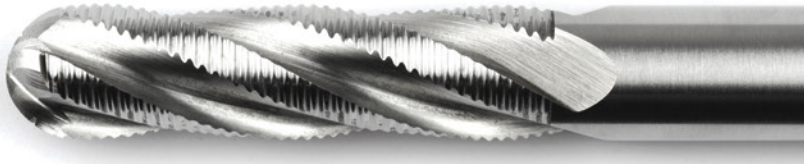
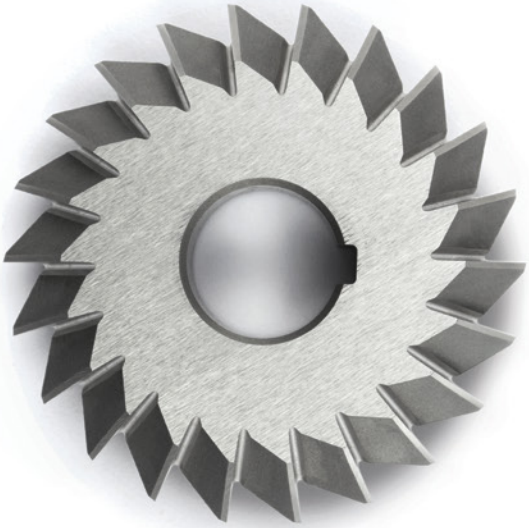
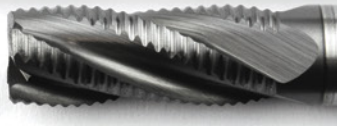

HSS-PM
CUTTING TOOLS
CATALOGUE

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UOP
Member IMC Group

HSS-PM
CUTTING TOOLS
CATALOGUE

WHO WE ARE

UOP S.p.A. è un'azienda produttrice di utensili integrali per asportazioni di truciolo. Fondata nel 1966, grazie ad una storia di crescita continua è ora una realtà apprezzata a livello internazionale. Dal 2003 è **Membro del Gruppo IMC**.
La sede centrale di Roncadelle (Brescia) ospita i reparti di progettazione, produzione, R&D, magazzino e logistica, amministrativo, commerciale e marketing. Nel 2015 abbiamo aggiunto **Morse-UOP**, un'unità di produzione e riaffilatura in Helmond, (Olanda).

Utensili in Metallo Duro Integrale
Unitamente alla nostra linea di utensili in acciaio da polveri e HSS-E, proponiamo un'ampia gamma di utensili in metallo duro integrale:
- **Megatool line** - Massime prestazioni in lavorazioni ad alti parametri di taglio e di materiali difficili da lavorare.
- **HSC Top Class line** - Frese in metallo duro integrale ultrafine per lavorazioni ad alta velocità.
- **Universal line** - Eccellente versatilità per un'ampia gamma di applicazioni.

Utensili Speciali
Produciamo utensili speciali in metallo duro integrale, con placchette saldo-brasate e in acciaio da polveri e HSS-E, con qualunque profilo e tolleranza. Nella nostra proposta, includiamo i servizi di **Rigenerazione Utensili** e **Rivestimenti PVD**.

UOP S.p.A. *is a company that produces round cutting tools for metalworking.*
It was founded in 1966 and thanks to its continuous growth, the company is now a reality appreciated on an international level. In 2003 it became a ***Member of the IMC Group****.*
Our headquarters are located in Roncadelle (Brescia), in the north of Italy, where you can find our engineering, production, R&D, warehouse and logistics, commercial and marketing departments. In 2015 we have added a regrinding and production unit, ***Morse-UOP*** *in Helmond (The Netherlands).*

Solid Carbide Cutting Tools
In addition to its Powder Metal and HSS-E Tools line, UOP offers a wide range of tools in solid carbide:
- ***Megatool line*** *- Peak performance with high cutting paramenters and in the machining of hard to cut materials.*
- ***HSC Top Class line*** *- Ultrafine solid carbide end mills for High Speed Cutting.*
- ***Universal line*** *- Excellent versatility for a wide range of applications.*

Special Tools
We produce special tools in full solid carbide; with carbide brazed tips and in powder metal and HSS-E, with any profile or tolerance that our customers require.
We also offer ***PDV coatings*** *and Tools* ***Regeneration Services.***

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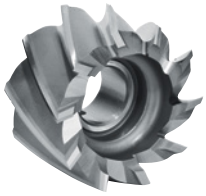
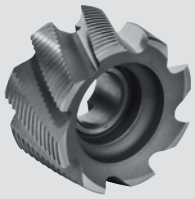
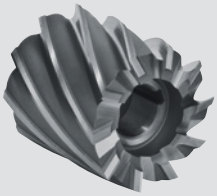
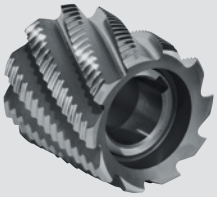
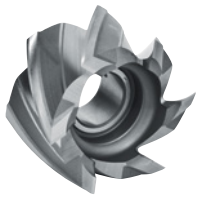
02105		Z8/16		contornatura *shouldering*	◕	◕	◕	○	○	●	●	26
02110		Z6/14 **NF**		semifinitura; spianatura *semi-finishing; facemilling*	◕	◕	◕	○	○	●	●	26
02110		Z6/16 **NR**		sgrossatura; spianatura *roughing; facemilling*	◕	◕	◕	○	○	●	●	27
02115		Z8/16		contornatura; spianatura *shouldering; facemilling*	◕	◕	◕	○	○	●	●	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

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

Serie/*Series*

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*	Ghisa *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

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

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*	Ghisa *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
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10155	Z2		copiatura *profiling*	◕	◕	◕	◕	○	●	●	46
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11405	Z1		apertura cava *slotting*	○	○	○	◕	●	○	○	48
12105	Z2		apertura cava *slotting*	○	○	◕	●	●	○	○	48
12120	Z2		apertura cava *slotting*	○	○	◕	●	●	○	○	49

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

Serie/*Series*

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*	Ghisa *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
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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

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

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*	Ghisa *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

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

Serie/*Series*

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*	Ghisa *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

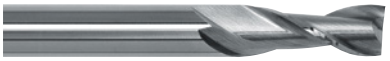
● consigliata/*recommended* ◕ accettabile/*acceptable* ○ non consigliata/*not recommended*

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*	Ghisa *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

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

Serie/*Series*

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*	Ghisa *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
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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
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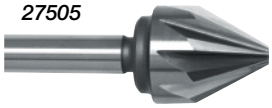
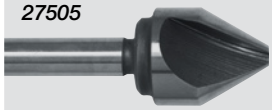
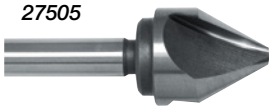
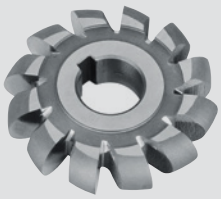
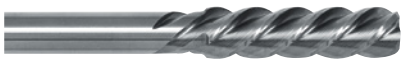
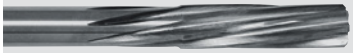
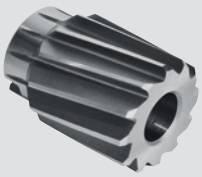
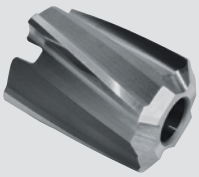
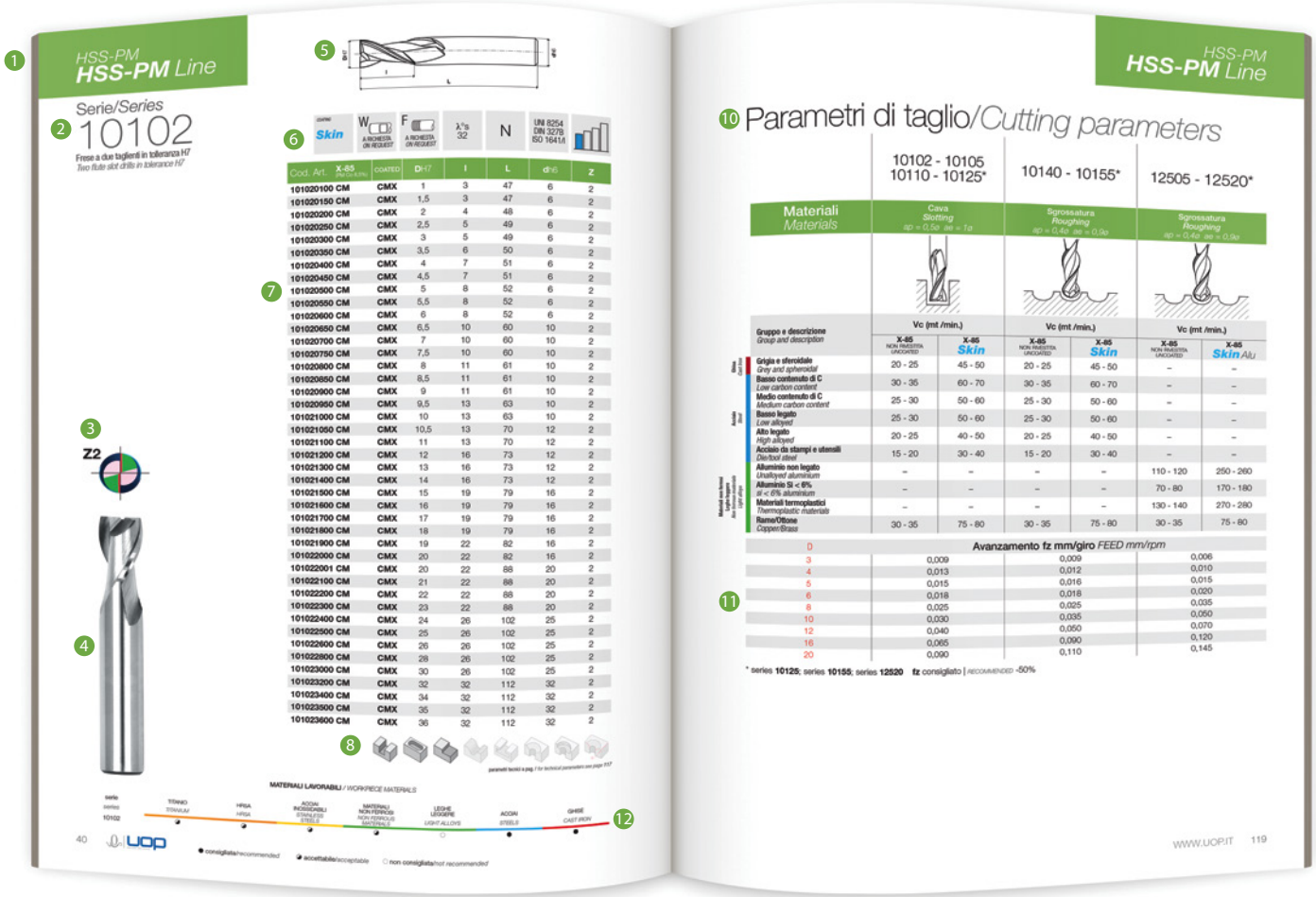
Serie/*Series*

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*	Ghisa *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*

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*	Ghisa *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. 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

Certificazioni
Certification

QUALITY ASSURANCE MANAGEMENT SYSTEM

Consapevoli che la completa soddisfazione del cliente è requisito essenziale per il successo dell'azienda, nel 1997 UOP S.p.A. ha ottenuto la certificazione per il **Sistema di Qualità ISO 9001** e nel giugno 2008 quella del Sistema di gestione per la Qualità – **Serie Aerospaziale AS9100**, standard di eccellenza riconosciuto a livello globale ed ulteriore conferma del nostro impegno verso la nostra clientela.

*Knowing that complete customer satisfaction is essential for the success of the Company, in 1997, the certification of the **Quality Assurance System ISO 9001** was awarded.*
*In June 2008, we obtained the **AS 9100 Aerospace** Quality Management System certification, of which the Standard of Excellence is world renowned, further confirming our commitment to our customers.*

Materiali/Rivestimenti
Materials/Coatings

HSS-PM
***HSS-PM** Line*

Qualità di acciaio super rapido e da polveri utilizzati nella nostra produzione:
***H**igh **S**peed **S**teel 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 *Titanium and alluminium based*	3700	800°	0,5	Lavorazioni di acciai, ghise, acciai inossidabili, titanio, HRSA" *Milling of steels, cast iron, stainless steels, titanium, HRSA*
Skin*Alu*	Base titanio e allumino *Titanium and alluminium based*	3700	800°	0,1	Lavorazioni leghe leggere, materie plastiche, materiali non ferrosi *Machining for light alloys, plastic materials, non ferrous materials*
Skin*Inox*	Base titanio e allumino *Titanium and alluminium based*	3500	800°	0,05	Fresatura acciai inossidabili *Stainless steel milling*

Rivestimenti a richiesta / *Coatings on request*

MoVIC	TiCN	TiN	CrN	ZrN	DLC
Bisolfuro di molibdeno *Molybdenum disulfide*	Carbonitruro di Titanio *Titanium carbonitride*	Nitruro di Titanio *Titanium nitride*	Nitruro di Cromo *Chromium nitride*	Nitruro di Zirconio *Zirconium nitride*	Carbonio *Carbonium*

Simboli
Symbols

Esecuzione / *Execution*

N H W — Taglienti a **FINIRE**
FINISHING CUTTING EDGE PROFILE

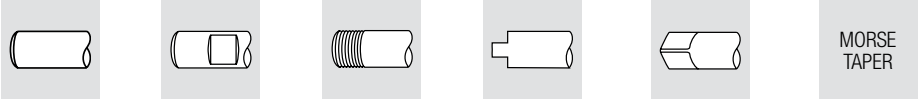
NR NRF — Taglienti a **SGROSSARE**
ROUGHING CUTTING EDGE PROFILE

NF WF — Taglienti a **SGROSSARE** e **SEMIFINIRE**
ROUGHING AND SEMI-FINISHING CUTTING EDGE PROFILE

Lunghezze / *Lengths*

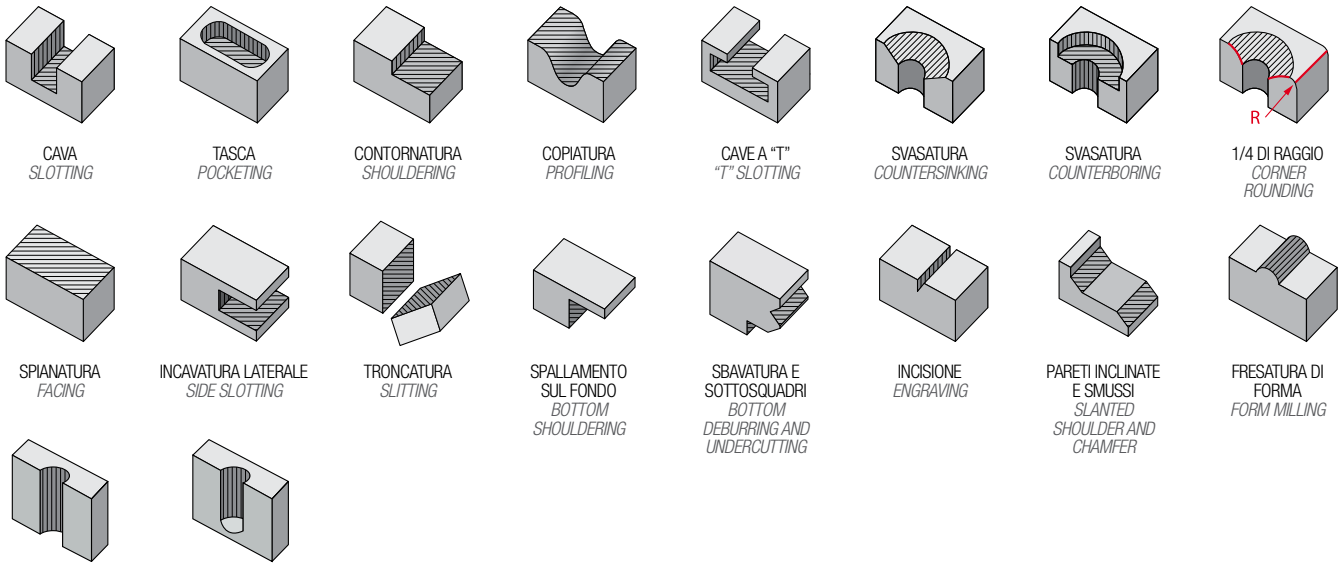
CORTA *SHORT* — NORMALE *NORMAL* — LUNGA *LONG* — EXTRALUNGA *EXTRALONG* — TUTTE LE LUNGHEZZE *ALL LENGTHS*

Codoli / *Shanks*



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* — INCAVATURA 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	[cm^3/min.]	VOLUME DI TRUCIOLATURA	*MATERIAL REMOVAL RATE*

Formule
Formulas

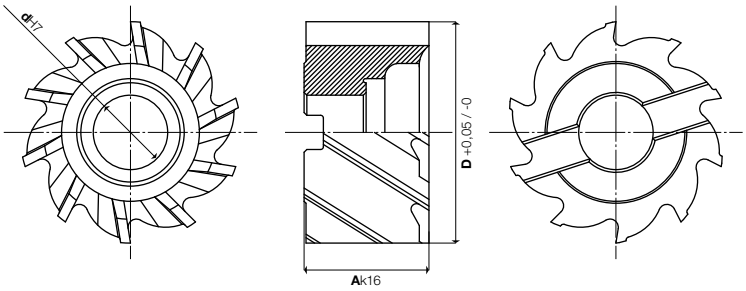
NUMERO DI GIRI *TOOL REVOLUTION*	n	=	$\frac{Vc \times 1000}{3{,}14 \times D}$	(rpm)
VELOCITÀ DI TAGLIO *CUTTING SPEED*	Vc	=	$\frac{D \times n \times 3{,}14}{1000}$	(m/min.)
VELOCITÀ DI AVANZAMENTO *FEED RATE*	F	=	$fz \times z \times n$	(mm/min.)
AVANZAMENTO PER DENTE *FEED PER TOOTH*	fz	=	$\frac{F}{z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

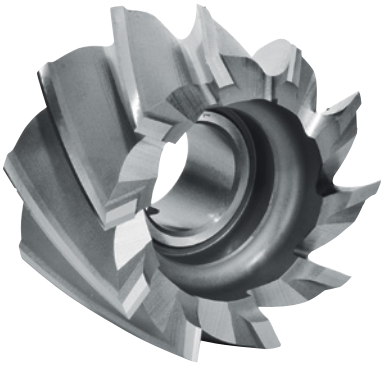
Suggerimenti di impiego
Recommendations

●	CONSIGLIATA	*RECOMMENDED*
◪	ACCETTABILE	*ACCEPTABLE*
○	NON CONSIGLIATA	*NOT RECOMMENDED*

Serie/*Series*
02105

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



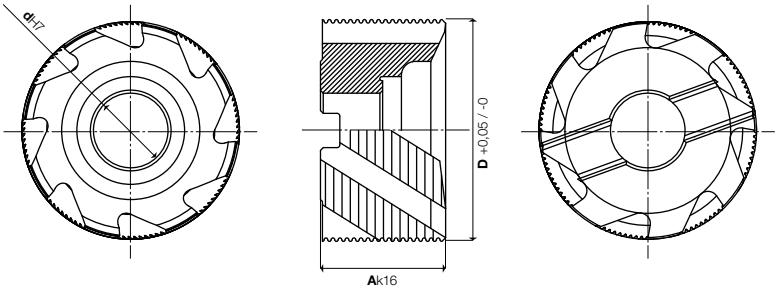


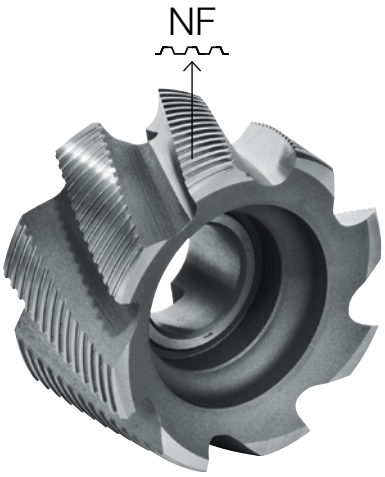
COATING				
Skin	λ°s 32	N	UNI 3903 DIN 1880 ISO 2586	Z8÷16

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

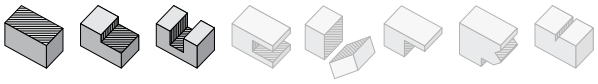
Frese a **SEMIFINIRE** con cava di trascinamento trasversale
Semifinishing cutters end mills with transversal driving slot





COATING				
Skin	λ°s 28	NF	UNI 3903 DIN 1880 ISO 2586	Z6÷14

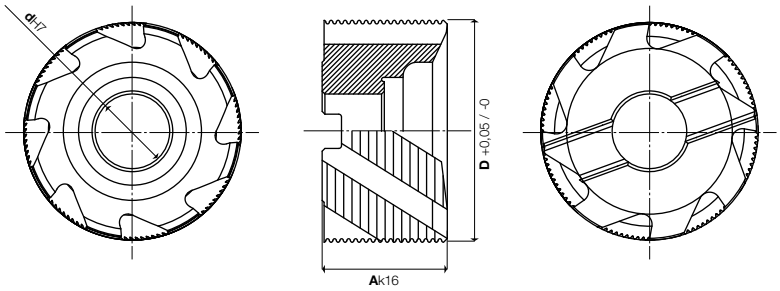
Cod. Art. X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Ak16	dH7	Z
021100400 CM	**CMX**	40	32	16	6
021100500 CM	**CMX**	50	36	22	6
021100630 CM	**CMX**	63	40	27	8
021100800 CM	**CMX**	80	45	27	8
021101000 CM	**CMX**	100	50	32	10
021101250 CM	**CMX**	125	56	40	12
021101600 CM	**CMX**	160	63	50	14



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	◕	◕	◕	○	○	●	●

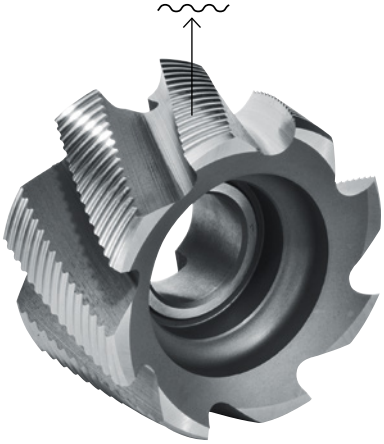
● consigliata/*recommended* ◕ accettabile/*acceptable* ○ non consigliata/*not recommended*



Serie/*Series* 02110

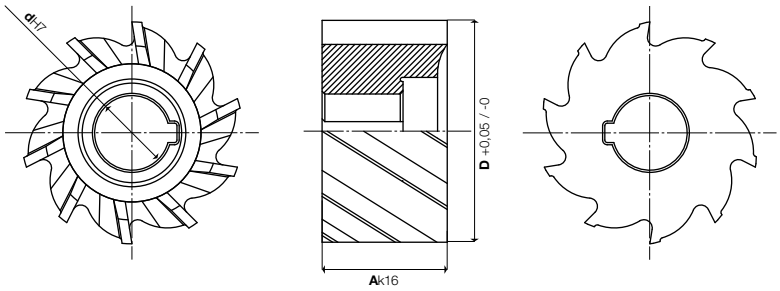
Frese a **SGROSSARE**
con cava di trascinamento trasversale
Roughing cutters with transversal driving slot

NR



COATING	λ°s			
Skin	28	NR	UNI 3903 DIN 1880 ISO 2586	**Z6÷14**

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

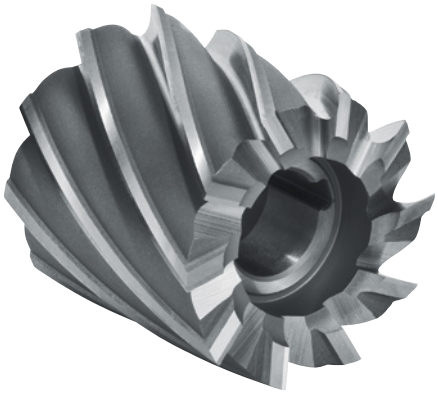


Serie/*Series* 02115

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

COATING	λ°s			
Skin	32	N	DIN 841 ISO 2586	**Z8÷16**

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



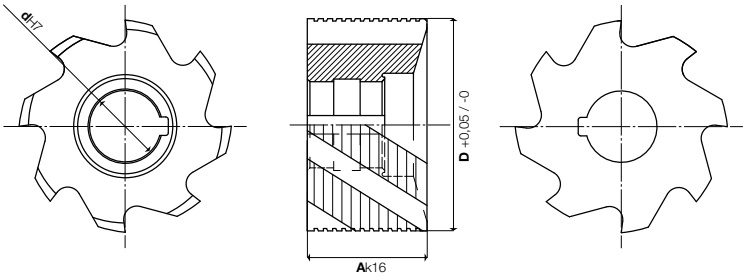
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*

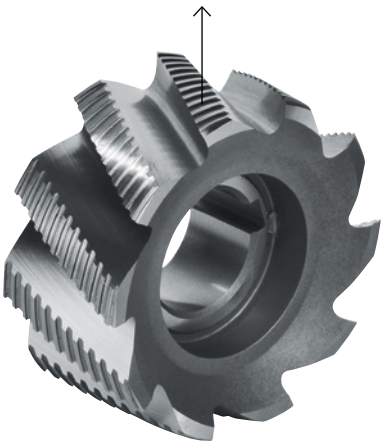
Serie/*Series*
02120

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

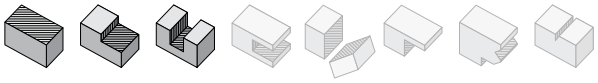


COATING	λ°s			
Skin	28	NF	DIN 841 ISO 2586	**Z6÷14**

NF

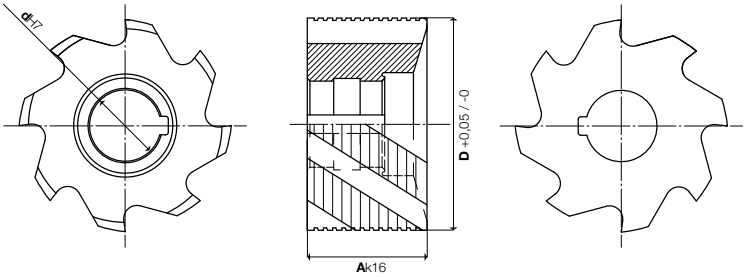


Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Ak16	dH7	Z
021200300 CM		CMX	30	30	13	6
021200350 CM		CMX	35	35	16	6
021200400 CM		CMX	40	20	16	8
021200402 CM		CMX	40	40	16	6
021200500 CM		CMX	50	25	22	8
021200502 CM		CMX	50	50	22	8
021200600 CM		CMX	60	30	27	10
021200602 CM		CMX	60	60	27	10
021200750 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

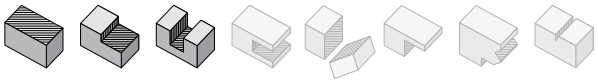
Frese a **SGROSSARE** con spacco longitudinale
Roughing cutters with longitudinal keyway



COATING	λ°s			
Skin	28	NR	DIN 841 ISO 2586	**Z6÷14**

NR

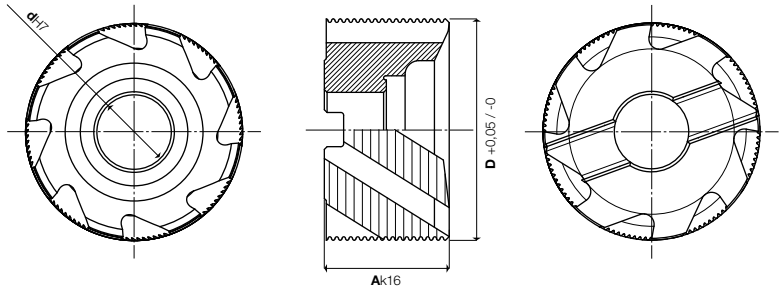
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	Ak16	dH7	Z
021200301 CM		CMX	30	30	13	6
021200351 CM		CMX	35	35	16	6
021200401 CM		CMX	40	20	16	8
021200403 CM		CMX	40	40	16	6
021200501 CM		CMX	50	25	22	8
021200503 CM		CMX	50	50	22	8
021200601 CM		CMX	60	30	27	10
021200603 CM		CMX	60	60	27	10
021200751 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 *series*	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

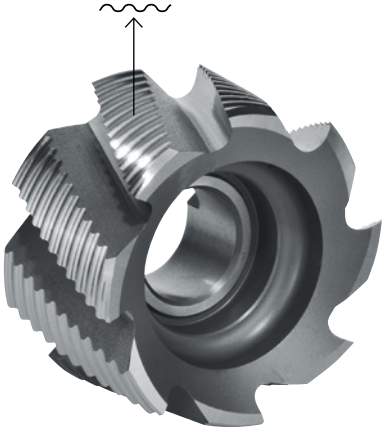
Frese a **SGROSSARE** con cava di trascinamento trasversale

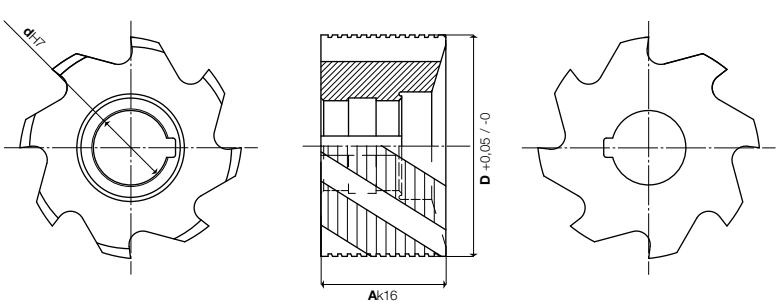
Roughing cutters with transversal driving slot

COATING	λ°s			
Skin *Inox*	28	NR	UNI 3903 DIN 1880 ISO 2586	**Z6÷14**

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

NR





Serie/*Series* 02130

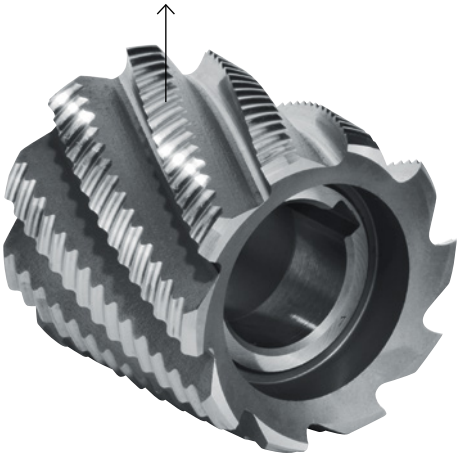
Frese a **SGROSSARE** con spacco longitudinale

Roughing cutters with longitudinal keyway

COATING	λ°s			
Skin *Inox*	28	NR	DIN 841 ISO 2586	**Z6÷10**

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

NR



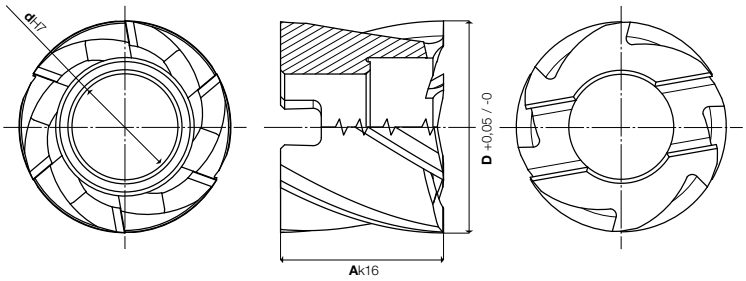
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

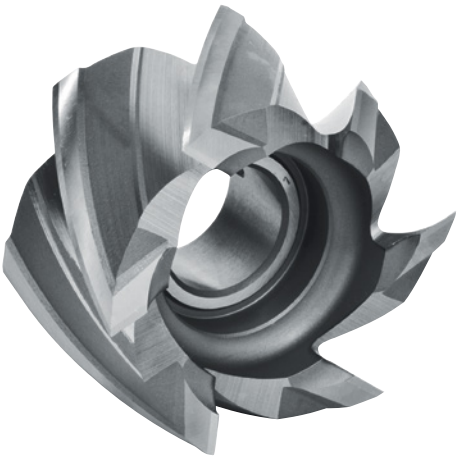
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
02125	◕	◕	●	○	○	●	●
02130	◕	◕	●	○	○	●	●

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

Serie/*Series*
02135

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



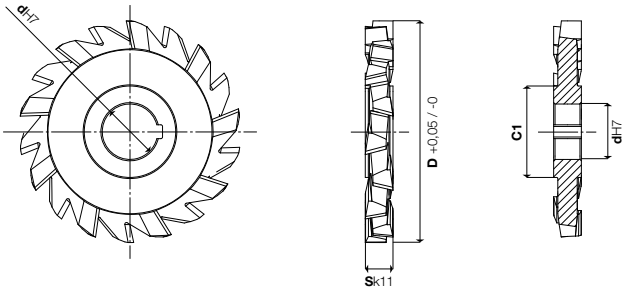


COATING	λ°σ			
Skin *Alu*	40	W	UNI 3903 DIN 1880 ISO 2586	**Z4÷6**

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	λ°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

→ continua alla pagina successiva / *continued on next page*

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*

→ continuazione della pagina precedente / *continuation of the previous page*

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

→ continua alla pagina successiva / *continued on next page*

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	◕	◕	●	○	○	●	●

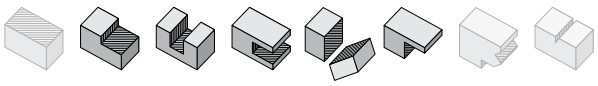
● consigliata/*recommended* ◕ accettabile/*acceptable* ○ non consigliata/*not recommended*

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. / *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*
04105	◕	◕	●	○	○	●	●

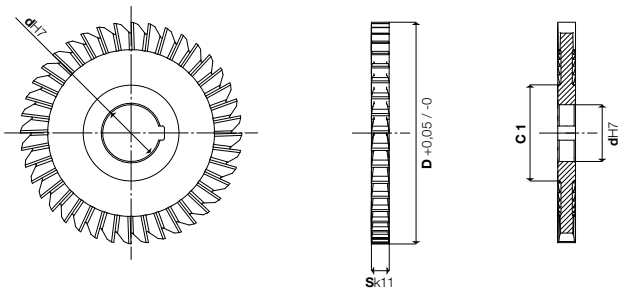
● consigliata/*recommended* ◕ accettabile/*acceptable* ○ non consigliata/*not recommended*

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

→ continua alla pagina successiva / *continued on next page*

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*

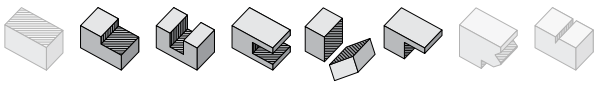
Serie/*Series*

04105

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



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

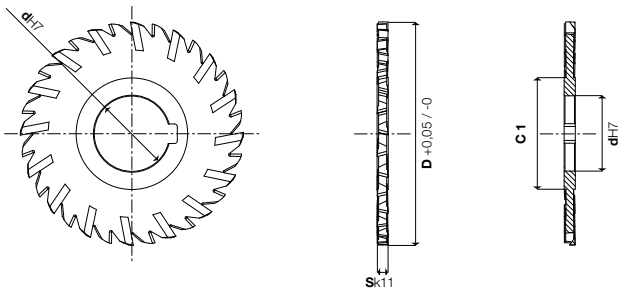
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
04105	◕	◕	●	○	○	●	●

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

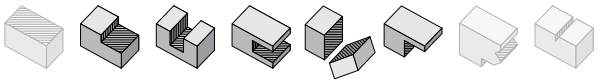
Serie/*Series* 04110

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



COATING **Skin** | QUALITY STANDARD UOP | H | Z32÷68

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*

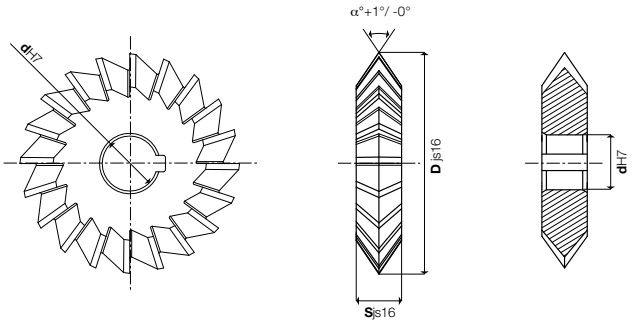
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*

