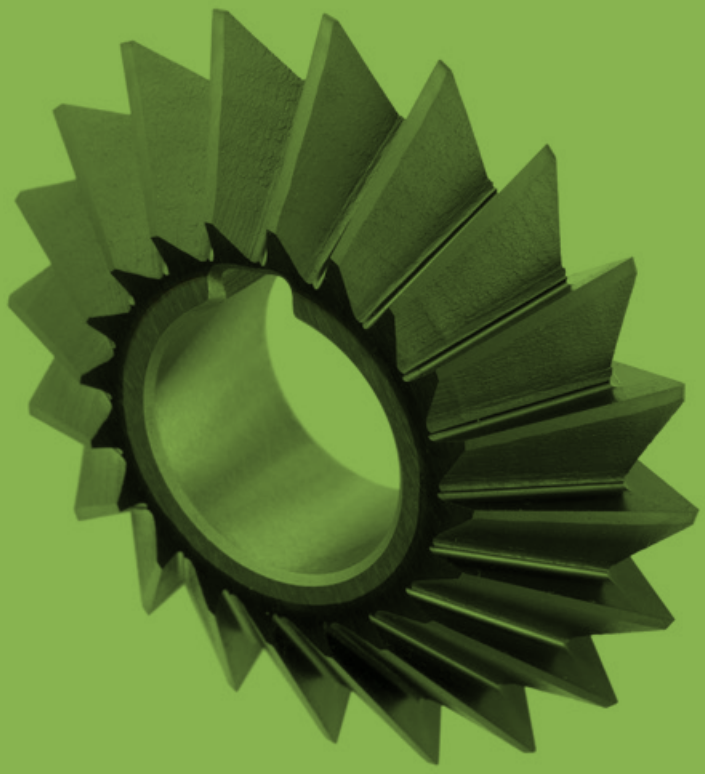

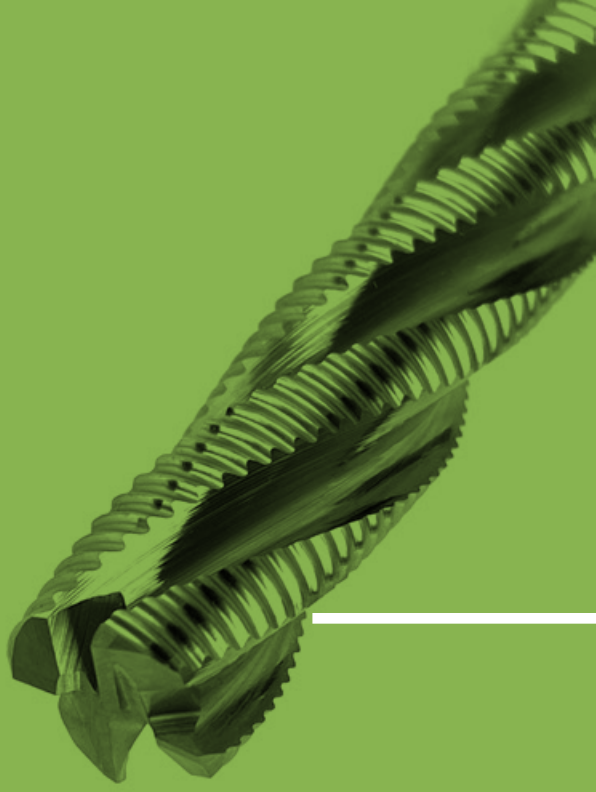

HSS-PM CUTTING TOOLS

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HSS-PM CUTTING TOOLS

10/2022 edition - item no. 1917549

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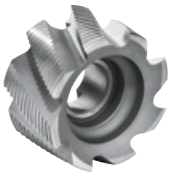
● 02110		Z6÷8 **NF**	-	Semifinitura, Spianatura *Semi-finishing, Facemilling*	◒	◒	◒	○	○	●	●	38
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○ SU RICHIESTA/ON REQUEST

● Consigliata/Recommended ◒ Accettabile/Acceptable ○ Non Consigliata/Not Recommended

		Denti *Teeth*	Lunghezza *Length*	*Center cutting*	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*
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○ SU RICHIESTA/ON REQUEST

● Consigliata/Recommended ◪ Accettabile/Acceptable ○ Non Consigliata/Not Recommended

		Denti *Teeth*	Lunghezza *Length*	*Center cutting*	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*
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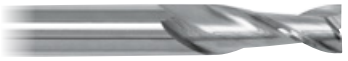
● 10125		Z2		✓	Apertura cava *Slotting*	●	●	●	◪	○	●	●	49
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● Consigliata/Recommended ◪ Accettabile/Acceptable ○ Non Consigliata/Not Recommended

		Denti *Teeth*	Lunghezza *Length*	*Center cutting*	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*
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○ SU RICHIESTA/ON REQUEST ● Consigliata/Recommended ◪ Accettabile/Acceptable ○ Non Consigliata/Not Recommended

		Denti *Teeth*	Lunghezza *Length*	*Center cutting*	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*
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● 20120		Z4÷5 **NR**		✗	Sgrossatura *Roughing*	●	●	●	◒	○	●	●	73
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● Consigliata/Recommended ◒ Accettabile/Acceptable ○ Non Consigliata/Not Recommended

		Denti *Teeth*	Lunghezza *Length*	*Center cutting*	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*
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● Consigliata/Recommended ◒ Accettabile/Acceptable ○ Non Consigliata/Not Recommended

		Denti *Teeth*	Lunghezza *Length*	*Center cutting*	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*
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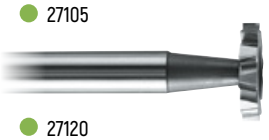
SU RICHIESTA *ON REQUEST*	○ 25120 	Z4÷5 **NF**	-	✓	Semifinitura *Semi-finishing*	○	○	◪	○	○	●	●	
	○ 25120 	Z4÷5 **NR**	-	✓	Sgrossatura *Roughing*	○	○	◪	○	○	●	●	
	● 27105 	Z8÷12	-	-	Incavatura laterale *Side slotting*	◪	◪	●	○	○	●	●	87
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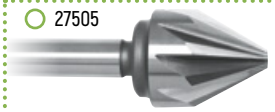
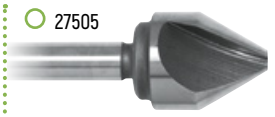
SU RICHIESTA *ON REQUEST*	○ 27505 	Z5÷11	-	-	Svasatura *Countersinking*	◪	◪	◪	○	○	●	●	
	○ 27505 	Z1	-	-	Svasatura *Countersinking*	◪	◪	◪	○	○	●	●	
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○ SU RICHIESTA/ON REQUEST ● Consigliata/Recommended ◪ Accettabile/Acceptable ○ Non Consigliata/Not Recommended

		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*
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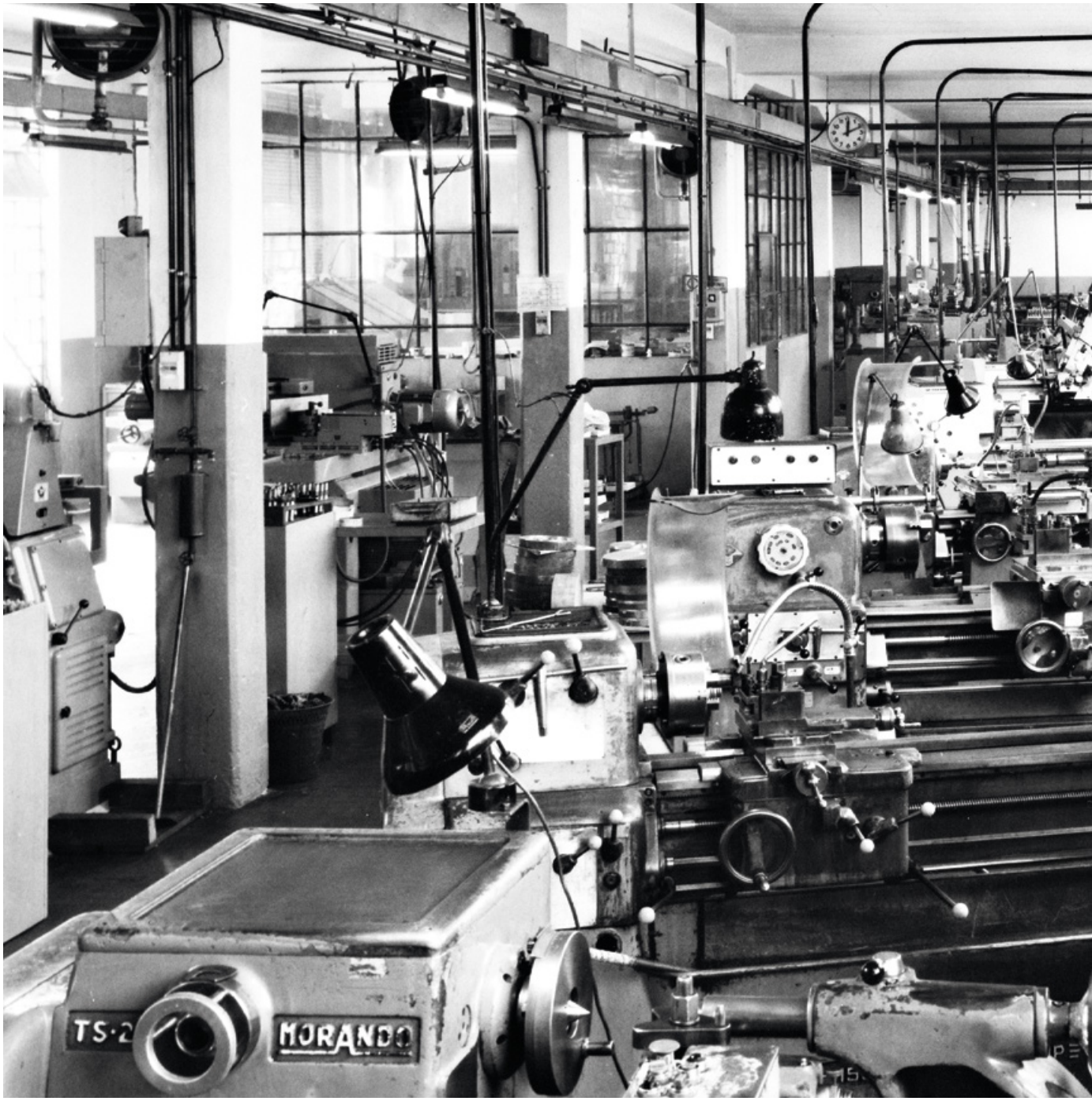
● 32150		Z7÷10	-	Alesatura per fori passanti *Through holes reaming*	○	○	◒	○	○	●	●	99
● 33105		Z8÷20	-	Alesatura per fori passanti *Through holes reaming*	○	○	◒	○	○	●	●	100
SU RICHIESTA *ON REQUEST* ○ 33105		Z5÷14	-	Alesatura per fori passanti *Through holes reaming*	○	○	○	○	○	●	●	

○ SU RICHIESTA/ON REQUEST

● Consigliata/Recommended ◒ Accettabile/Acceptable ○ Non Consigliata/Not Recommended

		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*
SU RICHIESTA *ON REQUEST*	○ 34105 	Z4	-	Allargatura per fori ciechi e passanti *Tthrough and blind holes boring*	○	○	◕	○	○	●	●	
	○ 34150 	Z4		Allargatura per fori ciechi e passanti *Through and blind holes boring*	○	○	◕	○	○	●	●	
	● 08105 	-		-	-	-	-	-	-	-	-	101
SU RICHIESTA *ON REQUEST*	○ 08110 	-		-	-	-	-	-	-	-	-	
	○ 08115 	-		-	-	-	-	-	-	-	-	

WHO WE ARE



SINCE 1966

UOP S.p.A. è un'azienda produttrice di utensili integrali per asportazioni di truciolo.
Fondata nel 1966, dal 2003 è membro del Gruppo IMC.
Grazie ad una storia di crescita continua è ora una realtà apprezzata a livello internazionale.

UOP S.p.A. is a company that produces solid cutting tools for metal removal.
It was founded in 1966 and in 2003 became a member of the IMC Group.
Thanks to its continuous growth, the company is now a reality appreciated on an international level.

WHO WE ARE

TODAY

La sede centrale di Roncadelle (Brescia) ospita i reparti di progettazione, produzione, R&D, magazzino e logistica, amministrativo, commerciale e marketing. UOP Cellatica e UOP Veneto sono le due nuove unità operative con le quali l'azienda punta a consolidare ulteriormente la propria presenza sul mercato nazionale.

Our headquarters in Roncadelle (Brescia) are home to our Technical, Production, R&D, Warehouse and Logistic, Accounting, Commercial and Marketing departments. UOP Cellatica and UOP Veneto are two new operational units with which the company is aiming to further consolidate its presence on the local market.

Z

STANDARD TOOLS

UOP STANDARD RANGE OF TOOLS IS ONE OF THE MOST COMPLETE PROPOSALS ON THE MARKET

La gamma di utensili standard prodotti da UOP S.p.A. rappresenta una delle proposte più complete sul mercato e comprende: frese cilindriche, punte, alesatori ed allargatori in **metallo duro integrale** e frese cilindriche e con foro, alesatori, allargatori, svasatori, frese coniche, frese di forma ed utensili vari in **acciaio da polveri e HSS-E**.
Nuovi ed innovativi articoli vengono introdotti ogni anno con l'obiettivo di offrire al mercato soluzioni all'avanguardia, anche nelle lavorazioni più gravose. Un eccellente livello di disponibilità a stock e l'utilizzo di magazzini automatici ci aiutano a fornire un veloce ed efficiente servizio di evasione ordine e spedizione, con consegna entro il giorno successivo in tutti i paesi europei.

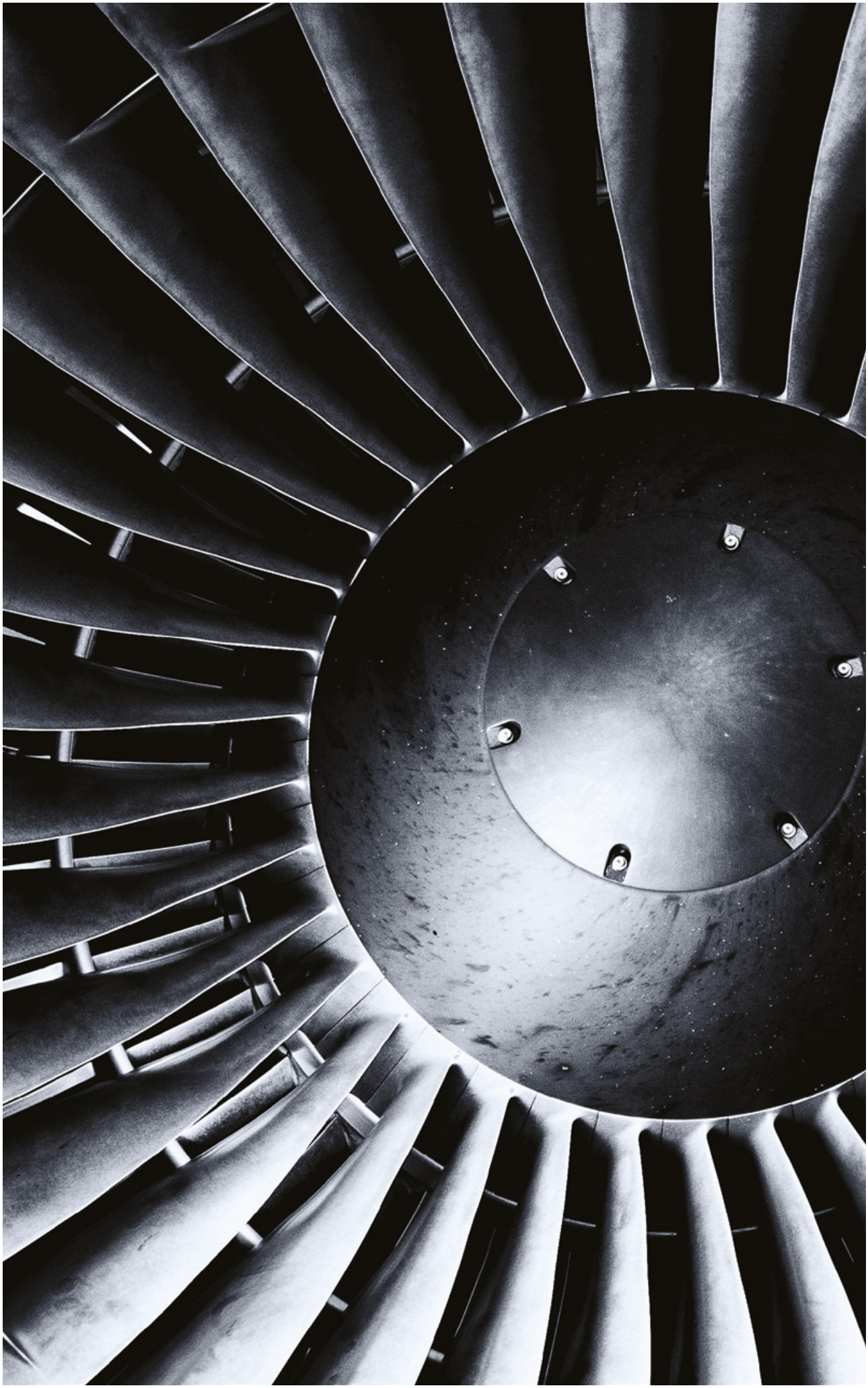
*The standard range of round tools produced by UOP represents one of the most complete proposals on the market. It comprises of end mills, drills, reamers and core drills in **solid carbide** and end mills, milling cutters, reamers, core drills, countersinks, taper end mills, form cutters and miscellaneous tools in **powder metal and HSS-E**.*
New and innovative items are launched every year as state of the art solutions for machining even in the toughest and most challenging conditions.
An excellent stock level, as well as the use of automated warehouse shuttles help us provide fast and efficient order processing and shipping with next day delivery throughout Europe.

SPECIAL TOOLS

THE DESIGN AS WELL AS THE PRODUCTION OF SPECIAL TOOLS REPRESENT A FOCAL POINT IN UOP'S STRATEGIES

La progettazione e la realizzazione di utensili speciali hanno sempre rappresentano un elemento centrale nelle strategie di UOP S.p.A. e si sono rivelate vero vantaggio competitivo per l'azienda.
Produciamo utensili speciali in **metallo duro integrale** e **acciaio da polveri e HSS-E**, con qualunque tipo di profilo e tolleranze millesimali, che otteniamo grazie all'utilizzo di macchine CNC di ultima generazione, come pure di un sistema di misurazione ottico di altissima precisione usato per i controlli durante il processo produttivo e nella fase di controllo finale.
L'applicazione delle procedure previste dal Sistema di gestione della Qualità permette un'accurata gestione dei dati e la conseguente possibilità di ottenere una sicura ripetibilità del processo e quindi dei prodotti.

The design as well as the production of special tools represent a focal point in UOP S.p.A.'s strategies and have proven to be a real competitive advantage for the company.
*We produce special tools in full **solid carbide** and in **powder metal and HSS-E**, with any profile or tolerance that our customers require, which we obtain thanks to the use of CNC machines of the latest generation as well as a high precision optical measuring system used during in process controls and in the final stage of quality inspection. The application of our Quality Assurance Management System procedures allows an accurate data management enabling to obtain a sure repeatability of the production process and consequently of the products.*



RESEARCH AND DEVELOPMENT

YOUR PARTNER IN FINDING SOLUTIONS. INDUSTRIES:
AEROSPACE, AUTOMOTIVE, POWER GENERATION, MEDICAL, DIES AND MOULDS, GENERAL MACHINING

La nostra filosofia prevede l'impegno costante a migliorare la qualità e la performance dei nostri utensili e continui investimenti in Ricerca e Sviluppo (un importo pari al 5% del fatturato viene destinato annualmente a quest'area). Un team di specialisti si dedica alla selezione delle migliori materie prime disponibili sul mercato, allo studio di nuove geometrie e nuove tecniche di rivestimento PVD, utilizzando centri di lavoro CNC dedicati.
Una stretta collaborazione con i nostri clienti e partner ci permette di confrontarci con le specifiche esigenze dei diversi settori industriali (Aerospaziale, Automobilistico, Medicale, Stampisti, Energia, Meccanica Generale) e proporre soluzioni pratiche ed efficienti intese ad introdurre vantaggi tangibili in termini di produttività.

