Fresado M.D.
CatalogoTarifado 2022

ZCC Cutting Tools Europe GmbH

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Fresa de metal duro integral

Solid carbide milling

Product overview

	Products	Solid carbide cutters	Teeth	Ø	Application						Type	Page
					P	M	K	N	S	H		
High performance milling	PM-2E		2	1.0-20.0	✔	✔	✔			✓	End mills	70
	PM-2EL		2	3.0-20.0	✔	✔	✔			✓	End mills	71
	PM-4E-G		4	1.0-20.0	✔	✔	✔			✓	End mills	72
	PM-4EL-G		4	3.0-20.0	✔	✔	✔			✓	End mills	73
	PM-4EX-G		4	3.0-20.0	✔	✔	✔			✓	End mills	74
	PM-4E		4	1.0-20.0	✔	✔	✔			✓	End mills	75
	PM-4EL		4	3.0-20.0	✔	✔	✔			✓	End mills	76
	PM-6E		6	6.0-20.0	✔	✔	✔			✓	End mills	77
	PM-6EL		6	6.0-20.0	✔	✔	✔			✓	End mills	78
	PM-2B		2	1.0-20.0	✔	✔	✔			✓	Ball nose cutters	79
	PM-2BL		2	2.0-20.0	✔	✔	✔			✓	Ball nose cutters	80
	PM-2BFP		2	1.0-20.0	✔	✔	✔			✓	Ball nose cutters	81
	PM-2BC		2	0.5-4.0	✔	✔	✔			✓	Ball nose cutter with conical neck	82-84
	PM-4B		4	3.0-20.0	✔	✔	✔			✓	Ball nose cutters	85
	PM-4BL		4	3.0-20.0	✔	✔	✔			✓	Ball nose cutters	86
	PM-2R		2	1.0-12.0	✔	✔	✔			✓	Torus mills	87
	PM-4R		4	3.0-12.0	✔	✔	✔			✓	Torus mills	90
	PM-4RL		4	6.0-16.0	✔	✔	✔			✓	Torus mills	91
	PM-4H		4	3.0-12.0	✔	✔	✔			✓	High-feed mills	88
	PM-4HL		4	4.0-12.0	✔	✔	✔			✓	High-feed mills	89
General machining	5501R302GM		2	3.0-20.0	✔	✔	✔				End mills	12
	5601R302GM		2	3.0-20.0	✔	✔	✔				End mills	13
	5502R302GM		2	1.0-20.0	✔	✔	✔				End mills	14-15

✔ Very suitable ✓ Suitable

	Products	Solid carbide cutters	Teeth	Ø	Application						Type	Page
					P	M	K	N	S	H		
General machining	5602R302GM		2	2.0-20.0	✔	✔	✔				End mills	16
	GM-2E		2	1.0-20.0	✔	✔	✔				End mills	17
	GM-2EL		2	3.0-20.0	✔	✔	✔				End mills	18
	GM-2EX		2	3.0-20.0	✔	✔	✔				End mills	19
	GM-2EFP		2	6.0-16.0	✔	✔	✔				End mills	20
	GM-2F		2	1.0-20.0	✔	✔	✔				End mills	21
	GM-2FL		2	3.0-20.0	✔	✔	✔				End mills	22
	GM-2EP		2	5.0	✔	✔	✔				Mini end mills	23-24
	GM-2ES		2	3.0	✔	✔	✔				Mini end mills	25
	GM-3E		3	1.0-20.0	✔	✔	✔				End mills	26
	GM-3EL		3	3.0-20.0	✔	✔	✔				End mills	27
	5501R303GM		3	3.0-20.0	✔	✔	✔				End mills	28
	5601R303GM		3	3.0-20.0	✔	✔	✔				End mills	29
	5502R303GM		3	3.0-20.0	✔	✔	✔				End mills	30
	5602R303GM		3	3.0-20.0	✔	✔	✔				End mills	31
	5502R453GM		3	3.0-20.0	✔	✔	✔				End mills	32
	5602R453GM		3	3.0-20.0	✔	✔	✔				End mills	33
	GM-4E-G		4	1.0-20.0	✔	✔	✔				End mills	39
	GM-4F-G		4	1.0-20.0	✔	✔	✔				End mills	34
	GM-4EL-G		4	3.0-20.0	✔	✔	✔				End mills	35
	GM-4FL-G		4	3.0-16.0	✔	✔	✔				End mills	36
	GM-4EX-G		4	3.0-20.0	✔	✔	✔				End mills	37
	GM-4E		4	1.0-20.0	✔	✔	✔				End mills	38

✔ Very suitable ✔ Suitable

Solid carbide milling Product overview

	Products	Solid carbide cutters	Teeth	Ø	Application						Type	Page
					P	M	K	N	S	H		
General machining	GM-4EL		4	3.0-20.0	✔	✔	✔				End mills	40
	GM-4EFP		4	6.0-20.0	✔	✔	✔				End mills	41
	5501R304GF		4	3.0-20.0	✔	✔	✔				End mills	42
	5601R304GF		4	3.0-20.0	✔	✔	✔				End mills	43
	5502R304GF		4	3.0-20.0	✔	✔	✔				End mills	44
	5602R304GF		4	3.0-20.0	✔	✔	✔				End mills	45
	5508R454GM		4	3.0-20.0	✔	✔	✔				End mills	46
	5602R454GM		4	3.0-20.0	✔	✔	✔				End mills	47
	5589R45MGFR02		6-10	6.0-20.0	✔	✔	✔				End mills	48
	GM-6E		6	6.0-20.0	✔	✔	✔				End mills	49
	GM-6EL		6	6.0-20.0	✔	✔	✔				End mills	50
	5565R302GF		2	3.0-20.0	✔	✔	✔				Ball nose cutters	51
	5665R202GM		2	3.0-20.0	✔	✔	✔				Ball nose cutters	52
	5566R302GF		2	3.0-12.0	✔	✔	✔				Ball nose cutters	53
	GM-2B		2	1.0-20.0	✔	✔	✔				Ball nose cutters	54
	GM-2BL		2	2.0-20.0	✔	✔	✔				Ball nose cutters	55
	GM-2BFP		2	1.0-20.0	✔	✔	✔				Ball nose cutters	56
	GM-2BS		2	3.0	✔	✔	✔				Mini ball nose cutters	57
	GM-2BP		2	5.0	✔	✔	✔				Mini ball nose cutters	58-59
	GM-4B		4	3.0-20.0	✔	✔	✔				Ball nose cutters	60
	GM-4BL		4	3.0-20.0	✔	✔	✔				Ball nose cutters	61
	GM-2R		2	1.0-12.0	✔	✔	✔				Torus mills	62

✔ Very suitable ✔ Suitable

	Products	Solid carbide cutters	Teeth	Ø	Application						Type	Page
					P	M	K	N	S	H		
General machining	GM-4R		4	3.0-12.0	✔	✔	✔				Torus mills	63
	GM-4RL		4	6.0-16.0	✔	✔	✔				Torus mills	64
	5602R303GR		3	6.0-8.0	✔	✔	✔				Rippers	65
	5602R304GR		4	10.0-20.0	✔	✔	✔				Rippers	66
	5602R305GR		5	25.0	✔	✔	✔				Rippers	67
	GM-4W		4	6.0-20.0	✔	✔	✔				Rippers	68
Machining high hardness steel	HM-2E		2	1.0-20.0						✔	End mills	94
	HM-2EFP		2	6.0-20.0						✔	End mills	95
	HM-2EP		2	5.0						✔	Mini end mills	96-97
	HM-2ES		2	3.0						✔	Mini end mills	98
	HM-4E		4	1.0-20.0						✔	End mills	99
	HM-4EL		4	3.0-20.0						✔	End mills	100
	HM-4EFP		4	6.0-20.0						✔	End mills	101
	5502R55MHH		4-8	3.0-20.0						✔	End mills	102
	HM-6E		6	6.0-20.0						✔	End mills	103
	HM-6EL		6	6.0-20.0						✔	End mills	104
	HM-2B		2	1.0-20.0						✔	Ball nose cutters	105
	HM-2BL		2	2.0-20.0						✔	Ball nose cutters	106
	HM-2BFP		2	1.0-20.0						✔	Ball nose cutters	107
	HM-2BS		2	3.0						✔	Mini ball nose cutters	108
	HM-2BP		2	5.0						✔	Mini ball nose cutters	109-110
	HM-4B		4	3.0-20.0						✔	Ball nose cutters	111
	HM-4BL		4	3.0-20.0						✔	Ball nose cutters	112

✔ Very suitable ✔ Suitable

Solid carbide milling

Product overview

	Products	Solid carbide cutters	Teeth	Ø	Application						Type	Page
					P	M	K	N	S	H		
Machining high hardness steel	HM-4R		4	3.0-12.0						✔	Torus mills	113
	HM-4RF		4	6.0-12.0						✔	Torus mills	114
	HM-4RP		4	6.0-16.0						✔	Torus mills	115
Copper and copper alloys	5502R402NM		2	3.0-20.0				✔			End mills	118
	NM-2E		2	1.0-12.0				✔			End mills	119
	NM-2EP		2	5.0				✔			Mini end mills	120
	NM-4E		4	3.0-12.0				✔			End mills	121
	NM-2B		2	1.0-12.0				✔			Ball nose cutters	122
	NM-2BP		2	5.0				✔			Mini ball nose cutters	123
Aluminium and aluminium alloys	AL-2E		2	1.0-20.0				✔			End mills	126
	AL-2EL		2	3.0-20.0				✔			End mills	127
	ALG-2E		2	1.0-20.0				✔			End mills	128
	ALG-2R		2	6.0-25.0				✔			Torus mills	140
	AL-3E		3	1.0-20.0				✔			End mills	129
	AL-3EL		3	3.0-20.0				✔			End mills	130
	ALG-3E		3	1.0-20.0				✔			End mills	131
	ALP-3E		3	1.0-20.0				✔			End mills	132
	ALP-4E		4	3.0-20.0				✔			End mills	133
	AL-3W		3	6.0-20.0				✔			Rippers	134
	5565R302NH		2	3.0-16.0				✔			Ball nose cutters	135
	5566R302NH		2	3.0-16.0				✔			Ball nose cutters	136
	AL-2B		2	2.0-12.0				✔			Ball nose cutters	137

✔ Very suitable ✔ Suitable

	Products	Solid carbide cutters	Teeth	Ø	Application						Type	Page
					P	M	K	N	S	H		
Aluminium and aluminium alloys	AL-2R-AIR		2	6.0-20.0				✔			High performance torus mills	138
	AL-2RL-AIR		2	6.0-20.0				✔			High performance torus mills	139
	AL-3R-AIR		3	12.0-20.0				✔			High performance torus mills	141
	AL-3RL-AIR		3	12.0-20.0				✔			High performance torus mills	142
HPC with unequal helix angle	5501R38414GM		4	4.0-20.0	✔	✔	✔			✓	End mills	144
	5502R38414GM		4	4.0-20.0	✔	✔	✔			✓	End mills	145
	5601R38414GM		4	4.0-20.0	✔	✔	✔			✓	End mills	146
	5602R38414GM		4	4.0-20.0	✔	✔	✔			✓	End mills	147
	5502R38414GM-R		4	4.0-20.0	✔	✔	✔			✓	Torus mills	148
	5602R38414GM-R		4	4.0-20.0	✔	✔	✔			✓	Torus mills	149
	UM-4E		4	4.0-20.0	✔	✔	✔			✓	End mills	152
	UM-4E-W		4	4.0-20.0	✔	✔	✔			✓	End mills	153
	UM-4EL		4	4.0-20.0	✔	✔	✔			✓	End mills	154
	UM-4EL-W		4	4.0-20.0	✔	✔	✔			✓	End mills	155
	UM-4ELP-W		4	4.0-20.0	✔	✔	✔			✓	End mills	156
	UM-4EFP		4	6.0-20.0	✔	✔	✔			✓	End mills	157
	UM-4R		4	4.0-20.0	✔	✔	✔			✓	Torus mills	158
	UM-4RL		4	6.0-16.0	✔	✔	✔			✓	Torus mills	159
	UM-4RFP		4	6.0-16.0	✔	✔	✔			✓	Torus mills	160
	VSM-4E		4	4.0-20.0	✓	✔			✔		End mills	162
	VSM-4E-C		4	8.0-20.0	✓	✔			✔		End mills	163
	VSM-4R		4	4.0-20.0	✓	✔			✔		Torus mills	164-165

✔ Very suitable ✓ Suitable

	Products	Solid carbide cutters	Teeth	Ø	Application						Type	Page
					P	M	K	N	S	H		
Deburring cutter	5501/5601		3-4	3.0-16.0	✔	✔	✔	✔			Deburring cutters	168
	5501/5601		3-4	3.0-16.0	✔	✔	✔	✔			Deburring cutters	169
	5601		4	5.2-10.0	✔	✔	✔	✔			Deburring cutters	170

✔ Very suitable ✔ Suitable

Coated cemented carbide PVD

Grade	Grade description
KMG303	PVD coated carbide substrate for universal milling application of steel (up to HRC<=48), stainless steel and cast iron.
KMG405	PVD coated carbide substrate for high performance milling application of steel (up to HRC <55), stainless steel, super alloy material and cast iron. High wear resistance and toughness for a wide application field.
KMG555	PVD coated carbide substrate for hard milling application of steel (HRC 55–68), highest wear resistance and toughness for best cutting result.
KMG309	PVD coated carbide substrate for non ferrous materials. High wear resistance even in abrasive materials.

Uncoated cemented carbide

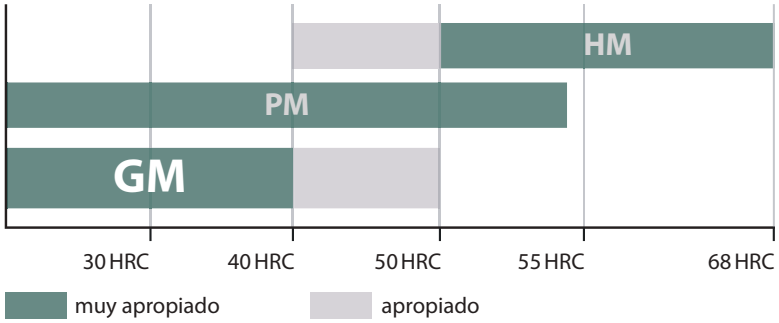
Grade	Grade description
YK30F	Uncoated K30 carbide substrate for steel, stainless steel, cast iron and non ferrous materials.
YK40F	Uncoated K20–K30/N20–N30 carbide substrate for cast iron and non ferrous materials.

GM Serie

Para el mecanizado general

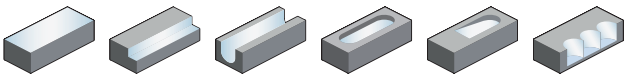
- Para el mecanizado de acero, de hasta como máximo 50 HRC, y fundiciones e incluso materiales de alta resistencia térmica.
- Hélice puntiaguda con alta estabilidad de filo. Desbastado y acabado con vida de la herramienta elevada.
- Fresa integral, fresa de punta esférica, fresa toroidal, fresa de desbaste y fresa mini
- Rango de diámetros, 0,3–20,0 mm

Ámbitos de aplicación en el mecanizado de acero

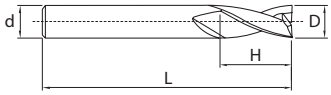


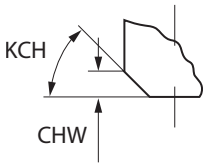
End mill Semi-finishing

5501R302GM



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm] D	d (h6)	H	L	KCH	CHW	Teeth	Grade/Precio KMG303/€	YK30F/€
5501R302GM-0300		3	6	4	50	0	0	2	10.4	7.40
5501R302GM-0400		4	6	5	54	0	0	2	11.1	8.10
5501R302GM-0500		5	6	6	54	0	0	2	11.1	8.10
5501R302GM-0600		6	6	7	54	45	0,10	2	11.1	8.10
5501R302GM-0800		8	8	9	58	45	0,10	2	15.3	11.1
5501R302GM-1000		10	10	11	66	45	0,10	2	21.1	16.1
5501R302GM-1200		12	12	12	73	45	0,10	2	29.6	23.5
5501R302GM-1400		14	14	14	75	45	0,15	2	40.7	33.1
5501R302GM-1600		16	16	16	82	45	0,15	2	51.2	41.5
5501R302GM-1800		18	18	18	84	45	0,15	2	63.3	51.6
5501R302GM-2000		20	20	20	92	45	0,15	2	84.4	72.1

● Ex stock ○ On demand
✻ With internal cooling

Application field

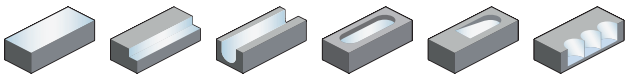
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

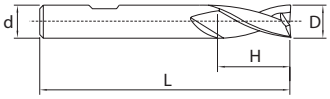
System code B258 Cutting data B422 Nonstandard order B461

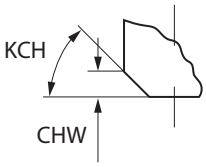
End mill Semi-finishing

5601R302GM



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm]						Teeth	Grade/Precio	
		D	d (h6)	H	L	KCH	CHW		KMG303/€	YK30F/€
5601R302GM-0300		3	6	4	50	0	0	2	***11.1***	***8.20***
5601R302GM-0400		4	6	5	54	0	0	2	***11.1***	***8.20***
5601R302GM-0500		5	6	6	54	0	0	2	***11.1***	***8.20***
5601R302GM-0600		6	6	7	54	45	0,10	2	***11.1***	***8.20***
5601R302GM-0800		8	8	9	58	45	0,10	2	***15.3***	***11.1***
5601R302GM-1000		10	10	11	66	45	0,10	2	***21.1***	***18.9***
5601R302GM-1200		12	12	12	73	45	0,10	2	***30.5***	***24.6***
5601R302GM-1400		14	14	14	75	45	0,15	2	***41.5***	***33.9***
5601R302GM-1600		16	16	16	82	45	0,15	2	***51.2***	***41.5***
5601R302GM-1800		18	18	18	84	45	0,15	2	***63.3***	***51.6***
5601R302GM-2000		20	20	20	92	45	0,15	2	***84.4***	***72.1***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

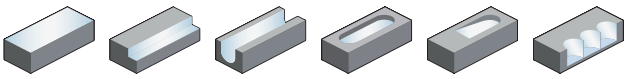
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

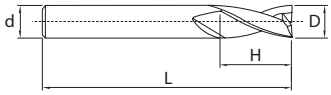
End mill long cutting edge

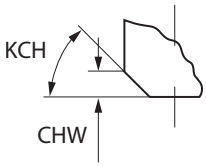
Semi-finishing

5502R302GM



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm]						Teeth	Grade/Precio	
		D	d (h6)	H	L	KCH	CHW		KMG303/€	YK30F/€
5502R302GM-0100		1	3	2	38	0	0	2	8.30	6.90
5502R302GM-0150		1.5	3	3	38	0	0	2	8.30	6.90
5502R302GM-0200		2	6	6	57	0	0	2	11.2	8.20
5502R302GM-0250		2.5	6	7	57	0	0	2	11.2	8.20
5502R302GM-0280		2.8	6	7	57	0	0	2	11.2	8.20
5502R302GM-0300		3	6	7	57	0	0	2	11.2	8.20
5502R302GM-0350		3.5	6	7	57	0	0	2	11.6	9.30
5502R302GM-0380		3.8	6	8	57	0	0	2	11.6	9.30
5502R302GM-0400		4	6	8	57	0	0	2	11.6	9.30
5502R302GM-0450		4.5	6	8	57	0	0	2	11.6	9.30
5502R302GM-0480		4.8	6	8	57	0	0	2	11.6	9.30
5502R302GM-0500		5	6	10	57	0	0	2	11.6	9.30
5502R302GM-0550		5.5	6	10	57	0	0	2	11.6	9.30
5502R302GM-0575		5.75	6	10	57	0	0	2	11.6	9.30
5502R302GM-0600		6	6	10	57	45	0,10	2	11.6	9.30
5502R302GM-0675		6.75	8	13	63	45	0,10	2	15.7	11.5
5502R302GM-0700		7	8	13	63	45	0,10	2	15.7	11.5
5502R302GM-0750		7.5	8	16	63	45	0,10	2	15.7	11.5
5502R302GM-0775		7.75	8	16	63	45	0,10	2	15.7	11.5
5502R302GM-0800		8	8	16	63	45	0,10	2	14.4	10.3
5502R302GM-0870		8.7	10	16	72	45	0,10	2	24.2	19.3
5502R302GM-0900		9	10	16	72	45	0,10	2	24.2	19.3
5502R302GM-0950		9.5	10	16	72	45	0,10	2	24.2	19.3
5502R302GM-1000		10	10	19	72	45	0,10	2	21.2	18.9
5502R302GM-1100		11	12	22	83	45	0,10	2	32.7	26.3
5502R302GM-1170		11.7	12	22	83	45	0,10	2	32.7	26.3
5502R302GM-1200		12	12	22	83	45	0,10	2	30.5	24.6
5502R302GM-1370		13.7	14	22	83	45	0,10	2	46.6	39.1
5502R302GM-1400		14	14	22	83	45	0,15	2	46.6	39.1
5502R302GM-1500		15	16	26	92	45	0,15	2	57.5	49.1
5502R302GM-1570		15.7	16	26	92	45	0,15	2	57.6	49.1
5502R302GM-1600		16	16	26	92	45	0,15	2	52.3	42.0
5502R302GM-1700		17	18	26	92	45	0,15	2	79.8	70.3
5502R302GM-1800		18	18	26	92	45	0,15	2	69.4	60.0

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

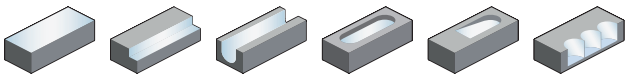
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

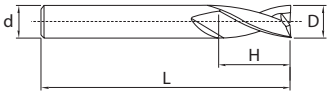
End mill long cutting edge

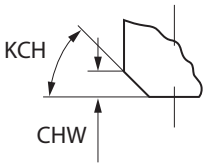
Semi-finishing

5502R302GM



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm]						Teeth	Grade/Precio	
		D	d (h6)	H	L	KCH	CHW		KMG303/€	YK30F/€
5502R302GM-2000		20	20	32	104	45	0,15	2	***91.5***	***82.4***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

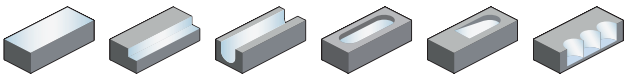
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

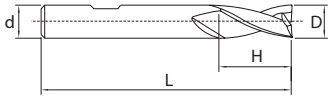
End mill long cutting edge

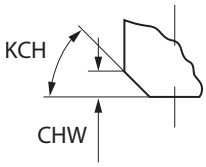
Semi-finishing

5602R302GM



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm]						Teeth	Grade/Precio	
		D	d (h6)	H	L	KCH	CHW		KMG303/€	YK30F/€
5602R302GM-0200		2	6	6	57	0	0	2	11.5	9.30
5602R302GM-0250		2.5	6	7	57	0	0	2	11.5	9.30
5602R302GM-0280		2.8	6	7	57	0	0	2	11.5	9.30
5602R302GM-0300		3	6	7	57	0	0	2	11.5	9.30
5602R302GM-0350		3.5	6	7	57	0	0	2	11.5	9.30
5602R302GM-0380		3.8	6	8	57	0	0	2	11.5	9.30
5602R302GM-0400		4	6	8	57	0	0	2	11.5	9.30
5602R302GM-0450		4.5	6	8	57	0	0	2	11.5	9.30
5602R302GM-0480		4.8	6	8	57	0	0	2	11.5	9.30
5602R302GM-0500		5	6	10	57	0	0	2	11.5	9.30
5602R302GM-0550		5.5	6	10	57	0	0	2	11.5	9.30
5602R302GM-0575		5.75	6	10	57	0	0	2	11.5	9.30
5602R302GM-0600		6	6	10	57	45	0,10	2	11.5	9.30
5602R302GM-0700		7	8	13	63	45	0,10	2	15.7	13.0
5602R302GM-0750		7.5	8	16	63	45	0,10	2	15.7	13.0
5602R302GM-0775		7.75	8	16	63	45	0,10	2	15.7	13.0
5602R302GM-0800		8	8	16	63	45	0,10	2	14.4	13.0
5602R302GM-0870		8.7	10	16	72	45	0,10	2	24.2	19.2
5602R302GM-0900		9	10	16	72	45	0,10	2	24.2	19.2
5602R302GM-1000		10	10	19	72	45	0,10	2	21.8	17.3
5602R302GM-1170		11.7	12	22	83	45	0,10	2	32.7	26.2
5602R302GM-1200		12	12	22	83	45	0,10	2	30.5	24.1
5602R302GM-1370		13.7	14	22	83	45	0,10	2	46.6	37.8
5602R302GM-1400		14	14	22	83	45	0,15	2	46.6	37.8
5602R302GM-1570		15.7	16	26	92	45	0,15	2	57.6	47.9
5602R302GM-1600		16	16	26	92	45	0,15	2	52.3	42.6
5602R302GM-1800		18	18	26	92	45	0,15	2	73.7	62.0
5602R302GM-2000		20	20	32	104	45	0,15	2	91.5	77.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

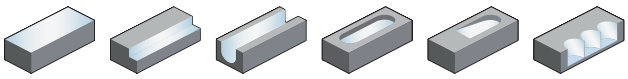
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

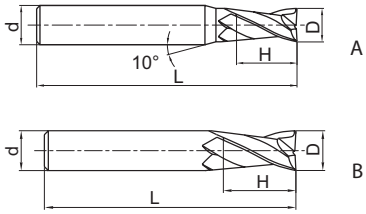
System code B258 Cutting data B422 Nonstandard order B461

End mill Semi-finishing

GM-2E



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-2E-D1.0S		1	4	3	50	2	A	10 .8
GM-2E-D1.5S		1.5	4	4	50	2	A	10 .8
GM-2E-D2.0S		2	4	6	50	2	A	10 .8
GM-2E-D2.5S		2.5	4	8	50	2	A	10 .8
GM-2E-D3.0S		3	4	8	50	2	A	10 .8
GM-2E-D4.0S		4	4	11	50	2	B	10 .8
GM-2E-D1.0		1	6	3	50	2	A	12 .7
GM-2E-D1.5		1.5	6	4	50	2	A	12 .7
GM-2E-D2.0		2	6	6	50	2	A	12 .7
GM-2E-D2.5		2.5	6	8	50	2	A	12 .7
GM-2E-D3.0		3	6	8	50	2	A	12 .7
GM-2E-D3.5		3.5	6	10	50	2	A	12 .7
GM-2E-D4.0		4	6	11	50	2	A	12 .7
GM-2E-D4.5		4.5	6	11	50	2	A	12 .7
GM-2E-D5.0		5	6	13	50	2	A	12 .7
GM-2E-D5.5		5.5	6	16	50	2	A	12 .7
GM-2E-D6.0		6	6	16	50	2	B	12 .7
GM-2E-D7.0		7	8	20	60	2	A	20 .1
GM-2E-D8.0		8	8	20	60	2	B	20 .1
GM-2E-D9.0		9	10	22	75	2	A	28 .4
GM-2E-D10.0		10	10	25	75	2	B	25 .8
GM-2E-D11.0		11	12	26	75	2	A	39 .6
GM-2E-D12.0		12	12	30	75	2	B	37 .8
GM-2E-D14.0		14	14	32	75	2	B	51 .4
GM-2E-D16.0		16	16	45	100	2	B	78 .0
GM-2E-D18.0		18	18	45	100	2	B	105.9
GM-2E-D20.0		20	20	45	100	2	B	121.3

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

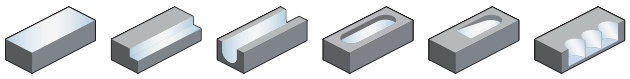
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

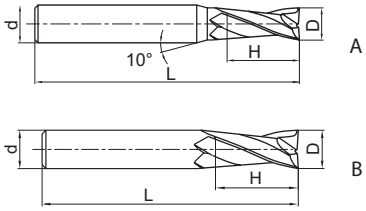
End mill long cutting edge

Semi-finishing

GM-2EL



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-2EL-D3.0		3	6	12	75	2	A	15.10
GM-2EL-D4.0		4	6	15	75	2	A	15.10
GM-2EL-D5.0		5	6	20	75	2	A	15.10
GM-2EL-D6.0		6	6	20	75	2	B	16.00
GM-2EL-D8.0		8	8	25	100	2	B	28.40
GM-2EL-D10.0		10	10	30	100	2	B	34.30
GM-2EL-D12.0		12	12	35	100	2	B	51.30
GM-2EL-D14.0		14	14	40	100	2	B	77.70
GM-2EL-D16.0		16	16	50	150	2	B	118.2
GM-2EL-D20.0		20	20	55	150	2	B	180.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

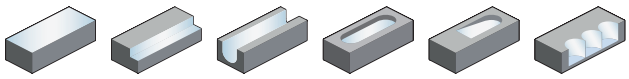
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

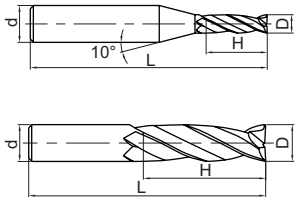
End mill extra long cutting edge

Semi-finishing

GM-2EX



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-2EX-D3.0		3	6	20	75	2	A	17.80
GM-2EX-D4.0		4	6	25	75	2	A	17.80
GM-2EX-D5.0		5	6	30	75	2	A	17.80
GM-2EX-D6.0		6	6	30	75	2	B	17.80
GM-2EX-D8.0		8	8	40	100	2	B	32.70
GM-2EX-D10.0		10	10	50	110	2	B	44.20
GM-2EX-D12.0		12	12	50	110	2	B	59.70
GM-2EX-D16.0		16	16	70	150	2	B	135.4
GM-2EX-D20.0		20	20	75	150	2	B	209.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

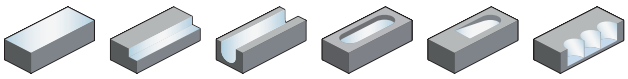
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

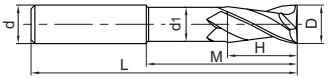
End mill short cutting edge

Semi-finishing

GM-2EFP



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	d_1	H	M	L		€
GM-2EFP-D6.0		6	6	5.8	9	30	30	2	*18.90*
GM-2EFP-D8.0		8	8	7.8	12	40	40	2	*31.10*
GM-2EFP-D10.0		10	10	9.6	15	50	50	2	*42.30*
GM-2EFP-D12.0		12	12	11.5	18	50	50	2	*56.90*
GM-2EFP-D16.0		16	16	15.5	24	50	50	2	*132.7*

● Ex stock ○ On demand
✻ With internal cooling

Application field

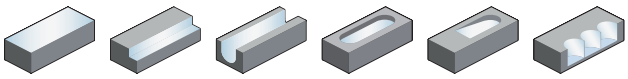
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

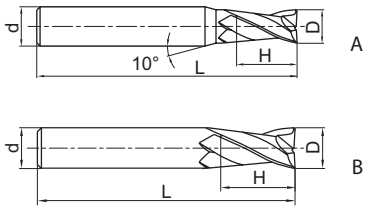
System code B258 Cutting data B422 Nonstandard order B461

End mill Semi-finishing

GM-2F



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-2F-D1.0S		1	4	3	50	2	A	----
GM-2F-D1.5S		1.5	4	4	50	2	A	----
GM-2F-D2.0S		2	4	6	50	2	A	----
GM-2F-D2.5S		2.5	4	8	50	2	A	----
GM-2F-D3.0S		3	4	8	50	2	A	----
GM-2F-D4.0S		4	4	11	50	2	B	----
GM-2F-D1.0		1	6	3	50	2	A	12.7
GM-2F-D1.5		1.5	6	4	50	2	A	16.8
GM-2F-D2.0		2	6	6	50	2	A	12.7
GM-2F-D2.5		2.5	6	8	50	2	A	14.0
GM-2F-D3.0		3	6	8	50	2	A	12.7
GM-2F-D3.5		3.5	6	10	50	2	A	12.7
GM-2F-D4.0		4	6	11	50	2	A	14.0
GM-2F-D4.5		4.5	6	11	50	2	A	14.0
GM-2F-D5.0		5	6	13	50	2	A	14.0
GM-2F-D5.5		5.5	6	16	50	2	A	14.0
GM-2F-D6.0		6	6	16	50	2	B	14.0
GM-2F-D7.0		7	8	20	60	2	A	23.7
GM-2F-D8.0		8	8	20	60	2	B	23.7
GM-2F-D9.0		9	10	22	75	2	A	29.8
GM-2F-D10.0		10	10	25	75	2	B	29.9
GM-2F-D11.0		11	12	26	75	2	A	46.6
GM-2F-D12.0		12	12	30	75	2	B	46.6
GM-2F-D14.0		14	14	32	75	2	B	54.5
GM-2F-D16.0		16	16	45	100	2	B	82.7
GM-2F-D18.0		18	18	45	100	2	B	99.6
GM-2F-D20.0		20	20	45	100	2	B	----

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

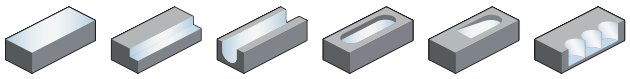
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

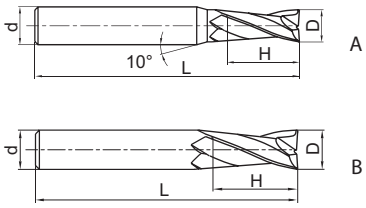
End mill long cutting edge

Semi-finishing

GM-2FL



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-2FL-D3.0		3	6	12	75	2	A	----
GM-2FL-D4.0		4	6	15	75	2	A	----
GM-2FL-D5.0		5	6	20	75	2	A	19 .7
GM-2FL-D6.0		6	6	20	75	2	B	18 .6
GM-2FL-D8.0		8	8	25	100	2	B	31 .7
GM-2FL-D10.0		10	10	30	100	2	B	43 .1
GM-2FL-D12.0		12	12	35	100	2	B	58 .0
GM-2FL-D14.0		14	14	40	100	2	B	79 .3
GM-2FL-D16.0		16	16	50	150	2	B	----
GM-2FL-D20.0		20	20	55	150	2	B	209.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

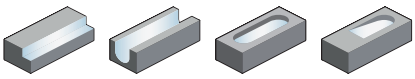
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

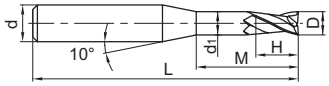
System code B258 Cutting data B422 Nonstandard order B461

End mill Semi-finishing

GM-2EP



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	d_1	H	M	L		€
GM-2EP-D0.5-M04		0.5	4	0.45	0.7	4	50	2	13.5
GM-2EP-D0.5-M06		0.5	4	0.45	0.7	6	50	2	13.5
GM-2EP-D0.5-M08		0.5	4	0.45	0.7	8	50	2	13.5
GM-2EP-D0.8-M04		0.8	4	0.75	1.2	4	50	2	13.5
GM-2EP-D0.8-M06		0.8	4	0.75	1.2	6	50	2	13.5
GM-2EP-D0.8-M08		0.8	4	0.75	1.2	8	50	2	13.5
GM-2EP-D0.8-M10		0.8	4	0.75	1.2	10	50	2	13.5
GM-2EP-D1.0-M04		1	4	0.95	1.5	4	50	2	13.5
GM-2EP-D1.0-M06		1	4	0.95	1.5	6	50	2	12.9
GM-2EP-D1.0-M08		1	4	0.95	1.5	8	50	2	12.9
GM-2EP-D1.0-M10		1	4	0.95	1.5	10	50	2	12.9
GM-2EP-D1.0-M12		1	4	0.95	1.5	12	50	2	12.9
GM-2EP-D1.0-M14		1	4	0.95	1.5	14	50	2	12.9
GM-2EP-D1.2-M06		1.2	4	1.15	1.8	6	50	2	12.9
GM-2EP-D1.2-M08		1.2	4	1.15	1.8	8	50	2	12.9
GM-2EP-D1.2-M10		1.2	4	1.15	1.8	10	50	2	12.9
GM-2EP-D1.2-M12		1.2	4	1.15	1.8	12	50	2	12.9
GM-2EP-D1.5-M06		1.5	4	1.45	2.3	6	50	2	12.9
GM-2EP-D1.5-M08		1.5	4	1.45	2.3	8	50	2	12.9
GM-2EP-D1.5-M10		1.5	4	1.45	2.3	10	50	2	12.9
GM-2EP-D1.5-M12		1.5	4	1.45	2.3	12	50	2	12.9
GM-2EP-D1.5-M14		1.5	4	1.45	2.3	14	50	2	12.9
GM-2EP-D2.0-M06		2	4	1.95	3	6	50	2	12.9
GM-2EP-D2.0-M08		2	4	1.95	3	8	50	2	12.9
GM-2EP-D2.0-M10		2	4	1.95	3	10	50	2	12.9
GM-2EP-D2.0-M12		2	4	1.95	3	12	50	2	12.9
GM-2EP-D2.0-M14		2	4	1.95	3	14	50	2	12.9
GM-2EP-D2.0-M16		2	4	1.95	3	16	50	2	12.9
GM-2EP-D2.5-M08		2.5	4	2.4	3.7	8	50	2	11.6
GM-2EP-D2.5-M10		2.5	4	2.4	3.7	10	50	2	11.6
GM-2EP-D2.5-M12		2.5	4	2.4	3.7	12	50	2	11.6
GM-2EP-D2.5-M14		2.5	4	2.4	3.7	14	50	2	11.6
GM-2EP-D2.5-M16		2.5	4	2.4	3.7	16	60	2	11.6
GM-2EP-D2.5-M18		2.5	4	2.4	3.7	18	60	2	11.6
GM-2EP-D2.5-M20		2.5	4	2.4	3.7	20	60	2	11.6
GM-2EP-D3.0-M06		3	6	2.85	4.5	6	50	2	11 .9
GM-2EP-D3.0-M08		3	6	2.85	4.5	8	50	2	11.9

● Ex stock ○ On demand
✻ With internal cooling

Application field

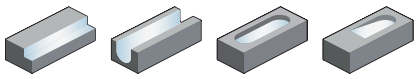
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

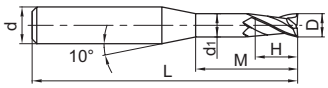
System code B258 Cutting data B422 Nonstandard order B461

End mill Semi-finishing

GM-2EP



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	d_1	H	M	L		€
GM-2EP-D3.0-M10		3	6	2.85	4.5	10	50	2	11.9
GM-2EP-D3.0-M12		3	6	2.85	4.5	12	50	2	11.9
GM-2EP-D3.0-M14		3	6	2.85	4.5	14	60	2	11.9
GM-2EP-D3.0-M16		3	6	2.85	4.5	16	60	2	11.9
GM-2EP-D3.0-M18		3	6	2.85	4.5	18	60	2	11.9
GM-2EP-D3.0-M20		3	6	2.85	4.5	20	60	2	11.9
GM-2EP-D4.0-M12		4	6	3.85	6	12	50	2	11.9
GM-2EP-D4.0-M14		4	6	3.85	6	14	60	2	11.9
GM-2EP-D4.0-M16		4	6	3.85	6	16	60	2	11.9
GM-2EP-D4.0-M20		4	6	3.85	6	20	60	2	11.9
GM-2EP-D4.0-M25		4	6	3.85	6	25	60	2	11.9
GM-2EP-D5.0-M16		5	6	4.85	7.5	16	60	2	11.9
GM-2EP-D5.0-M25		5	6	4.85	7.5	25	70	2	12.9

● Ex stock ○ On demand
✻ With internal cooling

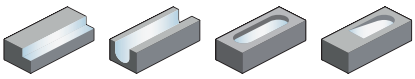
Application field					
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

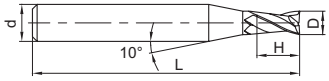
System code B258 Cutting data B422 Nonstandard order B461

End mill Semi-finishing

GM-2ES



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]				Teeth	Precio
		D	d (h6)	H	L		€
GM-2ES-D0.3		0.3	4	0.6	50	2	13.5
GM-2ES-D0.4		0.4	4	0.8	50	2	13.5
GM-2ES-D0.5		0.5	4	1	50	2	13.5
GM-2ES-D0.6		0.6	4	1.2	50	2	13.5
GM-2ES-D0.7		0.7	4	1.4	50	2	13.5
GM-2ES-D0.8		0.8	4	1.6	50	2	13.5
GM-2ES-D0.9		0.9	4	1.8	50	2	13.5
GM-2ES-D1.0		1	4	2	50	2	12.4
GM-2ES-D1.1		1.1	4	2	50	2	12.4
GM-2ES-D1.2		1.2	4	2.5	50	2	12.4
GM-2ES-D1.3		1.3	4	2.5	50	2	12.4
GM-2ES-D1.4		1.4	4	3	50	2	12.4
GM-2ES-D1.5		1.5	4	3	50	2	12.4
GM-2ES-D1.6		1.6	4	3.5	50	2	12.4
GM-2ES-D1.7		1.7	4	3.5	50	2	12.4
GM-2ES-D1.8		1.8	4	4	50	2	12.4
GM-2ES-D1.9		1.9	4	4	50	2	12.4
GM-2ES-D2.0		2	4	4	50	2	12.4
GM-2ES-D2.1		2.1	4	4	50	2	11.4
GM-2ES-D2.2		2.2	4	4.5	50	2	11.4
GM-2ES-D2.3		2.3	4	4.5	50	2	11.4
GM-2ES-D2.4		2.4	4	5	50	2	11.4
GM-2ES-D2.5		2.5	4	5	50	2	11.4
GM-2ES-D2.6		2.6	4	5	50	2	11.4
GM-2ES-D2.7		2.7	4	5.5	50	2	11.4
GM-2ES-D2.8		2.8	4	5.5	50	2	11.4
GM-2ES-D2.9		2.9	4	6	50	2	11.4
GM-2ES-D3.0		3	4	6	50	2	11.4
							11.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

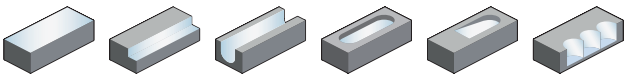
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

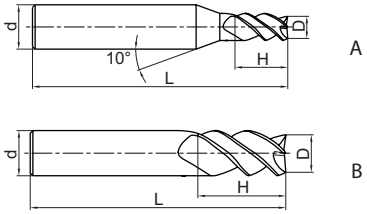
System code B258 Cutting data B422 Nonstandard order B461

End mill Semi-finishing

GM-3E



– Factory standard
– Centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-3E-D1.0S		1	4	3	50	3	A	11.0
GM-3E-D1.5S		1.5	4	4	50	3	A	11.0
GM-3E-D2.0S		2	4	6	50	3	A	11.0
GM-3E-D2.5S		2.5	4	8	50	3	A	11.0
GM-3E-D3.0S		3	4	8	50	3	A	11.0
GM-3E-D4.0S		4	4	11	50	3	B	11.0
GM-3E-D1.0		1	6	3	50	3	A	14.4
GM-3E-D1.5		1.5	6	4	50	3	A	14.4
GM-3E-D2.0		2	6	6	50	3	A	14.4
GM-3E-D2.5		2.5	6	8	50	3	A	14.4
GM-3E-D3.0		3	6	8	50	3	A	14.4
GM-3E-D3.5		3.5	6	10	50	3	A	14.4
GM-3E-D4.0		4	6	11	50	3	A	14.4
GM-3E-D4.5		4.5	6	11	50	3	A	14.4
GM-3E-D5.0		5	6	13	50	3	A	14.4
GM-3E-D5.5		5.5	6	16	50	3	A	14.4
GM-3E-D6.0		6	6	16	50	3	B	14.4
GM-3E-D7.0		7	8	20	60	3	A	20.1
GM-3E-D8.0		8	8	20	60	3	B	20.1
GM-3E-D9.0		9	10	22	75	3	A	28.4
GM-3E-D10.0		10	10	25	75	3	B	28.4
GM-3E-D11.0		11	12	26	75	3	A	39.6
GM-3E-D12.0		12	12	30	75	3	B	39.6
GM-3E-D14.0		14	14	32	75	3	B	51.4
GM-3E-D16.0		16	16	45	100	3	B	78.0
GM-3E-D18.0		18	18	45	100	3	B	113.5
GM-3E-D20.0		20	20	45	100	3	B	127.5

● Ex stock ○ On demand
✻ With internal cooling

Application field

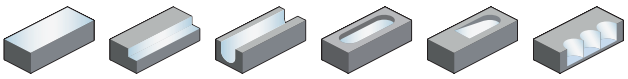
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

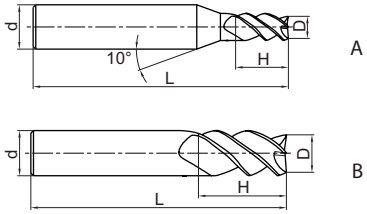
System code B258 Cutting data B422 Nonstandard order B461

End mill long cutting edge — Semi-finishing

GM-3EL



– Factory standard
– Centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-3EL-D3.0		3	6	12	75	3	A	17.4
GM-3EL-D4.0		4	6	15	75	3	A	17.4
GM-3EL-D5.0		5	6	20	75	3	A	17.4
GM-3EL-D6.0		6	6	20	75	3	B	17.4
GM-3EL-D8.0		8	8	25	100	3	B	31.1
GM-3EL-D10.0		10	10	30	100	3	B	39.7
GM-3EL-D12.0		12	12	35	100	3	B	55.0
GM-3EL-D14.0		14	14	40	100	3	B	77.7
GM-3EL-D16.0		16	16	50	150	3	B	132.7
GM-3EL-D20.0		20	20	55	150	3	B	205.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

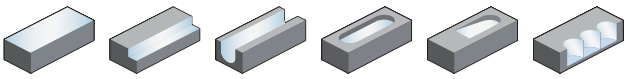
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

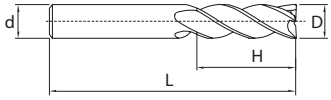
System code B258 Cutting data B422 Nonstandard order B461

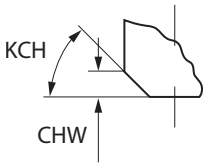
End mill Semi-finishing

5501R303GM



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm] D	d (h6)	H	L	KCH	CHW	Teeth	Grade/Precio KMG303/€	YK30F/€
5501R303GM-0300		3	6	4	50	0	0	3	11.1	8.10
5501R303GM-0400		4	6	5	54	0	0	3	11.1	8.10
5501R303GM-0500		5	6	6	54	0	0	3	11.1	8.10
5501R303GM-0600		6	6	7	54	45	0,10	3	11.1	8.10
5501R303GM-0800		8	8	9	58	45	0,10	3	15.3	11.1
5501R303GM-1000		10	10	11	66	45	0,10	3	21.1	16.1
5501R303GM-1200		12	12	12	73	45	0,10	3	29.9	23.5
5501R303GM-1400		14	14	14	75	45	0,15	3	40.7	33.1
5501R303GM-1600		16	16	16	82	45	0,15	3	51.2	41.5
5501R303GM-1800		18	18	18	84	45	0,15	3	63.3	51.6
5501R303GM-2000		20	20	20	92	45	0,15	3	84.4	72.1

● Ex stock ○ On demand
✻ With internal cooling

Application field

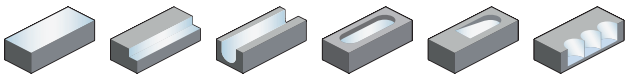
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

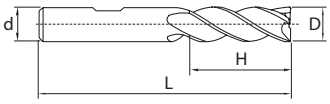
System code B258 Cutting data B422 Nonstandard order B461

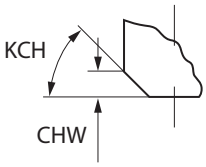
End mill Semi-finishing

5601R303GM



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm]						Teeth	Grade/Precio	
		D	d (h6)	H	L	KCH	CHW		KMG303/€	YK30F/€
5601R303GM-0300		3	6	4	50	0	0	3	11.1	8.20
5601R303GM-0400		4	6	5	54	0	0	3	11.1	8.20
5601R303GM-0500		5	6	6	54	0	0	3	11.1	8.20
5601R303GM-0600		6	6	7	54	45	0,10	3	11.1	11.1
5601R303GM-0800		8	8	9	58	45	0,10	3	15.3	18.9
5601R303GM-1000		10	10	11	66	45	0,10	3	21.1	16.1
5601R303GM-1200		12	12	12	73	45	0,10	3	30.5	24.6
5601R303GM-1400		14	14	14	75	45	0,15	3	41.5	33.9
5601R303GM-1600		16	16	16	82	45	0,15	3	51.2	41.5
5601R303GM-1800		18	18	18	84	45	0,15	3	63.3	51.6
5601R303GM-2000		20	20	20	92	45	0,15	3	84.4	72.1

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

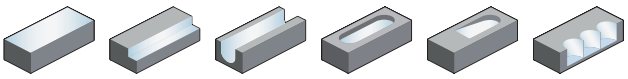
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

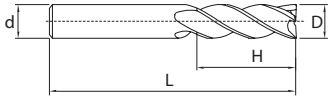
End mill long cutting edge

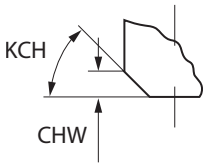
Semi-finishing

5502R303GM



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm]						Teeth	Grade/Precio	
		D	d (h6)	H	L	KCH	CHW		KMG303/€	YK30F/€
5502R303GM-0300		3	6	7	57	0	0	3	***11.2***	***9.30***
5502R303GM-0400		4	6	8	57	0	0	3	***11.2***	***9.30***
5502R303GM-0500		5	6	10	57	0	0	3	***11.2***	***8.20***
5502R303GM-0600		6	6	10	57	45	0,10	3	***11.2***	***8.20***
5502R303GM-0800		8	8	16	63	45	0,10	3	***14.4***	***10.3***
5502R303GM-1000		10	10	19	72	45	0,10	3	***21.2***	***18.9***
5502R303GM-1200		12	12	22	83	45	0,10	3	***30.5***	***24.6***
5502R303GM-1400		14	14	22	83	45	0,15	3	***46.6***	***39.1***
5502R303GM-1600		16	16	26	92	45	0,15	3	***52.3***	***42.0***
5502R303GM-1800		18	18	26	92	45	0,15	3	***69.4***	***60.0***
5502R303GM-2000		20	20	32	104	45	0,15	3	***91.5***	***82.4***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

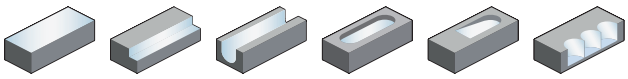
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

