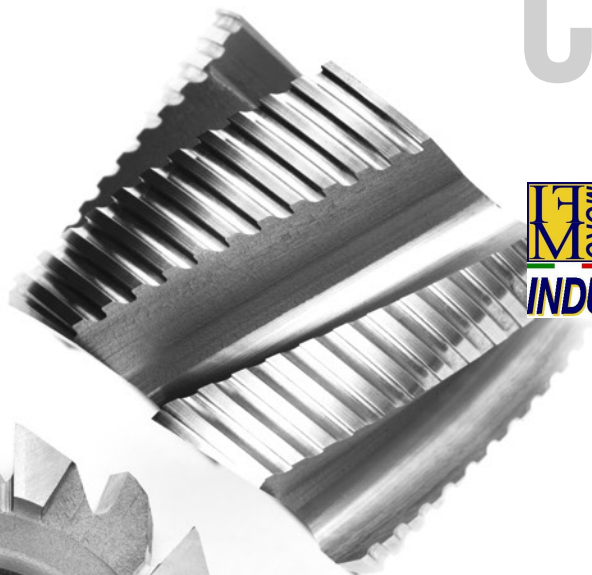
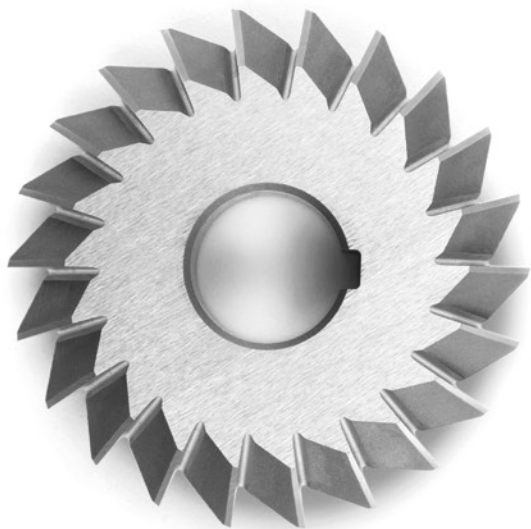
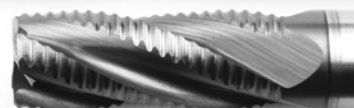
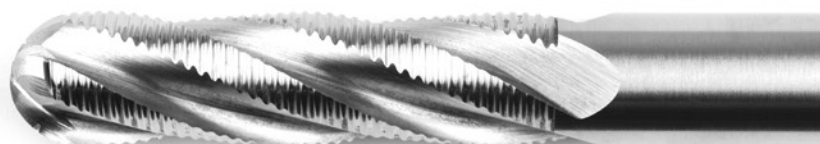
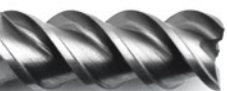
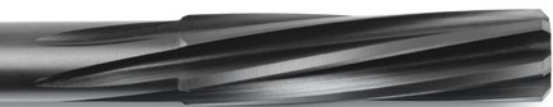




HSS-PM

CUTTING TOOLS

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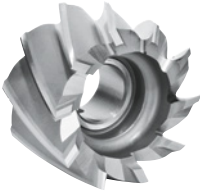
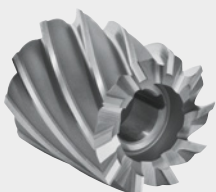
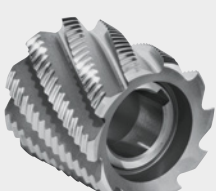
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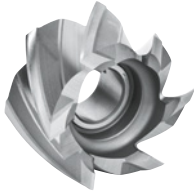
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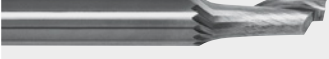
Serie/Series

		Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chiusa Cast iron	Pagina Page
02105												
		Z8/16		contornatura shouldering	●	●	●	○	○	●	●	26
02110												
		Z6/14 NF		semifinitura; spianatura semi-finishing; facemilling	●	●	●	○	○	●	●	26
02110												
		Z6/16 NR		sgrossatura; spianatura roughing; facemilling	●	●	●	○	○	●	●	27
02115												
		Z8/16		contornatura; spianatura shouldering; facemilling	●	●	●	○	○	●	●	27
02120												
		Z6/14 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	28
02120												
		Z6/14 NR		sgrossatura roughing	●	●	●	○	○	●	●	28
02125												
		Z6/14 NR		sgrossatura roughing	●	●	●	○	○	●	●	29
02130												
		Z6/10 NR		sgrossatura roughing	●	●	●	○	○	●	●	29

Serie/Series

		Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chiusa Cast Iron	Pagina Page
02135		Z4/6		contornatura; spianatura shouldering; facemilling	○	○	○	●	●	○	○	30
04105		Z16/38		apertura cava slotting	●	●	●	○	○	●	●	30
04105		Z18/46		apertura cava slotting	●	●	●	○	○	●	●	33
04110		Z32/68		apertura cava slotting	●	●	●	○	○	●	●	35
06105		Z20/30		fresatura di forma form milling	●	●	●	○	○	●	●	36
06110		Z16/26		fresatura di forma form milling	●	●	●	○	○	●	●	36
06115		Z18/24		fresatura di forma form milling	●	●	●	○	○	●	●	37
06120		Z24/30		fresatura di forma form milling	●	●	●	○	○	●	●	38

Serie/Series

	Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chiusa Cast iron	Pagina Page
06125 	Z26/30		fresatura di forma form milling	●	●	●	○	○	●	●	38
06130 	Z10/12		fresatura di forma form milling	●	●	●	○	○	●	●	39
06145 	Z10/12		fresatura di forma form milling	●	●	●	○	○	●	●	39
10102 	Z2		apertura cava slotting	●	●	●	●	○	●	●	40
10105 	Z2		apertura cava slotting	●	●	●	●	○	●	●	41
10110 High Performance 	Z2		apertura cava slotting	●	●	●	●	○	●	●	42
10110 	Z2		apertura cava slotting	●	●	●	●	○	●	●	43
10125 	Z2		apertura cava slotting	●	●	●	●	○	●	●	44
10140 	Z2		copiatura profiling	●	●	●	●	○	●	●	45
10155 	Z2		copiatura profiling	●	●	●	●	○	●	●	46
10170 	Z2		apertura cava slotting	●	●	●	●	○	●	●	47
11405 	Z1		apertura cava slotting	○	○	○	●	●	○	○	48
12105 	Z2		apertura cava slotting	○	○	●	●	●	○	○	48
12120 	Z2		apertura cava slotting	○	○	●	●	●	○	○	49

Serie/Series

	Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HSSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chiusa Cast Iron	Pagina Page
12505 	Z2		copiatura profiling	○	○	●	●	●	○	○	49
12520 	Z2		copiatura profiling	○	○	●	●	●	○	○	50
14105 High Performance 	Z3		contornatura shouldering	●	●	●	●	○	●	●	50
14105 	Z3		contornatura shouldering	●	●	●	●	○	●	●	51
14120 	Z3		contornatura shouldering	●	●	●	●	○	●	●	52
14135 	Z3		contornatura shouldering	●	●	●	●	○	●	●	53
14150 	Z3		contornatura shouldering	●	●	●	●	○	●	●	54
14155 	Z3		contornatura shouldering	●	●	●	●	○	●	●	55
14160 	Z3		contornatura shouldering	●	●	●	●	○	●	●	56
TORNADO 14505 	Z3/4		contornatura shouldering	●	●	●	○	○	●	●	57
TORNADO 14520 	Z3/4		contornatura shouldering	●	●	●	○	○	●	●	57
14805 	Z3		contornatura shouldering	○	○	○	●	●	○	○	58
14820 	Z3		contornatura shouldering	○	○	○	●	●	○	○	58
14850 	Z3		contornatura shouldering	○	○	○	●	●	○	○	59
14855 	Z3		contornatura shouldering	○	○	○	●	●	○	○	59

Serie/Series

		Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chiusa Cast iron	Pagina Page
15105		Z3 WF		semifinitura semi-finishing	○	○	○	●	●	○	○	60
15120		Z3 WF		semifinitura semi-finishing	○	○	○	●	●	○	○	60
17105		Z4/8		contornatura shouldering	○	○	●	○	○	●	●	61
17120		Z4/8		contornatura shouldering	○	○	●	○	○	●	●	62
17135		Z4/6		contornatura shouldering	○	○	●	○	○	●	●	63
17150		Z4/8		contornatura shouldering	○	○	●	○	○	●	●	64
17155		Z4/8		contornatura shouldering	○	○	●	○	○	●	●	64
17160		Z4/8		contornatura shouldering	○	○	●	○	○	●	●	65
17305 High Performance		Z4/5		contornatura shouldering	●	●	●	●	○	●	●	66
17305		Z3/8		contornatura shouldering	○	○	●	○	○	●	●	66
17320		Z4/8		contornatura shouldering	○	○	●	○	○	●	●	67
17350		Z4/8		contornatura shouldering	○	○	●	○	○	●	●	68
17355		Z4/8		contornatura shouldering	○	○	●	○	○	●	●	68
17505		Z4/8		copiatura profiling	○	○	●	○	○	●	●	69
17520		Z4/8		copiatura profiling	○	○	●	○	○	●	●	69

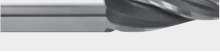
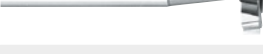
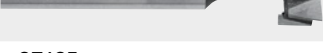
Serie/Series

	Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HSSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chiusa Cast Iron	Pagina Page
17550 	Z4/8		copiatura profiling	○	○	●	○	○	●	●	70
17555 	Z4/8		copiatura profiling	○	○	●	○	○	●	●	70
18105 High Performance 	Z4		contornatura shouldering	●	●	●	●	○	●	●	71
18105 	Z4		contornatura shouldering	●	●	●	●	○	●	●	71
19105 	Z4 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	72
20105 	Z3/6 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	73
20105 	Z4/6 NR		sgrossatura roughing	●	●	●	○	○	●	●	73
20120 	Z4/6 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	74
20120 	Z4/6 NR		sgrossatura roughing	●	●	●	○	○	●	●	74
20150 	Z4/6 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	75
20150 	Z4/6 NR		sgrossatura roughing	●	●	●	○	○	●	●	75
20155 	Z4/7 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	76
20155 	Z4/7 NR		sgrossatura roughing	●	●	●	○	○	●	●	76
20160 	Z4/6 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	77
20160 	Z4/6 NR		sgrossatura roughing	●	●	●	○	○	●	●	77

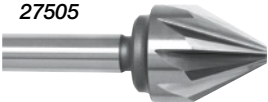
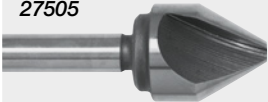
Serie/Series

	Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chiusa Cast iron	Pagina Page
21105 High Performance											
	Z3/5 NR		sgrossatura roughing	●	●	●	●	○	●	●	78
21105											
	Z3/7 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	78
21105											
	Z3/7 NR		sgrossatura roughing	●	●	●	○	○	●	●	79
21120											
	Z4/7 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	80
21120											
	Z4/7 NR		sgrossatura roughing	●	●	●	○	○	●	●	80
21150											
	Z4/8 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	81
21150											
	Z4/8 NR		sgrossatura roughing	●	●	●	○	○	●	●	81
21155											
	Z4/8 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	82
21155											
	Z4/8 NR		sgrossatura roughing	●	●	●	○	○	●	●	82
21305											
	Z3/5 NR		sgrossatura roughing	●	●	●	○	○	●	●	83
21505											
	Z3/7 NF		semifinitura semi-finishing	●	●	●	○	○	●	●	84
21505											
	Z3/7 NR		copiatura profiling	●	●	●	○	○	●	●	85
21520											
	Z4/7 NF		copiatura profiling	●	●	●	○	○	●	●	86
21520											
	Z4/7 NR		copiatura profiling	●	●	●	○	○	●	●	86
21550											
	Z4/8 NF		copiatura profiling	●	●	●	○	○	●	●	87

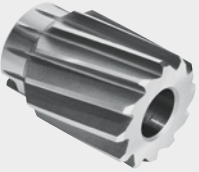
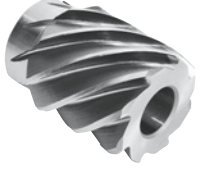
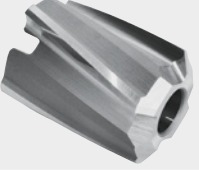
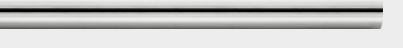
Serie/Series

	Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HSSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chiusa Cast Iron	Pagina Page
21550 	Z4/8 NR		copiatura profiling	●	●	●	○	○	●	●	87
21555 	Z4/8 NF		copiatura profiling	●	●	●	○	○	●	●	88
21555 	Z4/8 NR		copiatura profiling	●	●	●	○	○	●	●	88
22105 High Performance 	Z3 NRF		sgrossatura roughing	●	●	●	●	○	●	●	89
24105 	Z4		contornatura shouldering	●	●	●	○	○	●	●	89
24110 	Z4		copiatura profiling	●	●	●	○	○	●	●	90
24115 	Z2		apertura cava slotting	●	●	●	○	○	●	●	90
24120 	Z2		copiatura profiling	●	●	●	○	○	●	●	91
24125 	Z2		sgrossatura roughing	●	●	●	○	○	●	●	91
25105 	Z3/5		contornatura shouldering	○	○	●	○	○	●	●	92
25120 	Z4/5 NF		semifinitura semi-finishing	○	○	●	○	○	●	●	93
25120 	Z4/5 NR		sgrossatura roughing	○	○	●	○	○	●	●	94
27105 	Z8/12		Incavatura laterale side slotting	●	●	●	○	○	●	●	95
27120 	Z6/8		apertura cava "T" "t" slotting	●	●	●	○	○	●	●	96
27135 	Z4/8		apertura cava "T" "t" slotting	●	●	●	○	○	●	●	96

Serie/Series

	Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chiusa Cast iron	Pagina Page
27150 	Z8/10		apertura cava "T" "t" slotting	●	●	●	○	○	●	●	97
27155 	Z4/8 NF		apertura cava "T" "t" slotting	●	●	●	○	○	●	●	97
27505 	Z5/11		svasatura countersinking	●	●	●	○	○	●	●	98
27505 	Z1		svasatura countersinking	●	●	●	○	○	●	●	98
27505 	Z3		svasatura countersinking	●	●	●	○	○	●	●	99
28105 	Z2		fresatura sedi viti counterboring	●	●	●	○	○	●	●	100
28105 	Z4		fresatura sedi viti counterboring	●	●	●	○	○	●	●	100
28150 	Z2		fresatura sedi viti counterboring	●	●	●	○	○	●	●	101
28150 	Z4		fresatura sedi viti counterboring	●	●	●	○	○	●	●	101
28505 	Z4/6		raccordatura corner rounding	●	●	●	○	○	●	●	102
29105 	Z12/14		fresatura di forma form milling	●	●	●	○	○	●	●	103
29110 	Z12/14		fresatura di forma form milling	●	●	●	○	○	●	●	104
30150 	Z3/6		alesatura per fori passanti through holes reaming	○	○	●	○	○	●	●	105

Serie/Series

	Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chiusa Cast Iron	Pagina Page
30502 	Z3/4		alesatura per fori passanti through holes reaming	○	○	●	○	○	●	●	106
30505 	Z3		alesatura per fori passanti through holes reaming	○	○	●	○	○	●	●	106
30508 	Z3		alesatura per fori passanti through holes reaming	○	○	●	○	○	●	●	107
30510 	Z3		alesatura per fori passanti through holes reaming	○	○	●	○	○	●	●	107
31105 	Z4/12		alesatura per fori passanti through holes reaming	○	○	●	○	○	●	●	108
32105 	Z3/7		alesatura per fori passanti through holes reaming	○	○	●	○	○	●	●	109
32150 	Z5/10		alesatura per fori passanti through holes reaming	○	○	●	○	○	●	●	111
33105 	Z8/20		alesatura per fori passanti through holes reaming	○	○	●	○	○	●	●	112
33105 	Z5/14		alesatura per fori passanti through holes reaming	○	○	○	○	○	●	●	113
34105 	Z4		allargatura per fori ciechi e passanti through and blind holes boring	○	○	●	○	○	●	●	114
34150 	Z4		allargatura per fori ciechi e passanti through and blind holes boring	○	○	●	○	○	●	●	115
08105 			—	—	—	—	—	—	—	—	116
08110 			—	—	—	—	—	—	—	—	117
08115 			—	—	—	—	—	—	—	—	117

Indicazioni di lettura Reading guidelines

1 HSS-PM
HSS-PM Line

2 Serie/Series
10102
Free a due taglienti in tolleranza H7
Two flute slot drill in tolerance H7

3

4

5

6

Cod. Art.	X-45	Coating	DR-17	I	L	d16	Z
101020100 CM	CMX		1	3	47	6	2
101020150 CM	CMX		1,5	3	47	6	2
101020200 CM	CMX		2	4	48	6	2
101020250 CM	CMX		2,5	5	49	6	2
101020300 CM	CMX		3	5	49	6	2
101020350 CM	CMX		3,5	6	50	6	2
101020400 CM	CMX		4	7	51	6	2
101020450 CM	CMX		4,5	7	51	6	2
101020500 CM	CMX		5	8	52	6	2
101020550 CM	CMX		5,5	8	52	6	2
101020600 CM	CMX		6	8	52	6	2
101020650 CM	CMX		6,5	10	60	10	2
101020700 CM	CMX		7	10	60	10	2
101020750 CM	CMX		7,5	10	60	10	2
101020800 CM	CMX		8	11	61	10	2
101020850 CM	CMX		8,5	11	61	10	2
101020900 CM	CMX		9	11	61	10	2
101020950 CM	CMX		9,5	13	63	10	2
101021000 CM	CMX		10	13	63	10	2
101021050 CM	CMX		10,5	13	70	12	2
101021100 CM	CMX		11	13	70	12	2
101021200 CM	CMX		12	16	73	12	2
101021300 CM	CMX		13	16	73	12	2
101021400 CM	CMX		14	16	73	12	2
101021500 CM	CMX		15	19	79	16	2
101021600 CM	CMX		16	19	79	16	2
101021700 CM	CMX		17	19	79	16	2
101021800 CM	CMX		18	19	79	16	2
101021900 CM	CMX		19	22	82	16	2
101022000 CM	CMX		20	22	82	16	2
101022001 CM	CMX		20	22	88	20	2
101022100 CM	CMX		21	22	88	20	2
101022200 CM	CMX		22	22	88	20	2
101022300 CM	CMX		23	22	88	20	2
101022400 CM	CMX		24	26	102	25	2
101022500 CM	CMX		25	26	102	25	2
101022600 CM	CMX		26	26	102	25	2
101022800 CM	CMX		28	26	102	25	2
101023000 CM	CMX		30	26	102	25	2
101023200 CM	CMX		32	32	112	32	2
101023400 CM	CMX		34	32	112	32	2
101023500 CM	CMX		35	32	112	32	2
101023600 CM	CMX		36	32	112	32	2

7

8

12 MATERIALI LAVORABILI / WORKPIECE MATERIALS

40

10 Parametri di taglio/Cutting parameters

Materiali Materials	10102 - 10105 10110 - 10125*	10140 - 10155*	12505 - 12520*
	Canali Slotting ap = 0,5a, as = 1a	Sgrossatura Roughing ap = 0,4a, as = 0,5a	Sgrossatura Roughing ap = 0,4a, as = 0,5a
Gruppo e descrizione Group and description	Vc (mt./min.)		
	X-45 NON INDEBITA UNFINISHED	X-45 NON INDEBITA UNFINISHED	X-45 NON INDEBITA UNFINISHED
Grigio e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25
Base contenente di C Low carbon content	30 - 35	60 - 70	30 - 35
Medio contenuto di C Medium carbon content	25 - 30	50 - 60	25 - 30
Base legato Low alloyed	25 - 30	50 - 60	25 - 30
Alto legato High alloyed	20 - 25	40 - 50	20 - 25
Acciaio da stampi e utensili Die/Tool steel	15 - 20	30 - 40	15 - 20
Alluminio non legato Unalloyed aluminum	-	-	110 - 120
Alluminio Si < 6% Aluminum Si < 6%	-	-	70 - 80
Materiali termoplastici Thermoplastic materials	-	-	130 - 140
Rame/ottone Copper/Brass	30 - 35	75 - 80	30 - 35
	Avanzamento fz mm/giro FEED mm/rpm		
3	0,009	0,009	0,006
4	0,013	0,012	0,010
5	0,015	0,016	0,015
6	0,018	0,018	0,020
8	0,025	0,025	0,050
10	0,030	0,035	0,070
12	0,040	0,050	0,120
16	0,065	0,090	0,145
20	0,090	0,110	-

* series 10125; series 10155; series 12520 fz consigliato / recommended -50%

11 Avanzamento fz mm/tagliente
Feed mm/tooth

12 Materiali lavorabili
Workpiece materials

WWW.UOP.IT 119

- 1** Categoria di prestazione
Performance category
- 2** Denominazione serie
Series name
- 3** Numero denti
Number of teeth
- 4** Rappresentazione fotografica della serie
Picture representing the series
- 5** Rappresentazione tecnica della serie
Technical drawing
- 6** Informazioni aggiuntive (lunghezza, codolo, rivestimento, norma di riferimento, etc.)
Additional data (length, shank, coating, standards, etc.)
- 7** Tabella dimensionale articoli
Items dimensional table
- 8** Applicazioni
Application
- 10** Parametri di taglio
Cutting parameters
- 11** Avanzamento fz mm/tagliente
Feed mm/tooth
- 12** Materiali lavorabili
Workpiece materials

Materiali/Rivestimenti *Materials/Coatings*

HSS-PM HSS-PM Line

Qualità di acciaio super rapido e da polveri utilizzati nella nostra produzione:
High Speed Steel and Powder Metal grades used in our production:

M-TK	X-85	X-105
HSS Co 5%	PM Co 8,5%	PM Co 10,5%

UOP sviluppa i propri rivestimenti PVD, testandoli nel reparto di ricerca e sviluppo, mantenendo una particolare attenzione ai materiali da lavorare per i quali consiglia la soluzione più indicata.

