BM INDUSTRIE

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FRESE A CODOLO CILINDRICO STRAIGHT SHANK AND MILLS								
FRESE A DUE TAGLIENTI TWO FLUTE SLOT DRILLS								
CL 11	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 327 D	1 - 40	220
CL 11	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 327 D	1 - 25	220
CL 11 resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	White	DIN 327 D	2 - 25	220
CL 11 resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	DIN 327 D	2 - 25	220
CL 12	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	CARMON NORM	3 - 25	222
CL 12	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	CARMON NORM	3 - 25	222
CL 12 resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	White	CARMON NORM	3 - 25	222
CL 12 resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	CARMON NORM	3 - 25	222
CL 13F	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 327 H	4 - 40	223
CL 18	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 327 D	2 - 20	224
CL 19	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	CARMON NORM	3 - 20	225
FRESE A TRE TAGLIENTI THREE FLUTE END MILLS								
CL 16	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 844 B	2 - 25	226
CL 16	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 844 B	2 - 25	226
CL 16 resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	White	DIN 844 B	3 - 25	226
CL 16 resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	DIN 844 B	3 - 25	226
CL 30 FE	N	Acciai comuni Standard steel Acciai tenaci hardened steel	45	HSS+8%CO	White	DIN 844 B	6 - 20	227
CL 17	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 844 B	3 - 25	228

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FRESE CILINDRICHE FRONTALI MULTIFLUTE FINISHING CUTTERS								
CL 21 TF	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 844 B	3 - 40	229
CL 21 TF	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 844 B	3 - 32	229
CL 21 TF resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	White	DIN 844 B	3 - 32	229
CL 21 TF resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	DIN 844 B	3 - 32	229
CL 21 TF resistor	N	Acciao inox Stainless steel	30	RESISTOR	Pearl	DIN 844 B	3 - 32	229
CL 22 TF	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 844 B	3 - 25	230
CL 22 TF	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 844 B	3 - 25	230
CL 22 TF resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	White	DIN 844 B	3 - 25	230
CL 22 TF resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	DIN 844 B	3 - 25	230
FRESE CILINDRICHE FRONTALI A SGROSSARE ROUGHING END MILLS								
CL 24 TF	NR	Acciai comuni Standard steel acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 844 B	6 - 40	231
CL 24 TF	NR	Acciai comuni Standard steel acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 844 B	6 - 32	231
CL 24 TF resistor	NR	Acciai comuni Standard steel acciai tenaci hardened steel	30	RESISTOR	White	DIN 844 B	6 - 32	231
CL 24 TF resistor	NR	Acciai comuni Standard steel acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	DIN 844 B	6 - 32	231
CL 24 TF resistor	NR	Acciao inox Stainless steel	30	RESISTOR	Pearl	DIN 844 B	6 - 32	231
CL 24 TF PF	HR	Acciai comuni Standard steel acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 844 B	6 - 40	232
CL 24 TF PF	HR	Acciai comuni Standard steel acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 844 B	6 - 32	232
CL 24 TF PF resistor	HR	Acciai comuni Standard steel acciai tenaci hardened steel	30	RESISTOR	White	DIN 844 B	6 - 32	232
CL 24 TF PF resistor	HR	Acciai comuni Standard steel acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	DIN 844 B	6 - 32	232

Articolo Article	Tipo Type	Campo d'applicazione Application field	Angolo elica Point Helix	Materiale tipo Tool material	Superficie Surface	Standard	Gamma dal diameter range	pag page
CL 24 TF PF resistor	HR	Acciao inox Stainless steel	30	RESISTOR	Pearl	DIN 844 B	6 - 32	232
CL 24 SL - TF	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 844 B	6- 25	233
CL 24 SL - TF	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 844 B	6- 25	233
CL 24 SL - TFPF	HR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 844 B	6- 25	234
CL 24 SL - TFPF	HR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 844 B	6- 25	234
CL 25 TF	NF	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 844 B	6 - 25	235
CL 25 TF	NF	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 844 B	6 - 25	235
FRESE A CODOLO CONICO MORSE TAPER SHANK END MILLS								
FRESE CILINDRICHE A DUE TAGLIENTI TWO FLUTE SLOT MILLS								
CM 31	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 326 D	14 - 40	236
FRESE CILINDRICHE A TRE TAGLIENTI THREE FLUTE SLOT MILLS								
CM 36	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 845 B	14 - 40	237
CM 37 FE	N	Acciai comuni Standard steel Acciai tenaci hardened steel	45	HSS+8%CO	White	DIN 845 B	16 - 40	237
CM 38	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 845 B	16 - 40	238
FRESE CILINDRICHE FRONTALI MULTIFLUTE FINISHING CUTTERS								
CL 41 TF	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 845 B	14 - 50	239
CL 41 TF	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 845 B	14 - 40	239
CL 41 TF resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	White	DIN 845 B	16 - 50	239
CL 41 TF resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	DIN 845 B	16 - 40	239
CM 41 R	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 1899 2D	16 - 40	240
CM 44 R	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 1899 2D	16 - 40	240

Articolo Article	Tipo Type	Campo d'applicazione Application field	Angolo elica Point Helix	Materiale tipo Tool material	Superficie Surface	Standard	Gamma dal diameter range	pag page
CM 42	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 845 B	16 - 50	240
CM 42	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 845 B	16 - 40	240
CM 42 resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	White	DIN 845 B	16 - 50	240
CM 42 resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	DIN 845 B	16 - 40	240
CM 42 R	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 1899 2D	16 - 40	241
CM 48 R	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 1899 2D	16 - 40	241
CM 43	N	Acciai comuni Standard steel Acciai tenaci hardened steel	20	HSS+8%CO	White	CARMON NORM	16 - 40	241
CM 44 resistor	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	White	DIN 845 B	16 - 50	242
CM 44 TF	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 845 B	16 - 50	242
CM 44 TF	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 845 B	16 - 40	242
CM 44 TF resistor	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	White	DIN 845 B	16 - 40	242
CM 44 TF resistor	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	DIN 845 B	16 - 40	242
CM 48	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 845 B	16 - 50	243
CM 48	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 845 B	16 - 40	243
CM 48 resistor	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	White	DIN 845 B	16 - 50	243
CM 48 resistor	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	DIN 845 B	16 - 40	243
CM 45 TF	NF	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 845 B	16 - 50	244
FRESE CONICHE PER STAMPI DIESINKING MILLING CUTTERS								
CS 47	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 1889 EA	0° 30' - 7° 7	245

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FRESE AD ANGOLO DOVETAIL CUTTERS								
TCL 60 A	N	Acciai comuni Standard steel Acciai tenaci hardened steel	0	HSS+5%CO	White	DIN 1833 A/B	16 - 25	246
TCL 60 B	N	Acciai comuni Standard steel Acciai tenaci hardened steel	0	HSS+5%CO	White	DIN 1833 A/B	16 - 25	246
FRESE PER SEDI DI LINGUETTE AMERICANE WOODRUFF WOODRUFF KEYSEAT CUTTERS								
TCL 61	N	Acciai comuni Standard steel Acciai tenaci hardened steel	10	HSS+5%CO	White	DIN 850 B	10,5 - 45,50	247
FRESE PER SCANALATURA A " T " T-SLOT CUTTERS								
TCL 62	N	Acciai comuni Standard steel Acciai tenaci hardened steel	12° - 15°	HSS+5%CO	White	DIN 851 AA	12,5 - 32	248
TCM 63	N	Acciai comuni Standard steel Acciai tenaci hardened steel	12° - 15°	HSS+5%CO	White	DIN 851 B	22 - 56	249
FRESE A PROFILO CONCAVO AD UN QUARTO D CERCHIO QUARTER CIRCLE CUTTERS								
RC 135	N	Acciai comuni Standard steel Acciai tenaci hardened steel	0	HSS+5%CO	White	DIN 6518 B	1 - 20	250
FRESE A DISCO A TRE TAGLIENTI DIRITTI E ALTERNATI SIDE AND FACE CUTTERS WITH STRAIGHT STAGGERED TEETH								
CR 81	H	Acciai comuni Standard steel Acciai tenaci hardened steel	0	HSS+5%CO	White	DIN 885 B	50 - 160	251
CR 83	N	Acciai comuni Standard steel Acciai tenaci hardened steel	8 ° - 15°	HSS+5%CO	White	DIN 885 A	50 - 250	253
FRESE SOTTILI A TAGLI ALTERNATI STUGGERED TEETH SAWS								
CR 85	H	Acciai comuni Standard steel Acciai tenaci hardened steel	8 ° - 15°	HSS+5%CO	White	DIN 1834 A	63 - 160	256
FRESE FRONTALI AD ANGOLO ANGLE SHELL END MILLS								
FA 91	H	Acciai comuni Standard steel Acciai tenaci hardened steel	0	HSS+5%CO	White	DIN 842 A	40 - 100	257
FRESE AD ANGOLO PRISMATICHE DOUBLE ANGLE CUTTERS								
FP 92	H	Acciai comuni Standard steel Acciai tenaci hardened steel	0	HSS+5%CO	White	DIN 847	50 - 100	258

Articolo Article	Tipo Type	Campo d'applicazione Application field	Angolo elica Point Helix	Materiale tipo Tool material	Superficie Surface	Standard	Gamma dal diameter range	pag page
FRESE CILINDRICHE FRONTALI A SGROSSARE E FINIRE ROUGHING AND FINISHING SHELL END MILLS								
CF 94	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 1880	40 - 160	259
CF 94	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	Sapphire MULTI	DIN 1880	40 - 100	259
CF 94 resistor	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	White	DIN 1880	40 - 100	259
CF 94 resistor	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	RESISTOR	Sapphire MULTI	DIN 1880	40 - 100	259
CF 95	NF	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 1880	40 - 100	259
CF 96	N	Acciai comuni Standard steel Acciai tenaci hardened steel	20	HSS+8%CO	White	DIN 1880	40 - 100	260
CF 96	N	Acciai comuni Standard steel Acciai tenaci hardened steel	20	HSS+8%CO	Sapphire MULTI	DIN 1880	40 - 100	260
CF 96 resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	20	RESISTOR	White	DIN 1880	40 - 100	260
CF 96 resistor	N	Acciai comuni Standard steel Acciai tenaci hardened steel	20	RESISTOR	Sapphire MULTI	DIN 1880	40 - 100	260
CF 97	W	Acciai comuni Standard steel Acciai tenaci hardened steel	40	HSS+5%CO	White	DIN 1880	40 - 125	260
CF 98	N	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 841	30 - 75	261
CF 99	NR	Acciai comuni Standard steel Acciai tenaci hardened steel	30	HSS+8%CO	White	DIN 841	30 - 75	261
FRESE A DISCO PER DENTARE CREMAGLIERE ANGOLO DI PRESSIONE 20° RACK MILLING CUTTERS PRESSURE ANGLE 20°								
SCR 121	N	Acciai comuni Standard steel Acciai tenaci hardened steel	0	HSS+5%CO	White	CARMON NORM	1 - 10	262
FRESE A PROFILO COSTANTE SEMICIRCOLARE CONVESSO CONVEX CUTTERS								
SCV 131	N	Acciai comuni Standard steel Acciai tenaci hardened steel	0	HSS+5%CO	White	DIN 856	1 - 10	263
FRESE A PROFILO COSTANTE SEMICIRCOLARE CONCAVO CONCAVE CUTTERS								
SCC 132	N	Acciai comuni Standard steel Acciai tenaci hardened steel	0	HSS+5%CO	White	DIN 855 A	1 - 10	264

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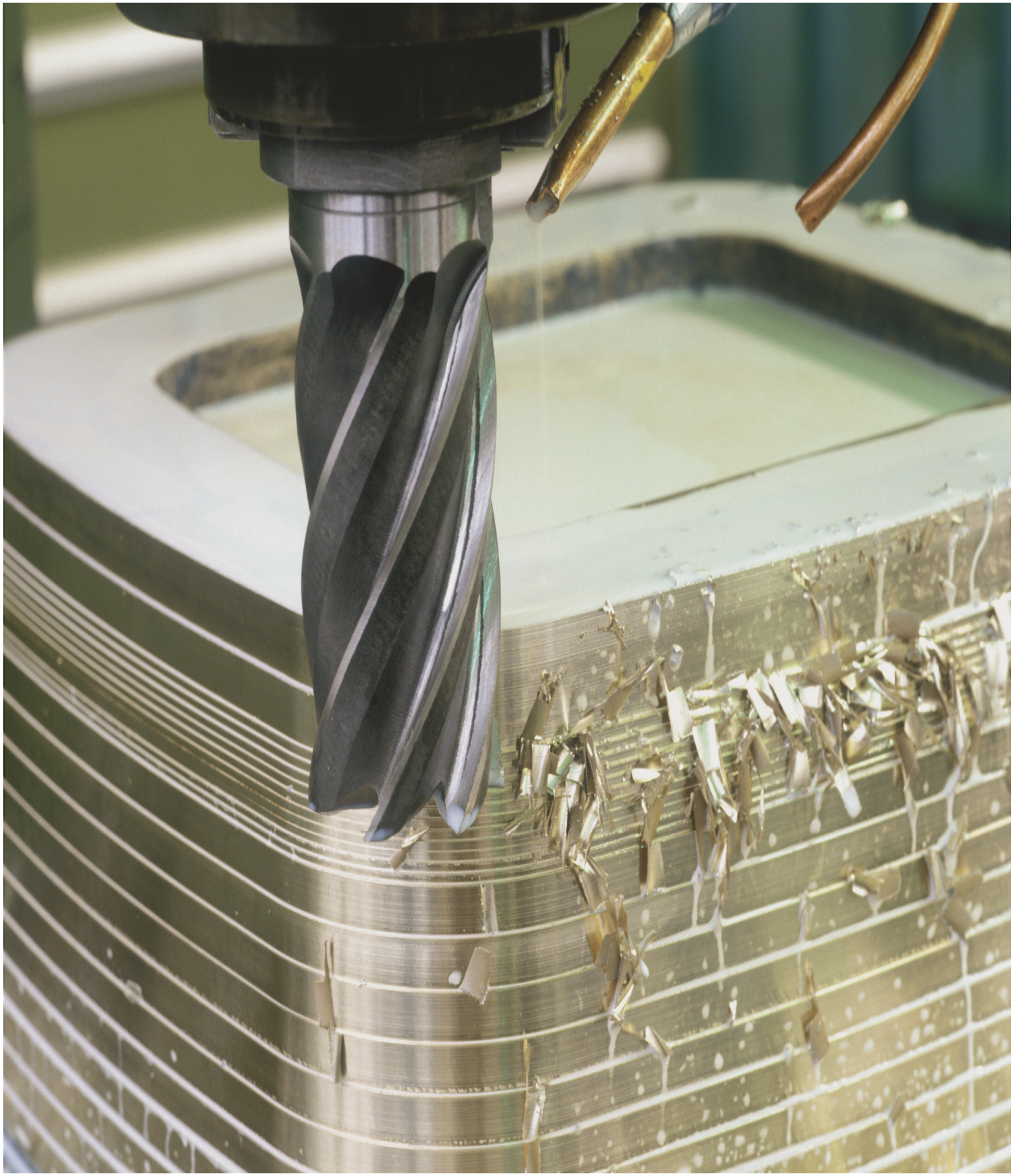
FRESE A DISCO PER DENTARE INGRANAGGI CILINDRICI ANGOLO DI PRESSIONE 20° INVOLUTE GEAR CUTTERS 20° PRESSURE ANGLE								
MOD 141	N	Acciai comuni Standard steel Acciai tenaci hardened steel	0	HSS+5%CO	White	UNI 4501	MOD 0,5 MOD 10 (DA 1 A 8)	265
PUNTE PER FORATURA A DUE DIAMETRI DI PROFILATI STEP MILLS								
ALL 156	W	Alluminio aluminum	30	HSS+5%CO	White	CARMON NORM	6 - 6,5	266
FRESE A DUE TAGLIENTI PER LAVORARE PROFILATI PANTOGRAPH END MILLS								
ALL 157	W	Alluminio aluminum	30	HSS+5%CO	White	CARMON NORM	4 - 6	266
FRESE MONOTAGLIENTI PER LAVORARE PROFILATI PANTOGRAPH END MILLS								
ALL 158	W	Alluminio aluminum	30	HSS+5%CO	White	CARMON NORM	4 - 10	267
ALL 158	W	Alluminio aluminum	30	HSS+5%CO	Sapphire MULTI	CARMON NORM	4 - 10	267
FRESE CILINDRICHE FRONTALI MULTIFLUTE CUTTERS								
ALL 160 resistor	W	Alluminio aluminum	40	RESISTOR	White	DIN 844 B	6 - 32	268
ALL 164 resistor	WR	Alluminio aluminum	35	RESISTOR	White	DIN 844 B	8 - 32	268
ALL 162 resistor	W	Alluminio aluminum	40	RESISTOR	White	DIN 844 B	6 - 32	269
ALL 166 resistor	WR	Alluminio aluminum	35	RESISTOR	White	DIN 844 B	10 - 32	269



rpm
=(mt/min x 1000) / (D x 3,14)

mm/min
= mm/rev x rpm

= mt/min

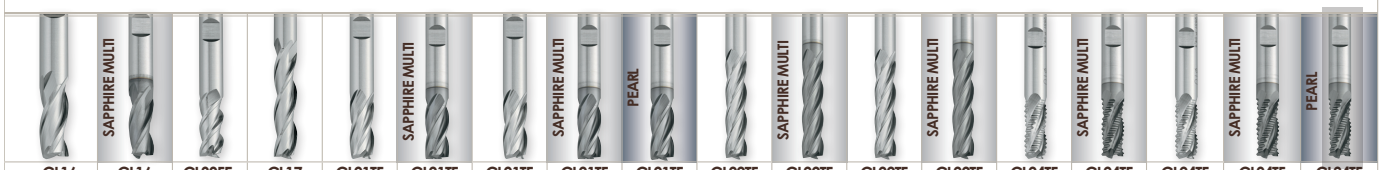
= mm/tooth (*vedi tabella - see table page pag. 141*)