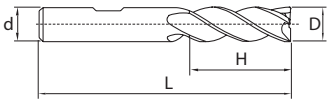
End mill long cutting edge

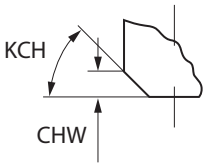
Semi-finishing

5602R303GM



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm]						Teeth	Grade/Precio	
		D	d (h6)	H	L	KCH	CHW		KMG303/€	YK30F/€
5602R303GM-0300		3	6	7	57	0	0	3	***11.5***	***9.30***
5602R303GM-0400		4	6	8	57	0	0	3	***11.5***	***9.30***
5602R303GM-0500		5	6	10	57	0	0	3	***11.5***	***8.20***
5602R303GM-0600		6	6	10	57	45	0,10	3	***11.5***	***8.20***
5602R303GM-0800		8	8	16	63	45	0,10	3	***14.5***	***13.0***
5602R303GM-1000		10	10	19	72	45	0,10	3	***21.8***	***17.3***
5602R303GM-1200		12	12	22	83	45	0,10	3	***30.5***	***24.1***
5602R303GM-1400		14	14	22	83	45	0,15	3	***46.6***	***37.8***
5602R303GM-1600		16	16	26	92	45	0,15	3	***52.3***	***42.6***
5602R303GM-1800		18	18	26	92	45	0,15	3	***73.7***	***62.0***
5602R303GM-2000		20	20	32	104	45	0,15	3	***91.5***	***77.8***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

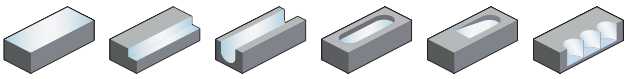
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

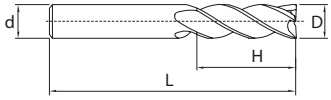
End mill long cutting edge

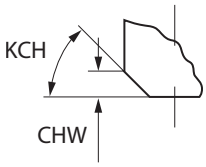
Semi-finishing

5502R453GM



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 45°





Article	✻	Dimensions [mm] D	d (h6)	H	L	KCH	CHW	Teeth	Precio €
5502R453GM-0300		3	6	7	57	0	0	3	13.4
5502R453GM-0400		4	6	8	57	0	0	3	13.4
5502R453GM-0500		5	6	10	57	0	0	3	13.4
5502R453GM-0600		6	6	10	57	45	0,10	3	13.4
5502R453GM-0800		8	8	16	63	45	0,10	3	19.1
5502R453GM-1000		10	10	19	72	45	0,10	3	27.6
5502R453GM-1200		12	12	22	83	45	0,10	3	38.5
5502R453GM-1400		14	14	22	83	45	0,15	3	53.4
5502R453GM-1600		16	16	26	92	45	0,15	3	71.1
5502R453GM-1800		18	18	26	92	45	0,15	3	87.2
5502R453GM-2000		20	20	32	104	45	0,15	3	118.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

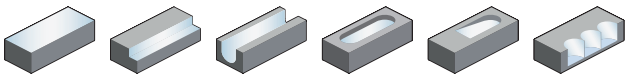
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

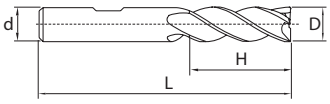
End mill long cutting edge

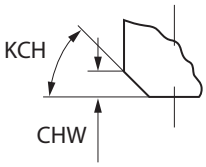
Semi-finishing

5602R453GM



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 45°





Article	✻	Dimensions [mm]						Teeth	Grade/Precio	
		D	d (h6)	H	L	KCH	CHW		KMG303/€	KMG405/€
5602R453GM-0300		3	6	7	57	0	0	3	***11.2***	***13.4***
5602R453GM-0400		4	6	8	57	0	0	3	***11.2***	***13.4***
5602R453GM-0500		5	6	10	57	0	0	3	***11.0***	***13.4***
5602R453GM-0600		6	6	10	57	45	0,10	3	***11.0***	***13.4***
5602R453GM-0800		8	8	16	63	45	0,10	3	***15.6***	***19.1***
5602R453GM-1000		10	10	19	72	45	0,10	3	***22.5***	***27.6***
5602R453GM-1200		12	12	22	83	45	0,10	3	***32.8***	***38.5***
5602R453GM-1400		14	14	22	83	45	0,15	3	***43.5***	***52.4***
5602R453GM-1600		16	16	26	92	45	0,15	3	***57.2***	***71.1***
5602R453GM-1800		18	18	26	92	45	0,15	3	***81.2***	***87.2***
5602R453GM-2000		20	20	32	104	45	0,15	3	***97.1***	***118.6***

● Ex stock ○ On demand
✻ With internal cooling

Application field

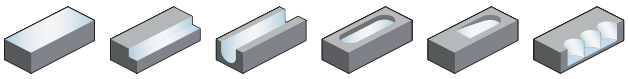
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

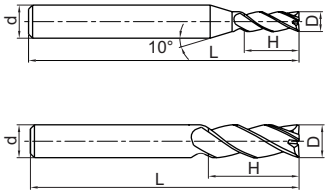
System code B258 Cutting data B422 Nonstandard order B461

End mill Semi-finishing

GM-4F-G



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-4F-D1.0S-G		1	4	3	50	4	A	------
GM-4F-D1.5S-G		1.5	4	4	50	4	A	------
GM-4F-D2.0S-G		2	4	6	50	4	A	14.5
GM-4F-D2.5S-G		2.5	4	8	50	4	A	-----
GM-4F-D3.0S-G		3	4	8	50	4	A	-----
GM-4F-D4.0S-G		4	4	11	50	4	B	14.5
GM-4F-D1.0-G		1	6	3	50	4	A	15.1
GM-4F-D1.5-G		1.5	6	4	50	4	A	15.1
GM-4F-D2.0-G		2	6	6	50	4	A	15.1
GM-4F-D2.5-G		2.5	6	8	50	4	A	15.1
GM-4F-D3.0-G		3	6	8	50	4	A	14.5
GM-4F-D3.5-G		3.5	6	10	50	4	A	15.1
GM-4F-D4.0-G		4	6	11	50	4	A	15.1
GM-4F-D4.5-G		4.5	6	11	50	4	A	15.1
GM-4F-D5.0-G		5	6	13	50	4	A	15.1
GM-4F-D5.5-G		5.5	6	16	50	4	A	15.1
GM-4F-D6.0-G		6	6	16	50	4	B	15.1
GM-4F-D7.0-G		7	8	20	60	4	A	24.9
GM-4F-D8.0-G		8	8	20	60	4	B	24.9
GM-4F-D9.0-G		9	10	22	75	4	A	35.7
GM-4F-D10.0-G		10	10	25	75	4	B	35.7
GM-4F-D11.0-G		11	12	26	75	4	A	47.5
GM-4F-D12.0-G		12	12	30	75	4	B	47.5
GM-4F-D14.0-G		14	14	32	75	4	B	59.7
GM-4F-D16.0-G		16	16	45	100	4	B	91.8
GM-4F-D18.0-G		18	18	45	100	4	B	145.6
GM-4F-D20.0-G		20	20	45	100	4	B	148.9

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

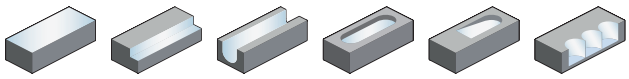
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

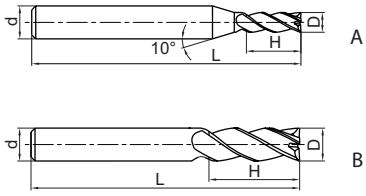
End mill long cutting edge

Semi-finishing

GM-4EL-G



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-4EL-D3.0-G		3	6	12	75	4	A	18.0
GM-4EL-D4.0-G		4	6	15	75	4	A	18.0
GM-4EL-D5.0-G		5	6	20	75	4	A	18.0
GM-4EL-D6.0-G		6	6	20	75	4	B	18.0
GM-4EL-D8.0-G		8	8	25	100	4	B	28.5
GM-4EL-D10.0-G		10	10	30	100	4	B	38.4
GM-4EL-D12.0-G		12	12	35	100	4	B	52.5
GM-4EL-D14.0-G		14	14	40	100	4	B	72.2
GM-4EL-D16.0-G		16	16	50	150	4	B	137.8
GM-4EL-D20.0-G		20	20	55	150	4	B	214.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

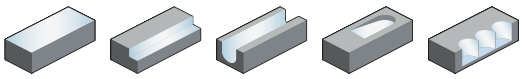
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

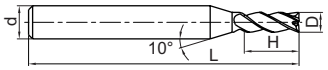
End mill long cutting edge

Semi-finishing

GM-4FL-G



– Factory standard
– Centre cutting
– Helix angle 30°



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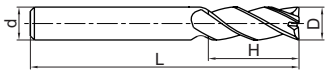


B

Article	✻	Dimensions [mm]				Teeth	Geometry	Precio
		D	d (h6)	H	L			€
GM-4FL-D3.0-G		3	6	12	75	4	A	18.5
GM-4FL-D4.0-G		4	6	15	75	4	A	18.5
GM-4FL-D5.0-G		5	6	20	75	4	A	18.5
GM-4FL-D6.0-G		6	6	20	75	4	B	18.5
GM-4FL-D8.0-G		8	8	25	100	4	B	28.5
GM-4FL-D10.0-G		10	10	30	100	4	B	38.4
GM-4FL-D12.0-G		12	12	35	100	4	B	52.5
GM-4FL-D14.0-G		14	14	40	100	4	B	72.2
GM-4FL-D16.0-G		16	16	50	150	4	B	137.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

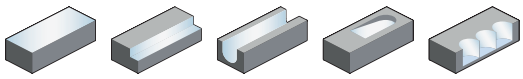
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

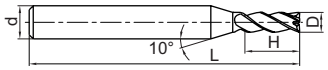
End mill extra long cutting edge

Semi-finishing

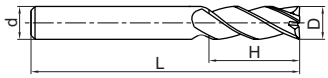
GM-4EX-G



– Factory standard
– Centre cutting
– Helix angle 30°



A



B

Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-4EX-D3.0-G		3	6	20	75	4	A	18.5
GM-4EX-D4.0-G		4	6	25	75	4	A	18.5
GM-4EX-D5.0-G		5	6	30	75	4	A	18.5
GM-4EX-D6.0-G		6	6	30	75	4	B	18.5
GM-4EX-D8.0-G		8	8	40	100	4	B	29.9
GM-4EX-D10.0-G		10	10	50	110	4	B	42.4
GM-4EX-D12.0-G		12	12	50	110	4	B	58.4
GM-4EX-D16.0-G		16	16	70	150	4	B	144.7
GM-4EX-D20.0-G		20	20	75	150	4	B	240.0
GM-4FL-D20.0-G		20	20	55	150	4	B	214.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

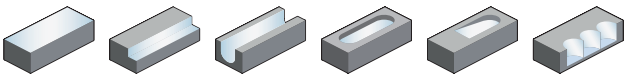
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

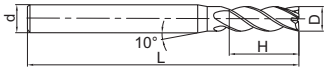
System code B258 Cutting data B422 Nonstandard order B461

End mill Semi-finishing

GM-4E



– Factory standard
– Centre cutting
– Helix angle 45°



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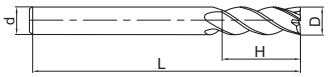


B

Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-4E-D1.0S		1	4	3	50	4	A	11.2
GM-4E-D1.5S		1.5	4	4	50	4	A	11.5
GM-4E-D2.0S		2	4	6	50	4	A	11.2
GM-4E-D2.5S		2.5	4	8	50	4	A	11.2
GM-4E-D3.0S		3	4	8	50	4	A	11.2
GM-4E-D4.0S		4	4	11	50	4	B	11.2
GM-4E-D1.0		1	6	3	50	4	A	13.2
GM-4E-D1.5		1.5	6	4	50	4	A	13.5
GM-4E-D2.0		2	6	6	50	4	A	13.2
GM-4E-D2.5		2.5	6	8	50	4	A	13.2
GM-4E-D3.0		3	6	8	50	4	A	13.2
GM-4E-D3.5		3.5	6	10	50	4	A	13.2
GM-4E-D4.0		4	6	11	50	4	A	13.2
GM-4E-D4.5		4.5	6	11	50	4	A	13.2
GM-4E-D5.0		5	6	13	50	4	A	13.2
GM-4E-D5.5		5.5	6	16	50	4	A	13.2
GM-4E-D6.0		6	6	16	50	4	B	13.2
GM-4E-D7.0		7	8	20	60	4	A	23.7
GM-4E-D8.0		8	8	20	60	4	B	23.7
GM-4E-D9.0		9	10	22	75	4	A	34.7
GM-4E-D10.0		10	10	25	75	4	B	29.6
GM-4E-D11.0		11	12	26	75	4	A	42.4
GM-4E-D12.0		12	12	30	75	4	B	42.4
GM-4E-D14.0		14	14	32	75	4	B	60.4
GM-4E-D16.0		16	16	45	100	4	B	91.8
GM-4E-D18.0		18	18	45	100	4	B	114 .3
GM-4E-D20.0		20	20	45	100	4	B	126.5

● Ex stock ○ On demand
✻ With internal cooling

Application field

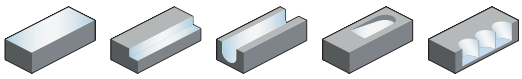
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

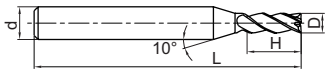
System code B258 Cutting data B422 Nonstandard order B461

End mill | Semi-finishing

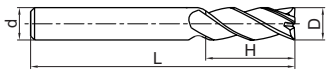
GM-4E-G



– Factory standard
– Centre cutting
– Helix angle 30°



A



B

Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-4E-D1.0S-G		1	4	3	50	4	A	11.2
GM-4E-D1.5S-G		1.5	4	4	50	4	A	11.5
GM-4E-D2.0S-G		2	4	6	50	4	A	11.2
GM-4E-D2.5S-G		2.5	4	8	50	4	A	11.2
GM-4E-D3.0S-G		3	4	8	50	4	A	11.2
GM-4E-D4.0S-G		4	4	11	50	4	B	11.2
GM-4E-D1.0-G		1	6	3	50	4	A	13.2
GM-4E-D1.5-G		1.5	6	4	50	4	A	13.5
GM-4E-D2.0-G		2	6	6	50	4	A	13.2
GM-4E-D2.5-G		2.5	6	8	50	4	A	13.2
GM-4E-D3.0-G		3	6	8	50	4	A	13.2
GM-4E-D3.5-G		3.5	6	10	50	4	A	13.2
GM-4E-D4.0-G		4	6	11	50	4	A	13.2
GM-4E-D4.5-G		4.5	6	11	50	4	A	13.2
GM-4E-D5.0-G		5	6	13	50	4	A	13.2
GM-4E-D5.5-G		5.5	6	16	50	4	A	13.2
GM-4E-D6.0-G		6	6	16	50	4	B	13.2
GM-4E-D7.0-G		7	8	20	60	4	A	23.7
GM-4E-D8.0-G		8	8	20	60	4	B	23.7
GM-4E-D9.0-G		9	10	22	75	4	A	34.7
GM-4E-D10.0-G		10	10	25	75	4	B	29.6
GM-4E-D11.0-G		11	12	26	75	4	A	42.4
GM-4E-D12.0-G		12	12	30	75	4	B	42.4
GM-4E-D14.0-G		14	14	32	75	4	B	60.4
GM-4E-D16.0-G		16	16	45	100	4	B	91.8
GM-4E-D18.0-G		18	18	45	100	4	B	114.3
GM-4E-D20.0-G		20	20	45	100	4	B	126.5

● Ex stock ○ On demand
✻ With internal cooling

Application field

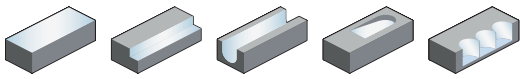
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

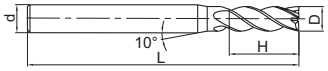
System code B258 | Cutting data B422 | Nonstandard order B461

End mill long cutting edge — Semi-finishing

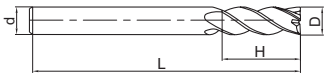
GM-4EL



– Factory standard
– Centre cutting
– Helix angle 45°



A



B

Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
GM-4EL-D3.0		3	6	12	75	4	A	18.0
GM-4EL-D4.0		4	6	15	75	4	A	18.0
GM-4EL-D5.0		5	6	20	75	4	A	18.0
GM-4EL-D6.0		6	6	20	75	4	B	18.0
GM-4EL-D8.0		8	8	25	100	4	B	28.5
GM-4EL-D10.0		10	10	30	100	4	B	38.4
GM-4EL-D12.0		12	12	35	100	4	B	52.5
GM-4EL-D14.0		14	14	40	100	4	B	72.7
GM-4EL-D16.0		16	16	50	150	4	B	137.8
GM-4EL-D20.0		20	20	55	150	4	B	214.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

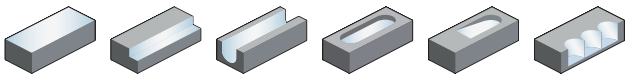
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

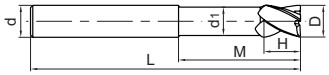
End mill short cutting edge

Semi-finishing

GM-4EFP



– Factory standard
– Centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	d_1	H	M	L		€
GM-4EFP-D6.0		6	6	5.8	9	30	75	4	***18.0***
GM-4EFP-D8.0		8	8	7.8	12	40	100	4	***27.1***
GM-4EFP-D10.0		10	10	9.6	15	50	100	4	***38.4***
GM-4EFP-D12.0		12	12	11.5	18	50	100	4	***52.2***
GM-4EFP-D16.0		16	16	15.5	24	50	150	4	***130.9***
GM-4EFP-D20.0		20	20	19.5	30	60	150	4	***234.6***

● Ex stock ○ On demand
✻ With internal cooling

Application field

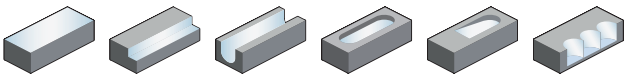
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

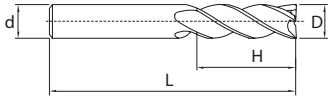
System code B258 Cutting data B422 Nonstandard order B461

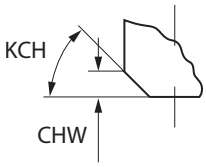
End mill Finishing

5501R304GF



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm] D	d (h6)	H	L	KCH	CHW	Teeth	Grade/Precio KMG303/€	YK30F/€
5501R304GF-0300		3	6	5	50	0	0	4	11.6	9.40
5501R304GF-0400		4	6	8	54	0	0	4	11.6	9.40
5501R304GF-0500		5	6	9	54	0	0	4	11.6	9.40
5501R304GF-0600		6	6	10	54	45	0,10	4	11.6	9.40
5501R304GF-0800		8	8	12	58	45	0,10	4	16.0	11.8
5501R304GF-1000		10	10	14	66	45	0,10	4	22.1	17.1
5501R304GF-1200		12	12	16	73	45	0,10	4	30.6	24.9
5501R304GF-1400		14	14	18	75	45	0,15	4	41.5	33.9
5501R304GF-1600		16	16	22	82	45	0,15	4	53.1	43.3
5501R304GF-1800		18	18	24	84	45	0,15	4	67.7	56.0
5501R304GF-2000		20	20	26	92	45	0,15	4	87.0	74.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

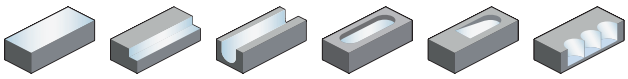
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

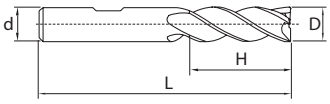
System code B258 Cutting data B422 Nonstandard order B461

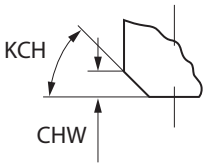
End mill Finishing

5601R304GF



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm]						Teeth	Grade/Precio	
		D	d (h6)	H	L	KCH	CHW		KMG303/€	YK30F/€
5601R304GF-0300		3	6	5	50	0	0	4	11.6	8.70
5601R304GF-0400		4	6	8	54	0	0	4	11.6	8.70
5601R304GF-0500		5	6	9	54	0	0	4	11.6	8.70
5601R304GF-0600		6	6	10	54	45	0,10	4	11.6	8.70
5601R304GF-0800		8	8	12	58	45	0,10	4	16.0	11.8
5601R304GF-1000		10	10	14	66	45	0,10	4	22.1	18.9
5601R304GF-1200		12	12	16	73	45	0,10	4	30.6	26.4
5601R304GF-1400		14	14	18	75	45	0,15	4	41.5	33.9
5601R304GF-1600		16	16	22	82	45	0,15	4	53.1	43.4
5601R304GF-1800		18	18	24	84	45	0,15	4	67.7	56.0
5601R304GF-2000		20	20	26	92	45	0,15	4	87.0	74.7

● Ex stock ○ On demand
✻ With internal cooling

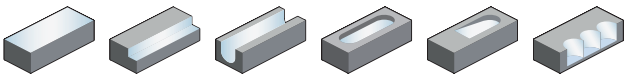
Application field					
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

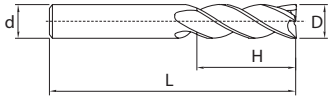
System code B258 Cutting data B422 Nonstandard order B461

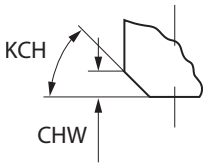
End mill long cutting edge Finishing

5502R304GF



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm] D	d (h6)	H	L	KCH	CHW	Teeth	Grade/Precio KMG303/€	YK30F/€
5502R304GF-0300		3	6	8	57	0	0	4	12.1	9.60
5502R304GF-0400		4	6	11	57	0	0	4	12.1	9.60
5502R304GF-0500		5	6	13	57	0	0	4	12.1	9.60
5502R304GF-0600		6	6	13	57	45	0,10	4	12.1	9.60
5502R304GF-0800		8	8	19	63	45	0,10	4	16.7	13.4
5502R304GF-1000		10	10	22	72	45	0,10	4	23.4	19.3
5502R304GF-1200		12	12	26	83	45	0,10	4	33.7	28.5
5502R304GF-1400		14	14	26	83	45	0,15	4	45.1	39.1
5502R304GF-1600		16	16	32	92	45	0,15	4	58.9	49.8
5502R304GF-1800		18	18	32	92	45	0,15	4	70.9	61.3
5502R304GF-2000		20	20	38	104	45	0,15	4	98.4	85.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

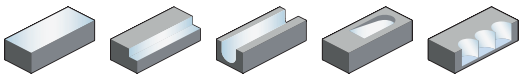
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

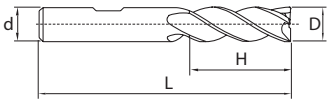
System code B258 Cutting data B422 Nonstandard order B461

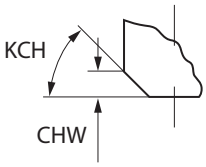
End mill long cutting edge **Finishing**

5602R304GF



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm]						Teeth	Grade/Precio	
		D	d (h6)	H	L	KCH	CHW		KMG303/€	YK30F/€
5602R304GF-0300		3	6	8	57	0	0	4	12.1	9.50
5602R304GF-0400		4	6	11	57	0	0	4	12.1	9.50
5602R304GF-0500		5	6	13	57	0	0	4	12.1	9.50
5602R304GF-0600		6	6	13	57	45	0,10	4	12.1	9.50
5602R304GF-0800		8	8	19	63	45	0,10	4	17.0	14.4
5602R304GF-1000		10	10	22	72	45	0,10	4	24.5	18.4
5602R304GF-1200		12	12	26	83	45	0,10	4	33.7	28.1
5602R304GF-1400		14	14	26	83	45	0,15	4	45.1	37.8
5602R304GF-1600		16	16	32	92	45	0,15	4	58.9	49.8
5602R304GF-1800		18	18	32	92	45	0,15	4	81.2	70.8
5602R304GF-2000		20	20	38	104	45	0,15	4	98.4	84.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

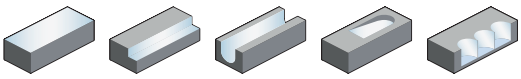
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

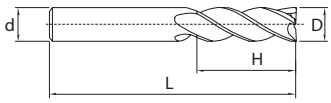
End mill long cutting edge

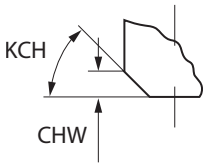
Semi-finishing

5508R454GM



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 45°





Article	✻	Dimensions [mm] D	d (h6)	H	L	KCH	CHW	Teeth	Grade/Precio KMG303/€	YK30F/€
5508R454GM-0300		3	3	8	45	0	0	4	10.6	9.40
5508R454GM-0400		4	4	11	50	0	0	4	10.6	9.40
5508R454GM-0500		5	5	13	50	0	0	4	11.0	9.40
5508R454GM-0600		6	6	13	57	45	0,10	4	12.4	9.60
5508R454GM-0800		8	8	19	63	45	0,10	4	16.5	13.4
5508R454GM-1000		10	10	22	72	45	0,10	4	23.8	20.3
5508R454GM-1200		12	12	26	83	45	0,10	4	34.8	28.5
5508R454GM-1400		14	14	26	83	45	0,15	4	45.9	39.1
5508R454GM-1600		16	16	32	92	45	0,15	4	57.2	49.7
5508R454GM-1800		18	18	32	92	45	0,15	4	75.5	60.1
5508R454GM-2000		20	20	38	104	45	0,15	4	97.1	85.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

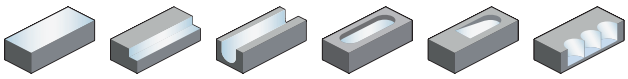
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

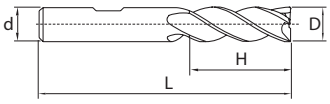
End mill long cutting edge

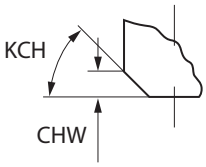
Semi-finishing

5602R454GM



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 45°





Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	H	L	KCH	CHW		€
5602R454GM-0300		3	6	8	57	0	0	4	11.5
5602R454GM-0400		4	6	11	57	0	0	4	11.9
5602R454GM-0500		5	6	13	57	0	0	4	11.9
5602R454GM-0600		6	6	13	57	45	0,10	4	11.9
5602R454GM-0800		8	8	19	63	45	0,10	4	16.5
5602R454GM-1000		10	10	22	72	45	0,10	4	23.8
5602R454GM-1200		12	12	26	83	45	0,10	4	34.8
5602R454GM-1400		14	14	26	83	45	0,15	4	45.9
5602R454GM-1600		16	16	32	92	45	0,15	4	57.2
5602R454GM-1800		18	18	32	92	45	0,15	4	81.2
5602R454GM-2000		20	20	38	104	45	0,15	4	98.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

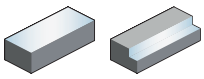
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

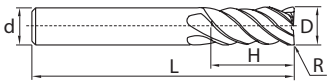
System code B258 Cutting data B422 Nonstandard order B461

Torus mill long cutting edge Finishing

5589R45MGFR02



– Type of shank DIN 6535HA
– Helix angle 45°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Precio €
5589R45MGFR02-0600		6	0.2	6	19	63	6	16.3
5589R45MGFR02-0800		8	0.2	8	28	72	6	23.3
5589R45MGFR02-1000		10	0.2	10	34	84	6	35.4
5589R45MGFR02-1200		12	0.2	12	40	97	6	48.2
5589R45MGFR02-1600		16	0.3	16	48	108	8	79.8
5589R45MGFR02-2000		20	0.3	20	56	122	10	129.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

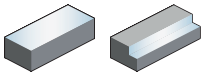
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

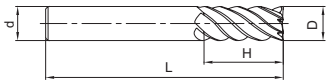
System code B258 Cutting data B422 Nonstandard order B461

End mill | Semi-finishing

GM-6E



– Factory standard
– Non-centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm]				Teeth	Precio
		D	d (h6)	H	L		€
GM-6E-D6.0		6	6	18	60	6	21.6
GM-6E-D8.0		8	8	20	60	6	28.6
GM-6E-D10.0		10	10	30	75	6	46.5
GM-6E-D12.0		12	12	32	75	6	56.0
GM-6E-D16.0		16	16	40	100	6	110.4
GM-6E-D20.0		20	20	45	100	6	169.9

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

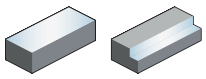
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

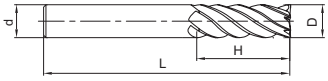
End mill long cutting edge

Semi-finishing

GM-6EL



– Factory standard
– Non-centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Precio €
GM-6EL-D6.0		6	6	24	75	6	24.9
GM-6EL-D8.0		8	8	32	75	6	33.3
GM-6EL-D10.0		10	10	40	100	6	48.9
GM-6EL-D12.0		12	12	45	100	6	64.7
GM-6EL-D16.0		16	16	64	150	6	151.5
GM-6EL-D20.0		20	20	75	150	6	260.9

● Ex stock ○ On demand
✻ With internal cooling

Application field

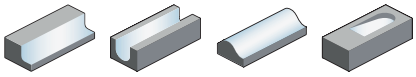
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

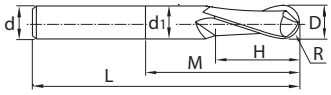
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter **Finishing**

5565R302GF



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]							Teeth	Precio
		D	R	d (h6)	d_1	H	M	L		€
5565R302GF-0300		3	1.5	6	2.8	4	9	57	2	12.2
5565R302GF-0400		4	2	6	3.7	5	12	57	2	12.2
5565R302GF-0500		5	2.5	6	4.6	6	15	57	2	12.2
5565R302GF-0600		6	3	6	5.5	7	20	57	2	12.2
5565R302GF-0800		8	4	8	7.4	9	26	63	2	17.0
5565R302GF-1000		10	5	10	9.2	11	31	72	2	24.2
5565R302GF-1200		12	6	12	11	12	37	83	2	34.9
5565R302GF-1600		16	8	16	15	16	43	92	2	57.7
5565R302GF-2000		20	10	20	19	20	50	104	2	96.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

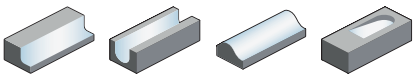
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

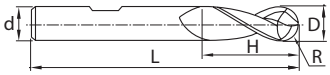
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter Semi-finishing

5665R202GM



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 20°



Article	✻	Dimensions [mm]						Teeth	Precio
		D	R	d (h6)	d_1	H	L		€
5665R202GM-0300		3	1.5	6	2.8	4	57	2	13.6
5665R202GM-0400		4	2	6	3.7	5	57	2	13.6
5665R202GM-0500		5	2.5	6	4.6	6	57	2	13.6
5665R202GM-0600		6	3	6	5.5	7	57	2	13.6
5665R202GM-0800		8	4	8	7.4	9	63	2	19.3
5665R202GM-1000		10	5	10	9.2	11	72	2	27.1
5665R202GM-1200		12	6	12	11	12	83	2	38.5
5665R202GM-1600		16	8	16	15	16	92	2	65.7
5665R202GM-2000		20	10	20	19	20	104	2	109.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

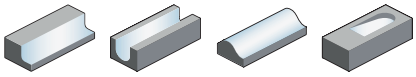
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

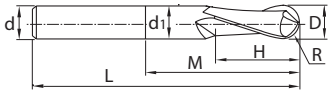
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter long shank **Finishing**

5566R302GF



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]							Teeth	Precio
		D	R	d (h6)	d_1	H	M	L		€
5566R302GF-0300		3	1.5	6	2.8	4	15	75	2	13.2
5566R302GF-0400		4	2	6	3.7	5	20	75	2	13.2
5566R302GF-0500		5	2.5	6	4.6	6	25	80	2	13.4
5566R302GF-0600		6	3	6	5.5	7	60	80	2	13.4
5566R302GF-0800		8	4	8	7.4	9	65	90	2	18.9
5566R302GF-1000		10	5	10	9.2	11	40	100	2	27.3
5566R302GF-1200		12	6	12	11	12	50	120	2	42.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

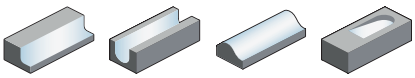
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

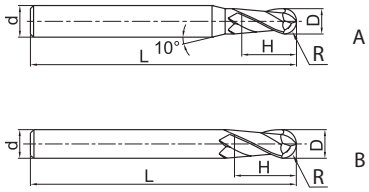
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter Semi-finishing

GM-2B



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
GM-2B-R0.5S		1	0.5	4	2	50	2	A	11.8
GM-2B-R0.75S		1.5	0.75	4	3	50	2	A	11.8
GM-2B-R1.0S		2	1	4	4	50	2	A	11.8
GM-2B-R1.25S		2.5	1.25	4	5	50	2	A	11.8
GM-2B-R1.5S		3	1.5	4	6	50	2	A	11.8
GM-2B-R2.0S		4	2	4	8	50	2	B	11.8
GM-2B-R0.5		1	0.5	6	2	50	2	A	14.4
GM-2B-R0.75		1.5	0.75	6	3	50	2	A	14.4
GM-2B-R1.0		2	1	6	4	50	2	A	14.4
GM-2B-R1.25		2.5	1.25	6	5	50	2	A	14.4
GM-2B-R1.5		3	1.5	6	6	50	2	A	14.4
GM-2B-R1.75		3.5	1.75	6	8	50	2	A	14.4
GM-2B-R2.0		4	2	6	8	50	2	A	14.4
GM-2B-R2.5		5	2.5	6	10	50	2	A	14.4
GM-2B-R2.75		5.5	2.75	6	12	50	2	A	14.4
GM-2B-R3.0		6	3	6	12	50	2	B	14.4
GM-2B-R3.5		7	3.5	8	14	60	2	A	23.7
GM-2B-R4.0		8	4	8	16	60	2	B	23.7
GM-2B-R4.5		9	4.5	10	18	75	2	A	34.4
GM-2B-R5.0		10	5	10	20	75	2	B	34.4
GM-2B-R6.0		12	6	12	24	75	2	B	45.9
GM-2B-R7.0		14	7	14	28	75	2	B	60.8
GM-2B-R8.0		16	8	16	32	100	2	B	101.8
GM-2B-R10.0		20	10	20	40	100	2	B	154.1

● Ex stock ○ On demand
✻ With internal cooling

Application field

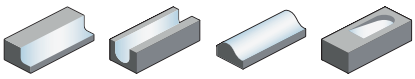
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

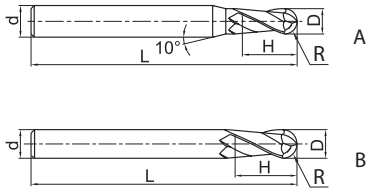
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter long shank | Semi-finishing

GM-2BL



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
GM-2BL-R1.0		2	1	6	4	75	2	A	15.9
GM-2BL-R1.25		2.5	1.25	6	5	75	2	A	15.9
GM-2BL-R1.5		3	1.5	6	6	75	2	A	15.9
GM-2BL-R1.75		3.5	1.75	6	8	75	2	A	15.9
GM-2BL-R2.0		4	2	6	8	75	2	A	15.9
GM-2BL-R2.5		5	2.5	6	10	75	2	A	15.9
GM-2BL-R2.75		5.5	2.75	6	12	75	2	A	15.9
GM-2BL-R3.0		6	3	6	12	75	2	B	15.9
GM-2BL-R3.5		7	3.5	8	14	75	2	A	28.3
GM-2BL-R4.0		8	4	8	16	100	2	B	28.3
GM-2BL-R4.5		9	4.5	10	18	100	2	A	43.5
GM-2BL-R5.0		10	5	10	20	100	2	B	43.5
GM-2BL-R6.0		12	6	12	24	100	2	B	54.9
GM-2BL-R7.0		14	7	14	28	100	2	B	78.3
GM-2BL-R8.0		16	8	16	32	150	2	B	136.6
GM-2BL-R10.0		20	10	20	40	150	2	B	191.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

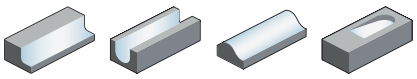
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

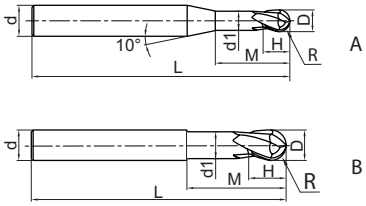
Ball nose cutter short cutting edge

Semi-finishing

GM-2BFP



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Geometry	Precio €
GM-2BFP-R0.5		1	0.5	6	0.95	1	2.5	75	2	A	17.5
GM-2BFP-R0.75		1.5	0.75	6	1.45	1	3	75	2	A	17.5
GM-2BFP-R1.0		2	1	6	1.95	2	4	75	2	A	17.5
GM-2BFP-R1.5		3	1.5	6	2.85	3	6	75	2	A	17.5
GM-2BFP-R2.0		4	2	6	3.85	4	8	75	2	A	17.5
GM-2BFP-R2.5		5	2.5	6	4.85	5	10	75	2	A	17.5
GM-2BFP-R3.0		6	3	6	5.8	6	12	75	2	B	17.5
GM-2BFP-R4.0		8	4	8	7.8	8	16	100	2	B	32.1
GM-2BFP-R5.0		10	5	10	9.6	10	20	100	2	B	43.5
GM-2BFP-R6.0		12	6	12	11.5	12	24	100	2	B	58.5
GM-2BFP-R8.0		16	8	16	15.5	16	32	150	2	B	136.6
GM-2BFP-R10.0		20	10	20	19.5	20	40	150	2	B	191.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

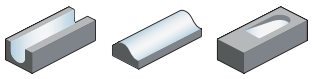
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

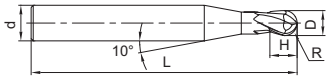
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter — Semi-finishing

GM-2BS



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Precio €
GM-2BS-R0.15		0.3	0.15	4	0.5	50	2	13.4
GM-2BS-R0.20		0.4	0.2	4	0.6	50	2	13.4
GM-2BS-R0.25		0.5	0.25	4	0.8	50	2	13.4
GM-2BS-R0.30		0.6	0.3	4	0.9	50	2	13.4
GM-2BS-R0.35		0.7	0.35	4	1	50	2	13.4
GM-2BS-R0.40		0.8	0.4	4	1.2	50	2	13.4
GM-2BS-R0.45		0.9	0.45	4	1.3	50	2	13.4
GM-2BS-R0.50		1	0.5	4	1.5	50	2	11.6
GM-2BS-R0.60		1.2	0.6	4	1.8	50	2	11.6
GM-2BS-R0.70		1.4	0.7	4	2	50	2	11.6
GM-2BS-R0.75		1.5	0.75	4	2.3	50	2	11.6
GM-2BS-R0.80		1.6	0.8	4	2.5	50	2	11.6
GM-2BS-R0.90		1.8	0.9	4	2.7	50	2	11.6
GM-2BS-R1.00		2	1	4	3	50	2	11.6
GM-2BS-R1.25		2.5	1.25	4	3.7	50	2	11.6
GM-2BS-R1.50		3	1.5	4	4.5	50	2	11.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

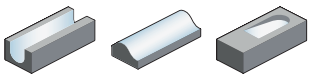
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

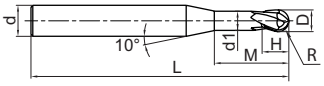
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter Semi-finishing

GM-2BP



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Precio €
GM-2BP-R0.25-M04		0.5	0.25	4	0.45	0.7	4	50	2	14.7
GM-2BP-R0.25-M06		0.5	0.25	4	0.45	0.7	6	50	2	14.7
GM-2BP-R0.3-M04		0.6	0.3	4	0.55	0.9	4	50	2	14.7
GM-2BP-R0.3-M06		0.6	0.3	4	0.55	0.9	6	50	2	14.7
GM-2BP-R0.3-M08		0.6	0.3	4	0.55	0.9	8	50	2	14.7
GM-2BP-R0.4-M04		0.8	0.4	4	0.75	1.2	4	50	2	14.7
GM-2BP-R0.4-M06		0.8	0.4	4	0.75	1.2	6	50	2	14.7
GM-2BP-R0.4-M08		0.8	0.4	4	0.75	1.2	8	50	2	14.7
GM-2BP-R0.4-M10		0.8	0.4	4	0.75	1.2	10	50	2	14.7
GM-2BP-R0.5-M04		1	0.5	4	0.95	1.5	4	50	2	13.7
GM-2BP-R0.5-M06		1	0.5	4	0.95	1.5	6	50	2	13.7
GM-2BP-R0.5-M08		1	0.5	4	0.95	1.5	8	50	2	13.7
GM-2BP-R0.5-M10		1	0.5	4	0.95	1.5	10	50	2	13.7
GM-2BP-R0.5-M12		1	0.5	4	0.95	1.5	12	50	2	13.7
GM-2BP-R0.6-M06		1.2	0.6	4	1.15	1.8	6	50	2	13.7
GM-2BP-R0.6-M08		1.2	0.6	4	1.15	1.8	8	50	2	13.7
GM-2BP-R0.6-M12		1.2	0.6	4	1.15	1.8	12	50	2	13.7
GM-2BP-R0.6-M16		1.2	0.6	4	1.15	1.8	16	50	2	13.7
GM-2BP-R0.75-M08		1.5	0.75	4	1.45	2.3	8	50	2	13.7
GM-2BP-R0.75-M12		1.5	0.75	4	1.45	2.3	12	50	2	13.7
GM-2BP-R0.75-M16		1.5	0.75	4	1.45	2.3	16	50	2	13.7
GM-2BP-R1.0-M06		2	1	4	1.95	3	6	50	2	12.2
GM-2BP-R1.0-M08		2	1	4	1.95	3	8	50	2	12.2
GM-2BP-R1.0-M10		2	1	4	1.95	3	10	50	2	12.2
GM-2BP-R1.0-M12		2	1	4	1.95	3	12	50	2	12.2
GM-2BP-R1.0-M16		2	1	4	1.95	3	16	50	2	12.2
GM-2BP-R1.0-M20		2	1	4	1.95	3	20	50	2	12.2
GM-2BP-R1.25-M08		2.5	1.25	4	2.4	3.7	8	50	2	12.2
GM-2BP-R1.25-M12		2.5	1.25	4	2.4	3.7	12	50	2	12.2
GM-2BP-R1.25-M16		2.5	1.25	4	2.4	3.7	16	60	2	12.2
GM-2BP-R1.25-M20		2.5	1.25	4	2.4	3.7	20	60	2	12.2
GM-2BP-R1.5-M08		3	1.5	6	2.85	4.5	8	50	2	13.7
GM-2BP-R1.5-M10		3	1.5	6	2.85	4.5	10	50	2	13.7
GM-2BP-R1.5-M12		3	1.5	6	2.85	4.5	12	50	2	13.7
GM-2BP-R1.5-M16		3	1.5	6	2.85	4.5	16	60	2	13.7
GM-2BP-R1.5-M20		3	1.5	6	2.85	4.5	20	60	2	13.7
GM-2BP-R2.0-M10		4	2	6	3.85	6	10	60	2	13.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

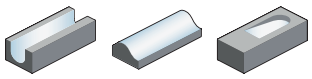
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

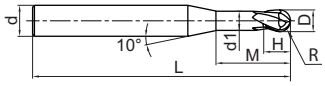
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter | Semi-finishing

GM-2BP



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]							Teeth	Precio
		D	R	d (h6)	d_1	H	M	L		€
GM-2BP-R2.0-M16		4	2	6	3.85	6	16	60	2	***13.7***
GM-2BP-R2.0-M20		4	2	6	3.85	6	20	60	2	***13.7***
GM-2BP-R2.0-M25		4	2	6	3.85	6	25	60	2	***13.7***
GM-2BP-R2.5-M16		5	2.5	6	4.85	7.5	16	60	2	***13.7***
GM-2BP-R2.5-M25		5	2.5	6	4.85	7.5	25	70	2	***14.6***

● Ex stock ○ On demand
✻ With internal cooling

Application field

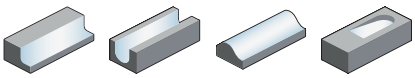
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

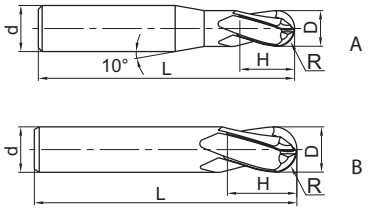
System code B258 | Cutting data B422 | Nonstandard order B461

Ball nose cutter Semi-finishing

GM-4B



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
GM-4B-R1.5		3	1.5	6	6	50	4	A	***14.3***
GM-4B-R2.0		4	2	6	8	50	4	A	***14.3***
GM-4B-R2.5		5	2.5	6	10	50	4	A	***14.3***
GM-4B-R3.0		6	3	6	12	50	4	B	***14.3***
GM-4B-R4.0		8	4	8	16	60	4	B	***23.7***
GM-4B-R5.0		10	5	10	20	75	4	B	***30.7***
GM-4B-R6.0		12	6	12	24	75	4	B	***41.9***
GM-4B-R7.0		14	7	14	28	75	4	B	***60.8***
GM-4B-R8.0		16	8	16	32	100	4	B	***89.0***
GM-4B-R9.0		18	9	18	36	100	4	B	***137.1***
GM-4B-R10.0		20	10	20	40	100	4	B	***137.1***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

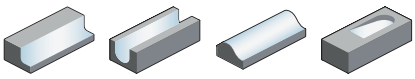
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

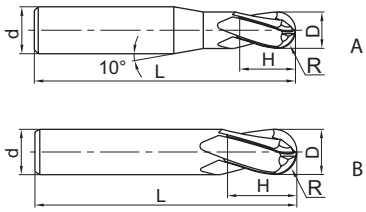
Ball nose cutter long shank

Semi-finishing

GM-4BL



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
GM-4BL-R1.5		3	1.5	6	6	75	4	A	19.3
GM-4BL-R2.0		4	2	6	8	75	4	A	19.3
GM-4BL-R2.5		5	2.5	6	10	75	4	A	19.3
GM-4BL-R3.0		6	3	6	12	75	4	B	19.3
GM-4BL-R4.0		8	4	8	16	100	4	B	35.6
GM-4BL-R5.0		10	5	10	20	100	4	B	43.0
GM-4BL-R6.0		12	6	12	24	100	4	B	59.7
GM-4BL-R7.0		14	7	14	28	100	4	B	87.5
GM-4BL-R8.0		16	8	16	32	150	4	B	149
GM-4BL-R9.0		18	9	18	36	150	4	B	----
GM-4BL-R10.0		20	10	20	40	150	4	B	231.3

● Ex stock ○ On demand
✻ With internal cooling

Application field

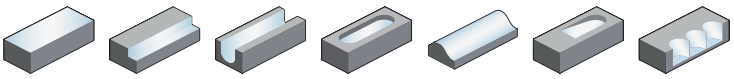
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

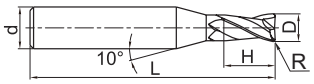
System code B258 Cutting data B422 Nonstandard order B461

Torus mill Semi-finishing

GM-2R



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Precio €
GM-2R-D1.0R0.2		1	0.2	4	3	50	2	15.3
GM-2R-D1.5R0.2		1.5	0.2	4	4	50	2	15.3
GM-2R-D2.0R0.2		2	0.2	4	6	50	2	15.8
GM-2R-D2.0R0.5		2	0.5	4	6	50	2	15.8
GM-2R-D2.5R0.2		2.5	0.2	4	8	50	2	15.8
GM-2R-D2.5R0.5		2.5	0.5	4	8	50	2	15.8
GM-2R-D3.0R0.2		3	0.2	4	8	50	2	15.8
GM-2R-D3.0R0.3		3	0.3	4	8	50	2	15.8
GM-2R-D3.0R0.5		3	0.5	4	8	50	2	15.8
GM-2R-D4.0R0.2		4	0.2	4	11	50	2	15.8
GM-2R-D4.0R0.3		4	0.3	4	11	50	2	15.8
GM-2R-D4.0R0.5		4	0.5	4	11	50	2	15.8
GM-2R-D4.0R1.0		4	1	4	11	50	2	15.8
GM-2R-D5.0R0.3		5	0.3	6	13	50	2	15.8
GM-2R-D5.0R0.5		5	0.5	6	13	50	2	15.8
GM-2R-D5.0R1.0		5	1	6	13	50	2	15.8
GM-2R-D6.0R0.3		6	0.3	6	16	50	2	15.8
GM-2R-D6.0R0.5		6	0.5	6	16	50	2	15.8
GM-2R-D6.0R1.0		6	1	6	16	50	2	15.8
GM-2R-D8.0R0.3		8	0.3	8	20	60	2	21.5
GM-2R-D8.0R0.5		8	0.5	8	20	60	2	21.5
GM-2R-D8.0R1.0		8	1	8	20	60	2	21.5
GM-2R-D10.0R0.5		10	0.5	10	25	75	2	33.1
GM-2R-D10.0R1.0		10	1	10	25	75	2	33.1
GM-2R-D10.0R1.5		10	1.5	10	25	75	2	33.1
GM-2R-D10.0R2.0		10	2	10	25	75	2	33.1
GM-2R-D12.0R0.5		12	0.5	12	30	75	2	47.8
GM-2R-D12.0R1.0		12	1	12	30	75	2	47.8
GM-2R-D12.0R1.5		12	1.5	12	30	75	2	47.8
GM-2R-D12.0R2.0		12	2	12	30	75	2	47.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

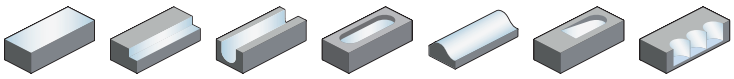
P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

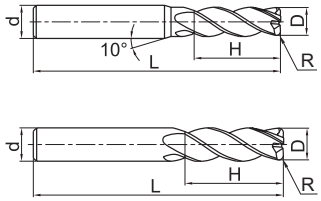
System code B258 Cutting data B422 Nonstandard order B461