We develop our PVD coatings by testing them in our R&D dept; proposing the best solutions for the workpiece materials and required applications.

RIVESTIMENTI COATINGS	BASE COMPOSITION	DUREZZA (HV) HARDNESS	RESISTENZA ALL'OSSIDAZIONE (°C) OXIDATION RESISTANCE	COEFFICIENTE DI ATTRITO COEFFICIENT OF FRICTION	APPLICAZIONI APPLICATIONS
Skin	BASE TITANIO E ALLUMINO <i>TITANIUM AND ALLUMINIUM BASED</i>	3700	800°	0,5	LAVORAZIONI DI ACCIAI, GHISE, ACCIAI INOSSIDABILI, TITANIO, HRSA® <i>MILLING OF STEELS, CAST IRON, STAINLESS STEELS, TITANIUM, HRSA</i>
Skin^{Alu}	BASE TITANIO E ALLUMINO <i>TITANIUM AND ALLUMINIUM BASED</i>	3700	800°	0,1	LAVORAZIONI LEGHE LEGGERE, MATERIE PLASTICHE, MATERIALI NON FERROSI <i>MACHINING FOR LIGHT ALLOYS, PLASTIC MATERIALS, NON FERROUS MATERIALS</i>
Skin^{Inox}	BASE TITANIO E ALLUMINO <i>TITANIUM AND ALLUMINIUM BASED</i>	3500	800°	0,05	FRESATURA ACCIAI INOSSIDABILI <i>STAINLESS STEEL MILLING</i>

Rivestimenti a richiesta / Coatings on request



BISOLFURO DI MOLIBDENO
MOLYBDENUM DISULFIDE



CARBONITRURIO DI TITANIO
TITANIUM CARBONITRIDE



NITRURIO DI TITANIO
TITANIUM NITRIDE



NITRURIO DI CROMO
CHROMIUM NITRIDE



NITRURIO DI ZIRCONIO
ZIRCONIUM NITRIDE



CARBONIO
CARBONIUM

Simboli *Symbols*

Esecuzione / Execution

N	H	W	Taglienti a FINIRE FINISHING CUTTING EDGE PROFILE
NR	NRF		Taglienti a SGROSSARE ROUGHING CUTTING EDGE PROFILE
NF	WF		Taglienti a SGROSSARE e SEMIFINIRE ROUGHING AND SEMI-FINISHING CUTTING EDGE PROFILE

Lunghezze / Lengths

CORTA SHORT	NORMALE NORMAL	LUNGA LONG	EXTRALUNGA EXTRALONG	TUTTE LE LUNGHEZZE ALL LENGTHS

Codoli / Shanks

					MORSE TAPER
CILINDRICO STRAIGHT (DIN1835A)	WELDON (DIN6535HB)	FILETTATO THREADED (DIN1835D)	CON TENONE WITH TANG	CON QUADRO WITH FLAT SQUARE (DIN10)	MORSE MORSE (DIN228)

Applicazioni / Application

CAVA SLOTTING	TASCA POCKETING	CONTORNATURA SHOULDERING	COPIATURA PROFILING	CAVE A "T" "T" SLOTTING	SVASATURA COUNTERSINKING	SVASATURA COUNTERBORING	1/4 DI RAGGIO CORNER ROUNDING
SPIANATURA FACING	INCASTRATURA LATERALE SIDE SLOTTING	TRONCATURA SLITTING	SPALLAMENTO SUL FONDO BOTTOM SHOULDERING	SBAVATURA E SOTTOSQUADRI BOTTOM DEBURRING AND UNDERCUTTING	INCISIONE ENGRAVING	PARETI INCLINATE E SMUSSI SLANTED SHOULDER AND CHAMFER	FRESATURA DI FORMA FORM MILLING
ALESATURA FORI CIECHI BLIND HOLES REAMING	ALESATURA FORI PASSANTI THROUGH HOLES REAMING						

Abbreviazioni

Abbreviations

D	[mm]	DIAMETRO DEL TAGLIENTE	CUTTING DIAMETER
d	[mm]	DIAMETRO DEL GAMBO	SHANK DIAMETER
ds	[mm]	DIAMETRO DELLO SCARICO	NECK DIAMETER
L	[mm]	LUNGHEZZA TOTALE DELL'UTENSILE	TOTAL LENGTH OF TOOL
l	[mm]	LUNGHEZZA DEL TAGLIENTE	LENGTH OF CUT
l1	[mm]	LUNGHEZZA TRA LA PARTE FRONTALE DELL'UTENSILE FINO ALLA FINE DELLO SCARICO	LENGTH FROM THE FRONT OF THE TOOL TO THE END OF THE NECK
l2	[mm]	LUNGHEZZA DALLA TESTA DELL'UTENSILE FINO ALL'INIZIO DELLA RASTREMATURA CONICA	LENGTH FROM THE FRONT OF THE TOOL TO THE TAPERING
Z		NUMERO DEI DENTI	NUMBER OF TEETH
R	[mm]	RAGGIO	RADIUS
S		SPESSORE	WIDTH
Vc	[m/min.]	VELOCITÀ DI TAGLIO	CUTTING SPEED
F	[mm/min.]	VELOCITÀ DI AVANZAMENTO	FEED RATE
fz	[mm]	AVANZAMENTO PER DENTE	FEED PER TOOTH
n	[rpm]	NUMERO DI GIRI	TOOL REVOLUTION
a_p	[mm]	PROFONDITÀ ASSIALE	AXIAL DEPTH
a_e	[mm]	PROFONDITÀ RADIALE	RADIAL DEPTH
Q	[cm³/min.]	VOLUME DI TRUCIOLATURA	MATERIAL REMOVAL RATE

Formule Formulas

NUMERO DI GIRI <i>TOOL REVOLUTION</i>	n	$= \frac{V_c \times 1000}{3,14 \times D}$	(rpm)
VELOCITÀ DI TAGLIO <i>CUTTING SPEED</i>	V_c	$= \frac{D \times n \times 3,14}{1000}$	(m/min.)
VELOCITÀ DI AVANZAMENTO <i>FEED RATE</i>	F	$= f_z \times z \times n$	(mm/min.)
AVANZAMENTO PER DENTE <i>FEED PER TOOTH</i>	f_z	$= \frac{F}{z \times n}$	(mm)
VOLUME DI TRUCIOLATURA <i>MATERIAL REMOVAL RATE</i>	Q	$= \frac{a_p \times a_e \times F}{1000}$	(cm ³ /min.)

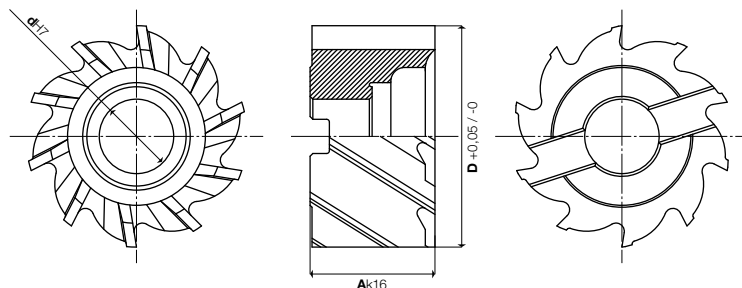
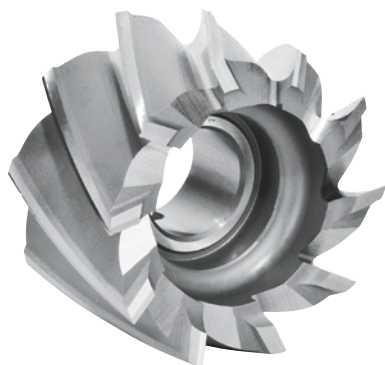
Suggerimenti di impiego Recommendations

●	CONSIGLIATA	RECOMMENDED
◐	ACCETTABILE	ACCEPTABLE
○	NON CONSIGLIATA	NOT RECOMMENDED

HSS-PM HSS-PM Line

Serie/Series 02105

Frese a **FINIRE** con cava di trascinamento trasversale
Finishing milling with transversal driving slot



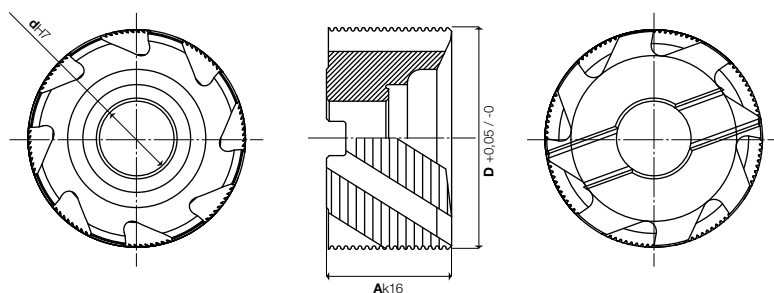
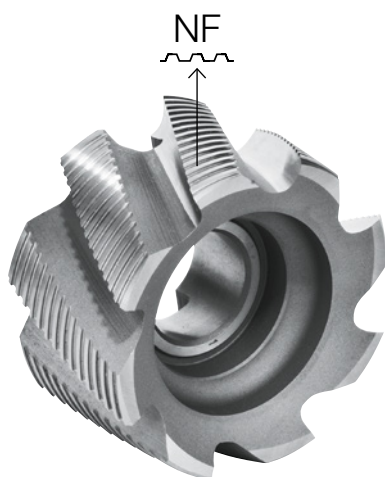
COATING Skin	$\lambda^{\circ}S$ 32	N	UNI 3903 DIN 1880 ISO 2586	Z8÷16
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Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Ak16	dh7	Z
021050400 CM		CMX	40	32	16	8
021050500 CM		CMX	50	36	22	8
021050630 CM		CMX	63	40	27	8
021050800 CM		CMX	80	45	27	10
021051000 CM		CMX	100	50	32	12
021051250 CM		CMX	125	56	40	14
021051600 CM		CMX	160	63	50	16



Serie/Series 02110

Frese a **SEMIFINIRE** con cava di trascinamento trasversale
Semifinishing cutters end mills with transversal driving slot



COATING Skin	$\lambda^{\circ}S$ 28	NF	UNI 3903 DIN 1880 ISO 2586	Z6÷14
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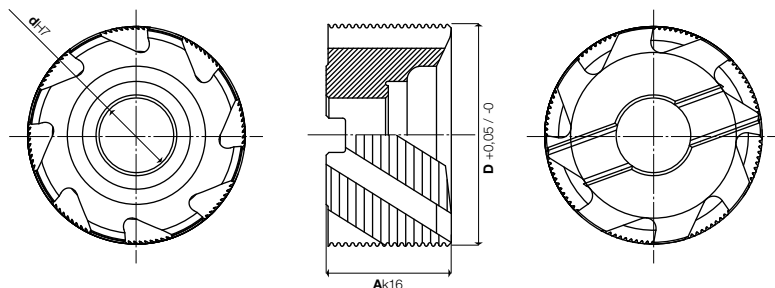
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Ak16	dh7	Z
021100400 CM		CMX	40	32	16	6
021100500 CM		CMX	50	36	22	6
021100630 CM		CMX	63	40	27	8
021100800 CM		CMX	80	45	27	8
021101000 CM		CMX	100	50	32	10
021101250 CM		CMX	125	56	40	12
021101600 CM		CMX	160	63	50	14



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
02105	●	●	●	○	○	●	●
02110	●	●	●	○	○	●	●

● consigliata/recommended ● accettabile/acceptable ○ non consigliata/not recommended



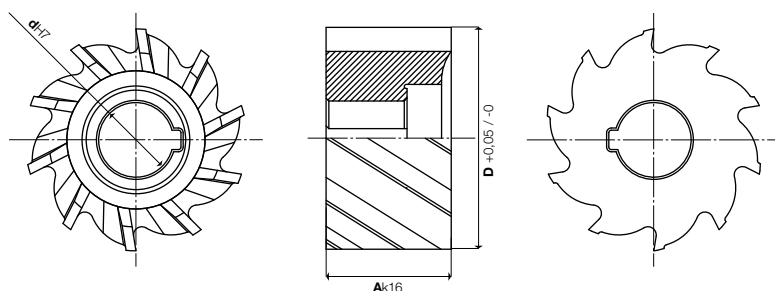
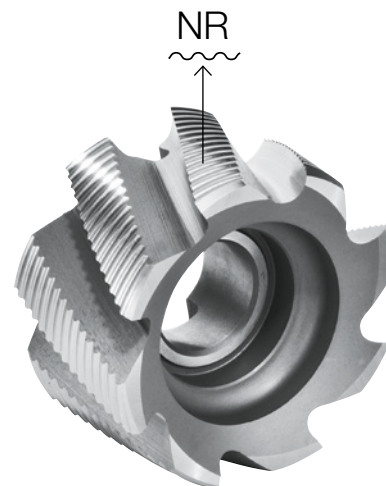
COATING Skin	λ° S 28	NR 	UNI 3903 DIN 1880 ISO 2586	Z6÷14
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Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Ak16	dH7	Z
021100401	CM	CMX	40	32	16	6
021100501	CM	CMX	50	36	22	6
021100631	CM	CMX	63	40	27	8
021100801	CM	CMX	80	45	27	8
021101001	CM	CMX	100	50	32	10
021101251	CM	CMX	125	56	40	12
021101601	CM	CMX	160	63	50	14



Serie/Series
02110

Frese a **SGROSSARE**
con cava di trascinamento trasversale
Roughing cutters with transversal driving slot



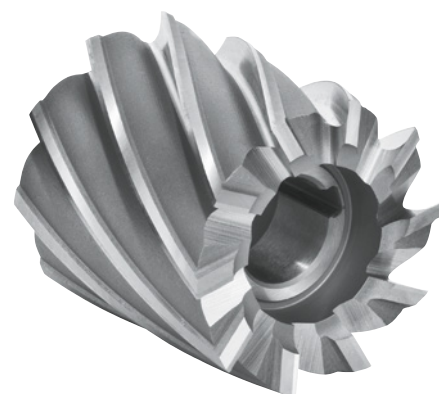
COATING Skin	λ° S 32	N	DIN 841 ISO 2586	Z8÷16
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Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Ak16	dH7	Z
021150300 CM	CMX	30	30	13	8	
021150350 CM	CMX	35	35	16	8	
021150400 CM	CMX	40	20	16	8	
021150401 CM	CMX	40	40	16	8	
021150500 CM	CMX	50	25	22	8	
021150501 CM	CMX	50	50	22	8	
021150600 CM	CMX	60	30	27	8	
021150601 CM	CMX	60	60	27	8	
021150750 CM	CMX	75	35	27	10	
021150751 CM	CMX	75	75	27	10	
021150900 CM	CMX	90	35	27	12	
021151100 CM	CMX	110	35	32	14	
021151300 CM	CMX	130	35	40	14	
021151500 CM	CMX	150	40	40	16	



Serie/Series
02115

Frese a **FINIRE** con spacco longitudinale
Finishing milling cutters with transversal driving slot



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
02110	●	●	●	○	○	●	●
02115	●	●	●	○	○	●	●

● consigliata/recommended

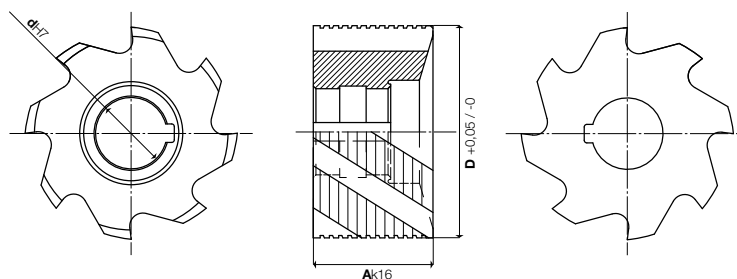
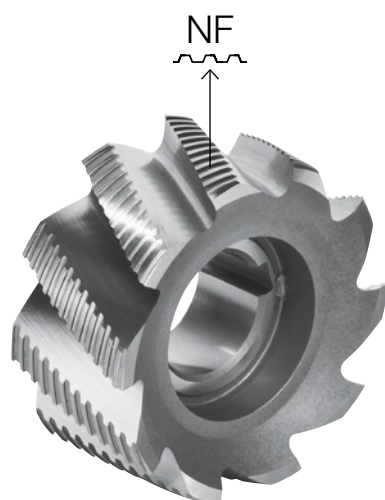
● accettabile/acceptable

○ non consigliata/not recommended

HSS-PM HSS-PM Line

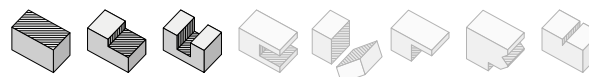
Serie/Series 02120

Frese a **SEMIFINIRE** con spacco longitudinale
Semi-finishing cutters with longitudinal keyway



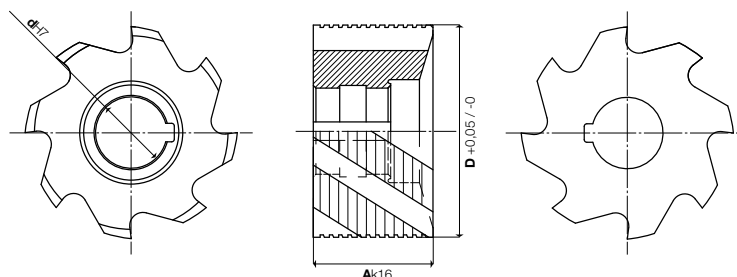
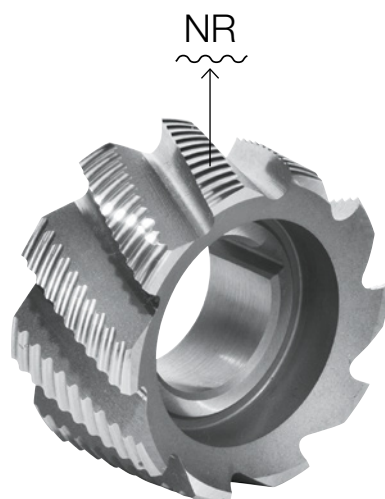
COATING Skin	λ° S 28	NF	DIN 841 ISO 2586	Z6÷14
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Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Ak16	dH7	Z
021200300 CM		CMX	30	30	13	6
021200350 CM		CMX	35	35	16	6
021200400 CM		CMX	40	20	16	8
021200402 CM		CMX	40	40	16	6
021200500 CM		CMX	50	25	22	8
021200502 CM		CMX	50	50	22	8
021200600 CM		CMX	60	30	27	10
021200602 CM		CMX	60	60	27	10
021200750 CM		CMX	75	35	27	10
021200752 CM		CMX	75	75	27	10
021200900 CM		CMX	90	35	27	12
021201100 CM		CMX	110	35	32	12
021201300 CM		CMX	130	35	40	14
021201500 CM		CMX	150	40	40	14