FRESE A CODOLO CILINDRICO
STRAIGHT SHANK END MILLS

	CL11	CL11	CL11	CL11	CL12	CL12	CL12	CL12	CL13F	CL18	CL19	CL16	CL16
	DIN 327/D				CARMON NORM.				DIN 327/H	DIN 327/D	CARMON NORM.	DIN 844/B	
	HSS+8%Co		RESISTOR		HSS+8%Co		RESISTOR		HSS+8%Co			HSS+8%Co	

Pag. 330	TIPO DI ACCIAIO TYPE OF STEEL		N/mm²	HV	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth
ACCIAI COMUNI COMMON STEEL	Acciai teneri Soft steel	1	500	157	60	b	120	b	75	b	130	a	60	b	120	b	75	b	130	a	60	b	40	t	40	t	50	a	100	a
	Acciai da costruzione Structural steel	2	700	219	50	b	100	b	65	b	120	b	50	b	100	b	65	b	120	b	50	b	28	t	28	t	40	a	80	a
	Acciai da tempra Hardening steel	3	900	280	12	c	45	c	35	c	70	c	12	c	45	c	35	c	70	c	12	c	24	t	24	t	28	n	60	b
	Acciaio automatico Automatic steel	4	1200	373			14	d			25	c			14	d			25	c									35	d
ACCIAI INOX STAINLESS STEEL	Acciaio automatico Automatic steel	3	850	265	25	e	35	e	40	c	80	c	25	e	35	e	40	c	80	c	25	e	25	e	25	e	20	e	34	e
	Austenitico Austenitic	3	850	265			22	g	35	c	70	c			22	g	35	c	70	c							15	e	25	e
	Ferritico+austenitico Ferritic austenitic	4	1000	311							20	b							20	b							8	d	18	e
GHISA CAST IRON	Ghisa fino a 180 hb Cast iron up to 180hb	2	500	157	30	b	50	b	35	r	58	r	30	b	50	b	35	r	58	r	30	b	30	b	30	b	30	b	50	b
	Ghisa oltre 180 hb Cast iron over 180hb	3	700	219	25	b	45	b	30	r	45	r	25	b	45	b	30	r	45	r	25	b	25	b	25	b	25	b	45	b
TITANIO TITANIUM	Titanio non legato Unalloyed titanium	5	500	157	30	e	38	e	35	e	45	e	30	e	38	e	35	e	45	e	30	e	30	e	30	e	30	e	38	e
	Leghe di titanio Titanium alloys	5	900	280	25	e	33	e	28	e	38	e	25	e	33	e	28	e	38	e	25	e	25	e	25	e	25	e	33	e
RAME COPPER	Rame Copper	9	350	110	135	c	215	c	150	d	260	d	135	c	215	c	150	d	260	d	135	c	135	c	135	c	135	c	215	c
	Ottone Brass	9	700	219	140	c	220	c	160	d	270	d	140	c	220	c	160	d	270	d	140	c	140	c	140	c	140	c	220	c
	Bronzo Bronze	9	700	219	140	c	220	c	160	d	270	d	140	c	220	c	160	d	270	d	140	c	140	c	140	c	140	c	220	c
NICHEL NICKEL	Nichel non legato Unalloyed nichel	6	700	219	50	e	100	e	55	s	125	s	50	e	100	e	55	s	125	s	50	e	50	e	50	e	50	e	100	e
	Leghe di nichel Nichel alloys	6	900	280	15	b	25	b	18	s	35	s	15	b	25	b	18	s	35	s	15	b	15	b	15	b	15	b	25	b
ALLUMINIO ALUMINIUM	Alluminio non legato Unalloyed aluminium	7	350	110	330	f	660	f	350	r	700	r	330	f	660	f	350	r	700	r	330	f	330	f	330	f	330	f	660	f
	Alluminio con leghe Alloyed aluminium	7	400	125	330	f	660	f	350	r	700	r	330	f	660	f	350	r	700	r	330	f	330	f	330	f	330	f	660	f
	Alluminio con leghe Alloyed aluminium	7	500	157	100	f	200	f	120	r	240	r	100	f	200	f	120	r	240	r	100	f	100	f	100	f	100	f	200	f

FRESE A CODOLO CILINDRICO
STRAIGHT SHANK END MILLS



CL16	CL16	CL30FE	CL17	CL21TF	CL21TF	CL21TF	CL21TF	CL21TF	CL22TF	CL22TF	CL22TF	CL22TF	CL24TF	CL24TF	CL24TF	CL24TF	CL24TF
DIN 844/B																	
RESISTOR		HSS+8%Co				RESISTOR			HSS+8%Co		RESISTOR		HSS+8%Co		RESISTOR		
mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi	mt/min mm/bothi
60 b	120 b	50 a	50 a	50 a	100 a	60 b	120 b	120 b	50 a	100 a	60 b	120 b	50 s	100 s	60 r	120 r	120 b
50 b	100 b	40 a	40 a	40 a	80 a	50 b	100 b	100 b	40 a	80 a	50 b	100 b	40 s	80 s	50 r	100 r	100 b
40 c	80 c	28 n	28 n	28 n	60 b	40 c	80 c	80 c	28 n	60 b	40 c	80 c	28 s	60 s	40 r	80 r	80 c
	38 c				35 d		38 c	38 c		35 d		38 c		35 s		38 r	38 c
28 e	45 e	20 e	20 e	20 e	34 e	28 e	45 e	45 e	20 e	34 e	28 e	45 e	25 r	35 r	30 r	45 r	45 e
20 e	35 e	15 e	15 e	15 e	25 e	20 e	35 e	35 e	15 e	25 e	20 e	35 e			28 r	40 r	35 e
12 e	23 e	8 d	8 d	8 d	18 e	12 e	23 e	23 e	8 d	18 e	12 e	23 e		18 i	15 r	25 r	23 e
35 r	58 r	30 b	30 b	30 b	50 b	35 r	58 r	58 r	30 b	50 b	35 r	58 r	27 m	45 m	32 m	50 m	50 m
30 r	45 r	25 b	25 b	25 b	45 b	30 r	45 r	45 r	25 b	45 b	30 r	45 r	22 m	40 m	27 m	45 m	45 m
35 e	45 e	30 e	30 e	30 e	38 e	35 e	45 e	45 e	30 e	38 e	35 e	45 e	32 h	40 h	35 m	45 m	45 m
28 e	38 e	25 e	25 e	25 e	33 e	28 e	38 e	38 e	25 e	33 e	28 e	38 e	28 h	36 h	30 m	40 m	40 m
150 d	260 d	135 c	135 c	135 c	215 c	150 d	260 d	260 d	135 c	215 c	150 d	260 d	140 s	220 s	155 s	235 s	235 s
160 d	270 d	140 c	140 c	140 c	220 c	160 d	270 d	270 d	140 c	220 c	160 d	270 d	150 s	225 s	160 s	230 s	230 s
160 d	270 d	140 c	140 c	140 c	220 c	160 d	270 d	270 d	140 c	220 c	160 d	270 d	150 s	225 s	160 s	230 s	230 s
55 s	125 s	50 e	50 e	50 e	100 e	55 s	125 s	125 s	50 e	100 e	55 s	125 s	55 u	110 u	65 u	120 u	120 u
18 s	35 s	15 b	15 b	15 b	25 b	18 s	35 s	35 s	15 b	25 b	18 s	35 s	20 u	30 u	30 u	60 u	60 u
350 r	700 r	660 f	330 f	330 f	660 f	350 r	700 r	700 r	330 f	660 f	350 r	700 r	330 u	660 u	350 u	700 u	700 u
350 r	700 r	660 f	330 f	330 f	660 f	350 r	700 r	700 r	330 f	660 f	350 r	700 r	330 u	660 u	350 u	700 u	700 u
120 r	240 r	200 f	100 f	100 f	200 f	120 r	240 r	240 r	100 f	200 f	120 r	240 r	100 u	200 u	100 u	200 u	200 u

rpm
=(mt/min x 1000) / (D x 3,14)

mm/min
= mm/rev x rpm

= mt/min

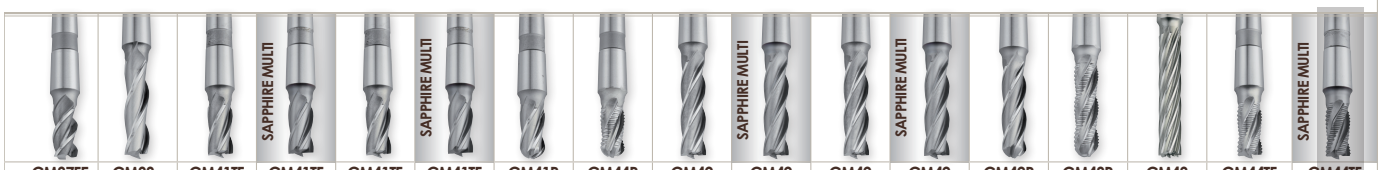
= mm/tooth (*vedi tabella - see table page pag. 141*)

FRESE A CODOLO CILINDRICO
STRAIGHT SHANK END MILLS

	CL24TFPF	CL24TFPF	CL24TFPF	CL24TFPF	CL24TFPF	CL24SLTF	CL24SLTF	CL24SLTFPF	CL24SLTFPF	CL25TF	CL25TF	CM31	CM36
	DIN 844/B											DIN 326/D	
	HSS+8%Co		RESISTOR			HSS+8%Co							

Pag. 330	TIPO DI ACCIAIO / TYPE OF STEEL		N/mm²	HV	CL24TFPF mt/min	CL24TFPF mm/tooth	CL24TFPF mt/min	CL24TFPF mm/tooth	CL24TFPF mt/min	CL24TFPF mm/tooth	CL24TFPF mt/min	CL24TFPF mm/tooth	CL24SLTF mt/min	CL24SLTF mm/tooth	CL24SLTF mt/min	CL24SLTF mm/tooth	CL24SLTFPF mt/min	CL24SLTFPF mm/tooth	CL25TF mt/min	CL25TF mm/tooth	CM31 mt/min	CM31 mm/tooth	CM36 mt/min	CM36 mm/tooth
ACCIAI COMUNI / COMMON STEEL	Acciai teneri / Soft steel	1	500	157	50	s	100	s	60	r	120	r	120	b	50	s	100	s	50	s	100	s	50	s	100	s	60	b	50	a
	Acciai da costruzione / Structural steel	2	700	219	40	s	80	s	50	r	100	r	100	b	40	s	80	s	40	s	80	s	40	s	80	s	50	b	40	a
	Acciai da tempra / Hardening steel	3	900	280	28	s	60	s	40	r	80	r	80	c	28	s	60	s	28	s	60	s	28	s	60	s	12	c	28	n
	Acciaio automatico / Automatic steel	4	1200	373			35	s			38	r	38	c			35	s			35	s			35	s				
ACCIAI INOX / STAINLESS STEEL	Acciaio automatico / Automatic steel	3	850	265	25	r	35	r	30	r	45	r	45	r	25	r	35	r	25	r	35	r	25	r	35	r	25	e	20	e
	Austenitico / Austenitic	3	850	265					28	r	40	r	40	r															15	e
	Ferritico+austenitico / Ferritic austenitic	4	1000	311			18	i	15	r	25	r	25	r			18	i			18	i			18	i			8	d
GHISA / CAST IRON	Ghisa fino a 180 hb / Cast iron up to 180hb	2	500	157	27	m	45	m	32	m	50	m	50	m	27	m	45	m	27	m	45	m	27	m	45	m	30	b	30	b
	Ghisa oltre 180 hb / Cast iron over 180hb	3	700	219	22	m	40	m	27	m	45	m	45	m	22	m	40	m	22	m	40	m	22	m	40	m	25	b	25	b
TITANIO / TITANIUM	Titanio non legato / Unalloyed titanium	5	500	157	32	h	40	h	35	m	45	m	40	h	32	h	40	h	32	h	40	h	32	h	40	h	30	e	30	e
	Leghe di titanio / Titanium alloys	5	900	280	28	h	36	h	30	m	40	m	36	h	28	h	36	h	28	h	36	h	28	h	36	h	25	e	25	e
RAME / COPPER	Rame / Copper	9	350	110	140	s	220	s	155	s	235	s	235	s	140	s	220	s	140	s	220	s	140	s	220	s	135	c	135	c
	Ottone / Brass	9	700	219	150	s	225	s	160	s	230	s	230	s	150	s	225	s	150	s	225	s	150	s	225	s	140	c	140	c
	Bronzo / Bronze	9	700	219	150	s	225	s	160	s	230	s	230	s	150	s	225	s	150	s	225	s	150	s	225	s	140	c	140	c
NICHEL / NICKEL	Nichel non legato / Unalloyed nichel	6	700	219	55	u	110	u	65	u	120	u	120	u	55	u	110	u	55	u	110	u	55	u	110	u	50	e	50	e
	Leghe di nichel / Nichel alloys	6	900	280	20	u	30	u	30	u	60	u	60	u	20	u	30	u	20	u	30	u	20	u	30	u	15	b	15	b
ALLUMINIO / ALUMINIUM	Alluminio non legato / Unalloyed aluminium	7	350	110	330	u	660	u	350	u	700	u	700	u	330	u	660	u	330	u	660	u	330	u	660	u	330	f	330	f
	Alluminio con leghe / Alloyed aluminium	7	400	125	330	u	660	u	350	u	700	u	700	u	330	u	660	u	330	u	660	u	330	u	660	u	330	f	330	f
	Alluminio con leghe / Alloyed aluminium	7	500	157	100	u	200	u	100	u	200	u	200	u	100	u	200	u	100	u	200	u	100	u	200	u	100	f	100	f

FRESE A CODOLO CONICO
MORSE TAPER SHANK END MILLS



CM37FE	CM38	CM41TF	CM41TF SAPPHIRE MULTI	CM41TF	CM41TF SAPPHIRE MULTI	CM41R	CM44R	CM42	CM42 SAPPHIRE MULTI	CM42	CM42 SAPPHIRE MULTI	CM42R	CM48R	CM43	CM44TF	CM44TF SAPPHIRE MULTI
DIN 845/B						DIN 1889/2D		DIN 845/B				DIN 1889/2D		CARMON NORM.	DIN 845/B	
HSS+8%Co				RESISTOR		HSS+8%Co				HSS+8%Co		HSS+8%Co				

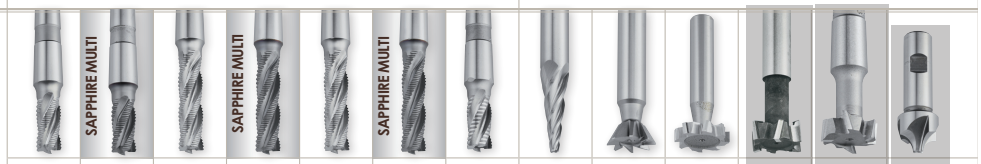
mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth
50	a	50	i	50	a	100	a	60	b	120	b	50	a	50	s	50	g	100	g	60	b	120	b	50	g	50	g	25	m	50	s	100	s
40	a	40	i	40	a	80	a	50	b	100	b	40	a	40	s	40	g	80	g	50	b	100	b	40	g	40	g	18	m	40	s	80	s
28	n	28	i	28	n	56	n	40	c	80	c	28	n	28	s	28	i	56	i	40	c	80	c	28	i	28	g	12	m	28	s	56	s
						35	d			38	c							35	d			38	c					10	m			35	s
20	e	20	g	20	e	34	e	28	e	45	e	20	e	25	r	20	c	34	c	28	e	45	e	20	c	25	h			25	r	35	r
15	e	15	g	15	e	25	e	20	e	35	e	15	e			15	c	25	c	20	e	35	e	15	c								
8	d	8	i	8	d	18	d	12	e	23	e	8	d			8	i	18	i	12	e	23	e	8	i							18	i
30	b	30	i	30	b	50	b	35	r	58	r	30	b	27	m	30	i	50	i	35	r	58	r	30	i	27	m			27	m	45	m
25	b	25	i	25	b	45	b	30	r	45	r	25	b	22	m	25	i	45	i	30	r	45	r	25	i	22	m	16	m	22	m	40	m
30	e	30	g	30	e	38	e	35	e	45	e	30	e	32	h	30	c	38	c	35	e	45	e	30	c	32	h			32	h	40	h
25	e	25	g	25	e	33	e	28	e	38	e	25	e	28	h	25	c	33	c	28	e	38	e	25	c	28	h			28	h	36	h
135	c	135	i	135	c	215	c	150	d	260	d	135	c	140	s	135	h	215	h	150	d	260	d	135	h	140	o			140	s	220	s
140	c	140	i	140	c	220	c	160	d	270	d	140	c	150	s	140	h	220	h	160	d	270	d	140	h	150	o			150	s	225	s
140	c	140	i	140	c	220	c	160	d	270	d	140	c	150	s	140	h	220	h	160	d	270	d	140	h	150	o			150	s	225	s
50	e	50	g	50	e	100	e	55	s	125	s	50	e	55	u	50	c	100	c	55	s	125	s	50	c	55	i			55	u	110	u
15	b	15	i	15	b	25	b	18	s	35	s	15	b	20	u	15	i	25	i	18	s	35	s	15	i	20	i			20	u	30	u
660	f	330	i	330	f	660	f	350	r	700	r	330	f	330	u	330	h	660	h	350	r	700	r	330	h	330	i	150	m	330	u	660	u
660	f	330	i	330	f	660	f	350	r	700	r	330	f	330	u	330	h	660	h	350	r	700	r	330	h	330	i			330	u	660	u
200	f	100	i	100	f	200	f	120	r	240	r	100	f	100	u	100	h	200	h	120	r	240	r	100	h	100	i			100	u	200	u

rpm
=(mt/min x 1000) / (D x 3,14)

mm/min
= mm/rev x rpm

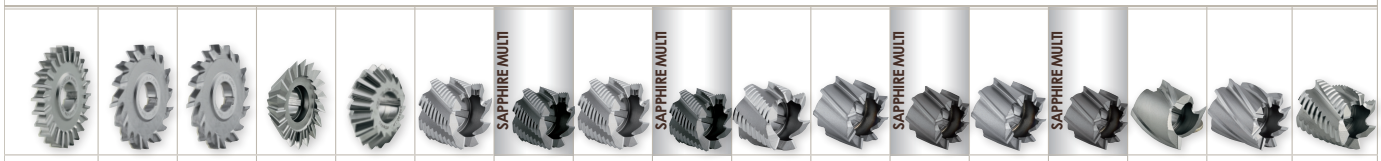
= mt/min

= mm/tooth (*vedi tabella - see table page pag. 141*)

