	**17,95**	603124	**28,90**
M 8	1,25	90	13	35	8,0	6,2	3	6,80	601126	**22,80**	603126	**36,80**
M10	1,50	100	15	39	10,0	8,0	3	8,50	601128	**26,70**	603128	**44,65**
M12	1,75	110	18	-	9	7,0	3	10,20	601130	**35,00**	603130	**56,90**
M14	2,00	110	20	-	11	9,0	4	12,00	601131	**44,65**	603131	**66,95**
M16	2,00	110	20	-	12	9,0	4	14,00	601132	**53,80**	603132	**80,95**
M18	2,50	125	25	-	14	11,0	4	15,50	601133	**74,40**	603133	**113,80**
M20	2,50	140	25	-	16	12,0	4	17,50	601134	**83,15**	603134	**126,90**
M22	2,50	140	25	-	18	14,5	4	19,50	601136	**107,65**	603136	**159,30**
M24	3,00	160	30	-	18	14,5	4	21,00	601138	**119,00**	603138	**176,80**
M27	3,00	160	30	-	20	16,0	4	24,00	601139	**140,00**	603139	**213,50**
M30	3,50	180	35	-	22	18,0	4	26,50	601171	**196,00**	603171	**260,80**

Condiciones de corte | Cutting data pag. 240 - 241

Macho máquina recto rosca métrica tipo H

Straight fluted metric thread H type machine tap

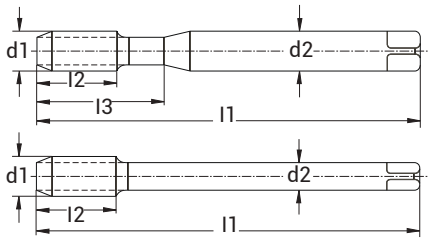
M | Type H | ISO2 6H | HSSE-PM | DIN13 | 60° P | B 3,5-5 | TiCN

STEEL <1300N/mm² | GG | GGG | ALU >0,5% SI | COPPER >200HB | REINFORCED PLASTIC

KOMPETENZ IN PRÄZISION

Macho de máquina HSS-PM recto tipo H con rosca métrica recubierto de TiCN. Recomendado para materiales duros y de viruta corta.

Straight fluted HSS-PM machine tap H type with metric thread and TiCN coating. Recommended for short-chipping hard materials.



DIN 371 M3 - M10

DIN 376 M12

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	l3 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	HB00TC-PM/4 [TiCN] Ref.	€
M 3	0,50	56	5	18	3,5	2,7	3	2,50	614000	**45,10**
M 4	0,70	63	7	21	4,5	3,4	3	3,30	614002	**45,10**
M 5	0,80	70	8	25	6,0	4,9	3	4,20	614003	**47,70**
M 6	1,00	80	10	30	6,0	4,9	3	5,00	614004	**47,70**
M 8	1,25	90	13	35	8,0	6,2	3	6,80	614006	**57,80**
M10	1,50	100	15	39	10,0	8,0	3	8,50	614008	**70,90**
M12	1,75	110	18	-	9	7,0	3	10,20	614010	**87,10**

Condiciones de corte | Cutting data pag. 241

SAUDA

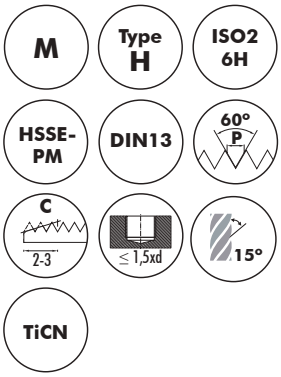
HCI5TC-PM/4

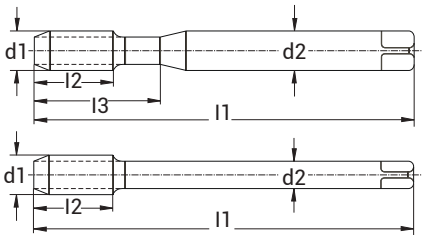
Macho máquina helicoidal rosca métrica tipo H

Helix fluted metric thread H type machine tap

Macho de máquina HSS-PM helicoidal tipo H con rosca métrica recubierto de TiCN. Recomendado para materiales duros y de viruta corta.

Helix fluted HSS-PM machine tap H type with metric thread and TiCN coating. Recommended for short-chipping hard materials.





DIN 371
M3 - M10

DIN 376
M12

WEXO® KOMPETENZ IN PRÄZISION

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	l3 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	HCI5TC-PM/4 [TiCN]	
									Ref.	€
M 3	0,50	56	5	18	3,5	2,7	3	2,50	614020	**49,45**
M 4	0,70	63	7	21	4,5	3,4	3	3,30	614022	**49,45**
M 5	0,80	70	8	25	6,0	4,9	3	4,20	614023	**51,20**
M 6	1,00	80	10	30	6,0	4,9	3	5,00	614024	**54,30**
M 8	1,25	90	13	35	8,0	6,2	3	6,80	614026	**59,95**
M10	1,50	100	15	39	10,0	8,0	3	8,50	614028	**70,00**
M12	1,75	110	18	-	9	7,0	3	10,20	614030	**89,30**

Condiciones de corte | Cutting data pag. 241

Macho máquina recto rosca métrica tipo GG

Straight fluted metric thread GG type machine tap

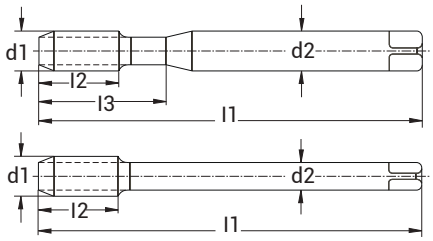
M | Type GG | 6HX | HSSE | DIN13 | 60° P | C 2-3 | ≤ 3xd | TiCN

GG | GGG | ALU >15% SI | COPPER | PLASTIC

KOMPETENZ IN PRÄZISION

Macho de máquina HSS recto tipo GG con rosca métrica recubierto de TiCN para fundición. Permite roscar agujeros ciegos y pasantes.

Straight fluted HSS machine tap GG type with metric thread and TiCN coating for cast iron. Suitable for blind and through holes.



DIN 371 — M3 - M10

DIN 376 — M12 - M30

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	l3 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	GGC00TC/4 [TiCN] Ref.	GGC00TC/4 [TiCN] €
M 3	0,50	56	9	18	3,5	2,7	3	2,50	603080	**28,45**
M 4	0,70	63	12	21	4,5	3,4	3	3,30	603082	**28,45**
M 5	0,80	70	13	25	6,0	4,9	3	4,20	603083	**28,90**
M 6	1,00	80	15	30	6,0	4,9	3	5,00	603084	**28,90**
M 8	1,25	90	18	35	8,0	6,2	4	6,80	603086	**41,15**
M10	1,50	100	20	39	10,0	8,0	4	8,50	603088	**47,70**
M12	1,75	110	23	-	9	7,0	4	10,20	603090	**62,60**
M14	2,00	110	25	-	11	9,0	4	12,00	603091	**73,50**
M16	2,00	110	25	-	12	9,0	4	14,00	603092	**90,15**
M18	2,50	125	30	-	14	11,0	4	15,50	603093	**115,50**
M20	2,50	140	30	-	16	12,0	4	17,50	603094	**141,80**
M22	2,50	140	30	-	18	14,5	4	19,50	603095	**172,40**
M24	3,00	160	36	-	18	14,5	4	21,00	603097	**178,50**
M27	3,00	160	36	-	20	16,0	4	24,00	603098	**208,30**
M30	3,50	180	40	-	22	18,0	4	26,50	603099	**257,30**

Condiciones de corte | Cutting data pag. 241

SAUDA

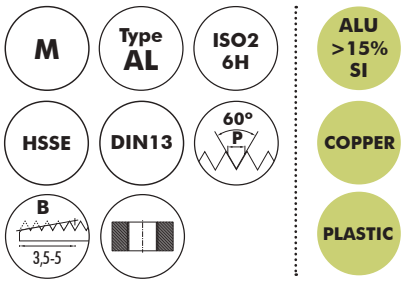
ALB00/4

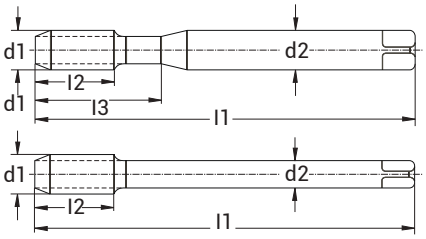
Macho máquina recto métrica tipo AL

Straight fluted metric thread AL type machine tap

Macho de máquina HSS recto tipo AL con rosca métrica para aluminio.

Straight fluted HSS machine tap AL type with metric thread for aluminum.





DIN 371
M3 - M10

DIN 376
M12 - M20

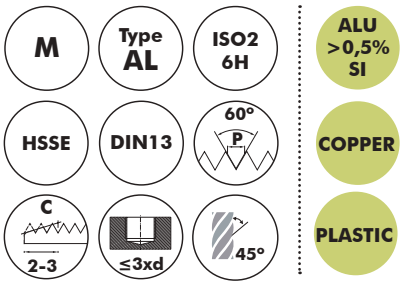
KOMPETENZ IN PRÄZISION

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	l3 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	ALB00/4 Ref.	ALB00/4 €
M 3	0,50	56	9	18	3,5	2,7	3	2,50	600040	**14,55**
M 4	0,70	63	12	21	4,5	3,4	3	3,30	600042	**14,55**
M 5	0,80	70	13	25	6,0	4,9	3	4,20	600043	**15,10**
M 6	1,00	80	15	30	6,0	4,9	3	5,00	600044	**15,10**
M 8	1,25	90	18	35	8,0	6,2	3	6,80	600046	**19,70**
M10	1,50	100	20	39	10,0	8,0	3	8,50	600048	**23,65**
M12	1,75	110	23	-	9	7,0	3	10,20	600050	**31,10**
M14	2,00	110	25	-	11	9,0	3	12,00	600051	**38,10**
M16	2,00	110	25	-	12	9,0	3	14,00	600052	**47,70**
M18	2,50	125	30	-	14	11,0	3	15,50	600053	**64,30**
M20	2,50	140	30	-	16	12,0	3	17,50	600054	**74,40**

Condiciones de corte | Cutting data pag. 241

Macho máquina helicoidal rosca métrica tipo AL

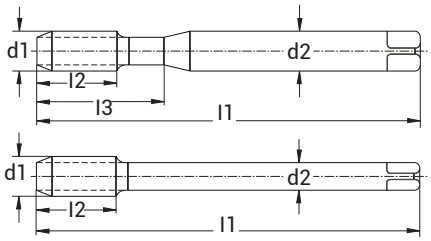
Helix fluted metric thread AL type machine tap



KOMPETENZ IN PRÄZISION

Macho de máquina HSS helicoidal tipo AL con rosca métrica para aluminio.

Helix fluted HSS machine tap AL type with metric thread for aluminum.



DIN 371
M3 - M10

DIN 376
M12 - M20

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	l3 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	ALC45/4 Ref.	ALC45/4 €
M 3	0,50	56	5	18	3,5	2,7	2	2,50	600140	**16,50**
M 4	0,70	63	7	21	4,5	3,4	2	3,30	600142	**16,50**
M 5	0,80	70	8	25	6,0	4,9	2	4,20	600143	**17,95**
M 6	1,00	80	10	30	6,0	4,9	2	5,00	600144	**17,95**
M 8	1,25	90	13	35	8,0	6,2	2	6,80	600146	**21,00**
M10	1,50	100	15	39	10,0	8,0	2	8,50	600148	**24,10**
M12	1,75	110	18	-	9	7,0	2	10,20	600150	**32,40**
M14	2,00	110	20	-	11	9,0	2	12,00	600151	**42,45**
M16	2,00	110	20	-	12	9,0	2	14,00	600152	**50,30**
M18	2,50	125	25	-	14	11,0	3	15,50	600153	**77,50**
M20	2,50	140	25	-	16	12,0	3	17,50	600154	**76,60**

Condiciones de corte | Cutting data pag. 241

SAUDA

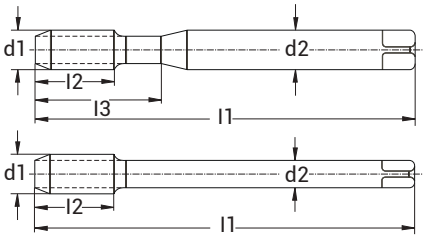
IGF-UC00TC/4

Macho de laminación rosca métrica tipo UNI

Metric thread UNI type fluteless tap

Macho de laminación HSS tipo UNI con rosca métrica recubierto de TiCN. Recomendado para uso universal.

UNI type HSS fluteless tap with metric thread and TiCN coating for universal use.



DIN 371
M3 - M10

DIN 376
M12 - M16

M | Type UNI | 6HX | HSSE | DIN2174 | DIN13 | 60° P | C 2-3 | ≤ 2,5xd | TiCN

STEEL <800N/mm²
ALU <15% SI
PLASTIC

WEXO® KOMPETENZ IN PRÄZISION

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	l3 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	IGF-UC00TC/4 [TiCN] Ref.	€
M 3	0,50	56	11	18	3,5	2,7	4	2,80	603300	**39,40**
M 4	0,70	63	13	21	4,5	3,4	4	3,70	603302	**51,20**
M 5	0,80	70	16	25	6,0	4,9	4	4,65	603303	**56,90**
M 6	1,00	80	19	30	6,0	4,9	4	5,55	603304	**59,10**
M 8	1,25	90	22	35	8,0	6,2	6	7,40	603306	**66,10**
M10	1,50	100	24	39	10,0	8,0	8	9,30	603308	**80,95**
M12	1,75	110	28	-	9	7,0	8	11,20	603310	**112,00**
M14	2,00	110	30	-	11	9,0	8	13,00	603311	**136,50**
M16	2,00	110	32	-	12	9,0	8	15,00	603312	**178,50**

Macho de laminación rosca métrica tipo UNI

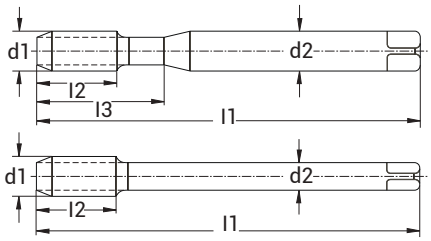
Metric thread UNI type

M | Type UNI | 6HX | HSSE | DIN2174 | DIN13 | 60° P | SN | C 2-3 | ≤ 2,5xd | TiCN

STEEL <800N/mm² | ALU <15% SI | PLASTIC

Macho de laminación HSS tipo UNI con rosca métrica recubierto de TiCN con ranuras de lubricación. Recomendado para uso universal.

UNI type HSS fluteless tap with metric thread, TiCN coating and lubrication
grooves for universal use.



DIN 371 — M3 - M10

DIN 376 — M12 - M16

KOMPETENZ IN PRÄZISION

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	l3 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	GGC00TC/4 Ref.	GGC00TC/4 €
M 3	0,50	56	5	18	3,5	2,7	4	2,80	603280	**41,15**
M 4	0,70	63	7	21	4,5	3,4	4	3,70	603282	**54,30**
M 5	0,80	70	8	25	6,0	4,9	4	4,65	603283	**59,10**
M 6	1,00	80	10	30	6,0	4,9	4	5,55	603284	**61,70**
M 8	1,25	90	13	35	8,0	6,2	6	7,40	603286	**69,15**
M10	1,50	100	15	39	10,0	8,0	8	9,30	603288	**85,30**
M12	1,75	110	18	-	9	7,0	8	11,20	603290	**115,50**
M14	2,00	110	20	-	11	9,0	8	13,00	603291	**141,80**
M16	2,00	110	20	-	12	9,0	8	15,00	603292	**187,30**

SAUDA

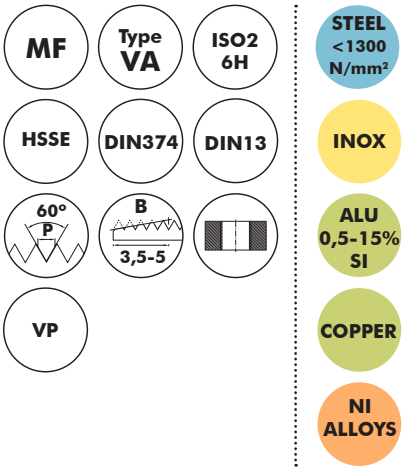
VAB00VP-MF/4

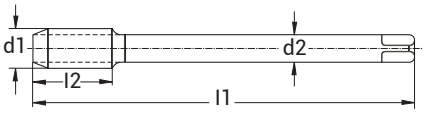
Macho máquina recto rosca métrica fina tipo VA

Straight fluted fine metric thread VA type machine tap

Macho de máquina HSS recto tipo VA vaporizado con rosca métrica fina. Recomendado para acero inoxidable y aceros de alta tensión de rotura.

Straight fluted HSS machine tap VA type with fine metric thread and steam treatment. Recommended for stainless materials and steels of higher tensile strength.





KOMPETENZ IN PRÄZISION

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	VAB00VP-MF/4 [VP]	
								Ref.	€
M 6	*0,75	80	15	4,5	3,4	3	5,20	601061	**28,45**
M 8	*1,00	90	18	6	4,9	3	7,00	601063	**30,65**
M 10	*1,00	90	20	7	5,5	3	9,00	601064	**35,00**
M 12	*1,00	100	22	9	7,0	3	11,00	601065	**43,80**
M 12	*1,50	100	21	9	7,0	3	10,50	601066	**39,80**
M 16	*1,50	100	21	12	9,0	3	14,50	601068	**62,60**
M 20	*1,50	125	24	16	12,0	3	18,50	601070	**98,90**

Condiciones de corte | Cutting data pag. 240

Macho máquina helicoidal rosca métrica fina tipo VA

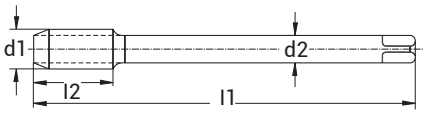
Helix fluted fine metric thread VA type machine tap

MF | Type VA | ISO2 6H | HSSE | DIN374 | DIN13 | 60° P | C 2-3 | ≤ 2,5xd | VP

STEEL <1300N/mm² | INOX | ALU 0,5-15% SI | COPPER | NI ALLOYS

Macho de máquina HSS helicoidal tipo VA vaporizado con rosca métrica fina. Recomendado para acero inoxidable y aceros de alta tensión de rotura.

Helix fluted HSS machine tap VA type with fine metric thread and steam treatment. Recommended for stainless materials and steels of higher tensile strength.



WEXO® KOMPETENZ IN PRÄZISION

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	VAC40VP-MF/4 [VP] Ref.	€
M 6	*0,75	80	10,0	4,5	3,4	3	5,20	601161	**29,30**
M 8	*0,75	80	10,8	6	4,9	3	7,20	601162	**45,10**
M 8	*1,00	90	13,0	6	4,9	3	7,00	601163	**31,50**
M 10	*1,00	90	12,0	7	5,5	3	9,00	601164	**35,45**
M 12	*1,00	100	15,5	9	7,0	3	11,00	601165	**43,80**
M 12	*1,50	100	14,0	9	7,0	3	10,50	601166	**42,00**
M 14	*1,50	100	21,5	12	9,0	3	12,50	601167	**53,80**
M 16	*1,50	100	16,0	12	9,0	4	14,50	601168	**65,20**
M 20	*1,50	125	20,0	16	12,0	4	18,50	601170	**101,50**

Condiciones de corte | Cutting data pag. 240

SAUDA

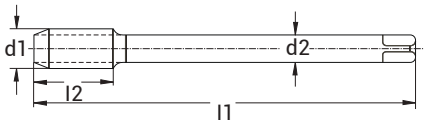
VAB00VP-G/4

Macho máquina recto rosca GAS tipo VA

Straight fluted ***GAS*** thread VA type machine tap

Macho de máquina HSS recto tipo VA vaporizado con rosca GAS . Recomendado para acero inoxidable y aceros de alta tensión de rotura.

Straight fluted HSS machine tap VA type with GAS thread and steam treatment. Recommended for stainless materials and steels of higher tensile strength.



G | Type VA | HSSE | DIN5156 | DIN ISO 228 | 55° P | B 3,5-5 | VP

STEEL <1300N/mm² | INOX | ALU 0,5-15% SI | COPPER | NI ALLOYS

KOMPETENZ IN PRÄZISION

P [Gg/1"]		l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	VAB00VP-G/4 [VP] Ref.	€
G 1/8	28	90	20	7	5,5	3	8,80	601200	38,10
G 1/4	19	100	21	11	9	3	11,80	601201	52,10
G 3/8	19	100	21	12	9	3	15,25	601202	63,45
G 1/2	14	125	24	16	12	3	19,00	601203	91,90
G 5/8	14	125	24	18	14,5	4	21,00	601204	125,15
G 3/4	14	140	26	20	16	4	24,50	601205	145,30
G 1	11	160	30	25	20	4	30,75	601207	234,50
G 1 1/8	11	170	30	28	22	4	35,30	601208	294,00
G 1 1/4	11	170	30	32	34	4	39,50	601209	346,50
G 1 3/8	11	180	32	36	29	4	41,90	601210	434,00
G 1 1/2	11	190	32	36	29	6	45,25	601211	490,00
G 1 3/4	11	200	32	40	32	6	51,30	601212	679,00
G 2	11	200	40	45	35	6	57,00	601213	1.137,50

Condiciones de corte | Cutting data pag. 240

Macho máquina helicoidal rosca GAS tipo VA

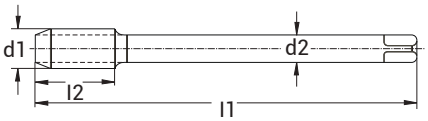
Helix fluted ***GAS*** thread VA type machine tap

G | Type VA | HSSE | DIN5156 | DIN ISO 228 | 55° P | C 2-3 | ≤ 2,5xd | 40° | VP

STEEL <1300N/mm² | INOX | ALU 0,5-15% SI | COPPER | NI ALLOYS

Macho de máquina HSS helicoidal tipo VA vaporizado con rosca GAS. Recomendado para acero inoxidable y aceros de alta tensión de rotura.

Helix futed HSS machine tap VA type with GAS thread and steam treatment. Recommended for stainless materials and steels of higher tensile strength.



WEXO® KOMPETENZ IN PRÄZISION

P [Gg/1"]		l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	VAC40VP-G/4 [VP] Ref.	€
G 1/8	28	90	12	7	5,5	3	8,80	601300	**43,30**
G 1/4	19	100	16	11	9,0	3	11,80	601301	**57,80**
G 3/8	19	100	16	12	9,0	3	15,25	601302	**78,30**
G 1/2	14	125	20	16	12,0	3	19,00	601303	**113,80**
G 5/8	14	125	20	18	14,5	4	21,00	601304	**167,15**
G 3/4	14	140	22	20	16,0	4	24,50	601305	**208,30**
G 1	11	160	30	25	20,0	4	30,75	601307	**318,50**
G 1 1/8	11	170	30	28	22,0	4	35,30	601308	**416,50**
G 1 1/4	11	170	30	32	34,0	4	39,50	601309	**451,50**
G 1 3/8	11	180	32	36	29,0	4	41,90	601310	**560,00**
G 1 1/2	11	190	32	36	29,0	6	45,25	601311	**619,50**
G 1 3/4	11	200	32	40	32,0	6	51,30	601312	**777,00**
G 2	11	200	40	45	35,0	6	57,00	601313	**1.260,00**

Condiciones de corte | Cutting data pag. 240

SAUDA

NB00-UNC/4

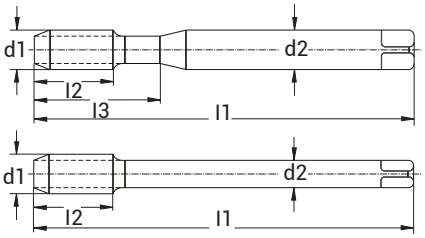
MACHOS

Macho máquina recto rosca UNC tipo N

Straight fluted ***UNC*** thread N type machine tap

Macho de máquina HSS recto tipo N con rosca UNC para aceros hasta 800 N/mm².

Straight fluted HSS machine tap N type with UNC thread for steels up to 800 N/mm².



Nr. 8-32 / 3/8" -16

Nr. 7/16" -14 /1"-8

UNC | Type N | 2B | HSSE | DIN 2184-1 | ANSI B 1.1 | 60° P | B 3,5-5

STEEL <1300N/mm² | ALU 0,5-15% SI | COPPER | PLASTIC

WEXO® KOMPETENZ IN PRÄZISION

P [Gg/1"]		l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	NB00-UNC/4 [VP] Ref.	€
UNC #	**8-32**	63	12	4,5	3,4	3	3,50	600606	**26,70**
UNC #	**10-24**	70	13	6,0	4,9	3	3,90	600607	**27,60**
UNC #	**12-24**	80	15	6,0	4,9	3	4,50	600608	**28,45**
UNC	**1/4-20**	80	15	7,0	5,5	3	5,20	600609	**31,10**
UNC	**5/16-18**	90	18	8,0	6,2	3	6,60	600610	**32,40**
UNC	**3/8-16**	90	20	9,0	7,0	3	8,00	600611	**38,95**
UNC	**7/16-14**	100	20	8,0	6,2	3	9,40	600620	**39,40**
UNC	**1/2-13**	110	23	9,0	7,0	3	10,75	600621	**50,30**
UNC	**9/16-12**	110	25	11,0	9,0	3	12,25	600622	**75,30**
UNC	**5/8-11**	110	25	12,0	9,0	3	13,50	600623	**65,20**
UNC	**3/4-10**	125	30	14,0	11,0	3	16,50	600624	**73,50**
UNC	**7/8-9**	140	30	18,0	14,5	3	19,50	600625	**91,90**
UNC	**1-8**	160	36	18,0	14,5	3	22,25	600626	**126,90**

Condiciones de corte | Cutting data pag. 240

Macho máquina helicoidal rosca UNC tipo N

Helix fluted ***UNC*** thread N type machine tap

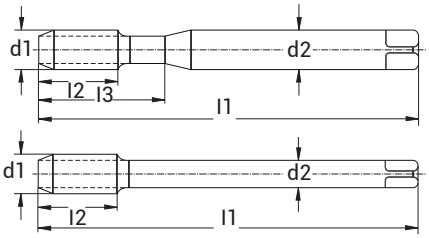
UNC | Type N | 2B | HSSE | DIN 2184-1 | ANSI B 1.1 | 60° P | C 2-3 | ≤ 2,5xd | 40°

STEEL <800N/mm² | ALU 0,5-15% SI | COPPER | PLASTIC

KOMPETENZ IN PRÄZISION

Macho de máquina HSS recto tipo N con rosca UNC para aceros hasta 800 N/mm².

Straight fluted HSS machine tap N type with UNC thread for steels up to 800 N/mm².



Nr. 8-32 / 3/8" - 16

Nr. 7/16" - 14 /1" - 8

P [Gg/1"]		l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	NC40-UNC/4 [VP] Ref.	€
UNC #	8-32	63	7	4,5	3,4	3	3,50	600635	**27,15**
UNC #	10-24	70	8	6,0	4,9	3	3,90	600636	**28,90**
UNC #	12-24	80	10	6,0	4,9	3	4,50	600637	**31,95**
UNC	1/4-20	80	10	7,0	5,5	3	5,20	600638	**31,95**
UNC	5/16-18	90	13	8,0	6,2	3	6,60	600639	**33,70**
UNC	3/8-16	90	15	9,0	7,0	3	8,00	600640	**40,30**
UNC	7/16-14	100	18	8,0	6,2	3	9,40	600650	**40,30**
UNC	1/2-13	110	20	9,0	7,0	3	10,75	600651	**53,40**
UNC	9/16-12	110	20	11,0	9,0	3	12,25	600652	**77,45**
UNC	5/8-11	110	20	12,0	9,0	3	13,50	600653	**66,10**
UNC	3/4-10	125	25	14,0	11,0	4	16,50	600654	**74,40**
UNC	7/8-9	140	25	18,0	14,5	4	19,50	600655	**93,65**
UNC	1-8	160	30	18,0	14,5	4	22,25	600656	**128,65**

Condiciones de corte | Cutting data pag. 240

SAUDA

NB00-UNF/4

Macho máquina recto rosca UNF tipo N

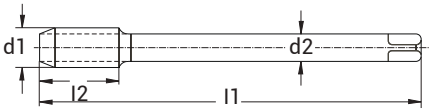
Straight fluted ***UNF*** thread N type machine tap

Macho de máquina HSS recto tipo N con rosca UNF para aceros hasta 800 N/mm².

Straight fluted HSS machine tap with UNF thread for steels up to 800 N/mm².

UNF | Type N | 2B | HSSE | DIN 2184-1 | ANSI B 1.1 | 60° P | B 3,5-5

STEEL <800N/mm² | ALU 0,5-15% SI | COPPER | PLASTIC



WEXO® KOMPETENZ IN PRÄZISION

P [Gg/1"]		l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	NB00-UNF/4 [VP] Ref.	€
UNF #	**10-32**	70	13	3,5	2,7	3	4,10	600670	**38,95**
UNF #	**12-28**	80	15	4,0	3	3	4,65	600672	**45,10**
UNF	**1/4-28**	80	15	4,5	3,4	3	5,50	600673	**42,90**
UNF	**16-24**	90	18	6,0	4,9	3	6,90	600674	**46,40**
UNF	**3/8-24**	90	20	7,0	5,5	3	8,50	600675	**49,45**
UNF	**7/16-20**	100	20	8,0	6,2	3	9,90	600676	**60,80**
UNF	**1/2-20**	100	21	9,0	7,0	3	11,50	600677	**63,45**
UNF	**5/8-18**	100	21	12,0	9,0	3	14,50	600679	**82,30**
UNF	**3/4-16**	110	24	14,0	11,0	3	17,50	600680	**104,15**
UNF	**7/8-14**	125	24	18,0	14,5	3	20,50	600681	**133,90**
UNF	**1-12**	140	26	18,0	14,5	3	23,25	600682	**194,30**

Condiciones de corte | Cutting data pag. 240

Macho máquina helicoidal rosca UNF tipo N

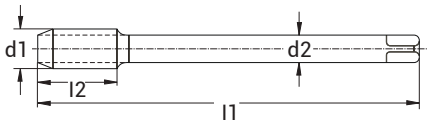
Helix fluted ***UNF*** thread N type machine tap

UNF | Type N | 2B | HSSE | DIN 2184-1 | ANSI B 1.1 | 60° P | C 2-3 | ≤ 2,5xd | 40°

STEEL <800N/mm² | ALU 0,5-15% SI | COPPER | PLASTIC

Macho de máquina HSS helicoidal tipo N con rosca UNF para aceros hasta 800 N/mm².

Helix fluted HSS machine tap with UNF thread for steels up to 800 N/mm².



P [Gg/1"]	l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	NC40-UNF/4 [VP] Ref.	€
UNC # 10-32	70	13	3,5	2,7	3	4,10	600853	**40,30**
UNC # 12-28	80	15	4,0	3,0	3	4,65	600854	**47,70**
UNC # 1/4-28	80	15	4,5	3,4	3	5,50	600855	**44,65**
UNC 5/16-24	90	18	6,0	4,9	3	6,90	600856	**49,45**
UNC 3/8-24	90	20	7,0	5,5	3	8,50	600857	**53,40**
UNC 7/16-20	100	20	8,0	6,2	3	9,90	600858	**64,30**
UNC 1/2-20	100	21	9,0	7,0	3	11,50	600859	**66,10**
UNC 5/8-20	100	21	12,0	9,0	3	14,50	600861	**87,50**
UNC 3/4-16	110	24	14,0	11,0	3	17,50	600862	**110,30**
UNC 7/8-14	125	24	18,0	14,5	3	20,50	600863	**140,00**
UNC 1-12	140	26	18,0	14,5	3	23,25	600864	**204,80**

Condiciones de corte | Cutting data pag. 240

SAUDA

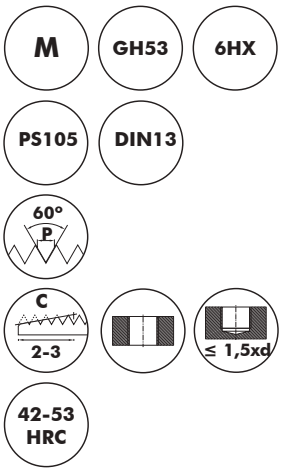
GH-53-TiCN

Macho máquina recto PS 105 rosca métrica

Straight fluted metric thread PS 105 machine tap

Macho de máquina PS 105 con rosca métrica recubierto de TiCN. Permite roscar agujeros ciegos y pasantes en materiales templados de 42 a 53 HRC.

Straight fluted PS 105 machine tap with metric thread and TiCN coating. Suitable for blind and through holes for hardened materials from 42 to 53 HRC.



STEEL <55 HRC

HG

WEXO® KOMPETENZ IN PRÄZISION

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	GH-53-TiCN Ref.	GH-53-TiCN €
M 3	0,50	46	11	3,5	2,7	4	2,55	430970	**62,70**
M 4	0,70	52	13	4,5	3,4	4	3,40	430971	**63,80**
M 5	0,80	60	16	6,0	4,9	4	4,30	430972	**64,95**
M 6	1,00	62	19	6,0	4,9	4	5,10	430973	**65,50**
M 8	1,25	70	22	6,0	4,9	5	6,90	430974	**75,20**
M10	1,50	75	24	7,0	5,5	5	8,60	430975	**84,90**
M12	1,75	82	29	9,0	7,0	5	10,40	430976	**113,95**
M 16	2,00	95	32	12,0	9,0	5	14,10	430978	**180,00**
M 20	2,50	105	37	16,0	12,0	5	17,70	430980	**303,05**
M16	*1,50	82	29	9,0	7,0	5	10,60	430982	**166,35**
M20	*1,50	88	30	11,0	9,0	5	12,60	430984	**193,70**

P [Gg/1"]		l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	GH-53-TiCN Ref.	GH-53-TiCN €
G 1/8	**28**	63	18	7	5,5	5	8,80	430993	**161,80**
G 1/4	**19**	70	20	11	9	5	11,90	430990	**203,95**

Condiciones de corte | Cutting data pag. 239

Macho de máquina recto VHM rosca métrica

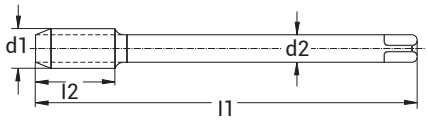
Straight fluted metric thread VHM machine tap

M | GH63 | 6HX | VHM | DIN13 | 60° P | C 2-3 | ≤ 1,5xd | 50-63 HRC

STEEL <65 HRC | HG

Macho de máquina VHM con rosca métrica recubierto de TiCN. Permite roscar agujeros ciegos y pasantes en materiales templados de 50 a 63 HRC

Straight fluted VHM machine tap with metric thread and TiCN coating. Suitable for blind and through holes for hardened materials from 50 to 63 HRC.



WEXO® KOMPETENZ IN PRÄZISION

d1 [mm]	P [mm]	l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	GH-63-TiCN Ref.	GH-63-TiCN €
M 3	0,50	46	11	3,5	2,7	4	2,55	140120	**305,05**
M 3,5	0,60	46	13	4,0	3	4	3,00	140119	**314,00**
M 4	0,70	52	13	4,5	3,4	4	3,40	140121	**314,00**
M 5	0,80	60	16	6,0	4,9	4	4,30	140122	**329,70**
M 6	1,00	62	19	6,0	4,9	5	5,10	140123	**354,40**
M 8	1,25	70	22	6,0	4,9	5	6,90	140124	**453,05**
M 10	1,50	75	24	7,0	5,5	5	8,60	140125	**592,10**
M 12	1,75	82	29	9,0	7,0	5	10,40	140126	**776,00**
M 14	2,00	88	30	11,0	9,0	6	12,10	140127	**964,40**
M 16	2,00	95	32	12,0	9,0	6	14,10	140128	**1.188,70**
M 20	2,50	105	37	16,0	12,0	6	17,70	140130	**1.592,40**
M 8	*1,00	70	22	6,0	4,9	5	7,10	140200	**484,45**
M 10	*1,00	75	24	7,0	5,5	5	9,10	140201	**628,00**
M 12	*1,00	82	29	9,0	7,0	5	11,10	140202	**829,85**
M 12	*1,50	82	29	9,0	7,0	5	10,60	140205	**829,85**
M 14	*1,50	88	30	11,0	9,0	6	12,60	140208	**1013,75**
M 16	*1,50	95	32	12,0	9,0	6	14,60	140210	**1278,40**
M 20	*1,50	105	37	16,0	12,0	6	18,60	140215	**1682,10**

P [Gg/1"]		l1 [mm]	l2 [mm]	d2 [mm]	□ [mm]	z	Ø [mm]	NB00-UNF/4 [VP] Ref.	NB00-UNF/4 [VP] €
G 1/8	**28**	63	18	7	5,5	5	8,90	140300	**807,40**
G 1/4	**19**	70	20	11	9	5	11,90	140301	**1.063,10**

Condiciones de corte | Cutting data pag. 239

MACHOS
Condiciones de corte

TAPS
Cutting Data

GH-53-TiCN - pag. 234 | GH-63-TiCN - pag. 235

			GH53 / 954 200		GH63 / 914 200					
MATERIAL			8.2 42-53 HRC		8.2					
					50-54 HRC		55-59 HRC		60-63 HRC	
Vc			2,5 m/min		2,5 m/min		2,0 m/min		1,8 m/smin	
d1 [mm]	P [mm]	Ø [mm]	n [min¹]	V_f [mm|min¹]	n [min¹]	V_f [mm/min¹]	n [min¹]	V_f [mm|min¹]	n [min¹]	V_f [mm/min¹]
M 3	0,5	2,55	250	125	250	125	212	106	190	95
M 3,5	0,6	3,00			225	135	180	108	160	96
M 4	0,7	3,40	200	140	200	140	160	112	140	98
M 5	0,8	4,30	160	128	160	128	125	100	115	92
M 6	1,0	5,10	132	132	132	132	106	106	95	95
M 8	1,25	6,90	100	125	100	125	80	100	72	90
M 10	1,5	8,60	80	120	80	120	64	96	56	84
M 12	1,75	10,40	64	112	64	112	56	98	48	84
M 14	2	12,10			56	112	46	92	40	80
M 16	2	14,10	50	100	50	100	40	80	36	72
M 20	2,50	17,70	40	100	40	100	32	80	28	70
M 8	*1	7,10			100	100	80	80	72	72
M 10	*1	9,10			80	80	64	64	56	56
M 12	*1	11,10			64	64	56	56	48	48
M 12	*1,5	10,60	64	96	64	96	64	96	48	72
M 14	*1,5	12,60	56	84	56	84	46	69	40	60
M 16	*1,5	14,60			50	75	40	60	36	54
M 20	*1,5	18,60			40	60	32	48	28	42
G 1/8	28	8,90	76	69	76	69	65	59	56	51
G 1/4	19	11,90	60	80	60	80	48	64	45	60

1. Utilizar aceite insoluble JMG de KLK para esta aplicación.

2. Eliminar todas las virutas del macho después de cada rosca metalizada.

3. Si se usa roscado con embrague, se recomienda regular al máximo el esfuerzo del portamachos.

4. No usar el macho para orscar a mano en ningún caso.

5. La profundidad máxima de rosca es de 1,5xd.

6. En caso de usar un centro de macanizado con la posibilidad de roscado sincronizado, el macho ha de usarse un amarre rígido. En ese caso, la velocidad de roscado se puede aumentar aproximadamente un 10%.

1. Water-insoluble JMG oil from KLK is recommended for this application.

2. After each tapped thread, all stuck chips has to be removed from the tap.

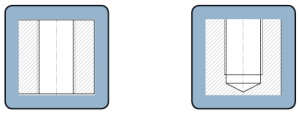
3. By using a tap holder with overload clutch, the overload torque has to be adjusted on its maximum. The usage of a quick change tap holder without overload clutch is recommended for this application.

4. In no case, the tap should be used by hand.

5. The maximum thread depht is 1,5xd.

6. In case of using a machining center with synchronized tapping possibility, the tap should be clamped in a rigid tap holder. In such case, tapping speed can be increased by approx. 10%.

CONDICIONES DE CORTE
CUTTING DATA



Referencia | *Reference*	NB00	NC40	VAB00VP	VAC40VP
Material del macho | *Tap Material*	HSSE	HSSE	HSSE	HSSE
Forma de punta | *Chamfer*	B	C	B	C
Tolerancia | *Tolerance*	ISO 2 (6H)	ISO 2 (6H)	ISO 2 (6H)	ISO 2 (6H)
Recubrimiento | *Coating*	-	-	VP	VP
Tipo de rosca | *Type of thread*	1	2	1	2

MATERIAL

P	**Acero no aleado** | *Unalloyed steel < 800 N/mm²*	8 - 12	6 - 10	10 - 15	8 - 12
	Acero aleado | *Alloy steel < 800 N/mm2*	8 - 10	6 - 8	10 - 12	8 - 10
	Acero para herramientas | *Tool steel < 1300 N/mm²*			8 - 10	6 - 8
	Acero para trabajos en frío | *Tool steel for cold work < 1300 N/mm²*			8 - 10	6 - 8
M	**Acero inoxidable** | *Stainless steel*			6 - 8	5 - 6
K	**Fundición gris** | *Grey cast iron (GG)*			12 - 15	10 - 12
	Fundición nodular | *Nodular cast iron (GGG)*			10 - 12	8 -10
N	**Aleaciones de cobre (viruta larga)** | *Cu alloys (long chipping)*	12 - 15	10 - 12		
	Aleaciones de cobre (viruta corta) | *Cu alloys (short chipping)*	10 - 12	8 - 10	12 - 15	10 - 12
	Aleaciones de cobre | *Cu alloys 200 HB*	10 - 12	8 - 10		
	Aleaciones de cobre | *Cu alloys 200 - 300 HB*			8 - 10	8 - 10
	Aleaciones de cobre | *Cu alloys >300 HB*				
	Aluminio y aleaciones de aluminio | *Al and Al alloys < 0,5 % Si*	20 - 26	18 - 22		
	Aleaciones de aluminio | *Al alloys 0,5-15 % Si*	18 - 22	15 - 18		
	Aleaciones de aluminio | *Al alloys > 15 % Si*			15 - 18	12 - 15
	Termoplásticos | *Thermoplastics*	20 - 26	18 -22		
	Plástico reforzado | *Reinforced plastics*			18 - 22	15 - 18
S	**Titanio** | *Titanium*			3 - 4	2 -3
	Aleaciones de titanio | *Ti alloys < 900 N/mm²*			3 - 4	2 - 3
	Aleaciones de titanio | *Ti alloys 900 - 1500 N/mm²*				
	Niquel | *Nickel*	3 -4	2 - 3	3 - 4	2 - 3
	Aleaciones de níquel | *Ni alloys < 900 N/mm²*			3 - 4	2 - 3
	Aleaciones de níquel | *Ni alloys 900 - 1500 N/mm²*				

CONDICIONES DE CORTE
CUTTING DATA

VAB00TC	VAC40TC	GGC00TC	ALB00	ALC45	HB00TC-PM	HC15TC-PM	UC00TC	UC00SNTC
HSSE	HSSE	HSSE	HSSE	HSSE	HSSE-PM	HSSE-PM	HSSE	HSSE
B	C	C	B	C	B	C	C	C
ISO 2 (6H)	ISO 2 (6H)	6HX	ISO 2 (6H)	ISO 2 (6H)	ISO 2 (6H)	ISO 2 (6H)	6HX	6HX
TiCN	TiCN	TiCN	-	-	TiCN	TiCN	TiCN	TiCN
1	2	1 | 2	1	2	1	2	1 | 2	1 | 2

18 - 22	15 - 18						18 - 35	12 - 28
15 - 18	12 - 15						12 - 25	10 - 20
12 - 15	10 - 12				15 - 18	12 - 15		
12 - 15	10 - 12				15 - 18	12 - 15		
10 - 12	8 - 10							
20 - 25	15 - 20	18 - 22			26 - 32	22 - 26		
15 - 20	12 - 15	15 - 18			22 - 26	18 - 22		
18 - 22	15 - 18		12 - 15	10 - 12				
18 - 22	15 - 18	15 - 18			22 - 26	18 - 22		
18 - 22	15 - 18							
15 - 18	12 - 15	10 - 12			15 - 18	12 - 15		
		8 - 10			12 - 15	10 - 12		
26 - 32	22 - 26		20 - 26	18 - 22			22 - 40	22 - 40
26 - 32	22 - 26						22 - 40	22 - 40
22 -26	18 - 22	22 - 26			26 - 32	22 - 26		
26 - 32	22 - 26		20 - 26	18 - 22			22 - 40	22 - 40
26 - 32	22 - 26	26 - 32			30 - 40	26 - 32		
5 - 6	4 - 5							
5 - 6	4 - 5							
					4 - 5	3 - 4		

FRESADO

MILLING

Descripción del grado de fresado

Milling grade description

Tipo de grado Grade type	Propiedades Properties	Aplicación de mecanizado Machining Application	Aplicación material Material application	Ámbito industrial Industry area
KS2100	·HRA 92 ·Resistencia al desgaste. ·Propiedades de recubrimiento anticorrosivo. ·Alta dureza y alta resistencia a la abrasión. ·HRA 92 ·Wear resistance. ·Anti-corrosion coating properties. ·High hardness & high abrasion resistance.	·Alta velocidad. ·Semiacabado. ·Mecanizado continuo. ·Aceros endurecidos. ·High speed. ·Semi-finishing. ·Continuous machining. ·Hardened steels.	P ★ ★ M ★ K ★ ★ S ★ H ★ ★ ★	·Moldes y matrices. ·Mecanizado de acero de alta dureza. ·Mold & die. ·Hardness steel machining.
KS3100	·HRA 91.8 ·Resistencia al desgaste. ·Propiedades de recubrimiento anticorrosivo. ·Alta dureza y alta resistencia a la abrasión. ·HRA 91.8 ·Wear resistance. ·Anti-corrosion coating properties. ·High hardness & high abrasion resistance.	·De velocidad media a alta. ·De profundidad moderada a alta. ·Mecanizado en general. ·Medium to high speed. ·Moderate to large depth. ·General machining.	P ★ ★ ★ M ★ K ★ ★ ★ S ★ H ★ ★	·Automotriz. ·Moldes y matrices. ·Mecanizado de acero. ·Automotive. ·Mold & die. ·Steel machining.
KS4100	·HRA 91.7 ·Resistencia al desgaste. ·Propiedades de recubrimiento anticorrosivas y de bajo coeficiente de fricción. ·Prevenir astillamientos y roturas. ·HRA 91.7 ·Wear resistance. ·Anti-corrosion & low friction coefficient coating properties. ·Prevent chipping and fracture.	·Alta velocidad. ·De profundidad moderada a alta. ·Desbaste. ·Mecanizado en general. ·High speed. ·Moderate to large depth. ·Medium to roughing. ·General machining.	P ★ ★ ★ M ★ ★ K ★ ★ ★ S ★ H ★	·Automotriz. ·Moldes y matrices. ·Mecanizado de acero y acero inoxidable. ·Automotive. ·Mold & die. ·Steel & stainless machining.
KS5100	·HRA 90.5 ·Resistencia al desgaste. ·Propiedades de recubrimiento antiadherente. ·Borde antiacumulación que impide la soldadura. ·HRA 91.7 ·Wear resistance. · Anti-sticky coating properties. ·Anti-build-up edge and prevent welding.	·Alta velocidad. ·Desbaste. ·Corte interrumpido. ·High speed. ·Medium to roughing. ·Interrupted cutting.	P ★ ★ M ★ ★ ★ K ★ ★ S ★ ★ ★ H	·Aeroespacial ·Mecanizado de titanio e inoxidable. ·Aerospace ·Titanium & stainless machining.

SAUDA

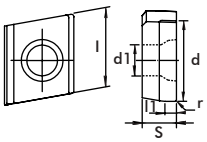
Escuadrado Shoulder milling	Ref.	KS2100	KS3100	KS4100	H10T	Medidas Dimensions (mm) l	d	S	r	d1	l1	€
	ANHX 100405 PNR-LP	✓	✓			10,00	6,60	6,20	0,50	-	0,85	**19,50**
	ANHX 100408 PNR-LP	✓	✓			10,00	6,60	6,20	0,80	-	0,60	**19,50**
	ANHX 100412 PNR-LP	✓	✓			10,00	6,60	6,20	1,20	-	0,30	**19,50**
	ANHX 100405 PNER-LM	✓	✓	✓		10,00	6,60	6,20	0,50	-	0,85	**19,50**
	ANHX 100408 PNER-LM	✓	✓			10,00	6,60	6,20	0,80	-	0,60	**19,50**
	ANHX 100412 PNER-LM	✓	✓	✓		10,00	6,60	6,20	1,20	-	0,30	**19,50**
	ANHX 100405 PNFR-LN				✓	10,00	6,60	6,20	0,20	-	0,85	**19,50**
	ANHX 100412 PNR-LN				✓	10,00	6,60	6,20	1,20	-	0,30	**19,50**
	Portaherramientas | Tool holder pag. 250 - 251											
	ANHX 120604 PNER-LS	✓	✓	✓		12,0	9,0	8,3	0,4	-	1,6	**20,75**
	ANHX 120608 PNER-LS	✓	✓	✓		12,0	9,0	8,3	0,8	-	1,2	**20,75**
	ANHX 120616 PNER-LS	✓	✓	✓		12,0	9,0	8,3	1,6	-	0,4	**20,75**
	ANHX 120604 PNSR-MP	✓		✓		12,0	9,0	8,3	0,4	-	1,6	**20,75**
	ANHX 120608 PNSR-MP	✓		✓		12,0	9,0	8,3	0,8	-	1,2	**20,75**
	ANHX 120616 PNSR-MP	✓		✓		12,0	9,0	8,3	1,6	-	0,4	**20,75**
	Portaherramientas | Tool holder pag. 252 - 253											
	ANHX 160708 PNR-LP	✓	✓			16	11,20	10,80	0,8	-	1,4	**22,85**
	ANHX 160712 PNR-LP	✓	✓			16	11,20	10,50	1,2	-	1,2	**22,85**
	ANHX 160708 PNER-MP	✓	✓			16	11,20	10,80	0,8	-	1,4	**22,85**
	ANHX 160712 PNER-MP	✓	✓			16	11,20	10,50	1,2	-	1,2	**22,85**
	ANHX 160708 PNFR-LN				✓	16	11,20	10,80	0,8	-	1,4	**22,85**
	ANHX 160712 PNFR-LN				✓	16	11,20	10,50	1,2	-	1,2	**22,85**
	Portaherramientas | Tool holder pag. 254 - 255											
	ANMX15T608-MG			✓		16,1	10	6,88	0,8	4,65	1,9	**22,80**
	Portaherramientas | Tool holder pag. 256											
	APHT100308PDFR-AL				✓							**14,40**
	APHT160408PDER-AL				✓	16,5	9,525	4,76	0,8	4,4	-	**13,00**
	APKT100304PDER-SG	✓				10,5	6,7	3,5	0,4	2,8	-	**7,95**
	APKT100304PDER-MG	✓		✓		10,5	6,7	3,5	0,4	2,8	-	**7,95**
	APKT100308PDER-MG	✓		✓		10,5	6,7	3,5	0,4	2,8	-	**7,95**
	APKT160408PDER-MG	✓				16,3	9,525	5,25	0,8	4,5	-	**9,95**
	APKT160408PDER-RG	✓		✓		16,3	9,525	5,25	0,8	4,5	-	**9,95**
	APKT160408PDER-MG	✓		✓		18,5	10,7	5,56	1,6	4,5	-	**9,95**
	APKT170516PEER-RG	✓		✓		18,5	10,7	5,56	1,6	4,5	-	**10,65**
	Portaherramientas | Tool holder pag. 257 - 258											
	APMT103508PDER-RG	✓		✓		10,64	6,5	3,5	0,8	3,0	-	**8,80**
	APMT113508PDER-MG	✓		✓		11,0	6,35	3,5	0,8	2,8	-	**7,60**
	APMT113516PDER-MG			✓		11,0	6,35	3,5	1,6	2,8	-	**7,60**
	APMT113508PDER-RG	✓		✓		11,0	6,35	3,5	0,8	2,8	-	**7,60**
	APMT113508PDER-HG			✓		11,0	6,35	3,5	0,8	2,8	-	**7,60**
	APMT160408PDER-MG	✓		✓		16,5	9,525	4,76	0,8	4,4	-	**9,35**
	APMT160416PDER-MG			✓		16,5	9,525	4,76	1,6	4,4	-	**9,35**
	APMT160408PDER-RG	✓		✓		16,5	9,525	4,76	0,8	4,4	-	**9,35**
	APMT160408PDER-HG	✓		✓		16,5	9,525	4,76	0,8	4,4	-	**9,35**
	APMT 200408 KS3100		✓			20,0	12,70	4,76	0,8	-	-	**22,40**
	Portaherramientas | Tool holder pag. 260 - 262											
	AXMT123508PEER-RG	✓		✓		12,18	6,93	3,58	0,8	3,4	-	**8,80**
	AXMT170508PEER-RG			✓		17,50	10,2	5,56	0,8	4,6	-	**10,90**
	AXMT170516PEER-RG			✓		17,50	10,2	5,56	1,6	4,6	-	**10,90**
	Portaherramientas | Tool holder pag. 263											

Escuadrado Shoulder milling	Ref.	KS2100	KS3100	KS4100	H10T	Medidas Dimensions (mm) l	d	S	r	d1	l1	€
	CPMT090308-MG		✓			9,525	-	3,18	0,8	4,4	-	**7,40**
	CPMT120408-MG		✓			12,7	-	4,76	0,8	5,5	-	**8,10**
	JDMT150508R-MG			✓		15,1	9,12	5,0	0,8	4,5	-	**9,30**
	LNXT 130604 PNER-MP	✓		✓		13	9,8	6,8	0,4	-	0,9	**21,65**
	LNXT 130604 PNER-MP	✓		✓		13	9,8	6,8	0,8	-	0,9	**21,65**
	Portaherramientas | Tool holder pag. 264											
	LNXT 150608 PNER-MP	✓		✓		15	11	6,35	0,8	-	1,8	**22,85**
	LNXT 150612 PNER-MP	✓		✓		15	11	6,35	1,2	-	1,8	**22,85**
	LNXT 150608 PNSR-HP	✓		✓		15	11	6,35	0,8	-	1,8	**22,85**
	Portaherramientas | Tool holder pag. 265											
	SPMG050204-MG			✓		5,0	-	2,38	0,4	2,30	-	**10,35**
	SPMG060204-MG			✓		6,0	-	2,38	0,4	2,65	-	**10,50**
	SPMG07T308-MG			✓		7,94	-	3,97	0,8	2,85	-	**11,40**
	SPMG090408-MG			✓		9,80	-	4,3	0,8	4,05	-	**12,10**
	SPMG090408-RG			✓		9,80	-	4,3	0,8	4,05	-	**12,10**
	SPMG110408-MG			✓		11,50	-	4,8	0,8	4,45	-	**13,00**
	SPMG110408-RG			✓		11,50	-	4,8	0,8	4,45	-	**13,00**
	Portaherramientas | Tool holder pag. 266 / 317 - 318 / 321 - 322											
	TNMU120708PER-MJ	✓	✓			12	-	7,04	1,16	-	9,525	**19,50**
	TNMU120708PER-NMJ	✓	✓			12	-	7,04	1,16	-	9,525	**19,50**
	TNMU1207R16PER-MJ	✓	✓			12	-	7,04	-	-	9,525	**19,50**
	Portaherramientas | Tool holder pag. 267											
	TPKR1603PPR-RG			✓		16,5	9,525	3,1	-	2,2	1,423	**9,80**
	TPMX100408-MG	✓		✓		6,9	-	4	0,8	3	-	**11,75**
	TPMX150508-MG	✓		✓		10,7	-	5	0,8	4,85	-	**14,20**
	Portaherramientas | Tool holder pag. 268 - 269											
	W39011T308-MG	✓		✓		11	6,9	3,59	0,8	2,8	-	**10,65**
	W39011T320-MG	✓		✓		11	6,9	3,59	2,0	2,8	-	**10,65**
	W390180612-SG			✓		15,4	11	6,33	1,2	4,2	-	**17,80**
	Portaherramientas | Tool holder pag. 270 - 271											
	W49008T308-SG			✓		5,6	8,5	3,3	0,8	2,8	1,2	**13,30**
	W490140408-SG			✓		10,3	13,8	3,9	0,8	4,1	2,0	**13,30**
	Portaherramientas | Tool holder pag. 272											
	WRT070204-RG	✓		✓		4,30	6,4	2,38	0,4	2,2	1,3	**9,50**
	WRT100308-RG	✓		✓		6,35	9,3	3,4	0,8	2,9	1,8	**9,50**
	Portaherramientas | Tool holder pag. 273											
	XDGX 15M504 PDFR-LN				✓	16	11,20	5	0,4	-	1,5	**22,80**
	XDGX 15M508 PDFR-LN				✓	16	11,20	5	0,8	-	1,1	**22,80**
	XDGX 15M512 PDFR-LN				✓	16	11,20	5	1,2	-	0,7	**22,80**
	XDGX 15M512 PDFR-LN				✓	16	11,20	5	1,6	-	0,4	**22,80**
	XDGX 15M520 PDFR-LN				✓	16	11,20	5	2,0	-	0,2	**22,80**
	XDGX 15M532 PDFR-LN				✓	16	11,20	5	3,2	-	0,6	**22,80**
	XDGX 15M540 PDFR-LN				✓	16	11,20	5	4,0	-	0,5	**22,80**
	XDGX 15M550 PDFR-LN				✓	16	11,20	5	5,0	-	0,4	**22,80**
	Portaherramientas | Tool holder pag. 274 - 275											
	XDGX 22M708 PDFR-LN				✓	22	13	7	0,8	-	2	**32,90**
	XDGX 22M716 PDFR-LN				✓	22	13	7	1,6	-	1,2	**32,90**
	XDGX 22M720 PDFR-LN				✓	22	13	7	2,0	-	0,8	**32,90**
	XDGX 22M732 PDFR-LN				✓	22	13	7	3,2	-	0,6	**32,90**
	XDGX 22M740 PDFR-LN				✓	22	13	7	4,0	-	0,9	**32,90**
	XDGX 22M750 PDFR-LN				✓	22	13	7	5,0	-	0,4	**32,90**
	Portaherramientas | Tool holder pag. 276 - 277											

SAUDA

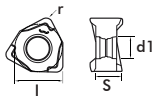
Escuadrado
Shoulder milling

Ref.	KS2100	KS3100	KS4100	H10T	Medidas Dimensions (mm) l	d	S	r	d1	l1	€
XNHW 120508 PZFR-015045				✓	12,25	4,5	5,4	0,8	4,8	1,5	195,90
XNHW 120508 PZTR-015045				✓	12,25	4,5	5,4	0,8	4,8	1,5	195,90
XNHW 120508 PZTR-000080				✓	12,25	8	5,4	0,8	4,8	-	195,90
XNHW 1205 PZFR-020120				✓	12,25	12	5,4	-	4,8	2,0	195,90



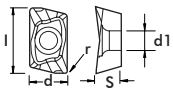
Portaherramientas | Tool holder pag. 278

XNMX040304-SG	✓				6,7	-	3,285	0,4	3,15	-	16,60
XNMX040304-MG	✓				6,7	-	3,285	0,4	3,15	2,0	16,60
XNMX040308-MG	✓		✓		6,7	-	3,285	0,4	3,15	-	16,60
XNMX080608-MG	✓		✓		12,53	-	6,5	0,8	4,5	2,0	20,30
XNMX080608-RG			✓		6,7	-	6,5	0,8	4,5	-	20,30



Portaherramientas | Tool holder pag. 279 - 280

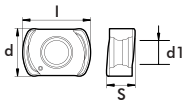
XOMT060204-MG	✓				7	4,09	2,45	0,4	2	-	10,65
XOMT060208-MG	✓		✓		7	4,09	2,45	0,8	2	-	10,65
XOMT060216-MG			✓		7	4,09	2,45	1,6	2	-	10,65
XOMT10T308-SG			✓		11,08	6,86	3,8	0,8	3	-	10,65



Portaherramientas | Tool holder pag. 281

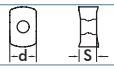
Gran avance
High feed milling

BNMX0603-SG	✓		✓		9,0	6,38	3,75	-	3,2	-	15,90
BNMX0603-MG	✓		✓		9,0	6,38	3,75	-	3,2	-	15,90
BNMX0603-RG	✓		✓		9,0	6,38	3,75	-	3,2	-	15,90
BNMX0904-MG	✓		✓		11,9	9,18	4,8	-	4,2	-	15,90



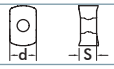
Portaherramientas | Tool holder pag. 282 - 283

ENMX 0604-ST			✓		-	6	4,21	0,8	-	-	19,05
ENMX 0604-TR			✓		-	6	4,21	0,8	-	-	19,05



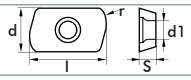
Portaherramientas | Tool holder pag. 284 - 285

ENMX 0905-ST	✓		✓		-	9	5,4	-	-	-	23,95
ENMX 0905 -TR			✓		-	9	5,4	-	-	-	23,95

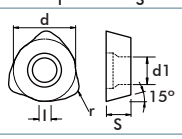


Portaherramientas | Tool holder pag. 286 - 287

ISR145	✓		✓		12	7,0	3,0	1,45	3,4	-	9,65
ISR145-F	✓		✓		12	7,0	3,0	1,45	3,4	-	10,00

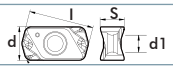


JDMW120420ZDSR-MF	✓		✓		2,5	12,0	4,76	2,0	4,75	-	9,95
JDMW120420ZDSR-RG	✓		✓		2,5	12,0	4,76	2,0	4,75	-	9,95
JDMT140520ZDSR-MG			✓		2,8	14,0	5,56	2,0	5,75	-	14,20



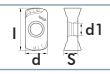
Portaherramientas | Tool holder pag. 288