Our company philosophy is to constantly improve the quality and the performance of our tools and continuously invest in Research and Development (5% of our turnover is invested annually in this area).
A team of specialists is dedicated to selecting the best raw material available on the market, to the study of new geometries and new PDV coating techniques, carrying out tests with CNC milling machines.
A close collaboration with our customers, allows us to understand the specific requirements of the different industrial sectors (Aerospace, Automotive, Medical, Die & Mould, Power Generation and General Machining) and propose practical and efficient solutions so as to introduce tangible advantages in terms of productivity.

QUALITY ASSURANCE

QUALITY ASSURANCE SYSTEM ISO 9001

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 dal giugno 2008 quella del sistema di gestione per la Qualità, **Serie Aerospaziale**, ora **UNI EN 9100**, 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 **Aerospace** Quality Management System certification, now with revision **UNI EN 9100**, of which the Standard of Excellence is world renowned, further confirming our commitment to our customers.*

AEROSPACE CERTIFICATION UNI EN 9100

COATING DEPARTMENT
UOP CELLATICA

PRODUCTION DEPARTMENT
UOP CELLATICA

PVD COATINGS AND REGRINDING

OUR TOOL REGENERATION SERVICE IS OF STRATEGIC IMPORTANCE

Il servizio di rigenerazione degli utensili è sempre stato per noi di importanza strategica e contribuisce a rendere unica la proposta di UOP S.p.A..
I reparti dedicati alla riaffilatura sono dotati delle stesse sofisticate tecnologie e dei moderni macchinari CNC che vengono utilizzati nei nostri reparti produttivi e che ci permettono di garantire un fedele ripristino delle geometrie e dei profili originali.
La recente incorporazione del ramo d'azienda della consociata con cui sviluppavamo i nostri rivestimenti PVD, oltre a garantirci una maggiore disponibilità di risorse dedicate, ha l'obiettivo di permettere tempi di reazione più rapidi e, in molti casi, proporre soluzioni economicamente più vantaggiose.
Con le due nuove sedi operative **UOP Cellatica** e **UOP Veneto** garantiamo una copertura capillare del territorio domestico anche con il servizio di riaffilatura e rivestimento.

Our tool regeneration service has always been of strategic importance and contributes to making UOP's offer unique. The regrinding departments are equipped with the same sophisticated technology and modern CNC machines that are used in our production departments and that allow us to guarantee an accurate renewal of the geometries and the profiles of the tools.
The recent incorporation of the subsidiary's branch, with which we develop our PVD coatings, has the objective of guaranteeing a greater availability of dedicated resources as well as allowing for faster reaction times and, in many cases, proposing more advantageous economic solutions.
*With the two new operational units **UOP Cellatica** and **UOP Veneto** we guarantee a domestic capillary distribution network also with a regrinding and recoating service.*

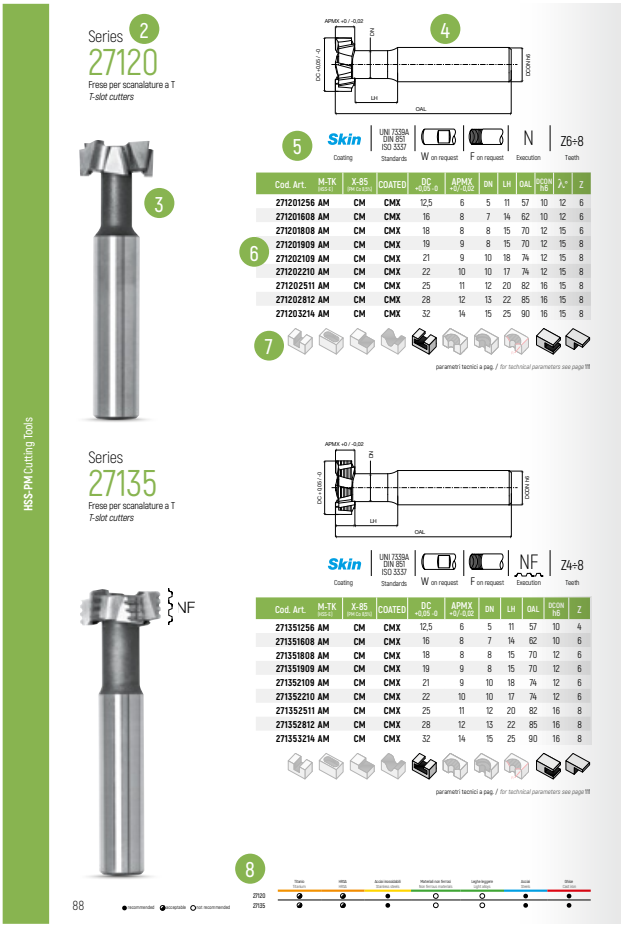
RIVESTIMENTI
COATINGS

RIAFFILATURA
REGRINDING

Per info sui servizi di **RIVESTIMENTO** e **RIAFFILATURA** inquadra i QR code.
*For info on **COATING** and **REGRINDING** services scan the QR codes.*

www.uop.it
servizio.clienti.veneto@uop.it
servizio.clienti.cellatica@uop.it

READING GUIDELINES



1 HSS-PM Cutting Tools

Series 2
27120
Frese per scanalature a T
T-slot cutters

3

4

5 Skin | UNI 7339A DIN 851 ISO 3337 | W on request | F on request | N | Z6÷8
Coating | Standards | Execution | Teeth

Cod. Art.	M-TK	X-85	COATED	DC	APMX	DN	LH	OAL	DCON h6	Z
271201256 AM	CM	CMX		12,5	6	5	11	57	10	6
271201608 AM	CM	CMX		16	8	7	14	62	10	6
271201808 AM	CM	CMX		18	8	8	15	70	12	6
271201909 AM	CM	CMX		19	9	8	15	70	12	8
271202109 AM	CM	CMX		21	9	10	18	74	12	8
271202210 AM	CM	CMX		22	10	10	17	74	12	8
271202511 AM	CM	CMX		25	11	12	20	82	16	8
271202812 AM	CM	CMX		28	12	13	22	85	16	8
271203214 AM	CM	CMX		32	14	15	25	90	16	8

6

7

parametri tecnici a pag. / *for technical parameters see page 111*

Series
27135
Frese per scanalature a T
T-slot cutters

NF

Skin | UNI 7339A DIN 851 ISO 3337 | W on request | F on request | NF | Z4÷8
Coating | Standards | Execution | Teeth

Cod. Art.	M-TK	X-85	COATED	DC	APMX	DN	LH	OAL	DCON h6	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

parametri tecnici a pag. / *for technical parameters see page 111*

8

27120
27135

● recommended ● acceptable ○ not recommended

88

9 Parametri di taglio/*Cutting parameters*

Materiali *Materials*	Cava *Slotting* ap = S | ae = 1ø		Cava *Slotting* ap = S | ae = 1ø	
	27120		27135 NF	
Gruppo e descrizione *Group and description*	Vc [mt /min.]		Vc [mt /min.]	
	X-85 NONRIVESTITA UNCOATED	X-85 Skin	X-85 NONRIVESTITA UNCOATED	X-85 Skin
Ghisa *Cast Iron* — Grigia e sferoidale *Grey and spheroidal*	20 - 25	45 - 50	20 - 25	45 - 50
Acciai *Steels* — Basso contenuto di C *Low Carbon content*	30 - 35	70 - 80	30 - 35	70 - 80
Acciai *Steels* — Medio contenuto di C *Medium Carbon content*	30 - 35	70 - 80	30 - 35	70 - 80
Acciai *Steels* — Basso legato *Low alloy*	25 - 30	70 - 75	25 - 30	70 - 75
Acciai *Steels* — Alto legato *High alloy*	20 - 30	60 - 70	20 - 30	60 - 70
Acciai *Steels* — Acciaio da stampi e utensili *Tool and die Steel*	15 - 20	30 - 40	15 - 20	30 - 40
Acciai inox ed altre leghe resistenti al calore *Stainless steel & heat resistant alloys* — 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

10

DC	S	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

HSS-PM Cutting Tools

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READING GUIDELINES

1 Categoria di prestazione
Performance category

2 Denominazione serie
Series name

3 Rappresentazione fotografica della serie
Picture representing the series

4 Rappresentazione tecnica della serie
Technical drawing

5 Informazioni aggiuntive (lunghezza, codolo, rivestimento, norma di riferimento, denti, etc.)
Additional data (length, shank, coating, standards, teeth, etc.)

6 Tabella dimensionale articoli
Items dimensional table

7 Applicazioni
Application

8 Materiali lavorabili
Workpiece materials

9 Parametri di taglio
Cutting parameters

10 Avanzamento fz mm/tagliente
Feed mm/tooth

TECHNICAL INFORMATION
MATERIALS, COATINGS, SYMBOLS, ABBREVIATIONS

MATERIALS

HSS-PM Line

Qualità di acciaio super rapido e da polveri utilizzati nella nostra produzione:
***H**igh **S**peed **S**teel and **P**owder **M**etal grades used in our production:*

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

TECHNICAL NOTES

Tutti i dati tecnici inseriti nel presente catalogo sono indicativi. UOP S.p.A. si riserva la facoltà di modificarli in qualsiasi momento, senza preavviso alcuno. UOP S.p.A. inoltre non si assume alcuna responsabilità per eventuali danni causati nell'impiego dei dati contenuti nella presente pubblicazione.

All technical characteristics in this catalogue is a guideline. UOP S.p.A. reserves the right to modify it at any time, without any notice. Furthermore, UOP S.p.A. assumes no liability for any damage caused when using this.

COATINGS

Sviluppiamo i nostri rivestimenti PVD testandoli nel reparto Ricerca e Sviluppo. Tenendo conto delle caratteristiche dei materiali da lavorare, proponiamo la soluzione più efficace per ogni diversa applicazione.

We develop our own PVD coatings by testing them in our R&D dept. Taking into consideration the characteristics of the material to be machined, we propose the most suitable solution for each application.

TABELLA RIVESTIMENTI UTENSILI STANDARD / *TABLE OF COATINGS FOR OUR STANDARD TOOLS*

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 aluminium 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 aluminium 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 aluminium based*	3500	800°	0,05	Fresatura acciai inossidabili *Stainless steel milling*

SYMBOLS

EXECUTION

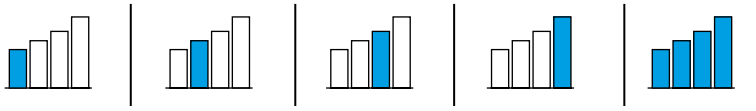
TAGLIENTI A **FINIRE**
FINISHING *CUTTING EDGE PROFILE*

N	H	W
GEOMETRIA PER LAVORAZIONI DI MATERIALI MEDIO-LEGATI *GEOMETRY FOR THE MACHINING OF MEDIUM ALLOYED MATERIALS*	GEOMETRIA PER LAVORAZIONI DI MATERIALI ALTO-LEGATI *GEOMETRY FOR THE MACHINING OF HIGH-ALLOYED MATERIALS*	GEOMETRIA PER LAVORAZIONI DI LEGHE LEGGERE *GEOMETRY FOR THE MACHINING OF LIGHT ALLOYS*

TAGLIENTI A **SGROSSARE** E **SEMIFINIRE**
ROUGHING *AND* ***SEMI-FINISHING*** *CUTTING EDGE PROFILE*

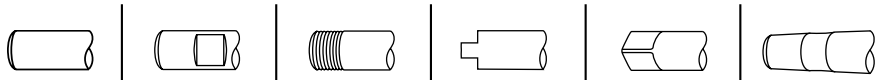
NR	NRF	NF	WF
TAGLIENTI A SGROSSARE *ROUGHING CUTTING EDGE*	TAGLIENTI A SGROSSARE, PER LEGHE LEGGERE *ROUGHING CUTTING EDGE FOR LIGHT ALLOYS*	TAGLIENTI A SEMIFINIRE *SEMI-FINISHING CUTTING EDGE*	TAGLIENTI A SEMIFINIRE *SEMI-FINISHING CUTTING EDGE*

LENGTH



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

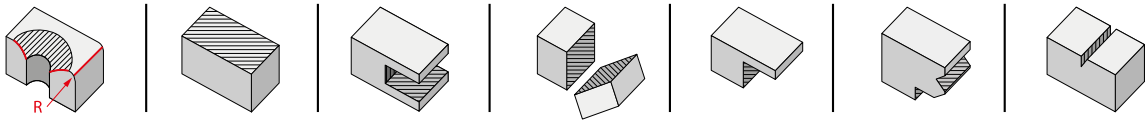
SHANK



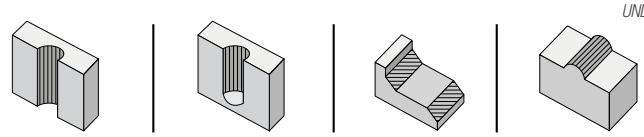
CILINDRICO *CYLINDRICAL* (DIN1835A)	WELDON (DIN6535HB)	FILETTATO *THREADED* (DIN1835D)	CON TENONE *WITH TANG*	CON QUADRO *WITH FLAT SQUARE* (DIN10)	MORSE *MORSE* (DIN228)

APPLICATION

CAVA *SLOTTING*	TASCA *POCKETING*	CONTORNATURA *SHOULDERING*	COPIATURA *PROFILING*	CAVE A "T" *"T" SLOTTING*	SVASATURA *COUNTERSINKING*	LAMATURA *COUNTERBORING*



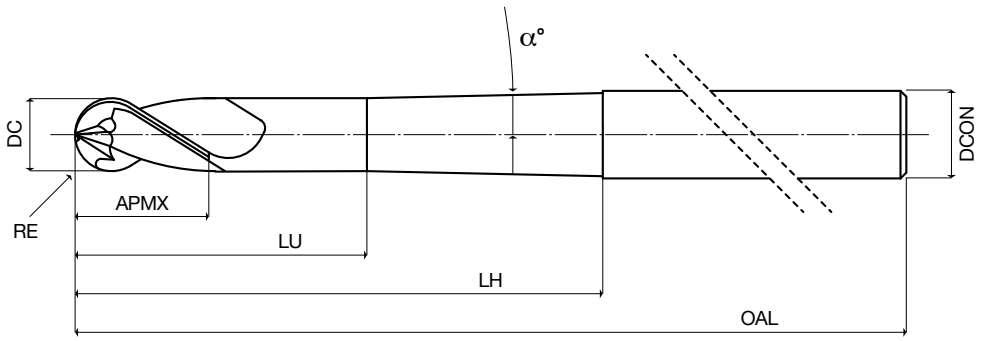
1/4 DI RAGGIO *CORNER ROUNDING*	SPIANATURA *FACING*	CAVA LATERALE *SIDE SLOTTING*	TRONCATURA *SLITTING*	SPALLAMENTO SUL FONDO *BOTTOM SHOULDERING*	SBAVATURA E SOTTOSQUADRI *BOTTOM DEBURRING AND UNDERCUTTING*	INCISIONE *ENGRAVING*



ALESATURA FORI PASSANTI *THROUGH HOLES REAMING*	ALESATURA FORI CIECHI *BLIND HOLES REAMING*	PARETI INCLINATE E SMUSSI *SLANTED SHOULDER AND CHAMFER*	FRESATURA DI FORMA *FORM MILLING*

ABBREVIATIONS

Nomenclatura secondo **ISO 13399** - *According to **ISO 13399** nomenclature*



DC	[mm]	DIAMETRO DEL TAGLIENTE *CUTTING DIAMETER*
DCON	[mm]	DIAMETRO DEL GAMBO *SHANK DIAMETER*
DN	[mm]	DIAMETRO DELLO SCARICO *NECK DIAMETER*
OAL	[mm]	LUNGHEZZA TOTALE DELL'UTENSILE *TOTAL LENGTH OF TOOL*
APMX	[mm]	LUNGHEZZA DEL TAGLIENTE *LENGTH OF CUT*
LU	[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*
LH	[mm]	LUNGHEZZA DALLA TESTA DELL'UTENSILE FINO ALLA FINE DELLA RASTREMATURA CONICA *LENGTH FROM THE HEAD OF THE TOOL TO THE END OF TAPERING*
Z	[n]	NUMERO DEI DENTI *NUMBER OF TEETH*
RE	[mm]	RAGGIO *RADIUS*
S	[mm]	SPESSORE *WIDTH*

FORMULAS

Vc	[m/min.]	VELOCITÀ DI TAGLIO *CUTTING SPEED*
F	[mm/min.]	VELOCITÀ DI AVANZAMENTO *FEED RATE*
fz	[mm]	AVANZAMENTO PER DENTE *FEED PER TOOTH*
fn	[mm]	AVANZAMENTO AL GIRO *FEED PER REVOLUTION*
n	[rpm]	GIRI AL MINUTO *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*