Serie/*Series*
06105

Frese ad angolo prismatiche
Double equal angle cutters

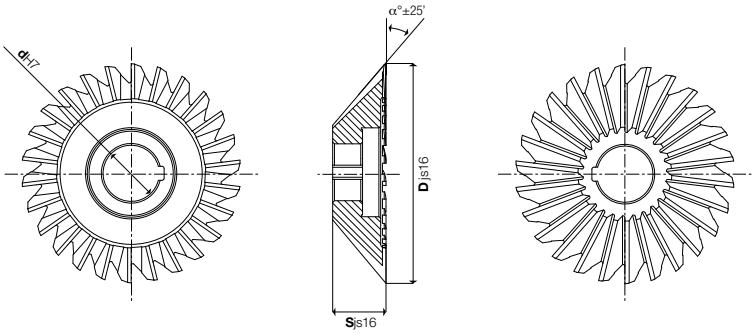


COATING			
Skin	H	UNI 3907 DIN 847 ISO 6108	Z 20÷30

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

Serie/*Series*
06110

Frese ad angolo
Angular cutters



COATING			
Skin	H	UNI 3908 DIN 842A ISO	Z16÷26

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs16	α° ±25'	Sjs16	dH7	Z
061104040	CM	CMX	40	45	12	10	18
061104050	CM	CMX	50	45	15	13	20
061104063	CM	CMX	63	45	18	16	20
061104080	CM	CMX	80	45	23	22	24
061104100	CM	CMX	100	45	30	27	24
061104125	CM	CMX	125	45	38	32	26
061104160	CM	CMX	160	45	45	40	26
061105040	CM	CMX	40	50	13	10	16
061105050	CM	CMX	50	50	16	13	18
061105063	CM	CMX	63	50	20	16	20
061105080	CM	CMX	80	50	25	22	22
061105100	CM	CMX	100	50	32	27	26
061105125	CM	CMX	125	50	40	32	26
061105160	CM	CMX	160	50	50	40	26
061106040	CM	CMX	40	60	13	10	18
061106050	CM	CMX	50	60	16	13	18
061106063	CM	CMX	63	60	20	16	18
061106080	CM	CMX	80	60	25	22	20
061106100	CM	CMX	100	60	32	27	22
061106125	CM	CMX	125	60	40	32	24
061106160	CM	CMX	160	60	50	40	26

MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

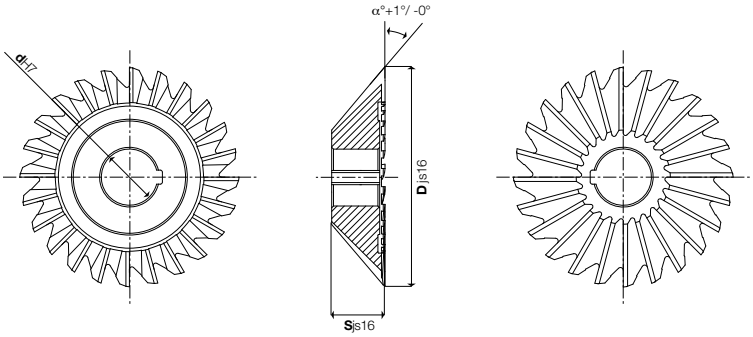
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
06105	◕	◕	◕	○	○	●	●
06110	◕	◕	◕	○	○	●	●

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

Serie/*Series*

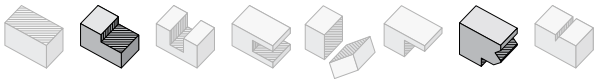
06115

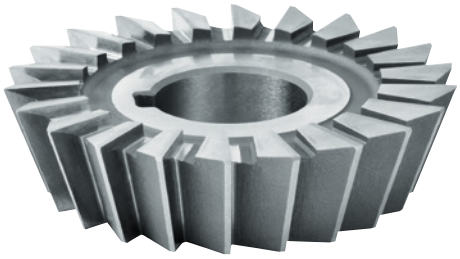
Frese ad angolo
Angular cutters



COATING			
Skin	H	UNI 3909A DIN 1823A ISO	**Z18÷24**

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





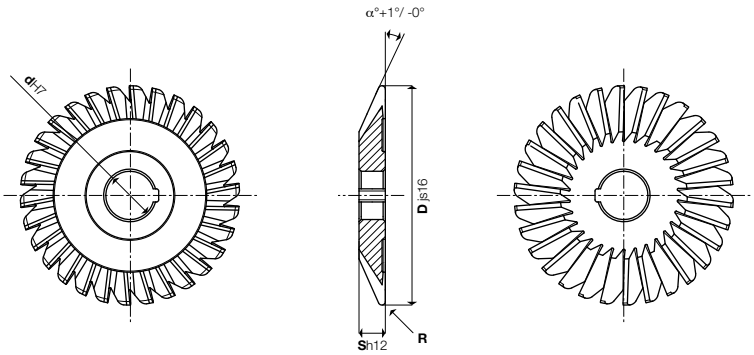
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*

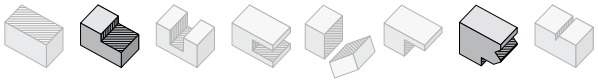
Serie/*Series*
06120

Frese ad angolo per utensili
Angular cutters for toolmaking



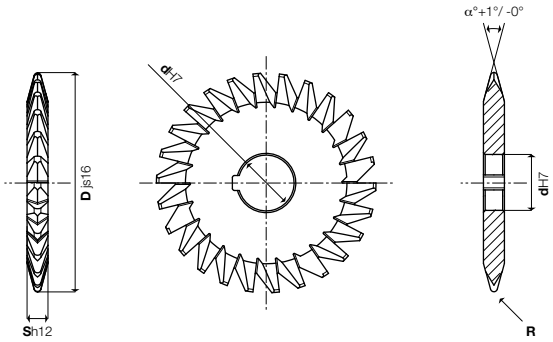
COATING			
Skin	H	UNI 3910A DIN 1824A ISO	**Z24÷30**

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs16	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



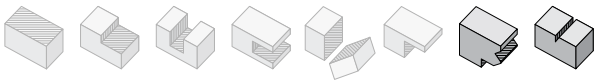
Serie/*Series*
06125

Frese ad angolo per utensili
Angular cutters for toolmaking



COATING			
Skin	H	UNI 3910B DIN 1824B ISO 2586	**Z26÷30**

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Djs16	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



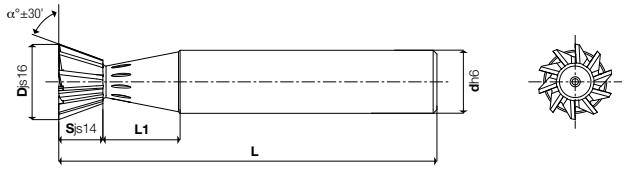
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

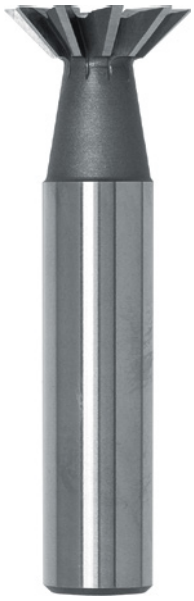
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
06120	◕	◕	◕	○	○	●	●
06125	◕	◕	◕	○	○	●	●

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

Serie/*Series* 06130

Frese ad angolo divergente
Dovetail cutters



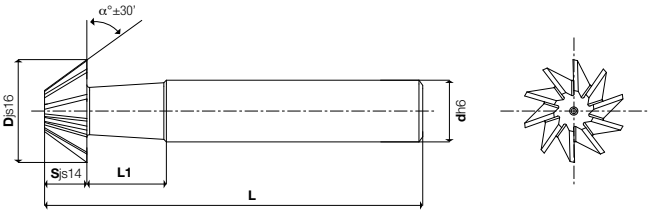


COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | N | UNI 8262A DIN 1833A ISO 3959 | Z10÷12

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	Djs16	α° ± 30'	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

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	Djs16	α° ± 30'	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

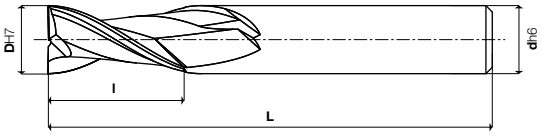
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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

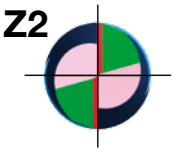


COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	UNI 8254 DIN 327B ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DH7	l	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. / *for technical parameters see page 119*

Z2



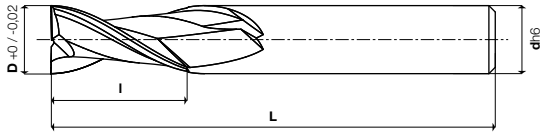
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
10102	◕	◕	◕	◕	○	●	●

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

Serie/*Series* 10105

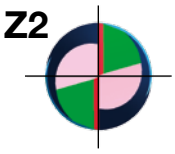
Frese a due taglienti
Two flute slot drills

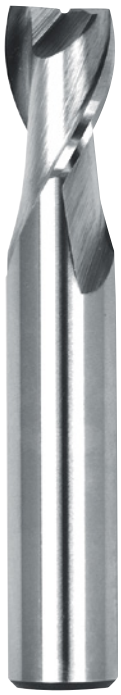


COATING	W	F	λ°s	N	QUALITY STANDARD UOP
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32		

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0 -0,02	l	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*

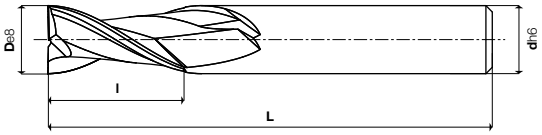
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
10105	◕	◕	◕	◕	○	●	●

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

Serie/*Series* 10110

Frese a due taglienti
Two flute end mills

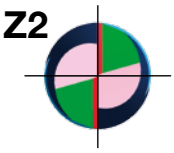
ALTE PRESTAZIONI
HIGH PERFORMANCE



COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	UNI 8254 DIN 327B ISO 1641/I	

Cod. Art. X-105 (PM Co 10,5%)	De8	l	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. / *for technical parameters see page 126*



MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

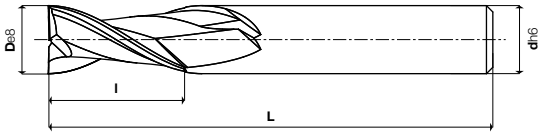
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
10110	●	●	●	●	○	●	●

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

Serie/*Series*

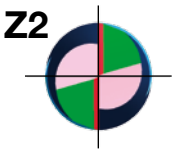
10110

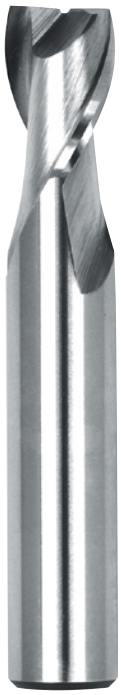
Frese a due taglienti in tolleranza e8
Two flute slot drills in tolerance e8



COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	UNI 8254 DIN 327B ISO 1641/I	

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	De8	l	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*

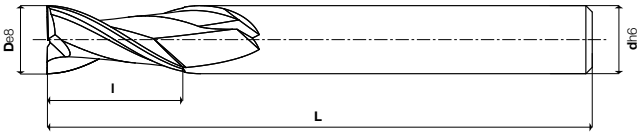
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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	◕	◕	◕	◕	○	●	●

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

Serie/*Series* 10125

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

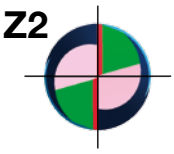


COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 32 | N | QUALITY STANDARD UOP

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	De8	l	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. / *for technical parameters see page 119*

Z2



MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

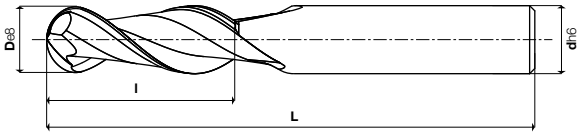
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
10125	◕	◕	◕	◕	○	●	●

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

Serie/*Series*

10140

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

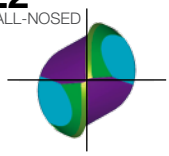


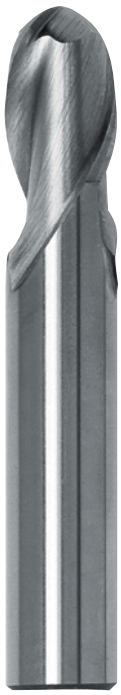
COATING	W	F	λ°s	N	ISO 1641/I	
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32			

Cod. Art.	X-85 (PM Co 8,5%)	COATED	De8	l	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





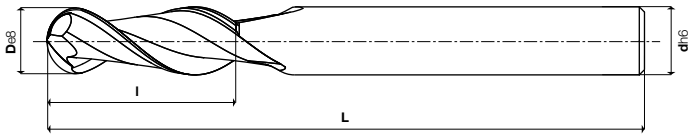
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*

Serie/*Series* 10155

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

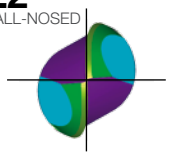


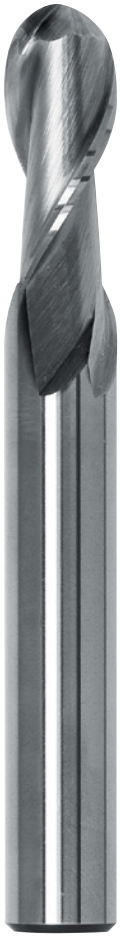
COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 32 | N | QUALITY STANDARD UOP

Cod. Art. X-85 (PM Co 8,5%)	COATED	De8	l	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*

Z2
BALL-NOSED





MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

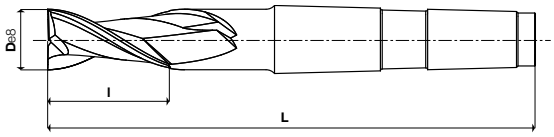
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
10155	◕	◕	◕	◕	○	●	●

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

Serie/*Series*

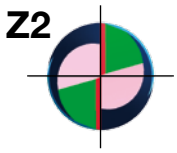
10170

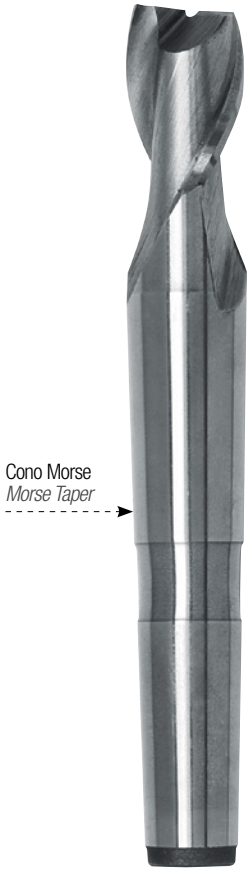
Frese a due taglienti
Two flute end mills



COATING			
Skin	λ°s 32	N	UNI 8260A DIN 326D ISO 1641/I

Cod. Art.	X-85 (PM Co 8,5%)	COATED	De8	l	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





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*

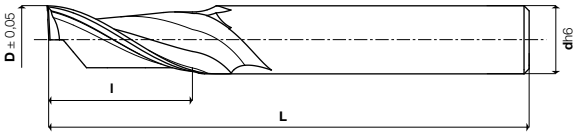
Serie/*Series*

11405

Frese a un tagliente elicoidale
Single flute end mills

12105

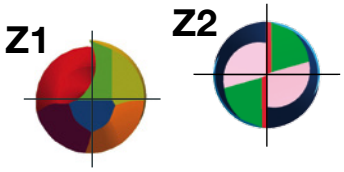
Frese a due taglienti
Two flute end mills

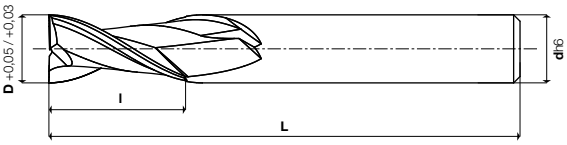


COATING **Skin** *Alu* | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 32 | W | *QUALITY STANDARD UOP*

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0,05	D II	l	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. / *for technical parameters see page 120*





COATING **Skin** *Alu* | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 40 | W | UNI 8244 DIN 844A ISO 1641/I

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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. / *for technical parameters see page 120*

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*
11405	○	○	○	◕	●	○	○
12105	○	○	◕	●	●	○	○

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

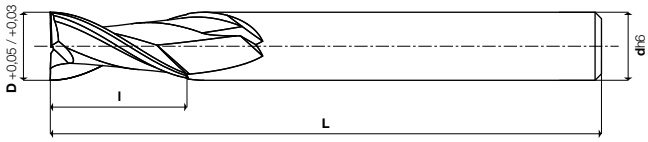
Serie/*Series*

12120

Frese a due taglienti
Two flute end mills

12505

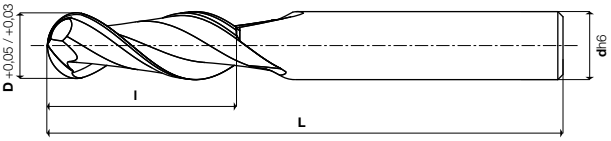
Frese a due taglienti a testa semisferica
Ball nosed two flute end drills



COATING	W	F	λ°s			
Skin Alu	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	40	W	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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

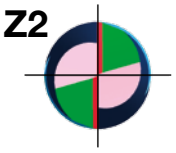
parametri tecnici a pag. / *for technical parameters see page 120*



COATING	W	F	λ°s			
Skin Alu	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	40	W	ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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 *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
12120	○	○	◕	●	●	○	○
12505	○	○	◕	●	●	○	○

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

Serie/*Series*

12520

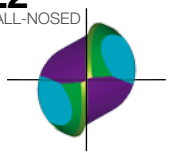
Frese a due taglienti a testa semisferica
Ball nosed two flute end drills

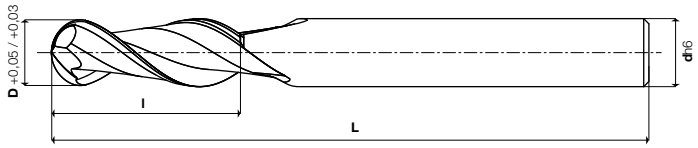
14105

Frese a tre taglienti ad alte prestazioni
Three flute end mills

ALTE PRESTAZIONI
HIGH PERFORMANCE

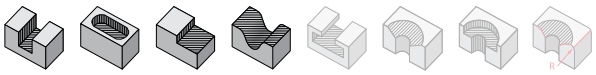
Z2
BALL-NOSED



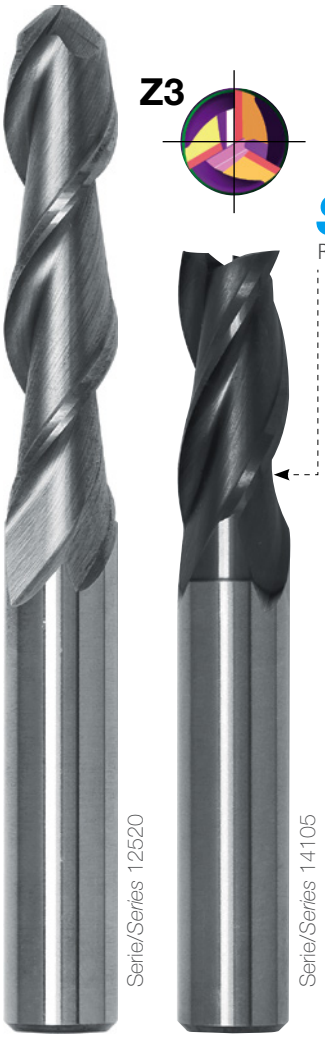


COATING	W	F	λ°s			
Skin *Alu*	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	40	W	ISO 1641/I	

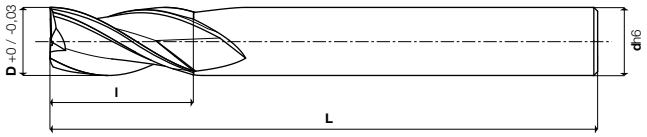
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	L	dh6	Z
125200300 CM		**CMX**	3	12	56	6	2
125200400 CM		**CMX**	4	19	63	6	2
125200500 CM		**CMX**	5	24	68	6	2
125200600 CM		**CMX**	6	24	68	6	2
125200800 CM		**CMX**	8	38	88	10	2
125201000 CM		**CMX**	10	45	95	10	2
125201200 CM		**CMX**	12	53	110	12	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. / *for technical parameters see page 119*



Skin
Rivestimento/*Coating*



COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-105 (PM Co 10,5%)	D +0 -0,03	l	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. / *for technical parameters see page 126*

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*
12520	○	○	◕	●	●	○	○
14105	●	●	●	●	○	●	●

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

Serie/*Series*

14105

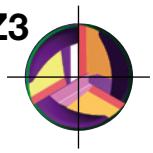
Frese a tre taglienti
Three flute end mills

COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0 -0,03	l	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

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

Z3



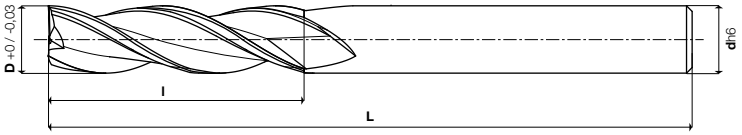
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*

Serie/*Series* 14120

Frese a tre taglienti
Three flute end mills

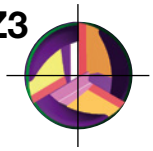


COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0 -0,03	l	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. / *for technical parameters see page 121*

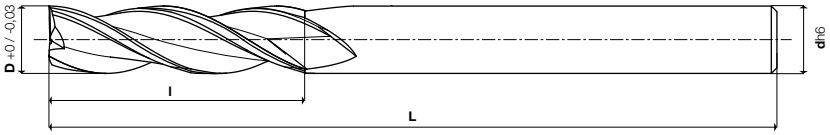
Z3



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*
14120	◕	◕	◕	◕	○	●	●

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

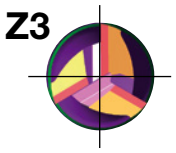


Serie/*Series*

14135

Frese a tre taglienti
Three flute end mills

COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 32 | N | QUALITY STANDARD UOP



Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0 -0,03	l	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*

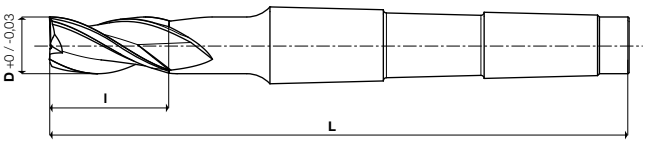
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*

Serie/*Series*
14150

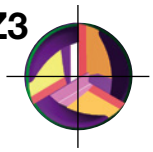
Frese a tre taglienti
Three flute end mills



COATING	λ°s			
Skin	32	N	UNI 8250 DIN 845B ISO 1641/II	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0 -0,03	l	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

Z3

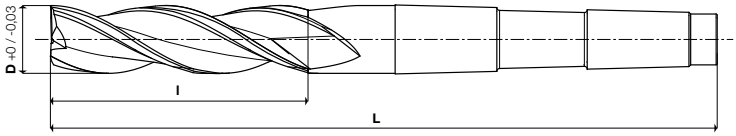


Cono Morse
Morse Taper

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*
14150	◕	◕	◕	◕	○	●	●

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



Serie/*Series*

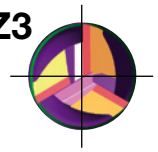
14155

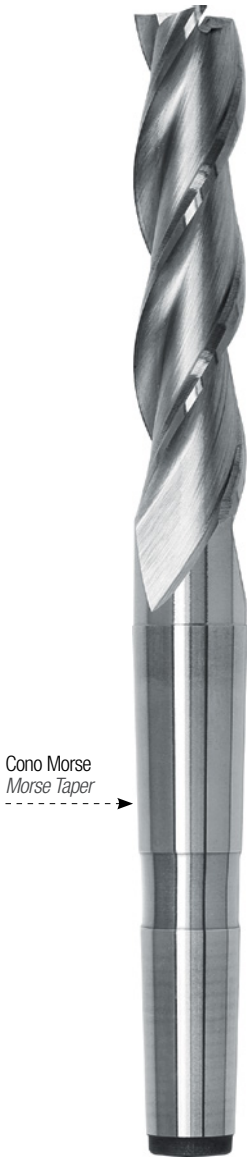
Frese a tre taglienti
Three flute end mills

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	l	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

Z3





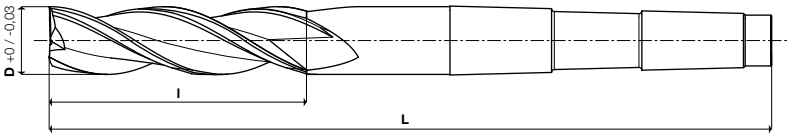
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*

Serie/*Series*
14160

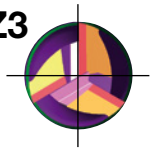
Frese a tre taglienti
Three flute end mills



COATING	λ°s		QUALITY STANDARD UOP	
Skin	32	N	✓	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0 -0,03	l	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

Z3



Cono Morse
Morse Taper

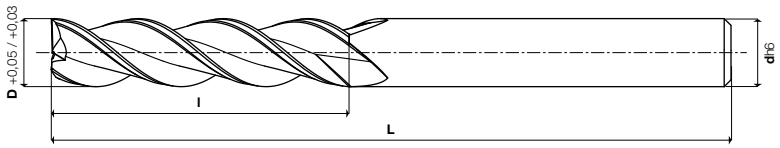
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
14160	◕	◕	◕	◕	○	●	●

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

Serie/*Series*
TORNADO
14505
Frese "Tornado"
"Tornado" end mills

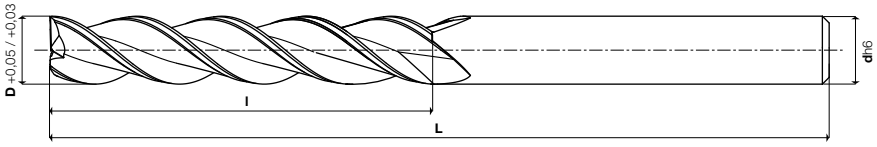
14520
Frese "Tornado"
"Tornado" end mills



COATING	W	F	λ°s	H	UNI 8244 DIN 844A ISO 1641/I
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	55		

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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*



COATING	W	F	λ°s	H	UNI 8244 DIN 844A ISO 1641/I
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	55		

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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*

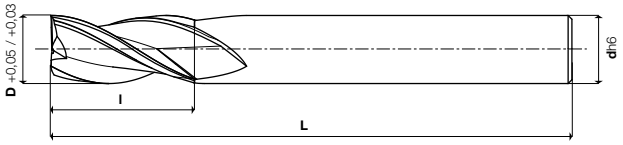
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
14505	◕	◕	◕	○	○	●	●
14520	◕	◕	◕	○	○	●	●

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

Serie/*Series*

14805

Frese a tre taglienti
Three flute end mills

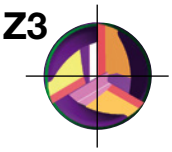


COATING **Skin** *Alu* | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 40 | W | QUALITY STANDARD UOP

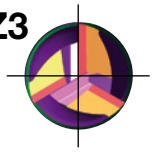
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	L	dh6	Z
148050300 CM		CMX	3	14	58	6	3
148050400 CM		CMX	4	18	62	6	3
148050500 CM		CMX	5	20	64	6	3
148050600 CM		CMX	6	22	66	6	3
148050700 CM		CMX	7	22	72	10	3
148050800 CM		CMX	8	25	75	10	3
148050900 CM		CMX	9	25	75	10	3
148051000 CM		CMX	10	28	78	10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

parametri tecnici a pag. / *for technical parameters see page 122*

Z3

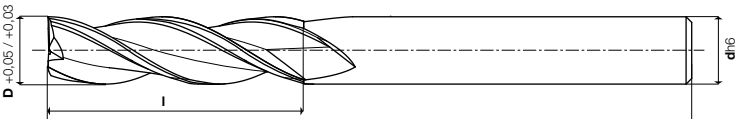


Z3



14820

Frese a tre taglienti
Three flute end mills



COATING **Skin** *Alu* | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 40 | W | QUALITY STANDARD UOP

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

parametri tecnici a pag. / *for technical parameters see page 122*

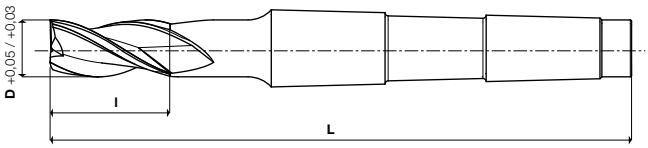
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
14805	○	○	○	●	●	○	○
14820	○	○	○	●	●	○	○

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

Serie/*Series* 14850

Frese a tre taglienti
Three flute end mills

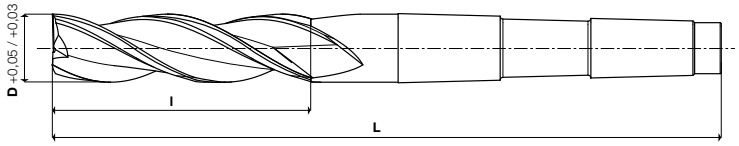


COATING **Skin** *Alu* | λ°s 40 | W | QUALITY STANDARD UOP

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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

Serie/*Series* 14855

Frese a tre taglienti
Three flute end mills



COATING **Skin** *Alu* | λ°s 40 | W | QUALITY STANDARD UOP

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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*

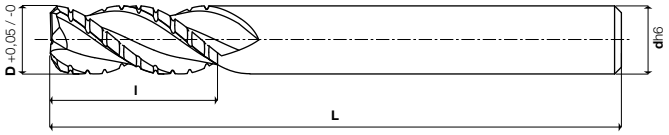
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
14850	○	○	○	●	●	○	○
14855	○	○	○	●	●	○	○

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

Serie/*Series*

15105

Frese a tre taglienti a **SEMIFINIRE**
Three flute roughing and semi-finishing end mills



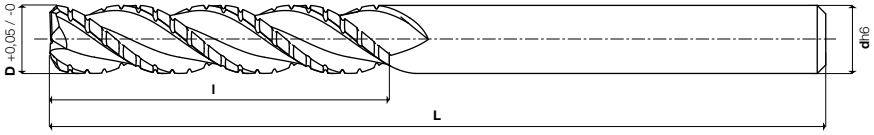
COATING	W	F	λ°s			
Skin Alu	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	40	WF	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	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. / *for technical parameters see page 124*

15120

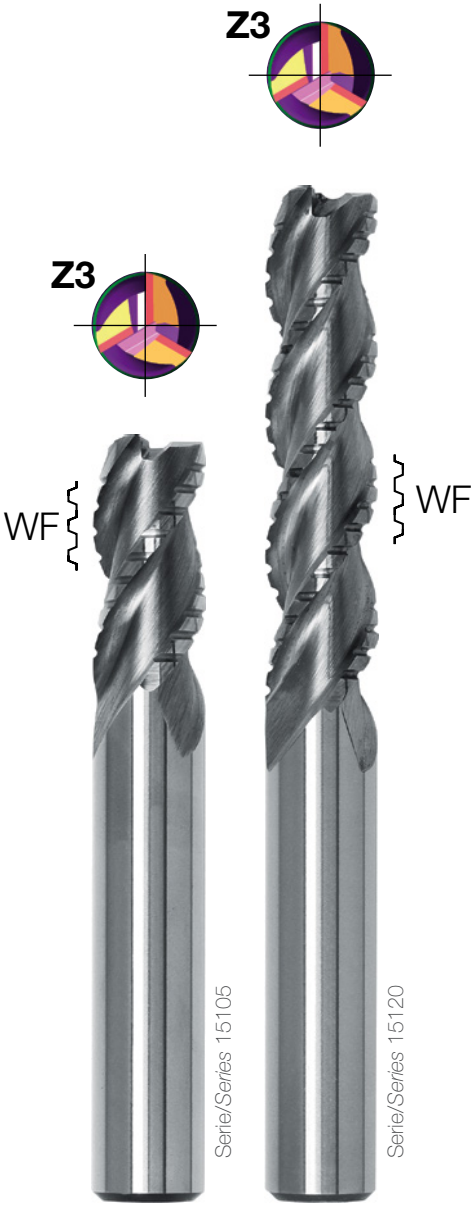
Frese a tre taglienti a **SEMIFINIRE**
Three flute roughing and semi-finishing end mills



COATING	W	F	λ°s			
Skin Alu	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	40	WF	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	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. / *for technical parameters see page 124*

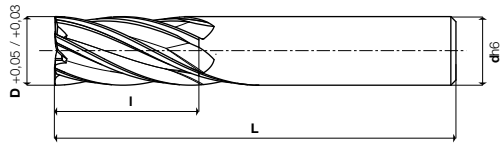


MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
15105	○	○	○	●	●	○	○
15120	○	○	○	●	●	○	○

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

Serie/*Series*
17105
Frese a **FINIRE**
Finishing end mills

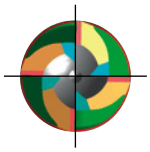


COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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



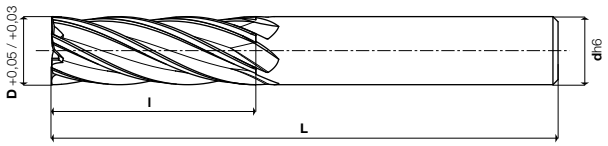
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
17105	○	○	◕	○	○	●	●

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

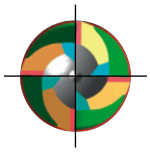
Serie/*Series* 17120

Frese a **FINIRE**
Finishing end mills



COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	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	l	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*

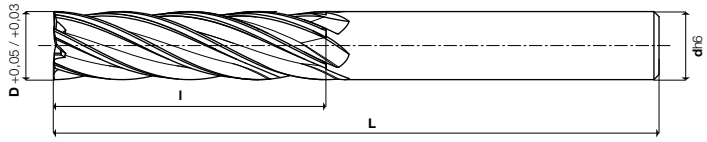
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
17120	○	○	◕	○	○	●	●

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

Serie/*Series*

17135

Frese a **FINIRE**
Finishing end mills

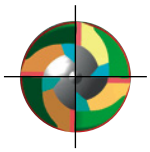


COATING	W	F	λ°s	N	QUALITY STANDARD UOP	
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32			

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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*

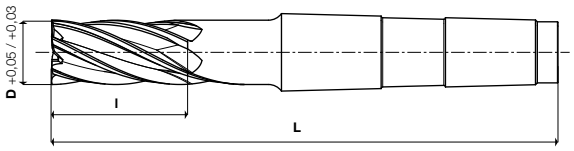
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
17135	○	○	◕	○	○	●	●

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

Serie/*Series*

17150

Frese a **FINIRE**
Finishing end mills

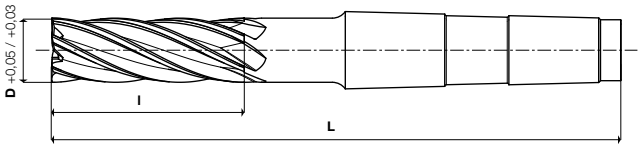


COATING	λ°s			
Skin	32	N	UNI 8250 DIN 845B ISO 1641/II	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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

17155

Frese a **FINIRE**
Finishing end mills



COATING	λ°s			
Skin	32	N	UNI 8250 DIN 845B ISO 1641/II	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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*

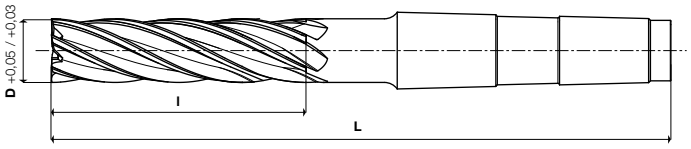
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
17150	○	○	◕	○	○	●	●
17155	○	○	◕	○	○	●	●

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

Serie/*Series*

17160

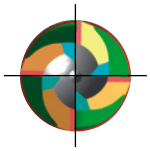
Frese a FINIRE
Finishing end mills



COATING **Skin** | λ°s 32 | N | QUALITY STANDARD UOP

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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