	FRESE A CODOLO CONICO MORSE TAPER SHANK END MILLS							UTENSILI VARI VARIOUS CUTTING TOOLS					
													
	CM44TF	CM44TF SAPPHIRE MULTI	CM48	CM48 SAPPHIRE MULTI	CM48	CM48 SAPPHIRE MULTI	CM45TF	CS47	TCL60	TCL61	TCL62	TCM63	RC135
	DIN 845/B							DIN 1889/EA	DIN 1833/A B	DIN 850/B	DIN 851/AA	DIN 851/B	DIN 6518/B
	RESISTOR		HSS+8%Co		RESISTOR		HSS+8%Co	HSS+5%Co					

Pag. 330	TIPO DI ACCIAIO TYPE OF STEEL		N/mm²	HV	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth	mt/min	mm/tooth
ACCIAI COMUNI COMMON STEEL	Acciai teneri Soft steel	1	500	157	60	r	120	r	50	g	100	g	60	r	120	r	50	s	50	a	35	f	30	c	35	c	35	c	50	a
	Acciai da costruzione Structural steel	2	700	219	50	r	100	r	40	g	80	g	50	r	100	r	40	s	40	a	30	f	25	c	30	c	30	c	40	a
	Acciai da tempra Hardening steel	3	900	280	40	r	80	r	28	g	56	g	40	r	80	r	28	s	28	n	25	e	20	b	25	b	25	b	28	n
	Acciaio automatico Automatic steel	4	1200	373			38	r			35	s			38	r					15	d	10	b	15	b	15	b		
ACCIAI INOX STAINLESS STEEL	Acciaio automatico Automatic steel	3	850	265	30	r	45	r	25	h	35	h	30	r	45	r	25	r	20	e	18	d	15	c	18	c	18	c	20	e
	Austenitico Austenitic	3	850	265	28	r	40	r					28	r	40	r			15	e	15	c	10	b	15	b	15	b	15	e
	Ferritico+austenitico Ferritic austenitic	4	1000	311	15	r	25	r			18	i	15	r	25	r			8	d	10	b	10	a	10	a	10	a	8	d
GHISA CAST IRON	Ghisa fino a 180 hb Cast iron up to 180hb	2	500	157	32	m	50	m	27	m	45	m	32	m	50	m	27	m	30	b	20	e	20	b	20	b	20	b	30	b
	Ghisa oltre 180 hb Cast iron over 180hb	3	700	219	27	m	45	m	22	m	40	m	27	m	45	m	22	m	25	b	15	c	15	b	15	b	15	b	25	b
TITANIO TITANIUM	Titanio non legato Unalloyed titanium	5	500	157	35	m	45	m	32	h	40	h	35	m	45	m	32	h	30	e	25	e	30	c	25	b	25	b	30	e
	Leghe di titanio Titanium alloys	5	900	280	30	m	40	m	28	h	36	h	30	m	40	m	28	h	25	e	15	c	20	b	15	b	15	b	25	e
RAME COPPER	Rame Copper	9	350	110	155	s	235	s	140	o	220	o	155	s	235	s	140	s	135	c	75	f	25	c	90	d	90	d	135	c
	Ottone Brass	9	700	219	160	s	230	s	150	o	225	o	160	s	230	s	150	s	140	c	75	f	25	c	90	d	90	d	140	c
	Bronzo Bronze	9	700	219	160	s	230	s	150	o	225	o	160	s	230	s	150	s	140	c	65	f	35	c	35	c	35	c	140	c
NICHEL NICKEL	Nichel non legato Unalloyed nichel	6	700	219	65	u	120	u	55	i	110	i	65	u	120	u	55	u	50	e	20	d	30	c	25	b	25	b	50	e
	Leghe di nichel Nichel alloys	6	900	280	30	u	60	u	20	i	30	i	30	u	60	u	20	u	15	b	12	c	6	a	6	a	6	a	15	b
ALLUMINIO ALUMINIUM	Alluminio non legato Unalloyed aluminium	7	350	110	350	u	700	u	330	i	660	i	350	u	700	u	330	u	330	f	150	i	60	h	150	i	150	i	330	f
	Alluminio con leghe Alloyed aluminium	7	400	125	350	u	700	u	330	i	660	i	350	u	700	u	330	u	330	f	55	h	30	d	55	h	55	h	330	f
	Alluminio con leghe Alloyed aluminium	7	500	157	100	u	200	u	100	i	200	i	100	u	200	u	100	u	100	f	40	g	15	b	40	g	40	g	100	f

FRESE A DISCO, AD ANGOLO E FRONTALI
SIDE AND FACE CUTTER, ANGLE CUTTER, SHELL END MILLS



CR81	CR83	CR85	FA91	FP92	CF94	CF94	CF94	CF94	CF95	CF96	CF96	CF96	CF96	CF97	CF98	CF99
DIN 885/B	DIN 885/A		DIN 842/A	DIN 847					DIN 1880						DIN 841	
HSS+5%Co					HSS+8%Co		RESISTOR		HSS+8%Co			RESISTOR		HSS+5%Co	HSS+8%Co	

mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth
40 i	40 c	40 i	35 m	35 m	30 d	60 d	35 t	70 t	30 d	30 d	60 d	35 t	70 t		30 d	30 d
35 i	35 c	35 i	14 m	14 m	25 d	50 d	30 t	60 t	25 d	25 d	50 d	30 t	60 t		25 d	25 d
30 i	30 c	30 i	11 m	11 m	20 c	40 d	25 p	50 p	20 c	20 c	40 d	25 p	50 p		20 c	20 c
20 i	20 c	20 i	9 m	9 m	10 b	20 b	14 r	28 r	10 b	10 b	20 b	14 r	28 r		10 b	10 b
25 i	25 c	25 i	14 m	14 m	20 c	40 c	20 b	40 b	20 c	20 c	40 c	20 b	40 b		20 c	20 c
20 i	20 c	20 i	12 m	12 m	15 c	30 c	15 n	30 n	15 c	15 c	30 c	15 n	30 n		15 c	15 c
10 i	10 c	10 i	10 m	10 m	6 a	12 a	8 r	16 r	6 a	6 a	12 a	8 r	16 r		6 a	6 a
25 c	25 d	25 c	25 m	25 m	20 b	40 b	25 d	50 d	20 b	20 b	40 b	25 d	50 d		20 b	20 b
15 c	15 d	15 c	20 m	20 m	15 b	30 b	20 d	40 d	15 b	15 b	30 b	20 d	40 d		15 b	15 b
25 c	25 a	25 c			30 c	30 c	35 d	70 d	30 c	30 c	30 c	35 d	70 d		30 c	30 c
15 i	15 b	15 i			20 b	40 b	25 a	50 a	20 b	20 b	40 b	25 a	50 a		20 b	20 b
120 i	120 c	120 i			70 g	140 g	80 f	160 f	70 g	70 g	140 g	80 f	160 f		70 g	70 g
120 i	120 c	120 i			70 g	140 g	80 f	160 f	70 g	70 g	140 g	80 f	160 f		70 g	70 g
120 i	120 c	120 i			35 f	70 f	40 b	80 b	35 f	35 f	70 f	40 b	80 b		35 f	35 f
35 i	35 c	35 i			30 c	60 c	35 d	70 d	30 c	30 c	60 c	35 d	70 d		30 c	30 c
12 c	12 b	12 c			12 a	24 a	15 a	30 a	12 a	12 a	24 a	15 a	30 a		12 a	12 a
350 c	350 d	350 c	85 m	85 m	200 h	400 h	230 i	450 i	200 h					200 d	200 h	200 h
100 c	100 d	100 c			60 d	120 d	80 d	160 d	60 d					120 d	60 d	60 d
70 c	70 d	70 c			35 d	70 d	40 d	80 d	35 d					80 d	35 d	35 d

rpm
=(mt/min x 1000) / (D x 3,14)

mm/min
= mm/rev x rpm

= mt/min

= mm/tooth (*vedi tabella - see table page pag. 141*)

				FRESE A DISCO, AD ANGOLO E FRONTALI SIDE AND FACE CUTTER, ANGLE CUTTER, SHELL END MILLS				UTENSILI PER PROFILATI D'ALLUMINIO, PVC E LEGHE LEGGERE CUTTING TOOLS FOR ALUMINIUM PROFILS, PLASTIC AND LIGHT ALLOYS							
				SCR121	SCV131	SCC132	MOD141	ALL156	ALL157	ALL158	ALL158 SAPPHIRE MULTI	ALL160	ALL162	ALL164	ALL166
				CARMON NORM.	DIN 856	DIN 855/A	UNI 4501	CARMON NORM.				DIN 844/B			
				HSS+5%Co								RESISTOR			
Pag. 330	TIPO DI ACCIAIO TYPE OF STEEL		N/mm²	HV	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth	mt/min mm/tooth
ACCIAI COMUNI COMMON STEEL	Acciai teneri Soft steel	1	500	157	25 m	25 m	25 m	25 m					60 b	60 b	60 r	60 r
	Acciai da costruzione Structural steel	2	700	219	14 m	14 m	14 m	14 m					50 b	50 b	50 r	50 r
	Acciai da tempra Hardening steel	3	900	280	11 m	11 m	11 m	11 m					40 c	40 c	40 r	40 r
	Acciaio automatico Automatic steel	4	1200	373	9 m	9 m	9 m	9 m								
ACCIAI INOX STAINLESS STEEL	Acciaio automatico Automatic steel	3	850	265	14 m	14 m	14 m	14 m					28 e	28 e	30 r	30 r
	Austenitico Austenitic	3	850	265	12 m	12 m	12 m	12 m					20 e	20 e	28 r	28 r
	Ferritico+austenitico Ferritic austenitic	4	1000	311	10 m	10 m	10 m	10 m					12 e	12 e	15 r	15 r
GHISA CAST IRON	Ghisa fino a 180 hb Cast iron up to 180hb	2	500	157	25 m	25 m	25 m	25 m					35 r	35 r	32 m	32 m
	Ghisa oltre 180 hb Cast iron over 180hb	3	700	219	20 m	20 m	20 m	20 m					30 r	30 r	27 m	27 m
TITANIO TITANIUM	Titanio non legato Unalloyed titanium	5	500	157									35 e	35 e	35 m	35 m
	Leghe di titanio Titanium alloys	5	900	280									28 e	28 e	30 m	30 m
RAME COPPER	Rame Copper	9	350	110									150 d	150 d	155 s	155 s
	Ottone Brass	9	700	219									160 d	160 d	160 s	160 s
	Bronzo Bronze	9	700	219									160 d	160 d	160 s	160 s
NICHEL NICKEL	Nichel non legato Unalloyed nichel	6	700	219									55 s	55 s	110 u	110 u
	Leghe di nichel Nichel alloys	6	900	280									18 s	18 s	30 u	30 u
ALLUMINIO ALUMINIUM	Alluminio non legato Unalloyed aluminium	7	350	110	85 m	85 m	85 m	85 m	100 c	100 c	200 v	400 v	350 r	350 r	350 u	350 u
	Alluminio con leghe Alloyed aluminium	7	400	125									350 r	350 r	350 u	350 u
	Alluminio con leghe Alloyed aluminium	7	500	157									120 r	120 r	100 u	100 u

FRESATURA *MILLING*		TABELLA PARAMETRI DI AVANZAMENTO mm/dente - *FEED DATA (mm/tooth)*																
		DIAMETRO DELLA FRESA *MILLING DIAMETER*																
TIPO DI FRESATURA *TYPE OF MILLING*	LETTERA DI RIFERIMENTO *REFERENCE LETTER*	D. 1	D. 2	D. 3	D. 4	D. 5	D. 6	D. 8	D. 10	D. 12	D. 14	D. 16	D. 20	D. 25	D. 30	D. 35	D. 40	D.50
FRESATURA DI CAVE SLOTTING	a	0,005	0,010	0,015	0,020	0,025	0,030	0,045	0,060	0,075	0,085	0,095	0,100	0,102	0,110	0,107	0,106	0,108
	b	0,005	0,008	0,013	0,017	0,023	0,027	0,040	0,056	0,065	0,074	0,085	0,087	0,089	0,100	0,098	0,096	0,098
	c	0,004	0,007	0,012	0,016	0,021	0,022	0,034	0,050	0,057	0,067	0,079	0,080	0,082	0,085	0,088	0,087	0,089
	d	0,004	0,008	0,010	0,014	0,020	0,025	0,036	0,052	0,063	0,072	0,083	0,084	0,086	0,092	0,098	0,100	0,102
	e	0,008	0,010	0,019	0,025	0,036	0,043	0,062	0,087	0,106	0,125	0,145	0,147	0,149	0,173	0,156	0,168	0,177
	f	0,008	0,010	0,015	0,020	0,022	0,024	0,035	0,042	0,054	0,056	0,067	0,079	0,086	0,089	0,091	0,091	0,091
SGROSSATURA ROUGHING	g						0,027	0,036	0,037	0,045	0,053	0,057	0,074	0,075	0,055	0,057	0,056	0,056
	h						0,024	0,033	0,034	0,039	0,046	0,051	0,065	0,067	0,050	0,051	0,049	0,052
	i						0,022	0,031	0,034	0,040	0,045	0,054	0,063	0,065	0,050	0,055	0,056	0,060
	l						0,025	0,036	0,048	0,064	0,080	0,093	0,105	0,100	0,102	0,112	0,115	0,120
	m						0,026	0,011	0,014	0,018	0,022	0,027	0,030	0,033	0,036	0,040	0,043	0,045
SEMI FINITURA SEMI-FINISHING	n	0,008	0,012	0,017	0,023	0,030	0,036	0,052	0,061	0,073	0,083	0,106	0,083	0,078	0,084	0,089	0,095	0,100
	o	0,007	0,010	0,016	0,020	0,027	0,025	0,047	0,055	0,066	0,074	0,090	0,074	0,070	0,075	0,080	0,900	0,950
	p	0,080	0,011	0,018	0,021	0,029	0,029	0,050	0,060	0,070	0,080	0,099	0,082	0,075	0,080	0,085	0,095	0,101
	q	0,008	0,015	0,022	0,025	0,037	0,035	0,067	0,080	0,094	0,107	0,100	0,095	0,113	0,120	0,128	0,140	0,147
	r	0,013	0,017	0,020	0,026	0,030	0,030	0,048	0,057	0,063	0,075	0,095	0,094	0,092	0,093	0,105	0,108	0,115
FINITURA FINISHING	s	0,011	0,016	0,025	0,030	0,040	0,038	0,073	0,088	0,102	0,115	0,146	0,114	0,108	0,115	0,125	0,138	0,143
	t	0,008	0,013	0,022	0,025	0,036	0,036	0,047	0,066	0,078	0,093	0,105	0,130	0,104	0,098	0,105	0,112	0,128
	u	0,009	0,014	0,020	0,025	0,030	0,042	0,060	0,072	0,083	0,093	0,114	0,098	0,089	0,095	0,100	0,110	0,118
	v	0,012	0,018	0,025	0,034	0,046	0,048	0,060	0,083	0,100	0,116	0,135	0,122	0,140	0,149	0,155	0,178	0,180
	z	0,016	0,022	0,027	0,033	0,038	0,048	0,061	0,073	0,083	0,094	0,115	0,117	0,118	0,135	0,137	0,140	0,143

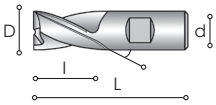
FRESE CILINDRICHE A DUE TAGLIENTI PER CAVE TWO FLUTE SLOT MILLS LANGLOCHFRÄSER MIT ZWEI SCHNEIDEN FRAISES CYLINDRIQUES A DEUX DENTS A RAINURER FRESAS CILINDRICAS DE DOS LABIOS PARA CHAVETEROS

CL 11

DIN 327D

N

λ 30°



CL11

D e8	L	l	d h6	Z	CODE	HSS+8%Co 1110..... €	HSS+8%Co 2110..... € SAPPHIRE MULTI	CODE	RESISTOR 1110..... €	RESISTOR 2110..... € SAPPHIRE MULTI
1	47	2,5	6	2	01000	21,70	28,11			
1,5	47	3	6	2	01500	20,22	26,48			
2	48	4	6	2	02000	18,10	24,15	02030	21,05	27,41
2,5	49	5	6	2	25000	18,10	24,15			
3	49	5	6	2	30000	15,39	21,17	30030	17,66	23,66
3,5	50	6	6	2	35000	15,39				
4	51	7	6	2	40000	14,94	20,68	40030	17,18	23,14
4,5	51	7	6	2	45000	15,46				
5	52	8	6	2	50000	14,68	20,39	50030	16,93	22,87
5,5	52	8	6	2	55000	14,94				
6	52	8	6	2	60000	13,82	19,44	60030	16,06	21,92
6,5	60	10	10	2	65000	19,70				
7	60	10	10	2	70000	19,70	27,82	70030	22,98	31,43
7,5	60	10	10	2	75000	20,15				
8	61	11	10	2	80000	18,88	26,91	80030	21,82	30,16
8,5	61	11	10	2	85000	22,86				
9	61	11	10	2	90000	22,15	30,51	90030	25,87	34,61
9,5	61	11	10	2	95000	22,98				
10	63	13	10	2	10000	21,38	29,67	10030	24,87	33,51
10,5	70	13	12	2	10500	27,55				
11	70	13	12	2	11000	26,40	35,18	11030	30,77	40,00
11,5	70	13	12	2	11500	27,29				
12	73	16	12	2	12000	26,50	35,29	12030	30,74	39,96
12,5	73	16	12	2	12500	29,48				
13	73	16	12	2	13000	29,48	39,15	13030	34,31	44,46
13,5	73	16	12	2	13500	31,67				
14	73	16	12	2	14000	31,67	41,55	14030	37,33	47,78
14,5	73	16	12	2	14500	35,60				
15	73	16	12	2	15000	35,60	45,88	15030	41,64	52,53
15,5	79	19	16	2	15500	37,91				
16	79	19	16	2	16000	37,91	48,42	16030	44,47	55,65
17	79	19	16	2	17000	42,42	56,54	17030	58,00	73,67
18	79	19	16	2	18000	47,11	61,71	18030	58,00	73,67
19	79	19	16	2	19000	58,24	75,91	19030	72,77	91,88
20	88	22	20	2	20000	56,55	74,04	20030	67,31	85,87
22	88	22	20	2	22000	75,25	94,60	22030	91,24	112,20
24	102	26	25	2	24000	109,09	141,50	24030	135,87	170,95
25	102	26	25	2	02500	109,09	141,50	25030	135,87	170,95
26	102	26	25	2	26000	117,91				
28	102	26	25	2	28000	124,93				

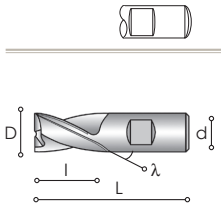
FRESE CILINDRICHE A DUE TAGLIENTI PER CAVE TWO FLUTE SLOT MILLS LANGLOCHFRÄSER MIT ZWEI SCHNEIDEN FRAISES CYLINDRIQUES A DEUX DENTS A RAINURER FRESAS CILINDRICAS DE DOS LABIOS PARA CHAVETEROS

CL 11

DIN 327D

N

λ 30°



CL11

D e8	L	l	d h6	Z	CODE	HSS+8%Co 1110..... €	HSS+8%Co 2110..... € SAPPHIRE MULTI	CODE	RESISTOR 1110..... €	RESISTOR 2110..... € SAPPHIRE MULTI
30	102	26	25	2	03000	136,83				
32	112	32	32	2	32000	151,83				
35	112	32	32	2	03500	177,65				
36	112	32	32	2	36000	193,53				
38	118	38	32	2	38000	217,99				
40	118	38	32	2	04000	242,20				

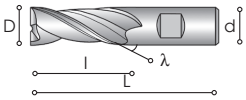
FRESE CILINDRICHE A DUE TAGLIENTI PER CAVE TWO FLUTE SLOT MILLS LANGLOCHFRÄSER MIT ZWEI SCHNEIDEN FRAISES CYLINDRIQUES A DEUX DENTS A RAINURER FRESAS CILINDRICAS DE DOS LABIOS PARA CHAVETEROS

CL 12

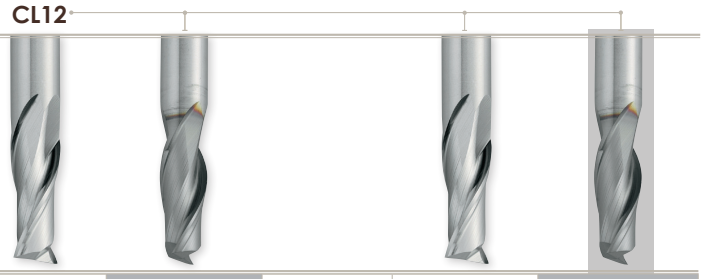
CARMON NORM.