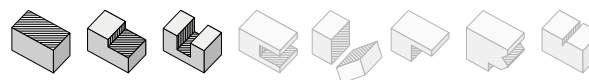
Serie/Series 02120

Frese a **SGROSSARE** con spacco longitudinale
Roughing cutters with longitudinal keyway



COATING Skin	λ° S 28	NR	DIN 841 ISO 2586	Z6÷14
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Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Ak16	dH7	Z
021200301 CM		CMX	30	30	13	6
021200351 CM		CMX	35	35	16	6
021200401 CM		CMX	40	20	16	8
021200403 CM		CMX	40	40	16	6
021200501 CM		CMX	50	25	22	8
021200503 CM		CMX	50	50	22	8
021200601 CM		CMX	60	30	27	10
021200603 CM		CMX	60	60	27	10
021200751 CM		CMX	75	35	27	10
021200753 CM		CMX	75	75	27	10
021200901 CM		CMX	90	35	27	12
021201101 CM		CMX	110	35	32	12
021201301 CM		CMX	130	35	40	14
021201501 CM		CMX	150	40	40	14



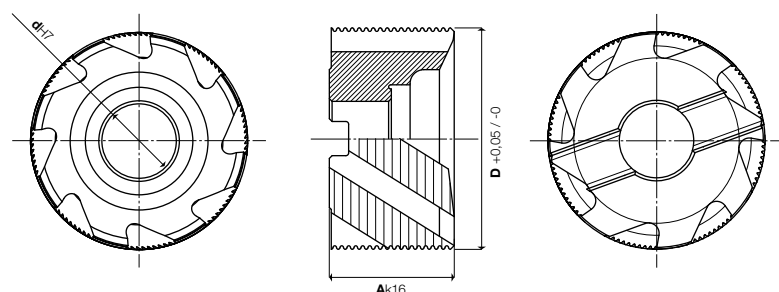
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
02120	●	●	●	○	○	●	●
02120	●	●	●	○	○	●	●

● consigliata/recommended ○ accettabile/acceptable ○ non consigliata/not recommended

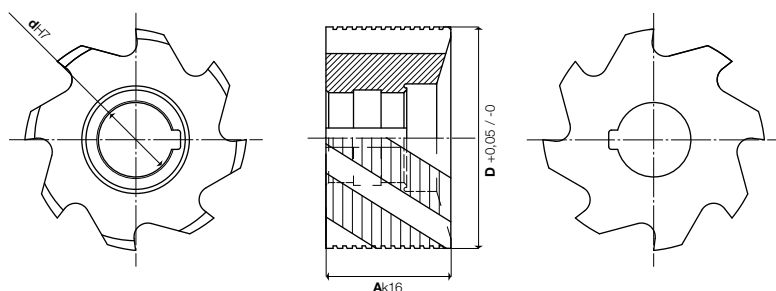
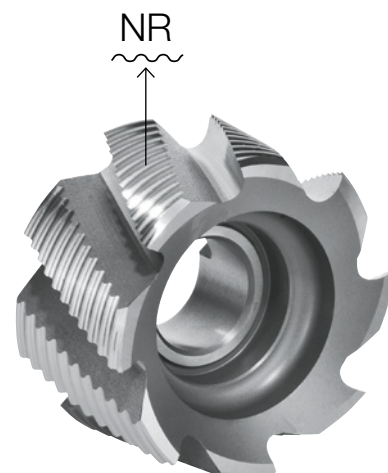
Serie/Series 02125

Frese a **SGROSSARE** con cava di trascinamento trasversale
Roughing cutters with transversal driving slot



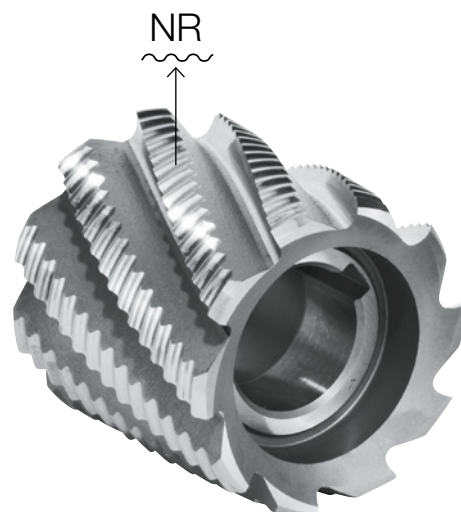
COATING Skin Inox	$\lambda^{\circ}\text{s}$ 28	NR	UNI 3903 DIN 1880 ISO 2586	Z6÷14
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Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0.05 -0	Ak16	dH7	Z
021250401 CM		CMX	40	32	16	6
021250501 CM		CMX	50	36	22	6
021250631 CM		CMX	63	40	27	8
021250801 CM		CMX	80	45	27	8
021251001 CM		CMX	100	50	32	10
021251251 CM		CMX	125	56	40	12
021251601 CM		CMX	160	63	50	14



COATING Skin Inox	$\lambda^{\circ}\text{s}$ 28	NR	DIN 841 ISO 2586	Z6÷10
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Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0.05 -0	Ak16	dH7	Z
021300401 CM		CMX	40	40	16	6
021300501 CM		CMX	50	50	22	8
021300601 CM		CMX	60	60	27	8
021300751 CM		CMX	75	75	27	10



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
02125	●	●	●	○	○	●	●
02130	●	●	●	○	○	●	●

● consigliata/recommended

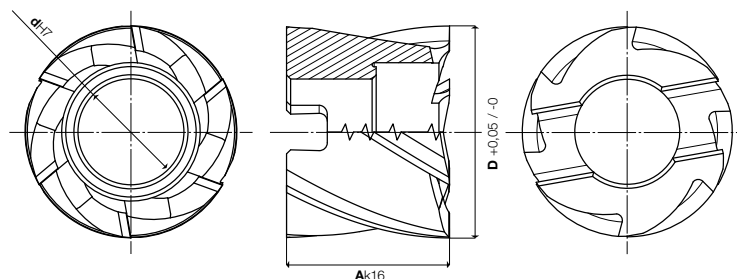
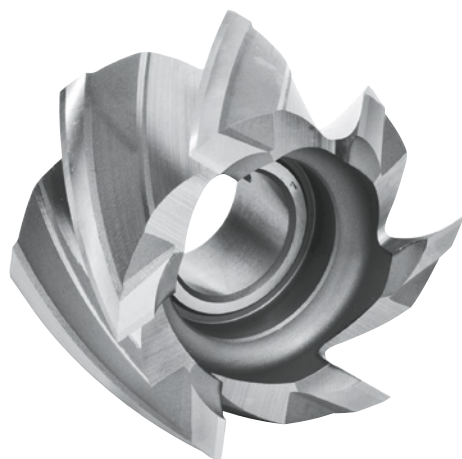
● accettabile/acceptable

○ non consigliata/not recommended

HSS-PM HSS-PM Line

Serie/Series 02135

Frese a **FINIRE** con cava di trascinamento trasversale
Finishing milling cutters with transversal driving slot



COATING

Skin
Alu

$\lambda^\circ \sigma$
40

W

UNI 3903
DIN 1880
ISO 2586

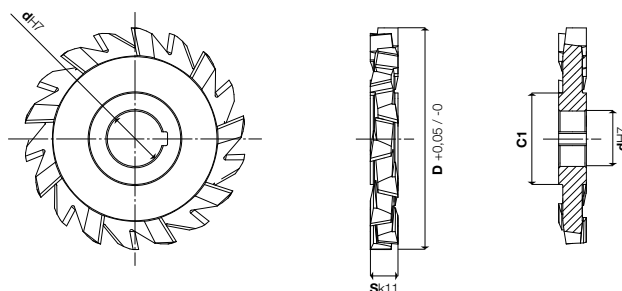
Z4÷6

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0.05 -0	Ak16	dH7	Z
021350400 AM		CM	CMX	40	32	16	4
021350500 AM		CM	CMX	50	36	22	4
021350630 AM		CM	CMX	63	40	27	4
021350800 AM		CM	CMX	80	45	27	6
021351000 AM		CM	CMX	100	50	32	6



Serie/Series 04105

Frese a disco a tre tagli elicoidali alternati
Side and face milling cutters **Staggered teeth**



COATING

Skin

H

UNI 3905A
DIN 885A
ISO 2587

Z16÷38

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0.05 -0	Sk 11	C1	dH7	$\lambda^\circ s$	Z
041051040 AM		CM	CMX	50	4	26	16	20	16
041051050 AM		CM	CMX	50	5	26	16	20	16
041051060 AM		CM	CMX	50	6	26	16	20	16
041051070 AM		CM	CMX	50	7	26	16	15	16
041051080 AM		CM	CMX	50	8	26	16	15	16
041051090 AM		CM	CMX	50	9	26	16	15	16
041051100 AM		CM	CMX	50	10	26	16	15	16
041052040 AM		CM	CMX	63	4	33	22	20	18
041052050 AM		CM	CMX	63	5	33	22	15	18
041052060 AM		CM	CMX	63	6	33	22	15	18

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MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
02135	○	○	○	○	○	○	○
04105	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

Serie/Series
04105

Frese a disco a tre tagli elicoidali alternati
Side and face milling cutters **Staggered teeth**

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D _{+0,05 -0}	Sk 11	C1	dH7	λ°s	Z
041052070 AM	CM	CMX		63	7	33	22	15	18
041052080 AM	CM	CMX		63	8	33	22	15	18
041052090 AM	CM	CMX		63	9	33	22	15	18
041052100 AM	CM	CMX		63	10	33	22	15	18
041052120 AM	CM	CMX		63	12	33	22	10	18
041052140 AM	CM	CMX		63	14	33	22	10	18
041052160 AM	CM	CMX		63	16	33	22	10	16
041052180 AM	CM	CMX		63	18	33	22	10	16
041052200 AM	CM	CMX		63	20	33	22	10	16
041053040 AM	CM	CMX		80	4	36	22	20	20
041053041 AM	CM	CMX		80	4	40	27	20	20
041053050 AM	CM	CMX		80	5	36	22	15	20
041053051 AM	CM	CMX		80	5	40	27	15	20
041053060 AM	CM	CMX		80	6	36	22	15	20
041053061 AM	CM	CMX		80	6	40	27	15	20
041053070 AM	CM	CMX		80	7	36	22	15	20
041053071 AM	CM	CMX		80	7	40	27	15	20
041053080 AM	CM	CMX		80	8	36	22	15	20
041053081 AM	CM	CMX		80	8	40	27	15	20
041053090 AM	CM	CMX		80	9	36	22	15	20
041053091 AM	CM	CMX		80	9	40	27	15	20
041053100 AM	CM	CMX		80	10	36	22	15	18
041053101 AM	CM	CMX		80	10	40	27	15	18
041053120 AM	CM	CMX		80	12	36	22	15	18
041053121 AM	CM	CMX		80	12	40	27	15	18
041053140 AM	CM	CMX		80	14	36	22	10	18
041053141 AM	CM	CMX		80	14	40	27	10	18
041053160 AM	CM	CMX		80	16	36	22	15	18
041053161 AM	CM	CMX		80	16	40	27	15	18
041053180 AM	CM	CMX		80	18	36	22	15	18
041053181 AM	CM	CMX		80	18	40	27	15	18
041054040 AM	CM	CMX		100	4	46	27	15	24
041054041 AM	CM	CMX		100	4	50	32	15	24
041054050 AM	CM	CMX		100	5	46	27	15	24
041054051 AM	CM	CMX		100	5	50	32	15	24
041054060 AM	CM	CMX		100	6	46	27	15	24
041054061 AM	CM	CMX		100	6	50	32	15	24
041054070 AM	CM	CMX		100	7	46	27	15	24
041054071 AM	CM	CMX		100	7	50	32	15	24
041054080 AM	CM	CMX		100	8	46	27	15	22
041054081 AM	CM	CMX		100	8	50	32	15	22
041054090 AM	CM	CMX		100	9	46	27	15	22
041054091 AM	CM	CMX		100	9	50	32	15	22
041054100 AM	CM	CMX		100	10	46	27	15	22
041054101 AM	CM	CMX		100	10	50	32	15	22
041054120 AM	CM	CMX		100	12	46	27	15	20
041054121 AM	CM	CMX		100	12	50	32	15	20
041054140 AM	CM	CMX		100	14	46	27	15	20
041054141 AM	CM	CMX		100	14	50	32	15	20
041054150 AM	CM	CMX		100	15	46	27	15	20
041054151 AM	CM	CMX		100	15	50	32	15	20
041054160 AM	CM	CMX		100	16	46	27	15	20
041054161 AM	CM	CMX		100	16	50	32	15	20
041054180 AM	CM	CMX		100	18	46	27	13	20
041054181 AM	CM	CMX		100	18	50	32	13	20
041054200 AM	CM	CMX		100	20	46	27	13	20
041054201 AM	CM	CMX		100	20	50	32	13	20
041054220 AM	CM	CMX		100	22	46	27	10	20

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MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
04105	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

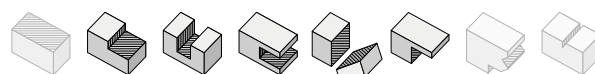
Serie/Series 04105

Frese a disco a tre tagli elicoidali alternati
Side and face milling cutters **Staggered teeth**



→ continuazione della pagina precedente / continuation of the previous page

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Sk 11	C1	dH7	λ°s	Z
041054221 AM	CM	CMX		100	22	50	32	10	20
041054250 AM	CM	CMX		100	25	46	27	10	20
041054251 AM	CM	CMX		100	25	50	32	10	20
041055050 AM	CM	CMX		125	5	52	32	15	26
041055060 AM	CM	CMX		125	6	52	32	15	26
041055080 AM	CM	CMX		125	8	52	32	15	26
041055100 AM	CM	CMX		125	10	52	32	15	24
041055120 AM	CM	CMX		125	12	52	32	15	22
041055140 AM	CM	CMX		125	14	52	32	15	22
041055160 AM	CM	CMX		125	16	52	32	15	22
041055180 AM	CM	CMX		125	18	52	32	15	22
041055200 AM	CM	CMX		125	20	52	32	10	22
041055220 AM	CM	CMX		125	22	52	32	10	22
041055250 AM	CM	CMX		125	25	52	32	10	22
041055280 AM	CM	CMX		125	28	52	32	10	22
041056060 AM	CM	CMX		160	6	58	32	15	28
041056061 AM	CM	CMX		160	6	66	40	15	28
041056080 AM	CM	CMX		160	8	58	32	15	28
041056081 AM	CM	CMX		160	8	66	40	15	28
041056100 AM	CM	CMX		160	10	58	32	15	26
041056101 AM	CM	CMX		160	10	66	40	15	26
041056120 AM	CM	CMX		160	12	58	32	15	26
041056121 AM	CM	CMX		160	12	66	40	15	26
041056140 AM	CM	CMX		160	14	58	32	15	24
041056141 AM	CM	CMX		160	14	66	40	15	24
041056160 AM	CM	CMX		160	16	58	32	15	24
041056161 AM	CM	CMX		160	16	66	40	15	24
041056180 AM	CM	CMX		160	18	58	32	15	24
041056181 AM	CM	CMX		160	18	66	40	15	24
041056200 AM	CM	CMX		160	20	58	32	15	24
041056201 AM	CM	CMX		160	20	66	40	15	24
041056220 AM	CM	CMX		160	22	58	32	13	24
041056221 AM	CM	CMX		160	22	66	40	13	24
041056250 AM	CM	CMX		160	25	58	32	13	24
041056251 AM	CM	CMX		160	25	66	40	13	24
041056280 AM	CM	CMX		160	28	58	32	10	24
041056281 AM	CM	CMX		160	28	66	40	10	24
041056320 AM	CM	CMX		160	32	58	32	10	24
041056321 AM	CM	CMX		160	32	66	40	10	24
041057080 AM	CM	CMX		200	8	80	40	16	34
041057100 AM	CM	CMX		200	10	80	40	16	32
041057120 AM	CM	CMX		200	12	80	40	16	30
041057140 AM	CM	CMX		200	14	80	40	16	30
041057160 AM	CM	CMX		200	16	80	40	16	30
041057180 AM	CM	CMX		200	18	80	40	16	30
041057200 AM	CM	CMX		200	20	80	40	16	30
041057220 AM	CM	CMX		200	22	80	40	16	30
041057250 AM	CM	CMX		200	25	80	40	16	30
041057280 AM	CM	CMX		200	28	80	40	14	30
041057320 AM	CM	CMX		200	32	80	40	14	30
041058140 AM	CM	CMX		250	14	90	50	15	38
041058160 AM	CM	CMX		250	16	90	50	15	36
041058180 AM	CM	CMX		250	18	90	50	15	34
041058200 AM	CM	CMX		250	20	90	50	15	34
041058250 AM	CM	CMX		250	25	90	50	15	30
041058280 AM	CM	CMX		250	28	90	50	15	28
041058300 AM	CM	CMX		250	30	90	50	15	26
041058320 AM	CM	CMX		250	32	90	50	15	26



parametri tecnici a pag. 1 / for technical parameters see page 128

MATERIALI LAVORABILI / WORKPIECE MATERIALS

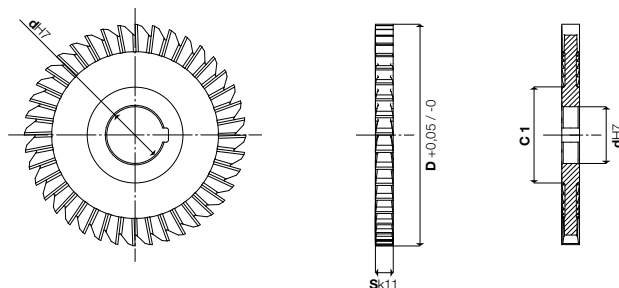
serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
04105	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

Serie/Series
04105

Frese a disco a tre taglienti diritti
Side and face milling cutters **Straight teeth**