NUMERO DI GIRI *TOOL REVOLUTION*

$$n = \frac{Vc \times 1000}{3{,}14 \times D} \quad (rpm)$$

VELOCITÀ DI TAGLIO *CUTTING SPEED*

$$Vc = \frac{D \times n \times 3{,}14}{1000} \quad (m/min.)$$

VELOCITÀ DI AVANZAMENTO *FEED RATE*

$$F = fz \times z \times n \quad (mm/min.)$$

AVANZAMENTO PER DENTE *FEED PER TOOTH*

$$fz = \frac{F}{z \times n} \quad (mm)$$

VOLUME DI TRUCIOLATURA *MATERIAL REMOVAL RATE*

$$Q = \frac{a_p \times a_e \times F}{1000} \quad (cm^3/min.)$$

RECOMMENDATIONS

● CONSIGLIATA/RECOMMENDED ◕ ACCETTABILE/ACCEPTABLE ○ NON CONSIGLIATA/NOT RECOMMENDED

TABLE OF TOLERANCES

ISO 286 - 2

Misure nominali dell'albero (mm) / *Shaft nominal size (mm)*

DA	1	3	6	10	18	30	40	50	65	80	100	120	140	160	180	200	225	250	280	315	355
A	3	6	10	18	30	40	50	65	80	100	120	140	160	180	200	225	250	280	315	355	400
mm																					
a12	-0,270	-0,270	-0,280	-0,290	-0,300	-0,310	-0,320	-0,340	-0,360	-0,380	-0,410	-0,460	-0,520	-0,580	-0,660	-0,740	-0,820	-0,920	-1,050	-1,200	-1,350
	-0,370	-0,390	-0,430	-0,470	-0,510	-0,560	-0,570	-0,640	-0,660	-0,730	-0,760	-0,860	-0,920	-0,980	-1,120	-1,200	-1,280	-1,440	-1,570	-1,770	-1,920
d6	-0,020	-0,030	-0,040	-0,050	-0,065	-0,080		-0,100		-0,120			-0,145			-0,170			-0,190		-0,210
	-0,026	-0,038	-0,049	-0,061	-0,078	-0,096		-0,119		-0,142			-0,170			-0,199			-0,222		-0,246
e6	-0,014	-0,020	-0,025	-0,032	-0,040	-0,050		-0,060		-0,072			-0,085			-0,100			-0,110		-0,125
	-0,020	-0,028	-0,034	-0,043	-0,053	-0,066		-0,079		-0,094			-0,110			-0,129			-0,142		-0,161
e8	-0,014	-0,020	-0,025	-0,032	-0,040	-0,050		-0,060		-0,072			-0,085			-0,100			-0,110		-0,125
	-0,028	-0,038	-0,047	-0,059	-0,073	-0,089		-0,106		-0,126			-0,148			-0,172			-0,191		-0,214
e13	-0,014	-0,020	-0,025	-0,032	-0,040	-0,050		-0,060		-0,072			-0,085			-0,100			-0,110		-0,125
	-0,154	-0,200	-0,245	-0,302	-0,370	-0,440		-0,520		-0,612			-0,715			-0,820			-0,920		-1,015
f5	-0,006	-0,010	-0,013	-0,016	-0,020	-0,025		-0,030		-0,036			-0,043			-0,050			-0,056		-0,062
	-0,010	-0,015	-0,019	-0,024	-0,029	-0,036		-0,043		-0,051			-0,061			-0,070			-0,079		-0,087
f6	-0,006	-0,010	-0,013	-0,016	-0,020	-0,025		-0,030		-0,036			-0,043			-0,050			-0,056		-0,062
	-0,012	-0,018	-0,022	-0,027	-0,033	-0,041		-0,049		-0,058			-0,068			-0,079			-0,088		-0,098
f7	-0,006	-0,010	-0,013	-0,016	-0,020	-0,025		-0,030		-0,036			-0,043			-0,050			-0,056		-0,062
	-0,016	-0,022	-0,028	-0,034	-0,041	-0,050		-0,060		-0,071			-0,083			-0,096			-0,108		-0,119
f9	-0,006	-0,010	-0,013	-0,016	-0,020	-0,025		-0,030		-0,036			-0,043			-0,050			-0,056		-0,062
	-0,020	-0,040	-0,049	-0,059	-0,072	-0,087		-0,104		-0,123			-0,143			-0,165			-0,185		-0,202
g5	-0,002	-0,004	-0,005	-0,006	-0,007	-0,009		-0,010		-0,012			-0,014			-0,015			-0,017		-0,018
	-0,006	-0,009	-0,011	-0,014	-0,016	-0,020		-0,023		-0,027			-0,032			-0,035			-0,040		-0,043
g6	-0,002	-0,004	-0,005	-0,006	-0,007	-0,009		-0,010		-0,012			-0,014			-0,015			-0,017		-0,018
	-0,008	-0,012	-0,014	-0,017	-0,020	-0,025		-0,029		-0,034			-0,039			-0,044			-0,049		-0,054
g7	-0,002	-0,004	-0,005	-0,006	-0,007	-0,009		-0,010		-0,012			-0,014			-0,015			-0,017		-0,018
	-0,012	-0,016	-0,020	-0,024	-0,028	-0,034		-0,040		-0,047			-0,054			-0,061			-0,069		-0,075
h4	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,003	-0,004	-0,004	-0,005	-0,006	-0,007		-0,008		-0,010			-0,012			-0,014			-0,016		-0,018
h5	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,004	-0,005	-0,006	-0,008	-0,009	-0,011		-0,013		-0,015			-0,018			-0,020			-0,023		-0,025
h6	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,006	-0,008	-0,009	-0,011	-0,013	-0,016		-0,019		-0,022			-0,025			-0,029			-0,032		-0,036
h7	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,010	-0,012	-0,015	-0,018	-0,021	-0,025		-0,030		-0,035			-0,040			-0,046			-0,052		-0,057
h8	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,014	-0,018	-0,022	-0,027	-0,033	-0,039		-0,046		-0,054			-0,063			-0,072			-0,081		-0,089
h9	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,025	-0,030	-0,036	-0,043	-0,052	-0,062		-0,074		-0,087			-0,100			-0,115			-0,130		-0,140
h10	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,040	-0,048	-0,058	-0,070	-0,084	-0,100		-0,120		-0,140			-0,160			-0,185			-0,210		-0,230
h11	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,060	-0,075	-0,090	-0,110	-0,130	-0,160		-0,190		-0,220			-0,250			-0,290			-0,320		-0,360
h12	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,100	-0,120	-0,150	-0,180	-0,210	-0,250		-0,300		-0,350			-0,400			-0,460			-0,520		-0,570
h13	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,140	-0,180	-0,220	-0,270	-0,330	-0,390		-0,460		-0,540			-0,630			-0,720			-0,810		-0,890
h14	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,250	-0,300	-0,360	-0,430	-0,520	-0,620		-0,740		-0,870			-1,000			-1,150			-1,300		-1,400
h15	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,400	-0,480	-0,580	-0,700	-0,840	-1,000		-1,200		-1,400			-1,600			-1,850			-2,100		-2,300
h16	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
	-0,600	-0,750	-0,900	-1,100	-1,300	-1,600		-1,900		-2,200			-2,500			-2,900			-3,200		-3,600
js14	+0,125	+0,150	+0,180	+0,215	+0,260	+0,310		+0,370		+0,435			+0,500			+0,575			+0,650		+0,700
	-0,125	-0,150	-0,180	-0,215	-0,260	-0,310		-0,370		-0,435			-0,500			-0,575			-0,650		-0,700
js16	+0,300	+0,375	+0,450	+0,550	+0,650	+0,800		+0,950		+1,100			+1,250			+1,450			+1,600		+1,800
	-0,300	-0,375	-0,450	-0,550	-0,650	-0,800		-0,950		-1,100			-1,250			-1,450			-1,600		+1,800
k5	+0,004	+0,006	+0,007	+0,009	+0,011	+0,013		+0,015		+0,018			+0,021			+0,024			+0,027		+0,029
	0,000	+0,001	+0,001	+0,001	+0,002	+0,002		+0,002		+0,003			+0,003			+0,004			+0,004		+0,004

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

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

Misure nominali dell'albero (mm) / *Shaft nominal size (mm)*

DA	1	3	6	10	18	30	40	50	65	80	100	120	140	160	180	200	225	250	280	315	355
A	3	6	10	18	30	40	50	65	80	100	120	140	160	180	200	225	250	280	315	355	400
	mm																				
k6	+0,006	+0,009	+0,010	+0,012	+0,015	+0,018		+0,021		+0,025			+0,028			+0,033			+0,036		+0,040
	0,000	+0,001	+0,001	+0,001	+0,002	+0,002		+0,002		+0,003			+0,003			+0,004			+0,004		+0,004
k7	+0,010	+0,013	+0,016	+0,019	+0,023	+0,027		+0,032		+0,038			+0,043			+0,050			+0,056		+0,061
	0,000	+0,001	+0,001	+0,001	+0,002	+0,002		+0,002		+0,003			+0,003			+0,004			+0,004		+0,004
k11	+0,060	+0,075	+0,090	+0,110	+0,130	+0,160		+0,190		+0,220			+0,250			+0,290			+0,290		+0,360
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
k12	+0,100	+0,120	+0,150	+0,180	+0,210	+0,250		+0,300		+0,350			+0,400			+0,460			+0,520		+0,570
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
k16	+0,600	+0,750	+0,900	+1,100	+1,300	+1,600		+1,900		+2,200			+2,500			+2,900			+3,200		+3,600
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000			0,000			0,000			0,000		0,000
m5	+0,006	+0,009	+0,012	+0,015	+0,017	+0,020		+0,024		+0,028			+0,033			+0,037			+0,043		+0,046
	+0,002	+0,004	+0,006	+0,007	+0,008	+0,009		+0,011		+0,013			+0,015			+0,017			+0,020		+0,021
m6	+0,008	+0,012	+0,015	+0,018	+0,021	+0,025		+0,030		+0,035			+0,040			+0,046			+0,052		+0,057
	+0,002	+0,004	+0,006	+0,007	+0,008	+0,009		+0,011		+0,013			+0,015			+0,017			+0,020		+0,021
m7	+0,012	+0,016	+0,021	+0,025	+0,029	+0,034		+0,041		+0,048			+0,055			+0,063			+0,072		+0,078
	+0,002	+0,004	+0,006	+0,007	+0,008	+0,009		+0,011		+0,013			+0,015			+0,017			+0,020		+0,021
n5	+0,008	+0,013	+0,016	+0,020	+0,024	+0,028		+0,033		+0,038			+0,045			+0,051			+0,057		+0,062
	+0,004	+0,008	+0,010	+0,012	+0,015	+0,017		+0,020		+0,023			+0,027			+0,031			+0,034		+0,037
n6	+0,010	+0,016	+0,019	+0,023	+0,028	+0,033		+0,039		+0,045			+0,052			+0,060			+0,066		+0,073
	+0,004	+0,008	+0,010	+0,012	+0,015	+0,017		+0,020		+0,023			+0,027			+0,031			+0,034		+0,037
n7	+0,014	+0,020	+0,025	+0,030	+0,036	+0,042		+0,050		+0,058			+0,067			+0,077			+0,086		+0,094
	+0,004	+0,008	+0,010	+0,012	+0,015	+0,017		+0,020		+0,023			+0,027			+0,031			+0,034		+0,037
p5	+0,010	+0,017	+0,021	+0,026	+0,031	+0,037		+0,045		+0,052			+0,061			+0,070			+0,079		+0,087
	+0,006	+0,012	+0,015	+0,018	+0,022	+0,026		+0,032		+0,037			+0,043			+0,050			+0,056		+0,062
p6	+0,012	+0,020	+0,024	+0,029	+0,035	+0,042		+0,051		+0,059			+0,068			+0,079			+0,088		+0,098
	+0,006	+0,012	+0,015	+0,018	+0,022	+0,026		+0,032		+0,037			+0,043			+0,050			+0,056		+0,062
r6	+0,016	+0,023	+0,028	+0,034	+0,041	+0,050		+0,060	+0,062	+0,073	+0,076	+0,088	+0,090	+0,093	+0,106	+0,109	+0,113	+0,126	+0,130	+0,144	+0,150
	+0,010	+0,015	+0,019	+0,023	+0,028	+0,034		+0,041	+0,043	+0,051	+0,054	+0,063	+0,065	+0,068	+0,077	+0,080	+0,084	+0,094	+0,098	+0,108	+0,114

Misura nominale del foro (mm) / *Hole nominal size (mm)*

DA	1	3	6	10	18	30	40	50	65	80	100	120	140	160	180	200	225	250	280	315	355
A	3	6	10	18	30	40	50	65	80	100	120	140	160	180	200	225	250	280	315	355	400
	mm																				
D12	+0,120	+0,150	+0,190	+0,230	+0,275	+0,330		+0,400		+0,470			+0,545			+0,630			+0,710		+0,780
	+0,020	+0,030	+0,040	+0,050	+0,065	+0,080		+0,100		+0,120			+0,145			+0,170			+0,190		+0,210
E6	+0,020	+0,028	+0,034	+0,043	+0,053	+0,066		+0,079		+0,094			+0,110			+0,129			+0,142		+0,161
	+0,014	+0,020	+0,025	+0,032	+0,040	+0,050		+0,060		+0,072			+0,085			+0,100			+0,110		+0,125
E7	+0,024	+0,032	+0,040	+0,050	+0,061	+0,075		+0,090		+0,107			+0,125			+0,146			+0,162		+0,185
	+0,014	+0,020	+0,025	+0,032	+0,040	+0,050		+0,060		+0,072			+0,085			+0,100			+0,110		+0,125
E11	+0,074	+0,095	+0,115	+0,142	+0,170	+0,210		+0,250		+0,292			+0,335			+0,390			+0,430		+0,485
	+0,014	+0,020	+0,025	+0,032	+0,040	+0,050		+0,060		+0,072			+0,085			+0,100			+0,110		+0,125
E12	+0,114	+0,140	+0,175	+0,212	+0,250	+0,300		+0,360		+0,422			+0,485			+0,560			+0,630		+0,695
	+0,014	+0,020	+0,025	+0,032	+0,040	+0,050		+0,060		+0,072			+0,085			+0,100			+0,110		+0,125
E13	+0,154	+0,200	+0,245	+0,302	+0,370	+0,440		+0,520		+0,612			+0,715			+0,820			+0,920		+1,015
	+0,014	+0,020	+0,025	+0,032	+0,040	+0,050		+0,060		+0,072			+0,085			+0,100			+0,110		+0,125
F6	+0,012	+0,018	+0,022	+0,027	+0,033	+0,041		+0,049		+0,058			+0,068			+0,079			+0,088		+0,098
	+0,006	+0,010	+0,013	+0,016	+0,020	+0,002		+0,030		+0,036			+0,043			+0,050			+0,056		+0,062
F7	+0,016	+0,022	+0,028	+0,034	+0,041	+0,050		+0,060		+0,071			+0,083			+0,096			+0,108		+0,119
	+0,006	+0,010	+0,013	+0,016	+0,020	+0,025		+0,030		+0,036			+0,043			+0,050			+0,056		+0,062
F8	+0,020	+0,028	+0,035	+0,043	+0,053	+0,064		+0,076		+0,090			+0,106			+0,122			+0,137		+0,151
	+0,006	+0,010	+0,013	+0,016	+0,020	+0,025		+0,030		+0,036			+0,043			+0,050			+0,056		+0,062
G6	+0,008	+0,012	+0,014	+0,017	+0,020	+0,025		+0,029		+0,034			+0,039			+0,044			+0,049		+0,054
	+0,002	+0,004	+0,005	+0,006	+0,007	+0,009		+0,010		+0,012			+0,014			+0,015			+0,017		+0,018
G7	+0,012	+0,016	+0,020	+0,024	+0,028	+0,034		+0,040		+0,047			+0,054			+0,061			+0,069		+0,075
	+0,002	+0,004	+0,005	+0,006	+0,007	+0,009		+0,010		+0,012			+0,014			+0,015			+0,017		+0,018
G8	+0,016	+0,022	+0,027	+0,033	+0,040	+0,048		+0,056		+0,066			+0,077			+0,087			+0,098		+0,107
	+0,002	+0,004	+0,005	+0,006	+0,007	+0,009		+0,010		+0,012			+0,014			+0,015			+0,017		+0,018

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

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

Misura nominale del foro (mm) / *Hole nominal size (mm)*

DA	1	3	6	10	18	30	40	50	65	80	100	120	140	160	180	200	225	250	280	315	355
A	3	6	10	18	30	40	50	65	80	100	120	140	160	180	200	225	250	280	315	355	400
	mm																				
H6	+0,006	+0,008	+0,009	+0,011	+0,013	+0,016		+0,019		+0,022		+0,025			+0,029			+0,032		+0,036	
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000		0,000			0,000			0,000		0,000	
H7	+0,010	+0,012	+0,015	+0,018	+0,021	+0,025		+0,030		+0,035		+0,040			+0,046			+0,052		+0,057	
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000		0,000			0,000			0,000		0,000	
H8	+0,014	+0,018	+0,022	+0,027	+0,033	+0,039		+0,046		+0,054		+0,063			+0,072			+0,081		+0,089	
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000		0,000			0,000			0,000		0,000	
H9	+0,025	+0,030	+0,036	+0,043	+0,052	+0,062		+0,074		+0,087		+0,100			+0,115			+0,130		+0,140	
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000		0,000			0,000			0,000		0,000	
H10	+0,040	+0,048	+0,058	+0,070	+0,084	+0,100		+0,120		+0,140		+0,160			+0,185			+0,210		+0,230	
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000		0,000			0,000			0,000		0,000	
H11	+0,060	+0,075	+0,090	+0,110	+0,130	+0,160		+0,190		+0,220		+0,250			+0,290			+0,320		+0,360	
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000		0,000			0,000			0,000		0,000	
H12	+0,100	+0,120	+0,150	+0,180	+0,210	+0,250		+0,300		+0,350		+0,400			+0,460			+0,520		+0,570	
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000		0,000			0,000			0,000		0,000	
H13	+0,140	+0,180	+0,220	+0,270	+0,330	+0,390		+0,460		+0,540		+0,630			+0,720			+0,810		+0,890	
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000		0,000			0,000			0,000		0,000	
H14	+0,250	+0,300	+0,360	+0,430	+0,520	+0,620		+0,740		+0,870		+1,000			+1,150			+1,300		+1,400	
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000		0,000			0,000			0,000		0,000	
H15	+0,400	+0,480	+0,580	+0,700	+0,840	+1,000		+1,200		+1,400		+1,400			+1,850			+2,100		+2,300	
	0,000	0,000	0,000	0,000	0,000	0,000		0,000		0,000		0,000			0,000			0,000		0,000	
J6	+0,002	+0,005	+0,005	+0,006	+0,008	+0,010		+0,013		+0,016		+0,018			+0,022			+0,025		+0,029	
	-0,004	-0,003	-0,004	-0,005	-0,005	-0,006		-0,006		-0,006		-0,007			-0,007			-0,007		-0,007	
J7	+0,004	+0,006	+0,008	+0,010	+0,012	+0,014		+0,018		+0,022		+0,026			+0,030			+0,036		+0,039	
	-0,006	-0,006	-0,007	-0,008	-0,009	-0,011		-0,012		-0,013		-0,014			-0,016			-0,016		-0,018	
J8	+0,006	+0,010	+0,012	+0,015	+0,020	+0,024		+0,028		+0,034		+0,041			+0,047			+0,055		+0,060	
	-0,008	-0,008	-0,010	-0,012	-0,013	-0,015		-0,018		-0,020		-0,022			-0,025			-0,026		-0,029	
JS6	+0,003	+0,004	+0,005	+0,006	+0,007	+0,008		+0,010		+0,011		+0,013			+0,015			+0,016		+0,018	
	-0,003	-0,004	-0,005	-0,006	-0,007	-0,080		-0,010		-0,011		-0,013			-0,015			-0,016		-0,018	
JS7	+0,005	+0,006	+0,008	+0,009	+0,011	+0,013		+0,015		+0,018		+0,020			+0,023			+0,026		+0,029	
	-0,005	-0,006	-0,008	-0,009	-0,011	-0,013		-0,015		-0,018		-0,020			-0,023			-0,026		-0,029	
JS8	+0,007	+0,009	+0,011	+0,014	+0,017	+0,020		+0,023		+0,027		+0,032			+0,036			+0,041		+0,045	
	-0,007	-0,009	-0,011	-0,014	-0,017	-0,020		-0,023		-0,027		-0,032			-0,036			-0,041		-0,045	
K6	0,000	+0,002	+0,002	+0,002	+0,002	+0,003		+0,004		+0,004		+0,004			+0,005			+0,005		+0,007	
	-0,006	-0,006	-0,007	-0,009	-0,011	-0,013		-0,015		-0,018		-0,021			-0,024			-0,027		-0,029	
K7	0,000	+0,003	+0,005	+0,006	+0,006	+0,007		+0,009		+0,010		+0,012			+0,013			+0,016		+0,017	
	-0,010	-0,009	-0,010	-0,012	-0,015	-0,018		-0,021		-0,025		-0,028			-0,033			-0,036		-0,040	
K8	0,000	+0,005	+0,006	+0,008	+0,010	+0,012		+0,014		+0,016		+0,020			+0,022			+0,025		+0,028	
	-0,014	-0,013	-0,016	-0,019	-0,023	-0,027		-0,032		-0,038		-0,043			-0,050			-0,056		-0,061	
M6	-0,002	-0,001	-0,003	-0,004	-0,004	-0,004		-0,005		-0,006		-0,008			-0,008			-0,009		-0,010	
	-0,008	-0,009	-0,012	-0,015	-0,017	-0,020		-0,024		-0,028		-0,033			-0,037			-0,041		-0,046	
M7	-0,002	0,000	0,000	0,000	0,000	0,000		0,000		0,000		0,000			0,000			0,000		0,000	
	-0,012	-0,012	-0,015	-0,018	-0,021	-0,025		-0,030		-0,035		-0,040			-0,046			-0,052		-0,057	
M8	-	+0,002	+0,001	+0,002	+0,004	+0,005		+0,005		+0,006		+0,008			+0,009			+0,009		+0,011	
	-	-0,016	-0,021	-0,025	-0,029	-0,034		-0,041		-0,048		-0,055			-0,063			-0,072		-0,078	
N6	-0,004	-0,005	-0,007	-0,009	-0,011	-0,012		-0,014		-0,016		-0,020			-0,022			-0,025		-0,026	
	-0,010	-0,013	-0,016	-0,020	-0,024	-0,028		-0,033		-0,038		-0,045			-0,051			-0,057		-0,062	
N7	-0,004	-0,004	-0,004	-0,005	-0,007	-0,008		-0,009		-0,010		-0,012			-0,014			-0,014		-0,016	
	-0,014	-0,016	-0,019	-0,023	-0,028	-0,033		-0,039		-0,045		-0,052			-0,060			-0,066		-0,073	
N8	-0,004	-0,002	-0,003	-0,003	-0,003	-0,003		-0,004		-0,004		-0,004			-0,005			-0,005		-0,005	
	-0,018	-0,020	-0,025	-0,030	-0,036	-0,042		-0,050		-0,058		-0,067			-0,077			-0,086		-0,094	
P6	-0,006	-0,009	-0,012	-0,015	-0,018	-0,021		-0,026		-0,030		-0,036			-0,041			-0,047		-0,051	
	-0,012	-0,017	-0,021	-0,026	-0,031	-0,037		-0,045		-0,052		-0,061			-0,070			-0,079		-0,087	
P7	-0,006	-0,008	-0,009	-0,011	-0,014	-0,017		-0,021		-0,024		-0,028			-0,033			-0,036		-0,041	
	-0,016	-0,020	-0,024	-0,029	-0,035	-0,042		-0,051		-0,059		-0,068			-0,079			-0,088		-0,098	
P8	-0,006	-0,012	-0,015	-0,018	-0,022	-0,026		-0,032		-0,037		-0,043			-0,050			-0,056		-0,062	
	-0,020	-0,030	-0,037	-0,045	-0,055	-0,065		-0,078		-0,091		-0,106			-0,122			-0,137		-0,151	
R6	-0,010	-0,012	-0,016	-0,020	-0,024	-0,029	-0,035	-0,037	-0,044	-0,047	-0,056	-0,058	-0,061	-0,068	-0,071	-0,075	-0,085	-0,089	-0,097	-0,103	
	-0,016	-0,020	-0,025	-0,031	-0,037	-0,045	-0,054	-0,056	-0,060	-0,069	-0,081	-0,083	-0,086	-0,097	-0,100	-0,104	-0,117	-0,121	-0,133	-0,139	
R7	-0,010	-0,011	-0,013	-0,016	-0,020	-0,025	-0,030	-0,032	-0,038	-0,041	-0,048	-0,050	-0,053	-0,060	-0,063	-0,067	-0,074	-0,078	-0,087	-0,093	
	-0,020	-0,023	-0,028	-0,034	-0,041	-0,050	-0,060	-0,062	-0,073	-0,076	-0,088	-0,090	-0,093	-0,106	-0,109	-0,113	-0,126	-0,130	-0,144	-0,150	

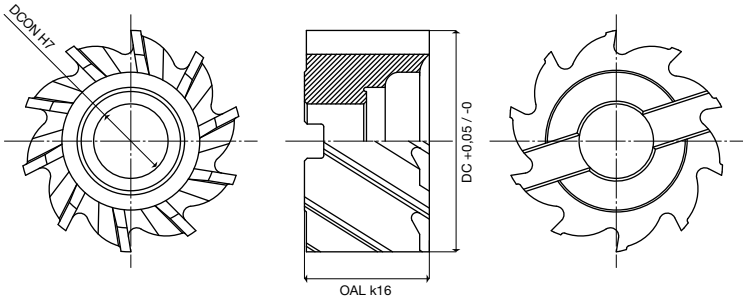
HSS-PM LINE

La linea di prodotti UOP HSS-PM LINE rappresenta una soluzione di eccezionale completezza di gamma nelle applicazioni di asportazione truciolo frutto di pluriennale esperienza. L'accoglienza che il mercato riserva ai prodotti in acciaio super rapido e da polveri (Powder Metal) permette a HSS-PM LINE di UOP di essere un riferimento nel settore.