Torus mill | Semi-finishing

GM-4R



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
GM-4R-D3.0R0.2		3	0.2	4	8	50	4	A	14.9
GM-4R-D4.0R0.3		4	0.3	4	10	50	4	B	14.9
GM-4R-D4.0R0.5		4	0.5	4	10	50	4	B	14.9
GM-4R-D5.0R0.5		5	0.5	6	13	50	4	A	14.9
GM-4R-D5.0R1.0		5	1	6	13	50	4	A	14.9
GM-4R-D6.0R0.5		6	0.5	6	16	50	4	B	14.9
GM-4R-D6.0R1.0		6	1	6	16	50	4	B	14.9
GM-4R-D8.0R0.5		8	0.5	8	20	60	4	B	24.4
GM-4R-D8.0R1.0		8	1	8	20	60	4	B	24.4
GM-4R-D10.0R0.5		10	0.5	10	25	75	4	B	34.4
GM-4R-D10.0R1.0		10	1	10	25	75	4	B	34.4
GM-4R-D10.0R2.0		10	2	10	25	75	4	B	34.4
GM-4R-D10.0R3.0		10	3	10	25	75	4	B	34.4
GM-4R-D12.0R0.5		12	0.5	12	30	75	4	B	47.1
GM-4R-D12.0R1.0		12	1	12	30	75	4	B	47.1
GM-4R-D12.0R2.0		12	2	12	30	75	4	B	47.1
GM-4R-D12.0R3.0		12	3	12	30	75	4	B	47.1

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

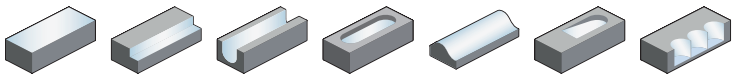
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

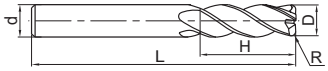
Torus mill long shank

Semi-finishing

GM-4RL



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Precio €
GM-4RL-D6.0R0.5		6	0.5	6	16	75	4	18.0
GM-4RL-D6.0R1.0		6	1	6	16	75	4	18.0
GM-4RL-D8.0R0.5		8	0.5	8	20	100	4	34.2
GM-4RL-D8.0R1.0		8	1	8	20	100	4	34.2
GM-4RL-D10.0R0.5		10	0.5	10	25	100	4	49.1
GM-4RL-D10.0R1.0		10	1	10	25	100	4	49.1
GM-4RL-D10.0R2.0		10	2	10	25	100	4	49.1
GM-4RL-D12.0R0.5		12	0.5	12	30	100	4	67.1
GM-4RL-D12.0R1.0		12	1	12	30	100	4	67.1
GM-4RL-D12.0R2.0		12	2	12	30	100	4	67.1
GM-4RL-D16.0R1.0		16	1	16	45	150	4	150.5
GM-4RL-D16.0R2.0		16	2	16	45	150	4	150.5

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

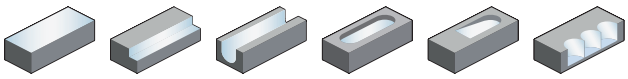
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

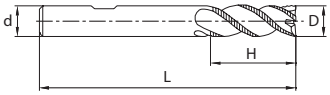
End mill long cutting edge

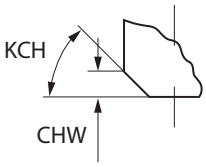
General roughing

5602R303GR



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	H	L	KCH	CHW		€
5602R303GR-0600		6	6	13	57	45	0,25	3	***24.3***
5602R303GR-0800		8	8	19	63	45	0,25	3	***32.1***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

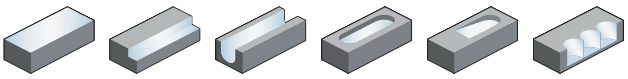
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

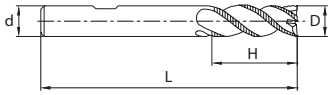
End mill long cutting edge

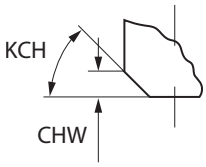
General roughing

5602R304GR



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm] D	d (h6)	H	L	KCH	CHW	Teeth	Precio €
5602R304GR-1000		10	10	22	72	45	0,50	4	*44.1*
5602R304GR-1200		12	12	26	83	45	0,50	4	*61.5*
5602R304GR-1400		14	14	30	90	45	0,50	4	*----*
5602R304GR-1600		16	16	32	92	45	0,50	4	*101.6*
5602R304GR-2000		20	20	38	104	45	0,50	4	*167.8*

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

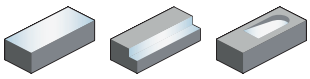
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

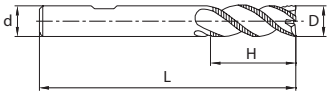
End mill long cutting edge

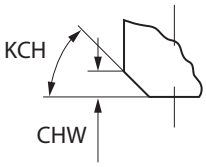
General roughing

5602R305GR



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 30°





Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	H	L	KCH	CHW		€
5602R305GR-2500		25	25	45	121	45	0,50	5	***313.8***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

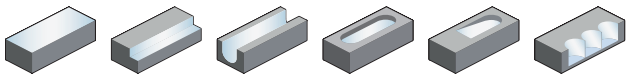
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

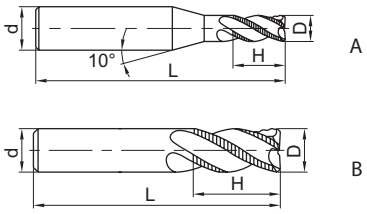
End mill serrated teeth

Semi-finishing

GM-4W



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]				Teeth	Geometry	Grade/Precio
		D	d (h6)	H	L			KMG405/€
GM-4W-D6.0		6	6	16	50	4	B	24.6
GM-4W-D7.0		7	8	20	60	4	A	39.8
GM-4W-D8.0		8	8	20	60	4	B	41.8
GM-4W-D9.0		9	10	22	75	4	A	62.3
GM-4W-D10.0		10	10	25	75	4	B	62.3
GM-4W-D11.0		11	12	26	75	4	A	85.7
GM-4W-D12.0		12	12	30	75	4	B	85.7
GM-4W-D16.0		16	16	45	100	4	B	1484
GM-4W-D20.0		20	20	45	100	4	B	2518

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			

✔ Very suitable
✔ Suitable

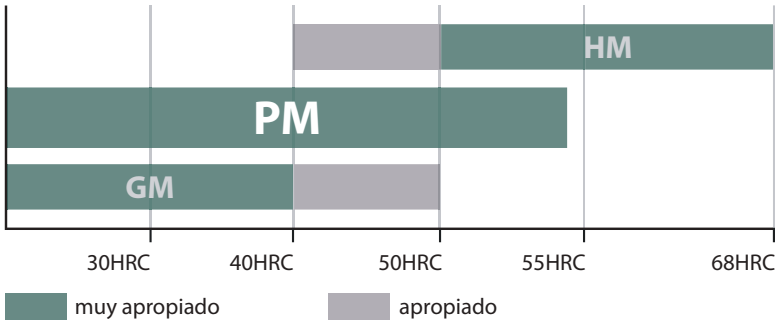
System code B258 Cutting data B422 Nonstandard order B461

PM Serie

Para el mecanizado exigente

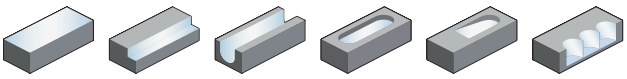
- Para el mecanizado de acero, de hasta como máximo 55 HRC, y fundiciones e incluso materiales de alta resistencia térmica.
- Filo de corte muy estable con elevada rigidez para altas velocidades de corte y avances.
- Fresa integral, fresa de punta esférica, fresa toroidal y fresa con avance rápido
- Rango de diámetros, 3,0–20,0 mm

Ámbitos de aplicación en el mecanizado de acero

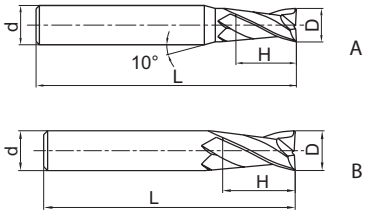


End mill High-performance machining

PM-2E



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]				Teeth	Geometry	Precio
		D	d (h6)	H	L			€
PM-2E-D1.0S		1	4	3	50	2	A	14.6
PM-2E-D1.5S		1.5	4	4	50	2	A	14.6
PM-2E-D2.0S		2	4	6	50	2	A	14.6
PM-2E-D2.5S		2.5	4	8	50	2	A	14.6
PM-2E-D3.0S		3	4	8	50	2	A	14.6
PM-2E-D4.0S		4	4	11	50	2	B	14.6
PM-2E-D1.0		1	6	3	50	2	A	14.6
PM-2E-D1.5		1.5	6	4	50	2	A	17.1
PM-2E-D2.0		2	6	6	50	2	A	17.1
PM-2E-D2.5		2.5	6	8	50	2	A	17.1
PM-2E-D3.0		3	6	8	50	2	A	17.1
PM-2E-D3.5		3.5	6	10	50	2	A	17.1
PM-2E-D4.0		4	6	11	50	2	A	17.1
PM-2E-D4.5		4.5	6	11	50	2	A	17.1
PM-2E-D5.0		5	6	13	50	2	A	17.1
PM-2E-D5.5		5.5	6	16	50	2	A	17.1
PM-2E-D6.0		6	6	16	50	2	B	17.1
PM-2E-D7.0		7	8	20	60	2	A	25.2
PM-2E-D8.0		8	8	20	60	2	B	25.2
PM-2E-D9.0		9	10	22	75	2	A	35.5
PM-2E-D10.0		10	10	25	75	2	B	35.5
PM-2E-D11.0		11	12	26	75	2	A	45.7
PM-2E-D12.0		12	12	30	75	2	B	45.7
PM-2E-D14.0		14	14	32	75	2	B	64.9
PM-2E-D16.0		16	16	45	100	2	B	95.2
PM-2E-D18.0		18	18	45	100	2	B	119
PM-2E-D20.0		20	20	45	100	2	B	147.3

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

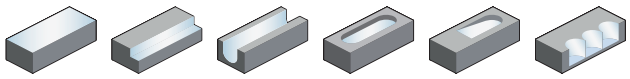
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

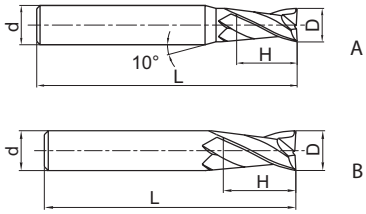
End mill long cutting edge

High-performance machining

PM-2EL



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
PM-2EL-D3.0		3	6	12	75	2	A	20.2
PM-2EL-D4.0		4	6	15	75	2	A	20.2
PM-2EL-D5.0		5	6	20	75	2	A	20.2
PM-2EL-D6.0		6	6	20	75	2	B	20.2
PM-2EL-D8.0		8	8	25	100	2	B	29.2
PM-2EL-D10.0		10	10	30	100	2	B	43.5
PM-2EL-D12.0		12	12	35	100	2	B	56.3
PM-2EL-D14.0		14	14	40	100	2	B	93.2
PM-2EL-D16.0		16	16	50	150	2	B	1385
PM-2EL-D20.0		20	20	55	150	2	B	2142

● Ex stock ○ On demand
✻ With internal cooling

Application field

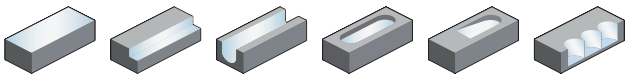
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

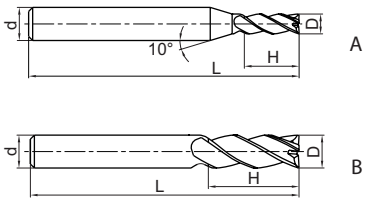
System code B258 Cutting data B422 Nonstandard order B461

End mill High-performance machining

PM-4E-G



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
PM-4E-D1.0S-G		1	4	3	50	4	A	14.9
PM-4E-D1.5S-G		1.5	4	4	50	4	A	14.9
PM-4E-D2.0S-G		2	4	6	50	4	A	14.9
PM-4E-D2.5S-G		2.5	4	8	50	4	A	14.9
PM-4E-D3.0S-G		3	4	8	50	4	A	14.9
PM-4E-D4.0S-G		4	4	11	50	4	B	14.9
PM-4E-D1.0-G		1	6	3	50	4	A	17.4
PM-4E-D1.5-G		1.5	6	4	50	4	A	17.4
PM-4E-D2.0-G		2	6	6	50	4	A	17.4
PM-4E-D2.5-G		2.5	6	8	50	4	A	17.4
PM-4E-D3.0-G		3	6	8	50	4	A	17.4
PM-4E-D3.5-G		3.5	6	10	50	4	A	17.4
PM-4E-D4.0-G		4	6	11	50	4	A	17.4
PM-4E-D4.5-G		4.5	6	11	50	4	A	17.4
PM-4E-D5.0-G		5	6	13	50	4	A	17.4
PM-4E-D5.5-G		5.5	6	16	50	4	A	17.4
PM-4E-D6.0-G		6	6	16	50	4	B	17.4
PM-4E-D7.0-G		7	8	20	60	4	A	25.6
PM-4E-D8.0-G		8	8	20	60	4	B	25.6
PM-4E-D9.0-G		9	10	22	75	4	A	36.2
PM-4E-D10.0-G		10	10	25	75	4	B	36.2
PM-4E-D11.0-G		11	12	26	75	4	A	47.5
PM-4E-D12.0-G		12	12	30	75	4	B	47.5
PM-4E-D14.0-G		14	14	32	75	4	B	68.1
PM-4E-D16.0-G		16	16	45	100	4	B	100
PM-4E-D18.0-G		18	18	45	100	4	B	124.9
PM-4E-D20.0-G		20	20	45	100	4	B	154.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

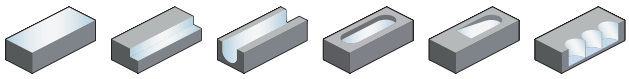
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

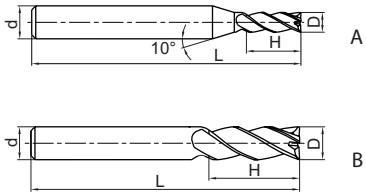
End mill long cutting edge

High-performance machining

PM-4EL-G



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
PM-4EL-D3.0-G		3	6	12	75	4	A	20.7
PM-4EL-D4.0-G		4	6	15	75	4	A	20.7
PM-4EL-D5.0-G		5	6	20	75	4	A	20.7
PM-4EL-D6.0-G		6	6	20	75	4	B	20.7
PM-4EL-D8.0-G		8	8	25	100	4	B	28.9
PM-4EL-D10.0-G		10	10	30	100	4	B	44.0
PM-4EL-D12.0-G		12	12	35	100	4	B	56.8
PM-4EL-D14.0-G		14	14	40	100	4	B	86.7
PM-4EL-D16.0-G		16	16	50	150	4	B	139.8
PM-4EL-D20.0-G		20	20	55	150	4	B	216.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

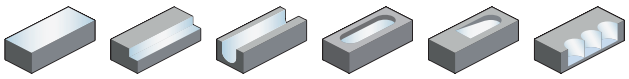
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

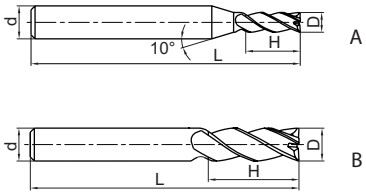
End mill extra long cutting edge

High-performance machining

PM-4EX-G



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
PM-4EX-D3.0-G		3	6	20	75	4	A	20.7
PM-4EX-D4.0-G		4	6	25	75	4	A	20.7
PM-4EX-D5.0-G		5	6	30	75	4	A	20.7
PM-4EX-D6.0-G		6	6	30	75	4	B	20.7
PM-4EX-D8.0-G		8	8	40	100	4	B	28.9
PM-4EX-D10.0-G		10	10	50	110	4	B	44.0
PM-4EX-D12.0-G		12	12	50	110	4	B	56.8
PM-4EX-D16.0-G		16	16	70	150	4	B	1398
PM-4EX-D20.0-G		20	20	75	150	4	B	2162

● Ex stock ○ On demand
✻ With internal cooling

Application field

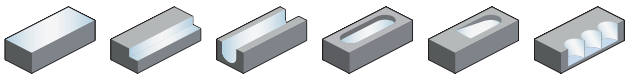
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

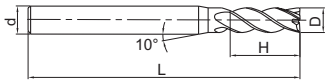
System code B258 Cutting data B422 Nonstandard order B461

End mill | High-performance machining

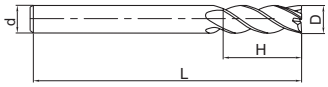
PM-4E



– Factory standard
– Centre cutting
– Helix angle 45°



A



B

Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
PM-4E-D1.0S		1	4	3	50	4	A	14.9
PM-4E-D1.5S		1.5	4	4	50	4	A	14.9
PM-4E-D2.0S		2	4	6	50	4	A	14.9
PM-4E-D2.5S		2.5	4	8	50	4	A	14.9
PM-4E-D3.0S		3	4	8	50	4	A	14.9
PM-4E-D4.0S		4	4	11	50	4	B	14.9
PM-4E-D1.0		1	6	3	50	4	A	17.4
PM-4E-D1.5		1.5	6	4	50	4	A	17.4
PM-4E-D2.0		2	6	6	50	4	A	17.4
PM-4E-D2.5		2.5	6	8	50	4	A	17.4
PM-4E-D3.0		3	6	8	50	4	A	17.4
PM-4E-D3.5		3.5	6	10	50	4	A	17.4
PM-4E-D4.0		4	6	11	50	4	A	17.4
PM-4E-D4.5		4.5	6	11	50	4	A	17.4
PM-4E-D5.0		5	6	13	50	4	A	17.4
PM-4E-D5.5		5.5	6	16	50	4	A	17.4
PM-4E-D6.0		6	6	16	50	4	B	17.4
PM-4E-D7.0		7	8	20	60	4	A	25.6
PM-4E-D8.0		8	8	20	60	4	B	25.6
PM-4E-D9.0		9	10	22	75	4	A	36.2
PM-4E-D10.0		10	10	25	75	4	B	36.2
PM-4E-D11.0		11	12	26	75	4	A	47.5
PM-4E-D12.0		12	12	30	75	4	B	47.5
PM-4E-D14.0		14	14	32	75	4	B	68.1
PM-4E-D16.0		16	16	45	100	4	B	100
PM-4E-D18.0		18	18	45	100	4	B	124.9
PM-4E-D20.0		20	20	45	100	4	B	154.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

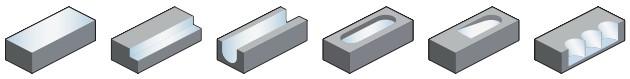
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

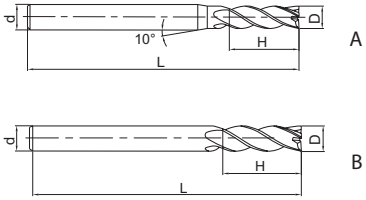
End mill long cutting edge

High-performance machining

PM-4EL



– Factory standard
– Centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
PM-4EL-D3.0		3	6	12	75	4	A	20.7
PM-4EL-D4.0		4	6	15	75	4	A	20.7
PM-4EL-D5.0		5	6	20	75	4	A	20.7
PM-4EL-D6.0		6	6	20	75	4	B	20.7
PM-4EL-D8.0		8	8	25	100	4	B	28.9
PM-4EL-D10.0		10	10	30	100	4	B	44.0
PM-4EL-D12.0		12	12	35	100	4	B	56.8
PM-4EL-D14.0		14	14	40	100	4	B	86.7
PM-4EL-D16.0		16	16	50	150	4	B	139.8
PM-4EL-D20.0		20	20	55	150	4	B	216.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

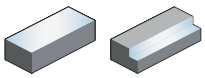
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

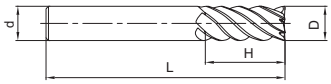
System code B258 Cutting data B422 Nonstandard order B461

End mill | High-performance machining

PM-6E



– Factory standard
– Non-centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm]				Teeth	Precio
		D	d (h6)	H	L		€
PM-6E-D6.0		6	6	18	60	6	*24.1*
PM-6E-D8.0		8	8	20	60	6	*32.2*
PM-6E-D10.0		10	10	30	75	6	*44.8*
PM-6E-D12.0		12	12	32	75	6	*56.8*
PM-6E-D16.0		16	16	40	100	6	*112.8*
PM-6E-D20.0		20	20	45	100	6	*173.8*

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

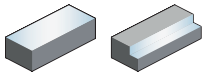
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

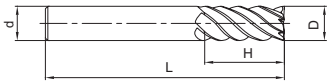
End mill long cutting edge

High-performance machining

PM-6EL



– Factory standard
– Non-centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Precio €
PM-6EL-D6.0		6	6	24	75	6	***24.1***
PM-6EL-D8.0		8	8	32	75	6	***35.0***
PM-6EL-D10.0		10	10	40	100	6	***50.9***
PM-6EL-D12.0		12	12	45	100	6	***77.0***
PM-6EL-D16.0		16	16	64	150	6	***157***
PM-6EL-D20.0		20	20	75	150	6	***223.7***

● Ex stock ○ On demand
✻ With internal cooling

Application field

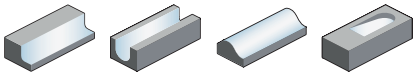
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

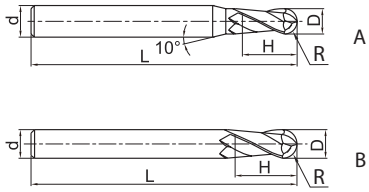
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter | High-performance machining

PM-2B



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
PM-2B-R0.5S		1	0.5	4	2	50	2	A	15.0
PM-2B-R0.75S		1.5	0.75	4	3	50	2	A	15.0
PM-2B-R1.0S		2	1	4	4	50	2	A	15.0
PM-2B-R1.25S		2.5	1.25	4	5	50	2	A	15.0
PM-2B-R1.5S		3	1.5	4	6	50	2	A	15.0
PM-2B-R2.0S		4	2	4	8	50	2	B	15.0
PM-2B-R0.5		1	0.5	6	2	50	2	A	17.6
PM-2B-R0.75		1.5	0.75	6	3	50	2	A	17.6
PM-2B-R1.0		2	1	6	4	50	2	A	17.6
PM-2B-R1.25		2.5	1.25	6	5	50	2	A	17.6
PM-2B-R1.5		3	1.5	6	6	50	2	A	17.6
PM-2B-R1.75		3.5	1.75	6	8	50	2	A	17.6
PM-2B-R2.0		4	2	6	8	50	2	A	17.6
PM-2B-R2.5		5	2.5	6	10	50	2	A	17.6
PM-2B-R2.75		5.5	2.75	6	12	50	2	A	17.6
PM-2B-R3.0		6	3	6	12	50	2	B	17.6
PM-2B-R3.5		7	3.5	8	14	60	2	A	25.8
PM-2B-R4.0		8	4	8	16	60	2	B	25.8
PM-2B-R4.5		9	4.5	10	18	75	2	A	37.2
PM-2B-R5.0		10	5	10	20	75	2	B	37.2
PM-2B-R6.0		12	6	12	24	75	2	B	48.0
PM-2B-R7.0		14	7	14	28	75	2	B	67.5
PM-2B-R8.0		16	8	16	32	100	2	B	100
PM-2B-R10.0		20	10	20	40	100	2	B	1563

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

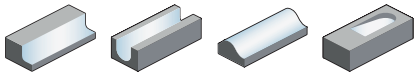
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

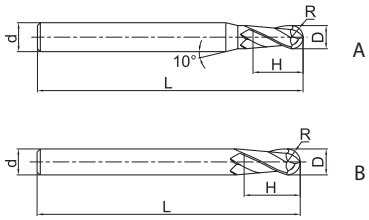
Ball nose cutter long shank

High-performance machining

PM-2BL



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
PM-2BL-R1.0		2	1	6	4	75	2	A	23.1
PM-2BL-R1.25		2.5	1.25	6	5	75	2	A	23.1
PM-2BL-R1.5		3	1.5	6	6	75	2	A	23.1
PM-2BL-R1.75		3.5	1.75	6	8	75	2	A	23.1
PM-2BL-R2.0		4	2	6	8	75	2	A	23.1
PM-2BL-R2.5		5	2.5	6	10	75	2	A	23.1
PM-2BL-R2.75		5.5	2.75	6	12	75	2	A	23.1
PM-2BL-R3.0		6	3	6	12	75	2	B	23.1
PM-2BL-R3.5		7	3.5	8	14	75	2	A	31.9
PM-2BL-R4.0		8	4	8	16	100	2	B	36.0
PM-2BL-R4.5		9	4.5	10	18	100	2	A	47.3
PM-2BL-R5.0		10	5	10	20	100	2	B	47.3
PM-2BL-R6.0		12	6	12	24	100	2	B	61.0
PM-2BL-R7.0		14	7	14	28	100	2	B	87.3
PM-2BL-R8.0		16	8	16	32	150	2	B	143.2
PM-2BL-R10.0		20	10	20	40	150	2	B	222.1

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

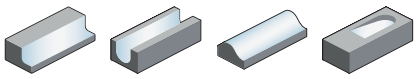
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

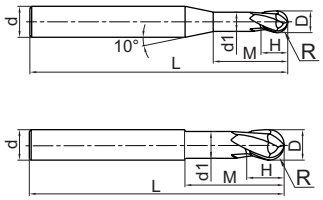
Ball nose cutter short cutting edge

High-performance machining

PM-2BFP



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]							Teeth	Geometry	Precio
		D	R	d (h6)	d_1	H	M	L			€
PM-2BFP-R0.5		1	0.5	6	0.95	1	2.5	75	2	A	23.1
PM-2BFP-R0.75		1.5	0.75	6	1.45	1.5	3	75	2	A	23.1
PM-2BFP-R1.0		2	1	6	1.95	2	4	75	2	A	23.1
PM-2BFP-R1.5		3	1.5	6	2.85	3	6	75	2	A	23.1
PM-2BFP-R2.0		4	2	6	3.85	4	8	75	2	A	23.1
PM-2BFP-R2.5		5	2.5	6	4.85	5	10	75	2	A	23.1
PM-2BFP-R3.0		6	3	6	5.8	6	12	75	2	B	23.1
PM-2BFP-R4.0		8	4	8	7.8	8	16	100	2	B	31.9
PM-2BFP-R5.0		10	5	10	9.6	10	20	100	2	B	36.0
PM-2BFP-R6.0		12	6	12	11.5	12	24	100	2	B	47.3
PM-2BFP-R8.0		16	8	16	15.5	16	32	150	2	B	61.0
PM-2BFP-R10.0		20	10	20	19.5	20	40	150	2	B	1432

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

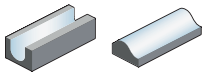
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

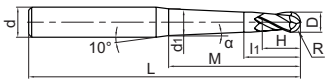
Ball nose cutter conical neck

High-performance machining

PM-2BC



– Straight shank
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	M	H	L	α	l_1	Teeth	Precio €
PM-2BC05-R0.25-M03		0.5	0.25	4	0.49	3	0.5	50	0.5	1.5	2	29.5
PM-2BC05-R0.25-M05		0.5	0.25	4	0.53	5	0.5	50	0.5	1.5	2	29.5
PM-2BC10-R0.25-M03		0.5	0.25	4	0.52	3	0.5	50	1	1.5	2	27.4
PM-2BC10-R0.25-M05		0.5	0.25	4	0.59	5	0.5	50	1	1.5	2	26.4
PM-2BC15-R0.25-M03		0.5	0.25	4	0.54	3	0.5	50	1.5	1.5	2	26.1
PM-2BC15-R0.25-M05		0.5	0.25	4	0.65	5	0.5	50	1.5	1.5	2	26.1
PM-2BC05-R0.30-M05		0.6	0.3	4	0.62	5	0.6	50	0.5	1.6	2	29.5
PM-2BC05-R0.30-M08		0.6	0.3	4	0.68	8	0.6	50	0.5	1.6	2	29.5
PM-2BC10-R0.30-M05		0.6	0.3	4	0.68	5	0.6	50	1	1.6	2	27.4
PM-2BC10-R0.30-M08		0.6	0.3	4	0.79	8	0.6	50	1	1.6	2	27.4
PM-2BC10-R0.30-M10		0.6	0.3	4	0.86	10	0.6	50	1	1.6	2	27.4
PM-2BC10-R0.30-M12		0.6	0.3	4	0.93	12	0.6	50	1	1.6	2	30.3
PM-2BC10-R0.30-M15		0.6	0.3	4	1.03	15	0.6	50	1	1.6	2	30.3
PM-2BC15-R0.30-M05		0.6	0.3	4	0.74	5	0.6	50	1.5	1.6	2	29.5
PM-2BC15-R0.30-M08		0.6	0.3	4	0.9	8	0.6	50	1.5	1.6	2	29.5
PM-2BC05-R0.40-M08		0.8	0.4	4	0.87	8	0.8	50	0.5	1.8	2	29.5
PM-2BC10-R0.40-M08		0.8	0.4	4	0.98	8	0.8	50	1	1.8	2	30.3
PM-2BC15-R0.40-M08		0.8	0.4	4	1.09	8	0.8	50	1.5	1.8	2	29.5
PM-2BC05-R0.40-M12		0.8	0.4	4	0.94	12	0.8	60	0.5	1.8	2	29.5
PM-2BC10-R0.40-M12		0.8	0.4	4	1.12	12	0.8	60	1	1.8	2	27.0
PM-2BC15-R0.40-M12		0.8	0.4	4	1.3	12	0.8	60	1.5	1.8	2	27.7
PM-2BC05-R0.50-M10		1	0.5	6	1.08	10	1	60	0.5	2.5	2	26.4
PM-2BC05-R0.50-M15		1	0.5	6	1.16	15	1	60	0.5	2.5	2	30.3
PM-2BC10-R0.50-M10		1	0.5	6	1.21	10	1	60	1	2.5	2	26.4
PM-2BC10-R0.50-M15		1	0.5	6	1.38	15	1	60	1	2.5	2	26.4
PM-2BC15-R0.50-M10		1	0.5	6	1.34	10	1	60	1.5	2.5	2	27.7
PM-2BC15-R0.50-M15		1	0.5	6	1.6	15	1	60	1.5	2.5	2	27.7
PM-2BC20-R0.50-M15		1	0.5	6	1.82	15	1	60	2	2.5	2	31.8
PM-2BC05-R0.50-M20		1	0.5	6	1.25	20	1	70	0.5	2.5	2	30.3
PM-2BC05-R0.50-M25		1	0.5	6	1.34	25	1	70	0.5	2.5	2	33.1
PM-2BC05-R0.50-M30		1	0.5	6	1.42	30	1	70	0.5	2.5	2	30.3
PM-2BC10-R0.50-M20		1	0.5	6	1.56	20	1	70	1	2.5	2	27.7
PM-2BC10-R0.50-M25		1	0.5	6	1.73	25	1	70	1	2.5	2	27.7
PM-2BC10-R0.50-M30		1	0.5	6	1.91	30	1	70	1	2.5	2	30.3
PM-2BC15-R0.50-M20		1	0.5	6	1.86	20	1	70	1.5	2.5	2	30.3
PM-2BC20-R0.50-M20		1	0.5	6	2.17	20	1	70	2	2.5	2	31.8
PM-2BC30-R0.50-M20		1	0.5	6	2.78	20	1	70	3	2.5	2	36.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

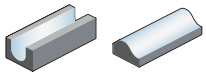
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

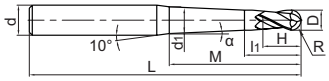
Ball nose cutter conical neck

High-performance machining

PM-2BC



– Straight shank
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]									Teeth	Precio
		D	R	d (h6)	d_1	M	H	L	α	l_1		€
PM-2BC50-R0.50-M20		1	0.5	6	4.01	20	1	70	5	2.5	2	36.4
PM-2BC10-R0.50-M35		1	0.5	6	2.08	35	1	80	1	2.5	2	30.3
PM-2BC05-R0.60-M12		1.2	0.6	6	1.31	12	1.2	60	0.5	2.7	2	26.4
PM-2BC10-R0.60-M12		1.2	0.6	6	1.47	12	1.2	60	1	2.7	2	27.8
PM-2BC15-R0.60-M12		1.2	0.6	6	1.63	12	1.2	60	1.5	2.7	2	26.4
PM-2BC05-R0.60-M24		1.2	0.6	6	1.52	24	1.2	70	0.5	2.7	2	27.4
PM-2BC10-R0.60-M24		1.2	0.6	6	1.89	24	1.2	70	1	2.7	2	30.3
PM-2BC15-R0.60-M24		1.2	0.6	6	2.26	24	1.2	70	1.5	2.7	2	33.1
PM-2BC05-R0.75-M10		1.5	0.75	6	1.57	10	1.5	60	0.5	3	2	30.3
PM-2BC05-R0.75-M15		1.5	0.75	6	1.65	15	1.5	60	0.5	3	2	30.3
PM-2BC10-R0.75-M10		1.5	0.75	6	1.69	10	1.5	60	1	3	2	30.3
PM-2BC10-R0.75-M15		1.5	0.75	6	1.86	15	1.5	60	1	3	2	30.3
PM-2BC15-R0.75-M10		1.5	0.75	6	1.81	10	1.5	60	1.5	3	2	29.5
PM-2BC15-R0.75-M15		1.5	0.75	6	2.07	15	1.5	60	1.5	3	2	31.8
PM-2BC05-R0.75-M30		1.5	0.75	6	1.92	30	1.5	70	0.5	3	2	30.3
PM-2BC10-R0.75-M20		1.5	0.75	6	2.04	20	1.5	70	1	3	2	30.3
PM-2BC10-R0.75-M30		1.5	0.75	6	2.39	30	1.5	70	1	3	2	30.3
PM-2BC15-R0.75-M30		1.5	0.75	6	2.86	30	1.5	70	1.5	3	2	31.8
PM-2BC05-R1.0-M20		2	1	6	2.18	20	2	60	0.5	4	2	30.3
PM-2BC10-R1.0-M20		2	1	6	2.46	20	2	60	1	4	2	31.8
PM-2BC10-R1.0-M25		2	1	6	2.64	25	2	60	1	4	2	31.8
PM-2BC15-R1.0-M20		2	1	6	2.74	20	2	60	1.5	4	2	30.3
PM-2BC05-R1.0-M30		2	1	6	2.36	30	2	70	0.5	4	2	30.3
PM-2BC10-R1.0-M30		2	1	6	2.81	30	2	70	1	4	2	31.4
PM-2BC15-R1.0-M30		2	1	6	3.27	30	2	70	1.5	4	2	30.3
PM-2BC20-R1.0-M30		2	1	6	3.72	30	2	70	2	4	2	31.8
PM-2BC30-R1.0-M30		2	1	6	4.63	30	2	70	3	4	2	31.8
PM-2BC05-R1.0-M40		2	1	6	2.53	40	2	80	0.5	4	2	33.9
PM-2BC10-R1.0-M35		2	1	6	2.99	35	2	80	1	4	2	31.4
PM-2BC10-R1.0-M40		2	1	6	3.16	40	2	80	1	4	2	31.4
PM-2BC15-R1.0-M40		2	1	6	3.79	40	2	80	1.5	4	2	34.1
PM-2BC20-R1.0-M40		2	1	6	4.42	40	2	80	2	4	2	33.9
PM-2BC30-R1.0-M40		2	1	6	5.68	40	2	80	3	4	2	31.8
PM-2BC10-R1.0-M50		2	1	6	3.51	50	2	90	1	4	2	33.6
PM-2BC05-R1.5-M30		3	1.5	6	3.32	30	3	70	0.5	6	2	30.3
PM-2BC10-R1.5-M30		3	1.5	6	3.74	30	3	70	1	6	2	31.2
PM-2BC15-R1.5-M30		3	1.5	6	4.16	30	3	70	1.5	6	2	31.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

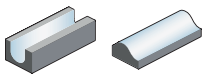
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

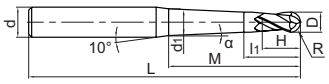
Ball nose cutter conical neck

High-performance machining

PM-2BC



– Straight shank
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	M	H	L	α	l_1	Teeth	Precio €
PM-2BC05-R1.5-M40		3	1.5	6	3.5	40	3	80	0.5	6	2	***31.7***
PM-2BC10-R1.5-M40		3	1.5	6	4.09	40	3	80	1	6	2	***31.2***
PM-2BC15-R1.5-M40		3	1.5	6	4.69	40	3	80	1.5	6	2	***33.9***
PM-2BC05-R1.5-M50		3	1.5	6	3.67	50	3	90	0.5	6	2	***36.5***
PM-2BC10-R1.5-M50		3	1.5	6	4.44	50	3	90	1	6	2	***33.6***
PM-2BC15-R1.5-M50		3	1.5	6	5.21	50	3	90	1.5	6	2	***36.5***
PM-2BC05-R2.0-M60		4	2	6	4.83	60	4	110	0.5	7	2	***37.8***
PM-2BC10-R2.0-M60		4	2	6	5.76	60	4	110	1	7	2	***38.9***

● Ex stock ○ On demand
✻ With internal cooling

Application field

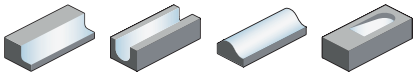
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

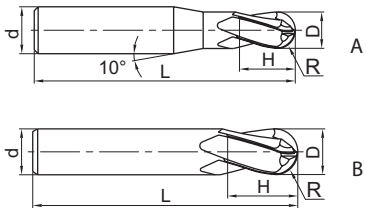
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter | High-performance machining

PM-4B



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
PM-4B-R1.5		3	1.5	6	6	50	4	A	*18.8*
PM-4B-R2.0		4	2	6	8	50	4	A	*18.8*
PM-4B-R2.5		5	2.5	6	10	50	4	A	*18.8*
PM-4B-R3.0		6	3	6	12	50	4	B	*18.8*
PM-4B-R4.0		8	4	8	16	60	4	B	*27.4*
PM-4B-R5.0		10	5	10	20	75	4	B	*39.7*
PM-4B-R6.0		12	6	12	24	75	4	B	*51.0*
PM-4B-R7.0		14	7	14	28	75	4	B	*68.1*
PM-4B-R8.0		16	8	16	32	100	4	B	*100*
PM-4B-R9.0		18	9	18	36	100	4	B	*124.9*
PM-4B-R10.0		20	10	20	40	100	4	B	*154.7*

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

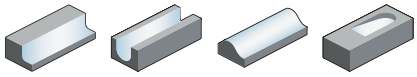
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

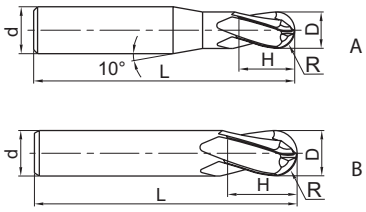
Ball nose cutter long shank

High-performance machining

PM-4BL



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
PM-4BL-R1.5		3	1.5	6	6	75	4	A	23.1
PM-4BL-R2.0		4	2	6	8	75	4	A	23.1
PM-4BL-R2.5		5	2.5	6	10	75	4	A	23.1
PM-4BL-R3.0		6	3	6	12	75	4	B	23.1
PM-4BL-R4.0		8	4	8	16	100	4	B	36.7
PM-4BL-R5.0		10	5	10	20	100	4	B	48.2
PM-4BL-R6.0		12	6	12	24	100	4	B	62.0
PM-4BL-R7.0		14	7	14	28	100	4	B	89.0
PM-4BL-R8.0		16	8	16	32	150	4	B	146
PM-4BL-R9.0		18	9	18	36	150	4	B	189.5
PM-4BL-R10.0		20	10	20	40	150	4	B	226.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

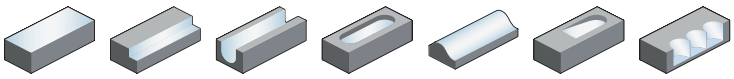
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

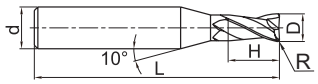
System code B258 Cutting data B422 Nonstandard order B461

Torus mill | High-performance machining

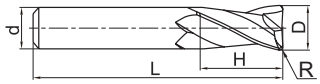
PM-2R



– Factory standard
– Centre cutting
– Helix angle 30°



A



B

Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
PM-2R-D1.0R0.2		1	0.2	4	3	50	2	A	16.3
PM-2R-D1.5R0.2		1.5	0.2	4	4	50	2	A	16.3
PM-2R-D2.0R0.2		2	0.2	4	6	50	2	A	16.3
PM-2R-D2.0R0.5		2	0.5	4	6	50	2	A	16.3
PM-2R-D2.5R0.2		2.5	0.2	4	8	50	2	A	16.3
PM-2R-D2.5R0.5		2.5	0.5	4	8	50	2	A	16.3
PM-2R-D3.0R0.2		3	0.2	4	8	50	2	A	16.3
PM-2R-D3.0R0.3		3	0.3	4	8	50	2	A	16.3
PM-2R-D3.0R0.5		3	0.5	4	8	50	2	A	16.3
PM-2R-D4.0R0.2		4	0.2	4	11	50	2	B	16.3
PM-2R-D4.0R0.3		4	0.3	4	11	50	2	B	16.3
PM-2R-D4.0R0.5		4	0.5	4	11	50	2	B	16.3
PM-2R-D4.0R1.0		4	1	4	11	50	2	B	16.3
PM-2R-D5.0R0.3		5	0.3	6	13	50	2	A	20.0
PM-2R-D5.0R0.5		5	0.5	6	13	50	2	A	20.0
PM-2R-D5.0R1.0		5	1	6	13	50	2	A	20.0
PM-2R-D6.0R0.3		6	0.3	6	16	50	2	B	20.0
PM-2R-D6.0R0.5		6	0.5	6	16	50	2	B	20.0
PM-2R-D6.0R1.0		6	1	6	16	50	2	B	20.0
PM-2R-D8.0R0.3		8	0.3	8	20	60	2	B	29.0
PM-2R-D8.0R0.5		8	0.5	8	20	60	2	B	29.0
PM-2R-D8.0R1.0		8	1	8	20	60	2	B	29.0
PM-2R-D10.0R0.5		10	0.5	10	25	75	2	B	40.8
PM-2R-D10.0R1.0		10	1	10	25	75	2	B	40.8
PM-2R-D10.0R1.5		10	1.5	10	25	75	2	B	40.8
PM-2R-D10.0R2.0		10	2	10	25	75	2	B	40.8
PM-2R-D12.0R0.5		12	0.5	12	30	75	2	B	52.3
PM-2R-D12.0R1.0		12	1	12	30	75	2	B	52.3
PM-2R-D12.0R1.5		12	1.5	12	30	75	2	B	52.3
PM-2R-D12.0R2.0		12	2	12	30	75	2	B	52.3

● Ex stock ○ On demand
✻ With internal cooling

Application field

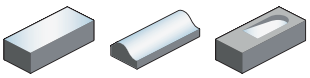
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

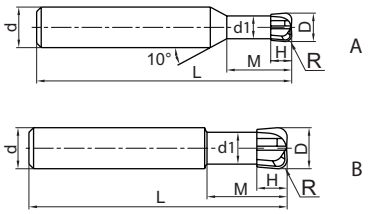
System code B258 | Cutting data B422 | Nonstandard order B461

End mill High-performance machining

PM-4H



– Factory standard
– Centre cutting
– Helix angle 0°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Geometry	Precio €
PM-4H-D3.0R0.8		3	0.8	6	2.7	1.2	8	50	4	A	20.5
PM-4H-D4.0R1.0		4	1	6	3.6	1.6	10	50	4	A	20.5
PM-4H-D5.0R1.2		5	1.2	6	4.5	2	12.5	50	4	A	20.5
PM-4H-D6.0R1.0		6	1	6	5.4	2.5	12	50	4	B	20.5
PM-4H-D6.0R1.5		6	1.5	6	5.4	2.5	12	50	4	B	20.5
PM-4H-D6.0R2.0		6	2	6	5.4	2.5	12	50	4	B	20.5
PM-4H-D8.0R1.0		8	1	8	7	3.5	16	60	4	B	32.2
PM-4H-D8.0R2.0		8	2	8	7	3.5	16	60	4	B	32.2
PM-4H-D10.0R1.0		10	1	10	9	4	20	75	4	B	44.8
PM-4H-D10.0R2.0		10	2	10	9	4	20	75	4	B	44.8
PM-4H-D10.0R3.0		10	3	10	9	4	20	75	4	B	44.8
PM-4H-D12.0R2.0		12	2	12	11	5	24	75	4	B	60.9
PM-4H-D12.0R3.0		12	3	12	11	5	24	75	4	B	60.9

● Ex stock ○ On demand
✻ With internal cooling

Application field

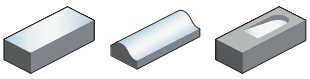
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

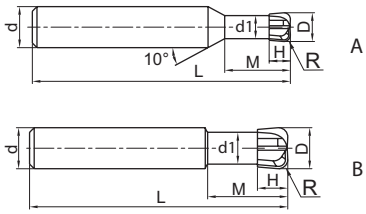
System code B258 Cutting data B422 Nonstandard order B461

End mill long shank | High-performance machining

PM-4HL



– Factory standard
– Centre cutting
– Helix angle 0°



Article	✻	Dimensions [mm]							Teeth	Geometry	Precio
		D	R	d (h6)	d_1	H	M	L			€
PM-4HL-D4.0R1.0		4	1	6	3.6	1.6	10	75	4	A	***26 .8***
PM-4HL-D5.0R1.2		5	1.2	6	4.5	2	12.5	75	4	A	***26 .8***
PM-4HL-D6.0R1.0		6	1	6	5.4	2.5	12	75	4	B	***26 .8***
PM-4HL-D6.0R1.5		6	1.5	6	5.4	2.5	12	75	4	B	***26 .8***
PM-4HL-D6.0R2.0		6	2	6	5.4	2.5	12	75	4	B	***26 .8***
PM-4HL-D8.0R1.0		8	1	8	7	3.5	16	100	4	B	***45 .1***
PM-4HL-D8.0R2.0		8	2	8	7	3.5	16	100	4	B	***45 .1***
PM-4HL-D10.0R1.0		10	1	10	9	4	20	100	4	B	***55 .1***
PM-4HL-D10.0R2.0		10	2	10	9	4	20	100	4	B	***55 .1***
PM-4HL-D10.0R3.0		10	3	10	9	4	20	100	4	B	***55 .1***
PM-4HL-D12.0R2.0		12	2	12	11	5	24	100	4	B	***78 .2***
PM-4HL-D12.0R3.0		12	3	12	11	5	24	100	4	B	***78.2***

● Ex stock ○ On demand
✻ With internal cooling

Application field

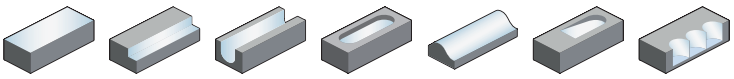
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

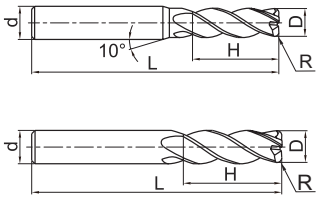
System code B258 | Cutting data B422 | Nonstandard order B461

Torus mill High-performance machining

PM-4R



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
PM-4R-D3.0R0.2		3	0.2	6	8	50	4	A	18.9
PM-4R-D4.0R0.3		4	0.3	6	10	50	4	A	18.9
PM-4R-D4.0R0.5		4	0.5	6	10	50	4	A	18.9
PM-4R-D5.0R0.5		5	0.5	6	13	50	4	A	28.7
PM-4R-D5.0R1.0		5	1	6	13	50	4	A	21.7
PM-4R-D6.0R0.5		6	0.5	6	16	50	4	B	21.7
PM-4R-D6.0R1.0		6	1	6	16	50	4	B	21.7
PM-4R-D8.0R0.5		8	0.5	8	20	60	4	B	30.9
PM-4R-D8.0R1.0		8	1	8	20	60	4	B	30.9
PM-4R-D10.0R0.5		10	0.5	10	25	75	4	B	43.1
PM-4R-D10.0R1.0		10	1	10	25	75	4	B	43.1
PM-4R-D10.0R2.0		10	2	10	25	75	4	B	43.1
PM-4R-D10.0R3.0		10	3	10	25	75	4	B	43.1
PM-4R-D12.0R0.5		12	0.5	12	30	75	4	B	55.2
PM-4R-D12.0R1.0		12	1	12	30	75	4	B	55.2
PM-4R-D12.0R2.0		12	2	12	30	75	4	B	55.2
PM-4R-D12.0R3.0		12	3	12	30	75	4	B	55.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

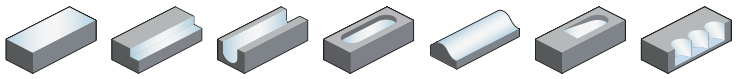
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

Torus mill long shank | High-performance machining

PM-4RL



– Factory standard
– Centre cutting
– Helix angle 30°

Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Precio €
PM-4RL-D6.0R0.5		6	0.5	6	16	75	4	*24 .4*
PM-4RL-D6.0R1.0		6	1	6	16	75	4	*24 .4*
PM-4RL-D8.0R0.5		8	0.5	8	20	100	4	*40 .1*
PM-4RL-D8.0R1.0		8	1	8	20	100	4	*40 .1*
PM-4RL-D10.0R0.5		10	0.5	10	25	100	4	*49 .5*
PM-4RL-D10.0R1.0		10	1	10	25	100	4	*49 .5*
PM-4RL-D10.0R2.0		10	2	10	25	100	4	*49 .5*
PM-4RL-D12.0R0.5		12	0.5	12	30	100	4	*69 .3*
PM-4RL-D12.0R1.0		12	1	12	30	100	4	*69 .3*
PM-4RL-D12.0R2.0		12	2	12	30	100	4	*69 .3*
PM-4RL-D16.0R1.0		16	1	16	45	150	4	*160.4*
PM-4RL-D16.0R2.0		16	2	16	45	150	4	*160.4*

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

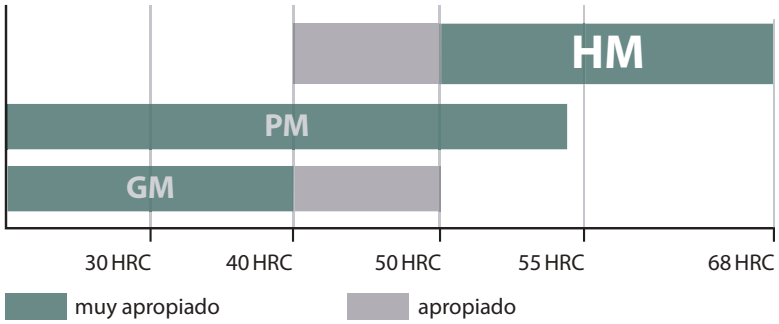
Notes

HM Serie

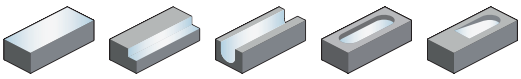
Para el mecanizado de materiales endurecidos