COATING

Skin
H

UNI 3905B
DIN 885B
ISO 2587

Z18÷46

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Sk 11	C1	dH7	Z
041051042 AM		CM	CMX	50	4	26	16	20
041051052 AM		CM	CMX	50	5	26	16	20
041051062 AM		CM	CMX	50	6	26	16	20
041051072 AM		CM	CMX	50	7	26	16	18
041051082 AM		CM	CMX	50	8	26	16	18
041051092 AM		CM	CMX	50	9	26	16	18
041051102 AM		CM	CMX	50	10	26	16	18
041052042 AM		CM	CMX	63	4	33	22	20
041052052 AM		CM	CMX	63	5	33	22	20
041052062 AM		CM	CMX	63	6	33	22	20
041052072 AM		CM	CMX	63	7	33	22	20
041052082 AM		CM	CMX	63	8	33	22	20
041052092 AM		CM	CMX	63	9	33	22	20
041052102 AM		CM	CMX	63	10	33	22	18
041052122 AM		CM	CMX	63	12	33	22	18
041052142 AM		CM	CMX	63	14	33	22	18
041052162 AM		CM	CMX	63	16	33	22	18
041052182 AM		CM	CMX	63	18	33	22	18
041052202 AM		CM	CMX	63	20	33	22	18
041053042 AM		CM	CMX	80	4	36	22	24
041053043 AM		CM	CMX	80	4	40	27	24
041053052 AM		CM	CMX	80	5	36	22	24
041053053 AM		CM	CMX	80	5	40	27	24
041053062 AM		CM	CMX	80	6	36	22	24
041053063 AM		CM	CMX	80	6	40	27	24
041053072 AM		CM	CMX	80	7	36	22	22
041053073 AM		CM	CMX	80	7	40	27	22
041053082 AM		CM	CMX	80	8	36	22	22
041053083 AM		CM	CMX	80	8	40	27	22
041053092 AM		CM	CMX	80	9	36	22	22
041053093 AM		CM	CMX	80	9	40	27	22
041053102 AM		CM	CMX	80	10	36	22	20
041053103 AM		CM	CMX	80	10	40	27	20
041053122 AM		CM	CMX	80	12	36	22	20
041053123 AM		CM	CMX	80	12	40	27	20
041053142 AM		CM	CMX	80	14	36	22	20
041053143 AM		CM	CMX	80	14	40	27	20
041053162 AM		CM	CMX	80	16	36	22	20
041053163 AM		CM	CMX	80	16	40	27	20
041053182 AM		CM	CMX	80	18	36	22	20
041053183 AM		CM	CMX	80	18	40	27	20
041053202 AM		CM	CMX	80	20	36	22	20
041053203 AM		CM	CMX	80	20	40	27	20
041054042 AM		CM	CMX	100	4	46	27	26
041054043 AM		CM	CMX	100	4	50	32	26
041054052 AM		CM	CMX	100	5	46	27	26
041054053 AM		CM	CMX	100	5	50	32	26
041054062 AM		CM	CMX	100	6	46	27	24
041054063 AM		CM	CMX	100	6	50	32	24
041054072 AM		CM	CMX	100	7	46	27	24
041054073 AM		CM	CMX	100	7	50	32	24
041054082 AM		CM	CMX	100	8	46	27	22
041054083 AM		CM	CMX	100	8	50	32	22
041054092 AM		CM	CMX	100	9	46	27	22

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MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie
series
04105

TITANIO
TITANIUM

HRSA
HRSA

ACCIAI
INOSSIDABILI
STAINLESS
STEELS

MATERIALI
NON FERROSI
NON FERROUS
MATERIALS

LEGHE
LEGGERE
LIGHT ALLOYS

ACCIAI
STEELS

GHISE
CAST IRON

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

33

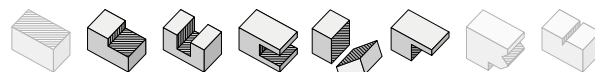
Serie/Series
04105

Frese a disco a tre taglienti dritti
Side and face milling cutters **Straight teeth**



→ continuazione della pagina precedente / continuation of the previous page

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Sk 11	C1	dH7	Z
041054093 AM	CM	CMX	100	9	50	32	22	
041054102 AM	CM	CMX	100	10	46	27	22	
041054103 AM	CM	CMX	100	10	50	32	22	
041054122 AM	CM	CMX	100	12	46	27	22	
041054123 AM	CM	CMX	100	12	50	32	22	
041054142 AM	CM	CMX	100	14	46	27	22	
041054143 AM	CM	CMX	100	14	50	32	22	
041054152 AM	CM	CMX	100	15	46	27	22	
041054153 AM	CM	CMX	100	15	50	32	22	
041054162 AM	CM	CMX	100	16	46	27	22	
041054163 AM	CM	CMX	100	16	50	32	22	
041054182 AM	CM	CMX	100	18	46	27	22	
041054183 AM	CM	CMX	100	18	50	32	22	
041054202 AM	CM	CMX	100	20	46	27	20	
041054203 AM	CM	CMX	100	20	50	32	20	
041054222 AM	CM	CMX	100	22	46	27	20	
041054223 AM	CM	CMX	100	22	50	32	20	
041054252 AM	CM	CMX	100	25	46	27	20	
041054253 AM	CM	CMX	100	25	50	32	20	
041055052 AM	CM	CMX	125	5	52	32	30	
041055062 AM	CM	CMX	125	6	52	32	30	
041055082 AM	CM	CMX	125	8	52	32	28	
041055102 AM	CM	CMX	125	10	52	32	28	
041055122 AM	CM	CMX	125	12	52	32	28	
041055142 AM	CM	CMX	125	14	52	32	26	
041055162 AM	CM	CMX	125	16	52	32	26	
041055182 AM	CM	CMX	125	18	52	32	26	
041055202 AM	CM	CMX	125	20	52	32	26	
041055222 AM	CM	CMX	125	22	52	32	26	
041055252 AM	CM	CMX	125	25	52	32	26	
041055282 AM	CM	CMX	125	28	52	32	26	
041056062 AM	CM	CMX	160	6	58	32	40	
041056063 AM	CM	CMX	160	6	66	40	40	
041056082 AM	CM	CMX	160	8	58	32	36	
041056083 AM	CM	CMX	160	8	66	40	36	
041056102 AM	CM	CMX	160	10	58	32	36	
041056103 AM	CM	CMX	160	10	66	40	36	
041056122 AM	CM	CMX	160	12	58	32	36	
041056123 AM	CM	CMX	160	12	66	40	36	
041056142 AM	CM	CMX	160	14	58	32	36	
041056143 AM	CM	CMX	160	14	66	40	36	
041056162 AM	CM	CMX	160	16	58	32	36	
041056163 AM	CM	CMX	160	16	66	40	36	
041056182 AM	CM	CMX	160	18	58	32	34	
041056183 AM	CM	CMX	160	18	66	40	34	
041056202 AM	CM	CMX	160	20	58	32	34	
041056203 AM	CM	CMX	160	20	66	40	34	
041056222 AM	CM	CMX	160	22	58	32	34	
041056223 AM	CM	CMX	160	22	66	40	34	
041056252 AM	CM	CMX	160	25	58	32	34	
041056253 AM	CM	CMX	160	25	66	40	34	
041056282 AM	CM	CMX	160	28	58	32	34	
041056283 AM	CM	CMX	160	28	66	40	34	
041056322 AM	CM	CMX	160	32	58	32	34	
041056323 AM	CM	CMX	160	32	66	40	34	
041057082 AM	CM	CMX	200	8	80	40	42	
041057102 AM	CM	CMX	200	10	80	40	40	
041057122 AM	CM	CMX	200	12	80	40	40	
041057142 AM	CM	CMX	200	14	80	40	40	
041057162 AM	CM	CMX	200	16	80	40	38	
041057182 AM	CM	CMX	200	18	80	40	38	
041057202 AM	CM	CMX	200	20	80	40	38	
041057222 AM	CM	CMX	200	22	80	40	38	
041057252 AM	CM	CMX	200	25	80	40	38	
041057282 AM	CM	CMX	200	28	80	40	38	
041057322 AM	CM	CMX	200	32	80	40	38	
041058142 AM	CM	CMX	250	14	90	50	46	
041058162 AM	CM	CMX	250	16	90	50	46	
041058182 AM	CM	CMX	250	18	90	50	46	
041058202 AM	CM	CMX	250	20	90	50	46	
041058252 AM	CM	CMX	250	25	90	50	46	
041058282 AM	CM	CMX	250	28	90	50	46	
041058302 AM	CM	CMX	250	30	90	50	46	
041058322 AM	CM	CMX	250	32	90	50	46	



MATERIALI LAVORABILI / WORKPIECE MATERIALS

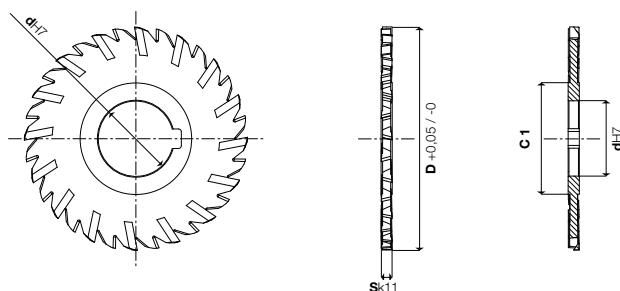
parametri tecnici a pag. 1 / for technical parameters see page 128

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
04105	●	●	●	○	○	●	●

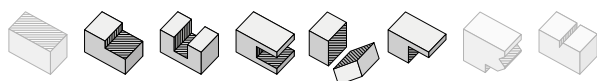
● consigliata/recommended ○ accettabile/acceptable ○ non consigliata/not recommended

Serie/Series
04110

Seghe circolari a tre tagli elicoidali alternati
Slitting saws **Staggered teeth**



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Sk11	C1	dH7	λ°	Z
041102016 CM	CMX	63	1,6	33	22	20	32	
041102020 CM	CMX	63	2	33	22	20	32	
041102025 CM	CMX	63	2,5	33	22	20	32	
041102030 CM	CMX	63	3	33	22	20	28	
041102035 CM	CMX	63	3,5	33	22	20	28	
041103020 CM	CMX	80	2	36	22	20	36	
041103025 CM	CMX	80	2,5	36	22	20	36	
041103030 CM	CMX	80	3	36	22	20	32	
041103035 CM	CMX	80	3,5	36	22	20	32	
041104020 CM	CMX	100	2	46	27	20	44	
041104025 CM	CMX	100	2,5	46	27	20	44	
041104030 CM	CMX	100	3	46	27	20	40	
041104035 CM	CMX	100	3,5	46	27	20	40	
041105020 CM	CMX	125	2	52	32	20	44	
041105025 CM	CMX	125	2,5	52	32	20	44	
041105030 CM	CMX	125	3	52	32	20	44	
041105035 CM	CMX	125	3,5	52	32	20	40	
041105040 CM	CMX	125	4	52	32	20	40	
041106030 CM	CMX	160	3	58	32	20	50	
041106040 CM	CMX	160	4	58	32	20	50	
041106050 CM	CMX	160	5	58	32	20	50	
041107040 CM	CMX	200	4	80	40	20	60	
041107050 CM	CMX	200	5	80	40	20	60	
041107060 CM	CMX	200	6	80	40	20	60	
041108060 CM	CMX	250	6	90	50	15	68	
041108080 CM	CMX	250	8	90	50	15	68	
041108100 CM	CMX	250	10	90	50	15	68	
041108120 CM	CMX	250	12	90	50	15	68	



parametri tecnici a pag. / for technical parameters see page 128



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
04110	●	●	●	○	○	●	●

● consigliata/recommended

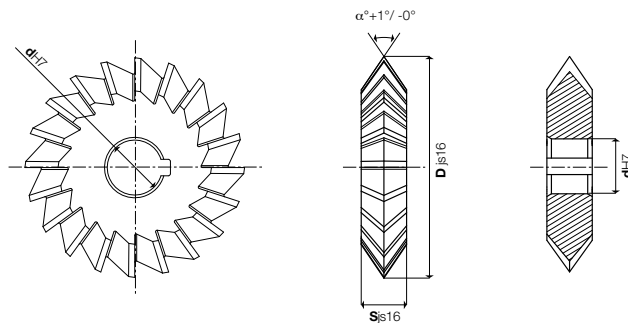
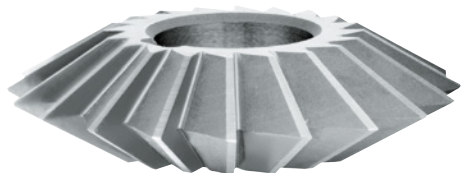
● accettabile/acceptable

○ non consigliata/not recommended

HSS-PM HSS-PM Line

Serie/Series 06105

Frese ad angolo prismatiche
Double equal angle cutters



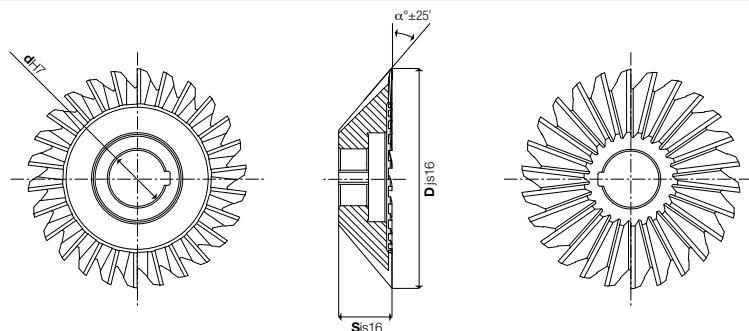
COATING Skin	H	UNI 3907 DIN 847 ISO 6108	Z 20÷30
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Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs16	α° +1°/-0°	Sjs16	dH7	Z
061054056 CM	CMX	CMX	56	45	10	16	24
061054063 CM	CMX	CMX	63	45	12	22	22
061054080 CM	CMX	CMX	80	45	16	22	26
061054100 CM	CMX	CMX	100	45	18	27	30
061056056 CM	CMX	CMX	56	60	12	16	22
061056063 CM	CMX	CMX	63	60	16	22	20
061056080 CM	CMX	CMX	80	60	20	22	24
061056100 CM	CMX	CMX	100	60	25	27	26
061059056 CM	CMX	CMX	56	90	14	16	22
061059063 CM	CMX	CMX	63	90	18	22	20
061059080 CM	CMX	CMX	80	90	22	22	22
061059100 CM	CMX	CMX	100	90	28	27	24



Serie/Series 06110

Frese ad angolo
Angular cutters



COATING Skin	H	UNI 3908 DIN 842A ISO	Z16÷26
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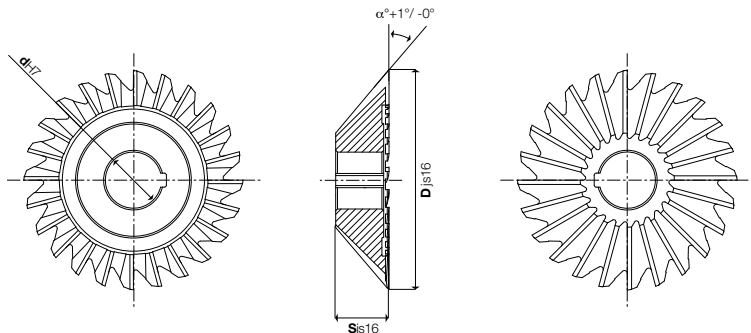
Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs16	α° $\pm 25^\circ$	Sjs16	dH7	Z
061104040 CM	CMX	CMX	40	45	12	10	18
061104050 CM	CMX	CMX	50	45	15	13	20
061104063 CM	CMX	CMX	63	45	18	16	20
061104080 CM	CMX	CMX	80	45	23	22	24
061104100 CM	CMX	CMX	100	45	30	27	24
061104125 CM	CMX	CMX	125	45	38	32	26
061104160 CM	CMX	CMX	160	45	45	40	26
061105040 CM	CMX	CMX	40	50	13	10	16
061105050 CM	CMX	CMX	50	50	16	13	18
061105063 CM	CMX	CMX	63	50	20	16	20
061105080 CM	CMX	CMX	80	50	25	22	22
061105100 CM	CMX	CMX	100	50	32	27	26
061105125 CM	CMX	CMX	125	50	40	32	26
061105160 CM	CMX	CMX	160	50	50	40	26
061106040 CM	CMX	CMX	40	60	13	10	18
061106050 CM	CMX	CMX	50	60	16	13	18
061106063 CM	CMX	CMX	63	60	20	16	18
061106080 CM	CMX	CMX	80	60	25	22	20
061106100 CM	CMX	CMX	100	60	32	27	22
061106125 CM	CMX	CMX	125	60	40	32	24
061106160 CM	CMX	CMX	160	60	50	40	26



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
06105	●	●	●	○	○	●	●
06110	●	●	●	○	○	●	●

● consigliata/recommended ○ accettabile/acceptable ○ non consigliata/not recommended



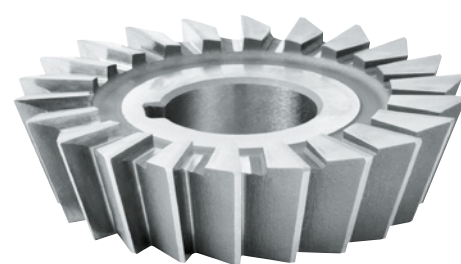
HSS-PM
HSS-PM Line

Serie/Series
06115

Frese ad angolo
Angular cutters

COATING Skin	H	UNI 3909A DIN 1823A ISO	Z18÷24
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Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs16	α° +1°/- 0°	Sjs16	dH7	Z
061154550	CM	CMX	50	45	10	16	22
061154563	CM	CMX	63	45	13	22	22
061154580	CM	CMX	80	45	15	27	24
061155050	CM	CMX	50	50	11	16	22
061155063	CM	CMX	63	50	15	22	22
061155080	CM	CMX	80	50	16	27	24
061155550	CM	CMX	50	55	12	16	20
061155563	CM	CMX	63	55	16	22	22
061155580	CM	CMX	80	55	18	27	22
061156050	CM	CMX	50	60	12	16	20
061156063	CM	CMX	63	60	18	22	20
061156080	CM	CMX	80	60	18	27	22
061156550	CM	CMX	50	65	12	16	20
061156563	CM	CMX	63	65	18	22	20
061156580	CM	CMX	80	65	20	27	22
061157050	CM	CMX	50	70	12	16	20
061157063	CM	CMX	63	70	18	22	20
061157064	CM	CMX	63	70	28	22	20
061157080	CM	CMX	80	70	20	27	22
061157550	CM	CMX	50	75	12	16	18
061157563	CM	CMX	63	75	18	22	20
061157564	CM	CMX	63	75	28	22	20
061157580	CM	CMX	80	75	22	27	20
061158050	CM	CMX	50	80	12	16	18
061158063	CM	CMX	63	80	18	22	20
061158064	CM	CMX	63	80	28	22	20
061158080	CM	CMX	80	80	24	27	20
061158550	CM	CMX	50	85	12	16	18
061158563	CM	CMX	63	85	18	22	20
061158580	CM	CMX	80	85	24	27	20



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
06115	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

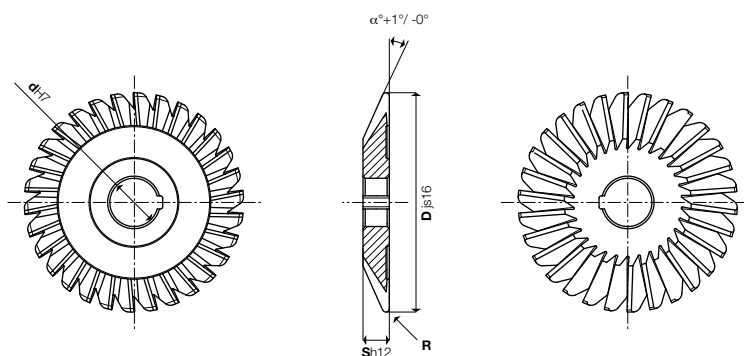
WWW.UOP.IT

37

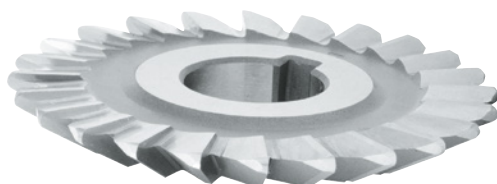
HSS-PM HSS-PM Line

Serie/Series 06120

Frese ad angolo per utensili
Angular cutters for toolmaking



COATING Skin	H	UNI 3910A DIN 1824A ISO	Z24÷30
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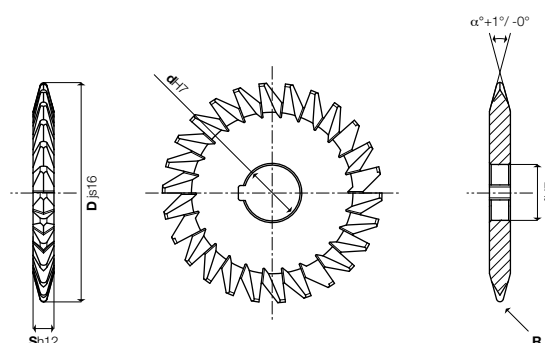


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D js16	α° +1°/-0°	Sh12	dH7	R	Z
061201056 CM	CMX		56	18	6	16	1	26
061201080 CM	CMX		80	18	9	22	1,2	26
061201100 CM	CMX		100	18	12	22	1,6	30
061202056 CM	CMX		56	24	6	16	1	24
061202080 CM	CMX		80	24	9	22	1,2	26
061202100 CM	CMX		100	24	12	22	1,6	30
061203056 CM	CMX		56	30	6	16	1	24
061203080 CM	CMX		80	30	9	22	1,2	26
061203100 CM	CMX		100	30	12	22	1,6	30