LNMX0303-SG	✓		✓		11,59	6,0	4,29	-	2,85	-	13,70
LNMX0303-MG	✓		✓		11,59	6,0	4,29	-	2,85	-	13,70



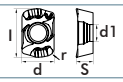
Portaherramientas | Tool holder pag. 289

LOGX030310-SG			✓		11,9	6,2	3,96	-	3,45	-	20,00



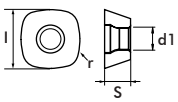
Portaherramientas | Tool holder pag. 290 - 291

LPGX0102-SG			✓		6,26	4,19	2,19	1,0	2,2	-	14,50
LPGX0102-MG			✓		6,26	4,19	2,19	1,0	2,2	-	14,50



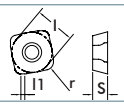
Portaherramientas | Tool holder pag. 292

SDMT1205ZDSN-MF	✓		✓		12,7	-	5,56	15	4,6	-	10,65
SDMT1205ZDTN-MG			✓		12,7	-	5,56	15	4,6	-	10,65
SDMT1205ZDTN-RG			✓		12,7	-	5,56	15	4,6	-	10,65
SDNW1205ZDTN-RG	✓		✓		12,7	-	5,56	15	4,6	-	10,35



Portaherramientas | Tool holder pag. 293

SDMW 120420	✓		✓		12,7	-	4,7	1,9	-	1,4	16,25



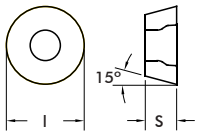
Portaherramientas | Tool holder pag. 294

Gran avance High feed milling	Ref.	KS2100	KS3100	KS4100	H10T	Medidas Dimensions (mm) l	d	S	r	d1	l1	€
	WNMX09T316-MG	✓		✓		9,525	-	3,97	1,6	3,6	-	**15,80**
	WNMX09T316-RG	✓		✓		9,525	-	3,97	1,6	3,6	-	**15,80**
	WNMX130516-MG	✓		✓		12,7	-	6,02	1,6	4,7	-	**21,55**
	Portaherramientas | Tool holder pag. 295											
	WPMW080615ZPSR-MF		✓			8	12,87	6,35	1,5	5,5	-	**12,60**
	WPMW080615ZPSR-RG		✓			8	12,87	6,35	1,5	5,5	-	**12,60**
Planeado Face milling												
	HNMX0704-SG			✓		6,8	12,7	4,45	1,2	4,9	1,4	**16,65**
	Portaherramientas | Tool holder pag. 296											
	OFMT05T3TN-MG			✓		12,7	-	3,8	0,6	4,6	-	**12,60**
	OFMT05T3TN-RG			✓		12,7	-	3,8	0,6	4,6	-	**12,60**
	Portaherramientas | Tool holder pag. 297											
	ONMU080608	✓		✓		20,2	-	5,8	0,8	-	-	**22,45**
	ONMU080612	✓		✓		20,2	-	5,8	1,2	-	-	**22,45**
	Portaherramientas | Tool holder pag. 298											
	ONMX0505-RG	✓		✓		12,7	12,7	6,4	-	6	-	**26,80**
	SNMX1205-MG	✓		✓		12,7	1,5	6,4	-	6	-	**19,70**
	SNMX1205-RG	✓		✓		12,7	1,5	6,4	-	6	-	**19,70**
	Portaherramientas | Tool holder pag. 299											
	PNMU1206ZNN	✓	✓	✓		14	-	5,84	0,8	-	-	**22,10**
	Portaherramientas | Tool holder pag. 300											
	SEET1204AFFN-AL				✓	12,7	-	4,76	0,8	5,5	-	**13,95**
	SEET1204AFFN-FG	✓				12,7	-	4,76	0,8	5,5	-	**13,95**
	SEKT1204AFTN-RG			✓		12,7	-	4,76	0,8	5,5	-	**9,80**
	SEKW1204AFEN		✓			12,7	-	4,76	0,8	5,5	-	**8,60**
	SEKW1204AFSN-F		✓			12,7	-	4,76	0,8	5,5	-	**8,60**
	SEKW1204AFTN		✓			12,7	-	4,76	0,8	5,5	-	**8,60**
	Portaherramientas | Tool holder pag. 301											
	SEET13T3AGFN-AL				✓	13,4	1,9	3,97	1,5	4,2	-	**13,95**
	SEET13T3AGFN-FG	✓				13,4	1,9	3,97	1,5	4,2	-	**13,95**
	SEMT13T3AGEN-MF	✓		✓		13,4	1,9	3,97	1,5	4,2	-	**9,65**
	SEMT13T3AGSN-MF	✓		✓		13,4	1,9	3,97	1,5	4,2	-	**9,65**
	SEMT13T3AGEN-MG	✓		✓		13,4	1,9	3,97	1,5	4,2	-	**9,65**
	SEMT13T3AGTN-MG	✓		✓		13,4	1,9	3,97	1,5	4,2	-	**9,65**
	SEMT13T3AGTN-RG			✓		13,4	1,9	3,97	1,5	4,2	-	**9,65**
	SEMT13T3AGTN-HG			✓		13,4	1,9	3,97	1,5	4,2	-	**9,65**
	Portaherramientas | Tool holder pag. 302											
	SEMR1203AFSN-RG		✓			12,7	1,6	3,18	1	2	-	**8,25**
	SPMN120308		✓			12,7	-	3,18	0,8	2	-	**7,55**
	W245-12T3-AL				✓	13,4	1,9	3,97	1,5	4,2	-	**11,95**
	W245-12T3-FG	✓				13,4	1,9	3,97	1,5	4,2	-	**11,95**
	W245-12T3-MG	✓		✓		13,4	1,9	3,97	1,5	4,2	-	**11,95**
	W245-12T3-HG			✓		13,4	1,9	3,97	1,5	4,2	-	**11,95**
	Portaherramientas | Tool holder pag. 303											

SAUDA

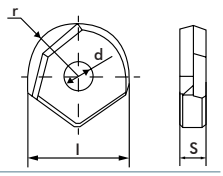
Copiado
Copy milling

Ref.	KS2100	KS3100	KS4100	H10T	Medidas Dimensions (mm) l	d	S	r	d1	l1	€
RDKT0802M0			✓		8	-	2,4	-	-	-	8,60
RDKT10T03M0			✓		10	-	2,4	-	-	-	8,95
RDKT1204M0			✓		12	-	2,4	-	-	-	10,10
RDKT1604M0			✓		16	-	2,4	-	-	-	14,10
RDKT0802M0-ST			✓		8	-	2,4	-	-	-	8,60
RDKT10T3M0-ST	✓		✓		10	-	2,4	-	-	-	10,00
RDKT1204M0-ST	✓		✓		12	-	2,4	-	-	-	11,25
RDKT0802M0-TR			✓		8	-	2,4	-	-	-	8,60
RDKT10T3M0-TR			✓		10	-	2,4	-	-	-	8,95
RDKT1204M0- TR			✓		12	-	2,4	-	-	-	10,10
RDKW0802M0			✓		8	-	2,4	-	-	-	8,60
RDKW10T3M0			✓		10	-	2,4	-	-	-	8,95
RDKW1204M0			✓		12	-	2,4	-	-	-	9,70



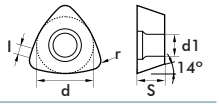
Portaherramientas | Tool holder pag. 304 - 305

SPWE100-50R		✓			10	4	3	5	-	-	10,10
SPWE120-60R		✓			12	4	3	6	-	-	10,10
SPWE160-80R		✓			16	5	4	8	-	-	11,40
SPWE200-100R		✓			20	5	5	10	-	-	13,90
SPWE250-125R		✓			25	6	6	12,5	-	-	17,85
SPWE320-160R		✓			32	6	7	16	-	-	23,40



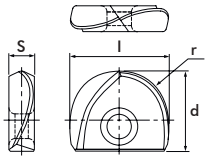
Portaherramientas | Tool holder pag. 306

WP26339R14-RG	✓		✓		-	9,52	3,97	1,2	4,4	-	11,75
WP26379R25-RG	✓		✓		1,1	13	5,56	2,0	5,5	-	13,30



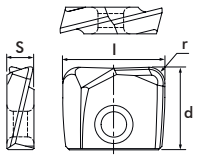
Portaherramientas | Tool holder pag. 307 - 308

XMB080	✓	✓	✓		8	8	2,4	4	-	-	38,10
XMB100	✓	✓	✓		10	9,5	2,7	5	-	-	39,95
XMB120	✓	✓	✓		12	11	3,2	6	-	-	40,40
XMB160	✓	✓	✓		16	13	4,3	8	-	-	44,45
XMB200	✓	✓	✓		20	16	5,2	10	-	-	57,95
XMB250	✓	✓	✓		25	19,5	6,2	12,5	-	-	74,60
XMB320	✓	✓	✓		32	24,5	7,2	16	-	-	105,70



Portaherramientas | Tool holder pag. 309 - 310

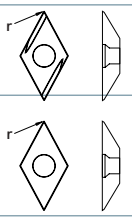
XMR080 10	✓		✓		8	8	2,4	1	-	-	42,30
XMR100 10	✓		✓		10	9,5	2,7	1	-	-	44,40
XMR100 20	✓		✓		10	9,5	2,7	2	-	-	44,40
XMR120 10	✓		✓		12	11	3,2	1	-	-	44,90
XMR120 20	✓		✓		12	11	3,2	2	-	-	44,90
XMR160 10	✓		✓		16	13	4,2	1	-	-	49,25
XMR160 20	✓		✓		16	13	4,2	2	-	-	49,25
XMR200 10	✓		✓		20	16	5,2	1	-	-	64,30
XMR200 20	✓		✓		20	16	5,2	2	-	-	64,30



Portaherramientas | Tool holder pag. 311 - 312

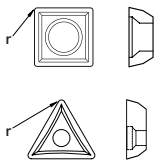
Varios
Various milling

DCEX11T301-XF		✓			-	-	0,1	-	-	-	46,40
DCEX11T302-XF		✓			-	-	0,2	-	-	-	35,70
DCEX11T304-XF		✓			-	-	0,4	-	-	-	35,70
DCEX11T301-XR		✓			-	-	0,1	-	-	-	46,40
DCEX11T302-XR		✓			-	-	0,2	-	-	-	35,70
DCEX11T304-XR		✓			-	-	0,4	-	-	-	35,70
DCEX11T308-XR		✓			-	-	0,8	-	-	-	35,70

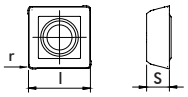
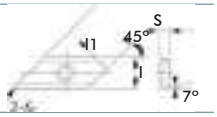
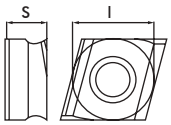


Portaherramientas | Tool holder pag. 313

SCGX09T304-FG	✓				-	-	0,4	-	-	-	32,05
SCMX09T304-SM		✓			-	-	0,4	-	-	-	24,00
TCGX16T308-FG	✓				-	-	0,8	-	-	-	32,05
TCMX16T308-SM		✓			-	-	0,8	-	-	-	24,00

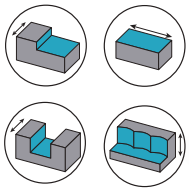


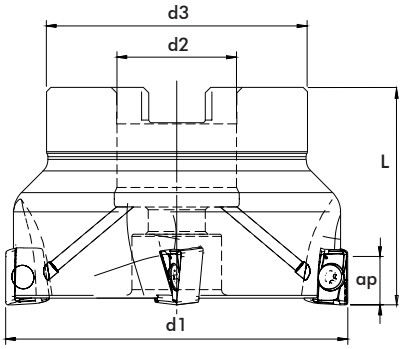
Portaherramientas | Tool holder pag. 314

Varios Various milling	Ref.	KS3100	SJ330	SKY77	NERO26	Medidas Dimensions (mm) l	d	S	r	d1	l1	€	
	SOMT11308 KS3100	✓				10,87	-	3,97	0,8	-	-	**16,50**	
Portaherramientas | Tool holder pag. 315													
	XCET310404		✓			12,7	-	4,5	0,8	-	22	**52,70**	
Portaherramientas | Tool holder pag. 316													
	ENHQ08T30601209SL28W			✓	✓	8	-	3,97	-	-	-	**47,75**	
	ENHQ08T30601409SR28W			✓	✓	8	-	3,97	-	-	-	**47,75**	
	ENHQ08T30601726SL28V			✓	✓	8	-	3,97	-	-	-	**47,75**	
	ENHQ08T30601626SR28V			✓	✓	8	-	3,97	-	-	-	**47,75**	
	ENHQ08T30600154SL30			✓		8	-	3,97	-	-	-	**47,75**	
	ENHQ08T30600254SR30			✓		8	-	3,97	-	-	-	**47,75**	
	ENHQ09040802312SL28W			✓	✓	9,52	-	4,76	-	-	-	**54,40**	
	ENHQ09040802212SR28W			✓	✓	9,52	-	4,76	-	-	-	**54,40**	
	ENHQ09040801726SL28V			✓	✓	9,52	-	4,76	-	-	-	**54,40**	
	ENHQ09040801626SR28V			✓	✓	9,52	-	4,76	-	-	-	**54,40**	
	ENHQ09040800354SL30			✓		9,52	-	4,76	-	-	-	**54,40**	
	ENHQ09040800254SR30			✓		9,52	-	4,76	-	-	-	**54,40**	
Portaherramientas | Tool holder pag. 319 - 320													

SAUDA

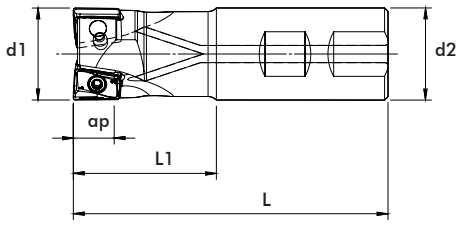
AN10





Ref.	Plaquita Inserts	d1	d2	d3	L	z	ap	€
AN10-040A04R	ANHX 1004...	40	16	32	40	4	9	**438,70**
AN10-040A05R	ANHX 1004...	40	16	32	40	5	9	**470,60**
AN10-050A05R	ANHX 1004...	50	22	42	40	5	9	**492,00**
AN10-050A07R	ANHX 1004...	50	22	42	40	7	9	**555,30**
AN10-063A07R	ANHX 1004...	63	22	52	40	7	9	**564,30**
AN10-063A09R	ANHX 1004...	63	22	52	40	9	9	**627,30**
AN10-080A08R	ANHX 1004...	80	27	60	50	8	9	**653,55**
AN10-080A10R	ANHX 1004...	80	27	60	50	10	9	**685,80**
AN10-100A09R	ANHX 1004...	100	32	80	50	9	9	**732,30**
AN10-100A12R	ANHX 1004...	100	32	80	50	12	9	**801,70**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0300800**	**5,90**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	ap	€
AN10-014M01R	ANHX 1004...	14	16	90	23	1	9	**230,25**
AN10-016M02R	ANHX 1004...	16	16	90	25	2	9	**250,85**
AN10-018M02R	ANHX 1004...	18	16	90	23	2	9	**267,35**
AN10-020M02R	ANHX 1004...	20	20	100	30	2	9	**270,35**
AN10-020M03R	ANHX 1004...	20	20	100	30	3	9	**303,00**
AN10-025M02R	ANHX 1004...	25	25	115	35	2	9	**283,10**
AN10-025M03R	ANHX 1004...	25	25	115	35	3	9	**315,35**
AN10-032M03R	ANHX 1004...	32	32	125	40	3	9	**333,35**
AN10-032M04R	ANHX 1004...	32	32	125	40	4	9	**364,50**
AN10-040M04R	ANHX 1004...	40	32	130	40	4	9	**381,70**
AN10-040M05R	ANHX 1004...	40	32	130	40	5	9	**412,50**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0300800**	**5,90**

ANHX10

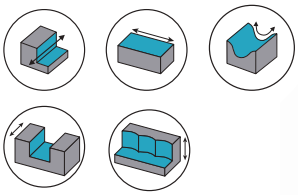
	Ref.	Material						€
		P	M	K	N	S	H	
	ANHX 100405 PNR-LP KS2100	●		●				19,50
	ANHX 100405 PNR-LP KS3100	●		●				19,50
	ANHX 100408 PNR-LP KS2100	●		●				19,50
	ANHX 100408 PNR-LP KS3100	●		●				19,50
	ANHX 100412 PNR-LP KS2100	●		●				19,50
	ANHX 100412 PNR-LP KS3100	●		●				19,50
	ANHX 100405 PNER-LM KS2100	●						19,50
	ANHX 100405 PNER-LM KS3100	●	●	●		●		19,50
	ANHX 100405 PNER-LM KS4100	●	●	●		●		19,50
	ANHX 100408 PNER-LM KS2100	●						19,50
	ANHX 100408 PNER-LM KS3100	●	●	●		●		19,50
	ANHX 100412 PNER-LM KS2100	●						19,50
	ANHX 100412 PNER-LM KS3100	●	●	●		●		19,50
	ANHX 100412 PNER-LM KS4100	●	●	●		●		19,50
	ANHX 100405 PNFR-LN H10T				●			19,50
	ANHX 100405 PNFR-LN H10T				●			19,50

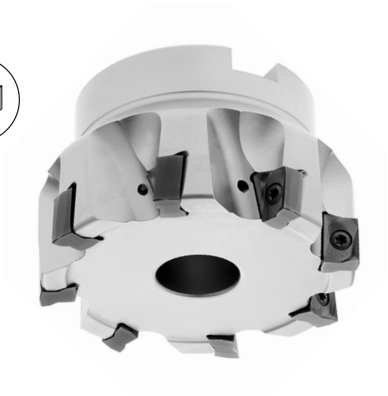
Condiciones de corte
Recommended cutting conditions

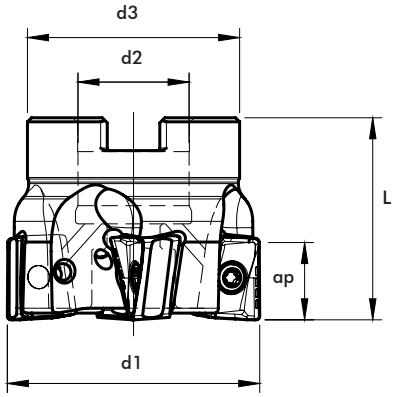
MATERIAL	Vc (m/min)				fz		
	KS2100	KS3100	KS4100	H10T	ANHX... LP	ANHX... LM	ANHX... LN
Acero sin aleación Unlloyed steel (HB125-220)	180-250	160-200	140-170	-	0,10-0,20	0,08-0,20	-
Acero de baja aleación Low-alloyed steel (HB220-280)	170-210	150-180	130-160	-	0,10-0,20	0,08-0,15	-
Acero de alta aleación High-alloyed steel (HB280-380)	160-200	130-160	110-140	-	0,10-0,15	0,08-0,15	-
Ferrítico/Martensítico Ferritic/Martensitic (HB200-330)	-	120-200	90-140	-	-	0,08-0,20	-
Austenítico AustenitiC (HB 200-330)	-	100-190	80-120	-	-	0,08-0,15	-
Austeníco/Férretico (Dúplex) Austenic-ferretic (Duplex) (HB230-260)	-	90-120	70-100	-	-	0,08-0,15	-
Hierro fundido maleable Malleable cast iron (HB130-230)	170-300	160-180	130-250	-	0,10-0,25	0,08-0,20	-
Fundición de hierro gris Grey cast iron (HB160-250)	150-250	140-240	110-220	-	0,10-0,25	0,08-0,20	-
Fundición de hierro nodular Nodular cast iron (HB180-245)	90-210	90-200	80-170	-	0,10-0,20	0,08-0,15	-
Aluminio Aluminium and non ferrous (HB30-130)	-	-	-	350-1200	-	-	0,10-0,20
Superaleaciones resistentes al calor Heat resistant super alloys (HB200-320)	-	35-70	30-60	-	-	0,08-0,10	-

SAUDA

AN12

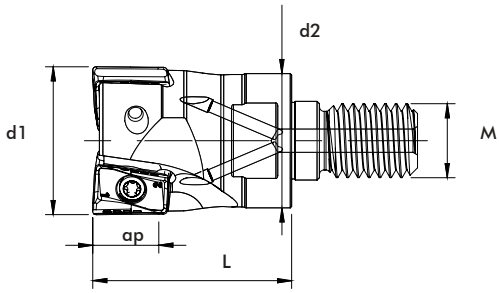






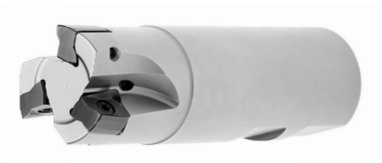
Ref.	Plaquita Inserts	d1	d2	d3	L	z	ap	€
AN12-040A04R	ANHX1206..	40	16	32	40	4	11	**469,10**
AN12-050A05R	ANHX1206..	50	22	42	40	5	11	**501,30**
AN12-050A06R	ANHX1206..	50	22	42	40	6	11	**533,95**
AN12-063A05R	ANHX1206..	63	22	52	40	5	11	**533,95**
AN12-063A07R	ANHX1206..	63	22	52	40	7	11	**565,80**
AN12-080A08R	ANHX1206..	80	27	60	50	8	11	**671,20**
AN12-100A12R	ANHX 1206...	100	32	80	50	12	11	**840,30**

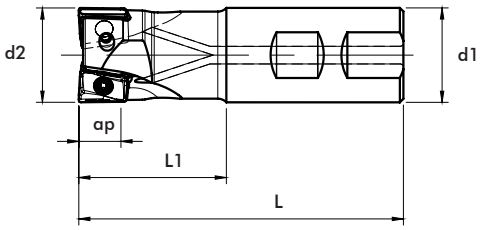
Complementos Spare parts		€
Tornillo de inserción Insert screw	**0350904**	**5,90**



Ref.	Plaquita Inserts	d1	d2	L	M	z	ap	€
AN12-025R02R	ANHX1206..	25	21	35	M12	2	11	**315,35**
AN12-032R03R	ANHX1206..	32	29	43	M16	3	11	**340,10**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0350904**	**5,90**

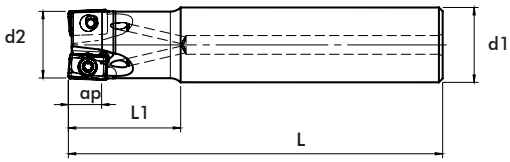




Ref.	Plaquita Inserts	d1	d2	L	L1	z	ap	€
AN12-025M02R	ANHX1206..	25	25	110	35	2	11	**323,60**
AN12-032M03R	ANHX1206..	32	32	150	35	3	11	**364,50**
AN12-040M04R	ANHX1206..	40	32	150	40	4	11	**429,00**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0350904**	**5,90**

AN12



Ref.	Plaquita Inserts	d1	d2	L	L1	z	ap	€
AN12-026M02R	ANHX1206..	26	25	200	40	2	11	**355,85**
AN12-033M03R	ANHX1206..	33	32	250	40	3	11	**404,60**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0350904**	**9,40**

ANHX12

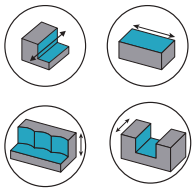
Ref.	Material P	M	K	N	S	H	€
ANHX 120604 PNER-LS KS2100	●		●				**20,75**
ANHX 120604 PNER-LS KS3100	●	●			●		**20,75**
ANHX 120604 PNER-LS KS4100	●	●	●		●		**20,75**
ANHX 120608 PNER-LS KS2100	●		●				**20,75**
ANHX 120608 PNER-LS KS3100	●	●			●		**20,75**
ANHX 120608 PNER-LS KS4100	●	●	●		●		**20,75**
ANHX 120616 PNER-LS KS2100	●		●				**20,75**
ANHX 120616 PNER-LS KS3100	●	●			●		**20,75**
ANHX 120616 PNER-LS KS4100	●	●	●		●		**20,75**
ANHX 120604 PNSR-MP KS2100	●		●				**20,75**
ANHX 120604 PNSR-MP KS4100	●		●		●		**20,75**
ANHX 120608 PNSR-MP KS2100	●		●				**20,75**
ANHX 120608 PNSR-MP KS4100	●		●		●		**20,75**
ANHX 120616 PNSR-MP KS2100	●		●				**20,75**
ANHX 120616 PNSR-MP KS4100	●		●		●		**20,75**

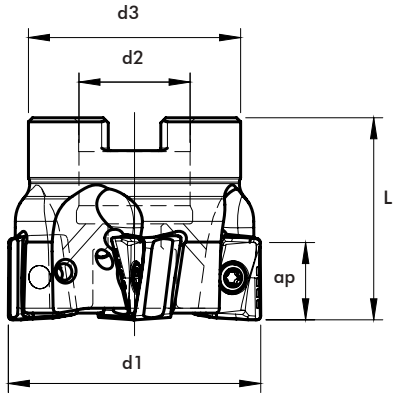
Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc (m/min) KS2100	KS3100	KS4100	fz ANHX 12... LS	ANHX 12... MP
Acero sin aleación Unlloyed steel (HB125-220)	150-230	150-180	130-160	0,10-0,20	0,10-0,30
Acero de baja aleación Low-alloyed steel (HB220-280)	140-220	140-170	120-150	0,10-0,20	0,10-0,25
Acero de alta aleación High-alloyed steel (HB280-380)	130-180	120-150	100-130	0,10-0,15	0,10-0,20
Ferrítico/Martensítico Ferritic/Martensitic (HB200-330)	-	90-150	100-120	0,10-0,20	-
Austenítico AustenitiC (HB 200-330)	-	80-130	80-110	0,10-0,15	-
Austeníco/Férretico (Dúplex) Austenic-ferretic (Duplex) (HB230-260)	-	970-100	70-100	0,10-0,15	-
Hierro fundido maleable Malleable cast iron (HB130-230)	150-280	-	130-250	0,10-0,25	0,10-0,30
Fundición de hierro gris Grey cast iron (HB160-250)	130-230	-	100-200	0,10-0,25	0,10-0,30
Fundición de hierro nodular Nodular cast iron (HB180-245)	80-190	-	50-150	0,10-0,20	0,10-0,25
Aluminio Aluminium and non ferrous (HB30-130)	-	-	-	-	-
Superaleaciones resistentes al calor Heat resistant super alloys (HB200-320)	-	25-100	20-80	0,07-0,10	-

SAUDA

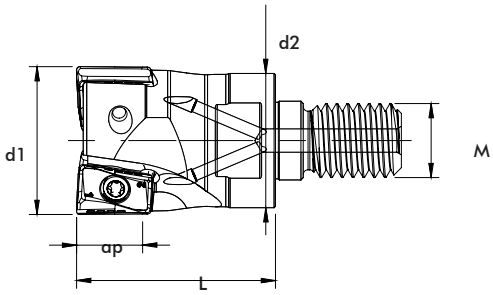
AN12





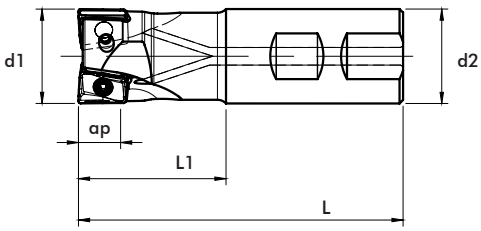
Ref.	Plaquita Inserts	d1	d2	d3	L	z	ap	€
AN16-050A03R	ANHX1607..	50	22	42	40	3	15	**372,70**
AN16-050A04R	ANHX1607..	50	22	42	40	4	15	**468,30**
AN16-063A04R	ANHX1607..	63	22	52	40	4	15	**486,30**
AN16-063A06R	ANHX1607..	63	22	52	40	6	15	**606,30**
AN16-080A05R	ANHX1607..	80	27	60	50	5	15	**637,80**
AN16-080A07R	ANHX1607..	80	27	60	50	7	15	**794,55**
AN16-100A05R	ANHX1607..	100	32	80	50	5	15	**733,05**
AN16-100A08R	ANHX1607..	100	32	80	50	8	15	**915,30**
AN16-125A07R	ANHX1607..	125	40	90	63	7	15	**1.022,10**
AN16-125A10R	ANHX1607..	125	40	90	63	10	15	**1.274,10**
AN16-160A08R	ANHX1607..	160	40	110	63	8	15	**1.110,60**
AN16-160A12R	ANHX1607..	160	40	110	63	12	15	**1.386,95**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0350904**	**5,90**



Ref.	Plaquita Inserts	d1	d2	L	M	z	ap	€
AN16-032R02R	ANHX1607..	32	29	43	M16	2	15	**329,60**
AN16-040R03R	ANHX1607..	40	29	43	M16	3	15	**405,35**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0350904**	**5,90**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	ap	€
AN16-032M02R	ANHX1607..	32	32	110	50	2	15	**329,60**
AN16-040M03R	ANHX1607..	40	32	115	40	3	15	**405,35**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0350904**	**5,90**

ANHX16

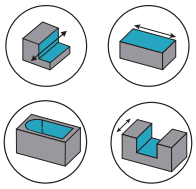
	Ref.	Material						€
		P	M	K	N	S	H	
	ANHX 160708 PNR-LP KS2100	●		●				22,85
	ANHX 160708 PNR-LP KS3100	●		●				22,85
	ANHX 160712 PNR-LP KS2100	●		●				22,85
	ANHX 160712 PNR-LP KS3100	●	●	●				22,85
	ANHX 160708 PNER-MP KS2100	●		●				22,85
	ANHX 160708 PNER-MP KS3100	●	●	●				22,85
	ANHX 160712 PNER-MP KS2100	●		●				22,85
	ANHX 160712 PNER-MP KS3100	●	●	●				22,85
	ANHX 160708 PNFR-LN H10T				●			22,85
	ANHX 160712 PNFR-LN H10T				●			22,85

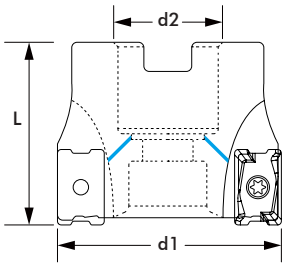
Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc (m/min)			fz		
	KS2100	KS3100	H10T	ANHX 16... LP	ANHX 16... MP	ANHX 16... LN
Acero sin aleación Unlloyed steel (HB125-220)	180-250	160-220	-	0,10-0,22	0,10-0,30	-
Acero de baja aleación Low-alloyed steel (HB220-280)	170-210	150-180	-	0,10-0,22	0,10-0,25	-
Acero de alta aleación High-alloyed steel (HB280-380)	160-200	130-160	-	0,10-0,20	0,10-0,20	-
Ferrítico/Martensítico Ferritic/Martensitic (HB200-330)	-	-	-	-	-	-
Austenítico AustenitiC (HB 200-330)	-	-	-	-	-	-
Austeníco/Férretico (Dúplex) Austenic-ferretic (Duplex) (HB230-260)	-	-	-	-	-	-
Hierro fundido maleable Malleable cast iron (HB130-230)	170-300	160-280	-	0,10-0,25	0,10-0,30	-
Fundición de hierro gris Grey cast iron (HB160-250)	150-250	140-240	-	0,10-0,25	0,10-0,30	-
Fundición de hierro nodular Nodular cast iron (HB180-245)	90-210	90-200	-	0,10-0,20	0,10-0,25	-
Aluminio Aluminium and non ferrous (HB30-130)	-	-	300-120	-	-	0,10-0,40
Superaleaciones resistentes al calor Heat resistant super alloys (HB200-320)	-	-	-	-	-	-

SAUDA

AN15





Ref.	Plaquita Inserts	d1	d2	L	z	€
AN15-040A04R	ANMX15T6..	40	16	40	4	**336,70**
AN15-050A05R	ANMX15T6..	50	22	40	5	**374,50**
AN15-063A06R	ANMX15T6..	63	22	40	6	**450,80**
AN15-080A07R	ANMX15T6..	80	27	50	7	**510,70**
AN15-100A08R	ANMX15T6..	100	32	50	8	**612,70**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**4006**		**5,90**

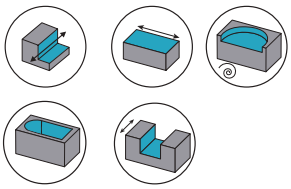
ANMX15

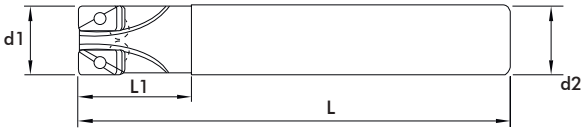
	Ref.	Medidas *Dimensions (mm)*						€
		P	M	K	N	S	H	
	ANMX15T608-MG KS4100	●	●	●		●		**22,80**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	110 ~ 260	0.09 ~ 0.27	0.3 ~ 15
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.18	0.3 ~ 15
Hierro fundido Cast iron	110 ~ 260	0.09 ~ 0.27	0.3 ~ 15
Aleación de alta temperatura High temperature Alloy	40 ~ 70	0.07 ~ 0.14	0.3 ~ 15

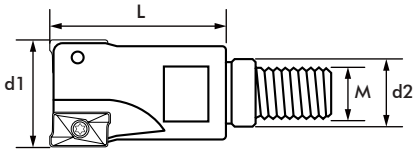
AP10/AP16





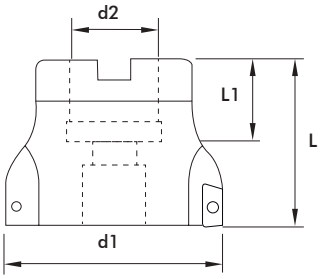
Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
AP10-016M02R	APKT1003.. APHT1003..	16	16	25	120	2	**149,80**
AP10-020M02R	APKT1003.. APHT1003..	20	20	30	120	2	**149,80**
AP10-025M04R	APKT1003.. APHT1003..	25	25	35	150	4	**260,95**
AP16-025M02R	APKT1604.. APHT1604..	25	25	40	150	2	**167,70**
AP16-032M03R	APKT1604.. APHT1604..	32	32	46	150	3	**177,50**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**2515 4004**		**3,50**



Ref.	Plaquita Inserts	d1	d2	L	M	z	€
AP10-016R02R	APKT1003.. APHT1003..	16	8,5	26	M8	2	**176,95**
AP10-025R04R	APKT1003.. APHT1003..	25	12,5	38	M12	4	**260,95**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**2515 4004**		**3,50**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
AP10-050A06R	APKT1003.. APHT1003..	50	22	40	20	6	**297,90**
AP10-063A06R	APKT1003.. APHT1003..	63	22	45	21	6	**308,00**
AP10-080A07R	APKT1003.. APHT1003..	80	27	50	23	7	**409,90**
AP16-050A04R	APKT1604.. APHT1604..	50	22	50	23	4	**253,25**
AP16-063A05R	APKT1604.. APHT1604..	63	22	50	23	5	**297,90**
AP16-080A06RL	APKT1604.. APHT1604..	80	27	55	32	6	**335,30**
AP16-100A08R	APKT1604.. APHT1604..	100	32	55	32	8	**391,30**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**2515 4004**		**3,50**

SAUDA

APKT10/16

	Ref.	Material						€
		P	M	K	N	S	H	
	APHT100308PDFR-AL H10T				●			14,40
	APHT160408PDER-AL H10T				●			13,00
	APKT100304PDER-SG KS2100	●	●	●			●	7,95
	APKT100304PDER-MG KS2100	●	●	●			●	7,95
	APKT100304PDER-MG KS4100	●	●	●		●		7,95
	APKT100308PDER-MG KS2100	●	●	●			●	7,95
	APKT100308PDER-MG KS4100	●	●	●		●		7,95
	APKT160408PDER-MG KS2100	●	●	●			●	9,95
	APKT160408PDER-RG KS2100	●	●	●			●	9,95
	APKT160408PDER-RG KS4100	●	●	●		●		9,95
	APKT160408PDER-MG KS2100	●	●	●			●	9,95
	APKT160408PDER-MG KS4100	●	●	●		●		9,95

Condiciones de corte
Recommended cutting conditions

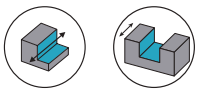
APKT1003

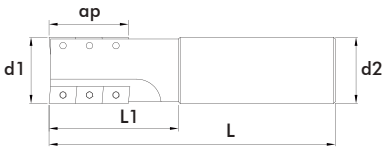
MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.22	0.3 ~ 7.0
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.18	0.3 ~ 4.0
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.22	0.3 ~ 6.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.07 ~ 0.14	0.3 ~ 4.0
Acero endurecido Hardened steel	50 ~ 100	0.07 ~ 0.15	0.3 ~ 4.0

APKT1604/APHT1604/APHT1003

MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.12 ~ 0.28	0.5 ~ 11.0
Inoxidable Stainless	100 ~ 180	0.10 ~ 0.22	0.5 ~ 7.0
Hierro fundido Cast iron	120 ~ 250	0.12 ~ 0.28	0.5 ~ 10.0
Aluminio Aluminum Alloy	300 ~ 1000	0.18 ~ 0.40	0.3 ~ 11.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.10 ~ 0.18	0.5 ~ 7.0
Acero endurecido Hardened steel	50 ~ 100	0.10 ~ 0.20	0.5 ~ 7.0

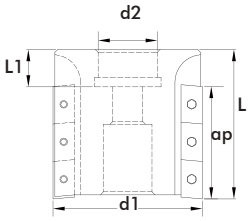
AP10/16





Ref.	Plaquita Inserts	d1	d2	L	L1	z	ap	€
AP10-020M01R	APKT1003.. APHT1003..	20	20	107	42	1x5	28	484,25
AP10-025M02R	APKT1003.. APHT1003..	25	25	125	50	2x4	35	559,00
AP10-032M03R	APKT1003.. APHT1003..	32	32	135	60	3x5	44	651,90

Complementos Spare parts			€
Tornillo de inserción Insert screw	2515		3,50



Ref.	Plaquita Inserts	d1	d2	L	L1	z	ap	€
AP16-050A03R	APKT1604.. APHT1604..	50	22	69	21	3x3	42	1.099,20

Complementos Spare parts			€
Tornillo de inserción Insert screw	4023		3,50

APKT10/16

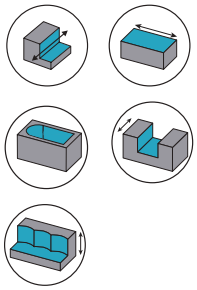
	Ref.	Material P	M	K	N	S	H	€
	APHT100308PDFR-AL H10T				●			14,40
	APHT160408PDER-AL H10T				●			13,00
	APKT100304PDER-SG KS2100	●	●	●			●	7,95
	APKT100304PDER-MG KS2100	●	●	●			●	7,95
	APKT100304PDER-MG KS4100	●	●	●		●		7,95
	APKT100308PDER-MG KS2100	●	●	●			●	7,95
	APKT100308PDER-MG KS4100	●	●	●		●		7,95
	APKT160408PDER-MG KS2100	●	●	●			●	9,95
	APKT160408PDER-RG KS2100	●	●	●			●	9,95
	APKT160408PDER-RG KS4100	●	●	●		●		9,95
	APKT160408PDER-MG KS2100	●	●	●			●	9,95
	APKT160408PDER-MG KS4100	●	●	●		●		9,95

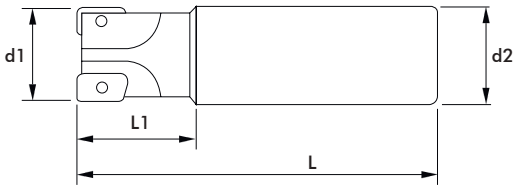
Condiciones de corte
Recommended cutting conditions

MATERIAL	APKT1003 Vc	APKT1003 fz	APKT1604/APHT1604/APHT1003 Vc	APKT1604/APHT1604/APHT1003 fz
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.22	120 ~ 250	0.12 ~ 0.28
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.18	100 ~ 180	0.10 ~ 0.22
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.22	120 ~ 250	0.12 ~ 0.28
Aluminio Aluminum Alloy	-	-	300 ~ 1000	0.10 ~ 0.40
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.07 ~ 0.14	40 ~ 100	0.10 ~ 0.18

SAUDA

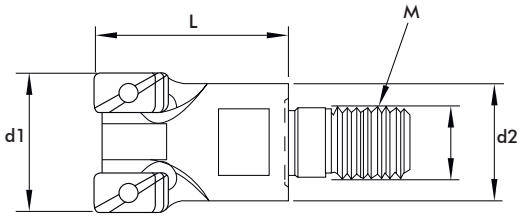
AM11/16





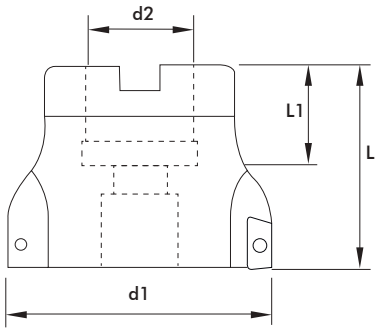
Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
AM11-016M02R	APMT1135..	16	16	100	25	2	**112,00**
AM11-016M02RL	APMT1135..	16	16	160	35	2	**120,95**
AM11-020M02R	APMT1135..	20	20	150	35	2	**120,95**
AM11-020M03R	APMT1135..	20	20	100	30	3	**195,85**
AM11-020M03RL	APMT1135..	20	20	150	35	3	**214,40**
AM16-025M02R	APMT1604..	25	25	150	40	2	**149,10**
AM16-032M03R	APMT1604..	32	32	150	45	3	**242,20**
AM16-032M03RL	APMT1604..	32	32	200	80	3	**335,30**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2515** **4023**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	M	z	€
AM11-016R02R	APMT1135..	16	8,5	26	M8	2	**177,30**
AM11-020R02R	APMT1135..	20	10,5	30	M10	2	**186,20**
AM11-025R04R	APMT1135..	25	12,5	35	M12	4	**298,05**
AM11-032R05R	APMT1135..	32	17	40	M16	5	**316,80**
AM16-025R02R	APMT1604..	25	12,5	35	M12	2	**186,20**
AM16-032R03R	APMT1604..	32	17	40	M16	3	**242,60**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2515** **4023**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
AM11-050A06R	APMT1135..	50	25,4	45	18	6	**335,30**
AM11-063A06R	APMT1135..	63	22	45	22	7	**372,40**
AM11-080A07R	APMT1135..	63	25,4	45	22	7	**372,40**
AM16-063A05RL	APMT1604..	50	22	45	22	5	**288,60**
AM16-080A06RL	APMT1604..	63	22	45	22	6	**326,40**
AM16-100A08R	APMT1604..	80	27	50	26	7	**391,70**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2515** **4023**	**3,50**

APMT11/16

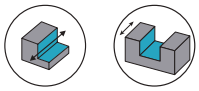
	Ref.	Material						€
		P	M	K	N	S	H	
	APMT113508PDER-MG KS2100	●	●	●			●	7,60
	APMT113508PDER-MG KS4100	●	●	●		●		7,60
	APMT113516PDER-MG KS4100	●	●	●		●		7,60
	APMT113508PDER-RG KS2100	●	●	●			●	7,60
	APMT113508PDER-RG KS4100	●	●	●		●		7,60
	APMT113508PDER-HG KS4100	●	●	●		●		7,60
	APMT160408PDER-MG KS2100	●	●	●			●	9,35
	APMT160408PDER-MG KS4100	●	●	●		●		9,35
	APMT160416PDER-MG KS4100	●	●	●		●		9,35
	APMT160408PDER-RG KS2100	●	●	●			●	9,35
	APMT160408PDER-RG KS4100	●	●	●		●		9,35
	APMT160408PDER-RG KS2100	●	●	●			●	9,35
	APMT160408PDER-RG KS4100	●	●	●		●		9,35

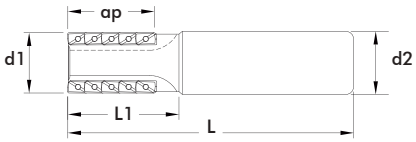
Condiciones de corte
Recommended cutting conditions

MATERIAL	APMT1135			APMT1604		
	Vc	fz	ap	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.22	0.5 ~ 7.0	120 ~ 250	0.12 ~ 0.28	0.5 ~ 11.0
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.18	0.5 ~ 4.0	100 ~ 180	0.10 ~ 0.22	0.5 ~ 7.0
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.22	0.5 ~ 6.0	120 ~ 250	0.12 ~ 0.28	0.5 ~ 11.0
Aluminio Aluminum Alloy	-	-	-	300 ~ 1000	0.10 ~ 0.40	0.5 ~ 11.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.07 ~ 0.14	0.5 ~ 4.0	40 ~ 100	0.10 ~ 0.22	0.5 ~ 7.0
Acero endurecido Hardened steel	50 ~ 100	0.07 ~ 0.15	0.5 ~ 4.0	50 ~ 100	0.10 ~ 0.22	0.5 ~ 7.0

SAUDA

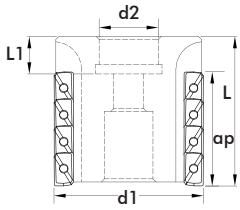
AM11/16





Ref.	Plaquita Inserts	d1	d2	L	L1	z	ap	€
AM11-020M01R	APMT1135..	20	20	107	42	1x5	28	**521,50**
AM11-025M02R	APMT1135..	25	25	125	50	2x4	35	**614,80**
AM11-032M03R	APMT1135..	32	32	135	60	3x5	44	**819,55**
AM11-040M03R	APMT1135..	40	32	175	94	3x8	72	**1005,90**
AM11-032M02R	APMT1604..	32	32	135	55	2x3	42	**577,70**
AM11-040M02R	APMT1604..	40	32	175	94	2x5	68	**651,90**
AM11-040M03RL	APMT1604..	40	32	175	94	3x5	68	**884,80**
AM11-050M03R	APMT1604..	50	50,8	224	128	3x8	100	**1.304,10**
AM11-050M03RL	APMT1604..	50	50,8	284	188	3x12	158	**1.769,60**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**20515 4023**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	ap	€
AM16-050A03R	APMT1604..	50	22	69	21	3x3	42	**1.099,20**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**4023**	**3,50**

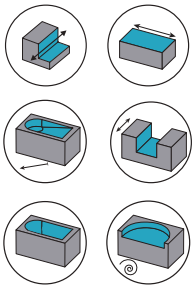
APMT11/16

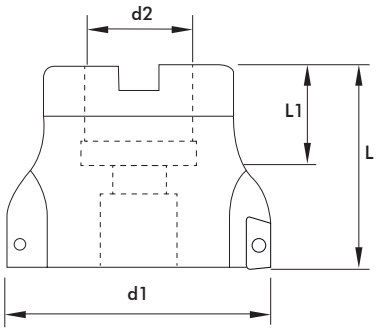
	Ref.	Material P	M	K	N	S	H	€
	APMT113508PDER-MG KS2100	●	●	●			●	**7,60**
	APMT113508PDER-MG KS4100	●	●	●		●		**7,60**
	APMT113516PDER-MG KS4100	●	●	●		●		**7,60**
	APMT113508PDER-RG KS2100	●	●	●			●	**7,60**
	APMT113508PDER-RG KS4100	●	●	●		●		**7,60**
	APMT113508PDER-HG KS4100	●	●	●		●		**7,60**
	APMT160408PDER-MG KS2100	●	●	●			●	**9,35**
	APMT160408PDER-MG KS4100	●	●	●		●		**9,35**
	APMT160416PDER-MG KS4100	●	●	●		●		**9,35**
	APMT160408PDER-RG KS2100	●	●	●			●	**9,35**
	APMT160408PDER-RG KS4100	●	●	●		●		**9,35**
	APMT160408PDER-RG KS2100	●	●	●			●	**9,35**
	APMT160408PDER-RG KS4100	●	●	●		●		**9,35**

Condiciones de corte
Recommended cutting conditions

MATERIAL	APMT1135 Vc	APMT1135 fz	APMT1604 Vc	APMT1604 fz
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.22	120 ~ 250	0.12 ~ 0.28
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.18	100 ~ 180	0.10 ~ 0.22
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.22	120 ~ 250	0.12 ~ 0.28
Aluminio Aluminum Alloy	-	-	300 ~ 1000	0.10 ~ 0.40
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.07 ~ 0.14	40 ~ 100	0.10 ~ 0.22

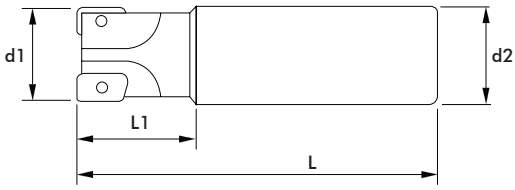
AX12/17





Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
AX12-050A06R	AXMT1235..	50	22	45	20	6	**260,95**
AX12-063A07R	AXMT1235..	63	22	45	20	7	**298,05**
AX12-080A08R	AXMT1235..	80	27	50	26	8	**335,30**
AX17-050A04R	AXMT1705..	50	22	45	20	4	**259,70**
AX17-063A05R	AXMT1705..	63	22	45	20	5	**298,05**
AX17-080A07R	AXMT1705..	80	27	50	26	7	**353,90**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**3002** **4004**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
AX12-016M02R	AXMT1235..	16	16	120	35	2	**186,40**
AX12-020M03R	AXMT1235..	20	20	120	40	3	**224,20**
AX12-025M04R	AXMT1235..	25	25	150	45	4	**279,30**
AX12-032M05R	AXMT1235..	32	32	150	45	5	**339,50**
AX12-025M02R	AXMT1705	25	25	150	40	2	**186,40**
AX12-032M03R	AXMT1705..	32	32	150	45	3	**259,70**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**3002** **4004**	**3,50**

AXMT12/17

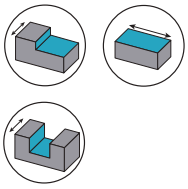
	Ref.	Material P	M	K	N	S	H	€
	AXMT123508PEER-RG KS2100	●	●	●			●	**8,80**
	AXMT123508PEER-RG KS4100	●	●	●		●		**8,80**
	AXMT170508PEER-RG KS4100	●	●	●		●		**10,90**
	AXMT170516PEER-RG KS4100	●	●	●		●		**10,90**

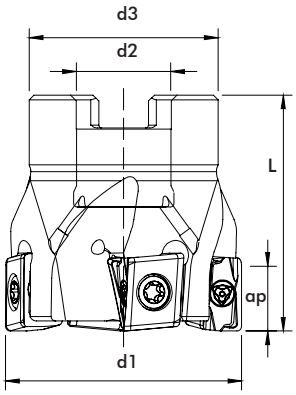
Condiciones de corte
Recommended cutting conditions

MATERIAL	AXMT1235 Vc	fz	ap	APMT1604 Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.22	0.3 ~ 7.0	120 ~ 250	0.12 ~ 0.28	0.5 ~ 11.0
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.18	0.3 ~ 4.0	100 ~ 180	0.10 ~ 0.22	0.5 ~ 7.0
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.22	0.3 ~ 6.0	120 ~ 250	0.12 ~ 0.28	0.5 ~ 10.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.07 ~ 0.14	0.3 ~ 4.0	40 ~ 100	0.10 ~ 0.18	0.5 ~ 7.0
Acero endurecido Hardened steel	50 ~ 100	0.07 ~ 0.15	0.3 ~ 4.0	50 ~ 100	0.10 ~ 0.20	0.5 ~ 7.0

SAUDA

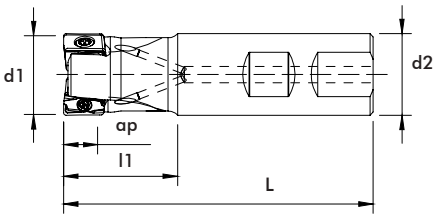
LN13





Ref.	Plaquita Inserts	d1	d2	d3	L	z	ap	€
LN13-040A04R	LNXT 1306...	40	16	32	40	4	11	**424,10**
LN13-050A05R	LNXT 1306...	50	22	42	40	5	11	**585,70**
LN13-063A06R	LNXT 1306...	63	22	52	40	6	11	**643,05**
LN13-063A08R	LNXT 1306...	63	22	52	40	8	11	**755,15**
LN13-080A07R	LNXT 1306...	80	27	60	50	7	11	**760,05**
LN13-100A13R	LNXT 1306...	100	32	80	50	13	11	**1.284,60**

Complementos Spare parts		€
Tornillo de inserción / Insert screw	**0400900** / **0401200**	**5,90**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	ap	€
LN13-025M02R	LNXT 1306...	25	25	95	45	2	11	**353,95**
LN13-032M03R	LNXT 1306...	32	32	110	50	3	11	**424,10**
LN13-040M04R	LNXT 1306...	40	32	110	50	4	11	**539,95**

Complementos Spare parts		€
Tornillo de inserción / Insert screw	**0400900** / **0401200**	**5,90**

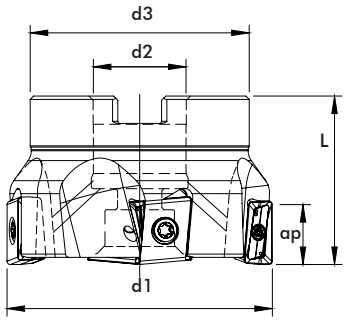
LNXT13

Ref.	Material P	M	K	N	S	H	€
LNXT 130604 PNER-MP KS2100	●		●				**21,65**
LNXT 130604 PNER-MP KS4100	●	●	●				**21,65**
LNXT 130608 PNER-MP KS2100	●		●				**21,65**
LNXT 130608 PNER-MP KS4100	●	●	●				**21,65**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc (m/min) KS2100	Vc (m/min) KS4100	fz LNXT 13... MP
Acero sin aleación Unlloyed steel (HB125-220)	180-250	140-170	0,10-0,35
Acero de baja aleación Low-alloyed steel (HB220-280)	170-210	130-160	0,10-0,30
Acero de alta aleación High-alloyed steel (HB280-380)	160-200	110-140	0,10-0,20
Ferrítico/Martensítico Ferritic/Martensitic (HB200-330)	-	120-180	0,10-0,30
Austenítico AustenitiC (HB 200-330)	-	100-150	0,10-0,25
Austeníco/Férretico (Dúplex) Austenic-ferretic (Duplex) (HB230-260)	-	70-130	0,10-0,20
Hierro fundido maleable Malleable cast iron (HB130-230)	170-300	-	0,10-0,35
Fundición de hierro gris Grey cast iron (HB160-250)	150-250	-	0,10-0,30
Fundición de hierro nodular Nodular cast iron (HB180-245)	90-210	-	0,10-0,25

LN15



Ref.	Plaquita Inserts	d1	d2	d3	L	z	ap	€
LN15-050A05R	LNXT 1506...	50	22	42	40	5	14	**634,10**
LN15-063A05R	LNXT 1506...	63	22	52	40	5	14	**675,70**
LN15-063A08R	LNXT 1506...	63	22	52	40	8	14	**760,80**
LN15-080A07R	LNXT 1506...	80	27	60	50	7	14	**904,00**
LN15-080A10R	LNXT 1506...	80	27	60	50	10	14	**929,55**
LN15-100A08R	LNXT 1506...	100	32	80	50	8	14	**1097,90**
LN15-100A12R	LNXT 1506...	100	32	80	50	12	14	**1350,60**
LN15-125A09R	LNXT 1506...	125	40	90	63	9	14	**1350,60**
LN15-125A15R	LNXT 1506...	125	40	90	63	15	14	**1966,65**
LN15-160A10R	LNXT 1506...	160	40	110	63	10	14	**1520,45**
LN15-160A20R	LNXT 1506...	160	40	110	63	20	14	**2473,60**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0401200**	**5,90**

LNXT15

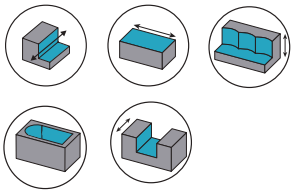
	Ref.	Material P	M	K	N	S	H	€
	LNXT 150608 PNER-MP KS2100	●		●				**22,85**
	LNXT 150608 PNER-MP KS4100	●						**22,85**
	LNXT 150612 PNER-MP KS2100	●		●				**22,85**
	LNXT 150612 PNER-MP KS4100	●						**22,85**
	LNXT 150608 PNSR-HP KS2100	●		●				**22,85**
	LNXT 150608 PNSR-HP KS4100	●		●				**22,85**

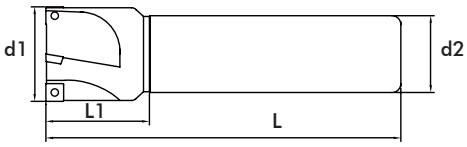
Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc (m/min) KS2100	KS4100	fz LNXT 15... MP	LNXT 15... HP	LNXT 15... W
Acero sin aleación Unlloyed steel (HB125-220)	180-250	140-170	0,10-0,30	0,10-0,30	0,10-0,35
Acero de baja aleación Low-alloyed steel (HB220-280)	170-210	130-160	0,10-0,30	0,10-0,30	0,10-0,35
Acero de alta aleación High-alloyed steel (HB280-380)	160-200	110-140	0,10-0,25	0,10-0,25	0,10-0,35
Hierro fundido maleable Malleable cast iron (HB130-230)	170-300	130-250	0,10-0,40	0,10-0,40	0,10-0,50
Fundición de hierro gris Grey cast iron (HB160-250)	150-250	110-220	0,10-0,35	0,10-0,35	0,10-0,50
Fundición de hierro nodular Nodular cast iron (HB180-245)	90-210	80-170	0,10-0,30	0,10-0,30	0,10-0,50

SAUDA

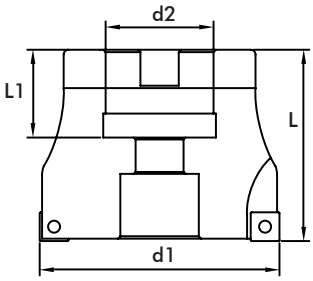
SP06/07





Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
SP05-012M02R	SPMG0502..	12	12	100	20	2	**167,70**
SP06-016M02R	SPMG0602..	16	16	120	25	2	**167,70**
SP06-020M03R	SPMG0602..	20	20	120	30	3	**224,00**
SP06-025M03R	SPMG0602..	25	25	120	30	3	**261,10**
SP06-030M04R	SPMG0602..	30	25	120	30	4	**335,30**
SP06-032M05R	SPMG0602..	32	25	120	30	5	**372,40**
SP07-025M03R	SPMG07T3..	25	25	150	35	3	**232,95**
SP07-032M04R	SPMG07T3..	32	32	150	40	4	**326,40**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2003** **2205** **3504**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
SP06-050A07R	SPMG0602..	50	22	45	20	7	**326,40**
SP06-063A09R	SPMG0602..	63	22	45	20	9	**391,70**
SP09-050A05R	SPMG0904..	50	22	45	20	5	**242,60**
SP09-063A06R	SPMG0904..	63	22	45	20	6	**279,70**
SP09-080A07R	SPMG0904..	80	27	50	23	7	**372,40**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2205** **3504**	**3,50**

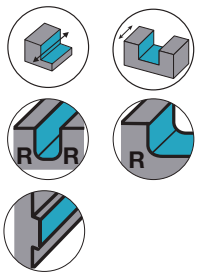
SPMG

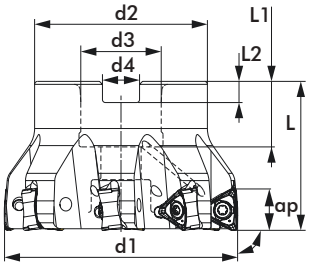
	Ref.	Material P	M	K	N	S	H	€
	SPMG050204-MG KS4100	●	●	●		●		**10,35**
	SPMG060204-MG KS4100	●	●	●		●		**10,50**
	SPMG07T308-MG KS4100	●	●	●		●		**11,40**
	SPMG090408-MG KS4100	●	●	●		●		**12,10**
	SPMG090408-RG KS4100	●	●	●		●		**12,10**

Condiciones de corte
Recommended cutting conditions

MATERIAL	SPMG050204 / SPMG060204			SPMT07T308 / SPMG090408		
	Vc	fz	ap	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.22	0.3 ~ 3.0	120 ~ 250	0.10 ~ 0.22	0.5 ~ 6.0
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.18	0.3 ~ 2.0	100 ~ 180	0.08 ~ 0.18	0.5 ~ 4.0
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.22	0.3 ~ 3.0	120 ~ 250	0.10 ~ 0.22	0.5 ~ 6.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.07 ~ 0.14	0.3 ~ 2.0	40 ~ 100	0.07 ~ 0.14	0.5 ~ 4.0
Acero endurecido Hardened steel	50 ~ 100	0.07 ~ 0.15	0.3 ~ 2.0	50 ~ 100	0.07 ~ 0.15	0.5 ~ 4.0

TN12





Ref.	Plaquita Inserts	d1	d2	d3	d4	L	L1	L2	z	ap	€
TN12-050A04R	TNMU12...	50	47	22	10,4	40	20	6,3	4	11	**663,35**
TN12-050A05R	TNMU12...	50	47	22	10,4	40	20	6,3	5	11	**663,35**
TN12-063A05R	TNMU12...	63	47	22	10,4	40	20	6,3	5	11	**736,70**
TN12-063A06R	TNMU12...	63	47	22	10,4	40	20	6,3	6	11	**916,70**
TN12-080A06R	TNMU12...	80	58	22	9,5	50	26	6	6	11	**1.293,35**
TN12-080A08R	TNMU12...	80	58	27	12,4	50	22	7	8	11	**1.320,00**
TN12-100A07R	TNMU12...	100	67	32	14,4	50	28,5	8	7	11	**1.383,35**
TN12-100A10R	TNMU12...	100	67	32	14,4	50	28,5	8	10	11	**1.750,00**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**3.5**		**5,90**

TNMU

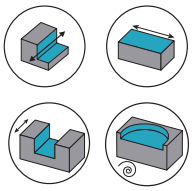
	Ref.	Material P	M	K	N	S	H	€
	TNMU120708PER-MJ KS2100			●		●		**19,50**
	TNMU120708PER-MJ KS3100	●	●					**19,50**
	TNMU120708PER-NMJ KS2100			●		●		**19,50**
	TNMU120708PER-NMJ KS3100	●	●					**19,50**
	TNMU1207R16PER-MJ KS2100			●		●		**19,50**
	TNMU1207R16PER-MJ KS3100	●	●					**19,50**