As a result of years of experience, UOP HSS-PM LINE represents an exceptionally complete solutions with its chip removal application range. The market welcomes UOP HSS-PM LINE with it products in HSS and PM making UOP a reference point for all in the sector.

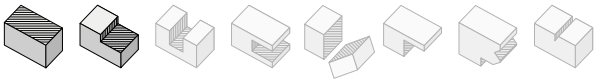
Series
02105

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



Skin	UNI 3903 DIN 1880 ISO 2586	N	λ°s 28	Z8÷10
Coating	Standards	Execution	Helix	Teeth

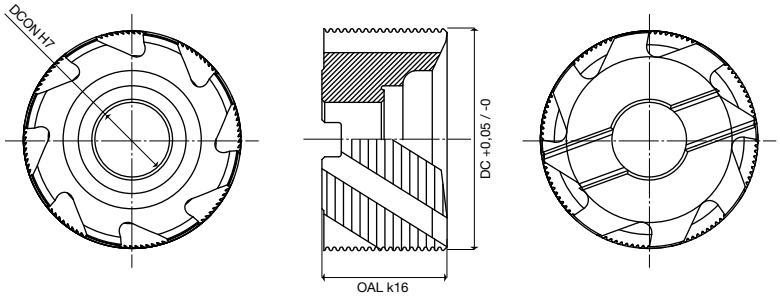
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	OAL k16	DCON H7	Z
021050400 CM	**CMX**	40	32	16	8
021050500 CM	**CMX**	50	36	22	8
021050630 CM	**CMX**	63	40	27	8
021050800 CM	**CMX**	80	45	27	10

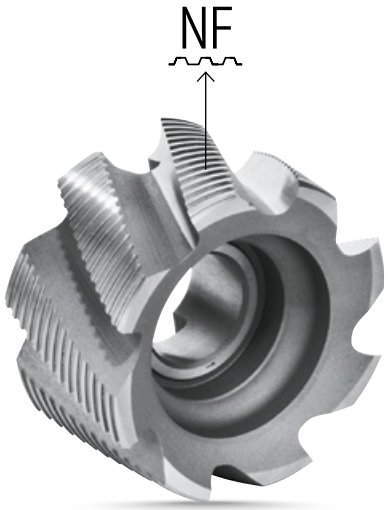


parametri tecnici a pag. / *for technical parameters see page* 103

Series
02110

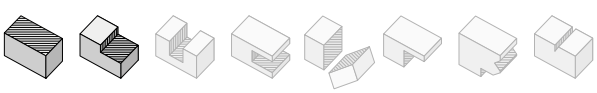
Frese a **SEMIFINIRE**
con cava di trascinamento trasversale
Semi-finishing cutters end mills
with transversal driving slot





Skin	UNI 3903 DIN 1880 ISO 2586	NF	λ°s 28	Z6÷8
Coating	Standards	Execution	Helix	Teeth

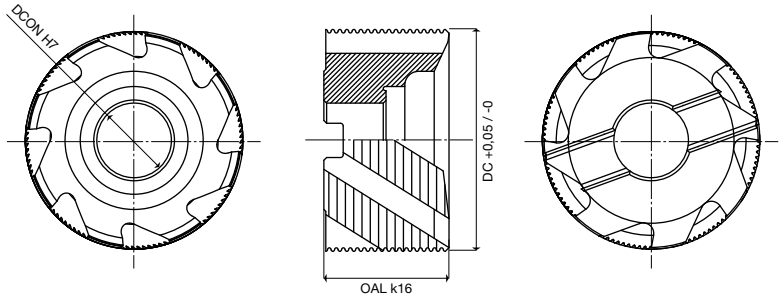
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	OAL k16	DCON H7	Z
021100400 CM	**CMX**	40	32	16	6
021100500 CM	**CMX**	50	36	22	6
021100630 CM	**CMX**	63	40	27	8
021100800 CM	**CMX**	80	45	27	8



parametri tecnici a pag. / *for technical parameters see page* 103

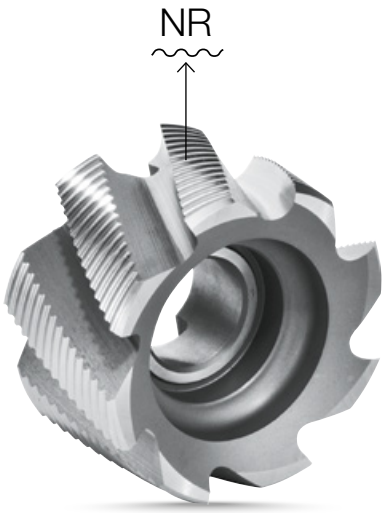
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
02105	◪	◪	◪	○	○	●	●
02110 NF	◪	◪	◪	○	○	●	●

● recommended ◪ acceptable ○ not recommended



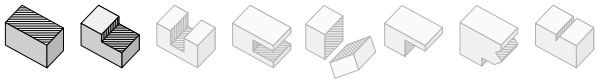
Series 02110

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

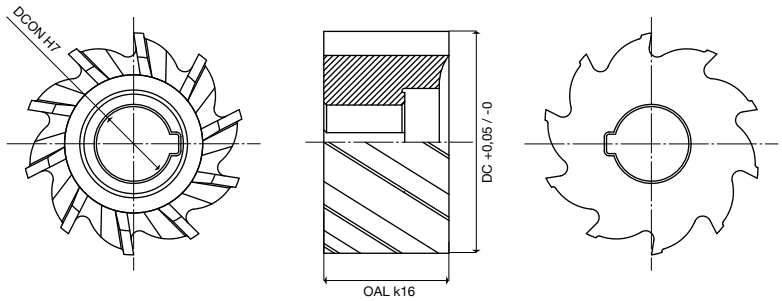


Skin	UNI 3903 DIN 1880 ISO 2586	NR	λ°s 28	Z6÷8
Coating	Standards	Execution	Helix	Teeth

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	OAL k16	DCON H7	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



parametri tecnici a pag. / *for technical parameters see page* 103



Series 02115

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

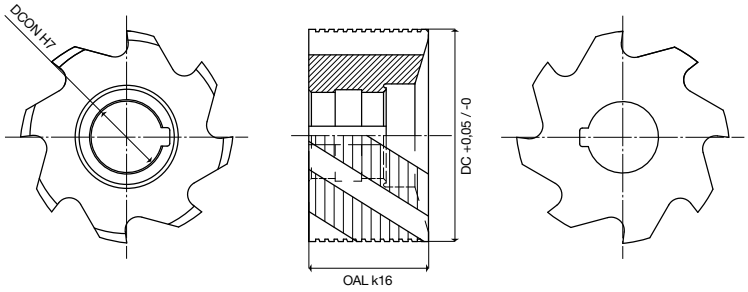
Skin	DIN 841 ISO 2586	N	λ°s 32	Z8
Coating	Standards	Execution	Helix	Teeth

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	OAL k16	DCON H7	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

parametri tecnici a pag. / *for technical parameters see page* 103

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
02110 NR	◪	◪	●	○	○	●	●
02115	◪	◪	◪	○	○	●	●

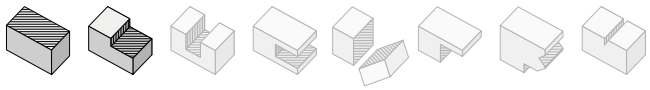
Series
02120
Frese a **SEMIFINIRE**
con spacco longitudinale
Semi-finishing cutters end mills with longitudinal keyway



NF

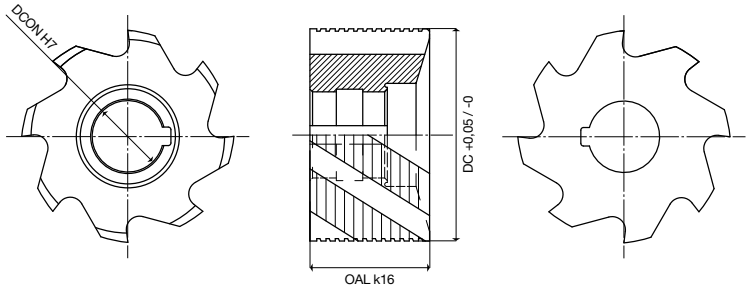
Skin	DIN 841 ISO 2586	NF	λ°s 28	Z6÷10
Coating	Standards	Execution	Helix	Teeth

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	OAL k16	DCON H7	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

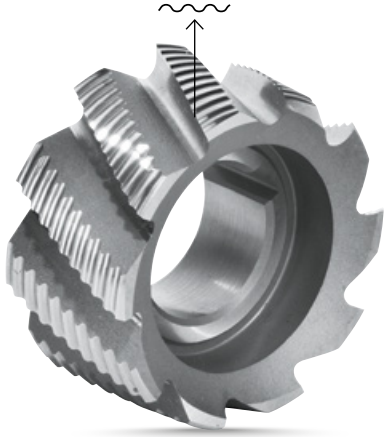


parametri tecnici a pag. / *for technical parameters see page* 103

Series
02120
Frese a **SGROSSARE**
con spacco longitudinale
Roughing cutters with longitudinal keyway

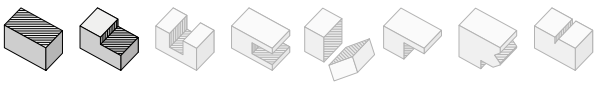


NR



Skin	DIN 841 ISO 2586	NR	λ°s 28	Z6÷10
Coating	Standards	Execution	Helix	Teeth

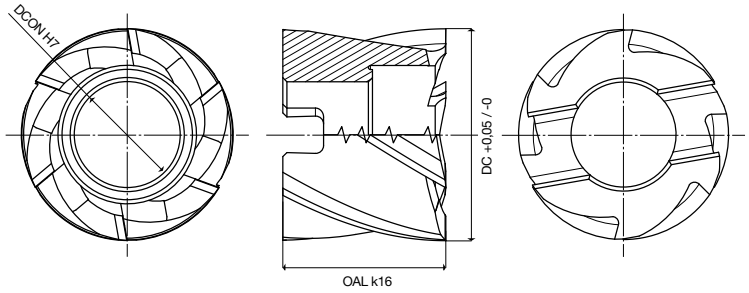
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	OAL k16	DCON H7	Z
021200301 CM	CMX	30	30	13	6
021200351 CM	CMX	35	35	16	6
021200401 CM	CMX	40	20	16	8
021200403 CM	CMX	40	40	16	6
021200501 CM	CMX	50	25	22	8
021200503 CM	CMX	50	50	22	8
021200601 CM	CMX	60	30	27	10
021200603 CM	CMX	60	60	27	10



parametri tecnici a pag. / *for technical parameters see page* 103

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
02120 NF	◪	◪	◪	○	○	●	●
02120 NR	◪	◪	●	○	○	●	●

● recommended ◪ acceptable ○ not recommended



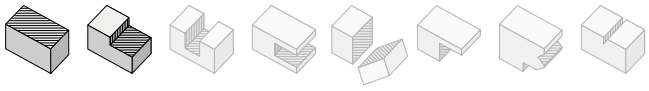
Series 02135

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

Finishing milling cutters
with transversal driving slot

Skin Alu	UNI 3903 DIN 1880 ISO 2586	W	λ°s 40	Z4÷6
Coating	Standards	Execution	Helix	Teeth

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	OAL k16	DCON H7	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



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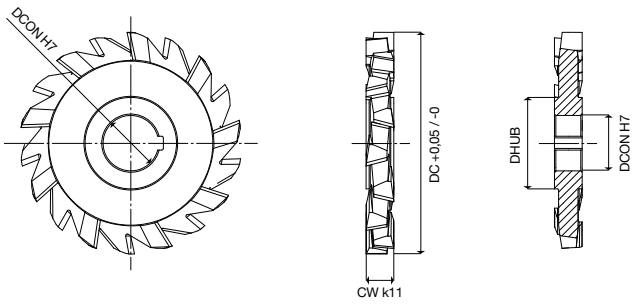

Series 04105

Frese a disco a tre tagli
elicoidali alternati

Side and face milling cutters
staggered teeth

Skin	UNI 3905A DIN 885A ISO 2587	H	Z16÷38
Coating	Standards	Execution	Teeth

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	CW k11	DHUB	DCON H7	λ°s	Z
041051040 CM	**CM**	**CMX**	50	4	26	16	20	16
041051050 CM	**CM**	**CMX**	50	5	26	16	20	16
041051060 CM	**CM**	**CMX**	50	6	26	16	20	16
041051070 CM	**CM**	**CMX**	50	7	26	16	15	16
041051080 CM	**CM**	**CMX**	50	8	26	16	15	16
041051090 CM	**CM**	**CMX**	50	9	26	16	15	16
041051100 CM	**CM**	**CMX**	50	10	26	16	15	16
041052040 CM	**CM**	**CMX**	63	4	33	22	20	18
041052050 CM	**CM**	**CMX**	63	5	33	22	15	18
041052060 CM	**CM**	**CMX**	63	6	33	22	15	18
041052070 CM	**CM**	**CMX**	63	7	33	22	15	18
041052080 CM	**CM**	**CMX**	63	8	33	22	15	18
041052090 CM	**CM**	**CMX**	63	9	33	22	15	18
041052100 CM	**CM**	**CMX**	63	10	33	22	15	18
041052120 CM	**CM**	**CMX**	63	12	33	22	10	18
041052140 CM	**CM**	**CMX**	63	14	33	22	10	18
041052160 CM	**CM**	**CMX**	63	16	33	22	10	16
041052180 CM	**CM**	**CMX**	63	18	33	22	10	16
041052200 CM	**CM**	**CMX**	63	20	33	22	10	16
041053040 CM	**CM**	**CMX**	80	4	36	22	20	20
041053041 CM	**CM**	**CMX**	80	4	40	27	20	20
041053050 CM	**CM**	**CMX**	80	5	36	22	15	20
041053051 CM	**CM**	**CMX**	80	5	40	27	15	20
041053060 CM	**CM**	**CMX**	80	6	36	22	15	20
041053061 CM	**CM**	**CMX**	80	6	40	27	15	20

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	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	◒	◒	●	○	○	●	●

Series 04105

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

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	CW k11	DHUB	DCON H7	λ°s	Z
041053070 CM		CMX	80	7	36	22	15	20
041053071 CM		CMX	80	7	40	27	15	20
041053080 CM		CMX	80	8	36	22	15	20
041053081 CM		CMX	80	8	40	27	15	20
041053090 CM		CMX	80	9	36	22	15	20
041053091 CM		CMX	80	9	40	27	15	20
041053100 CM		CMX	80	10	36	22	15	18
041053101 CM		CMX	80	10	40	27	15	18
041053120 CM		CMX	80	12	36	22	15	18
041053121 CM		CMX	80	12	40	27	15	18
041053140 CM		CMX	80	14	36	22	10	18
041053141 CM		CMX	80	14	40	27	10	18
041053160 CM		CMX	80	16	36	22	15	18
041053161 CM		CMX	80	16	40	27	15	18
041053180 CM		CMX	80	18	36	22	15	18
041053181 CM		CMX	80	18	40	27	15	18
041054040 CM		CMX	100	4	46	27	15	24
041054041 CM		CMX	100	4	50	32	15	24
041054050 CM		CMX	100	5	46	27	15	24
041054051 CM		CMX	100	5	50	32	15	24
041054060 CM		CMX	100	6	46	27	15	24
041054061 CM		CMX	100	6	50	32	15	24
041054070 CM		CMX	100	7	46	27	15	24
041054071 CM		CMX	100	7	50	32	15	24
041054080 CM		CMX	100	8	46	27	15	22
041054081 CM		CMX	100	8	50	32	15	22
041054090 CM		CMX	100	9	46	27	15	22
041054091 CM		CMX	100	9	50	32	15	22
041054100 CM		CMX	100	10	46	27	15	22
041054101 CM		CMX	100	10	50	32	15	22
041054120 CM		CMX	100	12	46	27	15	20
041054121 CM		CMX	100	12	50	32	15	20
041054140 CM		CMX	100	14	46	27	15	20
041054141 CM		CMX	100	14	50	32	15	20
041054150 CM		CMX	100	15	46	27	15	20
041054151 CM		CMX	100	15	50	32	15	20
041054160 CM		CMX	100	16	46	27	15	20
041054161 CM		CMX	100	16	50	32	15	20
041054180 CM		CMX	100	18	46	27	13	20
041054181 CM		CMX	100	18	50	32	13	20
041054200 CM		CMX	100	20	46	27	13	20
041054201 CM		CMX	100	20	50	32	13	20
041054220 CM		CMX	100	22	46	27	10	20
041054221 CM		CMX	100	22	50	32	10	20
041054250 CM		CMX	100	25	46	27	10	20
041054251 CM		CMX	100	25	50	32	10	20
041055050 CM		CMX	125	5	52	32	15	26
041055060 CM		CMX	125	6	52	32	15	26
041055080 CM		CMX	125	8	52	32	15	26
041055100 CM		CMX	125	10	52	32	15	24
041055120 CM		CMX	125	12	52	32	15	22
041055140 CM		CMX	125	14	52	32	15	22
041055160 CM		CMX	125	16	52	32	15	22
041055180 CM		CMX	125	18	52	32	15	22
041055200 CM		CMX	125	20	52	32	10	22
041055220 CM		CMX	125	22	52	32	10	22
041055250 CM		CMX	125	25	52	32	10	22
041055280 CM		CMX	125	28	52	32	10	22
041056060 CM		CMX	160	6	58	32	15	28
041056061 CM		CMX	160	6	66	40	15	28
041056080 CM		CMX	160	8	58	32	15	28
041056081 CM		CMX	160	8	66	40	15	28
041056100 CM		CMX	160	10	58	32	15	26
041056101 CM		CMX	160	10	66	40	15	26
041056120 CM		CMX	160	12	58	32	15	26
041056121 CM		CMX	160	12	66	40	15	26
041056140 CM		CMX	160	14	58	32	15	24
041056141 CM		CMX	160	14	66	40	15	24
041056160 CM		CMX	160	16	58	32	15	24
041056161 CM		CMX	160	16	66	40	15	24
041056180 CM		CMX	160	18	58	32	15	24
041056181 CM		CMX	160	18	66	40	15	24
041056200 CM		CMX	160	20	58	32	15	24
041056201 CM		CMX	160	20	66	40	15	24
041056220 CM		CMX	160	22	58	32	13	24
041056221 CM		CMX	160	22	66	40	13	24
041056250 CM		CMX	160	25	58	32	13	24
041056251 CM		CMX	160	25	66	40	13	24
041056280 CM		CMX	160	28	58	32	10	24