Serie/Series 06125

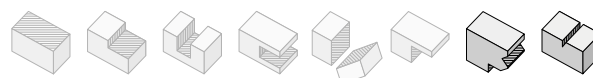
Frese ad angolo per utensili
Angular cutters for toolmaking



COATING Skin	H	UNI 3910B DIN 1824B ISO 2586	Z26÷30
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Cod. Art.	X-85 (PM Co 8,5%)	COATED	D js16	α° +1°/-0°	Sh12	dH7	R	Z
061251863 CM	CMX		63	18	6	16	1	26
061251890 CM	CMX		90	18	10	22	1,6	30
061252463 CM	CMX		63	24	6	16	1	26
061252490 CM	CMX		90	24	10	22	1,6	30
061253063 CM	CMX		63	30	6	16	1	26
061253090 CM	CMX		90	30	10	22	1,6	30



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
06120	●	●	●	○	○	●	●
06125	●	●	●	○	○	●	●

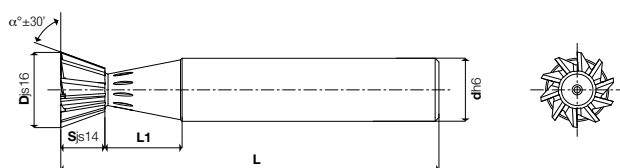
● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

Serie/Series 06130

Frese ad angolo divergente
Dovetail cutters



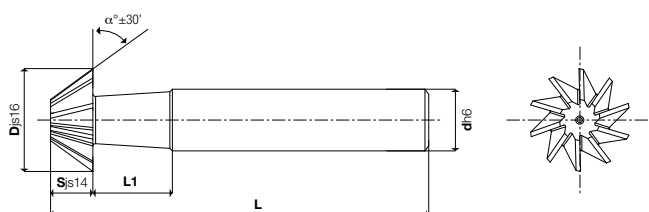
COATING Skin	W A RICHIESTA ON REQUEST	F A RICHIESTA ON REQUEST	N	UNI 8262A DIN 1833A ISO 3959	Z10÷12
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Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	Djs16	α° $\pm 30^\circ$	Sjs14	L1	L	dh6	Z
061304516 AM	CM	CMX		16	45	4	11,3	60	12	10
061304520 AM	CM	CMX		20	45	5	13,5	63	12	10
061304525 AM	CM	CMX		25	45	6,3	13	67	12	10
061304532 AM	CM	CMX		32	45	8	14	71	16	12
061306016 AM	CM	CMX		16	60	6,3	11	60	12	10
061306020 AM	CM	CMX		20	60	8	10	63	12	10
061306025 AM	CM	CMX		25	60	10	11,5	67	12	10
061306032 AM	CM	CMX		32	60	12,5	10	71	16	12
061307016 AM	CM	CMX		16	70	7	10	60	12	10
061307020 AM	CM	CMX		20	70	9	10	63	12	10
061307025 AM	CM	CMX		25	70	11	8,7	67	16	10



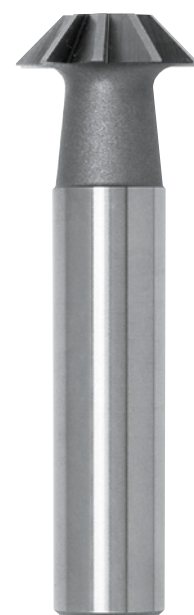
Serie/Series 06145

Frese ad angolo convergente
Inverted dovetail cutters



COATING Skin	W A RICHIESTA ON REQUEST	F A RICHIESTA ON REQUEST	N	UNI 8262B DIN 1833B ISO 3959	Z10÷12
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Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	Djs16	α° $\pm 30^\circ$	Sjs14	L1	L	dh6	Z
061454516 AM	CM	CMX		16	45	4	11,3	60	12	10
061454520 AM	CM	CMX		20	45	5	13,5	63	12	10
061454525 AM	CM	CMX		25	45	6,3	13	67	12	10
061454532 AM	CM	CMX		32	45	8	14	71	16	12
061456016 AM	CM	CMX		16	60	6,3	11	60	12	10
061456020 AM	CM	CMX		20	60	8	10	63	12	10
061456025 AM	CM	CMX		25	60	10	11,5	67	12	10
061456032 AM	CM	CMX		32	60	12,5	10	71	16	12
061457016 AM	CM	CMX		16	70	7	10	60	12	10
061457020 AM	CM	CMX		20	70	9	10	63	12	10
061457025 AM	CM	CMX		25	70	11	8,7	67	16	10



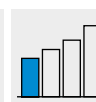
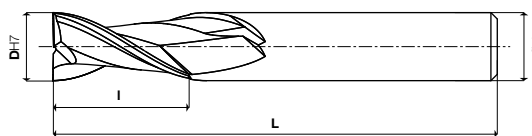
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
06130	●	●	●	○	○	●	●
06145	●	●	●	○	○	●	●

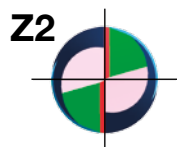
● consigliata/recommended ● accettabile/acceptable ○ non consigliata/not recommended

Serie/Series
10102

Frese a due taglienti in tolleranza H7
Two flute slot drills in tolerance H7



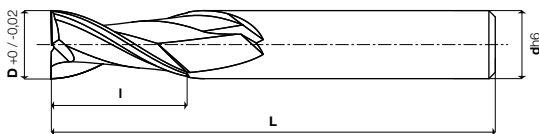
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DH7	I	L	dh6	Z
101020100 CM	CMX		1	3	47	6	2
101020150 CM	CMX		1,5	3	47	6	2
101020200 CM	CMX		2	4	48	6	2
101020250 CM	CMX		2,5	5	49	6	2
101020300 CM	CMX		3	5	49	6	2
101020350 CM	CMX		3,5	6	50	6	2
101020400 CM	CMX		4	7	51	6	2
101020450 CM	CMX		4,5	7	51	6	2
101020500 CM	CMX		5	8	52	6	2
101020550 CM	CMX		5,5	8	52	6	2
101020600 CM	CMX		6	8	52	6	2
101020650 CM	CMX		6,5	10	60	10	2
101020700 CM	CMX		7	10	60	10	2
101020750 CM	CMX		7,5	10	60	10	2
101020800 CM	CMX		8	11	61	10	2
101020850 CM	CMX		8,5	11	61	10	2
101020900 CM	CMX		9	11	61	10	2
101020950 CM	CMX		9,5	13	63	10	2
101021000 CM	CMX		10	13	63	10	2
101021050 CM	CMX		10,5	13	70	12	2
101021100 CM	CMX		11	13	70	12	2
101021200 CM	CMX		12	16	73	12	2
101021300 CM	CMX		13	16	73	12	2
101021400 CM	CMX		14	16	73	12	2
101021500 CM	CMX		15	19	79	16	2
101021600 CM	CMX		16	19	79	16	2
101021700 CM	CMX		17	19	79	16	2
101021800 CM	CMX		18	19	79	16	2
101021900 CM	CMX		19	22	82	16	2
101022000 CM	CMX		20	22	82	16	2
101022001 CM	CMX		20	22	88	20	2
101022100 CM	CMX		21	22	88	20	2
101022200 CM	CMX		22	22	88	20	2
101022300 CM	CMX		23	22	88	20	2
101022400 CM	CMX		24	26	102	25	2
101022500 CM	CMX		25	26	102	25	2
101022600 CM	CMX		26	26	102	25	2
101022800 CM	CMX		28	26	102	25	2
101023000 CM	CMX		30	26	102	25	2
101023200 CM	CMX		32	32	112	32	2
101023400 CM	CMX		34	32	112	32	2
101023500 CM	CMX		35	32	112	32	2
101023600 CM	CMX		36	32	112	32	2



parametri tecnici a pag. 1 / for technical parameters see page 119

MATERIALI LAVORABILI / WORKPIECE MATERIALS

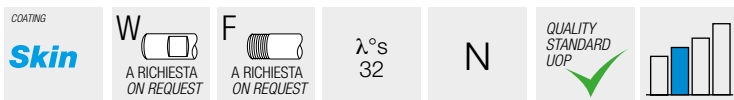
serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
10102	●	●	●	●	○	●	●



HSS-PM
HSS-PM Line

Serie/Series
10105

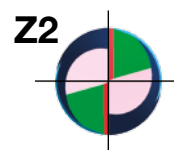
Frese a due taglienti
Two flute slot drills



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D ⁺⁰ -0,02	I	L	dh6	Z
101050200 CM	CMX	2	5	36	4	2	
101050250 CM	CMX	2,5	5	36	4	2	
101050300 CM	CMX	3	8	40	4	2	
101050350 CM	CMX	3,5	8	40	4	2	
101050400 CM	CMX	4	8	40	4	2	
101050450 CM	CMX	4,5	10	45	6	2	
101050500 CM	CMX	5	10	45	6	2	
101050600 CM	CMX	6	10	45	6	2	
101050700 CM	CMX	7	12	50	8	2	
101050800 CM	CMX	8	12	50	8	2	
101050900 CM	CMX	9	12	50	8	2	
101051000 CM	CMX	10	16	56	10	2	
101051100 CM	CMX	11	16	56	10	2	
101051200 CM	CMX	12	20	65	12	2	
101051300 CM	CMX	13	20	65	12	2	
101051400 CM	CMX	14	20	65	12	2	
101051500 CM	CMX	15	20	65	12	2	
101051600 CM	CMX	16	25	78	16	2	
101051700 CM	CMX	17	25	78	16	2	
101051800 CM	CMX	18	25	78	16	2	
101051900 CM	CMX	19	28	86	20	2	
101052000 CM	CMX	20	28	86	20	2	
101052200 CM	CMX	22	32	90	20	2	
101052400 CM	CMX	24	36	100	25	2	
101052500 CM	CMX	25	36	100	25	2	
101052600 CM	CMX	26	36	100	25	2	
101052800 CM	CMX	28	36	100	25	2	
101053000 CM	CMX	30	40	110	25	2	
101053200 CM	CMX	32	40	110	25	2	



parametri tecnici a pag. / for technical parameters see page 119



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
10105	●	●	●	●	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

41

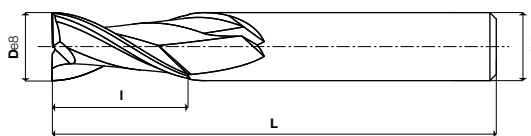
HSS-PM HSS-PM Line

Serie/Series

10110

Frese a due taglienti
Two flute end mills

ALTE PRESTAZIONI
HIGH PERFORMANCE



COATING

Skin

W

A RICHIESTA
ON REQUEST

F

A RICHIESTA
ON REQUEST

λ° s
32

N

UNI 8254
DIN 327B
ISO 1641/1

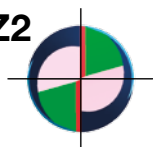


Cod. Art.	X-105 (PM Co 10,5%)	De8	I	L	dh6	Z
101100600 EMX		6	8	52	6	2
101100800 EMX		8	11	61	10	2
101101000 EMX		10	13	63	10	2
101101200 EMX		12	16	73	12	2
101101400 EMX		14	16	73	12	2
101101600 EMX		16	19	79	16	2
101101800 EMX		18	19	79	16	2
101102001 EMX		20	22	88	20	2
101102200 EMX		22	22	88	20	2
101102500 EMX		25	26	102	25	2
101102800 EMX		28	26	102	25	2
101103000 EMX		30	26	102	25	2
101103200 EMX		32	32	112	32	2



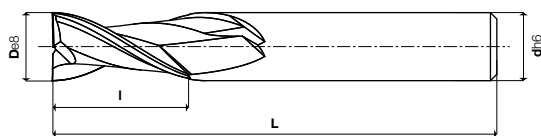
parametri tecnici a pag. 1 / for technical parameters see page 126

Z2



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
10110	●	●	●	●	○	●	●



HSS-PM
HSS-PM Line

Serie/Series
10110

Frese a due taglienti in tolleranza e8
Two flute slot drills in tolerance e8



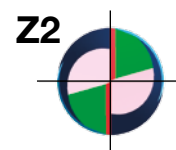
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	De8	I	L	dh6	Z
101100100 -	CM	CMX		1	3	47	6	2
101100150 -	CM	CMX		1,5	3	47	6	2
101100200 -	CM	CMX		2	4	48	6	2
101100250 -	CM	CMX		2,5	5	49	6	2
101100300 -	CM	CMX		3	5	49	6	2
101100350 -	CM	CMX		3,5	6	50	6	2
101100400 -	CM	CMX		4	7	51	6	2
101100450 -	CM	CMX		4,5	7	51	6	2
101100500 -	CM	CMX		5	8	52	6	2
101100550 -	CM	CMX		5,5	8	52	6	2
101100600 AM	CM	CMX		6	8	52	6	2
101100650 AM	CM	CMX		6,5	10	60	10	2
101100700 AM	CM	CMX		7	10	60	10	2
101100750 AM	CM	CMX		7,5	10	60	10	2
101100800 AM	CM	CMX		8	11	61	10	2
101100850 AM	CM	CMX		8,5	11	61	10	2
101100900 AM	CM	CMX		9	11	61	10	2
101100950 AM	CM	CMX		9,5	13	63	10	2
101101000 AM	CM	CMX		10	13	63	10	2
101101050 AM	CM	CMX		10,5	13	70	12	2
101101100 AM	CM	CMX		11	13	70	12	2
101101200 AM	CM	CMX		12	16	73	12	2
101101300 AM	CM	CMX		13	16	73	12	2
101101400 AM	CM	CMX		14	16	73	12	2
101101500 AM	CM	CMX		15	19	79	16	2
101101600 AM	CM	CMX		16	19	79	16	2
101101700 AM	CM	CMX		17	19	79	16	2
101101800 AM	CM	CMX		18	19	79	16	2
101101801 AM	CM	CMX		18	19	85	20	2
101101900 AM	CM	CMX		19	22	82	16	2
101101901 AM	CM	CMX		19	22	88	20	2
101102000 AM	CM	CMX		20	22	82	16	2
101102001 AM	CM	CMX		20	22	88	20	2
101102100 AM	CM	CMX		21	22	88	20	2
101102200 AM	CM	CMX		22	22	88	20	2
101102201 AM	CM	CMX		22	22	98	25	2
101102300 AM	CM	CMX		23	22	88	20	2
101102400 AM	CM	CMX		24	26	102	25	2
101102500 AM	CM	CMX		25	26	102	25	2
101102600 AM	CM	CMX		26	26	102	25	2
101102800 AM	CM	CMX		28	26	102	25	2
101103000 AM	CM	CMX		30	26	102	25	2
101103200 AM	CM	CMX		32	32	112	32	2
101103400 AM	CM	CMX		34	32	112	32	2
101103500 AM	CM	CMX		35	32	112	32	2
101103600 AM	CM	CMX		36	32	112	32	2
101103800 AM	CM	CMX		38	38	118	32	2
101104000 AM	CM	CMX		40	38	118	32	2
101104500 AM	CM	CMX		45	38	118	32	2
101105000 AM	CM	CMX		50	45	125	32	2



parametri tecnici a pag. / for technical parameters see page 119

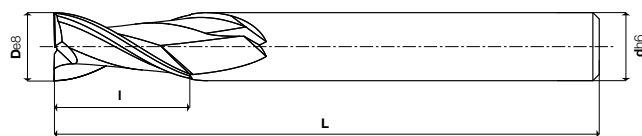
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
10110	●	●	●	●	○	●	●



Serie/Series
10125

Frese a due taglienti in tolleranza e8
Two flute slot drills in tolerance e8

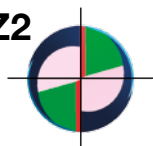


$\lambda^{\circ}\text{s}$
32

N



Z2



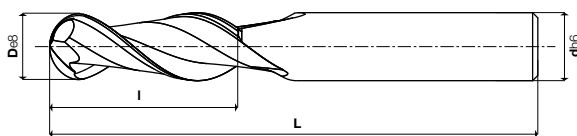
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	De8	I	L	dh6	Z
101250300 -	CM	CMX		3	9	60	6	2
101250350 -	CM	CMX		3,5	13	67	6	2
101250400 -	CM	CMX		4	13	67	6	2
101250450 -	CM	CMX		4,5	13	70	6	2
101250500 -	CM	CMX		5	16	70	6	2
101250550 -	CM	CMX		5,5	16	76	6	2
101250600 AM	CM	CMX		6	16	76	6	2
101250650 AM	CM	CMX		6,5	16	76	10	2
101250700 AM	CM	CMX		7	19	79	10	2
101250750 AM	CM	CMX		7,5	19	79	10	2
101250800 AM	CM	CMX		8	19	79	10	2
101250850 AM	CM	CMX		8,5	22	83	10	2
101250900 AM	CM	CMX		9	22	83	10	2
101250950 AM	CM	CMX		9,5	22	83	10	2
101251000 AM	CM	CMX		10	22	83	10	2
101251050 AM	CM	CMX		10,5	25	95	12	2
101251100 AM	CM	CMX		11	25	95	12	2
101251200 AM	CM	CMX		12	28	98	12	2
101251300 AM	CM	CMX		13	28	98	12	2
101251400 AM	CM	CMX		14	32	102	12	2
101251500 AM	CM	CMX		15	32	108	16	2
101251600 AM	CM	CMX		16	32	108	16	2
101251700 AM	CM	CMX		17	35	114	16	2
101251800 AM	CM	CMX		18	35	114	16	2
101251900 AM	CM	CMX		19	38	117	16	2
101252000 AM	CM	CMX		20	38	117	16	2
101252100 -	CM	CMX		21	38	132	20	2
101252200 AM	CM	CMX		22	41	135	20	2
101252300 -	CM	CMX		23	41	135	20	2
101252400 AM	CM	CMX		24	41	152	25	2
101252500 AM	CM	CMX		25	44	159	25	2
101252600 AM	CM	CMX		26	44	159	25	2
101252800 AM	CM	CMX		28	44	159	25	2
101253000 AM	CM	CMX		30	50	159	25	2
101253200 AM	CM	CMX		32	52	165	32	2
101253400 AM	CM	CMX		34	54	167	32	2
101253500 AM	CM	CMX		35	54	167	32	2
101253600 AM	CM	CMX		36	54	167	32	2
101253800 AM	CM	CMX		38	56	169	32	2
101254000 AM	CM	CMX		40	56	174	32	2
101254500 AM	CM	CMX		45	60	180	32	2
101255000 AM	CM	CMX		50	65	185	32	2



parametri tecnici a pag. 1 / for technical parameters see page 119

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
10125	●	●	●	●	○	●	●



HSS-PM
HSS-PM Line

Serie/Series
10140

Frese a due taglienti a testa semisferica
Ball nosed two flute slot drills



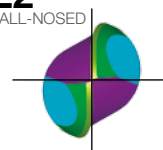
Cod. Art.	X-85 (PM Co 8,5%)	COATED	Dø8	I	L	dh6	Z
101400100 CM	CMX		1	3	47	6	2
101400150 CM	CMX		1,5	3	47	6	2
101400200 CM	CMX		2	4	48	6	2
101400300 CM	CMX		3	5	49	6	2
101400400 CM	CMX		4	7	51	6	2
101400500 CM	CMX		5	8	52	6	2
101400600 CM	CMX		6	8	52	6	2
101400700 CM	CMX		7	10	60	10	2
101400800 CM	CMX		8	11	61	10	2
101400900 CM	CMX		9	11	61	10	2
101401000 CM	CMX		10	13	63	10	2
101401100 CM	CMX		11	13	70	12	2
101401200 CM	CMX		12	16	73	12	2
101401300 CM	CMX		13	16	73	12	2
101401400 CM	CMX		14	16	73	12	2
101401500 CM	CMX		15	19	79	16	2
101401600 CM	CMX		16	19	79	16	2
101401700 CM	CMX		17	19	79	16	2
101401800 CM	CMX		18	19	79	16	2
101401900 CM	CMX		19	22	88	20	2
101402000 CM	CMX		20	22	88	20	2
101402200 CM	CMX		22	22	88	20	2
101402500 CM	CMX		25	26	102	25	2
101402800 CM	CMX		28	26	102	25	2
101403000 CM	CMX		30	26	102	25	2
101403200 CM	CMX		32	32	112	32	2



parametri tecnici a pag. / for technical parameters see page 119

Z2

BALL-NOSED



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
10140	●	●	●	●	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