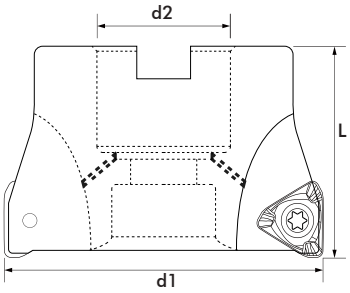
Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc (m/min) KS2100	KS3100	fz KS2100	KS3100
Acero de baja aleación Low carbon steel (-200 HB)	-	100 - 250	-	0.07 - 0.2
Acero de aleación Carbon steel and alloy steel (-300HB)	-	100 - 230	-	0.07 - 0.15
Acero endurecido Prehardened steel (30 - 40 HRC)	-	100 - 180	-	0.07 - 0.15
Acero inoxidable Stainless steel	-	90 - 200	-	0.07 - 0.15
Fundición de hierro gris Grey cast iron (150-250HB)	140 - 250	-	0.07 - 0.2	-
Fundición de hierro dúctil Ductile cast iron (HB150-250)	110 - 200	-	0.07 - 0.15	-
Aleación de titanio Titanium alloys	-	20 - 60	-	0.07 - 0.15
Aleaciones resistentes al calor Heat resistant alloys	20 - 40	-	0.07 - 0.1	-

SAUDA

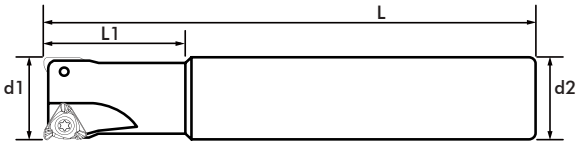
TP10/15





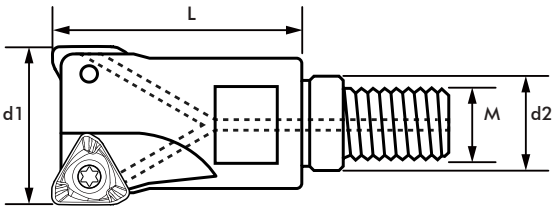
Ref.	Plaquita Inserts	d1	d2	L	z	Refrigeración Coolantt	€
TP10-050A06R	TPMX1004..	50	22	50	6	●	**425,30**
TP10-050A07R	TPMX1004..	50	22	50	7		**372,40**
TP10-63A07R	TPMX1004..	63	22	50	7	●	**469,00**
TP10-063A09R	TPMX1004..	63	22	50	9		**428,80**
TP15-040A04R	TPMX1505..	40	16	40	4	●	**297,50**
TP15-050A05R	TPMX1505..	50	22	40	5	●	**343,70**
TP15-063A06R	TPMX1505..	63	22	40	6	●	**412,30**
TP15-080A08R	TPMX1505..	80	27	50	8	●	**494,40**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2517** **4004**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
TP10-020M02R	TPMX1004..	20	20	130	50	2	**308,40**
TP10-025M03R	TPMX1004..	25	25	150	55	3	**383,30**
TP15-033M03R	TPMX1505..	33	32	200	45	3	**475,00**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2517** **4004**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	M	z	Refrigeración Coolantt	€
TP10-020M02RR	TPMX1004..	20	18	35	10	2	●	**247,80**
TP10-021M02R	TPMX1004..	21	10,5	35	10	2		**206,50**
T10-025-M03RR	TPMX1004..	25	21	35	12	3	●	**291,75**
TP10-026M03R	TPMX1004..	26	12,5	35	12	3		**243,10**
TP10-032M05R	TPMX1004..	32	29	43	16	5		**361,90**
TP10-032M05RR	TPMX1004..	32	17	43	16	5	●	**434,40**
TP10-033M05R	TPMX1004..	33	17	43	16	5		**353,20**
TP10-033M05RR	TPMX1004..	33	17	43	16	5	●	**434,40**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2517** **4004**	**3,50**

TPMX10/15

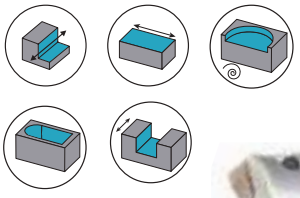
	Ref.	Material						€
		P	M	K	N	S	H	
	TPMX100408-MG KS2100	●	●	●			●	11,75
	TPMX100408-MG KS4100	●	●	●		●		11,75
	TPMX150508-MG KS2100	●	●	●			●	14,20
	TPMX150508-MG KS4100	●	●	●		●		14,20

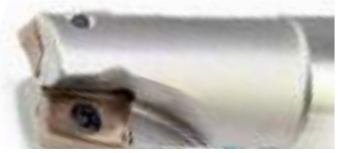
Condiciones de corte
Recommended cutting conditions

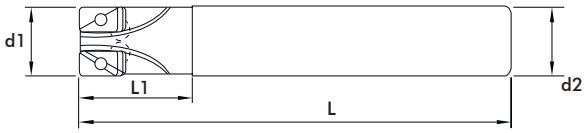
MATERIAL	TPMX1004			TPMX1505		
	Vc	fz	ap	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.08 ~ 0.20	0.3 ~ 7.0	120 ~ 250	0.12 ~ 0.28	0.5 ~ 11.0
Inoxidable Stainless	100 ~ 180	0.05 ~ 0.15	0.3 ~ 4.0	100 ~ 180	0.10 ~ 0.22	0.5 ~ 7.0
Hierro fundido Cast iron	120 ~ 250	0.08 ~ 0.20	0.3 ~ 6.0	120 ~ 250	0.12 ~ 0.28	0.5 ~ 10.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.05 ~ 0.12	0.3 ~ 4.0	40 ~ 100	0.10 ~ 0.18	0.5 ~ 7.0
Acero endurecido Hardened steel	50 ~ 100	0.05 ~ 0.13	0.3 ~ 4.0	50 ~ 100	0.10 ~ 0.20	0.5 ~ 7.0

SAUDA

W311/18

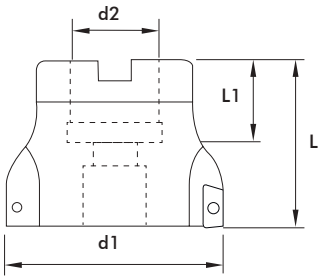






Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
W311-016M02R	W39011T3..	16	16	150	30	2	**186,20**
W311-025M03R	W39011T3..	25	25	150	30	3	**261,10**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**2509**		**3,50**



Ref.	Plaquita Inserts	d1	d2	L	z	Refrigeración Coolantt	€
W311-050A04R	W39011T3..	50	22	40	4		**261,10**
W318-050A05R	W3901806..	50	22	40	5	●	**395,70**
W318-063A06R	W3901806..	63	22	40	6	●	**444,35**
W318-080A07R	W3901806..	80	27	50	7	●	**524,00**
W318-100A08R	W3901806..	100	32	40	8	●	**605,20**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**2509** **4005**		**3,50**

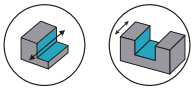
W390

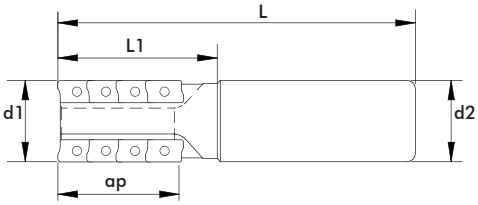
Ref.	Material P	M	K	N	S	H	€
W39011T308-MG KS2100	●	●	●			●	**10,65**
W39011T308-MG KS4100	●	●	●		●		**10,65**
W39011T320-MG KS2100	●	●	●			●	**10,65**
W39011T320-MG KS4100	●	●	●		●		**10,65**
W390180612-SG KS2100	●	●	●		●		**17,80**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	W39011T3 fz	W39011T3 ap	W3901806 fz	W3901806 ap
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.22	0.3 ~ 7.0	0.12 ~ 0.28	0.5 ~ 11.0
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.18	0.3 ~ 4.0	0.10 ~ 0.22	0.5 ~ 7.0
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.22	0.3 ~ 6.0	0.12 ~ 0.28	0.5 ~ 10.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.07 ~ 0.14	0.3 ~ 4.0	0.10 ~ 0.18	0.5 ~ 7.0
Acero endurecido Hardened steel	50 ~ 100	0.07 ~ 0.15	0.3 ~ 4.0	0.10 ~ 0.20	0.5 ~ 7.0

W311





Ref.	Plaquita Inserts	d1	d2	L	L1	z	ap	€
W311-025M02R	W39011T3..	25	25	110	50	2x4	36	**670,60**
W311-032M02R	W39011T3..	32	32	125	50	2x4	36	**708,10**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**2509**		**3,50**

W390

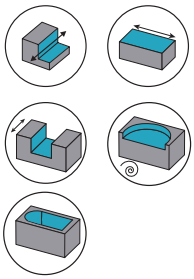
Ref.	Material P	Material M	Material K	Material N	Material S	Material H	€
W39011T308-MG KS2100	●	●	●			●	**10,65**
W39011T308-MG KS4100	●	●	●		●		**10,65**
W39011T320-MG KS2100	●	●	●			●	**10,65**
W39011T320-MG KS4100	●	●	●		●		**10,65**
W390180612-SG KS2100	●	●	●		●		**17,80**

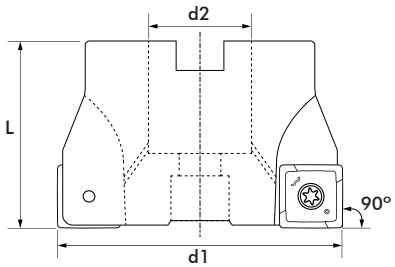
Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	fz
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.22
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.18
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.22
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.07 ~ 0.14

SAUDA

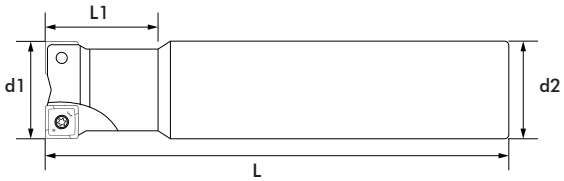
W408





Ref.	Plaquita Inserts	d1	d2	L	z	Refrigeración Coolantt	€
W408-040A04R	W49008T3..	40	16	40	4	●	**336,70**
W408-050A05R	W49008T3..	50	22	40	5	●	**388,20**
W408-063A06R	W49008T3..	63	22	40	6	●	**435,10**
W414-050A04R	W4901404..	50	22	40	4	●	**338,80**
W414-063A05R	W4901404..	63	22	40	5	●	**377,00**
W414-080A07R	W4901404..	80	27	50	7	●	**430,90**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2507** **3505**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
W408-020M02R	W49008T3..	20	20	100	25	2	**226,30**
W408-020M02RL	W49008T3..	20	20	150	25	2	**242,05**
W408-025M03R	W49008T3..	25	20	100	32	3	**286,15**
W408-032M03R	W49008T3..	25	20	150	32	3	**299,60**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2507**	**3,50**

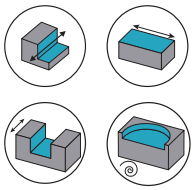
W49008/14

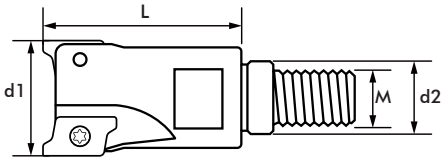
	Ref.	Material P	M	K	N	S	H	€
	W49008T308-SG KS4100	●	●	●		●		**13,30**
	W490140408-SG KS4100	●	●	●		●		**13,30**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	W49008T3 fz	W49008T3 ap	W4901404 fz	W4901404 ap
Acero al carbono Carbon steel	120 ~ 250	0.05 ~ 0.12	0.3 ~ 5.5	0.06 ~ 0.15	0.3 ~ 9
Inoxidable Stainless	100 ~ 180	0.04 ~ 0.10	0.3 ~ 4.5	0.05 ~ 0.12	0.3 ~ 8
Hierro fundido Cast iron	120 ~ 250	0.05 ~ 0.12	0.3 ~ 5.5	0.05 ~ 0.15	0.3 ~ 9
Aluminio Aluminum Alloy	300 ~ 1000	-	-	0.05 ~ 0.15	0.3 ~ 9
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.03 ~ 0.09	0.3 ~ 4.5	0.04 ~ 0.11	0.3 ~ 8
Acero endurecido Hardened steel	50 ~ 100	0.03 ~ 0.09	0.3 ~ 4.5	0.04 ~ 0.11	0.3 ~ 8

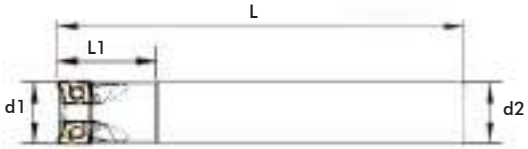
WR07/10





Ref.	Plaquita Inserts	d1	d2	L	M	z	€
WR07-010R02R	WRT0702..	10	5,5	18	5	2	**186,20**
WR07-011R02R	WRT0702..	11	5,5	18	5	2	**186,20**
WR07-012R02R	WRT0702..	12	6,5	20	6	2	**186,20**
WR07-013R02R	WRT0702..	13	6,5	20	6	2	**186,20**
WR10-017R02R	WRT1003..	17	8,5	30	8	2	**232,95**
WR10-021R03R	WRT1003..	21	10,5	32	10	3	**251,70**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2003** **2515**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
WR07-011M02R	WRT0702..	11	12	100	18	2	**186,20**
WR07-013M02R	WRT0702..	13	12	100	20	2	**186,20**
WR10-017M02R	WRT1003..	17	16	150	30	2	**196,40**
WR10-021M03R	WRT1003..	21	20	150	30	3	**214,20**
WR10-026M04R	WRT1003..	26	25	150	40	4	**214,20**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2003** **2515**	**3,50**

W490

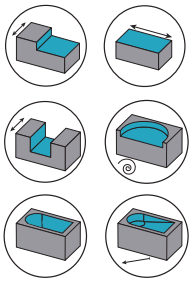
	Ref.	Material P	M	K	N	S	H	€
	WRT070204-RG KS2100	●	●	●			●	**8,60**
	WRT070204-RG KS4100	●	●	●		●		**9,50**
	WRT100308-RG KS2100	●	●	●			●	**8,95**
	WRT100308-RG KS4100	●	●	●		●		**9,65**

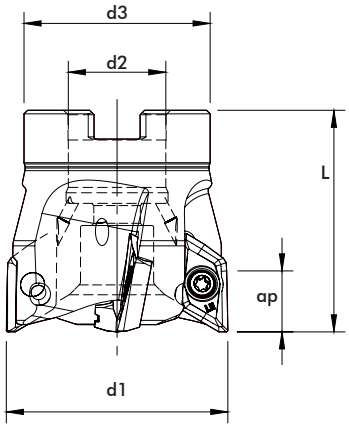
Condiciones de corte
Recommended cutting conditions

MATERIAL	WRT0702 Vc	fz	ap	WRT1003 Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.08 ~ 0.20	0.3 ~ 5.0	120 ~ 250	0.10 ~ 0.22	0.5 ~ 7.0
Inoxidable Stainless	100 ~ 180	0.05 ~ 0.15	0.3 ~ 3.0	100 ~ 180	0.08 ~ 0.18	0.5 ~ 4.0
Hierro fundido Cast iron	120 ~ 250	0.08 ~ 0.20	0.3 ~ 4.0	120 ~ 250	0.10 ~ 0.22	0.5 ~ 6.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.05 ~ 0.12	0.3 ~ 3.0	40 ~ 100	0.07 ~ 0.14	0.5 ~ 4.0
Acero endurecido Hardened steel	50 ~ 100	0.05 ~ 0.13	0.3 ~ 3.0	50 ~ 100	0.07 ~ 0.15	0.5 ~ 4.0

SAUDA

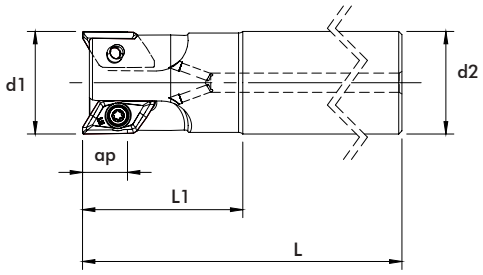
XD15





Ref.	Plaquita (radio) Inserts (radius)	d1	d2	d3	L	z	ap	€
XD15-040A03R-32	0,4~3,2	40	16	32	50	3	14	565,80
XD15-050A04R-32	0,4~3,2	50	22	42	50	4	14	646,45
XD15-063A05R-32	0,4~3,2	63	22	48	50	5	14	727,40
XD15-080A05R-32	0,4~3,2	80	27	60	50	5	14	767,55
XD15-100A06R-32	0,4~3,2	100	32	73	63	6	14	889,40
XD15-040A03R-50	4,0~5,0	40	16	32	50	3	14	565,80
XD15-050A04R-50	4,0~5,0	50	22	42	50	4	14	646,45
XD15-063A05R-50	4,0~5,0	63	22	48	50	5	14	727,40
XD15-080A05R-50	4,0~5,0	80	27	50	50	5	14	767,55
XD15-100A06R-50	4,0~5,0	100	32	73	63	6	14	889,40

Complementos Spare parts		€
Tornillo de inserción Insert screw	0400900 0400803	5,90



Ref.	Plaquita (radio) Inserts (radius)	d1	d2	L	L1	z	ap	€
XD15-020M01R-32	0,4~3,2	20	20	150	60	1	15	404,60
XD15-025M02R-32	0,4~3,2	25	25	180	90	2	15	444,70
XD15-032M02R-32	0,4~3,2	32	32	200	120	2	15	484,80
XD15-040M03R-32	0,4~3,2	40	40	250	65	3	15	646,45
XD15-020M01R-50	4,0~5,0	20	20	150	60	1	15	404,60
XD15-025M02R-50	4,0~5,0	25	25	180	90	2	15	444,70
XD15-040M03R-50	4,0~5,0	40	40	250	65	3	15	646,45

Complementos Spare parts		€
Tornillo de inserción Insert screw	0400900 0400803	5,90

XDGX15

Ref.	Material						€
	P	M	K	N	S	H	
XDGX 15M504 PDFR-LN H10T				●			22,80
XDGX 15M508 PDFR-LN H10T				●			22,80
XDGX 15M512 PDFR-LN H10T				●			22,80
XDGX 15M512 PDFR-LN H10T				●			22,80
XDGX 15M520 PDFR-LN H10T				●			22,80
XDGX 15M532 PDFR-LN H10T				●			22,80
XDGX 15M540 PDFR-LN H10T				●			22,80
XDGX 15M550 PDFR-LN H10T				●			22,80

Condiciones de corte
Recommended cutting conditions

Escuadrado
Shouldering

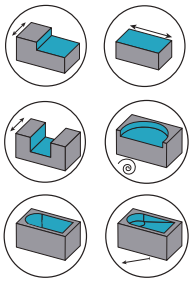
MATERIAL	Vc (m/min) H10T	ae	ap	fz
Aluminio Aluminium and non ferrous (HB30-130)	350-3000	≤ 25% ØDc	≤ 5.0	0,35 - 0,40
			5.0 - 10.0	0,30 - 0,35
			10.0 - 15.0	0,25 - 0,30
		< 50% ØDc	≤ 5.0	0,35 - 0,40
			5.0 - 10.0	0,30 - 0,35
			10.0 - 15.0	0,25 - 0,30
		≤ 75% ØDc	≤ 5.0	0,30 - 0,35
			5.0 - 10.0	0,25 - 0,30
			10.0 - 15.0	0,20 - 0,25

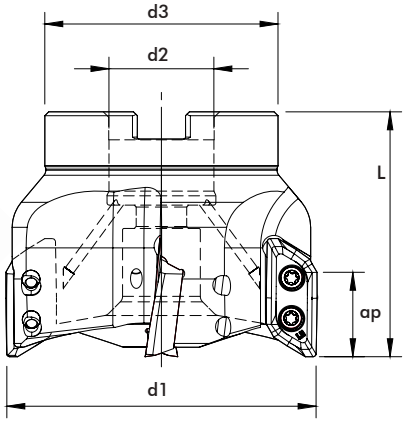
Ranurado
Slotting

MATERIAL	Vc (m/min) H10T	ae	ap	fz
Aluminio Aluminium and non ferrous (HB30-130)	350-3000	100% ØDc	≤ 5.0	0,25 - 0,36
			5.0 - 10.0	0,20 - 0,30
			10.0 - 15.0	0,15 - 0,25

SAUDA

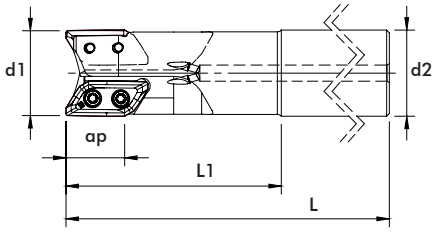
XD22





Ref.	Plaquita (radio) Inserts (radius)	d1	d2	d3	L	z	ap	€
XD22-050A03R-32	0,8~3,2	50	22	42	50	3	14	**646,45**
XD22-063A03R-32	0,8~3,2	63	22	42	50	3	14	**727,40**
XD22-080A04R-32	0,8~3,2	80	27	60	63	4	14	**807,70**
XD22-100A05R-32	0,8~3,2	100	32	70	63	5	14	**929,55**
XD22-125A06R-32	0,8~3,2	125	40	100	63	6	14	**1.050,60**
XD22-050A03R-50	4,0~5,0	50	22	42	50	3	14	**646,45**
XD22-063A03R-50	4,0~5,0	63	22	42	50	3	14	**727,40**
XD22-080A04R-50	4,0~5,0	80	27	60	63	4	14	**807,70**
XD22-100A05R-50	4,0~5,0	100	32	70	63	5	14	**929,55**
XD22-125A06R-50	4,0~5,0	125	40	100	63	6	14	**1.050,60**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0401200**	**5,90**



Ref.	Plaquita (radio) Inserts (radius)	d1	d2	L	L1	z	ap	€
XD22-032M02R-32	0,8~3,2	32	32	170	80	2	21,5	**444,70**
XD22-040M02R-32	0,8~3,2	40	40	170	80	2	21,5	**565,80**
XD22-040M02R-50	4,0~5,0	40	40	170	80	2	21,5	**565,80**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0401200**	**5,90**

XDGX22

	Ref.	Material						€
		P	M	K	N	S	H	
	XDGX 22M708 PDFR-LN H10T				●			32,90
	XDGX 22M716 PDFR-LN H10T				●			32,90
	XDGX 22M720 PDFR-LN H10T				●			32,90
	XDGX 22M732 PDFR-LN H10T				●			32,90
	XDGX 22M740 PDFR-LN H10T				●			32,90
	XDGX 22M750 PDFR-LN H10T				●			32,90

Condiciones de corte
Recommended cutting conditions

Escuadrado
Shouldering

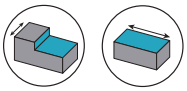
MATERIAL	Vc (m/min) H10T	ae	ap	fz
Aluminio Aluminium and non ferrous (HB30-130)	350-3000	≤ 25% ØDc	≤ 5.0	0,35 - 0,40
			5.0 - 10.0	0,30 - 0,35
			10.0 - 15.0	0,25 - 0,30
				0,20 - 0,25
		< 50% ØDc	≤ 5.0	0,35 - 0,40
			5.0 - 10.0	0,30 - 0,35
			10.0 - 15.0	0,25 - 0,30
				0,20 - 0,25
		≤ 75% ØDc	≤ 5.0	0,30 - 0,35
			5.0 - 10.0	0,25 - 0,30
			10.0 - 15.0	0,20 - 0,25
				0,15 - 0,20

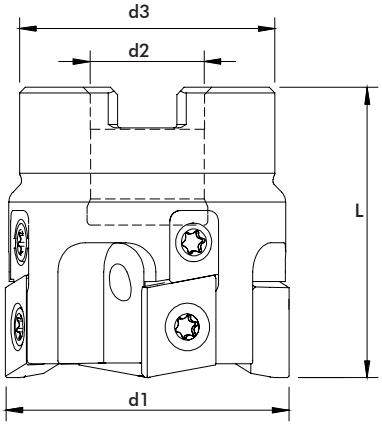
Ranurado
Slotting

MATERIAL	Vc (m/min) H10T	ae	ap	fz
Aluminio Aluminium and non ferrous (HB30-130)	350-3000	100% ØDc	≤ 5.0	0,25 - 0,35
			5.0 - 10.0	0,20 - 0,30
			10.0 - 15.0	0,15 - 0,25
			15.0 - 20.0	0,10 - 0,20

SAUDA

XN12





Ref.	Plaquita (radio) Inserts (radius)	d1	d2	d3	L	z	€
XN12-040A04R	XNHW 1205...	40	16	36	40	4	**864,70**
XN12-050A04R	XNHW 1205...	50	22	46	40	4	**881,20**
XN12-063A07R	XNHW 1205...	63	22	49	40	7	**1230,20**
XN12-080A05R	XNHW 1205...	80	27	60	50	5	**1289,50**
XN12-100A06R	XNHW 1205...	100	32	70	50	6	**1453,70**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**0401100**	**5,90**

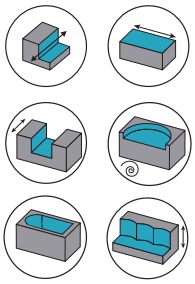
XNHW

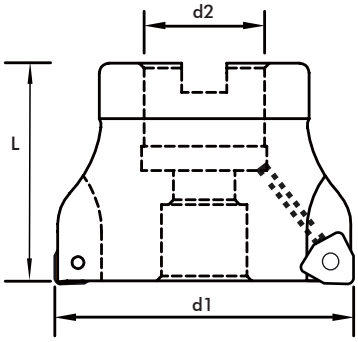
	Ref.	Material P	M	K	N	S	H	€
	XNHW 120508 PZFR-015045 H10T				●			**195,90**
	XNHW 120508 PZFR-015045 H10T				●			**195,90**
	XNHW 120508 PZFR-015045 H10T				●			**195,90**
	XNHW 120508 PZFR-015045 H10T				●			**195,90**

Condiciones de corte
Recommended cutting conditions

MATERIAL		fz
Aleaciones de aluminio forjado Aluminium wrought alloys	(HB80)	300 - 4000
	(HB90)	300 - 1500
Aleaciones de fundición de aluminio Aluminium cast alloys	< 12% Si (HB130)	300 - 5000
	< 12% Si (HB90)	300 - 3000
	> 12% Si (HB100)	300 - 1000
	Latón, bronce rojo Brass, red bronze	100 - 700
	Bronce Bronze	100 - 1500
	Cobre sin plomo y cobre electrolítico Lead-free copper and electrolytic copper	300 - 3000
Materiales no metálicos Non-metallic materials	Plásticos termoendurecibles Thermosetting plastics	80 - 300
	Plásticos reforzados con fibra Fibre-reinforced plastics	80 - 300
	Caucho duro Hard rubber	80 - 300

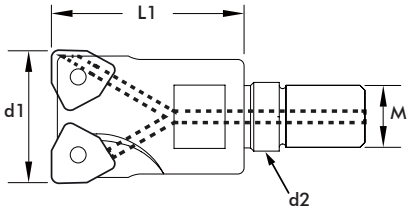
XN04/08





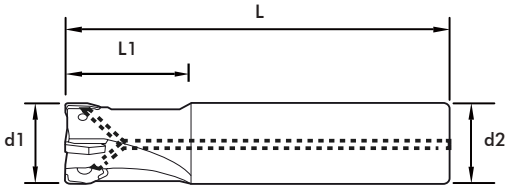
Ref.	Plaquita Inserts	d1	d2	L	z	Refrigeración Coolantt	€
XN04-050A06R	XNMX0403..	50	22	50	6		**372,40**
XN04-063A07R	XNMX0403..	63	22	50	7		**447,30**
XN04-040A07R	XNMX0403..	40	16	40	7	●	**641,90**
XN04-050A09R	XNMX0403..	50	22	40	9	●	**743,80**
XN08-050A05R	XNMX0806..	50	22	40	5	●	**598,70**
XN08-063A06R	XNMX0806..	63	22	40	6	●	**751,80**
XN08-080A07R	XNMX0806..	80	27	50	7	●	**951,30**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2512** **4006**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	M	z	Refrigeración Coolantt	€
XN04-017R02R	XNMX0403..	17	8,5	26	8	2	●	**232,80**
XN04-021R03R	XNMX0403..	21	10,5	32	10	3	●	**242,60**
XN04-026R04R	XNMX0403..	26	12,5	38	12	4	●	**288,60**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2512**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	Refrigeración Coolantt	€
XN04-020M03R	XNMX0403..	20	20	150	40	3		**199,50**
XN04-020M03RL	XNMX0403..	20	20	200	100	3		**332,70**
XN04-025M04R	XNMX0403..	25	25	150	40	4		**246,25**
XN04-032M05R	XNMX0403..	32	32	200	45	5		**335,30**
XN04-020M03RR	XNMX0403..	20	20	110	28	3	●	**359,30**
XN04-025M04RR	XNMX0403..	25	25	120	28	4	●	**512,40**
XN04-032M05RR	XNMX0403..	32	32	130	30	5	●	**608,70**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2512**	**3,50**

SAUDA

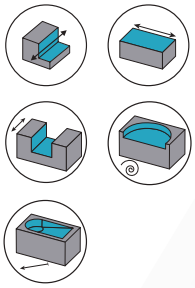
XNMX04/08

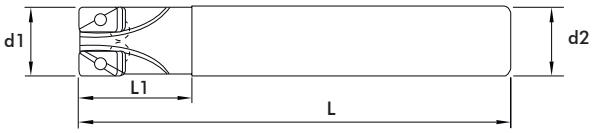
Ref.	Material						€
	P	M	K	N	S	H	
XNMX040304-SG KS2100	●	●	●			●	16,60
XNMX040304-MG KS2100	●	●	●			●	16,60
XNMX040308-MG KS2100	●	●	●			●	16,60
XNMX040308-MG KS4100	●	●	●		●		16,60
XNMX080608-MG KS2100	●	●	●			●	20,30
XNMX080608-MG KS4100	●	●	●		●		20,30
XNMX080608-RG KS4100	●	●	●		●		20,30

Condiciones de corte
Recommended cutting conditions

MATERIAL	XNMX0403			XNMX0806		
	Vc	fz	ap	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.16	0.3 ~ 3.0	120 ~ 250	0.1 ~ 0.3	0.3 ~ 7.0
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.12	0.3 ~ 1.6	100 ~ 180	0.08 ~ 0.25	0.3 ~ 4.5
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.16	0.3 ~ 3.0	120 ~ 250	0.1 ~ 0.3	0.3 ~ 7.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.08 ~ 0.12	0.3 ~ 1.5	40 ~ 100	0.08 ~ 0.18	0.3 ~ 4.0
Acero endurecido Hardened steel	50 ~ 100	0.09 ~ 0.13	0.3 ~ 1.5	50 ~ 100	0.09 ~ 0.19	0.3 ~ 4.0

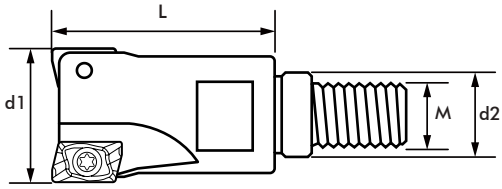
XO06





Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
XO06-010M02R	XOMT0602..	10	10	100	20	2	**149,10**
XO06-012M02R	XOMT0602..	12	12	100	20	2	**149,10**
XO06-012M03R	XOMT0602..	12	12	100	20	3	**204,80**
XO06-013M02R	XOMT0602..	13	12	100	20	2	**149,10**
XO06-013M03R	XOMT0602..	13	12	100	20	3	**204,80**
XO06-016M04R	XOMT0602..	16	16	100	30	4	**260,95**
XO06-020M05R	XOMT0602..	20	20	120	30	5	**286,15**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**1801**		**4,75**



Ref.	Plaquita Inserts	d1	d2	L	M	z	€
XO06-012R03R	XOMT0602..	12	6,5	18	6	3	**242,40**
XO06-016R04R	XOMT0602..	16	8,5	20	8	4	**260,95**
XO06-020R05R	XOMT0602..	20	10,5	30	10	5	**279,30**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**1801**		**4,75**

XOMT06/10

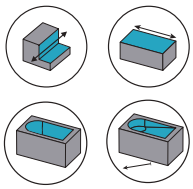
	Ref.	Material P	M	K	N	S	H	€
	XOMT060204-MG KS2100	●	●	●			●	**10,65**
	XOMT060208-MG KS2100	●	●	●			●	**10,65**
	XOMT060208-MG KS4100	●	●	●		●		**10,65**
	XOMT060216-MG KS4100	●	●	●		●		**10,65**
	XOMT10T308-SG KS2100	●	●	●		●		**10,65**

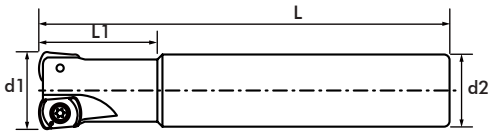
Condiciones de corte
Recommended cutting conditions

MATERIAL	XOMT0602 Vc	fz	ap	XOMT10T3 Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.08 ~ 0.20	0.3 ~ 3.0	120 ~ 250	0.10 ~ 0.22	0.3 ~ 7.0
Inoxidable Stainless	100 ~ 180	0.05 ~ 0.15	0.3 ~ 2.5	100 ~ 180	0.08 ~ 0.18	0.3 ~ 4.0
Hierro fundido Cast iron	120 ~ 250	0.08 ~ 0.13	0.3 ~ 3.0	120 ~ 250	0.10 ~ 0.22	0.3 ~ 7.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.05 ~ 0.12	0.3 ~ 2.5	40 ~ 100	0.07 ~ 0.14	0.3 ~ 5.0
Acero endurecido Hardened steel	50 ~ 100	0.05 ~ 0.13	0.3 ~ 2.5	50 ~ 100	0.07 ~ 0.15	0.3 ~ 5.0

SAUDA

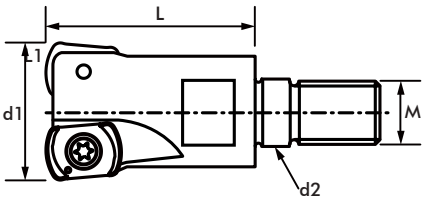
BN06/09

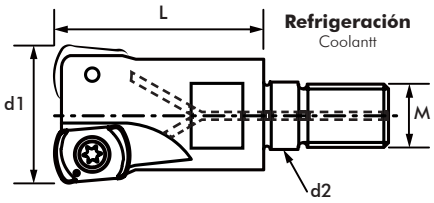




Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
BN06-015M02R	BNMX0603..	15	16	130	26	2	**186,20**
BN06-016M02R	BNMX0603..	16	16	130	26	2	**186,20**
BN06-017M02R	BNMX0603..	17	16	130	26	2	**186,20**
BN06-018M02R	BNMX0603..	18	20	130	25	2	**204,95**
BN06-020M03R	BNMX0603..	20	20	150	40	3	**232,95**
BN06-021M03R	BNMX0603..	21	20	150	40	3	**232,95**
BN06-025M04R	BNMX0603..	25	25	150	40	4	**251,50**
BN06-026M04R	BNMX0603..	26	25	150	30	4	**279,70**
BN06-032M04R	BNMX0603..	32	32	200	45	4	**307,85**
BN09-025M03R	BNMX0904..	25	25	150	40	3	**215,80**
BN09-032M03R	BNMX0904..	32	32	150	40	3	**234,70**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**3004** **4009**		**3,50**

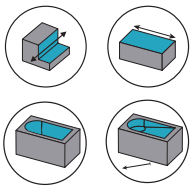


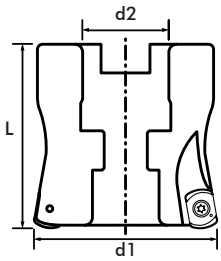


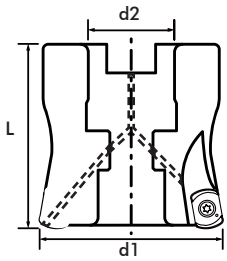
Ref.	Plaquita Inserts	d1	d2	L	M	z	Refrigeración Coolantt	€
BN06-016R02R	BNMX0603..	16	8,5	26	8	2		**186,20**
BN06-016R02RR	BNMX0603..	16	8,5	26	8	2	●	**212,30**
BN06-020R03R	BNMX0603..	20	10,5	30	10	3		**212,65**
BN06-020R03RR	BNMX0603..	20	10,5	30	10	3	●	**242,60**
BN06-021R03R	BNMX0603..	21	10,5	30	10	3		**232,95**
BN06-025R03R	BNMX0603..	25	12,5	35	12	3		**224,55**
BN06-025R04R	BNMX0603..	25	12,5	35	12	4		**233,50**
BN06-025R04RR	BNMX0603..	25	12,5	35	12	4	●	**297,20**
BN06-026R03R	BNMX0603..	26	12,5	35	12	3		**224,55**
BN06-032R04R	BNMX0603..	32	17,0	40	16	4	●	**360,90**
BN06-032R05R	BNMX0603..	32	17,0	40	16	5		**335,30**
BN06-032R05RR	BNMX0603..	32	17,0	40	16	5	●	**402,20**
BN06-040R06R	BNMX0603..	40	17,0	43	16	6	●	**466,90**
BN09-025R03R	BNMX0904..	25	12,5	35	12	3	●	**280,20**
BN09-032R04R	BNMX0904..	32	17,0	40	16	4	●	**360,90**
BN09-042R05R	BNMX0904..	42	17,0	43	16	5	●	**509,45**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**3004** **4009**		**3,50**

BN06/09







Refrigeración
Coolantt

Ref.	Plaquita Inserts	d1	d2	L	z	Refrigeración Coolantt	€
BN06-040A06R	BNMX0603..	40	22	50	6		**353,90**
BN06-040A06RR	BNMX0603..	40	22	50	6	●	**409,90**
BN06-050A07R	BNMX0603..	50	22	50	7		**344,95**
BN06-050A07RR	BNMX0603..	50	22	50	7	●	**445,75**
BN06-063A07R	BNMX0603..	63	22	50	7		**363,50**
BN09-050A06R	BNMX0904..	50	22	50	6	●	**424,60**
BN09-052A06R	BNMX0904..	52	22	50	6	●	**445,75**
BN09-063A07R	BNMX0904..	63	22	50	7		**363,50**
BN09-063A07RR	BNMX0904..	63	27	50	7	●	**488,10**
BN09-080A08R	BNMX0904..	80	27	50	8	●	**636,70**
BN09-100A10R	BNMX0904..	100	32	50	10	●	**677,30**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**3004** **4009**	**3,50**

BNMX

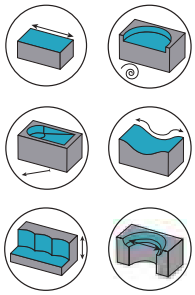
	Ref.	Material P	M	K	N	S	H	€
	BNMX0603-SG KS2100	●	●	●			●	**15,90**
	BNMX0603-SG KS4100	●	●	●		●		**15,90**
	BNMX0603-MG KS2100	●	●	●			●	**15,90**
	BNMX0603-MG KS4100	●	●	●		●		**15,90**
	BNMX0603-RG KS2100	●	●	●			●	**15,90**
	BNMX0603-RG KS4100	●	●	●		●		**15,90**
	BNMX0904-MG KS2100	●	●	●			●	**15,90**
	BNMX0904-MG KS4100	●	●	●		●		**15,90**

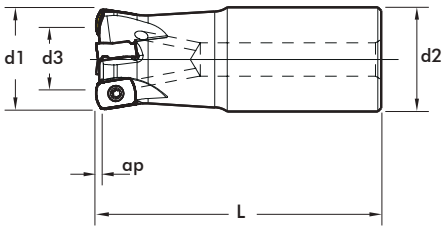
Condiciones de corte
Recommended cutting conditions

MATERIAL	BNMX0603 Vc	fz	ap	BNMX0904 Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.4 ~ 1.6	0.3 ~ 0.9	120 ~ 250	0.4 ~ 2.0	0.3 ~ 1.4
Inoxidable Stainless	100 ~ 180	0.3 ~ 1.2	0.3 ~ 0.7	100 ~ 180	0.3 ~ 1.6	0.3 ~ 1.2
Hierro fundido Cast iron	120 ~ 250	0.4 ~ 1.6	0.3 ~ 0.9	120 ~ 250	0.4 ~ 2.0	0.3 ~ 1.4
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.3 ~ 0.8	0.3 ~ 0.6	40 ~ 100	0.3 ~ 1.2	0.3 ~ 1.2
Acero endurecido Hardened steel	50 ~ 100	0.3 ~ 1.0	0.3 ~ 0.6	50 ~ 100	0.3 ~ 1.4	0.3 ~ 1.2

SAUDA

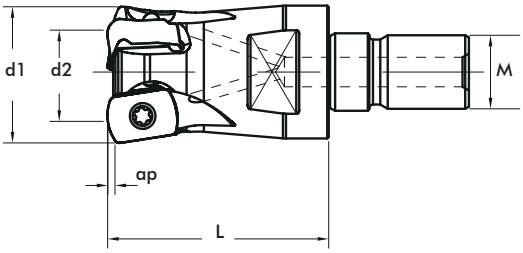
EN06





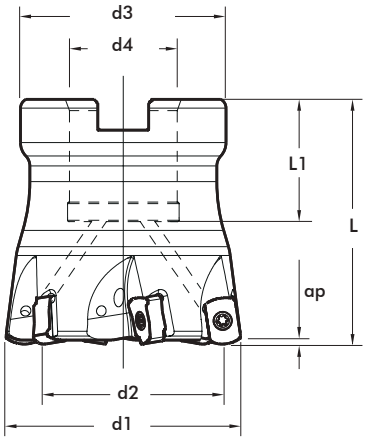
Ref.	Plaquita Inserts	d1	d2	d3	L	z	ap	Refrigeración Coolant	€
EN06-016M02R	ENMX06..	16	16	9,0	100	2	0,9	●	**463,70**
EN06-016M02RL	ENMX06..	16	16	9,0	150	2	0,9	●	**487,75**
EN06-020M03R	ENMX06..	20	20	12,6	130	3	1	●	**520,60**
EN06-020M03RL	ENMX06..	20	20	12,6	160	3	1	●	**565,60**
EN06-025M04R	ENMX06..	25	25	17,6	140	4	1	●	**627,80**
EN06-025M04RL	ENMX06..	25	25	17,6	180	4	1	●	**654,60**
EN06-025M04RLL	ENMX06..	25	25	17,6	250	4	1	●	**723,55**
EN06-032M05R	ENMX06..	32	32	24,6	150	5	1	●	**769,80**
EN06-032M05RL	ENMX06..	32	32	24,6	200	5	1	●	**796,50**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**18000206**	**5,90**



Ref.	Plaquita Inserts	d1	d2	L	M	z	ap	Refrigeración Coolant	€
EN06-016R02R	ENMX06..	16	9,0	23	8	2	0,9	●	**198,90**
EN06-020R03R	ENMX06..	20	12,6	30	10	3	1	●	**225,75**
EN06-025R04R	ENMX06..	25	17,6	35	12	4	1	●	**263,40**
EN06-032R05R	ENMX06..	32	24,6	42	16	5	1	●	**295,60**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**18000206**	**5,90**



Ref.	Plaquita Inserts	d1	d2	d3	d4	L	L1	z	ap	Ref. Coolant	€
EN06-040A06R	ENMX06..	40	32,6	37	16	40	18	6	1	●	**656,10**
EN06-050A06R	ENMX06..	50	42,6	42	22	50	25	6	1	●	**697,80**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**18000206**	**5,90**

ENMX06

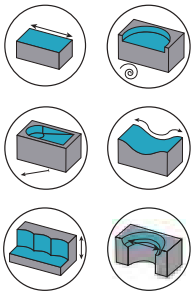
	Ref.	Material						€
		P	M	K	N	S	H	
	ENMX 0604-ST KS4100	●	●	●		●	●	19,05
	ENMX 0604-TR KS4100	●	●	●		●	●	19,05

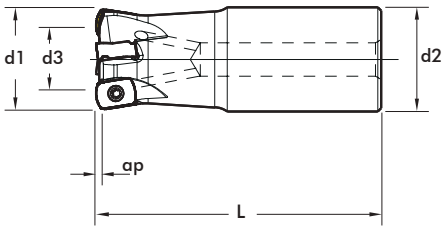
Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	fz
Acero sin aleación Non-Alloyed Steel (VDI 1~5)	140 - 380	0.3 -2.5
Acero de aleación baja Low-Alloyed Steel (VDI 6~9)	130 - 300	0.3 -2.5
Acero de aleación alta High-Alloyed Steel (VDI 10~11)	70 - 150	0.3 -2.5
Ferrítico y Martensítico Ferritic & Martensitic (VDI 12~13)	120 - 200	0.1 - 0.8
Acero inoxidable austenitico Austenitic Stainless Steel (VDI 14)	130 - 250	0.1 - 0.8
Fundición de hierro gris Grey Cast Iron (VDI 15~16)	120 - 250	-
Hierro fundido nodular Nodular Cast Iron (VDI 17~18)	130 - 220	-
Titanio y superaleaciones Titanium & Superalloys (VDI 31~37)	25 - 45	0.1 - 0.8
Material duro Hard materials (VDI 38~41)	40 - 80	0.3 - 2.5

SAUDA

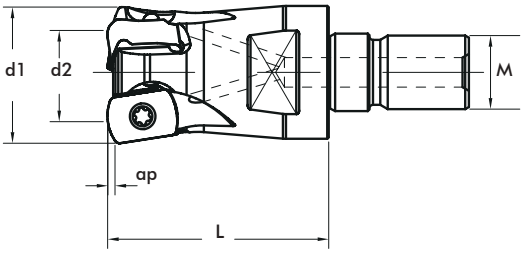
EN09





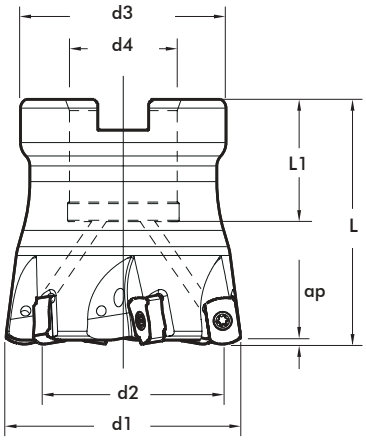
Ref.	Plaquita Inserts	d1	d2	d3	L	z	ap	Refrigeración Coolant	€
EN09-025M02R	ENMX09..	25	25	14,5	150	2	1,5	●	**261,35**
EN09-026M02R	ENMX09..	26	25	15,74	200	2	1,5	●	**328,45**
EN09-026M03R	ENMX09..	26	25	15,74	200	3	1,5	●	**370,90**
EN09-032M03R	ENMX09..	32	32	21,1	160	3	1,5	●	**333,00**
EN09-033M03R	ENMX09..	33	32	22,26	200	3	1,5	●	**388,50**
EN09-033M04R	ENMX09..	33	32	22,26	200	4	1,5	●	**423,05**
EN09-040M05R	ENMX09..	40	32	29,11	180	5	1,5	●	**482,80**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**18000214**	**5,90**



Ref.	Plaquita Inserts	d1	d2	L	M	z	ap	Refrigeración Coolant	€
EN09-025R02R	ENMX09..	25	14,5	35	12	2	1,5	●	**214,00**
EN09-025R03R	ENMX09..	25	14,5	35	12	3	1,5	●	**237,30**
EN09-026R02R	ENMX09..	26	15,74	35	12	2	1,5	●	**214,00**
EN09026R03R	ENMX09..	26	15,74	35	12	3	1,5	●	**237,30**
EN09-032R03R	ENMX09..	32	21,1	42	16	3	1,5	●	**254,30**
EN09-032R04R	ENMX09..	32	21,1	42	16	4	1,5	●	**288,35**
EN09-033R02R	ENMX09..	33	22,26	42	16	2	1,5	●	**220,25**
EN09-033R03R	ENMX09..	33	22,26	42	16	3	1,5	●	**254,30**
EN09-033R04R	ENMX09..	33	22,26	42	16	4	1,5	●	**288,35**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**18000214**	**5,90**



Ref.	Plaquita Inserts	d1	d2	d3	d4	L	L1	z	ap	Ref. Coolant	€
EN09-050A05R	ENMX09..	50	38,39	42	22	40	20	5	1,5	●	**369,95**
EN09-063A06R	ENMX09..	63	51,28	48	22	50	20	6	1,5	●	**433,35**
EN09-063A07R	ENMX09..	63	51,28	48	22	40	20	7	1,5	●	**466,45**
EN09-080A08R	ENMX09..	80	67,40	56	27	50	23	8	1,5	●	**574,85**
EN09-100A10R	ENMX09..	100	86,74	78	32	40	26	10	1,5	●	**903,80**
EN09-125A12R	ENMX09..	125	110,94	89	40	50	29	12	1,5	●	**1.124,10**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**18000214**	**5,90**

ENMX09

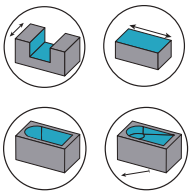
	Ref.	Material						€
		P	M	K	N	S	H	
	ENMX 0905-ST KS2100	●	●					23,95
	ENMX 0905-ST KS4100	●	●	●		●	●	23,95
	ENMX 0905-TR KS4100	●	●	●		●	●	23,95

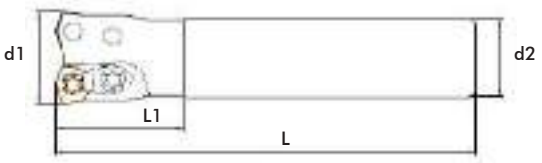
Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc KS2100	Vc KS4100	fz
Acero sin aleación Non-Alloyed Steel (VDI 1~5)	100 - 210	180 - 280	0.3 - 3.0
Acero de aleación baja Low-Alloyed Steel (VDI 6~9)	70 - 180	150 - 250	0.3 -3.0
Acero de aleación alta High-Alloyed Steel (VDI 10~11)	40 - 90	70 - 140	0.3 -3.0
Ferrítico y Martensítico Ferritic & Martensitic (VDI 12~13)	70 - 180	120 - 200	0.2 - 1.2
Acero inoxidable austenitico Austenitic Stainless Steel (VDI 14)	70 - 200	130 - 250	0.2 - 1.2
Fundición de hierro gris Grey Cast Iron (VDI 15~16)	-	120 - 250	-
Hierro fundido nodular Nodular Cast Iron (VDI 17~18)	-	130 - 220	-
Titanio y superaleaciones Titanium & Superalloys (VDI 31~37)	-	25 - 45	0.2 - 1.2
Material duro Hard materials (VDI 38~41)	-	40 - 80	0.3 - 3.0

SAUDA

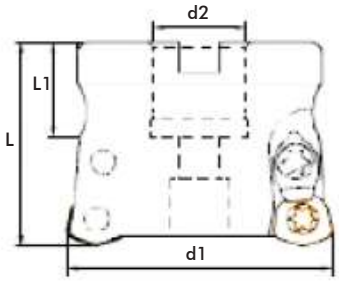
JD12





Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
JD12-032M02R	JDMW1204..	32	32	150	35	2	**242,60**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**4008**		**3,50**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
JD12-050A04R	JDMW1204..	50	22	45	23	4	**316,80**
JD12-063A05R	JDMW1204..	63	22	50	23	5	**363,50**
JD12-080A06R	JDMW1204..	80	27	55	26	6	**465,90**
JD14-063A04R	JDMT1405..	63	22	50	23	4	**341,30**
JD14-080A05R	JDMT1405..	80	27	55	26	5	**436,50**
JD14-100A06R	JDMT1405..	100	32	55	32	6	**531,00**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**4008** **5001**		**3,50**

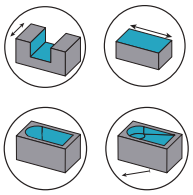
JDMW12/14

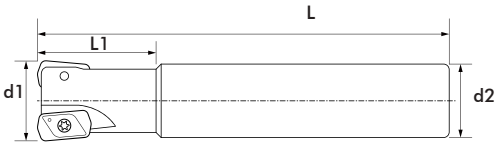
	Ref.	Material P	M	K	N	S	H	€
	JDMW120420ZDSR-MF KS2100	●	●	●			●	**9,95**
	JDMW120420ZDSR-MF KS4100	●	●	●		●		**9,95**
	JDMW120420ZDSR-RG KS2100	●		●			●	**9,95**
	JDMW120420ZDSR-RG KS4100	●	●	●		●		**9,95**
	JDMT140520ZDSR-MG KS4100	●	●	●		●		**14,20**

Condiciones de corte
Recommended cutting conditions

MATERIAL	JDMW1204 Vc	fz	ap	JDMT1405 Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.08 ~ 1.3	0.3 ~ 1.5	120 ~ 250	0.08 ~ 1.8	0.5 ~ 2.0
Inoxidable Stainless	100 ~ 180	0.6 ~ 1.0	0.3 ~ 1.0	100 ~ 180	0.6 ~ 1.2	0.5 ~ 1.5
Hierro fundido Cast iron	120 ~ 250	0.8 ~ 1.3	0.3 ~ 1.5	120 ~ 250	0.8 ~ 1.8	0.5 ~ 2.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.5 ~ 1.0	0.3 ~ 1.0	40 ~ 100	0.5 ~ 1.2	0.5 ~ 1.5
Acero endurecido Hardened steel	50 ~ 100	0.5 ~ 1.0	0.3 ~ 1.0	50 ~ 100	0.5 ~ 1.2	0.5 ~ 1.5

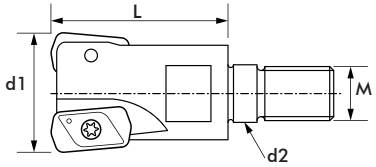
LN03





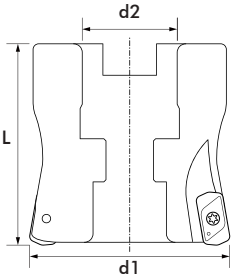
Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
LN03-016M02R	LNMX0303..	16	16	100	30	2	**182,55**
LN03-016M02RL	LNMX0303..	16	16	150	30	2	**195,70**
LN03-020M03R	LNMX0303..	20	20	150	50	3	**209,00**
LN03-025M04R	LNMX0303..	25	25	150	60	4	**234,90**
LN03-032M06R	LNMX0303..	32	32	150	70	6	**260,95**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**2535**		**3,50**



Ref.	Plaquita Inserts	d1	d2	L	M	z	Refrigeración Coolantt	€
LN03-017R02R	LNMX0303..	17	8,5	26	8	2		**216,30**
LN03-021R03R	LNMX0303..	21	10,5	32	10	3		**238,00**
LN03-02103RR	LNMX0303..	21	10,5	32	10	3	●	**274,10**
LN03-026R04R	LNMX0303..	26	12,5	38	12	4		**272,85**
LN03-032R04RL	LNMX0303..	32	17	41	16	4		**299,45**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**2535**		**3,50**



Ref.	Plaquita Inserts	d1	d2	L	z	€
LN03-016A05R	LNMX0303..	50	50	22	5	**405,85**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**2535**		**3,50**

LNMX03

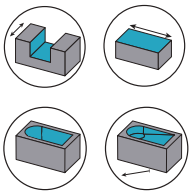
Ref.	Material P	M	K	N	S	H	€
LNMX0303-SG KS2100	●	●	●			●	**13,70**
LNMX0303-SG KS4100	●	●	●		●		**13,70**
LNMX0303-MG KS2100	●	●	●			●	**13,70**
LNMX0303-MG KS4100	●	●	●		●		**13,70**

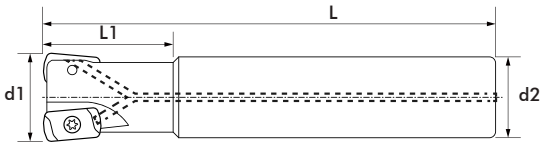
Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.4 ~ 1.6	0.3 ~ 0.9
Inoxidable Stainless	100 ~ 180	0.3 ~ 1.2	0.3 ~ 0.7
Hierro fundido Cast iron	120 ~ 250	0.4 ~ 1.6	0.3 ~ 0.9
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.3 ~ 0.8	0.3 ~ 0.6
Acero endurecido Hardened steel	50 ~ 100	0.3 ~ 1.0	0.3 ~ 0.6

SAUDA

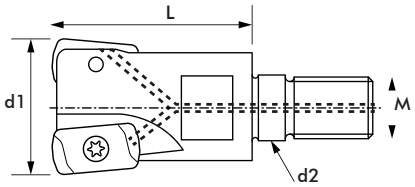
LO03





Ref.	Plaquita Inserts	d1	d2	L	L1	z	Refrigeración Coolantt	€
LO03-016M02R	LOX0303..	16	16	150	30	2		242,20
LO03-016M02RR	LOX0303..	16	16	150	30	2	●	279,30
LO03-017M02R	LOX0303..	17	16	150	20	2		270,20
LO03-018M02R	LOX0303..	18	16	150	20	2		279,30
LO03-020M03R	LOX0303..	20	20	150	50	3		307,50
LO03-020M03RR	LOX0303..	20	20	150	50	3	●	363,30
LO03-021M03R	LOX0303..	21	20	150	30	3		307,50
LO03-022M03R	LOX0303..	22	20	150	30	3		316,80
LO03-025M04R	LOX0303..	25	25	150	60	4		354,05
LO03-025M04RR	LOX0303..	25	25	150	60	4	●	428,60
LO03-026M04R	LOX0303..	26	25	150	35	4		326,05
LO03-026M04RR	LOX0303..	26	25	150	35	4	●	419,15
LO03-026M04RL	LOX0303..	26	25	150	45	4		372,60
LO03-028M04R	LOX0303..	28	25	200	20	4		391,30
LO03-028M05R	LOX0303..	28	25	150	20	5		428,60
LO03-030M04R	LOX0303..	30	32	150	46	4		419,15
LO03-032M05R	LOX0303..	32	32	150	70	5		428,60
LO03-032M04RR	LOX0303..	33	32	150	20	5	●	540,25
LO03-033M05R	LOX0303..	33	32	200	20	5		456,60
LO03-035M05R	LOX0303..	35	32	200	20	5		475,00

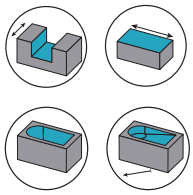
Complementos Spare parts			€
Tornillo de inserción Insert screw	3004		3,50

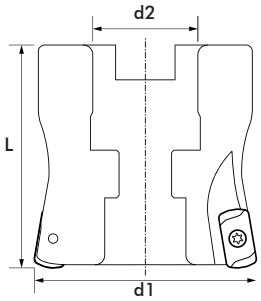


Ref.	Plaquita Inserts	d1	d2	L	M	z	Refrigeración Coolantt	€
LO03-017R02R	LOGX0303..	17	8,5	25	8	2	●	270,20
LO03-021R03R	LOGX0303..	21	10,5	30	10	3	●	316,60
LO03-026R04R	LOGX0303..	26	12,5	35	12	4	●	363,30
LO03-035R04R	LOGX0303..	35	17	40	16	4	●	409,90
LO03-035R05R	LOGX0303..	35	17	40	16	5	●	484,40

Complementos Spare parts			€
Tornillo de inserción Insert screw	3004		3,50

LO03





Ref.	Plaquita Inserts	d1	d2	L	z	€
LO03-050A07R	LOGX0303..	50	50	22	7	**503,00**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**3004**	**3,50**

LOGX03

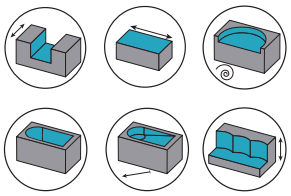
	Ref.	Material						€
		P	M	K	N	S	H	
	LOGX030310-SG KS4100	●	●	●		●		**20,00**

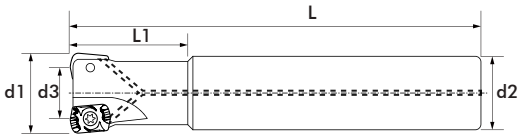
Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.4 ~ 1.6	0.3 ~ 0.9
Inoxidable Stainless	100 ~ 180	0.3 ~ 1.2	0.3 ~ 0.7
Hierro fundido Cast iron	120 ~ 250	0.4 ~ 1.6	0.3 ~ 0.9
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.3 ~ 0.8	0.3 ~ 0.6
Acero endurecido Hardened steel	50 ~ 100	0.3 ~ 1.0	0.3 ~ 0.6

SAUDA

LP01





Ref.	Plaquita Inserts	d1	d2	d3	L	L1	z	Refrigeración Coolantt	€
LP01-008M01R	LPGX0102..	8	10	4,2	80	16	1		**138,10**
LP01-008M01RR	LPGX0102..	8	10	4,2	80	16	1	●	**181,30**
LP01-010M02R	LPGX0102..	10	10	6,2	80	20	2		**164,35**
LP01-010M02RR	LPGX0102..	10	10	6,2	80	20	2	●	**213,50**
LP01-012M03R	LPGX0102..	12	12	8,2	80	20	3		**223,15**
LP01-012M03RR	LPGX0102..	12	12	8,2	80	20	3	●	**288,95**
LP01-016M04R	LPGX0102..	16	16	12,2	90	20	4		**282,30**
LP01-016M04RR	LPGX0102..	16	16	12,2	90	20	4	●	**366,80**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**1804**		**4,75**

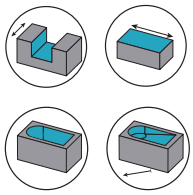
LPGX01

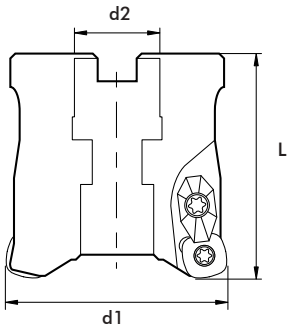
	Ref.	Material						€
		P	M	K	N	S	H	
	LPGX0102-SG KS4100	●	●	●		●		**14,50**
	LPGX0102-MG KS4100	●	●	●		●		**14,50**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.2 ~ 0.8	0.2 ~ 0.5
Inoxidable Stainless	100 ~ 180	0.2 ~ 0.6	0.2 ~ 0.4
Hierro fundido Cast iron	120 ~ 250	0.2 ~ 0.8	0.2 ~ 0.5
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.2 ~ 0.4	0.3 ~ 0.6
Acero endurecido Hardened steel	50 ~ 100	0.2 ~ 0.5	0.2 ~ 0.3