N

λ 30°



CL12



D e8	L	l	d h6	Z	CODE	HSS+8%Co 1120..... €	HSS+8%Co 2120..... € SAPPHIRE MULTI	CODE	RESISTOR 1120..... €	RESISTOR 2120..... € SAPPHIRE MULTI
3	56	8	6	2	30000	20,73	27,04	30030	24,28	30,95
4	63	11	6	2	40000	20,28	26,55	40030	23,69	30,31
5	68	13	6	2	50000	20,28	26,55	50030	23,69	30,31
6	68	13	6	2	60000	19,63	25,85	60030	22,98	29,52
7	80	16	10	2	70000	25,62	35,82	70030	29,94	40,57
8	88	19	10	2	80000	24,19	34,25	80030	28,38	38,85
9	88	19	10	2	90000	29,28	39,86	90030	34,44	45,53
10	95	22	10	2	10000	26,69	37,00	10030	31,25	42,02
11	102	22	12	2	11000	36,44	49,87	11030	42,68	56,74
12	110	26	12	2	12000	33,57	46,71	12030	39,30	53,04
13	110	26	12	2	13000	44,67	59,94	13030	52,65	68,72
14	110	26	12	2	14000	42,87	57,95	14030	50,47	66,32
15	110	26	12	2	15000	51,43	67,38	15030	60,77	77,64
16	123	32	16	2	16000	52,14	68,16	16030	61,40	78,34
17	123	32	16	2	17000	63,65	82,40	17030	75,76	95,71
18	123	32	16	2	18000	63,65	82,40	18030	79,11	99,40
19	123	32	16	2	19000	82,05	105,64	19030	98,92	124,19
20	141	38	20	2	20000	81,23	112,34	20030	87,83	110,00
22	141	38	20	2	22000	98,91	131,79	22030	118,96	153,84
24	166	45	25	2	24000	138,22	191,19	24030	171,59	227,90
25	166	45	25	2	25000	135,35	188,04	25030	168,17	224,14

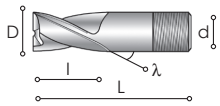
FRESE CILINDRICHE A DUE TAGLIENTI PER CAVE TWO FLUTE SLOT MILLS LANGLOCHFRÄSER MIT ZWEI SCHNEIDEN FRAISES CYLINDRIQUES A DEUX DENTS A RAINURER FRESAS CILINDRICAS DE DOS LABIOS PARA CHAVETEROS

CL 13F

DIN 327H

N

λ 30°



CL13F

D e8	L	l	d h8	Z	CODE	HSS+8%Co 1130..... €
4	51	7	6	2	04000	14,93
5	52	8	6	2	50000	14,62
6	52	8	6	2	60000	14,32
7	60	10	10	2	70000	19,54
8	61	11	10	2	80000	19,24
9	61	11	10	2	90000	22,01
10	63	13	10	2	10000	22,11
11	70	13	12	2	11000	26,41
12	73	16	12	2	12000	27,34
13	73	16	12	2	13000	29,05
14	73	16	12	2	14000	31,38
15	73	16	12	2	15000	34,95
16	79	19	16	2	16000	37,28
17	79	19	16	2	17000	41,32
18	79	19	16	2	18000	46,14
19	79	19	16	2	19000	57,17
20	88	22	20	2	20000	55,77
22	88	22	20	2	22000	105,79
24	102	26	25	2	24000	109,67
25	102	26	25	2	25000	109,67
26	102	26	25	2	26000	118,38
28	102	26	25	2	28000	125,36
30	102	26	25	2	30000	137,18
32	112	32	32	2	32000	151,94
35	112	32	32	2	35000	177,56
36	112	32	32	2	36000	193,41
38	118	38	32	2	38000	217,34
40	118	38	32	2	40000	241,57

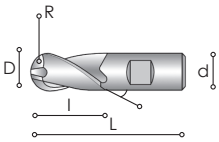
FRESE CILINDRICHE A DUE TAGLIENTI CON TESTA SEMISFERICA TWO FLUTE BALL NOSE END MILLS ZWEISCHNEIDENENFRÄSER MIT VOLLEM STIRNRADIUS FRAISES CYLINDRIQUES A DEUX DENTS AVEC TETE HEMISPHERIQUES FRESAS CILINDRICAS DE DOS LABIOS CON CABEZA SEMISFÉRICA

CL 18

DIN 327D

N

λ 30°



CL18

D e8	R ± 0,02	L	l	d h6	Z	CODE	HSS+8%Co 1180..... €
2	1	48	4	6	2	02000	30,25
3	1,5	49	5	6	2	30000	27,22
4	2	51	7	6	2	40000	25,55
5	2,5	52	8	6	2	50000	25,55
6	3	52	8	6	2	60000	25,55
7	3,5	60	10	10	2	70000	33,94
8	4	61	11	10	2	80000	33,94
9	4,5	61	11	10	2	90000	34,28
10	5	63	13	10	2	10000	35,29
11	5,5	70	13	12	2	11000	40,47
12	6	73	16	12	2	12000	40,47
13	6,5	73	16	12	2	13000	48,56
14	7	73	16	12	2	14000	48,56
15	7,5	73	16	12	2	15000	53,43
16	8	79	19	16	2	16000	54,45
17	8,5	79	19	16	2	17000	66,34
18	9	79	19	16	2	18000	66,34
19	9,5	79	19	16	2	19000	78,64
20	10	88	22	20	2	20000	78,64

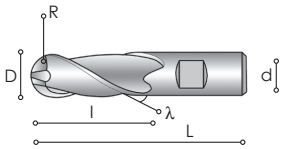
FRESE CILINDRICHE A DUE TAGLIENTI CON TESTA SEMISFERICA TWO FLUTE BALL NOSE END MILLS ZWEISCHNEIDENENFRÄSER MIT VOLLEM STIRNRADIUS FRAISES CYLINDRIQUES A DEUX DENTS AVEC TETE HEMISPHERIQUES FRESAS CILINDRICAS DE DOS LABIOS CON CABEZA SEMISFÉRICA

CL 19

CARMON NORM.

N

λ 30°



CL19

D e8	R ± 0,02	L	l	d h6	Z	CODE	HSS+8%Co 1190..... €
3	1,5	56	8	6	2	30000	33,07
4	2	63	11	6	2	40000	33,07
5	2,5	68	13	6	2	50000	33,07
6	3	68	13	6	2	60000	32,48
7	3,5	80	16	10	2	70000	39,96
8	4	88	19	10	2	80000	38,58
9	4,5	88	19	10	2	90000	46,66
10	5	95	22	10	2	10000	42,63
11	5,5	102	22	12	2	11000	52,84
12	6	110	26	12	2	12000	50,94
13	6,5	110	26	12	2	13000	64,96
14	7	110	26	12	2	14000	62,99
15	7,5	110	26	12	2	15000	73,49
16	8	123	32	16	2	16000	74,33
17	8,5	123	32	16	2	17000	91,60
18	9	123	32	16	2	18000	87,44
19	9,5	123	32	16	2	19000	117,89
20	10	141	38	20	2	20000	111,42

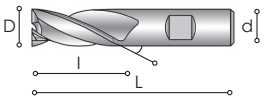
FRESE CILINDRICHE FRONTALI A TRE TAGLIENTI THREE FLUTE END MILLS LANGLOCHFRÄSER MIT DREI SCHNEIDEN FRAISES CYLINDRIQUES FRONTALES A TROIS DENTS FRESAS CILINDRICAS FRONTALES DE TRES LABIOS

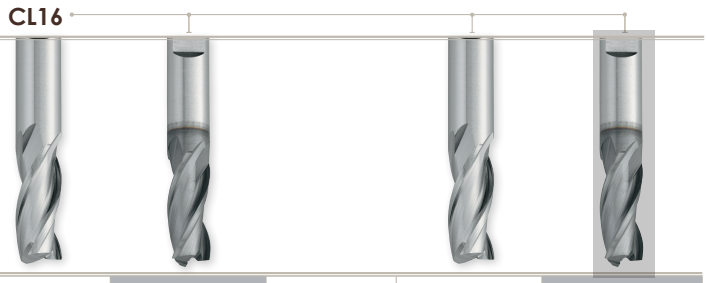
CL 16

DIN 844B

N

λ 30°





D e8	L	l	d h6	Z	CODE	HSS+8%Co 1160..... €	HSS+8%Co 2160..... € SAPPHIRE MULTI	CODE	RESISTOR 1160..... €	RESISTOR 2160..... € SAPPHIRE MULTI
2	51	7	6	3	02000	20,22	26,48			
3	52	8	6	3	30000	16,88	22,80	30030	19,70	25,92
4	55	11	6	3	40000	15,97	21,80	40030	18,87	25,00
5	57	13	6	3	50000	15,97	21,80	50030	19,22	25,37
6	57	13	6	3	60000	15,00	20,75	60030	18,26	24,33
7	66	16	10	3	70000	24,40	32,98			
8	69	19	10	3	80000	22,57	30,97	80030	26,50	35,30
9	69	19	10	3	90000	26,40	35,18			
10	72	22	10	3	10000	24,00	32,55	10030	28,19	37,15
11	79	22	12	3	11000	32,25	43,12			
12	83	26	12	3	12000	29,63	40,24	12030	34,93	46,07
13	83	26	12	3	13000	36,24	48,14			
14	83	26	12	3	14000	34,06	45,73	14030	40,04	52,32
15	83	26	12	3	15000	43,19	55,79			
16	92	32	16	3	16000	42,74	55,29	16030	51,29	64,69
17	92	32	16	3	17000	54,46	69,78			
18	92	32	16	3	18000	52,20	67,30	18030	64,88	81,24
19	92	32	16	3	19000	63,47	81,65			
20	104	38	20	3	20000	63,65	85,40	20030	79,30	102,60
22	104	38	20	3	22000	82,51	106,14	22030	99,50	124,83
24	121	45	25	3	24000	119,01	152,40	24030	146,87	183,06
25	121	45	25	3	25000	115,80	148,86	25030	143,01	178,81

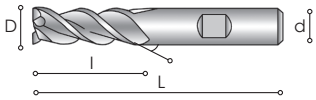
FRESE CILINDRICHE FRONTALI A TRE TAGLIENTI THREE FLUTE END MILLS LANGLOCHFRÄSER MIT DREI SCHNEIDEN FRAISES CYLINDRIQUES FRONTALES A TROIS DENTS FRESAS CILINDRICAS FRONTALES DE TRES LABIOS

CL 30FE

DIN 844B

N

λ 45°



CL30FE

D js14	L	l	d h6	Z	CODE	HSS+8%Co 1300..... €
6	57	13	6	3	60000	21,32
8	69	19	10	3	80000	30,62
10	72	22	10	3	10000	32,81
12	83	26	12	3	12000	39,19
14	83	26	12	3	14000	41,99
16	92	32	16	3	16000	52,88
18	92	32	16	3	18000	64,68
20	104	38	20	3	20000	78,31

FRESE CILINDRICHE FRONTALI A TRE TAGLIENTI THREE FLUTE END MILLS LANGLOCHFRÄSER MIT DREI SCHNEIDEN FRAISES CYLINDRIQUES FRONTALES A TROIS DENTS FRESAS CILINDRICAS FRONTALES DE TRES LABIOS

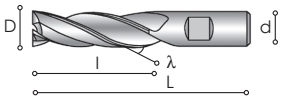
CL 17

DIN 844B

N

λ 30°

CL17



D e8	L	l	d h6	Z	CODE	HSS+8%Co 1170..... €
3	56	12	6	3	30000	22,27
4	63	19	6	3	40000	21,25
5	68	24	6	3	50000	20,47
6	68	24	6	3	60000	19,89
7	80	30	10	3	70000	33,80
8	88	38	10	3	80000	31,98
9	88	38	10	3	90000	32,82
10	95	45	10	3	10000	30,65
11	102	45	12	3	11000	40,61
12	110	53	12	3	12000	38,05
13	110	53	12	3	13000	46,47
14	110	53	12	3	14000	43,32
15	110	53	12	3	15000	55,68
16	123	63	16	3	16000	54,65
17	123	63	16	3	17000	70,10
18	123	63	16	3	18000	67,25
19	123	63	16	3	19000	82,26
20	141	75	20	3	20000	82,26
22	141	75	20	3	22000	106,01
24	166	90	25	3	24000	152,21
25	166	90	25	3	25000	152,21

CL 21TF

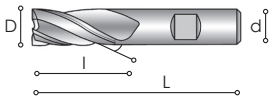
DIN 844B

N

λ 30°

INOX

CL21TF



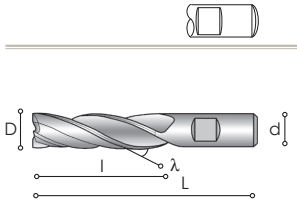
D js14	L	l	d h6	Z	CODE	HSS+8%Co 1213..... €	HSS+8%Co 2215..... € SAPPHIRE MULTI	CODE	RESISTOR 1213..... €	RESISTOR 2215..... € SAPPHIRE MULTI	RESISTOR 2218..... € PEARL
3	52	8	6	4	03000	16,13	21,99	03030	18,51	24,60	24,60
3,5	54	10	6	4	03500	17,14					
4	55	11	6	4	04000	15,06	20,81	04030	17,99	24,03	24,03
4,5	55	11	6	4	45000	16,29					
5	57	13	6	4	50000	15,46	21,25	50030	17,46	23,45	23,45
5,5	57	13	6	4	55000	15,76					
6	57	13	6	4	60000	15,19	20,95	60030	17,16	23,12	23,12
6,5	66	16	10	4	65000	24,36					
7	66	16	10	4	70000	24,38	32,96	70030	25,50	34,20	34,20
7,5	66	16	10	4	75000	24,38					
8	69	19	10	4	80000	22,50	30,90	80030	25,50	34,20	34,20
8,5	69	19	10	4	85000	24,31					
9	69	19	10	4	90000	24,31	32,90	90030	26,55	35,35	35,35
9,5	69	19	10	4	95000	24,31					
10	72	22	10	4	10000	23,73	32,25	10030	26,55	35,35	35,35
10,5	79	22	12	4	10500	29,14					
11	79	22	12	4	11000	29,13	39,70	11030	36,14	47,39	47,39
11,5	79	22	12	4	11500	28,68					
12	83	26	12	4	12000	28,67	39,18	12030	34,45	45,54	45,54
12,5	83	26	12	4	12500	37,06					
13	83	26	12	4	13000	37,06	49,04	13030	40,69	53,03	53,03
13,5	83	26	12	4	13500	31,31					
14	83	26	12	4	14000	31,31	42,72	14030	38,94	51,11	51,11
14,5	83	26	12	4	14500	39,69					
15	83	26	12	4	15000	39,69	51,92	15030	47,23	60,22	60,22
15,5	92	32	16	4	15500	38,18					
16	92	32	16	4	16000	38,19	50,27	16030	48,19	61,28	61,28
17	92	32	16	4	17000	58,89	74,66	17030	60,62	76,55	76,55
18	92	32	16	4	18000	48,79	63,54	18030	57,81	73,47	73,47
19	92	32	16	4	19000	57,73	75,34	19030	70,23	89,08	89,08
20	104	38	20	4	20000	56,71	77,74	20030	70,57	93,00	93,00
22	104	38	20	4	22000	90,67	115,11	22030	105,02	130,89	130,89
24	121	45	25	5	24000	127,27	161,49	24030	152,91	189,70	189,70
25	121	45	25	5	25000	127,27	161,49	25030	152,91	189,70	189,70
26	121	45	25	5	26000	140,09	178,50				
28	121	45	25	6	28000	151,33	190,87				
30	121	45	25	6	30000	166,52	207,58	30030	206,27	251,30	251,30
32	133	53	32	6	32000	193,01	239,58	32030	250,22	302,31	302,31
35	133	53	32	6	35000	227,07					
38	143	63	32	6	38000	244,31					
40	143	63	32	8	40000	295,99					