- Para el mecanizado de acero de hasta 68 HRC.
- Un filo de corte muy estable con alta rigidez y la más innovadora tecnología de recubrimiento hacen posible altas velocidades de corte y elevados valores de avance.
- Fresa integral, fresa de punta esférica, fresa toroidal y fresa mini
- Rango de diámetros, 0,3–20,0 mm

Ámbitos de aplicación en el mecanizado de acero

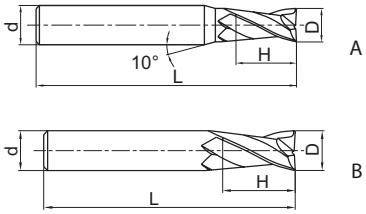


End mill | Hard machining



HM-2E

– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
HM-2E-D1.0S		1	4	3	50	2	A	14.3
HM-2E-D1.5S		1.5	4	4	50	2	A	14.3
HM-2E-D2.0S		2	4	6	50	2	A	14.3
HM-2E-D2.5S		2.5	4	8	50	2	A	14.3
HM-2E-D3.0S		3	4	8	50	2	A	14.3
HM-2E-D4.0S		4	4	11	50	2	B	14.3
HM-2E-D1.0		1	6	3	50	2	A	17.9
HM-2E-D1.5		1.5	6	4	50	2	A	17.9
HM-2E-D2.0		2	6	6	50	2	A	17.9
HM-2E-D2.5		2.5	6	8	50	2	A	17.9
HM-2E-D3.0		3	6	8	50	2	A	17.9
HM-2E-D3.5		3.5	6	10	50	2	A	17.9
HM-2E-D4.0		4	6	11	50	2	A	17.9
HM-2E-D4.5		4.5	6	11	50	2	A	17.9
HM-2E-D5.0		5	6	13	50	2	A	17.9
HM-2E-D5.5		5.5	6	16	50	2	A	17.9
HM-2E-D6.0		6	6	16	50	2	B	17.9
HM-2E-D7.0		7	8	20	60	2	A	32.6
HM-2E-D8.0		8	8	20	60	2	B	32.6
HM-2E-D9.0		9	10	22	75	2	A	54.9
HM-2E-D10.0		10	10	25	75	2	B	54.9
HM-2E-D11.0		11	12	26	75	2	A	65.3
HM-2E-D12.0		12	12	30	75	2	B	65.3
HM-2E-D14.0		14	14	32	100	2	B	108.4
HM-2E-D16.0		16	16	45	100	2	B	131.6
HM-2E-D18.0		18	18	45	100	2	B	193.1
HM-2E-D20.0		20	20	45	100	2	B	209.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
					✔

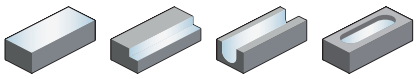
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

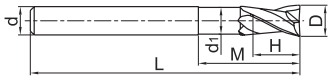
End mill short cutting edge

Hard machining

HM-2EFP



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	d_1	H	M	L		€
HM-2EFP-D6.0		6	6	5.8	9	30	75	2	***33.3***
HM-2EFP-D8.0		8	8	7.8	12	40	100	2	***59.3***
HM-2EFP-D10.0		10	10	9.6	15	50	100	2	***77.7***
HM-2EFP-D12.0		12	12	11.5	18	50	100	2	***105.9***
HM-2EFP-D16.0		16	16	15.5	24	50	150	2	***194.4***
HM-2EFP-D20.0		20	20	19.5	30	60	150	2	***274.4***

● Ex stock ○ On demand
✻ With internal cooling

Application field

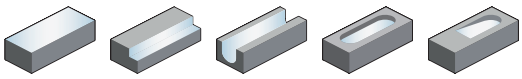
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

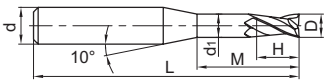
System code B258 Cutting data B422 Nonstandard order B461

End mill Hard machining

HM-2EP



– Straight shank
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	d (h6)	d_1	H	M	L	Teeth	Precio €
HM-2EP-D0.5-M04		0.5	4	0.45	0.7	4	50	2	20.2
HM-2EP-D0.5-M06		0.5	4	0.45	0.7	6	50	2	20.2
HM-2EP-D0.5-M08		0.5	4	0.45	0.7	8	50	2	20.2
HM-2EP-D0.8-M04		0.8	4	0.75	1.2	4	50	2	20.2
HM-2EP-D0.8-M06		0.8	4	0.75	1.2	6	50	2	20.2
HM-2EP-D0.8-M08		0.8	4	0.75	1.2	8	50	2	20.2
HM-2EP-D0.8-M10		0.8	4	0.75	1.2	10	50	2	20.2
HM-2EP-D1.0-M04		1	4	0.95	1.5	4	50	2	20.2
HM-2EP-D1.0-M06		1	4	0.95	1.5	6	50	2	20.2
HM-2EP-D1.0-M08		1	4	0.95	1.5	8	50	2	20.2
HM-2EP-D1.0-M10		1	4	0.95	1.5	10	50	2	20.2
HM-2EP-D1.0-M12		1	4	0.95	1.5	12	50	2	20.2
HM-2EP-D1.0-M14		1	4	0.95	1.5	14	50	2	20.2
HM-2EP-D1.2-M06		1.2	4	1.15	1.8	6	50	2	20.2
HM-2EP-D1.2-M08		1.2	4	1.15	1.8	8	50	2	20.2
HM-2EP-D1.2-M10		1.2	4	1.15	1.8	10	50	2	20.2
HM-2EP-D1.2-M12		1.2	4	1.15	1.8	12	50	2	20.2
HM-2EP-D1.5-M06		1.5	4	1.45	2.3	6	50	2	20.2
HM-2EP-D1.5-M08		1.5	4	1.45	2.3	8	50	2	20.2
HM-2EP-D1.5-M10		1.5	4	1.45	2.3	10	50	2	20.2
HM-2EP-D1.5-M12		1.5	4	1.45	2.3	12	50	2	20.2
HM-2EP-D1.5-M14		1.5	4	1.45	2.3	14	50	2	20.2
HM-2EP-D2.0-M06		2	4	1.95	3	6	50	2	20.2
HM-2EP-D2.0-M08		2	4	1.95	3	8	50	2	20.2
HM-2EP-D2.0-M10		2	4	1.95	3	10	50	2	20.2
HM-2EP-D2.0-M12		2	4	1.95	3	12	50	2	20.2
HM-2EP-D2.0-M14		2	4	1.95	3	14	50	2	20.2
HM-2EP-D2.0-M16		2	4	1.95	3	16	50	2	20.2
HM-2EP-D2.5-M08		2.5	4	2.4	3.7	8	50	2	20.2
HM-2EP-D2.5-M10		2.5	4	2.4	3.7	10	50	2	20.2
HM-2EP-D2.5-M12		2.5	4	2.4	3.7	12	50	2	20.2
HM-2EP-D2.5-M14		2.5	4	2.4	3.7	14	50	2	20.2
HM-2EP-D2.5-M16		2.5	4	2.4	3.7	16	60	2	20.2
HM-2EP-D2.5-M18		2.5	4	2.4	3.7	18	60	2	20.2
HM-2EP-D2.5-M20		2.5	4	2.4	3.7	20	60	2	20.2
HM-2EP-D3.0-M06		3	6	2.85	4.5	6	50	2	20.9
HM-2EP-D3.0-M08		3	6	2.85	4.5	8	50	2	20.9

● Ex stock ○ On demand
✻ With internal cooling

Application field

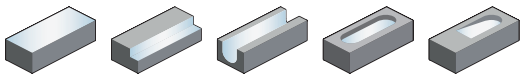
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

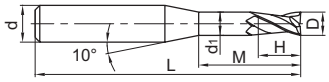
System code B258 Cutting data B422 Nonstandard order B461

End mill | Hard machining

HM-2EP



– Straight shank
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	d_1	H	M	L		€
HM-2EP-D3.0-M10		3	6	2.85	4.5	10	50	2	***20.9***
HM-2EP-D3.0-M12		3	6	2.85	4.5	12	50	2	***20.9***
HM-2EP-D3.0-M14		3	6	2.85	4.5	14	60	2	***22.1***
HM-2EP-D3.0-M16		3	6	2.85	4.5	16	60	2	***22.1***
HM-2EP-D3.0-M18		3	6	2.85	4.5	18	60	2	***22.1***
HM-2EP-D3.0-M20		3	6	2.85	4.5	20	60	2	***22.1***
HM-2EP-D4.0-M12		4	6	3.85	6	12	60	2	***22.1***
HM-2EP-D4.0-M16		4	6	3.85	6	16	60	2	***22.1***
HM-2EP-D4.0-M20		4	6	3.85	6	20	60	2	***22.1***
HM-2EP-D4.0-M25		4	6	3.85	6	25	60	2	***22.1***
HM-2EP-D5.0-M16		5	6	4.85	7.5	16	60	2	***22.1***
HM-2EP-D5.0-M25		5	6	4.85	7.5	25	70	2	***22.1***

● Ex stock ○ On demand
✻ With internal cooling

Application field

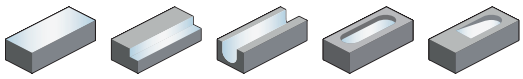
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

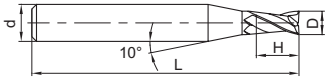
System code B258 | Cutting data B422 | Nonstandard order B461

End mill Hard machining

HM-2ES



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]				Teeth	Precio
		D	d (h6)	H	L		€
HM-2ES-D0.3		0.3	4	0.6	50	2	14.4
HM-2ES-D0.4		0.4	4	0.8	50	2	14.4
HM-2ES-D0.5		0.5	4	1	50	2	14.4
HM-2ES-D0.6		0.6	4	1.2	50	2	14.4
HM-2ES-D0.7		0.7	4	1.4	50	2	14.4
HM-2ES-D0.8		0.8	4	1.6	50	2	14.4
HM-2ES-D0.9		0.9	4	1.8	50	2	14.4
HM-2ES-D1.0		1	4	2	50	2	12.6
HM-2ES-D1.1		1.1	4	2	50	2	12.6
HM-2ES-D1.2		1.2	4	2.5	50	2	12.6
HM-2ES-D1.3		1.3	4	2.5	50	2	12.6
HM-2ES-D1.4		1.4	4	3	50	2	12.6
HM-2ES-D1.5		1.5	4	3	50	2	12.6
HM-2ES-D1.6		1.6	4	3.5	50	2	12.6
HM-2ES-D1.7		1.7	4	3.5	50	2	12.6
HM-2ES-D1.8		1.8	4	4	50	2	12.6
HM-2ES-D1.9		1.9	4	4	50	2	12.6
HM-2ES-D2.0		2	4	4	50	2	12.6
HM-2ES-D2.1		2.1	4	4	50	2	12.6
HM-2ES-D2.2		2.2	4	4.5	50	2	12.6
HM-2ES-D2.3		2.3	4	4.5	50	2	12.6
HM-2ES-D2.4		2.4	4	5	50	2	12.6
HM-2ES-D2.5		2.5	4	5	50	2	12.6
HM-2ES-D2.6		2.6	4	5	50	2	12.6
HM-2ES-D2.7		2.7	4	5.5	50	2	12.6
HM-2ES-D2.8		2.8	4	5.5	50	2	12.6
HM-2ES-D2.9		2.9	4	6	50	2	12.6
HM-2ES-D3.0		3	4	6	50	2	12.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

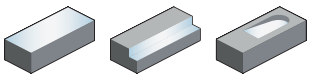
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

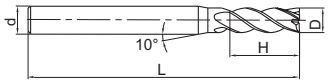
System code B258 Cutting data B422 Nonstandard order B461

End mill | Hard machining

HM-4E



– Factory standard
– Centre cutting
– Helix angle 45°



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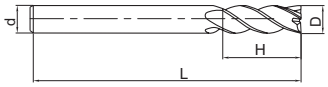


B

Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
HM-4E-D1.0S		1	4	3	50	4	A	15.3
HM-4E-D1.5S		1.5	4	4	50	4	A	15.3
HM-4E-D2.0S		2	4	6	50	4	A	15.3
HM-4E-D2.5S		2.5	4	8	50	4	A	15.3
HM-4E-D3.0S		3	4	8	50	4	A	15.3
HM-4E-D4.0S		4	4	11	50	4	B	17.9
HM-4E-D1.0		1	6	3	50	4	A	15.3
HM-4E-D1.5		1.5	6	4	50	4	A	15.3
HM-4E-D2.0		2	6	6	50	4	A	15.3
HM-4E-D2.5		2.5	6	8	50	4	A	15.3
HM-4E-D3.0		3	6	8	50	4	A	17.9
HM-4E-D3.5		3.5	6	10	50	4	A	17.9
HM-4E-D4.0		4	6	11	50	4	A	17.9
HM-4E-D4.5		4.5	6	11	50	4	A	17.9
HM-4E-D5.0		5	6	13	50	4	A	17.9
HM-4E-D5.5		5.5	6	16	50	4	A	17.9
HM-4E-D6.0		6	6	16	50	4	B	17.9
HM-4E-D7.0		7	8	20	60	4	A	32.6
HM-4E-D8.0		8	8	20	60	4	B	32.6
HM-4E-D9.0		9	10	22	75	4	A	54.9
HM-4E-D10.0		10	10	25	75	4	B	54.9
HM-4E-D11.0		11	12	26	75	4	A	65.3
HM-4E-D12.0		12	12	30	75	4	B	65.3
HM-4E-D14.0		14	14	32	75	4	B	108.4
HM-4E-D16.0		16	16	45	100	4	B	131.6
HM-4E-D18.0		18	18	45	100	4	B	193.1
HM-4E-D20.0		20	20	45	100	4	B	209.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

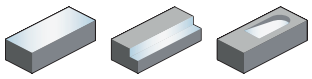
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

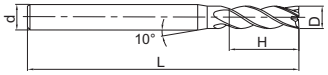
System code B258 | Cutting data B422 | Nonstandard order B461

End mill long shank | Hard machining

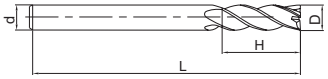
HM-4EL



– Factory standard
– Centre cutting
– Helix angle 45°



A



B

Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
HM-4EL-D3.0		3	6	12	75	4	A	24.2
HM-4EL-D4.0		4	6	15	75	4	A	24.2
HM-4EL-D5.0		5	6	20	75	4	A	24.2
HM-4EL-D6.0		6	6	20	75	4	B	24.2
HM-4EL-D8.0		8	8	25	100	4	B	47.7
HM-4EL-D10.0		10	10	30	100	4	B	71.6
HM-4EL-D12.0		12	12	35	100	4	B	94.8
HM-4EL-D14.0		14	14	40	100	4	B	108.4
HM-4EL-D16.0		16	16	50	150	4	B	131.6
HM-4EL-D20.0		20	20	55	150	4	B	209.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
					✔

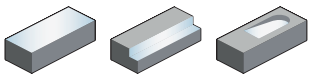
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

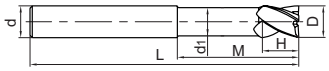
End mill short cutting edge

Hard machining

HM-4EFP



– Factory standard
– Centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm] D	d (h6)	d_1	H	M	L	Teeth	Precio €
HM-4EFP-D6.0		6	6	5.8	9	30	75	4	*33.3*
HM-4EFP-D8.0		8	8	7.8	12	40	100	4	*59.3*
HM-4EFP-D10.0		10	10	9.6	15	50	100	4	*77.7*
HM-4EFP-D12.0		12	12	11.5	18	50	100	4	*105.9*
HM-4EFP-D16.0		16	16	15.5	24	50	150	4	*194.4*
HM-4EFP-D20.0		20	20	19.5	30	60	150	4	*274.4*

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
					✔

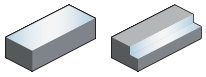
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

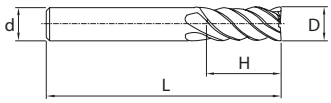
End mill long cutting edge

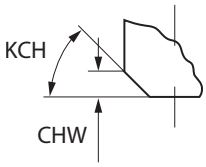
High-speed hard machining

5502R55MHH



– Type of shank DIN 6535HA
– Non-centre cutting
– Helix angle 55°





Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	H	L	KCH	CHW		€
5502R55MHH-0300		3	6	8	57	0	0	4	***29.6***
5502R55MHH-0400		4	6	11	57	0	0	4	***29.6***
5502R55MHH-0500		5	6	13	57	0	0	5	***29.6***
5502R55MHH-0600		6	6	13	57	45	0,10	6	***29.6***
5502R55MHH-0800		8	8	19	63	45	0,10	6	***38.7***
5502R55MHH-1000		10	10	22	72	45	0,10	6	***54.2***
5502R55MHH-1200		12	12	26	83	45	0,10	6	***73.0***
5502R55MHH-1600		16	16	32	92	45	0,10	6	***128.8***
5502R55MHH-2000		20	20	38	104	45	0,10	8	***212.2***

● Ex stock ○ On demand
✻ With internal cooling

Application field

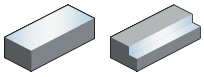
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

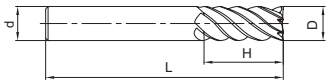
System code B258 Cutting data B422 Nonstandard order B461

End mill | Hard machining

HM-6E



– Factory standard
– Non-centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm]				Teeth	Precio
		D	d (h6)	H	L		€
HM-6E-D6.0		6	6	18	60	6	*27.5*
HM-6E-D8.0		8	8	20	60	6	*37.0*
HM-6E-D10.0		10	10	30	75	6	*54.9*
HM-6E-D12.0		12	12	32	75	6	*74.4*
HM-6E-D16.0		16	16	40	100	6	*140 .8*
HM-6E-D20.0		20	20	45	100	6	*211.1*

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
					✔

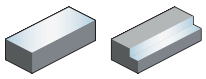
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

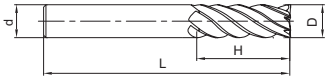
End mill long shank

Hard machining

HM-6EL



– Factory standard
– Non-centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Precio €
HM-6EL-D6.0		6	6	24	75	6	*31.4*
HM-6EL-D8.0		8	8	32	75	6	*50.5*
HM-6EL-D10.0		10	10	40	100	6	*74.9*
HM-6EL-D12.0		12	12	45	100	6	*100.1*
HM-6EL-D16.0		16	16	64	150	6	*208.4*
HM-6EL-D20.0		20	20	75	150	6	*310.8*

● Ex stock ○ On demand
✻ With internal cooling

Application field

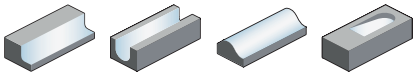
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

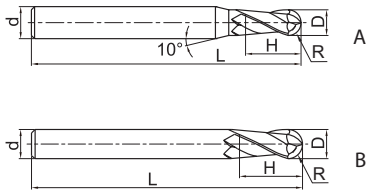
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter | Hard machining

HM-2B



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
HM-2B-R0.5S		1	0.5	4	2	50	2	A	30.2
HM-2B-R0.75S		1.5	0.75	4	3	50	2	A	30.2
HM-2B-R1.0S		2	1	4	4	50	2	A	30.2
HM-2B-R1.25S		2.5	1.25	4	5	50	2	A	30.2
HM-2B-R1.5S		3	1.5	4	6	50	2	A	30.2
HM-2B-R2.0S		4	2	4	8	50	2	B	30.2
HM-2B-R0.5		1	0.5	6	2	50	2	A	33.3
HM-2B-R0.75		1.5	0.75	6	3	50	2	A	33.3
HM-2B-R1.0		2	1	6	4	50	2	A	33.3
HM-2B-R1.25		2.5	1.25	6	5	50	2	A	33.3
HM-2B-R1.5		3	1.5	6	6	50	2	A	33.3
HM-2B-R1.75		3.5	1.75	6	8	50	2	A	33.3
HM-2B-R2.0		4	2	6	8	50	2	A	33.3
HM-2B-R2.5		5	2.5	6	10	50	2	A	33.3
HM-2B-R2.75		5.5	2.75	6	12	50	2	A	33.3
HM-2B-R3.0		6	3	6	12	50	2	B	33.3
HM-2B-R3.5		7	3.5	8	14	60	2	A	44.0
HM-2B-R4.0		8	4	8	16	60	2	B	44.0
HM-2B-R4.5		9	4.5	10	18	75	2	A	59.7
HM-2B-R5.0		10	5	10	20	75	2	B	59.7
HM-2B-R6.0		12	6	12	24	75	2	B	75.1
HM-2B-R7.0		14	7	14	28	75	2	B	96.7
HM-2B-R8.0		16	8	16	32	100	2	B	132.6
HM-2B-R10.0		20	10	20	40	100	2	B	189.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
					✔

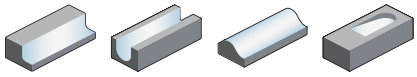
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

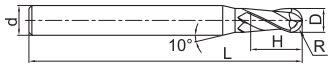
Ball nose cutter long shank

Hard machining

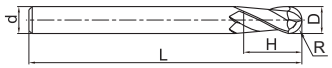
HM-2BL



– Factory standard
– Centre cutting
– Helix angle 35°



A



B

Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
HM-2BL-R1.0		2	1	6	4	75	2	A	39.0
HM-2BL-R1.25		2.5	1.25	6	6	75	2	A	39.0
HM-2BL-R1.5		3	1.5	6	6	75	2	A	39.0
HM-2BL-R1.75		3.5	1.75	6	8	75	2	A	39.0
HM-2BL-R2.0		4	2	6	8	75	2	A	39.0
HM-2BL-R2.5		5	2.5	6	10	75	2	A	39.0
HM-2BL-R2.75		5.5	2.75	6	12	75	2	A	39.0
HM-2BL-R3.0		6	3	6	12	75	2	B	39.0
HM-2BL-R3.5		7	3.5	8	14	75	2	A	55.5
HM-2BL-R4.0		8	4	8	16	100	2	B	55.5
HM-2BL-R4.5		9	4.5	10	18	100	2	A	71.7
HM-2BL-R5.0		10	5	10	20	100	2	B	71.7
HM-2BL-R6.0		12	6	12	24	100	2	B	91.1
HM-2BL-R7.0		14	7	14	28	100	2	B	113.1
HM-2BL-R8.0		16	8	16	32	150	2	B	175.2
HM-2BL-R10.0		20	10	20	40	150	2	B	251.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

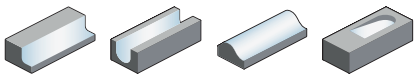
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

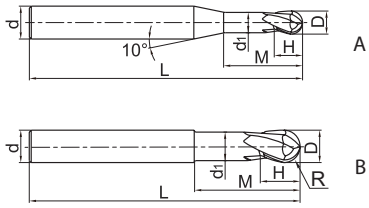
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter short cutting edge | Hard machining

HM-2BFP



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Geometry	Precio €
HM-2BFP-R0.5		1	0.5	6	0.95	1	2.5	75	2	A	39.0
HM-2BFP-R0.75		1.5	0.75	6	1.45	1.5	3	75	2	A	39.0
HM-2BFP-R1.0		2	1	6	1.95	2	4	75	2	A	39.0
HM-2BFP-R1.5		3	1.5	6	2.85	3	6	75	2	A	39.0
HM-2BFP-R2.0		4	2	6	3.85	4	8	75	2	A	39.0
HM-2BFP-R2.5		5	2.5	6	4.85	5	10	75	2	A	39.0
HM-2BFP-R3.0		6	3	6	5.8	6	12	75	2	B	39.0
HM-2BFP-R4.0		8	4	8	7.8	8	16	100	2	B	60.2
HM-2BFP-R5.0		10	5	10	9.6	10	20	100	2	B	77.7
HM-2BFP-R6.0		12	6	12	11.5	12	24	100	2	B	97.9
HM-2BFP-R8.0		16	8	16	15.5	16	32	150	2	B	191.4
HM-2BFP-R10.0		20	10	20	19.5	20	40	150	2	B	251.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
					✔

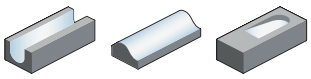
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

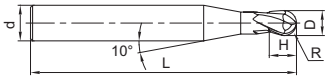
Ball nose cutter

Hard machining

HM-2BS



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]					Teeth	Precio
		D	R	d (h6)	H	L		€
HM-2BS-R0.15		0.3	0.15	4	0.5	50	2	17.2
HM-2BS-R0.20		0.4	0.2	4	0.6	50	2	17.2
HM-2BS-R0.25		0.5	0.25	4	0.8	50	2	17.2
HM-2BS-R0.30		0.6	0.3	4	0.9	50	2	17.2
HM-2BS-R0.35		0.7	0.35	4	1	50	2	17.2
HM-2BS-R0.40		0.8	0.4	4	1.2	50	2	17.2
HM-2BS-R0.45		0.9	0.45	4	1.3	50	2	17.2
HM-2BS-R0.50		1	0.5	4	1.5	50	2	15.5
HM-2BS-R0.60		1.2	0.6	4	1.8	50	2	15.5
HM-2BS-R0.70		1.4	0.7	4	2	50	2	15.5
HM-2BS-R0.75		1.5	0.75	4	2.3	50	2	15.5
HM-2BS-R0.80		1.6	0.8	4	2.5	50	2	15.5
HM-2BS-R0.90		1.8	0.9	4	2.7	50	2	15.5
HM-2BS-R1.00		2	1	4	3	50	2	15.5
HM-2BS-R1.25		2.5	1.25	4	3.7	50	2	15.5
HM-2BS-R1.50		3	1.5	4	4.5	50	2	15.5

● Ex stock ○ On demand
✻ With internal cooling

Application field

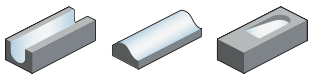
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

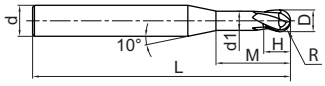
System code B258 Cutting data B422 Nonstandard order B461

End mill | Hard machining

HM-2BP



– Straight shank
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Precio €
HM-2BP-R0.25-M04		0.5	0.25	4	0.45	0.7	4	50	2	24.4
HM-2BP-R0.25-M06		0.5	0.25	4	0.45	0.7	6	50	2	24.4
HM-2BP-R0.3-M04		0.6	0.3	4	0.55	0.9	4	50	2	24.4
HM-2BP-R0.3-M06		0.6	0.3	4	0.55	0.9	6	50	2	24.4
HM-2BP-R0.3-M08		0.6	0.3	4	0.55	0.9	8	50	2	24.4
HM-2BP-R0.4-M04		0.8	0.4	4	0.75	1.2	4	50	2	24.4
HM-2BP-R0.4-M06		0.8	0.4	4	0.75	1.2	6	50	2	24.4
HM-2BP-R0.4-M08		0.8	0.4	4	0.75	1.2	8	50	2	24.4
HM-2BP-R0.4-M10		0.8	0.4	4	0.75	1.2	10	50	2	24.4
HM-2BP-R0.5-M04		1	0.5	4	0.95	1.5	4	50	2	23.4
HM-2BP-R0.5-M06		1	0.5	4	0.95	1.5	6	50	2	23.4
HM-2BP-R0.5-M08		1	0.5	4	0.95	1.5	8	50	2	23.4
HM-2BP-R0.5-M10		1	0.5	4	0.95	1.5	10	50	2	23.4
HM-2BP-R0.5-M12		1	0.5	4	0.95	1.5	12	50	2	23.4
HM-2BP-R0.6-M06		1.2	0.6	4	1.15	1.8	6	50	2	23.4
HM-2BP-R0.6-M08		1.2	0.6	4	1.15	1.8	8	50	2	23.4
HM-2BP-R0.6-M12		1.2	0.6	4	1.15	1.8	12	50	2	23.4
HM-2BP-R0.6-M16		1.2	0.6	4	1.15	1.8	16	50	2	23.4
HM-2BP-R0.75-M08		1.5	0.75	4	1.45	2.3	8	50	2	23.4
HM-2BP-R0.75-M12		1.5	0.75	4	1.45	2.3	12	50	2	23.4
HM-2BP-R0.75-M16		1.5	0.75	4	1.45	2.3	16	50	2	23.4
HM-2BP-R1.0-M06		2	1	4	1.95	3	6	50	2	22.3
HM-2BP-R1.0-M08		2	1	4	1.95	3	8	50	2	22.3
HM-2BP-R1.0-M10		2	1	4	1.95	3	10	50	2	22.3
HM-2BP-R1.0-M12		2	1	4	1.95	3	12	50	2	22.3
HM-2BP-R1.0-M16		2	1	4	1.95	3	16	50	2	22.3
HM-2BP-R1.0-M20		2	1	4	1.95	3	20	50	2	22.3
HM-2BP-R1.25-M08		2.5	1.25	4	2.4	3.7	8	50	2	22.3
HM-2BP-R1.25-M12		2.5	1.25	4	2.4	3.7	12	50	2	22.3
HM-2BP-R1.25-M16		2.5	1.25	4	2.4	3.7	16	60	2	22.3
HM-2BP-R1.25-M20		2.5	1.25	4	2.4	3.7	20	60	2	22.3
HM-2BP-R1.5-M08		3	1.5	6	2.85	4.5	8	50	2	26.2
HM-2BP-R1.5-M10		3	1.5	6	2.85	4.5	10	50	2	26.2
HM-2BP-R1.5-M12		3	1.5	6	2.85	4.5	12	50	2	26.2
HM-2BP-R1.5-M16		3	1.5	6	2.85	4.5	16	60	2	29.5
HM-2BP-R1.5-M20		3	1.5	6	2.85	4.5	20	60	2	29.5
HM-2BP-R2.0-M10		4	2	6	3.85	6	10	60	2	29.5

● Ex stock ○ On demand
✻ With internal cooling

Application field

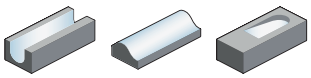
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

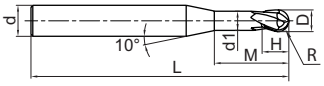
System code B258 | Cutting data B422 | Nonstandard order B461

End mill Hard machining

HM-2BP



– Straight shank
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Precio €
HM-2BP-R2.0-M16		4	2	6	3.85	6	16	60	2	***29.5***
HM-2BP-R2.0-M20		4	2	6	3.85	6	20	60	2	***29.5***
HM-2BP-R2.0-M25		4	2	6	3.85	6	25	60	2	***29.5***
HM-2BP-R2.5-M16		5	2.5	6	4.85	7.5	16	60	2	***29.5***
HM-2BP-R2.5-M25		5	2.5	6	4.85	7.5	25	70	2	***33.4***

● Ex stock ○ On demand
✻ With internal cooling

Application field

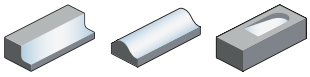
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

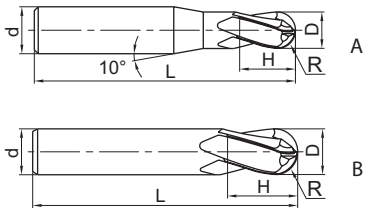
System code B258 Cutting data B422 Nonstandard order B461

Ball nose cutter | Hard machining

HM-4B



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
HM-4B-R1.5		3	1.5	6	6	50	4	A	33.3
HM-4B-R2.0		4	2	6	8	50	4	A	33.3
HM-4B-R2.5		5	2.5	6	10	50	4	A	33.3
HM-4B-R3.0		6	3	6	12	50	4	B	33.3
HM-4B-R4.0		8	4	8	16	60	4	B	44.0
HM-4B-R5.0		10	5	10	20	75	4	B	59.7
HM-4B-R6.0		12	6	12	24	75	4	B	75.1
HM-4B-R7.0		14	7	14	28	75	4	B	110.7
HM-4B-R8.0		16	8	16	32	100	4	B	150.8
HM-4B-R9.0		18	9	18	36	100	4	B	180.9
HM-4B-R10.0		20	10	20	40	100	4	B	251.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
					✔

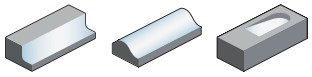
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

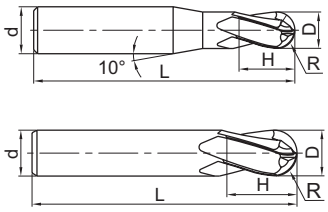
Ball nose cutter long shank

Hard machining

HM-4BL



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
HM-4BL-R1.5		3	1.5	6	6	75	4	A	39.0
HM-4BL-R2.0		4	2	6	8	75	4	A	39.0
HM-4BL-R2.5		5	2.5	6	10	75	4	A	39.0
HM-4BL-R3.0		6	3	6	12	75	4	B	39.0
HM-4BL-R4.0		8	4	8	16	100	4	B	55.5
HM-4BL-R5.0		10	5	10	20	100	4	B	71.7
HM-4BL-R6.0		12	6	12	24	100	4	B	91.1
HM-4BL-R7.0		14	7	14	28	100	4	B	113.1
HM-4BL-R8.0		16	8	16	32	150	4	B	175.2
HM-4BL-R9.0		18	9	18	36	150	4	B	200.6
HM-4BL-R10.0		20	10	20	40	150	4	B	251.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

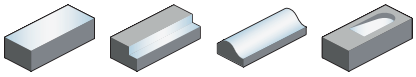
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

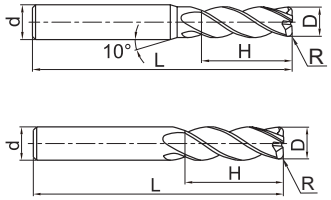
System code B258 Cutting data B422 Nonstandard order B461

Torus mill | Hard machining

HM-4R



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
HM-4R-D3.0R0.2		3	0.2	4	8	50	4	A	***26.1***
HM-4R-D4.0R0.3		4	0.3	4	10	50	4	B	***26.1***
HM-4R-D4.0R0.5		4	0.5	4	10	50	4	B	***26.1***
HM-4R-D5.0R0.5		5	0.5	6	13	50	4	A	***28.2***
HM-4R-D5.0R1.0		5	1	6	13	50	4	A	***28.2***
HM-4R-D6.0R0.5		6	0.5	6	16	50	4	B	***28.2***
HM-4R-D6.0R1.0		6	1	6	16	50	4	B	***28.2***
HM-4R-D8.0R0.5		8	0.5	8	20	60	4	B	***43.2***
HM-4R-D8.0R1.0		8	1	8	20	60	4	B	***43.2***
HM-4R-D10.0R0.5		10	0.5	10	25	75	4	B	***66.0***
HM-4R-D10.0R1.0		10	1	10	25	75	4	B	***66.0***
HM-4R-D10.0R2.0		10	2	10	25	75	4	B	***66.0***
HM-4R-D10.0R3.0		10	3	10	25	75	4	B	***66.0***
HM-4R-D12.0R0.5		12	0.5	12	30	75	4	B	***86.1***
HM-4R-D12.0R1.0		12	1	12	30	75	4	B	***86.1***
HM-4R-D12.0R2.0		12	2	12	30	75	4	B	***86.1***
HM-4R-D12.0R3.0		12	3	12	30	75	4	B	***86.1***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
					✔

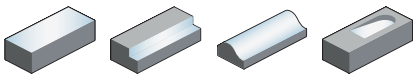
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

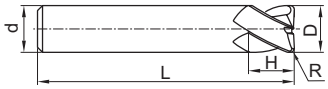
Torus mill short cutting edge

Hard machining

HM-4RF



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Precio €
HM-4RF-D6.0R0.5		6	0.5	6	6	50	4	28 .2
HM-4RF-D6.0R1.0		6	1	6	6	50	4	28 .2
HM-4RF-D8.0R0.5		8	0.5	8	8	60	4	43 .2
HM-4RF-D8.0R1.0		8	1	8	8	60	4	43 .2
HM-4RF-10.0R0.5		10	0.5	10	10	75	4	66 .5
HM-4RF-D10.0R1.0		10	1	10	10	75	4	66 .5
HM-4RF-D10.0R2.0		10	2	10	10	75	4	66. 5
HM-4RF-D12.0R0.5		12	0.5	12	12	75	4	86.1
HM-4RF-D12.0R1.0		12	1	12	12	75	4	86.1
HM-4RF-D12.0R2.0		12	2	12	12	75	4	86.1

● Ex stock ○ On demand
✻ With internal cooling

Application field

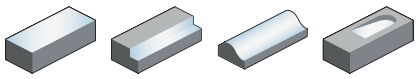
P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

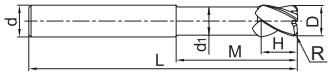
System code B258 Cutting data B422 Nonstandard order B461

Torus mill long shank | Hard machining

HM-4RP



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]							Teeth	Precio
		D	R	d (h6)	d_1	H	M	L		€
HM-4RP-D6.0R0.5		6	0.5	6	5.8	6	18	75	4	***33.1***
HM-4RP-D6.0R1.0		6	1	6	5.8	6	18	75	4	***33.1***
HM-4RP-D8.0R0.5		8	0.5	8	7.8	8	24	100	4	***60.2***
HM-4RP-D8.0R1.0		8	1	8	7.8	8	24	100	4	***60.2***
HM-4RP-D10.0R0.5		10	0.5	10	9.6	10	30	100	4	***77.7***
HM-4RP-D10.0R1.0		10	1	10	9.6	10	30	100	4	***77.7***
HM-4RP-D10.0R2.0		10	2	10	9.6	10	30	100	4	***77.7***
HM-4RP-D12.0R0.5		12	0.5	12	11.5	12	36	100	4	***105 .9***
HM-4RP-D12.0R1.0		12	1	12	11.5	12	36	100	4	***105 .9***
HM-4RP-D12.0R2.0		12	2	12	11.5	12	36	100	4	***105 .9***
HM-4RP-D16.0R1.0		16	1	16	15.5	16	40	150	4	***191 .4***
HM-4RP-D16.0R2.0		16	2	16	15.5	16	40	150	4	***191. 4***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
					✔

✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

Notes

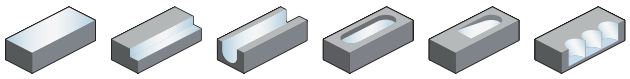
NM Serie

Para el mecanizado de cobre

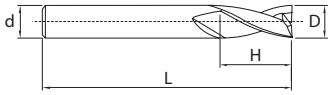
- **Para el mecanizado de cobre y aleaciones de cobre (latón, bronce).**
- **Excelente resistencia del filo de corte para una calidad de superficie muy buena.**
- **Fresa integral, fresa de punta esférica y fresa mini**
- **Rango de diámetros, 0,5–20,0 mm**

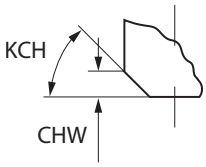
End mill General machining of non-ferrous metals

5502R402NM



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 40°





Article	✻	Dimensions [mm] D	d (h6)	H	L	KCH	CHW	Teeth	Precio €
5502R402NM-0300		3	6	8	57	0	0	2	12.3
5502R402NM-0400		4	6	11	57	0	0	2	12.3
5502R402NM-0500		5	6	13	57	0	0	2	12.3
5502R402NM-0600		6	6	13	57	45	0,10	2	12.3
5502R402NM-0800		8	8	19	63	45	0,10	2	16.1
5502R402NM-1000		10	10	22	72	45	0,10	2	23.0
5502R402NM-1200		12	12	26	83	45	0,10	2	32.8
5502R402NM-1400		14	14	26	83	45	0,15	2	42.4
5502R402NM-1600		16	16	32	92	45	0,15	2	54.9
5502R402NM-1800		18	18	32	92	45	0,15	2	66.3
5502R402NM-2000		20	20	38	104	45	0,15	2	93.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

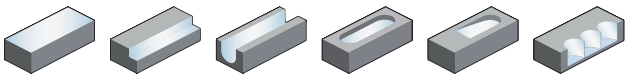
P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

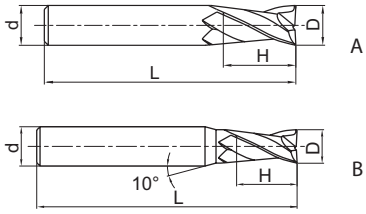
System code B258 Cutting data B422 Nonstandard order B461

End mill | General machining of non-ferrous metals

NM-2E



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
NM-2E-D1.0		1	4	3	50	2	A	***15.1***
NM-2E-D2.0		2	4	6	50	2	A	***15.6***
NM-2E-D3.0		3	6	8	50	2	A	***16.6***
NM-2E-D4.0		4	6	11	50	2	A	***16.6***
NM-2E-D5.0		5	6	13	50	2	A	***16.6***
NM-2E-D6.0		6	6	16	50	2	B	***16.6***
NM-2E-D8.0		8	8	20	60	2	B	***27.6***
NM-2E-D10.0		10	10	25	75	2	B	***42.0***
NM-2E-D12.0		12	12	30	75	2	B	***59.6***

● Ex stock ○ On demand
✻ With internal cooling

Application field

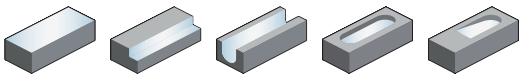
P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

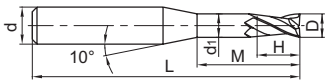
System code B258 | Cutting data B422 | Nonstandard order B461

End mill General machining of non-ferrous metals

NM-2EP



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	d (h6)	d_1	H	M	L	Teeth	Precio €
NM-2EP-D0.5-M08		0.5	4	0.45	0.7	8	50	2	20.7
NM-2EP-D0.5-M06		0.5	4	0.45	0.7	6	50	2	20.7
NM-2EP-D0.5-M04		0.5	4	0.45	0.7	4	50	2	20.7
NM-2EP-D0.8-M08		0.8	4	0.75	1.2	8	50	2	20.7
NM-2EP-D0.8-M04		0.8	4	0.75	1.2	4	50	2	20.7
NM-2EP-D0.8-M10		0.8	4	0.75	1.2	10	50	2	20.7
NM-2EP-D0.8-M06		0.8	4	0.75	1.2	6	50	2	20.7
NM-2EP-D1.0-M04		1	4	0.95	1.5	4	50	2	20.0
NM-2EP-D1.0-M10		1	4	0.95	1.5	10	50	2	20.0
NM-2EP-D1.0-M08		1	4	0.95	1.5	8	50	2	20.0
NM-2EP-D1.0-M06		1	4	0.95	1.5	6	50	2	20.2
NM-2EP-D1.0-M14		1	4	0.95	1.5	14	50	2	20.0
NM-2EP-D1.0-M12		1	4	0.95	1.5	12	50	2	20.0
NM-2EP-D1.5-M08		1.5	4	1.45	2.3	8	50	2	20.6
NM-2EP-D1.5-M16		1.5	4	1.45	2.3	16	50	2	20.6
NM-2EP-D2.0-M14		2	4	1.95	3	14	50	2	20.6
NM-2EP-D2.0-M08		2	4	1.95	3	8	50	2	20.6
NM-2EP-D2.0-M06		2	4	1.95	3	6	50	2	20.6
NM-2EP-D2.0-M10		2	4	1.95	3	10	50	2	20.6
NM-2EP-D2.0-M12		2	4	1.95	3	12	50	2	20.6
NM-2EP-D2.0-M16		2	4	1.95	3	16	50	2	20.6
NM-2EP-D2.5-M10		2.5	4	2.4	3.7	10	50	2	20.6
NM-2EP-D2.5-M20		2.5	4	2.4	3.7	20	60	2	21.0
NM-2EP-D3.0-M20		3	6	2.85	4.5	20	60	2	22.5
NM-2EP-D3.0-M10		3	6	2.85	4.5	10	50	2	21.0
NM-2EP-D4.0-M16		4	6	3.85	6	16	60	2	22.5
NM-2EP-D4.0-M25		4	6	3.85	6	25	60	2	22.5
NM-2EP-D5.0-M16		5	6	4.85	7.5	16	60	2	22.5
NM-2EP-D5.0-M25		5	6	4.85	7.5	25	70	2	23.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

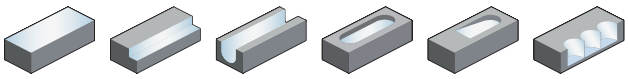
P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

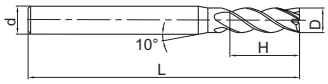
System code B258 Cutting data B422 Nonstandard order B461

End mill | General machining of non-ferrous metals

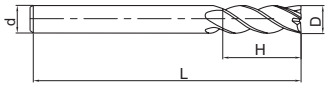
NM-4E



– Factory standard
– Centre cutting
– Helix angle 35°



A



B

Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
NM-4E-D3.0		3	6	8	50	4	A	***16.6***
NM-4E-D4.0		4	6	11	50	4	A	***16.6***
NM-4E-D5.0		5	6	13	50	4	A	***16.6***
NM-4E-D6.0		6	6	16	50	4	B	***16.6***
NM-4E-D8.0		8	8	20	60	4	B	***27.6***
NM-4E-D10.0		10	10	25	75	4	B	***42.0***
NM-4E-D12.0		12	12	30	75	4	B	***59.6***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

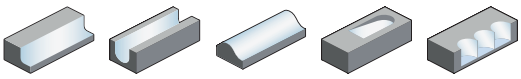
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

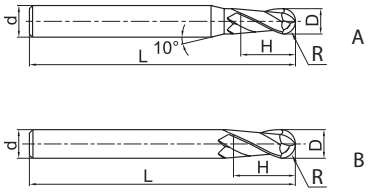
Ball nose cutter

General machining of non-ferrous metals

NM-2B



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
NM-2B-R0.5		1	0.5	4	2	50	2	A	***16.6***
NM-2B-R0.75		1.5	0.75	4	3	50	2	A	***16.6***
NM-2B-R1.0		2	1	4	4	50	2	A	***16.6***
NM-2B-R1.25		2.5	1.25	4	5	50	2	A	***16.6***
NM-2B-R1.5		3	1.5	6	6	50	2	A	***17.4***
NM-2B-R1.75		3.5	1.75	6	8	50	2	A	***17.9***
NM-2B-R2.0		4	2	6	8	50	2	A	***17.9***
NM-2B-R2.5		5	2.5	6	10	50	2	A	***18.4***
NM-2B-R3.0		6	3	6	12	50	2	B	***18.4***
NM-2B-R4.0		8	4	8	16	60	2	B	***31.1***
NM-2B-R5.0		10	5	10	20	75	2	B	***47.5***
NM-2B-R6.0		12	6	12	24	75	2	B	***68.7***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

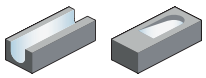
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

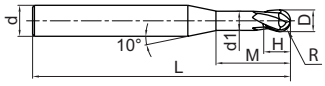
Ball nose cutter

General machining of non-ferrous metals

NM-2BP



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Precio €
NM-2BP-R0.25-M04		0.5	0.25	4	0.45	0.7	4	50	2	23.4
NM-2BP-R0.25-M06		0.5	0.25	4	0.45	0.7	6	50	2	23.4
NM-2BP-R0.3-M04		0.6	0.3	4	0.55	0.9	4	50	2	23.4
NM-2BP-R0.3-M06		0.6	0.3	4	0.55	0.9	6	50	2	23.4
NM-2BP-R0.3-M08		0.6	0.3	4	0.55	0.9	8	50	2	23.4
NM-2BP-R0.4-M04		0.8	0.4	4	0.75	1.2	4	50	2	23.4
NM-2BP-R0.4-M06		0.8	0.4	4	0.75	1.2	6	50	2	23.4
NM-2BP-R0.4-M08		0.8	0.4	4	0.75	1.2	8	50	2	23.4
NM-2BP-R0.4-M10		0.8	0.4	4	0.75	1.2	10	50	2	23.4
NM-2BP-R0.5-M04		1	0.5	4	0.95	1.5	4	50	2	22.7
NM-2BP-R0.5-M06		1	0.5	4	0.95	1.5	6	50	2	22.7
NM-2BP-R0.5-M08		1	0.5	4	0.95	1.5	8	50	2	22.7
NM-2BP-R0.5-M10		1	0.5	4	0.95	1.5	10	50	2	22.7
NM-2BP-R0.5-M12		1	0.5	4	0.95	1.5	12	50	2	22.7
NM-2BP-R0.75-M08		1.5	0.75	4	1.45	2.3	8	50	2	22.7
NM-2BP-R0.75-M16		1.5	0.75	4	1.45	2.3	16	50	2	22.7
NM-2BP-R1.0-M06		2	1	4	1.95	3	6	50	2	22.7
NM-2BP-R1.0-M08		2	1	4	1.95	3	8	50	2	22.7
NM-2BP-R1.0-M10		2	1	4	1.95	3	10	50	2	22.7
NM-2BP-R1.0-M12		2	1	4	1.95	3	12	50	2	22.7
NM-2BP-R1.0-M16		2	1	4	1.95	3	16	50	2	22.7
NM-2BP-R1.0-M20		2	1	4	1.95	3	20	60	2	23.1
NM-2BP-R1.5-M10		3	1.5	6	2.85	4.5	10	50	2	24.9
NM-2BP-R1.5-M20		3	1.5	6	2.85	4.5	20	60	2	25.3
NM-2BP-R2.0-M10		4	2	6	3.85	6	10	60	2	25.3
NM-2BP-R2.0-M16		4	2	6	3.85	6	16	60	2	25.3
NM-2BP-R2.0-M20		4	2	6	3.85	6	20	60	2	25.3
NM-2BP-R2.0-M25		4	2	6	3.85	6	25	60	2	25.3
NM-2BP-R2.5-M16		5	2.5	6	4.85	7.5	16	60	2	25.3
NM-2BP-R2.5-M25		5	2.5	6	4.85	7.5	25	70	2	25.9

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

Notes

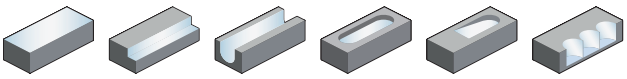
AL Serie

Para el mecanizado de aleaciones de aluminio

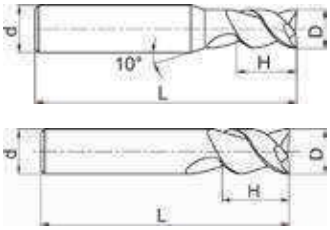
- **Hemos desarrollado nuevas geometrías para ampliar nuestro programa estándar:**
  - **ALP para el desbastado de alto rendimiento**
  - **ALG para el acabado con calidad de superficie muy alta**
  - **AIR Fresa toroidal para el mecanizado velocidad ultraalta**
- **Con nuestro recubrimiento similar al diamante KMD401, se consigue un rendimiento de herramientas extremamente mejor.**
- **Fresa integral, fresa de punta esférica, fresa toroidal y fresa de desbaste**
- **Rango de diámetros, 1,0–20,0 mm**