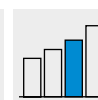
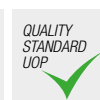
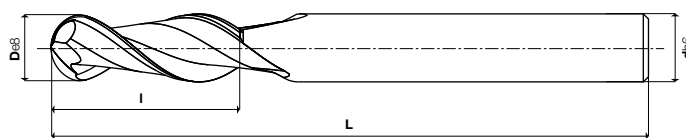
45

HSS-PM HSS-PM Line

Serie/Series

10155

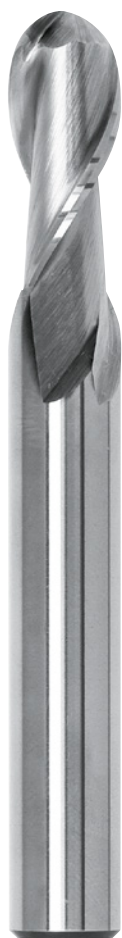
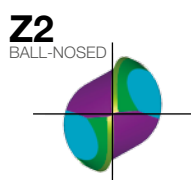
Frese a due taglienti a testa semisferica
Ball nosed two flute slot drills



Cod. Art.	X-85 (PM Co 8,5%)	COATED	De8	I	L	dh6	Z
101550300 CM	CMX		3	9	60	6	2
101550400 CM	CMX		4	13	67	6	2
101550500 CM	CMX		5	16	70	6	2
101550600 CM	CMX		6	16	76	6	2
101550700 CM	CMX		7	19	79	10	2
101550800 CM	CMX		8	19	79	10	2
101550900 CM	CMX		9	22	83	10	2
101551000 CM	CMX		10	22	83	10	2
101551100 CM	CMX		11	25	95	12	2
101551200 CM	CMX		12	28	98	12	2
101551300 CM	CMX		13	28	98	12	2
101551400 CM	CMX		14	32	102	12	2
101551500 CM	CMX		15	32	108	16	2
101551600 CM	CMX		16	32	108	16	2
101551700 CM	CMX		17	35	114	16	2
101551800 CM	CMX		18	35	114	16	2
101551900 CM	CMX		19	38	132	20	2
101552000 CM	CMX		20	38	132	20	2
101552200 CM	CMX		22	41	135	20	2
101552500 CM	CMX		25	44	159	25	2
101552800 CM	CMX		28	44	159	25	2
101553000 CM	CMX		30	50	159	25	2
101553200 CM	CMX		32	52	165	32	2

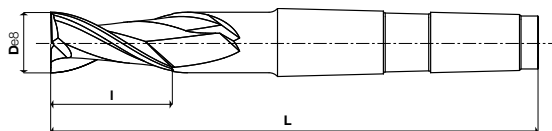


parametri tecnici a pag. / for technical parameters see page 119



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
10155	●	●	●	●	○	●	●



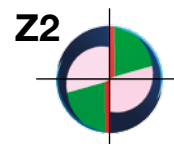
HSS-PM
HSS-PM Line

Serie/Series
10170

Frese a due taglienti
Two flute end mills



Cod. Art.	X-85 (PM Co 8,5%)	COATED	De8	I	L	MORSE TAPER	Z
101701000 CM	CMX	10	13	83	1	2	
101701200 CM	CMX	12	16	86	1	2	
101701400 CM	CMX	14	16	101	2	2	
101701600 CM	CMX	16	19	104	2	2	
101701800 CM	CMX	18	19	104	2	2	
101702000 CM	CMX	20	22	124	3	2	
101702200 CM	CMX	22	22	124	3	2	
101702400 CM	CMX	24	26	128	3	2	
101702500 CM	CMX	25	26	128	3	2	
101702600 CM	CMX	26	26	128	3	2	
101702800 CM	CMX	28	26	128	3	2	
101703000 CM	CMX	30	32	134	3	2	
101703200 CM	CMX	32	32	157	4	2	
101703400 CM	CMX	34	32	157	4	2	
101703500 CM	CMX	35	32	157	4	2	
101703600 CM	CMX	36	32	157	4	2	
101703800 CM	CMX	38	38	163	4	2	
101704000 CM	CMX	40	38	163	4	2	
101704500 CM	CMX	45	38	163	4	2	
101705000 CM	CMX	50	45	170	4	2	



Cono Morse
Morse Taper



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
10170	●	●	●	●	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

47

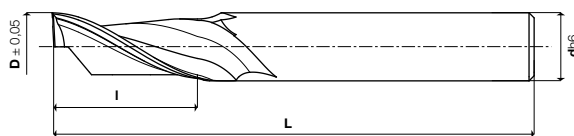
HSS-PM HSS-PM Line

Serie/Series 11405

Frese a un tagliente elicoidale
Single flute end mills

12105

Frese a due taglienti
Two flute end mills



COATING

Skin
Alu

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

$\lambda^{\circ}s$
32

W

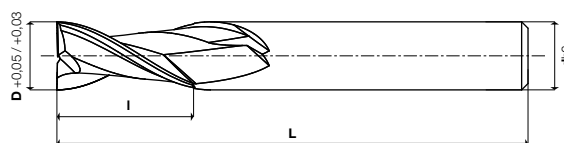
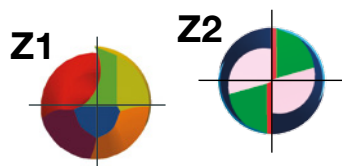
QUALITY
STANDARD
UOP



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0,05	D II	I	L	dh6	Z
114050317 CM	CMX		3,17	1/8	11	55	6,35	1
114050400 CM	CMX		4		11	55	6	1
114050476 CM	CMX		4,76	3/16	13	60	6,35	1
114050500 CM	CMX		5		13	60	6	1
114050555 CM	CMX		5,55	7/32	13	60	6,35	1
114050600 CM	CMX		6		13	60	6	1
114050635 CM	CMX		6,35	1/4	13	60	6,35	1
114050700 CM	CMX		7		16	65	10	1
114050754 CM	CMX		7,54	19/64	16	65	9,52	1
114050800 CM	CMX		8		19	70	10	1
114050873 CM	CMX		8,73	11/32	22	75	9,52	1
114050952 CM	CMX		9,52	3/8	22	75	9,52	1
114051000 CM	CMX		10		22	75	10	1
114051111 CM	CMX		11,11	7/16	25	80	12,7	1
114051200 CM	CMX		12		25	80	12	1
114051270 CM	CMX		12,7	1/2	25	80	12,7	1



parametri tecnici a pag. 1 for technical parameters see page 120



COATING

Skin
Alu

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

$\lambda^{\circ}s$
40

W

UNI 8244
DIN 844A
ISO 1641/I



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
121050200 CM	CMX		2	7	51	6	2
121050300 CM	CMX		3	8	52	6	2
121050400 CM	CMX		4	11	55	6	2
121050500 CM	CMX		5	13	57	6	2
121050600 CM	CMX		6	13	57	6	2
121050700 CM	CMX		7	16	66	10	2
121050800 CM	CMX		8	19	69	10	2
121050900 CM	CMX		9	19	69	10	2
121051000 CM	CMX		10	22	72	10	2
121051100 CM	CMX		11	22	79	12	2
121051200 CM	CMX		12	26	83	12	2
121051300 CM	CMX		13	26	83	12	2
121051400 CM	CMX		14	26	83	12	2
121051500 CM	CMX		15	32	92	16	2
121051600 CM	CMX		16	32	92	16	2
121051800 CM	CMX		18	32	92	16	2
121052000 CM	CMX		20	38	104	20	2
121052200 CM	CMX		22	38	104	20	2
121052500 CM	CMX		25	45	121	25	2
121052800 CM	CMX		28	45	121	25	2
121053000 CM	CMX		30	45	121	25	2
121053200 CM	CMX		32	53	133	32	2



parametri tecnici a pag. 1 for technical parameters see page 120

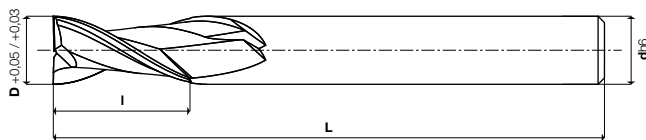
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
11405	○	○	○	●	●	○	○
12105	○	○	●	●	●	○	○

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended



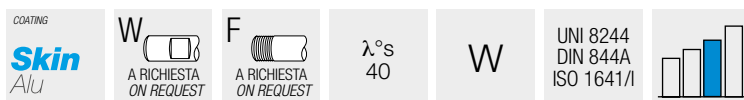
HSS-PM
HSS-PM Line

Serie/Series
12120

Frese a due taglienti
Two flute end mills

12505

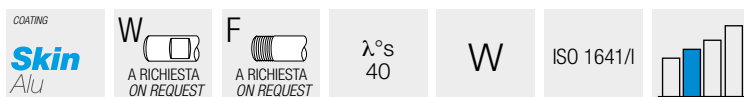
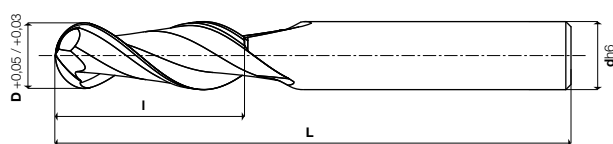
Frese a due taglienti a testa semisferica
Ball nosed two flute drills



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0.05 +0.03	I	L	dh6	Z
121200300 CM	CMX	3	12	56	6	2	
121200400 CM	CMX	4	19	63	6	2	
121200500 CM	CMX	5	24	68	6	2	
121200600 CM	CMX	6	24	68	6	2	
121200700 CM	CMX	7	30	80	10	2	
121200800 CM	CMX	8	38	88	10	2	
121200900 CM	CMX	9	38	88	10	2	
121201000 CM	CMX	10	45	95	10	2	
121201100 CM	CMX	11	45	102	12	2	
121201200 CM	CMX	12	53	110	12	2	
121201300 CM	CMX	13	53	110	12	2	
121201400 CM	CMX	14	53	110	12	2	
121201500 CM	CMX	15	63	123	16	2	
121201600 CM	CMX	16	63	123	16	2	
121201800 CM	CMX	18	63	123	16	2	
121202000 CM	CMX	20	75	141	20	2	
121202200 CM	CMX	22	75	141	20	2	
121202500 CM	CMX	25	90	166	25	2	
121202800 CM	CMX	28	90	166	25	2	
121203000 CM	CMX	30	90	166	25	2	
121203200 CM	CMX	32	106	186	32	2	



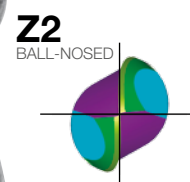
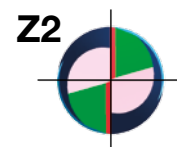
parametri tecnici a pag. / for technical parameters see page 120



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
125050200	CM	CMX	2	7	51	6	2
125050300	CM	CMX	3	8	52	6	2
125050400	CM	CMX	4	11	55	6	2
125050500	CM	CMX	5	13	57	6	2
125050600	CM	CMX	6	13	57	6	2
125050800	CM	CMX	8	19	69	10	2
125051000	CM	CMX	10	22	72	10	2
125051200	CM	CMX	12	26	83	12	2
125051400	CM	CMX	14	26	83	12	2
125051500	CM	CMX	15	32	92	16	2
125051600	CM	CMX	16	32	92	16	2
125051800	CM	CMX	18	32	92	16	2
125052000	CM	CMX	20	38	104	20	2
125052200	CM	CMX	22	38	104	20	2
125052500	CM	CMX	25	45	121	25	2
125052800	CM	CMX	28	45	121	25	2
125053000	CM	CMX	30	45	121	25	2
125053200	CM	CMX	32	53	133	32	2



parametri tecnici a pag. / for technical parameters see page 119



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
12120	○	○	●	●	●	○	○
12505	○	○	●	●	●	○	○

● consigliata/recommended ● accettabile/acceptable ○ non consigliata/not recommended

WWW.UOP.IT

49

HSS-PM HSS-PM Line

Serie/Series 12520

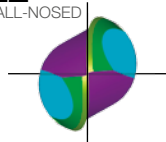
Frese a due taglienti a testa semisferica
Ball nosed two flute end drills

14105

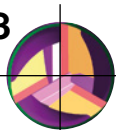
Frese a tre taglienti ad alte prestazioni
Three flute end mills

ALTE PRESTAZIONI
HIGH PERFORMANCE

Z2
BALL-NOSED



Z3



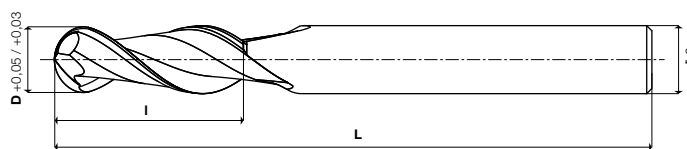
Skin
Rivestimento/Coating



Serie/Series 12520



Serie/Series 14105



COATING

Skin
Alu

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

λ° s
40

W

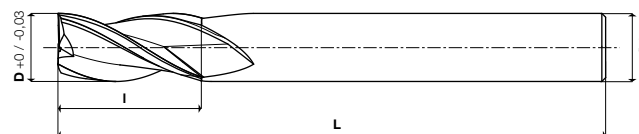
ISO 1641/I



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
125200300 CM	CMX		3	12	56	6	2
125200400 CM	CMX		4	19	63	6	2
125200500 CM	CMX		5	24	68	6	2
125200600 CM	CMX		6	24	68	6	2
125200800 CM	CMX		8	38	88	10	2
125201000 CM	CMX		10	45	95	10	2
125201200 CM	CMX		12	53	110	12	2
125201400 CM	CMX		14	53	110	12	2
125201500 CM	CMX		15	63	123	16	2
125201600 CM	CMX		16	63	123	16	2
125201800 CM	CMX		18	63	123	16	2
125202000 CM	CMX		20	75	141	20	2
125202200 CM	CMX		22	75	141	20	2
125202500 CM	CMX		25	90	166	25	2
125202800 CM	CMX		28	90	166	25	2
125203000 CM	CMX		30	90	166	25	2
125203200 CM	CMX		32	106	186	32	2



parametri tecnici a pag. 1 for technical parameters see page 119



COATING

Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

λ° s
32

N

UNI 8244
DIN 844A
ISO 1641/I

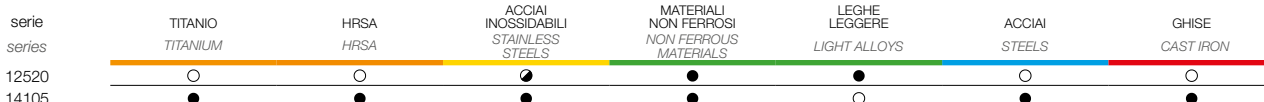


Cod. Art.	X-105 (PM Co 10,5%)	D +0 -0,03	I	L	dh6	Z
141050600 EMX		6	13	57	6	3
141050800 EMX		8	19	69	10	3
141051000 EMX		10	22	72	10	3
141051200 EMX		12	26	83	12	3
141051400 EMX		14	26	83	12	3
141051600 EMX		16	32	92	16	3
141051800 EMX		18	32	92	16	3
141052001 EMX		20	38	104	20	3



parametri tecnici a pag. 1 for technical parameters see page 126

MATERIALI LAVORABILI / WORKPIECE MATERIALS



● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended



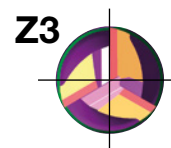
HSS-PM
HSS-PM Line

Serie/Series
14105

Frese a tre taglienti
Three flute end mills



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0 -0,03	I	L	dh6	Z
141050200 CM	CMX		2	7	51	6	3
141050250 CM	CMX		2,5	8	52	6	3
141050300 CM	CMX		3	8	52	6	3
141050350 CM	CMX		3,5	10	54	6	3
141050400 CM	CMX		4	11	55	6	3
141050450 CM	CMX		4,5	11	55	6	3
141050500 CM	CMX		5	13	57	6	3
141050550 CM	CMX		5,5	13	57	6	3
141050600 CM	CMX		6	13	57	6	3
141050650 CM	CMX		6,5	16	66	10	3
141050700 CM	CMX		7	16	66	10	3
141050800 CM	CMX		8	19	69	10	3
141050900 CM	CMX		9	19	69	10	3
141051000 CM	CMX		10	22	72	10	3
141051100 CM	CMX		11	22	79	12	3
141051200 CM	CMX		12	26	83	12	3
141051300 CM	CMX		13	26	83	12	3
141051400 CM	CMX		14	26	83	12	3
141051500 CM	CMX		15	32	92	16	3
141051600 CM	CMX		16	32	92	16	3
141051700 CM	CMX		17	32	92	16	3
141051800 CM	CMX		18	32	92	16	3
141051900 CM	CMX		19	38	98	16	3
141052000 CM	CMX		20	38	98	16	3
141052200 CM	CMX		22	38	104	20	3
141052400 CM	CMX		24	45	121	25	3
141052500 CM	CMX		25	45	121	25	3
141052600 CM	CMX		26	45	121	25	3
141052800 CM	CMX		28	45	121	25	3
141053000 CM	CMX		30	45	121	25	3
141053200 CM	CMX		32	53	133	32	3
141053400 CM	CMX		34	53	133	32	3
141053500 CM	CMX		35	53	133	32	3
141053600 CM	CMX		36	53	133	32	3
141053800 CM	CMX		38	63	143	32	3
141054000 CM	CMX		40	63	143	32	3
141054500 CM	CMX		45	63	143	32	3
141054800 CM	CMX		48	75	155	32	3
141055000 CM	CMX		50	75	155	32	3



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
14105	●	●	●	●	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