CL 22TF

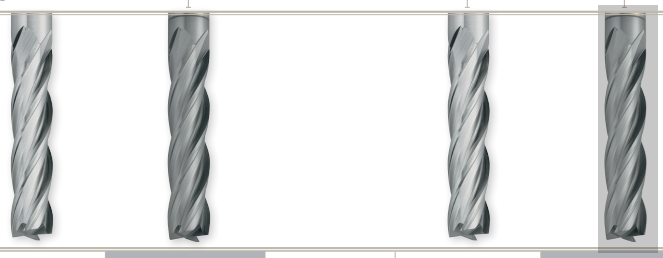
DIN 844B

N

λ 30°



CL22TF



D js14	L	l	d h6	Z	CODE	HSS+8%Co 1223..... €	HSS+8%Co 2223..... € SAPPHIRE MULTI	CODE	RESISTOR 1223..... €	RESISTOR 2223..... € SAPPHIRE MULTI
3	56	12	6	4	30000	23,63	30,24	30030	24,28	30,95
4	63	19	6	4	40000	22,02	28,47	40030	23,62	30,23
5	68	24	6	4	50000	21,44	27,82	50030	23,01	29,55
6	68	24	6	4	60000	20,53	26,84	60030	22,15	28,61
7	80	30	10	4	70000	32,31	43,19	70030	35,92	47,15
8	88	38	10	4	80000	32,12	42,98	80030	34,44	45,53
9	88	38	10	4	90000	32,12	42,98	90030	35,92	47,15
10	95	45	10	4	10000	30,38	41,06	10030	32,96	43,90
11	102	45	12	4	11000	39,91	53,70	11030	45,05	59,35
12	110	53	12	4	12000	37,78	51,35	12030	41,91	55,89
13	110	53	12	4	13000	44,87	60,15	13030	50,01	65,81
14	110	53	12	4	14000	41,00	55,90	14030	52,82	68,90
15	110	53	12	4	15000	52,65	68,72	15030	59,59	76,35
16	123	63	16	4	16000	53,39	69,53	16030	63,60	80,76
17	123	63	16	4	17000	75,25	95,15	17030	81,99	102,56
18	123	63	16	4	18000	62,43	81,05	18030	78,52	98,75
19	123	63	16	4	19000	88,70	112,94	19030	100,06	125,43
20	141	75	20	4	20000	75,96	106,54	20030	97,23	129,95
22	141	75	20	4	22000	110,50	144,54	22030	134,06	170,45
24	166	90	25	5	24000	153,36	207,85	24030	192,75	251,18
25	166	90	25	5	25000	153,36	207,85	25030	200,27	259,44

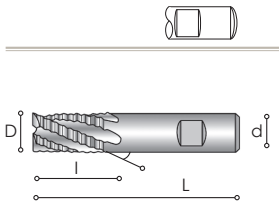
CL 24TF

DIN 844B

NR

λ 30°

INOX



CL24TF

D js14	L	l	d h6	Z	CODE	HSS+8%Co 1243..... €	HSS+8%Co 2245..... € SAPPHIRE MULTI	CODE	RESISTOR 1243..... €	RESISTOR 2245..... € SAPPHIRE MULTI	RESISTOR 2248..... € PEARL
6	57	13	6	3	60000	28,69	35,80	60030	32,44	39,92	39,92
7	66	16	10	3	70000	43,61	54,12	70030	52,06	63,42	63,42
8	69	19	10	3	80000	42,49	52,89	80030	50,80	62,04	62,04
9	69	19	10	3	90000	43,61	54,12	90030	52,06	63,42	63,42
10	72	22	10	4	10000	41,21	51,49	10030	50,43	61,62	61,62
11	79	22	12	4	11000	47,62	60,02	11030	58,13	71,58	71,58
12	83	26	12	4	12000	45,28	57,45	12030	57,30	70,67	70,67
13	83	26	12	4	13000	52,25	65,74	13030	64,53	79,25	79,25
14	83	26	12	4	14000	48,49	61,62	14030	61,50	75,92	75,92
15	83	26	12	4	15000	57,40	71,41	15030	72,93	88,49	88,49
16	92	32	16	4	16000	58,13	72,21	16030	74,27	89,97	89,97
18	92	32	16	4	18000	64,56	80,89	18030	82,67	100,82	100,82
20	104	38	20	4	20000	82,93	106,59	20030	106,53	132,56	132,56
22	104	38	20	4	22000	93,23	117,93	22030	120,82	148,27	148,27
24	121	45	25	4	24000	141,90	177,58				
25	121	45	25	4	25000	138,14	173,44	25030	181,81	221,49	221,49
28	121	45	25	4	28000	154,68	194,55				
30	121	45	25	5	30000	166,80	207,88	30030	219,79	266,17	266,17
32	133	53	32	5	32000	194,27	240,76	32030	258,62	311,55	311,55
35	133	53	32	5	35000	249,60					
38	143	63	32	5	38000	271,81					
40	143	63	32	6	40000	271,81					

FRESE CILINDRICHE FRONTALI PER SGROSSARE, PASSO FINE FINE PITCH ROUGHING END MILLS
SCHRUPPFRÄSER MIT FEINEM KORDEL PROFIL FRAISES DEUX TAILLES D'EBAUCHE, PAS FIN
FRESAS CILÍNDRICAS FRONTALES PARA DESBASTE, PASO FINO

CL 24TF-PF

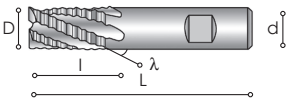
DIN 844B

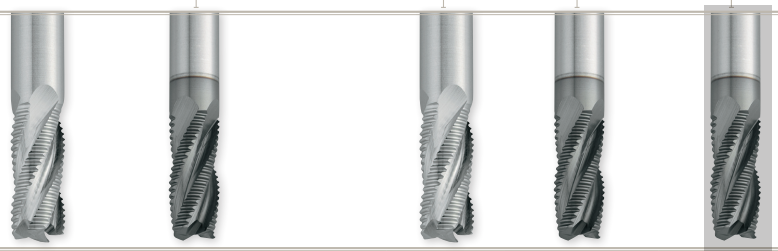
HR

λ 30°

INOX

CL24TF-PF





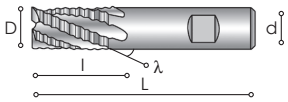
D js14	L	l	d h6	Z	CODE	HSS+8%Co 1244..... €	HSS+8%Co 2246..... € SAPPHIRE MULTI	CODE	RESISTOR 1244..... €	RESISTOR 2246..... € SAPPHIRE MULTI	RESISTOR 2249..... € PEARL
6	57	13	6	3	60000	39,47	47,66	60030	45,37	54,16	54,16
7	66	16	10	3	70000	45,52	56,23	70030	62,79	75,22	75,22
8	69	19	10	3	80000	45,52	56,23	80030	62,79	75,22	75,22
9	69	19	10	3	90000	45,52	56,23	90030	62,79	75,22	75,22
10	72	22	10	4	10000	45,52	56,23	10030	62,79	75,22	75,22
11	79	22	12	4	11000	52,74	65,66	11030	72,86	87,79	87,79
12	83	26	12	4	12000	52,74	65,66	12030	70,67	85,38	85,38
13	83	26	12	4	13000	59,82	74,08	13030	75,96	91,82	91,82
14	83	26	12	4	14000	59,82	74,08	14030	74,92	90,68	90,68
15	83	26	12	4	15000	64,62	79,35	15030	82,33	98,84	98,84
16	92	32	16	4	16000	69,40	84,62	16030	87,41	104,43	104,43
18	92	32	16	4	18000	86,26	104,76	18030	96,49	116,02	116,02
20	104	38	20	4	20000	90,91	115,38	20030	116,19	143,18	143,18
22	104	38	20	4	22000	110,86	137,32	22030	137,12	166,20	166,20
24	121	45	25	4	24000	164,51	202,45				
25	121	45	25	4	25000	164,51	202,45	25030	190,51	231,05	231,05
28	121	45	25	4	28000	173,18	214,89				
30	121	45	25	5	30000	190,51	233,97	30030	227,86	275,05	275,05
32	133	53	32	5	32000	221,65	270,89	32030	267,52	321,34	321,34
35	133	53	32	5	35000	249,37					
38	143	63	32	5	38000	280,31					
40	143	63	32	6	40000	291,96					

CL 24SL-TF

DIN 844B

NR

λ 30°



CL24SL-TF

D js14	L	l	d h6	Z	CODE	HSS+8%Co 1247..... €	HSS+8%Co 2247..... € SAPPHIRE MULTI
6	68	24	6	3	60000	51,23	60,60
8	88	38	10	3	80000	51,65	63,56
10	95	45	10	4	10000	52,90	64,93
12	110	53	12	4	12000	61,68	76,48
14	110	53	12	4	14000	67,68	83,98
16	123	63	16	4	16000	80,98	98,62
18	123	63	16	4	18000	92,30	112,46
20	141	75	20	4	20000	110,92	142,30
22	141	75	20	4	22000	135,16	168,96
24	166	90	25	4	24000	183,35	236,23
25	166	90	25	4	25000	183,35	236,23

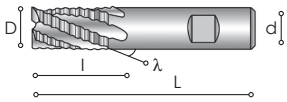
FRESE CILINDRICHE FRONTALI PER SGROSSARE, PASSO FINE FINE PITCH ROUGHING END MILLS
SCHRUPPFRÄSER MIT FEINEM KORDEL PROFIL FRAISES DEUX TAILLES D'EBAUCHE, PAS FIN
FRESAS CILÍNDRICAS FRONTALES PARA DESBASTE, PASO FINO

CL 24SL-TF-PF

DIN 844B

HR

λ 30°



CL24SL-TF-PF

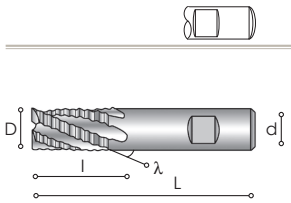
D js14	L	l	d h6	Z	CODE	HSS+8%Co 1248..... €	HSS+8%Co 2248..... € SAPPHIRE MULTI
6	68	24	6	3	06000	60,76	71,08
8	88	38	10	3	08000	61,26	75,02
10	95	45	10	4	01000	62,73	76,65
12	110	53	12	4	01200	73,14	90,25
14	110	53	12	4	01400	76,25	94,67
16	123	63	16	4	01600	91,24	111,16
18	123	63	16	4	01800	103,99	126,77
20	141	75	20	4	02000	124,97	160,46
22	141	75	20	4	02200	146,57	184,21
24	166	90	25	4	02400	212,95	273,40
25	166	90	25	4	02500	212,95	273,40

CL 25TF

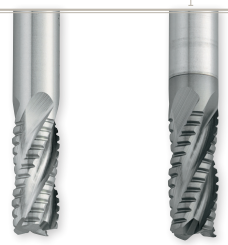
DIN 844B

NF

λ 30°



CL25TF



D js14	L	l	d h6	Z	CODE	HSS+8%Co 1253..... €	HSS+8%Co 2253..... € SAPPHIRE MULTI
6	57	13	6	3	60000	28,69	35,80
7	66	16	10	3	70000	43,61	54,12
8	69	19	10	3	80000	42,49	52,89
9	69	19	10	3	90000	43,61	54,12
10	72	22	10	4	10000	41,21	51,49
11	79	22	12	4	11000	47,62	60,02
12	83	26	12	4	12000	45,28	57,45
13	83	26	12	4	13000	52,25	65,74
14	83	26	12	4	14000	48,49	61,62
15	83	26	12	4	15000	57,40	71,41
16	92	32	16	4	16000	58,13	72,21
18	92	32	16	4	18000	64,56	80,89
20	104	38	20	4	20000	82,93	106,59
22	104	38	20	4	22000	93,23	117,93
24	121	45	25	4	24000	141,90	177,58
25	121	45	25	4	25000	138,14	173,44

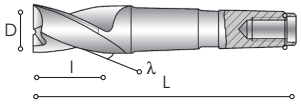
FRESE CILINDRICHE A DUE TAGLIENTI PER CAVE TWO FLUTE SLOT MILLS LANGLOCHFRÄSER MIT ZWEI SCHNEIDEN FRAISES CYLINDRIQUES A DEUX DENTS A RAINURER FRESAS CILINDRICAS DE DOS LABIOS PARA CHAVETEROS

CM 31

DIN 326D

N

λ 30°



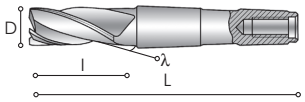
CM31

D e8	L	l	CM	Z	CODE	HSS+8%Co 1310..... €
14	101	16	2	2	14000	54,97
15	101	16	2	2	15000	62,58
16	104	19	2	2	16000	58,71
17	104	19	2	2	17000	65,02
18	104	19	2	2	18000	61,40
19	104	19	2	2	19000	75,25
20	124	22	3	2	20000	89,45
21	124	22	3	2	21000	99,37
22	124	22	3	2	22000	94,02
23	124	22	3	2	23000	109,53
24	128	26	3	2	24000	105,88
25	128	26	3	2	25000	109,09
26	128	26	3	2	26000	117,72
28	128	26	3	2	28000	132,13
30	128	26	3	2	30000	149,19
32	157	32	4	2	32000	185,55
34	157	32	4	2	34000	203,07
35	157	32	4	2	35000	218,95
36	157	32	4	2	36000	231,88
38	163	38	4	2	38000	260,92
40	163	38	4	2	40000	288,85

FRESE CILINDRICHE FRONTALI A TRE TAGLIENTI THREE FLUTE END MILLS LANGLOCHFRÄSER MIT DREI SCHNEIDEN FRAISES CYLINDRIQUES FRONTALES A TROIS DENTS FRESAS CILINDRICAS FRONTALES DE TRES LABIOS

CM 36 DIN 845B N λ 30°

CM 37FE DIN 845B N λ 45°



CM36

CM37FE

CM36 D e8 CM37FE D js14	L	l	CM	Z	CODE	HSS+8%Co 1360..... €	HSS+8%Co 1370..... €
14	111	26	2	3	14000	63,47	
15	111	26	2	3	15000	67,25	
16	117	32	2	3	16000	68,23	77,63
17	117	32	2	3	17000	90,89	
18	117	32	2	3	18000	74,09	
19	117	32	2	3	19000	100,79	
20	140	38	3	3	20000	104,22	128,04
21	140	38	3	3	21000	115,27	
22	140	38	3	3	22000	110,24	
23	140	38	3	3	23000	127,25	
24	147	45	3	3	24000	127,69	
25	147	45	3	3	25000	130,46	155,60
26	147	45	3	3	26000	137,35	
28	147	45	3	3	28000	145,71	
30	147	45	3	3	30000	169,60	182,66
32	178	53	4	3	32000	198,10	
34	178	53	4	3	34000	218,58	
35	178	53	4	3	35000	229,61	236,26
36	178	53	4	3	36000	238,45	
38	188	63	4	3	38000	276,04	
40	188	63	4	3	40000	310,28	364,48

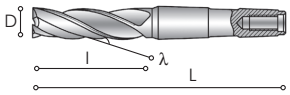
FRESE CILINDRICHE FRONTALI A TRE TAGLIENTI THREE FLUTE END MILLS LANGLOCHFRÄSER MIT DREI SCHNEIDEN FRAISES CYLINDRIQUES FRONTALES A TROIS DENTS FRESAS CILINDRICAS FRONTALES DE TRES LABIOS

CM 38

DIN 845-B

N

λ 30°



CM38

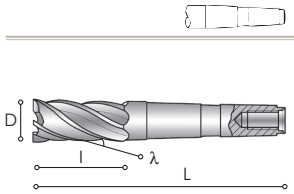
D js14	L	l	CM	Z	CODE	HSS+8%Co 1380..... €
16	148	63	2	3	16000	84,80
18	148	63	2	3	18000	92,33
20	177	75	3	3	20000	122,51
22	177	75	3	3	22000	137,70
24	192	90	3	3	24000	170,78
25	192	90	3	3	25000	176,61
26	192	90	3	3	26000	185,18
28	192	90	3	3	28000	196,51
30	192	90	3	3	30000	212,37
32	231	106	4	3	32000	290,27
34	231	106	4	3	34000	325,93
35	231	106	4	3	35000	342,42
36	231	106	4	3	36000	373,54
38	250	125	4	3	38000	431,78
40	250	125	4	3	40000	484,64

CM 41TF

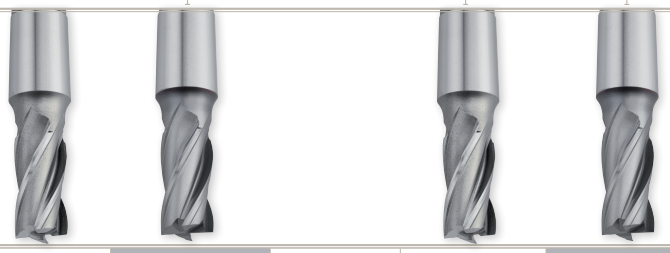
DIN 845-B

N

λ 30°



CM41TF



D js14	L	l	CM	Z	CODE	HSS+8%Co 1410..... €	HSS+8%Co 2410..... € SAPPHIRE MULTI	CODE	RESISTOR 1410..... €	RESISTOR 2410..... € SAPPHIRE MULTI
14	111	26	2	4	14000	61,26	79,76	14030		
15	111	26	2	4	15000	68,53	87,76	15030		
16	117	32	2	4	16000	64,06	82,85	16030	75,36	95,28
17	117	32	2	4	17000	69,18		17030		
18	117	32	2	4	18000	67,20	86,30	18030	79,04	99,33
19	117	32	2	4	19000	77,10		19030		
20	140	38	3	4	20000	93,50	124,34	20030	117,62	150,88
21	140	38	3	4	21000	106,19		21030		
22	140	38	3	4	22000	104,53	136,48	22030	136,82	171,99
23	140	38	3	5	23000	128,02		23030		
24	147	45	3	5	24000	123,51	175,00	24030	155,11	209,77
25	147	45	3	5	25000	126,41	178,20	25030	158,78	213,80
26	147	45	3	5	26000	131,82	194,81	26030	166,64	233,12
28	147	45	3	6	28000	137,21	200,75	28030	174,22	241,46
30	147	45	3	6	30000	161,42	227,38	30030	205,08	275,40
32	178	53	4	6	32000	186,84	260,91	32030	250,22	330,63
34	178	53	4	6	34000	212,98	289,67	34030	278,51	361,75
35	178	53	4	6	35000	211,36	287,89	35030	278,03	361,23
36	178	53	4	6	36000	250,82	339,57	36030	301,11	394,89
38	188	63	4	6	38000	257,91	357,01	38030	332,81	439,41
40	188	63	4	8	40000	289,81	392,12	40030	379,34	490,58
42	188	63	4	8	42000	451,97		42030		
44	188	63	4	8	44000	452,77		44030		
45	188	63	4	8	45000	402,69		45030	540,31	
50	233	75	5	8	50000	549,38		50030	761,45	