End mill General machining of Al and Al alloys

AL-2E



– Factory standard
– Centre cutting
– Helix angle 55°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
AL-2E-D1.0		1	4	3	50	2	A	*9.80*
AL-2E-D1.5		1.5	4	4	50	2	A	*9.80*
AL-2E-D2.0		2	4	6	50	2	A	*9.80*
AL-2E-D2.5		2.5	4	7	50	2	A	*9.80*
AL-2E-D3.0		3	6	9	50	2	A	*11.0*
AL-2E-D4.0		4	6	12	50	2	A	*11.0*
AL-2E-D5.0		5	6	15	50	2	A	*11.0*
AL-2E-D6.0		6	6	18	60	2	B	*11.9*
AL-2E-D8.0		8	8	20	60	2	B	*18.4*
AL-2E-D10.0		10	10	30	75	2	B	*37.5*
AL-2E-D12.0		12	12	32	75	2	B	*46.3*
AL-2E-D16.0		16	16	45	100	2	B	*87.4*
AL-2E-D20.0		20	20	45	100	2	B	*137*

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

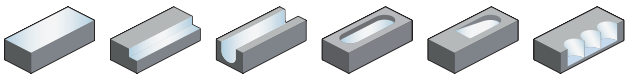
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

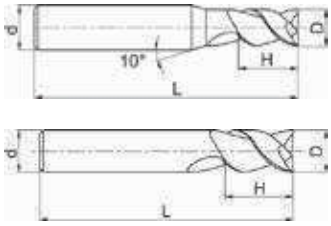
End mill long cutting edge

General machining of Al and Al alloys

AL-2EL



– Factory standard
– Centre cutting
– Helix angle 55°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
AL-2EL-D3.0		3	6	12	60	2	A	13 . 9
AL-2EL-D4.0		4	6	16	60	2	A	13 . 9
AL-2EL-D5.0		5	6	20	60	2	A	13 . 9
AL-2EL-D6.0		6	6	25	75	2	B	17 . 2
AL-2EL-D8.0		8	8	32	75	2	B	31 . 1
AL-2EL-D10.0		10	10	45	100	2	B	42 . 3
AL-2EL-D12.0		12	12	45	100	2	B	54 . 7
AL-2EL-D16.0		16	16	65	150	2	B	131.3
AL-2EL-D20.0		20	20	75	150	2	B	230.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

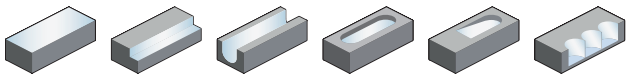
P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

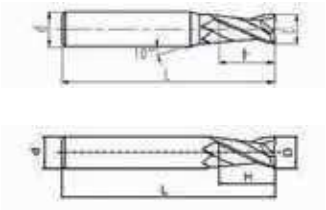
System code B258 Cutting data B422 Nonstandard order B461

End mill General machining of Al and Al alloys

ALG-2E



– Factory standard
– Centre cutting
– Helix angle 30°



A

B

Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
ALG-2E-D1.0		1	4	3	50	2	A	8 . 30
ALG-2E-D1.5		1.5	4	4	50	2	A	8 . 30
ALG-2E-D2.0		2	4	6	50	2	A	8 . 30
ALG-2E-D2.5		2.5	4	8	50	2	A	8 . 30
ALG-2E-D3.0S		3	4	8	50	2	A	8 . 30
ALG-2E-D3.5S		3.5	4	10	50	2	A	8 . 30
ALG-2E-D4.0S		4	4	11	50	2	B	8 . 30
ALG-2E-D3.0		3	6	8	50	2	A	10 . 2
ALG-2E-D3.5		3.5	6	10	50	2	A	10 . 2
ALG-2E-D4.0		4	6	11	50	2	A	10 . 2
ALG-2E-D4.5		4.5	6	11	50	2	A	10 . 2
ALG-2E-D5.0		5	6	13	50	2	A	11 . 1
ALG-2E-D5.5		5.5	6	16	50	2	A	11 . 1
ALG-2E-D6.0		6	6	16	50	2	B	11 . 1
ALG-2E-D7.0		7	8	20	60	2	A	18 . 3
ALG-2E-D8.0		8	8	20	60	2	B	21 . 1
ALG-2E-D9.0		9	10	22	75	2	A	34 . 6
ALG-2E-D10.0		10	10	25	75	2	B	34 . 6
ALG-2E-D11.0		11	12	26	75	2	A	44 . 9
ALG-2E-D12.0		12	12	30	75	2	B	44 . 9
ALG-2E-D14.0		14	14	32	75	2	B	62 . 2
ALG-2E-D16.0		16	16	45	100	2	B	87 . 6
ALG-2E-D18.0		18	18	45	100	2	B	136 . 2
ALG-2E-D20.0		20	20	45	100	2	B	140.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

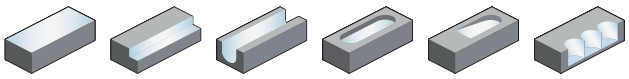
P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

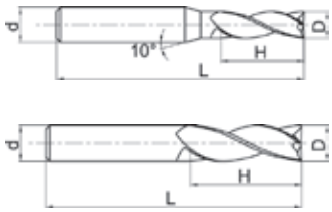
System code B258 Cutting data B422 Nonstandard order B461

End mill | General machining of Al and Al alloys

AL-3E



– Factory standard
– Centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
AL-3E-D1.0		1	4	3	50	3	A	9 . 80
AL-3E-D1.5		1.5	4	4	50	3	A	9 . 80
AL-3E-D2.0		2	4	6	50	3	A	9 . 80
AL-3E-D2.5		2.5	4	7	50	3	A	9 . 80
AL-3E-D3.0		3	6	9	50	3	A	11 . 0
AL-3E-D4.0		4	6	12	50	3	A	11 . 0
AL-3E-D5.0		5	6	15	50	3	A	11 . 0
AL-3E-D6.0		6	6	18	60	3	B	12 . 3
AL-3E-D8.0		8	8	20	60	3	B	21 . 1
AL-3E-D10.0		10	10	30	75	3	B	38 . 5
AL-3E-D12.0		12	12	32	75	3	B	47 . 2
AL-3E-D16.0		16	16	45	100	3	B	86 . 5
AL-3E-D20.0		20	20	45	100	3	B	142.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

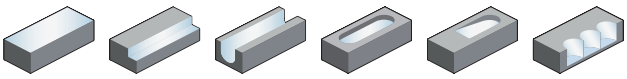
✔ Very suitable
✔ Suitable

System code B258 | Cutting data B422 | Nonstandard order B461

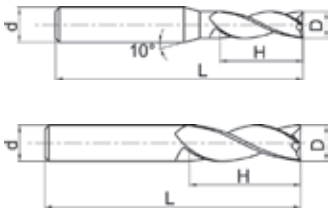
End mill long cutting edge

General machining of Al and Al alloys

AL-3EL



– Factory standard
– Centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Precio €
AL-3EL-D3.0		3	6	12	60	3	A	*13 .9*
AL-3EL-D4.0		4	6	16	60	3	A	*13 .9*
AL-3EL-D5.0		5	6	20	60	3	A	*13 .9*
AL-3EL-D6.0		6	6	25	75	3	B	*17 .2*
AL-3EL-D8.0		8	8	32	75	3	B	*31 .1*
AL-3EL-D10.0		10	10	45	100	3	B	*44 .5*
AL-3EL-D12.0		12	12	45	100	3	B	*57 .5*
AL-3EL-D16.0		16	16	65	150	3	B	*136 .8*
AL-3EL-D20.0		20	20	75	150	3	B	*235.8*

● Ex stock ○ On demand
✻ With internal cooling

Application field

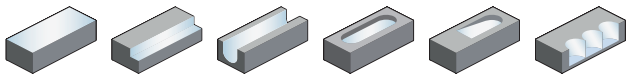
P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

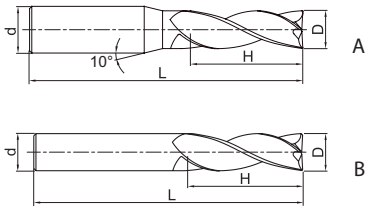
System code B258 Cutting data B422 Nonstandard order B461

End mill — General machining of Al and Al alloys

ALG-3E



– Factory standard
– Centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Grade/Precio YK40F/€
ALG-3E-D1.0		1	4	3	50	3	A	8 . 30
ALG-3E-D1.5		1.5	4	4	50	3	A	8 . 30
ALG-3E-D2.0		2	4	6	50	3	A	8 . 30
ALG-3E-D2.5		2.5	4	8	50	3	A	8 . 30
ALG-3E-D3.0S		3	4	8	50	3	A	8 . 30
ALG-3E-D3.5S		3.5	4	10	50	3	A	8 . 30
ALG-3E-D4.0S		4	4	11	50	3	B	8 . 30
ALG-3E-D3.0		3	6	8	50	3	A	10 . 2
ALG-3E-D3.5		3.5	6	10	50	3	A	10 . 2
ALG-3E-D4.0		4	6	11	50	3	A	10 . 2
ALG-3E-D4.5		4.5	6	11	50	3	A	10 . 2
ALG-3E-D5.0		5	6	13	50	3	A	11 . 1
ALG-3E-D5.5		5.5	6	16	50	3	A	11 . 1
ALG-3E-D6.0		6	6	16	50	3	B	11 . 1
ALG-3E-D7.0		7	8	20	60	3	A	18 . 3
ALG-3E-D8.0		8	8	20	60	3	B	18 . 3
ALG-3E-D9.0		9	10	22	75	3	A	34 . 6
ALG-3E-D10.0		10	10	25	75	3	B	34 . 6
ALG-3E-D11.0		11	12	26	75	3	A	44 . 9
ALG-3E-D12.0		12	12	30	75	3	B	44 . 9
ALG-3E-D14.0		14	14	32	75	3	B	62 . 2
ALG-3E-D16.0		16	16	45	100	3	B	87 . 6
ALG-3E-D18.0		18	18	45	100	3	B	136 .2
ALG-3E-D20.0		20	20	45	100	3	B	140.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

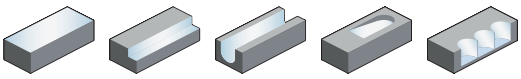
P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

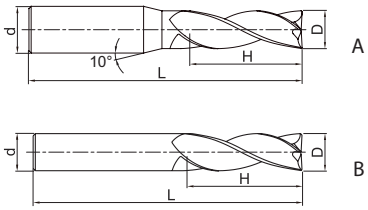
System code B258 Cutting data B422 Nonstandard order B461

End mill High-performance machining of Al and Al alloys

ALP-3E



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Grade/Precio YK40F/€
ALP-3E-D1.0		1	4	3	50	3	A	9 . 50
ALP-3E-D1.5		1.5	4	4	50	3	A	9 . 50
ALP-3E-D2.0		2	4	6	50	3	A	9 . 50
ALP-3E-D2.5		2.5	4	8	50	3	A	9 . 50
ALP-3E-D3.0S		3	4	9	50	3	A	9 . 50
ALP-3E-D4.0S		4	4	12	50	3	B	9 . 50
ALP-3E-D3.0		3	6	8	50	3	A	11 . 5
ALP-3E-D4.0		4	6	11	50	3	A	11 . 5
ALP-3E-D4.5		4.5	6	11	50	3	A	11 . 5
ALP-3E-D5.0		5	6	13	50	3	A	12 . 7
ALP-3E-D5.5		5.5	6	16	50	3	A	12 . 7
ALP-3E-D6.0		6	6	16	50	3	B	12 . 7
ALP-3E-D7.0		7	8	20	60	3	B	20 . 6
ALP-3E-D8.0		8	8	20	60	3	B	20 . 6
ALP-3E-D9.0		9	10	22	75	3	B	39 . 2
ALP-3E-D10.0		10	10	25	75	3	B	37 . 4
ALP-3E-D11.0		11	12	26	75	3	B	48 . 6
ALP-3E-D12.0		12	12	30	75	3	B	48 . 6
ALP-3E-D14.0		14	14	32	75	3	B	68 . 5
ALP-3E-D16.0		16	16	45	100	3	B	99 . 4
ALP-3E-D20.0		20	20	45	100	3	B	190.5

● Ex stock ○ On demand
✻ With internal cooling

Application field

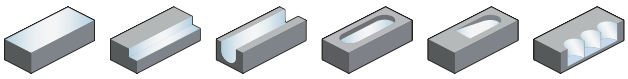
P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

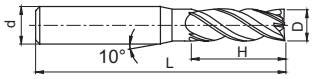
System code B258 Cutting data B422 Nonstandard order B461

End mill — High-performance machining of Al and Al alloys

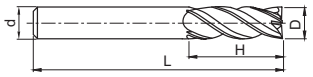
ALP-4E



– Factory standard
– Centre cutting
– Helix angle 38°



A



B

Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Geometry	Grade/Precio YK40F/€
ALP-4E-D3.0S		3	4	9	50	4	A	9 . 50
ALP-4E-D4.0S		4	4	11	50	4	B	9 . 50
ALP-4E-D3.0		3	6	9	50	4	A	11 . 5
ALP-4E-D4.0		4	6	11	50	4	A	11 . 5
ALP-4E-D5.0		5	6	13	50	4	A	11 . 5
ALP-4E-D6.0		6	6	16	50	4	B	12 . 7
ALP-4E-D8.0		8	8	20	60	4	B	20 . 6
ALP-4E-D10.0		10	10	25	75	4	B	37 . 4
ALP-4E-D12.0		12	12	30	75	4	B	48 . 6
ALP-4E-D16.0		16	16	45	100	4	B	99 . 4
ALP-4E-D18.0		18	18	45	100	4	B	148 .4
ALP-4E-D20.0		20	20	45	100	4	B	159.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

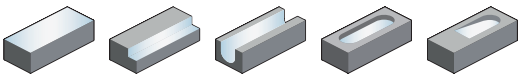
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

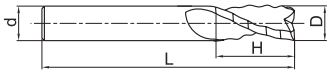
End mill serrated teeth

General machining of Al and Al alloys

AL-3W



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Precio €
AL-3W-D6.0		6	6	16	50	3	21 .9
AL-3W-D8.0		8	8	20	60	3	37 .2
AL-3W-D10.0		10	10	25	75	3	54 .1
AL-3W-D12.0		12	12	30	75	3	68 .6
AL-3W-D16.0		16	16	45	100	3	116 .4
AL-3W-D20.0		20	20	45	100	3	201.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

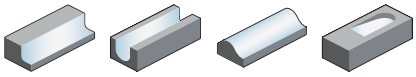
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

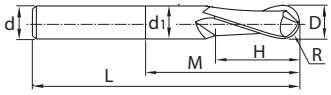
Ball nose cutter

High performance machining of heat-resistant alloys

5565R302NH



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]							Teeth	Precio
		D	R	d (h6)	d_1	H	M	L		€
5565R302NH-0300		3	1.5	6	2.8	6	9	57	2	***20 .4***
5565R302NH-0400		4	2	6	3.7	8	12	57	2	***20 .4***
5565R302NH-0500		5	2.5	6	4.6	10	15	57	2	***20 .4***
5565R302NH-0600		6	3	6	5.5	12	20	57	2	***20 .4***
5565R302NH-0800		8	4	8	7.4	16	26	63	2	***26 .0***
5565R302NH-1000		10	5	10	9.2	20	31	72	2	***37 .3***
5565R302NH-1200		12	6	12	11	24	37	83	2	***50 .6***
5565R302NH-1600		16	8	16	15	32	43	92	2	***87.0***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

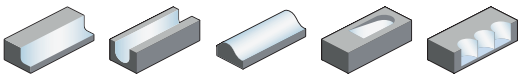
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

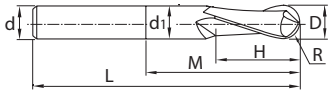
Ball nose cutter long shank

High performance machining of heat-resistant alloys

5566R302NH



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]							Teeth	Precio
		D	R	d (h6)	d_1	H	M	L		€
5566R302NH-0300		3	1.5	6	2.8	6	9	75	2	22 .3
5566R302NH-0400		4	2	6	3.7	8	12	75	2	22 .3
5566R302NH-0500		5	2.5	6	4.6	10	15	80	2	22 .8
5566R302NH-0600		6	3	6	5.5	12	20	80	2	22 .8
5566R302NH-0800		8	4	8	7.4	16	26	90	2	30 .5
5566R302NH-1000		10	5	10	9.2	20	31	100	2	44 .2
5566R302NH-1200		12	6	12	11	24	37	120	2	63 .0
5566R302NH-1600		16	8	16	15	32	43	140	2	105.5

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

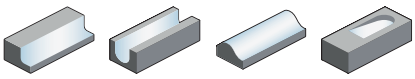
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

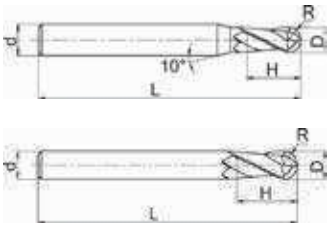
Ball nose cutter

General machining of Al and Al alloys

AL-2B



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Geometry	Precio €
AL-2B-R1.0		2	1	6	4	60	2	A	***13.8***
AL-2B-R1.5		3	1.5	6	6	60	2	A	***13.8***
AL-2B-R2.0		4	2	6	8	60	2	A	***13.8***
AL-2B-R2.5		5	2.5	6	10	60	2	A	***13.8***
AL-2B-R3.0		6	3	6	12	60	2	B	***13.8***
AL-2B-R4.0		8	4	8	16	75	2	B	***21.7***
AL-2B-R5.0		10	5	10	20	75	2	B	***32.6***
AL-2B-R6.0		12	6	12	24	75	2	B	***47.2***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

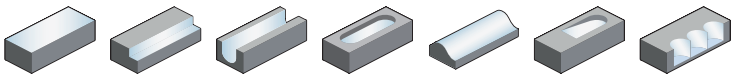
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

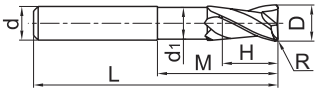
Torus mill

General machining of Al and Al alloys

AL-2R-AIR



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]							Teeth	Precio
		D	R	d (h6)	d_1	H	M	L		€
AL-2R-D6.0R1.0-AIR		6	1	6	5.5	7	20	57	2	41 .9
AL-2R-D8.0R1.0-AIR		8	1	8	7.4	9	26	63	2	50 .5
AL-2R-D10.0R1.0-AIR		10	1	10	9.2	11	31	72	2	69 .4
AL-2R-D10.0R2.0-AIR		10	2	10	9.2	11	31	72	2	69 .4
AL-2R-D12.0R1.0-AIR		12	1	12	11	12	37	83	2	98 .7
AL-2R-D12.0R2.0-AIR		12	2	12	11	12	37	83	2	98 .7
AL-2R-D12.0R3.0-AIR		12	3	12	11	12	37	83	2	98 .7
AL-2R-D16.0R1.0-AIR		16	1	16	15	16	43	92	2	175
AL-2R-D16.0R2.0-AIR		16	2	16	15	16	43	92	2	175
AL-2R-D16.0R3.0-AIR		16	3	16	15	16	43	92	2	175
AL-2R-D16.0R4.0-AIR		16	4	16	15	16	43	92	2	175
AL-2R-D20.0R1.0-AIR		20	1	20	19	20	53	104	2	267. 7
AL-2R-D20.0R2.0-AIR		20	2	20	19	20	53	104	2	267 .7
AL-2R-D20.0R3.0-AIR		20	3	20	19	20	53	104	2	267 .7
AL-2R-D20.0R4.0-AIR		20	4	20	19	20	53	104	2	267 .7
AL-2R-D20.0R5.0-AIR		20	5	20	19	20	53	104	2	267 .7
AL-2R-D20.0R6.0-AIR		20	6	20	19	20	53	104	2	267. 7

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

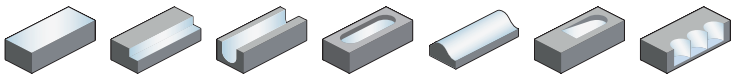
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

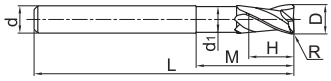
Torus mill long shank

General machining of Al and Al alloys

AL-2RL-AIR



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]							Teeth	Precio
		D	R	d (h6)	d_1	H	M	L		€
AL-2RL-D6.0R1.0-AIR		6	1	6	5.5	7	43	80	2	47.1
AL-2RL-D8.0R1.0-AIR		8	1	8	7.4	9	53	90	2	59.1
AL-2RL-D10.0R1.0-AIR		10	1	10	9.2	11	59	100	2	80.6
AL-2RL-D10.0R2.0-AIR		10	2	10	9.2	11	59	100	2	80.6
AL-2RL-D12.0R1.0-AIR		12	1	12	11	12	74	120	2	125.1
AL-2RL-D12.0R2.0-AIR		12	2	12	11	12	74	120	2	125.1
AL-2RL-D12.0R3.0-AIR		12	3	12	11	12	74	120	2	125.1
AL-2RL-D16.0R1.0-AIR		16	1	16	15	16	84	140	2	221.9
AL-2RL-D16.0R2.0-AIR		16	2	16	15	16	84	140	2	221.9
AL-2RL-D16.0R3.0-AIR		16	3	16	15	16	84	140	2	221.9
AL-2RL-D16.0R4.0-AIR		16	4	16	15	16	84	140	2	221.9
AL-2RL-D20.0R1.0-AIR		20	1	20	19	20	89	140	2	308.9
AL-2RL-D20.0R2.0-AIR		20	2	20	19	20	89	140	2	308.9
AL-2RL-D20.0R3.0-AIR		20	3	20	19	20	89	140	2	308.9
AL-2RL-D20.0R4.0-AIR		20	4	20	19	20	89	140	2	308.9
AL-2RL-D20.0R5.0-AIR		20	5	20	19	20	89	140	2	308.9
AL-2RL-D20.0R6.0-AIR		20	6	20	19	20	89	140	2	308.9

● Ex stock ○ On demand
✻ With internal cooling

Application field

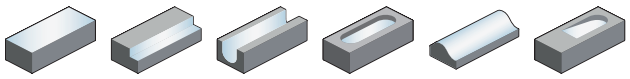
P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

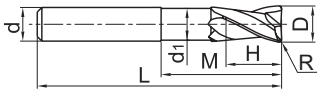
System code B258 Cutting data B422 Nonstandard order B461

End mill General machining of Al and Al alloys

ALG-2R



– Straight shank
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Precio €
ALG-2R-D6.0R0.3		6	0.3	6	5.7	8	16	75	2	14.9
ALG-2R-D6.0R0.5		6	0.5	6	5.7	8	16	75	2	14.9
ALG-2R-D6.0R1.0		6	1	6	5.7	8	16	75	2	14.9
ALG-2R-D8.0R0.3		8	0.3	8	7.4	10	20	75	2	23.3
ALG-2R-D8.0R0.5		8	0.5	8	7.4	10	20	75	2	23.3
ALG-2R-D8.0R1.0		8	1	8	7.4	10	20	75	2	23.3
ALG-2R-D10.0R0.5		10	0.5	10	9.4	12	35	100	2	38.0
ALG-2R-D10.0R1.0		10	1	10	9.4	12	35	100	2	38.0
ALG-2R-D10.0R1.6		10	1.6	10	9.4	12	35	100	2	38.0
ALG-2R-D10.0R2.5		10	2.5	10	9.4	12	35	100	2	38.0
ALG-2R-D12.0R0.5		12	0.5	12	11.4	15	35	100	2	50.7
ALG-2R-D12.0R1.0		12	1	12	11.4	15	35	100	2	50.7
ALG-2R-D12.0R1.6		12	1.6	12	11.4	15	35	100	2	50.7
ALG-2R-D12.0R2.5		12	2.5	12	11.4	15	35	100	2	50.7
ALG-2R-D12.0R3.2		12	3.2	12	11.4	15	35	100	2	50.7
ALG-2R-D12.0R4.0		12	4	12	11.4	15	35	100	2	50.7
ALG-2R-D16.0R1.0		16	1	16	15.4	15	45	125	2	50.7
ALG-2R-D16.0R1.6		16	1.6	16	15.4	15	45	125	2	109.3
ALG-2R-D16.0R2.5		16	2.5	16	15.4	15	45	125	2	109.3
ALG-2R-D16.0R3.2		16	3.2	16	15.4	15	45	125	2	109.3
ALG-2R-D16.0R4.0		16	4	16	15.4	15	45	125	2	109.3
ALG-2R-D16.0R6.3		16	6.3	16	15.4	15	45	125	2	109.3
ALG-2R-D20.0R1.0		20	1	20	18	20	50	125	2	164.3
ALG-2R-D20.0R1.6		20	1.6	20	18	20	50	125	2	164.3
ALG-2R-D20.0R2.5		20	2.5	20	18	20	50	125	2	164.3
ALG-2R-D20.0R3.2		20	3.2	20	18	20	50	125	2	164.3
ALG-2R-D20.0R4.0		20	4	20	18	20	50	125	2	164.3
ALG-2R-D20.0R6.3		20	6.3	20	18	20	50	125	2	164.3
ALG-2R-D25.0R6.3		25	6.3	25	23	25	75	150	2	231.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

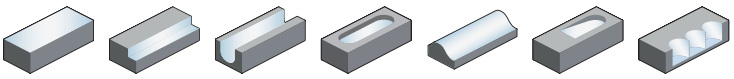
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

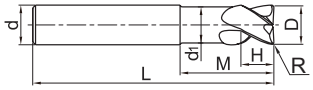
Torus mill

General machining of Al and Al alloys

AL-3R-AIR



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]							Teeth	Precio
		D	R	d (h6)	d_1	H	M	L		€
AL-3R-D12.0R1.0-AIR		12	1	12	11	12	37	83	3	100.4
AL-3R-D12.0R2.0-AIR		12	2	12	11	12	37	83	3	100.4
AL-3R-D12.0R3.0-AIR		12	3	12	11	12	37	83	3	100.4
AL-3R-D16.0R1.0-AIR		16	1	16	15	16	43	92	3	176.6
AL-3R-D16.0R2.0-AIR		16	2	16	15	16	43	92	3	176.6
AL-3R-D16.0R3.0-AIR		16	3	16	15	16	43	92	3	176.6
AL-3R-D16.0R4.0-AIR		16	4	16	15	16	43	92	3	176.6
AL-3R-D20.0R1.0-AIR		20	1	20	19	20	53	104	3	274.7
AL-3R-D20.0R2.0-AIR		20	2	20	19	20	53	104	3	274.7
AL-3R-D20.0R3.0-AIR		20	3	20	19	20	53	104	3	274.7
AL-3R-D20.0R4.0-AIR		20	4	20	19	20	53	104	3	274.7
AL-3R-D20.0R5.0-AIR		20	5	20	19	20	53	104	3	274.7
AL-3R-D20.0R6.0-AIR		20	6	20	19	20	53	104	3	274.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

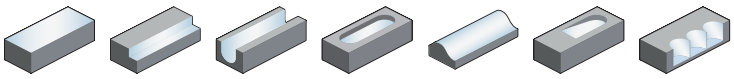
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

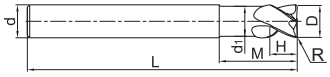
Torus mill long shank

General machining of Al and Al alloys

AL-3RL-AIR



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Precio €
AL-3RL-D12.0R1.0-AIR		12	1	12	11	12	74	120	3	135.0
AL-3RL-D12.0R2.0-AIR		12	2	12	11	12	74	120	3	135.0
AL-3RL-D12.0R3.0-AIR		12	3	12	11	12	74	120	3	135.0
AL-3RL-D16.0R1.0-AIR		16	1	16	15	16	84	140	3	231.6
AL-3RL-D16.0R2.0-AIR		16	2	16	15	16	84	140	3	231.6
AL-3RL-D16.0R3.0-AIR		16	3	16	15	16	84	140	3	231.6
AL-3RL-D16.0R4.0-AIR		16	4	16	15	16	84	140	3	231.6
AL-3RL-D20.0R1.0-AIR		20	1	20	19	20	89	140	3	338.2
AL-3RL-D20.0R2.0-AIR		20	2	20	19	20	89	140	3	338.2
AL-3RL-D20.0R3.0-AIR		20	3	20	19	20	89	140	3	338.2
AL-3RL-D20.0R4.0-AIR		20	4	20	19	20	89	140	3	338.2
AL-3RL-D20.0R5.0-AIR		20	5	20	19	20	89	140	3	338.2
AL-3RL-D20.0R6.0-AIR		20	6	20	19	20	89	140	3	338.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

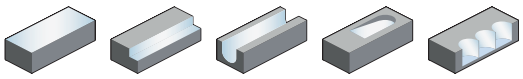
HPC Serie

High Performance Cutter (HPC)
Fresado de alto rendimiento

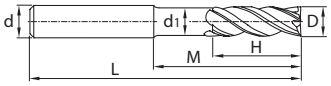
- **Para el desbastado y el acabado de acero de hasta 55 HRC, acero inoxidable y fundiciones.**
- **Geometría con hélice desigual (38°/41°) y paso desigual para un mecanizado suave sin vibraciones.**
- **Fresa integral y fresa toroidal**
- **Rango de diámetros, 4,0–20,0 mm**

End mill HSC/HPC machining

5501R38414GM



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	d (h6)	d_1	H	M	L	Teeth	Precio €
5501R38414GM-0400		4	6	3.7	8	16	54	4	18.6
5501R38414GM-0500		5	6	4.7	9	17	54	4	18.6
5501R38414GM-0600		6	6	5.7	10	18	54	4	18.6
5501R38414GM-0800		8	8	7.7	12	22	58	4	25.7
5501R38414GM-1000		10	10	9.5	14	26	66	4	39.0
5501R38414GM-1200		12	12	11.5	16	28	73	4	48.7
5501R38414GM-1400		14	14	13.5	18	30	75	4	64.3
5501R38414GM-1600		16	16	15.5	22	34	82	4	92.7
5501R38414GM-1800		18	18	17.5	24	36	84	4	114.5
5501R38414GM-2000		20	20	19.5	26	42	92	4	146.1

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

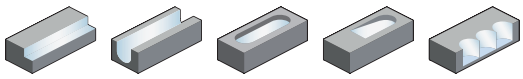
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

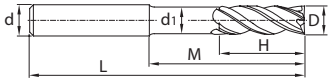
End mill long cutting edge

HSC/HPC machining

5502R38414GM



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	d_1	H	M	L		€
5502R38414GM-0400		4	6	3.7	11	19	57	4	***19.6***
5502R38414GM-0500		5	6	4.7	13	21	57	4	***19.6***
5502R38414GM-0600		6	6	5.7	13	21	57	4	***19.6***
5502R38414GM-0800		8	8	7.7	19	27	63	4	***27.5***
5502R38414GM-1000		10	10	9.5	22	32	72	4	***38.7***
5502R38414GM-1200		12	12	11.5	26	38	83	4	***58.0***
5502R38414GM-1400		14	14	13.5	26	38	83	4	***79.8***
5502R38414GM-1600		16	16	15.5	32	44	92	4	***94.1***
5502R38414GM-1800		18	18	17.5	32	44	92	4	***142.4***
5502R38414GM-2000		20	20	19.5	38	54	104	4	***162.6***

● Ex stock ○ On demand
✻ With internal cooling

Application field

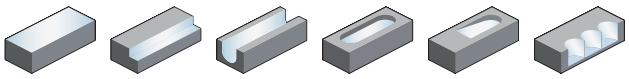
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

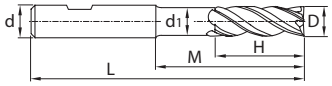
System code B258 Cutting data B422 Nonstandard order B461

End mill HSC/HPC machining

5601R38414GM



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	d (h6)	d_1	H	M	L	Teeth	Precio €
5601R38414GM-0400		4	6	3.7	8	16	54	4	18.6
5601R38414GM-0500		5	6	4.7	9	17	54	4	18.6
5601R38414GM-0600		6	6	5.7	10	18	54	4	18.6
5601R38414GM-0800		8	8	7.7	12	22	58	4	25.7
5601R38414GM-1000		10	10	9.5	14	26	66	4	39.0
5601R38414GM-1200		12	12	11.5	16	28	73	4	54.6
5601R38414GM-1400		14	14	13.5	18	30	75	4	76.9
5601R38414GM-1600		16	16	15.5	22	34	82	4	92.7
5601R38414GM-1800		18	18	17.5	24	36	84	4	134.8
5601R38414GM-2000		20	20	19.5	26	42	92	4	156.8

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

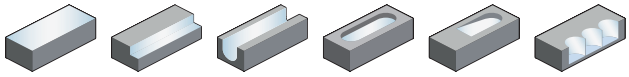
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

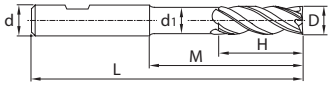
End mill long cutting edge

HSC/HPC machining

5602R38414GM



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	d_1	H	M	L		€
5602R38414GM-0400		4	6	3.7	11	19	57	4	19.6
5602R38414GM-0500		5	6	4.7	13	21	57	4	19.6
5602R38414GM-0600		6	6	5.7	13	21	57	4	19.6
5602R38414GM-0800		8	8	7.7	19	27	63	4	27.5
5602R38414GM-1000		10	10	9.5	22	32	72	4	38.7
5602R38414GM-1200		12	12	11.5	26	38	83	4	58.0
5602R38414GM-1400		14	14	13.5	26	38	83	4	84.9
5602R38414GM-1600		16	16	15.5	32	44	92	4	91.3
5602R38414GM-1800		18	18	17.5	32	44	92	4	142.4
5602R38414GM-2000		20	20	19.5	38	54	104	4	162.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

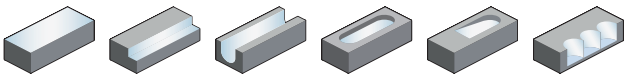
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

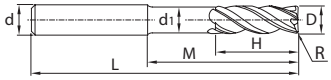
Torus mill long cutting edge

HSC/HPC machining

5502R38414GM-R



– Type of shank DIN 6535HA
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Precio €
5502R38414GM-R02-0400		4	0.2	6	3.7	11	19	57	4	25.1
5502R38414GM-R05-0400		4	0.5	6	3.7	11	19	57	4	25.1
5502R38414GM-R02-0500		5	0.2	6	4.7	13	21	57	4	25.1
5502R38414GM-R05-0500		5	0.5	6	4.7	13	21	57	4	25.1
5502R38414GM-R02-0600		6	0.2	6	5.7	13	21	57	4	25.1
5502R38414GM-R05-0600		6	0.5	6	5.7	13	21	57	4	25.1
5502R38414GM-R10-0600		6	1	6	5.7	13	21	57	4	25.1
5502R38414GM-R02-0800		8	0.2	8	7.7	19	27	63	4	35.1
5502R38414GM-R05-0800		8	0.5	8	7.7	19	27	63	4	35.1
5502R38414GM-R10-0800		8	1	8	7.7	19	27	63	4	35.1
5502R38414GM-R15-0800		8	1.5	8	7.7	19	27	63	4	35.1
5502R38414GM-R20-0800		8	2	8	7.7	19	27	63	4	35.1
5502R38414GM-R02-1000		10	0.2	10	9.5	22	32	72	4	44.3
5502R38414GM-R05-1000		10	0.5	10	9.5	22	32	72	4	43.3
5502R38414GM-R10-1000		10	1	10	9.5	22	32	72	4	43.3
5502R38414GM-R15-1000		10	1.5	10	9.5	22	32	72	4	43.3
5502R38414GM-R20-1000		10	2	10	9.5	22	32	72	4	43.3
5502R38414GM-R05-1200		12	0.5	12	11.5	26	38	83	4	64.0
5502R38414GM-R10-1200		12	1	12	11.5	26	38	83	4	64.0
5502R38414GM-R15-1200		12	1.5	12	11.5	26	38	83	4	65.2
5502R38414GM-R20-1200		12	2	12	11.5	26	38	83	4	65.2
5502R38414GM-R10-1600		16	1	16	15.5	32	44	92	4	101.9
5502R38414GM-R15-1600		16	1.5	16	15.5	32	44	92	4	105.0
5502R38414GM-R20-1600		16	2	16	15.5	32	44	92	4	105.0
5502R38414GM-R30-1600		16	3	16	15.5	32	44	92	4	105.0
5502R38414GM-R10-2000		20	1	20	19.5	38	54	104	4	179.2
5502R38414GM-R15-2000		20	1.5	20	19.5	38	54	104	4	179.2
5502R38414GM-R20-2000		20	2	20	19.5	38	54	104	4	179.2
5502R38414GM-R30-2000		20	3	20	19.5	38	54	104	4	179.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

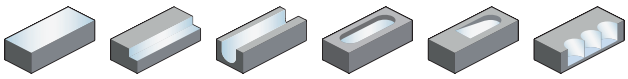
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

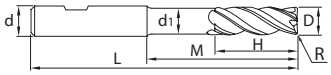
Torus mill long cutting edge

HSC/HPC machining

5602R38414GM-R



– Type of shank: DIN 6535HB
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Precio €
5602R38414GM-R02-0400		4	0.2	6	3.7	11	19	57	4	25.1
5602R38414GM-R05-0400		4	0.5	6	3.7	11	19	57	4	25.1
5602R38414GM-R02-0500		5	0.2	6	4.7	13	21	57	4	25.1
5602R38414GM-R05-0500		5	0.5	6	4.7	13	21	57	4	25.1
5602R38414GM-R02-0600		6	0.2	6	5.7	13	21	57	4	25.1
5602R38414GM-R05-0600		6	0.5	6	5.7	13	21	57	4	25.1
5602R38414GM-R10-0600		6	1	6	5.7	13	21	57	4	25.1
5602R38414GM-R02-0800		8	0.2	8	7.7	19	27	63	4	35.1
5602R38414GM-R05-0800		8	0.5	8	7.7	19	27	63	4	35.1
5602R38414GM-R10-0800		8	1	8	7.7	19	27	63	4	35.1
5602R38414GM-R15-0800		8	1.5	8	7.7	19	27	63	4	35.1
5602R38414GM-R20-0800		8	2	8	7.7	19	27	63	4	35.1
5602R38414GM-R02-1000		10	0.2	10	9.5	22	32	72	4	44.3
5602R38414GM-R05-1000		10	0.5	10	9.5	22	32	72	4	44.3
5602R38414GM-R10-1000		10	1	10	9.5	22	32	72	4	44.3
5602R38414GM-R15-1000		10	1.5	10	9.5	22	32	72	4	44.3
5602R38414GM-R20-1000		10	2	10	9.5	22	32	72	4	44.3
5602R38414GM-R05-1200		12	0.5	12	11.5	26	38	83	4	65.2
5602R38414GM-R10-1200		12	1	12	11.5	26	38	83	4	65.2
5602R38414GM-R15-1200		12	1.5	12	11.5	26	38	83	4	65.2
5602R38414GM-R20-1200		12	2	12	11.5	26	38	83	4	65.2
5602R38414GM-R10-1600		16	1	16	15.5	32	44	92	4	105.0
5602R38414GM-R15-1600		16	1.5	16	15.5	32	44	92	4	105.0
5602R38414GM-R20-1600		16	2	16	15.5	32	44	92	4	105.0
5602R38414GM-R30-1600		16	3	16	15.5	32	44	92	4	105.0
5602R38414GM-R10-2000		20	1	20	19.5	38	54	104	4	179.2
5602R38414GM-R15-2000		20	1.5	20	19.5	38	54	104	4	179.2
5602R38414GM-R20-2000		20	2	20	19.5	38	54	104	4	179.2
5602R38414GM-R30-2000		20	3	20	19.5	38	54	104	4	179.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

Notes

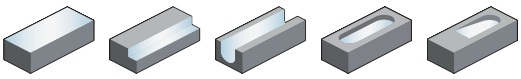
UM Serie

High Speed Cutter (HSC)
Fresa de alta velocidad

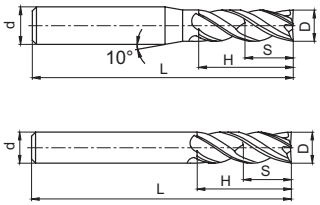
- **Para el desbastado y el acabado de acero de hasta 55 HRC, acero inoxidable y fundiciones con elevado volumen de desprendimiento.**
- **Geometría optimizada con hélice desigual (38°/41°) y paso desigual.**
- **Fresa integral y fresa toroidal**
- **Rango de diámetros, 4,0–20,0 mm**

End mill HSC/HPC machining

UM-4E



– Factory standard
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	d (h6)	H	L	S	Teeth	Geometry	Precio €
UM-4E-D4.0S		4	4	11	50	6	4	B	15.9
UM-4E-D4.0		4	6	11	50	6	4	A	18.4
UM-4E-D4.5		4.5	6	11	50	6.75	4	A	18.4
UM-4E-D5.0		5	6	13	50	7.5	4	A	18.4
UM-4E-D5.5		5.5	6	16	50	8.25	4	A	18.4
UM-4E-D6.0		6	6	16	50	9	4	B	18.4
UM-4E-D7.0		7	8	20	60	10.5	4	A	28.4
UM-4E-D8.0		8	8	20	60	12	4	B	28.4
UM-4E-D9.0		9	10	22	75	13.5	4	A	41.2
UM-4E-D10.0		10	10	25	75	15	4	B	41.2
UM-4E-D11.0		11	12	26	75	16.5	4	A	52.0
UM-4E-D12.0		12	12	30	75	18	4	B	52.0
UM-4E-D14.0		14	14	32	75	21	4	B	73.8
UM-4E-D16.0		16	16	45	100	24	4	B	101.1
UM-4E-D18.0		18	18	45	100	27	4	B	139.1
UM-4E-D20.0		20	20	45	100	30	4	B	168.9

● Ex stock ○ On demand
✻ With internal cooling

Application field

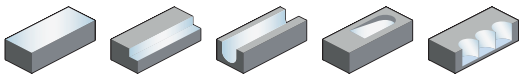
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

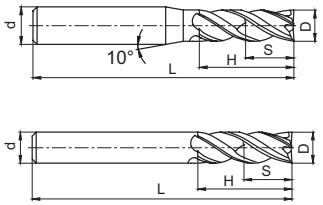
System code B258 Cutting data B422 Nonstandard order B461

End mill HSC/HPC machining

UM-4E-W



– Factory standard with weldon clamping surface
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	d (h6)	H	L	S	Teeth	Geometry	Precio €
UM-4E-D4.0S-W		4	4	11	50	6	4	B	15.9
UM-4E-D4.0-W		4	6	11	50	6	4	A	18.4
UM-4E-D4.5-W		4.5	6	11	50	6.75	4	A	18.4
UM-4E-D5.0-W		5	6	13	50	7.5	4	A	18.4
UM-4E-D5.5-W		5.5	6	16	50	8.25	4	A	18.4
UM-4E-D6.0-W		6	6	16	50	9	4	B	18.4
UM-4E-D7.0-W		7	8	20	60	10.5	4	A	28.4
UM-4E-D8.0-W		8	8	20	60	12	4	B	28.4
UM-4E-D9.0-W		9	10	22	75	13.5	4	A	41.2
UM-4E-D10.0-W		10	10	25	75	15	4	B	41.2
UM-4E-D11.0-W		11	12	26	75	16.5	4	A	52.0
UM-4E-D12.0-W		12	12	30	75	18	4	B	52.0
UM-4E-D14.0-W		14	14	32	75	21	4	B	73.8
UM-4E-D16.0-W		16	16	45	100	24	4	B	101.1
UM-4E-D18.0-W		18	18	45	100	27	4	B	139.1
UM-4E-D20.0-W		20	20	45	100	30	4	B	168.9

● Ex stock ○ On demand
✻ With internal cooling

Application field

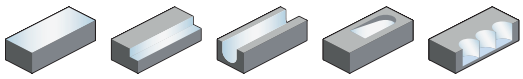
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

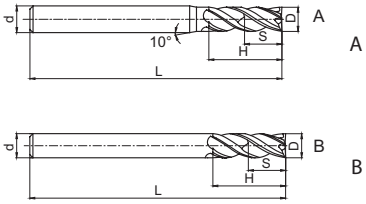
System code B258 Cutting data B422 Nonstandard order B461

End mill long cutting edge HSC/HPC machining

UM-4EL



– Factory standard
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	d (h6)	H	L	S	Teeth	Geometry	Precio €
UM-4EL-D4.0		4	6	15	75	6	4	A	23.4
UM-4EL-D5.0		5	6	20	75	7.5	4	A	23.4
UM-4EL-D6.0		6	6	20	75	9	4	B	23.4
UM-4EL-D8.0		8	8	25	100	12	4	B	37.1
UM-4EL-D10.0		10	10	30	100	15	4	B	51.1
UM-4EL-D12.0		12	12	35	100	18	4	B	63.7
UM-4EL-D14.0		14	14	40	100	21	4	B	89.4
UM-4EL-D16.0		16	16	50	150	24	4	B	146.9
UM-4EL-D20.0		20	20	55	150	30	4	B	227.1

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

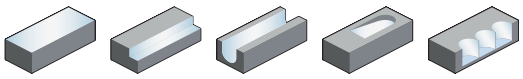
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

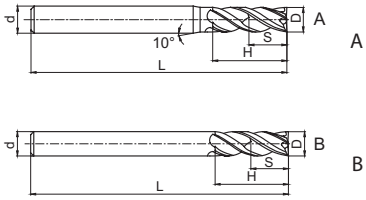
End mill long cutting edge

HSC/HPC machining

UM-4EL-W



– Factory standard with weldon clamping surface
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	d (h6)	H	L	S	Teeth	Geometry	Precio €
UM-4EL-D4.0-W		4	6	15	75	6	4	A	23.4
UM-4EL-D5.0-W		5	6	20	75	7.5	4	A	23.4
UM-4EL-D6.0-W		6	6	20	75	9	4	B	23.4
UM-4EL-D8.0-W		8	8	25	100	12	4	B	37.1
UM-4EL-D10.0-W		10	10	30	100	15	4	B	51.1
UM-4EL-D12.0-W		12	12	35	100	18	4	B	63.7
UM-4EL-D14.0-W		14	14	40	100	21	4	B	89.4
UM-4EL-D16.0-W		16	16	50	150	24	4	B	146.9
UM-4EL-D20.0-W		20	20	55	150	30	4	B	227.1

● Ex stock ○ On demand
✻ With internal cooling

Application field

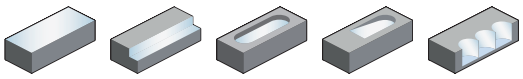
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

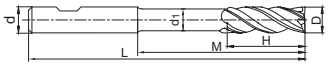
System code B258 Cutting data B422 Nonstandard order B461

End mill reduced neck HSC/HPC machining

UM-4ELP-W



– Factory standard with weldon clamping surface
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	d_1	H	M	L		€
UM-4ELP-D4.0-W		4	6	3.8	15	36	75	4	26.3
UM-4ELP-D5.0-W		5	6	4.8	20	36	75	4	26.3
UM-4ELP-D6.0-W		6	6	5.7	20	36	75	4	26.3
UM-4ELP-D8.0-W		8	8	7.7	25	60	100	4	40.3
UM-4ELP-D10.0-W		10	10	9.5	30	55	100	4	54.3
UM-4ELP-D12.0-W		12	12	11.5	35	50	100	4	68.4
UM-4ELP-D14.0-W		14	14	13.5	40	50	100	4	99.7
UM-4ELP-D16.0-W		16	16	15.5	50	100	150	4	145.7
UM-4ELP-D20.0-W		20	20	19.5	55	98	150	4	236.5

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔			✔

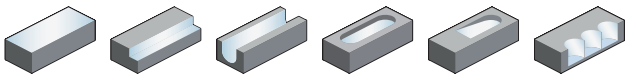
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

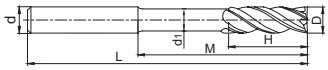
End mill short cutting edge

HSC/HPC machining

UM-4EFP



– Factory standard
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm]						Teeth	Precio
		D	d (h6)	d_1	H	M	L		€
UM-4EFP-D6.0		6	6	5.8	9	30	75	4	***23.4***
UM-4EFP-D8.0		8	8	7.8	12	40	100	4	***37.1***
UM-4EFP-D10.0		10	10	9.6	15	50	100	4	***50.1***
UM-4EFP-D12.0		12	12	11.5	18	50	100	4	***63.7***
UM-4EFP-D16.0		16	16	15.5	24	50	150	4	***146.9***
UM-4EFP-D20.0		20	20	19.5	30	60	150	4	***227.1***

● Ex stock ○ On demand
✻ With internal cooling

Application field

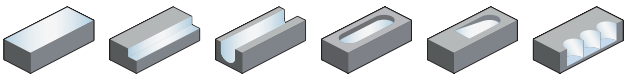
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

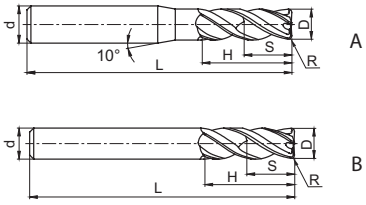
System code B258 Cutting data B422 Nonstandard order B461

Torus mill HSC/HPC machining

UM-4R



– Factory standard
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	S	Teeth	Geometry	Precio €
UM-4R-D4.0R0.3		4	0.3	6	10	50	6	4	A	23.3
UM-4R-D4.0R0.5		4	0.5	6	10	50	6	4	A	23.3
UM-4R-D5.0R0.5		5	0.5	6	13	50	7.5	4	A	23.7
UM-4R-D5.0R1.0		5	1	6	13	50	7.5	4	A	23.7
UM-4R-D6.0R0.5		6	0.5	6	16	50	9	4	B	23.7
UM-4R-D6.0R1.0		6	1	6	16	50	9	4	B	23.7
UM-4R-D8.0R0.5		8	0.5	8	20	60	12	4	B	34.1
UM-4R-D8.0R1.0		8	1	8	20	60	12	4	B	34.1
UM-4R-D10.0R0.5		10	0.5	10	25	75	15	4	B	48.8
UM-4R-D10.0R1.0		10	1	10	25	75	15	4	B	48.8
UM-4R-D10.0R2.0		10	2	10	25	75	15	4	B	48.8
UM-4R-D10.0R3.0		10	3	10	25	75	15	4	B	48.8
UM-4R-D12.0R0.5		12	0.5	12	30	75	18	4	B	60.9
UM-4R-D12.0R1.0		12	1	12	30	75	18	4	B	60.9
UM-4R-D12.0R2.0		12	2	12	30	75	18	4	B	60.9
UM-4R-D12.0R3.0		12	3	12	30	75	18	4	B	60.9
UM-4R-D16.0R1.0		16	1	16	45	100	24	4	B	108.8
UM-4R-D16.0R2.0		16	2	16	45	100	24	4	B	108.8
UM-4R-D16.0R3.0		16	3	16	45	100	24	4	B	108.8
UM-4R-D20.0R1.0		20	1	20	45	100	30	4	B	190.6
UM-4R-D20.0R2.0		20	2	20	45	100	30	4	B	190.6
UM-4R-D20.0R3.0		20	3	20	45	100	30	4	B	190.6