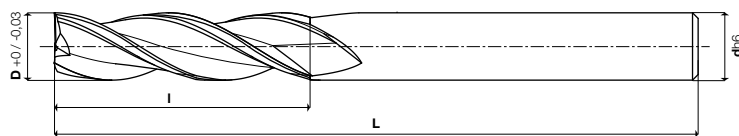
WWW.UOP.IT

51

HSS-PM HSS-PM Line

Serie/Series 14120

Frese a tre taglienti
Three flute end mills



COATING

Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

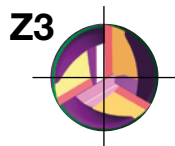
λ° s
32

N

UNI 8244
DIN 844A
ISO 1641/I



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0 -0,03	I	L	dh6	Z
141200200 CM		CMX	2	10	54	6	3
141200300 CM		CMX	3	12	56	6	3
141200400 CM		CMX	4	19	63	6	3
141200500 CM		CMX	5	24	68	6	3
141200600 CM		CMX	6	24	68	6	3
141200700 CM		CMX	7	30	80	10	3
141200800 CM		CMX	8	38	88	10	3
141200900 CM		CMX	9	38	88	10	3
141201000 CM		CMX	10	45	95	10	3
141201100 CM		CMX	11	45	102	12	3
141201200 CM		CMX	12	53	110	12	3
141201300 CM		CMX	13	53	110	12	3
141201400 CM		CMX	14	53	110	12	3
141201500 CM		CMX	15	63	123	16	3
141201600 CM		CMX	16	63	123	16	3
141201700 CM		CMX	17	63	123	16	3
141201800 CM		CMX	18	63	123	16	3
141201900 CM		CMX	19	75	135	16	3
141202000 CM		CMX	20	75	135	16	3
141202200 CM		CMX	22	75	141	20	3
141202400 CM		CMX	24	90	166	25	3
141202500 CM		CMX	25	90	166	25	3
141202600 CM		CMX	26	90	166	25	3
141202800 CM		CMX	28	90	166	25	3
141203000 CM		CMX	30	90	166	25	3
141203200 CM		CMX	32	106	186	32	3
141203400 CM		CMX	34	106	186	32	3
141203500 CM		CMX	35	106	186	32	3
141203600 CM		CMX	36	106	186	32	3
141203800 CM		CMX	38	125	205	32	3
141204000 CM		CMX	40	125	205	32	3



parametri tecnici a pag. 1 / for technical parameters see page 121

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie
series
14120

TITANIO
TITANIUM

HRSA
HRSA

ACCIAI
INOSSIDABILI
STAINLESS
STEELS

MATERIALI
NON FERROSI
NON FERROUS
MATERIALS

LEGHE
LEGGERE
LIGHT ALLOYS

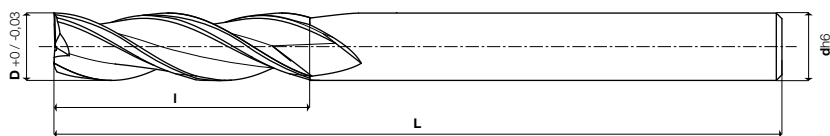
ACCIAI
STEELS

GHISE
CAST IRON

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended



COATING
Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

$\lambda^{\circ}S$
32

N

QUALITY
STANDARD
UOP



HSS-PM
HSS-PM Line

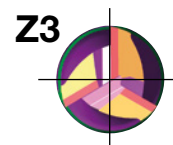
Serie/Series
14135

Frese a tre taglienti
Three flute end mills

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D ⁺⁰ -0,03	I	L	dh6	Z
141350600 CM	CMX		6	56	106	10	3
141350700 CM	CMX		7	63	113	10	3
141350800 CM	CMX		8	63	113	10	3
141350900 CM	CMX		9	70	120	10	3
141351000 CM	CMX		10	70	120	10	3
141351100 CM	CMX		11	80	137	12	3
141351200 CM	CMX		12	80	137	12	3
141351300 CM	CMX		13	80	137	12	3
141351400 CM	CMX		14	80	137	12	3
141351500 CM	CMX		15	90	150	16	3
141351600 CM	CMX		16	90	150	16	3
141351700 CM	CMX		17	90	150	16	3
141351800 CM	CMX		18	100	166	20	3
141351900 CM	CMX		19	110	176	20	3
141352000 CM	CMX		20	110	176	20	3
141352200 CM	CMX		22	110	176	20	3
141352500 CM	CMX		25	125	201	25	3
141352800 CM	CMX		28	135	211	25	3
141353000 CM	CMX		30	140	216	25	3
141353200 CM	CMX		32	150	230	32	3



parametri tecnici a pag. / for technical parameters see page 121



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
14135	●	●	●	●	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

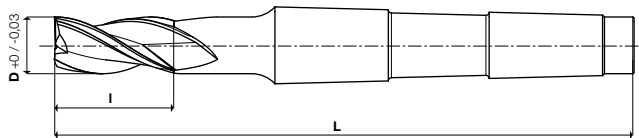
WWW.UOP.IT

53

HSS-PM HSS-PM Line

Serie/Series
14150

Frese a tre taglienti
Three flute end mills



COATING
Skin

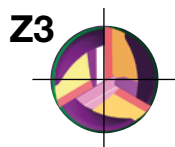
λ° s
32

N

UNI 8250
DIN 845B
ISO 1641/II



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0 -0,03	I	L	MORSE TAPER	Z
141501000 CM	CMX		10	22	92	1	3
141501200 CM	CMX		12	26	96	1	3
141501400 CM	CMX		14	26	111	2	3
141501500 CM	CMX		15	32	117	2	3
141501600 CM	CMX		16	32	117	2	3
141501800 CM	CMX		18	32	117	2	3
141502000 CM	CMX		20	38	140	3	3
141502200 CM	CMX		22	38	140	3	3
141502400 CM	CMX		24	45	147	3	3
141502500 CM	CMX		25	45	147	3	3
141502600 CM	CMX		26	45	147	3	3
141502800 CM	CMX		28	45	147	3	3
141503000 CM	CMX		30	53	155	3	3
141503200 CM	CMX		32	53	178	4	3
141503400 CM	CMX		34	53	178	4	3
141503500 CM	CMX		35	53	178	4	3
141503600 CM	CMX		36	53	178	4	3
141503800 CM	CMX		38	63	188	4	3
141504000 CM	CMX		40	63	188	4	3
141504500 CM	CMX		45	63	188	4	3
141505000 CM	CMX		50	75	200	4	3



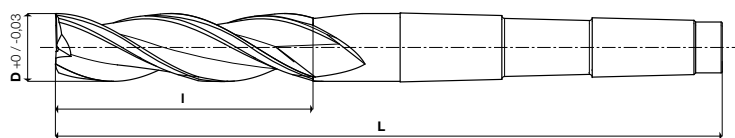
Cono Morse
Morse Taper

MATERIALI LAVORABILI / WORKPIECE MATERIALS



● consigliata/recommended ● accettabile/acceptable ○ non consigliata/not recommended





HSS-PM
HSS-PM Line

Serie/Series
14155

Frese a tre taglienti
Three flute end mills

COATING

Skin

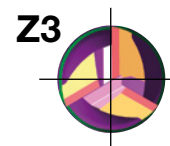
$\lambda^{\circ}S$
32

N

UNI 8250
DIN 845B
ISO 1641/II



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0 -0,03	I	L	MORSE TAPER	Z
141551000 CM	CMX		10	45	115	1	3
141551200 CM	CMX		12	53	123	1	3
141551400 CM	CMX		14	53	138	2	3
141551500 CM	CMX		15	63	148	2	3
141551600 CM	CMX		16	63	148	2	3
141551800 CM	CMX		18	63	148	2	3
141552000 CM	CMX		20	75	177	3	3
141552200 CM	CMX		22	75	177	3	3
141552400 CM	CMX		24	90	192	3	3
141552500 CM	CMX		25	90	192	3	3
141552600 CM	CMX		26	90	192	3	3
141552800 CM	CMX		28	90	192	3	3
141553000 CM	CMX		30	90	192	3	3
141553200 CM	CMX		32	106	231	4	3
141553400 CM	CMX		34	106	231	4	3
141553500 CM	CMX		35	106	231	4	3
141553600 CM	CMX		36	106	231	4	3
141553800 CM	CMX		38	125	250	4	3
141554000 CM	CMX		40	125	250	4	3
141554500 CM	CMX		45	125	250	4	3
141555000 CM	CMX		50	150	275	4	3



Cono Morse
Morse Taper

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
14155	●	●	●	●	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

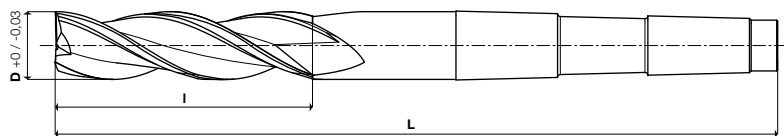
55

HSS-PM HSS-PM Line

Serie/Series

14160

Frese a tre taglienti
Three flute end mills



COATING
Skin

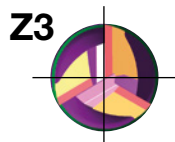
λ° s
32

N

QUALITY
STANDARD
UOP



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0 -0,03	I	L	MORSE TAPER	Z
141601000 CM		CMX	10	70	155	2	3
141601200 CM		CMX	12	80	165	2	3
141601400 CM		CMX	14	80	165	2	3
141601500 CM		CMX	15	90	175	2	3
141601600 CM		CMX	16	90	175	2	3
141601800 CM		CMX	18	100	202	3	3
141602000 CM		CMX	20	110	212	3	3
141602200 CM		CMX	22	110	212	3	3
141602400 CM		CMX	24	125	227	3	3
141602500 CM		CMX	25	125	250	4	3
141602600 CM		CMX	26	125	250	4	3
141602800 CM		CMX	28	135	260	4	3
141603000 CM		CMX	30	140	265	4	3
141603200 CM		CMX	32	150	275	4	3
141603400 CM		CMX	34	150	275	4	3
141603500 CM		CMX	35	150	275	4	3
141603600 CM		CMX	36	150	275	4	3
141603800 CM		CMX	38	180	305	4	3
141604000 CM		CMX	40	180	305	4	3
141604500 CM		CMX	45	190	315	4	3
141605000 CM		CMX	50	200	325	4	3



Cono Morse
Morse Taper



MATERIALI LAVORABILI / WORKPIECE MATERIALS



● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

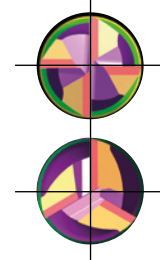
Serie/Series
TORNADO
14505

Frese "Tornado"
"Tornado" end mills

14520

Frese "Tornado"
"Tornado" end mills

Z3÷4

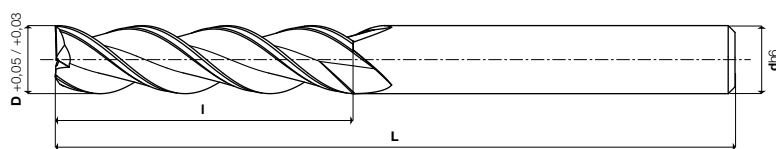


Z3÷4



Serie/Series 14505

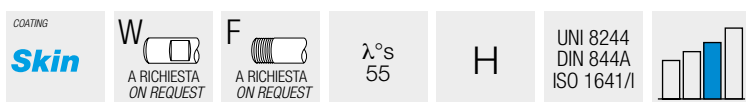
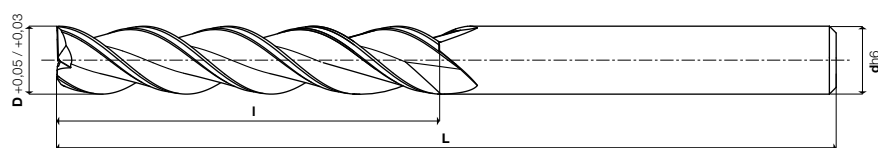
Serie/Series 14520



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
145050300 CM	CMX		3	8	52	6	3
145050400 CM	CMX		4	11	55	6	3
145050500 CM	CMX		5	13	57	6	3
145050600 CM	CMX		6	13	57	6	3
145050700 CM	CMX		7	16	66	10	3
145050800 CM	CMX		8	19	69	10	3
145050900 CM	CMX		9	19	69	10	3
145051000 CM	CMX		10	22	72	10	3
145051200 CM	CMX		12	26	83	12	3
145051400 CM	CMX		14	26	83	12	3
145051500 CM	CMX		15	32	92	16	3
145051600 CM	CMX		16	32	92	16	3
145051800 CM	CMX		18	32	92	16	3
145052000 CM	CMX		20	38	104	20	3
145052200 CM	CMX		22	38	104	20	3
145052500 CM	CMX		25	45	121	25	4



parametri tecnici a pag. / for technical parameters see page 121



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
145200300 CM	CMX		3	12	56	6	3
145200400 CM	CMX		4	19	63	6	3
145200500 CM	CMX		5	24	68	6	3
145200600 CM	CMX		6	24	68	6	3
145200700 CM	CMX		7	30	80	10	3
145200800 CM	CMX		8	38	88	10	3
145200900 CM	CMX		9	38	88	10	3
145201000 CM	CMX		10	45	95	10	3
145201200 CM	CMX		12	53	110	12	3
145201400 CM	CMX		14	53	110	12	3
145201500 CM	CMX		15	63	123	16	3
145201600 CM	CMX		16	63	123	16	3
145201800 CM	CMX		18	63	123	16	3
145202000 CM	CMX		20	75	141	20	3
145202200 CM	CMX		22	75	141	20	3
145202500 CM	CMX		25	90	166	25	4



parametri tecnici a pag. / for technical parameters see page 121

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO	HRSA	ACCIAI INOSSIDABILI	MATERIALI NON FERROSI	LEGHE LEGGERE	ACCIAI	GHISE
series	TITANIUM	HRSA	STAINLESS STEELS	NON FERROUS MATERIALS	LIGHT ALLOYS	STEELS	CAST IRON
14505	●	●	●	○	○	●	●
14520	●	●	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

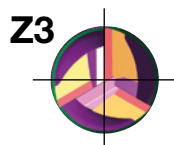
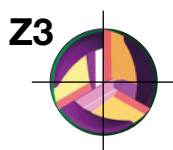
HSS-PM HSS-PM Line

Serie/Series 14805

Frese a tre taglienti
Three flute end mills

14820

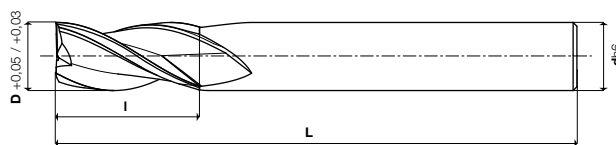
Frese a tre taglienti
Three flute end mills



Serie/Series 14805



Serie/Series 14820



$\lambda^{\circ}s$
40

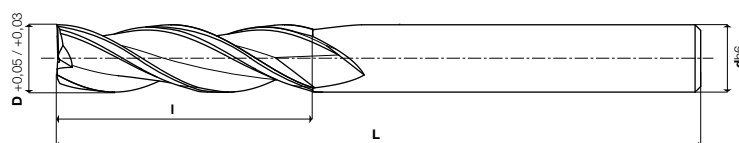
W



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
148050300 CM	CMX	CMX	3	14	58	6	3
148050400 CM	CMX	CMX	4	18	62	6	3
148050500 CM	CMX	CMX	5	20	64	6	3
148050600 CM	CMX	CMX	6	22	66	6	3
148050700 CM	CMX	CMX	7	22	72	10	3
148050800 CM	CMX	CMX	8	25	75	10	3
148050900 CM	CMX	CMX	9	25	75	10	3
148051000 CM	CMX	CMX	10	28	78	10	3
148051200 CM	CMX	CMX	12	32	89	12	3
148051400 CM	CMX	CMX	14	32	89	12	3
148051600 CM	CMX	CMX	16	36	96	16	3
148051800 CM	CMX	CMX	18	40	100	16	3
148052000 CM	CMX	CMX	20	45	110	20	3
148052200 CM	CMX	CMX	22	45	110	20	3
148052500 CM	CMX	CMX	25	50	125	25	3
148052800 CM	CMX	CMX	28	56	132	25	3
148053000 CM	CMX	CMX	30	63	140	25	3
148053200 CM	CMX	CMX	32	63	143	32	3
148053600 CM	CMX	CMX	36	70	150	32	3
148054000 CM	CMX	CMX	40	70	150	32	3



parametri tecnici a pag. 1 for technical parameters see page 122



$\lambda^{\circ}s$
40

W



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
148200300 CM	CMX	CMX	3	18	62	6	3
148200400 CM	CMX	CMX	4	22	65	6	3
148200500 CM	CMX	CMX	5	26	70	6	3
148200600 CM	CMX	CMX	6	30	75	6	3
148200700 CM	CMX	CMX	7	34	84	10	3
148200800 CM	CMX	CMX	8	34	84	10	3
148200900 CM	CMX	CMX	9	40	90	10	3
148201000 CM	CMX	CMX	10	40	90	10	3
148201200 CM	CMX	CMX	12	56	113	12	3
148201400 CM	CMX	CMX	14	63	120	12	3
148201600 CM	CMX	CMX	16	63	123	16	3
148201800 CM	CMX	CMX	18	71	131	16	3
148202000 CM	CMX	CMX	20	71	137	20	3
148202200 CM	CMX	CMX	22	80	146	20	3
148202500 CM	CMX	CMX	25	80	156	25	3
148202800 CM	CMX	CMX	28	90	166	25	3
148203000 CM	CMX	CMX	30	90	166	25	3
148203200 CM	CMX	CMX	32	90	170	32	3
148203600 CM	CMX	CMX	36	100	180	32	3
148204000 CM	CMX	CMX	40	100	180	32	3



parametri tecnici a pag. 1 for technical parameters see page 122

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
14805	○	○	○	●	●	○	○
14820	○	○	○	●	●	○	○



● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

Serie/Series
14850

Frese a tre taglienti
Three flute end mills

14855

Frese a tre taglienti
Three flute end mills

COATING

Skin
Alu

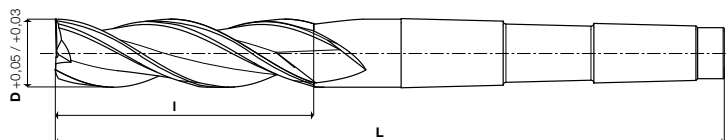
$\lambda^{\circ}\text{s}$
40

W

QUALITY
STANDARD
UOP



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	MORSE TAPER	Z
148501000	CM	CMX	10	28	98	1	3
148501200	CM	CMX	12	32	102	1	3
148501400	CM	CMX	14	32	117	2	3
148501500	CM	CMX	15	35	120	2	3
148501600	CM	CMX	16	35	120	2	3
148501800	CM	CMX	18	40	125	2	3
148502000	CM	CMX	20	45	147	3	3
148502200	CM	CMX	22	45	147	3	3
148502400	CM	CMX	24	50	152	3	3
148502500	CM	CMX	25	50	152	3	3
148502600	CM	CMX	26	56	158	3	3
148502800	CM	CMX	28	56	158	3	3
148503000	CM	CMX	30	63	165	3	3
148503200	CM	CMX	32	63	188	4	3
148503400	CM	CMX	34	70	195	4	3
148503500	CM	CMX	35	70	195	4	3
148503600	CM	CMX	36	70	195	4	3
148503800	CM	CMX	38	70	195	4	3
148504000	CM	CMX	40	70	195	4	3
148504500	CM	CMX	45	80	205	4	3
148505000	CM	CMX	50	90	215	4	3



COATING

Skin
Alu

$\lambda^{\circ}\text{s}$
40

W

QUALITY
STANDARD
UOP



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	MORSE TAPER	Z
148551000 CM	CMX	10	45	115	1	3	
148551200 CM	CMX	12	50	120	1	3	
148551400 CM	CMX	14	50	135	2	3	
148551500 CM	CMX	15	50	135	2	3	
148551600 CM	CMX	16	56	141	2	3	
148551800 CM	CMX	18	63	148	2	3	
148552000 CM	CMX	20	70	172	3	3	
148552200 CM	CMX	22	70	172	3	3	
148552400 CM	CMX	24	80	182	3	3	
148552500 CM	CMX	25	80	182	3	3	
148552600 CM	CMX	26	80	182	3	3	
148552800 CM	CMX	28	90	192	3	3	
148553000 CM	CMX	30	90	192	3	3	
148553200 CM	CMX	32	100	225	4	3	
148553400 CM	CMX	34	110	235	4	3	
148553500 CM	CMX	35	110	235	4	3	
148553600 CM	CMX	36	110	235	4	3	
148553800 CM	CMX	38	110	235	4	3	
148554000 CM	CMX	40	110	235	4	3	
148554500 CM	CMX	45	120	245	4	3	
148555000 CM	CMX	50	130	255	4	3	



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
14850	○	○	○	●	●	○	○
14855	○	○	○	●	●	○	○

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

59



HSS-PM HSS-PM Line

Serie/Series

15105

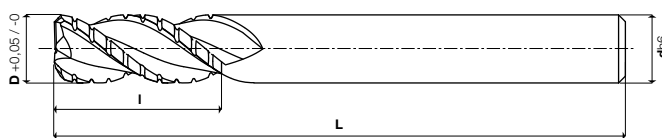
Frese a tre taglienti a **SEMIFINIRE**

Three flute roughing and semi-finishing end mills

15120

Frese a tre taglienti a **SEMIFINIRE**

Three flute roughing and semi-finishing end mills



COATING

Skin
Alu

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

$\lambda^{\circ}s$
40

WF

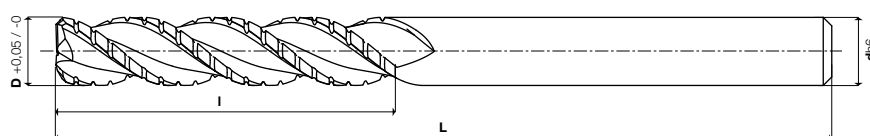
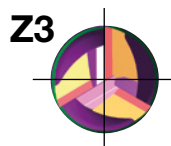
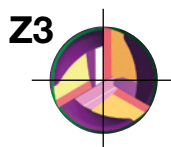
UNI 8244
DIN 844A
ISO 1641/I