CM 41R
44R
42

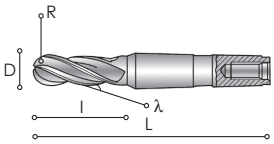
FRESE CILINDRICHE FRONTALI CON TESTA SEMISFERICA BALL NOSE END MILLS
MEHRSCHNEIDEN- RADIUSSCHAFTFRÄSER FRAISES CYLINDRIQUES FRONTALES AVEC TETE HEMISPHERIQUES
FRESAS CILÍNDRICAS FRONTALES CON CABEZA SEMIESFÉRICA

CM 41R

DIN 1889/2D — N — λ 30°

CM 44R

DIN 1889/2D — NR — λ 30°




CM41R

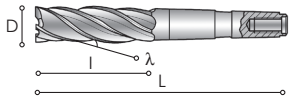

CM44R

D js14	R ± 0,02	L	l	CM	CM41R Z	CM44R Z	CODE	HSS+8%Co 1411..... €	HSS+8%Co 1441..... €
16	8	117	32	2	4	3	16000	107,79	111,73
20	10	140	38	3	4	4	20000	129,09	151,83
25	12,5	147	45	3	5	4	25000	180,84	207,84
30	15	147	45	3	6	5	30000	232,51	270,32
32	16	178	53	4	6	5	32000	292,71	300,61
40	20	188	63	4	8	6	40000	340,59	424,71

FRESE CILINDRICHE FRONTALI MULTIFLUTE FINISHING CUTTERS MEHRSCHNEIDENFRÄSER
FRAISES DEUX TAILLES FRESAS CILÍNDRICAS FRONTALES

CM 42

DIN 845B — N — λ 30°



CM42

D js14	L	l	CM	Z	CODE	HSS+8%Co 1420..... €	HSS+8%Co 2420..... € SAPPHIRE MULTI	CODE	RESISTOR 1420..... €	RESISTOR 2420..... € SAPPHIRE MULTI
16	148	63	2	4	16000	83,86	108,92	16030	100,78	127,54
18	148	63	2	4	18000	87,73	113,18	18030	105,66	132,91
20	177	75	3	4	20000	113,78	164,32	20030	139,85	193,00
22	177	75	3	4	22000	135,21	187,88	22030	166,03	221,79
24	192	90	3	5	24000	169,08	233,73	24030	215,65	284,96
25	192	90	3	5	25000	169,46	234,17	25030	207,56	276,07
26	192	90	3	5	26000	179,37	254,77	26030	221,41	301,01
28	192	90	3	6	28000	194,50	271,41	28030	241,93	323,59
30	192	90	3	6	30000	210,14	288,61	30030	260,67	344,19
32	231	106	4	6	32000	290,21	395,35	32030	366,48	479,25
34	231	106	4	6	34000	319,35	427,42	34030	409,20	526,25
35	231	106	4	6	35000	335,58	445,26	35030	432,88	552,29
36	231	106	4	6	36000	352,70	475,84	36030	458,83	592,59
38	250	125	4	6	38000	422,97	553,14	38030	558,19	701,89
40	250	125	4	8	40000	468,99	603,77	40030	627,77	778,43
45	250	125	4	8	45000	565,34		45030	775,67	
50	308	150	5	8	50000	810,94		50030	1135,50	

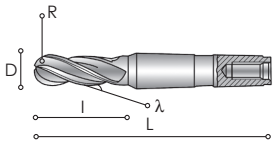
FRESE CILINDRICHE FRONTALI CON TESTA SEMISFERICA
BALL NOSE END MILLS
MEHRSCHNEIDEN- RADIUSSCHAFTFRÄSER
FRAISES CYLINDRIQUES FRONTALES AVEC TETE HEMISPHERIQUES
FRESAS CILÍNDRICAS FRONTALES CON CABEZA SEMIESFÉRICA

CM 42R

DIN 1889/2D — N — λ 30°

CM 48R

DIN 1889/2D — NR — λ 30°



CM42R

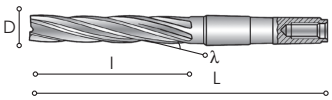
CM48R

D js14	R ± 0,02	L	l	CM	CM42R Z	CM48R Z	CODE	HSS+8%Co 1421..... €	HSS+8%Co 1481..... €
16	8	148	63	2	4	3	16000	125,35	140,72
20	10	177	75	3	4	4	20000	174,71	195,34
25	12,5	192	90	3	5	4	25000	232,57	276,25
30	15	192	90	3	6	5	30000	304,19	349,11
32	16	231	106	4	6	5	32000	368,54	425,28
40	20	250	125	4	8	6	40000	513,83	608,17

FRESE CILINDRICHE FRONTALI MULTIFLUTE FINISHING CUTTERS MEHRSCHNEIDENFRÄSER
FRAISES DEUX TAILLES FRESAS CILÍNDRICAS FRONTALES

CM 43

CARMON NORM. — N — λ 20°



CM43

D js14	L	l	CM	Z	CODE	HSS+8%Co 1430..... €
16	170	90	2	6	16000	120,42
18	200	100	3	8	18000	180,59
20	210	110	3	8	20000	193,15
22	210	110	3	8	22000	205,64
24	225	125	3	8	24000	240,45
25	225	125	3	8	25000	261,69
26	250	125	4	8	26000	290,94
28	265	140	4	8	28000	318,36
30	265	140	4	8	30000	346,17
32	285	160	4	10	32000	388,86
34	285	160	4	10	34000	416,16
36	305	180	4	10	36000	451,52
38	310	185	4	10	38000	517,44
40	315	190	4	10	40000	579,44

FRESE CILINDRICHE FRONTALI PER SGROSSARE
FRAISES DEUX TAILLES D'EBAUCHE
FRESAS CILÍNDRICAS FRONTALES PARA DESBASTE
ROUGHING END MILLS SCHRUPPFRÄSER

CM 44TF

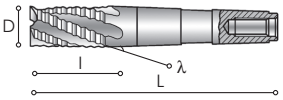
DIN 845B

NR

λ 30°

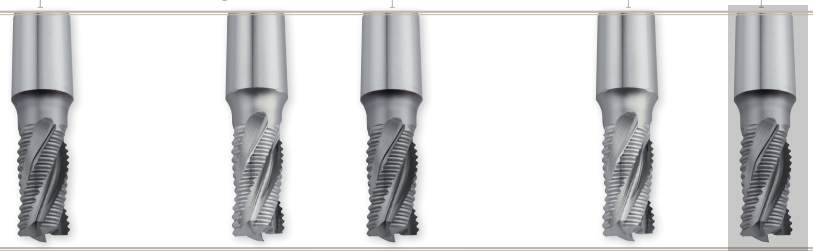
CM 44TF

CM 44



CM44

CM44TF



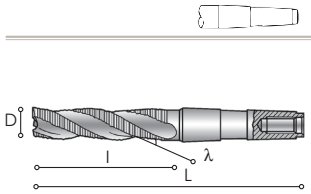
D js14	L	l	CM	Z	CODE	RESISTOR 1440..... €	CODE	HSS+8%Co 1444..... €	HSS+8%Co 2444..... € SAPPHIRE MULTI	CODE	RESISTOR 1444..... €	RESISTOR 2444..... € SAPPHIRE MULTI
16	117	32	2	3	16030	91,82	16000	78,40	98,63	16030	96,42	118,44
18	117	32	2	3	18030	101,08	18000	86,13	107,11	18030	106,14	129,12
20	140	38	3	4	20030	131,97	20000	114,23	147,14	20030	143,97	179,87
22	140	38	3	4	22030	147,48	22000	122,92	156,71	22030	154,85	191,82
24	147	45	3	4	24030	168,04	24000	140,02	193,17	24030	176,44	233,23
25	147	45	3	4	25030	175,09	25000	144,22	197,79	25030	183,84	241,37
26	147	45	3	4	26030	186,92	26000	150,45	215,30	26030	196,27	265,71
28	147	45	3	4	28030	201,97	28000	166,67	233,15	28030	212,06	283,08
30	147	45	3	5	30030	225,97	30000	183,34	251,48	30030	237,27	310,81
32	178	53	4	5	32030		32000	219,38	296,71	32030	273,44	356,17
35	178	53	4	5	35030	287,37	35000	240,00	319,39	35030		
36	178	53	4	5	36030	297,91	36000	247,22	335,60	36030		
40	188	63	4	6	40030		40000	293,09	395,73	40030	381,11	492,54
45	188	63	4	6	45030	546,32	45000	416,46		45030		
50	233	75	5	6	50030	765,25	50000	565,86		50030		

CM 48

DIN 845B

NR

λ 30°



CM48

D js14	L	l	CM	Z	CODE	HSS+8%Co 1480..... €	HSS+8%Co 2480..... € SAPPHIRE MULTI	CODE	RESISTOR 1480..... €	RESISTOR 2480..... € SAPPHIRE MULTI
16	148	63	2	3	16000	102,09	128,97	16030	128,10	157,59
18	148	63	2	3	18000	106,93	134,29	18030	134,41	164,52
20	177	75	3	4	20000	150,40	204,59	20030	195,98	254,73
22	177	75	3	4	22000	162,52	217,92	22030	211,39	271,68
24	192	90	3	4	24000	208,14	276,71	24030	270,43	345,22
25	192	90	3	4	25000	212,50	281,50	25030	278,17	353,73
28	192	90	3	4	28000	239,55	320,97	28030	315,41	404,41
30	192	90	3	5	30000	254,68	337,61	30030	334,42	425,32
32	231	106	4	5	32000	319,58	427,66	32030	425,70	544,39
35	231	106	4	5	35000	356,79	468,60	35030	476,06	599,78
38	250	125	4	5	38000	454,97	588,34	38030	618,35	768,06
40	250	125	4	6	40000	468,78	603,54	40030	651,98	805,06
45	250	125	4	6	45000	589,86		45030	795,51	
50	308	150	5	6	50000	817,73		50030	1194,75	

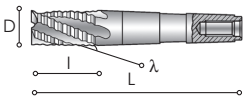
FRESE CILINDRICHE FRONTALI PER SEMIFINIRE
FRAISES DEUX TAILLES DE SEMIFINITION
SEMIFINISHING END MILLS
FRESAS CILÍNDRICAS FRONTALES
SCHRUPP-SCHLICHTFRÄSER PARA SEMIACABADO

CM 45TF

DIN 845B

NF

λ 30°



CM45TF

D js14	L	l	CM	Z	CODE	HSS+8%Co 1450..... €
16	117	32	2	3	16000	78,40
18	117	32	2	3	18000	86,13
20	140	38	3	4	20000	109,94
22	140	38	3	4	22000	122,92
24	147	45	3	4	24000	140,02
25	147	45	3	4	25000	144,22
26	147	45	3	4	26000	150,45
28	147	45	3	4	28000	166,67
30	147	45	3	5	30000	183,34
32	178	53	4	5	32000	219,38
35	178	53	4	5	35000	230,99
36	178	53	4	5	36000	237,95
40	188	63	4	6	40000	293,09
45	188	63	4	6	45000	400,85
50	233	75	5	6	50000	565,86

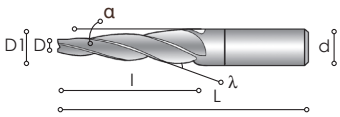
CS 47

DIN 1889EA

N

λ 30°

CS47



α ± 10'	D k12	D1	L	l	d h8	Z	CODE	HSS+8%Co 1470..... €
0° 30'	3	3,3	60	17	6	3	03003	28,38
0° 30'	4	4,4	65	23	6	3	03004	28,38
0° 30'	5	5,5	70	29	6	3	03005	35,62
0° 30'	6	6,5	75	29	10	4	03006	42,92
1°	3	3,5	60	15	6	3	10003	31,39
1°	4	4,7	65	20	6	3	10004	31,39
1°	5	5,9	70	26	6	3	10005	38,30
1°	6	7,4	80	40	8	4	10006	45,17
1°	8	9,6	90	45	10	4	10008	50,92
1°30	3	3,8	60	16	6	3	13003	40,17
1°30	4	5	65	19	6	3	13004	42,19
1°30	5	6,3	70	25	6	3	13005	44,94
1°30	6	8,1	80	40	8	4	13006	48,81
1°30	8	10,35	90	45	10	4	13008	53,87
2°	3	4,1	60	16	6	3	20003	29,85
2°	4	6	65	28,5	6	3	20004	38,30
2°	5	6,75	70	25	6	3	20005	44,19
2°	6	8,8	80	40	8	4	20006	50,09
2°	8	11,15	90	45	12	4	20008	83,58
3°	6	12,3	100	60	12	4	30006	67,31
3°	8	16,4	125	80	16	4	30008	98,64
4°	6	13	100	50	12	4	40006	80,83
4°	8	18,5	125	75	20	4	40008	118,68
5°	6	16,5	112	60	16	4	50006	109,79
6°	8	17,45	100	45	16	4	60008	169,66
7°	6	19,75	112	56	20	4	70006	197,97
2°52	6	10	95	40	10	4	25206	68,54
2°52	12	20	140	80	20	4	25212	86,58
4° 34	6	16	112	62,5	16	4	43406	197,97
5° 43	6	14	95	40	12	4	54306	80,77
7° 7	6	20	120	56	20	4	77006	118,75

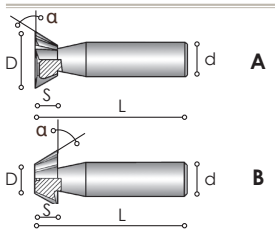
FRESE AD ANGOLO DOVETAIL CUTTERS WINKELFRÄSER FRAISES D'ANGLE FRESAS EN ANGULO

TCL 60A

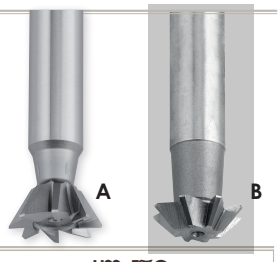
DIN 1833A/B — N — λ 0°

TCL 60B

DIN 1833A/B — N — λ 0°



TCL60



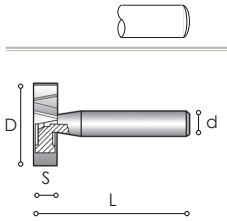
D js16	α ± 30'	L	S js14	d h8	Z	CODE	HSS+5%Co 1601..... A 1602..... B €
16	45°	60	4	12	8	16450	57,33
20	45°	63	5	12	8	20450	74,85
25	45°	67	6,3	16	10	25450	92,93
32	45°	71	8	16	12	32450	134,21
16	60°	60	6,3	12	8	16600	57,33
20	60°	63	8	12	8	20600	74,85
25	60°	67	10	16	10	25600	92,93
32	60°	71	12,5	16	12	32600	134,21
16	70°	60	7	12	8	16700	57,33
20	70°	63	9	12	8	20700	74,85
25	70°	67	11	16	10	25700	92,93

TCL 61

DIN 850/B

N

λ 10°



TCL61

D + 0,05 - 0	S d9	L	d h8	Z	CODE	HSS+5%Co 1610..... €
10,5	2	50	6	6	10520	45,67
10,5	2,5	50	6	6	10525	45,67
10,5	3	50	6	6	10530	45,67
13,5	2	56	10	8	13520	50,58
13,5	3	56	10	8	13530	50,58
13,5	4	56	10	8	13540	50,58
16,5	3	56	10	8	16530	59,56
16,5	4	56	10	8	16540	59,56
16,5	5	56	10	8	16550	59,56
16,5	6	56	10	8	16560	59,56
19,5	3	56	10	8	19530	67,72
19,5	4	56	10	8	19540	67,72
19,5	5	56	10	8	19550	67,72
19,5	6	56	10	8	19560	67,72
22,5	4	56	10	8	22540	79,15
22,5	5	56	10	8	22550	79,15
22,5	6	56	10	8	22560	79,15
22,5	8	56	10	8	22580	79,15
25,5	5	56	10	8	25550	91,34
25,5	6	56	10	8	25560	91,34
25,5	7	56	10	8	25570	91,34
25,5	8	56	10	8	25580	91,34
28,5	6	56	10	8	28560	108,49
28,5	8	56	10	8	28580	108,49
28,5	10	63	12	8	28510	108,49
32,5	6	56	10	10	32560	126,43
32,5	7	56	10	10	32570	126,43
32,5	8	56	10	10	32580	126,43
32,5	10	63	12	10	32510	126,43
45,5	10	63	12	10	45510	177,86

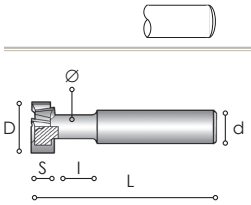
FRESE PER SCANALATURA A "T" T-SLOT CUTTERS T-NUTENFRÄSER
FRAISES POUR RAINURES A "T" FRESAS PARA RANURAS EN "T"

TCL 62

DIN 851AA

N

λ 12°-15°



TCL62

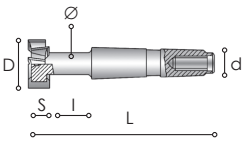
D + 0,05 / 0	S +0 / - 0,05	Ø	L	l	d h8	Z	CODE	HSS+5%Co 1620..... €
12,5	6	5	57	11	10	6	12500	67,72
16	8	7	62	14	10	6	16000	79,15
18	8	8	70	17	12	6	18000	87,28
19	9	8	70	17	12	6	19000	90,57
21	9	10	74	20	12	6	21000	100,32
22	10	10	74	20	12	6	22000	103,61
25	11	12	82	23	16	6	25000	119,92
28	12	13	85	25	16	6	28000	136,25
32	14	15	90	28	16	8	32000	158,26