● Ex stock ○ On demand
✻ With internal cooling

Application field

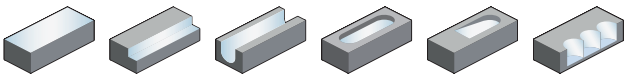
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

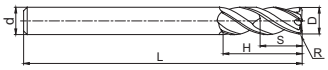
System code B258 Cutting data B422 Nonstandard order B461

Torus mill long shank HSC/HPC machining

UM-4RL



– Factory standard
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	S	Teeth	Precio €
UM-4RL-D6.0R0.5		6	0.5	6	16	75	9	4	26.2
UM-4RL-D6.0R1.0		6	1	6	16	75	9	4	26.2
UM-4RL-D8.0R0.5		8	0.5	8	20	100	12	4	41.1
UM-4RL-D8.0R1.0		8	1	8	20	100	12	4	41.1
UM-4RL-D10.0R0.5		10	0.5	10	25	100	15	4	55.4
UM-4RL-D10.0R1.0		10	1	10	25	100	15	4	55.4
UM-4RL-D10.0R2.0		10	2	10	25	100	15	4	55.4
UM-4RL-D12.0R0.5		12	0.5	12	30	100	18	4	74.7
UM-4RL-D12.0R1.0		12	1	12	30	100	18	4	74.7
UM-4RL-D12.0R2.0		12	2	12	30	100	18	4	74.7
UM-4RL-D16.0R1.0		16	1	16	45	150	24	4	154.7
UM-4RL-D16.0R2.0		16	2	16	45	150	24	4	154.7

● Ex stock ○ On demand
✻ With internal cooling

Application field					
P	M	K	N	S	H
✔	✔	✔			✔

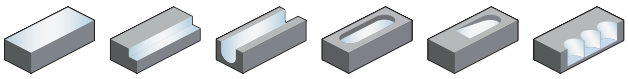
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

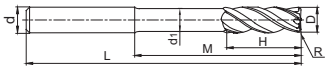
Torus mill short cutting edge

HSC/HPC machining

UM-4RFP



– Factory standard
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	R	d (h6)	d_1	H	M	L	Teeth	Precio €
UM-4RFP-D6.0R0.5		6	0.5	6	5.8	6	18	75	4	26.2
UM-4RFP-D6.0R1.0		6	1	6	5.8	6	18	75	4	26.2
UM-4RFP-D8.0R0.5		8	0.5	8	7.7	8	24	100	4	41.1
UM-4RFP-D8.0R1.0		8	1	8	7.7	8	24	100	4	41.1
UM-4RFP-D10.0R0.5		10	0.5	10	9.6	10	30	100	4	55.4
UM-4RFP-D10.0R1.0		10	1	10	9.6	10	30	100	4	55.4
UM-4RFP-D10.0R2.0		10	2	10	9.6	10	30	100	4	55.4
UM-4RFP-D12.0R0.5		12	0.5	12	11.5	12	36	100	4	74.7
UM-4RFP-D12.0R1.0		12	1	12	11.5	12	36	100	4	74.7
UM-4RFP-D12.0R2.0		12	2	12	11.5	12	36	100	4	74.7
UM-4RFP-D16.0R1.0		16	1	16	15.5	16	40	150	4	154.7
UM-4RFP-D16.0R2.0		16	2	16	15.5	16	40	150	4	154.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

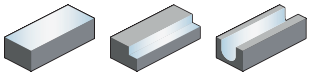
P	M	K	N	S	H
✔	✔	✔			✔

✔ Very suitable
✔ Suitable

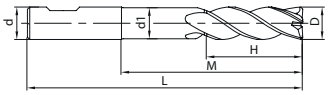
System code B258 Cutting data B422 Nonstandard order B461

Fresa integral Mecanizado HSC/HPC

UM-5EP-W



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 38°/39°/40°



Artículo	✻	Dimensiones [mm] D	d (h6)	d_1	H	M	L	Dientes	Tipo KMG405
UM-5EP-D6.0-W		6	6	5,7	16	22	58	5	23.8€
UM-5EP-D8.0-W		8	8	7,7	21	27	63	5	32.0€
UM-5EP-D10.0-W		10	10	9,5	24	35	75	5	36.6€
UM-5EP-D12.0-W		12	12	11,5	31	43	88	5	58.5€
UM-5EP-D16.0-W		16	16	15,5	36	52	100	5	116.3€
UM-5EP-D20.0-W		20	20	19,5	41	72	126	5	195.8€
UM-5EP-D25.0-W		25	25	24	51	102	160	5	374.0€

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

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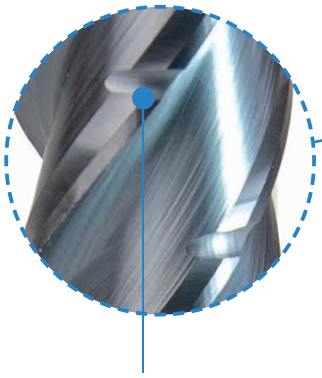
Serie UMC

Virutas cortas incluso con filos de corte largos

SU VENTAJA

– Mayor productividad en el mecanizado trocoidal y de alta velocidad
– Menor fuerza de arranque de viruta gracias al ataque intermitente de la herramienta
– Mejor evacuación de viruta, especialmente con el mecanizado de cajeras
– Preparación optimizada de los filos de corte para una mayor suavidad y vida útil



Los rompevirutas minimizan las fuerzas de corte y facilitan la evacuación de virutas con una calidad de superficie constante

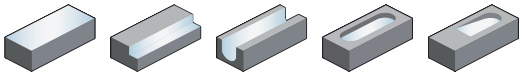
Diseño del núcleo en dos niveles para una óptima estabilidad de herramienta

Rebaje del mango para máxima profundidad efectiva

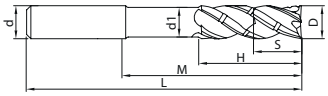
Fig.: UMC-4E-D12.0 KMG405

Fresa integral Mecanizado HSC/HPC

UMC-4E



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte central
– Hélice 38°/40°



Artículo	✻	Dimensiones [mm] D	d (h6)	d_1	H	M	L	S	Dientes	Tipo KMG405
UMC-4E-D6.0		6	6	5,8	18	24	60	9	4	26.7€
UMC-4E-D8.0		8	8	7,8	24	34	70	12	4	43.6€
UMC-4E-D10.0		10	10	9,6	30	40	80	15	4	55.7€
UMC-4E-D12.0		12	12	11,5	36	45	90	18	4	80.3€
UMC-4E-D16.0		16	16	15,5	48	62	110	24	4	142.6€
UMC-4E-D20.0		20	20	19,5	60	80	130	30	4	242.1€

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

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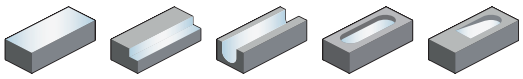
Fresa de metal duro integral

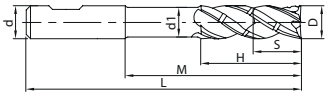
Fresa integral

Mecanizado HSC/HPC

UMC-4E-W



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte central
– Hélice 38°/40°



Artículo	✻	Dimensiones [mm]							Dientes	Tipo
		D	d (h6)	d_1	H	M	L	S		KMG405
UMC-4E-D6.0-W		6	6	5,8	18	24	60	9	4	26.7€
UMC-4E-D8.0-W		8	8	7,8	24	34	70	12	4	43.6€
UMC-4E-D10.0-W		10	10	9,6	30	40	80	15	4	55.7€
UMC-4E-D12.0-W		12	12	11,5	36	45	90	18	4	80.3€
UMC-4E-D16.0-W		16	16	15,5	48	62	110	24	4	142.6€
UMC-4E-D20.0-W		20	20	19,5	60	80	130	30	4	242.1€

● Desde el almacén ○ Bajo pedido

✻ Con refrigeración interior

Ámbito de aplicación

P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

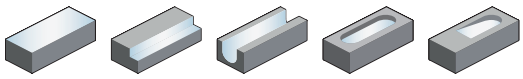
VSM Serie

Con hélice puntiaguda para materiales de alta resistencia térmica

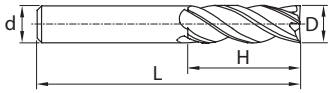
- **Para el desbastado y el acabado de acero, acero inoxidable y materiales de alta resistencia térmica con elevado volumen de desprendimiento.**
- **Hélice puntiaguda con hélice desigual (38°/41°) y paso desigual.**
- **Mecanizado suave sin vibraciones.**
- **Fresa integral y fresa toroidal**
- **Rango de diámetros, 4,0–20,0 mm**

End mill General machining of heat-resistant alloys

VSM-4E



– Factory standard
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Precio €
VSM-4E-D4.0		4	6	11	50	4	21.7
VSM-4E-D5.0		5	6	13	50	4	21.7
VSM-4E-D6.0		6	6	16	50	4	21.7
VSM-4E-D8.0		8	8	20	60	4	31.4
VSM-4E-D10.0		10	10	25	75	4	43.6
VSM-4E-D12.0		12	12	30	75	4	59.1
VSM-4E-D16.0		16	16	45	100	4	112.9
VSM-4E-D20.0		20	20	45	100	4	172.2

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔			✔	

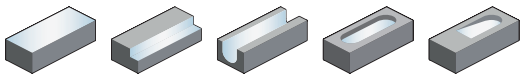
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

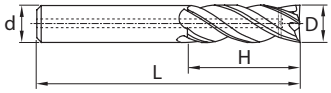
End mill

General machining of heat-resistant alloys

VSM-4E-C



– Factory standard
– Coolant exit, radial
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	d (h6)	H	L	Teeth	Precio €
VSM-4E-C-D8.0	✻	8	8	20	60	4	***38.0***
VSM-4E-C-D10.0	✻	10	10	25	75	4	***49.4***
VSM-4E-C-D12.0	✻	12	12	30	75	4	***66.9***
VSM-4E-C-D16.0	✻	16	16	45	100	4	***119.6***
VSM-4E-C-D20.0	✻	20	20	45	100	4	***179.0***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔			✔	

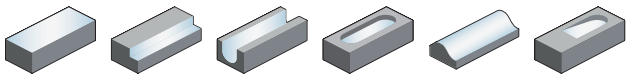
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

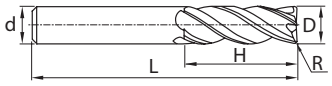
Torus mill

General machining of heat-resistant alloys

VSM-4R



– Factory standard
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm] D	R	d (h6)	H	L	Teeth	Precio €
VSM-4R-D4.0R0.2		4	0.2	6	11	50	4	26.2
VSM-4R-D4.0R0.5		4	0.5	6	11	50	4	26 .2
VSM-4R-D5.0R0.2		5	0.2	6	13	50	4	26 .2
VSM-4R-D5.0R0.5		5	0.5	6	13	50	4	26 .2
VSM-4R-D6.0R0.2		6	0.2	6	16	50	4	26 .2
VSM-4R-D6.0R0.5		6	0.5	6	16	50	4	26 .2
VSM-4R-D6.0R1.0		6	1	6	16	50	4	26 .2
VSM-4R-D6.0R1.5		6	1.5	6	16	50	4	26 .2
VSM-4R-D8.0R0.5		8	0.5	8	20	63	4	42 .1
VSM-4R-D8.0R0.8		8	0.8	8	20	63	4	42 .1
VSM-4R-D8.0R1.0		8	1	8	20	63	4	42 .1
VSM-4R-D8.0R1.5		8	1.5	8	20	63	4	42.1
VSM-4R-D8.0R2.0		8	2	8	20	63	4	41.2
VSM-4R-D10.0R0.5		10	0.5	10	25	75	4	54.7
VSM-4R-D10.0R0.8		10	0.8	10	25	75	4	54.7
VSM-4R-D10.0R1.0		10	1	10	25	75	4	54.7
VSM-4R-D10.0R1.5		10	1.5	10	25	75	4	54.7
VSM-4R-D10.0R2.0		10	2	10	25	75	4	54.7
VSM-4R-D12.0R0.5		12	0.5	12	30	75	4	74.2
VSM-4R-D12.0R0.8		12	0.8	12	30	75	4	74.2
VSM-4R-D12.0R1.0		12	1	12	30	75	4	74.2
VSM-4R-D12.0R1.5		12	1.5	12	30	75	4	74.2
VSM-4R-D12.0R2.0		12	2	12	30	75	4	74 .2
VSM-4R-D12.0R2.5		12	2.5	12	30	75	4	74 .2
VSM-4R-D12.0R3.0		12	3	12	30	75	4	74 .2
VSM-4R-D12.0R4.0		12	4	12	30	75	4	74 .2
VSM-4R-D16.0R0.5		16	0.5	16	45	100	4	153.6
VSM-4R-D16.0R0.8		16	0.8	16	45	100	4	153.6
VSM-4R-D16.0R1.0		16	1	16	45	100	4	153.6
VSM-4R-D16.0R1.5		16	1.5	16	45	100	4	153.6
VSM-4R-D16.0R2.0		16	2	16	45	100	4	153.6
VSM-4R-D16.0R2.5		16	2.5	16	45	100	4	153.6
VSM-4R-D16.0R3.0		16	3	16	45	100	4	153.6
VSM-4R-D16.0R4.0		16	4	16	45	100	4	153.6
VSM-4R-D20.0R0.5		20	0.5	20	45	100	4	207.9
VSM-4R-D20.0R1.0		20	1	20	45	100	4	207.9
VSM-4R-D20.0R1.5		20	1.5	20	45	100	4	207.9

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔			✔	

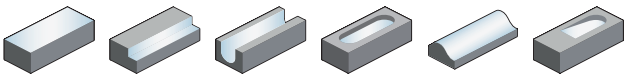
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

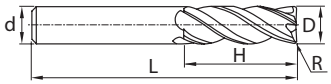
Torus mill

General machining of heat-resistant alloys

VSM-4R



– Factory standard
– Centre cutting
– Helix angle 38°/41°



Article	✻	Dimensions [mm]					Teeth	Precio
		D	R	d (h6)	H	L		€
VSM-4R-D20.0R2.0		20	2	20	45	100	4	***207.9***
VSM-4R-D20.0R2.5		20	2.5	20	45	100	4	***207.9***
VSM-4R-D20.0R3.0		20	3	20	45	100	4	***207.9***
VSM-4R-D20.0R4.0		20	4	20	45	100	4	***207.9***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔			✔	

✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

Notes

Deburring Cutter

Deburring cutter 60° General machining

5501/5601R60*FM

– Type of shank DIN 6535HA
– Type of shank: DIN 6535HB
– Non-centre cutting
– Helix angle 0°

Article	✻	Dimensions [mm] d (h6)	L	D	Shank	X	Teeth	Precio €
5501R603FM-0300		3	48	0,2	HA	60	3	12.7
5501R604FM-0400		4	48	0,2	HA	60	4	13.6
5601R604FM-0600		6	55	0,2	HB	60	4	17.0
5601R604FM-0800		8	58	0,5	HB	60	4	25.1
5601R604FM-1000		10	65	0,5	HB	60	4	30.9
5601R606FM-1000		10	65	0,7	HB	60	6	46.0
5601R604FM-1200		12	75	0,5	HB	60	4	42.6
5601R606FM-1200		12	75	0,7	HB	60	6	65.1
5601R604FM-1600		16	85	0,7	HB	60	4	101.8
5601R606FM-1600		16	85	0,7	HB	60	6	120.7

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔	✔		

✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

Deburring cutter 90° General machining

5501/5601R90*FM

– Type of shank DIN 6535HA
– Type of shank: DIN 6535HB
– Non-centre cutting
– Helix angle 0°

Article	✻	Dimensions [mm]					Teeth	Grade
		d (h6)	L	D	Shank	X		KMG303
5501R903FM-0300		3	48	0,2	HA	90	3	***12.7***
5501R904FM-0400		4	48	0,2	HA	90	4	***13.6***
5601R904FM-0600		6	55	0,2	HB	90	4	***17.0***
5601R904FM-0800		8	58	0,5	HB	90	4	***25.1***
5601R904FM-1000		10	65	0,5	HB	90	4	***30.9***
5601R906FM-1000		10	65	0,7	HB	90	6	***46.0***
5601R904FM-1200		12	75	0,5	HB	90	4	***42.6***
5601R906FM-1200		12	75	0,7	HB	90	6	***65.1***
5601R904FM-1600		16	85	0,7	HB	90	4	***101.8***
5601R906FM-1600		16	85	0,7	HB	90	6	***120.7***

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔	✔		

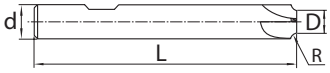
✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

Quarter round profile mill General machining

5601R90*FM-R

– Type of shank: DIN 6535HB
– Non-centre cutting
– Helix angle 0°



Article	✻	Dimensions [mm] d (h6)	L	D	R	Teeth	Precio €
5601R904FM-R02-0600		6	60	5,6	0,2	4	19.7
5601R904FM-R03-0600		6	60	5,4	0,3	4	19 .7
5601R904FM-R04-0600		6	60	5,2	0,4	4	19 .7
5601R904FM-R05-0800		8	70	7,0	0,5	4	35 .7
5601R904FM-R06-0800		8	70	6,8	0,6	4	35 .7
5601R904FM-R075-0800		8	70	6,5	0,75	4	35 .7
5601R904FM-R08-0800		8	70	6,4	0,8	4	35 .7
5601R904FM-R10-0800		8	70	6,0	1,0	4	35 .7
5601R904FM-R15-1000		10	75	7,0	1,5	4	51 .8
5601R904FM-R20-1000		10	75	6,0	2,0	4	51 .8
5601R904FM-R25-1200		12	75	7,0	2,5	4	72 .2
5601R904FM-R30-1200		12	75	6,0	3,0	4	72. 2
5601R904FM-R40-1600		16	80	8,0	4,0	4	135.7
5601R904FM-R50-2000		20	80	10,0	5,0	4	180.4

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
✔	✔	✔	✔		

✔ Very suitable
✔ Suitable

System code B258 Cutting data B422 Nonstandard order B461

EPM Serie

La entrada perfecta en la clase de alto rendimiento del metal duro integral

El concepto EPM

- Un programa enfocado para los procesos mas importantes.
- Un programa universal para el mecanizado de materiales mas relevantes.
- Una relacion atractiva de precio/rendimiento para la entrada en la clase elevada del metal duro integral.

Las caracteristicas de EPM

- Recubrimiento nano TiAlN para un fresado de acero (hasta HRc 55), acero inoxidable y fundicion. Una resistencia al desgaste enparejada con una tenacidad para una gama de aplicaciones amplia.
- Un filo estable
- Fresas cilindricas y esfericas
- Gama de diametros de 3,0 a 20,0 mm

Las ventajas de EPM

- Seleccion facil de herramientas por su flexibilidad de aplicaciones
- Una calidad fiable por una tecnologia superior
- Relacion optima de precio/rendimiento

Fresa de metal duro integral

EPM	–	2	E	L	P	–	D12	R0.5	–	M08	–	W
1		2	3	4	5		6	7		8		9

Aplicación	
Code	Descripción
GR	Desbastado general
GM	Mecanizado medio
GF	Acabado
PM	Mecanizado de alto rendimiento
EPM	**«Ecoline» – Mecanizado de alto rendimiento**
HM	Mecanizado de aceros templados
HH	Mecanizado de aceros templados de alta velocidad
NM	Mecanizado general de metales no ferríticos
AL	Mecanizado general de aluminio y aleaciones de aluminio
ALP	Mecanizado de alto rendimiento de aluminio y aleaciones de aluminio
ALG	Mecanizado general de aluminio y aleaciones de aluminio
UM	Mecanizado HSC/HPC
VSM	Mecanizado general de materiales de alta resistencia térmica

1

Número de hélices

2

Modelo de hélice	
Code	Descripción
E	Fresa de escuadrar con bisel de protección
F	Fresa de escuadrar con filos de corte puntiagudos
B	Fresa de punta esférica
R	Fresa toroidal
W	Fresa de desbaste
H	Fresa con avance rápido

3

Longitud de hélice	
Code	Descripción
L	Largo
X	Extralargo
F	Corto

4

Tipo	
Code	Descripción
S	Diámetro mini
P	Cuello rebajado
C	Cuello cónico

5

Diámetro [mm]	
Code	Descripción
D3.0	3,0
D8.0	8,0
D20.0	20,0
...	

6

Radio [mm]	
Code	Descripción
R0.5	0,5
R1.0	1,5
R3.0	3,0
...	

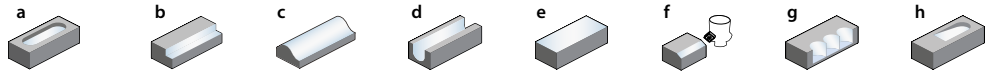
7

Particularidades	
Code	Descripción
G	Hélice 30°
M	Longitud de cuello [mm]
S	Mango estrecho
AIR	Para la industria aeronáutica

8

Mango Weldon

9

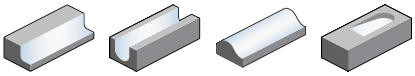


a Fresado de ranuras **b** Fresado en esquina **c** Fresado para conformado **d** Fresado para ranurado **e** Fresado para planear
f Fresado de chaflanes **g** Fresado en rampa **h** Fresado circular/rampas

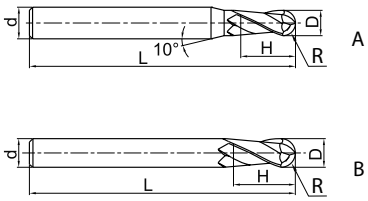
Fresa de punta esférica

Mecanizado de alto rendimiento

EPM-2B



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



Artículo	✻	Dimensiones [mm] R	D	d (h6)	H	L	Dientes	Geometría	Precio €
EPM-2B-R1.5		1.5	3	6	6	50	2	A	13.9
EPM-2B-R2.0		2	4	6	8	50	2	A	13.9
EPM-2B-R2.5		2.5	5	6	10	50	2	A	13.9
EPM-2B-R3.0		3	6	6	12	50	2	B	13.9
EPM-2B-R4.0		4	8	8	16	60	2	B	22.3
EPM-2B-R5.0		5	10	10	20	75	2	B	33.2
EPM-2B-R6.0		6	12	12	24	75	2	B	44.8
EPM-2B-R7.0		7	14	14	28	75	2	B	59.5
EPM-2B-R8.0		8	16	16	32	100	2	B	85.6
EPM-2B-R10.0		10	20	20	40	100	2	B	135.2

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

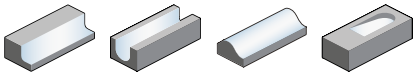
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

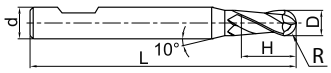
Fresa de punta esférica

Mecanizado de alto rendimiento

EPM-2B-W



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



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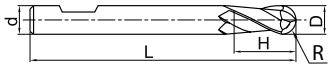


B

Artículo	✻	Dimensiones [mm]					Dientes	Geometría	Precio
		R	D	d (h6)	H	L			€
EPM-2B-R1.5-W		1.5	3	6	4	50	2	A	14.3
EPM-2B-R2.0-W		2	4	6	5	54	2	A	14.3
EPM-2B-R2.5-W		2.5	5	6	6	54	2	A	14.3
EPM-2B-R3.0-W		3	6	6	7	54	2	B	14.3
EPM-2B-R4.0-W		4	8	8	9	58	2	B	23.9
EPM-2B-R5.0-W		5	10	10	11	66	2	B	36.5
EPM-2B-R6.0-W		6	12	12	12	73	2	B	49.8
EPM-2B-R8.0-W		8	16	16	16	83	2	B	87.3
EPM-2B-R10.0-W		10	20	20	20	92	2	B	142.7

● Desde el almacén ○ Bajo pedido

✻ Con refrigeración interior

Ámbito de aplicación

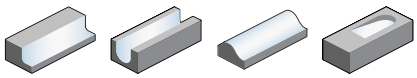
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

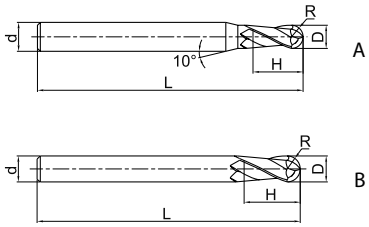
Fresa de punta esférica con mango largo

Mecanizado de alto rendimiento

EPM-2BL



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



Artículo	✻	Dimensiones [mm] R	D	d (h6)	H	L	Dientes	Geometría	Precio €
EPM-2BL-R1.5		1.5	3	6	6	75	2	A	17.5
EPM-2BL-R2.0		2	4	6	8	75	2	A	17.5
EPM-2BL-R2.5		2.5	5	6	10	75	2	A	17.5
EPM-2BL-R3.0		3	6	6	12	75	2	B	17.5
EPM-2BL-R4.0		4	8	8	16	100	2	B	31.3
EPM-2BL-R5.0		5	10	10	20	100	2	B	43.7
EPM-2BL-R6.0		6	12	12	24	100	2	B	56.2
EPM-2BL-R7.0		7	14	14	28	100	2	B	75.9
EPM-2BL-R8.0		8	16	16	32	150	2	B	134.9
EPM-2BL-R10.0		10	20	20	40	150	2	B	198.4

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

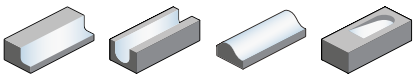
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

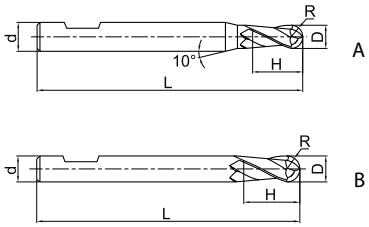
Fresa de punta esférica con mango largo

Mecanizado de alto rendimiento

EPM-2BL-W



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



Artículo	✻	Dimensiones [mm] R	D	d (h6)	H	L	Dientes	Geometría	Precio €
EPM-2BL-R1.5-W		1.5	3	6	4	57	2	A	14.6
EPM-2BL-R2.0-W		2	4	6	5	57	2	A	14.6
EPM-2BL-R2.5-W		2.5	5	6	6	57	2	A	14.6
EPM-2BL-R3.0-W		3	6	6	7	57	2	B	14.6
EPM-2BL-R4.0-W		4	8	8	9	63	2	B	27.6
EPM-2BL-R5.0-W		5	10	10	11	72	2	B	37.4
EPM-2BL-R6.0-W		6	12	12	12	83	2	B	51.1
EPM-2BL-R8.0-W		8	16	16	16	92	2	B	94.8
EPM-2BL-R10.0-W		10	20	20	20	104	2	B	152.0

● Desde el almacén ○ Bajo pedido

✻ Con refrigeración interior

Ámbito de aplicación

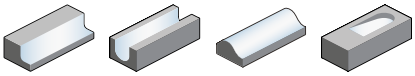
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

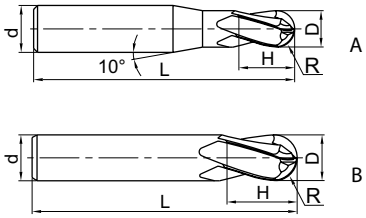
Fresa de punta esférica

Mecanizado de alto rendimiento

EPM-4B



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



Artículo	✻	Dimensiones [mm] R	D	d (h6)	H	L	Dientes	Geometría	Precio €
EPM-4B-R1.5		1.5	3	6	6	50	4	A	15.2
EPM-4B-R2.0		2	4	6	8	50	4	A	15.2
EPM-4B-R2.5		2.5	5	6	10	50	4	A	15.2
EPM-4B-R3.0		3	6	6	12	50	4	B	15.2
EPM-4B-R4.0		4	8	8	16	60	4	B	24.6
EPM-4B-R5.0		5	10	10	20	75	4	B	35.5
EPM-4B-R6.0		6	12	12	24	75	4	B	46.4
EPM-4B-R7.0		7	14	14	28	75	4	B	63.6
EPM-4B-R8.0		8	16	16	32	100	4	B	93.0
EPM-4B-R9.0		9	18	18	36	100	4	B	123.3
EPM-4B-R10.0		10	20	20	40	100	4	B	139.8

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

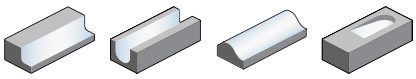
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

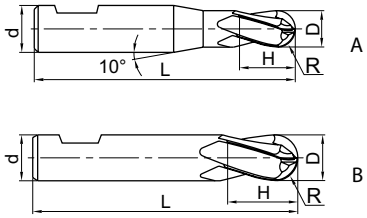
Fresa de punta esférica

Mecanizado de alto rendimiento

EPM-4B-W



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



Artículo	✻	Dimensiones [mm] R	D	d (h6)	H	L	Dientes	Geometría	Precio €
EPM-4B-R1.5-W		1.5	3	6	4	50	4	A	16.1
EPM-4B-R2.0-W		2	4	6	5	54	4	A	16.1
EPM-4B-R2.5-W		2.5	5	6	6	54	4	A	16.1
EPM-4B-R3.0-W		3	6	6	7	54	4	B	16.1
EPM-4B-R4.0-W		4	8	8	9	58	4	B	26.4
EPM-4B-R5.0-W		5	10	10	11	66	4	B	40.1
EPM-4B-R6.0-W		6	12	12	12	73	4	B	52.9
EPM-4B-R7.0-W		7	14	14	14	75	4	B	64.4
EPM-4B-R8.0-W		8	16	16	16	83	4	B	93.4
EPM-4B-R9.0-W		9	18	18	18	84	4	B	125.2
EPM-4B-R10.0-W		10	20	20	20	92	4	B	145.5

● Desde el almacén ○ Bajo pedido

✻ Con refrigeración interior

Ámbito de aplicación

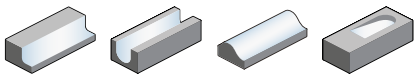
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

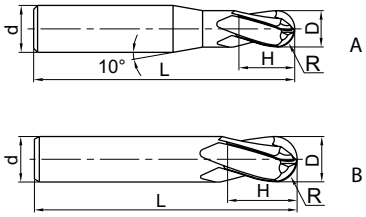
Fresa de punta esférica con mango largo

Mecanizado de alto rendimiento

EPM-4BL



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



Artículo	✻	Dimensiones [mm] R	D	d (h6)	H	L	Dientes	Geometría	Precio €
EPM-4BL-R1.5		1.5	3	6	6	75	4	A	20.2
EPM-4BL-R2.0		2	4	6	8	75	4	A	20.2
EPM-4BL-R2.5		2.5	5	6	10	75	4	A	20.2
EPM-4BL-R3.0		3	6	6	12	75	4	B	20.2
EPM-4BL-R4.0		4	8	8	16	100	4	B	31.1
EPM-4BL-R5.0		5	10	10	20	100	4	B	44.6
EPM-4BL-R6.0		6	12	12	24	100	4	B	55.1
EPM-4BL-R7.0		7	14	14	28	100	4	B	71.6
EPM-4BL-R8.0		8	16	16	32	150	4	B	134.9
EPM-4BL-R10.0		10	20	20	40	150	4	B	206.4

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

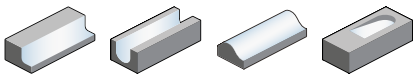
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

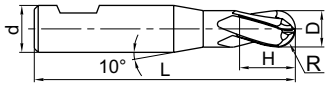
Fresa de punta esférica con mango largo

Mecanizado de alto rendimiento

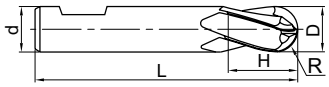
EPM-4BL-W



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



A



B

Artículo	✻	Dimensiones [mm]					Dientes	Geometría	Precio
		R	D	d (h6)	H	L			€
EPM-4BL-R1.5-W		1.5	3	6	4	57	4	A	19.5
EPM-4BL-R2.0-W		2	4	6	5	57	4	A	19.5
EPM-4BL-R2.5-W		2.5	5	6	6	57	4	A	19.5
EPM-4BL-R3.0-W		3	6	6	7	57	4	B	19.5
EPM-4BL-R4.0-W		4	8	8	9	63	4	B	29.5
EPM-4BL-R5.0-W		5	10	10	11	72	4	B	41.8
EPM-4BL-R6.0-W		6	12	12	12	83	4	B	53.6
EPM-4BL-R8.0-W		8	16	16	16	92	4	B	96.1
EPM-4BL-R10.0-W		10	20	20	20	104	4	B	155.8

● Desde el almacén ○ Bajo pedido

✻ Con refrigeración interior

Ámbito de aplicación

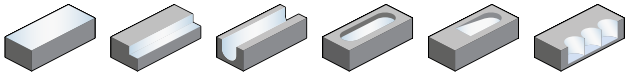
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

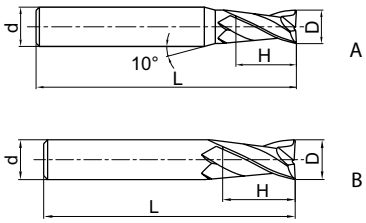
Fresa integral

Mecanizado de alto rendimiento

EPM-2E



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



Artículo	✻	Dimensiones [mm] D	d (h6)	H	L	Dientes	Geometría	Precio €
EPM-2E-D3.0		3	6	8	50	2	A	13.3
EPM-2E-D4.0		4	6	11	50	2	A	13.3
EPM-2E-D5.0		5	6	13	50	2	A	13.3
EPM-2E-D6.0		6	6	16	50	2	B	13.3
EPM-2E-D8.0		8	8	20	60	2	B	20.9
EPM-2E-D10.0		10	10	25	75	2	B	30.9
EPM-2E-D12.0		12	12	30	75	2	B	40.7
EPM-2E-D14.0		14	14	32	75	2	B	58.2
EPM-2E-D16.0		16	16	45	100	2	B	82.9
EPM-2E-D18.0		18	18	45	100	2	B	112.7
EPM-2E-D20.0		20	20	45	100	2	B	126.0

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

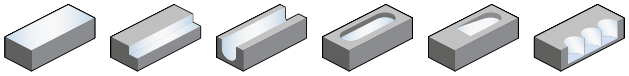
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

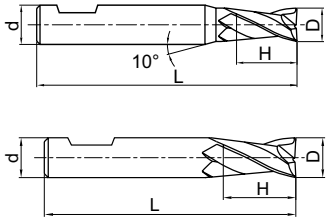
Fresa integral

Mecanizado de alto rendimiento

EPM-2E-W



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



Artículo	✻	Dimensiones [mm] D	d (h6)	H	L	Dientes	Geometría	Precio €
EPM-2E-D3.0-W		3	6	4	50	2	A	13.8
EPM-2E-D4.0-W		4	6	5	54	2	A	13.8
EPM-2E-D5.0-W		5	6	6	54	2	A	13.8
EPM-2E-D6.0-W		6	6	7	54	2	B	13.8
EPM-2E-D8.0-W		8	8	9	58	2	B	21.6
EPM-2E-D10.0-W		10	10	11	66	2	B	35.9
EPM-2E-D12.0-W		12	12	12	73	2	B	46.5
EPM-2E-D14.0-W		14	14	14	75	2	B	58.9
EPM-2E-D16.0-W		16	16	16	82	2	B	84.0
EPM-2E-D18.0-W		18	18	18	84	2	B	112.7
EPM-2E-D20.0-W		20	20	20	92	2	B	131.0

● Desde el almacén ○ Bajo pedido

✻ Con refrigeración interior

Ámbito de aplicación

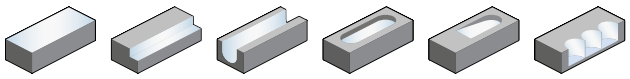
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

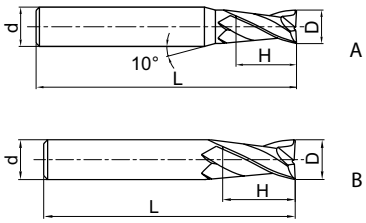
Fresa integral de hélice larga

Mecanizado de alto rendimiento

EPM-2EL



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



Artículo	✻	Dimensiones [mm] D	d (h6)	H	L	Dientes	Geometría	Precio €
EPM-2EL-D3.0		3	6	12	75	2	A	16.6
EPM-2EL-D4.0		4	6	15	75	2	A	16.6
EPM-2EL-D5.0		5	6	20	75	2	A	16.6
EPM-2EL-D6.0		6	6	20	75	2	B	16.6
EPM-2EL-D8.0		8	8	25	100	2	B	26.2
EPM-2EL-D10.0		10	10	30	100	2	B	38.4
EPM-2EL-D12.0		12	12	35	100	2	B	51.3
EPM-2EL-D14.0		14	14	40	100	2	B	70.2
EPM-2EL-D16.0		16	16	50	150	2	B	131.3
EPM-2EL-D20.0		20	20	55	150	2	B	191.6

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

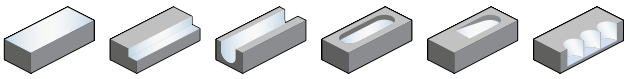
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

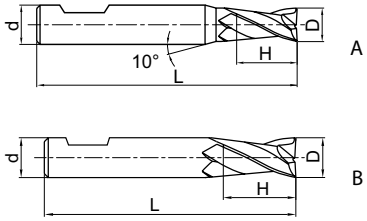
Fresa integral de hélice larga

Mecanizado de alto rendimiento

EPM-2EL-W



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 30°



Artículo	✻	Dimensiones [mm]				Dientes	Geometría	Precio
		D	d (h6)	H	L			€
EPM-2EL-D3.0-W		3	6	6	57	2	A	14.2
EPM-2EL-D4.0-W		4	6	8	57	2	A	14.2
EPM-2EL-D5.0-W		5	6	10	57	2	A	14.2
EPM-2EL-D6.0-W		6	6	10	57	2	B	14.2
EPM-2EL-D8.0-W		8	8	16	63	2	B	23.6
EPM-2EL-D10.0-W		10	10	19	72	2	B	35.9
EPM-2EL-D12.0-W		12	12	22	83	2	B	45.0
EPM-2EL-D14.0-W		14	14	22	83	2	B	61.5
EPM-2EL-D16.0-W		16	16	26	92	2	B	91.1
EPM-2EL-D18.0-W		18	18	26	92	2	B	117.4
EPM-2EL-D20.0-W		20	20	32	104	2	B	142.9

● Desde el almacén ○ Bajo pedido

✻ Con refrigeración interior

Ámbito de aplicación

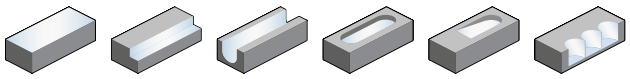
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

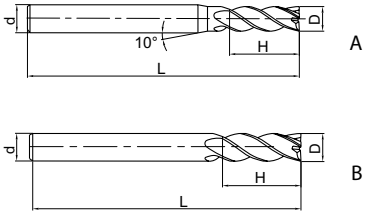
Fresa integral

Mecanizado de alto rendimiento

EPM-4E



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 45°



Artículo	✻	Dimensiones [mm] D	d (h6)	H	L	Dientes	Geometría	Precio €
EPM-4E-D3.0		3	6	8	50	4	A	13.6
EPM-4E-D4.0		4	6	11	50	4	A	13.6
EPM-4E-D5.0		5	6	13	50	4	A	13.6
EPM-4E-D6.0		6	6	16	50	4	B	13.6
EPM-4E-D8.0		8	8	20	60	4	B	21.0
EPM-4E-D10.0		10	10	25	75	4	B	30.9
EPM-4E-D12.0		12	12	30	75	4	B	41.4
EPM-4E-D14.0		14	14	32	75	4	B	60.9
EPM-4E-D16.0		16	16	45	100	4	B	87.6
EPM-4E-D18.0		18	18	45	100	4	B	115.7
EPM-4E-D20.0		20	20	45	100	4	B	132.8

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

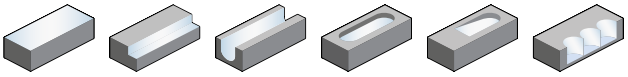
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

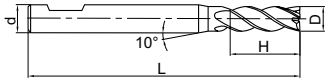
Fresa integral

Mecanizado de alto rendimiento

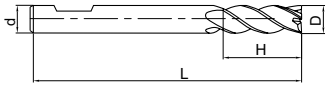
EPM-4E-W



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 45°



A



B

Artículo	✻	Dimensiones [mm]				Dientes	Geometría	Precio
		D	d (h6)	H	L			€
EPM-4E-D3.0-W		3	6	4	50	4	A	14.0
EPM-4E-D4.0-W		4	6	5	54	4	A	14.0
EPM-4E-D5.0-W		5	6	6	54	4	A	14.0
EPM-4E-D6.0-W		6	6	7	54	4	B	14.0
EPM-4E-D8.0-W		8	8	9	58	4	B	21.6
EPM-4E-D10.0-W		10	10	11	66	4	B	35.7
EPM-4E-D12.0-W		12	12	12	73	4	B	47.2
EPM-4E-D14.0-W		14	14	14	75	4	B	60.9
EPM-4E-D16.0-W		16	16	16	82	4	B	90.9
EPM-4E-D18.0-W		18	18	18	84	4	B	116.2
EPM-4E-D20.0-W		20	20	20	92	4	B	136.4

● Desde el almacén ○ Bajo pedido

✻ Con refrigeración interior

Ámbito de aplicación

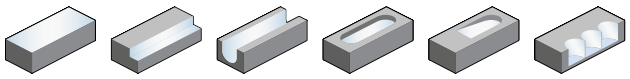
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

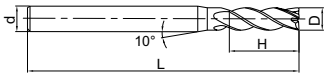
Fresa integral de hélice larga

Mecanizado de alto rendimiento

EPM-4EL



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 45°



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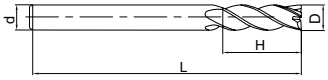


B

Artículo	✻	Dimensiones [mm] D	d (h6)	H	L	Dientes	Geometría	Precio €
EPM-4EL-D3.0		3	6	12	75	4	A	16.9
EPM-4EL-D4.0		4	6	15	75	4	A	16.9
EPM-4EL-D5.0		5	6	20	75	4	A	16.9
EPM-4EL-D6.0		6	6	20	75	4	B	16.9
EPM-4EL-D8.0		8	8	25	100	4	B	28.0
EPM-4EL-D10.0		10	10	30	100	4	B	39.3
EPM-4EL-D12.0		12	12	35	100	4	B	53.1
EPM-4EL-D14.0		14	14	40	100	4	B	71.4
EPM-4EL-D16.0		16	16	50	150	4	B	132.9
EPM-4EL-D20.0		20	20	55	150	4	B	194.5

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

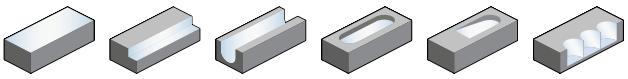
P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

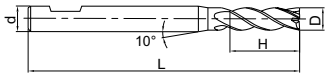
Fresa integral de hélice larga

Mecanizado de alto rendimiento

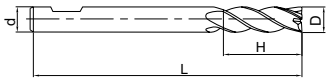
EPM-4EL-W



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte no central
– Hélice 45°



A



B

Artículo	✻	Dimensiones [mm]				Dientes	Geometría	Pecio
		D	d (h6)	H	L			€
EPM-4EL-D3.0-W		3	6	8	57	4	A	14.7
EPM-4EL-D4.0-W		4	6	11	57	4	A	14.7
EPM-4EL-D5.0-W		5	6	13	57	4	A	14.7
EPM-4EL-D6.0-W		6	6	13	57	4	B	14.7
EPM-4EL-D8.0-W		8	8	19	63	4	B	22.7
EPM-4EL-D10.0-W		10	10	22	72	4	B	39.0
EPM-4EL-D12.0-W		12	12	26	83	4	B	50.6
EPM-4EL-D14.0-W		14	14	26	83	4	B	60.9
EPM-4EL-D16.0-W		16	16	32	92	4	B	94.5
EPM-4EL-D18.0-W		18	18	32	92	4	B	121.0
EPM-4EL-D20.0-W		20	20	38	104	4	B	151.1

● Desde el almacén ○ Bajo pedido

✻ Con refrigeración interior

Ámbito de aplicación

P	M	K	N	S	H
✔	✔	✔			✔

✔ Muy apropiado
✔ Apropiado

TM Serie

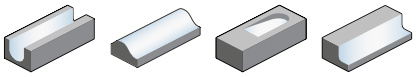
Para el mecanizado de titanio y super-aleaciones

- Desbastado y acabado de titanio y aceros de base niquel o cobalto
- Un filo particular para estabilizar el filo, para aplicaciones exijentes
- Tecnologia de ultima generacion para alta resistencia termica y al desgaste
- Substrato nuevo con buena conductividad termica y resistente al desgaste
- Serie TM-Multi hasta 9 filos para la productividad
- Fresa torica y esferica
- Diametros de 6,0–25,0 mm

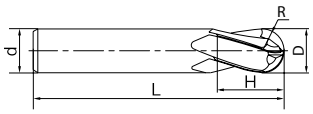
Fresa de punta esférica

Mecanizado de alto rendimiento

TM-4B



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte central
– Hélice 38°



Artículo	✻	Dimensiones [mm]					Dientes	Precio
		D	R	d (h6)	H	L		€
TM-4B-R3.0		6	3	6	9	50	4	29.9
TM-4B-R4.0		8	4	8	12	60	4	48.4
TM-4B-R5.0		10	5	10	15	75	4	63.4
TM-4B-R6.0		12	6	12	18	75	4	85.9
TM-4B-R8.0		16	8	16	24	85	4	148
TM-4B-R10.0		20	10	20	30	100	4	231.2

● Desde el almacén ○ Bajo pedido

✻ Con refrigeración interior

Ámbito de aplicación

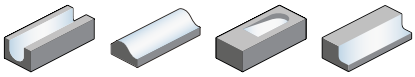
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

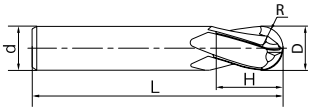
Fresa de punta esférica

Mecanizado de alto rendimiento

TM-4BL



– Modelo de mango: DIN 6535HA
– de corte central
– Hélice 38°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	H	L	Dientes	Precio €
TM-4BL-R3.0		6	3	6	16	57	4	31.6
TM-4BL-R4.0		8	4	8	20	63	4	50.6
TM-4BL-R5.0		10	5	10	22	72	4	66.4
TM-4BL-R6.0		12	6	12	25	83	4	87.3
TM-4BL-R8.0		16	8	16	32	92	4	152.4
TM-4BL-R10.0		20	10	20	38	104	4	238.7

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

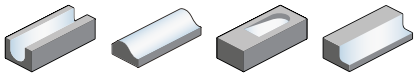
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

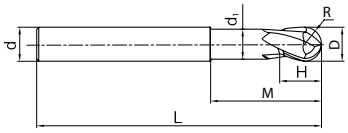
Fresa de punta esférica

Mecanizado de alto rendimiento

TM-4BP



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte central
– Hélice 38°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	d_1	H	M	L	Dientes	Precio €
TM-4BP-R3.0		6	3	6	5.5	9	18	60	4	*35.1*
TM-4BP-R4.0		8	4	8	7.4	12	24	75	4	*58.0*
TM-4BP-R5.0		10	5	10	9.4	15	30	75	4	*68.2*
TM-4BP-R6.0		12	6	12	11.4	18	35	90	4	*96.6*
TM-4BP-R8.0		16	8	16	15.4	24	40	90	4	*152.1*
TM-4BP-R10.0		20	10	20	19.4	35	50	110	4	*245.7*

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

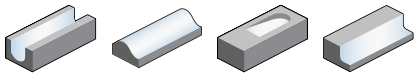
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

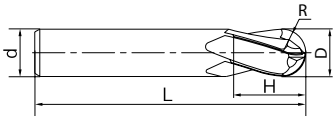
Fresa de punta esférica

Mecanizado de alto rendimiento

TM-5B



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– Hélice 38°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	H	L	Dientes	Precio €
TM-5B-R3.0		6	3	6	9	50	5	32.0
TM-5B-R4.0		8	4	8	12	60	5	52.1
TM-5B-R5.0		10	5	10	15	75	5	68.5
TM-5B-R6.0		12	6	12	18	75	5	93.0
TM-5B-R8.0		16	8	16	24	85	5	161.0
TM-5B-R10.0		20	10	20	30	100	5	251.9

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

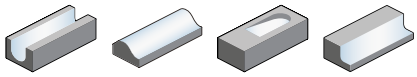
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

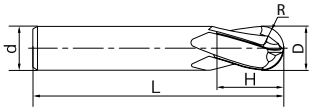
Fresa de punta esférica

Mecanizado de alto rendimiento

TM-5BL



– Modelo de mango: DIN 6535HA
– Hélice 38°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	H	L	Dientes	Precio €
TM-5BL-R3.0		6	3	6	16	57	5	34.0
TM-5BL-R4.0		8	4	8	20	63	5	54.7
TM-5BL-R5.0		10	5	10	22	72	5	71.7
TM-5BL-R6.0		12	6	12	25	83	5	97.4
TM-5BL-R8.0		16	8	16	32	92	5	166.0
TM-5BL-R10.0		20	10	20	38	104	5	266.8

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

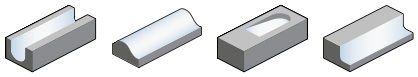
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

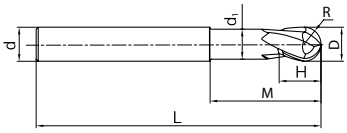
Fresa de punta esférica

Mecanizado de alto rendimiento

TM-5BP



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– Hélice 38°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	d_1	H	M	L	Dientes	Precio €
TM-5BP-R3.0		6	3	6	5.5	9	18	60	5	37 .6
TM-5BP-R4.0		8	4	8	7.4	12	24	75	5	62 .7
TM-5BP-R5.0		10	5	10	9.4	15	30	75	5	73 .9
TM-5BP-R6.0		12	6	12	11.4	18	35	90	5	117 .6
TM-5BP-R8.0		16	8	16	15.4	24	40	90	5	165.4
TM-5BP-R10.0		20	10	20	19.4	35	50	110	5	293.0

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

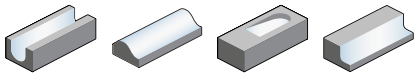
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