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*

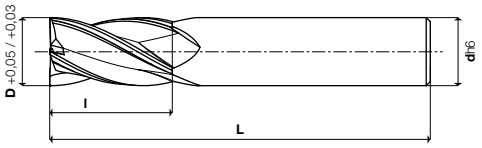
Serie/*Series* 17305

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

ALTE PRESTAZIONI
HIGH PERFORMANCE

17305

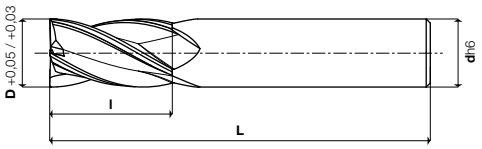
Frese a **FINIRE** con tagliente al centro
Finishing end mills center cutting



COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art. X-105 (PM Co 10,5%)	D +0,05 +0,03	l	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. / *for technical parameters see page 123*

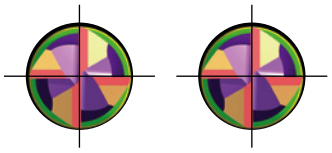


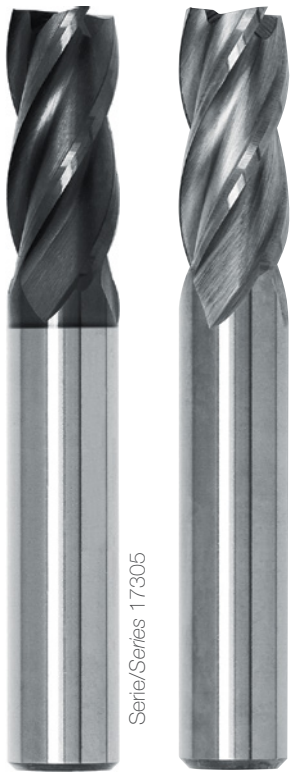
COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art. X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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. / *for technical parameters see page 123*

Z4÷5 **Z4÷8**





MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

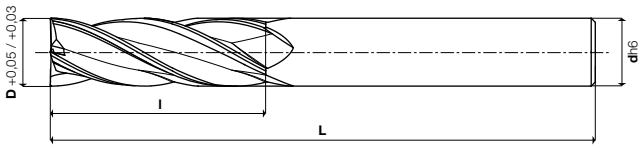
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
17305 EMX	●	●	●	●	○	●	●
17305 CM/CMX	○	○	◕	○	○	●	●

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

Serie/*Series*

17320

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

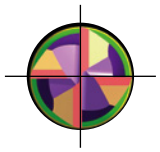


COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	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*

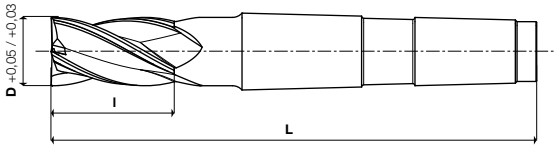
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
17320	○	○	◕	○	○	●	●

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

Serie/*Series*

17350

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

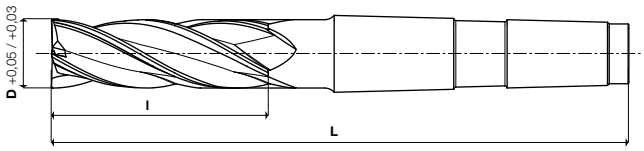


COATING	λ°s			
Skin	32	N	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	L	MORSE TAPER	Z
173501000 CM		CMX	10	22	92	1	4
173501200 CM		CMX	12	26	96	1	4
173501400 CM		CMX	14	26	111	2	4
173501500 CM		CMX	15	32	117	2	4
173501600 CM		CMX	16	32	117	2	4
173501800 CM		CMX	18	32	117	2	4
173502000 CM		CMX	20	38	140	3	4
173502200 CM		CMX	22	38	140	3	4
173502400 CM		CMX	24	45	147	3	5
173502500 CM		CMX	25	45	147	3	5
173502600 CM		CMX	26	45	147	3	5
173502800 CM		CMX	28	45	147	3	5
173503000 CM		CMX	30	53	155	3	6
173503200 CM		CMX	32	53	178	4	6
173503400 CM		CMX	34	53	178	4	6
173503500 CM		CMX	35	53	178	4	6
173503600 CM		CMX	36	53	178	4	6
173503800 CM		CMX	38	63	188	4	6
173504000 CM		CMX	40	63	188	4	8
173504500 CM		CMX	45	63	188	4	8
173505000 CM		CMX	50	75	200	4	8
173505001 CM		CMX	50	75	233	5	8

17355

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



COATING	λ°s			
Skin	32	N	UNI 8250 DIN 845B ISO 1641/II	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	L	MORSE TAPER	Z
173551000 CM		CMX	10	45	115	1	4
173551200 CM		CMX	12	53	123	1	4
173551400 CM		CMX	14	53	138	2	4
173551500 CM		CMX	15	63	148	2	4
173551600 CM		CMX	16	63	148	2	4
173551800 CM		CMX	18	63	148	2	4
173552000 CM		CMX	20	75	177	3	4
173552200 CM		CMX	22	75	177	3	4
173552400 CM		CMX	24	90	192	3	5
173552500 CM		CMX	25	90	192	3	5
173552600 CM		CMX	26	90	192	3	5
173552800 CM		CMX	28	90	192	3	5
173553000 CM		CMX	30	90	192	3	6
173553200 CM		CMX	32	106	231	4	6
173553400 CM		CMX	34	106	231	4	6
173553500 CM		CMX	35	106	231	4	6
173553600 CM		CMX	36	106	231	4	6
173553800 CM		CMX	38	125	250	4	6
173554000 CM		CMX	40	125	250	4	8
173554500 CM		CMX	45	125	250	4	8
173555000 CM		CMX	50	150	308	5	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*
17350	○	○	◕	○	○	●	●
17355	○	○	◕	○	○	●	●

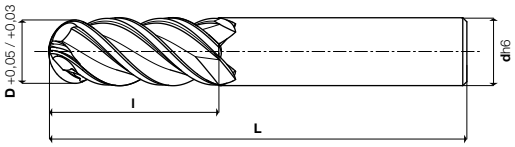
● consigliata/*recommended* ◕ accettabile/*acceptable* ○ non consigliata/*not recommended*

Serie/*Series* 17505

Frese a testa semisferica
Ball nosed end mills

17520

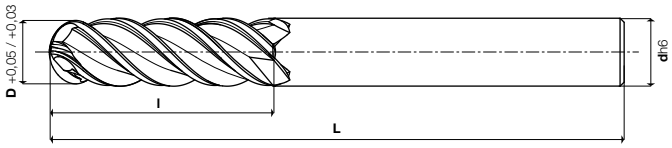
Frese a testa semisferica
Ball nosed end mills



COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	L	dh6	Z
175050200 CM		CMX	2	7	51	6	4
175050300 CM		CMX	3	8	52	6	4
175050400 CM		CMX	4	11	55	6	4
175050500 CM		CMX	5	13	57	6	4
175050600 CM		CMX	6	13	57	6	4
175050800 CM		CMX	8	19	69	10	4
175051000 CM		CMX	10	22	72	10	4
175051200 CM		CMX	12	26	83	12	4
175051400 CM		CMX	14	26	83	12	4
175051500 CM		CMX	15	32	92	16	4
175051600 CM		CMX	16	32	92	16	4
175051800 CM		CMX	18	32	92	16	4
175052000 CM		CMX	20	38	98	16	4
175052001 CM		CMX	20	38	104	20	4
175052200 CM		CMX	22	38	104	20	4
175052400 CM		CMX	24	45	121	25	5
175052500 CM		CMX	25	45	121	25	5
175052600 CM		CMX	26	45	121	25	5
175052800 CM		CMX	28	45	121	25	5
175053000 CM		CMX	30	45	121	25	6
175053200 CM		CMX	32	53	133	32	6
175053600 CM		CMX	36	53	133	32	6
175054000 CM		CMX	40	63	143	32	8
175055000 CM		CMX	50	75	155	32	8

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

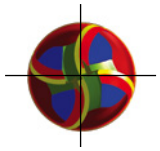


COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	L	dh6	Z
175200200 CM		CMX	2	10	54	6	4
175200300 CM		CMX	3	12	56	6	4
175200400 CM		CMX	4	19	63	6	4
175200500 CM		CMX	5	24	68	6	4
175200600 CM		CMX	6	24	68	6	4
175200800 CM		CMX	8	38	88	6	4
175201000 CM		CMX	10	45	95	10	4
175201200 CM		CMX	12	53	110	12	4
175201400 CM		CMX	14	53	110	12	4
175201500 CM		CMX	15	63	123	16	4
175201600 CM		CMX	16	63	123	16	4
175201800 CM		CMX	18	63	123	16	4
175202000 CM		CMX	20	75	135	16	4
175202001 CM		CMX	20	75	141	20	4
175202200 CM		CMX	22	75	141	20	4
175202400 CM		CMX	24	90	166	25	5
175202500 CM		CMX	25	90	166	25	5
175202600 CM		CMX	26	90	166	25	5
175202800 CM		CMX	28	90	166	25	5
175203000 CM		CMX	30	90	166	25	6
175203200 CM		CMX	32	106	186	32	6
175203600 CM		CMX	36	106	186	32	6
175204000 CM		CMX	40	125	205	32	8

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

Z4÷8
BALL-NOSED



Z4÷8
BALL-NOSED

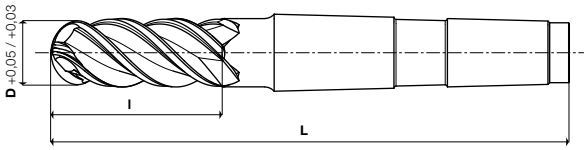
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
17505	○	○	◕	○	○	●	●
17520	○	○	◕	○	○	●	●

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

Serie/*Series*
17550

Frese a testa semisferica
Ball nosed end mills

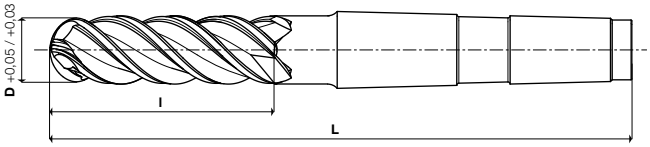


COATING **Skin** | λ°s 32 | N | ISO 1641/I

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	L	MORSE TAPER	Z
175501600 CM		CMX	16	32	117	2	4
175502000 CM		CMX	20	38	140	3	4
175502200 CM		CMX	22	38	140	3	4
175502400 CM		CMX	24	45	147	3	5
175502500 CM		CMX	25	45	147	3	5
175502800 CM		CMX	28	45	147	3	5
175503000 CM		CMX	30	53	155	3	6
175503200 CM		CMX	32	53	178	4	6
175503600 CM		CMX	36	53	178	4	6
175504000 CM		CMX	40	63	188	4	8
175505000 CM		CMX	50	75	233	5	8

17555

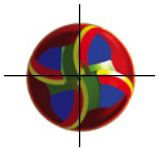
Frese a testa semisferica
Ball nosed end mills



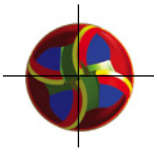
COATING **Skin** | λ°s 32 | N | UNI DIN ISO 1641/II

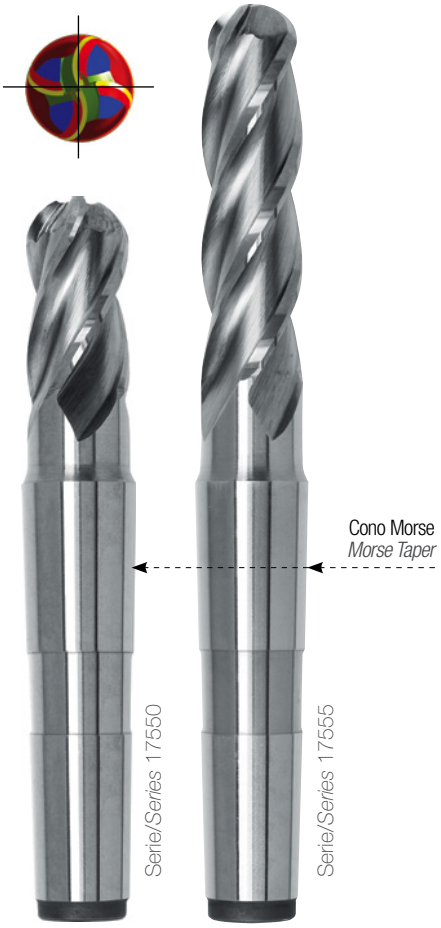
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 +0,03	l	L	MORSE TAPER	Z
175551600 CM		CMX	16	63	148	2	4
175552000 CM		CMX	20	75	177	3	4
175552200 CM		CMX	22	75	177	3	4
175552400 CM		CMX	24	90	192	3	5
175552500 CM		CMX	25	90	192	3	5
175552800 CM		CMX	28	90	192	3	5
175553000 CM		CMX	30	90	192	3	6
175553200 CM		CMX	32	106	231	4	6
175553600 CM		CMX	36	106	231	4	6
175554000 CM		CMX	40	125	250	4	8
175555000 CM		CMX	50	150	308	5	8

Z4÷8
BALL-NOSED



Z4÷8
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*
17550	○	○	◕	○	○	●	●
17555	○	○	◕	○	○	●	●

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

Serie/*Series*

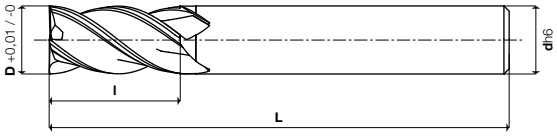
18105

Frese per finitura
Finishing end mills

ALTE PRESTAZIONI
HIGH PERFORMANCE

18105

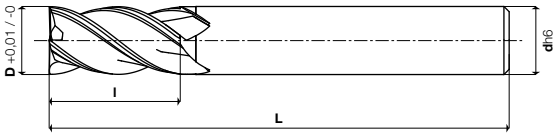
Frese per finitura
Finishing end mills



COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	45	N	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-105 (PM Co 10,5%)	D +0,01 -0	l	L	dh6	Z
181050600	**EMX**	6	13	57	6	4
181050800	**EMX**	8	19	69	10	4
181051000	**EMX**	10	22	72	10	4
181051200	**EMX**	12	26	83	12	4
181051400	**EMX**	14	26	83	12	4
181051600	**EMX**	16	32	92	16	4
181051800	**EMX**	18	32	92	16	4
181052000	**EMX**	20	38	104	20	4
181052200	**EMX**	22	38	104	20	4

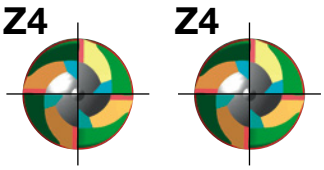
parametri tecnici a pag. / *for technical parameters see page 127*



COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	45	N	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,01 -0	l	L	dh6	Z
181050200	**CM**	**CMX**	2	7	51	6	4
181050300	**CM**	**CMX**	3	8	52	6	4
181050400	**CM**	**CMX**	4	11	55	6	4
181050500	**CM**	**CMX**	5	13	57	6	4
181050600	**CM**	**CMX**	6	13	57	6	4
181050800	**CM**	**CMX**	8	19	69	10	4
181051000	**CM**	**CMX**	10	22	72	10	4
181051200	**CM**	**CMX**	12	26	83	12	4
181051400	**CM**	**CMX**	14	26	83	12	4
181051500	**CM**	**CMX**	15	32	92	16	4
181051600	**CM**	**CMX**	16	32	92	16	4
181051800	**CM**	**CMX**	18	32	92	16	4
181052000	**CM**	**CMX**	20	38	104	20	4
181052200	**CM**	**CMX**	22	38	104	20	4

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



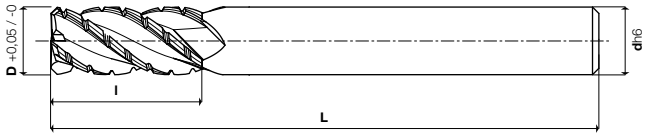
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
18105 EMX	●	●	●	●	○	●	●
18105 CM/CMX	◕	◕	◕	◕	○	●	●

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

Serie/*Series* 19105

Frese a **SEMIFINIRE** tagliente interrotto
Semi-finishing end mills Interrupted cutting edge

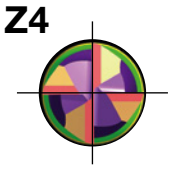


COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	40	NF	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,01 -0	l	L	dh6	Z
191050600 CM		**CMX**	6	13	57	6	4
191050700 CM		**CMX**	7	16	66	10	4
191050800 CM		**CMX**	8	19	69	10	4
191050900 CM		**CMX**	9	19	69	10	4
191051000 CM		**CMX**	10	22	72	10	4
191051100 CM		**CMX**	11	22	79	12	4
191051200 CM		**CMX**	12	26	83	12	4
191051300 CM		**CMX**	13	26	83	12	4
191051400 CM		**CMX**	14	26	83	12	4
191051500 CM		**CMX**	15	32	92	16	4
191051600 CM		**CMX**	16	32	92	16	4
191051700 CM		**CMX**	17	32	92	16	4
191051800 CM		**CMX**	18	32	92	16	4
191051900 CM		**CMX**	19	38	104	20	4
191052000 CM		**CMX**	20	38	104	20	4
191052200 CM		**CMX**	22	38	104	20	4
191052400 CM		**CMX**	24	45	121	25	4
191052500 CM		**CMX**	25	45	121	25	4

parametri tecnici a pag. / *for technical parameters see page 124*

Z4



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*
19105	◕	◕	◕	○	○	●	●

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

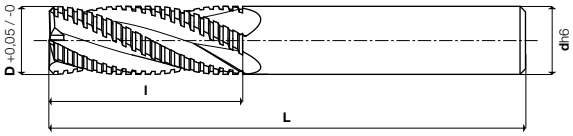
Serie/*Series*

20105

Frese a **SEMIFINIRE**
Semi-finishing end mills

20105

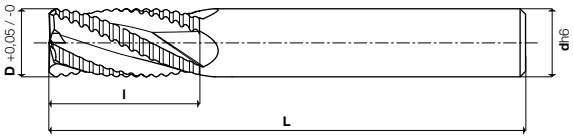
Frese a **SGROSSARE**
Roughing end mills



COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 28 | NF | QUALITY STANDARD UOP

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
201050601 CM		CMX	6	16	60	6	3
201050801 CM		CMX	8	22	64	10	4
201051001 CM		CMX	10	28	70	10	4
201051201 CM		CMX	12	32	80	12	4
201051401 CM		CMX	14	32	80	12	4
201051601 CM		CMX	16	36	90	16	4
201051801 CM		CMX	18	40	100	16	4
201052001 CM		CMX	20	45	110	20	4
201052501 CM		CMX	25	50	125	25	5
201053201 CM		CMX	32	63	140	25	5
201053601 CM		CMX	36	70	150	32	6
201054001 CM		CMX	40	70	150	32	6

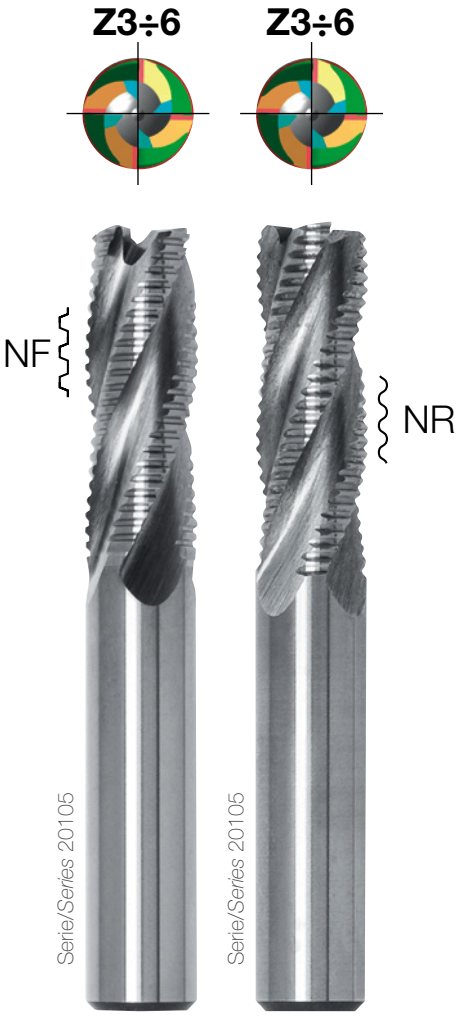
parametri tecnici a pag. / *for technical parameters see page 124*



COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 28 | NR | QUALITY STANDARD UOP

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
201050603 CM		CMX	6	16	60	6	3
201050803 CM		CMX	8	22	64	10	4
201051003 CM		CMX	10	28	70	10	4
201051203 CM		CMX	12	32	80	12	4
201051403 CM		CMX	14	32	80	12	4
201051603 CM		CMX	16	36	90	16	4
201051803 CM		CMX	18	40	100	16	4
201052003 CM		CMX	20	45	110	20	4
201052503 CM		CMX	25	50	125	25	5
201053203 CM		CMX	32	63	140	25	5
201053603 CM		CMX	36	70	150	32	6
201054003 CM		CMX	40	70	150	32	6

parametri tecnici a pag. / *for technical parameters see page 124*



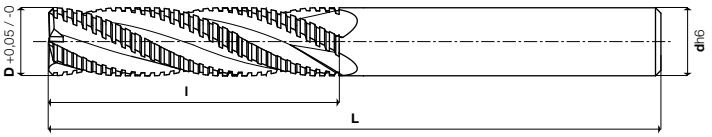
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
20105	◕	◕	◕	○	○	●	●
20105	◕	◕	◕	○	○	●	●

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

Serie/*Series* 20120

Frese a **SEMIFINIRE**
Semi-finishing end mills



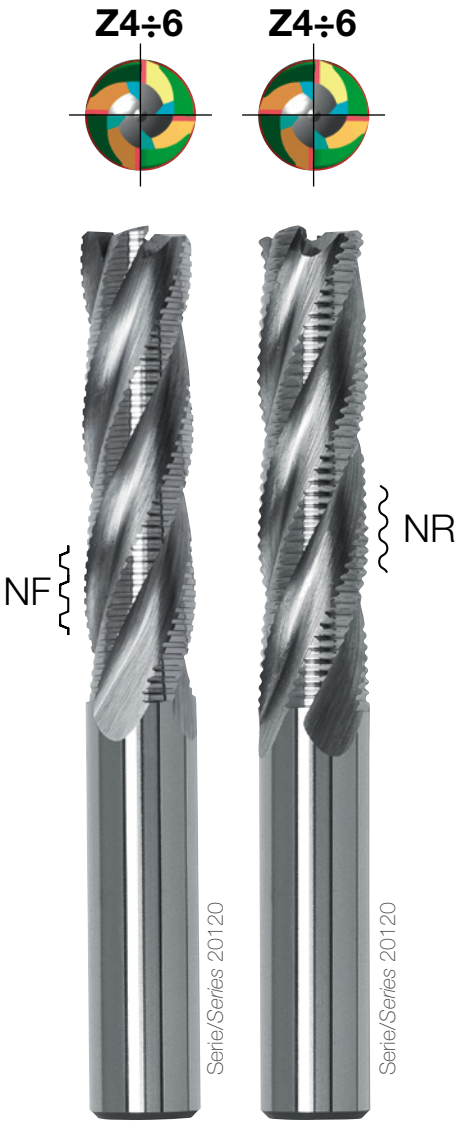
COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 28 | NF | QUALITY STANDARD UOP

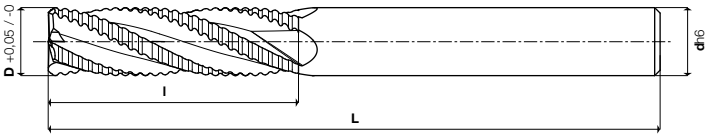
Cod. Art. X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
201200801 CM	**CMX**	8	35	85	10	4
201201001 CM	**CMX**	10	42	90	10	4
201201201 CM	**CMX**	12	48	95	12	4
201201401 CM	**CMX**	14	48	100	16	4
201201601 CM	**CMX**	16	54	104	16	4
201201801 CM	**CMX**	18	60	120	16	4
201202001 CM	**CMX**	20	62	128	20	4
201202501 CM	**CMX**	25	70	145	25	5
201203201 CM	**CMX**	32	80	160	32	5
201203601 CM	**CMX**	36	90	170	32	6
201204001 CM	**CMX**	40	90	170	32	6

parametri tecnici a pag. / *for technical parameters see page 124*

Serie/*Series* 20120

Frese a **SGROSSARE**
Roughing end mills





COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 28 | NR | QUALITY STANDARD UOP

Cod. Art. X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
201200803 CM	**CMX**	8	35	85	10	4
201201003 CM	**CMX**	10	42	90	10	4
201201203 CM	**CMX**	12	48	95	12	4
201201403 CM	**CMX**	14	48	100	16	4
201201603 CM	**CMX**	16	54	104	16	4
201201803 CM	**CMX**	18	60	120	16	4
201202003 CM	**CMX**	20	62	128	20	4
201202503 CM	**CMX**	25	70	145	25	5
201203203 CM	**CMX**	32	80	160	32	5
201203603 CM	**CMX**	36	90	170	32	6
201204003 CM	**CMX**	40	90	170	32	6

parametri tecnici a pag. / *for technical parameters see page 124*

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*
20120	◕	◕	◕	○	○	●	●
20120	◕	◕	◕	○	○	●	●

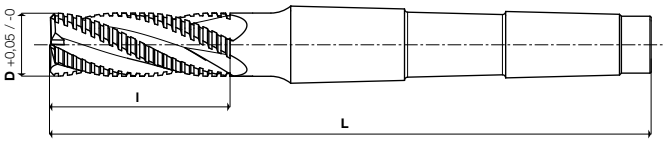
● consigliata/*recommended* ◕ accettabile/*acceptable* ○ non consigliata/*not recommended*

Serie/*Series* 20150

Frese a **SEMIFINIRE**
Semi-finishing end mills

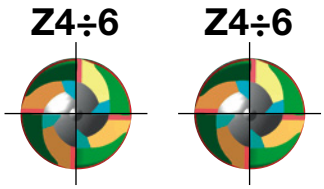
20150

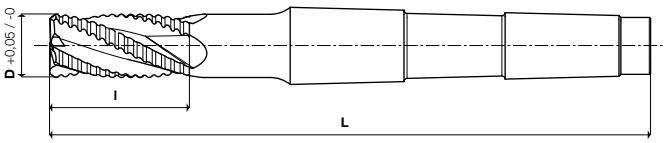
Frese a **SGROSSARE**
Roughing end mills



COATING **Skin** | λ°s 28 | NF | QUALITY STANDARD UOP

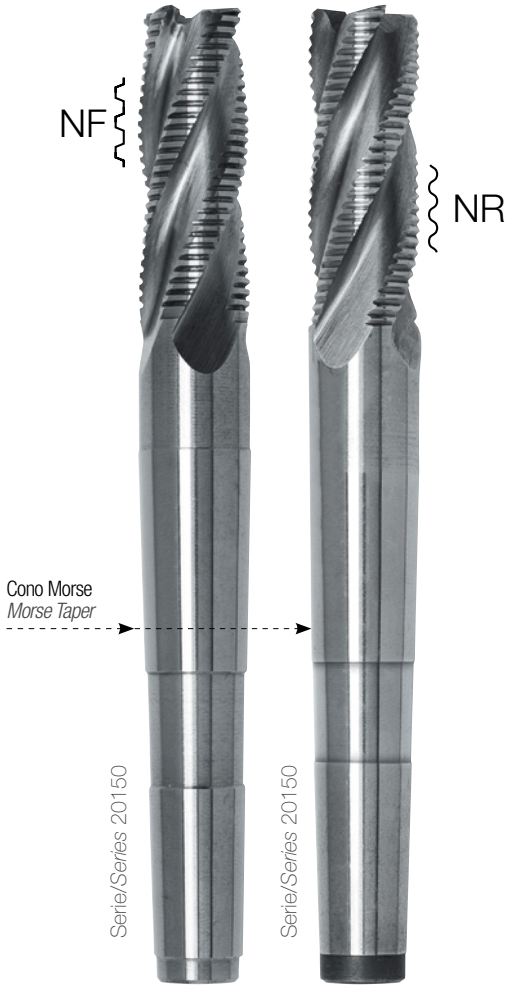
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
201502001	CM	CMX	20	45	125	2	4
201502501	CM	CMX	25	50	150	3	5
201502601	CM	CMX	26	56	155	3	5
201502801	CM	CMX	28	56	155	3	5
201503001	CM	CMX	30	63	165	3	5
201503201	CM	CMX	32	63	188	4	5
201503601	CM	CMX	36	70	195	4	6
201504001	CM	CMX	40	70	195	4	6
201504501	CM	CMX	45	80	205	4	6





COATING **Skin** | λ°s 28 | NR | QUALITY STANDARD UOP

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
201502003	CM	CMX	20	45	125	2	4
201502503	CM	CMX	25	50	150	3	5
201502603	CM	CMX	26	56	155	3	5
201502803	CM	CMX	28	56	155	3	5
201503003	CM	CMX	30	63	165	3	5
201503203	CM	CMX	32	63	188	4	5
201503603	CM	CMX	36	70	195	4	6
201504003	CM	CMX	40	70	195	4	6
201504503	CM	CMX	45	80	205	4	6



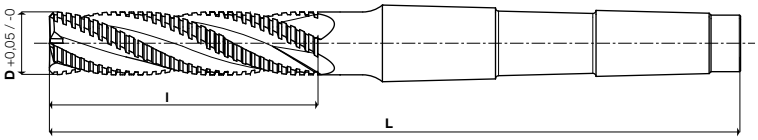
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
20150	◕	◕	◕	○	○	●	●
20150	◕	◕	◕	○	○	●	●

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

Serie/*Series* 20155

Frese a **SEMIFINIRE**
Semi-finishing end mills

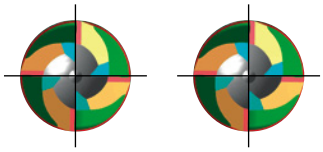


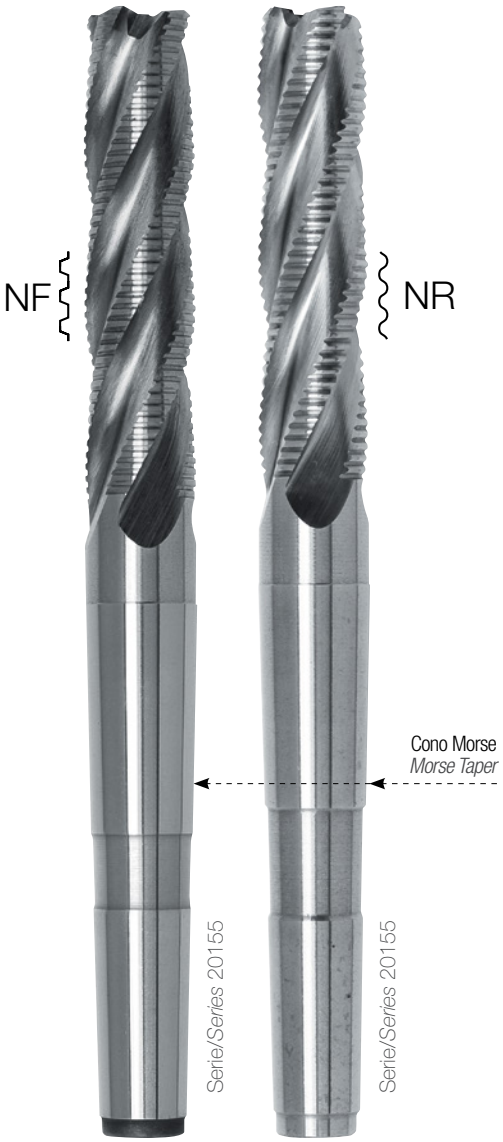
COATING **Skin** | λ°s 28 | NF | QUALITY STANDARD UOP

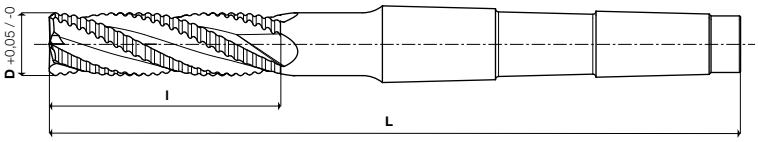
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
201552001 CM		CMX	20	65	148	2	4
201552501 CM		CMX	25	70	171	3	5
201552601 CM		CMX	26	70	176	3	5
201552801 CM		CMX	28	80	186	3	5
201553001 CM		CMX	30	85	210	4	5
201553201 CM		CMX	32	90	215	4	5
201553601 CM		CMX	36	90	215	4	6
201554001 CM		CMX	40	95	220	4	6
201555001 CM		CMX	50	110	235	4	7

20155

Frese a **SGROSSARE**
Roughing end mills







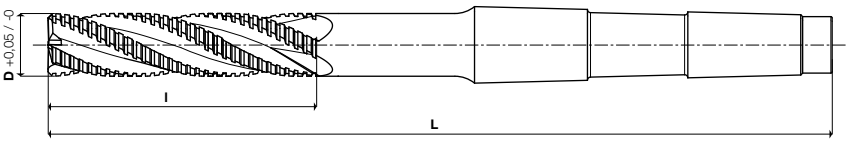
COATING **Skin** | λ°s 28 | NR | QUALITY STANDARD UOP

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
201552003 CM		CMX	20	65	148	2	4
201552503 CM		CMX	25	70	171	3	5
201552603 CM		CMX	26	70	176	3	5
201552803 CM		CMX	28	80	186	3	5
201553003 CM		CMX	30	85	210	4	5
201553203 CM		CMX	32	90	215	4	5
201553603 CM		CMX	36	90	215	4	6
201554003 CM		CMX	40	95	220	4	6
201555003 CM		CMX	50	110	235	4	7

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*
20155	◕	◕	◕	○	○	●	●
20155	◕	◕	◕	○	○	●	●

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



COATING **Skin** | λ°s 28 | NF | QUALITY STANDARD UOP

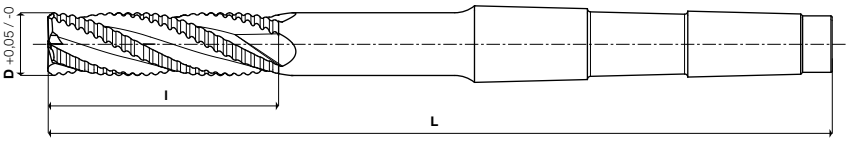
Serie/*Series* 20160

Frese a **SEMIFINIRE**
Semi-finishing end mills

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
201602001	CM	CMX	20	110	212	3	4
201602501	CM	CMX	25	125	250	4	5
201603001	CM	CMX	30	140	265	4	5
201603201	CM	CMX	32	150	275	4	6
201603601	CM	CMX	36	150	275	4	6
201604001	CM	CMX	40	180	305	4	6

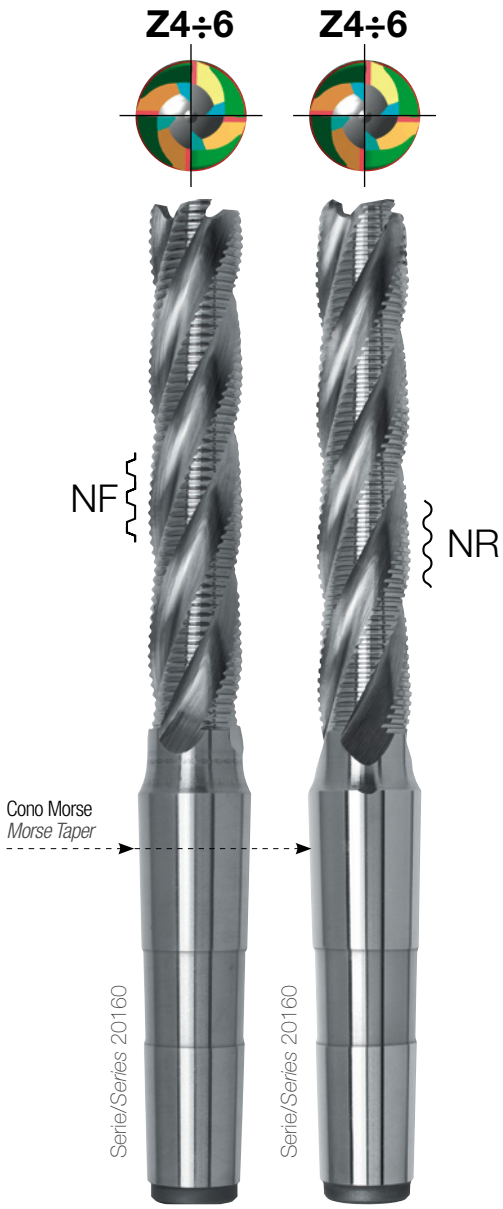
20160

Frese a **SGROSSARE**
Roughing end mills



COATING **Skin** | λ°s 28 | NR | QUALITY STANDARD UOP

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
201602003	CM	CMX	20	110	212	3	4
201602503	CM	CMX	25	125	250	4	5
201603003	CM	CMX	30	140	265	4	5
201603203	CM	CMX	32	150	275	4	6
201603603	CM	CMX	36	150	275	4	6
201604003	CM	CMX	40	180	305	4	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*
20160	◕	◕	◕	○	○	●	●
20160	◕	◕	◕	○	○	●	●