TCM 63

DIN 851/B

N

λ 12°-15°



TCM63

D + 0,05 / 0	S +0 / - 0,05	Ø	L	I	CM	Z	CODE	HSS+5%Co 1630..... €
22	10	10	98	20	2	6	22000	118,19
25	11	12	103	23	2	6	25000	128,67
28	12	13	106	25	2	6	28000	145,53
32	14	15	111	28	2	8	32000	174,81
36	16	17	133	32	3	8	36000	194,74
40	18	19	138	35	3	8	40000	233,52
45	20	21	143	38	3	8	45000	283,46
50	22	25	173	43	4	10	50000	354,45
56	24	28	182	50	4	10	56000	456,77

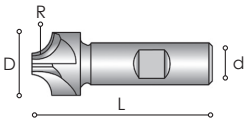
FRESE A PROFILO CONCAVO AD UN QUARTO DI CERCHIO QUARTER CIRCLE CUTTERS VIERTELKREISFRÄSER
FRAISES A PROFIL CONCAVE A UN QUART DE CERCLE FRESAS DE PERFIL CÓNCAVO DE UN CUARTO DE CÍRCULO

RC 135

DIN 6518/B

N

λ 0°



RC135

R H11	D js14	L	d h6	Z	CODE	HSS+5%Co 1135..... €
1	8	60	10	4	01000	40,81
1,5	9	60	10	4	15000	40,81
2	10	60	10	4	20000	40,81
2,5	11	60	10	4	25000	40,99
3	12	60	12	4	30000	61,93
3,5	14	60	12	4	35000	64,92
4	14	60	12	4	40000	64,92
4,5	16	60	12	4	45000	70,61
5	16	60	16	4	50000	70,61
5,5	20	67	16	4	55000	83,61
6	20	67	16	4	60000	83,61
6,5	24	71	16	4	65000	94,17
7	24	71	16	4	70000	94,17
7,5	24	71	16	4	75000	94,17
8	24	71	16	4	80000	94,17
8,5	28	85	20	4	85000	104,05
9	28	85	20	4	90000	104,05
9,5	28	85	20	4	95000	104,05
10	28	85	20	4	10000	104,05
10,5	32	90	20	4	10500	129,79
11	32	90	20	4	11000	129,79
12	34	90	20	4	12000	130,22
13	42	100	20	4	13000	221,14
14	44	100	20	6	14000	222,33
15	46	100	20	6	01500	277,19
16	48	100	20	6	16000	277,75
18	52	112	20	6	18000	406,47
20	58	112	20	6	02000	546,63

FRESE A DISCO A TRE TAGLI DIRITTI SIDE AND FACE CUTTERS WITH STRAIGHT TEETH GERADEVERZAHNTE SCHEIBENFRÄSER FRAISES A DISQUE A TROIS TAILLES DROITES FRESAS DE DISCO DE TRES CORTES RECTOS

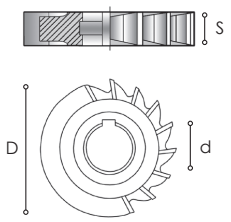
CR 81

DIN 885/B

H

λ 0°

CR81



D js16	S k11	d H7	Z	CODE	HSS+5%Co 181..... €
50	4	16	20	...150004	88,44
50	5	16	20	...150005	88,44
50	6	16	20	...150006	94,54
50	8	16	20	...150008	98,61
50	10	16	20	...150010	116,11
63	4	22	22	...263004	101,38
63	5	22	22	...263005	106,90
63	6	22	22	...263006	106,90
63	8	22	22	...263008	118,17
63	10	22	22	...263010	130,46
63	12	22	20	...263012	137,10
63	14	22	20	...263014	148,64
80	6	22	24	...280006	143,08
80	8	22	24	...280008	148,93
80	10	22	24	...280010	160,32
80	12	22	24	...280012	172,62
80	14	22	20	...280014	184,72
80	16	22	20	...280016	206,30
80	18	22	20	...280018	213,52
80	6	27	24	...380006	143,08
80	8	27	24	...380008	148,93
80	10	27	24	...380010	160,32
80	12	27	24	...380012	172,62
80	14	27	20	...380014	184,72
80	16	27	20	...380016	195,21
80	18	27	20	...380018	213,52
100	6	27	26	...310006	184,72
100	8	27	26	...310008	201,38
100	10	27	26	...310010	217,87
100	12	27	26	...310012	236,40
100	14	27	22	...310014	252,75
100	16	27	22	...310016	267,16
100	18	27	22	...310018	285,63
100	20	27	22	...310020	313,88
100	18	32	22	...410018	285,63
100	20	32	22	...410020	302,11
125	8	32	30	...412508	273,33
125	10	32	30	...412510	291,81
125	12	32	24	...412512	313,44
125	14	32	24	...412514	337,05

FRESE A DISCO A TRE TAGLI DIRITTI SIDE AND FACE CUTTERS WITH STRAIGHT TEETH GERADEVERZAHNTE SCHEIBENFRÄSER FRAISES A DISQUE A TROIS TAILLES DROITES FRESAS DE DISCO DE TRES CORTES RECTOS

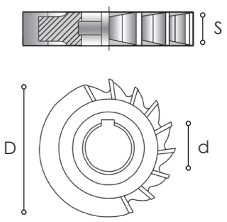
CR 81

DIN 885/B

H

λ 0°

CR81



D js16	S k11	d H7	Z	CODE	HSS+5%Co 181..... €
125	16	32	24	...412516	367,89
125	18	32	24	...412518	411,00
125	20	32	24	...412520	441,89
160	10	32	36	...416010	433,66
160	12	32	30	...416012	464,69
160	14	32	30	...416014	500,72
160	16	32	30	...416016	534,38
160	18	32	30	...416018	571,96
160	20	32	30	...416020	607,82
160	22	32	30	...416022	682,34
160	25	32	30	...416025	801,53
160	28	32	30	...416028	913,72
160	32	32	30	...416032	1055,82
160	18	40	30	...516018	571,96
160	20	40	30	...516020	607,82
160	22	40	30	...516022	682,34
160	25	40	30	...516025	801,53
160	28	40	30	...516028	913,72
160	32	40	30	...516032	1055,82

FRESE A DISCO A TRE TAGLI ALTERNATI SIDE AND FACE CUTTERS WITH STAGGERED TEETH KREUZVERZAHNTE SCHEIBENFRÄSER FRAISES A DISQUE A TROIS TAILLES ALTERNEES FRESAS DE DISCO DE TRES CORTES ALTERNOS

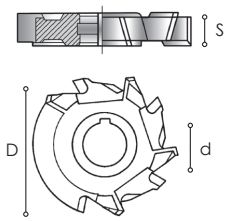
CR 83

DIN 885/A

N

λ 8°-15°

CR83



D js16	S k11	d H7	Z	CODE	HSS+5%Co 183..... €
50	3	16	14	...150003	99,75
50	4	16	14	...150004	87,58
50	5	16	14	...150005	87,58
50	6	16	14	...150006	93,62
50	7	16	14	...150007	97,65
50	8	16	14	...150008	97,65
50	9	16	14	...150009	109,70
50	10	16	14	...150010	113,06
63	3	22	16	...263003	126,13
63	4	22	16	...263004	100,39
63	5	22	16	...263005	105,87
63	6	22	16	...263006	105,87
63	7	22	14	...263007	111,35
63	8	22	14	...263008	117,03
63	9	22	14	...263009	123,14
63	10	22	14	...263010	129,19
63	12	22	14	...263012	135,76
63	14	22	14	...263014	148,64
63	16	22	14	...263016	158,01
63	18	22	14	...263018	164,42
80	3	22	18	...280003	152,66
80	4	22	18	...280004	126,13
80	5	22	18	...280005	134,35
80	6	22	18	...280006	141,68
80	7	22	16	...280007	146,54
80	8	22	16	...280008	146,54
80	9	22	16	...280009	152,66
80	10	22	16	...280010	164,95
80	12	22	16	...280012	177,60
80	14	22	16	...280014	190,05
80	16	22	16	...280016	202,82
80	18	22	16	...280018	213,52
80	20	22	16	...280020	226,36
80	3	27	18	...380003	152,66
80	4	27	18	...380004	126,13
80	5	27	18	...380005	134,35
80	6	27	18	...380006	141,68
80	7	27	16	...380007	146,54
80	8	27	16	...380008	146,54
80	9	27	16	...380009	152,66

FRESE A DISCO A TRE TAGLI ALTERNATI SIDE AND FACE CUTTERS WITH STAGGERED TEETH KREUZVERZAHNTE SCHEIBENFRÄSER FRAISES A DISQUE A TROIS TAILLES ALTERNEES FRESAS DE DISCO DE TRES CORTES ALTERNOS

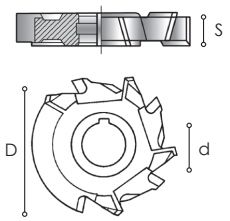
CR 83

DIN 885/A

N

λ 8°-15°

CR83



D js16	S k11	d H7	Z	CODE	HSS+5%Co 183..... €
80	10	27	16	...380010	164,95
80	12	27	16	...380012	177,60
80	14	27	16	...380014	190,05
80	16	27	16	...380016	202,82
80	18	27	16	...380018	213,52
80	20	27	16	...380020	226,36
100	3	27	22	...310003	209,63
100	4	27	22	...310004	169,98
100	5	27	22	...310005	175,02
100	6	27	22	...310006	182,93
100	7	27	18	...310007	191,35
100	8	27	18	...310008	199,42
100	9	27	18	...310009	207,59
100	10	27	18	...310010	215,75
100	12	27	18	...310012	234,11
100	14	27	18	...310014	252,75
100	16	27	18	...310016	267,16
100	18	27	18	...310018	285,63
100	20	27	18	...310020	302,11
100	3	32	22	...410003	209,63
100	4	32	22	...410004	169,98
100	5	32	22	...410005	175,02
100	6	32	22	...410006	182,93
100	7	32	18	...410007	191,35
100	8	32	18	...410008	199,42
100	9	32	18	...410009	207,59
100	10	32	18	...410010	215,75
100	12	32	18	...410012	234,11
100	14	32	18	...410014	252,75
100	16	32	18	...410016	267,16
100	18	32	18	...410018	285,63
100	20	32	18	...410020	302,11
125	4	32	24	...412504	258,51
125	5	32	24	...412505	253,66
125	6	32	24	...412506	253,66
125	7	32	20	...412507	264,58
125	8	32	20	...412508	270,68
125	10	32	20	...412510	288,98
125	12	32	20	...412512	310,39
125	14	32	20	...412514	337,05

FRESE A DISCO A TRE TAGLI ALTERNATI SIDE AND FACE CUTTERS WITH STAGGERED TEETH KREUZVERZAHNTE SCHEIBENFRÄSER FRAISES A DISQUE A TROIS TAILLES ALTERNEES FRESAS DE DISCO DE TRES CORTES ALTERNOS

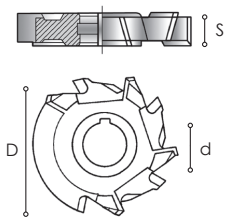
CR 83

DIN 885/A

N

λ 8°-15°

CR83



D js16	S k11	d H7	Z	CODE	HSS+5%Co 183..... €
125	16	32	20	...412516	367,89
125	18	32	20	...412518	411,00
125	20	32	20	...412520	441,89
125	22	32	20	...412522	500,01
125	25	32	18	...412525	585,55
160	5	32	26	...416005	417,21
160	6	32	26	...416006	376,56
160	7	32	26	...416007	424,35
160	8	32	26	...416008	396,82
160	10	32	22	...416010	429,44
160	12	32	22	...416012	460,17
160	14	32	22	...416014	500,72
160	16	32	24	...416016	534,38
160	18	32	24	...416018	571,96
160	20	32	22	...416020	607,82
160	22	32	22	...416022	682,34
160	25	32	22	...416025	801,47
160	32	32	22	...416032	1055,82
160	5	40	26	...516005	417,21
160	6	40	26	...516006	376,56
160	7	40	26	...516007	424,35
160	8	40	26	...516008	396,82
160	10	40	22	...516010	429,44
160	12	40	22	...516012	460,17
160	14	40	22	...516014	500,72
160	16	40	24	...516016	534,38
160	18	40	24	...516018	571,96
160	20	40	22	...516020	607,82
160	32	40	22	...516032	1055,82
200	10	40	34	...520010	649,89
200	12	40	30	...520012	693,14
200	14	40	30	...520014	749,24
200	16	40	30	...520016	810,83
200	18	40	30	...520018	878,98
200	20	40	28	...520020	953,46
200	28	40	28	...520028	1238,18
250	14	40	36	...525014	1157,67
250	16	40	36	...525016	1281,84
250	18	40	36	...525018	1374,32
250	20	40	36	...525020	1435,83

FRESE SOTTILI A TAGLI ALTERNATI STUGGERED TEETH SAWS
SCHMALE SCHEIBERFRÄSER,KREUZVERZAHNT FRAISE CIRCULAIRE DENTURE ALTERNÉE EXÉCUTION MINCE FRESU DE DISCO 3 CORTES

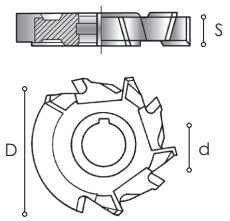
CR 85

DIN 1834/A

H

λ 8°-15°

CR85



D js16	S k11	d H7	Z	CODE	HSS+5%Co 185..... €
63	1,6	22	28	...263016	127,45
63	2	22	28	...263002	115,47
63	2,5	22	28	...263025	115,47
80	1,6	27	32	...380016	143,44
80	2	27	32	...380002	143,44
80	2,5	27	32	...380025	143,44
100	1,6	32	36	...410016	171,80
100	2	32	36	...410002	171,80
100	2,5	32	36	...410025	171,80
125	1,6	32	40	...412516	230,95
125	2	32	40	...412502	230,95
125	2,5	32	40	...412525	230,95
125	3	32	40	...412503	230,95
160	2	40	44	...516002	332,29
160	2,5	40	44	...516025	332,29
160	3	40	44	...516003	332,29
160	4	40	44	...516004	332,29

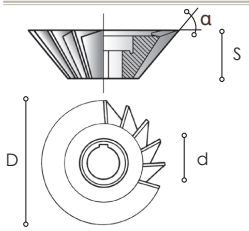
FA 91

DIN 842-A

H

λ 0°

FA91



D js16	α ± 25'	S js14	d H7	Z	CODE	HSS+5%Co 1910..... €
40	45°	10	10	14	40045	115,73
50	45°	13	13	16	50045	139,98
63	45°	18	16	16	63045	186,86
80	45°	22	22	18	80045	295,07
100	45°	28	28	20	10045	502,43
40	50°	13	10	14	40050	115,73
50	50°	16	13	16	50050	139,98
63	50°	20	16	16	63050	186,86
80	50°	25	22	18	80050	295,07
100	50°	32	27	20	10050	502,43
40	60°	13	10	14	40060	115,73
50	60°	16	13	16	50060	139,98
63	60°	20	16	16	63060	186,86
80	60°	25	22	18	80060	295,07
100	60°	32	27	20	10060	502,43

FRESE AD ANGOLO PRISMATICHE DOUBLE ANGLE CUTTERS PRISMENFRÄSER FRAISES ISOCELES FRESAS EN ANGULO PRISMÁTICAS

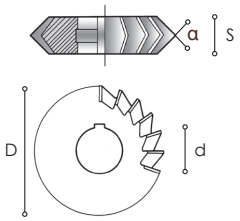
FP 92

DIN 847

H

λ 0°

FP92



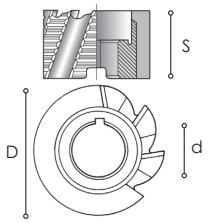
D js16	α ± 30'	S js16	d H7	Z	CODE	HSS+5%Co 1920..... €
50	45°	8	16	16	50045	117,96
63	45°	10	22	18	63045	159,88
80	45°	12	27	18	80045	239,29
100	45°	18	32	20	10045	343,47
50	60°	10	16	16	50060	126,90
63	60°	14	22	18	63060	169,20
80	60°	18	27	18	80060	245,68
100	60°	25	32	20	10060	373,72
50	90°	14	16	16	50090	132,24
63	90°	20	22	18	63090	182,49
80	90°	22	27	18	80090	270,13
100	90°	32	32	20	10090	401,62

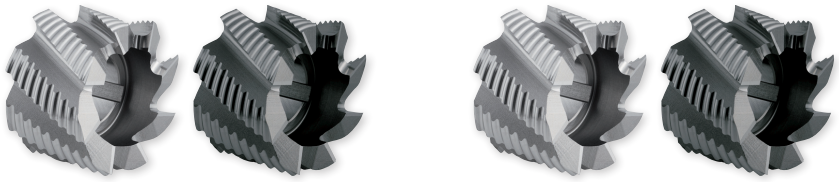
FRESE CILINDRICHE FRONTALI PER SGROSSARE ROUGHING SHELL END MILLS WALZENSTIRNFRÄSER IN SCHRUPPAUSFÜHRUNG FRAISES DEUX TAILLES D'EBAUCHE FRESAS CILÍNDRICAS FRONTALES PARA DESBASTE

CF 94

DIN 1880 | NR | λ 30°

CF94





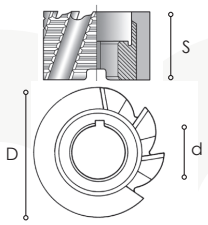
D js16	S k16	d H7	Z	CODE	HSS+8%Co 1940..... €	HSS+8%Co 2940..... € SAPPHIRE MULTI	CODE	RESISTOR 1940..... €	RESISTOR 2940..... € SAPPHIRE MULTI
40	32	16	6	40000	158,40	219,40	40030	208,24	274,24
50	36	22	6	50000	209,14	276,92	50030	286,78	362,32
63	40	27	8	63000	296,55	394,33	63030	406,45	515,22
80	45	27	10	80000	464,33	594,71	80030	651,45	800,53
100	50	32	12	10000	699,11	882,06	10030	971,15	1.181,31
160	63	50	16	16000	2.071,07				