SD12





Ref.	Plaquita Inserts	d1	d2	L	z	€
SD12-050A03R	SDMT1205.. SDNW1205..	50	22	50	3	**270,75**
SD12-050A04RL	SDMT1205.. SDNW1205..	50	22	50	4	**344,95**
SD12-063A03R	SDMT1205.. SDNW1205..	63	22	50	3	**307,85**
SD12-063A04R	SDMT1205.. SDNW1205..	63	22	50	4	**332,35**
SD12-080A04R	SDMT1205.. SDNW1205..	80	32	55	4	**382,05**
SD12-080A05R	SDMT1205.. SDNW1205..	80	32	55	5	**407,25**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**4011**		**4,20**

SDMT/SDNW12

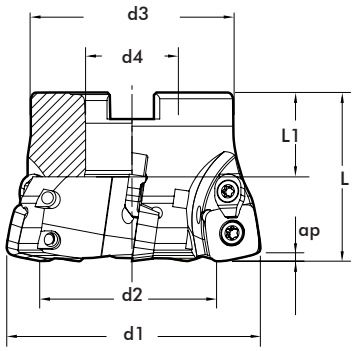
	Ref.	Material P	M	K	N	S	H	€
	SDMT1205ZDSN-MF KS2100	●	●	●			●	**10,65**
	SDMT1205ZDSN-MF KS4100	●	●	●		●		**10,65**
	SDMT1205ZDTN-MG KS4100	●	●	●		●		**10,65**
	SDMT1205ZDTN-RG KS4100	●	●	●		●		**10,65**
	SDNW1205ZDTN-RG KS2100	●	●	●			●	**10,35**
	SDNW1205ZDTN-RG KS4100	●	●	●		●		**10,35**

Condiciones de corte
Recommended cutting conditions

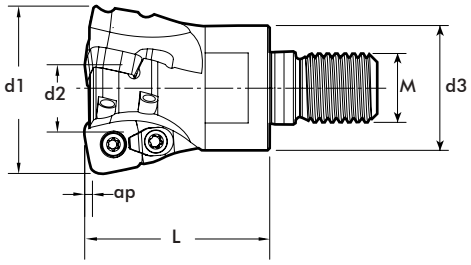
MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.8 ~ 1.8	0.3 ~ 1.5
Inoxidable Stainless	100 ~ 180	0.6 ~ 1.2	0.3 ~ 1.0
Hierro fundido Cast iron	120 ~ 250	0.8 ~ 1.8	0.3 ~ 1.5
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.5 ~ 1.2	0.3 ~ 1.0
Acero endurecido Hardened steel	50 ~ 100	0.5 ~ 1.2	0.3 ~ 1.0

SAUDA

SD12



Ref.	Plaquita Inserts	d1	d2	d3	d4	L	L1	z	ap	Ref. Coolant	€
SD12-050A04R	SDMW12..	50	32,4	42	22	40	22	4	1,8	●	**290,95**
SD12-063A05R	SDMW12..	63	45,4	48	22	40	22	5	1,8	●	**336,55**
SD12-080A06R	SDMW12..	80	62,4	58	27	50	25	6	1,8	●	**462,40**
SD12-100A08R	SDMW12..	100	82,4	65	32	50	26	8	1,8	●	**559,90**



Ref.	Plaquita Inserts	d1	d2	d3	L	M	z	ap	Refrigeración Coolant	€
SD12-032R02R	SDMW12..	32	14,4	29	43	16	2	1,8	●	**290,95**
SD12-040R03R	SDMW12..	40	22,4	29	43	16	3	1,8	●	**336,55**

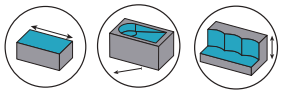
SDMW12

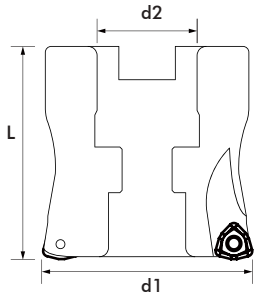
	Ref.	Material						€
		P	M	K	N	S	H	
	SDMW 120420 KS2100	●	●					**16,25**
	SDMW 120420 KS4100	●	●	●		●	●	**16,25**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc KS2100	Vc KS4100	fz
Acero sin aleación Non-Alloyed Steel (VDI 1~5)	100 - 210	180 - 380	0.60 ~ 1.40
Acero de aleación baja Low-Alloyed Steel (VDI 6~9)	70 - 180	120 - 300	0.60 ~ 1.40
Acero de aleación alta High-Alloyed Steel (VDI 10~11)	40 - 90	70 - 150	0.60 ~ 1.40
Ferrítico y Martensítico Ferritic & Martensitic (VDI 12~13)	70 - 180	120 - 200	0.60 ~ 1.40
Acero inoxidable austenitico Austenitic Stainless Steel (VDI 14)	70 - 200	130 - 250	0.60 ~ 1.40
Fundición de hierro gris Grey Cast Iron (VDI 15~16)	-	120 - 250	0.60 ~ 1.40
Hierro fundido nodular Nodular Cast Iron (VDI 17~18)	-	130 - 220	0.60 ~ 1.40
Titanio y superaleaciones Titanium & Superalloys (VDI 31~37)	-	25 - 45	0.60 ~ 1.40
Material duro Hard materials (VDI 38~41)	-	40 - 80	0.60 ~ 1.40

WN09/13





Ref.	Plaquita Inserts	d1	d2	L	z	Refrigeración Coolantt	€
WN09-050A05R	WNMX09T3..	50	22	50	5		**353,90**
WN09-050A05RR	WNMX09T3..	50	22	50	5	●	**409,90**
WN09-063A05R	WNMX09T3..	63	22	50	5		**372,60**
WN09-063A05RR	WNMX09T3..	63	22	50	5	●	**429,10**
WN13-063A05R	WNMX1305..	63	22	50	5		**419,15**
WN13-080A07R	WNMX1305..	80	27	50	7		**577,35**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**3006** **4006**	**3,50**

Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
WN09-025M02R	WNMX09T3..	25	25	150	40	2	**197,60**
WN09-032M03R	WNMX09T3..	32	32	150	40	3	**260,95**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**3006**	**3,50**

WNX

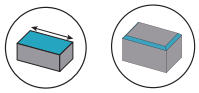
	Ref.	Material P	M	K	N	S	H	€
	WNMX09T316-MG KS2100	●	●	●			●	**15,80**
	WNMX09T316-MG KS4100	●	●	●		●		**15,80**
	WNMX09T316-RG KS2100	●	●	●			●	**15,80**
	WNMX09T316-RG KS4100	●	●	●		●		**15,80**
	WNMX130516-MG KS2100	●	●	●			●	**21,55**
	WNMX130516-MG KS4100	●	●	●		●		**21,55**

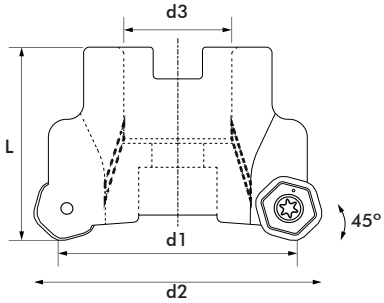
Condiciones de corte
Recommended cutting conditions

MATERIAL	WNMX09T3 Vc	fz	ap	WNMX1305 Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.4 ~ 1.5	0.4 ~ 1.35	120 ~ 250	0.4 ~ 3.0	0.4 ~ 1.7
Inoxidable Stainless	100 ~ 180	0.4 ~ 1.2	0.4 ~ 1.0	100 ~ 180	0.3 ~ 2.0	0.4 ~ 1.4
Hierro fundido Cast iron	120 ~ 250	0.4 ~ 1.5	0.4 ~ 1.35	120 ~ 250	0.4 ~ 3.0	0.4 ~ 1.7
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.4 ~ 1.0	0.4 ~ 1.0	40 ~ 100	0.3 ~ 1.6	0.4 ~ 1.3
Acero endurecido Hardened steel	50 ~ 100	0.4 ~ 1.1	0.4 ~ 1.0	50 ~ 100	0.3 ~ 2.0	0.4 ~ 1.3

SAUDA

HN07





Ref.	Plaquita Inserts	d1	d2	d3	L	z	Refrigeración Coolantt	€
HN07-050A05R	HNMX0704..	50	58,7	22	40	5	●	**397,80**
HN07-063A06R	HNMX0704..	63	71,7	22	40	6	●	**419,15**
HN07-080A08R	HNMX0704..	80	88,7	27	50	8	●	**493,20**
HN07-100A09R	HNMX0704..	100	108,7	32	50	9	●	**644,90**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**4005**		**3,50**

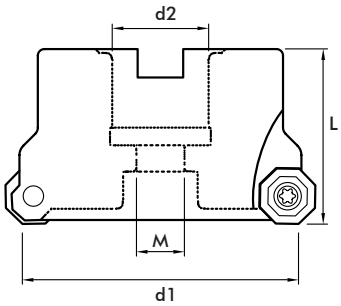
HNMX07

	Ref.	Material						€
		P	M	K	N	S	H	
	HNMX0704-SG KS4100	●	●	●				**16,65**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	140 ~ 250	0.10 ~ 0.3	0.3 ~ 3.5
Inoxidable Stainless	60 ~ 140	0.08 ~ 0.2	0.3 ~ 2.0
Aleación de alta temperatura High temperature Alloy	30 ~ 70	0.08 ~ 0.2	0.3 ~ 2.0

OF05



Ref.	Plaquita Inserts	d1	d2	L	M	z	€
OF05-050A05R	OFMT05T3...	50	22	40	11	5	**313,10**
OF05-063A06R	OFMT05T3...	63	22	40	11	6	**383,80**
OF05-080A07R	OFMT05T3...	80	27	50	38	7	**469,40**
OF05-100A08R	OFMT05T3...	100	32	50	46	8	**563,50**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**4011**		**4,20**

OFMT05

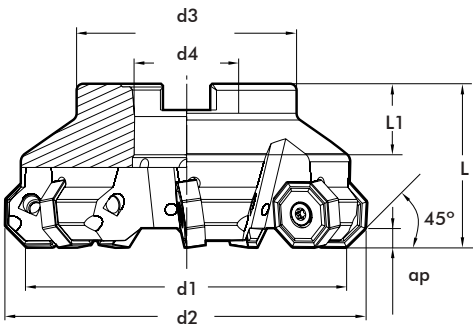
	Ref.	Material						€
		P	M	K	N	S	H	
	OFMT05T3TN-MG KS4100	●	●	●		●		**12,60**
	OFMT05T3TN-RG KS4100	●	●	●		●		**12,60**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.30	0.3 ~ 2.8
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.25	0.3 ~ 1.7
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.30	0.3 ~ 2.8
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.08 ~ 0.25	0.3 ~ 1.7
Acero endurecido Hardened steel	50 ~ 100	0.08 ~ 0.25	0.3 ~ 1.7

SAUDA

ON08



Ref.	Plaquita Inserts	d1	d2	d3	d4	L	L1	z	ap	Ref. Coolant	€
ON08-063A05R	ONMU08..	63	75	49	22	40	22	5	5,5	●	**321,70**
ON08-080A06R	ONMU08..	80	92	58	27	50	25	6	5,5	●	**364,60**
ON08-100A07R	ONMU08..	100	112	67	32	50	26	7	5,5	●	**414,60**
ON08-125A08R	ONMU08..	125	137	87	40	63	32	8	5,5		**511,85**
ON08-160A10R	ONMU08..	160	172	107	40	63	32	10	5,5		**686,25**
ON08-200A12R	ONMU08..	200	212	130	60	63	40	12	5,5		**1106,55**
ON08-315A16R	ONMU08..	315	327	220	60	63	40	16	5,5		**1940,05**

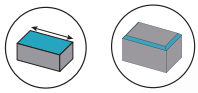
ONMU08

	Ref.	Material						€
		P	M	K	N	S	H	
	ONMU080608 KS2100	●	●					**22,45**
	ONMU080608 KS4100	●						**22,45**
	ONMU080612 KS2100	●	●	●		●	●	**22,45**

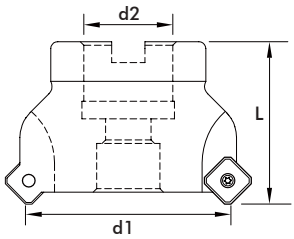
Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	Vc	fz	
	KS2100	KS4100	ONMU080608	ONMU080612
Acero sin aleación Non-Alloyed Steel (VDI 1~5)	100 - 210	180 - 380	0.22~0.50	0.05~0.40
Acero de aleación baja Low-Alloyed Steel (VDI 6~9)	70 - 180	120 - 300	0.22~0.50	0.05~0.40
Acero de aleación alta High-Alloyed Steel (VDI 10~11)	40 - 90	70 - 150	0.22~0.50	0.05~0.40
Ferrítico y Martensítico Ferritic & Martensitic (VDI 12~13)	70 - 180	120 - 200	0.22~0.50	0.05~0.40
Acero inoxidable austenitico Austenitic Stainless Steel (VDI 14)	70 - 200	130 - 250	0.22~0.50	0.05~0.40
Fundición de hierro gris Grey Cast Iron (VDI 15~16)	-	120 - 250	0.22~0.50	0.05~0.40
Hierro fundido nodular Nodular Cast Iron (VDI 17~18)	-	130 - 220	0.22~0.50	0.05~0.40
Titanio y superaleaciones Titanium & Superalloys (VDI 31~37)	-	25 - 45	0.22~0.50	0.05~0.40
Material duro Hard materials (VDI 38~41)	-	40 - 80	0.22~0.50	0.05~0.40

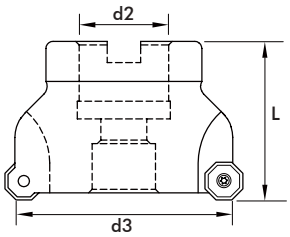
SN12



SNMX1205



ONMX0505



Ref.	Plaquita Inserts	d1	d2	d3	L	z	€
SN12-050A04R	SNMX1205.. ONMX0505..	50	22	52,9	40	4	**372,40**
SN12-063A05R	SNMX1205.. ONMX0505..	63	22	65,9	40	5	**465,90**
SN12-080A06R	SNMX1205.. ONMX0505..	80	27	82,9	50	6	**652,10**
SN12-100A08R	SNMX1205.. ONMX0505..	100	32	102,9	50	8	**801,20**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**4015**		**5,90**

ONMX05 SNMX12

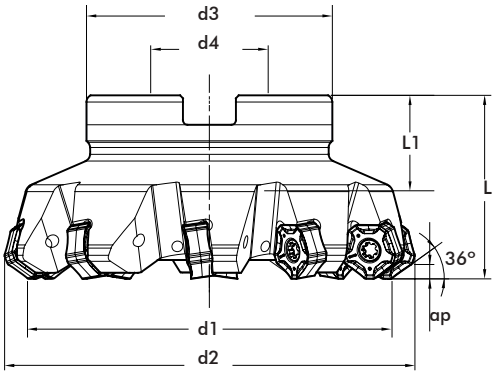
	Ref.	Material P	M	K	N	S	H	€
	ONMX0505-RG KS2100	●	●	●			●	**26,80**
	ONMX0505-RG KS4100	●	●	●		●		**26,80**
	SNMX1205-MG KS2100	●	●	●			●	**19,70**
	SNMX1205-MG KS4100	●	●	●		●		**19,70**
	SNMX1205-RG KS2100	●	●	●			●	**19,70**
	SNMX1205-RG KS4100	●	●	●		●		**19,70**

Condiciones de corte
Recommended cutting conditions

MATERIAL	ONMX0505 Vc	fz	ap	SNMX1205 Vc	fz	ap
Acero al carbono Carbon steel	80 ~ 200	0.1 ~ 0.3	0.3 ~ 2.0	80 ~ 200	0.1 ~ 0.3	0.3 ~ 6.0
Inoxidable Stainless	50 ~ 110	0.08 ~ 0.25	0.3 ~ 1.5	50 ~ 110	0.08 ~ 0.25	0.3 ~ 3.6
Hierro fundido Cast iron	80 ~ 180	0.1 ~ 0.3	0.3 ~ 2.0	80 ~ 180	0.1 ~ 0.3	0.3 ~ 6.0
Aleación de alta temperatura High temperature Alloy	30 ~ 60	0.08 ~ 0.2	0.3 ~ 1.5	30 ~ 60	0.08 ~ 0.2	0.3 ~ 3.6
Acero endurecido Hardened steel	35 ~ 70	0.08 ~ 0.23	0.3 ~ 1.5	35 ~ 70	0.08 ~ 0.23	0.3 ~ 3.6

SAUDA

PN12



Ref.	Plaquita Inserts	d1	d2	d3	d4	L	L1	z	ap	Ref. Coolant	€
PN12-050A04R	PNMU12..	50	83,6	42	22	40	20	4	4	●	**376,00**
PN12-050A05R	PNMU12..	50	58,6	42	22	40	20	5	4	●	**416,30**
PN12-063A05R	PNMU12..	63	83,6	48	22	40	20	5	4	●	**449,20**
PN12-063A06R	PNMU12..	63	96,6	48	22	40	20	6	4	●	**489,40**
PN12-080A08R	PNMU12..	80	96,6	58	27	50	23	8	4	●	**642,25**
PN12-100A10R	PNMU12..	100	1113,6	67	32	50	67	10	4	●	**769,25**
PN12-125A10R	PNMU12..	125	158,6	89	40	63	89	10	4	●	**817,80**

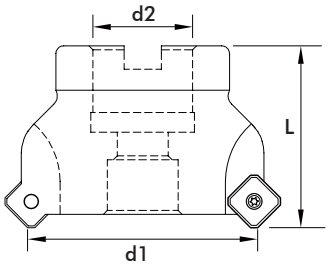
PNMU12

	Ref.	Material						€
		P	M	K	N	S	H	
	PNMU1206ZNN KS2100	●	●					**22,10**
	PNMU1206ZNN KS3100	●						**22,10**
	PNMU1206ZNN KS4100	●	●	●		●	●	**22,10**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc KS2100	Vc KS3100	Vc KS4100	fz
Acero sin aleación Non-Alloyed Steel (VDI 1~5)	100 - 210	170 - 300	180 - 380	0.05~0.50
Acero de aleación baja Low-Alloyed Steel (VDI 6~9)	70 - 180	180 - 250	120 - 300	0.05~0.50
Acero de aleación alta High-Alloyed Steel (VDI 10~11)	40 - 90	100 - 140	70 - 150	0.05~0.50
Ferrítico y Martensítico Ferritic & Martensitic (VDI 12~13)	70 - 180	-	120 - 200	0.05~0.50
Acero inoxidable austenitico Austenitic Stainless Steel (VDI 14)	70 - 200	-	130 - 250	0.05~0.50
Fundición de hierro gris Grey Cast Iron (VDI 15~16)	-	-	120 - 250	0.05~0.50
Hierro fundido nodular Nodular Cast Iron (VDI 17~18)	-	-	130 - 220	0.05~0.50
Titanio y superaleaciones Titanium & Superalloys (VDI 31~37)	-	-	25 - 45	0.05~0.50
Material duro Hard materials (VDI 38~41)	-	-	40 - 80	0.05~0.50

SE12



Ref.	Plaquita Inserts	d1	d2	L	z	€
SE12-050A04R	SEKW1204.. SEET1204..	50	22	40	4	**224,00**
SE12-063A05R	SEKW1204.. SEET1204..	63	22	45	5	**279,70**
SE12-080A06R	SEKW1204.. SEET1204..	80	27	50	6	**335,30**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**5006**		**3,50**

SEET12 SEKT12 SEKW12

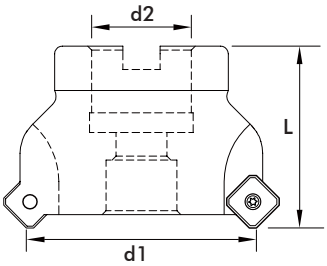
	Ref.	Material P	M	K	N	S	H	€
	SEET1204AFFN-AL H10T				●			**13,95**
	SEET1204AFFN-FG KS2100	●	●	●			●	**13,95**
	SEKT1204AFTN-RG KS4100	●	●	●		●		**9,80**
	SEKW1204AFEN KS3100	●	●	●				**8,60**
	SEKW1204AFSN-F KS3100	●	●	●				**8,60**
	SEKW1204AFTN KS3100	●	●	●				**8,60**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.30	0.3 ~ 5.5
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.25	0.3 ~ 3.0
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.30	0.3 ~ 5.5
Aluminio Aluminum Alloy	300 ~ 1000	0.10 ~ 0.40	0.3 ~ 5.5
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.08 ~ 0.25	0.3 ~ 3.0
Acero endurecido Hardened steel	50 ~ 100	0.08 ~ 0.25	0.3 ~ 3.0

SAUDA

SE13



Ref.	Plaquita Inserts	d1	d2	L	z	€
SE13-050A04R	SEMT13T3..	50	22	40	4	**354,60**
SE13-063A05R	SEMT13T3..	63	22	40	5	**410,20**
SE13-080A06R	SEMT13T3..	80	27	50	6	**484,40**
SE13-100A07R	SEMT13T3..	100	32	50	7	**670,60**
SE13-125A08R	SEMT13T3..	125	40	50	8	**816,60**
SE13-160A10R	SEMT13T3..	160	40	63	10	**1.109,20**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**350535**		**3,50**

FRESADO

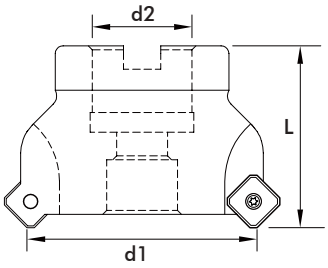
SEET13 SEMT13

	Ref.	Material P	M	K	N	S	H	€
	SEET13T3AGFN-AL H10T				●			**13,95**
	SEET13T3AGFN-FG KS2100	●	●	●			●	**13,95**
	SEMT13T3AGEN-MF KS2100	●	●	●			●	**9,65**
	SEMT13T3AGEN-MF KS4100	●	●	●		●		**9,65**
	SEMT13T3AGSN-MF KS2100	●	●	●			●	**9,65**
	SEMT13T3AGSN-MF KS4100	●	●	●		●		**9,65**
	SEMT13T3AGEN-MG KS2100	●	●	●			●	**9,65**
	SEMT13T3AGEN-MG KS4100	●	●	●		●		**9,65**
	SEMT13T3AGTN-MG KS2100	●	●	●			●	**9,65**
	SEMT13T3AGTN-MG KS4100	●	●	●		●		**9,65**
	SEMT13T3AGTN-RG KS4100	●	●	●		●		**9,65**
	SEMT13T3AGTN-HG KS4100	●	●	●		●		**9,65**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.30	0.3 ~ 5.5
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.25	0.3 ~ 3.0
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.30	0.3 ~ 5.0
Aluminio Aluminum Alloy	300 ~ 1000	0.10 ~ 0.40	0.3 ~ 5.5
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.08 ~ 0.25	0.3 ~ 3.0
Acero endurecido Hardened steel	50 ~ 100	0.08 ~ 0.25	0.3 ~ 3.0

W212



Ref.	Plaquita Inserts	d1	d2	L	z	€
W245-050A04R	W245-12T3..	50	22	40	4	**354,60**
W245-063A05R	W245-12T3..	63	22	40	5	**410,20**
W245-080A06R	W245-12T3..	80	27	50	6	**484,40**
W245-100A07R	W245-12T3..	100	32	50	7	**591,90**
W245-125A08R	W245-12T3..	125	40	63	8	**816,60**
W245-160A10R	W245-12T3..	160	40	63	10	**1.109,20**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**350535**		**3,50**

W245

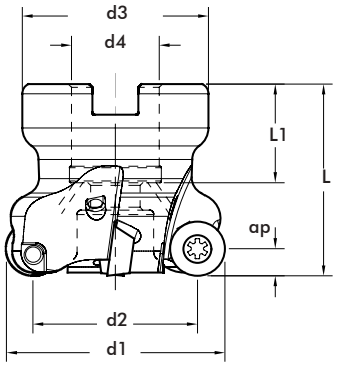
	Ref.	Material P	M	K	N	S	H	€
	W245-12T3-AL H10T				●			**11,95**
	W245-12T3-FG KS2100	●	●	●			●	**11,95**
	W245-12T3-MG KS2100	●	●	●			●	**11,95**
	W245-12T3-MG KS4100	●	●	●		●		**11,95**
	W245-12T3-HG KS4100	●	●	●		●		**11,95**

Condiciones de corte
Recommended cutting conditions

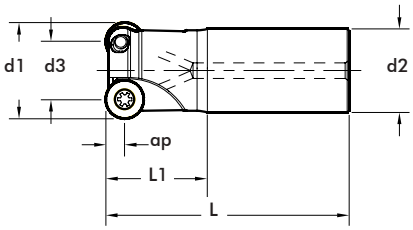
MATERIAL	Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.10 ~ 0.30	0.3 ~ 5.5
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.25	0.3 ~ 3.0
Hierro fundido Cast iron	120 ~ 250	0.10 ~ 0.30	0.3 ~ 5.0
Aluminio Aluminum Alloy	300 ~ 1000	0.10 ~ 0.40	0.3 ~ 5.5
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.08 ~ 0.25	0.3 ~ 3.0
Acero endurecido Hardened steel	50 ~ 100	0.08 ~ 0.25	0.3 ~ 3.0

SAUDA

RD08/10/12

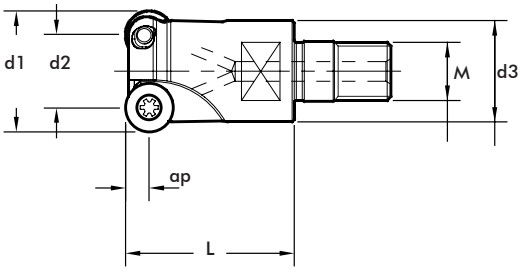


Ref.	Plaquita Inserts	d1	d2	d3	d4	L	L1	z	ap	Ref. Coolant	€
RD10-040A05R	RDKT10.. RDKW10..	40	30	34	16	40	18	5	5	●	**225,90**
RD10-050A05R	RDKT10.. RDKW10..	50	40	42	22	50	22	5	5	●	**239,05**
RD10-040A06R	RDKT10.. RDKW10..	40	40	42	22	50	22	6	5	●	**656,50**
RD10-063A06R	RDKT10.. RDKW10..	63	53	48	22	50	22	6	5	●	**276,80**
RD12-040A04R	RDKT12.. RDKW12..	40	28	32	16	40	18	4	6	●	**217,30**
RD12-050A05R	RDKT12.. RDKW12..	50	38	40	22	50	20	5	6	●	**255,90**
RD12-052A05R	RDKT12.. RDKW12..	52	40	42	22	50	22	5	6	●	**239,05**
RD12-063A06R	RDKT12.. RDKW12..	63	51	48	22	50	20	6	6	●	**295,95**
RD12-080A07R	RDKT12.. RDKW12..	80	68	58	27	50	25	7	6	●	**320,85**
RD12-100A07R	RDKT12.. RDKW12..	100	88	65	32	50	26	7	6	●	**374,30**
RD12-100A08R	RDKT12.. RDKW12..	100	88	65	32	50	26	8	6	●	**396,30**



Ref.	Plaquita Inserts	d1	d2	d3	L	L1	z	ap	Ref. Coolant	€
RD08-016M02R	RDKT08.. RDKW08..	16	8	10	160	-	2	4	●	**220,75**
RD08-020M02R	RDKT08.. RDKW08..	20	12	15	180	-	2	4	●	**220,75**
RD08-025M03R	RDKT08.. RDKW08..	25	17	25	180	-	3	4	●	**255,00**
RD10-020M02RR	RDKT10.. RDKW10..	20	20	10	180	-	2	5	●	**340,30**
RD10-025M02RR	RDKT10.. RDKW10..	25	25	15	180	-	2	5	●	**211,60**
RD12-025M02R	RDKT12.. RDKW12..	25	25	25	180	80	2	6	●	**346,00**
RD12-032M02R	RDKT12.. RDKW12..	32	32	32	200	60	2	6	●	**360,30**
RD12-032M03RR	RDKT12.. RDKW12..	32	32	32	160	60	3	6	●	**431,35**

RD08/10/12



Ref.	Plaquita Inserts	d1	d2	d3	L	M	z	ap	Refrigeración Coolant	€
RD08-016R02R	RDKT08.. RDKW08..	16	8	13	23	8	2	4	●	**220,75**
RD08-020R02R	RDKT08.. RDKW08..	20	12	18	30	10	2	4	●	**220,75**
RD08-025R03R	RDKT08.. RDKW08..	25	17	21	35	12	3	4	●	**255,00**
RD10-020R02R	RDKT10.. RDKW10..	20	10	18	30	10	2	5	●	**225,45**
RD10-025R03R	RDKT10.. RDKW10..	25	15	21	35	12	3	5	●	**263,05**
RD12-025R02R	RDKT12.. RDKW12..	25	13	21	35	12	2	6	●	**367,45**
RD12-032R03R	RDKT12.. RDKW12..	32	20	29	42	16	3	6	●	**268,80**
RD12-042R04R	RDKT12.. RDKW12..	42	30	29	43	16	4	6	●	**287,80**

RDKT08/10/12/16 RDKW08/10/12

	Ref.	Material P	M	K	N	S	H	€
	RDKT0802M0 KS4100	●	●	●		●	●	**8,60**
	RDKT10T03M0 KS4100	●	●	●		●	●	**8,95**
	RDKT1204M0 KS4100	●	●	●		●	●	**10,10**
	RDKT1604M0 KS4100	●	●	●		●	●	**14,10**
	RDKT0802M0-ST KS4100	●	●	●		●	●	**8,60**
	RDKT10T3M0-ST KS2100	●	●					**10,00**
	RDKT10T3M0-ST KS4100	●	●	●		●	●	**10,00**
	RDKT1204M0-ST KS2100	●	●					**11,25**
	RDKT1204M0-ST KS4100	●	●	●		●	●	**11,25**
	RDKT0802M0-TR KS4100	●	●	●		●	●	**8,60**
	RDKT10T3M0-TR KS4100	●	●	●		●	●	**8,95**
	RDKT1204M0- TR KS4100	●	●	●		●	●	**10,10**
	RDKW0802M0 KS4100	●	●	●		●	●	**8,60**
	RDKW10T3M0 KS4100	●	●	●		●	●	**8,95**
	RDKW1204M0 KS4100	●	●	●		●	●	**9,70**

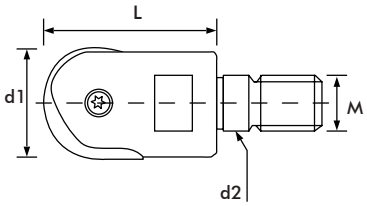
Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc KS2100	Vc KS4100
Acero sin aleación Non-Alloyed Steel (VDI 1~5)	100 - 210	180 - 380
Acero de aleación baja Low-Alloyed Steel (VDI 6~9)	70 - 180	120 - 300
Acero de aleación alta High-Alloyed Steel (VDI 10~11)	40 - 90	70 - 150
Ferrítico y Martensítico Ferritic & Martensitic (VDI 12~13)	70 - 180	120 - 200
Acero inoxidable austenitico Austenitic Stainless Steel (VDI 14)	70 - 200	130 - 250
Fundición de hierro gris Grey Cast Iron (VDI 15~16)	-	120 - 250
Hierro fundido nodular Nodular Cast Iron (VDI 17~18)	-	130 - 220
Titanio y superaleaciones Titanium & Superalloys (VDI 31~37)	-	25 - 45
Material duro Hard materials (VDI 38~41)	-	40 - 80

Ref.	fz
RDKT0802M0	0.15 ~ 0.25
RDKT10T03M0	0.15 ~ 0.25
RDKT1204M0	0.20 ~ 0.30
RDKT1604M0	0.30~0.60
RDKT0802M0-ST	0.08 ~ 0.25
RDKT10T3M0-ST	0.08 ~ 0.28
RDKT1204M0-ST	0.10 ~ 0.30
RDKT0802M0-TR	0.18 ~ 0.35
RDKT10T3M0-TR	0.22 ~ 0.40
RDKT1204M0- TR	0.22 ~ 0.40
RDKW0802M0	0.13 ~ 0.25
RDKW10T3M0	0.16 ~ 0.30
RDKW1204M0	0.16 ~ 0.35

SAUDA

SPW



Ref.	Plaquita Inserts	d1	d2	L	M	€
SPW10-M05	SPWE100-50R	10	5,5	20	5	**76,00**
SPW12-M06	SPWE120-60R	12	6,5	22	6	**76,00**
SPW16-M08	SPWE160-80R	16	8,5	28	8	**76,00**
SPW20-M10	SPWE200-100R	20	10,5	30	10	**76,00**
SPW25-M12	SPWE250-125R	25	12,5	40	12	**91,10**
SPW32-M16	SPWE320-160R	32	17	43	16	**144,40**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**P03240** **P03250** **P03260** **P03280**	**9,90**

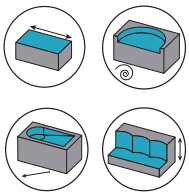
Ref.	Plaquita Inserts	d1	d2	L	L1	€
SPWC100-L130	SPWE100-50R	10	10	130	30	**33,00**
SPWC100-L160	SPWE100-50R	10	10	160	35	**33,00**
SPWC120-L130	SPWE120-60R	12	12	130	30	**33,00**
SPWC120-L160	SPWE120-60R	12	12	160	30	**33,00**
SPWC160-L120	SPWE160-80R	16	16	120	30	**41,80**
SPWC160-L160	SPWE160-80R	16	16	160	30	**41,80**
SPWC160-L200	SPWE160-80R	16	16	200	45	**45,60**
SPWC200-L160	SPWE200-100R	20	20	160	30	**45,60**
SPWC200-L200	SPWE200-100R	20	20	200	35	**50,60**
SPWC250-L160	SPWE250-125R	25	25	160	35	**68,40**
SPWC250-L200	SPWE250-125R	25	25	200	40	**78,50**
SPWC250-L250	SPWE250-125R	25	25	250	60	**91,10**
SPWC320-L200	SPWE320-160R	32	32	200	55	**91,10**
SPWC320-L250	SPWE320-160R	32	32	250	70	**106,20**
SPWC320-L300	SPWE320-160R	32	32	300	80	**121,55**

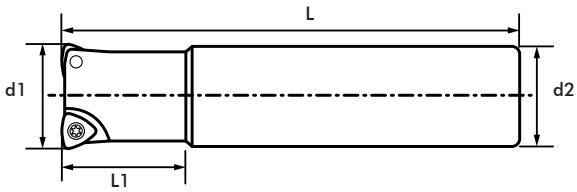
Complementos Spare parts		€
Tornillo de inserción Insert screw	**P03240** **P03250** **P03260** **P03280**	**9,90**

SPWE

Ref.	Material P	M	K	N	S	H	€
SPWE100-50R KS3100	●	●	●		●		**10,10**
SPWE120-60R KS3100	●	●	●		●		**10,10**
SPWE160-80R KS3100	●	●	●		●		**11,40**
SPWE200-100R KS3100	●	●	●		●		**13,90**
SPWE250-125R KS3100	●	●	●		●		**17,85**
SPWE200-100R KS3100	●	●	●		●		**23,40**

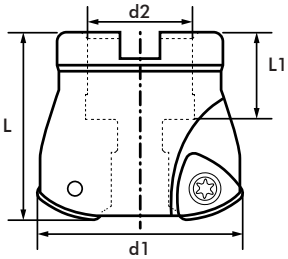
WP26





Ref.	Plaquita Inserts	d1	d2	L	z	€
WP26-035M03R	WP26339R14..	35	32	230	3	**385,90**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**4005**	**3,50**



Ref.	Plaquita Inserts	d1	d2	L	L1	z	€
WP26-050A03R	WP26379R25..	50	22	50	21	3	**289,50**
WP26-100A06R	WP26379R25..	100	32	50	26	6	**463,75**
WP26-160A08R	WP26379R25..	160	40	63	38	8	**656,25**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**5002**	**3,50**

WP2633/37

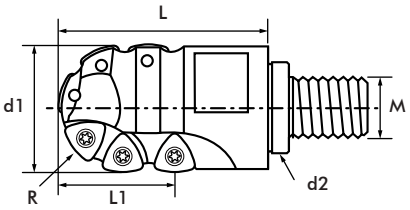
	Ref.	Material P	M	K	N	S	H	€
	WP26339R14-RG KS2100	●	●	●			●	**11,75**
	WP26339R14-RG KS4100	●	●	●		●		**11,75**
	WP26379R25-RG KS2100	●	●	●			●	**13,30**
	WP26379R25-RG KS4100	●	●	●		●		**13,30**

Condiciones de corte
Recommended cutting conditions

MATERIAL	WP26339R14 Vc	fz	ap	WP26379R25 Vc	fz	ap
Acero al carbono Carbon steel	120 ~ 250	0.4 ~ 1.5	0.4 ~ 1.5	120 ~ 250	0.4 ~ 3.0	0.4 ~ 2.0
Inoxidable Stainless	100 ~ 180	0.4 ~ 1.2	0.4 ~ 1.0	100 ~ 180	0.4 ~ 2.0	0.4 ~ 1.4
Hierro fundido Cast iron	120 ~ 250	0.4 ~ 1.5	0.4 ~ 1.5	120 ~ 250	0.4 ~ 3.0	0.4 ~ 2.0
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.4 ~ 1.0	0.4 ~ 1.0	40 ~ 100	0.4 ~ 1.6	0.4 ~ 1.2

SAUDA

WP26



Ref.	Plaquita Inserts	d1	d2	L	L1	R	M	z	€
WP26-025R02R	WP26339R14..	25	12,5	42	21	12,5	12	2	**482,30**
WP26-030R02R	WP26339R14..	30	12,5	50	23	15	12	2	**521,00**
WP26-032R02R	WP26339R14..	32	17	50	23	16	16	2	**578,90**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**4023**		**3,50**

FRESADO

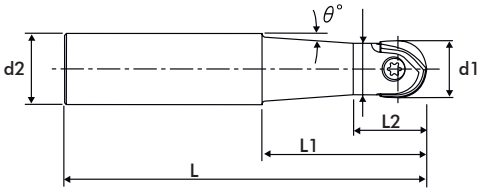
WP2633/37

	Ref.	Material P	M	K	N	S	H	€
	WP26339R14-RG KS2100	●	●	●			●	**11,75**
	WP26339R14-RG KS4100	●	●	●		●		**11,75**
	WP26379R25-RG KS2100	●	●	●			●	**13,30**
	WP26379R25-RG KS4100	●	●	●		●		**13,30**

Condiciones de corte
Recommended cutting conditions

MATERIAL	WP26339R14 Vc	aw1 = (0.5D, 0.5D) fz	aw2 = (0.25D, 0.25D) fz	WP26379R25 Vc	aw1 = (0.5D, 0.5D) fz	aw2 = (0.25D, 0.25D) fz
Acero al carbono Carbon steel	120 ~ 250	0.16 ~ 0.30	0.2 ~ 0.39	120 ~ 250	0.20 ~ 0.36	0.26 ~ 0.46
Inoxidable Stainless	100 ~ 180	0.08 ~ 0.14	0.1 ~ 0.18	100 ~ 180	0.08 ~ 0.14	0.10 ~ 0.18
Hierro fundido Cast iron	120 ~ 250	0.16 ~ 0.30	0.2 ~ 0.39	120 ~ 250	0.20 ~ 0.36	0.26 ~ 0.46
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.08 ~ 0.12	0.1 ~ 0.18	40 ~ 100	0.08 ~ 0.12	0.10 ~ 0.18

ZBT/S



Ref.	d1	d2	d3	L	L1	L2	θ°	€
ZBT0801120	8	12	7,2	90	35	12	4° 43´	**227,00**
ZBT0802120	8	12	7,2	110	55	25	3° 37´	**227,00**
ZBT1001120	10,11	12	9	90	35	15	2° 51´	**227,00**
ZBT1002120	10,11	12	9	110	55	130	2° 17´	**227,00**
ZBT1201160	12,13	16	10,5	110	55	17	3° 23´	**227,00**
ZBT1601200	16,17	20	14,5	125	65	20	2° 51´	**227,00**
ZBT2001250	20,21	25	18	145	75	25	3° 26´	**261,25**
ZBT2501320	25,26	32	22,5	170	90	30	4° 03´	**261,25**
ZBT3001320	30,32,33	32	27	195	110	40	1° 38´	**272,80**
ZBS1202120	12,13	12	10,5	110	55	-	-	**216,45**
ZBS1601160	16,17	16	14,5	95	35	-	-	**216,45**
ZBS1602160	16,17	16	14,5	125	65	-	-	**216,45**
ZBS2001200	20,21	20	18	110	40	-	-	**250,25**
ZBS2002200	20,21	20	18	145	75	-	-	**250,25**
ZBS2501250	25,26	25	22,5	125	45	-	-	**250,25**
ZBS2502250	25,26	25	22,5	170	90	-	-	**250,25**
ZBS3001320	30,32,33	32	27	140	55	-	-	**272,80**
ZBS3002320	30,32,33	32	27	195	100	-	-	**272,80**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**3512** **4016** **5020** **6025** **8030**	**19,90**

XMB

Ref.	Material						€
	P	M	K	N	S	H	
XMB080 KS2100	●			●			**38,10**
XMB80 KS3100	●	●					**38,10**
XMB080 KS4100	●					●	**38,10**
XMB100 KS2100	●			●			**39,95**
XMB100 KS3100	●	●					**39,95**
XMB100 KS4100	●					●	**39,95**
XMB120 KS2100	●			●			**40,40**
XMB120 KS3100	●	●					**40,40**
XMB120 KS4100	●					●	**40,40**
XMB160 KS2100	●			●			**44,45**
XMB160 KS3100	●	●					**44,45**
XMB160 KS4100	●					●	**44,45**
XMB00 KS2100	●			●			**57,95**
XMB200 KS3100	●	●					**57,95**
XMB200 KS4100	●					●	**57,95**
XMB250 KS2100	●			●			**74,60**
XMB250 KS3100	●	●					**74,60**
XMB250 KS4100	●			●			**74,60**
XMB320 KS2100	●			●			**105,70**
XMB320 KS3100	●	●					**105,70**
XMB320 KS4100	●					●	**105,70**

SAUDA

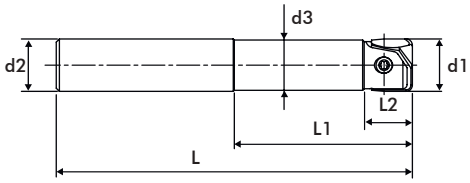
Condiciones de corte
Recommended cutting conditions

Ø	ACEROS NO ALEADOS/ALEADOS HIERRO FUNDIDO NON-ALLOYED/ALLOY STEELS CAST IRON (HB ~280 / HRC ~30 / N/mm² ~100)				ACEROS ALEADOS ACEROS RESISTENTES AL CALOR ALLOY STEELS HEAT RESISTANT STEELS (HB 280~380 / HRC 30~40 / N/mm² 1000~1250)			
	KS2100				KS2100			
	RPM	Vf	Vc	fz	RPM	Vf	Vc	fz
8	6370~12730	2550~5090	160~320	0.20~0.20	4770~11140	1910~4460	120~280	0.20~0.20
10, 11	5090~11460	2040~4580	160~360	0.20~0.20	3820~9550	1530~3820	120~300	0.20~0.20
12, 13	4240~10080	1700~4030	160~380	0.20~0.20	3180~9280	1270~3710	120~350	0.20~0.20
16, 17	3180~9550	1590~5730	160~480	0.25~0.30	2390~7560	1190~45 40	120~380	0.25~0.30
20, 21	2550~9230	1270~7380	160~580	0.25~0.40	1910~6680	950~5350	120~420	0.25~0.40
25, 26	2040~7640	1020~7640	160~600	0.25~0.50	1530~6110	760~6110	120~480	0.25~0.50
30, 32, 33	1700~7430	850~8910	160~700	0.25~0.60	1270~5840	640~7000	120~550	0.25~0.60

Ø	TROQUELES DE ACEROS PARA HERRAMIENTAS PRETEMPLADO DIE TOOL STEELS PRE-HARDENED (HB 380~480 / HRC 40~50 / N/mm² 1250~1500)				ACEROS INOXIDABLES STAINLESS STEELS			
	KS2100				KS2100			
	RPM	Vf	Vc	fz	RPM	Vf	Vc	fz
8	3980~8750	1190~3500	100~220	0.15~0.20	3580~5170	720~1290	90~130	0.10~0.12
10, 11	3180~8280	950~3310	100~260	0.15~0.20	2860~4140	720~1240	90~130	0.13~0.15
12, 13	2650~7430	800~2970	100~280	0.15~0.20	2390~3450	720~1380	90~130	0.15~0.20
16, 17	1990~6960	800~4180	100~350	0.20~0.30	1790~2590	540~1030	90~130	0.15~0.20
20, 21	1590~6370	640~5090	100~400	0.20~0.40	1430~2070	430~830	90~130	0.15~0.20
25, 26	1270~5730	510~5730	100~450	0.20~0.50	1150~1660	460~830	90~130	0.20~0.25
30, 32, 33	1060~5310	420~6370	100~500	0.20~0.60	950~1380	380~690	90~130	0.20~0.25

Ø	RADIO COMPLETO FULL RADIUS TYPE (HB ~280 / HRC ~30 / N/mm² ~100)				ACEROS DE ALTA DUREZA HIGH HARDENED STEELS (HB 55 550~740 / HRC 55~65 / N/mm² 1500~)			
	KS4100				KS4100			
	RPM	Vf	Vc	fz	RPM	Vf	Vc	fz
8	6370~12730	2550~5090	160~320	0.20~0.20	5090~11460	640~2150	80~180	0.10~0.15
10, 11	5090~11460	2040~4580	160~360	0.20~0.20	2550~6370	510~1910	80~200	0.10~0.15
12, 13	4240~10080	1700~4030	160~380	0.20~0.20	2120~5840	420~1750	80~220	0.10~0.15
16, 17	3180~9550	1590~5730	160~480	0.25~0.30	1590~5170	480~2590	80~260	0.15~0.25
20, 21	2550~9230	1270~7380	160~580	0.25~0.40	1270~5090	480~2590	80~320	0.15~0.25
25, 26	2040~7640	1020~7640	160~600	0.25~0.50	1020~4580	310~2290	80~360	0.15~0.25
30, 32, 33	1700~7430	850~8910	160~700	0.25~0.60	850~4240	250~2550	80~400	0.15~0.30

ZRS



Ref.	d1	d2	d3	L	L1	L2	€
ZRS1201120	12, 13	12	11	110	30	13	**216,45**
ZRS1601160	16, 17	16	15	130	50	15	**216,45**
ZRS1602160	16, 17	16	15	165	65	15	**216,45**
ZRS2001200	20, 21	20	19	140	60	18	**250,25**
ZRS2002200	20, 21	20	19	180	80	18	**250,25**
ZRS2501250	25, 26	25	24	150	70	23	**250,25**
ZRS2502250	25, 26	25	24	200	90	23	**250,25**
ZRS3001320	30, 32, 33	32	29	160	80	27	**272,80**
ZRS3002320	30, 32, 33	32	29	220	100	27	**272,80**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**3512** **4016** **5020** **6025** **8030**	**19,90**

XMR

Ref.	Material						€
	P	M	K	N	S	H	
XMR080 10 KS2100	●	●		●			**42,30**
XMR080 10 KS4100	●					●	**42,30**
XMR100 10 KS2100	●	●		●			**44,40**
XMR100 10 KS4100	●					●	**44,40**
XMR100 20 KS2100	●	●		●			**44,40**
XMR100 20 KS4100	●					●	**44,40**
XMR120 10 KS2100	●	●		●			**44,90**
XMR120 10 KS4100	●					●	**44,90**
XMR120 20 KS2100	●	●		●			**44,90**
XMR120 20 KS4100	●					●	**44,90**
XM160 10 KS2100	●	●		●			**49,25**
XMR160 10 KS4100	●					●	**49,25**
XMR160 20 KS2100	●	●		●			**49,25**
XMR160 20 KS4100	●					●	**49,25**
XMR200 10 KS2100	●	●		●			**64,30**
XMR200 10 KS4100	●					●	**64,30**
XMR200 20 KS2100	●	●		●			**64,30**
XMR200 20 KS4100	●					●	**64,30**

SAUDA

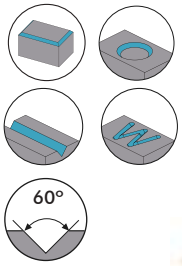
Condiciones de corte
Recommended cutting conditions

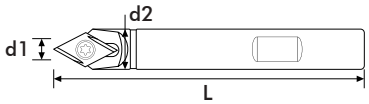
Ø	ACEROS NO ALEADOS/ALEADOS HIERRO FUNDIDO NON-ALLOYED/ALLOY STEELS CAST IRON (HB ~280 / HRC ~30 / N/mm² ~100)				ACEROS NO ALEADOS/ALEADOS HIERRO FUNDIDO NON-ALLOYED/ALLOY STEELS CAST IRON (HB ~280 / HRC ~30 / N/mm² ~100)			
	KS2100				KS4100			
	RPM	Vf	Vc	fz	RPM	Vf	Vc	fz
8	6370~11940	2550~3580	160~300	0.20~0.15	5970~7960	7160~6370	150~200	0.60~0.40
10, 11	5090~9550	2040~2860	160~300	0.20~0.15	4770~6370	7160~6370	150~200	0.75~0.50
12, 13	4240~7960	1700~2390	160~300	0.20~0.15	3980~5310	7160~6370	150~200	0.90~0.60
16, 17	3180~5970	1590~2390	160~300	0.25~0.20	2980~3980	7160~6370	150~200	1.20~0.80
20, 21	2550~4770	1270~1910	160~300	0.25~0.20	2390~3180	7160~6370	150~200	1.50~1.00
25, 26	2040~3820	1020~1530	160~300	0.25~0.20	1910~2550	7640~7640	150~200	2.00~1.50
30, 32, 33	1700~3180	850~1270	160~300	0.25~0.20	1590~2120	7320~7640	150~200	2.30~1.80

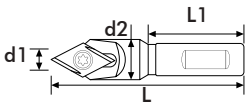
Ø	ACEROS ALEADOS ACEROS RESISTENTES AL CALOR ALLOY STEELS HEAT RESISTANT STEELS (HRC 30~40 / N/mm² 1000~1250)				TROQUELES DE ACEROS PARA HERRAMIENTAS PRETEMPLADO DIE TOOL STEELS PRE-HARDENED (HB 380~480 / HRC 40~50 / N/mm² 1250~1500)			
	KS2100				KS2100			
	RPM	Vf	Vc	fz	RPM	Vf	Vc	fz
8	4770~11140	1910~3340	120~280	0.20~0.15	3980~11140	990~1340	100~280	0.12~0.06
10, 11	3820~8910	1530~2670	120~280	0.20~0.15	3180~8910	800~1070	100~280	0.13~0.06
12, 13	3180~7430	1270~2230	120~280	0.20~0.15	2650~7430	660~890	100~280	0.12~0.06
16, 17	2390~5570	1190~2230	120~280	0.25~0.20	1990~5570	600~840	100~280	0.15~0.08
20, 21	1910~4460	950~1780	120~280	0.25~0.20	1590~4460	480~670	100~280	0.15~0.08
25, 26	1530~3570	760~1430	120~280	0.25~0.20	1270~3570	380~530	100~280	0.15~0.07
30, 32, 33	1270~2970	640~1190	120~280	0.25~0.20	1060~2970	320~450	100~280	0.15~0.08

Ø	ACEROS INOXIDABLES STAINLESS STEELS				ACEROS DE ALTA DUREZA HIGH HARDENED STEELS (HB 55 0~740 / HRC 55~65 / N/mm² ~1500)			
	KS4100				KS4100			
	RPM	Vf	Vc	fz	RPM	Vf	Vc	fz
8	3580~5170	720~1030	90~130	0.10~0.10	3180~8750	640~880	80~220	0.10~0.05
10, 11	2860~4140	630~910	90~130	0.11~0.11	2550~7000	510~700	80~220	0.10~0.05
12, 13	2390~3450	550~790	90~130	0.12~0.11	2120~5840	420~580	80~220	0.10~0.05
16, 17	1790~2590	450~650	90~130	0.13~0.13	1590~4380	480~530	80~220	0.15~0.06
20, 21	1430~2070	360~520	90~130	0.13~0.13	1270~3500	380~420	80~220	0.15~0.06
25, 26	1150~1660	290~410	90~130	0.13~0.12	1020~2800	310~340	80~220	0.15~0.06
30, 32, 33	950~1380	240~340	90~130	0.13~0.12	850~2330	250~280	80~220	0.15~0.06

DC11







Ref.	Plaquita Inserts	d1	d2	L	L1	€
DC11-010M01R	DCEX11T3..	10	12	60	30	**88,75**
DC11-12M01R	DCEX11T3..	12	12	100	-	**92,60**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**3520**		**3,50**

DCEX11

	Ref.	Material P	M	K	N	S	H	€
	DCEX11T301-XF KS3100	●	●	●	●	●		**46,40**
	DCEX11T302-XF KS3100	●	●	●	●	●		**35,70**
	DCEX11T304-XF KS3100	●	●	●	●	●		**35,70**
	DCEX11T301-XR KS3100	●	●	●		●	●	**46,40**
	DCEX11T302-XR KS3100	●	●	●		●	●	**35,70**
	DCEX11T304-XR KS3100	●	●	●		●	●	**35,70**
	DCEX11T308-XR KS3100	●	●	●		●	●	**35,70**

Condiciones de corte
Recommended cutting conditions

DTS 60° Biselado / Avellanado
DTS 60° Chamfering / Countersinking

MATERIAL	Vc	fr
Acero al carbono Carbon steel	12 ~ 180	0.05 ~ 0.15
Aleación de acero Alloy steel	12 ~ 180	0.05 ~ 0.15
Inoxidable Stainless	12 ~ 180	0.05 ~ 0.15
Hierro fundido Cast iron	12 ~ 180	0.05 ~ 0.15
Aluminio Aluminum Alloy	12 ~ 180	0.10 ~ 0.20
Acero endurecido Hardened steel	12 ~ 180	0.03 ~ 0.10

DTS 60° Ranurado / Grabado
DTS 60° Grooving / Engraving

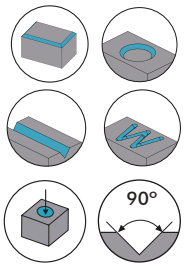
MATERIAL	Vc	fr
Acero al carbono Carbon steel	10 ~ 170	0.005 ~ 0.05
Aleación de acero Alloy steel	10 ~ 170	0.005 ~ 0.03
Inoxidable Stainless	10 ~ 170	0.005 ~ 0.05
Hierro fundido Cast iron	10 ~ 170	0.005 ~ 0.03
Aluminio Aluminum Alloy	10 ~ 170	0.005 ~ 0.08
Acero endurecido Hardened steel	10 ~ 170	0.005 ~ 0.02

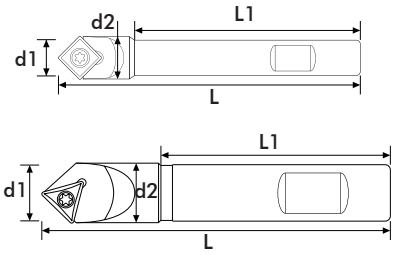
DTS 60° Profundidad de corte
DTS 60° Cutting Depth of Passes

No. de pasadas No. of passes	ap una pasada (mm) ap of one pass (mm)					
	Aluminio Aluminum	Hierro fundido Cast iron	Acero al carbono Carbon steel	Aleación de acero Alloy steel	Inoxidable Stainless	Acero endurecido Hardened steel
1	1.0	0.8	0.8	0.6	0.5	0.2
2	0.8	0.7	0.6	0.5	0.4	0.2
3	0.2	0.3	0.3	0.3	0.3	0.15
4	-	0.2	0.2	0.3	0.3	0.15
5	-	-	0.1	0.2	0.2	0.1
6	-	-	-	0.1	0.2	0.1
7	-	-	-	-	0.1	0.1

SAUDA

SC09
TC16





Ref.	Plaquita Inserts	d1	d2	L	L1	€
SC09-010M01R	SCGX09T3.. SCMX09T3..	10	12,2	100	71	**92,60**
SC09-012M01R	SCGX09T3.. SCMX09T3..	12	12,2	100	71	**92,60**
TC16-020M01R	TCGX16T3.. TCMX16T3..	20	21,2	120	78	**119,70**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**3520** **3521**	**3,50**

SC/TC

	Ref.	Material P	M	K	N	S	H	€
	SCGX09T304-FG KS2100	●	●	●	●	●		**32,05**
	SCMX09T304-SM KS3100	●	●	●		●	●	**24,00**
	TCGX16T308-FG KS2100	●	●	●	●	●		**32,05**
	TCMX16T308-SM KS3100	●	●	●		●	●	**24,00**

Condiciones de corte
Recommended cutting conditions

DTS 90° Biselado / Avellanado
DTS 90° Chamfering / Countersinking

MATERIAL	Vc	fr
Acero al carbono Carbon steel	60 ~ 270	0.15 ~ 0.24
Aleación de acero Alloy steel	50 ~ 220	0.12 ~ 0.20
Inoxidable Stainless	35 ~ 120	0.10 ~ 0.20
Hierro fundido Cast iron	60 ~ 220	0.15 ~ 0.25
Acero endurecido Hardened steel	20 ~ 60	0.03 ~ 0.08

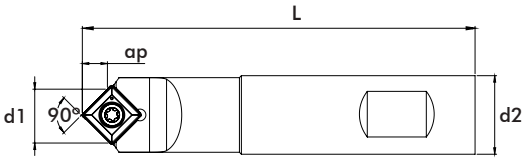
DTS 90° Ranurado / Grabado
DTS 90° Grooving / Engraving

MATERIAL	Vc	fr
Acero al carbono Carbon steel	40 ~ 140	0.12 ~ 0.18
Aleación de acero Alloy steel	35 ~ 120	0.10 ~ 0.14
Inoxidable Stainless	25 ~ 70	0.08 ~ 0.12
Hierro fundido Cast iron	30 ~ 100	0.12 ~ 0.18
Acero endurecido Hardened steel	20 ~ 50	0.02 ~ 0.04

DTS 90° Punteado
DTS 90° Spotting

MATERIAL	Vc		fr	
	Ød = 2 ~ 4.9 mm	Ød ≥ 5 mm	Ød = 2 ~ 4.9 mm	Ød ≥ 5 mm
Acero al carbono Carbon steel	60 ~ 120	90 ~ 220	0.04 ~ 0.08	0.06 ~ 0.10
Aleación de acero Alloy steel	50 ~ 100	75 ~ 180	0.03 ~ 0.06	0.05 ~ 0.08
Inoxidable Stainless	30 ~ 60	45 ~ 120	0.02 ~ 0.04	0.04 ~ 0.06
Hierro fundido Cast iron	40 ~ 80	60 ~ 130	0.04 ~ 0.08	0.06 ~ 0.10
Acero endurecido Hardened steel	20 ~ 40	30 ~ 60	0.02 ~ 0.04	0.04 ~ 0.08

SO11



Ref.	Plaquita Inserts	d1	d2	L	z	ap	€
SO11-013M01R	SOMT11T308	13	16	100	1	6,5	**178,50**
SO11-013M01RL	SOMT11T308	13	16	150	1	6,5	**226,50**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**P04008**	**5,90**

SOMT11

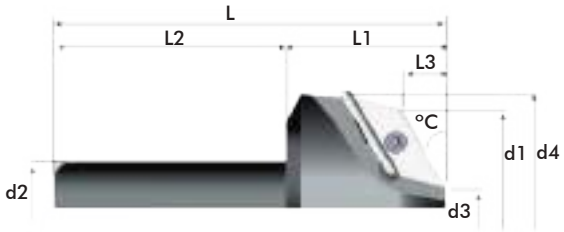
	Ref.	Material						€
		P	M	K	N	S	H	
	SOMT11T308 KS3100	●	●	●				**16,50**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc (m/min)	fz
	KS3100	SOMT11T308
Acero sin aleación Unlloyed steel (HB125-220)	150 - 230	0,04 - 0,08
Acero de baja aleación Low-alloyed steel (HB220-280)	140 - 220	0,03 - 0,07
Acero de alta aleación High-alloyed steel (HB280-380)	130 - 180	0,03 - 0,06
Ferrítico/Martensítico Ferritic/Martensitic (HB200-330)	-	0,04 - 0,07
Austenítico/Duplex Austenitic/Duplex (HB 200-330)	-	0,03 - 0,06
Dúplex Duplex (HB230-260)	-	0,03 - 0,06
Hierro fundido maleable Malleable cast iron (HB130-230)	150 - 280	0,05 - 0,10
Fundición de hierro gris Grey cast iron (HB160-250)	130 - 230	0,05 - 0,08
Fundición de hierro nodular Nodular cast iron (HB180-245)	80 - 190	0,04 - 0,08