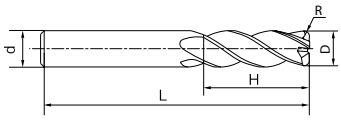
Fresa toroidal

Mecanizado de alto rendimiento

TM-4R



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte central
– Hélice 38°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	H	L	Dientes	Precio €
TM-4R-D6.0R0.3		6	0.3	6	16	50	4	29.9
TM-4R-D6.0R0.5		6	0.5	6	16	50	4	29.9
TM-4R-D6.0R 0.75		6	0.75	6	16	50	4	29.9
TM-4R-D6.0R1.0		6	1.0	6	16	50	4	29.9
TM-4R-D8.0R0.3		8	0.3	8	20	60	4	48.4
TM-4R-D8.0R0.5		8	0.5	8	20	60	4	48.4
TM-4R-D8.0R0.75		8	0.75	8	20	60	4	48.4
TM-4R-D8.0R1.0		8	1.0	8	20	60	4	48.4
TM-4R-D10.0R0.5		10	0.5	10	25	75	4	63.4
TM-4R-D10.0R0.75		10	0.75	10	25	75	4	63.4
TM-4R-D10.0R1.0		10	1.0	10	25	75	4	63.4
TM-4R-D10.0R1.25		10	1.25	10	25	75	4	63.4
TM-4R-D10.0R1.5		10	1.5	10	25	75	4	63.4
TM-4R-D10.0R1.6		10	1.6	10	25	75	4	63.4
TM-4R-D10.0R2.0		10	2.0	10	25	75	4	63.4
TM-4R-D10.0R2.5		10	2.5	10	25	75	4	63.4
TM-4R-D10.0R3.0		10	3.0	10	25	75	4	63.4
TM-4R-D12.0R0.5		12	0.5	12	30	75	4	85.9
TM-4R-D12.0R0.75		12	0.75	12	30	75	4	85.9
TM-4R-D12.0R1.0		12	1.0	12	30	75	4	85.9
TM-4R-D12.0R1.25		12	1.25	12	30	75	4	85.9
TM-4R-D12.0R1.5		12	1.5	12	30	75	4	85.9
TM-4R-D12.0R1.6		12	1.6	12	30	75	4	85.9
TM-4R-D12.0R2.0		12	2.0	12	30	75	4	85.9
TM-4R-D12.0R2.5		12	2.5	12	30	75	4	85.9
TM-4R-D12.0R3.0		12	3.0	12	30	75	4	85.9
TM-4R-D12.0R3.2		12	3.2	12	30	75	4	85.9
TM-4R-D12.0R4.0		12	4.0	12	30	75	4	85.9
TM-4R-D16.0R1.0		16	1.0	16	35	90	4	155.7
TM-4R-D16.0R1.25		16	1.25	16	35	90	4	155.7
TM-4R-D16.0R1.5		16	1.5	16	35	90	4	155.7
TM-4R-D16.0R1.6		16	1.6	16	35	90	4	155.7

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

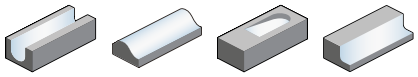
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

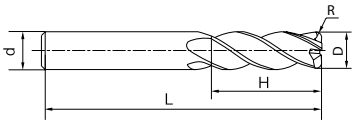
Fresa toroidal

Mecanizado de alto rendimiento

TM-4R



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte central
– Hélice 38°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	H	L	Dientes	Precio €
TM-4R-D16.0R2.0		16	2.0	16	35	90	4	155 .7
TM-4R-D16.0R2.5		16	2.5	16	35	90	4	155 .7
TM-4R-D16.0R3.0		16	3.0	16	35	90	4	155 .7
TM-4R-D16.0R3.2		16	3.2	16	35	90	4	155 .7
TM-4R-D16.0R4.0		16	4.0	16	35	90	4	155 .7
TM-4R-D16.0R5.0		16	5.0	16	35	90	4	155 .7
TM-4R-D16.0R6.3		16	6.3	16	35	90	4	155 .7
TM-4R-D20.0R1.0		20	1.0	20	45	100	4	231 .2
TM-4R-D20.0R1.25		20	1.25	20	45	100	4	231 .2
TM-4R-D20.0R1.5		20	1.5	20	45	100	4	231 .2
TM-4R-D20.0R1.6		20	1.6	20	45	100	4	231 .2
TM-4R-D20.0R2.0		20	2.0	20	45	100	4	231 .2
TM-4R-D20.0R2.5		20	2.5	20	45	100	4	231 .2
TM-4R-D20.0R3.0		20	3.0	20	45	100	4	231 .2
TM-4R-D20.0R3.2		20	3.2	20	45	100	4	231 .2
TM-4R-D20.0R4.0		20	4.0	20	45	100	4	231 .2
TM-4R-D20.0R5.0		20	5.0	20	45	100	4	231 .2
TM-4R-D20.0R6.3		20	6.3	20	45	100	4	231 .2
TM-4R-D25.0R1.0		25	1.0	25	50	110	4	447 .3
TM-4R-D25.0R1.25		25	1.25	25	50	110	4	447 .3
TM-4R-D25.0R1.5		25	1.5	25	50	110	4	447 .3
TM-4R-D25.0R1.6		25	1.6	25	50	110	4	447 .3
TM-4R-D25.0R2.0		25	2.0	25	50	110	4	447 .3
TM-4R-D25.0R2.5		25	2.5	25	50	110	4	447 .3
TM-4R-D25.0R3.0		25	3.0	25	50	110	4	447 .3
TM-4R-D25.0R3.2		25	3.2	25	50	110	4	447 .3
TM-4R-D25.0R4.0		25	4.0	25	50	110	4	447 .3
TM-4R-D25.0R5.0		25	5.0	25	50	110	4	447 .3
TM-4R-D25.0R6.3		25	6.3	25	50	110	4	447. 3

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

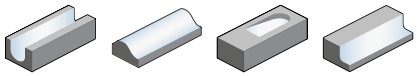
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

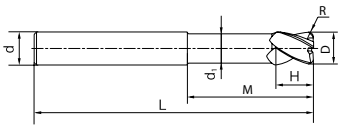
Fresa toroidal

Mecanizado de alto rendimiento

TM-4RP



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte central
– Hélice 38°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	d_1	H	M	L	Dientes	Precio €
TM-4RP-D8.0R0.3		8	0.3	8	7.4	16	25	75	4	48.4
TM-4RP-D8.0R0.5		8	0.5	8	7.4	16	25	75	4	48.4
TM-4RP-D8.0R0.75		8	0.75	8	7.4	16	25	75	4	48.4
TM-4RP-D8.0R1.0		8	1.0	8	7.4	16	25	75	4	48.4
TM-4RP-D10.0R0.5		10	0.5	10	9.4	20	32	75	4	68.2
TM-4RP-D10.0R0.75		10	0.75	10	9.4	20	32	75	4	68.2
TM-4RP-D10.0R1.0		10	1.0	10	9.4	20	32	75	4	68.2
TM-4RP-D10.0R1.25		10	1.25	10	9.4	20	32	75	4	68.2
TM-4RP-D10.0R1.5		10	1.5	10	9.4	20	32	75	4	68.2
TM-4RP-D10.0R1.6		10	1.6	10	9.4	20	32	75	4	68.2
TM-4RP-D10.0R2.0		10	2.0	10	9.4	20	32	75	4	68.2
TM-4RP-D10.0R2.5		10	2.5	10	9.4	20	32	75	4	68.2
TM-4RP-D10.0R3.0		10	3.0	10	9.4	20	32	75	4	68.2
TM-4RP-D12.0R0.5		12	0.5	12	11.4	24	40	90	4	108.1
TM-4RP-D12.0R0.75		12	0.75	12	11.4	24	40	90	4	108.1
TM-4RP-D12.0R1.0		12	1.0	12	11.4	24	40	90	4	108.1
TM-4RP-D12.0R1.25		12	1.25	12	11.4	24	40	90	4	108.1
TM-4RP-D12.0R1.5		12	1.5	12	11.4	24	40	90	4	108.1
TM-4RP-D12.0R1.6		12	1.6	12	11.4	24	40	90	4	108.1
TM-4RP-D12.0R2.0		12	2.0	12	11.4	24	40	90	4	108.1
TM-4RP-D12.0R2.5		12	2.5	12	11.4	24	40	90	4	108.1
TM-4RP-D12.0R3.0		12	3.0	12	11.4	24	40	90	4	108.1
TM-4RP-D12.0R3.2		12	3.2	12	11.4	24	40	90	4	108.1
TM-4RP-D12.0R4.0		12	4.0	12	11.4	24	40	90	4	108.1
TM-4RP-D16.0R1.0		16	1.0	16	15	32	50	100	4	166.9
TM-4RP-D16.0R1.25		16	1.25	16	15	32	50	100	4	166.9
TM-4RP-D16.0R1.5		16	1.5	16	15	32	50	100	4	166.9
TM-4RP-D16.0R1.6		16	1.6	16	15	32	50	100	4	166.9
TM-4RP-D16.0R2.0		16	2.0	16	15	32	50	100	4	166.9

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

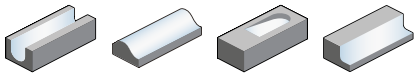
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

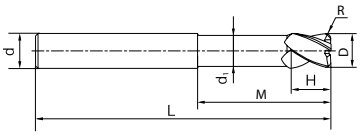
Fresa toroidal

Mecanizado de alto rendimiento

TM-4RP



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– de corte central
– Hélice 38°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	d_1	H	M	L	Dientes	Precio €
TM-4RP-D16.0R2.5		16	2.5	16	15	32	50	100	4	166.9
TM-4RP-D16.0R3.0		16	3.0	15	14	32	50	100	4	166.9
TM-4RP-D16.0R3.2		16	3.2	16	15	32	50	100	4	166.9
TM-4RP-D16.0R4.0		16	4.0	16	15	32	50	100	4	166.9
TM-4RP-D16.0R5.0		16	5.0	16	15	32	50	100	4	166.9
TM-4RP-D16.0R6.3		16	6.3	16	15	32	50	100	4	166.9
TM-4RP-D20.0R1.0		20	1.0	20	19	35	60	110	4	280.6
TM-4RP-D20.0R1.25		20	1.25	20	19	35	60	110	4	280.6
TM-4RP-D20.0R1.5		20	1.5	20	19	35	60	110	4	280.6
TM-4RP-D20.0R1.6		20	1.6	20	19	35	60	110	4	280.6
TM-4RP-D20.0R2.0		20	2.0	20	19	35	60	110	4	280.6
TM-4RP-D20.0R2.5		20	2.5	20	19	35	60	110	4	280.6
TM-4RP-D20.0R3.0		20	3.0	20	19	35	60	110	4	280.6
TM-4RP-D20.0R3.2		20	3.2	20	19	35	60	110	4	280.6
TM-4RP-D20.0R4.0		20	4.0	20	19	35	60	110	4	280.6
TM-4RP-D20.0R5.0		20	5.0	20	19	35	60	110	4	280.6
TM-4RP-D20.0R6.3		20	6.3	20	19	35	60	110	4	280.6
TM-4RP-D25.0R1.0		25	1.0	25	24	45	75	150	4	553.9
TM-4RP-D25.0R1.25		25	1.25	25	24	45	75	150	4	553.9
TM-4RP-D25.0R1.5		25	1.5	25	24	45	75	150	4	553.9
TM-4RP-D25.0R1.6		25	1.6	25	24	45	75	150	4	553.9
TM-4RP-D25.0R2.0		25	2.0	25	24	45	75	150	4	553.9
TM-4RP-D25.0R2.5		25	2.5	25	24	45	75	150	4	553.9
TM-4RP-D25.0R3.0		25	3.0	25	24	45	75	150	4	553.9
TM-4RP-D25.0R3.2		25	3.2	25	24	45	75	150	4	553.9
TM-4RP-D25.0R4.0		25	4.0	25	24	45	75	150	4	553.9
TM-4RP-D25.0R5.0		25	5.0	25	24	45	75	150	4	553.9
TM-4RP-D25.0R6.3		25	6.3	25	24	45	75	150	4	553.9

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

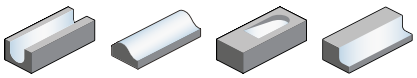
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

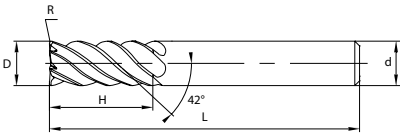
Fresa toroidal

Mecanizado de alto rendimiento

TM-5R



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– Hélice 42°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	H	L	Dientes	Precio €
TM-5R-D6.0R0.3		6	0.3	6	16	50	5	32.0
TM-5R-D6.0R0.5		6	0.5	6	16	50	5	32.0
TM-5R-D6.0R 0.75		6	0.75	6	16	50	5	32.0
TM-5R-D6.0R1.0		6	1.0	6	16	50	5	52.1
TM-5R-D8.0R0.3		8	0.3	8	20	60	5	52.1
TM-5R-D8.0R0.5		8	0.5	8	20	60	5	52.1
TM-5R-D8.0R0.75		8	0.75	8	20	60	5	52.1
TM-5R-D8.0R1.0		8	1.0	8	20	60	5	52.1
TM-5R-D10.0R0.5		10	0.5	10	25	75	5	68.5
TM-5R-D10.0R0.75		10	0.75	10	25	75	5	68.5
TM-5R-D10.0R1.0		10	1.0	10	25	75	5	68.5
TM-5R-D10.0R1.25		10	1.25	10	25	75	5	68.5
TM-5R-D10.0R1.5		10	1.5	10	25	75	5	68.5
TM-5R-D10.0R1.6		10	1.6	10	25	75	5	68.5
TM-5R-D10.0R2.0		10	2.0	10	25	75	5	68.5
TM-5R-D10.0R2.5		10	2.5	10	25	75	5	68.5
TM-5R-D10.0R3.0		10	3.0	10	25	75	5	68.5

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

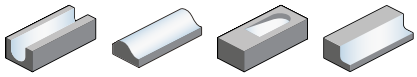
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

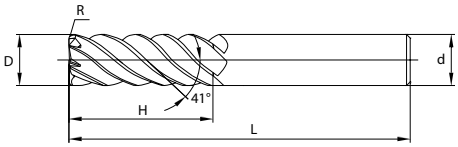
Fresa toroidal

Mecanizado de alto rendimiento

TM-7R



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– Hélice 41°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	H	L	Dientes	Precio €
TM-7R-D12.0R0.5		12	0.5	12	30	75	7	103.9
TM-7R-D12.0R0.75		12	0.75	12	30	75	7	103.9
TM-7R-D12.0R1.0		12	1.0	12	30	75	7	103.9
TM-7R-D12.0R1.25		12	1.25	12	30	75	7	103.9
TM-7R-D12.0R1.5		12	1.5	12	30	75	7	103.9
TM-7R-D12.0R1.6		12	1.6	12	30	75	7	103.9
TM-7R-D12.0R2.0		12	2.0	12	30	75	7	103.9
TM-7R-D12.0R2.5		12	2.5	12	30	75	7	103.9
TM-7R-D12.0R3.0		12	3.0	12	30	75	7	103.9
TM-7R-D12.0R3.2		12	3.2	12	30	75	7	103.9
TM-7R-D12.0R4.0		12	4.0	12	30	75	7	103.9
TM-7R-D16.0R1.0		16	1.0	16	35	90	7	190.0
TM-7R-D16.0R1.25		16	1.25	16	35	90	7	190.0
TM-7R-D16.0R1.5		16	1.5	16	35	90	7	190.0
TM-7R-D16.0R1.6		16	1.6	16	35	90	7	190.0
TM-7R-D16.0R2.0		16	2.0	16	35	90	7	190.0
TM-7R-D16.0R2.5		16	2.5	16	35	90	7	190.0
TM-7R-D16.0R3.0		16	3.0	16	35	90	7	190.0
TM-7R-D16.0R3.2		16	3.2	16	35	90	7	190.0
TM-7R-D16.0R4.0		16	4.0	16	35	90	7	190.0
TM-7R-D16.0R5.0		16	5.0	16	35	90	7	190.0
TM-7R-D16.0R6.3		16	6.3	16	35	90	7	190.0
TM-7R-D20.0R1.0		20	1.0	20	45	100	7	282.9
TM-7R-D20.0R1.25		20	1.25	20	45	100	7	282.9
TM-7R-D20.0R1.5		20	1.5	20	45	100	7	282.9
TM-7R-D20.0R1.6		20	1.6	20	45	100	7	282.9
TM-7R-D20.0R2.0		20	2.0	20	45	100	7	282.9
TM-7R-D20.0R2.5		20	2.5	20	45	100	7	282.9
TM-7R-D20.0R3.0		20	3.0	20	45	100	7	282.9
TM-7R-D20.0R3.2		20	3.2	20	45	100	7	282.9
TM-7R-D20.0R4.0		20	4.0	20	45	100	7	282.9
TM-7R-D20.0R5.0		20	5.0	20	45	100	7	282.9
TM-7R-D20.0R6.3		20	6.3	20	45	100	7	282.9

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

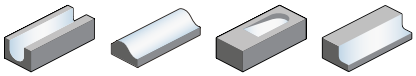
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

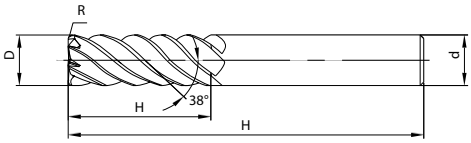
Fresa toroidal

Mecanizado de alto rendimiento

TM-9R



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– Hélice 38°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	H	L	Dientes	Precio €
TM-9R-D25.0R1.0		25	1.0	25	50	110	9	586.1
TM-9R-D25.0R1.25		25	1.25	25	50	110	9	586.1
TM-9R-D25.0R1.5		25	1.5	25	50	110	9	586.1
TM-9R-D25.0R1.6		25	1.6	25	50	110	9	586.1
TM-9R-D25.0R2.0		25	2.0	25	50	110	9	586.1
TM-9R-D25.0R2.5		25	2.5	25	50	110	9	586.1
TM-9R-D25.0R3.0		25	3.0	25	50	110	9	586.1
TM-9R-D25.0R3.2		25	3.2	25	50	110	9	586.1
TM-9R-D25.0R4.0		25	4.0	25	50	110	9	586.1
TM-9R-D25.0R5.0		25	5.0	25	50	110	9	586.1
TM-9R-D25.0R6.3		25	6.3	25	50	110	9	586.1

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

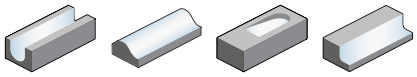
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

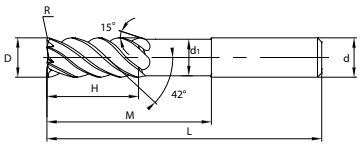
Fresa toroidal

Mecanizado de alto rendimiento

TM-5RP



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– Hélice 42°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	d_1	H	M	L	Dientes	Precio €
TM-5RP-D8.0R0.3		8	0.3	8	7.4	16	25	75	5	***62.7***
TM-5RP-D8.0R0.5		8	0.5	8	7.4	16	25	75	5	***62.7***
TM-5RP-D8.0R0.75		8	0.75	8	7.4	16	25	75	5	***62.7***
TM-5RP-D8.0R1.0		8	1.0	8	7.4	16	25	75	5	***62.7***
TM-5RP-D10.0R0.5		10	0.5	10	9.4	20	32	75	5	***73.9***
TM-5RP-D10.0R0.75		10	0.75	10	9.4	20	32	75	5	***73.9***
TM-5RP-D10.0R1.0		10	1.0	10	9.4	20	32	75	5	***73.9***
TM-5RP-D10.0R1.25		10	1.25	10	9.4	20	32	75	5	***73.9***
TM-5RP-D10.0R1.5		10	1.5	10	9.4	20	32	75	5	***73.9***
TM-5RP-D10.0R1.6		10	1.6	10	9.4	20	32	75	5	***73.9***
TM-5RP-D10.0R2.0		10	2.0	10	9.4	20	32	75	5	***73.9***
TM-5RP-D10.0R2.5		10	2.5	10	9.4	20	32	75	5	***73.9***
TM-5RP-D10.0R3.0		10	3.0	10	9.4	20	32	75	5	***73.9***

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

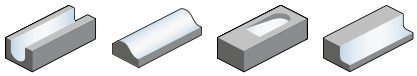
Ámbito de aplicación

P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

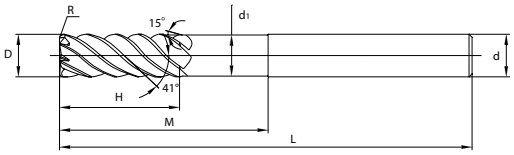
Fresa toroidal

Mecanizado de alto rendimiento



TM-7RP

– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– Hélice 41°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	d_1	H	M	L	Dientes	Precio €
TM-7RP-D12.0R0.5		12	0.5	12	11.4	24	40	90	7	131.9
TM-7RP-D12.0R0.75		12	0.75	12	11.4	24	40	90	7	131.9
TM-7RP-D12.0R1.0		12	1.0	12	11.4	24	40	90	7	131.9
TM-7RP-D12.0R1.25		12	1.25	12	11.4	24	40	90	7	131.9
TM-7RP-D12.0R1.5		12	1.5	12	11.4	24	40	90	7	131.9
TM-7RP-D12.0R1.6		12	1.6	12	11.4	24	40	90	7	131.9
TM-7RP-D12.0R2.0		12	2.0	12	11.4	24	40	90	7	131.9
TM-7RP-D12.0R2.5		12	2.5	12	11.4	24	40	90	7	131.9
TM-7RP-D12.0R3.0		12	3.0	12	11.4	24	40	90	7	131.9
TM-7RP-D12.0R3.2		12	3.2	12	11.4	24	40	90	7	131.9
TM-7RP-D12.0R4.0		12	4.0	12	11.4	24	40	90	7	131.9
TM-7RP-D16.0R1.0		16	1.0	16	15	32	50	100	7	204.2
TM-7RP-D16.0R1.25		16	1.25	16	15	32	50	100	7	204.2
TM-7RP-D16.0R1.5		16	1.5	16	15	32	50	100	7	204.2
TM-7RP-D16.0R1.6		16	1.6	16	15	32	50	100	7	204.2
TM-7RP-D16.0R2.0		16	2.0	16	15	32	50	100	7	204.2
TM-7RP-D16.0R2.5		16	2.5	16	15	32	50	100	7	204.2
TM-7RP-D16.0R3.0		16	3.0	16	15	32	50	100	7	204.2
TM-7RP-D16.0R3.2		16	3.2	16	15	32	50	100	7	204.2
TM-7RP-D16.0R4.0		16	4.0	16	15	32	50	100	7	204.2
TM-7RP-D16.0R5.0		16	5.0	16	15	32	50	100	7	204.2
TM-7RP-D16.0R6.3		16	6.3	16	15	32	50	100	7	204.2
TM-7RP-D20.0R1.0		20	1.0	20	19	35	60	110	7	341.6
TM-7RP-D20.0R1.25		20	1.25	20	19	35	60	110	7	341.6
TM-7RP-D20.0R1.5		20	1.5	20	19	35	60	110	7	341.6
TM-7RP-D20.0R1.6		20	1.6	20	19	35	60	110	7	341.6
TM-7RP-D20.0R2.0		20	2.0	20	19	35	60	110	7	341.6
TM-7RP-D20.0R2.5		20	2.5	20	19	35	60	110	7	341.6
TM-7RP-D20.0R3.0		20	3.0	20	19	35	60	110	7	341.6
TM-7RP-D20.0R3.2		20	3.2	20	19	35	60	110	7	341.6
TM-7RP-D20.0R4.0		20	4.0	20	19	35	60	110	7	341.6
TM-7RP-D20.0R5.0		20	5.0	20	19	35	60	110	7	341.6
TM-7RP-D20.0R6.3		20	6.3	20	19	35	60	110	7	341.6

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

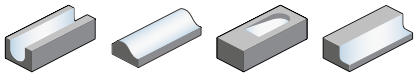
P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

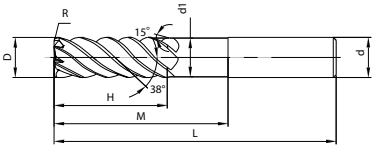
Fresa toroidal

Mecanizado de alto rendimiento

TM-9RP



– Modelo de mango: Norma de fábrica ZCC-CT mango cilíndrico
– Hélice 38°



Artículo	✻	Dimensiones [mm] D	R	d (h6)	d_1	H	M	L	Dientes	Precio €
TM-9RP-D25.0R1.0		25	1.0	25	24	45	75	150	9	*783 .1*
TM-9RP-D25.0R1.25		25	1.25	25	24	45	75	150	9	*783 .1*
TM-9RP-D25.0R1.5		25	1.5	25	24	45	75	150	9	*783 .1*
TM-9RP-D25.0R1.6		25	1.6	25	24	45	75	150	9	*783 .1*
TM-9RP-D25.0R2.0		25	2.0	25	24	45	75	150	9	*783 .1*
TM-9RP-D25.0R2.5		25	2.5	25	24	45	75	150	9	*783 .1*
TM-9RP-D25.0R3.0		25	3.0	25	24	45	75	150	9	*783 .1*
TM-9RP-D25.0R3.2		25	3.2	25	24	45	75	150	9	*783 .1*
TM-9RP-D25.0R4.0		25	4.0	25	24	45	75	150	9	*783 .1*
TM-9RP-D25.0R5.0		25	5.0	25	24	45	75	150	9	*783 .1*
TM-9RP-D25.0R6.3		25	6.3	25	24	45	75	150	9	*783. 1*

● Desde el almacén ○ Bajo pedido
✻ Con refrigeración interior

Ámbito de aplicación

P	M	K	N	S	H
	✔			✔	

✔ Muy apropiado
✔ Apropiado

Guía de condiciones de corte recomendadas – Fresa de metal duro integral

End mill – GM series

1 2 3 4

	Material group	Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed v_c [m/min]							
						[illegible]				GM-2E GM-2EFP GM-2F			
						Slot milling		Shoulder milling		Slot milling		Shoulder milling	
						Ø (mm)	$a_{p\,max}$	Ø (mm)	$a_{p\,max}$	Ø (mm)	$a_{p\,max}$	Ø (mm)	$a_{p\,max}$
						0<a<3	0,1xD	0<a<3	<0,5xD	0<a<3	0,1xD	0<a<20	<0,5xD
						3<a<20	0,8xD			3<a<20	0,8xD		
						KMG309				KMG301			
						a_e/D				a_e/D			
						1/1	1/2	1/10	1-group	1/1	1/2	1/10	1-group
P	Unalloyed steel	ca. 0,15 % C	annealed	125	1	150	200	270	2	150	200	270	2
P	Unalloyed steel	ca. 0,45 % C	annealed	190	2	145	190	260	2	145	190	260	2
P	Unalloyed steel	ca. 0,45 % C	tempered	250	3	105	140	190	2	105	140	190	2
P	Unalloyed steel	ca. 0,75 % C	annealed	270	4	90	120	165	2	90	120	165	2
P	Unalloyed steel	ca. 0,75 % C	tempered	500	5	85	110	150	2	85	110	150	2
P	Low-alloyed steel		annealed	180	6	115	150	205	2	115	150	205	2
P	Low-alloyed steel		tempered	275	7	90	120	165	2	90	120	165	2
P	Low-alloyed steel		tempered	300	8	85	110	150	2	85	110	150	2
P	Low-alloyed steel		tempered	550	9	80	105	145	2	80	105	145	2
P	High-alloyed steel and high-alloyed tool steel		annealed	200	10	105	140	190	2	105	140	190	2
P	High-alloyed steel and high-alloyed tool steel		hardened and tempered	325	11	80	110	145	2	80	110	145	2
M	Stainless steel	ferritic/martensitic	annealed	200	12	50	65	90	2	50	65	90	2
M	Stainless steel	martensitic	tempered	240	13	45	60	80	2	45	60	80	2
M	Stainless steel	austenitic	quench hardened	180	14	55	70	95	2	55	70	95	2
M	Stainless steel	austenitic-ferritic		230	15	45	60	80	2	45	60	80	2
K	Grey cast iron	pelitic/ferritic		180	16	110	150	200	2	110	150	200	2
K	Grey cast iron	pelitic (martensitic)		260	17	90	120	165	2	90	120	165	2
K	Cast iron with spheroidal graphite	ferritic		160	18	135	180	245	2	135	180	245	2
K	Cast iron with spheroidal graphite	pelitic		250	19	105	140	190	2	105	140	190	2
K	Malleable cast iron	ferritic		130	20	150	200	270	2	150	200	270	2
K	Malleable cast iron	pelitic		230	21	120	160	220	2	120	160	220	2
N	Aluminium wrought alloys	cannot be hardened		60	22								
N	Aluminium wrought alloys	hardenable	hardened	100	23								
N	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24								
N	Cast aluminium alloys	≤ 12 % Si, hardenable	hardened	90	25								
N	Cast aluminium alloys	> 12 % Si, cannot be hardened		130	26								
N	Copper and copper alloys (bronze/brass)	machining steel, Pb > 1%		110	27								
N	Copper and copper alloys (bronze/brass)	CuZn, CuSnZn		90	28								
N	Copper and copper alloys (bronze/brass)	CuSn, Pb-free copper, electrolytic copper		100	29								
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30								
S	Heat-resistant alloys	Fe-based alloys	hardened	280	31								
S	Heat-resistant alloys	Ni or Co basis	annealed	250	32								
S	Heat-resistant alloys	Ni or Co basis	hardened	350	33								
S	Heat-resistant alloys	Ni or Co basis	cast	320	34								
S	Titanium alloys	pure titanium		R_m 400	35								
S	Titanium alloys	α and β alloys	hardened	R_m 1050	36								
H	Hardened steel		hardened and tempered	55 HRC	37								
H	Hardened steel		hardened and tempered	60 HRC	38								
H	Hard cast iron		cast	400	39								
H	Hardened cast iron		hardened and tempered	55 HRC	40								
X	Non-metallic materials	Thermosetting			41								
X	Non-metallic materials	Thermosetting plastics			42								
X	Non-metallic materials	Plastic, glass-fibre reinforced GFRP			43								
X	Non-metallic materials	Plastic, carbon fibre reinforced CFRP			44								
X	Non-metallic materials	Graphite			45								
X	Non-metallic materials	Wood			46								

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.
Feed rate recommendations on page B460
For examples of material for cutting tool groups view page D22.

Recommend feed rate

Solid carbide milling group 2 – Square shoulder mills GM series

4

5

	a_e / D	Feed rate per cutting edge (f_z) [mm]														
		Ø0,5	Ø0,8	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20
P	1/1	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,06	0,07	0,07	0,08	0,08	0,09
	1/2	0,01	0,03	0,03	0,03	0,03	0,03	0,04	0,04	0,05	0,08	0,09	0,09	0,10	0,10	0,12
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,06	0,06	0,08	0,12	0,14	0,14	0,16	0,16	0,18
M	1/1	0,01	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,03	0,05	0,06	0,06	0,06	0,06	0,07
	1/2	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,06	0,07	0,07	0,08	0,08	0,09
	1/10	0,02	0,05	0,03	0,05	0,05	0,05	0,06	0,05	0,06	0,10	0,11	0,11	0,13	0,13	0,15
K	1/1	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,06	0,07	0,07	0,08	0,08	0,09
	1/2	0,01	0,03	0,03	0,03	0,03	0,03	0,04	0,04	0,05	0,08	0,09	0,09	0,10	0,10	0,12
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,06	0,06	0,08	0,12	0,14	0,14	0,16	0,16	0,18

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

1. Elija la serie de productos adecuada.
2. Determine la relación de acoplamiento.
3. Elija el material utilizado y seleccione la velocidad de corte.
4. Determine el grupo de avance y pase a la página correspondiente de avances recomendados.
5. Elija el diámetro de herramienta y la relación de acoplamiento.

Fresa integral – Serie GM

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]							
						5501R302GM 5601R302GM 5502R302GM 5602R302GM				GM-2E GM-2EFP GM-2F			
						Ranurado		Esquina		Ranurado		Esquina	
						Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$
						0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D	0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D
						3 ≤ x ≤ 20	0,8 x D			3 ≤ x ≤ 20	0,8 x D		
						KMG303				KMG303			
						a_e / D				a_e / D			
						1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1	150	200	270	2	150	200	270	2
		aprox. 0,45 % C	recocido	190	2	145	190	260	2	145	190	260	2
		aprox. 0,45 % C	bonificado	250	3	105	140	190	2	105	140	190	2
		aprox. 0,75 % C	recocido	270	4	90	120	165	2	90	120	165	2
		aprox. 0,75 % C	bonificado	300	5	85	110	150	2	85	110	150	2
	Acero de baja aleación		recocido	180	6	115	150	205	2	115	150	205	2
			bonificado	275	7	90	120	165	2	90	120	165	2
			bonificado	300	8	85	110	150	2	85	110	150	2
			bonificado	350	9	80	105	145	2	80	105	145	2
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10	105	140	190	2	105	140	190	2
			templado y revenido	325	11	80	110	145	2	80	110	145	2
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12	50	65	90	2	50	65	90	2
		martensítica	bonificado	240	13	45	60	80	2	45	60	80	2
		austenítica	templado	180	14	55	70	95	2	55	70	95	2
		ferrítica austenítica		230	15	45	60	80	2	45	60	80	2
K	Fundición gris	perlítica/ferrítica		180	16	110	150	200	2	110	150	200	2
		perlítica (martensítica)		260	17	90	120	165	2	90	120	165	2
	Fundiciones con grafito esferoidal	ferrítica		160	18	135	180	245	2	135	180	245	2
		perlítica		250	19	105	140	190	2	105	140	190	2
	Fundición maleable	ferrítica		130	20	150	200	270	2	150	200	270	2
		perlítica		230	21	120	160	220	2	120	160	220	2
N	Aleaciones de forja de aluminio	no templable		60	22								
		templable	templado	100	23								
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24								
		≤ 12 % Si, templable	templado	90	25								
		> 12 % Si, no templable		130	26								
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27								
		CuZn, CuSnZn		90	28								
		CuSn, cobre sin plomo y cobre electrolítico		100	29								
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30								
			templado	280	31								
		a base de Ni o Co	recocido	250	32								
			templado	350	33								
			fundido	320	34								
	Aleaciones de titanio	Titanio puro		R_m 400	35								
		Aleaciones alfa- + beta	templado	R_m 1050	36								
H	Acero templado		templado y revenido	55 HRC	37								
			templado y revenido	60 HRC	38								
	Fundición dura		fundido	400	39								
	Función templada		templado y revenido	55 HRC	40								
X	Materiales no metálicos	Termoplásticos			41								
		Duroplásticos			42								
		Plástico reforzado con fibra de vidrio PRFV			43								
		Plástico reforzado con fibra de carbono PRFC			44								
		Grafito			45								
		Madera			46								

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página B444.
Se proporcionan ejemplos de materiales para grupos de arranque de virutas en la página D22.

	Velocidad de corte v_c [m/min]																			
	GM-2EL GM-2EX GM-2FL				GM-2EP GM-2ES				GM-3E GM-4E GM-4E-G				GM-2EL GM-4EL-G				5501R303GM 5601R303GM 5502R303GM 5602R303GM			
	Ranurado		Esquina		Ranurado		Esquina		Ranurado		Esquina		Ranurado		Esquina		Ranurado		Esquina	
	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$
	0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D	0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D	0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D	0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D	0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D
	3 ≤ x ≤ 20	0,8 x D			3 ≤ x ≤ 20	0,8 x D			3 ≤ x ≤ 20	0,8 x D			3 ≤ x ≤ 20	0,8 x D			3 ≤ x ≤ 20	0,8 x D		
	KMG303				KMG303				KMG303				KMG303				KMG303			
	a_e / D				a_e / D				a_e / D				a_e / D				a_e / D			
	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f
	130	170	230	2	150	200	270	2	150	200	270	2	130	170	230	2	140	185	245	2
	125	165	220	2	145	190	260	2	145	190	260	2	125	165	220	2	135	180	235	2
	95	120	165	2	105	140	190	2	105	140	190	2	95	120	165	2	100	130	175	2
	80	105	140	2	90	120	165	2	90	120	165	2	80	105	140	2	85	115	150	2
	75	95	130	2	85	110	150	2	85	110	150	2	75	95	130	2	80	105	135	2
	100	130	175	2	115	150	205	2	115	150	205	2	100	130	175	2	105	140	185	2
	80	105	140	2	90	120	165	2	90	120	165	2	80	105	140	2	85	115	150	2
	75	95	130	2	85	110	150	2	85	110	150	2	75	95	130	2	80	105	135	2
	70	90	120	2	80	105	145	2	80	105	145	2	70	90	120	2	75	100	130	2
	95	120	165	2	105	140	190	2	105	140	190	2	95	120	165	2	100	130	175	2
	70	95	125	2	80	110	145	2	80	110	145	2	70	95	125	2	75	100	130	2
	45	55	75	2	50	65	90	2	50	65	90	2	45	55	75	2	45	60	80	2
	40	50	65	2	45	60	80	2	45	60	80	2	40	50	65	2	40	55	70	2
	45	60	80	2	55	70	95	2	55	70	95	2	45	60	80	2	50	65	85	2
	40	50	65	2	45	60	80	2	45	60	80	2	40	50	65	2	40	55	70	2
	95	125	170	2	110	150	200	2	110	150	200	2	95	125	170	2	105	140	180	2
	80	105	140	2	90	120	165	2	90	120	165	2	80	105	140	2	85	115	150	2
	120	155	210	2	135	180	245	2	135	180	245	2	120	155	210	2	130	170	225	2
	95	120	165	2	105	140	190	2	105	140	190	2	95	120	165	2	100	130	175	2
	130	170	230	2	150	200	270	2	150	200	270	2	130	170	230	2	140	185	245	2
	105	140	185	2	120	160	220	2	120	160	220	2	105	140	185	2	115	150	200	2

Fresa integral – Serie GM

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]							
						5501R304GF 5601R304GF 5502R304GF 5602R304GF				GM-4F-G GM-4EFP			
						Ranurado		Esquina		Ranurado		Esquina	
						Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$
						0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D	0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D
						3 ≤ x ≤ 20	0,8 x D			3 ≤ x ≤ 20	0,8 x D		
						KMG303				KMG303			
						a_e / D				a_e / D			
						1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1	155	200	265	2	150	200	270	2
		aprox. 0,45 % C	recocido	190	2	150	190	255	2	145	190	260	2
		aprox. 0,45 % C	bonificado	250	3	110	140	190	2	105	140	190	2
		aprox. 0,75 % C	recocido	270	4	95	120	160	2	90	120	165	2
		aprox. 0,75 % C	bonificado	300	5	90	110	150	2	85	110	150	2
	Acero de baja aleación		recocido	180	6	120	150	200	2	115	150	205	2
			bonificado	275	7	95	120	160	2	90	120	165	2
			bonificado	300	8	90	110	150	2	85	110	150	2
			bonificado	350	9	85	105	140	2	80	105	145	2
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10	110	140	190	2	105	140	190	2
			templado y revenido	325	11	85	110	145	2	80	110	145	2
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12	50	65	85	2	50	65	90	2
		martensítica	bonificado	240	13	45	60	75	2	45	60	80	2
		austenítica	templado	180	14	55	70	95	2	55	70	95	2
		ferrítica austenítica		230	15	45	60	75	2	45	60	80	2
K	Fundición gris	perlítica/ferrítica		180	16	115	150	195	2	110	150	200	2
		perlítica (martensítica)		260	17	95	120	160	2	90	120	165	2
	Fundiciones con grafito esferoidal	ferrítica		160	18	140	180	240	2	135	180	245	2
		perlítica		250	19	110	140	190	2	105	140	190	2
	Fundición maleable	ferrítica		130	20	155	200	265	2	150	200	270	2
		perlítica		230	21	125	160	215	2	120	160	220	2
N	Aleaciones de forja de aluminio	no templable		60	22								
		templable	templado	100	23								
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24								
		≤ 12 % Si, templable	templado	90	25								
		> 12 % Si, no templable		130	26								
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27								
		CuZn, CuSnZn		90	28								
		CuSn, cobre sin plomo y cobre electrolítico		100	29								
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30								
			templado	280	31								
		a base de Ni o Co	recocido	250	32								
			templado	350	33								
			fundido	320	34								
	Aleaciones de titanio	Titanio puro		R_m 400	35								
		Aleaciones alfa- + beta	templado	R_m 1050	36								
H	Acero templado		templado y revenido	55 HRC	37								
			templado y revenido	60 HRC	38								
	Fundición dura		fundido	400	39								
	Función templada		templado y revenido	55 HRC	40								
X	Materiales no metálicos	Termoplásticos			41								
		Duroplásticos			42								
		Plástico reforzado con fibra de vidrio PRFV			43								
		Plástico reforzado con fibra de carbono PRFC			44								
		Grafito			45								
		Madera			46								

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página B444.
Se proporcionan ejemplos de materiales para grupos de arranque de virutas en la página D22.

	Velocidad de corte v_c [m/min]																			
	GM-4FL-G GM-4EX-G				GM-6E				GM-6E 5589R45MGFR				5565R302GF 5565R302GM 5566R302GF				GM-2B GM-4B GM-2BS GM-2BP			
	Ranurado		Esquina				Esquina				Esquina		Ranurado		Esquina					
	Ø [mm]	$a_{p\,máx.}$	Ø [mm]	$a_{e\,máx.}$			Ø [mm]	$a_{e\,máx.}$			Ø [mm]	$a_{e\,máx.}$	Ø [mm]	$a_{p\,máx.}$	Ø [mm]	$a_{e\,máx.}$				
	0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D			0 < x ≤ 20	< 0,5 x D			0 < x ≤ 20	< 0,5 x D	0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D				
	3 ≤ x ≤ 20	0,8 x D											3 ≤ x ≤ 20	0,8 x D						
	KMG303				KMG303				KMG303				KMG303				KMG303			
	a_e / D				a_e / D				a_e / D				a_e / D				a_e / D			
	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/10	1/20	Grupo f	1/1	1/10	1/20	Grupo f
	130	170	230	2			270	2			230	2		250	280	5		250	280	5
	125	165	220	2			260	2			220	2		240	270	5		240	270	5
	95	120	165	2			190	2			165	2		175	200	5		175	200	5
	80	105	140	2			165	2			140	2		150	170	5		150	170	5
	75	95	130	2			150	2			130	2		140	155	5		140	155	5
	100	130	175	2			205	2			175	2		190	210	5		190	210	5
	80	105	140	2			165	2			140	2		150	170	5		150	170	5
	75	95	130	2			150	2			130	2		140	155	5		140	155	5
	70	90	120	2			145	2			120	2		130	150	5		130	150	5
	95	120	165	2			190	2			165	2		175	200	5		175	200	5
	70	95	125	2			145	2			125	2		135	150	5		135	150	5
	45	55	75	2			90	2			75	2		80	90	5		80	90	5
	40	50	65	2			80	2			65	2		70	80	5		70	80	5
	45	60	80	2			95	2			80	2		85	100	5		85	100	5
	40	50	65	2			80	2			65	2		70	80	5		70	80	5
	95	125	170	2			200	2			170	2		185	205	5		185	205	5
	80	105	140	2			165	2			140	2		150	170	5		150	170	5
	120	155	210	2			245	2			210	2		225	255	5		225	255	5
	95	120	165	2			190	2			165	2		175	200	5		175	200	5
	130	170	230	2			270	2			230	2		250	280	5		250	280	5
	105	140	185	2			220	2			185	2		200	225	5		200	225	5

Fresa integral – Serie GM

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]							
						GM-2BL GM-4BL GM-2BFP				GM-2R GM-4R			
										Ranurado		Esquina	
										Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$
										0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D
										3 ≤ x ≤ 20	0,8 x D		
						KMG303				KMG303			
						a_e / D				a_e / D			
						1/1	1/10	1/20	Grupo f	1/1	1/2	1/10	Grupo f
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1		220	250	5	160	215	275	2
		aprox. 0,45 % C	recocido	190	2		210	240	5	155	205	265	2
		aprox. 0,45 % C	bonificado	250	3		155	175	5	115	155	195	2
		aprox. 0,75 % C	recocido	270	4		135	150	5	100	130	165	2
		aprox. 0,75 % C	bonificado	300	5		125	140	5	90	120	155	2
	Acero de baja aleación		recocido	180	6		165	190	5	120	165	210	2
			bonificado	275	7		135	150	5	100	130	165	2
			bonificado	300	8		125	140	5	90	120	155	2
			bonificado	350	9		115	130	5	85	115	145	2
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10		155	175	5	115	155	195	2
			templado y revenido	325	11		120	135	5	85	115	150	2
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12		75	80	5	55	70	90	2
		martensítica	bonificado	240	13		65	70	5	45	65	80	2
		austenítica	templado	180	14		75	85	5	55	75	95	2
		ferrítica austenítica		230	15		65	70	5	45	65	80	2
K	Fundición gris	perlítica/ferrítica		180	16		165	185	5	120	160	205	2
		perlítica (martensítica)		260	17		135	150	5	100	130	165	2
	Fundiciones con grafito esferoidal	ferrítica		160	18		200	225	5	145	195	250	2
		perlítica		250	19		155	175	5	115	155	195	2
	Fundición maleable	ferrítica		130	20		220	250	5	160	215	275	2
		perlítica		230	21		180	200	5	130	175	220	2
N	Aleaciones de forja de aluminio	no templable		60	22								
		templable	templado	100	23								
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24								
		≤ 12 % Si, templable	templado	90	25								
		> 12 % Si, no templable		130	26								
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27								
		CuZn, CuSnZn		90	28								
		CuSn, cobre sin plomo y cobre electrolítico		100	29								
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30								
			templado	280	31								
		a base de Ni o Co	recocido	250	32								
			templado	350	33								
			fundido	320	34								
	Aleaciones de titanio	Titanio puro		R_m 400	35								
		Aleaciones alfa- + beta	templado	R_m 1050	36								
H	Acero templado		templado y revenido	55 HRC	37								
			templado y revenido	60 HRC	38								
	Fundición dura		fundido	400	39								
	Función templada		templado y revenido	55 HRC	40								
X	Materiales no metálicos	Termoplásticos			41								
		Duroplásticos			42								
		Plástico reforzado con fibra de vidrio PRFV			43								
		Plástico reforzado con fibra de carbono PRFC			44								
		Grafito			45								
		Madera			46								

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página B444.
Se proporcionan ejemplos de materiales para grupos de arranque de virutas en la página D22.

	Velocidad de corte v_c [m/min]							
	GM-4RL				5602R303GR 5602R304GR 5602R305GR GM-4W			
	Ranurado		Esquina		Ranurado		Esquina	
	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$
	0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D	0 < x < 3	0,1 x D	0 < x ≤ 20	< 0,5 x D
	3 ≤ x ≤ 20	0,8 x D			3 ≤ x ≤ 20	0,8 x D		
	KMG303				KMG303			
	a_e / D				a_e / D			
	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f
	145	200	240	2	135	180	240	2
	140	190	230	2	130	175	230	2
	105	140	170	2	95	130	170	2
	90	120	145	2	85	110	145	2
	80	110	135	2	75	100	135	2
	110	150	180	2	105	135	180	2
	90	120	145	2	85	110	145	2
	80	110	135	2	75	100	135	2
	80	105	125	2	75	95	125	2
	105	140	170	2	95	130	170	2
	80	110	130	2	75	100	130	2
	50	65	80	2	45	60	80	2
	45	60	70	2	40	55	70	2
	50	70	85	2	50	65	85	2
	45	60	70	2	40	55	70	2
	110	150	180	2	100	135	180	2
	90	120	145	2	85	110	145	2
	135	180	220	2	125	165	220	2
	105	140	170	2	95	130	170	2
	145	200	240	2	135	180	240	2
	120	160	195	2	110	145	195	2

Fresa integral – Serie HM

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]								
						HM-2E HM-2EP HM-2ES HM-4E				HM-2EFP HM-4EL HM-4EFP				
								Esquina				Esquina		
								Ø [mm]	$a_{e\,máx.}$			Ø [mm]	$a_{e\,máx.}$	
								0 < x ≤ 20	0,05 x D			0 < x ≤ 20	0,05 x D	
						KMG555				KMG555				
						a_e / D				a_e / D				
						1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1									
		aprox. 0,45 % C	recocido	190	2									
		aprox. 0,45 % C	bonificado	250	3									
		aprox. 0,75 % C	recocido	270	4									
		aprox. 0,75 % C	bonificado	300	5									
	Acero de baja aleación		recocido	180	6									
			bonificado	275	7									
			bonificado	300	8									
			bonificado	350	9									
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10									
			templado y revenido	325	11									
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12									
		martensítica	bonificado	240	13									
		austenítica	templado	180	14									
		ferrítica austenítica		230	15									
K	Fundición gris	perlítica/ferrítica		180	16									
		perlítica (martensítica)		260	17									
	Fundiciones con grafito esferoidal	ferrítica		160	18									
		perlítica		250	19									
	Fundición maleable	ferrítica		130	20									
		perlítica		230	21									
N	Aleaciones de forja de aluminio	no templable		60	22									
		templable	templado	100	23									
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24									
		≤ 12 % Si, templable	templado	90	25									
		> 12 % Si, no templable		130	26									
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27									
		CuZn, CuSnZn		90	28									
		CuSn, cobre sin plomo y cobre electrolítico		100	29									
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30									
			templado	280	31									
		a base de Ni o Co	recocido	250	32									
			templado	350	33									
			fundido	320	34									
	Aleaciones de titanio	Titanio puro		R_m 400	35									
		Aleaciones alfa- + beta	templado	R_m 1050	36									
H	Acero templado		templado y revenido	55 HRC	37	55	100	125	3	50	95	115	3	
			templado y revenido	60 HRC	38	55	95	120	3	50	95	110	3	
	Fundición dura		fundido	400	39	70	125	160	3	65	120	145	3	
	Función templada		templado y revenido	55 HRC	40	55	100	125	3	50	95	115	3	
X	Materiales no metálicos	Termoplásticos			41									
		Duroplásticos			42									
		Plástico reforzado con fibra de vidrio PRFV			43									
		Plástico reforzado con fibra de carbono PRFC			44									
		Grafito			45									
		Madera			46									

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página B444.
Se proporcionan ejemplos de materiales para grupos de arranque de virutas en la página D22.