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

Serie/*Series*

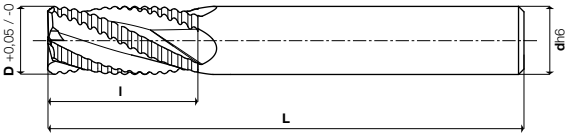
21105

Frese a **SGROSSARE**
Roughing end mills

ALTE PRESTAZIONI
HIGH PERFORMANCE

21105

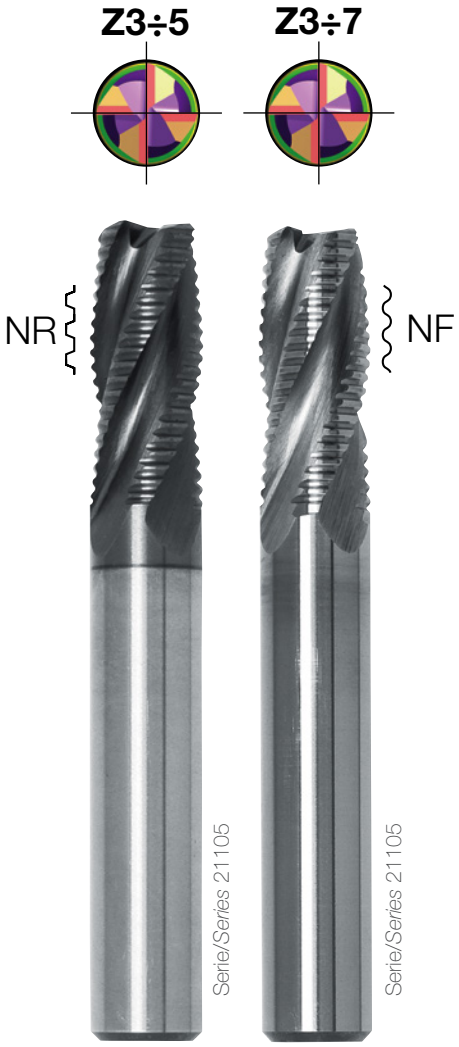
Frese a **SEMIFINIRE** tagliente al centro
Semi-finishing end mills center cutting

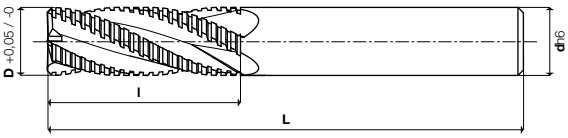


COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 28 | NR | UNI 8244 DIN 844A ISO 1641/I

Cod. Art. X-105 (PM Co 10,5%)	D +0,05 -0	l	L	dh6	Z
211050603 EMX	6	13	57	6	3
211050803 EMX	8	19	69	10	4
211051003 EMX	10	22	72	10	4
211051203 EMX	12	26	83	12	4
211051403 EMX	14	26	83	12	4
211051603 EMX	16	32	92	16	4
211051803 EMX	18	32	92	16	4
211052007 EMX	20	38	104	20	4
211052203 EMX	22	38	104	20	4
211052503 EMX	25	45	121	25	5
211052603 EMX	26	45	121	25	5
211052803 EMX	28	45	121	25	5
211053003 EMX	30	45	121	25	5
211053203 EMX	32	53	133	32	5

parametri tecnici a pag. / *for technical parameters see page 127*





COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 28 | NF | UNI 8244 DIN 844A ISO 1641/I

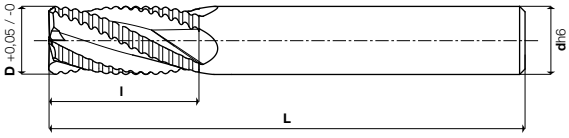
Cod. Art. X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
211050601 CM	**CMX**	6	13	57	6	3
211050701 CM	**CMX**	7	16	66	10	3
211050801 CM	**CMX**	8	19	69	10	4
211050901 CM	**CMX**	9	19	69	10	4
211051001 CM	**CMX**	10	22	72	10	4
211051101 CM	**CMX**	11	22	79	12	4
211051201 CM	**CMX**	12	26	83	12	4
211051301 CM	**CMX**	13	26	83	12	4
211051401 CM	**CMX**	14	26	83	12	4
211051501 CM	**CMX**	15	32	92	16	4
211051601 CM	**CMX**	16	32	92	16	4
211051701 CM	**CMX**	17	32	92	16	4
211051801 CM	**CMX**	18	32	92	16	4
211051805 CM	**CMX**	18	32	98	20	4
211052001 CM	**CMX**	20	38	98	16	4
211052005 CM	**CMX**	20	38	104	20	4
211052201 CM	**CMX**	22	38	104	20	4
211052205 CM	**CMX**	22	38	114	25	4
211052401 CM	**CMX**	24	45	121	25	5
211052501 CM	**CMX**	25	45	121	25	5
211052601 CM	**CMX**	26	45	121	25	5
211052801 CM	**CMX**	28	45	121	25	5
211053001 CM	**CMX**	30	45	121	25	5
211053201 CM	**CMX**	32	53	133	32	5
211053601 CM	**CMX**	36	53	133	32	6
211054001 CM	**CMX**	40	63	143	32	6
211054501 CM	**CMX**	45	63	143	32	6
211055001 CM	**CMX**	50	75	155	32	7

parametri tecnici a pag. / *for technical parameters see page 124*

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*
21105 EMX	●	●	●	●	○	●	●
21105 CM/CMX	◕	◕	◕	○	○	●	●

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



Serie/*Series*

21105

Frese a **SGROSSARE** tagliente al centro
Roughing end mills center cutting

COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	28	NR	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
211050603 CM		**CMX**	6	13	57	6	3
211050703 CM		**CMX**	7	16	66	10	3
211050803 CM		**CMX**	8	19	69	10	4
211050903 CM		**CMX**	9	19	69	10	4
211051003 CM		**CMX**	10	22	72	10	4
211051103 CM		**CMX**	11	22	79	12	4
211051203 CM		**CMX**	12	26	83	12	4
211051303 CM		**CMX**	13	26	83	12	4
211051403 CM		**CMX**	14	26	83	12	4
211051503 CM		**CMX**	15	32	92	16	4
211051603 CM		**CMX**	16	32	92	16	4
211051703 CM		**CMX**	17	32	92	16	4
211051803 CM		**CMX**	18	32	92	16	4
211051807 CM		**CMX**	18	32	98	20	4
211052003 CM		**CMX**	20	38	98	16	4
211052007 CM		**CMX**	20	38	104	20	4
211052203 CM		**CMX**	22	38	104	20	4
211052207 CM		**CMX**	22	38	114	25	4
211052403 CM		**CMX**	24	45	121	25	5
211052503 CM		**CMX**	25	45	121	25	5
211052603 CM		**CMX**	26	45	121	25	5
211052803 CM		**CMX**	28	45	121	25	5
211053003 CM		**CMX**	30	45	121	25	5
211053203 CM		**CMX**	32	53	133	32	5
211053603 CM		**CMX**	36	53	133	32	6
211054003 CM		**CMX**	40	63	143	32	6
211054503 CM		**CMX**	45	63	143	32	6
211055003 CM		**CMX**	50	75	155	32	7

parametri tecnici a pag. / *for technical parameters see page 124*

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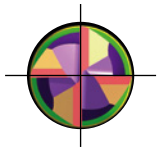
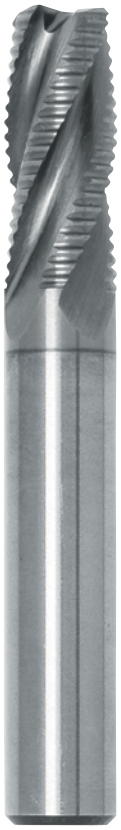




MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
21105	◕	◕	◕	○	○	●	●

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

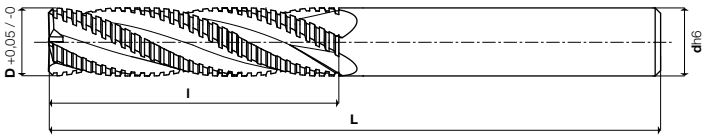
Serie/*Series*

21120

Frese a **SEMIFINIRE** tagliente al centro
Semi-finishing end mills center cutting

21120

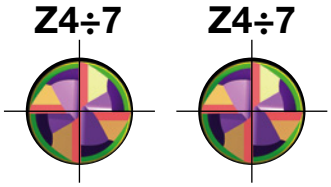
Frese a **SGROSSARE** tagliente al centro
Roughing end mills center cutting

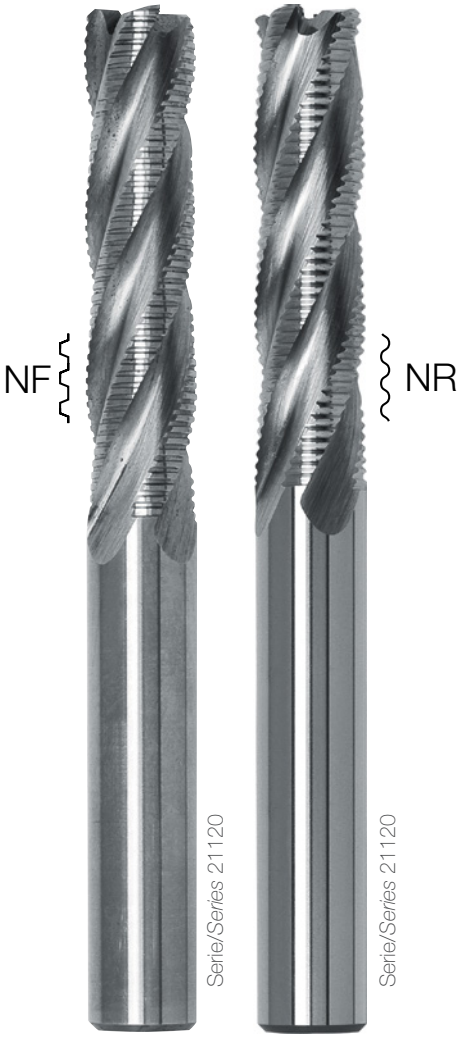


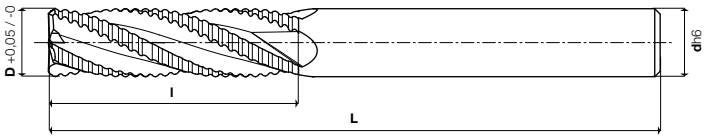
COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	28	NF	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
211200801 CM		CMX	8	38	88	10	4
211201001 CM		CMX	10	45	95	10	4
211201201 CM		CMX	12	53	110	12	4
211201401 CM		CMX	14	53	110	12	4
211201501 CM		CMX	15	63	123	16	4
211201601 CM		CMX	16	63	123	16	4
211201801 CM		CMX	18	63	123	16	4
211201805 CM		CMX	18	63	129	20	4
211202001 CM		CMX	20	75	135	16	4
211202005 CM		CMX	20	75	141	20	4
211202201 CM		CMX	22	75	141	20	4
211202205 CM		CMX	22	75	151	25	4
211202401 CM		CMX	24	90	166	25	5
211202501 CM		CMX	25	90	166	25	5
211202801 CM		CMX	28	90	166	25	5
211203001 CM		CMX	30	90	166	25	5
211203201 CM		CMX	32	106	186	32	5
211203601 CM		CMX	36	106	186	32	6
211204001 CM		CMX	40	125	205	32	6
211204501 CM		CMX	45	125	205	32	6
211205001 CM		CMX	50	150	230	32	7

parametri tecnici a pag. / *for technical parameters see page 124*







COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	28	NR	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
211200803 CM		CMX	8	38	88	10	4
211201003 CM		CMX	10	45	95	10	4
211201203 CM		CMX	12	53	110	12	4
211201403 CM		CMX	14	53	110	12	4
211201503 CM		CMX	15	63	123	16	4
211201603 CM		CMX	16	63	123	16	4
211201803 CM		CMX	18	63	123	16	4
211201807 CM		CMX	18	63	129	20	4
211202003 CM		CMX	20	75	135	16	4
211202007 CM		CMX	20	75	141	20	4
211202203 CM		CMX	22	75	141	20	4
211202207 CM		CMX	22	75	151	25	4
211202403 CM		CMX	24	90	166	25	5
211202503 CM		CMX	25	90	166	25	5
211202803 CM		CMX	28	90	166	25	5
211203003 CM		CMX	30	90	166	25	5
211203203 CM		CMX	32	106	186	32	5
211203603 CM		CMX	36	106	186	32	6
211204003 CM		CMX	40	125	205	32	6
211204503 CM		CMX	45	125	205	32	6
211205003 CM		CMX	50	150	230	32	7

parametri tecnici a pag. / *for technical parameters see page 124*

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*
21120	◕	◕	◕	○	○	●	●
21120	◕	◕	◕	○	○	●	●

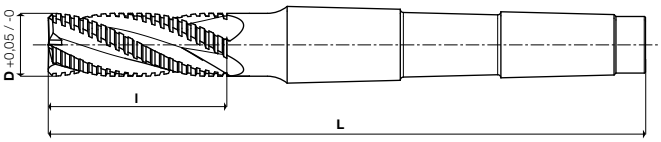
● consigliata/*recommended* ◕ accettabile/*acceptable* ○ non consigliata/*not recommended*

Serie/*Series* 21150

Frese a **SEMIFINIRE** tagliente al centro
Semi-finishing end mills center cutting

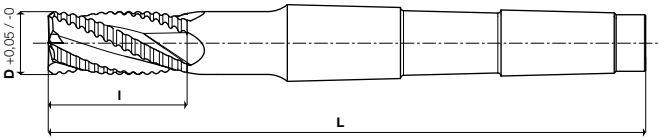
21150

Frese a **SGROSSARE** tagliente al centro
Roughing end mills center cutting



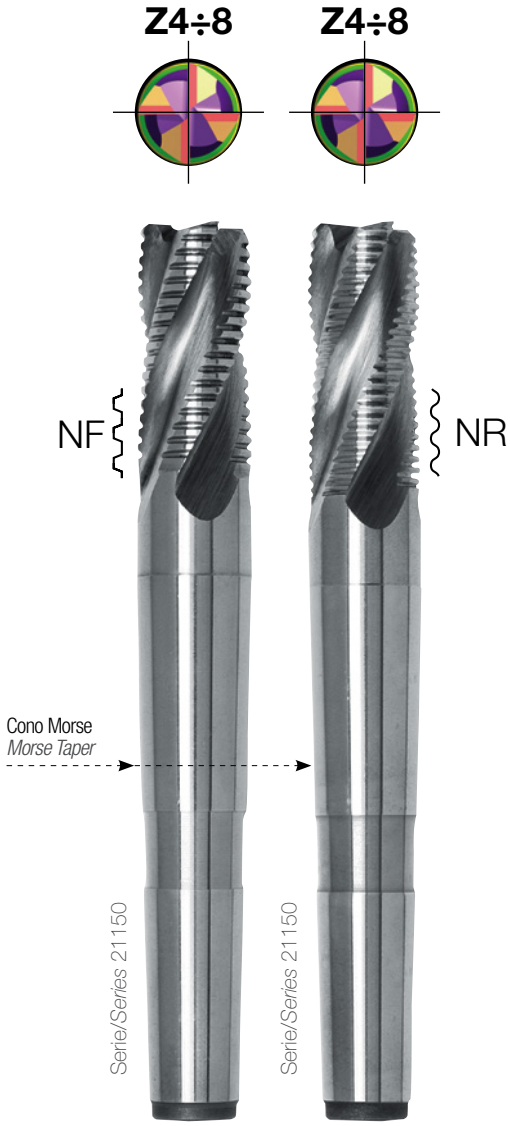
COATING	λ°s		
Skin	28	NF	UNI 8250 DIN 845B ISO 1641/II

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
211501601 CM		CMX	16	32	117	2	4
211501801 CM		CMX	18	32	117	2	4
211502001 CM		CMX	20	38	140	3	4
211502201 CM		CMX	22	38	140	3	4
211502401 CM		CMX	24	45	147	3	5
211502501 CM		CMX	25	45	147	3	5
211502601 CM		CMX	26	45	147	3	5
211502801 CM		CMX	28	45	147	3	5
211503001 CM		CMX	30	53	155	3	5
211503201 CM		CMX	32	53	178	4	5
211503401 CM		CMX	34	53	178	4	5
211503501 CM		CMX	35	53	178	4	6
211503601 CM		CMX	36	53	178	4	6
211503801 CM		CMX	38	63	188	4	6
211504001 CM		CMX	40	63	188	4	6
211504501 CM		CMX	45	63	188	4	6
211505001 CM		CMX	50	75	200	4	7
211505005 CM		CMX	50	75	233	5	7
211505601 CM		CMX	56	75	233	5	7
211506301 CM		CMX	63	90	248	5	8



COATING	λ°s		
Skin	28	NR	UNI 8250 DIN 845B ISO 1641/II

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
211501603 CM		CMX	16	32	117	2	4
211501803 CM		CMX	18	32	117	2	4
211502003 CM		CMX	20	38	140	3	4
211502203 CM		CMX	22	38	140	3	4
211502403 CM		CMX	24	45	147	3	5
211502503 CM		CMX	25	45	147	3	5
211502603 CM		CMX	26	45	147	3	5
211502803 CM		CMX	28	45	147	3	5
211503003 CM		CMX	30	53	155	3	5
211503203 CM		CMX	32	53	178	4	5
211503403 CM		CMX	34	53	178	4	5
211503503 CM		CMX	35	53	178	4	6
211503603 CM		CMX	36	53	178	4	6
211503803 CM		CMX	38	63	188	4	6
211504003 CM		CMX	40	63	188	4	6
211504503 CM		CMX	45	63	188	4	6
211505003 CM		CMX	50	75	200	4	7
211505007 CM		CMX	50	75	233	5	7
211505603 CM		CMX	56	75	233	5	7
211506303 CM		CMX	63	90	248	5	8



MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

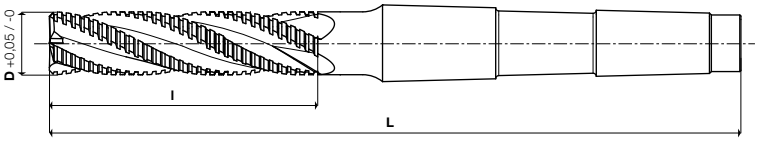
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
21150	◕	◕	◕	○	○	●	●
21150	◕	◕	◕	○	○	●	●

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

Serie/*Series*

21155

Frese a **SEMIFINIRE** tagliente al centro
Semi-finishing end mills center cutting

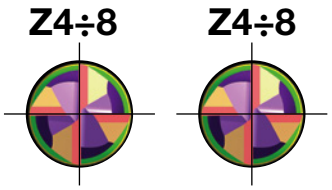


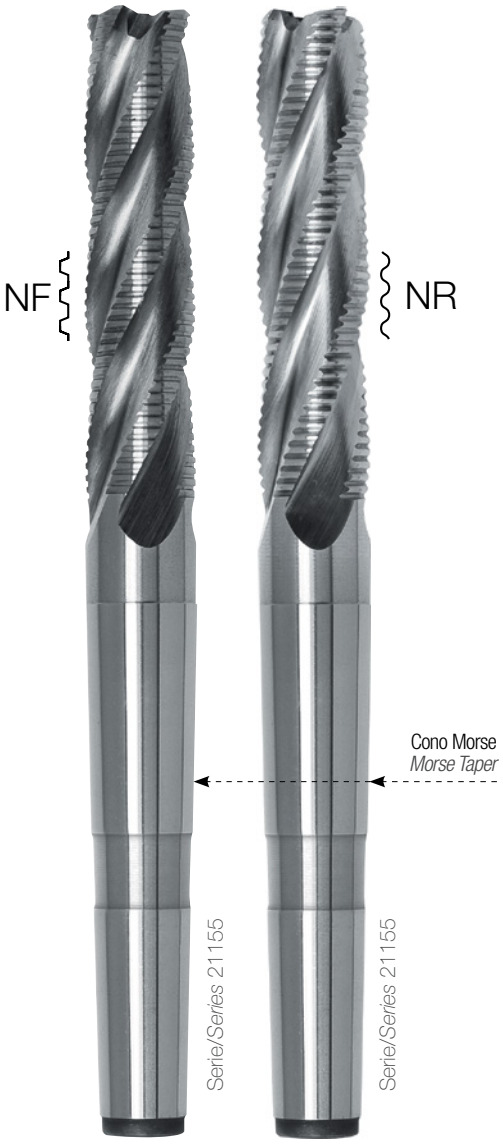
COATING **Skin** | λ°s 28 | NF | UNI 8250 DIN 845B ISO 1641/II

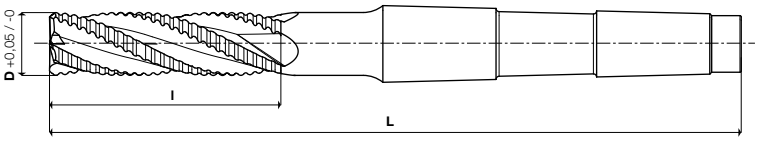
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
211551601 CM		CMX	16	63	148	2	4
211551801 CM		CMX	18	63	148	2	4
211552001 CM		CMX	20	75	177	3	4
211552201 CM		CMX	22	75	177	3	4
211552401 CM		CMX	24	90	192	3	5
211552501 CM		CMX	25	90	192	3	5
211552601 CM		CMX	26	90	192	3	5
211552801 CM		CMX	28	90	192	3	5
211553001 CM		CMX	30	90	192	3	5
211553201 CM		CMX	32	106	231	4	5
211553401 CM		CMX	34	106	231	4	5
211553501 CM		CMX	35	106	231	4	6
211553601 CM		CMX	36	106	231	4	6
211553801 CM		CMX	38	125	250	4	6
211554001 CM		CMX	40	125	250	4	6
211554501 CM		CMX	45	125	250	4	6
211555001 CM		CMX	50	150	275	4	7
211555005 CM		CMX	50	150	308	5	7
211555601 CM		CMX	56	150	308	5	7
211556301 CM		CMX	63	180	338	5	8

21155

Frese a **SGROSSARE** tagliente al centro
Roughing end mills center cutting







COATING **Skin** | λ°s 28 | NR | UNI 8250 DIN 845B ISO 1641/II

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
211551603 CM		CMX	16	63	148	2	4
211551803 CM		CMX	18	63	148	2	4
211552003 CM		CMX	20	75	177	3	4
211552203 CM		CMX	22	75	177	3	4
211552403 CM		CMX	24	90	192	3	5
211552503 CM		CMX	25	90	192	3	5
211552603 CM		CMX	26	90	192	3	5
211552803 CM		CMX	28	90	192	3	5
211553003 CM		CMX	30	90	192	3	5
211553203 CM		CMX	32	106	231	4	5
211553403 CM		CMX	34	106	231	4	5
211553503 CM		CMX	35	106	231	4	6
211553603 CM		CMX	36	106	231	4	6
211553803 CM		CMX	38	125	250	4	6
211554003 CM		CMX	40	125	250	4	6
211554503 CM		CMX	45	125	250	4	6
211555003 CM		CMX	50	150	275	4	7
211555007 CM		CMX	50	150	308	5	7
211555603 CM		CMX	56	150	308	5	7
211556303 CM		CMX	63	180	338	5	8

MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

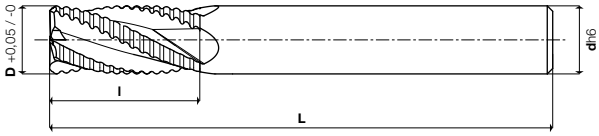
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
21155	◕	◕	◕	○	○	●	●
21155	◕	◕	◕	○	○	●	●

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

Serie/*Series*

21305

Frese a **SGROSSARE**
Roughing end mills

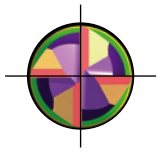


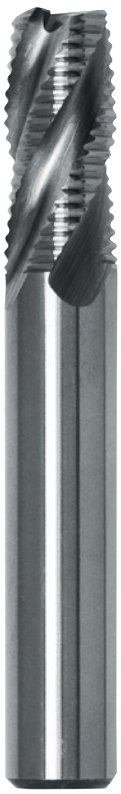
COATING	W	F	λ°s			
Skin *Inox*	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	NR	UNI 8244 DIN 844A ISO 1641/I	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
213050503 CM		**CMX**	5	13	57	6	3
213050603 CM		**CMX**	6	13	57	6	3
213050803 CM		**CMX**	8	19	69	10	4
213051003 CM		**CMX**	10	22	72	10	4
213051203 CM		**CMX**	12	26	83	12	4
213051403 CM		**CMX**	14	26	83	12	4
213051503 CM		**CMX**	15	32	92	16	4
213051603 CM		**CMX**	16	32	92	16	4
213051803 CM		**CMX**	18	32	92	16	4
213052007 CM		**CMX**	20	38	104	20	4
213052203 CM		**CMX**	22	38	104	20	4
213052503 CM		**CMX**	25	45	121	25	5

parametri tecnici a pag. / *for technical parameters see page 125*

Z3÷5





NR

MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

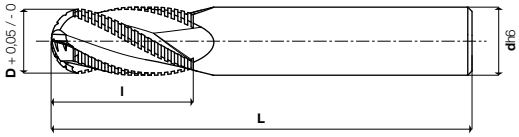
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
21305	◕	◕	●	○	○	●	●

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

Serie/*Series*

21505

Frese a **SEMIFINIRE**, testa semisferica
Ball nosed semi-finishing end mills

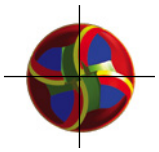


COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 28 | NF | ISO 1641/I

Cod. Art. X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
215050601 CM	**CMX**	6	13	57	6	3
215050701 CM	**CMX**	7	16	66	10	3
215050801 CM	**CMX**	8	19	69	10	4
215050901 CM	**CMX**	9	19	69	10	4
215051001 CM	**CMX**	10	22	72	10	4
215051101 CM	**CMX**	11	22	79	12	4
215051201 CM	**CMX**	12	26	83	12	4
215051301 CM	**CMX**	13	26	83	12	4
215051401 CM	**CMX**	14	26	83	12	4
215051501 CM	**CMX**	15	32	92	16	4
215051601 CM	**CMX**	16	32	92	16	4
215051801 CM	**CMX**	18	32	92	16	4
215051805 CM	**CMX**	18	32	98	20	4
215052001 CM	**CMX**	20	38	98	16	4
215052005 CM	**CMX**	20	38	104	20	4
215052201 CM	**CMX**	22	38	104	20	4
215052205 CM	**CMX**	22	38	114	25	4
215052401 CM	**CMX**	24	45	121	25	5
215052501 CM	**CMX**	25	45	121	25	5
215052601 CM	**CMX**	26	45	121	25	5
215052801 CM	**CMX**	28	45	121	25	5
215053001 CM	**CMX**	30	45	121	25	5
215053201 CM	**CMX**	32	53	133	32	5
215053601 CM	**CMX**	36	53	133	32	6
215054001 CM	**CMX**	40	63	143	32	6
215054501 CM	**CMX**	45	63	143	32	6
215055001 CM	**CMX**	50	75	155	32	7

parametri tecnici a pag. / *for technical parameters see page 125*

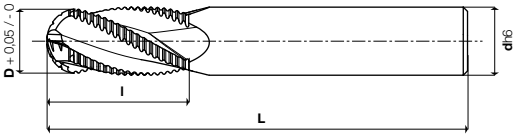
Z3÷7
BALL-NOSED



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*
21505	◕	◕	◕	○	○	●	●

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



Serie/*Series*

21505

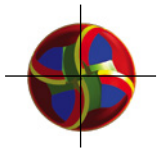
Frese a **SGROSSARE**, testa semisferica
Ball nosed roughing end mills

COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	28	NR	ISO 1641/I	

Cod. Art. X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
215050603 CM	**CMX**	6	13	57	6	3
215050703 CM	**CMX**	7	16	66	10	3
215050803 CM	**CMX**	8	19	69	10	4
215050903 CM	**CMX**	9	19	69	10	4
215051003 CM	**CMX**	10	22	72	10	4
215051103 CM	**CMX**	11	22	79	12	4
215051203 CM	**CMX**	12	26	83	12	4
215051303 CM	**CMX**	13	26	83	12	4
215051403 CM	**CMX**	14	26	83	12	4
215051503 CM	**CMX**	15	32	92	16	4
215051603 CM	**CMX**	16	32	92	16	4
215051803 CM	**CMX**	18	32	92	16	4
215051807 CM	**CMX**	18	32	98	20	4
215052003 CM	**CMX**	20	38	98	16	4
215052007 CM	**CMX**	20	38	104	20	4
215052203 CM	**CMX**	22	38	104	20	4
215052207 CM	**CMX**	22	38	114	25	4
215052403 CM	**CMX**	24	45	121	25	5
215052503 CM	**CMX**	25	45	121	25	5
215052603 CM	**CMX**	26	45	121	25	5
215052803 CM	**CMX**	28	45	121	25	5
215053003 CM	**CMX**	30	45	121	25	5
215053203 CM	**CMX**	32	53	133	32	5
215053603 CM	**CMX**	36	53	133	32	6
215054003 CM	**CMX**	40	63	143	32	6
215054503 CM	**CMX**	45	63	143	32	6
215055003 CM	**CMX**	50	75	155	32	7

parametri tecnici a pag. / *for technical parameters see page 125*

Z3÷7
BALL-NOSED



NR

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*
21505	◕	◕	◕	○	○	●	●

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

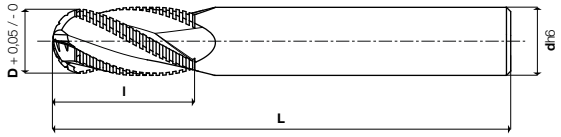
Serie/*Series*

21520

Frese a **SEMIFINIRE**, testa semisferica
Ball nosed semi-finishing end mills

21520

Frese a **SGROSSARE**, testa semisferica
Ball nosed roughing end mills

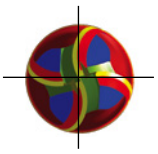


COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	28	NF	ISO 1641/I	

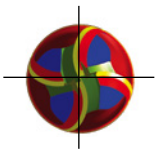
Cod. Art. X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
215200801 CM	**CMX**	8	38	88	10	4
215201001 CM	**CMX**	10	45	95	10	4
215201201 CM	**CMX**	12	53	110	12	4
215201401 CM	**CMX**	14	53	110	12	4
215201501 CM	**CMX**	15	63	123	16	4
215201601 CM	**CMX**	16	63	123	16	4
215201801 CM	**CMX**	18	63	123	16	4
215201805 CM	**CMX**	18	63	129	20	4
215202001 CM	**CMX**	20	75	135	16	4
215202005 CM	**CMX**	20	75	141	20	4
215202201 CM	**CMX**	22	75	141	20	4
215202205 CM	**CMX**	22	75	151	25	4
215202401 CM	**CMX**	24	90	166	25	5
215202501 CM	**CMX**	25	90	166	25	5
215202801 CM	**CMX**	28	90	166	25	5
215203001 CM	**CMX**	30	90	166	25	5
215203201 CM	**CMX**	32	106	186	32	5
215203601 CM	**CMX**	36	106	186	32	6
215204001 CM	**CMX**	40	125	205	32	6
215204501 CM	**CMX**	45	125	205	32	6
215205001 CM	**CMX**	50	150	230	32	7

parametri tecnici a pag. / *for technical parameters see page 125*

Z4÷7
BALL-NOSED



Z4÷7
BALL-NOSED

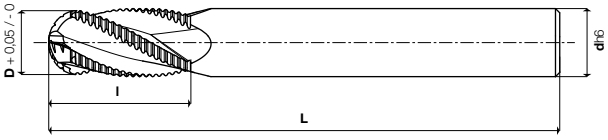


NF

Serie/*Series* 21520

NR

Serie/*Series* 21520



COATING	W	F	λ°s			
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	28	NR	ISO 1641/I	

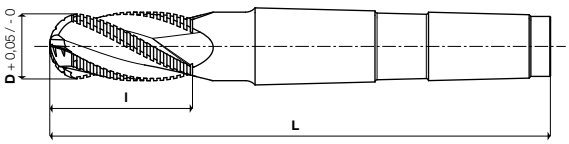
Cod. Art. X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	dh6	Z
215200803 CM	**CMX**	8	38	88	10	4
215201003 CM	**CMX**	10	45	95	10	4
215201203 CM	**CMX**	12	53	110	12	4
215201403 CM	**CMX**	14	53	110	12	4
215201503 CM	**CMX**	15	63	123	16	4
215201603 CM	**CMX**	16	63	123	16	4
215201803 CM	**CMX**	18	63	123	16	4
215201807 CM	**CMX**	18	63	129	20	4
215202003 CM	**CMX**	20	75	135	16	4
215202007 CM	**CMX**	20	75	141	20	4
215202203 CM	**CMX**	22	75	141	20	4
215202207 CM	**CMX**	22	75	151	25	4
215202403 CM	**CMX**	24	90	166	25	5
215202503 CM	**CMX**	25	90	166	25	5
215202803 CM	**CMX**	28	90	166	25	5
215203003 CM	**CMX**	30	90	166	25	5
215203203 CM	**CMX**	32	106	186	32	5
215203603 CM	**CMX**	36	106	186	32	6
215204003 CM	**CMX**	40	125	205	32	6
215204503 CM	**CMX**	45	125	205	32	6
215205003 CM	**CMX**	50	150	230	32	7

parametri tecnici a pag. / *for technical parameters see page 125*

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*
21520	◕	◕	◕	○	○	●	●
21520	◕	◕	◕	○	○	●	●

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



COATING
Skin

λ°s 28

NF

ISO 1641/I

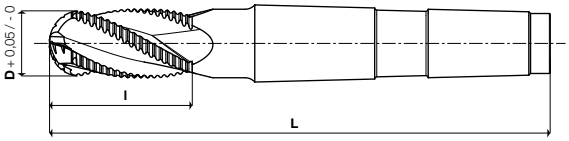
Serie/*Series* 21550

Frese a **SEMIFINIRE**, testa semisferica
Ball nosed semi-finishing end mills

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
215501601	CM	CMX	16	32	117	2	4
215501801	CM	CMX	18	32	117	2	4
215502001	CM	CMX	20	38	140	3	4
215502201	CM	CMX	22	38	140	3	4
215502401	CM	CMX	24	45	147	3	5
215502501	CM	CMX	25	45	147	3	5
215502601	CM	CMX	26	45	147	3	5
215502801	CM	CMX	28	45	147	3	5
215503001	CM	CMX	30	53	155	3	5
215503201	CM	CMX	32	53	178	4	5
215503401	CM	CMX	34	53	178	4	5
215503501	CM	CMX	35	53	178	4	6
215503601	CM	CMX	36	53	178	4	6
215503801	CM	CMX	38	63	188	4	6
215504001	CM	CMX	40	63	188	4	6
215504501	CM	CMX	45	63	188	4	6
215505001	CM	CMX	50	75	233	5	7
215505601	CM	CMX	56	75	233	5	7
215506301	CM	CMX	63	90	248	5	8