SAUDA

ECC



Ref.	Plaquita Inserts	d1	d2	d3	d4	L	L1	L2	L3	°C	z	€
ECC057415	XCET310404	74,8	32	15	102,8	135	55	80	2,6	5º	3	**433,35**
ECC107415	XCET310404	74,5	32	15	99,5	135	55	80	5,2	10º	3	**433,35**
ECC157315	XCET310404	73,3	32	15	95,2	135	55	80	7,8	15º	3	**433,35**
ECC207115	XCET310404	71,8	32	15	90,3	135	55	80	10,3	20º	3	**433,35**
ECC256915	XCET310404	69,8	32	15	84,9	135	55	80	12,8	25º	3	**433,35**
ECC306715	XCET310404	67,4	32	15	79,0	135	55	80	15,1	30º	3	**433,35**
ECC356415	XCET310404	64,6	32	15	72,8	135	55	80	17,4	35º	3	**433,35**
ECC406115	XCET310404	61,4	32	15	66,3	135	55	80	19,5	40º	3	**433,35**
ECC455715	XCET310404	57,9	32	15	-	135	55	80	21,4	45º	3	**433,35**
ECC505718	XCET310404	57,0	32	18	-	135	55	80	23,2	50º	3	**433,35**
ECC555622	XCET310404	56,8	32	22	-	135	55	80	24,8	55º	3	**433,35**
ECC605424	XCET310404	54,3	32	24	-	135	55	80	26,3	60º	3	**433,35**
ECC655328	XCET310404	53,6	32	28	-	145	65	80	27,5	65º	3	**433,35**
ECC705232	XCET310404	52,8	32	32	-	145	65	80	28,5	70º	3	**433,35**
ECC755035	XCET310404	50,7	32	35	-	145	65	80	29,3	75º	3	**433,35**
ECC804838	XCET310404	48,5	32	38	-	145	65	80	29,9	80º	3	**433,35**
ECC854742	XCET310404	47,3	32	42	-	145	65	80	30,3	85º	3	**433,35**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**CSTB-5S**	**4,90**

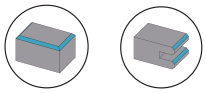
XCET

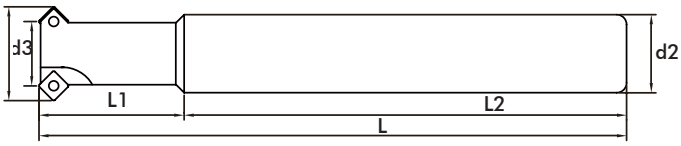
	Ref.	Material P	M	K	N	S	H	€
	XCET310404	●	●	●				**52,70**

Condiciones de corte
Recommended cutting conditions

MATERIAL	Nº de revoluciones (min^{-1}) Nº of revolution n (min^{-1})	fz
Aceros al carbono C55, etc. Aceros aleados 42CrMo4, etc. < 300 HB Carbon steels C55, etc. Alloy steels 42CrMo4, etc. < 300 HB	1000 - 3000 - 7000 700 - 2000 - 4900	0.1 - 0.25
Aceros para troqueles X40CrMoV5-1, etc < 300 HB Die steels X40CrMoV5-1, etc. < 300 HB	1000 - 3000 - 7000	0.1 - 0.2
Aceros inoxidables X5CrNi18-1 O, etc. < 250 HB Stainless steels X5CrNi18-1 O, etc. < 250 HB	1000 - 3000 - 7000	0.1 - 0.25
Hierros fundidos 250, etc. Cast Irons 250, etc.	1000 - 3000 - 7000	0.1 - 0.25

SP06/07





Ref.	Plaquita Inserts	d1	d2	d3	L	L1	L2	z	€
SP05-011M01R	SPMG0502..	11	10	6	100	17	83	1	**186,40**
SP05-015M02R	SPMG0502..	15	12	10	120	20	100	2	**195,70**
SP05-017M03R	SPMG0502..	17	16	11	150	25	125	3	**242,60**
SP05-019M03R	SPMG0502..	19	16	13	150	30	120	3	**242,60**
SP05-024M04R	SPMG0502..	24	20	18	150	35	115	4	**298,20**
SP06-022M03R	SPMG0602..	22	16	16	120	30	80	3	**251,50**
SP07-027M03R	SPMG07T3..	27	20	17	120	30	80	3	**261,10**
SP09-030M02R	SPMG0904..	30	20	19	150	40	110	2	**204,80**
SP09-040M03R	SPMG0904..	40	25	29	150	40	110	3	**279,70**
SP09-050M04R	SPMG0904..	50	25	39	150	40	110	4	**335,30**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2003** **2205** **2003** **2511** **3504**	**3,50**

SPMG

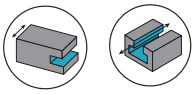
	Ref.	Material P	M	K	N	S	H	€
	SPMG050204-MG KS4100	●	●	●		●		**10,35**
	SPMG060204-MG KS4100	●	●	●		●		**10,50**
	SPMG07T308-MG KS4100	●	●	●		●		**11,40**
	SPMG090408-MG KS4100	●	●	●		●		**12,10**
	SPMG090408-RG KS4100	●	●	●		●		**12,10**

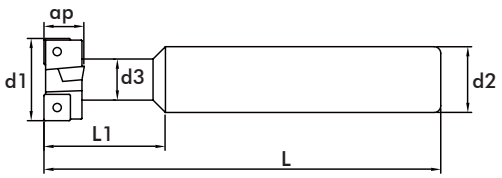
Condiciones de corte
Recommended cutting conditions

	Vc	fz Ø11 ~ Ø15	Ø16 ~ Ø22	Ø23 ~ Ø33	Ø34 ~ Ø41	Ø42 ~ Ø50
Acero al carbono Carbon steel	120 ~ 250	0.06 ~ 0.12	0.06 ~ 0.12	0.06 ~ 0.12	0.12 ~ 0.24	0.12 ~ 0.25
Inoxidable Stainless	100 ~ 180	0.05 ~ 0.10	0.05 ~ 0.10	0.05 ~ 0.10	0.10 ~ 0.17	0.10 ~ 0.17
Hierro fundido Cast iron	120 ~ 250	0.06 ~ 0.12	0.06 ~ 0.12	0.06 ~ 0.12	0.12 ~ 0.24	0.12 ~ 0.25
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.03 ~ 0.06	0.03 ~ 0.06	0.03 ~ 0.06	0.05 ~ 0.10	0.05 ~ 0.10
Acero endurecido Hardened steel	50 ~ 100	0.03 ~ 0.06	0.03 ~ 0.06	0.03 ~ 0.06	0.05 ~ 0.10	0.05 ~ 0.10

SAUDA

SP06/07





Ref.	Plaquita Inserts	d1	d2	d3	L	L1	z	ap	€
SP06-021M04R	SPMG0602..	21	16	11	100	27	4	9	**335,30**
SP05-022M04R	SPMG0502..	22	20	15	90	15	4	6,3	**335,30**
SP07-025M04R	SPMG07T3..	25	20	12	110	31	4	11	**372,40**
SP09-032M04R	SPMG0904..	32	25	17	110	39	4	14	**391,50**

Complementos Spare parts			€
Tornillo de inserción Insert screw	**2003 2205 2003 2511 3504**		**3,50**

FRESADO

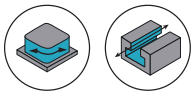
SPMG

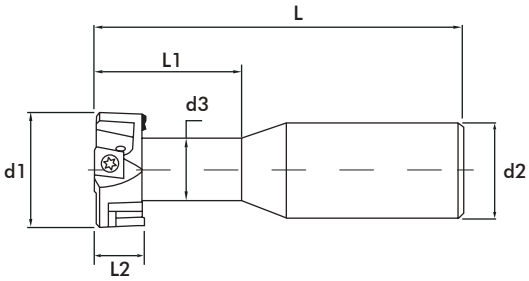
	Ref.	Material P	M	K	N	S	H	€
	SPMG050204-MG KS4100	●	●	●		●		**10,35**
	SPMG060204-MG KS4100	●	●	●		●		**10,50**
	SPMG07T308-MG KS4100	●	●	●		●		**11,40**
	SPMG090408-MG KS4100	●	●	●		●		**12,10**
	SPMG090408-RG KS4100	●	●	●		●		**12,10**

Condiciones de corte
Recommended cutting conditions

	Vc	fz
Acero al carbono Carbon steel	120 ~ 250	0.08 ~ 0.12
Inoxidable Stainless	100 ~ 180	0.07 ~ 0.10
Hierro fundido Cast iron	120 ~ 250	0.08 ~ 0.12
Aleación de alta temperatura High temperature Alloy	40 ~ 100	0.05 ~ 0.08
Acero endurecido Hardened steel	50 ~ 100	0.05 ~ 0.08

ET09





Ref.	Plaquita Inserts	d1	d2	d3	L	L1	L2	z	zz	€
15E.3213.010	EN..08T3.R/L	32	32	16,8	115	39	13	2	2*2	**1.346,30**
15E.4017.010	EN..0904.R/L	40	32	20,8	125	50	17	2	2*2	**1.576,90**
15E.4821.010	EN..08T3.R/L	48	32	26,0	135	60	21	2	2*3	**1.769,70**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**P03009** **P35009**	**6,50**

ENHQ

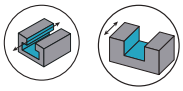
	Ref.	Material P	M	K	N	S	H	€
	ENHQ08T30601209SL28W SKY77	●		●				**47,75**
	ENHQ08T30601209SL28W NERO26	●		●				**47,75**
	ENHQ08T30601409SR28W SKY77	●		●				**47,75**
	ENHQ08T30601409SR28W NERO26	●		●				**47,75**
	ENHQ08T30601626SR28V SKY77	●		●				**47,75**
	ENHQ08T30601626SR28V NERO26	●		●				**47,75**
	ENHQ08T30600254SR30 SKY77	●		●				**47,75**
	ENHQ09040802312SL28W SKY77	●		●				**54,40**
	ENHQ09040802212SR28W SKY77	●		●				**54,40**
	ENHQ09040801626SR28V SKY77	●		●				**54,40**
	ENHQ09040801626SR28V NERO26	●		●				**54,40**
	ENHQ09040800254SR30 SKY77	●		●				**54,40**

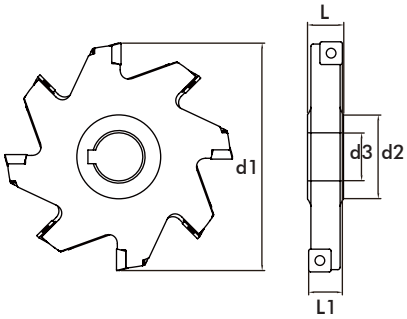
SAUDA

Condiciones de corte
Recommended cutting conditions

			Hierro fundido Cast iron			Acero Steel					
			D20	D18	D17	A22	A20	A18	A16	B15	B14
ENHQ08T30601209SL28W	SKY77	hmax	0,15	0,12	0,1	0,15	0,15	0,12	0,1	-	-
		Vc	240	230	220	240	240	230	220	-	-
	NERO26	hmax	0,15	0,12	0,1	-	-	-	-	-	-
		Vc	280	270	260	-	-	-	-	-	-
ENHQ08T30601409SR28W	SKY77	hmax	0,15	0,12	0,1	0,15	0,15	0,12	0,1	-	-
		Vc	240	230	220	240	240	230	220	-	-
	NERO26	hmax	0,15	0,12	0,1	-	-	-	-	-	-
		Vc	280	270	260	-	-	-	-	-	-
ENHQ08T30601726SL28V	SKY77	hmax	0,15	0,12	0,1	0,15	0,15	0,12	0,1	-	-
		Vc	240	230	220	240	240	230	220	-	-
	NERO26	hmax	0,15	0,12	0,1	-	-	-	-	-	-
		Vc	280	270	260	-	-	-	-	-	-
ENHQ08T30601626SR28V	SKY77	hmax	0,15	0,12	0,1	0,15	0,15	0,12	0,1	-	-
		Vc	240	230	220	240	240	230	220	-	-
	NERO26	hmax	0,15	0,12	0,1	-	-	-	-	-	-
		Vc	280	270	260	-	-	-	-	-	-
ENHQ08T30600154SL30	SKY77	hmax	0,1	0,09	0,08	0,1	0,1	0,09	0,08	-	-
		Vc	240	230	220	240	240	230	220	-	-
ENHQ08T30600254SR30	SKY77	hmax	0,1	0,09	0,08	0,1	0,1	0,09	0,08	-	-
		Vc	240	230	220	240	240	230	220	-	-
ENHQ09040802312SL28W	SKY77	hmax	0,18	0,15	0,12	0,18	0,15	0,13	0,11	-	-
		Vc	240	230	220	240	240	230	220	-	-
	NERO26	hmax	0,18	0,15	0,12	-	-	-	-	-	-
		Vc	280	270	260	-	-	-	-	-	-
ENHQ09040802212SR28W	SKY77	hmax	0,18	0,15	0,12	0,18	0,15	0,13	0,11	-	-
		Vc	240	230	220	240	240	230	220	-	
	NERO26	hmax	0,18	0,15	0,12	-	-	-	-	-	-
		Vc	280	270	260	-	-	-	-	-	-
ENHQ09040801726SL28V	SKY77	hmax	0,18	0,15	0,12	0,18	0,15	0,13	0,11	-	-
		Vc	240	230	220	240	240	230	220	-	-
	NERO26	hmax	0,18	0,15	0,12	-	-	-	-	-	-
		Vc	280	270	260	-	-	-	-	-	-
ENHQ09040801626SR28V	SKY77	hmax	0,18	0,15	0,12	0,18	0,15	0,13	0,11	-	-
		Vc	240	230	220	240	240	230	220	-	-
	NERO26	hmax	0,18	0,15	0,12	-	-	-	-	-	-
		Vc	280	270	260	-	-	-	-	-	-
ENHQ09040800354SL30	SKY77	hmax	-	-	-	0,13	0,12	0,1	0,08	0,08	0,07
		Vc	-	-	-	180	160	130	100	90	80
ENHQ09040800254SR30	SKY77	hmax	-	-	-	0,13	0,12	0,1	0,08	0,08	0,07
		Vc	-	-	-	180	160	130	100	90	80

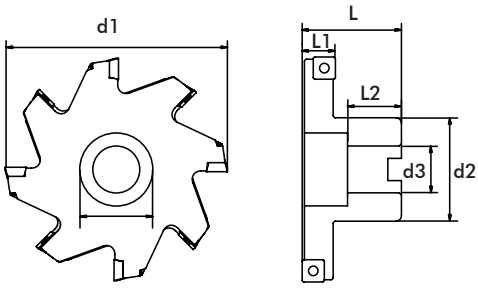
ET09





Ref.	Plaquita Inserts	d1	d2	d3	L	L1	z	€
SP05-080A02R	SPMG0502..	80	44	22	12	6	2x4	**521,35**
SP06-080A02R	SPMG0602..	80	44	22	12	8	2x4	**521,35**
SP06-080A02RL	SPMG0602..	80	44	22	12	10	2x4	**521,35**
SP07-080A02R	SPMG07T3..	80	44	22	12	12	2x4	**521,35**
SP05-100A02R	SPMG0502..	100	50	27	12	6	2x5	**652,10**
SP05-100A02RL	SPMG0502..	100	50	27	12	7	2x5	**652,10**
SP006-100A02R	SPMG0602..	100	50	27	12	8	2x5	**652,10**
SP07-100A02R	SPMG07T3..	100	50	27	12	10	2x5	**652,10**
SP07-100A02RL	SPMG07T3..	100	50	27	12	12	2x5	**652,10**
SP09-100A02R	SPMG0904..	100	50	27	16	16	2x5	**652,10**
SP09-125A02R	SPMG0904..	125	65	32	16	16	2x6	**796,30**
SP07-160A02R	SPMG07T3..	160	75	40	12	12	2x8	**1.890,00**
SP09-160A02R	SPMG0904..	160	75	40	16	16	2x8	**1.890,00**
SP11-160A02R	SPMG1104..	160	75	40	20	20	2x6	**1.890,00**
SP09-200A02R	SPMG0904..	200	80	40	16	16	2x9	**3.360,00**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2003 2205 2511 3504 4006**	**4,90**



Ref.	Plaquita Inserts	d1	d2	d3	L	L1	L2	z	€
SP05-080A02RC	SPMG0502..	80	42	22	40	6	22	2x4	**745,50**
SP05-080A02RLC	SPMG0502..	80	42	22	40	7	22	2x4	**745,50**
SP06-080A02RC	SPMG0602..	80	42	22	40	8	22	2x4	**745,50**
SP06-080A02RLC	SPMG0602..	80	42	22	40	10	22	2x4	**745,50**
SP07-080A02RC	SPMG07T3..	80	42	22	40	12	22	2x4	**745,50**
SP06-100A02RC	SPMG0602..	100	50	27	40	8	22	2x5	**838,45**
SP06-100A02RLC	SPMG0602..	100	50	27	40	9	22	2x5	**838,45**
SP07-100A02RC	SPMG07T3..	100	50	27	40	10	22	2x5	**838,45**
SP07-100A02RLC	SPMG07T3..	100	50	27	40	12	22	2x5	**838,45**
SP06-125A02RC	SPMG0602..	125	70	32	45	10	25	2x6	**1.164,65**
SP07-125A02RC	SPMG07T3..	125	70	32	45	11	25	2x6	**1.164,65**
SP07-125A02RLC	SPMG07T3..	125	70	32	45	12	25	2x6	**1.164,65**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**2003 2205 2511**	**4,90**

SAUDA

SPMG

	Ref.	Material						€
		P	M	K	N	S	H	
	SPMG050204-MG KS4100	●	●	●		●		10,35
	SPMG060204-MG KS4100	●	●	●		●		10,50
	SPMG07T308-MG KS4100	●	●	●		●		11,40
	SPMG090408-MG KS4100	●	●	●		●		12,10
	SPMG090408-RG KS4100	●	●	●		●		12,10

Condiciones de corte
Recommended cutting conditions

MATERIAL	Vc	fz
Acero al carbono Carbon steel	100 ~ 220	0.10 ~ 0.35
Inoxidable Stainless	130 ~ 200	0.12 ~ 0.30
Hierro fundido Cast iron	100 ~ 210	0.10 ~ 0.20

TALADRADO

DRILLING

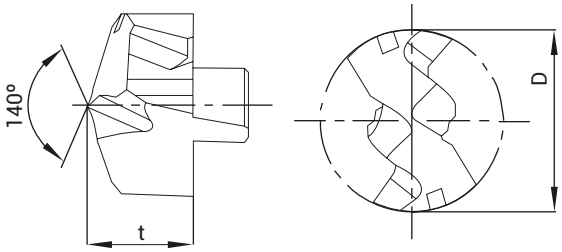
PBR

PM recomendado para menos de 5D
PM recommended for less than 5D

PR recomendado para más de 5D
PR recommended for more than 5D

● Stock
○ Bajo pedido

Cabeza de broca indexable
Indexibel drill head



Ref.	Dimensiones Dimensions (mm) D	t	€	KP125	KP115	Mango Holder
PBR-080-PM/PR	8,0	5,4	55,70	●	●	KBR-080-12
PBR-081-PM/PR	8,1	5,4	55,70	○	○	
PBR-082-PM/PR	8,2	5,4	55,70	○	○	
PBR-083-PM/PR	8,3	5,4	55,70	○	○	
PBR-084-PM/PR	8,4	5,4	55,70	○	○	
PBR-085-PM/PR	8,5	5,4	55,70	●	●	
PBR-086-PM/PR	8,6	5,4	55,70	○	○	
PBR-087-PM/PR	8,7	5,4	55,70	○	○	
PBR-088-PM/PR	8,8	5,4	55,70	○	○	
PBR-089-PM/PR	8,9	5,4	55,70	○	○	
PBR-090-PM/PR	9,0	5,8	62,70	●	●	KBR-090-12
PBR-091-PM/PR	9,1	5,8	62,70	○	○	
PBR-092-PM/PR	9,2	5,8	62,70	○	○	
PBR-093-PM/PR	9,3	5,8	62,70	○	○	
PBR-094-PM/PR	9,4	5,8	62,70	○	○	
PBR-095-PM/PR	9,5	5,8	62,70	●	●	
PBR-096-PM/PR	9,6	5,8	62,70	○	○	
PBR-097-PM/PR	9,7	5,8	62,70	○	○	
PBR-098-PM/PR	9,8	5,8	62,70	○	○	
PBR-099-PM/PR	9,9	5,8	62,70	○	○	
PBR-100-PM/PR	10,0	6,2	71,95	●	●	KBR-100-16
PBR-101-PM/PR	10,1	6,2	71,95	○	○	
PBR-102-PM/PR	10,2	6,2	71,95	○	○	
PBR-103-PM/PR	10,3	6,2	71,95	○	○	
PBR-104-PM/PR	10,4	6,2	71,95	○	○	
PBR-105-PM/PR	10,5	6,2	71,95	●	●	
PBR-106-PM/PR	10,6	6,2	71,95	○	○	
PBR-107-PM/PR	10,7	6,2	71,95	○	○	
PBR-108-PM/PR	10,8	6,2	71,95	○	○	
PBR-109-PM/PR	10,9	6,2	71,95	○	○	
PBR-110-PM/PR	11,0	6,6	81,25	●	●	KBR-110-16
PBR-111-PM/PR	11,1	6,6	81,25	○	○	
PBR-112-PM/PR	11,2	6,6	81,25	○	○	
PBR-113-PM/PR	11,3	6,6	81,25	○	○	
PBR-114-PM/PR	11,4	6,6	81,25	○	○	
PBR-115-PM/PR	11,5	6,6	81,25	●	●	
PBR-116-PM/PR	11,6	6,6	81,25	○	○	
PBR-117-PM/PR	11,7	6,6	81,25	○	○	
PBR-118-PM/PR	11,8	6,6	81,25	○	○	
PBR-119-PM/PR	11,9	6,6	81,25	○	○	
PBR-120-PM/PR	12,0	7,0	88,20	●	●	KBR-120-16
PBR-121-PM/PR	12,1	7,0	88,20	○	○	
PBR-122-PM/PR	12,2	7,0	88,20	○	○	
PBR-123-PM/PR	12,3	7,0	88,20	○	○	
PBR-124-PM/PR	12,4	7,0	88,20	○	○	
PBR-125-PM/PR	12,5	7,0	88,20	●	●	
PBR-126-PM/PR	12,6	7,0	88,20	○	○	
PBR-127-PM/PR	12,7	7,0	88,20	○	○	
PBR-128-PM/PR	12,8	7,0	88,20	○	○	
PBR-129-PM/PR	12,9	7,0	88,20	○	○	

Ref.	Dimensiones Dimensions (mm) D	t	€	KP125	KP115	Mango Holder
PBR-130-PM/PR	13,0	7,6	97,50	●	●	KBR-130-16
PBR-131-PM/PR	13,1	7,6	97,50	○	○	
PBR-132-PM/PR	13,2	7,6	97,50	○	○	
PBR-133-PM/PR	13,3	7,6	97,50	○	○	
PBR-134-PM/PR	13,4	7,6	97,50	○	○	
PBR-135-PM/PR	13,5	7,6	97,50	●	●	
PBR-136-PM/PR	13,6	7,6	97,50	○	○	
PBR-137-PM/PR	13,7	7,6	97,50	○	○	
PBR-138-PM/PR	13,8	7,6	97,50	○	○	
PBR-139-PM/PR	13,9	7,6	97,50	○	○	
PBR-140-PM/PR	14,0	8,1	106,75	●	●	KBR-140-16
PBR-141-PM/PR	14,1	8,1	106,75	○	○	
PBR-142-PM/PR	14,2	8,1	106,75	○	○	
PBR-143-PM/PR	14,3	8,1	106,75	○	○	
PBR-144-PM/PR	14,4	8,1	106,75	○	○	
PBR-145-PM/PR	14,5	8,1	106,75	●	●	
PBR-146-PM/PR	14,6	8,1	106,75	○	○	
PBR-147-PM/PR	14,7	8,1	106,75	○	○	
PBR-148-PM/PR	14,8	8,1	106,75	○	○	
PBR-149-PM/PR	14,9	8,1	106,75	○	○	
PBR-150-PM/PR	15,0	8,7	116,00	●	●	KBR-150-20
PBR-151-PM/PR	15,1	8,7	116,00	○	○	
PBR-152-PM/PR	15,2	8,7	116,00	○	○	
PBR-153-PM/PR	15,3	8,7	116,00	○	○	
PBR-154-PM/PR	15,4	8,7	116,00	○	○	
PBR-155-PM/PR	15,5	8,7	116,00	●	●	
PBR-156-PM/PR	15,6	8,7	116,00	○	○	
PBR-157-PM/PR	15,7	8,7	116,00	○	○	
PBR-158-PM/PR	15,8	8,7	116,00	○	○	
PBR-159-PM/PR	15,9	8,7	116,00	○	○	
PBR-160-PM/PR	16,0	9,3	125,30	●	●	KBR-160-20
PBR-161-PM/PR	16,1	9,3	125,30	○	○	
PBR-162-PM/PR	16,2	9,3	125,30	○	○	
PBR-163-PM/PR	16,3	9,3	125,30	○	○	
PBR-164-PM/PR	16,4	9,3	125,30	○	○	
PBR-165-PM/PR	16,5	9,3	125,30	●	●	
PBR-166-PM/PR	16,6	9,3	125,30	○	○	
PBR-167-PM/PR	16,7	9,3	125,30	○	○	
PBR-168-PM/PR	16,8	9,3	125,30	○	○	
PBR-169-PM/PR	16,9	9,3	125,30	○	○	
PBR-170-PM/PR	17,0	9,9	134,60	●	●	KBR-170-20
PBR-171-PM/PR	17,1	9,9	134,60	○	○	
PBR-172-PM/PR	17,2	9,9	134,60	○	○	
PBR-173-PM/PR	17,3	9,9	134,60	○	○	
PBR-174-PM/PR	17,4	9,9	134,60	○	○	
PBR-175-PM/PR	17,5	9,9	134,60	●	●	
PBR-176-PM/PR	17,6	9,9	134,60	○	○	
PBR-177-PM/PR	17,7	9,9	134,60	○	○	
PBR-178-PM/PR	17,8	9,9	134,60	○	○	
PBR-179-PM/PR	17,9	9,9	134,60	○	○	

Ref.	Dimensiones Dimensions (mm) D	t	€	KP125	KP115	Mango Holder
PBR-180-PM/PR	18,0	10,5	143,90	●	●	KBR-180-25
PBR-181-PM/PR	18,1	10,5	143,90	○	○	
PBR-182-PM/PR	18,2	10,5	143,90	○	○	
PBR-183-PM/PR	18,3	10,5	143,90	○	○	
PBR-184-PM/PR	18,4	10,5	143,90	○	○	
PBR-185-PM/PR	18,5	10,5	143,90	●	●	
PBR-186-PM/PR	18,6	10,5	143,90	○	○	
PBR-187-PM/PR	18,7	10,5	143,90	○	○	
PBR-188-PM/PR	18,8	10,5	143,90	○	○	
PBR-189-PM/PR	18,9	10,5	143,90	○	○	
PBR-190-PM/PR	19,0	11,0	153,15	●	●	KBR-190-25
PBR-191-PM/PR	19,1	11,0	153,15	○	○	
PBR-192-PM/PR	19,2	11,0	153,15	○	○	
PBR-193-PM/PR	19,3	11,0	153,15	○	○	
PBR-194-PM/PR	19,4	11,0	153,15	○	○	
PBR-195-PM/PR	19,5	11,0	153,15	●	●	
PBR-196-PM/PR	19,6	11,0	153,15	○	○	
PBR-197-PM/PR	19,7	11,0	153,15	○	○	
PBR-198-PM/PR	19,8	11,0	153,15	○	○	
PBR-199-PM/PR	19,9	11,0	153,15	○	○	
PBR-200-PM/PR	20,0	11,6	162,45	●	●	KBR-200-25
PBR-201-PM/PR	20,1	11,6	162,45	○	○	
PBR-202-PM/PR	20,2	11,6	162,45	○	○	
PBR-203-PM/PR	20,3	11,6	162,45	○	○	
PBR-204-PM/PR	20,4	11,6	162,45	○	○	
PBR-205-PM/PR	20,5	11,6	162,45	●	●	
PBR-206-PM/PR	20,6	11,6	162,45	○	○	
PBR-207-PM/PR	20,7	11,6	162,45	○	○	
PBR-208-PM/PR	20,8	11,6	162,45	○	○	
PBR-209-PM/PR	20,9	11,6	162,45	○	○	
PBR-210-PM/PR	21,0	12,1	171,70	●	●	KBR-210-25
PBR-211-PM/PR	21,1	12,1	171,70	○	○	
PBR-212-PM/PR	21,2	12,1	171,70	○	○	
PBR-213-PM/PR	21,3	12,1	171,70	○	○	
PBR-214-PM/PR	21,4	12,1	171,70	○	○	
PBR-215-PM/PR	21,5	12,1	171,70	●	●	
PBR-216-PM/PR	21,6	12,1	171,70	○	○	
PBR-217-PM/PR	21,7	12,1	171,70	○	○	
PBR-218-PM/PR	21,8	12,1	171,70	○	○	
PBR-219-PM/PR	21,9	12,1	171,70	○	○	
PBR-220-PM/PR	22,0	12,7	181,00	●	●	KBR-220-25
PBR-221-PM/PR	22,1	12,7	181,00	○	○	
PBR-222-PM/PR	22,2	12,7	181,00	○	○	
PBR-223-PM/PR	22,3	12,7	181,00	○	○	
PBR-224-PM/PR	22,4	12,7	181,00	○	○	
PBR-225-PM/PR	22,5	12,7	181,00	●	●	
PBR-226-PM/PR	22,6	12,7	181,00	○	○	
PBR-227-PM/PR	22,7	12,7	181,00	○	○	
PBR-228-PM/PR	22,8	12,7	181,00	○	○	
PBR-229-PM/PR	22,9	12,7	181,00	○	○	

Ref.	Dimensiones Dimensions (mm) D	t	€	KP125	KP115	Mango Holder
PBR-230-PM/PR	23,0	13,3	190,30	●	●	KBR-230-32
PBR-231-PM/PR	23,1	13,3	190,30	○	○	
PBR-232-PM/PR	23,2	13,3	190,30	○	○	
PBR-233-PM/PR	23,3	13,3	190,30	○	○	
PBR-234-PM/PR	23,4	13,3	190,30	○	○	
PBR-235-PM/PR	23,5	13,3	190,30	●	●	
PBR-236-PM/PR	23,6	13,3	190,30	○	○	
PBR-237-PM/PR	23,7	13,3	190,30	○	○	
PBR-238-PM/PR	23,8	13,3	190,30	○	○	
PBR-239-PM/PR	23,9	13,3	190,30	○	○	
PBR-240-PM/PR	24,0	13,9	199,55	●	●	KBR-240-32
PBR-241-PM/PR	24,1	13,9	199,55	○	○	
PBR-242-PM/PR	24,2	13,9	199,55	○	○	
PBR-243-PM/PR	24,3	13,9	199,55	○	○	
PBR-244-PM/PR	24,4	13,9	199,55	○	○	
PBR-245-PM/PR	24,5	13,9	199,55	●	●	
PBR-246-PM/PR	24,6	13,9	199,55	○	○	
PBR-247-PM/PR	24,7	13,9	199,55	○	○	
PBR-248-PM/PR	24,8	13,9	199,55	○	○	
PBR-249-PM/PR	24,9	13,9	199,55	○	○	
PBR-250-PM/PR	25,0	14,5	208,85	●	●	KBR-250-32
PBR-251-PM/PR	25,1	14,5	208,85	○	○	
PBR-252-PM/PR	25,2	14,5	208,85	○	○	
PBR-253-PM/PR	25,3	14,5	208,85	○	○	
PBR-254-PM/PR	25,4	14,5	208,85	○	○	
PBR-255-PM/PR	25,5	14,5	208,85	●	●	
PBR-256-PM/PR	25,6	14,5	208,85	○	○	
PBR-257-PM/PR	25,7	14,5	208,85	○	○	
PBR-258-PM/PR	25,8	14,5	208,85	○	○	
PBR-259-PM/PR	25,9	14,5	208,85	○	○	
PBR-260-PM/PR	26,0	14,5	208,85	●	●	

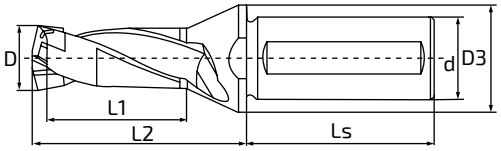
● Stock
○ Bajo pedido

SAUDA

KBR

Brocas (refrigeración interior)

Drills (coolant through center)



1,5xD

Ref.	Cabezal de corte aplicable Applicable cutting head Dia. (mm)	Dimensiones Dimensions (mm)					€
		d	D3	L1	Ls	D	
KBR-1,5D-080/089-12	8,0~8,9	12	16	16	45	7,8	**139,25**
KBR-1,5D-090/099-12	9,0~9,9	12	16	18	45	8,8	**145,05**
KBR-1,5D-100/109-16	10,0~10,9	16	20	20	48	9,8	**150,80**
KBR-1,5D-110/119-16	11,0~11,9	16	20	22	48	10,8	**160,10**
KBR-1,5D-120/129-16	12,0~12,9	16	20	24	48	11,8	**165,95**
KBR-1,5D-130/139-16	13,0~13,9	16	20	25	48	12,8	**171,70**
KBR-1,5D-140/149-16	14,0~14,9	16	20	27	48	13,8	**177,50**
KBR-1,5D-150/159-20	15,0~15,9	20	25	29	50	14,8	**183,30**
KBR-1,5D-160/169-20	16,0~16,9	20	25	30	50	15,8	**189,10**
KBR-1,5D-170/179-20	17,0~17,9	20	25	32	50	16,8	**194,95**
KBR-1,5D-180/189-25	18,0~18,9	25	32	34	56	17,8	**200,70**
KBR-1,5D-190/199-25	19,0~19,9	25	32	36	56	18,8	**206,50**
KBR-1,5D-200/209-25	20,0~20,9	25	32	38	56	19,8	**218,10**
KBR-1,5D-210/219-25	21,0~21,9	25	32	40	56	20,8	**229,75**
KBR-1,5D-220/229-25	22,0~22,9	25	32	42	56	21,8	**247,10**
KBR-1,5D-230/239-32	23,0~23,9	32	42	43	60	22,8	**264,50**
KBR-1,5D-240/249-32	24,0~24,9	32	42	45	60	23,8	**281,95**
KBR-1,5D-250/259-32	25,0~25,9	32	42	47	60	24,8	**299,30**

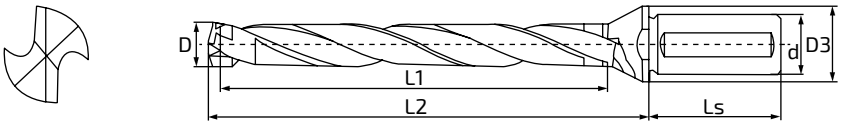
3xD

Ref.	Cabezal de corte aplicable Applicable cutting head Dia. (mm)	Dimensiones Dimensions (mm)					€
		d	D3	L1	Ls	D	
KBR-3D-080/089-12	8,0~8,9	12	16	32	45	7,8	**167,10**
KBR-3D-090/099-12	9,0~9,9	12	16	35	45	8,8	**174,05**
KBR-3D-100/109-16	10,0~10,9	16	20	39	48	9,8	**181,00**
KBR-3D-110/119-16	11,0~11,9	16	20	42	48	10,8	**191,45**
KBR-3D-120/129-16	12,0~12,9	16	20	45	48	11,8	**198,40**
KBR-3D-130/139-16	13,0~13,9	16	20	49	48	12,8	**206,50**
KBR-3D-140/149-16	14,0~14,9	16	20	53	48	13,8	**212,30**
KBR-3D-150/159-20	15,0~15,9	20	25	56	50	14,8	**220,45**
KBR-3D-160/169-20	16,0~16,9	20	25	60	50	15,8	**226,25**
KBR-3D-170/179-20	17,0~17,9	20	25	63	50	16,8	**234,35**
KBR-3D-180/189-25	18,0~18,9	25	32	66	56	17,8	**240,20**
KBR-3D-190/199-25	19,0~19,9	25	32	70	56	18,8	**248,30**
KBR-3D-200/209-25	20,0~20,9	25	32	73	56	19,8	**262,20**
KBR-3D-210/219-25	21,0~21,9	25	32	77	56	20,8	**275,00**
KBR-3D-220/229-25	22,0~22,9	25	32	80	56	21,8	**297,00**
KBR-3D-230/239-32	23,0~23,9	32	42	84	60	22,8	**316,75**
KBR-3D-240/249-32	24,0~24,9	32	42	88	60	23,8	**338,80**
KBR-3D-250/259-32	25,0~25,9	32	42	91	60	24,8	**359,70**

KBR

Brocas (refrigeración interior)

Drills (coolant through center)



5xD

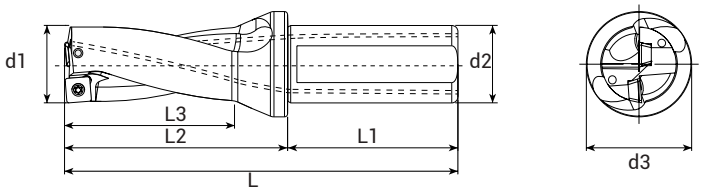
Ref.	Cabezal de corte aplicable Applicable cutting head Dia. (mm)	Dimensiones Dimensions (mm)					€
		d	D3	L1	Ls	D	
KBR-5D-080/089-12	8,0~8,9	12	16	50	45	7,8	199,55
KBR-5D-090/099-12	9,0~9,9	12	16	55	45	8,8	208,85
KBR-5D-100/109-16	10,0~10,9	16	20	60	48	9,8	217,00
KBR-5D-110/119-16	11,0~11,9	16	20	66	48	10,8	229,75
KBR-5D-120/129-16	12,0~12,9	16	20	71	48	11,8	237,85
KBR-5D-130/139-16	13,0~13,9	16	20	77	48	12,8	247,10
KBR-5D-140/149-16	14,0~14,9	16	20	82	48	13,8	255,25
KBR-5D-150/159-20	15,0~15,9	20	25	88	50	14,8	263,35
KBR-5D-160/169-20	16,0~16,9	20	25	93	50	15,8	271,50
KBR-5D-170/179-20	17,0~17,9	20	25	99	50	16,8	279,60
KBR-5D-180/189-25	18,0~18,9	25	32	104	56	17,8	288,90
KBR-5D-190/199-25	19,0~19,9	25	32	110	56	18,8	297,00
KBR-5D-200/209-25	20,0~20,9	25	32	115	56	19,8	313,25
KBR-5D-210/219-25	21,0~21,9	25	32	121	56	20,8	330,70
KBR-5D-220/229-25	22,0~22,9	25	32	126	56	21,8	355,00
KBR-5D-230/239-32	23,0~23,9	32	42	132	60	22,8	380,55
KBR-5D-240/249-32	24,0~24,9	32	42	137	60	23,8	406,05
KBR-5D-250/259-32	25,0~25,9	32	42	143	60	24,8	430,45

8xD

Ref.	Cabezal de corte aplicable Applicable cutting head Dia. (mm)	Dimensiones Dimensions (mm)					€
		d	D3	L1	Ls	D	
KBR-8D-080/089-12	8,0~8,9	12	16	76	45	7,8	259,90
KBR-8D-090/099-12	9,0~9,9	12	16	85	45	8,8	271,50
KBR-8D-100/109-16	10,0~10,9	16	20	93	48	9,8	281,95
KBR-8D-110/119-16	11,0~11,9	16	20	102	48	10,8	299,30
KBR-8D-120/129-16	12,0~12,9	16	20	110	48	11,8	309,80
KBR-8D-130/139-16	13,0~13,9	16	20	119	48	12,8	320,20
KBR-8D-140/149-16	14,0~14,9	16	20	127	48	13,8	331,80
KBR-8D-150/159-20	15,0~15,9	20	25	136	50	14,8	342,25
KBR-8D-160/169-20	16,0~16,9	20	25	144	50	15,8	352,70
KBR-8D-170/179-20	17,0~17,9	20	25	153	50	16,8	363,15
KBR-8D-180/189-25	18,0~18,9	25	32	161	56	17,8	374,75
KBR-8D-190/199-25	19,0~19,9	25	32	170	56	18,8	385,20
KBR-8D-200/209-25	20,0~20,9	25	32	178	56	19,8	407,25
KBR-8D-210/219-25	21,0~21,9	25	32	187	56	20,8	429,30
KBR-8D-220/229-25	22,0~22,9	25	32	195	56	21,8	461,75
KBR-8D-230/239-32	23,0~23,9	32	42	204	60	22,8	494,25
KBR-8D-240/249-32	24,0~24,9	32	42	212	60	23,8	526,75
KBR-8D-250/259-32	25,0~25,9	32	42	221	60	24,8	559,20

SAUDA

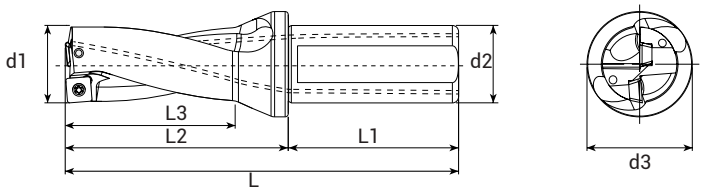
YGSP



Ref.	Plaquita Insert	d1	d2	d3	L	L1	L2	L3	€
YGSP2-13S20F026-05	SPMX050204	13	20	25	94	50	44	2xD	**361,70**
YGSP3-13S20F039-05	SPMX050204	13	20	25	107	50	57	3xD	**379,80**
YGSP5-13S20F065-05	SPMX050204	13	20	25	133	50	83	5xD	**459,50**
YGSP2-14S20F028-05	SPMX050204	14	20	25	96	50	46	2xD	**361,70**
YGSP3-14S20F042-05	SPMX050204	14	20	25	110	50	60	3xD	**379,80**
YGSP5-14S20F070-05	SPMX050204	14	20	25	128	50	88	5xD	**459,50**
YGSP2-15S20F030-05	SPMX050204	15	20	25	98	50	48	2xD	**361,70**
YGSP3-15S20F045-05	SPMX050204	15	20	25	113	50	63	3xD	**379,80**
YGSP5-15S20F075-05	SPMX050204	15	20	25	143	50	93	5xD	**459,50**
YGSP2-16S25F032-06	SPMX060204	16	25	34	109	56	53	2xD	**361,70**
YGSP3-16S25F048-06	SPMX060204	16	25	34	125	56	69	3xD	**379,80**
YGSP5-16S25F080-06	SPMX060204	16	25	34	157	56	101	5xD	**459,50**
YGSP2-17S25F034-06	SPMX060204	17	25	34	111	56	55	2xD	**361,70**
YGSP3-17S25F051-06	SPMX060204	17	25	34	128	56	72	3xD	**379,80**
YGSP5-17S25F085-06	SPMX060204	17	25	34	162	56	106	5xD	**459,50**
YGSP2-18S25F036-06	SPMX060204	18	25	34	113	56	57	2xD	**361,70**
YGSP3-18S25F054-06	SPMX060204	18	25	34	131	56	75	3xD	**379,80**
YGSP5-18S25F090-06	SPMX060204	18	25	34	167	56	111	5xD	**459,50**
YGSP2-19S25F038-06	SPMX060204	19	25	34	115	56	59	2xD	**361,70**
YGSP3-19S25F057-06	SPMX060204	19	25	34	134	56	78	3xD	**379,80**
YGSP5-19S25F095-06	SPMX060204	19	25	34	172	56	116	5xD	**459,50**
YGSP2-20S25F040-06	SPMX060204	20	25	34	118	56	62	2xD	**361,70**
YGSP3-20S25F060-06	SPMX060204	20	25	34	138	56	82	3xD	**379,80**
YGSP5-20S25F100-06	SPMX060204	20	25	34	178	56	122	5xD	**459,50**
YGSP2-21S25F042-06	SPMX060204	21	25	34	120	56	64	2xD	**361,70**
YGSP3-21S25F063-06	SPMX060204	21	25	34	141	56	85	3xD	**379,80**
YGSP5-21S25F105-06	SPMX060204	21	25	34	183	56	127	5xD	**459,50**
YGSP2-22S32F044-07	SPMX07T308	22	25	34	134	56	74	2xD	**368,75**
YGSP3-22S32F066-07	SPMX07T308	22	25	34	156	56	96	3xD	**387,20**
YGSP5-22S32F110-07	SPMX07T308	22	25	34	200	56	140	5xD	**468,55**
YGSP2-23S32F046-07	SPMX07T308	23	25	34	136	56	76	2xD	**368,75**
YGSP3-23S32F069-07	SPMX07T308	23	25	34	159	56	99	3xD	**387,20**
YGSP5-23S32F115-07	SPMX07T308	23	25	34	205	56	145	5xD	**468,55**
YGSP2-24S32F048-07	SPMX07T308	24	25	34	138	56	78	2xD	**368,75**
YGSP3-24S32F072-07	SPMX07T308	24	25	34	162	56	102	3xD	**387,20**
YGSP5-24S32F120-07	SPMX07T308	24	25	34	210	56	150	5xD	**468,55**
YGSP2-25S32F050-07	SPMX07T308	25	25	34	140	56	80	2xD	**368,75**
YGSP3-25S32F075-07	SPMX07T308	25	25	34	165	56	105	3xD	**387,20**
YGSP5-25S32F125-07	SPMX07T308	25	25	34	215	56	155	5xD	**468,55**
YGSP2-26S32F052-07	SPMX07T308	26	25	34	142	56	82	2xD	**392,60**
YGSP3-26S32F078-07	SPMX07T308	26	25	34	168	56	108	3xD	**412,25**
YGSP5-26S32F130-07	SPMX07T308	26	25	34	220	56	160	5xD	**498,80**
YGSP2-27S32F054-07	SPMX07T308	27	25	34	144	56	84	2xD	**392,60**
YGSP3-27S32F081-07	SPMX07T308	27	25	34	171	56	111	3xD	**412,25**
YGSP5-27S32F135-07	SPMX07T308	27	25	34	225	56	165	5xD	**498,80**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**062043** **072252** **082564**	**7,00**

YGSP

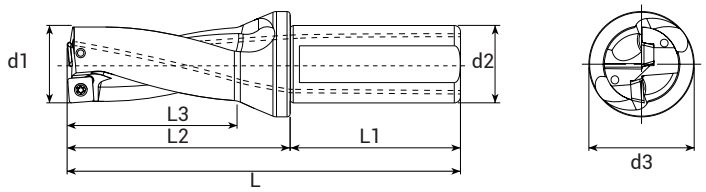


Ref.	Plaquita Insert	d1	d2	d3	L	L1	L2	L3	€
YGSP2-28S32F056-09	SPMX090408	28	25	34	146	56	86	2xD	**392,60**
YGSP3-28S32F084-09	SPMX090408	28	25	34	174	56	114	3xD	**412,25**
YGSP5-28S32F140-09	SPMX090408	28	32	44	230	60	170	5xD	**498,80**
YGSP2-29S32F058-09	SPMX090408	29	25	34	148	56	88	2xD	**392,60**
YGSP3-29S32F087-09	SPMX090408	29	25	34	177	56	117	3xD	**412,25**
YGSP5-29S32F145-09	SPMX090408	29	32	44	235	60	175	5xD	**498,80**
YGSP2-30S32F060-09	SPMX090408	30	32	44	151	60	91	2xD	**392,60**
YGSP3-30S32F090-09	SPMX090408	30	32	44	181	60	121	3xD	**412,25**
YGSP5-30S32F150-09	SPMX090408	30	32	44	241	60	181	5xD	**498,80**
YGSP2-31S32F062-09	SPMX090408	31	32	44	153	60	93	2xD	**445,85**
YGSP3-31S32F093-09	SPMX090408	31	32	44	184	60	124	3xD	**468,10**
YGSP5-31S32F155-09	SPMX090408	31	32	44	246	60	186	5xD	**566,50**
YGSP2-32S32F064-09	SPMX090408	32	32	44	155	60	95	2xD	**445,85**
YGSP3-32S32F096-09	SPMX090408	32	32	44	187	60	127	3xD	**468,10**
YGSP5-32S32F160-09	SPMX090408	32	32	44	251	60	191	5xD	**566,50**
YGSP2-33S32F066-09	SPMX090408	33	32	44	157	60	97	2xD	**454,50**
YGSP3-33S32F099-09	SPMX090408	33	32	44	190	60	130	3xD	**477,30**
YGSP5-33S32F165-09	SPMX090408	33	32	44	256	60	196	5xD	**577,45**
YGSP2-34S32F068-11	SPMX110408	34	32	44	155	60	95	2xD	**419,80**
YGSP3-34S32F102-11	SPMX110408	34	32	44	156	60	129	3xD	**429,10**
YGSP4-34S32F136-11	SPMX110408	34	32	44	200	60	163	4xD	**722,60**
YGSP2-35S32F070-11	SPMX110408	35	32	44	157	60	97	2xD	**419,80**
YGSP3-35S32F105-11	SPMX110408	35	32	44	159	60	132	3xD	**429,10**
YGSP4-35S32F140-11	SPMX110408	35	32	44	205	60	167	4xD	**722,60**
YGSP2-36S32F072-11	SPMX110408	36	32	44	159	60	99	2xD	**419,80**
YGSP3-36S32F108-11	SPMX110408	36	32	44	162	60	135	3xD	**429,10**
YGSP4-36S32F144-11	SPMX110408	36	32	44	210	60	171	4xD	**722,60**
YGSP2-37S32F074-11	SPMX110408	37	32	44	161	60	101	2xD	**419,80**
YGSP3-37S32F111-11	SPMX110408	37	32	44	165	60	138	3xD	**429,10**
YGSP4-37S32F148-11	SPMX110408	37	32	44	215	60	175	4xD	**722,60**
YGSP2-38S32F076-11	SPMX110408	38	32	44	163	60	103	2xD	**419,80**
YGSP3-38S32F114-11	SPMX110408	38	32	44	168	60	141	3xD	**429,10**
YGSP4-38S32F152-11	SPMX110408	38	32	44	220	60	179	4xD	**722,60**
YGSP2-39S32F078-11	SPMX110408	39	32	44	165	60	105	2xD	**419,80**
YGSP3-39S32F117-11	SPMX110408	39	32	44	171	60	144	3xD	**429,10**
YGSP4-39S32F156-11	SPMX110408	39	32	44	225	60	183	4xD	**722,60**
YGSP2-40S32F080-11	SPMX110408	40	32	44	167	60	107	2xD	**419,80**
YGSP3-40S32F120-11	SPMX110408	40	32	44	168	60	147	3xD	**429,10**
YGSP4-40S32F160-11	SPMX110408	40	32	44	220	60	187	4xD	**722,60**
YGSP2-41S32F082-11	SPMX110408	41	32	44	169	60	109	2xD	**419,80**
YGSP3-41S32F123-11	SPMX110408	41	32	44	171	60	150	3xD	**473,50**
YGSP4-41S32F164-11	SPMX110408	41	32	44	225	60	191	4xD	**776,85**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**103588** **18000119**	**7,00**

SAUDA

YGSP

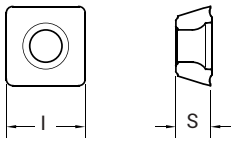


Ref.	Plaquita Insert	d1	d2	d3	L	L1	L2	L3	€
YGSP2-42S32F084-14	SPMX140512	42	32	44	134	60	111	2xD	**434,30**
YGSP3-42S32F126-14	SPMX140512	42	32	44	156	60	153	3xD	**473,50**
YGSP4-42S32F168-14	SPMX140512	42	32	44	200	60	195	4xD	**776,85**
YGSP2-43S32F086-14	SPMX140512	43	32	44	136	60	113	2xD	**434,30**
YGSP3-43S32F129-14	SPMX140512	43	32	44	159	60	156	3xD	**473,50**
YGSP4-43S32F172-14	SPMX140512	43	32	44	205	60	199	4xD	**776,85**
YGSP2-44S32F088-14	SPMX140512	44	32	44	138	60	115	2xD	**434,30**
YGSP3-44S32F132-14	SPMX140512	44	32	44	162	60	159	3xD	**473,50**
YGSP4-44S32F176-14	SPMX140512	44	32	44	210	60	203	4xD	**776,85**
YGSP2-45S32F090-14	SPMX140512	45	40	54	140	70	122	2xD	**475,30**
YGSP3-45S32F135-14	SPMX140512	45	40	54	165	70	167	3xD	**498,20**
YGSP2-46S32F092-14	SPMX140512	46	40	54	142	70	124	2xD	**501,80**
YGSP3-46S32F138-14	SPMX140512	46	40	54	168	70	170	3xD	**527,80**
YGSP2-47S32F094-14	SPMX140512	47	40	54	144	70	126	2xD	**542,80**
YGSP3-47S32F141-14	SPMX140512	47	40	54	171	70	173	3xD	**554,90**
YGSP2-48S32F096-14	SPMX140512	48	40	54	142	70	128	2xD	**571,80**
YGSP3-48S32F144-14	SPMX140512	48	40	54	168	70	176	3xD	**584,50**
YGSP2-49S32F098-14	SPMX140512	49	40	54	144	70	130	2xD	**598,30**
YGSP3-49S32F147-14	SPMX140512	49	40	54	171	70	179	3xD	**611,60**
YGSP2-50S32F100-14	SPMX140512	50	40	54	144	70	132	2xD	**624,85**
YGSP3-50S32F150-14	SPMX140512	50	40	54	171	70	182	3xD	**665,90**
YGSP3-52S32F156-14	SPMX140512	52	40	54	144	70	188	2xD	**722,60**

Complementos Spare parts		€
Tornillo de inserción Insert screw	**18000121**	**7,00**

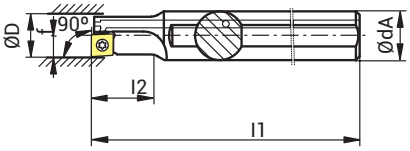
SPMX

	KS2100	KS4100
P	●	●
M	●	●
K		●
N		
S	●	●
H		



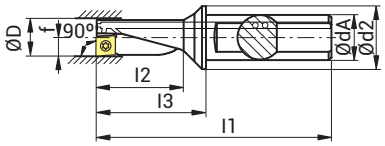
Ref.	KS2100	KS4100	l	s	€
SPMX 050204	✓	✓	4,3	1,8	**12,05**
SPMX 060204	✓	✓	4,2	2,1	**10,90**
SPMX 07T308	✓	✓	4,8	2,3	**12,55**
SPMX 090408	✓	✓	5,5	2,5	**11,25**
SPMX 110408	✓	✓	6,1	2,9	**13,30**
SPMX 140512		✓	7,3	3,3	**11,90**
SPMX 050204 -ST	✓	✓	8,5	3,8	**16,25**
SPMX 060204 -ST	✓	✓	9,6	4,4	**14,60**
SPMX 07T308 -ST	✓	✓	4,3	1,8	**17,45**
SPMX 090408 -ST	✓	✓	4,2	2,1	**15,75**
SPMX 110408 -ST	✓		4,8	2,3	**18,90**
SPMX 140512 -ST	✓		5,5	2,5	**18,35**

1.5D - 2.25D ECOCUT



Ref.	Plaquita Insert	Dimensiones Dimensions (mm)					Nm	€
		Dmin	dA	l1	l2	f		
ECC 08L-1.5D 04	XC...0401...	8	12	80	12,0	4,0	0,4	302,4
ECC 08R-1.5D 04	XC...0401...	8	12	80	12,0	4,0	0,4	302,4
ECC 10L-1.5D 05	XC...0502...	10	12	90	15,0	5,0	0,7	302,4
ECC 10R-1.5D 05	XC...0502...	10	12	90	15,0	5,0	0,7	302,4
ECC 12L-1.5D 06	XC...0602...	12	16	100	18,0	6,0	1,0	307,3
ECC 12R-1.5D 06	XC...0602...	12	16	100	18,0	6,0	1,0	307,3
ECC 14L-1.5D 07	XC...0703...	14	16	110	21,0	7,0	1,2	314,7
ECC 14R-1.5D 07	XC...0703...	14	16	110	21,0	7,0	1,2	314,7
ECC 16L-1.5D 08	XC...0803...	16	20	125	24,0	8,0	2,2	319,6
ECC 16R-1.5D 08	XC...0803...	16	20	125	24,0	8,0	2,2	319,6
ECC 18L-1.5D 09	XC...09T3...	18	25	135	27,0	9,0	2,2	368,6
ECC 18R-1.5D 09	XC...09T3...	18	25	135	27,0	9,0	2,2	368,6
ECC 20L-1.5D 10	XC...10T3...	20	25	150	30,0	10,0	3,2	415,5
ECC 20R-1.5D 10	XC...10T3...	20	25	150	30,0	10,0	3,2	415,5
ECC 25L-1.5D 13	XC...1304...	25	32	180	37,5	12,5	5,0	479,2
ECC 25R-1.5D 13	XC...1304...	25	32	180	37,5	12,5	5,0	479,2
ECC 32L-1.5D 17	XC...1705...	32	40	200	48,0	16,0	5,0	543,25
ECC 32R-1.5D 17	XC...1705...	32	40	200	48,0	16,0	5,0	543,25

Tornillo de inserción Insert screw	€
11807484	7,00
11807480	6,25
11684214	6,10
11684216	7,80
11227305	6,00
11610311	6,00
11801441	6,00

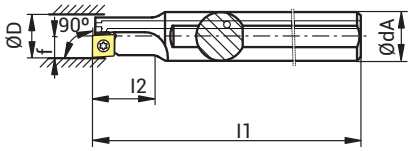


Ref.	Plaquita Insert	Dimensiones Dimensions(mm)							Nm	€
		Dmin	dA	d2	l1	l2	l3	f		
ECC08L-2.25D04	XC...0401...	8	10	15	60,0	18,0	22,0	4	0,4	449,7
ECC08R-2.25D04	XC...0401...	8	10	15	60,0	18,0	22,0	4	0,4	449,7
ECC10L-2.25D05	XC...0502...	10	12	18	69,5	22,5	27,5	5	0,7	449,7
ECC10R-2.25D05	XC...0502...	10	12	18	69,5	22,5	27,5	5	0,7	449,7
ECC12L-2.25D06	XC...0602...	12	16	22	78,0	27,0	33,0	6	1,0	462,2
ECC12R-2.25D06	XC...0602...	12	16	22	78,0	27,0	33,0	6	1,0	462,2
ECC14L-2.25D07	XC...0703...	14	16	23	83,5	31,5	38,5	7	1,2	472,1
ECC14R-2.25D07	XC...0703...	14	16	23	83,5	31,5	38,5	7	1,2	472,1
ECC16L-2.25D08	XC...0803...	16	20	28	94,0	36,0	44,0	8	2,2	482,1
ECC16R-2.25D08	XC...0803...	16	20	28	94,0	36,0	44,0	8	2,2	482,1
ECC18L-2.25D09	XC...09T3...	18	25	36	109,5	40,5	53,5	9	2,2	531,1
ECC18R-2.25D09	XC...09T3...	18	25	36	109,5	40,5	53,5	9	2,2	531,1
ECC20L-2.25D10	XC...10T3....	20	25	35	111,0	45,0	55,0	10	3,2	578
ECC20R-2.25D10	XC...10T3....	20	25	35	111,0	45,0	55,0	10	3,2	578
ECC25L-2.25D13	XC...1304...	25	32	44	129,0	56,5	69,0	12,5	5,0	671,2
ECC25R-2.25D13	XC...1304...	25	32	44	129,0	56,5	69,0	12,5	5,0	671,2
ECC32L-2.25D17	XC...1705...	32	40	54	158,0	72,0	88,0	16	5,0	754,6
ECC32R-2.25D17	XC...1705...	32	40	54	158,0	72,0	88,0	16	5,0	754,6

Tornillo de inserción Insert screw	€
11807484	7,00
11807480	6,25
11684214	6,10
11684216	7,80
11227305	6,00
11610311	6,00
11801441	6,00

SAUDA

3.0D ECOCUT



Ref.	Plaquita Insert	Dimensiones Dimensions (mm)					Nm	€
		Dmin	dA	l1	l2	f		
ECC 08L-3.0D 04 H	XC...0401...	8	12	80	24	4,0	0,4	1.109,1
ECC 08R-3.0D 04 H	XC...0401...	8	12	80	24	4,0	0,4	1.109,1
ECC 10L-3.0D 05 H	XC...0502...	10	12	85	30	5,0	0,7	1.114
ECC 10R-3.0D 05 H	XC...0502...	10	12	85	30	5,0	0,7	1114
ECC 12L-3.0D 06 H	XC...0602...	12	16	95	36	6,0	1,0	1.202,25
ECC 12R-3.0D 06 H	XC...0602...	12	16	95	36	6,0	1,0	1.202,25
ECC 14L-3.0D 07 H	XC...0703...	14	16	100	42	7,0	1,2	1.230,3
ECC 14R-3.0D 07 H	XC...0703...	14	16	100	42	7,0	1,2	1.230,3
ECC 16L-3.0D 08 H	XC...0803...	16	20	110	48	8,0	2,2	1.349
ECC 16R-3.0D 08 H	XC...0803...	16	20	110	48	8,0	2,2	1.349
ECC 18L-3.0D 09 H	XC...09T3...	18	25	125	54	9,0	2,2	1.633,1
ECC 18R-3.0D 09 H	XC...09T3...	18	25	125	54	9,0	2,2	1.633,1
ECC 20L-3.0D 10 H	XC...10T3...	20	25	130	60	10,0	3,2	1.666,25
ECC 20R-3.0D 10 H	XC...10T3...	20	25	130	60	10,0	3,2	1.666,25
ECC 25L-3.0D 13 H	XC...1304...	25	32	150	75	12,5	5,0	2.122,6
ECC 25R-3.0D 13 H	XC...1304...	25	32	150	75	12,5	5,0	2.122,6
ECC 32L-3.0D 17 H	XC...1705...	32	40	185	96	16,0	5,0	2.777,65
ECC 32R-3.0D 17 H	XC...1705...	32	40	185	96	16,0	5,0	2.777,65

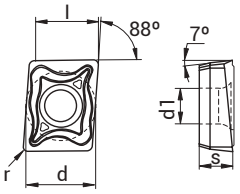
Tornillo de inserción Insert screw	€
11807484	7,00
11807480	6,25
11684214	6,10
11684216	7,80
11227305	6,00
11610311	6,00
11801441	6,00