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● recommended ◪ acceptable ○ not recommended

04105

Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
◪	◪	●	○	○	●	●

Series 04105

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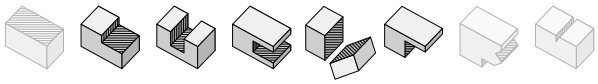
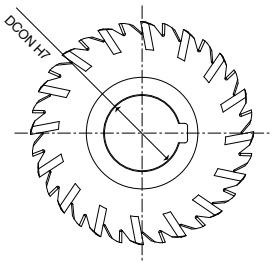
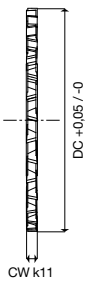
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	CW k11	DHUB	DCON H7	λ°s	Z
041056281 CM	**CMX**	160	28	66	40	10	24
041056320 CM	**CMX**	160	32	58	32	10	24
041056321 CM	**CMX**	160	32	66	40	10	24
041057080 CM	**CMX**	200	8	80	40	16	34
041057100 CM	**CMX**	200	10	80	40	16	32
041057120 CM	**CMX**	200	12	80	40	16	30
041057140 CM	**CMX**	200	14	80	40	16	30
041057160 CM	**CMX**	200	16	80	40	16	30
041057180 CM	**CMX**	200	18	80	40	16	30
041057200 CM	**CMX**	200	20	80	40	16	30
041057220 CM	**CMX**	200	22	80	40	16	30
041057250 CM	**CMX**	200	25	80	40	16	30
041057280 CM	**CMX**	200	28	80	40	14	30
041057320 CM	**CMX**	200	32	80	40	14	30
041058140 CM	**CMX**	250	14	90	50	15	38
041058160 CM	**CMX**	250	16	90	50	15	36
041058180 CM	**CMX**	250	18	90	50	15	34
041058200 CM	**CMX**	250	20	90	50	15	34
041058250 CM	**CMX**	250	25	90	50	15	30
041058280 CM	**CMX**	250	28	90	50	15	28
041058300 CM	**CMX**	250	30	90	50	15	26
041058320 CM	**CMX**	250	32	90	50	15	26

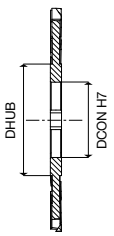


parametri tecnici a pag. / *for technical parameters see page* 104

Series
04105
Frese a disco a tre tagli elicoidali alternati
Side and face milling cutters staggered teeth





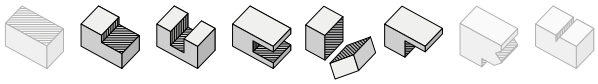


Skin | ✓ | H | Z32÷60

Coating | Quality UOP | Execution | Teeth

Series 04110

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	CW k11	DHUB	DCON H7	λ°s	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



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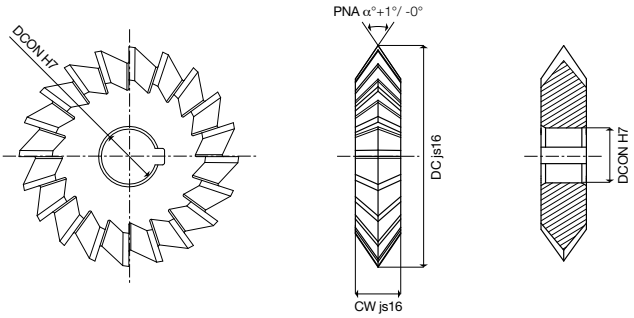
Series
04110
Seghe circolari a tre tagli elicoidali alternati
Side and face milling cutters straight teeth

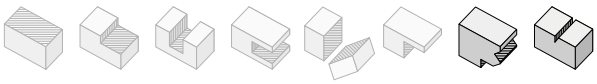
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
04105	◪	◪	●	○	○	●	●
04110	◪	◪	●	○	○	●	●

Series
06105
Frese ad angolo prismatiche
Double equal angle cutters

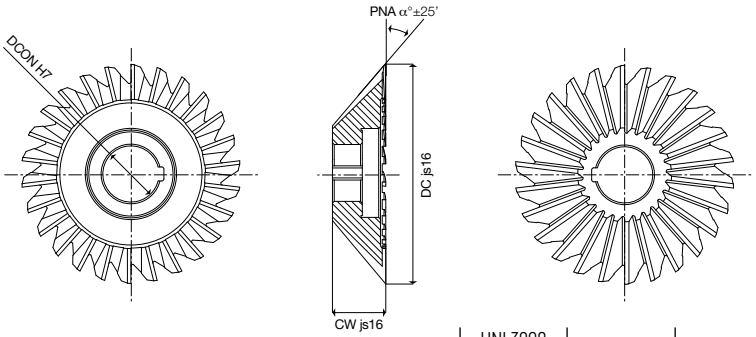


Skin	UNI 3907 DIN 847 ISO 6108	H	Z20÷30
Coating	Standards	Execution	Teeth

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC js16	PNA α° +1°/ - 0°	CW js16	DCON H7	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

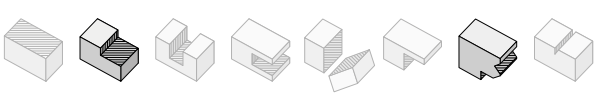


Series
06110
Frese ad angolo
Angular cutters



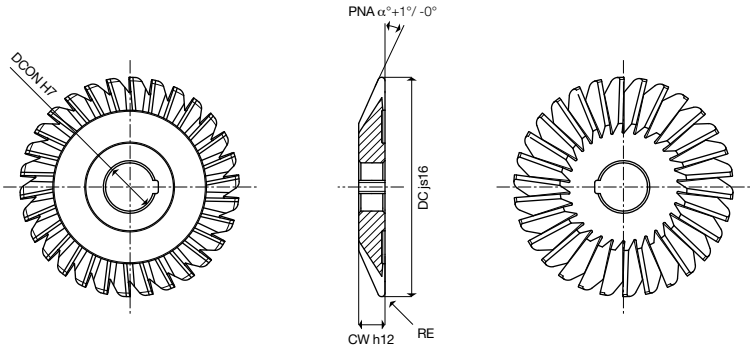
Skin	UNI 3908 DIN 842A ISO	H	Z16÷26
Coating	Standards	Execution	Teeth

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC js16	PNA α° ±25'	CW js16	DCON H7	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
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
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



	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	◕	◕	◕	○	○	●	●

● recommended ◕ acceptable ○ not recommended



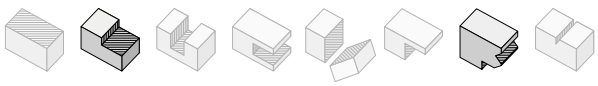
Series 06120

Frese ad angolo per utensili
Angular cutters for toolmaking

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

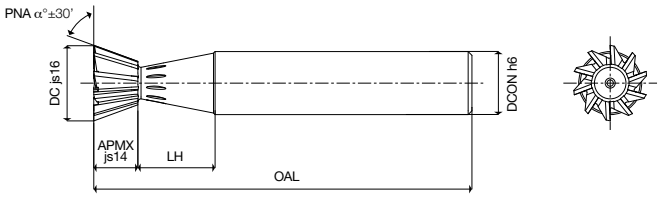
Coating | Standards | Execution | Teeth

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC js16	PNA α° +1°/ - 0°	CW h12	DCON H7	RE	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



Series 06130

Frese ad angolo divergente
Dovetail cutters



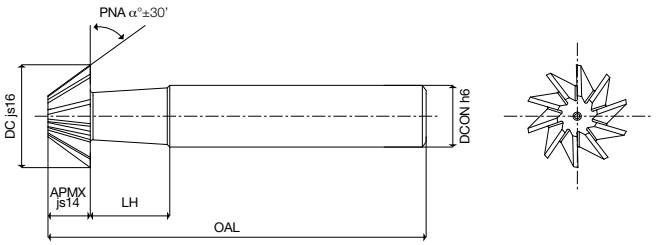
Skin | UNI 8262A DIN 1833A ISO 3959 | W on request | F on request | N | Z10÷12

Coating | Standards | | | Execution | Teeth

Cod. Art. M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC js16	PNA α° ± 30'	APMX js14	LH	OAL	DCON h6	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

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
06120	◪	◪	◪	○	○	●	●
06130	◪	◪	◪	○	○	●	●

Series
06145
Frese ad angolo convergente
Inverted dovetail cutters

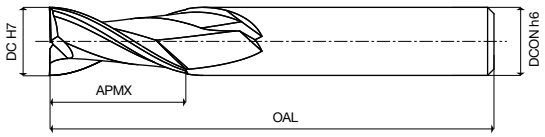


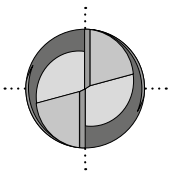
Skin | UNI 8262B DIN 1833B ISO 3959 | W on request | F on request | N | Z10÷12

Coating | Standards | | | Execution | Teeth

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC js16	PNA α° ± 30'	APMX js14	LH	OAL	DCON h6	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

Series
10102
Frese a due taglienti in tolleranza H7
Two flute end mills in tolerance H7





Skin | UNI 8254 DIN 327B ISO 1641/I | W on request | F on request | N | λ°s 32 | Z2 | Length

Coating | Standards | | | Execution | Helix | Teeth | Length

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC H7	APMX	OAL	DCON h6	Z
101020100 CM	CM	CMX	1	3	47	6	2
101020150 CM	CM	CMX	1,5	3	47	6	2
101020200 CM	CM	CMX	2	4	48	6	2
101020250 CM	CM	CMX	2,5	5	49	6	2
101020300 CM	CM	CMX	3	5	49	6	2
101020350 CM	CM	CMX	3,5	6	50	6	2
101020400 CM	CM	CMX	4	7	51	6	2
101020450 CM	CM	CMX	4,5	7	51	6	2
101020500 CM	CM	CMX	5	8	52	6	2
101020550 CM	CM	CMX	5,5	8	52	6	2
101020600 CM	CM	CMX	6	8	52	6	2
101020650 CM	CM	CMX	6,5	10	60	10	2
101020700 CM	CM	CMX	7	10	60	10	2
101020750 CM	CM	CMX	7,5	10	60	10	2
101020800 CM	CM	CMX	8	11	61	10	2
101020850 CM	CM	CMX	8,5	11	61	10	2

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

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
06145	◕	◕	◕	○	○	●	●
10102	◕	◕	◕	◕	○	●	●

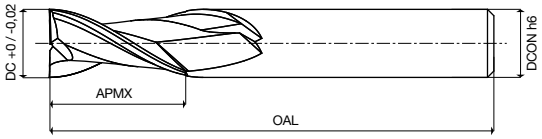
● recommended ◕ acceptable ○ not recommended

Series 10102

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

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC H7	APMX	OAL	DCON h6	Z
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
101021800 CM	**CMX**	18	19	79	16	2
101022000 CM	**CMX**	20	22	82	16	2
101022001 CM	**CMX**	20	22	88	20	2
101022200 CM	**CMX**	22	22	88	20	2
101022500 CM	**CMX**	25	26	102	25	2

parametri tecnici a pag. / *for technical parameters see page* 107

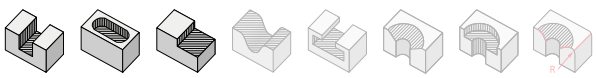


Series 10105

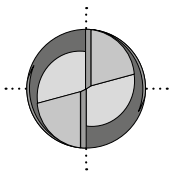
Frese a due taglienti
Two flute end mills

Skin				N	λ°s 32	Z2	
Coating	Quality UOP	W on request	F on request	Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0/-0,02	APMX	OAL	DCON h6	Z
101050200 CM	**CMX**	2	5	36	4	2
101050300 CM	**CMX**	3	8	40	4	2
101050400 CM	**CMX**	4	8	40	4	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
101051800 CM	**CMX**	18	25	78	16	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

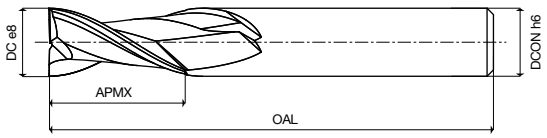


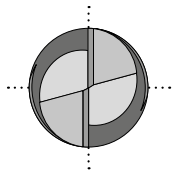
parametri tecnici a pag. / *for technical parameters see page* 107



	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
10105	◕	◕	◕	◕	○	●	●

Series
10110
Frese a due taglienti in tolleranza e8
Two flute end mills in tolerance e8





Skin	UNI 8254 DIN 327B ISO 1641/I			N	λ°s 32	Z2	
Coating	Standards	W on request	F on request	Execution	Helix	Teeth	Length

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC e8	APMX	OAL	DCON h6	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	**CM**	**CMX**	6	8	52	6	2
101100650	**CM**	**CMX**	6,5	10	60	10	2
101100700	**CM**	**CMX**	7	10	60	10	2
101100750	**CM**	**CMX**	7,5	10	60	10	2
101100800	**CM**	**CMX**	8	11	61	10	2
101100850	**CM**	**CMX**	8,5	11	61	10	2
101100900	**CM**	**CMX**	9	11	61	10	2
101100950	**CM**	**CMX**	9,5	13	63	10	2
101101000	**CM**	**CMX**	10	13	63	10	2
101101050	**CM**	**CMX**	10,5	13	70	12	2
101101100	**CM**	**CMX**	11	13	70	12	2
101101200	**CM**	**CMX**	12	16	73	12	2
101101300	**CM**	**CMX**	13	16	73	12	2
101101400	**CM**	**CMX**	14	16	73	12	2
101101500	**CM**	**CMX**	15	19	79	16	2
101101600	**CM**	**CMX**	16	19	79	16	2
101101700	**CM**	**CMX**	17	19	79	16	2
101101800	**CM**	**CMX**	18	19	79	16	2
101101900	**CM**	**CMX**	19	22	82	16	2
101102000	**CM**	**CMX**	20	22	82	16	2
101102001	**CM**	**CMX**	20	22	88	20	2
101102100	**CM**	**CMX**	21	22	88	20	2
101102200	**CM**	**CMX**	22	22	88	20	2
101102300	**CM**	**CMX**	23	22	88	20	2
101102400	**CM**	**CMX**	24	26	102	25	2
101102500	**CM**	**CMX**	25	26	102	25	2
101102600	**CM**	**CMX**	26	26	102	25	2
101102800	**CM**	**CMX**	28	26	102	25	2
101103000	**CM**	**CMX**	30	26	102	25	2
101103200	**CM**	**CMX**	32	32	112	32	2
101103500	**CM**	**CMX**	35	32	112	32	2
101103600	**CM**	**CMX**	36	32	112	32	2
101104000	**CM**	**CMX**	40	38	118	32	2
101104500	**CM**	**CMX**	45	38	118	32	2
101105000	**CM**	**CMX**	50	45	125	32	2

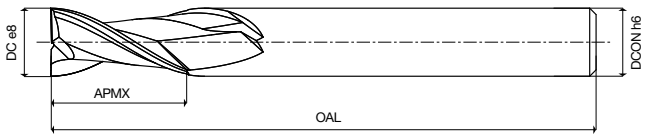
parametri tecnici a pag. / *for technical parameters see page* 107

● recommended ◕ acceptable ○ not recommended

10110

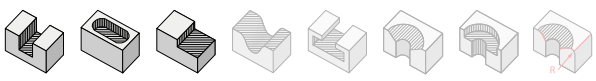
Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
●	●	●	◕	○	●	●

Frese a due taglienti in tolleranza e8
Two flute end mills in tolerance e8



Skin				N	λ°S 32	Z2	
Coating	Quality UOP	W on request	F on request	Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC e8	APMX	OAL	DCON h6	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 CM	**CMX**	6	16	76	6	2
101250650 CM	**CMX**	6,5	16	76	10	2
101250700 CM	**CMX**	7	19	79	10	2
101250750 CM	**CMX**	7,5	19	79	10	2
101250800 CM	**CMX**	8	19	79	10	2
101250850 CM	**CMX**	8,5	22	83	10	2
101250900 CM	**CMX**	9	22	83	10	2
101250950 CM	**CMX**	9,5	22	83	10	2
101251000 CM	**CMX**	10	22	83	10	2
101251050 CM	**CMX**	10,5	25	95	12	2
101251100 CM	**CMX**	11	25	95	12	2
101251200 CM	**CMX**	12	28	98	12	2
101251300 CM	**CMX**	13	28	98	12	2
101251400 CM	**CMX**	14	32	102	12	2
101251500 CM	**CMX**	15	32	108	16	2
101251600 CM	**CMX**	16	32	108	16	2
101251700 CM	**CMX**	17	35	114	16	2
101251800 CM	**CMX**	18	35	114	16	2
101251900 CM	**CMX**	19	38	117	16	2
101252000 CM	**CMX**	20	38	117	16	2
101252100 CM	**CMX**	21	38	132	20	2
101252200 CM	**CMX**	22	41	135	20	2
101252300 CM	**CMX**	23	41	135	20	2
101252400 CM	**CMX**	24	41	152	25	2
101252500 CM	**CMX**	25	44	159	25	2
101252600 CM	**CMX**	26	44	159	25	2
101252800 CM	**CMX**	28	44	159	25	2
101253000 CM	**CMX**	30	50	159	25	2
101253200 CM	**CMX**	32	52	165	32	2
101253600 CM	**CMX**	36	54	167	32	2
101254000 CM	**CMX**	40	56	174	32	2



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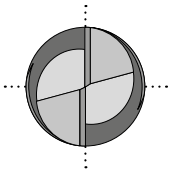
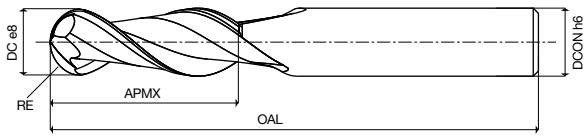


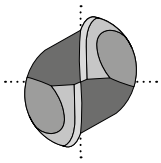
Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
●	●	●	◪	○	●	●

Series
10140

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



BALL-NOSED



Skin	ISO 1641/I	W on request	F on request	N	λ°s 32	Z2 BALL-NOSED	
Coating	Standards			Execution	Helix	Teeth	Length