21550

Frese a **SGROSSARE**, testa semisferica
Ball nosed roughing end mills



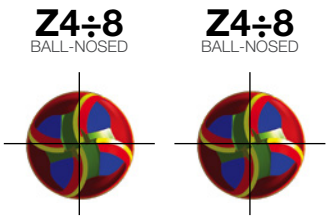
COATING
Skin

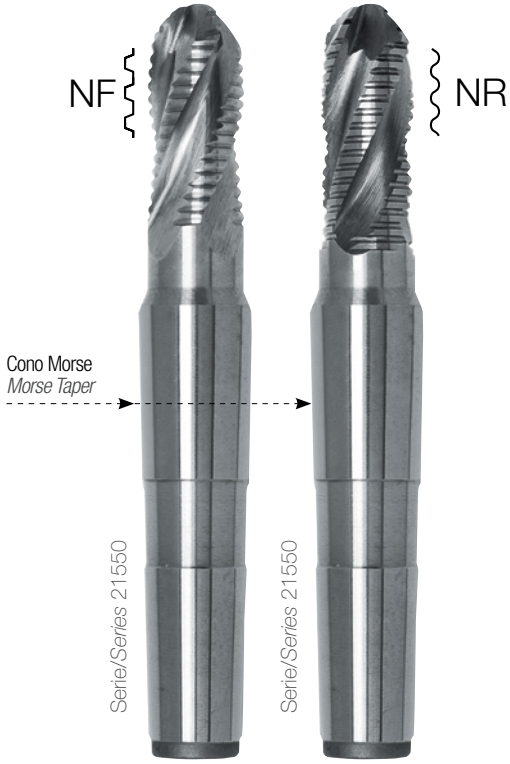
λ°s 28

NR

ISO 1641/I

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
215501603	CM	CMX	16	32	117	2	4
215501803	CM	CMX	18	32	117	2	4
215502003	CM	CMX	20	38	140	3	4
215502203	CM	CMX	22	38	140	3	4
215502403	CM	CMX	24	45	147	3	5
215502503	CM	CMX	25	45	147	3	5
215502603	CM	CMX	26	45	147	3	5
215502803	CM	CMX	28	45	147	3	5
215503003	CM	CMX	30	53	155	3	5
215503203	CM	CMX	32	53	178	4	5
215503403	CM	CMX	34	53	178	4	5
215503503	CM	CMX	35	53	178	4	6
215503603	CM	CMX	36	53	178	4	6
215503803	CM	CMX	38	63	188	4	6
215504003	CM	CMX	40	63	188	4	6
215504503	CM	CMX	45	63	188	4	6
215505003	CM	CMX	50	75	233	5	7
215505603	CM	CMX	56	75	233	5	7
215506303	CM	CMX	63	90	248	5	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*
21550	◕	◕	◕	○	○	●	●
21550	◕	◕	◕	○	○	●	●

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

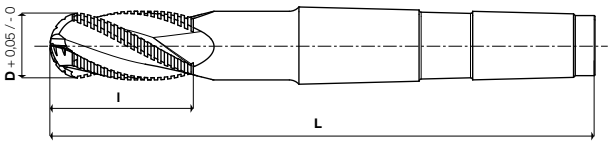
Serie/*Series*

21555

Frese a **SEMIFINIRE**, testa semisferica
Ball nosed semi-finishing end mills

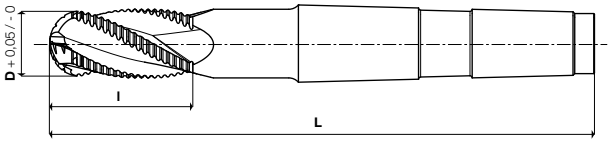
21555

Frese a **SGROSSARE**, testa semisferica
Ball nosed roughing end mills



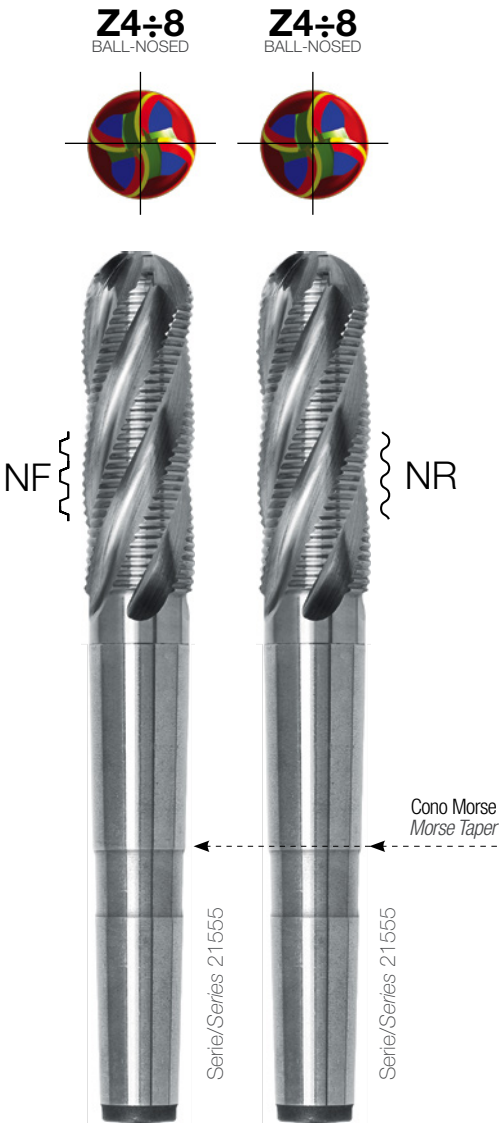
COATING **Skin** | λ°s 28 | NF | ISO 1641/II

Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
215551601 CM		CMX	16	63	148	2	4
215551801 CM		CMX	18	63	148	2	4
215552001 CM		CMX	20	75	177	3	4
215552201 CM		CMX	22	75	177	3	4
215552401 CM		CMX	24	90	192	3	5
215552501 CM		CMX	25	90	192	3	5
215552601 CM		CMX	26	90	192	3	5
215552801 CM		CMX	28	90	192	3	5
215553001 CM		CMX	30	90	192	3	5
215553201 CM		CMX	32	106	231	4	5
215553401 CM		CMX	34	106	231	4	5
215553501 CM		CMX	35	106	231	4	6
215553601 CM		CMX	36	106	231	4	6
215553801 CM		CMX	38	125	250	4	6
215554001 CM		CMX	40	125	250	4	6
215554501 CM		CMX	45	125	250	4	6
215555001 CM		CMX	50	150	308	5	7
215555601 CM		CMX	56	150	308	5	7
215556301 CM		CMX	63	180	338	5	8



COATING **Skin** | λ°s 28 | NR | ISO 1641/II

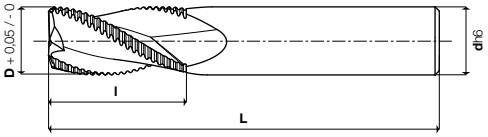
Cod. Art.	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	l	L	MORSE TAPER	Z
215551603 CM		CMX	16	63	148	2	4
215551803 CM		CMX	18	63	148	2	4
215552003 CM		CMX	20	75	177	3	4
215552203 CM		CMX	22	75	177	3	4
215552403 CM		CMX	24	90	192	3	5
215552503 CM		CMX	25	90	192	3	5
215552603 CM		CMX	26	90	192	3	5
215552803 CM		CMX	28	90	192	3	5
215553003 CM		CMX	30	90	192	3	5
215553203 CM		CMX	32	106	231	4	5
215553403 CM		CMX	34	106	231	4	5
215553503 CM		CMX	35	106	231	4	6
215553603 CM		CMX	36	106	231	4	6
215553803 CM		CMX	38	125	250	4	6
215554003 CM		CMX	40	125	250	4	6
215554503 CM		CMX	45	125	250	4	6
215555003 CM		CMX	50	150	308	5	7
215555603 CM		CMX	56	150	308	5	7
215556303 CM		CMX	63	180	338	5	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*
21555	◕	◕	◕	○	○	●	●
21555	◕	◕	◕	○	○	●	●

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



Serie/*Series*

22105

Frese a **SGROSSARE**
Roughing end mills

ALTE PRESTAZIONI
HIGH PERFORMANCE

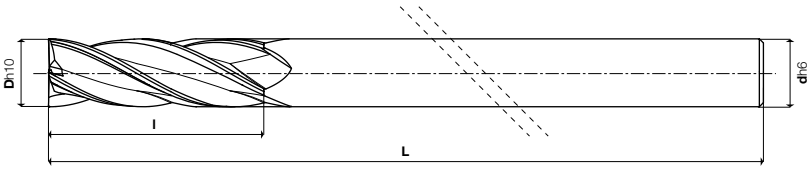
24105

Frese a quattro taglienti
Four flutes end mills

COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 32 | NRF | UNI DIN ISO 1641/I

Cod. Art.	X-105 (PM Co 10,5%)	D +0,05 -0	l	L	dh6	Z
221050602	EMX	6	8	52	6	3
221050802	EMX	8	11	61	10	3
221051002	EMX	10	13	63	10	3
221051202	EMX	12	13	73	12	3
221051402	EMX	14	16	73	12	3
221051602	EMX	16	19	79	16	3
221051802	EMX	18	19	79	16	3
221052002	EMX	20	22	88	20	3
221052202	EMX	22	22	88	20	3
221052502	EMX	25	26	102	25	3
221052802	EMX	28	26	102	25	3
221053002	EMX	30	26	102	25	3
221053202	EMX	32	32	112	32	3

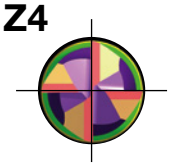
parametri tecnici a pag. / *for technical parameters see page 127*



COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 32 | N | QUALITY STANDARD UOP

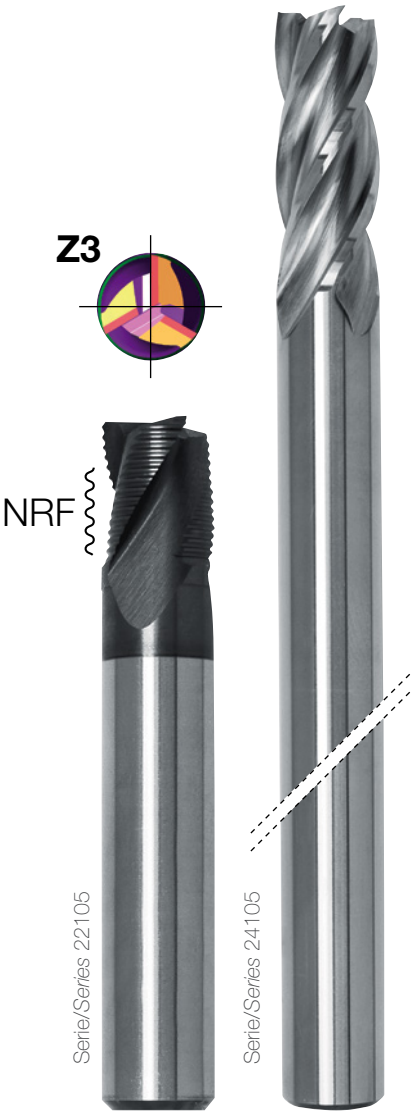
Cod. Art.	X-85 (PM Co 8,5%)	COATED	Dh10	l	L	dh6	Z
241051000 CM		CMX	10	30	200	10	4
241051200 CM		CMX	12	30	200	12	4
241051600 CM		CMX	16	35	200	16	4
241052000 CM		CMX	20	35	200	20	4
241052500 CM		CMX	25	40	200	25	4

Z4



Z3

NRF



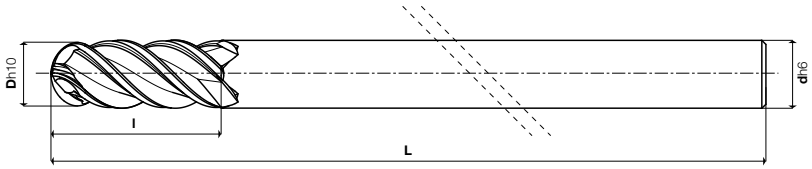
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
22105	●	●	●	●	○	●	●
24105	◕	◕	◕	○	○	●	●

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

Serie/*Series* 24110

Frese a quattro taglienti a testa semisferica
Ball nosed end mills

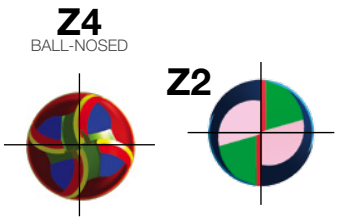


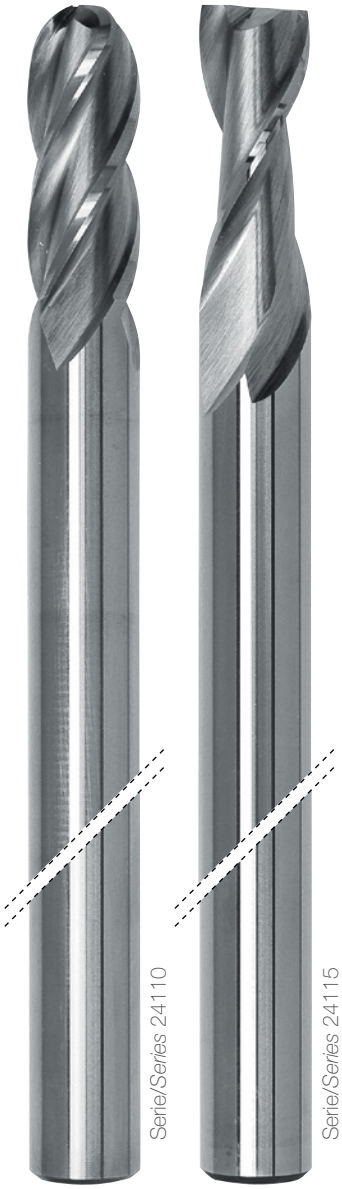
COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 32 | N | QUALITY STANDARD UOP

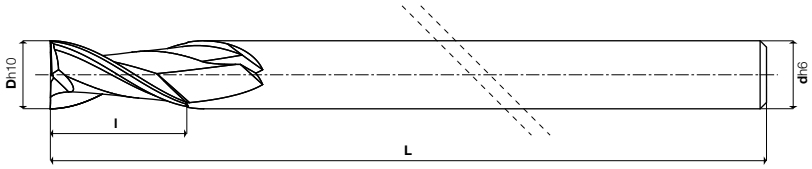
Cod. Art. X-85 (PM Co 8,5%)	COATED	Dh10	l	L	dh6	Z
241101000 CM	**CMX**	10	30	200	10	4
241101200 CM	**CMX**	12	30	200	12	4
241101600 CM	**CMX**	16	35	200	16	4
241102000 CM	**CMX**	20	35	200	20	4
241102500 CM	**CMX**	25	40	200	25	4

24115

Frese a due taglienti
Two flute end mills







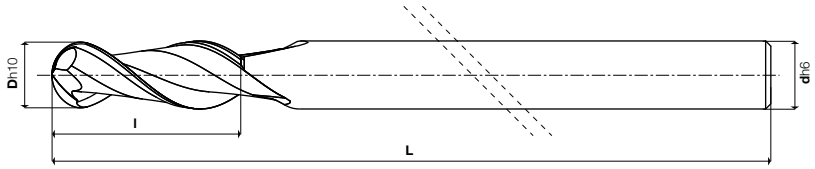
COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | λ°s 32 | N | QUALITY STANDARD UOP

Cod. Art. X-85 (PM Co 8,5%)	COATED	Dh10	l	L	dh6	Z
241151000 CM	**CMX**	10	30	200	10	2
241151200 CM	**CMX**	12	30	200	12	2
241151600 CM	**CMX**	16	35	200	16	2
241152000 CM	**CMX**	20	35	200	20	2
241152500 CM	**CMX**	25	40	200	25	2

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*
24110	◕	◕	◕	○	○	●	●
24115	◕	◕	◕	○	○	●	●

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



Serie/*Series* 24120

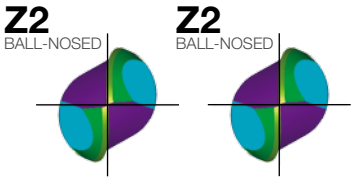
Frese a due taglienti a testa semisferica
Ball-nosed two flute slot drills

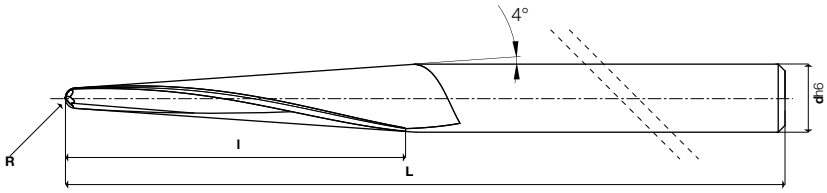
24125

Frese coniche a due taglienti a testa semisferica
Conicità 4° laterali
Ball nosed milling cutters Taper 4°

COATING	W	F	λ°s		QUALITY STANDARD UOP	
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	32	N	✓	

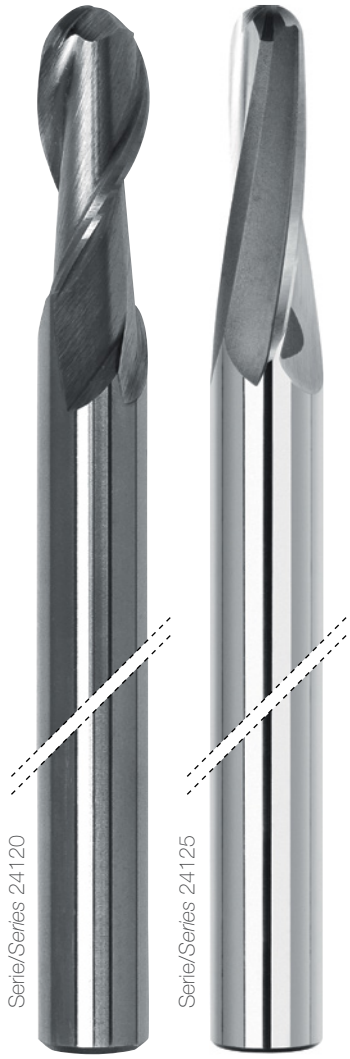
Cod. Art.	X-85 (PM Co 8,5%)	COATED	Dh10	l	L	dh6	Z
241201000 CM		CMX	10	30	200	10	2
241201200 CM		CMX	12	30	200	12	2
241201600 CM		CMX	16	35	200	16	2
241202000 CM		CMX	20	35	200	20	2
241202500 CM		CMX	25	40	200	25	2





COATING	W	F	λ°s		QUALITY STANDARD UOP	
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	15	N	✓	

Cod. Art.	X-85 (PM Co 8,5%)	COATED	R	l	L	dh6	Z
241250150 CM		CMX	1,5	50	180	10	2
241250200 CM		CMX	2	45	180	10	2
241250250 CM		CMX	2,5	38	180	10	2
241250300 CM		CMX	3	45	200	12	2
241250350 CM		CMX	3,5	40	200	12	2
241250400 CM		CMX	4	47	200	14	2
241250500 CM		CMX	5	47	200	16	2
241250600 CM		CMX	6	63	200	20	2
241250800 CM		CMX	8	72	200	25	2



MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

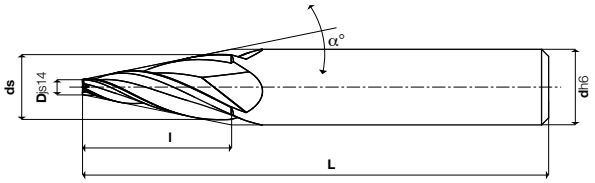
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
24120	◕	◕	◕	○	○	●	●
24125	◕	◕	◕	○	○	●	●

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

Serie/*Series*

25105

Frese coniche per stampi
Conicità 9° 28' - 5° 43' - 2° 52'
Tapered end mills



COATING	W	F	λ°s		
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	25	N	UNI 8265 DIN 1889EA ISO

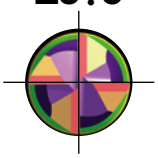
α° 9° 28' conicità 1/3

Cod. Art. X-85 (PM Co 8,5%)	COATED	Djs14	ds	l	L	dh6	Z
251051050 CM	**CMX**	2,5	13	31,5	85	12	3
251051100 CM	**CMX**	4	16	36	96	16	4
251051150 CM	**CMX**	4	22,7	56	116	16	4
251051200 CM	**CMX**	4	34	90	170	32	4
251051250 CM	**CMX**	6	20	42	100	16	4
251051300 CM	**CMX**	6	27	63	138	25	4
251051350 CM	**CMX**	6	40	102	182	32	4
251051400 CM	**CMX**	8	25	50	125	25	4
251051450 CM	**CMX**	8	32	72	152	32	4
251051500 CM	**CMX**	8	45,5	112	192	32	4
251051550 CM	**CMX**	12	32	60	140	32	4

α° 5° 43' conicità 1/5

Cod. Art. X-85 (PM Co 8,5%)	COATED	Djs14	ds	l	L	dh6	Z
251052050 CM	**CMX**	2,5	10	37,5	88	10	3
251052100 CM	**CMX**	4	12	40	97	12	4
251052150 CM	**CMX**	4	16	60	120	16	4
251052200 CM	**CMX**	4	22	90	150	16	4
251052250 CM	**CMX**	6	14	40	97	12	4
251052300 CM	**CMX**	6	18	60	120	16	4
251052350 CM	**CMX**	6	26	100	175	25	4
251052400 CM	**CMX**	8	17	45	105	16	4
251052450 CM	**CMX**	8	22	70	130	16	4
251052500 CM	**CMX**	8	28	100	175	25	4
251052550 CM	**CMX**	12	21	45	105	16	4
251052600 CM	**CMX**	12	26,2	71	146	25	4
251052650 CM	**CMX**	12	37	125	205	32	5
251052700 CM	**CMX**	16	26	50	125	25	4
251052750 CM	**CMX**	16	32	80	160	32	4
251052800 CM	**CMX**	16	41	125	205	32	5
251052850 CM	**CMX**	20	32,6	63	143	32	5
251052900 CM	**CMX**	20	40	100	180	32	5
251052950 CM	**CMX**	20	52	160	240	32	5

Z3÷5



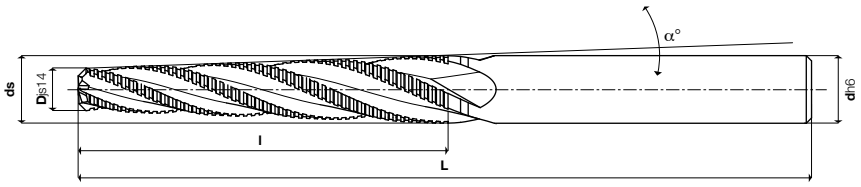
α° 2° 52' conicità 1/10

Cod. Art. X-85 (PM Co 8,5%)	COATED	Djs14	ds	l	L	dh6	Z
251053050 CM	**CMX**	4	8	40	90	10	4
251053100 CM	**CMX**	6	10	40	90	10	4
251053150 CM	**CMX**	6	12	60	117	12	4
251053200 CM	**CMX**	8	12,5	45	95	12	4
251053250 CM	**CMX**	8	16	80	140	16	4
251053300 CM	**CMX**	12	17	50	110	16	4
251053350 CM	**CMX**	12	20	80	140	16	4
251053400 CM	**CMX**	12	25	130	205	25	4
251053450 CM	**CMX**	16	21,6	56	116	16	4
251053500 CM	**CMX**	16	25	90	165	25	4
251053550 CM	**CMX**	16	32	160	240	32	4
251053600 CM	**CMX**	20	26,3	63	138	25	5
251053650 CM	**CMX**	20	30	100	175	32	5

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*
25105	○	○	◕	○	○	●	●

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



Serie/*Series*

25120

Frese coniche a **SEMIFINIRE** per stampi
Conicità 9° 28' - 5° 43' - 2° 52'
Tapered end mills

COATING	W	F	λ°s		
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	25	NF	UNI 8265 DIN 1889EA ISO

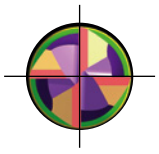
α° 9° 28' conicità 1/3

Cod. Art. X-85 (PM Co 8,5%)	COATED	Djs14	ds	l	L	dh6	Z
251201401 CM	**CMX**	8	25	50	125	25	4
251201451 CM	**CMX**	8	32	72	152	32	4
251201501 CM	**CMX**	8	45,5	112	192	32	4
251201551 CM	**CMX**	12	32	60	140	32	4

α° 5° 43' conicità 1/5

Cod. Art. X-85 (PM Co 8,5%)	COATED	Djs14	ds	l	L	dh6	Z
251202301 CM	**CMX**	6	18	60	120	16	4
251202401 CM	**CMX**	8	17	45	105	16	4
251202451 CM	**CMX**	8	22	70	130	16	4
251202501 CM	**CMX**	8	28	100	175	25	4
251202551 CM	**CMX**	12	21	45	105	16	4
251202601 CM	**CMX**	12	26,2	71	146	25	4
251202651 CM	**CMX**	12	37	125	205	32	4
251202701 CM	**CMX**	16	26	50	125	25	4
251202751 CM	**CMX**	16	32	80	160	32	4
251202801 CM	**CMX**	16	41	125	205	32	4
251202851 CM	**CMX**	20	32,6	63	143	32	5
251202901 CM	**CMX**	20	40	100	180	32	5
251202951 CM	**CMX**	20	52	160	240	32	5

Z4÷5



α° 2° 52' conicità 1/10

Cod. Art. X-85 (PM Co 8,5%)	COATED	Djs14	ds	l	L	dh6	Z
251203201 CM	**CMX**	8	12,5	45	102	12	4
251203251 CM	**CMX**	8	16	80	140	16	4
251203301 CM	**CMX**	12	17	50	110	16	4
251203351 CM	**CMX**	12	20	80	140	16	4
251203401 CM	**CMX**	12	25	130	205	25	4
251203451 CM	**CMX**	16	21,6	56	116	16	4
251203501 CM	**CMX**	16	25	90	165	25	4
251203551 CM	**CMX**	16	32	160	240	32	4
251203601 CM	**CMX**	20	26,3	63	138	25	5
251203651 CM	**CMX**	20	30	100	175	25	5

MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

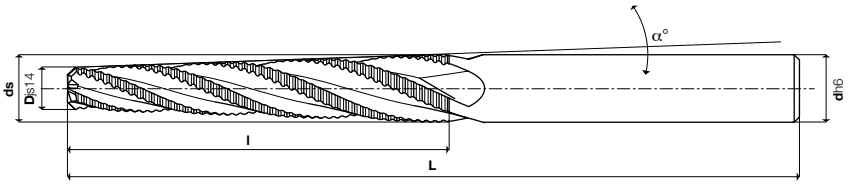
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
25120	○	○	◕	○	○	●	●

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

Serie/*Series*

25120

Frese coniche a **SGROSSARE** per stampi
Conicità 9° 28' - 5° 43' - 2° 52'
Tapered end mills



COATING	W	F	λ°s	NR	UNI 8265 DIN 1889EA ISO
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	25		

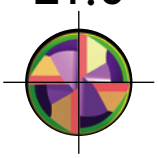
α° 9° 28' conicità 1/3

Cod. Art. X-85 (PM Co 8,5%)	COATED	Djs14	ds	l	L	dh6	Z
251201402 CM	**CMX**	8	25	50	125	25	4
251201452 CM	**CMX**	8	32	72	152	32	4
251201502 CM	**CMX**	8	45,5	112	192	32	4
251201552 CM	**CMX**	12	32	60	140	32	4

α° 5° 43' conicità 1/5

Cod. Art. X-85 (PM Co 8,5%)	COATED	Djs14	ds	l	L	dh6	Z
251202302 CM	**CMX**	6	18	60	120	16	4
251202402 CM	**CMX**	8	17	45	105	16	4
251202452 CM	**CMX**	8	22	70	130	16	4
251202502 CM	**CMX**	8	28	100	175	25	4
251202552 CM	**CMX**	12	21	45	105	16	4
251202602 CM	**CMX**	12	26,2	71	146	25	4
251202652 CM	**CMX**	12	37	125	205	32	4
251202702 CM	**CMX**	16	26	50	125	25	4
251202752 CM	**CMX**	16	32	80	160	32	4
251202802 CM	**CMX**	16	41	125	205	32	4
251202852 CM	**CMX**	20	32,6	63	143	32	5
251202902 CM	**CMX**	20	40	100	180	32	5
251202952 CM	**CMX**	20	52	160	240	32	5

Z4÷5



NR

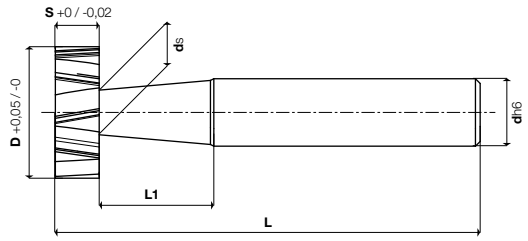
α° 2° 52' conicità 1/10

Cod. Art. X-85 (PM Co 8,5%)	COATED	Djs14	ds	l	L	dh6	Z
251203202 CM	**CMX**	8	12,5	45	102	12	4
251203252 CM	**CMX**	8	16	80	140	16	4
251203302 CM	**CMX**	12	17	50	110	16	4
251203352 CM	**CMX**	12	20	80	140	16	4
251203402 CM	**CMX**	12	25	130	205	25	4
251203452 CM	**CMX**	16	21,6	56	116	16	4
251203502 CM	**CMX**	16	25	90	165	25	4
251203552 CM	**CMX**	16	32	160	240	32	4
251203602 CM	**CMX**	20	26,3	63	138	25	5
251203652 CM	**CMX**	20	30	100	175	25	5

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*
25120	○	○	◕	○	○	●	●

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



Serie/*Series*

27105

Frese per sedi di linguette americane (Woodruff)
Woodruff cutters

COATING	W	F		
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	H	UNI 8263 DIN 850B ISO

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	S +0 -0,02	ds	L1	L	dh6	λ°	Z
271051020 AM	**CM**	**CMX**	10,5	2	4	9	50	6	13	8
271051025 AM	**CM**	**CMX**	10,5	2,5	4	9	50	6	13	8
271051030 AM	**CM**	**CMX**	10,5	3	4,2	8	50	6	13	8
271051302 AM	**CM**	**CMX**	13,5	2	4,6	12	56	10	15	8
271051303 AM	**CM**	**CMX**	13,5	3	4,6	12	56	10	15	8
271051304 AM	**CM**	**CMX**	13,5	4	4,6	12	56	10	15	8
271051603 AM	**CM**	**CMX**	16,5	3	4,6	12	56	10	15	8
271051604 AM	**CM**	**CMX**	16,5	4	4,6	12	56	10	15	8
271051605 AM	**CM**	**CMX**	16,5	5	5	9,5	56	10	15	8
271051606 AM	**CM**	**CMX**	16,5	6	5	9,5	56	10	15	8
271051903 AM	**CM**	**CMX**	19,5	3	5,6	17,5	63	10	15	10
271051904 AM	**CM**	**CMX**	19,5	4	5,6	17,5	63	10	15	10
271051905 AM	**CM**	**CMX**	19,5	5	6	16	63	10	15	10
271051906 AM	**CM**	**CMX**	19,5	6	6,5	15	63	10	15	10
271052204 AM	**CM**	**CMX**	22,5	4	6	17	63	10	13	10
271052205 AM	**CM**	**CMX**	22,5	5	6	17	63	10	13	10
271052206 AM	**CM**	**CMX**	22,5	6	6,5	13	63	10	13	10
271052208 AM	**CM**	**CMX**	22,5	8	6,5	13	63	10	13	10
271052505 AM	**CM**	**CMX**	25,5	5	7,5	12	63	10	15	12
271052506 AM	**CM**	**CMX**	25,5	6	7,5	12	63	10	15	12
271052507 AM	**CM**	**CMX**	25,5	7	7,5	12	63	10	15	12
271052508 AM	**CM**	**CMX**	25,5	8	7,5	12	63	10	15	12
271052806 AM	**CM**	**CMX**	28,5	6	8,5	10	63	10	13	12
271052807 AM	**CM**	**CMX**	28,5	7	8,5	10	63	10	13	12
271052808 AM	**CM**	**CMX**	28,5	8	8,5	10	63	10	13	12
271052810 AM	**CM**	**CMX**	28,5	10	9,3	13	71	12	13	12
271053206 AM	**CM**	**CMX**	32,5	6	8,5	16	71	12	15	12
271053207 AM	**CM**	**CMX**	32,5	7	8,5	16	71	12	15	12
271053208 AM	**CM**	**CMX**	32,5	8	8,5	16	71	12	15	12
271053210 AM	**CM**	**CMX**	32,5	10	9,3	13	71	12	15	12
271054510 AM	**CM**	**CMX**	45,5	10	11	13	71	12	13	12

Z8÷12

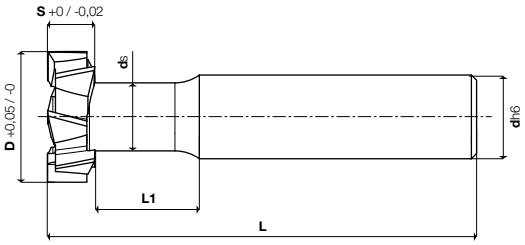
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
27105	◕	◕	●	○	○	●	●

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

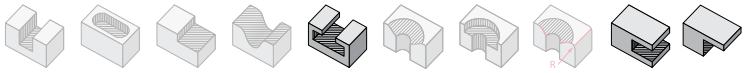
Serie/*Series* 27120

Frese per scanalature a T
T-slot cutters



COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | N | UNI 7339A DIN 851 ISO 3337

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	S +0 -0,02	ds	L1	L	dh6	λ°	Z
271201256 AM	**CM**	**CMX**		12,5	6	5	11	57	10	12	6
271201608 AM	**CM**	**CMX**		16	8	7	14	62	10	12	6
271201808 AM	**CM**	**CMX**		18	8	8	15	70	12	15	6
271201909 AM	**CM**	**CMX**		19	9	8	15	70	12	15	8
271202109 AM	**CM**	**CMX**		21	9	10	18	74	12	15	8
271202210 AM	**CM**	**CMX**		22	10	10	17	74	12	15	8
271202511 AM	**CM**	**CMX**		25	11	12	20	82	16	15	8
271202812 AM	**CM**	**CMX**		28	12	13	22	85	16	15	8
271203214 AM	**CM**	**CMX**		32	14	15	25	90	16	15	8



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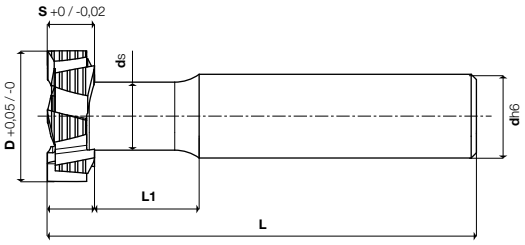
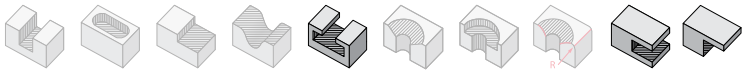
Serie/*Series* 27135

Frese per scanalature a T
T-slot cutters



COATING **Skin** | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | NF | UNI 7339A DIN 851 ISO 3337

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	S +0 -0,02	ds	L1	L	dh6	Z
271351256 AM	**CM**	**CMX**		12,5	6	5	11	57	10	4
271351608 AM	**CM**	**CMX**		16	8	7	14	62	10	6
271351808 AM	**CM**	**CMX**		18	8	8	15	70	12	6
271351909 AM	**CM**	**CMX**		19	9	8	15	70	12	6
271352109 AM	**CM**	**CMX**		21	9	10	18	74	12	6
271352210 AM	**CM**	**CMX**		22	10	10	17	74	12	6
271352511 AM	**CM**	**CMX**		25	11	12	20	82	16	8
271352812 AM	**CM**	**CMX**		28	12	13	22	85	16	8
271353214 AM	**CM**	**CMX**		32	14	15	25	90	16	8



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Z6÷8 **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*
27120	◕	◕	●	○	○	●	●
27135	◕	◕	●	○	○	●	●