XCET

	KP125	KP135	KM145	H10T
P	●	●	●	
M	●	○	●	
K	●	○	●	○
N		○		●
S		●		●
H				

● Aplicación principal
Main use

○ Aplicación complementaria
Complementary use



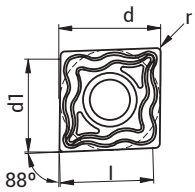
Ref.	KP125	KP135	KM145	H10T	Medidas Dimensions					€
					d	l	s	r	d1	
XCET 040102FL-27Q				✓	5,4	4,3	1,8	0,4	2,10	34,25
XCET 040102FR-27Q				✓	4,6	4,2	2,1	0,5	2,25	34,25
XCET 040104FL-27Q				✓	5,3	4,8	2,3	0,6	2,25	34,25
XCET 040104FR-27Q				✓	5,9	5,5	2,5	0,6	2,50	34,25
XCNT 040102EL	✓	✓	✓		6,5	6,1	2,9	0,7	2,50	29,40
XCNT 040102ER	✓	✓	✓		7,7	7,3	3,3	0,8	2,90	29,40
XCNT 040104EL	✓	✓	✓		8,9	8,5	3,8	0,8	3,50	29,40
XCNT 040104ER	✓	✓	✓		10,1	9,6	4,4	0,8	4,10	29,40

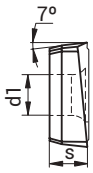
XCET

	KP125	KP135	KM145	H10T
P	●	●	●	
M	●	○	●	
K	●	○	●	○
N		○		●
S		●		●
H				

● Aplicación principal
Main use

○ Aplicación complementaria
Complementary use



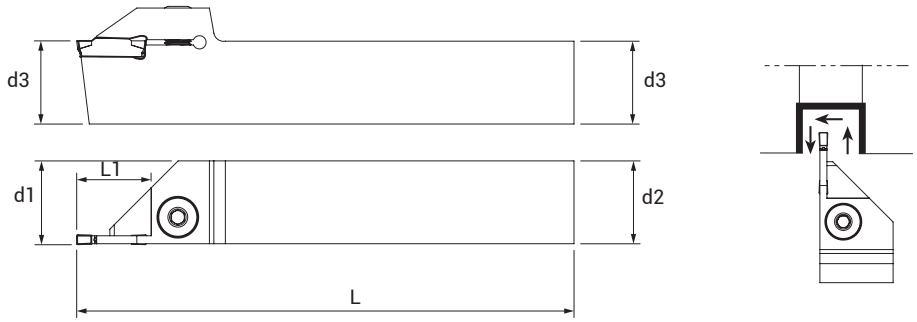


Ref.	KP125	KP135	KM145	H10T	Medidas Dimensions l	d	s	r	d1	€
XCET 050202FN-27Q				✓	5,80	5,00	2,10	0,20	2,25	**34,25**
XCET 050204FN-27Q				✓	5,80	5,00	2,10	0,40	2,25	**34,25**
XCET 060202FN-27Q				✓	6,50	6,00	2,38	0,20	2,50	**34,25**
XCET 060204FN-27Q				✓	6,50	6,00	2,38	0,40	2,50	**34,25**
XCET 070304FN-27Q				✓	7,60	7,00	3,18	0,40	2,80	**34,25**
XCET 080304FN-27Q				✓	8,50	8,00	3,18	0,40	3,40	**34,65**
XCET 09T304FN-27Q				✓	9,60	9,00	3,97	0,40	3,40	**34,90**
XCET 10T304FN-27Q				✓	10,60	10,00	3,97	0,40	4,40	**36,00**
XCET 10T308FN-27Q				✓	10,60	10,00	3,97	0,80	4,40	**36,00**
XCET 130404FN-27Q				✓	13,50	12,50	4,76	0,40	5,30	**43,60**
XCET 130408FN-27Q				✓	13,50	12,50	4,76	0,80	5,30	**43,60**
XCET 170508FN-27Q				✓	17,50	16,00	5,56	0,80	5,30	**44,70**
XCNT 050202EN	✓	✓	✓		5,80	5,00	2,10	0,20	2,25	**29,40**
XCNT 050204EN	✓	✓	✓		5,80	5,00	2,10	0,40	2,25	**29,40**
XCNT 060202EN	✓	✓	✓		6,50	6,00	2,38	0,20	2,50	**29,40**
XCNT 060204EN	✓	✓	✓		6,50	6,00	2,38	0,40	2,50	**29,40**
XCNT 070304EN	✓	✓	✓		7,60	7,00	3,18	0,40	2,80	**29,40**
XCNT 080304EN	✓	✓	✓		8,50	8,00	3,18	0,40	3,40	**29,40**
XCNT 09T304EN	✓	✓	✓		9,60	9,00	3,97	0,40	3,40	**30,30**
XCNT 10T304EN	✓	✓	✓		10,60	10,00	3,97	0,40	4,40	**31,85**
XCNT 10T308EN	✓	✓	✓		10,60	10,00	3,97	0,80	4,40	**31,85**
XCNT 130404EN	✓	✓	✓		13,50	12,50	4,76	0,40	5,30	**36,40**
XCNT 130408EN	✓	✓	✓		13,50	12,50	4,76	0,80	5,30	**36,40**
XCNT 170508EN	✓	✓	✓		17,50	16,00	5,56	0,80	5,30	**38,40**

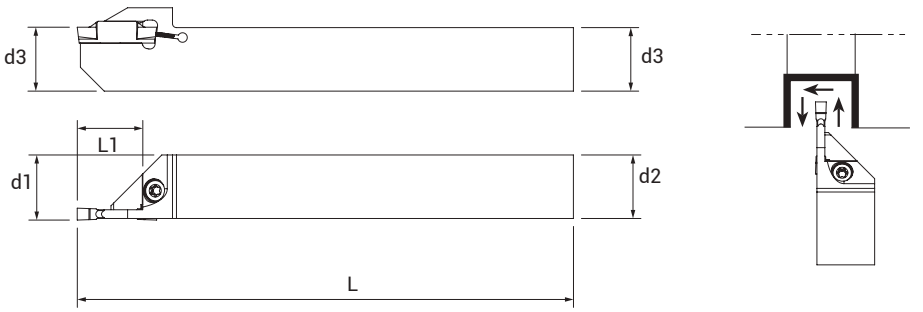
TRONZADO

PARTING

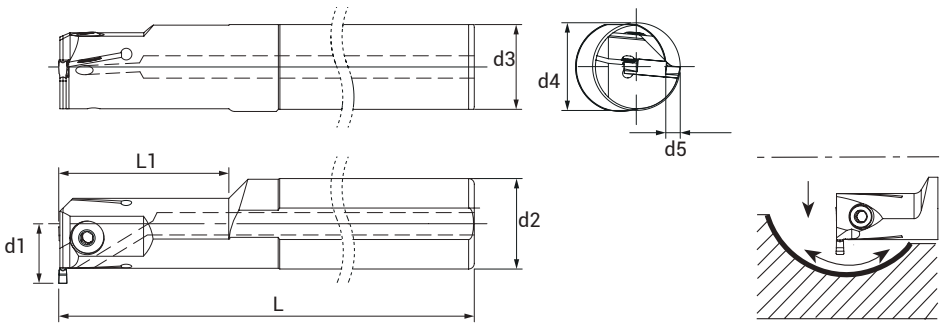
YTER/L



Ref.	Plaquita Insert	Ancho	d1	d2	d3	L	L1	€
YTER/L 2020-2T15	TD..2..	2	20,3	20	20	125	15	**235,90**
YTER/L 2020-2T20	TD..2..	2	20,3	20	20	125	20	**235,90**
YTER/L 2020-2T9	TD..2..	2	20,3	20	20	125	9	**235,90**
YTER/L 2525-2T17	TD..2..	2	25,3	25	25	150	17	**235,90**
YTER/L 2020-3T20	TD..3..	3	20,4	20	20	125	20	**235,90**
YTER/L 2525-3T20	TD..3..	3	25,4	25	25	150	20	**235,90**
YTER/L 2525-3T9	TD..3..	3	25,3	25	25	150	9	**235,90**
YTER/L 3232-3T20	TD..3..	3	32,4	32	32	170	20	**235,90**
YTER/L 2525-4T20	TD..4..	4	25,5	25	25	150	20	**235,90**
YTER/L 2525-3T25	TD..3..	3	35,4	25	25	150	25	**235,90**
YTER/L 2525-4T30	TD..4..	4	25,5	25	25	150	30	**235,90**
YTER/L 2525-5T25	TD..5..	5	25,5	25	25	150	25	**254,50**



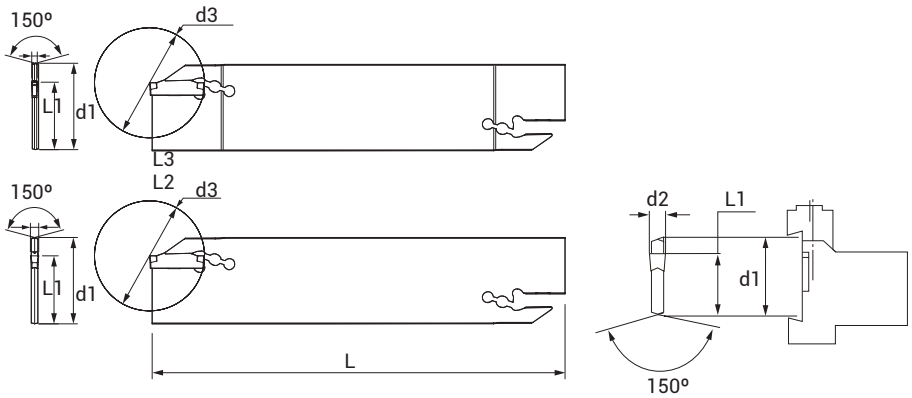
Ref.	Plaquita Insert	Ancho	d1	d2	d3	L	L1	€
YTER/L 1212-2T12-S	TD..2..	2	12,2	12	12	125	12	**235,90**
YTER/L 1616-2T16-S	TD..2..	2	16,2	16	16	125	16	**235,90**
YTER/L 1212-3T12-S	TD..3..	3	12,3	12	16	125	12	**235,90**
YTER/L 1616-3T16-S	TD..3..	3	16,3	16	16	125	16	**235,90**



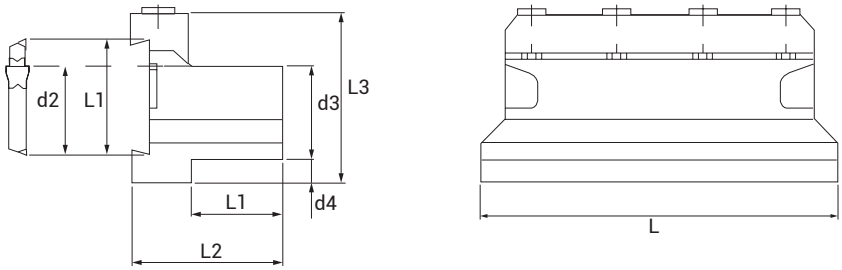
Ref.	Plaquita Insert	Ancho	d1	d2	d3	d4	d5	L	L1	Ref. Coolant	€
YTIR/L 16-2C-T8.5-C	TD..2..	2	16,5	16	14,8	25	8,5	150	28	●	**235,90**
YTIR/L 20-3C-T6-C	TD..2..	3	16	20	18,3	25	6	170	40	●	**235,90**
YTIR/L 25-3C-T6-C	TD..3..	3	18,5	25	23	25	6	200	40	●	**243,05**
YTIR/L 32-3C-T5-C	TD..3..	3	21	32	30	31	5	250	60	●	**271,65**

SAUDA

YGB



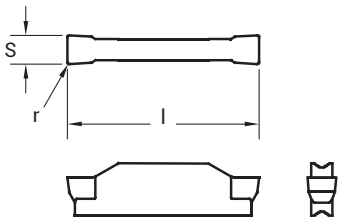
Ref.	Plaquita Insert	d1	d2	d3	L	L1	€
YGB 25-2	TD..2..	25	2	20	110	21,4	**193,00**
YGB 32-2	TD..2..	32	2	20	150	25	**193,00**
YGB 32-3	TD..3..	32	3	20	150	25	**193,00**
YGB 32-4	TD..4..	32	2	20	150	25	**193,00**
YGB 32-5	TD..5..	32	3	20	150	25	**193,00**



Ref.	Plaquita Insert	d1	d2	d3	d4	L	L1	L2	L3	€
YGBU 20-25	TD..2..	25	21,4	20	13	86	19	38	243	**207,30**
YGBU 25-25	TD..2..	25	21,4	25	8	110	23	42	45	**207,30**
YGBU 20-32	TD..3..	32	25	20	13	110	19	38	50	**213,75**
YGBU 25-32	TD..4..	32	25	25	8	110	23	42	50	**213,75**
YGBU 32-32	TD..5..	32	25	32	5	110	29	48	54	**213,75**

TDP/N/Y

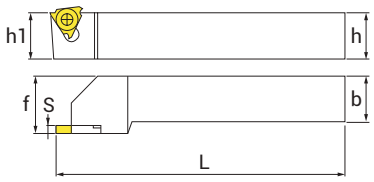
	KS2100	KS3100	KS4100
P		●	●
M	●	●	●
K		●	●
N			
S	●	●	●
H			



	Ref.	KS2100	KS3100	KS4100	l	s	r	Tronzado y Ranurado Parting & Grooving fn (mm/rev.)	Torneado Turning fn (mm/rev.)	Ap fn (mm)	€
	TDP2002	✓	✓	✓	20	2	0,2	0.04~0.12	-	-	**21,10**
	TDP3002	✓	✓	✓	20	3	0,2	0.05~0.16	-	-	**21,10**
	TDP4003	✓	✓	✓	20	4	0,3	0.06~0.18	-	-	**23,45**
	TDPR2002			✓	20	2	0,2	0.04~0.12	-	-	**21,10**
	TDPL2002			✓	20	2	0,2	0.04~0.12	-	-	**21,10**
	TDPR3002			✓	20	3	0,2	0.05~0.16	-	-	**21,10**
	TDPL3002			✓	20	3	0,2	0.05~0.16	-	-	**21,10**
	TDN2002	✓	✓	✓	20	2	0,2	0.06~0.18	-	-	**21,10**
	TDN3002	✓	✓	✓	20	3	0,2	0.07~0.22	-	-	**21,10**
	TDN4003	✓	✓	✓	20	4	0,2	0.08~0.25	-	-	**23,45**
	TDN5003			✓	20	5	0,3	0.08~0.25	-	-	**25,80**
	TDNR2002			✓	20	2	0,2	0.06~0.18	-	-	**21,10**
	TDNL2002			✓	20	2	0,2	0.06~0.18	-	-	**21,10**
	TDNR3002			✓	20	3	0,2	0.07~0.22	-	-	**21,10**
	TDNL3002			✓	20	3	0,2	0.07~0.22	-	-	**21,10**
	TDY3E- 0.4		✓		20	3	0,4	0.10~0.20	0.10~0.38	0.50~2.20	**21,10**
	TDY4E- 0.4		✓		20	4	0,4	0.15~0.26	0.10~0.40	0.50~2.80	**23,45**

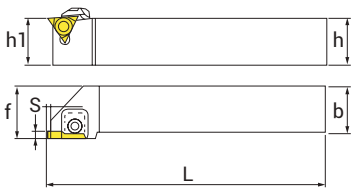
SAUDA

SGWHR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	f	S	h1	
SGWHR/L1212H3200	GBA32...	12	12	100	16	0,5-1,8	12	**40,25**
SGWHR/L1212H3215	GBA32...	12	12	100	16	1,8-2,3	12	**40,25**
SGWHR/L1616H3200	GBA32...	16	16	100	20	0,5-1,8	16	**40,25**
SGWHR/L1616H3215	GBA32...	16	16	100	20	1,8-2,3	16	**40,25**
SGWHR/L2020K3200	GBA32...	20	20	125	25	0,5-1,8	20	**46,40**
SGWHR/L2020K3215	GBA32...	20	20	125	25	1,8-2,3	20	**46,40**
SGWHR/L2020K3223	GBA32...	20	20	125	25	2,3-3,3	20	**46,40**
SGWHR/L2525M3200	GBA32...	25	25	150	32	0,5-1,8	25	**52,60**
SGWHR/L2525M3215	GBA32...	25	25	150	32	1,8-2,3	25	**52,60**
SGWHR/L2525M3223	GBA32...	25	25	150	32	2,3-3,3	25	**52,60**

MGWHR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	f	S	h1	
MGWHR/L1616H4315A	GBA43...	16	16	100	20	1,25-1,5	16	**80,45**
MGWHR/L1616H4315	GBA43...	16	16	100	20	1,5-2,3	16	**80,45**
MGWHR/L1616H4325	GBA43...	16	16	100	20	2,3-3,3	16	**80,45**
MGWHR/L2020K4315A	GBA43...	20	20	125	25	1,25-1,5	20	**86,65**
MGWHR/L2020K4315	GBA43...	20	20	125	25	1,5-2,3	20	**86,65**
MGWHR/L2020K4323	GBA43...	20	20	125	25	2,3-3,3	20	**86,65**
MGWHR/L2525K4315A	GBA43...	25	25	150	32	1,25-1,5	25	**92,80**
MGWHR/L2525K4315	GBA43...	25	25	150	32	1,5-2,3	25	**92,80**
MGWHR/L2525K4323	GBA43...	25	25	150	32	2,3-3,3	25	**92,80**
MGWHR/L2525K4333	GBA43...	25	25	150	32	3,3-4,7	25	**92,80**

Herramientas para ranurar y cortar
Grooving and parting tools

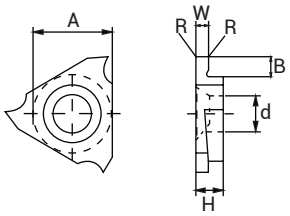
GBA

Interrupción baja
Light interrupted

General

Interrumpido
Interrupted

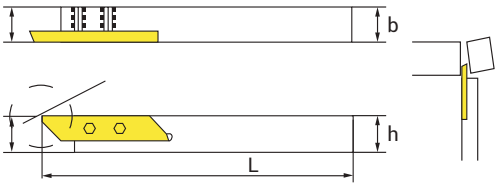
P	●
M	●
K	●
N	
S	●



Ref.	KP125	Stock R	Stock L	W	R	B	d	H	A	€
				Medidas Dimensions (mm)						
GBA32050R	✓	✓		0,50	0,05	1,30	4,50	3,18	9,52	**16,90**
GBA32075R/L	✓	✓	✓	0,75	0,10	2,10	4,50	3,18	9,52	**16,90**
GBA32080R/L	✓	✓	✓	0,80	0,10	2,10	4,50	3,18	9,52	**16,90**
GBA32090R	✓	✓		0,85	0,10	2,10	4,50	3,18	9,52	**16,90**
GBA32100R/L	✓	✓	✓	1,00	0,10	2,30	4,50	3,18	9,52	**16,90**
GBA32125R/L	✓	✓	✓	1,25	0,10	2,30	4,50	3,18	9,52	**16,90**
GBA32150R/L	✓	✓	✓	1,50	0,10	2,30	4,50	3,18	9,52	**16,90**
GBA32175R	✓	✓		1,75	0,10	2,30	4,50	3,18	9,52	**16,90**
GBA32200R/L	✓	✓	✓	2,00	0,10	2,80	4,50	3,18	9,52	**16,90**
GBA32250R/L	✓	✓	✓	2,50	0,10	2,80	4,50	3,18	9,52	**16,90**
GBA32300R	✓	✓		3,00	0,20	2,80	4,50	3,18	9,52	**16,90**
GBA43125R	✓	✓		1,25	0,20	2,00	5,40	4,76	12,70	**28,10**
GBA43150R	✓	✓		1,50	0,20	3,50	5,40	4,76	12,70	**28,10**
GBA43175R	✓	✓		1,75	0,20	3,50	5,40	4,76	12,70	**28,10**
GBA43200R	✓	✓		2,00	0,20	3,50	5,40	4,76	12,70	**28,10**
GBA43250R	✓	✓		2,50	0,30	4,00	5,40	4,76	12,70	**28,10**
GBA43300R	✓	✓		3,00	0,30	4,00	5,40	4,76	12,70	**28,10**

SAUDA

THCR/L



Ref.	Plaquita Inserts	Stock R	Stock L	Medidas Dimensions (mm) D	h	b	H	F	L	€
THCR/L1010J42	THC42...	○	○	21	10	10	10	12	85	**74,30**
THCR/L1212J42	THC42...	○	○	21	12	12	12	16	100	**74,30**
THCR/L1616J42	THC42...	○	○	21	16	16	150	20	100	**86,65**
THCR/L2020K42	THC42...	○	○	21	20	20	125	25	125	**99,00**
THCR/L2525M42	THC42...	○	○	21	25	25	150	32	150	**112,50**

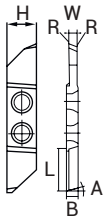
● Stock ○ Bajo pedido
Under delivery

THC

Interrupción baja
Light interrupted

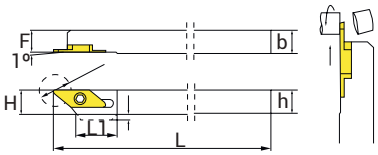
Gen-
eral
Interrumpido
Interrupted

P	●
M	●
K	●
N	
S	●



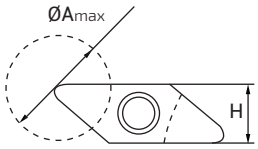
Ref.	KP125	Medidas Dimensions (mm) W	R	B	L	H	A	€
THC42R100-CE	✓	1,0	0,06	3,04	5,0	7,94	0	**40,80**
THC42R100-CE15R	✓	1,0	0,06	3,04	5,0	7,94	15	**40,80**
THC42R150-CE	✓	1,5	0,06	3,04	8,5	7,94	0	**40,80**
THC42R150-CE15R	✓	1,5	0,06	3,04	8,5	7,94	15	**40,80**
THC42R200-CE	✓	2,0	0,10	3,04	11,5	7,94	0	**40,80**
THC42R200-CE15R	✓	2,0	0,10	3,04	11,5	7,94	15	**40,80**
THC42R250-CE	✓	2,5	0,10	3,04	11,5	7,94	0	**40,80**
THC42R250-CE15R	✓	2,5	0,10	3,04	11,5	7,94	15	**40,80**
THC42R300-CE	✓	3,0	0,20	3,04	11,5	7,94	0	**40,80**
THC42R300-CE15R	✓	3,0	0,20	3,04	11,5	7,94	15	**40,80**
THC42R200-CN	✓	2,0	0,10	3,04	11,5	7,94	0	**40,80**
THC42R200-CU15R	✓	2,0	0,10	3,04	11,5	7,94	15	**40,80**
THC42R250-CN	✓	2,5	0,10	3,04	11,5	7,94	0	**40,80**
THC42R250-CU15R	✓	2,5	0,10	3,04	11,5	7,94	15	**40,80**
THC42R300-CN	✓	3,0	0,20	3,04	11,5	7,94	0	**40,80**
THC42R300-CU15R	✓	3,0	0,20	3,04	11,5	7,94	15	**40,80**

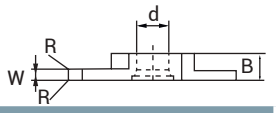
KTKFR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	h	b	L	L1	f	H	
KTKFR/L1010K12	TKFT12...	12	10	10	125	15	10	10	**74,30**
KTKFR/L1212M12	TKFT12...	12	12	12	150	15	12	12	**74,30**
KTKFR/L1616M12	TKFT12...	12	16	16	150	15	16	16	**74,30**
KTKFR/L1010K16	TKFT16...	16	10	10	125	20	10	10	**74,30**
KTKFR/L1212M16	TKFT16...	16	12	12	150	20	12	12	**74,30**
KTKFR/L1616M16	TKFT16...	16	16	16	150	20	16	16	**74,30**

TKF





Interrupción baja
Light interrupted

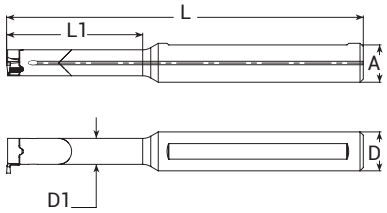
General

Interrumpido
Interrupted

P	●
M	●
K	●
N	
S	●

Ref.	KP125	Medidas Dimensions (mm)							€
		W	R	B	d	L	H	A	
TKF12R/L050-S	✓	0,5	0,03	3	5	0	8,7	5	**33,80**
TKF12R/L070-S	✓	0,7	0,03	3	5	0	8,7	8	**33,80**
TKF12R/L100-S	✓	1,0	0,03	3	5	0	8,7	12	**33,80**
TKF12R/L150-S	✓	1,5	0,03	3	5	0	8,7	12	**33,80**
TKF12R/L200-S	✓	2,0	0,03	3	5	0	8,7	12	**33,80**
TKF12R/L050-S16R	✓	0,5	0,05	3	5	16	8,7	5	**33,80**
TKF12R/L070-S16R	✓	0,7	0,05	3	5	16	8,7	8	**33,80**
TKF12R/L100-S16R	✓	1,0	0,05	3	5	16	8,7	12	**33,80**
TKF12R/L150-S16R	✓	1,5	0,05	3	5	16	8,7	12	**33,80**
TKF12R/L200-S16R	✓	2,0	0,05	3	5	16	8,7	12	**33,80**
TKF16R/L150-S	✓	0,5	0,05	4	5	0	9,5	16	**33,80**
TKF16R/L200-S	✓	0,7	0,05	4	5	0	9,5	16	**33,80**
TKF16R/L250-S	✓	1,0	0,05	4	5	0	9,5	16	**33,80**
TKF16R/L300-S	✓	3,0	0,05	4	5	0	9,5	16	**33,80**
TKF16R/L150-S16R	✓	1,5	0,05	4	5	16	9,5	16	**33,80**
TKF16R/L200-S16R	✓	2,0	0,05	4	5	16	9,5	16	**33,80**
TKF16R/L250-S16R	✓	2,5	0,05	4	5	16	9,5	16	**33,80**
TKF16R/L300-S16R	✓	3,0	0,05	4	5	16	9,5	16	**33,80**

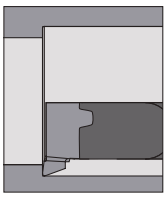
Perforación
Mango de metal duro

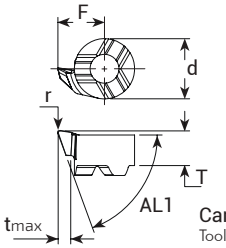


Ref.	Medidas Dimensions (mm)					€
	A	L	L1	D	D1	
CV08-1221	11,5	80,5	21	12	6	**370,05**
CV08-1230	11,5	90,5	30	12	6	**424,40**
CV08-1242	11,5	100,5	42	12	6	**507,90**
CV08-1250	11,5	115	50	12	6	**573,20**
CV11-1229	11,5	95	29	12	8	**391,90**
CV11-1242	11,5	110	42	12	8	**428,10**
CV11-1256	11,5	120	56	12	8	**504,25**
CV11-1264	11,5	130	64	12	8	**576,85**
CV16-1240	11,0	130	40	12	11	**584,50**
CV16-1256	11,0	130	56	12	11	**623,95**
CV16-1280	11,0	130	80	12	11	**746,30**

TRONZADO

Perforación
Boring

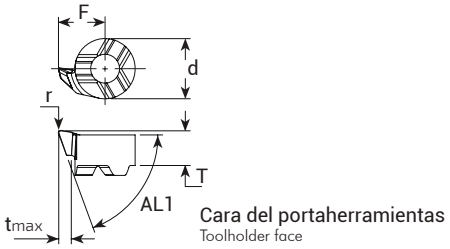


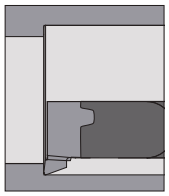


Cara del portaherramientas
Toolholder face

Ref.	Grades Calidades		Medidas Dimensions (mm)						Min. Dia. Perforación Min. Bore Dia. (mm)	€
	VBX	VTX	r	d	T	tmax	AL1	F		
V08BCR		✓	0,2	6	3,65	1,3	69,8º	4,65	7,8	**49,30**
V11BCR		✓	0,2	8	4,00	2,3	69,8º	6,70	11,0	**68,45**
V14BCR	✓	✓	0,2	9	5,60	4,0	69,8º	8,70	13,8	**68,45**
V16BCR	✓	✓	0,2	11	560	4,3	69,8º	9,70	15,5	**66,65**

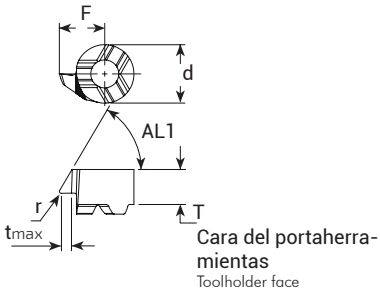
Perforación con fresa de viruta
Boring with chip former

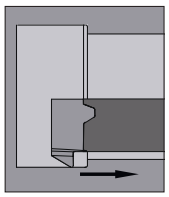




Ref.	Grades Calidades		Medidas Dimensions (mm)						Min. Dia. Perforación Min. Bore Dia. (mm)	€
	VBX	VTX	r	d	T	tmax	AL1	F		
V08BCFR		✓	0,2	6	3,65	1,3	69,8º	4,65	7,8	**54,50**
V11BCFR		✓	0,2	8	4,00	2,2	69,8º	6,70	11,0	**56,30**

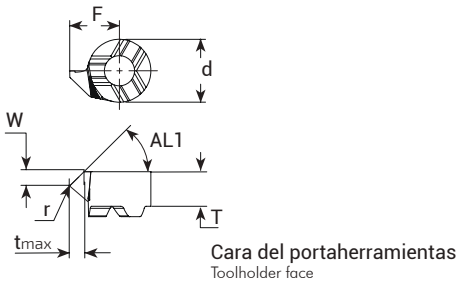
Perforación posterior
Back boring

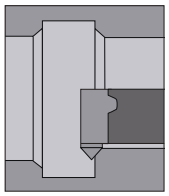




Ref.	Grades Calidades		Medidas Dimensions (mm)						Min. Dia. Perforación Min. Bore Dia. (mm)	€
	VBX	VTX	r	d	T	tmax	AL1	F		
V08BBR		✓	0,2	6	3,8	1,2	59,5º	4,65	7,8	**61,80**
V11BBR		✓	0,2	8	4,0	2,2	59,5º	6,70	11,0	**61,80**
V14BBR	✓	✓	0,2	9	5,6	3,5	59,5º	8,70	13,8	**68,45**

Chaflanar
Chamfering

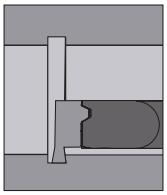


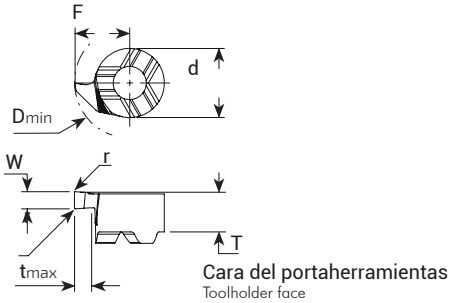


Ref.	Grades Calidades		Medidas Dimensions (mm)							Min. Dia. Perforación Min. Bore Dia. (mm)	€
	VBX	VTX	r	d	W	T	tmax	AL1	F		
V08CH45R		✓	0,2	6	1,3	3,8	1,0	45º	4,65	8,0	**52,25**
V14CH45R	✓	✓	0,2	9	2,7	5,6	2,6	45º	9,00	14,0	**68,45**

SAUDA

Ranurado
Grooving





Ref.	Grades Calidades		Medidas Dimensions (mm)						Min. Dia. Perforación Min. Bore Dia. (mm)	€
	VBX	VTX	d	W+0,03	tmax	T	F	r		
V08GSW078T100R		✓	6	0,78	1,0	3,6	4,8	0,05	8	**47,30**
V08GSW086T100R		✓	6	0,86	1,0	3,6	4,8	0,05	8	**47,30**
V08GSW100T100R		✓	6	1,00	1,0	3,6	4,8	0,05	8	**47,30**
V08GSW117T100R		✓	6	1,17	1,0	3,6	4,8	0,05	8	**47,30**
V08GSW150T100R		✓	6	1,5	1,0	3,6	4,8	0,05	8	**47,30**
V08GSW157T100R		✓	6	1,57	1,0	3,6	4,8	0,05	8	**47,30**
V08GSW198T100R		✓	6	1,98	1,0	3,6	4,8	0,05	8	**47,30**
V08GSW200T100R		✓	6	2,00	1,0	3,6	4,8	0,05	8	**47,30**
V11GSW100T230R		✓	8	1,00	2,3	4,0	6,7	0,05	11	**47,30**
V11GSW117T230R		✓	8	1,17	2,3	4,0	6,7	0,05	11	**47,30**
V11GSW120T230R		✓	8	1,20	2,3	4,0	6,7	0,05	11	**47,30**
V11GSW142T230R		✓	8	1,42	2,3	4,0	6,7	0,05	11	**47,30**
V11GSW150T230R		✓	8	1,50	2,3	4,0	6,7	0,05	11	**47,30**
V11GSW157T230R		✓	8	1,57	2,3	4,0	6,7	0,05	11	**47,30**
V11GSW198T230R		✓	8	1,98	2,3	4,0	6,7	0,05	11	**47,30**
V11GSW200T230R		✓	8	2,00	2,3	4,0	6,7	0,05	11	**47,30**
V11GSW238T230R		✓	8	2,38	2,3	4,0	6,7	0,05	11	**47,30**
V11GSW250T230R		✓	8	2,50	2,3	4,0	6,7	0,05	11	**47,30**
V11GSW318T230R		✓	8	3,18	2,3	4,0	6,7	0,05	11	**47,30**
V14GSW117T400R	✓	✓	9	1,17	4,0	5,6	9,0	0,05	14	**52,50**
V14GSW150T400R	✓	✓	9	1,50	4,0	5,6	9,0	0,05	14	**52,50**
V14GSW157T400R	✓	✓	9	1,57	4,0	5,6	9,0	0,05	14	**52,50**
V14GSW198T400R	✓	✓	9	1,98	4,0	5,6	9,0	0,05	14	**52,50**
V14GSW200T400R	✓	✓	9	2,00	4,0	5,6	9,0	0,05	14	**52,50**
V14GSW238T400R	✓	✓	9	2,38	4,0	5,6	9,0	0,05	14	**52,50**
V14GSW250T400R	✓	✓	9	2,50	4,0	5,6	9,0	0,05	14	**52,50**
V14GSW300T400R	✓	✓	9	3,00	4,0	5,6	9,0	0,05	14	**52,50**
V14GSW318T400R	✓	✓	9	3,18	4,0	5,6	9,0	0,05	14	**52,50**
V16GSW117T430R	✓	✓	11	1,17	4,3	5,6	10,2	0,05	16	**54,80**
V16GSW142T430R	✓	✓	11	1,42	4,3	5,6	10,2	0,05	16	**54,80**
V16GSW157T430R	✓	✓	11	1,57	4,3	5,6	10,2	0,05	16	**54,80**
V16GSW198T430R	✓	✓	11	4,00	4,3	5,6	10,2	0,05	16	**54,80**
V16GSW200T430R	✓	✓	11	1,98	4,3	5,6	10,2	0,05	16	**54,80**
V16GSW238T430R	✓	✓	11	2,00	4,3	5,6	10,2	0,05	16	**54,80**
V16GSW250T430R	✓	✓	11	2,38	4,3	5,6	10,2	0,05	16	**54,80**
V16GSW300T430R	✓	✓	11	3,00	4,3	5,6	10,2	0,05	16	**54,80**
V16GSW318T430R	✓	✓	11	3,18	4,3	5,6	10,2	0,05	16	**54,80**
V16GSW350T430R	✓	✓	11	3,50	4,3	5,6	10,2	0,05	16	**54,80**

ROSCADO

THREADING

ROSCADO

SAUDA

Características
Threading insert features

Flujo de virutas
Chip flow

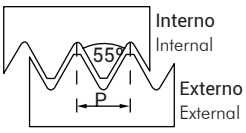
Afilado y resistencia de los bordes
Both edge sharpness and strength

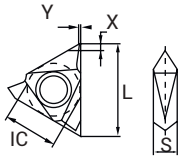
Tratamiento de la ranura de rotura de viruta de dos vías
Treatment of two way chip breaking groove

-Nuevo tipo de rompevirutas, buen control de virutas; tratamiento especial de bordes con uniformidad.
-La calidad KP125, es adecuada para acero (P), acero inoxidable (M), hierro fundido (K) y otros materiales.
-Rango de paso cubierto: 1.0-3.0mm.
- New type of pressing groove, chip processing is good; special edge treatment, edge uniformity.
-With KP125 grade, suitable for steel (P), stainless steel (M), cast iron (K) and other materials.
-Covered pitch range 1.0-3.0mm.

Plaquitas de perfil parcial en V de 55°
Partial profile 55° V-style inserts

P	●
M	●
K	●
N	
S	
H	●

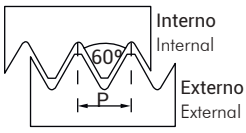


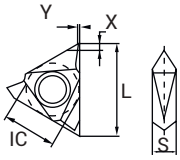


Ref. ER	KP125	Inclinación Pitch mm	Inclinación Pitch TPI	Medidas Dimensions IC	S	L	X	Y	€
MTT43R5501	✓	1,0-1,75	24-14	1/2"	4,76	22	1,70	0,29	**23,95**
MTT43R5502	✓	2,0-2,5	13-10	1/2"	4,76	22	1,70	0,29	**23,95**
MTT43R5503	✓	3,0-3,5	9-7	1/2"	4,76	22	1,70	0,29	**23,95**
MTT43R5504	✓	4,0-4,5	6-5	1/2"	4,76	22	1,70	0,29	**23,95**

Plaquitas de perfil parcial en V de 60°
Partial profile 60° V-style inserts

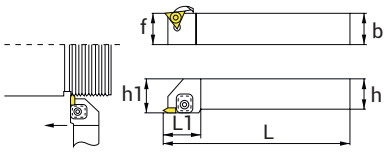
P	●
M	●
K	●
N	
S	
H	●





Ref. ER	KP125	Inclinación Pitch mm	TPI	Medidas Dimensions IC	S	L	X	Y	€
MTT43R6001	✓	1,0-1,75	24-14	1/2"	4,76	22	1,70	0,29	**23,95**
MTT43R6002	✓	2,0-2,5	13-10	1/2"	4,76	22	1,70	0,29	**23,95**
MTT43R6003	✓	3,0-3,5	9-7	1/2"	4,76	22	1,70	0,29	**23,95**
MTT43R6004	✓	4,0-4,5	6-5	1/2"	4,76	22	1,70	0,29	**23,95**

MTWHR/L

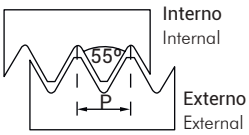


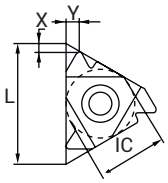
Ref.	Plaquita Inserts	Medidas Dimensions (mm) h	b	L	L1	h1	f	€
MTWHR/L 1616H16	TT43	16	16	100	22	16	20	**81,60**
MTWHR/L 2020K16	TT43	20	20	125	25	20	25	**81,60**
MTWHR/L 2525M16	TT43	25	25	150	30	25	32	**88,60**
MTWHR/L 3232P16	TT43	32	32	170	35	32	40	**109,70**

SAUDA

Plaquitas de perfil parcial en V de 55°
Partial profile 55° V-style inserts

P	●
M	●
K	●
N	
S	
H	●

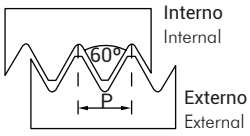


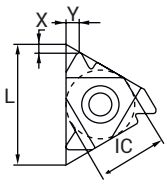


Ref. ER	Ref. IR	KP125	Inclinación Pitch mm	Inclinación Pitch TPI	Medidas Dimensions IC	S	L	X	Y	€
16ER A55-B	**16IR A55-B**	✓	0,5-1,5	48-16	9,525	3,97	16	0,8	0,9	**9,85**
16ER G55-B	**16IR G55-B**	✓	1,75-3,0	14-8	9,525	3,97	16	1,2	1,7	**9,85**
22ER N55	**22IR N55**	✓	3,5-5,0	7-5	12,700	5,56	22	1,7	2,5	**21,40**

Plaquitas de perfil parcial en V de 60°
Partial profile 60° V-style inserts

P	●
M	●
K	●
N	
S	
H	●

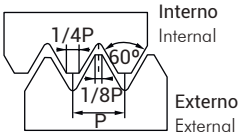


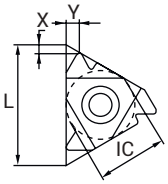


Ref. ER	Ref. IR	KP125	Inclinación Pitch mm	Inclinación Pitch TPI	Medidas Dimensions IC	S	L	X	Y	€
16ER A60-B	**16IR A60-B**	✓	0,5-1,5	48-16	9,525	3,97	16	0,8	0,9	**9,85**
16ER G60-B	**16IR G60-B**	✓	1,75-3,0	14-8	9,525	3,97	16	1,2	1,7	**9,85**
22ER N60	**22IR N60**	✓	3,5-5,0	7-5	12,700	5,56	22	1,7	2,5	**21,40**

Métrica ISO
ISO Metric

P	●
M	●
K	●
N	
S	
H	●

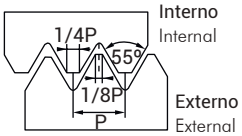


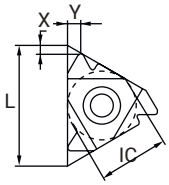


Ref. ER	Ref. IR	KP125	Inclinación Pitch mm	Inclinación Pitch TPI	Medidas Dimensions IC	S	L	X	Y	€
	11IR0.50 ISO-B	✓	0,50	0,50	6,350	3,18	11	0,6	0,6	**9,85**
	11IR0.75 ISO-B	✓	0,75	0,75	6,350	3,18	11	0,6	0,6	**9,85**
	11IR1.00 ISO-B	✓	1,00	1,00	6,350	3,18	11	0,7	0,7	**9,85**
	11IR1.25 ISO-B	✓	1,25	1,25	6,350	3,18	11	0,8	0,9	**9,85**
	11IR1.50 ISO-B	✓	1,50	1,50	6,350	3,18	11	0,8	1,0	**9,85**
	11IR1.75 ISO-B	✓	1,75	1,75	6,350	3,18	11	0,8	1,1	**9,85**
	11IR2.00 ISO-B	✓	2,00	2,00	6,350	3,18	11	-	-	**9,85**
16ER1.00 ISO-B	**16IR1.00 ISO-B**	✓	1,00	1,00	9,525	3,97	16	0,7	0,7	**9,85**
16ER1.25 ISO-B	**16IR1.25 ISO-B**	✓	1,25	1,25	9,525	3,97	16	0,8	0,9	**9,85**
16ER1.50 ISO-B	**16IR1.50 ISO-B**	✓	1,50	1,50	9,525	3,97	16	0,8	1,0	**9,85**
16ER1.75 ISO-B	**16IR1.75 ISO-B**	✓	1,75	1,75	9,525	3,97	16	0,9	1,2	**9,85**
16ER2.00 ISO-B	**16IR2.00 ISO-B**	✓	2,00	2,00	9,525	3,97	16	1,0	1,3	**9,85**
16ER2.50 ISO-B	**16IR2.50 ISO-B**	✓	2,50	2,50	9,525	3,97	16	1,1	1,5	**9,85**
16ER3.00 ISO-B	**16IR3.00 ISO-B**	✓	3,00	3,00	9,525	3,97	16	1,2	1,6	**9,85**

Plaquitas Whitworth de 55°
55° Whitworth inserts

P	●
M	●
K	●
N	
S	
H	●



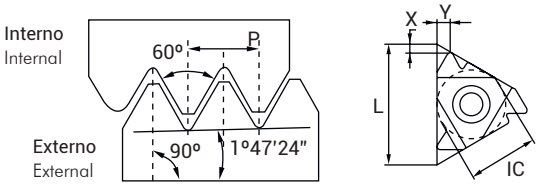


Ref. ER	Ref. IR	KP125	Inclinación Pitch mm	Inclinación Pitch TPI	Medidas Dimensions IC	S	L	X	Y	€
16ER 19W-B	**16IR 19W-B**	✓	19	19	9,525	3,97	16	0,8	1,0	**9,85**
16ER 14W-B	**16IR 14W-B**	✓	14	14	9,525	3,97	16	0,9	1,2	**9,85**
16ER 11W-B	**16IR 11W-B**	✓	11	11	9,525	3,97	16	1,1	1,5	**9,85**

SAUDA

Plaquitas NPT de 60°
60° NPT

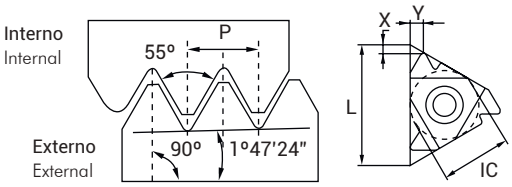
P	●
M	●
K	●
N	
S	
H	●



Ref. ER	Ref. IR	KP125	Inclinación Pitch mm	Inclinación Pitch TPI	Medidas Dimensions IC	S	L	X	Y	€
16ER14NPT-B	**16IR14NPT-B**	✓	14	14	9,525	3,97	16	0,9	1,2	**9,85**
16ER11.5NPT-B	**16IR11.5NPT-B**	✓	11,5	11,5	9,525	3,97	16	1,1	1,5	**9,85**

Plaquitas BSPT de 55°
BSPT 55° inserts

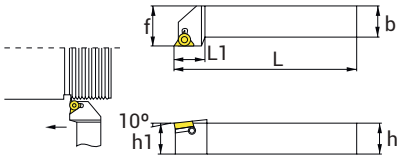
P	●
M	●
K	●
N	
S	
H	●



Ref. ER	Ref. IR	KP125	Inclinación Pitch mm	Inclinación Pitch TPI	Medidas Dimensions IC	S	L	X	Y	€
16ER28 BSPT-B	**16IR28 BSPT-B**	✓	28	28	9,525	3,97	16	0,6	0,6	**9,85**
16ER19 BSPT-B	**116IR19 BSPT-B**	✓	19	19	9,525	3,97	16	0,8	0,9	**9,85**
16ER14 BSPT-B	**16IR14 BSPT-B**	✓	14	14	9,525	3,97	16	1,0	1,2	**9,85**
16ER11 BSPT-B	**16IR11 BSPT-B**	✓	11	11	9,525	3,97	16	1,0	1,5	**9,85**

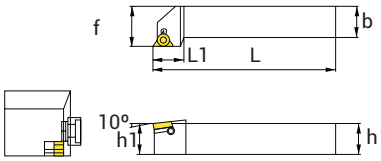
Portaherramientas para roscar
Threading tools

KSER/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
KSER/L 1212K16	16ER/L	12	12	100	20	12	16	**33,80**
KSER/L 1616H16	16ER/L	16	16	100	22	16	20	**33,80**
KSER/L 2020K16	16ER/L	20	20	125	25	20	25	**33,80**
KSER/L 2525M16	16ER/L	25	25	150	30	25	32	**40,80**
KSER/L 3232P16	16ER/L	32	32	170	35	32	40	**68,95**

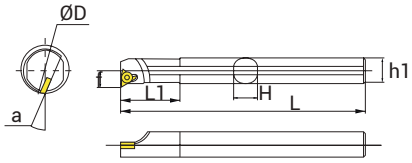
KCER/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
KCER/L 2525M22	22ER/L	25	25	150	30	25	32	**61,90**
KCER/L 3232P22	22ER/L	32	32	170	35	32	40	**88,60**

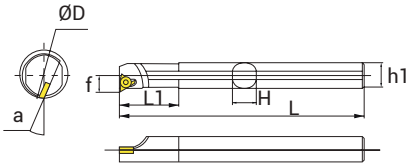
SAUDA

KSNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	H	L	L1	f	a	
KSNR/L 1016M11	11IR/L	13	16	15	150	22	7,7	15	**40,80**
KSNR/L 1316M11	11IR/L	16	16	15	150	32	8,7	15	**40,80**
KSNR/L 1020M11	11IR/L	13	20	18	150	32	7,7	21	**40,80**
KSNR/L 1316M16	16IR/L	16	16	15	150	32	8,7	21	**40,80**
KSNR/L 1620M16	16IR/L	20	32	18	150	40	11,7	15	**45,00**

KSNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	H	L	L1	f	a	
KSNR/L 0016M16	16IR/L	19	16	15	150	40	11,7	15	**33,80**
KSNR/L 0016Q16	16IR/L	19	16	15	180	40	11,7	15	**33,80**
KSNR/L 0020Q16	16IR/L	24	20	18	180	40	13,7	21	**38,00**
KSNR/L 0025R16	16IR/L	29	25	23	200	45	16,2	21	**45,00**
KSNR/L 0032S16	16IR/L	36	32	29	250	50	19,7	15	**78,80**

TORNEADO

TURNING

TORNEADO

SAUDA

Descripción del grado de torneado

Turning grade description

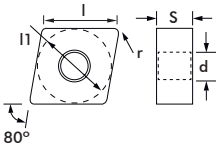
Tipo de grado Grade type	Propiedades Properties	Aplicación de mecanizado Machining Application	Aplicación material Material application	Ámbito industrial Industry area
KP115	P10/P15	Aceros en general, corte continuo. Steel in general, continuous cutting.	P ★ ★ ★ M ★ K ★ S H ★	Mecanizado en general y líneas de producción. General machining and production lines.
KP125	P20/P25	Aceros en general, corte continuo. Steel in general, continuous cutting.	P ★ ★ ★ M ★ ★ K ★ S H	Mecanizado en general y líneas de producción. General machining and production lines.
KP135	P35/P40	Aceros en general, corte interrumpido. Steel in general, interrupted cutting.	P ★ ★ ★ M ★ K S H	Mecanizado en general y líneas de producción. General machining and production lines.
KM135	P35/P40	Gama de inoxidables y exóticos. Stainless and exotic range.	P M ★ ★ ★ K S ★ H	Aeroespacial e industria petroquímica. Aerospace and petrochemical industry.
KM145	P40/P45	Gama de inoxidables y exóticos. Stainless and exotic range.	P M ★ ★ ★ K S ★ ★ H	Aeroespacial. Aerospace.

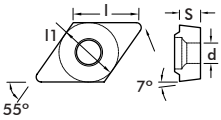
	Símbolo Symbol	P	M	K	S
KP115		●	●	●	
KP125		●	●	●	
KP135		●	●	●	
KM135			●		●
KM145			●		●

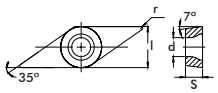
Ref.	KSP125	KP135	KM135	KM145	H10	H10T	CERMET	CBN	Medidas Dimensions (mm) l	d	S	r	d1	l1	€
CCGT030102L-F				✓			✓		3,500	1,9	1,40	0,2	-	-	**15,50**
CCGT030104L-F				✓			✓		3,500	1,9	1,40	0,4	-	-	**15,50**
CCGT040102L-F				✓			✓		4,300	2,3	1,80	0,2	-	-	**15,50**
CCGT040104L-F				✓			✓		4,300	2,3	1,80	0,4	-	-	**15,50**
CCGT060602L-F				✓			✓		6,350	2,8	2,38	0,2	-	-	**12,70**
CCGT060604L-F				✓			✓		6,350	2,8	2,38	0,4	-	-	**12,70**
CCGT09T302L-F				✓			✓		9,525	4,4	3,97	0,2	-	-	**13,10**
CCGT09T304L-F				✓			✓		9,525	4,4	3,97	0,4	-	-	**13,10**
CCGT060202-AG					✓				6,4	6,35	2,38	0,2	2,8	-	**11,35**
CCGT060204-AG					✓				6,4	6,35	2,38	0,4	2,8	-	**11,35**
CCGT09T304-AG					✓				9,7	9,53	3,97	0,4	4,4	-	**13,10**
CCGT09T308-AG					✓				9,7	9,53	3,97	0,8	4,4	-	**13,10**
CCGT120404-AG					✓				12,9	12,70	4,76	0,4	5,5	-	**16,70**
CCGT060202-FG						✓			6,4	6,35	2,38	0,2	2,8	-	**11,35**
CCGT060204-FG						✓			6,4	6,35	2,38	0,4	2,8	-	**11,35**
CCGT09T304-FG						✓			9,7	9,53	3,97	0,4	4,4	-	**13,10**
CCGT09T308-FG						✓			9,7	9,53	3,97	0,8	4,4	-	**13,10**
CCGT120404-FG						✓			12,9	12,70	4,76	0,4	5,5	-	**16,70**
CCGW060202-Z2								✓	6,35	2,8	2,38	0,2	-	-	**90,00**
CCGW060204-Z2								✓	6,35	2,8	2,38	0,4	-	-	**90,00**
CCGW09T304-Z2								✓	9,52	4,4	3,97	0,4	-	-	**90,00**
CCGW09T308-Z2								✓	9,52	4,4	3,97	0,8	-	-	**90,00**
CCMT060204-MP				✓					6,4	6,35	2,38	0,4	2,8	-	**7,60**
CCMT09T304-MP				✓					9,7	9,53	2,38	0,4	4,4	-	**7,95**
CCMT09T308-MP				✓					9,7	9,53	3,97	0,8	4,4	-	**7,95**
CCMT060204-MG			✓	✓					6,4	6,35	2,38	0,4	2,8	-	**7,60**
CCMT09T304-MG			✓	✓					9,7	9,53	3,97	0,4	4,4	-	**7,95**
CCMT09T308-MG			✓	✓					9,7	12,70	3,97	0,8	4,4	-	**7,95**
CCMT120408-MG			✓	✓					12,9	4,4	4,76	0,8	5,5	-	**9,95**
CNGA120404-Z2								✓	12,7	5,16	4,76	0,4	-	-	**90,00**
CNGA120408-Z2								✓	12,7	5,16	4,76	0,8	-	-	**90,00**
CNGA120412-Z2								✓	12,7	5,16	4,76	1,2	-	-	**90,00**
CNMG120404-FP			✓						12,9	12,7	4,76	0,4	5,16	-	**8,95**
CNMG120408-FP			✓	✓					12,9	12,7	4,76	0,8	5,16	-	**8,95**
CNMG120404-SM			✓	✓					12,9	12,7	4,76	0,4	5,16	-	**8,95**
CNMG120408-SM			✓	✓					12,9	12,7	4,76	0,8	5,16	-	**8,95**
CNMG120404-SP			✓	✓					12,9	12,7	4,76	0,4	5,16	-	**8,95**
CNMG120408-SP			✓	✓					12,9	12,7	4,76	0,8	5,16	-	**8,95**
CNMG120404-MP			✓	✓					12,9	12,7	4,76	0,4	5,16	-	**8,95**
CNMG120408-MP			✓	✓					12,9	12,7	4,76	0,8	5,16	-	**8,95**
CNMG120412-MP			✓	✓					12,9	12,7	4,76	1,2	5,16	-	**8,95**
CNMG120408-RK				✓					12,9	12,7	4,76	0,8	5,16	-	**8,95**
CNMG120408-RG				✓					12,9	12,7	4,76	0,8	5,16	-	**8,95**
CNMG120408-RP				✓					12,9	12,7	4,76	0,8	5,16	-	**8,95**
CNMG120408-HG				✓					12,9	12,7	4,76	0,8	5,16	-	**8,95**
CNMG120412-HG				✓					12,9	12,7	4,76	1,2	5,16	-	**8,95**

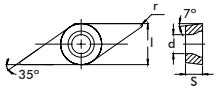
SAUDA

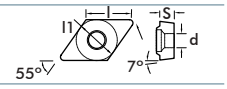
Ref.	KSP115	KSP125	KP135	KM135	KM145	H10	H10T	CERMET	CBN	Medidas Dimensions (mm) l	d	S	r	d1	l1	€
CNMG160608-HR	✓	✓	✓		✓					12,9	6,35	6,35	0,8	-	15,875	**18,90**
CNMG160612-HR	✓	✓	✓		✓					12,9	6,35	6,35	1,2	-	15,875	**18,90**
CNMG160616-HR	✓	✓	✓		✓					12,9	6,35	6,35	1,6	-	15,875	**18,90**
CNMG190612-HR	✓	✓	✓		✓					12,9	7,94	6,35	1,2	-	19,05	**24,10**
CNMG190616-HR	✓	✓	✓		✓					12,9	7,94	6,35	1,6	-	19,05	**24,10**
CNMG250924-HR		✓	✓		✓					12,9	9,12	9,52	2,4	-	25,4	**49,65**
CNMM190612-RP		✓								12,9	7,94	6,35	1,2	-	19,05	**22,85**
CNMM190616-RP		✓								12,9	7,94	6,35	1,6	-	19,05	**22,85**
CNMM190624-RP		✓								12,9	7,94	6,35	2,4	-	19,05	**22,85**
CNMM190612-HY		✓	✓							12,9	7,94	6,35	1,2	-	19,05	**22,85**
CNMM190616-HY		✓	✓							12,9	7,94	6,35	1,6	-	19,05	**22,85**
CNMM190624-HY		✓	✓							12,9	7,94	6,35	2,4	-	19,05	**22,85**
CNMM250924-HY		✓			✓					12,9	9,12	9,52	2,4	-	25,4	**49,65**
DCET11T301R-XF			✓							11,6	4,4	3,97	0,1	-	9,53	**16,65**
DCET11T302R-XF			✓							11,6	4,4	3,97	0,2	-	9,53	**16,65**
DCET11T304R-XF			✓							11,6	4,4	3,97	0,4	-	9,53	**16,65**
DCET11T301L-XF			✓							11,6	4,4	3,97	0,1	-	9,53	**16,65**
DCET11T302L-XF			✓							11,6	4,4	3,97	0,2	-	9,53	**16,65**
DCET11T304L-XF			✓							11,6	4,4	3,97	0,4	-	9,53	**16,65**
DCET11T301R-YF			✓							11,6	4,4	3,97	0,1	-	9,53	**16,65**
DCET11T302R-YF			✓							11,6	4,4	3,97	0,2	-	9,53	**16,65**
DCET11T304R-YF			✓							11,6	4,4	3,97	0,4	-	9,53	**16,65**
DCET11T301L-YF			✓							11,6	4,4	3,97	0,1	-	9,53	**16,65**
DCET11T302L-YF			✓							11,6	4,4	3,97	0,2	-	9,53	**16,65**
DCET11T304L-YF			✓							11,6	4,4	3,97	0,4	-	9,53	**16,65**
DCEW11T301			✓							11,6	4,4	3,97	0,1	-	9,53	**16,65**
DCEW11T302			✓							11,6	4,4	3,97	0,2	-	9,53	**16,65**
DCEW11T304			✓							11,6	4,4	3,97	0,4	-	9,53	**16,65**
DCGT070202-AG							✓			7,75	2,8	2,38	0,2	-	6,35	**11,65**
DCGT070204-AG							✓			7,75	2,8	2,38	0,4	-	6,35	**11,65**
DCGT11T302-AG							✓			11,6	4,4	3,97	0,2	-	9,53	**13,20**
DCGT11T304-AG							✓			11,6	4,4	3,97	0,4	-	9,53	**13,20**
DCGT11T308-AG							✓			11,6	4,4	3,97	0,8	-	9,53	**13,20**
DCGT070202-FG						✓				7,75	2,8	2,38	0,2	-	6,35	**11,65**
DCGT070204-FG						✓				7,75	2,8	2,38	0,4	-	6,35	**11,65**
DCGT11T302-FG						✓				11,6	4,4	3,97	0,2	-	9,53	**13,20**
DCGT11T304-FG						✓				11,6	4,4	3,97	0,4	-	9,53	**13,20**
DCGT11T308-FG						✓				11,6	4,4	3,97	0,8	-	9,53	**13,20**
DCGT11T302L-F								✓		9,25	4,4	3,97	0,2	-	-	**13,20**
DCGT11T304L-F								✓		9,25	4,4	3,97	0,4	-	-	**13,20**
DCGT11T302R-F								✓		9,25	4,4	3,97	0,2	-	-	**13,20**
DCGT11T304R-F								✓		9,25	4,4	3,97	0,4	-	-	**13,20**
DCGW070202-Z2									✓	6,35	2,8	2,38	0,2	-	-	**90,00**
DCGW070204-Z2									✓	9,25	4,4	3,97	0,2	-	-	**90,00**
DCGW11T302-Z2									✓	9,25	4,4	3,97	0,4	-	-	**90,00**
DCGW11T304-Z2									✓	9,25	4,4	3,97	0,8	-	-	**90,00**
DCMT11T304-MP					✓					9,53	4,4	3,97	0,4	-	11,6	**9,80**
DCMT11T308-MP					✓					9,53	4,4	3,97	0,8	-	11,6	**9,80**