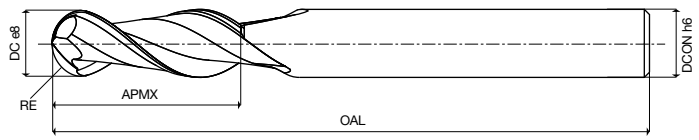
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC e8	RE	APMX	OAL	DCON h6	Z
101400100 CM		**CMX**	1	0,5	3	47	6	2
101400150 CM		**CMX**	1,5	0,75	3	47	6	2
101400200 CM		**CMX**	2	1	4	48	6	2
101400300 CM		**CMX**	3	1,5	5	49	6	2
101400400 CM		**CMX**	4	2	7	51	6	2
101400500 CM		**CMX**	5	2,5	8	52	6	2
101400600 CM		**CMX**	6	3	8	52	6	2
101400700 CM		**CMX**	7	3,5	10	60	10	2
101400800 CM		**CMX**	8	4	11	61	10	2
101400900 CM		**CMX**	9	4,5	11	61	10	2
101401000 CM		**CMX**	10	5	13	63	10	2
101401100 CM		**CMX**	11	5,5	13	70	12	2
101401200 CM		**CMX**	12	6	16	73	12	2
101401300 CM		**CMX**	13	6,5	16	73	12	2
101401400 CM		**CMX**	14	7	16	73	12	2
101401500 CM		**CMX**	15	7,5	19	79	16	2
101401600 CM		**CMX**	16	8	19	79	16	2
101401800 CM		**CMX**	18	9	19	79	16	2
101402000 CM		**CMX**	20	10	22	88	20	2
101402200 CM		**CMX**	22	11	22	88	20	2
101402500 CM		**CMX**	25	12,5	26	102	25	2
101402800 CM		**CMX**	28	14	26	102	25	2
101403000 CM		**CMX**	30	15	26	102	25	2
101403200 CM		**CMX**	32	16	32	112	32	2

parametri tecnici a pag. / *for technical parameters see page* 107

● recommended ◕ acceptable ○ not recommended

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
10140	●	●	●	◕	○	●	●

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

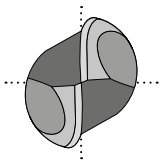


Skin	✓	W	F	N	λ°S 32	Z2 BALL-NOSED	
Coating	Quality UOP	W on request	F on request	Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC e8	RE	APMX	OAL	DCON h6	Z
101550300 CM	**CMX**	3	1,5	9	60	6	2
101550400 CM	**CMX**	4	2	13	67	6	2
101550500 CM	**CMX**	5	2,5	16	70	6	2
101550600 CM	**CMX**	6	3	16	76	6	2
101550700 CM	**CMX**	7	3,5	19	79	10	2
101550800 CM	**CMX**	8	4	19	79	10	2
101550900 CM	**CMX**	9	4,5	22	83	10	2
101551000 CM	**CMX**	10	5	22	83	10	2
101551100 CM	**CMX**	11	5,5	25	95	12	2
101551200 CM	**CMX**	12	6	28	98	12	2
101551300 CM	**CMX**	13	6,5	28	98	12	2
101551400 CM	**CMX**	14	7	32	102	12	2
101551500 CM	**CMX**	15	7,5	32	108	16	2
101551600 CM	**CMX**	16	8	32	108	16	2
101551800 CM	**CMX**	18	9	35	114	16	2
101552000 CM	**CMX**	20	10	38	132	20	2
101552200 CM	**CMX**	22	11	41	135	20	2
101552500 CM	**CMX**	25	12,5	44	159	25	2
101552800 CM	**CMX**	28	14	44	159	25	2
101553000 CM	**CMX**	30	15	50	159	25	2
101553200 CM	**CMX**	32	16	52	165	32	2

parametri tecnici a pag. / *for technical parameters see page* 107

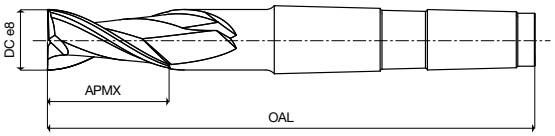
BALL-NOSED

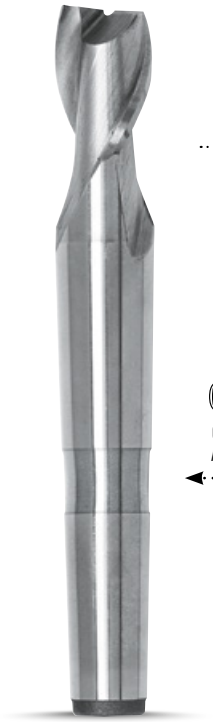


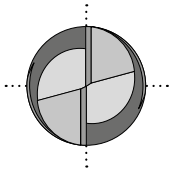
Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
●	●	●	◕	○	●	●

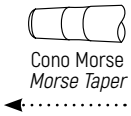
Series 10170

Frese a due taglienti
Two flute end mills









Cono Morse
Morse Taper

DCON = MORSE TAPER

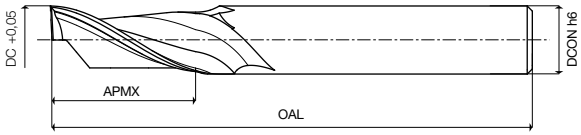
Skin	UNI 8260A DIN 326 ISO 1641/I	N	λ°S 32	Z2	
Coating	Standards	Execution	Helix	Teeth	Length

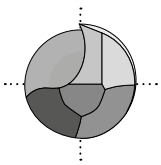
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC e8	APMX	OAL	MORSE TAPER	Z
101702000 CM	**CMX**	20	22	124	3	2
101702500 CM	**CMX**	25	26	128	3	2
101703000 CM	**CMX**	30	32	134	3	2
101703200 CM	**CMX**	32	32	157	4	2
101703600 CM	**CMX**	36	32	157	4	2
101704000 CM	**CMX**	40	38	163	4	2

parametri tecnici a pag. / *for technical parameters see page* 107

Series 11405

Frese a un tagliente elicoidale
Single flute end mills





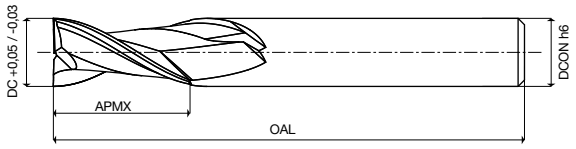
Skin Alu				W	λ°S 32	Z1	
Coating	Quality UOP	W on request	F on request	Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	D"	APMX	OAL	DCON h6	Z
114050317 CM	**CMX**	3,17	1/8	11	55	6,35	1
114050400 CM	**CMX**	4		11	55	6	1
114050500 CM	**CMX**	5		13	60	6	1
114050600 CM	**CMX**	6		13	60	6	1
114050800 CM	**CMX**	8		19	70	10	1
114051000 CM	**CMX**	10		22	75	10	1
114051200 CM	**CMX**	12		25	80	12	1

parametri tecnici a pag. / *for technical parameters see page* 108

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
10170	◪	◪	◪	◪	○	●	●
11405	○	○	○	◪	●	○	○

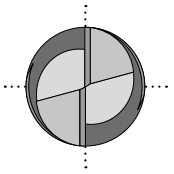
● recommended ◪ acceptable ○ not recommended



Skin Alu	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	W	λ°s 40	Z2	
Coating	Standards			Execution	Helix	Teeth	Length

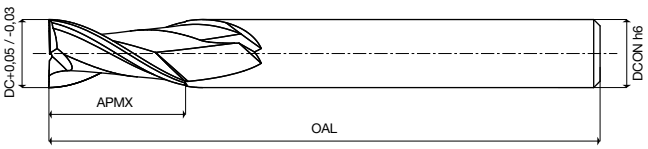
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	Z
121050200 CM	**CMX**	2	7	51	6	2
121050300 CM	**CMX**	3	8	52	6	2
121050400 CM	**CMX**	4	11	55	6	2
121050500 CM	**CMX**	5	13	57	6	2
121050600 CM	**CMX**	6	13	57	6	2
121050700 CM	**CMX**	7	16	66	10	2
121050800 CM	**CMX**	8	19	69	10	2
121050900 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

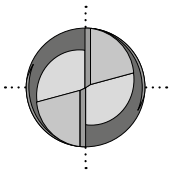
parametri tecnici a pag. / *for technical parameters see page* 108



	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
12105	○	○	◒	●	●	○	○

Series
12120
Frese a due taglienti
Two flute end mills





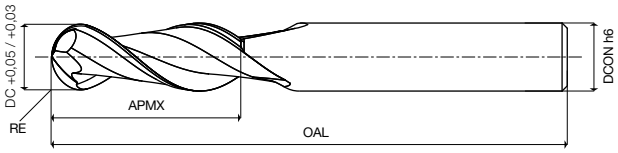
Skin Alu	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	W	λ°s 40	Z2	
Coating	Standards			Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	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

parametri tecnici a pag. / *for technical parameters see page* 108

● recommended ◕ acceptable ○ not recommended

12120	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
	○	○	◕	●	●	○	○



SU RICHIESTA
ON REQUEST

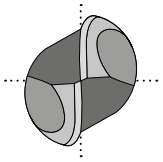
Series 12505

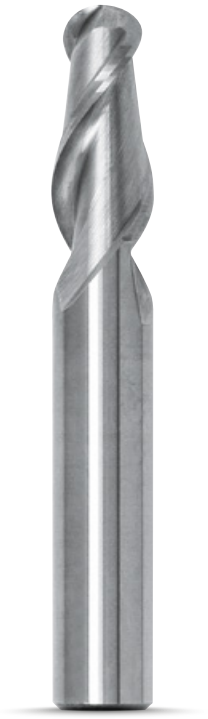
Frese a due taglienti a testa semisferica
Ball nosed two flute end drills

INFO: servizio.clienti@uop.it / *customer.service@uop.it*

Skin Alu — Coating | ISO 1641/I — Quality UOP | W on request | F on request | W — Execution | λ°s 40 — Helix | Z2 BALL-NOSED — Teeth | Length

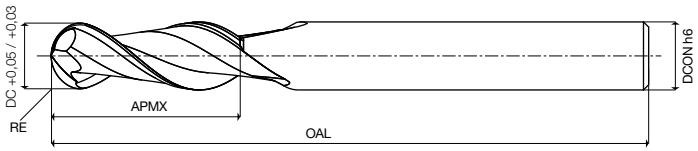
BALL-NOSED





Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/+0,03	RE	APMX	OAL	DCON h6	Z
125050200	CM	CMX	2	1	7	51	6	2
125050300	CM	CMX	3	1,5	8	52	6	2
125050400	CM	CMX	4	2	11	55	6	2
125050500	CM	CMX	5	2,5	13	57	6	2
125050600	CM	CMX	6	3	13	57	6	2
125050800	CM	CMX	8	4	19	69	10	2
125051000	CM	CMX	10	5	22	72	10	2
125051200	CM	CMX	12	6	26	83	12	2
125051400	CM	CMX	14	7	26	83	12	2
125051500	CM	CMX	15	7,5	32	92	16	2
125051600	CM	CMX	16	8	32	92	16	2
125051800	CM	CMX	18	9	32	92	16	2
125052000	CM	CMX	20	10	38	104	20	2

parametri tecnici a pag. / *for technical parameters see page* 108



SU RICHIESTA
ON REQUEST

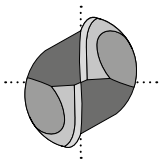
Series 12520

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

INFO: servizio.clienti@uop.it / *customer.service@uop.it*

Skin Alu — Coating | ISO 1641/I — Quality UOP | W on request | F on request | W — Execution | λ°s 40 — Helix | Z2 BALL-NOSED — Teeth | Length

BALL-NOSED

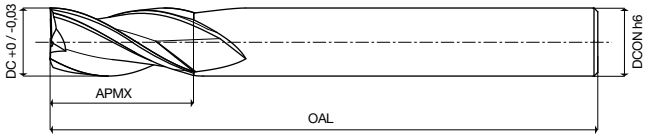


Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/+0,03	RE	APMX	OAL	DCON h6	Z
125200300	CM	CMX	3	1,5	12	56	6	2
125200400	CM	CMX	4	2	19	63	6	2
125200500	CM	CMX	5	2,5	24	68	6	2
125200600	CM	CMX	6	3	24	68	6	2
125200800	CM	CMX	8	4	38	88	10	2
125201000	CM	CMX	10	5	45	95	10	2
125201200	CM	CMX	12	6	53	110	12	2
125201400	CM	CMX	14	7	53	110	12	2
125201500	CM	CMX	15	7,5	63	123	16	2
125201600	CM	CMX	16	8	63	123	16	2
125201800	CM	CMX	18	9	63	123	16	2
125202000	CM	CMX	20	10	75	141	20	2

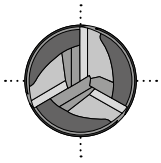
parametri tecnici a pag. / *for technical parameters see page* 108

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
12505	○	○	◒	●	●	○	○
12520	○	○	◒	●	●	○	○

Series
14105
Frese a tre taglienti
Three flute end mills



Skin — Coating
UNI 8244
DIN 844A
ISO 1641/I — Standards
W on request
F on request
N — Execution
λ°S 32 — Helix
Z3 — Teeth
Length



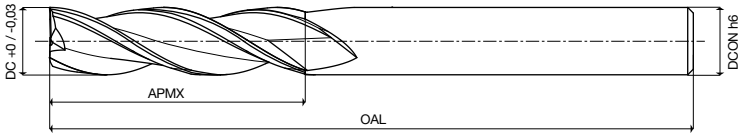
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0/-0,03	APMX	OAL	DCON h6	Z
141050200 CM		CMX	2	7	51	6	3
141050250 CM		CMX	2,5	8	52	6	3
141050300 CM		CMX	3	8	52	6	3
141050350 CM		CMX	3,5	10	54	6	3
141050400 CM		CMX	4	11	55	6	3
141050450 CM		CMX	4,5	11	55	6	3
141050500 CM		CMX	5	13	57	6	3
141050550 CM		CMX	5,5	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
141053000 CM		CMX	30	45	121	25	3
141053200 CM		CMX	32	53	133	32	3
141053600 CM		CMX	36	53	133	32	3
141054000 CM		CMX	40	63	143	32	3
141054500 CM		CMX	45	63	143	32	3
141055000 CM		CMX	50	75	155	32	3

parametri tecnici a pag. / *for technical parameters see page* 109

● recommended ◕ acceptable ○ not recommended

14105

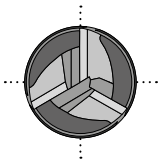
Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
●	●	●	●	○	●	●



Skin	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	N	λ°s 32	Z3	
Coating	Standards			Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0/-0,03	APMX	OAL	DCON h6	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
141203000 CM	**CMX**	30	90	166	25	3
141203200 CM	**CMX**	32	106	186	32	3
141203600 CM	**CMX**	36	106	186	32	3
141204000 CM	**CMX**	40	125	205	32	3

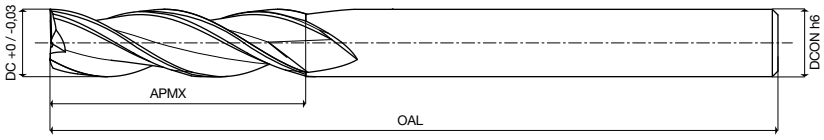
parametri tecnici a pag. / *for technical parameters see page* 109

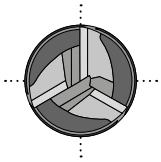


Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
●	●	●	●	○	●	●

Series 14135

Frese a tre taglienti
Three flute end mills





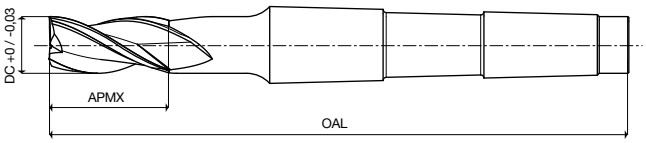
Skin		W	F	N	λ°s 32	Z3	
Coating	Quality UOP	W on request	F on request	Execution	Helix	Teeth	Length

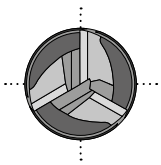
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0/-0,03	APMX	OAL	DCON h6	Z
141350600 CM	CMX	6	56	106	10	3
141350700 CM	CMX	7	63	113	10	3
141350800 CM	CMX	8	63	113	10	3
141350900 CM	CMX	9	70	120	10	3
141351000 CM	CMX	10	70	120	10	3
141351100 CM	CMX	11	80	137	12	3
141351200 CM	CMX	12	80	137	12	3
141351300 CM	CMX	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
141351800 CM	CMX	18	100	166	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

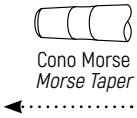
parametri tecnici a pag. / *for technical parameters see page* 109

Series 14150

Frese a tre taglienti
Three flute end mills







Cono Morse
Morse Taper

Skin	UNI 8250 DIN 845B ISO 1641/II	N	λ°s 32	Z3	
Coating	Standards	Execution	Helix	Teeth	Length

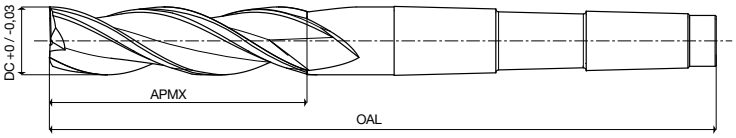
DCON = MORSE TAPER

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0/-0,03	APMX	OAL	MORSE TAPER	Z
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
141503000 CM	CMX	30	53	155	3	3
141503200 CM	CMX	32	53	178	4	3
141503600 CM	CMX	36	53	178	4	3
141504000 CM	CMX	40	63	188	4	3

parametri tecnici a pag. / *for technical parameters see page* 109

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
14135	●	●	●	●	○	●	●
14150	◒	◒	◒	◒	○	●	●

● recommended ◒ acceptable ○ not recommended



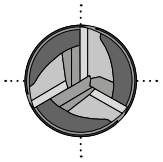
Series
14155
Frese a tre taglienti
Three flute end mills

Skin	UNI 8250 DIN 845B ISO 1641/II	N	λ°s 32	Z3	
Coating	Standards	Execution	Helix	Teeth	Length

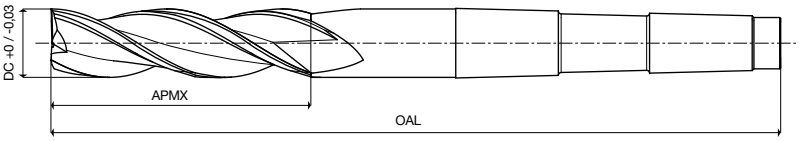
DCON = MORSE TAPER

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0/-0,03	APMX	OAL	MORSE TAPER	Z
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
141553000	CM	CMX	30	90	192	3	3
141553200	CM	CMX	32	106	231	4	3
141553600	CM	CMX	36	106	231	4	3
141554000	CM	CMX	40	125	250	4	3

parametri tecnici a pag. / *for technical parameters see page* 109



Cono Morse
Morse Taper



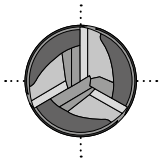
Series
14160
Frese a tre taglienti
Three flute end mills

Skin	✓	N	λ°s 32	Z3	
Coating	Quality UOP	Execution	Helix	Teeth	Length

DCON = MORSE TAPER

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0/-0,03	APMX	OAL	MORSE TAPER	Z
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
141603000	CM	CMX	30	140	265	4	3
141603200	CM	CMX	32	150	275	4	3
141603600	CM	CMX	36	150	275	4	3
141604000	CM	CMX	40	180	305	4	3

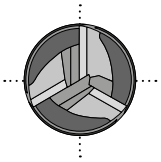
parametri tecnici a pag. / *for technical parameters see page* 109

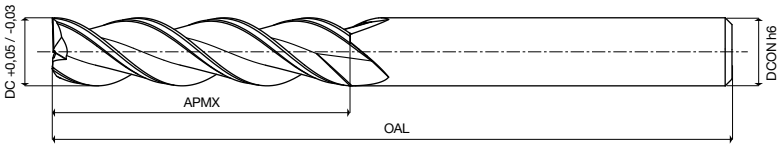


Cono Morse
Morse Taper

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
14155	◕	◕	◕	◕	○	●	●
14160	◕	◕	◕	◕	○	●	●

Series
TORNADO
14505
Frese "Tornado"
"Tornado" end mills



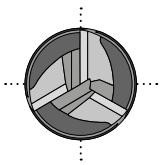


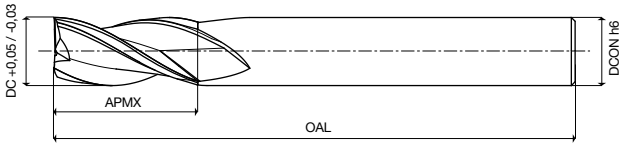
Skin	UNI 8244 DIN 844A ISO 1641/I			H	λ°s 55	Z3	
Coating	Standards	W on request	F on request	Execution	Helix	Teeth	Length

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	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
145051600 CM		**CMX**	16	32	92	16	3
145052000 CM		**CMX**	20	38	104	20	3

parametri tecnici a pag. / *for technical parameters see page* 109

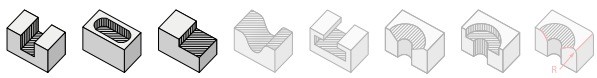
Series
14805
Frese a tre taglienti
Three flute end mills





Skin	✓			W	λ°s 40	Z3	
Coating	Quality UOP	W on request	F on request	Execution	Helix	Teeth	Length

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	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



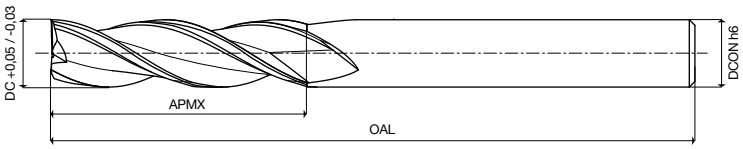
parametri tecnici a pag. / *for technical parameters see page* 110

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
14505	◪	◪	◪	○	○	●	●
14805	○	○	○	●	●	○	○