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

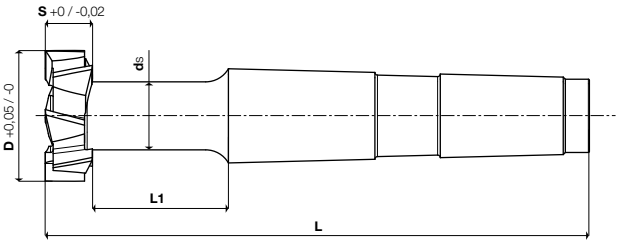
Serie/*Series*

27150

Frese per scanalature a T
T-slot cutters

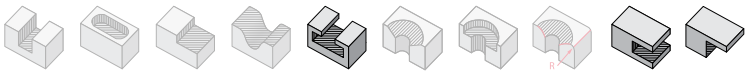
27155

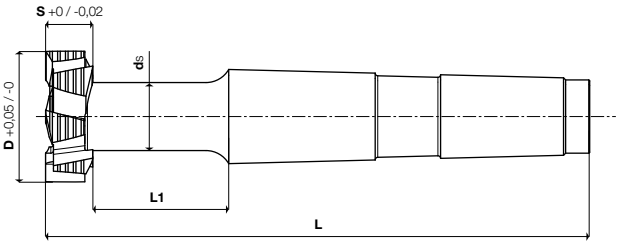
Frese per scanalature a T
T-slot cutters



COATING		
Skin	N	UNI 7339B DIN 851B ISO 3337

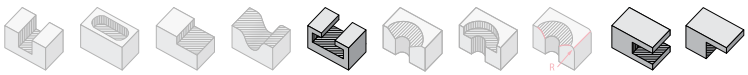
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	S +0 -0,02	ds	L1	L	MORSE TAPER	λ°	Z
271501256 AM	**CM**	**CMX**	12,5	6	5	9	72	1	12	8
271501608 AM	**CM**	**CMX**	16	8	7	12	77	1	12	8
271501808 AM	**CM**	**CMX**	18	8	8	17	82	1	15	8
271501909 AM	**CM**	**CMX**	19	9	8	16	82	1	15	8
271502109 AM	**CM**	**CMX**	21	9	10	24	102	2	15	8
271502210 AM	**CM**	**CMX**	22	10	10	23	102	2	15	8
271502511 AM	**CM**	**CMX**	25	11	12	24	104	2	15	8
271502812 AM	**CM**	**CMX**	28	12	13	25	106	2	15	8
271503214 AM	**CM**	**CMX**	32	14	15	28	111	2	15	8
271503616 AM	**CM**	**CMX**	36	16	17	31	133	3	15	8
271504018 AM	**CM**	**CMX**	40	18	19	36	140	3	15	8
271504520 AM	**CM**	**CMX**	45	20	20	37	143	3	15	8
271505022 AM	**CM**	**CMX**	50	22	25	46	177	4	10	10
271505624 AM	**CM**	**CMX**	56	24	27	49	182	4	10	10





COATING		
Skin	NF	UNI 7339B DIN 851B ISO 3337

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	D +0,05 -0	S +0 -0,02	ds	L1	L	MORSE TAPER	Z
271551256 AM	**CM**	**CMX**	12,5	6	5	9	72	1	4
271551608 AM	**CM**	**CMX**	16	8	7	12	77	1	6
271551808 AM	**CM**	**CMX**	18	8	8	17	82	1	6
271551909 AM	**CM**	**CMX**	19	9	8	16	82	1	6
271552109 AM	**CM**	**CMX**	21	9	10	24	102	2	6
271552210 AM	**CM**	**CMX**	22	10	10	23	102	2	6
271552511 AM	**CM**	**CMX**	25	11	12	24	104	2	8
271552812 AM	**CM**	**CMX**	28	12	13	25	106	2	8
271553214 AM	**CM**	**CMX**	32	14	15	28	111	2	8
271553616 AM	**CM**	**CMX**	36	16	17	31	133	3	8
271554018 AM	**CM**	**CMX**	40	18	19	36	140	3	8
271554520 AM	**CM**	**CMX**	45	20	20	37	143	3	8
271555022 AM	**CM**	**CMX**	50	22	25	46	177	4	8
271555624 AM	**CM**	**CMX**	56	24	27	49	182	4	8



MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

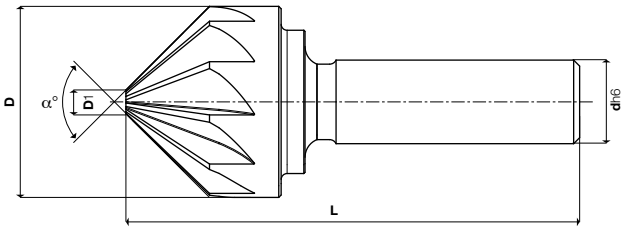
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
27150	◕	◕	●	○	○	●	●
27155	◕	◕	●	○	○	●	●

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

Serie/*Series*
27505

Frese coniche a svasare
Countersinks

Z5÷11



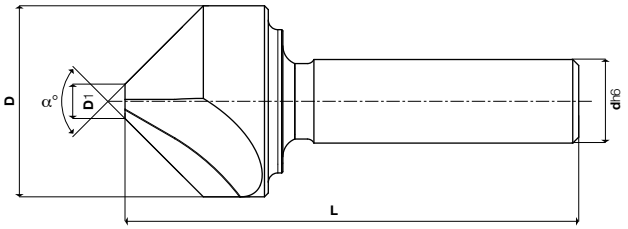
COATING		
Skin	N	UNI 6847 DIN 334-335 ISO

Cod. Art.	M-TK (HSS-E)	COATED	D	D1	α°	L	dh6	Z
275051060 AM		AMX	6,3	1,6	60	45	5	5
275051080 AM		AMX	8,4	2	60	50	6	5
275051120 AM		AMX	12,5	2	60	50	8	5
275051160 AM		AMX	16	3,2	60	60	10	7
275051200 AM		AMX	20	5	60	63	10	7
275051250 AM		AMX	25	5	60	72	10	9
275051300 AM		AMX	30	7	60	80	12	9
275051350 AM		AMX	35	7	60	85	12	9
275051500 AM		AMX	50	10	60	100	16	11
275052060 AM		AMX	6,3	1,6	90	45	5	5
275052080 AM		AMX	8,4	2	90	50	6	5
275052120 AM		AMX	12,5	2	90	48	8	5
275052160 AM		AMX	16	3,2	90	56	10	7
275052200 AM		AMX	20	5	90	60	10	7
275052250 AM		AMX	25	5	90	70	10	9
275052300 AM		AMX	30	7	90	78	12	9
275052450 AM		AMX	45	9	90	92	16	11

Serie/*Series*
27505

Frese coniche a svasare
Countersinks

Z1



COATING		
Skin	N	UNI 6847 DIN 334-335 ISO

Cod. Art.	M-TK (HSS-E)	COATED	D	D1	α°	L	dh6	Z
275051061 AM		AMX	6,3	1,6	60	45	5	1
275051081 AM		AMX	8,1	2	60	50	6	1
275051121 AM		AMX	12,5	2	60	50	8	1
275051161 AM		AMX	16	3,2	60	60	10	1
275051201 AM		AMX	20	5	60	63	10	1
275051251 AM		AMX	25	5	60	72	10	1
275051301 AM		AMX	30	7	60	80	12	1
275051351 AM		AMX	35	7	60	85	12	1
275051501 AM		AMX	50	10	60	100	16	1
275052061 AM		AMX	6,3	1,6	90	45	5	1
275052081 AM		AMX	8,4	2	90	50	6	1
275052121 AM		AMX	12,5	2	90	48	8	1
275052161 AM		AMX	16	3,2	90	56	10	1
275052201 AM		AMX	20	5	90	60	10	1
275052251 AM		AMX	25	5	90	70	10	1
275052301 AM		AMX	30	7	90	78	12	1
275052451 AM		AMX	45	9	90	92	16	1

MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

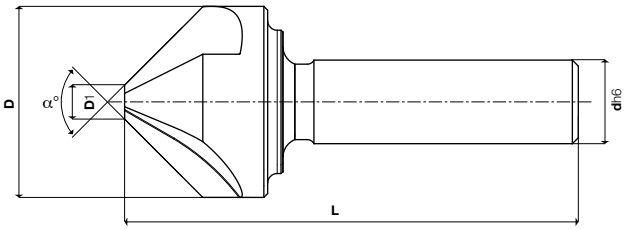
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
27505	◕	◕	◕	○	○	●	●
27505	◕	◕	◕	○	○	●	●

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

Serie/*Series*

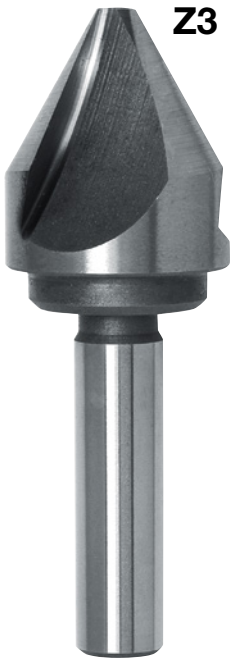
27505

Frese coniche a svasare
Countersinks



COATING		
Skin	N	UNI 6847 DIN 334-335 ISO

Cod. Art.	M-TK (HSS-E)	COATED	D	D1	α°	L	dh6	Z
275051063 AM		**AMX**	6,3	1,6	60	45	5	3
275051083 AM		**AMX**	8,4	2	60	50	6	3
275051123 AM		**AMX**	12,5	2	60	50	8	3
275051163 AM		**AMX**	16	3,2	60	60	10	3
275051203 AM		**AMX**	20	5	60	63	10	3
275051253 AM		**AMX**	25	5	60	72	10	3
275051303 AM		**AMX**	30	7	60	80	12	3
275051353 AM		**AMX**	35	7	60	85	12	3
275051503 AM		**AMX**	50	10	60	100	16	3
275052063 AM		**AMX**	6,3	1,6	90	45	5	3
275052083 AM		**AMX**	8,4	2	90	50	6	3
275052123 AM		**AMX**	12,5	2	90	48	8	3
275052163 AM		**AMX**	16	3,2	90	56	10	3
275052203 AM		**AMX**	20	5	90	60	10	3
275052253 AM		**AMX**	25	5	90	70	10	3
275052303 AM		**AMX**	30	7	90	78	12	3
275052453 AM		**AMX**	45	9	90	92	16	3
275053103 AM		**AMX**	10,5	1,6	90	50	8	3
275053123 AM		**AMX**	12,5	1,8	120	60	8	3
275053163 AM		**AMX**	16,5	2,2	120	65	8	3
275053203 AM		**AMX**	20,5	2,4	120	65	10	3
275053253 AM		**AMX**	25	2,7	120	70	10	3



MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

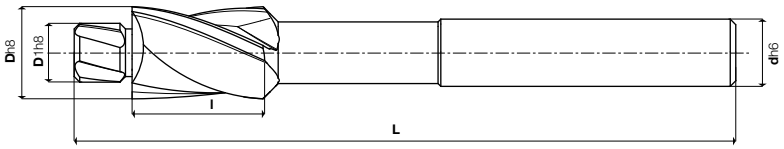
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
27505	◕	◕	◕	○	○	●	●

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

Serie/*Series*

28105

Frese per sedi di viti
Counterbores



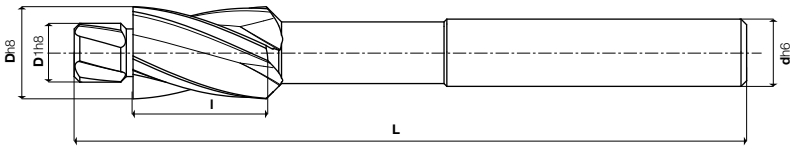
COATING **Skin** | N | UNI 6841

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	SCREW	Dh8	D1h8	l	L	dh6	Z
281050302 AM	**CM**	**CMX**		M3	5,9	3,2	12	70	6	2
281050402 AM	**CM**	**CMX**		M4	7,4	4,3	12	70	8	2
281050502 AM	**CM**	**CMX**		M5	9,4	5,3	14	90	10	2
281050602 AM	**CM**	**CMX**		M6	10,4	6,4	16	100	10	2
281050802 AM	**CM**	**CMX**		M8	13,5	8,4	20	115	12	2
281051002 AM	**CM**	**CMX**		M10	16,5	10,5	25	120	12	2
281051202 AM	**CM**	**CMX**		M12	19	13	25	120	16	2
281051402 AM	**CM**	**CMX**		M14	23	15	30	130	16	2
281051602 AM	**CM**	**CMX**		M16	25	17	35	155	20	2
281051802 AM	**CM**	**CMX**		M18	28	19	40	160	20	2
281052002 AM	**CM**	**CMX**		M20	31	21	50	180	20	2
281052202 AM	**CM**	**CMX**		M22	34	23	50	185	22	2
281052402 AM	**CM**	**CMX**		M24	37	25	50	200	22	2

Serie/*Series* 28105

28105

Frese per sedi di viti
Counterbores



COATING **Skin** | N | UNI 6841

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	SCREW	Dh8	D1h8	l	L	dh6	Z
281050304 AM	**CM**	**CMX**		M3	5,9	3,2	12	70	6	4
281050404 AM	**CM**	**CMX**		M4	7,4	4,3	12	70	8	4
281050504 AM	**CM**	**CMX**		M5	9,4	5,3	14	90	10	4
281050604 AM	**CM**	**CMX**		M6	10,4	6,4	16	100	10	4
281050804 AM	**CM**	**CMX**		M8	13,5	8,4	20	115	12	4
281051004 AM	**CM**	**CMX**		M10	16,5	10,5	25	120	12	4
281051204 AM	**CM**	**CMX**		M12	19	13	25	120	16	4
281051404 AM	**CM**	**CMX**		M14	23	15	30	130	16	4
281051604 AM	**CM**	**CMX**		M16	25	17	35	155	20	4
281051804 AM	**CM**	**CMX**		M18	28	19	40	160	20	4
281052004 AM	**CM**	**CMX**		M20	31	21	50	180	20	4
281052204 AM	**CM**	**CMX**		M22	34	23	50	185	22	4
281052404 AM	**CM**	**CMX**		M24	37	25	50	200	22	4

Z2 **Z4**

Serie/*Series* 28105 Serie/*Series* 28105

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*
28105	◕	◕	◕	○	○	●	●
28105	◕	◕	◕	○	○	●	●

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

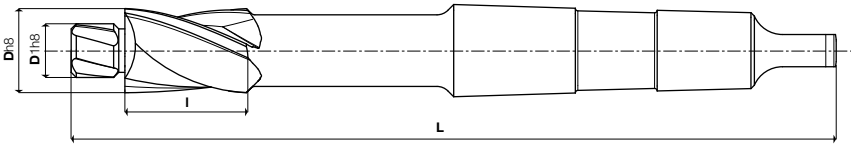
Serie/*Series*

28150

Frese per sedi di viti
Counterbores

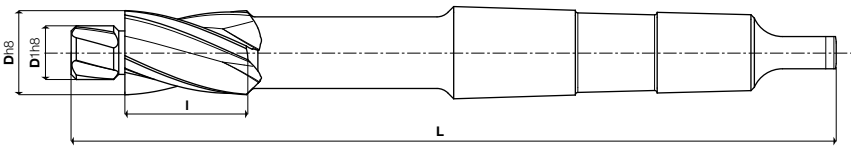
28150

Frese per sedi di viti
Counterbores



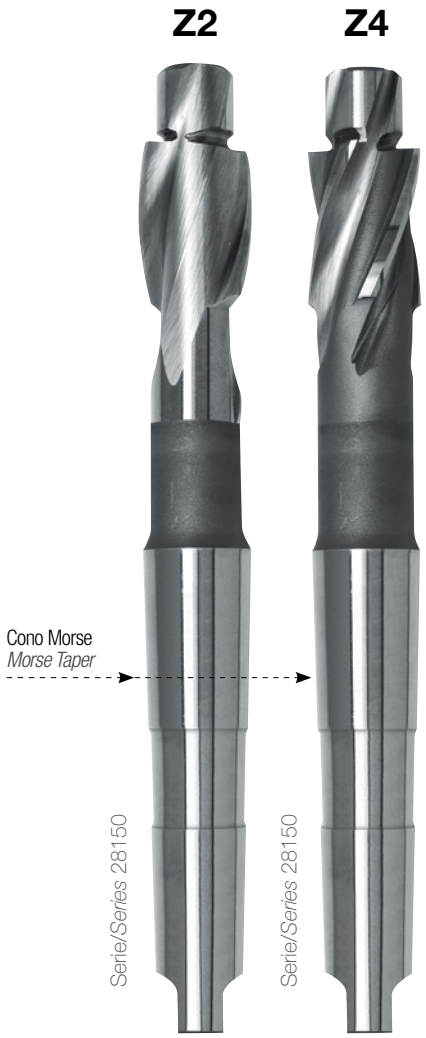
COATING
Skin | N | UNI 6842

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	SCREW	Dh8	D1h8	l	L	MORSE TAPER	Z
281500302 AM	**CM**	**CMX**	M3	5,9	3,2	12	105	1	2
281500402 AM	**CM**	**CMX**	M4	7,4	4,3	12	105	1	2
281500502 AM	**CM**	**CMX**	M5	9,4	5,3	13	118	1	2
281500602 AM	**CM**	**CMX**	M6	10,4	6,4	16	125	1	2
281500802 AM	**CM**	**CMX**	M8	13,5	8,4	20	140	1	2
281501002 AM	**CM**	**CMX**	M10	16,5	10,5	25	160	2	2
281501202 AM	**CM**	**CMX**	M12	19	13	25	160	2	2
281501402 AM	**CM**	**CMX**	M14	23	15	32	170	2	2
281501602 AM	**CM**	**CMX**	M16	25	17	35	180	2	2
281501802 AM	**CM**	**CMX**	M18	28	19	40	180	2	2
281502002 AM	**CM**	**CMX**	M20	31	21	50	215	3	2
281502202 AM	**CM**	**CMX**	M22	34	23	50	220	3	2
281502402 AM	**CM**	**CMX**	M24	37	25	50	230	3	2



COATING
Skin | N | UNI 6842

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	SCREW	Dh8	D1h8	l	L	MORSE TAPER	Z
281500304 AM	**CM**	**CMX**	M3	5,9	3,2	12	105	1	4
281500404 AM	**CM**	**CMX**	M4	7,4	4,3	12	105	1	4
281500504 AM	**CM**	**CMX**	M5	9,4	5,3	13	118	1	4
281500604 AM	**CM**	**CMX**	M6	10,4	6,4	16	125	1	4
281500804 AM	**CM**	**CMX**	M8	13,5	8,4	20	140	1	4
281501004 AM	**CM**	**CMX**	M10	16,5	10,5	25	160	2	4
281501204 AM	**CM**	**CMX**	M12	19	13	25	160	2	4
281501404 AM	**CM**	**CMX**	M14	23	15	32	170	2	4
281501604 AM	**CM**	**CMX**	M16	25	17	35	180	2	4
281501804 AM	**CM**	**CMX**	M18	28	19	40	180	2	4
281502004 AM	**CM**	**CMX**	M20	31	21	50	215	3	4
281502204 AM	**CM**	**CMX**	M22	34	23	50	220	3	4
281502404 AM	**CM**	**CMX**	M24	37	25	50	230	3	4



MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

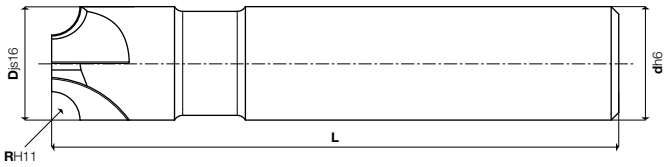
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
28150	◕	◕	◕	○	○	●	●
28150	◕	◕	◕	○	○	●	●

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

Serie/*Series*

28505

Frese di forma ad un quarto di cerchio concavo
Corner-rounding cutters



COATING	W	F		
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	N	UNI 8264 DIN 6518A ISO

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	RH11	Djs16	L	dh6	Z
285050100 AM	**CM**	**CMX**	1	10	60	10	4
285050150 AM	**CM**	**CMX**	1,5	10	60	10	4
285050200 AM	**CM**	**CMX**	2	10	60	10	4
285050250 AM	**CM**	**CMX**	2,5	10	60	10	4
285050300 AM	**CM**	**CMX**	3	12	60	12	4
285050400 AM	**CM**	**CMX**	4	15	60	12	4
285050500 AM	**CM**	**CMX**	5	18	70	16	4
285050600 AM	**CM**	**CMX**	6	21	70	16	4
285050700 AM	**CM**	**CMX**	7	24	70	16	4
285050800 AM	**CM**	**CMX**	8	24	70	16	4
285050900 AM	**CM**	**CMX**	9	28	85	20	4
285050901 AM	**CM**	**CMX**	9	28	85	25	4
285051000 AM	**CM**	**CMX**	10	28	85	20	4
285051001 AM	**CM**	**CMX**	10	28	85	25	4
285051100 AM	**CM**	**CMX**	11	35	90	20	4
285051101 AM	**CM**	**CMX**	11	35	90	25	4
285051200 AM	**CM**	**CMX**	12	35	100	20	4
285051201 AM	**CM**	**CMX**	12	35	100	25	4
285051250 AM	**CM**	**CMX**	12,5	35	100	20	4
285051251 AM	**CM**	**CMX**	12,5	35	100	25	4
285051300 AM	**CM**	**CMX**	13	42	100	25	4
285051400 AM	**CM**	**CMX**	14	42	100	25	4
285051500 AM	**CM**	**CMX**	15	48	105	25	5
285051600 AM	**CM**	**CMX**	16	48	105	25	5
285051800 AM	**CM**	**CMX**	18	52	115	32	5
285052000 AM	**CM**	**CMX**	20	60	115	32	6

Z4÷6

MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

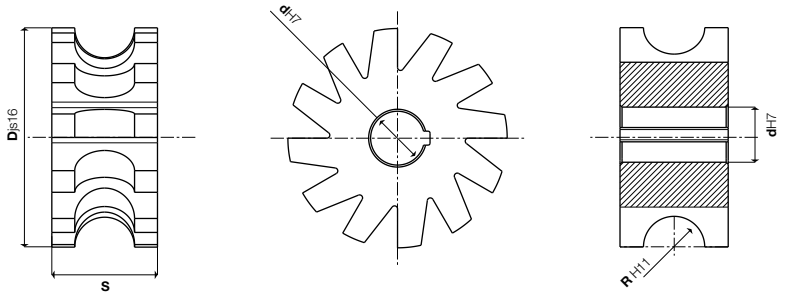
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
28505	◕	◕	◕	○	○	●	●

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

Serie/*Series*

29105

Frese a profilo costante concavo
Form relieved concave milling cutters



COATING		
Skin	N	UNI 4499 DIN ISO

Cod. Art. M-TK (HSS-E)	COATED	R H11	Djs16	S	dH7	Z
291050100 AM	**AMX**	1	56	8	22	14
291050150 AM	**AMX**	1,5	56	8	22	14
291050200 AM	**AMX**	2	56	9	22	14
291050250 AM	**AMX**	2,5	56	10	22	14
291050300 AM	**AMX**	3	63	12	22	14
291050350 AM	**AMX**	3,5	63	14	22	14
291050400 AM	**AMX**	4	63	16	22	14
291050450 AM	**AMX**	4,5	63	18	22	12
291050500 AM	**AMX**	5	63	20	22	12
291050550 AM	**AMX**	5,5	63	22	22	12
291050600 AM	**AMX**	6	70	24	22	12
291050650 AM	**AMX**	6,5	70	26	22	12
291050700 AM	**AMX**	7	70	28	22	12
291050750 AM	**AMX**	7,5	80	30	27	12
291050800 AM	**AMX**	8	80	32	27	12
291050850 AM	**AMX**	8,5	80	34	27	12
291050900 AM	**AMX**	9	90	36	27	12
291050950 AM	**AMX**	9,5	90	38	27	12
291051000 AM	**AMX**	10	90	40	27	12
291051100 AM	**AMX**	11	100	42	27	12
291051200 AM	**AMX**	12	100	44	27	12
291051250 AM	**AMX**	12,5	100	46	27	12
291051300 AM	**AMX**	13	100	48	27	12
291051400 AM	**AMX**	14	100	50	27	12
291051500 AM	**AMX**	15	110	53	32	12
291051600 AM	**AMX**	16	110	56	32	12
291051700 AM	**AMX**	17	110	59	32	12
291051800 AM	**AMX**	18	125	62	32	12
291051900 AM	**AMX**	19	125	66	32	12
291052000 AM	**AMX**	20	125	70	32	12

Z12÷14

MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

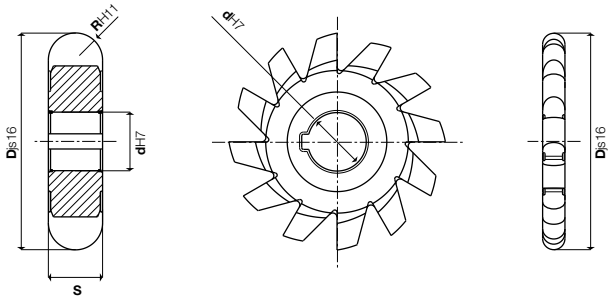
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
29105	◕	◕	◕	○	○	●	●

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

Serie/*Series*

29110

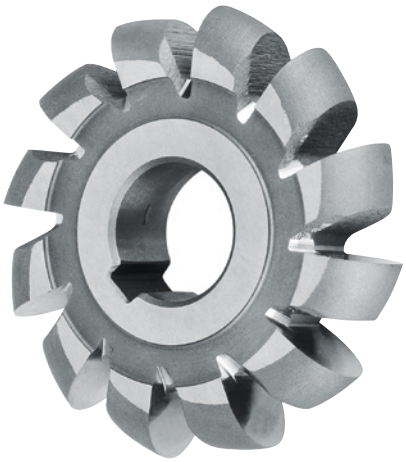
Frese a profilo costante convesso
Form relieved convex milling cutters



COATING		
Skin	N	UNI 4498 DIN 856 ISO

Cod. Art. M-TK (HSS-E)	COATED	RH11	Djs16	S	dH7	Z
291100100 AM	**AMX**	1	50	2	22	14
291100150 AM	**AMX**	1,5	50	3	22	14
291100200 AM	**AMX**	2	50	4	22	14
291100250 AM	**AMX**	2,5	56	5	22	14
291100300 AM	**AMX**	3	56	6	22	14
291100350 AM	**AMX**	3,5	63	7	22	14
291100400 AM	**AMX**	4	63	8	22	14
291100450 AM	**AMX**	4,5	63	9	22	14
291100500 AM	**AMX**	5	63	10	22	14
291100550 AM	**AMX**	5,5	70	11	22	14
291100600 AM	**AMX**	6	70	12	22	14
291100650 AM	**AMX**	6,5	70	13	22	14
291100700 AM	**AMX**	7	70	14	22	14
291100750 AM	**AMX**	7,5	70	15	22	12
291100800 AM	**AMX**	8	70	16	22	12
291100850 AM	**AMX**	8,5	90	17	27	12
291100900 AM	**AMX**	9	90	18	27	12
291100950 AM	**AMX**	9,5	90	19	27	12
291101000 AM	**AMX**	10	90	20	27	12
291101100 AM	**AMX**	11	90	22	27	12
291101200 AM	**AMX**	12	90	24	27	12
291101250 AM	**AMX**	12,5	100	25	27	12
291101300 AM	**AMX**	13	100	26	27	12
291101400 AM	**AMX**	14	100	28	27	12
291101500 AM	**AMX**	15	110	30	32	12
291101600 AM	**AMX**	16	110	32	32	12
291101700 AM	**AMX**	17	110	34	32	12
291101800 AM	**AMX**	18	110	36	32	12
291101900 AM	**AMX**	19	125	38	32	12
291102000 AM	**AMX**	20	125	40	32	12

Z12÷14



MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

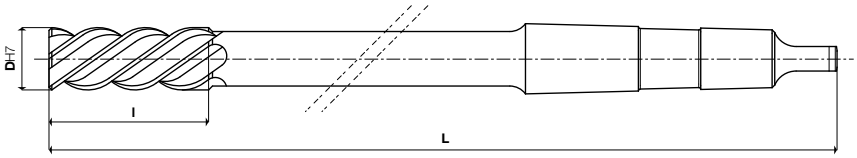
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
29110	◕	◕	◕	○	○	●	●

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

Serie/*Series*

30150

Alesatori a macchina
Machine reamers



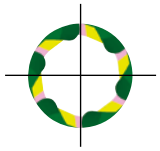
COATING	λ°s		
Skin	45	N	UNI DIN208C ISO 521

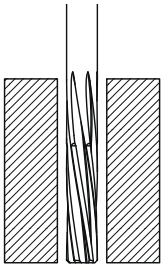
Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta

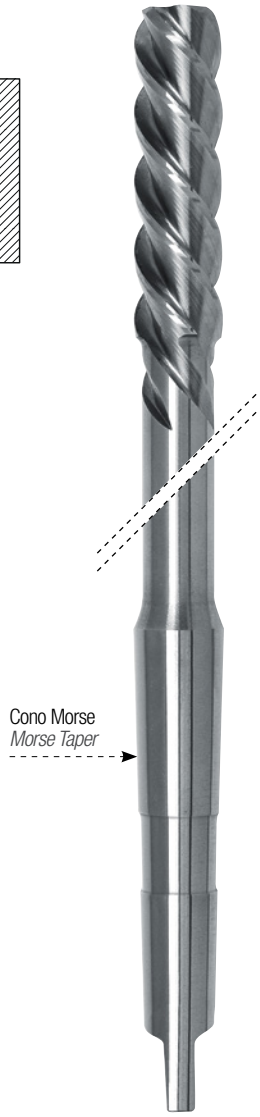
In-between diameters and tolerances different from H7 are supplied on request

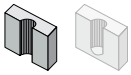
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DH7	l	L	MORSE TAPER	Z
301500500 CM		CMX	5	23	133	1	3
301500600 CM		CMX	6	26	138	1	3
301500700 CM		CMX	7	31	150	1	3
301500800 CM		CMX	8	33	156	1	3
301500900 CM		CMX	9	36	162	1	3
301501000 CM		CMX	10	38	168	1	4
301501100 CM		CMX	11	41	175	1	4
301501200 CM		CMX	12	44	182	1	4
301501300 CM		CMX	13	44	182	1	4
301501400 CM		CMX	14	47	189	1	4
301501500 CM		CMX	15	50	204	2	4
301501600 CM		CMX	16	52	210	2	4
301501700 CM		CMX	17	54	214	2	4
301501800 CM		CMX	18	56	219	2	4
301501900 CM		CMX	19	58	223	2	4
301502000 CM		CMX	20	60	228	2	4
301502100 CM		CMX	21	62	232	2	4
301502200 CM		CMX	22	64	237	2	4
301502300 CM		CMX	23	66	241	2	4
301502400 CM		CMX	24	68	268	3	4
301502500 CM		CMX	25	68	268	3	5
301502600 CM		CMX	26	70	273	3	5
301502700 CM		CMX	27	71	277	3	5
301502800 CM		CMX	28	71	277	3	5
301502900 CM		CMX	29	73	281	3	5
301503000 CM		CMX	30	73	281	3	5
301503100 CM		CMX	31	75	285	3	5
301503200 CM		CMX	32	77	317	4	5
301503300 CM		CMX	33	77	317	4	5
301503400 CM		CMX	34	78	321	4	5
301503500 CM		CMX	35	78	321	4	6
301503600 CM		CMX	36	79	325	4	6
301503700 CM		CMX	37	79	325	4	6
301503800 CM		CMX	38	81	329	4	6
301503900 CM		CMX	39	81	329	4	6
301504000 CM		CMX	40	81	329	4	6

Z3÷6









MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

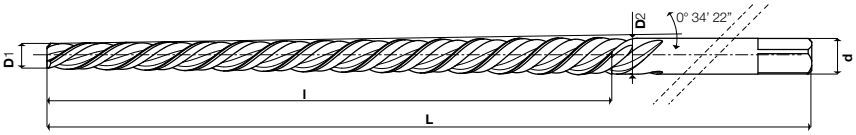
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
30150	○	○	◕	○	○	●	●

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

Serie/*Series*

30502

Alesatori conici, conicità 2%
Tapered reamers, taper 2%

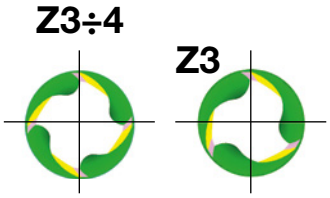


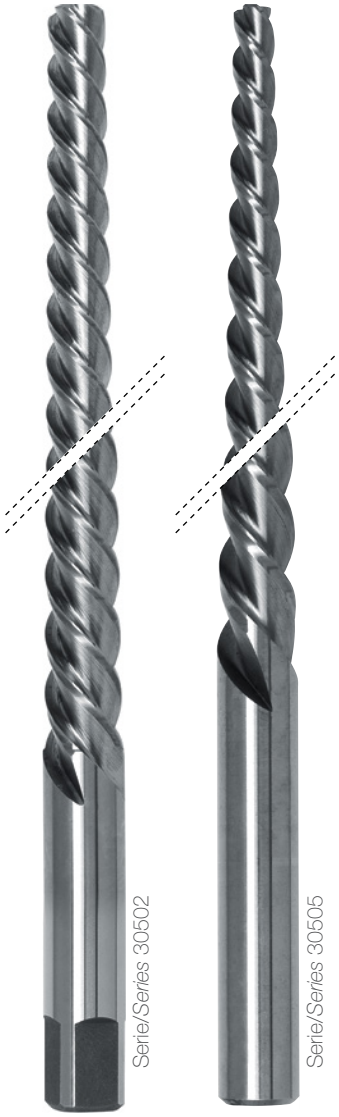
COATING **Skin** | λ°s 45 | N | UNI 6857 DIN ISO

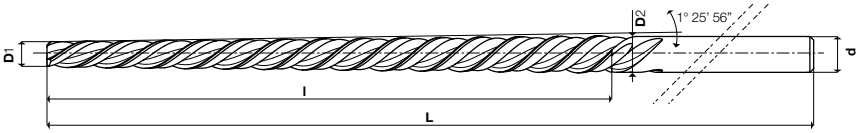
Cod. Art. X-85 (PM Co 8,5%)	COATED	Dnom	D1	D2	l	L	d	Z
305020200 CM	**CMX**	2	1,9	2,86	48	65	3,5	3
305020250 CM	**CMX**	2,5	2,4	3,46	53	75	3,5	3
305020300 CM	**CMX**	3	2,9	4,16	63	100	4	3
305020400 CM	**CMX**	4	3,9	5,40	75	115	5	3
305020500 CM	**CMX**	5	4,9	6,64	87	135	6,5	3
305020600 CM	**CMX**	6	5,9	8,28	119	170	8,5	3
305020800 CM	**CMX**	8	7,9	10,72	141	205	10,5	3
305021000 CM	**CMX**	10	9,9	13,16	163	230	14	4
305021200 CM	**CMX**	12	11,86	15,74	194	275	18	4
305021600 CM	**CMX**	16	15,84	21,12	264	355	18	4
305022000 CM	**CMX**	20	19,8	25,20	270	370	25	4

30505

Alesatori conici, conicità 5%
Tapered reamers, taper 5%







COATING **Skin** | λ°s 45 | W A RICHIESTA *ON REQUEST* | F A RICHIESTA *ON REQUEST* | N | *QUALITY STANDARD UOP*

Cod. Art. X-85 (PM Co 8,5%)	COATED	Dnom	D1	D2	l	L	d	Z
305050600 CM	**CMX**	6	3	6	60	110	6	3
305050800 CM	**CMX**	8	4	8	80	130	8	3
305051000 CM	**CMX**	10	5	10	100	155	10	3
305051200 CM	**CMX**	12	6	12	120	180	12	3

MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

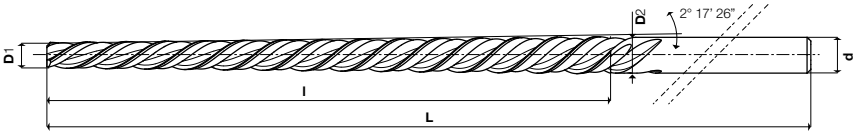
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
30502	○	○	◕	○	○	●	●
30505	○	○	◕	○	○	●	●

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

Serie/*Series*

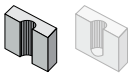
30508

Alesatori conici, conicità 8%
Tapered reamers, taper 8%



COATING	λ°s	W	F		QUALITY
Skin	45	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	N	*QUALITY STANDARD UOP*