Ref.	KSP115	KSP125	KP135	KM135	KM145	H10	H10T	CERMET	CBN	Medidas Dimensions (mm) l	d	S	r	d1	l1	€
DCMT070204-MG				✓	✓					6,35	2,8	2,38	0,4	-	7,75	**8,95**
DCMT11T304-MG				✓	✓					9,53	4,4	3,97	0,4	-	11,6	**9,80**
DCMT11T308-MG				✓	✓					9,53	4,4	3,97	0,8	-	11,6	**9,80**
DNGA150404-Z2									✓	12,7	5,16	4,76	0,4	-	-	**90,00**
DNGA150408-Z2									✓	12,7	5,16	4,76	0,8	-	-	**90,00**
DNGA150412-Z2									✓	12,7	5,16	4,76	1,2	-	-	**90,00**
DNGX110401-FG			✓							11,6	4,5	4,76	0,1	-	9,525	**22,10**
DNGX110402-FG			✓							11,6	4,5	4,76	0,2	-	9,525	**22,10**
DNMG150404-SP					✓					15,5	5,16	4,76	0,4	-	12,7	**12,45**
DNMG150408-RG					✓					11,6	3,81	4,76	0,8	-	9,525	**12,45**
DNMG150608-RG					✓					15,5	5,16	4,76	0,8	-	12,7	**12,45**
KNUX160405-L01	✓	✓								9,525	2,5	4,76	0,5	-	-	**12,75**
KNUX160405-R01	✓	✓								9,525	2,5	4,76	0,5	-	-	**12,75**
KNUX160410-L02	✓	✓								9,525	3,2	4,76	1	-	-	**12,75**
KNUX160410-R02	✓	✓								9,525	3,2	4,76	1	-	-	**12,75**
SCGT09T304-AG							✓			9,53	4,4	3,97	0,4	-	9,53	**12,85**
SCGT09T308-AG							✓			9,53	4,4	3,97	0,8	-	9,53	**12,85**
SCGT09T304-FG						✓				9,53	4,4	3,97	0,4	-	9,53	**12,85**
SCGT09T308-FG						✓				9,53	4,4	3,97	0,8	-	9,53	**12,85**
SCMT09T304-MP					✓					9,53	4,4	3,97	0,4	-	9,53	**8,10**
SCMT09T304-MG				✓	✓					9,53	4,4	3,97	0,4	-	9,53	**8,10**
SCMT09T308-MG				✓	✓					9,53	4,4	3,97	0,8	-	9,53	**8,10**
SNMG 120404-SM					✓					12,7	12,7	4,76	0,4	-	5,16	**8,40**
SNMG120408-RG					✓					12,7	12,7	4,76	0,8	-	5,16	**8,40**
SNMG120412-RG					✓					12,7	12,7	4,76	1,2	-	5,16	**8,40**
SNMG150608-RM	✓	✓								15,875	6,35	6,35	0,8	-	-	**18,90**
SNMG150612-RM	✓	✓								15,875	6,35	6,35	1,2	-	-	**18,90**
SNMG190612-RM	✓	✓								19,05	7,94	6,35	1,2	-	-	**24,10**
SNMG190616-RM	✓	✓								19,05	7,94	6,35	1,6	-	-	**24,10**
SNMM190612-RP	✓	✓								19,05	7,94	6,35	1,2	-	-	**22,85**
SNMM190616-RP	✓	✓								19,05	7,94	6,35	1,6	-	-	**22,85**
SNMM190624-RP	✓	✓								19,05	7,94	6,35	2,4	-	-	**22,85**
SNMM250724-HY	✓	✓								25,4	9,12	7,94	2,4	-	-	**47,80**
SNMM250924-HY	✓	✓								25,4	9,12	9,52	2,4	-	-	**47,80**
SNGA120404-Z4									✓	12,7	5,16	4,76	0,4	-	-	**118,15**
SNGA120408-Z4									✓	12,7	5,16	4,76	0,8	-	-	**118,15**
SNGA120412-Z4									✓	12,7	5,16	4,76	1,2	-	-	**118,15**
TBGT060102L-F								✓		3,97	2,3	1,59	0,2	-	-	**15,50**
TBGT060104L-F								✓		3,97	2,3	1,59	0,4	-	-	**15,50**
TPGH080202L-F								✓		4,76	2,3	2,38	0,2	-	-	**12,70**
TPGH080204L-F								✓		4,76	2,3	2,38	0,4	-	-	**12,70**
TPGH090202L-F								✓		5,56	3	2,38	0,2	-	-	**12,70**
TPGH090204L-F								✓		5,56	3	2,38	0,4	-	-	**12,70**
TPGH110302L-F								✓		6,35	3,3	3,18	0,2	-	-	**12,70**
TPGH110304L-F								✓		6,35	3,3	3,18	0,4	-	-	**12,70**
TCGT090204-AG							✓			9,6	2,5	2,38	0,4	-	5,56	**12,45**
TCGT110204-AG							✓			11,0	2,8	2,38	0,4	-	6,35	**13,70**
TCGT16T304-AG							✓			16,5	4,4	3,97	0,4	-	9,53	**14,95**
TCGT16T308-AG							✓			16,5	4,4	3,97	0,8	-	9,53	**14,95**

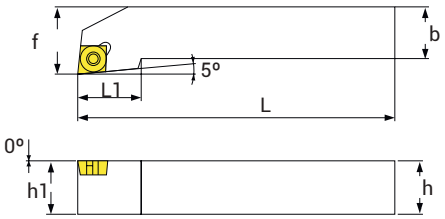
SAUDA

Ref.	KSP115	KSP125	KP135	KM135	KM145	H10	H10T	CERMET	CBN	Medidas Dimensions (mm) l	d	S	r	d1	l1	€
TCGT090204-FG						✓				9,6	2,5	2,38	0,4	-	5,56	**12,45**
TCGT110204-FG						✓				11,0	2,8	2,38	0,4	-	6,35	**13,70**
TCGT16T304-FG						✓				16,5	4,4	3,97	0,4	-	9,53	**14,95**
TCGT16T308-FG						✓				16,5	4,4	3,97	0,8	-	9,53	**14,95**
TCMT110204-MP					✓					11,0	2,8	2,38	0,4	-	6,35	**8,80**
TCMT110204-MG				✓	✓					11,0	2,8	2,38	0,4	-	6,35	**8,80**
TCMT16T304-MG				✓	✓					16,5	4,4	3,97	0,4	-	9,53	**9,95**
TCMT16T308-MG				✓	✓					16,5	4,4	3,97	0,8	-	9,53	**9,95**
TCGW110204-Z3									✓	6,35	2,8	2,38	0,4	-	-	**104,10**
TCGW110208-Z3									✓	6,35	2,8	2,38	0,8	-	-	**104,10**
TCGW16T304-Z3									✓	9,52	4,4	3,97	0,4	-	-	**104,10**
TCGW16T308-Z3									✓	9,52	4,4	3,97	0,8	-	-	**104,10**
TNGA160404-Z3									✓	9,52	5,16	4,76	0,4	-	-	**104,10**
TNGA160408-Z3									✓	9,52	5,16	4,76	0,8	-	-	**104,10**
TNGA160412-Z3									✓	9,52	5,16	4,76	1,2	-	-	**104,10**
TNMG 160404R								✓		9,52	3,18	4,76	0,4	-	-	**8,15**
TNMG 160408R								✓		9,52	3,18	4,76	0,8	-	-	**8,15**
TNMG 160404L								✓		9,52	3,18	4,76	0,4	-	-	**8,15**
TNMG 160408L								✓		9,52	3,18	4,76	0,8	-	-	**8,15**
TNMG160408-FP				✓	✓					16,5	3,81	4,76	0,8	-	9,53	**8,15**
TNMG160408-SM				✓	✓					16,5	3,81	4,76	0,8	-	9,53	**8,15**
TNMG160404-SP					✓					16,5	3,81	4,76	0,4	-	9,53	**8,15**
TNMG160408-SP					✓					16,5	3,81	4,76	0,8	-	9,53	**8,15**
TNMG160404R-ME					✓					16,5	3,81	4,76	0,4	-	9,53	**8,15**
TNMG160408R-ME					✓					16,5	3,81	4,76	0,8	-	9,53	**8,15**
TNMG160404L-ME					✓					16,5	3,81	4,76	0,4	-	9,53	**8,15**
TNMG160408L-ME					✓					16,5	3,81	4,76	0,8	-	9,53	**8,15**
TNMG160404-MP				✓	✓					16,5	3,81	4,76	0,4	-	9,53	**8,15**
TNMG160408-MP				✓	✓					16,5	3,81	4,76	0,8	-	9,53	**8,15**
TNMG160412-MP				✓	✓					16,5	3,81	4,76	1,2	-	9,53	**8,15**
TNMG160408-RP					✓					16,5	3,81	4,76	0,8	-	9,53	**8,15**
TNMG160408-HG					✓					16,5	3,81	4,76	0,8	-	9,53	**8,15**
TNMG160412-HG					✓					16,5	3,81	4,76	1,2	-	9,53	**8,15**
TNMG220408-RK					✓					22,0	5,16	4,76	0,8	-	12,7	**13,85**
TPMH160304-MP					✓					16,5	4,4	3,18	0,4	-	9,53	**10,00**
VBET110301R-XF			✓							6,35	2,8	3,18	0,1	-	11,1	**16,65**
VBET110302R-XF			✓							6,35	2,8	3,18	0,2	-	11,1	**16,65**
VBET110304R-XF			✓							6,35	2,8	3,18	0,4	-	11,1	**16,65**
VBET110301L-XF			✓							6,35	2,8	3,18	0,1	-	11,1	**16,65**
VBET110302L-XF			✓							6,35	2,8	3,18	0,2	-	11,1	**16,65**
VBET110304L-XF			✓							6,35	2,8	3,18	0,4	-	11,1	**16,65**
VBET110301R-YF			✓							6,35	2,8	3,18	0,1	-	11,1	**16,65**
VBET110302R-YF			✓							6,35	2,8	3,18	0,2	-	11,1	**16,65**
VBET110304R-YF			✓							6,35	2,8	3,18	0,4	-	11,1	**16,65**
VBET110301L-YF			✓							6,35	2,8	3,18	0,1	-	11,1	**16,65**
VBET110302L-YF			✓							6,35	2,8	3,18	0,2	-	11,1	**16,65**
VBET110304L-YF			✓							6,35	2,8	3,18	0,4	-	11,1	**16,65**

Ref.	KSP115	KSP125	KP135	KM135	KM145	H10	H10T	CERMET	CBN	Medidas Dimensions (mm) l	d	S	r	d1	l1	€
VBEW110301			✓							6,35	2,8	3,18	0,1	-	11,1	**16,65**
VBEW110302			✓							6,35	2,8	3,18	0,2	-	11,1	**16,65**
VBEW110304			✓							6,35	2,8	3,18	0,4	-	11,1	**16,65**
VBMT160404-MG				✓	✓					16,6	4,4	4,76	0,4	-	9,53	**12,80**
VBMT160408-MG				✓	✓					16,6	4,4	4,76	0,8	-	9,53	**12,80**
VCET110301R-XF			✓							6,35	2,8	3,18	0,1	-	11,1	**16,65**
VCET110302R-XF			✓							6,35	2,8	3,18	0,2	-	11,1	**16,65**
VCET110304R-XF			✓							6,35	2,8	3,18	0,4	-	11,1	**16,65**
VCET110301L-XF			✓							6,35	2,8	3,18	0,1	-	11,1	**16,65**
VCET110302L-XF			✓							6,35	2,8	3,18	0,2	-	11,1	**16,65**
VCET110304L-XF			✓							6,35	2,8	3,18	0,4	-	11,1	**16,65**
VCET110301R-YF			✓							6,35	2,8	3,18	0,1	-	11,1	**16,65**
VCET110302R-YF			✓							6,35	2,8	3,18	0,2	-	11,1	**16,65**
VCET110304R-YF			✓							6,35	2,8	3,18	0,4	-	11,1	**16,65**
VCET110301L-YF			✓							6,35	2,8	3,18	0,1	-	11,1	**16,65**
VCET110302L-YF			✓							6,35	2,8	3,18	0,2	-	11,1	**16,65**
VCET110304L-YF			✓							6,35	2,8	3,18	0,4	-	11,1	**16,65**
VCEW110301			✓							6,35	2,8	3,18	0,1	-	11,1	**16,65**
VCEW110302			✓							6,35	2,8	3,18	0,2	-	11,1	**16,65**
VCEW110304			✓							6,35	2,8	3,18	0,4	-	11,1	**16,65**
VCGT110302-AG							✓			6,35	2,8	3,18	0,2	-	11,1	**14,95**
VCGT110304-AG							✓			6,35	2,8	3,18	0,4	-	11,1	**14,95**
VCGT160402-AG							✓			16,6	4,4	4,76	0,2	-	9,525	**17,35**
VCGT160404-AG							✓			16,6	4,4	4,76	0,4	-	9,525	**17,35**
VCGT160408-AG							✓			16,6	4,4	4,76	0,8	-	9,525	**17,35**
VCGT110302-FG						✓				6,35	2,8	3,18	0,2	-	11,1	**14,95**
VCGT110304-FG						✓				6,35	2,8	3,18	0,4	-	11,1	**14,95**
VCGT160402-FG						✓				16,6	4,4	4,76	0,2	-	9,525	**17,35**
VCGT160404-FG						✓				16,6	4,4	4,76	0,4	-	9,525	**17,35**
VCGT160408-FG						✓				16,6	4,4	4,76	0,8	-	9,525	**17,35**
VCGT110301-SG				✓						6,35	2,8	3,18	0,1	-	11,1	**14,95**
VCGT110302-SG				✓						6,35	2,8	3,18	0,2	-	11,1	**14,95**
VCGT110304-SG				✓						6,35	2,8	3,18	0,4	-	11,1	**14,95**
VNGA 160404-Z2									✓	9,52	3,81	4,76	0,4	-	-	**90,00**
VNGA 160408-Z2									✓	9,52	3,81	4,76	0,8	-	-	**90,00**
VNMG160404-MP				✓	✓					16,5	3,81	4,76	0,4	-	9,53	**12,65**
VNMG160408-RG					✓					16,5	3,81	4,76	0,8	-	9,53	**12,65**
WNGA 080404-Z3									✓	9,52	3,18	4,76	0,4	-	-	**104,10**
WNGA 080408-Z3									✓	9,52	3,18	4,76	0,8	-	-	**104,10**
WNGA 080412-Z3									✓	9,52	3,18	4,76	1,2	-	-	**104,10**
WNMG080408-FP					✓					8,7	5,16	4,76	0,8	-	-	**9,60**
WNMG080404-SP				✓	✓					8,7	5,16	4,76	0,4	-	-	**9,60**
WNMG080408-SP					✓					8,7	5,16	4,76	0,8	-	-	**9,60**
WNMG080404-MP				✓	✓					8,7	5,16	4,76	0,4	-	-	**9,60**
WNMG080408-MP				✓	✓					8,7	5,16	4,76	0,8	-	-	**9,60**
WNMG080412-MP				✓	✓					8,7	5,16	4,76	1,2	-	-	**9,60**
WNMG080408-RP					✓					8,7	5,16	4,76	0,8	-	-	**9,60**
WNMG080408-HG					✓					8,7	5,16	4,76	0,8	-	-	**9,60**
WNMG080412-HG					✓					8,7	5,16	4,76	1,2	-	-	**9,60**

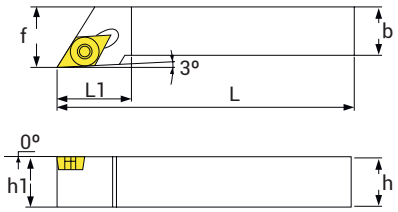
SAUDA

SCLCR/L



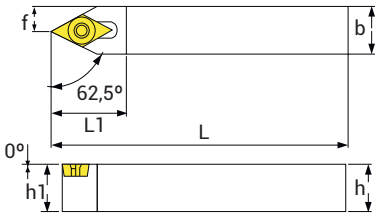
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
SCLCR/L1010H06	CC..0602	10	10	100	15	10	12	**78,65**
SCLCR/L1212H06	CC..0602	12	12	100	15	12	16	**84,70**
SCLCR/L1212H09	CC..09T3	12	12	100	20	12	16	**84,70**
SCLCR/L1616H09	CC..09T3	16	16	100	20	16	20	**87,45**
SCLCR/L2020K09	CC..09T3	20	20	125	22	20	25	**93,50**
SCLCR/L2525M09	CC..09T3	25	25	150	22	25	32	**102,30**
SCLCR/L2020K12	CC..1204	20	20	125	28	20	25	**93,50**
SCLCR/L2525M12	CC..1204	25	25	170	28	25	32	**102,30**

SDJCR/L



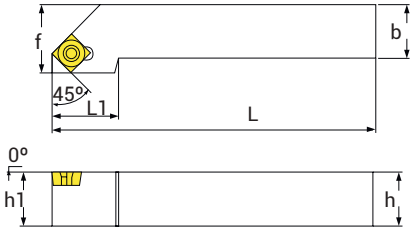
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
SDJCR/L1010H07	DC..0702	10	10	100	16	10	12	**78,65**
SDJCR/L1212H07	DC..0702	12	12	100	16	12	16	**84,70**
SDJCR/L1616H07	DC..0702	16	16	100	20	16	20	**87,45**
SDJCR/L1212H11	DC..11T3	12	12	100	22	12	16	**84,70**
SDJCR/L1616H11	DC..11T3	16	16	100	22	16	20	**87,45**
SDJCR/L2020K11	DC..11T3	20	20	125	25	20	25	**93,50**
SDJCR/L2525M11	DC..11T3	25	25	150	32	25	32	**102,30**
SDJCR/L3232P11	DC..11T3	32	32	170	32	32	40	**132,55**

SDNCN



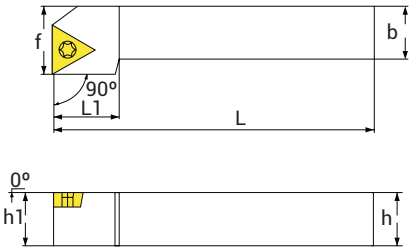
Ref.	Plaquita Insert	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
SDNCN0808H07	DC..0702	8	8	100	16	8	8	**78,65**
SDNCN1010H07	DC..0702	10	10	100	16	10	12	**78,65**
SDNCN1212H07	DC..0702	12	12	100	18	12	16	**84,70**
SDNCN1616H07	DC..0702	16	16	100	22	16	20	**87,45**
SDNCN1212H11	DC..11T3	12	12	100	22	12	16	**84,70**
SDNCN1616H11	DC..11T3	16	16	100	27	16	20	**87,45**
SDNCN2020K11	DC..11T3	20	20	125	27	20	25	**93,50**
SDNCN2525M11	DC..11T3	25	25	150	27	25	32	**102,30**

SSSCR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
SSSCR/L1212H09	SC..09T3	12	12	100	16	12	16	**84,70**
SSSCR/L1616H09	SC..09T3	16	16	100	18	16	20	**87,45**
SSSCR/L2020K09	SC..09T3	20	20	125	22	20	25	**93,50**
SSSCR/L2020K12	SC..1204	20	20	125	22	20	25	**93,50**
SSSCR/L2525M12	SC..1204	25	25	150	30	25	32	**102,30**

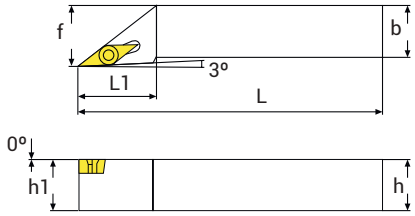
STFCR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
STFCR/L1212H11	TC..1102	12	12	100	18	12	16	**84,70**
STFCR/L1616H11	TC..1102	16	16	100	20	16	20	**87,45**
STFCR/L2020K16	TC..16T3	20	20	125	30	20	25	**93,50**
STFCR/L2525M16	TC..16T3	25	25	150	30	25	32	**102,30**

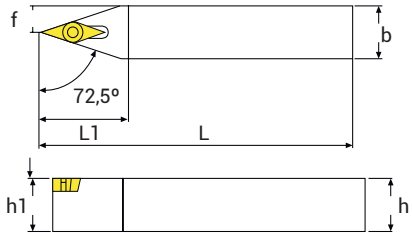
SAUDA

SVJBR/L



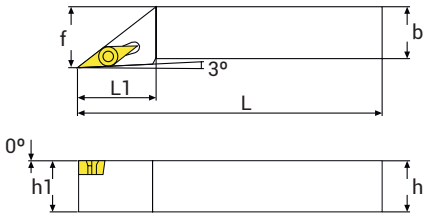
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
SVJBR/L1616H16	VB..1604	16	16	100	32	16	20	**97,35**
SVJBR/L2020K16	VB..1604	20	20	125	35	20	25	**109,45**
SVJBR/L2525M16	VB..1604	25	25	150	38	25	32	**117,15**
SVJBR/L3232P16	VB..1604	32	32	170	45	32	40	**139,15**

SVVC(B)N



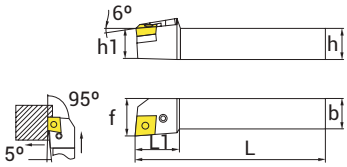
Ref.	Plaquita Insert	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
SVVCN1616H11	VC..1103	16	16	100	28	16	20	**97,35**
SVVCN2020K11	VC..1103	20	20	125	35	20	25	**109,45**
SVVCN1616H16	VC..1604	16	16	100	32	16	20	**97,35**
SVVCN2020K16	VC..1604	20	20	125	35	20	25	**109,45**
SVVCN2525M16	VC..1604	25	25	150	38	25	32	**117,15**
SVVBN1616H16	VB..1604	16	16	100	32	16	20	**97,35**
SVVBN2020K16	VB..1604	20	20	125	35	20	25	**109,45**
SVVBN2525M16	VB..1604	25	25	150	38	25	32	**117,15**

SVJCR/L



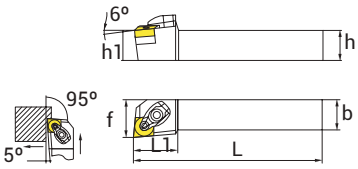
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
SVJCR/L1212H11	VC..1103	12	12	100	25	12	16	**93,50**
SVJCR/L1616H11	VC..1103	16	16	100	28	16	20	**97,35**
SVJCR/L2020K11	VC..1103	20	20	125	35	20	25	**109,45**
SVJCR/L2525M11	VC..1103	25	25	150	32	25	32	**117,15**
SVJCR/L1616H16	VC..1604	16	16	100	32	16	20	**97,35**
SVJCR/L2020K16	VC..1604	20	20	125	35	20	25	**109,45**
SVJCR/L2525M16	VC..1604	25	25	150	38	25	32	**117,15**
SVJCR/L3232P16	VC..1604	32	32	170	45	32	40	**139,15**

PCLNR/L



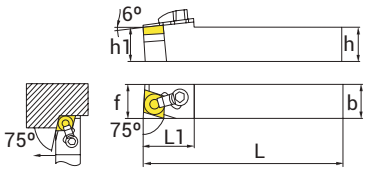
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
PCLNR/L2020K12	CN..1204	20	20	125	28	20	25	**96,80**
PCLNR/L2525M12	CN..1204	25	25	150	28	25	32	**102,30**
PCLNR/L3232P12	CN..1204	32	32	170	30	32	40	**132,55**
PCLNR/L2525M16	CN..1606	25	25	150	33	25	32	**102,30**
PCLNR/L3232P16	CN..1606	32	32	170	33	32	40	**132,55**
PCLNR/L3232P19	CN..1906	32	32	170	36	32	40	**132,55**
PCLNR/L4040S19	CN..1906	40	40	250	40	40	50	**178,75**
PCLNR/L4040S25	CN..2509	40	40	250	47	40	50	**178,75**
PCLNR/L5050T25	CN..2509	50	50	300	47	50	60	**275,55**

DCLNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
DCLNR/L2020K12	CN..1204	20	20	125	32	20	25	**99,55**
DCLNR/L2525M12	CN..1204	25	25	150	32	25	32	**105,05**
DCLNR/L3232P12	CN..1204	32	32	170	35	32	40	**140,80**

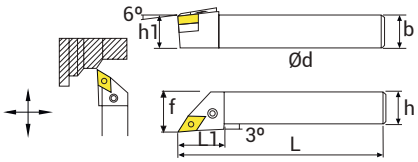
MCBNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
MCBNR/L1616H12	CN..1204	16	16	100	34	16	20	**99,55**
MCBNR/L2020K12	CN..1204	20	20	125	34	20	25	**99,55**
MCBNR/L2525M12	CN..1204	25	25	150	34	25	32	**105,05**
MCBNR/L3232P12	CN..1204	32	32	170	40	32	40	**140,80**

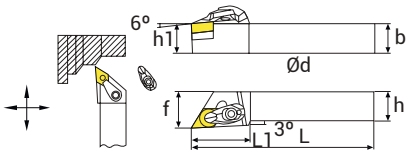
SAUDA

PDJNR/L



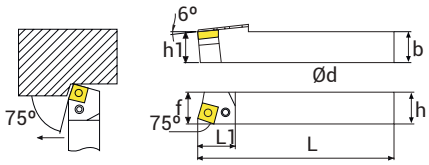
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
PDJNR/L1616H11	DN..1104	16	16	100	32	16	20	**88,55**
PDJNR/L2020K11	DN..1104	20	20	125	32	20	25	**96,80**
PDJNR/L2525M11	DN..1104	25	25	150	32	25	32	**102,30**
PDJNR/L2020K1504	DN..1504	20	20	125	38	20	25	**96,80**
PDJNR/L2525M1504	DN..1504	25	25	150	38	25	32	**102,30**
PDJNR/L3232P1504	DN..1504	32	32	170	38	32	40	**132,55**
PDJNR/L2020K1506	DN..1506	20	20	125	28	20	25	**96,80**
PDJNR/L2525M1506	DN..1506	25	25	150	38	25	32	**102,30**
PDJNR/L 3232P1506	DN..1506	32	32	170	38	32	40	**132,55**

DDJNR/L



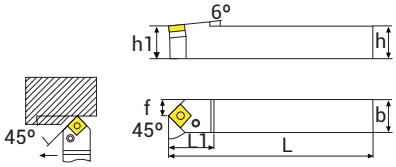
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
DDJNR/L2020K1504	DN..1504	20	20	125	38	20	25	**99,55**
DDJNR/L2525M1504	DN..1504	25	25	150	38	25	32	**105,05**
DDJNR/L3232P1504	DN..1504	32	32	170	38	32	40	**140,80**
DDJNR/L2020K1506	DN..1506	20	20	125	38	20	25	**99,55**
DDJNR/L2525M1506	DN..1506	25	25	150	38	25	32	**105,05**
DDJNR/L3232K1506	DN..1506	32	32	170	38	32	40	**140,80**

PSBNR/L



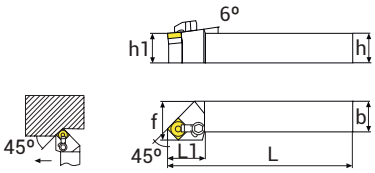
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
PSBNR/L2020K12	SN..1204	20	20	125	28	25	25	**96,80**
PSBNR/L2525M12	SN..1204	25	25	150	28	32	32	**102,30**
PSBNR/L3232P12	SN..1204	32	32	170	30	40	40	**132,55**
PSBNR/L2525M15	SN..1506	25	25	150	33	32	32	**102,30**
PSBNR/L3232P15	SN..1506	32	32	170	33	40	40	**132,55**
PSBNR/L3232P19	SN..1906	32	32	170	36	40	40	**132,55**
PSBNR/L4040S19	SN..1906	40	40	250	40	50	50	**178,75**
PSBNR/L4040S25	SN..2509	40	40	250	47	50	50	**178,75**
PSBNR/L5050T25	SN..2509	50	50	300	47	60	60	**275,55**

PSDNN



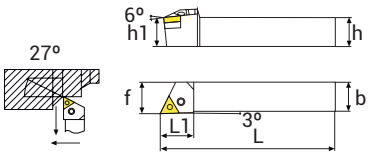
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
PSDNN2020K12	SN..1204	20	20	125	28	20	25	**96,80**
PSDNN2525M12	SN..1204	25	25	150	28	25	32	**102,30**
PSDNN3232P12	SN..1204	32	32	170	30	32	40	**132,55**
PSDNN2525M15	SN..1506	25	25	150	33	25	32	**102,30**
PSDNN3232P15	SN..1506	32	32	170	33	32	40	**132,55**
PSDNN3232P19	SN..1906	32	32	170	36	32	40	**132,55**
PSDNN4040S19	SN..1906	40	40	250	40	40	50	**178,75**
PSDNN4040S25	SN..2509	40	40	250	47	40	50	**178,75**
PSDNN5050T25	SN..2509	50	50	300	47	50	60	**275,55**

PSSNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
PSSNR/L2020K12	SN..1204	20	20	125	28	20	25	**96,80**
PSSNR/L2525M12	SN..1204	25	25	150	28	25	32	**102,30**
PSSNR/L3232P12	SN..1204	32	32	170	30	32	40	**132,55**
PSSNR/L2525M15	SN..1506	25	25	150	33	25	32	**102,30**
PSSNR/L3232P15	SN..1506	32	32	170	33	32	40	**132,55**
PSSNR/L3232P19	SN..1906	32	32	170	36	32	40	**132,55**
PSSNR/L4040S19	SN..1906	40	40	250	40	40	50	**178,75**
PSSNR/L4040S25	SN..2509	40	40	250	47	40	50	**178,75**
PSSNR/L5050T25	SN..2509	50	50	300	47	50	60	**275,55**

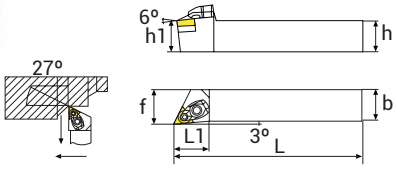
PTJNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
PTJNR/L2020K16	TN..1604	20	20	125	22	25	25	**96,80**
PTJNR/L2525M16	TN..1604	25	25	150	28	32	32	**102,30**
PTJNR/L3232P16	TN..1604	32	32	170	32	40	40	**132,55**

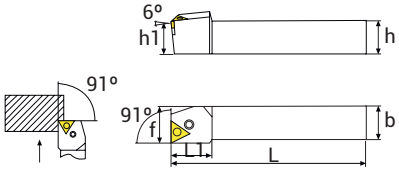
SAUDA

DTJNR/L



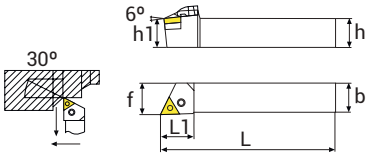
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
DTJNR/L2020K16	TN..1604	20	20	125	32	20	25	**99,55**
DTJNR/L2525M16	TN..1604	25	25	150	32	25	32	**105,05**
DTJNR/L3232P16	TN..1604	32	32	170	35	32	40	**140,80**

PTFNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
PTFNR/L2020K16	TN..1604	20	20	125	22	20	25	**96,80**
PTFNR/L2525M16	TN..1604	25	25	150	28	25	32	**102,30**
PTFNR/L3232P16	TN..1604	32	32	170	32	32	40	**111,65**

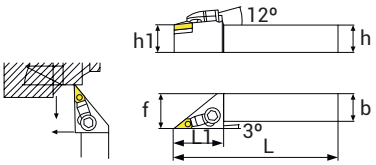
PTGNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
PTGNR/L2020K16	TN..1604	20	20	125	22	20	25	**96,80**
PTGNR/L2525M16	TN..1604	25	25	150	28	25	32	**102,30**
PTGNR/L3232P16	TN..1604	32	32	170	32	32	40	**111,65**

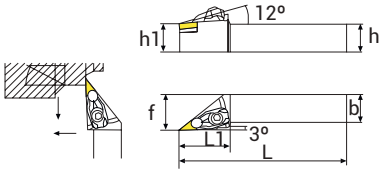
TORNEADO

MVJNR/L



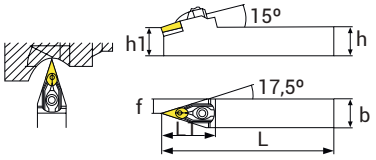
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
MVJNR/L1616H16	VN..1604	16	16	100	36	16	20	**102,30**
MVJNR/L2020K16	VN..1604	20	20	125	36	20	25	**110,00**
MVJNR/L2525M16	VN..1604	25	25	150	42	25	32	**118,80**
MVJNR/L3232P16	VN..1604	32	32	170	45	32	40	**127,05**

DVJNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
DVJNR/L2020K16	VN..1604	20	20	125	45	20	25	**110,00**
DVJNR/L2525M16	VN..1604	25	25	150	45	25	32	**118,80**
DVJNR/L3232P16	VN..1604	32	32	170	48	32	40	**127,05**

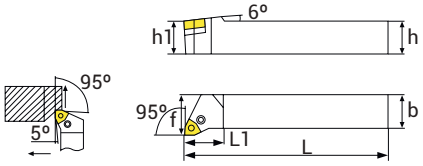
DVVNN



Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
DVVNN1616H16	VN..1604	16	16	100	48	16	20	**99,55**
DVVNN2020K16	VN..1604	20	20	125	48	20	25	**99,55**
DVVNN2525M16	VN..1604	25	25	150	48	25	32	**105,05**
DVVNN3232P16	VN..1604	32	32	170	48	32	40	**140,80**

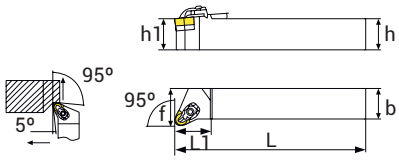
SAUDA

PWLNR/L



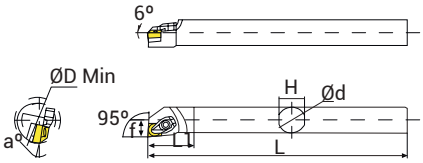
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
PWLNR/L1616H06	WN..0604	16	16	100	20	16	20	**88,55**
PWLNR/L2020K06	WN..0604	20	20	125	25	20	25	**96,80**
PWLNR/L2525M06	WN..0604	25	25	150	25	25	32	**102,30**
PWLNR/L1616H08	WN..0804	16	16	100	26	16	20	**88,55**
PWLNR/L2020K08	WN..0804	20	20	125	26	20	25	**96,80**
PWLNR/L2525M08	WN..0804	25	25	150	26	25	32	**102,30**
PWLNR/L3232P08	WN..0804	32	32	170	30	32	40	**132,55**

DWLNR/L



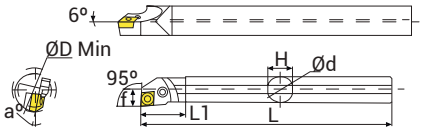
Ref.	Plaquita Inserts	Medidas Dimensions (mm)						€
		h	b	L	L1	h1	f	
DWLNR/L1616H06	WN..0604	16	16	100	28	16	20	**99,55**
DWLNR/L2020K06	WN..0604	20	20	125	28	20	25	**99,55**
DWLNR/L2525M06	WN..0604	25	25	150	30	25	32	**105,05**
DWLNR/L1616H08	WN..0804	16	16	100	30	16	20	**99,55**
DWLNR/L2020K08	WN..0804	20	20	125	32	20	25	**99,55**
DWLNR/L2525M08	WN..0804	25	25	150	32	25	32	**105,05**
DWLNR/L3232P08	WN..0804	32	32	170	35	32	40	**140,80**

DCLNR/L



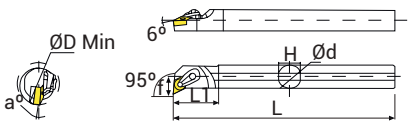
Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
S20R-DCLNR/L12	CN..1204	25	20	200	32	16	13	15	**68,50**
S25S-DCLNR/L12	CN..1204	32	25	250	40	20	17	12	**90,40**
S32T-DCLNR/L12	CN..1204	40	32	300	50	32	22	17	**160,70**
S40U-DCLNR/L12	CN..1204	50	40	350	55	40	27	15	**301,20**

PCLNR/L



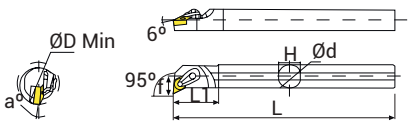
Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
S25S-PCLNR/L12	CN..1204	32	25	250	40	20	17	12	**170,70**
S32T-PCLNR/L12	CN..1204	40	32	300	50	32	22	17	**200,85**
S40U-PCLNR/L12	CN..1204	50	40	350	55	40	27	15	**301,20**

DDUNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
S25S-DDUNR/L1504	DN..1504	32	25	250	40	23	17	12	**82,15**
S32T-DDUNR/L1504	DN..1504	40	32	300	50	29	22,5	17	**146,05**
S40U-DDUNR/L1504	DN..1504	50	40	350	55	37	26	15	**273,80**
S32T-DDUNR/L1506	DN..1506	42	32	300	50	29	22,5	17	**146,05**
S40U-DDUNR/L1506	DN..1506	50	40	350	55	37	26	15	**273,80**

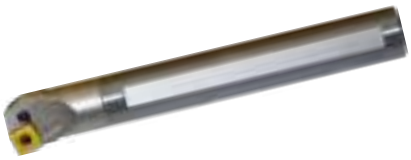
PDUNR/L

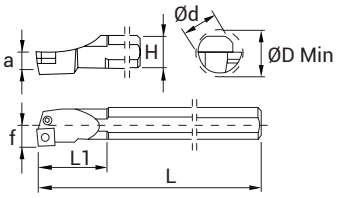


Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
S25S-PDUNR/L1506	DN..1506	32	25	250	35	23	17	12	**90,40**
S32T-PDUNR/L1506	DN..1506	40	32	300	40	30	22	17	**160,70**
S40U-PDUNR/L1506	DN..1506	50	40	350	50	37	27	15	**301,20**

SAUDA

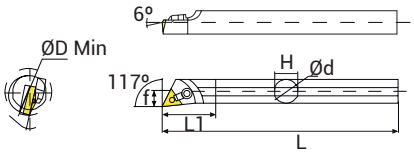
PSKNR/L





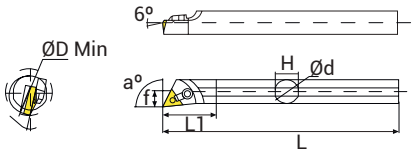
Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
A25R-PSKNR/L11	DN..1104	31	25	200	40	23	17	11,5	**429,90**
A32S-PSKNR/L15	DN..1506	39	32	250	50	30	22	15,0	**429,90**
A40T-PSKNR/L15	DN..1506	48	40	300	60	37	27	18,5	**503,20**

MTJNR/L



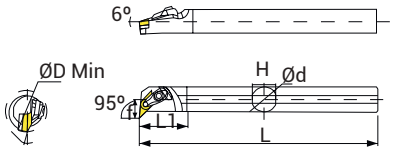
Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
S20Q-MTJNR/L16	TN..1604	25	20	180	40	18	13	15	**68,50**
S20R-MTJNR/L16	TN..1604	25	20	200	40	18	13	15	**68,50**
S25R-MTJNR/L16	TN..1604	32	25	200	45	23	16,5	12	**90,40**
S25S-MTJNR/L16	TN..1604	32	25	250	45	23	16,5	12	**90,40**
S32S-MTJNR/L16	TN..1604	41	32	250	54	29	22,5	17	**160,70**
S32T-MTJNR/L16	TN..1604	41	32	300	54	29	22,5	17	**160,70**

MTFNR/L



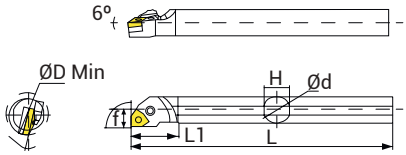
Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
S16Q-MTFNR/L16	TN..1604	20	16	180	38	15	11	15	**68,50**
S20Q-MTFNR/L16	TN..1604	25	20	180	45	18	13	15	**68,50**
S20R-MTFNR/L16	TN..1604	25	20	200	45	18	13	15	**68,50**
S25R-MTFNR/L16	TN..1604	32	25	200	45	23	16,5	12	**90,40**
S25S-MTFNR/L16	TN..1604	32	25	250	45	23	16,5	12	**90,40**
S32S-MTFNR/L16	TN..1604	41	32	250	50	29	22,5	17	**160,70**
S32T-MTFNR/L16	TN..1604	41	32	300	50	29	22,5	17	**160,70**

DVUNR/L



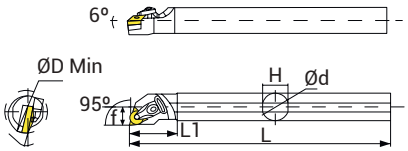
Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
S25S-DVUNR/L16	VN..1604	32	25	250	45	23	17	12	**90,40**
S32T-DVUNR/L16	VN..1604	42	32	300	50	29	23	17	**160,70**
S40U-DVUNR/L16	VN..1604	50	40	350	55	37	27	15	**301,20**

PWLNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
S20R-PWLNR/L06	WN..0604	25	20	200	45	18	13	15	**150,60**
S25S-PWLNR/L08	WN..0804	32	25	250	45	23	16,5	12	**170,70**
S32T-PWLNR/L08	WN..0804	44	32	300	50	29	22,5	17	**200,85**
S40T-PWLNR/L08	WN..0804	54	40	300	55	37	26	15	**301,20**

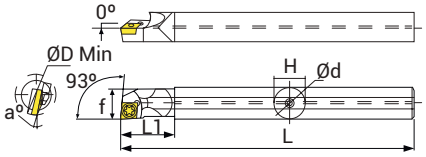
DWLNR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
S20R-DWLNR/L08	WN..0804	25	20	200	45	18	13,0	15	**68,50**
S25S-DWLNR/L08	WN..0804	32	25	250	45	23	16,5	12	**90,40**
S32T-DWLNR/L08	WN..0804	42	32	300	50	29	22,5	17	**160,70**
S40U-DWLNR/L08	WN..0804	50	40	350	55	37	26,0	15	**301,20**

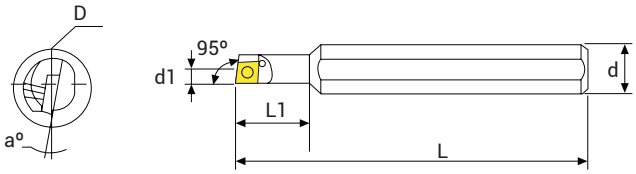
SAUDA

SCLCR/L-A
Soporte de metal duro
Carbide holder



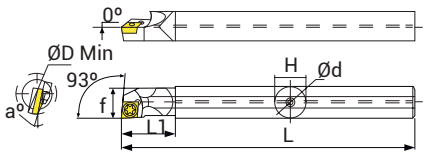
Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
C0604G-SCLCR/L03-A	CCGT0301	5	4	2,5	3,8	90	15	15	**251,00**
C0605H-SCLCR/L03-A	CCGT0301	6	5	3,0	4,4	100	15	13	**251,00**
C06H-SCLCR/L04-A	CC..0401	7	6	3,5	5,4	100	15	13	**251,00**
C07K-SCLCR/L04-A	CC..0401	8	7	4,0	6,4	125	20	15	**281,05**
C08K-SCLCR/L06-A	CC..0602	10	8	5,0	7,0	125	20	13	**281,05**
C10K-SCLCR/L06-A	CC..0602	13	10	6,5	9,0	125	22	12	**311,20**
C12M-SCLCR/L06-A	CC..0602	16	12	8,0	11,0	150	25	10	**441,65**
C12Q-SCLCR/L06-A	CC..0602	16	12	8,0	11,0	180	25	12	**552,10**
C16Q-SCLCR/L09-A	CC..09T3	20	16	10,0	15,0	180	28	10	**803,10**
C20-SCLCR/L09-A	CC..09T3	25	20	12,5	18,0	250	33	8	**1.003,85**

SCLCR/L



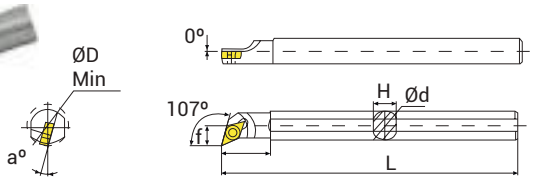
Ref.	Plaquita Inserts	Medidas Dimensions (mm)								€
		D	d	d1	L	L1	H	f	a	
S0612K-SCLCR/L04	CC..0401	7	12	6	125	18	11	3,5	10	**50,20**
S0812K-SCLCR/L06	CC..0602	10	12	8	125	24	11	5,0	10	**50,20**
S0616M-SCLCR/L04	CC..0401	7	16	6	150	18	11	3,5	10	**60,25**
S0816M-SCLCR/L06	CC..0602	10	16	8	150	24	15	5,0	10	**60,25**
S1016M-SCLCR/L06	CC..0602	13	16	10	150	30	15	6,0	10	**60,25**
S1216M-SCLCR/L06	CC..0602	16	16	12	150	36	15	7,0	10	**60,25**
S1020M-SCLCR/L06	CC..0602	13	20	10	150	30	18	6,0	8	**80,40**
S1220M-SCLCR/L06	CC..0602	16	20	12	150	36	18	7,0	8	**80,40**
S1220M-SCLCR/L09	CC..09T3	16	20	12	150	36	18	7,5	8	**80,40**

SCLCR/L
Soporte de acero rápido
HSS holder



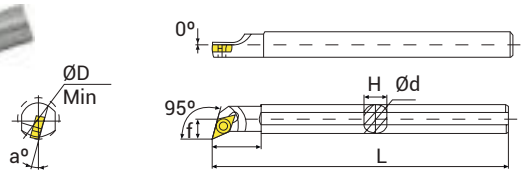
Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
H04H-SCLCR/L03	CCGT0301	5	4	2,5	3,8	100	15	15	**110,50**
H05H-SCLCR/L03	CCGT0301	6	5	3,0	4,4	100	15	13	**110,50**
H1004H-SCLCR/L03	CCGT0301	5	10	2,5	3,8	100	15	15	**110,50**
H1005H-SCLCR/L03	CCGT0301	6	10	3,0	4,4	100	15	13	**110,50**
H06H-SCLCR/L04	CCGT0401	7	6	3,5	5,4	100	15	13	**110,50**
H07K-SCLCR/L04	CCGT0401	8	7	4,0	6,4	125	20	15	**110,50**
H08K-SCLCR/L06	CC..0602	10	8	5,0	7,0	125	20	13	**110,50**
H10K-SCLCR/L06	CC..0602	13	10	6,5	9,0	125	22	12	**110,50**
H12K-SCLCR/L06	CC..0602	16	12	8,0	11,0	125	25	10	**150,60**

SDQCR/L
Soporte de metal duro
Carbide holder



Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
C08K-SDQCR/L07	DC..0702	13	8	6	7	125	20	12	**180,70**
C10K-SDQCR/L07	DC..0702	16	10	7	9	125	23	10	**210,85**
C12M-SDQCR/L07	DC..0702	20	12	9	11	150	30	8	**301,20**
C12Q-SDQCR/L07	DC..0702	20	12	9	11	150	30	8	**401,60**
C16Q-SDQCR/L07	DC..0702	25	16	10,5	15	180	30	6	**602,25**
C16Q-SDQCR/L11	DC..11T3	25	16	11	15	180	30	6	**602,25**
C16R-SDQCR/L11	DC..11T3	25	16	11	15	200	30	6	**702,70**
C20S-SDQCR/L11	DC..11T3	28	20	12,5	18	250	39	6	**1.154,35**

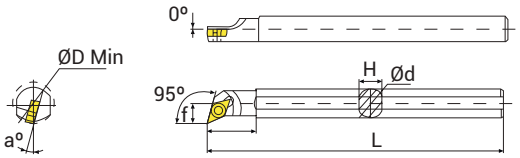
SDUCR/L
Soporte de metal duro
Carbide holder



Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
C08K-SDUCR/L07	DC..0702	10	8	7,0	13	125	25	12	**180,70**
C10K-SDUCR/L07	DC..0702	13	10	8,0	12	125	25	10	**210,85**
C12M-SDUCR/L07	DC..0702	16	12	9,0	10	150	28	8	**301,20**
C12Q-SDUCR/L07	DC..0702	16	12	9,0	12	150	28	8	**401,60**
C16Q-SDUCR/L07	DC..0702	20	16	11,0	10	180	30	6	**602,25**
C16Q-SDUCR/L11	DC..11T3	20	16	11,5	10	180	35	6	**602,25**
C16R-SDUCR/L11	DC..11T3	20	16	11,5	10	200	35	6	**702,70**
C20S-SDUCR/L11	DC..11T3	25	20	13,0	8	250	40	6	**1.154,35**

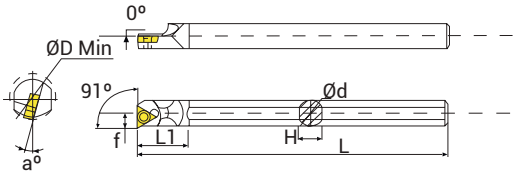
SAUDA

SDUCR/L
Soporte de acero rápido
HSS holder



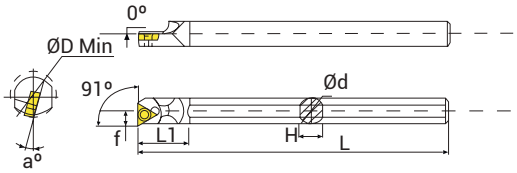
Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
H08K-SDUCR/L07	DC..0702	10	8	7	13	125	25	12	**110,50**
H10K-SDUCR/L07	DC..0702	13	10	8	12	125	25	10	**110,50**
H12M-SDUCR/L07	DC..0702	16	12	9	10	150	28	8	**150,60**
H16Q-SDUCR/L07	DC..0702	20	16	11	10	180	30	6	**200,85**
H16Q-SDUCR/L11	DC..11T3	20	16	11,5	10	180	35	6	**200,85**
H20R-SDUCR/L11	DC..11T3	25	20	13	8	200	40	6	**301,20**

STFB(C)R/L
Soporte de metal duro
Carbide holder



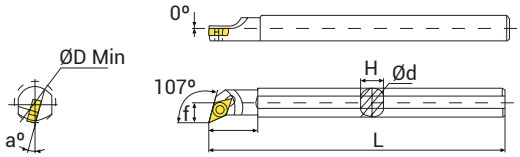
Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
C06J-STFBR/L06-A	TB..0601	7	6	100	5,4	15	3,5	13	**180,70**
C08K-STFCR/L09-A	TC..0902	10	8	125	7,0	20	5,0	13	**180,70**
C10K-STFCR/L09-A	TC..0902	13	10	125	9,0	22	6,5	12	**210,85**
C10K-STFCR/L11-A	TC..1102	13	10	125	9,0	22	6,5	12	**210,85**
C12M-STFCR/L11-A	TC..1102	16	12	150	11,0	25	8,0	10	**301,20**
C12Q-STFCR/L11-A	TC..1102	16	12	180	11,0	25	8,0	12	**401,60**
C16Q-STFCR/L11-A	TC..1102	20	16	180	15,0	28	10,0	10	**602,25**
C16R-STFCR/L11-A	TC..1102	20	16	200	15,0	28	10,0	10	**702,70**
C20S-STFCR/L16-A	TC..16T3	25	20	250	18,0	33	12,5	8	**1.154,35**

STUPR/L-A
Soporte de metal duro
Refrigeración en el centro
Carbide holder
Coolant through center



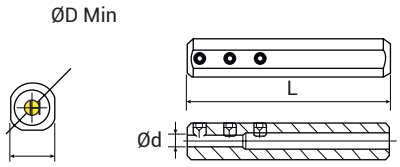
Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
C08K-STUPR/L09-A	TP..0903	10	8	125	7	20	5,0	13	**281,05**
C10K-STUPR/L09-A	TP..0903	13	10	125	9	22	6,5	12	**311,20**
C10K-STUPR/L11-A	TP..1103	13	10	125	9	22	6,5	12	**311,20**
C12M-STUPR/L11-A	TP..1103	16	12	150	11	25	8,0	10	**441,65**
C12Q-STUPR/L11-A	TP..1103	16	12	180	11	25	8,0	12	**552,10**
C16Q-STUPR/L11-A	TP..1103	20	16	180	15	28	10,0	10	**803,10**
C16R-STUPR/L11-A	TP..1103	20	16	200	15	28	10,0	10	**1.003,85**
C20R-STUPR/L16-A	TP..1603	25	20	200	18	33	13,0	8	**1.254,75**
C20S-STUPR/L16-A	TP..1603	25	20	250	18	33	13,0	8	**1.455,55**

SVUCR/L



Ref.	Plaquita Inserts	Medidas Dimensions (mm)							€
		D	d	L	L1	H	f	a	
S20R-SVUBR/L16	VB..1604	27	20	200	50	18	14,0	12	**59,35**
S25S-SVUBR/L16	VB..1604	32	25	250	50	23	16,5	8	**70,80**
S32T-SVUBR/L16	VB..1604	41	32	300	55	29	22,5	8	**136,90**
S20R-SVUCR/L16	VC..1604	27	20	200	50	18	14,0	8	**59,35**
S25S-SVUCR/L16	VC..1604	32	25	250	50	23	16,5	6	**70,80**
S32T-SVUCR/L16	VC..1604	41	32	300	55	29	22,5	8	**136,90**

SHB
Cutter



Ref.	Medidas Dimensions (mm)				€
	D	d	L	H	
SHB 0416-100	16	4	100	15	**120,45**
SHB 0516-100	16	5	100	15	**120,45**
SHB 0616-100	16	6	100	15	**120,45**
SHB 0716-100	16	7	100	15	**120,45**
SHB 0816-100	16	8	100	15	**120,45**
SHB 0420-100	20	4	100	15	**120,45**
SHB 0520-100	20	5	100	15	**120,45**
SHB 0620-100	20	6	100	15	**120,45**
SHB 0820-100	20	8	100	15	**120,45**
SHB 1020-100	20	10	100	15	**120,45**

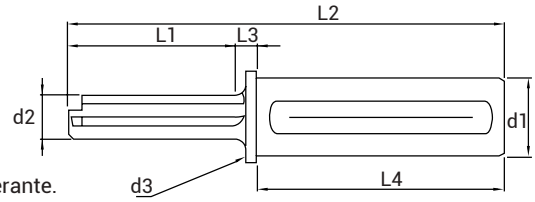
BROCHADO

BROACHING TOOLS

Herrramientas de interiores
Tools for internal

Las herramientas KLK están fabricadas con acero templado. La herramienta dispone de orificios de 4 mm para el suministro forzado de líquido refrigerante que, además de lubricar y enfriar la plaquita, se utilizan para extraer las virutas producidas mediante el ranurado del orificio ciego.
La herramienta está disponible en dos diámetros de encaje (25 y 32). Dos líneas de herramientas están disponibles para cada diámetro de encaje: estándar y larga (identificadas por el sufijo "L" en el código).
La herramienta garantiza un bajo impacto en los rodamientos de la máquina.
La fuerza de corte para la ejecución de carcasas de llaves de 20 mmm de ancho, para una muestra, es comparable a la fuerza de corte requerida para un orificio común con un diámetro de 14 mm.

The KLK tools are made with tempered steel. The tool feature 4 mm holes for the forced supply of coolant liquid which, in addition to lubricating and cooling the insert, are used to extract the chips, produced through slotting, out of the blind hole.
The tool is available in two socket diameters (25 and 32). Two tool lines are available for each socket diameter: standard and long (identified by the suffix "L" in the code).
The tool guarantees low impact on the machine tool bearings.
The cutting force for executting force key housings with a 20 mmm width, for a expample, is comparable to the cutting force required for a common hole with a 14 mm diameter.



* En estas herramientas hay un orificio de 4 mm de extensión forzada refrigerante.
* On these tools there is a 4mm hole forced coolant adduction.

Ref.	L1	L2	L3	L4	d1	d2	d3	Orificio min. Min. hole (mm)	€
UT-02-25*	25,0	124,0	9	90	25	6	30	7,0	**256,70**
UT-02-25-L*	34,5	133,5	9	90	25	6	30	7,0	**256,70**
UT-02-32*	25,0	134,0	9	100	32	6	37	7,0	**256,70**
UT-02-32-L*	34,5	143,5	9	100	32	6	37	7,0	**256,70**
UT-03-25*	30,0	129,0	9	90	25	8	30	8,7	**256,70**
UT-03-25-L*	40,0	139,0	9	90	25	8	30	8,7	**256,70**
UT-03-32*	30,0	139,0	9	100	32	8	37	8,7	**256,70**
UT-03-32-L*	40,0	149,0	9	100	32	8	37	8,7	**256,70**
UT-04-25*	40,0	139,0	9	90	25	10	30	11,0	**256,70**
UT-04-25-L*	56,0	155,0	9	90	25	10	30	11,0	**256,70**
UT-04-32*	40,0	149,0	9	100	32	10	37	11,0	**256,70**
UT-04-32-L*	56,0	165,0	9	100	32	10	37	11,0	**256,70**
UT-05-25*	46,0	145,0	9	90	25	12	30	13,0	**282,35**
UT-05-25-L*	66,0	165,0	9	90	25	12	30	13,0	**282,35**
UT-05-32*	46,0	155,0	9	100	32	12	37	13,0	**282,35**
UT-05-32-L*	66,0	175,0	9	100	32	12	37	13,0	**282,35**
UT-06-25*	56,0	155,0	9	90	25	16	30	17,0	**282,35**
UT-06-25-L*	81,0	180,0	9	90	25	16	30	17,0	**282,35**
UT-06-32*	56,0	165,0	9	100	32	16	37	17,0	**256,70**
UT-06-32-L*	81	190	9	100	32	16	37	17	**256,70**
UT-08-25*	68	167	9	90	25	20	30	21,5	**256,70**
UT-08-25-L*	100	199	9	90	25	20	30	21,5	**256,70**
UT-08-32*	68	177	9	100	32	20	37	21,5	**256,70**
UT-08-32-L*	100	209	9	100	32	20	37	21,5	**256,70**
UT-10-25	86	185	9	90	25	25	32	28	**256,70**
UT-10-25-L	126	225	9	90	25	25	32	28	**256,70**
UT-10-32*	86	195	9	100	32	25	37	28	**256,70**
UT-10-32-L*	126	235	9	100	32	25	37	28	**256,70**
UT-12-25	104	203	9	90	25	30	35	32	**256,70**
UT-12-25-L	161	260	9	90	25	30	35	32	**256,70**
UT-12-32*	104	213	9	100	32	30	37	32	**282,35**
UT-12-32-L*	161	270	9	100	32	30	37	32	**282,35**
UT-14/16-25	104	225	9	90	25	35	37	37	**282,35**
UT-14/16-25-L	161	279	9	90	25	35	37	37	**282,35**
UT-14/16-32	126	235	9	100	32	35	37	37	**282,35**
UT-14/16-32-L	180	289	9	100	32	35	37	37	**282,35**
UT-18/25-32	140	249	9	100	32	40	45	45	**333,70**
UT-18/25-32-L	200	309	9	100	32	40	45	45	**333,70**

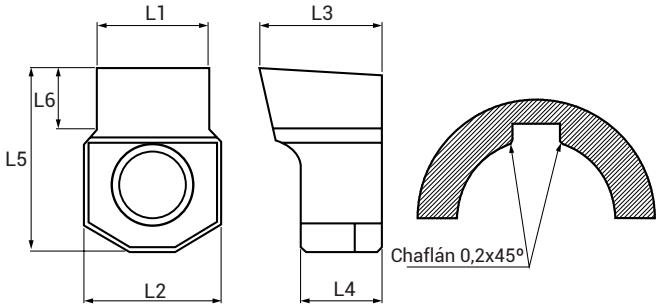
SAUDA

Plaquitas

Inserts

Las plaquitas de ranurado se fabrican con una aleación que, tras el tratamiento térmico, alcanza una dureza de 70-71 HRC. Este material confiere a las plaquitas una gran resistencia y, por lo tanto, puede soportar fuertes presiones. Las plaquitas también están sujetas a tratamiento de superficie, recubrimiento de TiN, con propiedades antidesgaste y antiagarrotamiento.
Las plaquitas se afilan de nuevo afilando sus lados. Este proceso elimina cualquier gubia que pudiera impedir que la plaquita corte perpendicular al eje de referencia de la pieza durante la fase de ranurado. La forma sobresaliente de las plaquitas permite afilarlos varias veces. Todas estas características hacen que las plaquitas sean extraordinariamente duraderas.
Las plaquitas identificadas por su código con "SM" ejecutan un chaflán de 0,2x45º en el punto de intersección entre el agujero y las paredes de la ranura, dejando el agujero libre de rebabas. Este tipo de biselado sólo se puede realizar en llaves UNI.

The slotting inserts are made with alloy which, following heat treatment, reaches a hardness of 70-71 HRC. This material gives the inserts high toughness, and can accordingly withstand strong pressures. The inserts are also subject to surface treatment, TiN coating, with anti wear and seize properties.
The inserts are re-sharpened by tapering their sides. This process eliminates any gouges that would prevent the insert from cutting perpendicular to the reference axis of the workpiece during the broaching phase. The protruding shape of the inserts makes it possible to re-sharpen them numerous times. All of these characteristics make inserts extraordinarily long-lasting.
The inserts identified by their code ending with "SM" execute a 0.2x45º chamfering on the intersection point between the hole and the walls of the broached slot, leaving the hole burr-free. This type of chamfering can only be carried out on UNI keays.