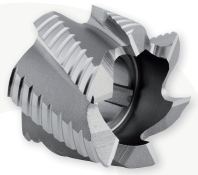
FRESE CILINDRICHE FRONTALI PER SEMIFINIRE SEMIFINISHING SHELL END MILLS WALZENSTIRNFRÄSER IN SCHRUPPSCHLICHT AUSFÜHRUNG FRAISES DEUX TAILLES DE SEMIFINITION FRESAS CILÍNDRICAS FRONTALES PARA SEMIACABADO

CF 95

DIN 1880 | NF | λ 30°

CF95





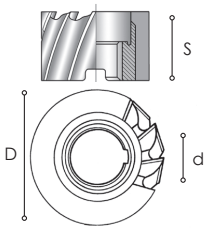
D js16	S k16	d H7	Z	CODE	HSS+8%Co 1950..... €
40	32	16	6	40000	158,40
50	36	22	6	50000	209,14
63	40	27	8	63000	296,55
80	45	27	10	80000	464,33
100	50	32	12	10000	699,11

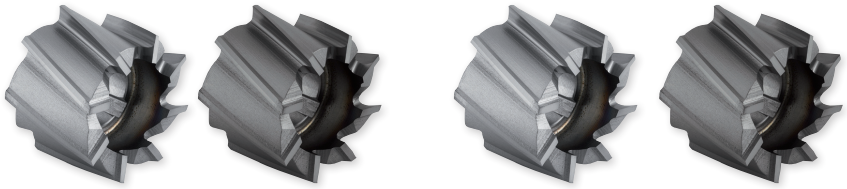
FRESE FRAISES | CILINDRICHE DEUX | FRONTALI TAILLES | SHELL FRESAS | END MILLS CILÍNDRICAS | WALZENSTIRNFRÄSER FRONTALES

CF 96

DIN 1880 | N | λ 20°

CF96





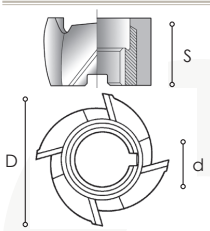
D js16	S k16	d H7	Z	CODE	HSS+8%Co 1960..... €	HSS+8%Co 2960..... € SAPPHIRE MULTI	CODE	RESISTOR 1960..... €	RESISTOR 2960..... € SAPPHIRE MULTI
40	32	16	8	40000	119,09	176,28	40030	160,97	222,24
50	36	22	8	50000	154,98	217,35	50030	214,52	282,83
63	40	27	10	63000	221,72	312,02	63030	297,87	395,77
80	45	27	10	80000	332,81	450,03	80030	458,69	588,50
100	50	32	12	10000	535,87	702,51	10030	732,68	918,99

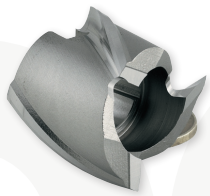
FRESE FRAISES | CILINDRICHE DEUX | FRONTALI TAILLES | SHELL FRESAS | END MILLS CILÍNDRICAS | WALZENSTIRNFRÄSER FRONTALES

CF 97

DIN 1880 | W | λ 40°

CF97

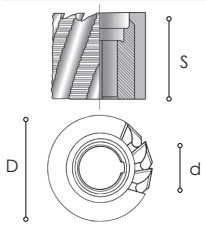




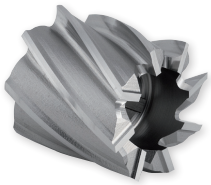
D js16	S k16	d H7	Z	CODE	HSS+5%Co 1970..... €
40	32	16	3	40000	114,18
50	36	22	3	50000	148,42
63	40	27	4	63000	211,10
80	45	27	4	80000	313,76
100	50	32	4	10000	502,33
125	56	40	5	12500	924,85

CF 98 DIN 841 N λ 30°

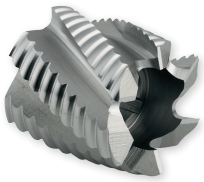
CF 99 DIN 841 NR λ 30°



CF98



CF99



D js16	S k16	d H7	CF98 Z	CF99 Z	CODE	HSS+8%Co 1980..... €	HSS+8%Co 1990..... €
30	30	13	6	5	30000	104,59	128,75
35	35	16	8	5	35000	117,02	145,50
40	40	16	8	6	40000	146,81	179,00
50	50	22	8	6	50000	219,15	232,43
60	60	27	10	8	60000	298,96	363,53
75	75	27	10	10	75000	512,37	615,66

FRESE A DISCO PER DENTARE CREMAGLIERE. ANGOLO DI PRESSIONE 20° RACK MILLING CUTTERS. PRESSURE ANGLE 20° ZAHNSTANGENFRÄSER. 20° EINGRIFFSWINKEL FRAISES A DISQUE POUR DENTELLER LES CREMAILLERES. ANGLE DE PRESSION 20° FRESAS DE DISCO PARA DENTAR CREMALLERAS. ÁNGULO DE PRESIÓN 20°

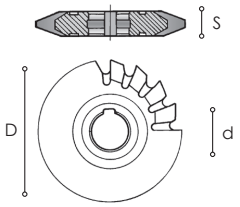
SCR 121

CARMON NORM.

N

λ 0°

SCR121



Mod	D js16	S js16	d H7	Z	CODE	HSS+5%Co 1121..... €
1	100	8	22	18	01000	304,05
1,5	100	8	22	18	15000	304,05
2	100	8	22	16	20000	312,60
2,5	100	9	22	16	25000	318,33
3	100	10	22	16	30000	329,65
3,5	100	11	22	16	35000	349,54
4	100	11	22	16	40000	349,54
4,5	125	13	27	18	45000	676,35
5	125	14	27	18	50000	676,35
5,5	125	15	27	18	55000	772,96
6	125	16	27	18	60000	772,96
6,5	125	17	27	18	65000	824,19
7	125	18	27	18	70000	824,19
8	125	21	27	18	80000	895,25
9	125	24	27	18	90000	895,25
10	125	26	27	18	10000	994,74

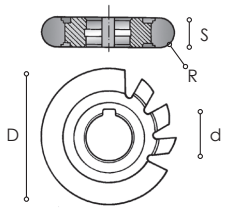
SCV 131

DIN 856

N

λ 0°

SCV131



R h11	D js16	S	d H7	Z	CODE	HSS+5%Co 1131..... €
1	50	2	16	14	01000	102,84
1,5	50	3	16	14	01500	107,74
2	50	4	16	14	02000	110,13
2,5	63	5	22	12	25000	117,08
3	63	6	22	12	30000	123,83
3,5	63	7	22	12	35000	142,11
4	63	8	22	12	40000	148,48
4,5	63	9	22	12	45000	155,44
5	63	10	22	12	50000	162,39
5,5	80	11	27	12	55000	190,38
6	80	12	27	12	60000	190,38
6,5	80	13	27	12	65000	205,51
7	80	14	27	12	70000	213,74
7,5	80	15	27	12	75000	222,43
8	80	16	27	12	80000	231,83
8,5	100	17	32	12	85000	272,76
9	100	18	32	12	90000	283,58
9,5	100	19	32	12	95000	294,39
10	100	20	32	12	10000	308,54

FRESE A PROFILO COSTANTE SEMICIRCOLARE CONCAVO CONCAVE CUTTERS HALBKREISFRÄSER KONKAV
FRAISES A PROFIL CONSTANT SEMI-CIRCULAIRE CONCAVE FRESAS DE PERFIL CONSTANTE SEMICIRCULAR CONCAVO

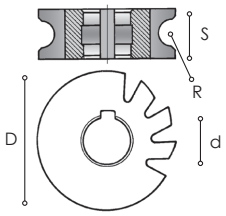
SCC 132

DIN 855/A

N

λ 0°

SCC132



R H11	D js16	S	d H7	Z	CODE	HSS+5%Co 1132..... €
1	50	6	16	14	01000	131,50
1,5	50	8	16	14	01500	137,21
2	50	9	16	14	02000	136,32
2,5	63	10	22	12	25000	140,12
3	63	12	22	12	30000	160,64
3,5	63	14	22	12	35000	176,16
4	63	16	22	12	40000	193,28
4,5	63	18	22	12	45000	208,08
5	63	20	22	12	50000	218,82
5,5	80	22	27	12	55000	246,69
6	80	24	27	12	60000	272,83
6,5	80	26	27	12	65000	298,45
7	80	28	27	12	70000	316,92
7,5	80	30	27	12	75000	378,76
8	80	32	27	12	80000	398,39
8,5	100	34	32	12	85000	436,37
9	100	34	32	12	90000	492,16
9,5	100	36	32	12	95000	516,49
10	100	36	32	12	10000	532,90

FRESE A DISCO PER DENTARE INGRANAGGI CILINDRICI. ANGOLO DI PRESSIONE 20° INVOLUTE GEAR CUTTERS. 20° PRESSURE ANGLE ZAHNFORMFRÄSER FÜR STIRNRAEDER. 20° EINGRIFFSWINKEL FRAISES A DISQUE POUR DENTELER LES ENGRENAGES CYLINDRIQUES. ANGLE DE PRESSION 20° FRESAS DE DISCO PARA DENTAR ENGRANAJES CILÍNDRICOS ANGULO DE PRESIÓN 20°

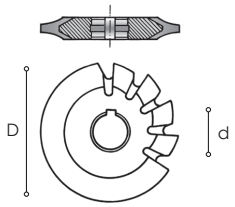
MOD 141

UNI 4501

N

λ 0°

FRESA TIPO/*TYPE*	1	2	3	4	5	6	7	8
N°DENTI DA FRESARE *NO. OF TEETH TO BE PRODUCED*	*12-13*	*14-16*	*17-20*	*21-25*	*26-34*	*35-54*	*55-134*	*135-00*



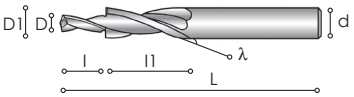
MOD141

Mod	D js16	d H7	CODE	HSS+5%Co 1141..... €
0,5	40	16	....0500 (1÷8)	101,25
0,75	40	16	....0750 (1÷8)	101,25
1	50	16	....0100 (1÷8)	95,57
1,25	50	16	....1250 (1÷8)	105,73
1,5	63	22	....1500 (1÷8)	110,61
1,75	63	22	....1750 (1÷8)	125,78
2	63	22	....2000 (1÷8)	123,37
2,25	63	22	....2250 (1÷8)	135,82
2,5	63	22	....2500 (1÷8)	127,12
2,75	70	27	....2750 (1÷8)	170,64
3	70	27	....3000 (1÷8)	154,21
3,25	70	27	....3250 (1÷8)	174,19
3,5	80	27	....3500 (1÷8)	188,83
3,75	80	27	....3750 (1÷8)	215,92
4	80	27	....4000 (1÷8)	231,71
4,25	80	27	....4250 (1÷8)	277,58
4,5	90	27	....4500 (1÷8)	310,07
4,75	90	27	....4750 (1÷8)	310,07
5	90	32	....5000 (1÷8)	348,38
5,25	90	32	....5250 (1÷8)	404,48
5,5	90	32	....5500 (1÷8)	404,48
5,75	90	32	....5750 (1÷8)	442,93
6	100	32	....6000 (1÷8)	442,93
6,5	100	32	....6500 (1÷8)	499,10
7	110	32	....7000 (1÷8)	590,57
8	110	32	....8000 (1÷8)	634,84
9	125	40	....9000 (1÷8)	1033,50
10	125	40	....1000 (1÷8)	1033,50

PUNTE PER LA FORATURA A DUE DIAMETRI DI PROFILATI STEP MILLS STUFENBOHRER
FORETS A GRADIN POUR SIEGES VIS BROCAS ESCALONADAS GRADUADAS PARA ALOJAMIENTOS ASIENTOS DE TORNILLOS

ALL 156

CARMON NORM. W λ 30°



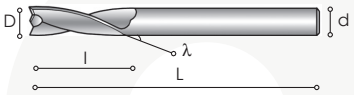
ALL156

D	D1	L	l	l1	d h8	Z	CODE	HSS+5%Co 4156..... €
6	12	83	13	35	10	2	61283	57,50
6	14	83	13	35	10	2	61483	60,62
5	12	100	15	35	10	2	51200	60,63
6	10	100	15	35	10	2	61000	60,62
6	11	100	15	35	10	2	61100	60,62
6	11,5	100	15	35	10	2	60011	60,62
6	12	100	15	35	10	2	61200	60,62
5,5	11,5	100	12	35	12	2	55115	60,62
6	11,5	100	12	35	12	2	60115	60,62
6,5	11,5	100	12	35	12	2	65115	60,62
6	12	100	12	35	12	2	61210	60,62
6,5	13,5	100	12	35	12	2	65135	68,74
6	11,5	122	18	45	12	2	61150	68,74
6	12	122	18	45	12	2	61212	68,74
6,5	11,5	122	18	45	12	2	65122	68,74
6,5	12	122	18	45	12	2	65012	68,74

FRESE A DUE TAGLIENTI PER LA LAVORAZIONE DI PROFILATI PANTOGRAPH END MILLS
KOPIERFRÄSER FRAISES POUR PANTOGRAPHE FRESAS PARA PANTÓGRAFO

ALL 157

CARMON NORM. W λ 30°

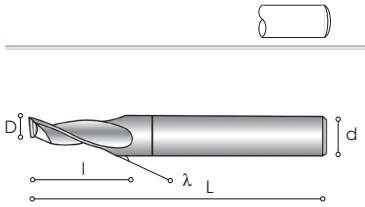


ALL157

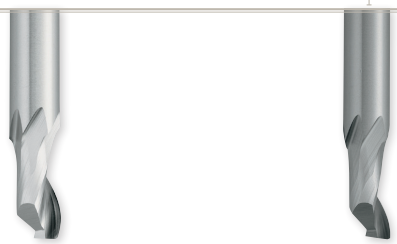
D	L	l	d h8	Z	CODE	HSS+5%Co 4157..... €
4	55	14	6	2	40000	21,60
5	58	15	6	2	50000	21,60
3-6	65	10/15	6	2	36000	32,22

ALL 158

CARMON NORM. W λ 30°



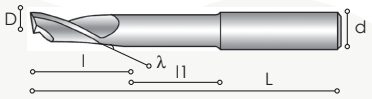
ALL158



D	L	l	d h8	Z	CODE	HSS+5%Co 4158..... €	CODE	HSS+5%Co 2158..... € SAPPHIRE MULTI
4	60	12	6	1	46000	26,69	46002	33,60
5	60	15	6	1	56015	25,72	56152	32,53
5	60	25	6	1	56000	29,55	56002	36,74
6	60	15	6	1	66000	26,69	66002	33,60
2,75/5	68	8/15	8	1	27550	38,08	27552	46,93
3	68	12	8	1	30000	24,87	30002	32,39
4	68	12	8	1	40000	24,20	40002	31,65
5	68	15	8	1	50000	24,20	58002	31,65
6	68	15	8	1	60000	24,20	60002	31,65
7	68	15	8	1	70000	24,20	70002	31,65
8	80	15	8	1	80000	24,20	88002	33,01
10	80	15	8	1	10008	30,18	10002	40,84
5	68	15	10	1	50010	25,72	51002	34,44
6	68	15	10	1	60010	25,72	61002	34,44
10	80	15	10	1	10080	33,94	10012	44,98

ALL 158

CARMON NORM. W λ 30°

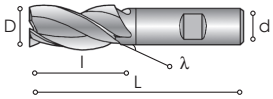


D	L	l	l1	d h8	Z	CODE	HSS+5%Co 4158..... €	CODE	HSS+5%Co 2158..... € SAPPHIRE MULTI
5	80	15	40	8	1	50080	28,50	50802	37,75
6	80	15	40	8	1	60080	28,50	60082	37,75
8	80	15	40	8	1	80080	28,50	80802	37,75
8	95	18	50	8	1	80095	28,90	89502	38,19
8	120	18	70	8	1	80120	30,25	81202	41,19
10	95	18	50	8	1	10000	32,24	10802	43,88
8	95	18	50	10	1	80010	35,93	81002	47,17
10	95	18	50	10	1	10010	34,95	10102	46,09
10	120	18	70	10	1	10120	35,93	10122	49,33

FRESE / FRAISES — CILINDRICHE / DEUX — FRONTALI / TAILLES — MULTIFLUTE / FRESAS — CUTTERS / CILÍNDRICAS — MEHRSCHNEIDENFRÄSER / FRONTALES

ALL 160 DIN 844/B — W — λ 40°

ALL 164 DIN 844/B — WR — λ 35°



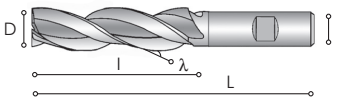
ALL160

ALL164

ALL160 D k10 **ALL164** D k12	L	l	d h6	**ALL160** Z	**ALL164** Z	CODE	**RESISTOR** 4160..... €	**RESISTOR** 4164..... €
6	57	13	6	2		60030	21,85	
8	69	19	10	2	3	80030	27,90	44,03
10	72	22	10	3	3	10030	31,93	45,00
12	83	26	12	3	3	12030	37,49	53,74
14	83	26	12	3		14030	42,88	
16	92	32	16	3	3	16030	53,10	71,06
18	92	32	16	3		18030	65,43	
20	104	38	20	3	3	20030	85,17	102,50
25	121	45	25	3	3	25030	149,97	179,96
32	133	53	32	3	3	32030	254,75	267,88

ALL 162 DIN 844/B W λ 40°

ALL 166 DIN 844/B WR λ 35°



ALL162

ALL166

ALL162 D k10 **ALL166** D k12	L	l	d h6	**ALL162** Z	**ALL166** Z	CODE	RESISTOR 4162..... €	RESISTOR 4166..... €
6	68	24	6	2		60030	23,18	
8	88	38	10	2		80030	37,64	
10	95	45	10	3	3	10030	39,19	55,74
12	110	53	12	3	3	12030	47,93	67,55
16	123	63	16	3	3	16030	73,61	94,44
20	141	75	20	3	3	20030	115,73	132,08
25	166	90	25	3	3	25030	196,52	236,94
32	186	106	32	3	3	32030	300,58	365,99