	Velocidad de corte v_c [m/min]																			
	HM-6E				HM-6EL				HM-2B HM-2BP HM-2BS HM-4B				HM-2BL HM-4BL				HM-4R HM-4RP HM-4RF			
			Esquina				Esquina												Esquina	
			Ø [mm]	$a_{e\ máx.}$			Ø [mm]	$a_{e\ máx.}$											Ø [mm]	$a_{e\ máx.}$
			0 < x ≤ 20	0,05 x D			0 < x ≤ 20	0,05 x D											0 < x ≤ 20	0,05 x D
	KMG555				KMG555				KMG555				KMG555				KMG555			
	a_e / D				a_e / D				a_e / D				a_e / D				a_e / D			
	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/10	1/20	Grupo f	1/1	1/10	1/20	Grupo f	1/1	1/2	1/10	Grupo f
			125	3			115	3		130	145	7		125	140	7	55	100	125	3
			120	3			110	3		80	90	7		80	90	7	55	95	120	3
			160	3			145	3		163	181	7		156	175	7	70	125	160	3
			125	3			115	3		109	145	7		105	140	7	55	100	125	3

Fresa integral – Serie NM

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]								
						NM-2E 5502R402NM NM-4E NM-2EP				NM-2B NM-4BP				
						Ranurado		Esquinana						
						Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$					
						0<x<12	0,5xD	0<x≤20	<0,5xD					
						12≤x≤20	1,0xD							
						KMG309				KMG309				
						a_e / D				a_e / D				
						1/1	1/2	1/10	Grupo f	1/1	1/10	1/20	Grupo f	
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1									
		aprox. 0,45 % C	recocido	190	2									
		aprox. 0,45 % C	bonificado	250	3									
		aprox. 0,75 % C	recocido	270	4									
		aprox. 0,75 % C	bonificado	300	5									
	Acero de baja aleación		recocido	180	6									
			bonificado	275	7									
			bonificado	300	8									
			bonificado	350	9									
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10									
			templado y revenido	325	11									
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12									
		martensítica	bonificado	240	13									
		austenítica	templado	180	14									
		ferrítica austenítica		230	15									
K	Fundición gris	perlítica/ferrítica		180	16									
		perlítica (martensítica)		260	17									
	Fundiciones con grafito esferoidal	ferrítica		160	18									
		perlítica		250	19									
	Fundición maleable	ferrítica		130	20									
		perlítica		230	21									
N	Aleaciones de forja de aluminio	no templable		60	22	920	1100	1200	4		1400	1550	4	
		templable	templado	100	23	555	660	720	4		840	930	4	
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24	370	440	480	4		560	620	4	
		≤ 12 % Si, templable	templado	90	25	460	550	600	4		700	775	4	
		> 12 % Si, no templable		130	26	140	165	180	4		210	235	4	
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27	280	330	360	4		420	465	4	
		CuZn, CuSnZn		90	28	325	385	420	4		490	545	4	
		CuSn, cobre sin plomo y cobre electrolítico		100	29	280	330	360	4		420	465	4	
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30									
			templado	280	31									
		a base de Ni o Co	recocido	250	32									
			templado	350	33									
			fundido	320	34									
	Aleaciones de titanio	Titanio puro		R_m 400	35									
		Aleaciones alfa- + beta	templado	R_m 1050	36									
H	Acero templado		templado y revenido	55 HRC	37									
			templado y revenido	60 HRC	38									
	Fundición dura		fundido	400	39									
	Función templada		templado y revenido	55 HRC	40									
X	Materiales no metálicos	Termoplásticos			41									
		Duroplásticos			42									
		Plástico reforzado con fibra de vidrio PRFV			43									
		Plástico reforzado con fibra de carbono PRFC			44									
		Grafito			45									
		Madera			46									

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página B444.
Se proporcionan ejemplos de materiales para grupos de arranque de virutas en la página D22.

Fresa de metal duro integral

Fresa integral – Serie AL

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]							
						AL-1E AL-2E AL-3E (W) ALG-2E				AL-2EL AL-3EL			
						Ranurado		Esquina		Ranurado		Esquina	
						Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$
						0<x<12	0,5xD	0<x≤20	<0,5xD	0<x<12	0,5xD	0<x≤20	<0,5xD
						12≤x≤20	1,0xD			12≤x≤20	1,0xD		
						YK30F / YK40F				YK30F			
						a_e / D				a_e / D			
						1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1								
		aprox. 0,45 % C	recocido	190	2								
		aprox. 0,45 % C	bonificado	250	3								
		aprox. 0,75 % C	recocido	270	4								
		aprox. 0,75 % C	bonificado	300	5								
	Acero de baja aleación		recocido	180	6								
			bonificado	275	7								
			bonificado	300	8								
			bonificado	350	9								
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10								
			templado y revenido	325	11								
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12								
		martensítica	bonificado	240	13								
		austenítica	templado	180	14								
		ferrítica austenítica		230	15								
K	Fundición gris	perlítica/ferrítica		180	16								
		perlítica (martensítica)		260	17								
	Fundiciones con grafito esferoidal	ferrítica		160	18								
		perlítica		250	19								
	Fundición maleable	ferrítica		130	20								
		perlítica		230	21								
N	Aleaciones de forja de aluminio	no templable		60	22	920	1100	1200	4	830	990	1080	4
		templable	templado	100	23	555	660	720	4	500	595	650	4
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24	370	440	480	4	335	400	435	4
		≤ 12 % Si, templable	templado	90	25	460	550	600	4	415	495	540	4
		> 12 % Si, no templable		130	26	140	165	180	4	125	150	165	4
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27	280	330	360	4	250	300	325	4
		CuZn, CuSnZn		90	28	325	385	420	4	295	350	380	4
		CuSn, cobre sin plomo y cobre electrolítico		100	29	280	330	360	4	250	300	325	4
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30								
			templado	280	31								
		a base de Ni o Co	recocido	250	32								
			templado	350	33								
			fundido	320	34								
	Aleaciones de titanio	Titanio puro		R_m 400	35								
		Aleaciones alfa- + beta	templado	R_m 1050	36								
H	Acero templado		templado y revenido	55 HRC	37								
			templado y revenido	60 HRC	38								
	Fundición dura		fundido	400	39								
	Función templada		templado y revenido	55 HRC	40								
X	Materiales no metálicos	Termoplásticos			41								
		Duroplásticos			42								
		Plástico reforzado con fibra de vidrio PRFV			43								
		Plástico reforzado con fibra de carbono PRFC			44								
		Grafito			45								
		Madera			46								

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página B444.
Se proporcionan ejemplos de materiales para grupos de arranque de virutas en la página D22.

	Velocidad de corte v_c [m/min]																			
	ALG-3E ALP-3E ALP-4E				ALG-3E (W) ALP-3E (W) ALP-4E (W)				5566R302NH AL-2B				AL-2R-AIR AL-3R-AIR				ALG-2R (W)			
	Ranurado		Esquina		Ranurado		Esquina		Ranurado		Esquina		Ranurado		Esquina		Ranurado		Esquina	
	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$
	0<x<12	0,5xD	0<x≤20	<0,5xD	0<x<12	0,5xD	0<x≤20	<0,5xD	0<x<12	0,5xD	0<x≤20	<0,5xD	0<x<12	0,5xD	0<x≤20	<0,5xD	0<x<12	0,5xD	0<x≤20	<0,5xD
	12≤x≤20	1,0xD			12≤x≤20	1,0xD			12≤x≤20	1,0xD			12≤x≤20	1,0xD			12≤x≤20	1,0xD		
	YK40F				KMD401				YK30F / YK40F				YK40F				KMD401			
	a_e / D				ae / D				a_e / D				a_e / D				ae / D			
	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/10	1/20	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f
	920	1100	1200	4	1200	1430	1560	4		1400	1550	4	1150	1380	1500	8	1495	1795	1950	8
	555	660	720	4	725	860	940	4		840	930	4	690	830	900	8	900	1080	1170	8
	370	440	480	4	485	575	625	4		560	620	4	460	555	600	8	600	725	780	8
	460	550	600	4	600	715	780	4		700	775	4	575	690	750	8	750	900	975	8
	140	165	180	4	185	215	235	4		210	235	4	175	210	225	8	230	275	295	8
	280	330	360	4	365	430	470	4		420	465	4	345	415	450	8	450	540	585	8
	325	385	420	4	425	505	550	4		490	545	4	405	485	525	8	530	635	685	8
	280	330	360	4	365	430	470	4		420	465	4	345	415	450	8	450	540	585	8

Fresa integral – Serie AL

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]								
						AL-2RL-AIR AL-3RL-AIR								
						Ranurado		Esquina						
						0<x<12	0,5xD	0<x≤20	<0,5xD					
						12≤x≤20	1,0xD							
						YK40F								
						a_e / D								
						1/1	1/2	1/10	Grupo f					
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1									
		aprox. 0,45 % C	recocido	190	2									
		aprox. 0,45 % C	bonificado	250	3									
		aprox. 0,75 % C	recocido	270	4									
		aprox. 0,75 % C	bonificado	300	5									
	Acero de baja aleación		recocido	180	6									
			bonificado	275	7									
			bonificado	300	8									
			bonificado	350	9									
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10									
			templado y revenido	325	11									
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12									
		martensítica	bonificado	240	13									
		austenítica	templado	180	14									
		ferrítica austenítica		230	15									
K	Fundición gris	perlítica/ferrítica		180	16									
		perlítica (martensítica)		260	17									
	Fundiciones con grafito esferoidal	ferrítica		160	18									
		perlítica		250	19									
	Fundición maleable	ferrítica		130	20									
		perlítica		230	21									
N	Aleaciones de forja de aluminio	no templable		60	22	1035	1250	1350	8					
		templable	templado	100	23	625	750	810	8					
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24	415	500	540	8					
		≤ 12 % Si, templable	templado	90	25	520	625	675	8					
		> 12 % Si, no templable		130	26	160	190	205	8					
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27	315	375	405	8					
		CuZn, CuSnZn		90	28	365	440	475	8					
		CuSn, cobre sin plomo y cobre electrolítico		100	29	315	375	405	8					
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30									
			templado	280	31									
		a base de Ni o Co	recocido	250	32									
			templado	350	33									
			fundido	320	34									
	Aleaciones de titanio	Titanio puro		R_m 400	35									
		Aleaciones alfa- + beta	templado	R_m 1050	36									
H	Acero templado		templado y revenido	55 HRC	37									
			templado y revenido	60 HRC	38									
	Fundición dura		fundido	400	39									
	Función templada		templado y revenido	55 HRC	40									
X	Materiales no metálicos	Termoplásticos			41									
		Duroplásticos			42									
		Plástico reforzado con fibra de vidrio PRFV			43									
		Plástico reforzado con fibra de carbono PRFC			44									
		Grafito			45									
		Madera			46									

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página B444.
Se proporcionan ejemplos de materiales para grupos de arranque de virutas en la página D22.

Fresa integral – Serie PM

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]							
						PM-2E PM-4E PM-4E-G				PM-4EL PM-4EL-G PM-4EX-G			
						Ranurado		Esquina		Ranurado		Esquina	
						Ø [mm]	$a_{p\,máx.}$	Ø [mm]	$a_{e\,máx.}$	Ø [mm]	$a_{p\,máx.}$	Ø [mm]	$a_{e\,máx.}$
						0 < x < 3	0,1 5 x D	0 < x ≤ 20	0,15 x D	0 < x < 3	0,1 5 x D	0 < x ≤ 20	0,15 x D
						3 ≤ x < 6	0,3 x D			3 ≤ x < 6	0,3 x D		
						6 ≤ x ≤ 20	0,5 x D			6 ≤ x ≤ 20	0,5 x D		
						KMG405				KMG405			
						a_e / D				a_e / D			
						1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1	165	220	300	1	140	190	255	1
		aprox. 0,45 % C	recocido	190	2	160	210	285	1	135	185	245	1
		aprox. 0,45 % C	bonificado	250	3	120	155	210	1	100	135	180	1
		aprox. 0,75 % C	recocido	270	4	100	135	180	1	85	115	155	1
		aprox. 0,75 % C	bonificado	300	5	95	125	165	1	80	105	145	1
	Acero de baja aleación		recocido	180	6	125	165	225	1	110	145	195	1
			bonificado	275	7	100	135	180	1	85	115	155	1
			bonificado	300	8	95	125	165	1	80	105	145	1
			bonificado	350	9	90	115	160	1	75	100	135	1
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10	120	155	210	1	100	135	180	1
			templado y revenido	325	11	90	120	160	1	75	105	140	1
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12	55	75	100	1	45	65	85	1
		martensítica	bonificado	240	13	50	65	85	1	40	55	75	1
		austenítica	templado	180	14	60	75	105	1	50	65	90	1
		ferrítica austenítica		230	15	50	65	85	1	40	55	75	1
K	Fundición gris	perlítica/ferrítica		180	16	125	165	220	1	105	140	190	1
		perlítica (martensítica)		260	17	100	135	180	1	85	115	155	1
	Fundiciones con grafito esferoidal	ferrítica		160	18	150	200	270	1	130	175	230	1
		perlítica		250	19	120	155	210	1	100	135	180	1
	Fundición maleable	ferrítica		130	20	165	220	300	1	145	190	255	1
		perlítica		230	21	135	180	240	1	115	155	205	1
N	Aleaciones de forja de aluminio	no templable		60	22								
		templable	templado	100	23								
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24								
		≤ 12 % Si, templable	templado	90	25								
		> 12 % Si, no templable		130	26								
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27								
		CuZn, CuSnZn		90	28								
		CuSn, cobre sin plomo y cobre electrolítico		100	29								
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30								
			templado	280	31								
		a base de Ni o Co	recocido	250	32								
			templado	350	33								
			fundido	320	34								
	Aleaciones de titanio	Titanio puro		R_m 400	35								
		Aleaciones alfa- + beta	templado	R_m 1050	36								
H	Acero templado		templado y revenido	55 HRC	37	80	105	140	1	65	90	120	1
			templado y revenido	60 HRC	38								
	Fundición dura		fundido	400	39	105	140	185	1	85	120	160	1
	Función templada		templado y revenido	55 HRC	40								
X	Materiales no metálicos	Termoplásticos			41								
		Duroplásticos			42								
		Plástico reforzado con fibra de vidrio PRFV			43								
		Plástico reforzado con fibra de carbono PRFC			44								
		Grafito			45								
		Madera			46								

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página B444.
Se proporcionan ejemplos de materiales para grupos de arranque de virutas en la página D22.

	Velocidad de corte v_c [m/min]																			
	PM-6E				PM-6EL				PM-2B PM-4B				PM-2BL PM-2BFP PM-4BL				PM-2BC			
			Esquina				Esquina													
			Ø [mm]	$a_{p\ máx.}$			Ø [mm]	$a_{p\ máx.}$												
			0 < x ≤ 20	0.15 x D			0 < x ≤ 20	0.15 x D												
	KMG405				KMG405				KMG405				KMG405				KMG405			
	a_e / D				a_e / D				a_e / D				a_e / D				a_e / D			
	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/10	1/20	Grupo f	1/1	1/10	1/20	Grupo f	1/1	1/10	1/20	Grupo f
		220	300	1		190	255	1		270	300	5		230	255	5		230	255	5
		210	285	1		185	245	1		260	285	5		220	245	5		220	245	5
		155	210	1		135	180	1		190	210	5		165	180	5		165	180	5
		135	180	1		115	155	1		165	180	5		140	155	5		140	155	5
		125	165	1		105	145	1		150	165	5		130	145	5		130	145	5
		165	225	1		145	195	1		205	225	5		175	195	5		175	195	5
		135	180	1		115	155	1		165	180	5		140	155	5		140	155	5
		125	165	1		105	145	1		150	165	5		130	145	5		130	145	5
		115	160	1		100	135	1		145	160	5		120	135	5		120	135	5
		155	210	1		135	180	1		190	210	5		165	180	5		165	180	5
		120	160	1		105	140	1		145	160	5		125	140	5		125	140	5
		75	100	1		65	85	1		90	100	5		75	85	5		75	85	5
		65	85	1		55	75	1		80	85	5		65	75	5		65	75	5
		75	105	1		65	90	1		95	105	5		80	90	5		80	90	5
		65	85	1		55	75	1		80	85	5		65	75	5		65	75	5
		165	220	1		140	190	1		200	220	5		170	190	5		170	190	5
		135	180	1		115	155	1		165	180	5		140	155	5		140	155	5
		200	270	1		175	230	1		245	270	5		210	230	5		210	230	5
		155	210	1		135	180	1		190	210	5		165	180	5		165	180	5
		220	300	1		190	255	1		270	300	5		230	255	5		230	255	5
		180	240	1		155	205	1		220	240	5		185	205	5		185	205	5
		105	140	1		90	120	1		125	140	5		110	120	5		110	120	5
		140	185	1		120	160	1		165	185	1		145	160	1		145	160	1

Fresa integral – Serie PM

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]							
						PM-2R PM-4R				PM-4RL			
						Ranurado		Esquina		Ranurado		Esquina	
						Ø [mm]	$a_{p\,máx.}$	Ø [mm]	$a_{e\,máx.}$	Ø [mm]	$a_{p\,máx.}$	Ø [mm]	$a_{e\,máx.}$
						0 < x < 3	0,1 5x D	0 < x ≤ 20	0.15 x D	0 < x < 3	0,1 5x D	0 < x ≤ 20	0.15 x D
						3 ≤ x < 6	0,3 x D			3 ≤ x < 6	0,3 x D		
						6 ≤ x ≤ 20	0,5 x D			6 ≤ x ≤ 20	0,5 x D		
						KMG405				KMG405			
						a_e / D				a_e / D			
						1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1	165	220	300	1	150	200	265	1
		aprox. 0,45 % C	recocido	190	2	160	210	285	1	145	190	255	1
		aprox. 0,45 % C	bonificado	250	3	120	155	210	1	105	140	190	1
		aprox. 0,75 % C	recocido	270	4	100	135	180	1	90	120	160	1
		aprox. 0,75 % C	bonificado	300	5	95	125	165	1	85	110	150	1
	Acero de baja aleación		recocido	180	6	125	165	225	1	115	150	200	1
			bonificado	275	7	100	135	180	1	90	120	160	1
			bonificado	300	8	95	125	165	1	85	110	150	1
			bonificado	350	9	90	115	160	1	80	105	140	1
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10	120	155	210	1	105	140	190	1
			templado y revenido	325	11	90	120	160	1	80	110	145	1
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12	55	75	100	1	50	65	85	1
		martensítica	bonificado	240	13	50	65	85	1	45	60	75	1
		austenítica	templado	180	14	60	75	105	1	55	70	95	1
		ferrítica austenítica		230	15	50	65	85	1	45	60	75	1
K	Fundición gris	perlítica/ferrítica		180	16	125	165	220	1	110	150	195	1
		perlítica (martensítica)		260	17	100	135	180	1	90	120	160	1
	Fundiciones con grafito esferoidal	ferrítica		160	18	150	200	270	1	135	180	240	1
		perlítica		250	19	120	155	210	1	105	140	190	1
	Fundición maleable	ferrítica		130	20	165	220	300	1	150	200	265	1
		perlítica		230	21	135	180	240	1	120	160	215	1
N	Aleaciones de forja de aluminio	no templable		60	22								
		templable	templado	100	23								
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24								
		≤ 12 % Si, templable	templado	90	25								
		> 12 % Si, no templable		130	26								
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27								
		CuZn, CuSnZn		90	28								
		CuSn, cobre sin plomo y cobre electrolítico		100	29								
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30								
			templado	280	31								
		a base de Ni o Co	recocido	250	32								
			templado	350	33								
			fundido	320	34								
	Aleaciones de titanio	Titanio puro		R_m 400	35								
		Aleaciones alfa- + beta	templado	R_m 1050	36								
H	Acero templado		templado y revenido	55 HRC	37	85	110	145	1	70	95	125	1
			templado y revenido	60 HRC	38								
	Fundición dura		fundido	400	39	115	145	190	1	95	125	165	1
	Función templada		templado y revenido	55 HRC	40								
X	Materiales no metálicos	Termoplásticos			41								
		Duroplásticos			42								
		Plástico reforzado con fibra de vidrio PRFV			43								
		Plástico reforzado con fibra de carbono PRFC			44								
		Grafito			45								
		Madera			46								

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página B444.
Se proporcionan ejemplos de materiales para grupos de arranque de virutas en la página D22.

	Velocidad de corte v_c [m/min]				
	PM-4H PM-4HL				
			Esquina		
			Ø [mm]	$a_{e\ máx.}$	
			0 < x ≤ 20	0.15 x D	
	KMG405				
	a_e / D				
	1/1	1/2	1/10	Grupo f	
		210	270	6	
		200	260	6	
		150	190	6	
		130	165	6	
		120	150	6	
		160	205	6	
		130	165	6	
		120	150	6	
		110	145	6	
		150	190	6	
		115	145	6	
		70	90	6	
		60	80	6	
		75	95	6	
		60	80	6	
		155	200	6	
		130	165	6	
		190	245	6	
		150	190	6	
		210	270	6	
		170	220	6	
		100	125	1	
		130	165	1	

Fresa integral – Series UM/HPC/VSM

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]							
						5501R38414GM (-R) 5502R38414GM (-R) 5602R38414GM (-R)				5501R38414GM (-R) long series 5502R38414GM (-R) long series 5602R38414GM (-R) long series			
						Ranurado		Esquina		Ranurado		Esquina	
						Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$
						0 < x < 3	0,3x D	0 < x < 3	0.15 x D	0 < x < 3	0,3x D	0 < x < 3	0.15 x D
						3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D
						12≤x≤20	1,5xD			12≤x≤20	1,5xD		
						KMG405				KMG405			
						a_e / D				a_e / D			
						1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1	250	300	380	9	190	225	285	9
		aprox. 0,45 % C	recocido	190	2	240	285	365	9	185	215	275	9
		aprox. 0,45 % C	bonificado	250	3	175	210	270	9	135	160	200	9
		aprox. 0,75 % C	recocido	270	4	150	180	230	9	115	135	175	9
		aprox. 0,75 % C	bonificado	300	5	140	165	210	9	105	125	160	9
	Acero de baja aleación		recocido	180	6	190	225	285	9	145	170	215	9
			bonificado	275	7	150	180	230	9	115	135	175	9
			bonificado	300	8	140	165	210	9	105	125	160	9
			bonificado	350	9	130	160	200	9	100	120	150	9
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10	175	210	270	9	135	160	200	9
			templado y revenido	325	11	135	160	205	9	105	120	155	9
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12	80	100	125	9	65	75	95	9
		martensítica	bonificado	240	13	70	85	110	9	55	65	80	9
		austenítica	templado	180	14	85	105	130	9	65	80	100	9
		ferrítica austenítica		230	15	70	85	110	9	55	65	80	9
K	Fundición gris	perlítica/ferrítica		180	16	185	220	280	9	140	165	210	9
		perlítica (martensítica)		260	17	150	180	230	9	115	135	175	9
	Fundiciones con grafito esferoidal	ferrítica		160	18	225	270	345	9	175	205	260	9
		perlítica		250	19	175	210	270	9	135	160	200	9
	Fundición maleable	ferrítica		130	20	250	300	380	9	190	225	285	9
		perlítica		230	21	200	240	305	9	155	180	230	9
N	Aleaciones de forja de aluminio	no templable		60	22								
		templable	templado	100	23								
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24								
		≤ 12 % Si, templable	templado	90	25								
		> 12 % Si, no templable		130	26								
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27								
		CuZn, CuSnZn		90	28								
		CuSn, cobre sin plomo y cobre electrolítico		100	29								
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30								
			templado	280	31								
		a base de Ni o Co	recocido	250	32								
			templado	350	33								
			fundido	320	34								
	Aleaciones de titanio	Titanio puro		R_m 400	35								
		Aleaciones alfa- + beta	templado	R_m 1050	36								
H	Acero templado		templado y revenido	55 HRC	37	115	140	175	9				
			templado y revenido	60 HRC	38								
	Fundición dura		fundido	400	39	135	165	205	9				
	Función templada		templado y revenido	55 HRC	40								
X	Materiales no metálicos	Termoplásticos			41								
		Duroplásticos			42								
		Plástico reforzado con fibra de vidrio PRFV			43								
		Plástico reforzado con fibra de carbono PRFC			44								
		Grafito			45								
		Madera			46								

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página B444.
Se proporcionan ejemplos de materiales para grupos de arranque de virutas en la página D22.

Fresa para desbarbar – Serie FM

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]				
						5501 / 5601 5501 / 5601 5601				
						KMG303				
						a_e / D				
						1/1	1/2	1/10	Grupo f	
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1			230	11	
		aprox. 0,45 % C	recocido	190	2			220	11	
		aprox. 0,45 % C	bonificado	250	3			165	11	
		aprox. 0,75 % C	recocido	270	4			140	11	
		aprox. 0,75 % C	bonificado	300	5			130	11	
	Acero de baja aleación		recocido	180	6			175	11	
			bonificado	275	7			140	11	
			bonificado	300	8			130	11	
			bonificado	350	9			120	11	
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10			165	11	
			templado y revenido	325	11			125	11	
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12			75	11	
		martensítica	bonificado	240	13			65	11	
		austenítica	templado	180	14			80	11	
		ferrítica austenítica		230	15			65	11	
K	Fundición gris	perlítica/ferrítica		180	16			170	11	
		perlítica (martensítica)		260	17			140	11	
	Fundiciones con grafito esferoidal	ferrítica		160	18			210	11	
		perlítica		250	19			165	11	
	Fundición maleable	ferrítica		130	20			230	11	
		perlítica		230	21			185	11	
N	Aleaciones de forja de aluminio	no templable		60	22			1200	11	
		templable	templado	100	23			720	11	
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24			480	11	
		≤ 12 % Si, templable	templado	90	25			600	11	
		> 12 % Si, no templable		130	26			180	11	
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27			360	11	
		CuZn, CuSnZn		90	28			420	11	
		CuSn, cobre sin plomo y cobre electrolítico		100	29			360	11	
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30					
			templado	280	31					
		a base de Ni o Co	recocido	250	32					
			templado	350	33					
			fundido	320	34					
	Aleaciones de titanio	Titanio puro		R_m 400	35					
		Aleaciones alfa- + beta	templado	R_m 1050	36					
H	Acero templado		templado y revenido	55 HRC	37					
			templado y revenido	60 HRC	38					
	Fundición dura		fundido	400	39					
	Función templada		templado y revenido	55 HRC	40					
X	Materiales no metálicos	Termoplásticos			41					
		Duroplásticos			42					
		Plástico reforzado con fibra de vidrio PRFV			43					
		Plástico reforzado con fibra de carbono PRFC			44					
		Grafito			45					
		Madera			46					

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página B444.
Se proporcionan ejemplos de materiales para grupos de arranque de virutas en la página D22.

	Velocidad de corte v_c [m/min]																			
	UM-4E UM-4E-W UM-4R UM-5EP				UM-4EL UM-4EL-W UM-4ELP UM-4EFP				UM-4RL UM-4RFP				UMC-4E UMC-4E-W				VSM-4E VSM-4R			
	Ranurado		Esquina		Ranurado		Esquina		Ranurado		Esquina		Ranurado		Esquina					
	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$								
	0 < x < 3	0,3x D	0 < x < 3	0.15 x D	0 < x < 3	0,3x D	0 < x < 3	0.15 x D	0 < x < 3	0,3x D	0 < x < 3	0.15 x D	0 < x < 3	0,3x D	0 < x < 3	0.15 x D	0 < x < 3	0,3x D	0 < x < 3	0.15 x D
	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D	3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D
	12≤x≤20	1,5xD			12≤x≤20	1,5xD			12≤x≤20	1,5xD			12≤x≤20	1,5xD			12≤x≤20	1,5xD		
	KMG405				KMG405				KMG405				KMG405				KMG405			
	a_e / D				a_e / D				a_e / D				a_e / D				a_e / D			
	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	
	250	300	380	9	150	180	230	9	150	180	230	9			300	9	145	180	250	10
	240	285	365	9	145	175	220	9	145	175	220	9			285	9	140	175	240	10
	175	210	270	9	105	130	165	9	105	130	165	9			210	9	105	130	175	10
	150	180	230	9	90	110	140	9	90	110	140	9			180	9	90	110	150	10
	140	165	210	9	85	100	130	9	85	100	130	9			165	9	80	100	140	10
	190	225	285	9	115	135	175	9	115	135	175	9			225	9	110	135	190	10
	150	180	230	9	90	110	140	9	90	110	140	9			180	9	90	110	150	10
	140	165	210	9	85	100	130	9	85	100	130	9			165	9	80	100	140	10
	130	160	200	9	80	95	120	9	80	95	120	9			160	9	80	95	130	10
	175	210	270	9	105	130	165	9	105	130	165	9			210	9	105	130	175	10
	135	160	205	9	80	100	125	9	80	100	125	9			160	9	80	100	135	10
	80	100	125	9	50	60	75	9	50	60	75	9			100	9	50	60	80	10
	70	85	110	9	45	55	65	9	45	55	65	9			85	9	45	55	70	10
	85	105	130	9	55	65	80	9	55	65	80	9			105	9	50	65	85	10
	70	85	110	9	45	55	65	9	45	55	65	9			85	9	45	55	70	10
	185	220	280	9	110	135	170	9	110	135	170	9			220	9				
	150	180	230	9	90	110	140	9	90	110	140	9			180	9				
	225	270	345	9	135	165	210	9	135	165	210	9			270	9				
	175	210	270	9	105	130	165	9	105	130	165	9			210	9				
	250	300	380	9	150	180	230	9	150	180	230	9			300	9				
	200	240	305	9	120	145	185	9	120	145	185	9			240	9				
																	45	55	85	10
																	25	30	45	10
																	45	55	85	10
																	25	30	45	10
																	25	30	45	10
																	75	90	135	10
																	45	55	85	10
	115	140	175	9	70	85	110	9	70	85	110	9								
	135	165	205	9	85	100	130	9	85	100	130	9								

Fresa de metal duro integral

Avance recomendado

Fresa de metal duro integral Grupo 1 – Fresa de escuadrar Serie PM

	a_e / D	Avance por hélice (f_z) [mm]														
		Ø0,5	Ø0,8	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20
P	1/1	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,05	0,07	0,08	0,08	0,09	0,09	0,10
	1/2	0,01	0,03	0,03	0,03	0,03	0,03	0,04	0,04	0,06	0,09	0,10	0,10	0,12	0,12	0,13
	1/10	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,20
M	1/1	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,05	0,06	0,06	0,07	0,07	0,08
	1/2	0,01	0,02	0,02	0,02	0,02	0,02	0,04	0,04	0,05	0,07	0,08	0,08	0,10	0,10	0,11
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,07	0,11	0,13	0,13	0,15	0,15	0,16
K	1/1	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,05	0,07	0,08	0,08	0,09	0,09	0,10
	1/2	0,01	0,03	0,03	0,03	0,03	0,03	0,04	0,04	0,06	0,09	0,10	0,10	0,12	0,12	0,13
	1/10	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,20
H	1/1	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,05	0,06	0,06	0,07	0,07	0,08
	1/2	0,01	0,02	0,02	0,02	0,02	0,02	0,04	0,04	0,05	0,07	0,08	0,08	0,10	0,10	0,11
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,07	0,11	0,13	0,13	0,15	0,15	0,16

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Fresa de metal duro integral Grupo 2 – Fresa de escuadrar Serie GM

	a_e / D	Avance por hélice (f_z) [mm]														
		Ø0,5	Ø0,8	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20
P	1/1	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,06	0,07	0,07	0,08	0,08	0,09
	1/2	0,01	0,03	0,03	0,03	0,03	0,03	0,04	0,04	0,05	0,08	0,09	0,09	0,10	0,10	0,12
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,06	0,06	0,08	0,12	0,14	0,14	0,16	0,16	0,18
M	1/1	0,01	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,03	0,05	0,06	0,06	0,06	0,06	0,07
	1/2	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,06	0,07	0,07	0,08	0,08	0,09
	1/10	0,02	0,03	0,03	0,03	0,03	0,03	0,05	0,05	0,06	0,10	0,11	0,11	0,13	0,13	0,15
K	1/1	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,06	0,07	0,07	0,08	0,08	0,09
	1/2	0,01	0,03	0,03	0,03	0,03	0,03	0,04	0,04	0,05	0,08	0,09	0,09	0,10	0,10	0,12
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,06	0,06	0,08	0,12	0,14	0,14	0,16	0,16	0,18

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Fresa de metal duro integral Grupo 3 – Fresa de escuadrar Serie HM

	a_e / D	Avance por hélice (f_z) [mm]														
		Ø0,5	Ø0,8	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20
H	1/1	0,01	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,03	0,05	0,06	0,06	0,06	0,06	0,07
	1/2	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,06	0,07	0,07	0,08	0,08	0,09
	1/10	0,02	0,03	0,03	0,03	0,03	0,03	0,05	0,05	0,06	0,10	0,11	0,11	0,13	0,13	0,15

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Fresa de metal duro integral Grupo 4 – Fresa de escuadrar Serie AL/HM

	a_e / D	Avance por hélice (f_z) [mm]														
		Ø0,5	Ø0,8	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20
N	1/1	0,02	0,03	0,03	0,03	0,03	0,03	0,05	0,05	0,06	0,09	0,11	0,11	0,12	0,12	0,14
	3/4	0,02	0,04	0,04	0,04	0,04	0,04	0,06	0,06	0,08	0,12	0,14	0,14	0,16	0,16	0,18
	1/10	0,03	0,06	0,06	0,06	0,06	0,06	0,09	0,09	0,12	0,19	0,22	0,22	0,25	0,25	0,28
	1/20	0,04	0,08	0,08	0,08	0,08	0,08	0,12	0,12	0,16	0,23	0,27	0,27	0,31	0,31	0,35

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Avance recomendado

Fresa de metal duro integral Grupo 5 – Fresa de escuadrar Serie GM

	a_e / D	Avance por hélice (f_z) [mm]																			
		Ø0,5	Ø0,8	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20					
P	1/1																				
	1/10	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,20					
	1/20	0,03	0,06	0,06	0,06	0,06	0,06	0,08	0,08	0,11	0,17	0,20	0,20	0,23	0,23	0,25					
M	1/1																				
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,07	0,11	0,13	0,13	0,15	0,15	0,16					
	1/20	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,21					
K	1/1																				
	1/10	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,20					
	1/20	0,03	0,06	0,06	0,06	0,06	0,06	0,08	0,08	0,11	0,17	0,20	0,20	0,23	0,23	0,25					
H	1/1																				
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,07	0,11	0,13	0,13	0,15	0,15	0,16					
	1/20	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,21					

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Fresa de metal duro integral Grupo 6 – Fresa con avance rápido Serie PM

	a_e / D	Avance por hélice (f_z) [mm]																			
		Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12													
P	1/1																				
	1/10																				
	1/20	0,15	0,25	0,28	0,33	0,44	0,55	0,66													
M	1/1																				
	1/10																				
	1/20	0,12	0,22	0,25	0,30	0,41	0,52	0,63													
K	1/1																				
	1/10																				
	1/20	0,15	0,25	0,28	0,33	0,44	0,55	0,66													
H	1/1																				
	1/10																				
	1/20	0,12	0,22	0,25	0,30	0,41	0,52	0,63													

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Fresa de metal duro integral Grupo 7 – Fresa de punta esférica Serie HM

	a_e / D	Avance por hélice (f_z) [mm]																			
		Ø0,5	Ø0,8	Ø 1	Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20					
H	1/1																				
	1/2	0,02	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,07	0,11	0,13	0,13	0,15	0,15	0,16					
	1/10	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,21					

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Fresa de metal duro integral Grupo 8 – Fresa con avance rápido Serie AL

	a_e / D	Avance por hélice (f_z) [mm]																			
		Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20												
N	1/1	0,04	0,05	0,08	0,09	0,11	0,13	0,16	0,18												
	3/4	0,05	0,07	0,10	0,12	0,14	0,16	0,20	0,23												
	1/10	0,08	0,11	0,16	0,19	0,22	0,25	0,31	0,36												

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Avance recomendado

Fresa de metal duro integral Grupo 9 – Fresa de escuadrar Serie UM Mecanizado HSC/HPC

	a_e / D	Avance por hélice (f_z) [mm]									
		Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20
P	1/1	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08
	1/2	0,08	0,08	0,08	0,09	0,09	0,09	0,09	0,10	0,10	0,10
	1/10	0,14	0,14	0,16	0,18	0,22	0,25	0,27	0,3	0,32	0,36
M	1/1	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,06	0,06	0,06
	1/2	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08
	1/10	0,10	0,10	0,10	0,12	0,12	0,14	0,16	0,16	0,18	0,18
K	1/1	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08
	1/2	0,08	0,08	0,08	0,09	0,09	0,09	0,09	0,10	0,10	0,10
	1/10	0,14	0,14	0,16	0,18	0,22	0,25	0,27	0,3	0,32	0,36
H	1/1	0,045	0,045	0,045	0,053	0,053	0,053	0,053	0,06	0,06	0,06
	1/2	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08
	1/10	0,10	0,10	0,10	0,12	0,12	0,14	0,16	0,16	0,18	0,18

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Fresa de metal duro integral Grupo 10 – Fresa de escuadrar Serie VSM

	a_e / D	Avance por hélice (f_z) [mm]									
		Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20
P	1/1	0,03	0,04	0,05	0,05	0,05	0,05	0,06	0,06	0,07	0,08
	1/2	0,04	0,06	0,07	0,07	0,07	0,07	0,08	0,09	0,10	0,11
	1/10	0,05	0,08	0,09	0,09	0,09	0,09	0,11	0,12	0,14	0,15
M	1/1	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,06
	1/2	0,03	0,05	0,05	0,05	0,05	0,05	0,06	0,07	0,08	0,08
	1/10	0,04	0,06	0,07	0,07	0,07	0,07	0,08	0,09	0,10	0,11
S	1/1	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,06
	1/2	0,03	0,05	0,05	0,05	0,05	0,05	0,06	0,07	0,08	0,08
	1/10	0,04	0,06	0,07	0,07	0,07	0,07	0,08	0,09	0,10	0,11

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Fresa de metal duro integral Grupo 11 – Fresa para desbarbar Serie FM

	a_e / D	Avance por hélice (f_z) [mm]										
		Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20
P	1/1											
	1/2											
	1/10	0,02	0,02	0,03	0,03	0,04	0,06	0,07	0,07	0,08	0,08	0,09
M	1/1											
	1/2											
	1/10	0,02	0,02	0,02	0,02	0,03	0,05	0,06	0,06	0,06	0,06	0,07
K	1/1											
	1/2											
	1/10	0,02	0,02	0,03	0,03	0,04	0,06	0,07	0,07	0,08	0,08	0,09
N	1/1											
	1/2											
	1/10	0,03	0,03	0,05	0,05	0,06	0,09	0,11	0,11	0,12	0,12	0,14

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Fresa integral – Serie EPM

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]							
						EPM-2E EPM-4E				EPM-2EL EPM-4EL			
						Fresado por ranurado		Fresado en esquina		Fresado por ranurado		Fresado en esquina	
						Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$	Ø [mm]	$a_{p\ máx.}$	Ø [mm]	$a_{e\ máx.}$
						0 < x < 3	0,1 5x D	0 < x ≤ 20	0,15 x D	0 < x < 3	0,1 5 x D	0 < x ≤ 20	0,15 x D
						3 ≤ x < 6	0,3 x D			3 ≤ x < 6	0,3 x D		
						6 ≤ x ≤ 20	0,5 x D			6 ≤ x ≤ 20	0,5 x D		
						KMG406				KMG406			
						a_e / D				a_e / D			
						1/1	1/2	1/10	Grupo f	1/1	1/2	1/10	Grupo f
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1	165	220	300	1	140	190	255	1
		aprox. 0,45 % C	recocido	190	2	160	210	285	1	135	185	245	1
		aprox. 0,45 % C	bonificado	250	3	120	155	210	1	100	135	180	1
		aprox. 0,75 % C	recocido	270	4	100	135	180	1	85	115	155	1
		aprox. 0,75 % C	bonificado	300	5	95	125	165	1	80	105	145	1
	Acero de baja aleación		recocido	180	6	125	165	225	1	110	145	195	1
			bonificado	275	7	100	135	180	1	85	115	155	1
			bonificado	300	8	95	125	165	1	80	105	145	1
			bonificado	350	9	90	115	160	1	75	100	135	1
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10	120	155	210	1	100	135	180	1
			templado y revenido	325	11	90	120	160	1	75	105	140	1
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12	55	75	100	1	45	65	85	1
		martensítica	bonificado	240	13	50	65	85	1	40	55	75	1
		austenítica	templado	180	14	60	75	105	1	50	65	90	1
		ferrítica austenítica		230	15	50	65	85	1	40	55	75	1
K	Fundición gris	perlítica/ferrítica		180	16	125	165	220	1	105	140	190	1
		perlítica (martensítica)		260	17	100	135	180	1	85	115	155	1
	Fundiciones con grafito esferoidal	ferrítica		160	18	150	200	270	1	130	175	230	1
		perlítica		250	19	120	155	210	1	100	135	180	1
	Fundición maleable	ferrítica		130	20	165	220	300	1	145	190	255	1
		perlítica		230	21	135	180	240	1	115	155	205	1
N	Aleaciones de forja de aluminio	no templable		60	22								
		templable	templado	100	23								
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24								
		≤ 12 % Si, templable	templado	90	25								
		> 12 % Si, no templable		130	26								
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27								
		CuZn, CuSnZn		90	28								
		CuSn, cobre sin plomo y cobre electrolítico		100	29								
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30								
			templado	280	31								
		a base de Ni o Co	recocido	250	32								
			templado	350	33								
			fundido	320	34								
	Aleaciones de titanio	Titanio puro		R_m 400	35								
		Aleaciones alfa- + beta	templado	R_m 1050	36								
H	Acero templado		templado y revenido	55 HRC	37	80	105	140	1	65	90	120	1
			templado y revenido	60 HRC	38								
	Fundición dura		fundido	400	39	105	140	185	1	85	120	160	1
	Función templada		templado y revenido	55 HRC	40								
X	Materiales no metálicos	Termoplásticos			41								
		Duroplásticos			42								
		Plástico reforzado con fibra de vidrio PRFV			43								
		Plástico reforzado con fibra de carbono PRFC			44								
		Grafito			45								
		Madera			46								

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.
Las recomendaciones de avance se encuentran en la página 22.

	Velocidad de corte v_c [m/min]																			
	EPM-2B EPM-4B				EPM-2BL EPM-4BL															
	KMG406				KMG406															
	a_e / D				a_e / D															
	1/1	1/10	1/20	Grupo f	1/1	1/10	1/20	Grupo f												
		270	300	5		230	255	5												
		260	285	5		220	245	5												
		190	210	5		165	180	5												
		165	180	5		140	155	5												
		150	165	5		130	145	5												
		205	225	5		175	195	5												
		165	180	5		140	155	5												
		150	165	5		130	145	5												
		145	160	5		120	135	5												
		190	210	5		165	180	5												
		145	160	5		125	140	5												
		90	100	5		75	85	5												
		80	85	5		65	75	5												
		95	105	5		80	90	5												
		80	85	5		65	75	5												
		200	220	5		170	190	5												
		165	180	5		140	155	5												
		245	270	5		210	230	5												
		190	210	5		165	180	5												
		270	300	5		230	255	5												
		220	240	5		185	205	5												
		125	140	5		110	120	5												
		165	185	1		145	160	1												

Fresado VHM Grupo 1 – Fresa de escuadrar Serie EPM

	a_e / D	Avance por hélice (f_z) [mm]																			
		Ø0,5	**Ø0,8**	**Ø 1**	**Ø 2**	**Ø 3**	**Ø 4**	**Ø 5**	**Ø 6**	**Ø 8**	**Ø 10**	**Ø 12**	**Ø 14**	**Ø 16**	**Ø 18**	**Ø 20**					
P	**1/1**	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,05	0,07	0,08	0,08	0,09	0,09	0,10					
	1/2	0,01	0,03	0,03	0,03	0,03	0,03	0,04	0,04	0,06	0,09	0,10	0,10	0,12	0,12	0,13					
	1/10	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,20					
M	**1/1**	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,05	0,06	0,06	0,07	0,07	0,08					
	1/2	0,01	0,02	0,02	0,02	0,02	0,02	0,04	0,04	0,05	0,07	0,08	0,08	0,10	0,10	0,11					
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,07	0,11	0,13	0,13	0,15	0,15	0,16					
K	**1/1**	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,05	0,07	0,08	0,08	0,09	0,09	0,10					
	1/2	0,01	0,03	0,03	0,03	0,03	0,03	0,04	0,04	0,06	0,09	0,10	0,10	0,12	0,12	0,13					
	1/10	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,20					
H	**1/1**	0,01	0,02	0,02	0,02	0,02	0,02	0,03	0,03	0,04	0,05	0,06	0,06	0,07	0,07	0,08					
	1/2	0,01	0,02	0,02	0,02	0,02	0,02	0,04	0,04	0,05	0,07	0,08	0,08	0,10	0,10	0,11					
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,07	0,11	0,13	0,13	0,15	0,15	0,16					

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Fresado VHM Grupo 5 – Fresa de escuadrar Serie EPM

	a_e / D	Avance por hélice (f_z) [mm]																			
		Ø0,5	**Ø0,8**	**Ø 1**	**Ø 2**	**Ø 3**	**Ø 4**	**Ø 5**	**Ø 6**	**Ø 8**	**Ø 10**	**Ø 12**	**Ø 14**	**Ø 16**	**Ø 18**	**Ø 20**					
P	**1/1**																				
	1/10	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,20					
	1/20	0,03	0,06	0,06	0,06	0,06	0,06	0,08	0,08	0,11	0,17	0,20	0,20	0,23	0,23	0,25					
M	**1/1**																				
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,07	0,11	0,13	0,13	0,15	0,15	0,16					
	1/20	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,21					
K	**1/1**																				
	1/10	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,20					
	1/20	0,03	0,06	0,06	0,06	0,06	0,06	0,08	0,08	0,11	0,17	0,20	0,20	0,23	0,23	0,25					
H	**1/1**																				
	1/10	0,02	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,07	0,11	0,13	0,13	0,15	0,15	0,16					
	1/20	0,02	0,05	0,05	0,05	0,05	0,05	0,07	0,07	0,09	0,14	0,16	0,16	0,18	0,18	0,21					

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Fresa integral – Serie TM

Grupo de materiales		Composición/microestructura/tratamiento en caliente		Dureza Brinell HB	Grupo de arranque de virutas	Velocidad de corte v_c [m/min]								
						TM-4R / TM-4RP TM-5R / TM-5RP TM-7R / TM-7RP TM-9R / TM-9RP				TM-4B / TM-4BP TM-5B / TM-5BP				
						Ranurado		Esquina		Ranurado		Esquina		
						0 < x < 3	0,3 x D	0 < x < 3						
						3 ≤ x < 12	0,7 x D	3 ≤ x < 20	0,3 x D					
						12 ≤ x ≤ 20	1,5 x D							
						KMS405				KMS405				
						a_e / D				a_e / D				
						1/1	1/2	1/10	Grupo f	1/1	1/10	1/20	Grupo f	
P	Acero no aleado	aprox. 0,15 % C	recocido	125	1									
		aprox. 0,45 % C	recocido	190	2									
		aprox. 0,45 % C	bonificado	250	3									
		aprox. 0,75 % C	recocido	270	4									
		aprox. 0,75 % C	bonificado	300	5									
	Acero de baja aleación		recocido	180	6									
			bonificado	275	7									
			bonificado	300	8									
			bonificado	350	9									
	Acero de alta aleación y acero para herramientas de alta aleación		recocido	200	10									
			templado y revenido	325	11									
M	Acero inoxidable	ferrítica/martensítica	recocido	200	12									
		martensítica	bonificado	240	13									
		austenítica	templado	180	14									
		ferrítica austenítica		230	15									
K	Fundición gris	perlítica/ferrítica		180	16									
		perlítica (martensítica)		260	17									
	Fundiciones con grafito esferoidal	ferrítica		160	18									
		perlítica		250	19									
	Fundición maleable	ferrítica		130	20									
		perlítica		230	21									
N	Aleaciones de forja de aluminio	no templable		60	22									
		templable	templado	100	23									
	Aleaciones de fundición de aluminio	≤ 12 % Si, no templable		75	24									
		≤ 12 % Si, templable	templado	90	25									
		> 12 % Si, no templable		130	26									
	Cobre y aleaciones de cobre (bronce/latón)	Aleaciones para torno automático, PB > 1 %		110	27									
		CuZn, CuSnZn		90	28									
		CuSn, cobre sin plomo y cobre electrolítico		100	29									
S	Aleaciones resistentes al calor	a base de Fe	recocido	200	30	45	55	85	10	-	85	90	10	
			templado	280	31	25	30	45	10	-	45	50	10	
		a base de Ni o Co	recocido	250	32	45	55	85	10	-	85	90	10	
			templado	350	33	25	30	45	10	-	45	50	10	
			fundido	320	34	25	30	45	10	-	45	50	10	
	Aleaciones de titanio	Titanio puro		R_m 400	35	75	90	135	10	-	135	145	10	
		Aleaciones alfa- + beta	templado	R_m 1050	36	45	55	85	10	-	85	90	10	
H	Acero templado		templado y revenido	55 HRC	37									
			templado y revenido	60 HRC	38									
	Fundición dura		fundido	400	39									
	Función templada		templado y revenido	55 HRC	40									
X	Materiales no metálicos	Termoplásticos			41									
		Duroplásticos			42									
		Plástico reforzado con fibra de vidrio PRFV			43									
		Plástico reforzado con fibra de carbono PRFC			44									
		Grafito			45									
		Madera			46									

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

Avance recomendado

Fresa de metal duro integral Grupo 10 – Fresa de escuadrar Serie VSM / Serie TM

	a_e / D	Avance por hélice (f_z) [mm]																			
		Ø 4	**Ø 5**	**Ø 6**	**Ø 8**	**Ø 10**	**Ø 12**	**Ø 14**	**Ø 16**	**Ø 18**	**Ø 20**										
P	**1/1**	0,03	0,04	0,05	0,05	0,05	0,05	0,06	0,06	0,07	0,08										
	1/2	0,04	0,06	0,07	0,07	0,07	0,07	0,08	0,09	0,10	0,11										
	1/10	0,05	0,08	0,09	0,09	0,09	0,09	0,11	0,12	0,14	0,15										
M	**1/1**	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,06										
	1/2	0,03	0,05	0,05	0,05	0,05	0,05	0,06	0,07	0,08	0,08										
	1/10	0,04	0,06	0,07	0,07	0,07	0,07	0,08	0,09	0,10	0,11										
S	**1/1**	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,06										
	1/2	0,03	0,05	0,05	0,05	0,05	0,05	0,06	0,07	0,08	0,08										
	1/10	0,04	0,06	0,07	0,07	0,07	0,07	0,08	0,09	0,10	0,11										

Notas: Las condiciones de corte especificadas son valores orientativos, que se han determinado en condiciones ideales.
En función del caso de aplicación deben adaptarse individualmente.

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