Ref.	L1	L2	L3	L4	L5	L6	€
IN-02 P9	1,994	5,00	6,5	5	6,0	1,30	**51,35**
IN-02 P9-SM	1,994	5,00	6,5	5	6,0	1,09	**51,35**
IN-02 H7	2,010	5,00	6,5	5	6,0	1,30	**51,35**
IN-02 H7-SM	2,010	5,00	6,5	5	6,0	1,09	**51,35**
IN-02 D10	2,060	5,00	6,5	5	6,0	1,30	**51,35**
IN-02 C11	2,120	5,00	6,5	5	6,0	1,30	**51,35**
IN-03 P9	2,994	6,08	6,5	5	7,5	2,00	**51,35**
IN-03 P9-SM	2,994	6,08	6,5	5	7,5	1,42	**51,35**
IN-03 H7	3,010	6,08	6,5	5	7,5	2,00	**51,35**
IN-03 H7-SM	3,010	6,08	6,5	5	7,5	1,42	**51,35**
IN-03 D10	3,060	6,08	6,5	5	7,5	2,00	**51,35**
IN-03 C11	3,120	6,08	6,5	5	7,5	2,00	**51,35**
IN-04 P9	3,988	6,08	7,0	5	8,0	2,60	**51,35**
IN-04 P9-SM	3,988	6,08	7,0	5	8,0	2,07	**51,35**
IN-04 H7	4,012	6,08	7,0	5	8,0	2,60	**51,35**
IN-04 H7-SM	4,012	6,08	7,0	5	8,0	2,07	**51,35**
IN-04 D10	4,078	6,08	7,0	5	8,0	2,60	**51,35**
IN-04 C11	4,145	6,08	7,0	5	8,0	2,60	**51,35**
IN-05 P9	4,988	6,08	7,0	5	8,0	3,00	**51,35**
IN-05 P9-SM	4,988	6,08	7	5	8,0	2,74	**51,35**
IN-05 H7	5,012	6,08	7	5	8,0	3,00	**51,35**
IN-05 H7-SM	5,012	6,08	7	5	8,0	2,74	**51,35**
IN-05 D10	5,078	6,08	7	5	8,0	3,00	**51,35**

Ref.	L1	L2	L3	L4	L5	L6	€
IN-05 C11	5,145	6,08	7	5	8,0	3,00	**51,35**
IN-06 P9	5,988	10,08	9	6	13,5	4,00	**61,60**
IN-06 P9-SM	5,988	10,08	9	6	13,5	3,00	**61,60**
IN-06 H7	6,012	10,08	9	6	13,5	4,00	**61,60**
IN-06 H7-SM	6,012	10,08	9	6	13,5	3,00	**61,60**
IN-06 D10	6,078	10,08	9	6	13,5	4,00	**61,60**
IN-06 C11	6,145	10,08	9	6	13,5	4,00	**61,60**
IN-08 P9	7,985	10,08	9	6	13,5	4,50	**61,60**
IN-08 P9-SM	7,985	10,08	9	6	13,5	3,78	**61,60**
IN-08 H7	8,015	10,08	9	6	13,5	4,50	**61,60**
IN-08 H7-SM	8,015	10,08	9	6	13,5	3,78	**61,60**
IN-08 D10	8,098	10,08	9	6	13,5	4,50	**61,60**
IN-08 C11	8,170,00	10,08	9	6	13,5	4,50	**61,60**
IN-10 P9	9,985	13,10	14	10	18,5	6,00	**77,00**
IN-10 P9-SM	9,985	13,10	14	10	18,5	3,88	**77,00**
IN-10 H7	10,015	13,10	14	10	18,5	6,00	**77,00**
IN-10 H7-SM	10,015	13,10	14	10	18,5	3,88	**77,00**
IN-10 D10	10,098	13,10	14	10	18,5	6,00	**77,00**
IN-10 C11	10,170,00	13,10	14	10	18,5	6,00	**77,00**
IN-12 P9	11,982	13,10	14	10	18,5	6,50	**77,00**
IN-12 P9-SM	11,982	13,10	14	10	18,5	3,89	**77,00**
IN-12 H7	12,018	13,10	14	10	18,5	6,50	**77,00**
IN-12 H7-SM	12,018	13,10	14	10	18,5	3,89	**77,00**
IN-12 D10	12,120	13,10	14	10	18,5	6,50	**77,00**
IN-12 C11	12,205	13,10	14	10	18,5	6,50	**77,00**
IN-14 P9	13,982	18,00	14	10	22,0	7,00	**89,85**
IN-14 P9-SM	13,982	18,00	14	10	22,0	4,71	**89,85**
IN-14 H7	14,018	18,00	14	10	22,0	7,00	**89,85**
IN-14 H7-SM	14,018	18,00	14	10	22,0	4,71	**89,85**
IN-14 D10	14,120	18,00	14	10	22,0	7,00	**89,85**
IN-14 C11	14,205	18,00	14	10	22,0	7,00	**89,85**
IN-16 P9	15,982	18,00	14	10	22,0	8,00	**89,85**
IN-16 P9-SM	15,982	18,00	14	10	22,0	5,53	**89,85**
IN-16 H7	16,018	18,00	14	10	22,0	8,00	**89,85**
IN-16 H7-SM	16,018	18,00	14	10	22,0	5,53	**89,85**
IN-16 D10	16,120	18,00	14	10	22,0	8,00	**89,85**
IN-16 C11	16,205	18,00	14	10	22,0	8,00	**89,85**
IN-18 P9**	17,982	26,00	18	10	30,0	9,00	**154,00**
IN-18 P9-SM**	17,982	26,00	18	10	30,0	5,67	**154,00**
IN-18 H7**	18,018	26,00	18	10	30,0	9,00	**154,00**
IN-18 H7-SM**	18,018	26,00	18	10	30,0	5,67	**154,00**
IN-18 D10**	18,120	26,00	18	10	30,0	9,00	**154,00**
IN-18 C11**	18,205	26,00	18	10	30,0	9,00	**154,00**
IN-20 P9**	19,978	26,00	18	10	30,0	10,00	**154,00**
IN-20 P9-SM**	19,978	26,00	18	10	30,0	6,29	**154,00**
IN-20 H7**	20,021	26,00	18	10	30,0	10,00	**154,00**
IN-20 H7-SM**	20,021	26,00	18	10	30,0	6,29	**154,00**
IN-20 D10**	20,149	26,00	18	10	30,0	10,00	**154,00**
IN-20 C11**	20,240	26,00	18	10	30,0	10,00	**154,00**
IN-22 P9**	21,978	26,00	18	10	30,0	11,00	**154,00**
IN-22 P9-SM**	21,978	26,00	18	10	30,0	6,79	**154,00**
IN-22 H7**	22,021	26,00	18	10	30,0	11,00	**154,00**
IN-22 H7-SM**	22,021	26,00	18	10	30,0	6,79	**154,00**
IN-22 D10**	22,149	26,00	18	10	30,0	11,00	**154,00**
IN-22 C11**	22,240	26,00	18	10	30,0	11,00	**154,00**
IN-25 P9**	24,978	26,00	18	10	30,0	12,00	**154,00**
IN-25 P9-SM**	24,978	26,00	18	10	30,0	7,02	**154,00**
IN-25 H7**	25,021	26,00	18	10	30,0	12,00	**154,00**
IN-25 H7-SM**	25,021	26,00	18	10	30,0	7,02	**154,00**
IN-25 D10**	25,149	26,00	18	10	30,0	12,00	**154,00**
IN-25 C11**	25,240	26,00	18	10	30,0	12,00	**154,00**

** Para estas medidas recomendamos el mecanizado en dos pasos: desbaste y acabado
** For these sizes we recommend machining in two steps: roughing and finishing

ESPACIO DE TRABAJO

WORKSPACE

FOTO PHOTO	SECCIÓN SECTION	PÁGINA PAGE
	Portaconos Cone holder	382
	Armarios/Herramientas Cabinets/Tools	384
	Armarios/Industrial Cabinets/Industrial	388
	Armarios/Archivador Cabinets/File cabinet	390
	Armarios/Vitrina Cabinets/Cabinets	391
	Armarios/Ordenador Cabinets/Computer	392
	Carro de herramientas Tools trolley	394
	Banco de trabajo Workbench	395
	Paneles perforados Perforated Tools board	400
	Ganchos Hooks	401

SAUDA

WS-2755 Soporte de sobremesa para 16 conos
16 cone table stand

Soporte de acero soldado de alta calidad. Fácil montaje en armarios de almacenamiento de herramientas CNC y bancos de trabajo. Talla única para todos los conos morse BT 30-40-50 y HSK 16-32-40-50-63-80 con soportes de plástico ajustables. Bajo pedido, se puede cambiar a soporte fijo para HSK100 y Capto C6. La primera posición es a 2º 34', adecuada para conos morse HSK. La segunda posición es a 8º 17' para conos morse BT. Anchura: 500 mm / Profundidad: 570 mm /Altura: 300 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

High quality welded steel support coated with electrostatic powder. Easy assembly on CNC tool storage cabinets and workbenches. One size fits all BT 30-40-50 and HSK 16-32-40-50-63-80 morse tapers with adjustable plastic holders. Upon request, can be changed to fixed holder for HSK100 and Capto C6. Width: 500 mm / Depth: 570 mm / Height: 300 mm / Colour: RAL 5015 with electrostatic powder coating.

180 €

WS-2200 Carro portaconos para 35 conos
Cone trolley for 35 cones

Carro de alta calidad, apropiado para el almacenamiento de material pequeño al cual facilita el fácil acceso Se puede utilizar para conos morse SK 30-40-50 y para conos HSK 16-32-40-50-63-80-100. Tiene tres posiciones ajustables en cada dirección. La primera posición es a 2º 34', adecuada para mangos HSK. La segunda posición es a 8º 17' 50" para conos SK y BT. Capacidad para 35 conos. Anchura: 650 mm / Profundidad: 450 mm /Altura: 820 + 130 mm

High quality trolley, suitable for the storage of small material which facilitates easy access. Can be used for Morse cones SK 30-40-50 and for HSK 16-32-40-50-50-63-80-100 cones. It has three adjustable positions in each direction. The first position is at 2º 34', suitable for HSK handles. The second position is at 8º 17' 50" for SK and BT cones. Capacity for 35 cones. Width: 650 mm / Depth: 450 mm /Height: 820 + 130 mm

566,25 €

Carro de cajones + portaconos para 16 conos
Drawer trolley
+ cone holder for 16 cones

WS-2700

5 cajones 5 drawers

Anchura: 560 mm / Profundidad: 570 mm / Altura: 1.000 mm / Altura ruedas: 130 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 560 mm / Depth: 570 mm / Height: 1,000 mm / Wheel height: 130 mm / Colour: RAL 5015 with electrostatic powder coating.

1.366 €

Carro de cajones + portaconos para 16 conos
Drawer trolley
+ cone holder for 16 cones

WS-2750

4 cajones 4 drawers

Anchura: 560 mm / Profundidad: 570 mm / Altura: 1.000 mm / Altura ruedas: 130 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 560 mm / Depth: 570 mm / Height: 1,000 mm / Wheel height: 130 mm / Colour: RAL 5015 with electrostatic powder coating.

1.256 €

Carro portaconos
Cone trolley

WS-2740

3 cajones y 1 cajón con portaconos
3 drawers and 1 coneholder drawer

Anchura: 560 mm / Profundidad: 570 mm / Altura: 700 mm / Altura ruedas: 130 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 560 mm / Depth: 570 mm / Height: 700 mm / Wheel height: 130 mm / Colour: RAL 5015 with electrostatic powder coating.

1.078,75 €

SAUDA

WS-2550 Armario portaconos
Cone trolley

SOPORTE PARA CONOS

2 estantes para conos extraibles y 2 cajones
2 pull-out shelves for cones and 2 drawers

Armario de acero soldado de alta calidad, perforado y reforzado para 4x guías y recubierto con polvo electrostático. Sistema central de cierre. Se puede utilizar para conos morse SK 30-40-50 y para conos HSK 16-32-40-50-63-80-100. Tiene tres posiciones ajustables en cada dirección. La primera posición es a 2º 34', adecuada para mangos HSK. La segunda posición es a 8º 17' 50" para conos SK y BT. Utilizado por moldistas y mecanizadores para el almacenamiento de conos CNC. Anchura: 710 mm / Profundidad: 725 mm / Altura: 1.000 mm / Altura patas: 30 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

High quality welded steel cabinet, perforated and reinforced for 4x guides and coated with electrostatic powder. Central locking system. It can be used for Morse cones SK 30-40-50 and for HSK 16-32-40-50-50-63-80-100 cones. It has three adjustable positions in each direction. The first position is 2º 34', suitable for HSK handles. The second position is at 8º 17' 50" for SK and BT cones. Used by moulders and machinists for the storage of CNC cones. Width: 710 mm / Depth: 725 mm / Height: 1.000 mm / Height of feet: 30 mm / Colour: RAL 5015 with electrostatic powder coating.

1.540,25 €

WS-2650 Armario portaconos
Cone trolley

SOPORTE PARA CONOS

4 cajones y 1 cajón portaconos
4 drawers and 1 coneholder drawer

Anchura: 560 mm / Profundidad: 570 m / Altura: 800 mm / Altura patas: 30 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 560 mm / Depth: 570 m / Height: 800 mm / Height of feet: 30 mm / Colour: RAL 5015 with electrostatic powder coating.

1.188,75 €

Armario de herramientas WS-10100
Tools cabinet

7 cajones 7 drawers

Anchura: 1.010 mm / Profundidad: 570 mm / Altura: 1.000 mm / Altura patas: 30 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 1.010 mm / Depth: 570 mm / Height: 1.000 mm / Height of feet: 30 mm / Colour: RAL 5015 with electrostatic powder coating.

2.181,75 €

Armario de herramientas WS-1080
Tools cabinet

7 cajones 7 drawers

Anchura: 410 mm / Profundidad: 570 mm / Altura: 800 mm / Altura patas: 30 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 410 mm / Depth: 570 mm / Height: 800 mm / Height of feet: 30 mm / Colour: RAL 5015 with electrostatic powder coating.

1.164,75 €

SAUDA

WS-5030 Armario de herramientas
Tools cabinet

75
100

2 cajones 2 drawers

Anchura: 560 mm / Profundidad: 570 mm / Altura: 300 m / Altura patas: 30 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 560 mm / Depth: 570 mm / Height: 300 m / Height of feet: 30 mm / Colour: RAL 5015 with electrostatic powder coating.

464,25 €

WS-5080 Armario de herramientas
Tools cabinet

75
75
100
100
125
200

6 cajones 6 drawers

Armario portaherramientas de acero soldado de alta calidad, perforado y reforzado para 4 guías y recubierto con polvo electrostático. Seis cajones con apertura fácil y silenciosa del 97% del mismo. Permite solo la apertura de un cajón al mismo tiempo. Cajones con área para etiquetado frontal y ranuras en los laterales del interior para las divisiones interiores. Sistema central de cierre. Usado para proteger y almacenar material pequeño, para moldistas, mecanizadores, fabricantes de electrónica, logística, máquinas textiles, joyería, etc. Anchura: 560 mm / Profundidad: 570 mm / Altura: 800 mm / Altura patas: 30 mm / Color: RAL 5015.

High quality welded steel Tools cabinet, perforated and reinforced for 4 guides and coated with electrostatic powder. Six drawers with easy and silent opening of 97% of it. Only one drawer can be opened at a time. Drawers with area for front labeling and slots on the sides of the interior for interior divisions. Central locking system. Used to protect and store small material, for moulders, mechanisers, electronics manufacturers, logistics, textile machines, jewellery, etc. Width: 560 mm / Depth: 570 mm / Height: 800 mm / Height of feet: 30 mm / Colour: RAL 5015.

1.301,50 €

Armario de herramientas WS-6140
Tools cabinet

3 cajones y 3 baldas de altura ajustable
3 drawers and 3 height-adjustable shelves

Anchura 920 mm / Profundidad 450 mm / Altura 1.200 mm / Altura patas 30 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width 920 mm / Depth 450 mm / Height 1,200 mm / Height of feet 30 mm / Colour: RAL 5015 with electrostatic powder coating.

1.210,25 €

Armario de herramientas WS-7100
Tools cabinet

7 cajones 7 drawers

Anchura: 710 mm / Profundidad: 725 mm / Altura: 1.000 mm / Altura patas: 30 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 710 mm / Depth: 725 mm / Height: 1.000 mm / Height of feet: 30 mm / Colour: RAL 5015 with electrostatic powder coating.

2.106,50 €

SAUDA

WS-5110 Armario industrial
Industrial cabinet

2 cajones y 2 baldas extraibles
2 drawers and 2 pull-out shelves

Anchura: 560 mm / Profundidad: 600 mm / Altura: 1.000 mm / Altura patas: 30 mm / Color: RAL 5015-9002 con recubrimiento de polvo electrostático.

Width: 560 mm / Depth: 600 mm / Height: 1.000 mm / Height of feet: 30 mm / Colour: RAL 5015-9002 with electrostatic powder coating.

1.073,50 €

WS-6800 Armario industrial
Industrial cabinet

1 cajón 1 drawer

Anchura: 560 mm / Profundidad: 570 mm / Altura: 800 mm / Altura patas: 30 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 560 mm / Depth: 570 mm / Height: 800 mm / Height of feet: 30 mm / Colour: RAL 5015 with electrostatic powder coating.

542,25 €

Armario industrial
Industrial cabinet

WS-7110

2 cajones y 3 baldas extraibles
2 drawers and 3 pull-out shelves

Anchura: 710 mm / Profundidad: 750 mm / Altura: 1.000 mm / Altura patas: 30 mm / Color: RAL 5015-9002 con recubrimiento de polvo electrostático.

Width: 710 mm / Depth: 750 mm / Height: 1.000 mm / Height of feet: 30 mm / Colour: RAL 5015-9002 with electrostatic powder coating.

1.553,75 €

Armario industrial
Industrial cabinet

WS-7215

3 cajones y 3 baldas extraibles
3 drawers and 3 pull-out shelves

Anchura: 710 mm / Profundidad: 750 mm / Altura: 1.200 mm / Altura patas: 30 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 710 mm / Depth: 750 mm / Height: 1,200 mm / Height of feet: 30 mm / Colour: RAL 5015 with electrostatic powder coating.

1814,00 €

SAUDA

WS-6233 Armario archivador
File cabinet

4 baldas de altura ajustable
4 height-adjustable shelves

Anchura: 920 mm / Profundidad: 400 mm / Altura: 2.000 mm / Color: RAL 9002 con recubrimiento de polvo electrostático.

Width: 710 mm / Depth: 750 mm / Height: 1,200 mm / Height of feet: 30 mm / Colour: RAL 5015 with electrostatic powder coating.

684,50 €

WS-6246 Armario archivador con vitrina
Glass file cabinet

2 baldas 2 shelves

Anchura: 920 mm / Profundidad: 450 mm / Altura: 1.200 mm / Color: RAL 5015-9002 con recubrimiento de polvo electrostático.

Width: 920 mm / Depth: 450 mm / Height: 1,200 mm / Colour: RAL 5015-9002 with electrostatic powder coating.

786,25 €

Armario archivador con vitrina
Cabinet with showcase and sliding doors

WS-6555

2 baldas 2 shelves

Anchura: 1.200 mm / Profundidad: 400 mm / Altura: 1.200 mm / Color: RAL 9002 con recubrimiento de polvo electrostático.

Width: 1,200 mm / Depth: 400 mm / Height: 1,200 mm / Colour: RAL 9002 with electrostatic powder coating.

708,50 €

Armario archivador con vitrina
Cabinet with showcase and sliding doors

WS-6565

3 baldas 3 shelves

Anchura: 1.200 mm / Profundidad: 400 mm / Altura: 1.200 mm / Color: RAL 5015-9002 con recubrimiento de polvo electrostático.

Width: 1.200 mm / Depth: 400 mm / Height: 1.200 mm / Colour: RAL 5015-9002 with electrostatic powder coating.

756,75 €

SAUDA

WS-7440 Armario ordenador
Glass file cabinet

Adecuado para uso multifuncional. La parte frontal se cierra con una única llave. Láminas de aireación en la parte posterior. Cable de alimentación 1x4x dentro del armario. Protege los ordenadores de los posibles daños en el entorno del taller. Anchura: 560 mm / Profundidad: 570 mm / Altura: 1.000 mm /

Color: RAL 5015 recubierto.

Suitable for multifunctional use. The front part is closed with a single key. Ventilation holes for air circulation at the back cover. Power cable 1x4x inside the cabinet. Protects computers from possible damage in the workshop environment. Width: 560 mm / Depth: 570 mm / Height: 1000 mm / Colour: coated RAL 5015.

807,75 €

WS-7441 Armario ordenador
Glass file cabinet

Adecuado para uso multifuncional. La parte frontal se cierra con una única llave. Láminas de aireación en la parte posterior. Cable de alimentación 1x4x dentro del armario. Protege los ordenadores de los posibles daños en el entorno del taller. Anchura: 560 mm / Profundidad: 570 mm / Altura: 1.000 mm /

Color: RAL 5015 recubierto.

Suitable for multifunctional use. The front part is closed with a single key. Ventilation holes for air circulation at the back cover. Power cable 1x4x inside the cabinet. Protects computers from possible damage in the workshop environment. Width: 560 mm / Depth: 570 mm / Height: 1000 mm / Colour: coated RAL 5015.

786,25 €

Armario de ordenador WS-7425
Computer cabinet

Adecuado para uso multifuncional. La parte frontal se cierra con una única llave. Láminas de aireación en la parte posterior. Cable de alimentación 1x4x dentro de la cabina. La parte del monitor cuenta con un marco metálico y una pantalla de 2 mm de plexiglás transparente que se desliza hacia atrás. Protege los ordenadores de los posibles daños en el entorno del taller. Anchura: 560 mm / Profundidad: 600 mm / Altura: 1.400 mm / Color: RAL 5015 recubierto.

Suitable for multifunctional use. The front part is closed with a single key. Ventilation holes for air circulation at the back cover. Power cable 1x4x inside the cabin. The monitor part has a metal frame and a 2 mm transparent Plexiglas screen that slides backwards. It protects computers from possible damage in the workshop environment.
Width: 560 mm / Depth: 600 mm / Height: 1400 mm / Color: RAL 5015 coated.

770,25 €

Carro de herramientas WS-5070
Tools trolley

5 cajones 5 drawers

Carro portaherramientas de acero soldado de alta calidad y recubierto con polvo electrostático. Cinco cajones, sistema central de cierre de dos llaves. Comúnmente usado en servicios automovilísticos para el almacenamiento de equipamiento y herramientas. Anchura: 560 mm / Profundidad: 570 mm / Altura: 720 mm / Altura ruedas: 130 mm / Dos ruedas fijas, una móvil y una rueda con freno de 125 mm de diámetro.

Tools trolley made of high quality welded steel coated with electrostatic powder. Five drawers, central locking system with two keys. Commonly used in automotive services for the storage of equipment and Toolss. Width: 560 mm / Depth: 570 mm / Height: 720 mm / Wheel height: 130 mm / Two fixed wheels, one mobile and one wheel with brake of 125 mm diameter.

1183,50 €

SAUDA

WS-8075 Carro de herramientas
Tools trolley

5 cajones 5 drawers

Carro portaherramientas de acero soldado de alta calidad y recubierto con polvo electrostático. Cinco cajones, sistema central de cierre de dos llaves. Comúnmente usado en servicios automovilísticos para el almacenamiento de equipamiento y herramientas. Anchura: 600 mm / Profundidad: 450 mm / Altura: 700 mm / Altura bandeja: 30 mm / Altura ruedas: 130 mm / Dos ruedas fijas, una móvil y una rueda con freno de 125 mm de diámetro.

Tools trolley made of high quality welded steel coated with electrostatic powder. Five drawers, central locking system with two keys. Commonly used in automotive services for the storage of equipment and Toolss. Width: 600 mm / Depth: 450 mm / Height: 700 mm / Height of tray: 30 mm / Height of wheels: 130 mm / Two fixed wheels, one mobile and one wheel with 125 mm diameter brake.

786,25 €

WS-8076 Carro de herramientas
Tools trolley

6 cajones 6 drawers

Soldado de alta calidad y recubierto con polvo electrostático. Seis cajones. Sistema central de cierre centralizado de dos llaves. Comúnmente usado en servicios automovilísticos para el almacenamiento de equipamiento y herramientas. Permite minimizar la pérdida de equipamiento y herramientas en las zonas de trabajo. Anchura: 600 mm / Profundidad: 450 mm / Altura: 700 mm Altura bandeja: 30 mm / Altura ruedas: 130 mm / Dos ruedas fijas, una móvil y una rueda con freno de 125 mm de diámetro.

High quality welded with electrostatic powder. Six drawers. Central locking system with two keys. Commonly used in automotive services for the storage of equipment and Toolss. It minimizes the loss of equipment and Toolss in the work areas. Width: 600 mm / Depth: 450 mm / Height: 700 mm Height of tray: 30 mm / Height of wheels: 130 mm / Two fixed wheels, one mobile and one wheel with a 125 mm diameter brake.

837,25 €

Carro de herramientas
Tools trolley

WS-8106

6 cajones 6 drawers

Carro de herramientas de acero soldado de alta calidad y recubierto con polvo electrostático. Seis cajones. Sistema central de cierre centralizado de dos llaves.Comúnmente usado en servicios automovilísticos para el almacenamiento de equipamiento y herramientas. Permite minimizar la pérdida de equipamiento y herramientas en las zonas de trabajo. Anchura: 830 mm / Profundidad: 450 mm / Altura: 800 mm Altura bandeja: 30 mm / Altura ruedas: 160 mm / Dos ruedas fijas, una móvil y una rueda con freno de 125 mm de diámetro.

High quality welded steel tools trolley coated with electrostatic powder. Six drawers. Central locking system of two keys. Commonly used in automotive services for the storage of equipment and Toolss. It minimizes the loss of equipment and Toolss in the work areas. Width: 830 mm / Depth: 450 mm / Height: 800 mm Height of tray: 30 mm / Height of wheels: 160 mm / Two fixed wheels, one mobile and one wheel with 125 mm diameter brake.

1.089,50 €

75
75
100
100
125
200

Banco de trabajo móvil
Trolley/Workbench

WS-2325

2 estantes fijos, 3 cajones, 1 cajón con portaconos
2 fixed shelves, 3 drawers, 1 drawer with cone holder

Banco de acero soldado de alta calidad, perforado y reforzado para 4x guías y recubierto con polvo electrostático. Sistema central de cierre. Se puede utilizar para conos morse SK 30-40-50 y para conos HSK 16-32-40-50-63-80-100. 4 cajones.

Tiene tres posiciones ajustables en cada dirección. La primera posición es a 2º 34', adecuada para mangos HSK. La segunda posición es a 8º 17' 50" para conos SK y BT.

Utilizado por moldistas y mecanizadores para el almacenamiento de conos CNC. Anchura: 1.120 mm / Profundidad: 570 mm / Altura: 725 mm / Altura ruedas: 160 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

High quality welded steel bench, perforated and reinforced for 4x guides and coated with electrostatic powder. Central locking system. It can be used for Morse cones SK 30-40-50 and for HSK 16-32-40-50-50-63-80-100 cones. 4 drawers.
It has three adjustable positions in each direction. The first position is 2º 34', suitable for HSK handles. The second position is at 8º 17' 50" for SK and BT cones.
Used by moulders and machinists for the storage of CNC cones. Width: 1.120 mm / Depth: 570 mm / Height: 725 mm / Wheel height: 160 mm / Colour: RAL 5015 with electrostatic powder coating.

1.658,50 €

75
75
125
300

SAUDA

WS-8021 Banco de trabajo móvil
Trolley/Workbench

75
75
100
125
200

5 cajones y 2 baldas 5 drawers and 2 shelves

Anchura: 1.120 mm / Profundidad: 570 mm / Altura: 785 mm / Altura ruedas: 160 mm /

Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 1.120 mm / Depth: 570 mm / Height: 785 mm / Height of wheels: 160 mm /
Colour: RAL 5015 with electrostatic powder coating.

1.709,50 €

WS-8052 Banco de trabajo móvil
Trolley/Workbench

100

2 cajones y 2 armarios 2 drawers and 2 cabinets

Banco de trabajo móvil de acero soldado de alta calidad y recubierto con polvo electrostático. Dos armarios y dos cajones. Sistema central de cierre centralizado de dos llaves. Comúnmente usado en servicios automovilísticos para el almacenamiento de equipamiento y herramientas.

Permite minimizar la pérdida de equipamiento y herramientas en las zonas de trabajo. Anchura: 1.120 mm Profundidad: 570 mm / Altura: 785 mm / Altura ruedas: 160 mm /Dos ruedas fijas, una móvil y una rueda con freno de 125 mm de diámetro.

Mobile workbench made of high quality welded steel coated with electrostatic powder. Two cabinets and two drawers. Central locking system with two keys. Commonly used in automotive services for the storage of equipment and Toolss. It minimizes the loss of equipment and Toolss in the work areas. Width: 1,120 mm Depth: 570 mm / Height: 785 mm / Wheel height: 160 mm / Two fixed wheels, one mobile and one wheel with a 125 mm diameter brake.

1.441 €

Banco de trabajo móvil
Trolley/Workbench

WS-8023

5 cajones y 1 armario 5 drawers and 1 cabinet

Carro de trabajo móvil de acero soldado de alta calidad y recubierto con polvo electrostático. Cinco cajones y un armario. Sistema central de cierre centralizado de dos llaves. Comúnmente usado en servicios automovilísticos para el almacenamiento de equipamiento y herramientas. Anchura: 1.120 mm Profundidad: 570 mm / Altura: 755 mm / Altura ruedas: 160 mm / Dos ruedas fijas, una móvil y una rueda con freno de 125 mm de diámetro.

Mobile working trolley made of high quality welded steel coated with electrostatic powder. Five drawers and a wardrobe. Central locking system with two keys. Commonly used in automotive services for the storage of equipment and Toolss. Width: 1,120 mm Depth: 570 mm / Height: 755 mm / Wheel height: 160 mm / Two fixed wheels, one mobile and one wheel with a 125 mm diameter brake.

1.924 €

Carro de herramientas - Banco de trabajo
Tools trolley - Workspace

WS-2350

Panel perforado, 2 estantes fijos, 3 cajones
1 cajón con portacono
Perforated tools board, 2 fixed shelves, 3 drawers
1 drawer with cone holder

Cuatro cajones y dos baldas. Anchura: 1.120 mm / Profundidad: 570 mm / Altura: 1.270 mm / Altura ruedas: 160 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Four drawers and two shelves. Width: 1,120 mm / Depth: 570 mm / Height: 1,270 mm / Wheel height: 160 mm / Colour: RAL 5015 with electrostatic powder coating.

1.811,50 €

SAUDA

WS-2326 Banco de trabajo móvil
Trolley/Workbench

1 armario, 4 cajones, 1 cajón con portaconos
1 wardrobe, 4 drawers, 1 cone holder drawer

Carro de acero soldado de alta calidad, perforado y reforzado para 4x guías y recubierto con polvo electrostático. Sistema central de cierre. Se puede utilizar para conos morse SK 30-40-50 y para conos HSK 16-32-40-50-63-80-100. Cinco cajones y un armario.

Tiene tres posiciones ajustables en cada dirección. La primera posición es a 2º 34', adecuada para mangos HSK. La segunda posición es a 8º 17' 50" para conos SK y BT. Utilizado por moldistas y mecanizadores para el almacenamiento de conos CNC.

Anchura: 1.120 mm / Profundidad: 570 mm / Altura: 725 mm / Altura ruedas: 160 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

High quality welded steel trolley, perforated and reinforced for 4x guides and coated with electrostatic powder. Central locking system. It can be used for Morse cones SK 30-40-50 and for HSK 16-32-40-50-50-63-80-100 cones. Five drawers and a wardrobe.
It has three adjustable positions in each direction. The first position is 2º 34', suitable for HSK handles. The second position is 8º 17' 50" for SK and BT cones. Used by moulders and machinists for the storage of CNC cones.
Width: 1.120 mm / Depth: 570 mm / Height: 725 mm / Wheel height: 160 mm / Colour: RAL 5015 with electrostatic powder coating.

1945,50 €

Banco de trabajo para empaquetar
Workbench for packaging

WS-3405

Incluye portabobinas y estantes para gavetas. Capacidad máxima de 500 Kg.

Anchura: 1.700 mm / Profundidad: 700 mm / Altura: 2.000 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Includes reelstands and drawer shelves. Maximum capacity of 500 Kg.
Width: 1.700 mm / Depth: 700 mm / Height: 2.000 mm / Colour: RAL 5015 with electrostatic powder coating.

1.286 €

Banco de trabajo
Workbench

WS-2176

5 cajones y estante inferior
5 drawers and lower shelf

Anchura: 1.700 mm / Profundidad: 600 mm / Altura: 850 mm / Color: RAL 5015 con recubrimiento de polvo electrostático.

Width: 1.700 mm / Depth: 600 mm / Height: 850 mm / Colour: RAL 5015 with electrostatic powder coating.

1.830,25 €

SAUDA

WS-3035 **Panel perforado**
Perforated Tools board

2.200 x 550 x 20 mm

174,50 €

WS-3000 **Panel perforado**
Perforated Tools board

1.700 x 550 x 20 mm

134,25 €

WS-3010 **Panel perforado**
Perforated Tools board

1.150 x 700 x 20 mm

115,50 €

WS-3015 **Panel perforado**
Perforated Tools board

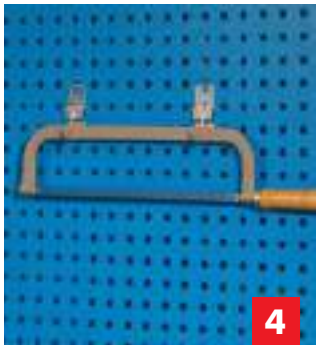
1.110 x 550 x 20 mm

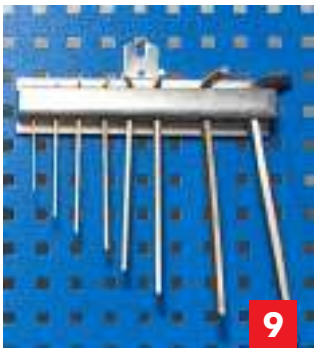
91,25 €

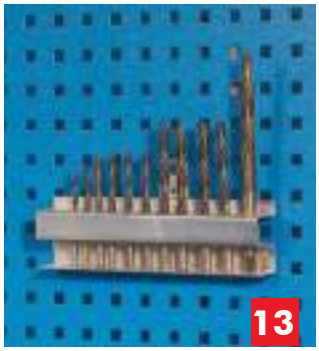
WS-3025 **Panel perforado**
Perforated Tools board

700 x 550 x 20 mm

61,75 €







Ganchos sujetaherramientas

1	WS-K1	2,75 €	7	WS-K7	5,50 €
2	WS-K2	5,50 €	8	WS-K8	5,50 €
3	WS-K3	2,75 €	9	WS-K9	5,50 €
4	WS-K4	2,75 €	10	WS-K10	8,25 €
5	WS-K5	5,50 €	11	WS-K11	13,50 €
6	WS-K6	5,50 €	12	WS-K12	8,25 €

Gancho sujetabrocas

13	WS-K13	8,75 €

Gancho bandeja

14	WS-K14	8,25 €

OTROS PRODUCTOS

OTHER PRODUCTS

Aflojatodo multiusos super lubricante y protector

Multiuse loosener, lubricating and protecting oil

Aflojado de máxima calidad que rinde de forma excepcional abarcando desde las aplicaciones domésticas más
sencillas hasta las aplicaciones industriales más severas. Cumple con los tres cometidos principales, siendo éstos,
desincrustar óxido y suciedad, penetrar y lubricar. Gracias a su alta concentración de materia activa, conseguimos
resultados óptimos con la mínima cantidad de producto. Una vez que el producto esté aplicado, nos permite calentar
el mecanismo para facilitar la penetración.

400 ml

21,95 €

Maximum quality loosener with exceptional performance for all applications, from strightforward DIY through to the
harshest industrial conditions. Performs three main tasks: descaling rust and dirt, penetrating and lubricating. Thanks
to its high concentration of active material, optimal results are achieved with a minimum amount of product. Once
the product has been applied, the mechanism can be heated for better penetration.

Grasa lubricante

Lubricating film

Tratamiento antifricción en spray, con componentes lubricantes, que permite proteger cualquier mecanismo que
esté sometido a fricción, evitando así problemas de oxidaciones y desgastes innecesarios. Gracias al tratamiento
antifricción que cubre incluso las irregularidades microscópicas, se logra una gran protección contra el óxido y la
corrosión, por un largo periodo de tiempo, siendo además un excelente amigo de las labores de montaje de
cualquier mecanismo por delicado que sea. Gran protección contra la corrosión en ambientes marinos e industriales.
Excelente lubricante para utilizar como aceite de corte en las labores de roscado.

400 ml

21,50 €

Lubricating treatment in a spray, with anti-friction ingredients that help protect any mechanism subject to friction,
thus avoiding problems with rust and unnecesary wear. Thanks to the lubricating treatment, which works even at the
microscopic level, it gives excellent protection againnst rust and corrosion over long periods of time, as well as being
handy to have in the work place when assembling any mechanism, no matter how delicate. Gives very good
anti-rust protection in marine environments and industrial applications. Excellent for use as a cutting oil for
threading work.

SAUDA

Aceite universal

Universal oil

Aceite universal biodegradable.
Cuidado de vehículos: piezas de aluminio, cromadas, gomas y materiales sintéticos. Evita el congelamiento. Ideal también para bicicletas y motocicletas.
Cuidado del cuero: suaviza y aporta elasticidad, protege contra el agua, desinfecta y da brillo. Ideal para muebles, botas y sillas de montar.
Hogar: eficaz en cerraduras, bisagras, limpieza de aluminio, acero inoxidable, madera y material sintético. Conserva, desinfecta y protege contra la corrosión
Jardín: cuida los utensilios como cortacésped, tijeras…
Industria: mantenimiento de máquinas, herramientas, elementos de precisión y conexiones atascadas. Protege del óxido y la corrosión y tiene efecto desinfectante.
Cuidado de animales: limpieza de orejas, pelo y patas de los perros y de la melena, cola y cascos de caballos.
Cuidado de armas: Protege de la corrosión, lubrica y limpia. Elimina restos de pólvora, plomo y cobre.

Universal biodegradable oil.
Vehicle care: aluminum and chrome parts, rubber goods and synthetic material. It will prevent locks freezing. Ideally suited for bikes and motorcycles.
Leather care: makes hard and dry leather soft and supple, protects against water. It disinfects and imparts a silky sheen. Perfect for furniture, boots and saddlery.
Household: acts against unwieldy doorlocks and squealing hinges. It cleans and preserves aluminum, stainless steel and synthetic surfaces. It preserves, disinfects and provides long-lasting rust protection.
Garden: Maintains gardening tools, lawn mowers, shears…
Industry: used for the maintenance of machines, tools, precision instruments and for loosening screwed joints. It prevents rust and corrosion and also disinfects.
Animal care: ideally suited for the care of dog's coats and paws and for cleaning their outer ears. It's useful for the manes, tail hairs and hooves of horses.
Weapons: forms a protective film on the metal and inhibits corrosion, it cleans and lubricates. It acts against residues of powder, lead and copper.

400 ml

10,60 €

Protec

Protec

Cuidado, mantenimiento y protección de maquinaria industrial y equipamiento de talleres y herramientas de precisión.
Lubrica las operaciones de fresado, torneado, roscado y taladrado.
Ideal para conservación de larga duración, incluso con mucha humedad.
No contiene ceras
Elimina los chirridos
Uso para aflojar uniones de tornillos, juntas y conexiones.
Temperatura de aplicación e -40ºC a 150ºC

Care, maintenance and protection of industrial machinery, workshop equipment and precision tools.
For lubricating milling, turning, threading and drilling operations.
Ideal for long-term preservation, even at high air humidity.
Contains no waxes
Eliminates squeaking and creaking
Use to free tight fittings, plugs and joint connections
Operating temperature from -40°C to +150°C

400 ml

14,10 €

Magnaslot: Plato magnético electropermanente

Magnaslot: Electropermanent magnet plate

Sistema full metallic patentado Nº EP1874504

Los platos magnéticos electropermanentes patentados "full metallic" EPM son la más eficiente y segura solución de amarre de piezas para todo tipo de centros o fresados.

La posibilidad de uso de espesores fijos y moviles permite crear una zona de apoyo magnética y flexible la cual se ajusta a la forma de la pieza a mecanizar, amarrandola firmemente y eliminando todo tipo de deformaciones.

- Amarre de piezas pequeñas y grandes en centros de mecanizado.
- Mecanizado sin vibraciones ni deformaciones.
- Mecanizado de 5 caras en un solo amarre.
- Dimensión del polo 50*50 mm
- Fuerza de amarre 380 daN por polo
- Profundidad del campo magnético en el nivel más elevado de adhesión 12 mm

The patented electro-permanent magnetic plates "full metallic" EPM are the most efficient and safe solution for clamping parts for all types of centers or milling.

The possibility of using fixed and movable thicknesses allows the creation of a magnetic and flexible support zone which adjusts to the shape of the part to be machined, firmly clamping it and eliminating all types of deformations.

- Clamping of small and large parts in machining centres.
- Machining without vibrations or deformations.
- 5-sided machining in a single clamping operation.
- Pole dimension 50*50 mm.
- Clamping force 380 daN per pole.
- Depth of magnetic field at highest adhesion level 12 mm.

Fija Fixed

Flexible Flexible

Prolongación Extension

Ref.	Prod.	Dimensiones Measurements [mm]	Polo Polsize	€
38010	PVF50 Prolongación fija	50x50x32	50	20,00
38011	PVB50 Prolongación flexible	50x50x32	50	50,00

Magnaslot Polo 50

Ref.	Prod.	Dimensiones Measurements [mm]	Polo Polsize	Cantidad de polos Number of poles	Fuerza por polo Force per pol [Kg]	Unidad de control Control device	€
38335	magnaslot 304HD50	300x430x55	50	24	400	D50	2.960,00
49812	magnaslot 404HD50	420x430x55	50	36	400	D50	4.440,00
56130	magnaslot 406HD50	420x590x55	50	48	400	D50	5.920,00
48641	magnaslot 408HD50	420x750x55	50	60	400	D50	7.400,00
50615	magnaslot508HD50	480x750x55	50	70	400	D50	8.633,35
49574	magnaslot 608HD50	600x750x55	50	90	400	D100	11.100,00
49787	magnaslot 410HD50	420x990x55	50	84	400	D100	10.360,00
50249	magnaslot 510HD50	480x990x55	50	98	400	D100	12.086,70
49319	magnaslot 610HD50	600x990x55	50	126	400	D100	15.540,00

Magnaslot Polo ECO 50

Ref.	Prod.	Dimensiones Measurements [mm]	Polo Polsize	Cantidad de polos Number of poles	Fuerza por polo Force per pol [Kg]	Unidad de control Control device	€
58261	magnaslot 304ECO50	325x370x55	50	20	400	D50	2.466,70
63276	magnaslot 404ECO50	360x360x55	50	25	400	D50	3.083,35
63277	magnaslot 406ECO50	370x635x55	50	40	400	D50	4.933,35
64066	magnaslot 408ECO50	360x790x55	50	50	400	D50	6.166,70
64072	magnaslot 508ECO50	445x790x55	50	60	400	D50	7.400,00
63278	magnaslot 608ECO50	580x790x55	50	80	400	D50	9.866,70
61382	magnaslot 410ECO50	360x950x55	50	60	400	D50	7.400,00
65976	magnaslot510ECO50	465x965x55	50	72	400	D50	8.880,00
63279	magnaslot 610ECO50	580x940x55	50	96	400	D100	11.840,00

Unidad de control Control device

Ref.	Prod.	€
13070	Unidad Control D50	1.500,00
52950	Unidad Control D100	1.833,35
58088	Unidad Control D100-4 cuatro canales	4.333,35

Magnaslot: Plato magnético electropermanente

Magnaslot: Electropermanent magnet plate

- Mecanizado de 5 caras en un solo amarre.
- Sin deformaciones de la pieza de amarrar.
- Rapidez de posicionamiento de la pieza.
- Óptima duración de la herramienta por vibraciones.

- 5-sided machining in a single clamping operation.
- No deformation of the clamping piece.
- Fast positioning of the part.
- Optimum tool life due to vibrations.

Sistema full metallic patentado
Nº EP1874504

Prolongación Extension

Ref.	Prod.	Dimensiones Measurements [mm]	Polo Polsize	€
40127	PVF70 Prolongacion fija	70x70x45	75	40,00
40128	PVB70 Prolongacion flexible	70x70x45	75	96,70

Fija Fixed

Flexible Flexible

Magnaslot Polo 75

Ref.	Prod.	Dimensiones Measurements [mm]	Polo Polsize	Cantidad de polos Number of poles	Fuerza por polo Force per pol [Kg]	Unidad de control Control device	€
48900	magnaslot 304HD75	327x425x60	75	12	900	D50	2.960,00
52546	magnaslot 404HD75	415x425x60	75	16	900	D50	3.946,70
49011	magnaslot 406HD75	415x600x60	75	24	900	D50	5.920,00
49012	magnaslot 408HD75	415x815x60	75	32	900	D50	7.893,35
52542	magnaslot 508HD75	503x815x60	75	40	900	D50	9.866,70
49833	magnaslot 510HD75	503x1030x60	75	50	900	D100	12.333,35
49985	magnaslot 610HD75	591x1030x60	75	60	900	D100	14.800,00

Unidad de control Control device

Ref.	Prod.	€
13070	Unidad Control D50	1.500,00
52950	Unidad Control D100	1.833,35
58088	Unidad Control D100-4 cuatro canales	4.333,35

Magnaslot con ranuras: Plato magnético electropermanente

Magnaslot: Electropermanent magnet plate

Sistema full metallic patentado Nº EP1874504

Los platos magnéticos electropermanentes patentados "full metallic" EPM con ranuras engloba las ventajas de amarre magnético y el amarre mecánico en un único plato.

Es la más perfecta y segura solución de amarre de piezas magnéticas y no magnéticas de una manera eficiente.

Los tres espesores fijos combinados junto a un set de espesores móviles generan una base magnética y flexible, consiguiendo un ajuste de forma de la pieza a amarrar dotando al sistema de un amarre firme y con ausencia de deformaciones.

- Amarre de piezas pequeñas y grandes.

- Amarre de piezas magnéticas y no magnéticas.

- Mecanizado sin vibraciones ni deformaciones.

- Rapidez de posicionamiento de la pieza.

- Mecanizado de 5 caras en un solo amarre.

- Dimensión del polo 75*75 mm.

- Ranuras para el amarre mecánico.

- Fuerza de amarre 800 DaN por polo.

- Profundidad del campo magn´´etico en el nivel más elevado de adhesión 20 mm.

- Superficie completa de acero resistente contra virutas calientes y refrigerante.

- Esporización automática para un amarre uniforme.

- Una combinación de varios platos EPM permite el mecanizado de piezas largas y grandes.

The patented electro-permanent magnetic plates "full metallic" EPM with slots include the advantages of magnetic clamping and mechanical clamping in a single plate.

It is the most perfect and safe solution for clamping magnetic and non-magnetic parts in an efficient way.

The three fixed thicknesses combined with a set of movable thicknesses generate a magnetic and flexible base, achieving an adjustment of the shape of the piece to be clamped, giving the system a firm clamp and with no deformation.

- Mooring of small and large parts.

- Magnetic and non-magnetic part clamping.

- Machining without vibrations or deformations.

- Fast positioning of the part.

- 5-sided machining in a single mooring.

- Pole dimension 75*75 mm.

- Slits for mechanical clamping.

- Mooring force 800 DaN per pole.

- Depth of field magn´´etico at highest adhesion level 20 mm.

- Complete surface made of steel resistant to hot chips and coolant.

- Automatic spreading for uniform clamping.

- A combination of several EPM chucks allows the machining of long and large parts.

Fija Fixed

Flexible Flexible

Prolongación Extension

Ref.	Prod.	Dimensiones Measurements [mm]	Polo Polsize	€
40127	PVF70 Prolongacion fija	70x70x45	75	40,00
40128	PVB70 Prolongacion flexible	70x70x45	75	96,70

Magnaslot Polo 75

Ref.	Prod.	Dimensiones Measurements [mm]	Polo Polsize	Cantidad de polos Number of poles	Fuerza por polo Force per pol [Kg]	Unidad de control Control device	€
49010	magnaslot 406HD75 T-Slot	415x600x93	75	24	900	D50	8.000,00
51290	magnaslot 508HD75 T-Slot	503x815x93	75	48	900	D100	13.333,35
61383	magnaslot 610HD75 T-slot	591x1030x93	75	60	900	D100	19.990,00

Unidad de control Control device

Ref.	Prod.	€
13070	Unidad Control D50	1.500,00
52950	Unidad Control D100	1.833,35
58088	Unidad Control D100-4 cuatro canales	4.333,35

SAUDA

Elevador magnético permanente

Permanent magnetic lifter

- El elevador magnético permanente puede ser utilizado en diversas industrias para el transporte y elevación de acero, piezas de motor y moldes, debido a su superficie magnética.

- La fuerza de tracción más alta del elevador magnético es 3,5 veces mayor que la capacidad de elevación nominal.

- Peso ligero: entre 10 y 125 kg.

- No se necesita electricidad para usar el elevador magnético, una vez que se ha usado hay menos de 1% de magnetismo residual.

- El diseño sencillo del accionador y del pestillo de seguridad permite su uso con una sola mano.

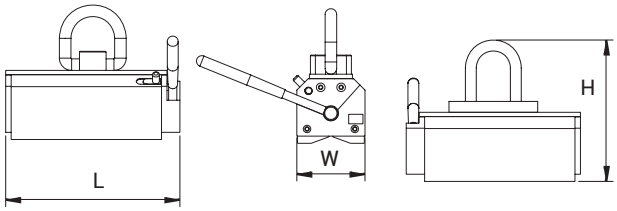
- The permanent magnetic lifter can be used in variety industries for the transportation and lifting of steel, engine parts and molds, due to its magnetic surface.

- The magnetic lifter's highest pulling force is 3.5times greater than the rated lifting capability.

- Light weight: ranging from 10-125kgs.

- No electricity is needed to use the magnetic lifter, once it's been used there is less than 1% residual magnetism.

- The simple switch and safety button design allows for one handed operation.



Ref.	Dimensiones Measurements [mm]				▬ Carga Load	● Carga Load	Temp.	Peso Weight	€
	L	W	H	R	[Kg]	[Kg]	[°C]	[kg]	
EMP0100	92	64	70	145	100	30	<80	3	**386,10**
EMP0200	114	72	86	145	200	60	<80	5	**403,95**
EMP0500	210	88	96	203	500	150	<80	12,5	**861,30**
EMP1000	264	148	138	266	1000	300	<80	37	**1.663,20**
EMP2000	397	168	168	380	2000	500	<80	80	**3.350,20**
EMP5000	582	290	265	627	5000	1500	<80	320	**9.117,90**

Elift: Elevador magnético

Magnetic lift

- Elevación totalmente segura, coeficiente de seguridad 1:3.

- Amarre y seguridad en el amarre de piezas con todo tipo de rugosidades.

- No daña las superficies de las piezas.

- Se activa y desactiva fácilmente mediante una palanca de mano.

- Se cuelga fácilmente de la grúa lo que conlleva una optimización de la capacidad de la grúa y una mejora de su manejo en espacios reducidos.

- La palanca del interruptor no salta hacia atrás, evitando todo tipo de impacto en la acción de DEMAG o desaccionamiento del imán hacia atrás.

- Temperatura máxima de funcionamiento: 80ºC.

- Sistema "bimanual" para accionamiento desaccionamiento de la palanca con gatillo de bloqueo.

- Totally safe lifting, safety coefficient 1:3.

- Mooring and safety in the clamping of parts with all types of roughness.

- No damage to part surfaces.

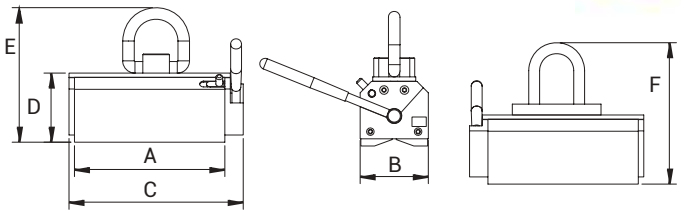
- It is easily activated and deactivated by means of a hand lever.

- Easy to hang from the crane, which optimises the crane's capacity and improves its handling in confined spaces.

- The switch lever does not jump backwards, avoiding any kind of impact on the action of DEMAG or backwards activation of the magnet.

- Maximum operating temperature: 80ºC.

- Two-hand" system for activating the lever with locking trigger.



Prod.	Dimensiones Measurements [mm]						Carga Load	Grosor mín Min width	Carga Load	máx. Ø	Peso Weight	Ref.	€
	A	B	C	D	E	F	[Kg]	[mm]	[Kg]	[mm]	[kg]		
Elift 100	105	70	132	71	-	138	100	15	45	100	4	50871	**383,35**
Elift 300	160	90	193	87	167	-	300	25	125	160	9	34858	**666,70**
Elift 500	220	100	255	101	181	-	500	30	215	220	18	34589	**1.000,00**
Elift 1000	310	122	355	126	243	-	1.000	50	450	350	42	34860	**1.666,70**
Elift 2000	390	182	442	176	-	365	2.000	50	900	400	88	34862	**3.166,70**
Elift 3000	480	182	529	176	-	365	3.000	60	1.350	400	175	43161	**5.000,00**
Elift 5000	520	370	564	321	-	625	5.000	80	2.250	450	350	42037	**9.600,00**

SAUDA

Elevador magnético con batería SB 200

Electropermanent battery lifter SB 200

Los imánes electropermanentes con bateria estan hechos para elevación de cargas hasta 200/500kg en material plano y 80/200kg en redondo. Los SB 200 y SB 500 combinan la seguridad de los imanes permanentes y la facilidad de uso de los electroimanes. ON / OFF ciclos de accionamientos son posibles hasta que las baterías tengan que ser recargadas.

- Pequeño, robusto y fácil de manejar.

- Seleccionable el funcionamiento en modo manual o automatic.

- Electro permanente, intrinsecamente seguros.

- Hasta 1.000 ciclos de accionamientos.

- Pila recagable (Lithium-Ionen) en 2h.

- Consume muy poca energía.

- Para material plano y Redondo.

- Se puede utilizar en un balancin con varios imanes.

- Manipulacion de cargas ferricas en almancenes de perfiles, oxicorte, plasma, laser, centros de mecanizado, un sinfin de aplicaciones de utilizacion en su empresa ayudándole a ser mas eficaz en los tiempos de trabajo.

The electro-permanent magnets with battery are made for lifting of loads up to 200/500kg in flat material and 80/200kg in round. The SB 200 and SB 500 combine the safety of permanent magnets with the ease of use of electromagnets. Approximately 1,000 ON/OFF cycles of drives are possible until the batteries have to be recharged.

- Small, robust and easy to handle.

- Selectable operation in manual or automatic mode.

- Permanent electro, intrinsically insurance.

- Up to 1,000 drive cycles.

- Rechargeable battery (Lithium-Ionen) in 2h.

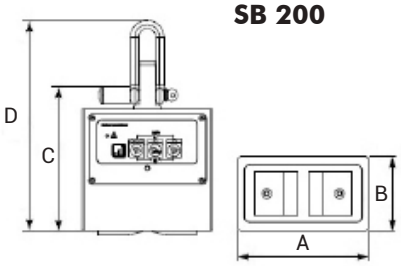
- It consumes very little energy.

- For flat and round material.

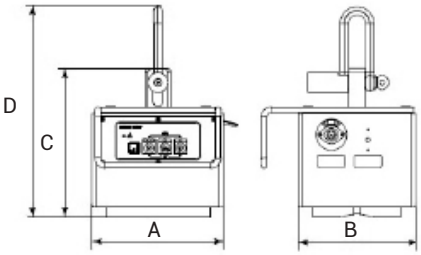
- Can be used on a rocker arm several magnets.

- Handling of ferrous loads in profile storage, oxy-cutting,
plasma, laser, machining centres, an endless number of applications of use in your company helping you to be more
effective in working times.

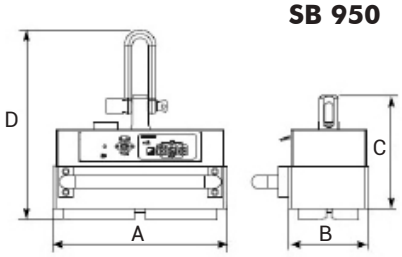
SB 200



SB 500



SB 950



Prod.	Dimensiones Measurements [mm]				Carga Load	Grosor mín Min width	Carga Load	máx. Ø	Peso Weight	Ref.	€
	A	B	C	D	[Kg]	[mm]	[Kg]	[mm]	[kg]		
SB 200	180	160	202	290	200	4	50	150	10	65697	**3.750,00**
SB 500	180	160	221	304	500	4	200	200	24	62666	**4.000,00**
SB 950	350	160	225	380	950	4	400	200	39,5	60643	**6.000,00**

Gancho pesador

Electric crane scale

- Este gancho pesador tiene muchas funciones, como acumulación de peso, visualización de peso bruto/neto convertible, cierre automático, calibración por control remoto.

- Adaptador de alimentación AC/DC: salida DC9V/1.5A.

- Batería recargable 6V/10Ah.

- Distancia remota: 10m

- Múltiples unidades de medición.

- Batería recargable de alta capacidad.

- Este producto es utilizado en puertos, transporte, industria metalúrgica, acererías, industrias de materiales de construcción, almacenamiento, carbón, fabricación de papel, empresas mineras y otras áreas de medición de carga y descarga.

- This crane scale has many functions, like weight accumulation, gross/net weight display convertible, auto shut, remote control calibration.

- AC/DC power adaptor: output DC9V/1.5A.

-6V/10Ah rechargeable battery.

- Remote distance: min.10m

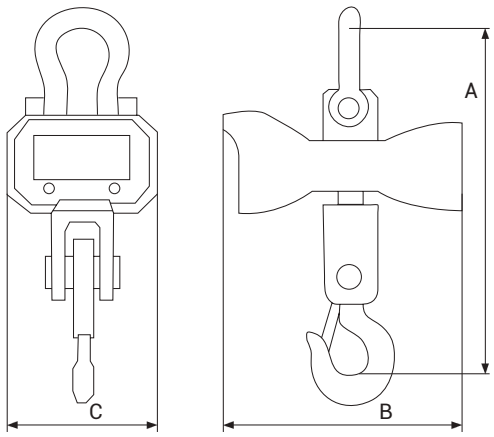
- Multi-weighing units.

- Multi-function operation.

- High capacity rechargeable battery.

- This product is widely used in ports, transportation, metallurgy industry, steel market, building materials market, storage, coal, paper making, mining enterprises and other areas of loading and unloading cargo measurement.

Ref.	Dimensiones [mm]			Max. capacidad	Min. division	Peso	€
	A	B	C	[Kg]	[Kg]	[kg]	
GP03	600	80	45	3000	1	12	**891,00**
GP05	730	100	55	5000	2	14	**1.009,80**
GP10	850	120	70	10000	5	44	**1.455,30**
GP15	900	140	70	15000	5	60	**2.970,00**
GP20	900	140	70	20000	10	60	**3.504,60**



Separador de aceite

Oil skimmer

- Separa el aceite de la taladrina.

- La circulación del aceite, gracias al ventilador, permite eliminar el propio aceite y otros materiales flotantes.

- Se instala fácilmente en centros de mecanizado, tornos CNC y otras máquinas.

- Elimina malos olores y previene la descomposición de la taladrina.

- Mejora la eficiencia y reduce los costes de aceite malgastado.

- Aumenta la vida de la maquinaria y mejora la superficie de lubricación de la pieza de trabajo ya que elimina los pequeños restos de viruta.

- Reduce el coste de cambio de mangueras de aceite de corte.

- Previene la decoloración del material, especialmente trabajando con acero inoxidable o aluminio.

- Todos los componentes están estandarizados con tecnología patentada.

- Separate the oil from the coolant.

- The circulation of the oil, thanks to the fan, allows to eliminate the oil and other floating materials.

- Easily installed on machining centers, CNC lathes and other machines.

- Eliminates bad smells and prevents the decomposition of the emulsion.

- Improves efficiency and reduces wasted oil costs.

- Increases the life of the machinery and improves the lubricating surface of the workpiece by eliminating small chips.

- Reduces the cost of changing cutting oil hoses.

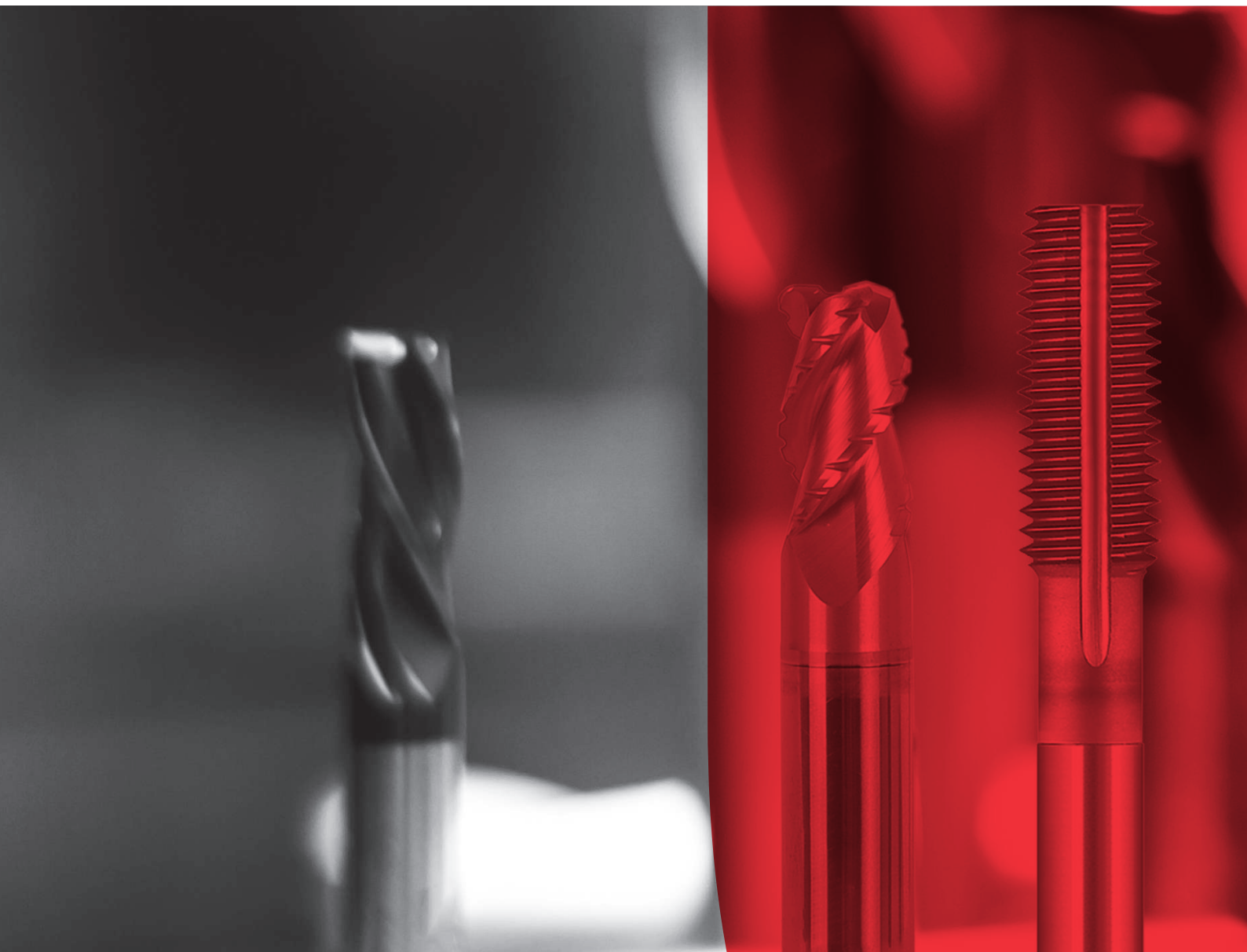
- Prevents discoloration of the material, especially when working with stainless steel or aluminium.

- All components are standardized with patented technology.

Modelo	A	B	Anchura correa	Capacidad	€
MOS-3500S	370	150-200	34	400cc/10min	**979,00**
MOS-5500N	350	150	54	1000cc/10mm	**1.385,00**

5500

3500



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