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
151050600 CM	CMX		6	13	57	6	3
151050800 CM	CMX		8	19	69	10	3
151051000 CM	CMX		10	22	72	10	3
151051200 CM	CMX		12	26	83	12	3
151051400 CM	CMX		14	26	83	12	3
151051500 CM	CMX		15	32	92	16	3
151051600 CM	CMX		16	32	92	16	3
151051800 CM	CMX		18	32	92	16	3
151052000 CM	CMX		20	38	104	20	3
151052200 CM	CMX		22	38	104	20	3
151052500 CM	CMX		25	45	121	25	3
151052800 CM	CMX		28	45	121	25	3
151053000 CM	CMX		30	45	121	25	3
151053200 CM	CMX		32	53	133	32	3
151053600 CM	CMX		36	53	133	32	3
151054000 CM	CMX		40	63	143	32	3



parametri tecnici a pag. 1 for technical parameters see page 124



COATING

Skin
Alu

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

$\lambda^{\circ}s$
40

WF

UNI 8244
DIN 844A
ISO 1641/I



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	I	L	dh6	Z
151200600 CM	CMX		6	24	68	6	3
151200800 CM	CMX		8	38	88	10	3
151201000 CM	CMX		10	45	95	10	3
151201200 CM	CMX		12	53	110	12	3
151201400 CM	CMX		14	53	110	12	3
151201500 CM	CMX		15	63	123	16	3
151201600 CM	CMX		16	63	123	16	3
151201800 CM	CMX		18	63	123	16	3
151202000 CM	CMX		20	75	141	20	3
151202200 CM	CMX		22	75	141	20	3
151202500 CM	CMX		25	90	166	25	3
151202800 CM	CMX		28	90	166	25	3
151203000 CM	CMX		30	90	166	32	3
151203200 CM	CMX		32	106	186	32	3
151203600 CM	CMX		36	106	186	32	3
151204000 CM	CMX		40	125	205	32	3



parametri tecnici a pag. 1 for technical parameters see page 124

MATERIALI LAVORABILI / WORKPIECE MATERIALS

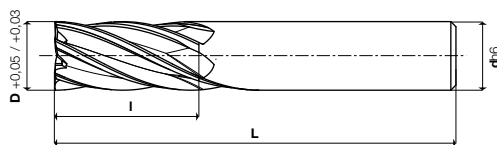
serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
15105	○	○	○	●	●	○	○
15120	○	○	○	●	●	○	○

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended





HSS-PM
HSS-PM Line

Serie/Series
17105

Frese a **FINIRE**
Finishing end mills

COATING

Skin

W

A RICHIESTA
ON REQUEST

F

A RICHIESTA
ON REQUEST

λ° S
32

N

UNI 8244
DIN 844A
ISO 1641/1

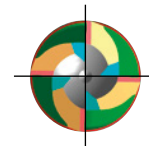


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
171050200	CM	CMX	2	7	51	6	4
171050250	CM	CMX	2,5	8	52	6	4
171050300	CM	CMX	3	8	52	6	4
171050350	CM	CMX	3,5	10	54	6	4
171050400	CM	CMX	4	11	55	6	4
171050450	CM	CMX	4,5	11	55	6	4
171050500	CM	CMX	5	13	57	6	4
171050550	CM	CMX	5,5	13	57	6	4
171050600	CM	CMX	6	13	57	6	4
171050650	CM	CMX	6,5	16	66	10	4
171050700	CM	CMX	7	16	66	10	4
171050800	CM	CMX	8	19	69	10	4
171050900	CM	CMX	9	19	69	10	4
171051000	CM	CMX	10	22	72	10	4
171051100	CM	CMX	11	22	79	12	4
171051200	CM	CMX	12	26	83	12	4
171051300	CM	CMX	13	26	83	12	4
171051400	CM	CMX	14	26	83	12	4
171051500	CM	CMX	15	32	92	16	4
171051600	CM	CMX	16	32	92	16	4
171051700	CM	CMX	17	32	92	16	4
171051800	CM	CMX	18	32	92	16	4
171051900	CM	CMX	19	38	98	16	4
171052000	CM	CMX	20	38	98	16	4
171052001	CM	CMX	20	38	104	20	4
171052200	CM	CMX	22	38	104	20	4
171052400	CM	CMX	24	45	121	25	5
171052500	CM	CMX	25	45	121	25	5
171052600	CM	CMX	26	45	121	25	5
171052800	CM	CMX	28	45	121	25	5
171053000	CM	CMX	30	45	121	25	6
171053200	CM	CMX	32	53	133	32	6
171053400	CM	CMX	34	53	133	32	6
171053500	CM	CMX	35	53	133	32	6
171053600	CM	CMX	36	53	133	32	6
171053800	CM	CMX	38	63	143	32	6
171054000	CM	CMX	40	63	143	32	8
171054500	CM	CMX	45	63	143	32	8
171054800	CM	CMX	48	75	155	32	8
171055000	CM	CMX	50	75	155	32	8



parametri tecnici a pag. / for technical parameters see page 123

Z4÷8



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie
series
17105

TITANIO
TITANIUM

HRSA
HRSA

ACCIAI
INOSSIDABILI
STAINLESS
STEELS

MATERIALI
NON FERROSI
NON FERROUS
MATERIALS

LEGHE
LEGGERE
LIGHT ALLOYS

ACCIAI
STEELS

GHISE
CAST IRON

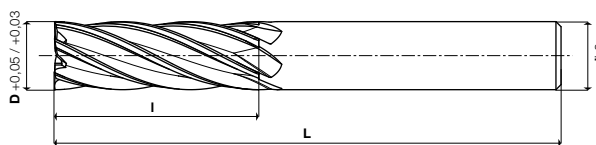
● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

WWW.UOP.IT

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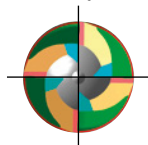
λ° s
32

N

UNI 8244
DIN 844A
ISO 1641/I



Z4÷8



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0.05 +0.03	I	L	dh6	Z
171200200 CM	CMX		2	10	54	6	4
171200300 CM	CMX		3	12	56	6	4
171200400 CM	CMX		4	19	63	6	4
171200500 CM	CMX		5	24	68	6	4
171200600 CM	CMX		6	24	68	6	4
171200700 CM	CMX		7	30	80	10	4
171200800 CM	CMX		8	38	88	10	4
171200900 CM	CMX		9	38	88	10	4
171201000 CM	CMX		10	45	95	10	4
171201100 CM	CMX		11	45	102	12	4
171201200 CM	CMX		12	53	110	12	4
171201300 CM	CMX		13	53	110	12	4
171201400 CM	CMX		14	53	110	12	4
171201500 CM	CMX		15	63	123	16	4
171201600 CM	CMX		16	63	123	16	4
171201700 CM	CMX		17	63	123	16	4
171201800 CM	CMX		18	63	123	16	4
171201900 CM	CMX		19	75	135	16	4
171202000 CM	CMX		20	75	135	16	4
171202001 CM	CMX		20	75	141	20	4
171202200 CM	CMX		22	75	141	20	4
171202400 CM	CMX		24	90	166	25	5
171202500 CM	CMX		25	90	166	25	5
171202600 CM	CMX		26	90	166	25	5
171202800 CM	CMX		28	90	166	25	5
171203000 CM	CMX		30	90	166	25	6
171203200 CM	CMX		32	106	186	32	6
171203400 CM	CMX		34	106	186	32	6
171203500 CM	CMX		35	106	186	32	6
171203600 CM	CMX		36	106	186	32	6
171203800 CM	CMX		38	125	205	32	6
171204000 CM	CMX		40	125	205	32	8



parametri tecnici a pag. / for technical parameters see page 123

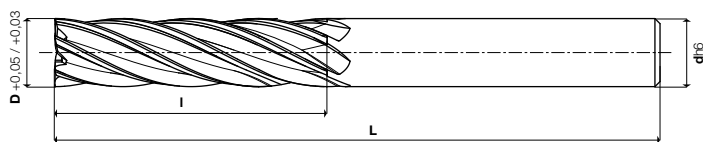
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
17120	○	○	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended



HSS-PM
HSS-PM Line

Serie/Series
17135

Frese a **FINIRE**
Finishing end mills

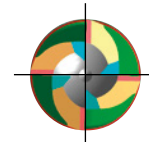


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
171350600 CM	CMX		6	56	106	10	4
171350700 CM	CMX		7	63	113	10	4
171350800 CM	CMX		8	63	113	10	4
171350900 CM	CMX		9	70	120	10	4
171351000 CM	CMX		10	70	120	10	4
171351200 CM	CMX		12	80	137	12	4
171351400 CM	CMX		14	80	137	12	4
171351500 CM	CMX		15	90	150	16	4
171351600 CM	CMX		16	90	150	16	4
171351800 CM	CMX		18	100	166	20	4
171352000 CM	CMX		20	110	176	20	4
171352200 CM	CMX		22	110	176	20	4
171352500 CM	CMX		25	125	201	25	5
171352800 CM	CMX		28	135	211	25	5
171353000 CM	CMX		30	140	216	25	6
171353200 CM	CMX		32	150	230	32	6



parametri tecnici a pag. / for technical parameters see page 123

Z4÷6



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
17135	○	○	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

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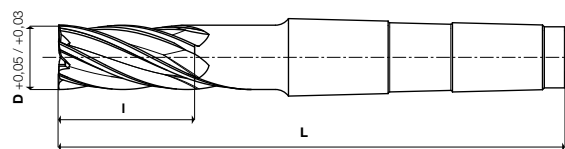
HSS-PM HSS-PM Line

Serie/Series
17150

Frese a **FINIRE**
Finishing end mills

17155

Frese a **FINIRE**
Finishing end mills



COATING
Skin

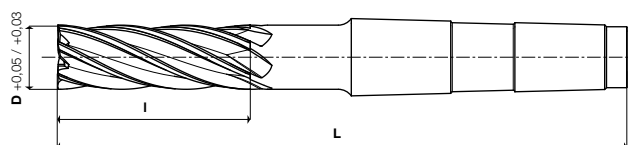
λ° s
32

N

UNI 8250
DIN 845B
ISO 1641/II



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	MORSE TAPER	Z
171501000 CM	CMX		10	22	92	1	4
171501200 CM	CMX		12	26	96	1	4
171501400 CM	CMX		14	26	111	2	4
171501600 CM	CMX		16	32	117	2	4
171501800 CM	CMX		18	32	117	2	4
171502000 CM	CMX		20	38	140	3	4
171502200 CM	CMX		22	38	140	3	4
171502400 CM	CMX		24	45	147	3	5
171502500 CM	CMX		25	45	147	3	5
171502600 CM	CMX		26	45	147	3	5
171502800 CM	CMX		28	45	147	3	5
171503000 CM	CMX		30	53	155	3	6
171503200 CM	CMX		32	53	178	4	6
171503400 CM	CMX		34	53	178	4	6
171503500 CM	CMX		35	53	178	4	6
171503600 CM	CMX		36	53	178	4	6
171503800 CM	CMX		38	63	188	4	6
171504000 CM	CMX		40	63	188	4	8
171504500 CM	CMX		45	63	188	4	8
171505001 CM	CMX		50	75	233	5	8



COATING
Skin

λ° s
32

N

UNI 8250
DIN 845B
ISO 1641/II



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	MORSE TAPER	Z
171551000 CM	CMX		10	45	115	1	4
171551200 CM	CMX		12	53	123	1	4
171551400 CM	CMX		14	53	138	2	4
171551600 CM	CMX		16	63	148	2	4
171551800 CM	CMX		18	63	148	2	4
171552000 CM	CMX		20	75	177	3	4
171552200 CM	CMX		22	75	177	3	4
171552400 CM	CMX		24	90	192	3	5
171552500 CM	CMX		25	90	192	3	5
171552600 CM	CMX		26	90	192	3	5
171552800 CM	CMX		28	90	192	3	5
171553000 CM	CMX		30	90	192	3	6
171553200 CM	CMX		32	106	231	4	6
171553400 CM	CMX		34	106	231	4	6
171553500 CM	CMX		35	106	231	4	6
171553600 CM	CMX		36	106	231	4	6
171553800 CM	CMX		38	125	250	4	8
171554000 CM	CMX		40	125	250	4	8
171554500 CM	CMX		45	125	250	4	8
171555000 CM	CMX		50	150	308	5	8



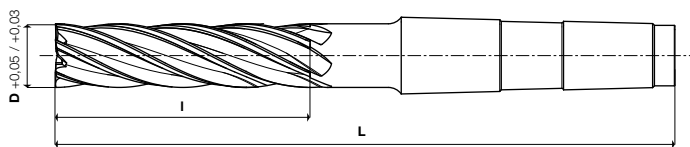
MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
17150	○	○	●	○	○	●	●
17155	○	○	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended



HSS-PM
HSS-PM Line

Serie/Series
17160

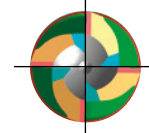
Frese a FINIRE
Finishing end mills



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0.05 +0.03	I	L	MORSE TAPER	Z
171601000	CM	CMX	10	70	155	2	4
171601200	CM	CMX	12	80	165	2	4
171601400	CM	CMX	14	80	165	2	4
171601600	CM	CMX	16	90	175	2	4
171601800	CM	CMX	18	100	202	3	4
171602000	CM	CMX	20	110	212	3	4
171602200	CM	CMX	22	110	212	3	4
171602400	CM	CMX	24	125	227	3	5
171602500	CM	CMX	25	125	250	4	5
171602600	CM	CMX	26	125	250	4	5
171602800	CM	CMX	28	135	260	4	5
171603000	CM	CMX	30	140	265	4	6
171603200	CM	CMX	32	150	275	4	6
171603400	CM	CMX	34	150	275	4	6
171603500	CM	CMX	35	150	275	4	6
171603600	CM	CMX	36	150	275	4	6
171603800	CM	CMX	38	180	305	4	8
171604000	CM	CMX	40	180	305	4	8
171604500	CM	CMX	45	190	315	4	8
171605000	CM	CMX	50	200	360	5	8



Z4÷8



Cono Morse
Morse Taper

MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
17160	○	○	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

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65

HSS-PM HSS-PM Line

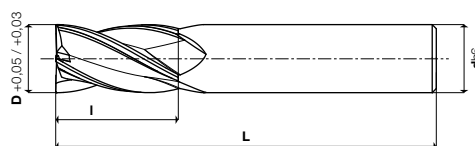
Serie/Series 17305

Frese a **FINIRE** con tagliente al centro
Finishing end mills center cutting

ALTE PRESTAZIONI
HIGH PERFORMANCE

17305

Frese a **FINIRE** con tagliente al centro
Finishing end mills center cutting



COATING
Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

$\lambda^{\circ}s$
32

N

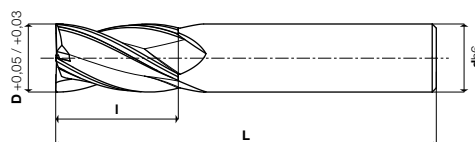
UNI 8244
DIN 844A
ISO 1641/I



Cod. Art.	X-105 (PM Co 10,5%)	D +0,05 +0,03	I	L	dh6	Z
173050600 EMX		6	13	57	6	4
173050800 EMX		8	19	69	10	4
173051000 EMX		10	22	72	10	4
173051200 EMX		12	26	83	12	4
173051400 EMX		14	26	83	12	4
173051600 EMX		16	32	92	16	4
173051800 EMX		18	32	92	16	4
173052001 EMX		20	38	104	20	4
173052200 EMX		22	38	104	20	4
173052500 EMX		25	45	121	25	5



parametri tecnici a pag. 1 / for technical parameters see page 123



COATING
Skin

W
A RICHIESTA
ON REQUEST

F
A RICHIESTA
ON REQUEST

$\lambda^{\circ}s$
32

N

UNI 8244
DIN 844A
ISO 1641/I

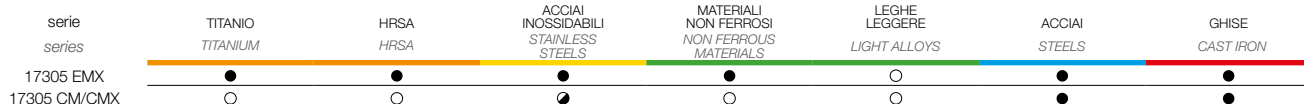


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
173050200 CM		CMX	2	7	51	6	4
173050300 CM		CMX	3	8	52	6	4
173050400 CM		CMX	4	11	55	6	4
173050500 CM		CMX	5	13	57	6	4
173050600 CM		CMX	6	13	57	6	4
173050800 CM		CMX	8	19	69	10	4
173051000 CM		CMX	10	22	72	10	4
173051200 CM		CMX	12	26	83	12	4
173051400 CM		CMX	14	26	83	12	4
173051500 CM		CMX	15	32	92	16	4
173051600 CM		CMX	16	32	92	16	4
173051800 CM		CMX	18	32	92	16	4
173052000 CM		CMX	20	38	98	16	4
173052001 CM		CMX	20	38	104	20	4
173052200 CM		CMX	22	38	104	20	4
173052400 CM		CMX	24	45	121	25	5
173052500 CM		CMX	25	45	121	25	5
173052600 CM		CMX	26	45	121	25	5
173052800 CM		CMX	28	45	121	25	5
173053000 CM		CMX	30	45	121	25	6
173053200 CM		CMX	32	53	133	32	6
173053600 CM		CMX	36	53	133	32	6
173054000 CM		CMX	40	63	143	32	8
173055000 CM		CMX	50	75	155	32	8

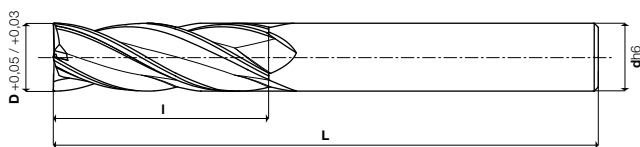


parametri tecnici a pag. 1 / for technical parameters see page 123

MATERIALI LAVORABILI / WORKPIECE MATERIALS



● consigliata/recommended ○ accettabile/acceptable ○ non consigliata/not recommended



HSS-PM
HSS-PM Line

Serie/Series
17320

Frese a **FINIRE** con tagliente al centro
Finishing end mills center cutting

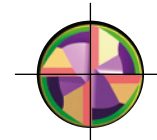


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	I	L	dh6	Z
173200200 CM	CMX	2	10	54	6	4	
173200300 CM	CMX	3	12	56	6	4	
173200400 CM	CMX	4	19	63	6	4	
173200500 CM	CMX	5	24	68	6	4	
173200600 CM	CMX	6	24	68	6	4	
173200800 CM	CMX	8	38	88	10	4	
173201000 CM	CMX	10	45	95	10	4	
173201200 CM	CMX	12	53	110	12	4	
173201400 CM	CMX	14	53	110	12	4	
173201500 CM	CMX	15	63	123	16	4	
173201600 CM	CMX	16	63	123	16	4	
173201800 CM	CMX	18	63	123	16	4	
173202000 CM	CMX	20	75	135	16	4	
173202001 CM	CMX	20	75	141	20	4	
173202200 CM	CMX	22	75	141	20	4	
173202400 CM	CMX	24	90	166	25	5	
173202500 CM	CMX	25	90	166	25	5	
173202600 CM	CMX	26	90	166	25	5	
173202800 CM	CMX	28	90	166	25	5	
173203000 CM	CMX	30	90	166	25	6	
173203200 CM	CMX	32	106	186	32	6	
173203600 CM	CMX	36	106	186	32	6	
173204000 CM	CMX	40	125	205	32	8	



parametri tecnici a pag. / for technical parameters see page 123

Z4÷8



MATERIALI LAVORABILI / WORKPIECE MATERIALS

serie series	TITANIO TITANIUM	HRSA HRSA	ACCIAI INOSSIDABILI STAINLESS STEELS	MATERIALI NON FERROSI NON FERROUS MATERIALS	LEGHE LEGGERE LIGHT ALLOYS	ACCIAI STEELS	GHISE CAST IRON
17320	○	○	●	○	○	●	●

● consigliata/recommended

● accettabile/acceptable

○ non consigliata/not recommended

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