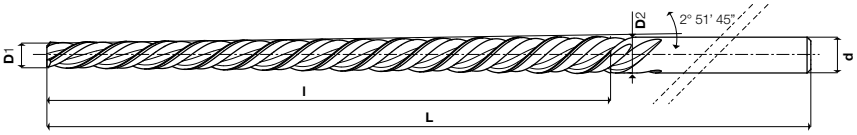
Cod. Art.	X-85 (PM Co 8,5%)	COATED	Dnom	D1	D2	l	L	d	Z
305080600 CM		CMX	6	2	6	50	100	6	3
305080800 CM		CMX	8	3	8	62,5	110	8	3
305081000 CM		CMX	10	4	10	75	130	10	3
305081200 CM		CMX	12	4,8	12	90	150	12	3



Z3

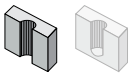
30510

Alesatori conici, conicità 10%
Tapered reamers, taper 10%



COATING	λ°s	W	F		QUALITY
Skin	45	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	N	*QUALITY STANDARD UOP*

Cod. Art.	X-85 (PM Co 8,5%)	COATED	Dnom	D1	D2	l	L	d	Z
305100600 CM		CMX	6	2	6	40	90	6	3
305100800 CM		CMX	8	3	8	50	100	8	3
305101000 CM		CMX	10	4	10	60	115	10	3
305101200 CM		CMX	12	5	12	70	130	12	3



Z3

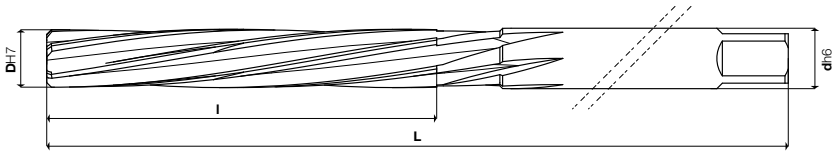
MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

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*
30508	○	○	◕	○	○	●	●
30510	○	○	◕	○	○	●	●

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

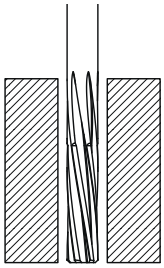
Serie/*Series* 31105

Alesatori fissi a mano
Tapered reamers

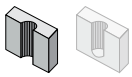


COATING		λ°s		
Skin		10	N	UNI 6852 DIN 206B ISO 236/I

Z4÷12



Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DH7	l	L	dh6	Z
311050300 AM	CM	CMX		3	31	62	3	4
311050400 AM	CM	CMX		4	38	76	4	5
311050500 AM	CM	CMX		5	44	87	5	5
311050600 AM	CM	CMX		6	47	93	6	5
311050700 AM	CM	CMX		7	54	107	7	5
311050800 AM	CM	CMX		8	58	115	8	6
311050900 AM	CM	CMX		9	62	124	9	6
311051000 AM	CM	CMX		10	66	133	10	6
311051100 AM	CM	CMX		11	71	142	11	7
311051200 AM	CM	CMX		12	76	152	12	7
311051300 AM	CM	CMX		13	76	152	13	7
311051400 AM	CM	CMX		14	81	163	14	7
311051500 AM	CM	CMX		15	81	163	15	7
311051600 AM	CM	CMX		16	87	175	16	7
311051700 AM	CM	CMX		17	87	175	17	7
311051800 AM	CM	CMX		18	93	188	18	8
311051900 AM	CM	CMX		19	93	188	19	8
311052000 AM	CM	CMX		20	100	201	20	8
311052100 AM	-	-		21	100	201	21	8
311052200 AM	-	-		22	107	215	22	8
311052300 AM	-	-		23	107	215	23	8
311052400 AM	-	-		24	115	231	24	8
311052500 AM	-	-		25	115	231	25	8
311052600 AM	-	-		26	115	231	26	8
311052700 AM	-	-		27	124	247	27	10
311052800 AM	-	-		28	124	247	28	10
311052900 AM	-	-		29	124	247	29	10
311053000 AM	-	-		30	124	247	30	10
311053200 AM	-	-		32	133	265	32	10
311053400 AM	-	-		34	142	284	34	10
311053500 AM	-	-		35	142	284	35	10
311053600 AM	-	-		36	142	284	36	10
311053800 AM	-	-		38	152	305	38	10
311054000 AM	-	-		40	152	305	40	10
311054500 AM	-	-		45	163	326	45	12
311055000 AM	-	-		50	174	347	50	12



Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request

MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

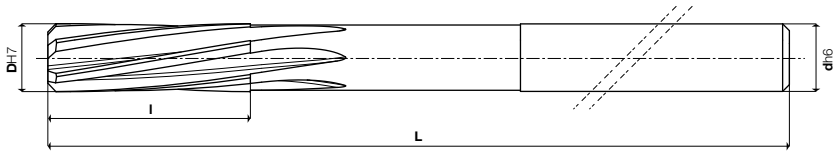
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
31105	○	○	◕	○	○	●	●

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

Serie/*Series*

32105

Alesatori a macchina
Machine reamers



COATING	W	F		
Skin	A RICHIESTA *ON REQUEST*	A RICHIESTA *ON REQUEST*	N	UNI 6853 DIN 212D ISO 521

Cod. Art. X-85 (PM Co 8,5%)	COATED	DH7	l	L	dh6	λ°	Z
321050100 CM	**CMX**	1	5	37	1	30	3
321050110 CM	**CMX**	1,1	7	40	1,1	30	3
321050120 CM	**CMX**	1,2	7	40	1,2	30	3
321050130 CM	**CMX**	1,3	7	40	1,3	30	3
321050140 CM	**CMX**	1,4	8	40	1,4	30	3
321050150 CM	**CMX**	1,5	8	40	1,5	30	3
321050160 CM	**CMX**	1,6	9	43	1,6	30	3
321050170 CM	**CMX**	1,7	9	43	1,7	30	3
321050180 CM	**CMX**	1,8	10	46	1,8	30	3
321050190 CM	**CMX**	1,9	10	46	1,9	30	3
321050200 CM	**CMX**	2	11	49	2	10	5
321050210 CM	**CMX**	2,1	11	49	2,1	10	5
321050220 CM	**CMX**	2,2	12	53	2,2	10	5
321050230 CM	**CMX**	2,3	12	53	2,3	10	5
321050240 CM	**CMX**	2,4	14	57	2,4	10	5
321050250 CM	**CMX**	2,5	14	57	2,5	10	5
321050260 CM	**CMX**	2,6	14	57	2,6	10	5
321050270 CM	**CMX**	2,7	15	61	2,7	10	5
321050280 CM	**CMX**	2,8	15	61	2,8	10	5
321050290 CM	**CMX**	2,9	15	61	2,9	10	5
321050300 CM	**CMX**	3	15	61	3	10	5
321050310 CM	**CMX**	3,1	16	65	3,1	10	5
321050320 CM	**CMX**	3,2	16	65	3,2	10	5
321050330 CM	**CMX**	3,3	16	65	3,3	10	5
321050340 CM	**CMX**	3,4	18	70	3,4	10	5
321050350 CM	**CMX**	3,5	18	70	3,5	10	5
321050360 CM	**CMX**	3,6	18	70	3,6	10	5
321050370 CM	**CMX**	3,7	18	70	3,7	10	5
321050380 CM	**CMX**	3,8	19	75	3,8	10	5
321050390 CM	**CMX**	3,9	19	75	3,9	10	5
321050400 CM	**CMX**	4	19	75	4	10	5
321050410 CM	**CMX**	4,1	19	75	4,1	10	5
321050420 CM	**CMX**	4,2	19	75	4,2	10	5
321050430 CM	**CMX**	4,3	21	80	4,3	10	5
321050440 CM	**CMX**	4,4	21	80	4,4	10	5
321050450 CM	**CMX**	4,5	21	80	4,5	10	5
321050460 CM	**CMX**	4,6	21	80	4,6	10	5
321050470 CM	**CMX**	4,7	21	80	4,7	10	5
321050480 CM	**CMX**	4,8	23	86	4,8	10	5
321050490 CM	**CMX**	4,9	23	86	4,9	10	5
321050500 CM	**CMX**	5	23	86	5	10	5
321050510 CM	**CMX**	5,1	23	86	5,1	10	5
321050520 CM	**CMX**	5,2	23	86	5,2	10	5
321050530 CM	**CMX**	5,3	26	93	5,3	10	5
321050540 CM	**CMX**	5,4	26	93	5,4	10	5
321050550 CM	**CMX**	5,5	26	93	5,5	10	6
321050560 CM	**CMX**	5,6	26	93	5,6	10	6
321050570 CM	**CMX**	5,7	26	93	5,7	10	6
321050580 CM	**CMX**	5,8	26	93	5,8	10	6
321050590 CM	**CMX**	5,9	26	93	5,9	10	6
321050600 CM	**CMX**	6	26	93	6	10	6

→| continua alla pagina successiva / *continued on next page*

Z3÷7

MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

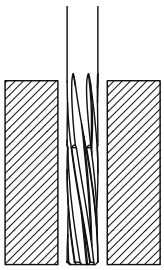
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
32105	○	○	◕	○	○	●	●

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

Serie/*Series* 32105

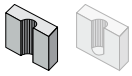
Alesatori a macchina
Machine reamers

Z3÷7



→ continuazione della pagina precedente / *continuation of the previous page*

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DH7	l	L	dh6	λ°	Z
321050610 CM		CMX	6,1	28	101	6,1	10	6
321050620 CM		CMX	6,2	28	101	6,2	10	6
321050630 CM		CMX	6,3	28	101	6,3	10	6
321050640 CM		CMX	6,4	28	101	6,4	10	6
321050650 CM		CMX	6,5	28	101	6,5	10	6
321050660 CM		CMX	6,6	28	101	6,6	10	6
321050670 CM		CMX	6,7	31	109	6,7	10	6
321050680 CM		CMX	6,8	31	109	6,8	10	6
321050690 CM		CMX	6,9	31	109	6,9	10	6
321050700 CM		CMX	7	31	109	7	10	6
321050710 CM		CMX	7,1	31	109	7,1	10	6
321050720 CM		CMX	7,2	31	109	7,2	10	6
321050730 CM		CMX	7,3	31	109	7,3	10	6
321050740 CM		CMX	7,4	31	109	7,4	10	6
321050750 CM		CMX	7,5	33	117	7,5	10	6
321050760 CM		CMX	7,6	33	117	7,6	10	6
321050770 CM		CMX	7,7	33	117	7,7	10	6
321050780 CM		CMX	7,8	33	117	7,8	10	6
321050790 CM		CMX	7,9	33	117	7,9	10	6
321050800 CM		CMX	8	33	117	8	10	6
321050810 CM		CMX	8,1	33	117	8,1	10	6
321050820 CM		CMX	8,2	33	117	8,2	10	6
321050830 CM		CMX	8,3	33	117	8,3	10	6
321050840 CM		CMX	8,4	33	117	8,4	10	6
321050850 CM		CMX	8,5	36	125	8,5	10	6
321050860 CM		CMX	8,6	36	125	8,6	10	6
321050870 CM		CMX	8,7	36	125	8,7	10	6
321050880 CM		CMX	8,8	36	125	8,8	10	6
321050890 CM		CMX	8,9	36	125	8,9	10	6
321050900 CM		CMX	9	36	125	9	10	6
321050910 CM		CMX	9,1	36	125	9,1	10	6
321050920 CM		CMX	9,2	36	125	9,2	10	6
321050930 CM		CMX	9,3	36	125	9,3	10	6
321050940 CM		CMX	9,4	36	125	9,4	10	6
321050950 CM		CMX	9,5	38	133	9,5	10	6
321050960 CM		CMX	9,6	38	133	9,6	10	6
321050970 CM		CMX	9,7	38	133	9,7	10	6
321050980 CM		CMX	9,8	38	133	9,8	10	6
321050990 CM		CMX	9,9	38	133	9,9	10	6
321051000 CM		CMX	10	38	133	10	10	6
321051050 CM		CMX	10,5	41	142	10,5	10	7
321051100 CM		CMX	11	41	142	11	10	7
321051150 CM		CMX	11,5	44	151	11,5	10	7
321051200 CM		CMX	12	44	151	12	10	7
321051250 CM		CMX	12,5	44	151	12,5	10	7
321051300 CM		CMX	13	44	151	13	10	7
321051350 CM		CMX	13,5	47	160	13,5	10	7
321051400 CM		CMX	14	47	160	14	10	7
321051450 CM		CMX	14,5	50	162	14,5	10	7
321051500 CM		CMX	15	50	162	15	10	7
321051550 CM		CMX	15,5	52	170	15,5	10	7
321051600 CM		CMX	16	52	170	16	10	7



Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request

MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

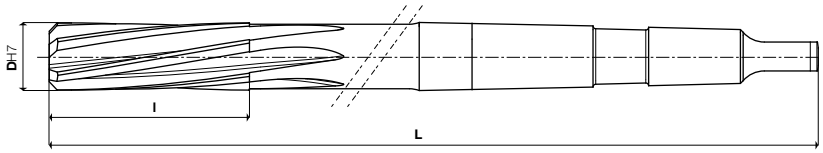
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
32105	○	○	◕	○	○	●	●

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

Serie/*Series*

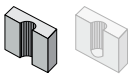
32150

Alesatori a macchina
Machine reamers



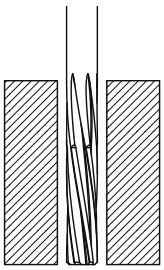
COATING	λ°s		
Skin	10	N	UNI 6854 DIN 208B ISO 521

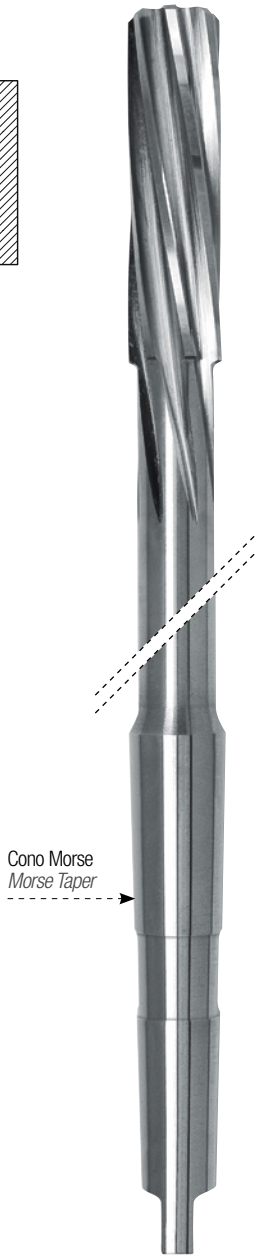
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DH7	l	L	MORSE TAPER	Z
321500500 AM	**CM**	**CMX**	5	23	133	1	5
321500600 AM	**CM**	**CMX**	6	26	138	1	6
321500700 AM	**CM**	**CMX**	7	31	150	1	6
321500800 AM	**CM**	**CMX**	8	33	156	1	6
321500900 AM	**CM**	**CMX**	9	36	162	1	6
321501000 AM	**CM**	**CMX**	10	38	168	1	6
321501100 AM	**CM**	**CMX**	11	41	175	1	7
321501200 AM	**CM**	**CMX**	12	44	182	1	7
321501300 AM	**CM**	**CMX**	13	44	182	1	7
321501400 AM	**CM**	**CMX**	14	47	189	1	7
321501500 AM	**CM**	**CMX**	15	50	204	2	7
321501600 AM	**CM**	**CMX**	16	52	210	2	7
321501700 AM	**CM**	**CMX**	17	54	214	2	8
321501800 AM	**CM**	**CMX**	18	56	219	2	8
321501900 AM	**CM**	**CMX**	19	58	223	2	8
321502000 AM	**CM**	**CMX**	20	60	228	2	8
321502100 AM	**CM**	**CMX**	21	62	232	2	8
321502200 AM	**CM**	**CMX**	22	64	237	2	8
321502300 AM	**CM**	**CMX**	23	66	241	2	8
321502400 AM	**CM**	**CMX**	24	68	268	3	8
321502500 AM	**CM**	**CMX**	25	68	268	3	8
321502600 AM	**CM**	**CMX**	26	70	273	3	8
321502700 AM	**CM**	**CMX**	27	71	277	3	10
321502800 AM	**CM**	**CMX**	28	71	277	3	10
321502900 AM	**CM**	**CMX**	29	73	281	3	10
321503000 AM	**CM**	**CMX**	30	73	281	3	10
321503100 AM	**CM**	**CMX**	31	75	285	3	10
321503200 AM	**CM**	**CMX**	32	77	317	4	10
321503300 AM	**CM**	**CMX**	33	77	317	4	10
321503400 AM	**CM**	**CMX**	34	78	321	4	10
321503500 AM	**CM**	**CMX**	35	78	321	4	10
321503600 AM	**CM**	**CMX**	36	79	325	4	10
321503700 AM	**CM**	**CMX**	37	79	325	4	10
321503800 AM	**CM**	**CMX**	38	81	329	4	10
321503900 AM	**CM**	**CMX**	39	81	329	4	10
321504000 AM	**CM**	**CMX**	40	81	329	4	10



Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request

Z5÷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*
32150	○	○	◕	○	○	●	●

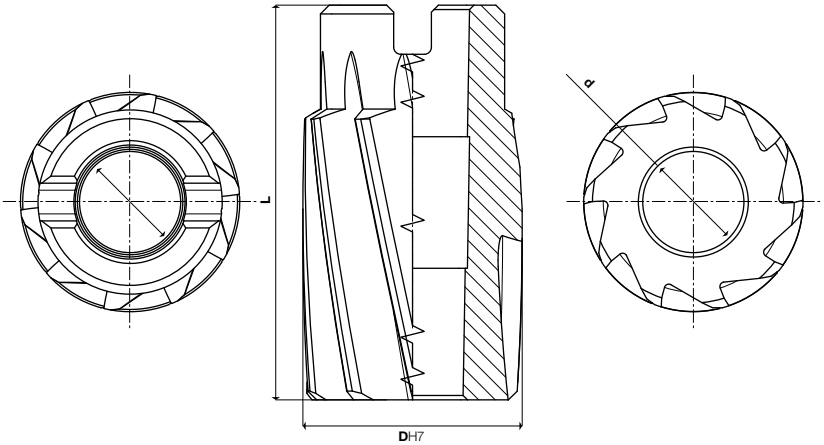
● consigliata/*recommended* ◕ accettabile/*acceptable* ○ non consigliata/*not recommended*

Serie/*Series*

33105

Alesatori a macchina tipo manicotto foro conico **1:30**
*Shell reamers taper hole **1:30***

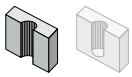
Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request



COATING			
Skin	λ°s 10	N	UNI 6855 DIN 219B ISO 2402

Z8÷20

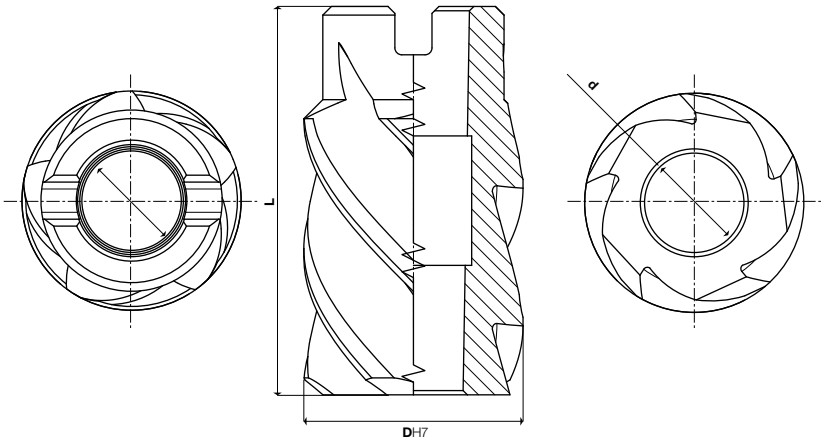
Cod. Art.	M-TK (HSS-E)	COATED	DH7	L	d	Z
331050200 AM		**AMX**	20	40	10	8
331050210 AM		**AMX**	21	40	10	8
331050220 AM		**AMX**	22	40	10	8
331050230 AM		**AMX**	23	40	10	8
331050240 AM		**AMX**	24	45	13	10
331050250 AM		**AMX**	25	45	13	10
331050260 AM		**AMX**	26	45	13	10
331050270 AM		**AMX**	27	45	13	10
331050280 AM		**AMX**	28	45	13	10
331050290 AM		**AMX**	29	45	13	10
331050300 AM		**AMX**	30	45	13	10
331050310 AM		**AMX**	31	50	16	10
331050320 AM		**AMX**	32	50	16	10
331050330 AM		**AMX**	33	50	16	10
331050340 AM		**AMX**	34	50	16	10
331050350 AM		**AMX**	35	50	16	10
331050360 AM		**AMX**	36	56	19	12
331050370 AM		**AMX**	37	56	19	12
331050380 AM		**AMX**	38	56	19	12
331050390 AM		**AMX**	39	56	19	12
331050400 AM		**AMX**	40	56	19	12
331050420 AM		**AMX**	42	56	19	12
331050440 AM		**AMX**	44	63	22	12
331050450 AM		**AMX**	45	63	22	12
331050460 AM		**AMX**	46	63	22	14
331050470 AM		**AMX**	47	63	22	14
331050480 AM		**AMX**	48	63	22	14
331050490 AM		**AMX**	49	63	22	14
331050500 AM		**AMX**	50	63	22	14
331050520 AM		**AMX**	52	71	27	14
331050550 AM		**AMX**	55	71	27	14
331050580 AM		**AMX**	58	71	27	14
331050600 AM		**AMX**	60	71	27	16
331050620 AM		**AMX**	62	80	32	16
331050650 AM		**AMX**	65	80	32	16
331050680 AM		**AMX**	68	80	32	16
331050700 AM		**AMX**	70	80	32	16
331050720 AM		**AMX**	72	90	40	16
331050750 AM		**AMX**	75	90	40	16
331050780 AM		**AMX**	78	90	40	16
331050800 AM		**AMX**	80	90	40	20
331050820 AM		**AMX**	82	90	40	20
331050850 AM		**AMX**	85	90	40	20
331050880 AM		**AMX**	88	100	50	20
331050900 AM		**AMX**	90	100	50	20
331050920 AM		**AMX**	92	100	50	20
331050950 AM		**AMX**	95	100	50	20
331050980 AM		**AMX**	98	100	50	20
331051000 AM		**AMX**	100	100	50	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*
33105	○	○	◕	○	○	●	●

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



Serie/*Series*

33105

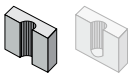
Alesatori a macchina tipo manicotto foro conico **1:30**
*Shell reamers taper hole **1:30***

Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request

COATING			
Skin	λ°s 45	N	UNI 6855 DIN 219B ISO 2402

Cod. Art. M-TK (HSS-E)	COATED	DH7	L	d	Z
331050201 AM	**AMX**	20	40	10	5
331050211 AM	**AMX**	21	40	10	5
331050221 AM	**AMX**	22	40	10	5
331050231 AM	**AMX**	23	40	10	5
331050241 AM	**AMX**	24	45	13	5
331050251 AM	**AMX**	25	45	13	5
331050261 AM	**AMX**	26	45	13	5
331050271 AM	**AMX**	27	45	13	5
331050281 AM	**AMX**	28	45	13	5
331050291 AM	**AMX**	29	45	13	6
331050301 AM	**AMX**	30	45	13	6
331050311 AM	**AMX**	31	50	16	6
331050321 AM	**AMX**	32	50	16	6
331050331 AM	**AMX**	33	50	16	7
331050341 AM	**AMX**	34	50	16	7
331050351 AM	**AMX**	35	50	16	7
331050361 AM	**AMX**	36	56	19	8
331050371 AM	**AMX**	37	56	19	8
331050381 AM	**AMX**	38	56	19	8
331050391 AM	**AMX**	39	56	19	8
331050401 AM	**AMX**	40	56	19	8
331050421 AM	**AMX**	42	56	19	8
331050441 AM	**AMX**	44	63	22	8
331050451 AM	**AMX**	45	63	22	8
331050461 AM	**AMX**	46	63	22	8
331050471 AM	**AMX**	47	63	22	8
331050481 AM	**AMX**	48	63	22	8
331050491 AM	**AMX**	49	63	22	8
331050501 AM	**AMX**	50	63	22	8
331050521 AM	**AMX**	52	71	27	8
331050551 AM	**AMX**	55	71	27	8
331050581 AM	**AMX**	58	71	27	10
331050601 AM	**AMX**	60	71	27	10
331050621 AM	**AMX**	62	80	32	10
331050651 AM	**AMX**	65	80	32	10
331050681 AM	**AMX**	68	80	32	10
331050701 AM	**AMX**	70	80	32	10
331050721 AM	**AMX**	72	90	40	10
331050751 AM	**AMX**	75	90	40	10
331050781 AM	**AMX**	78	90	40	10
331050801 AM	**AMX**	80	90	40	12
331050821 AM	**AMX**	82	90	40	12
331050851 AM	**AMX**	85	90	40	12
331050881 AM	**AMX**	88	100	50	12
331050901 AM	**AMX**	90	100	50	14
331050921 AM	**AMX**	92	100	50	14
331050951 AM	**AMX**	95	100	50	14
331050981 AM	**AMX**	98	100	50	14
331051001 AM	**AMX**	100	100	50	14

Z5÷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*
33105	○	○	○	○	○	●	●

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

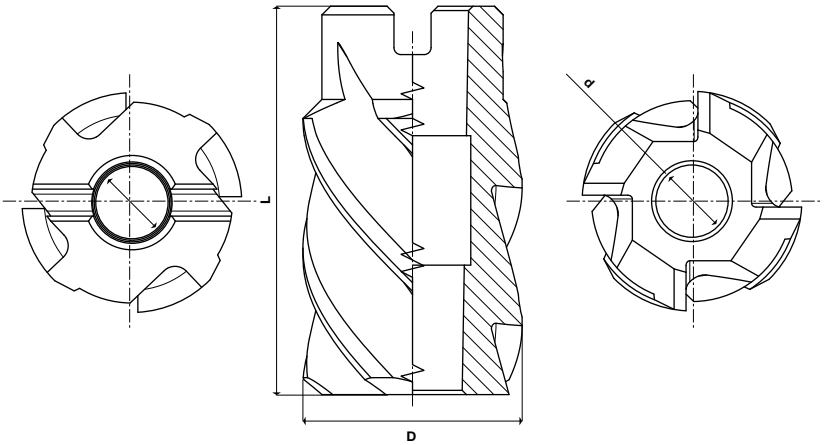
Serie/*Series*

34105

Allargatori a manicotto foro conico **1:30**
*Shell drills taper hole **1:30***

*Il diametro è nominale ed è ridotto
in rapporto alle dimensioni precisamente:
da 20÷30: -0,3 mm
da 30÷60: -0,4 mm
da 62÷100: -0,5 mm

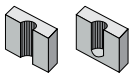
**Dimension D is reduced as follows:*
from 20÷30: -0,3 mm
from 30÷60: -0,4 mm
from 62÷100: -0.5 mm



COATING			
Skin	λ°s 15	N	UNI 6840 DIN 222 ISO 3314

Z4

Cod. Art.	M-TK (HSS-E)	COATED	D*	L	d	Z
341050200 AM		**AMX**	20	40	10	4
341050210 AM		**AMX**	21	40	10	4
341050220 AM		**AMX**	22	40	10	4
341050230 AM		**AMX**	23	40	10	4
341050240 AM		**AMX**	24	45	13	4
341050250 AM		**AMX**	25	45	13	4
341050260 AM		**AMX**	26	45	13	4
341050270 AM		**AMX**	27	45	13	4
341050280 AM		**AMX**	28	45	13	4
341050290 AM		**AMX**	29	45	13	4
341050300 AM		**AMX**	30	45	13	4
341050310 AM		**AMX**	31	45	13	4
341050320 AM		**AMX**	32	45	13	4
341050330 AM		**AMX**	33	45	13	4
341050340 AM		**AMX**	34	45	13	4
341050350 AM		**AMX**	35	45	13	4
341050360 AM		**AMX**	36	50	16	4
341050370 AM		**AMX**	37	50	16	4
341050380 AM		**AMX**	38	50	16	4
341050390 AM		**AMX**	39	50	16	4
341050400 AM		**AMX**	40	50	16	4
341050420 AM		**AMX**	42	50	16	4
341050440 AM		**AMX**	44	50	16	4
341050450 AM		**AMX**	45	50	16	4
341050460 AM		**AMX**	46	56	19	4
341050470 AM		**AMX**	47	56	19	4
341050480 AM		**AMX**	48	56	19	4
341050490 AM		**AMX**	49	56	19	4
341050500 AM		**AMX**	50	56	19	4
341050520 AM		**AMX**	52	56	19	4
341050550 AM		**AMX**	55	63	22	4
341050580 AM		**AMX**	58	63	22	4
341050600 AM		**AMX**	60	63	22	4
341050620 AM		**AMX**	62	63	22	4
341050650 AM		**AMX**	65	71	27	4
341050680 AM		**AMX**	68	71	27	4
341050700 AM		**AMX**	70	71	27	4
341050720 AM		**AMX**	72	71	27	4
341050750 AM		**AMX**	75	71	27	4
341050780 AM		**AMX**	78	80	32	4
341050800 AM		**AMX**	80	80	32	4
341050820 AM		**AMX**	82	80	32	4
341050850 AM		**AMX**	85	80	32	4
341050880 AM		**AMX**	88	80	32	4
341050900 AM		**AMX**	90	80	32	4
341050920 AM		**AMX**	92	90	40	4
341050950 AM		**AMX**	95	90	40	4
341050980 AM		**AMX**	98	90	40	4
341051000 AM		**AMX**	100	90	40	4



MATERIALI LAVORABILI / *WORKPIECE MATERIALS*

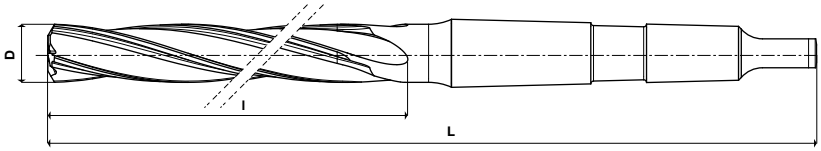
serie *series*	TITANIO *TITANIUM*	HRSA *HRSA*	ACCIAI INOSSIDABILI *STAINLESS STEELS*	MATERIALI NON FERROSI *NON FERROUS MATERIALS*	LEGHE LEGGERE *LIGHT ALLOYS*	ACCIAI *STEELS*	GHISE *CAST IRON*
34105	○	○	◕	○	○	●	●

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

Serie/*Series*

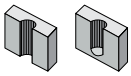
34150

Allargatori
Core drills



COATING			
Skin	λ°s 20	N	UNI 6829 DIN 343 ISO 7079

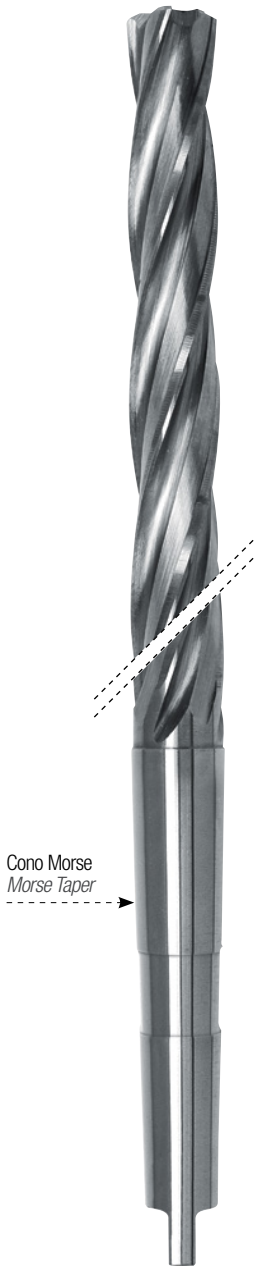
Cod. Art.	M-TK (HSS-E)	COATED	D*	l	L	MORSE TAPER	Z
341500900 AM		**AMX**	9	81	162	1	4
341501000 AM		**AMX**	10	87	168	1	4
341501100 AM		**AMX**	11	94	175	1	4
341501200 AM		**AMX**	12	101	182	1	4
341501300 AM		**AMX**	13	101	182	1	4
341501400 AM		**AMX**	14	108	189	1	4
341501500 AM		**AMX**	15	114	212	2	4
341501600 AM		**AMX**	16	120	218	2	4
341501700 AM		**AMX**	17	125	223	2	4
341501800 AM		**AMX**	18	130	228	2	4
341501900 AM		**AMX**	19	135	233	2	4
341502000 AM		**AMX**	20	140	238	2	4
341502100 AM		**AMX**	21	145	243	2	4
341502200 AM		**AMX**	22	150	248	2	4
341502300 AM		**AMX**	23	155	253	2	4
341502400 AM		**AMX**	24	160	281	3	4
341502500 AM		**AMX**	25	160	281	3	4
341502600 AM		**AMX**	26	165	286	3	4
341502700 AM		**AMX**	27	170	291	3	4
341502800 AM		**AMX**	28	170	291	3	4
341502900 AM		**AMX**	29	175	296	3	4
341503000 AM		**AMX**	30	175	296	3	4
341503100 AM		**AMX**	31	180	301	3	4
341503200 AM		**AMX**	32	185	334	4	4
341503300 AM		**AMX**	33	185	334	4	4
341503400 AM		**AMX**	34	190	339	4	4
341503500 AM		**AMX**	35	190	339	4	4
341503600 AM		**AMX**	36	195	344	4	4
341503700 AM		**AMX**	37	195	344	4	4
341503800 AM		**AMX**	38	200	349	4	4
341503900 AM		**AMX**	39	200	349	4	4
341504000 AM		**AMX**	40	200	349	4	4



*Il diametro è nominale ed è ridotto in rapporto alle dimensioni precisamente:
da 9÷12: -0,2 mm
da 13÷19: -0,25 mm
da 20÷30: -0,3 mm
da 31÷40: -0,4 mm

**Dimension D is reduced as follows:*
from 9÷12: -0,2 mm
from 13÷19: -0,25 mm
from 20÷30: -0,3 mm
from 31÷40: -0,4 mm
from 62÷100: -0,5 mm

Z4



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*
34150	○	○	◕	○	○	●	●

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

Serie/*Series*

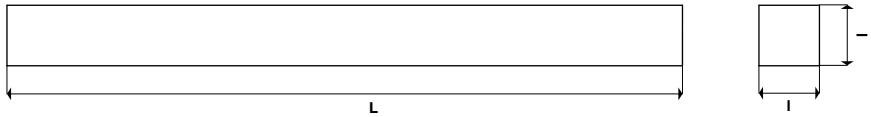
08105

Barrette tonde
Round toolbits

UNI 3868
DIN
ISO

QUALITY STANDARD UOP

Cod. Art.	X-85 (PM Co 8,5%)	X-105 (PM Co 10,5%)	dh7	L
081050310	CM	–	3	100
081050410	CM	–	4	100
081050415	CM	–	4	150
081050420	CM	–	4	200
081050510	CM	–	5	100
081050515	CM	–	5	150
081050520	CM	–	5	200
081050610	CM	EM	6	100
081050615	CM	EM	6	150
081050620	CM	EM	6	200
081050810	CM	EM	8	100
081050815	CM	EM	8	150
081050820	CM	EM	8	200
081051010	CM	EM	10	100
081051015	CM	EM	10	150
081051020	CM	EM	10	200
081051210	CM	EM	12	100
081051215	CM	EM	12	150
081051220	CM	EM	12	200
081051410	CM	EM	14	100
081051415	CM	EM	14	150
081051420	CM	EM	14	200
081051610	CM	EM	16	100
081051615	CM	EM	16	150
081051620	CM	EM	16	200
081051810	CM	EM	18	100
081051815	CM	EM	18	150
081051820	CM	EM	18	200
081052010	CM	EM	20	100
081052015	CM	EM	20	150
081052020	CM	EM	20	200
081052510	CM	EM	25	100
081052515	CM	EM	25	150
081052520	CM	EM	25	200
081053010	CM	EM	30	100
081053015	CM	EM	30	150
081053020	CM	EM	30	200
081053030	CM	EM	30	300