● recommended ◪ acceptable ○ not recommended

Series 14820

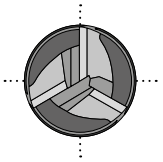
Frese a tre taglienti
Three flute end mills



Skin	✓	W on request	F on request	W	λ°s 40	Z3	
Coating	Quality UOP			Execution	Helix	Teeth	Length

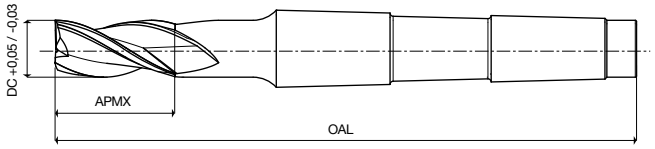
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	Z
148200300 CM	**CMX**	3	18	62	6	3
148200400 CM	**CMX**	4	22	65	6	3
148200500 CM	**CMX**	5	26	70	6	3
148200600 CM	**CMX**	6	30	75	6	3
148200700 CM	**CMX**	7	34	84	10	3
148200800 CM	**CMX**	8	34	84	10	3
148200900 CM	**CMX**	9	40	90	10	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

parametri tecnici a pag. / *for technical parameters see page* 110



Series 14850

Frese a tre taglienti
Three flute end mills

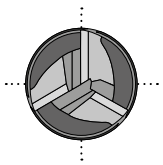


Skin Alu	✓	W	λ°s 40	Z3	
Coating	Quality UOP	Execution	Helix	Teeth	Length

DCON = MORSE TAPER

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	MORSE TAPER	Z
148502000 CM	**CMX**	20	45	147	3	3
148502500 CM	**CMX**	25	50	152	3	3
148503000 CM	**CMX**	30	63	165	3	3
148503200 CM	**CMX**	32	63	188	4	3
148503600 CM	**CMX**	36	70	195	4	3

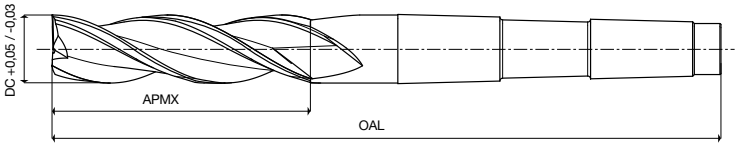
parametri tecnici a pag. / *for technical parameters see page* 110

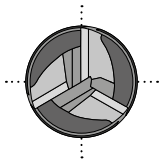


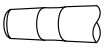
Cono Morse
Morse Taper

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
14820	○	○	○	●	●	○	○
14850	○	○	○	●	●	○	○

Series
14855
Frese a tre taglienti
Three flute end mills







Cono Morse
Morse Taper

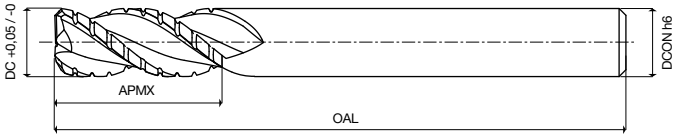
Skin Alu — Coating | Quality UOP | W — Execution | λ°S 40 — Helix | Z3 — Teeth | Length

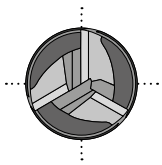
DCON = MORSE TAPER

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	MORSE TAPER	Z
148552000	CM	CMX	20	70	172	3	3
148552500	CM	CMX	25	80	182	3	3
148553000	CM	CMX	30	90	192	3	3
148553200	CM	CMX	32	100	225	4	3
148553600	CM	CMX	36	110	235	4	3

parametri tecnici a pag. / *for technical parameters see page* 110

Series
15105
Frese a tre taglienti a **SEMIFINIRE**
Three flute roughing and semi-finishing end mills





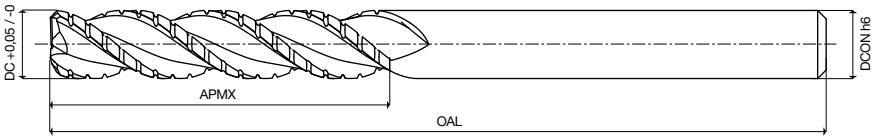
Skin Alu — Coating | UNI 8244 DIN 844A ISO 1641/I — Standards | W on request | F on request | WF — Execution | λ°S 40 — Helix | Z3 — Teeth | Length

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	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
151052500	CM	CMX	25	45	121	25	3

parametri tecnici a pag. / *for technical parameters see page* 110

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
14855	○	○	○	●	●	○	○
15105	○	○	○	●	●	○	○

● recommended ◕ acceptable ○ not recommended



Series 15120

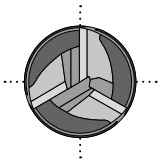
Frese a tre taglienti a **SEMIFINIRE**

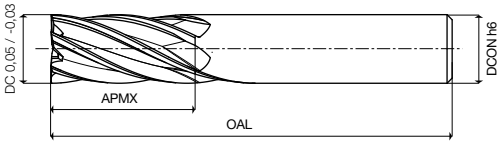
Three flute roughing and semi-finishing end mills

Skin Alu	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	WF	λ°S 40	Z3	
Coating	Standards	W on request	F on request	Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	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
151202500 CM	**CMX**	25	90	166	25	3

parametri tecnici a pag. / *for technical parameters see page* 110





Series 17105

Frese a **FINIRE**

Finishing end mills

Skin	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	N	λ°S 32	Z4÷8	
Coating	Standards	W on request	F on request	Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	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

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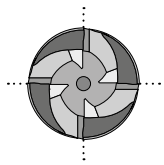
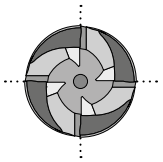


NO CENTER CUTTING

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
15120	○	○	○	●	●	○	○
17105	○	○	◕	○	○	●	●

Series 17105

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



NO CENTER CUTTING

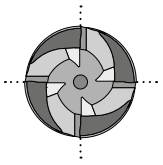
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	Z
171051500 CM		CMX	15	32	92	16	4
171051600 CM		CMX	16	32	92	16	4
171051700 CM		CMX	17	32	92	16	4
171051800 CM		CMX	18	32	92	16	4
171051900 CM		CMX	19	38	98	16	4
171052000 CM		CMX	20	38	98	16	4
171052001 CM		CMX	20	38	104	20	4
171052500 CM		CMX	25	45	121	25	5
171053000 CM		CMX	30	45	121	25	6
171053200 CM		CMX	32	53	133	32	6
171053600 CM		CMX	36	53	133	32	6
171054000 CM		CMX	40	63	143	32	8
171054500 CM		CMX	45	63	143	32	8
171055000 CM		CMX	50	75	155	32	8

parametri tecnici a pag. / *for technical parameters see page* 111

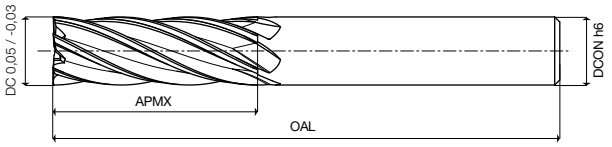
Series 17120

Frese a **FINIRE**

Finishing end mills

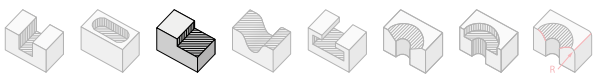


NO CENTER CUTTING



Skin	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	N	λ°s 32	Z4÷8	
Coating	Standards			Execution	Helix	Teeth	Length

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	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
171202001 CM		CMX	20	75	141	20	4
171202500 CM		CMX	25	90	166	25	5
171203000 CM		CMX	30	90	166	25	6
171203200 CM		CMX	32	106	186	32	6
171203600 CM		CMX	36	106	186	32	6
171204000 CM		CMX	40	125	205	32	8



parametri tecnici a pag. / *for technical parameters see page* 111

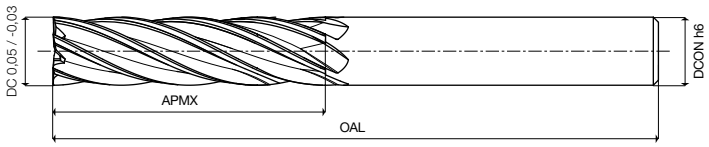
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
17105	○	○	◒	○	○	●	●
17120	○	○	◒	○	○	●	●

● recommended ◒ acceptable ○ not recommended

Series 17135

Frese a **FINIRE**

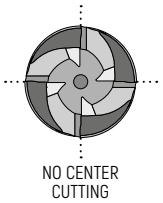
Finishing end mills



Skin	Quality UOP	W on request	F on request	N	λ°S 32	Z4÷6	
Coating				Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	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
171352500 CM	**CMX**	25	125	201	25	5
171353000 CM	**CMX**	30	140	216	25	6
171353200 CM	**CMX**	32	150	230	32	6

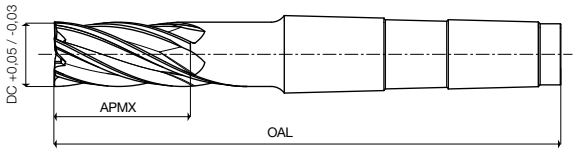
parametri tecnici a pag. / *for technical parameters see page* 111



Series 17150

Frese a **FINIRE**

Finishing end mills

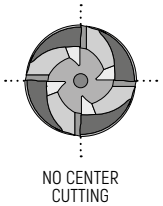


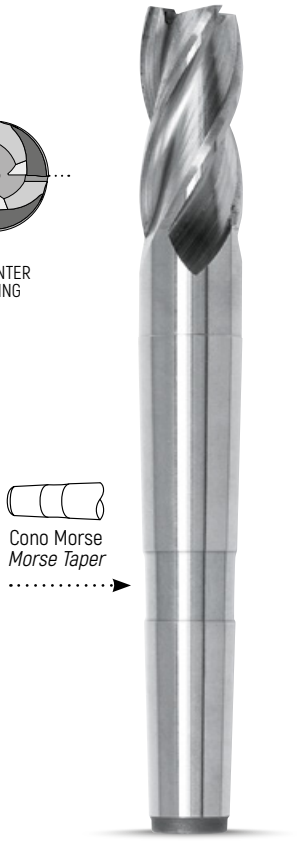
Skin	UNI 8250 DIN 845B ISO 1641/II	N	λ°S 32	Z4÷8	
Coating	Standards	Execution	Helix	Teeth	Length

DCON = MORSE TAPER

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	MORSE TAPER	Z
171501600 CM	**CMX**	16	32	117	2	4
171501800 CM	**CMX**	18	32	117	2	4
171502000 CM	**CMX**	20	38	140	3	4
171502500 CM	**CMX**	25	45	147	3	5
171503000 CM	**CMX**	30	53	155	3	6
171503200 CM	**CMX**	32	53	178	4	6
171503600 CM	**CMX**	36	53	178	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

parametri tecnici a pag. / *for technical parameters see page* 111



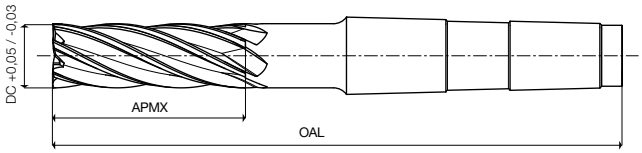


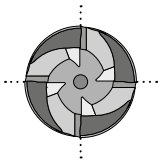
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
17135	○	○	◪	○	○	●	●
17150	○	○	◪	○	○	●	●

Series 17155

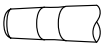
Frese a **FINIRE**

Finishing end mills





NO CENTER CUTTING



Cono Morse
Morse Taper

Skin	UNI 8250 DIN 845B ISO 1641/II	N	λ°s 32	Z4÷8	
Coating	Standards	Execution	Helix	Teeth	Length

DCON = MORSE TAPER

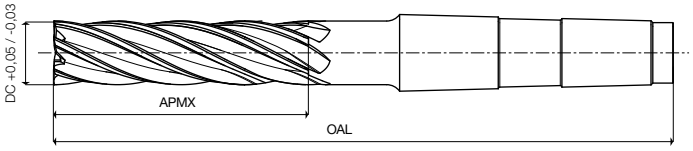
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	MORSE TAPER	Z
171551600 CM	**CMX**	16	63	148	2	4
171551800 CM	**CMX**	18	63	148	2	4
171552000 CM	**CMX**	20	75	177	3	4
171552500 CM	**CMX**	25	90	192	3	5
171553000 CM	**CMX**	30	90	192	3	6
171553200 CM	**CMX**	32	106	231	4	6
171553600 CM	**CMX**	36	106	231	4	6
171554000 CM	**CMX**	40	125	250	4	8
171554500 CM	**CMX**	45	125	250	4	8
171555000 CM	**CMX**	50	150	308	5	8

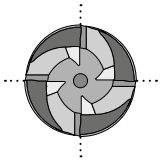
parametri tecnici a pag. / *for technical parameters see page* 111

Series 17160

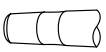
Frese a **FINIRE**

Finishing end mills





NO CENTER CUTTING



Cono Morse
Morse Taper

Skin	✓	N	λ°s 32	Z4÷8	
Coating	Quality UOP	Execution	Helix	Teeth	Length

DCON = MORSE TAPER

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	MORSE TAPER	Z
171602000 CM	**CMX**	20	110	212	3	4
171602500 CM	**CMX**	25	125	250	4	5
171603000 CM	**CMX**	30	140	265	4	6
171603200 CM	**CMX**	32	150	275	4	6
171603600 CM	**CMX**	36	150	275	4	6
171604000 CM	**CMX**	40	180	305	4	8
171604500 CM	**CMX**	45	190	315	4	8
171605000 CM	**CMX**	50	200	360	5	8

parametri tecnici a pag. / *for technical parameters see page* 111

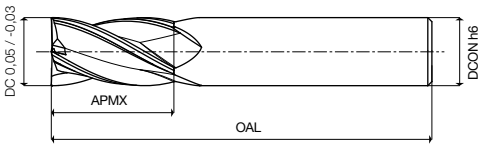
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
17155	○	○	◪	○	○	●	●
17160	○	○	◪	○	○	●	●

● recommended ◪ acceptable ○ not recommended

Series 17305

Frese a **FINIRE** con tagliente al centro

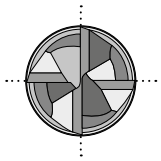
Finishing end mills center cutting



Skin	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	N	λ°s 32	Z4÷8	
Coating	Standards			Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	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

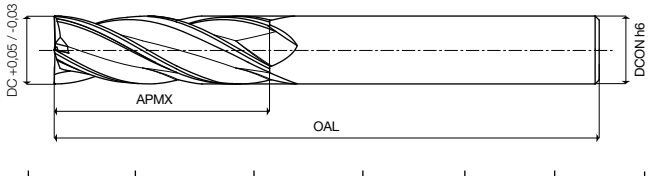
parametri tecnici a pag. / *for technical parameters see page* 111



Series 17320

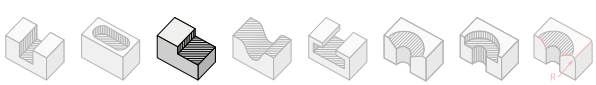
Frese a **FINIRE** con tagliente al centro

Finishing end mills center cutting



Skin	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	N	λ°s 32	Z4÷8	
Coating	Standards			Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	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



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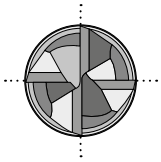
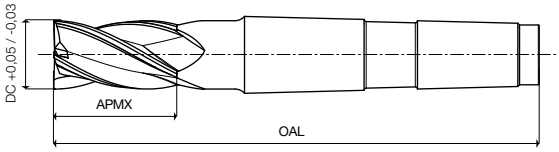
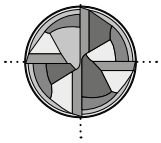


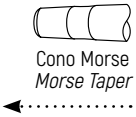
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
17305	●	●	●	●	○	●	●
17320	●	●	●	●	○	●	●

Series 17350

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







Skin	UNI 8244 DIN 845A ISO 1641/I	N	λ°s 32	Z4÷8	
Coating	Standards	Execution	Helix	Teeth	Length

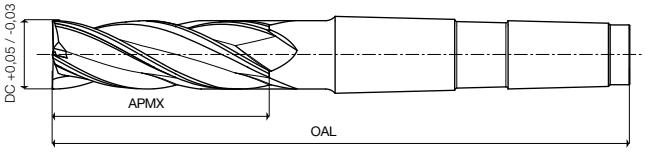
DCON = MORSE TAPER

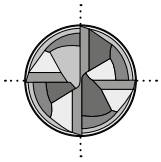
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	MORSE TAPER	Z
173502000 CM	**CMX**	20	38	140	3	4
173502500 CM	**CMX**	25	45	147	3	5
173503000 CM	**CMX**	30	53	155	3	6
173503200 CM	**CMX**	32	53	178	4	6
173503600 CM	**CMX**	36	53	178	4	6
173504000 CM	**CMX**	40	63	188	4	8
173504500 CM	**CMX**	45	63	188	4	8
173505000 CM	**CMX**	50	75	200	4	8
173505001 CM	**CMX**	50	75	233	5	8

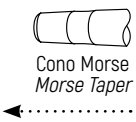
parametri tecnici a pag. / *for technical parameters see page* 111

Series 17355

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







Skin	UNI 8250 DIN 845B ISO 1641/II	N	λ°s 32	Z4÷8	
Coating	Standards	Execution	Helix	Teeth	Length

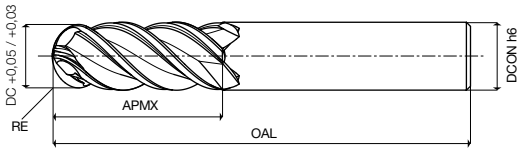
DCON = MORSE TAPER

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	MORSE TAPER	Z
173552000 CM	**CMX**	20	75	177	3	4
173552500 CM	**CMX**	25	90	192	3	5
173553000 CM	**CMX**	30	90	192	3	6
173553200 CM	**CMX**	32	106	231	4	6
173553600 CM	**CMX**	36	106	231	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

parametri tecnici a pag. / *for technical parameters see page* 111

	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	○	○	◪	○	○	●	●

● recommended ◪ acceptable ○ not recommended



SU RICHIESTA
ON REQUEST

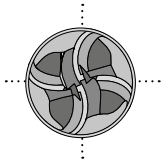
Series 17505

Frese a testa semisferica
Ball nosed end mills

INFO: servizio.clienti@uop.it / *customer.service@uop.it*

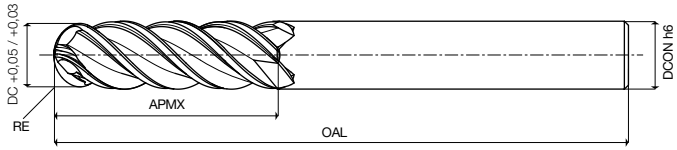
Skin	ISO 1641/I	N	λ°s 32	Z4÷8 BALL-NOSED	
Coating	Standards	Execution	Helix	Teeth	Length

BALL-NOSED



Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/+0,03	RE	APMX	OAL	DCON h6	Z
175050200 CM		CMX	2	1	7	51	6	4
175050300 CM		CMX	3	1,5	8	52	6	4
175050400 CM		CMX	4	2	11	55	6	4
175050500 CM		CMX	5	2,5	13	57	6	4
175050600 CM		CMX	6	3	13	57	6	4
175050800 CM		CMX	8	4	19	69	10	4
175051000 CM		CMX	10	5	22	72	10	4
175051200 CM		CMX	12	6	26	83	12	4
175051400 CM		CMX	14	7	26	83	12	4
175051500 CM		CMX	15	7,5	32	92	16	4
175051600 CM		CMX	16	8	32	92	16	4
175051800 CM		CMX	18	9	32	92	16	4
175052000 CM		CMX	20	10	38	98	16	4
175052001 CM		CMX	20	10	38	104	20	4
175052200 CM		CMX	22	11	38	104	20	4
175052400 CM		CMX	24	12	45	121	25	5
175052500 CM		CMX	25	12,5	45	121	25	5
175052600 CM		CMX	26	13	45	121	25	5
175052800 CM		CMX	28	14	45	121	25	5
175053000 CM		CMX	30	15	45	121	25	6
175053200 CM		CMX	32	16	53	133	32	6
175053600 CM		CMX	36	18	53	133	32	6
175054000 CM		CMX	40	20	63	143	32	8
175055000 CM		CMX	50	25	75	155	32	8

parametri tecnici a pag. / *for technical parameters see page* 112



SU RICHIESTA
ON REQUEST

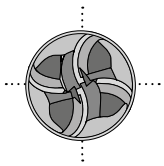
Series 17520

Frese a testa semisferica
Ball nosed end mills

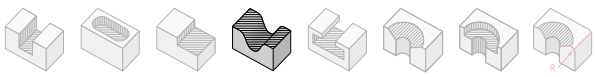
INFO: servizio.clienti@uop.it / *customer.service@uop.it*