UNI 3868
DIN
ISO

QUALITY STANDARD UOP

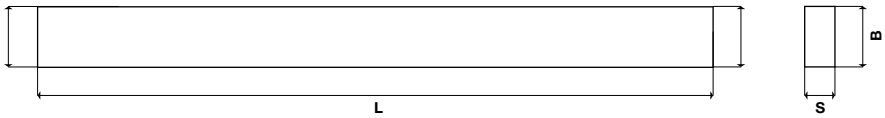
Serie/*Series* 08110

Barrette quadre
Square toolbits

Cod. Art.	X-105 (PM Co 10,5%)	I h14	L
081100615	**EM**	6	150
081100620	**EM**	6	200
081100715	**EM**	7	150
081100720	**EM**	7	200
081100815	**EM**	8	150
081100820	**EM**	8	200
081101015	**EM**	10	150
081101020	**EM**	10	200
081101215	**EM**	12	150
081101220	**EM**	12	200
081101420	**EM**	14	200
081101520	**EM**	15	200
081101620	**EM**	16	200
081101820	**EM**	18	200
081102020	**EM**	20	200
081102520	**EM**	25	200

Serie/*Series* 08115

Barrette rettangolari
Flat toolbits

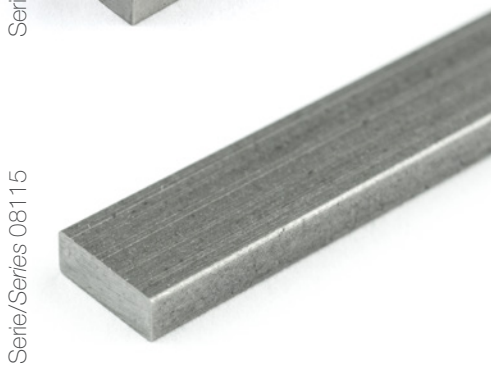


UNI 3868
DIN
ISO

QUALITY STANDARD UOP

Cod. Art.	X-105 (PM Co 10,5%)	B h14	S h14	L
081151208	**EM**	12	8	200
081151503	**EM**	15	3	200
081151610	**EM**	16	10	200
081151804	**EM**	18	4	200
081152003	**EM**	20	3	200
081152004	**EM**	20	4	200
081152012	**EM**	20	12	200
081152504	**EM**	25	4	200
081152515	**EM**	25	15	200

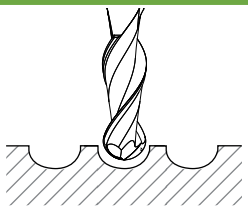
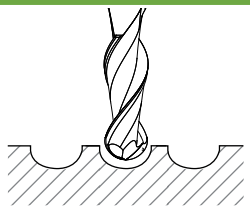
Serie/*Series* 08110



Serie/*Series* 08115

Parametri tecnici
Technical parameters

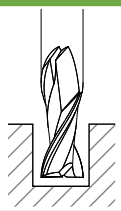
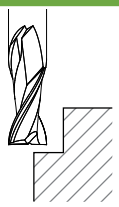
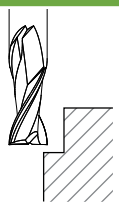
Parametri di taglio/*Cutting parameters*

	10102 - 10105 10110 - 10125*		10140 - 10155*		12505 - 12520*	
Materiali *Materials*	Cava *Slotting* *ap = 0,5ø ae = 1ø*		Sgrossatura *Roughing* *ap = 0,4ø ae = 0,9ø*		Sgrossatura *Roughing* *ap = 0,4ø ae = 0,9ø*	
						
Gruppo e descrizione *Group and description*	Vc (mt /min.)		Vc (mt /min.)		Vc (mt /min.)	
	X-85 NON RIVESTITA *UNCOATED*	**X-85** **Skin**	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin**	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Alu*
Ghisa *Cast Iron* — **Grigia e sferoidale** *Grey and spheroidal*	20 - 25	45 - 50	20 - 25	45 - 50	–	–
Acciaio *Steel* — **Basso contenuto di C** *Low carbon content*	30 - 35	60 - 70	30 - 35	60 - 70	–	–
Medio contenuto di C *Medium carbon content*	25 - 30	50 - 60	25 - 30	50 - 60	–	–
Basso legato *Low alloyed*	25 - 30	50 - 60	25 - 30	50 - 60	–	–
Alto legato *High alloyed*	20 - 25	40 - 50	20 - 25	40 - 50	–	–
Acciaio da stampi e utensili *Die/tool steel*	15 - 20	30 - 40	15 - 20	30 - 40	–	–
Materiali non ferrosi Leghe leggere *Non ferrous materials Light alloys* — **Alluminio non legato** *Unalloyed aluminium*	–	–	–	–	110 - 120	250 - 260
Alluminio Si < 6% *si < 6% aluminium*	–	–	–	–	70 - 80	170 - 180
Materiali termoplastici *Thermoplastic materials*	–	–	–	–	130 - 140	270 - 280
Rame/Ottone *Copper/Brass*	30 - 35	75 - 80	30 - 35	75 - 80	30 - 35	75 - 80

D	**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	0,035
10	0,030	0,035	0,050
12	0,040	0,050	0,070
16	0,065	0,090	0,120
20	0,090	0,110	0,145

* series **10125**; series **10155**; series **12520** **fz** consigliato | *RECOMMENDED* -50%

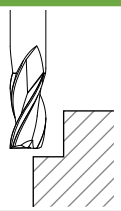
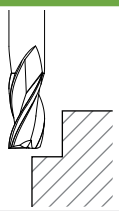
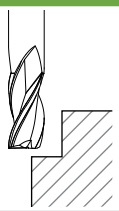
Parametri di taglio/*Cutting parameters*

	11405 12105 12120*		11405 12105 12120*		11405 12105 12120*		11405 12105 12120*	
Materiali *Materials*	Cava *Slotting* *ap = 1ø ae = 1ø*		Sgrossatura *Roughing* *ap = 0,5ø ae = 0,1ø*		Sgrossatura *Roughing* *ap = 1,5ø ae = 0,5ø*		Contornatura leggera *Light shouldering* *ap = 1,5ø ae = 0,15ø*	
								
Gruppo e descrizione *Group and description*	**Vc (mt /min.)**		**Vc (mt /min.)**		**Vc (mt /min.)**		**Vc (mt /min.)**	
	X-85 NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Alu*	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Alu*	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Alu*	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Alu*
Materiali non ferrosi Leghe leggere *Non ferrous materials Light alloys*								
Alluminio non legato *Unalloyed aluminium*	110 - 120	250 - 260	110 - 120	250 - 260	110 - 120	250 - 260	110 - 120	250 - 260
Alluminio Si < 6% *si < 6% aluminium*	70 - 80	170 - 180	70 - 80	170 - 180	70 - 80	170 - 180	70 - 80	170 - 180
Materiali termoplastici *Thermoplastic materials*	130 - 140	270 - 280	130 - 140	270 - 280	130 - 140	270 - 280	130 - 140	270 - 280
Rame/Ottone *Copper/Brass*	30 - 35	75 - 80	30 - 35	75 - 80	30 - 35	75 - 80	30 - 35	75 - 80

D	**Avanzamento fz mm/giro** *FEED mm/rpm*			
3	0,007	0,007	0,007	0,007
4	0,008	0,010	0,008	0,010
5	0,010	0,016	0,010	0,016
6	0,012	0,020	0,012	0,020
8	0,016	0,032	0,016	0,030
10	0,022	0,045	0,022	0,040
12	0,030	0,060	0,024	0,050
16	0,036	0,100	0,030	0,080
20	0,045	0,120	0,036	0,105

* series **12120** **fz** consigliato | *RECOMMENDED* -50%

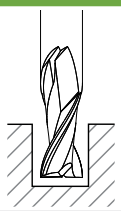
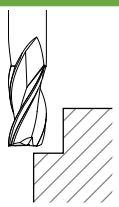
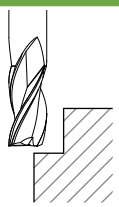
Parametri di taglio/*Cutting parameters*

Materiali *Materials*	14105 14120* 14135**		14505 14520*		14505 14520*	
	Contornatura *Shouldering* *ap = 1,5ø ae = 0,15ø*		Contornatura *Shouldering* *ap = 1,5ø ae = 0,15ø*		Contornatura *Shouldering* *ap = 1,5ø ae = 0,5ø*	
						
Gruppo e descrizione *Group and description*	Vc (mt /min.)		Vc (mt /min.)		Vc (mt /min.)	
	X-85 NON RIVESTITA *UNCOATED*	**X-85** **Skin**	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin**	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin**
Ghisa *Cast Iron* — **Grigia e sferoidale** *Grey and spheroidal*	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50
Acciaio *Steel* — **Basso contenuto di C** *Low carbon content*	30 - 35	60 - 70	30 - 35	60 - 70	30 - 35	60 - 70
Medio contenuto di C *Medium carbon content*	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
Basso legato *Low alloyed*	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
Alto legato *High alloyed*	20 - 25	40 - 50	20 - 25	40 - 50	20 - 25	40 - 50
Acciaio da stampi e utensili *Die/tool steel*	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40
Materiali non ferrosi Leghe leggere *Non ferrous materials Light alloys* — **Alluminio non legato** *Unalloyed aluminium*	–	–	–	–	–	–
Alluminio Si < 6% *si < 6% aluminium*	–	–	–	–	–	–
Materiali termoplastici *Thermoplastic materials*	–	–	–	–	–	–
Rame/Ottone *Copper/Brass*	30 - 35	75 - 80	30 - 35	75 - 80	30 - 35	75 - 80

D	**Avanzamento fz mm/giro** *FEED mm/rpm*	
3	0,010	0,010
4	0,015	0,015
5	0,020	0,020
6	0,025	0,023
8	0,035	0,024
10	0,045	0,030
12	0,056	0,035
16	0,090	0,054
20	0,120	0,070

* series **14120**; series **14120** **fz** consigliato | *RECOMMENDED* -30%
** series **14135** **fz** consigliato | *RECOMMENDED* -50%

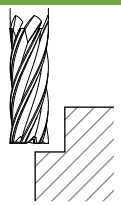
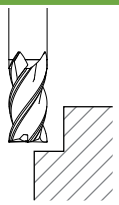
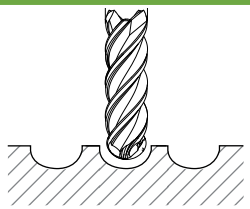
Parametri di taglio/*Cutting parameters*

	14805 14820*		14805 14820*		14805 14820*	
Materiali *Materials*	**Cava** ***Shouldering*** *ap = 1ø ae = 1ø*		**Contornatura** ***Shouldering*** *ap = 1,5ø ae = 0,15ø*		**Contornatura** ***Shouldering*** *ap = 1,5ø ae = 0,5ø*	
						
Gruppo e descrizione *Group and description*	**Vc (mt /min.)**		**Vc (mt /min.)**		**Vc (mt /min.)**	
	X-85 NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Alu*	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Alu*	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Alu*
Materiali non ferrosi Leghe leggere *Non ferrous materials* *Light alloys*						
Alluminio non legato *Unalloyed aluminium*	110 - 120	250 - 260	110 - 120	250 - 260	110 - 120	250 - 260
Alluminio Si < 6% *si < 6% aluminium*	70 - 80	170 - 180	70 - 80	170 - 180	70 - 80	170 - 180
Materiali termoplastici *Thermoplastic materials*	130 - 140	270 - 280	130 - 140	270 - 280	130 - 140	270 - 280
Rame/Ottone *Copper/Brass*	30 - 35	75 - 80	30 - 35	75 - 80	30 - 35	75 - 80

D	**Avanzamento fz mm/giro** *FEED mm/rpm*		
3	0,007	0,007	0,007
4	0,008	0,008	0,010
5	0,010	0,010	0,016
6	0,012	0,012	0,020
8	0,016	0,016	0,030
10	0,022	0,022	0,040
12	0,030	0,024	0,050
16	0,036	0,030	0,080
20	0,045	0,036	0,105

* series **14820** **fz** consigliato | *RECOMMENDED* -50%

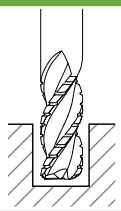
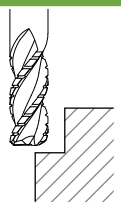
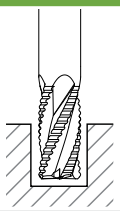
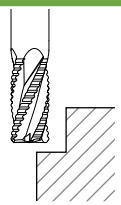
Parametri di taglio/*Cutting parameters*

		17105 - 17120* 17135** - 17305 17320		18105		17505 17520*	
	Materiali *Materials*	Contornatura *Shouldering* *ap = 1,5ø ae = 0,15ø*		Contornatura *Shouldering* *ap = 1,5ø ae = 0,15ø*		Sgrossatura *Roughing* *ap = 0,4ø ae = 0,9ø*	
							
	Gruppo e descrizione *Group and description*	Vc (mt /min.)		Vc (mt /min.)		Vc (mt /min.)	
		X-85 NON RIVESTITA *UNCOATED*	**X-85** **Skin**	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin**	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin**
Ghisa *Cast Iron*	**Grigia e sferoidale** *Grey and spheroidal*	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50
Acciaio *Steel*	**Basso contenuto di C** *Low carbon content*	30 - 35	60 - 70	30 - 35	60 - 70	30 - 35	60 - 70
	Medio contenuto di C *Medium carbon content*	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Basso legato *Low alloyed*	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloyed*	20 - 25	40 - 50	20 - 25	40 - 50	20 - 25	40 - 50
	Acciaio da stampi e utensili *Die/tool steel*	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40
Acciaio Inossidabile *Stainless Steel*	**AISI 304 - 416 - 420**	–	–	–	15 - 20	–	–
	AISI 316 - 440	–	–	–	15 - 20	–	–
	17-4 ph 15-5 ph	–	–	–	10 - 15	–	–
	Leghe Cr - Co *Cr - Co alloys*	–	–	–	10 - 15	–	–
	Duplex F51	–	–	–	5 - 10	–	–
	Super Duplex F55	–	–	–	5 - 10	–	–
Superleghe resistenti al calore *Heat Resistant Super Alloys*	**HRSA Hastelloy**	–	–	–	5 - 10	–	–
	HRSA Inconel 625	–	–	–	5 - 10	–	–
	HRSA Inconel 718	–	–	–	5 - 10	–	–
	HRSA Nimonic	–	–	–	5 - 10	–	–
Ti	**Titanio** - *Titanium*	–	–	–	10 - 15	–	–
	Leghe di titanio *Titanium alloys*	–	–	–	10 - 15	–	–

D	**Avanzamento fz mm/giro** *FEED mm/rpm*	
3	0,010	0,007
4	0,015	0,009
5	0,020	0,012
6	0,025	0,014
8	0,035	0,021
10	0,045	0,028
12	0,056	0,038
16	0,090	0,065
20	0,120	0,090

* series **17120**; series **17520** **fz** consigliato | *RECOMMENDED* -30%
** series **17135** **fz** consigliato | *RECOMMENDED* -50%

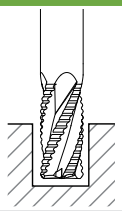
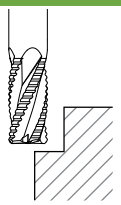
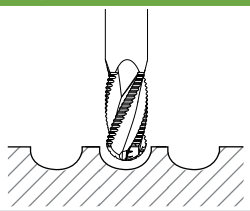
Parametri di taglio/*Cutting parameters*

		15105 15120* WF		15105 15120* WF		21105 21120* NF NR		19105 - 20105 20120* - 21105 21120* NF NR	
	Materiali *Materials*	Cava *Slotting* *ap = 1ø ae = 1ø*		Sgrossatura *Roughing* *ap = 1,5ø ae = 0,5ø*		Cava *Slotting* *ap = 1ø ae = 1ø*		Sgrossatura *Roughing* *ap = 1,5ø ae = 0,5ø*	
									
	Gruppo e descrizione *Group and description*	Vc (mt /min.)		Vc (mt /min.)		Vc (mt /min.)		Vc (mt /min.)	
		X-85 NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Alu*	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Alu*	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin**	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin**
Ghisa *Cast Iron*	**Grigia e sferoidale** *Grey and spheroidal*	–	–	–	–	20 - 25	45 - 50	20 - 25	45 - 50
Acciaio *Steel*	**Basso contenuto di C** *Low carbon content*	–	–	–	–	30 - 35	60 - 70	30 - 35	60 - 70
	Medio contenuto di C *Medium carbon content*	–	–	–	–	30 - 35	50 - 60	30 - 35	50 - 60
	Basso legato *Low alloyed*	–	–	–	–	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloyed*	–	–	–	–	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili *Die/tool steel*	–	–	–	–	15 - 20	30 - 40	15 - 20	30 - 40
Acciaio Inossidabile *Stainless Steel*	**AISI 304 - 416 - 420**	–	–	–	–	–	15 - 20	–	15 - 20
	AISI 316 - 440	–	–	–	–	–	15 - 20	–	15 - 20
	17-4 ph 15-5 ph	–	–	–	–	–	10 - 15	–	10 - 15
	Leghe Cr - Co *Cr - Co alloys*	–	–	–	–	–	10 - 15	–	10 - 15
	Duplex F51	–	–	–	–	–	5 - 10	–	5 - 10
	Super Duplex F55	–	–	–	–	–	5 - 10	–	5 - 10
Superleghe resistenti al calore *Heat Resistant Super Alloys*	**HRSA Hastelloy**	–	–	–	–	–	5 - 10	–	5 - 10
	HRSA Inconel 625	–	–	–	–	–	5 - 10	–	5 - 10
	HRSA Inconel 718	–	–	–	–	–	5 - 10	–	5 - 10
	HRSA Nimonic	–	–	–	–	–	5 - 10	–	5 - 10
Ti	**Titanio** - *Titanium*	–	–	–	–	–	10 - 15	–	10 - 15
	Leghe di titanio *Titanium alloys*	–	–	–	–	–	10 - 15	–	10 - 15
Materiali non ferrosi Leghe leggere *Non ferrous materials Light alloys*	**Alluminio non legato** *Unalloyed aluminium*	110 - 120	250 - 260	110 - 120	250 - 260	–	–	–	–
	Alluminio Si < 6% *si < 6% aluminium*	70 - 80	170 - 180	70 - 80	170 - 180	–	–	–	–
	Materiali termoplastici *Thermoplastic materials*	130 - 140	270 - 280	130 - 140	270 - 280	–	–	–	–
	Rame/Ottone *Copper/Brass*	30 - 35	75 - 80	30 - 35	75 - 80	–	–	–	–

D	**Avanzamento fz mm/giro** *FEED mm/rpm*			
6	0,012	0,025	0,012	0,020
8	0,016	0,035	0,016	0,026
10	0,022	0,045	0,022	0,030
12	0,026	0,055	0,026	0,040
16	0,036	0,070	0,036	0,060
20	0,045	0,085	0,045	0,080

* series **fz** consigliato | *RECOMMENDED* -50%

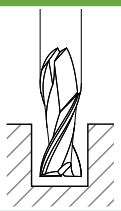
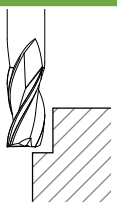
Parametri di taglio/*Cutting parameters*

Materiali *Materials*		21305 NR		21305 NR		21505 21520* NF NR	
		Cava *Slotting* *ap = 1ø ae = 1ø*		Sgrossatura *Roughing* *ap = 1,5ø ae = 0,5ø*		Sgrossatura *Roughing* *ap = 0,4ø ae = 0,9ø*	
							
	Gruppo e descrizione *Group and description*	Vc (mt /min.)		Vc (mt /min.)		Vc (mt /min.)	
		X-85 NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Inox*	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin** *Inox*	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin**
Ghisa *Cast Iron*	**Grigia e sferoidale** *Grey and spheroidal*	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50
Acciaio *Steel*	**Basso contenuto di C** *Low carbon content*	30 - 35	60 - 70	30 - 35	60 - 70	30 - 35	60 - 70
	Medio contenuto di C *Medium carbon content*	30 - 35	50 - 60	30 - 35	50 - 60	30 - 35	50 - 60
	Basso legato *Low alloyed*	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloyed*	20 - 30	40 - 50	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili *Die/tool steel*	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40
Acciaio Inossidabile *Stainless Steel*	**AISI 304 - 416 - 420**	–	15 - 20	–	15 - 20	–	15 - 20
	AISI 316 - 440	–	15 - 20	–	15 - 20	–	15 - 20
	17-4 ph 15-5 ph	–	10 - 15	–	10 - 15	–	10 - 15
	Leghe Cr - Co *Cr - Co alloys*	–	10 - 15	–	10 - 15	–	10 - 15
	Duplex F51	–	5 - 10	–	5 - 10	–	5 - 10
	Super Duplex F55	–	5 - 10	–	5 - 10	–	5 - 10
Superleghe resistenti al calore *Heat Resistant Super Alloys*	**HRSA Hastelloy**	–	–	–	–	–	5 - 10
	HRSA Inconel 625	–	–	–	–	–	5 - 10
	HRSA Inconel 718	–	–	–	–	–	5 - 10
	HRSA Nimonic	–	–	–	–	–	5 - 10
Ti	**Titanio** - *Titanium*	–	–	–	–	–	10 - 15
	Leghe di titanio *Titanium alloys*	–	–	–	–	–	10 - 15
Materiali non ferrosi Leghe leggere *Non ferrous materials Light alloys*	**Alluminio non legato** *Unalloyed aluminium*	–	–	–	–	–	–
	Alluminio Si < 6% *si < 6% aluminium*	–	–	–	–	–	–
	Materiali termoplastici *Thermoplastic materials*	–	–	–	–	–	–
	Rame/Ottone *Copper/Brass*	–	–	–	–	–	–

D	**Avanzamento fz mm/giro** *FEED mm/rpm*		
6	0,013	0,022	0,014
8	0,016	0,028	0,020
10	0,022	0,035	0,030
12	0,026	0,045	0,040
16	0,038	0,070	0,065
20	0,050	0,090	0,090

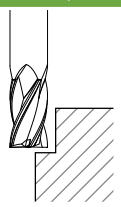
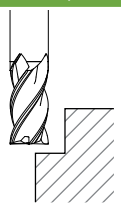
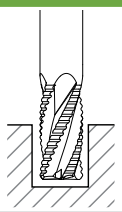
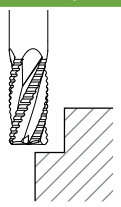
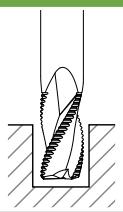
* series **fz** consigliato | *RECOMMENDED* -50%

Parametri di taglio/*Cutting parameters*

		10110	14105
	Materiali *Materials*	Cava *Slotting* *ap = 0,5ø ae = 1ø*	Contornatura *Shouldering* *ap = 1,5ø ae = 0,15ø*
			
	Gruppo e descrizione *Group and description*	Vc (mt /min.)	Vc (mt /min.)
		X-105 **Skin**	X-105 **Skin**
Ghisa *Cast Iron*	**Grigia e sferoidale** *Grey and spheroidal*	45 - 50	45 - 50
Acciaio *Steel*	**Basso contenuto di C** *Low carbon content*	70 - 80	70 - 80
	Medio contenuto di C *Medium carbon content*	70 - 80	70 - 80
	Basso legato *Low alloyed*	65 - 75	65 - 75
	Alto legato *High alloyed*	50 - 60	50 - 60
	Acciaio da stampi e utensili *Die/tool steel*	30 - 40	30 - 40
Acciaio Inossidabile *Stainless Steel*	**AISI 304 - 416 - 420**	15 - 20	15 - 20
	AISI 316 - 440	15 - 20	15 - 20
	17-4 ph 15-5 ph	10 - 15	10 - 15
	Leghe Cr - Co *Cr - Co alloys*	10 - 15	10 - 15
	Duplex F51	5 - 10	5 - 10
	Super Duplex F55	5 - 10	5 - 10
Superleghe resistenti al calore *Heat Resistant Super Alloys*	**HRSA Hastelloy**	5 - 10	5 - 10
	HRSA Inconel 625	5 - 10	5 - 10
	HRSA Inconel 718	5 - 10	5 - 10
	HRSA Nimonic	5 - 10	5 - 10
Ti	**Titanio** - *Titanium*	15 - 20	15 - 20
	Leghe di titanio *Titanium alloys*	15 - 20	15 - 20
Materiali non ferrosi Leghe leggere *Non ferrous materials Light alloys*	**Alluminio non legato** *Unalloyed aluminium*	–	–
	Alluminio Si < 6% *si < 6% aluminium*	–	–
	Materiali termoplastici *Thermoplastic materials*	–	–
	Rame/Ottone *Copper/Brass*	75 - 85	75 - 85

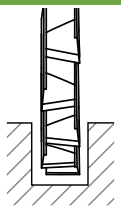
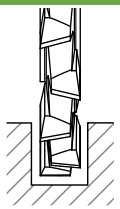
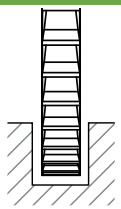
D	**Avanzamento fz mm/giro** *FEED mm/rpm*	
6	0,018	0,025
8	0,024	0,035
10	0,030	0,045
12	0,040	0,060
16	0,066	0,090
20	0,090	0,120

Parametri di taglio/*Cutting parameters*

		17305	18105	21105 NR	21105 NR	22105 NRF
	Materiali *Materials*	Contornatura *Shouldering* *ap = 1,5ø* *ae = 0,15ø*	Contornatura *Shouldering* *ap = 1,5ø* *ae = 0,15ø*	Cava *Slotting* *ap = 1ø* *ae = 1ø*	Sgrossatura *Roughing* *ap = 1,5ø* *ae = 0,5ø*	Cava *Slotting* *ap = 1ø* *ae = 1ø*
						
	Gruppo e descrizione *Group and description*	Vc (mt /min.)	Vc (mt /min.)	Vc (mt /min.)	Vc (mt /min.)	Vc (mt /min.)
		X-105 **Skin**	X-105 **Skin**	X-105 **Skin**	X-105 **Skin**	X-105 **Skin**
Ghisa *Cast Iron*	**Grigia e sferoidale** *Grey and spheroidal*	45 - 50	45 - 50	45 - 50	45 - 50	45 - 50
Acciaio *Steel*	**Basso contenuto di C** *Low carbon content*	70 - 80	70 - 80	70 - 80	70 - 80	70 - 80
	Medio contenuto di C *Medium carbon content*	70 - 80	70 - 80	70 - 80	70 - 80	70 - 80
	Basso legato *Low alloyed*	65 - 75	65 - 75	65 - 75	65 - 75	65 - 75
	Alto legato *High alloyed*	50 - 60	50 - 60	50 - 60	50 - 60	50 - 60
	Acciaio da stampi e utensili *Die/tool steel*	30 - 40	30 - 40	30 - 40	30 - 40	30 - 40
Acciaio Inossidabile *Stainless Steel*	**AISI 304 - 416 - 420**	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
	AISI 316 - 440	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
	17-4 ph 15-5 ph	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15
	Leghe Cr - Co *Cr - Co alloys*	10 - 15	10 - 15	10 - 15	10 - 15	10 - 15
	Duplex F51	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
	Super Duplex F55	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
Superleghe resistenti al calore *Heat Resistant Super Alloys*	**HRSA Hastelloy**	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
	HRSA Inconel 625	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
	HRSA Inconel 718	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
	HRSA Nimonic	5 - 10	5 - 10	5 - 10	5 - 10	5 - 10
Ti	**Titanio** - *Titanium*	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
	Leghe di titanio *Titanium alloys*	15 - 20	15 - 20	15 - 20	15 - 20	15 - 20
Materiali non ferrosi Leghe leggere *Non ferrous materials Light alloys*	**Alluminio non legato** *Unalloyed aluminium*	–	–	–	–	–
	Alluminio Si < 6% *si < 6% aluminium*	–	–	–	–	–
	Materiali termoplastici *Thermoplastic materials*	–	–	–	–	–
	Rame/Ottone *Copper/Brass*	75 - 85	75 - 85	75 - 85	75 - 85	75 - 85

D	**Avanzamento fz mm/giro** *FEED mm/rpm*				
6	0,025	0,025	0,012	0,025	0,015
8	0,035	0,035	0,016	0,035	0,020
10	0,045	0,045	0,022	0,045	0,025
12	0,060	0,060	0,026	0,055	0,030
16	0,090	0,090	0,036	0,070	0,040
20	0,120	0,120	0,045	0,085	0,050

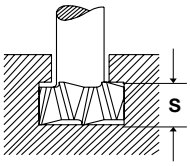
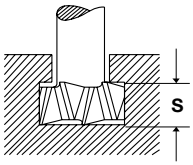
Parametri di taglio/*Cutting parameters*

		04110*		04105*		04105**	
	Materiali *Materials*	Cava *Slotting* *ap = 0,1ø ae = S*		Cava *Slotting* *ap = 0,1ø ae = S*		Cava *Slotting* *ap = 0,1ø ae = S*	
							
	Gruppo e descrizione *Group and description*	Vc (mt /min.)		Vc (mt /min.)		Vc (mt /min.)	
		X-85 NON RIVESTITA *UNCOATED*	X-85 **Skin**	X-85 NON RIVESTITA *UNCOATED*	X-85 **Skin**	X-85 NON RIVESTITA *UNCOATED*	X-85 **Skin**
Ghisa *Cast Iron*	Grigia e sferoidale *Grey and spheroidal*	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50
Acciaio *Steel*	Basso contenuto di C *Low carbon content*	30 - 35	70 - 80	30 - 35	70 - 80	30 - 35	70 - 80
	Medio contenuto di C *Medium carbon content*	30 - 35	70 - 80	30 - 35	70 - 80	30 - 35	70 - 80
	Basso legato *Low alloyed*	25 - 30	70 - 75	25 - 30	70 - 75	25 - 30	70 - 75
	Alto legato *High alloyed*	20 - 30	60 - 70	20 - 30	60 - 70	20 - 30	60 - 70
	Acciaio da stampi e utensili *Die/tool steel*	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40
Acciaio Inossidabile *Stainless Steel*	AISI 304 - 416 - 420	–	15 - 20	–	15 - 20	–	15 - 20
	AISI 316 - 440	–	15 - 20	–	15 - 20	–	15 - 20
	17-4 ph 15-5 ph	–	10 - 15	–	10 - 15	–	10 - 15
	Leghe Cr - Co *Cr - Co alloys*	–	10 - 15	–	10 - 15	–	10 - 15
	Duplex F51	–	5 - 10	–	5 - 10	–	5 - 10
	Super Duplex F55	–	5 - 10	–	5 - 10	–	5 - 10

	D	s	Avanzamento fz mm/giro *FEED mm/rpm*					
AVANZAMENTO fz mm/tagliente FEED mm/tooth	63	**1,6÷3,5**	0,035 ÷ 0,038	0,035 ÷ 0,038	–	–	–	–
	80	**2÷3,5**	0,041 ÷ 0,044	0,041 ÷ 0,044	–	–	–	–
	100	**2÷3,5**	0,047 ÷ 0,050	0,047 ÷ 0,050	–	–	–	–
	125	**2÷4**	0,055 ÷ 0,060	0,055 ÷ 0,060	–	–	–	–
	160	**3÷5**	0,065	0,065	–	–	–	–
	200	**÷6**	0,070	0,070	–	–	–	–
	250	**6÷12**	0,075	0,075	–	–	–	–
	50	**4÷10**	–	–	0,040	0,040	0,025 ÷ 0,030	0,025 ÷ 0,030
	63	**4÷20**	–	–	0,050 ÷ 0,060	0,050 ÷ 0,060	0,035 ÷ 0,040	0,035 ÷ 0,040
	80	**4÷20**	–	–	0,065 ÷ 0,070	0,065 ÷ 0,070	0,042 ÷ 0,046	0,042 ÷ 0,046
	100	**4÷25**	–	–	0,075 ÷ 0,085	0,075 ÷ 0,085	0,048 ÷ 0,054	0,048 ÷ 0,054
	125	**5÷28**	–	–	0,090 ÷ 0,100	0,090 ÷ 0,100	0,056 ÷ 0,060	0,056 ÷ 0,060
	160	**6÷32**	–	–	0,105 ÷ 0,115	0,105 ÷ 0,115	0,066 ÷ 0,078	0,066 ÷ 0,078
	200	**8÷32**	–	–	0,120 ÷ 0,125	0,120 ÷ 0,125	0,084 ÷ 0,096	0,084 ÷ 0,096
	250	**14÷32**	–	–	0,128 ÷ 0,140	0,128 ÷ 0,140	0,105	0,105

* frese a disco a 3 tagli **elicoidali alternati** | *SIDE AND FACE MILLING CUTTERS* ***STAGGERED TEETH***
** frese a disco a 3 tagli **diritti** | *SIDE AND FACE MILLING CUTTERS* ***STRAIGH TEETH***

Parametri di taglio/*Cutting parameters*

Materiali *Materials*		27120 Cava *Slotting* *ap = S ae = 1ø*		27135 NF Cava *Slotting* *ap = S ae = 1ø*	
					
	Gruppo e descrizione *Group and description*	Vc (mt /min.)		Vc (mt /min.)	
		X-85 NON RIVESTITA *UNCOATED*	**X-85** **Skin**	**X-85** NON RIVESTITA *UNCOATED*	**X-85** **Skin**
Ghisa *Cast Iron*	**Grigia e sferoidale** *Grey and spheroidal*	20 - 25	45 - 50	20 - 25	45 - 50
Acciaio *Steel*	**Basso contenuto di C** *Low carbon content*	30 - 35	70 - 80	30 - 35	70 - 80
	Medio contenuto di C *Medium carbon content*	30 - 35	70 - 80	30 - 35	70 - 80
	Basso legato *Low alloyed*	25 - 30	70 - 75	25 - 30	70 - 75
	Alto legato *High alloyed*	20 - 30	60 - 70	20 - 30	60 - 70
	Acciaio da stampi e utensili *Die/tool steel*	15 - 20	30 - 40	15 - 20	30 - 40
Acciaio Inossidabile *Stainless Steel*	**AISI 304 - 416 - 420**	–	15 - 20	–	15 - 20
	AISI 316 - 440	–	15 - 20	–	15 - 20
	17-4 ph 15-5 ph	–	10 - 15	–	10 - 15
	Leghe Cr - Co *Cr - Co alloys*	–	10 - 15	–	10 - 15
	Duplex F51	–	5 - 10	–	5 - 10
	Super Duplex F55	–	5 - 10	–	5 - 10

	D	s	Avanzamento fz mm/giro *FEED mm/rpm*			
AVANZAMENTO fz mm/tagliente FEED mm/tooth	12,5	**6**	0,035	0,035	0,039	0,039
	16	**8**	0,040	0,040	0,045	0,045
	18	**8**	0,045	0,045	0,050	0,050
	19	**9**	0,050	0,050	0,056	0,056
	21	**9**	0,055	0,055	0,062	0,062
	22	**10**	0,060	0,060	0,067	0,067
	25	**11**	0,064	0,064	0,072	0,072
	28	**12**	0,068	0,068	0,076	0,076
	32	**14**	0,072	0,072	0,081	0,081
	36	**16**	0,076	0,076	0,085	0,085
	40	**18**	0,080	0,080	0,090	0,090
	45	**20**	0,083	0,083	0,093	0,093
	50	**22**	0,086	0,086	0,096	0,096
	56	**24**	0,090	0,090	0,101	0,101

Condizioni di fornitura e spedizione

Supply and shipment conditions

Gli utensili sono confezionati in contenitori in P.P. singoli o multipli, o mediante l'impiego di materiale plastico termoindurente.
Le spedizioni vengono effettuate in scatole di cartone atte a preservare l'integrità dei prodotti durante il trasporto.

Tools are packed in individual or multiple polypropylene containers, or using thermoset plastic. Shipments are made in cardboard boxes designed to protect the products against damage in transit.

Annotazioni tecniche
Technical notes

I parametri tecnici contenuti nel presente catalogo sono indicativi. UOP S.p.A. si riserva la possibilità di modificarli senza doverne dare avviso.
La responsabilità di eventuali danni causati nell'impiego dei parametri tecnici consigliati non potrà essere attribuita ad UOP S.p.A..

The technical parameters suggested in this catalogue are guidelines. UOP S.p.A. reserves the right to modify them, without prior notification.
UOP S.p.A. does not accept the responsibility for any damage caused by the use of the suggested technical parameters.

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