Skin	ISO 1641/I	N	λ°s 32	Z4÷8 BALL-NOSED	
Coating	Standards	Execution	Helix	Teeth	Length

BALL-NOSED



Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/+0,03	RE	APMX	OAL	DCON h6	Z
175200200 CM		CMX	2	1	10	54	6	4
175200300 CM		CMX	3	1,5	12	56	6	4
175200400 CM		CMX	4	2	19	63	6	4
175200500 CM		CMX	5	2,5	24	68	6	4
175200600 CM		CMX	6	3	24	68	6	4
175200800 CM		CMX	10	5	38	88	6	4
175201000 CM		CMX	10	5	45	95	10	4
175201200 CM		CMX	12	6	53	110	12	4
175201400 CM		CMX	14	7	53	110	12	4
175201500 CM		CMX	15	7,5	63	123	16	4
175201600 CM		CMX	16	8	63	123	16	4
175201800 CM		CMX	18	9	63	123	16	4
175202000 CM		CMX	20	10	75	135	16	4
175202001 CM		CMX	20	10	75	141	20	4
175202200 CM		CMX	22	11	75	141	20	4
175202400 CM		CMX	24	12	90	166	25	5
175202500 CM		CMX	25	12,5	90	166	25	5
175202600 CM		CMX	26	13	90	166	25	5
175202800 CM		CMX	28	14	90	166	25	5
175203000 CM		CMX	30	15	90	166	25	6
175203200 CM		CMX	32	16	106	186	32	6
175203600 CM		CMX	36	18	106	186	32	6
175204000 CM		CMX	40	20	125	205	32	8



parametri tecnici a pag. / *for technical parameters see page* 112

	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	●	●	●	●	○	●	●

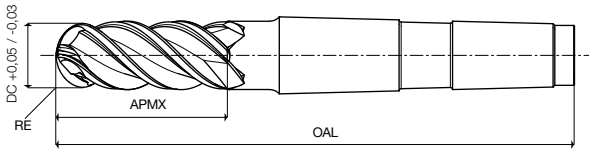
Series 17550

SU RICHIESTA *ON REQUEST*

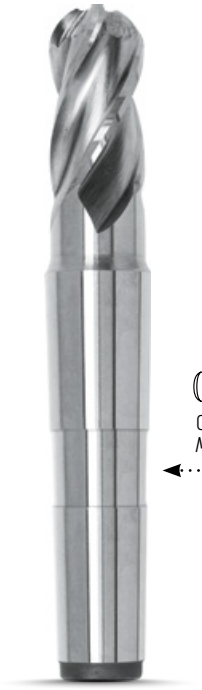
Frese a testa semisferica

Ball nosed end mills

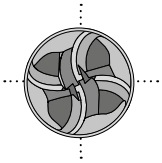
INFO: servizio.clienti@uop.it / *customer.service@uop.it*

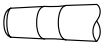


Skin	ISO 1641/I	N	λ°s 32	Z4÷8 BALL-NOSED	
Coating	Standards	Execution	Helix	Teeth	Length



BALL-NOSED





Cono Morse
Morse Taper

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	RE	APMX	OAL	MORSE TAPER	Z
175502000 CM		CMX	20	10	38	140	3	4
175502500 CM		CMX	25	12,5	45	147	3	5
175503000 CM		CMX	30	15	53	155	3	6
175503200 CM		CMX	32	16	53	178	4	6
175503600 CM		CMX	36	18	53	178	4	6
175504000 CM		CMX	40	20	63	188	4	8
175505000 CM		CMX	50	25	75	233	5	8

parametri tecnici a pag. / *for technical parameters see page* 112

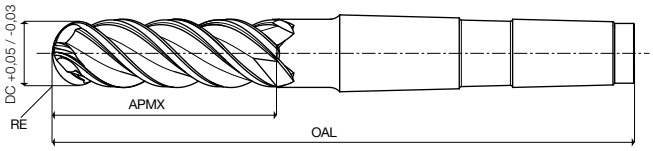
Series 17555

SU RICHIESTA *ON REQUEST*

Frese a testa semisferica

Ball nosed end mills

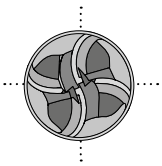
INFO: servizio.clienti@uop.it / *customer.service@uop.it*

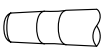


Skin	UNI DIN ISO 1641/I	N	λ°s 32	Z4÷8 BALL-NOSED	
Coating	Standards	Execution	Helix	Teeth	Length

DCON = MORSE TAPER

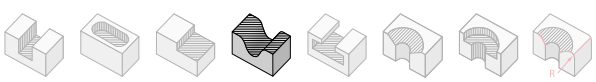
BALL-NOSED





Cono Morse
Morse Taper

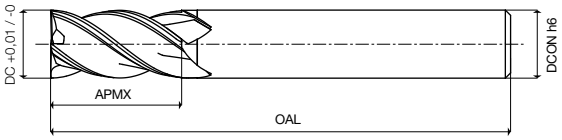
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	RE	APMX	OAL	MORSE TAPER	Z
175552000 CM		CMX	20	10	75	177	3	4
175552500 CM		CMX	25	12,5	90	192	3	5
175553000 CM		CMX	30	15	90	192	3	6
175553200 CM		CMX	32	16	106	231	4	6
175553600 CM		CMX	36	18	106	231	4	6
175554000 CM		CMX	40	20	125	250	4	8
175555000 CM		CMX	50	25	150	308	5	8



parametri tecnici a pag. / *for technical parameters see page* 112

	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	○	○	◪	○	○	●	●

● recommended ◪ acceptable ○ not recommended



Series 18105

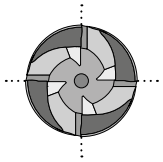
Frese a **FINIRE**

Finishing end mills

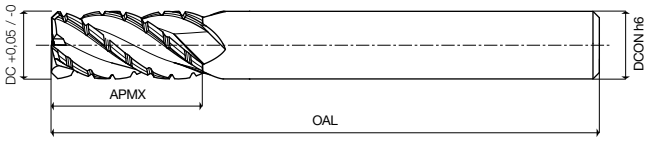
Skin	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	N	λ°s 45	Z4	
Coating	Standards			Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,01/-0	APMX	OAL	DCON h6	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* 113



NO CENTER CUTTING



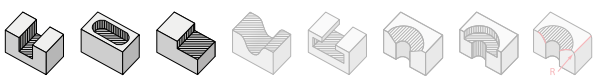
Series 19105

Frese a **SEMIFINIRE**
tagliente interrotto

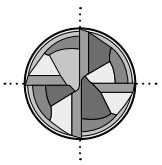
Semi-finishing end mills
Interrupted cutting edge

Skin	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	NF	λ°s 40	Z4	
Coating	Standards			Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	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

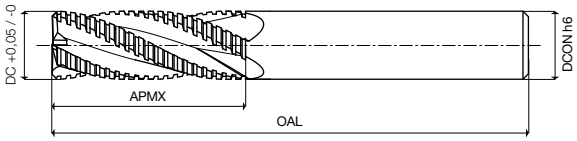


parametri tecnici a pag. / *for technical parameters see page* 113

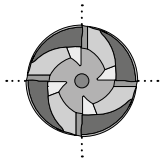


	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
18105	●	●	●	●	○	●	●
19105 NF	◒	◒	◒	○	○	●	●

Series
20105
Frese a **SEMIFINIRE**
Semi-finishing end mills



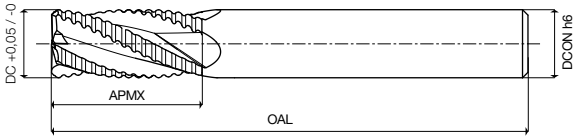
Skin — Coating | Quality UOP | W on request | F on request | NF — Execution | λ°s 28 — Helix | Z3÷5 — Teeth | Length


NO CENTER CUTTING

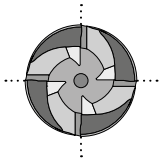
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	Z
201050601 CM		CMX	6	16	60	6	3
201050801 CM		CMX	8	22	64	10	4
201051001 CM		CMX	10	28	70	10	4
201051201 CM		CMX	12	32	80	12	4
201051401 CM		CMX	14	32	80	12	4
201051601 CM		CMX	16	36	90	16	4
201051801 CM		CMX	18	40	100	16	4
201052001 CM		CMX	20	45	110	20	4
201052501 CM		CMX	25	50	125	25	5

parametri tecnici a pag. / *for technical parameters see page* 114

Series
20105
Frese a **SGROSSARE**
Roughing end mills



Skin — Coating | Quality UOP | W on request | F on request | NR — Execution | λ°s 28 — Helix | Z3÷5 — Teeth | Length

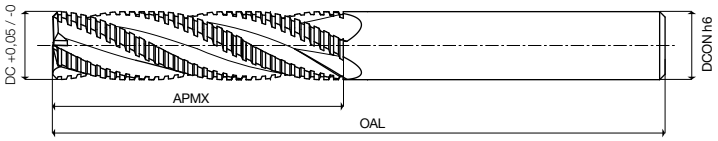

NO CENTER CUTTING

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	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

parametri tecnici a pag. / *for technical parameters see page* 114

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
20105 NF	◪	◪	◪	○	○	●	●
20105 NR	●	●	●	◪	○	●	●

● recommended ◪ acceptable ○ not recommended

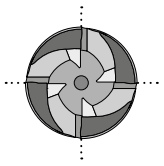


Series
20120
Frese a **SEMIFINIRE**
Semi-finishing end mills

Skin	✓	W on request	F on request	NF	λ°s 28	Z4÷5	
Coating	Quality UOP			Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	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

parametri tecnici a pag. / *for technical parameters see page* 114

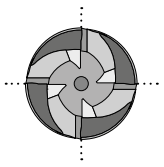


Series
20120
Frese a **SGROSSARE**
Roughing end mills

Skin	✓	W on request	F on request	NR	λ°s 28	Z4÷5	
Coating	Quality UOP			Execution	Helix	Teeth	Length

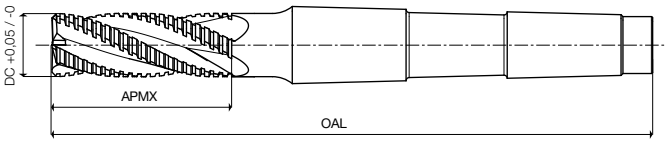
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	Z
201200803 CM	**CMX**	8	35	85	10	4
201201003 CM	**CMX**	10	42	90	10	4
201201203 CM	**CMX**	12	48	95	12	4
201201403 CM	**CMX**	14	48	100	16	4
201201603 CM	**CMX**	16	54	104	16	4
201201803 CM	**CMX**	18	60	120	16	4
201202003 CM	**CMX**	20	62	128	20	4
201202503 CM	**CMX**	25	70	145	25	5

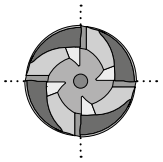
parametri tecnici a pag. / *for technical parameters see page* 114



	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
20120 NF	◪	◪	◪	○	○	●	●
20120 NR	●	●	●	◪	○	●	●

Series
20150
Frese a **SEMIFINIRE**
Semi-finishing end mills





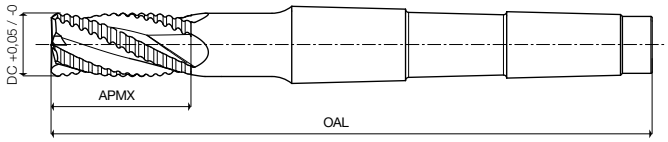
Skin | ✓ | NF | λ°s 28 | Z4÷6 | Length
Coating | Quality UOP | Execution | Helix | Teeth | Length

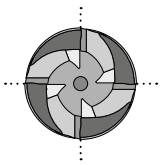
DCON = MORSE TAPER

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	MORSE TAPER	Z
201502001	CM	CMX	20	45	125	2	4
201502501	CM	CMX	25	50	150	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

parametri tecnici a pag. / *for technical parameters see page* 114

Series
20150
Frese a **SGROSSARE**
Roughing end mills





Skin | ✓ | NR | λ°s 28 | Z4÷6 | Length
Coating | Quality UOP | Execution | Helix | Teeth | Length

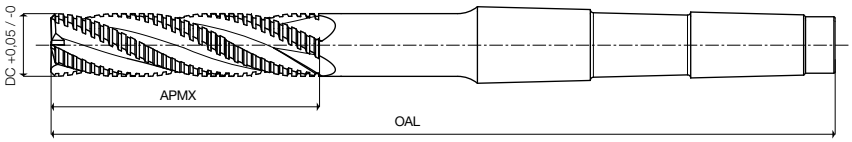
DCON = MORSE TAPER

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	MORSE TAPER	Z
201502003	CM	CMX	20	45	125	2	4
201502503	CM	CMX	25	50	150	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

parametri tecnici a pag. / *for technical parameters see page* 114

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
20150 NF	◪	◪	◪	○	○	●	●
20150 NR	◪	◪	◪	○	○	●	●

● recommended ◪ acceptable ○ not recommended



Series
20160
Frese a **SEMIFINIRE**
Semi-finishing end mills

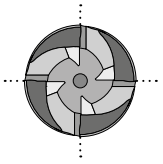
Skin | ✓ | NF | λ°s 28 | Z4÷6 | ▮▮▮

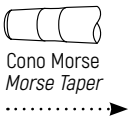
Coating | Quality UOP | Execution | Helix | Teeth | Length

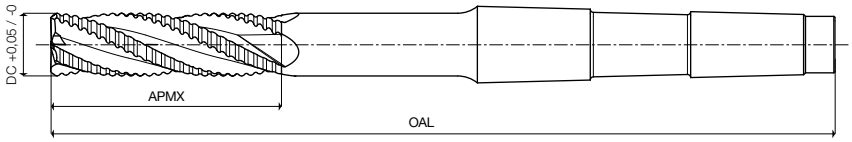
DCON = MORSE TAPER

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	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

parametri tecnici a pag. / *for technical parameters see page* 114







Series
20160
Frese a **SGROSSARE**
Roughing end mills

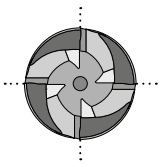
Skin | ✓ | NR | λ°s 28 | Z4÷6 | ▮▮▮

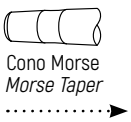
Coating | Quality UOP | Execution | Helix | Teeth | Length

DCON = MORSE TAPER

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	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

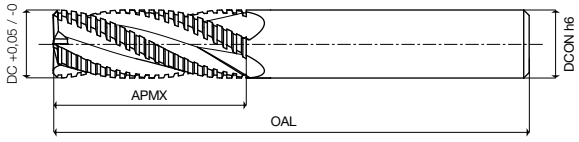
parametri tecnici a pag. / *for technical parameters see page* 114

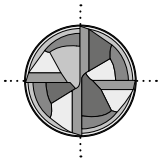




	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
20160 NF	◪	◪	◪	○	○	●	●
20160 NR	◪	◪	◪	○	○	●	●

Series
21105
Frese a **SEMIFINIRE** tagliente al centro
Semi-finishing end mills center cutting



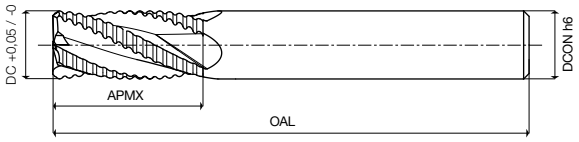


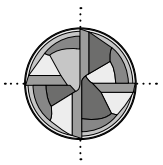
Skin	UNI 8244 DIN 844A ISO 1641/I				λ°s 28	Z3÷5	
Coating	Standards	W on request	F on request	Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	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
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
211052501 CM	**CMX**	25	45	121	25	5
211053001 CM	**CMX**	30	45	121	25	5
211053201 CM	**CMX**	32	53	133	32	5

parametri tecnici a pag. / *for technical parameters see page* 115

Series
21105
Frese a **SGROSSARE** tagliente al centro
Roughing end mills center cutting





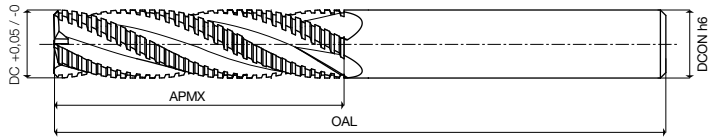
Skin	UNI 8244 DIN 844A ISO 1641/I				λ°s 28	Z3÷6	
Coating	Standards	W on request	F on request	Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	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
211052003 CM	**CMX**	20	38	98	16	4
211052007 CM	**CMX**	20	38	104	20	4
211052203 CM	**CMX**	22	38	104	20	4
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

parametri tecnici a pag. / *for technical parameters see page* 115

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
21105 NF	◪	◪	◪	○	○	●	●
21105 NR	●	●	●	◪	○	●	●

● recommended ◪ acceptable ○ not recommended



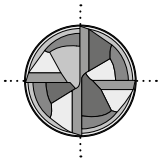
Series 21120

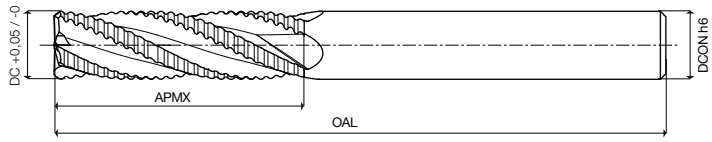
Frese a **SEMIFINIRE** tagliente al centro
Semi-finishing end mills center cutting

Skin	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	NF	λ°s 28	Z4÷6	
Coating	Standards			Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	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
211201805 CM	**CMX**	18	63	129	20	4
211202005 CM	**CMX**	20	75	141	20	4
211202201 CM	**CMX**	22	75	141	20	4
211202501 CM	**CMX**	25	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

parametri tecnici a pag. / *for technical parameters see page* 115





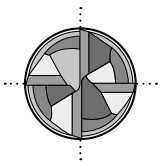
Series 21120

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

Skin	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	NR	λ°s 28	Z4÷6	
Coating	Standards			Execution	Helix	Teeth	Length

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	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
211202007 CM	**CMX**	20	75	141	20	4
211202203 CM	**CMX**	22	75	141	20	4
211202503 CM	**CMX**	25	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

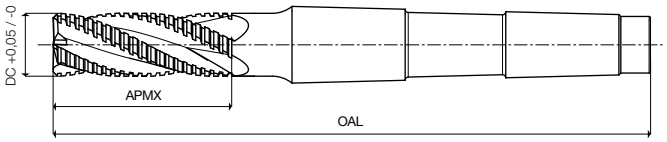
parametri tecnici a pag. / *for technical parameters see page* 115

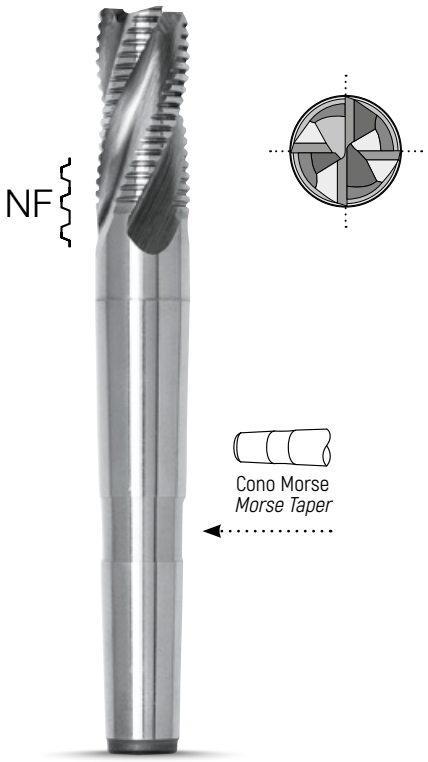


	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
21120 NF	◪	◪	◪	○	○	●	●
21120 NR	●	●	●	◪	○	●	●

Series
21150

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





Skin	UNI 8250 DIN 845B ISO 1641/II	NF	λ°s 28	Z4÷8	
Coating	Standards	Execution	Helix	Teeth	Length

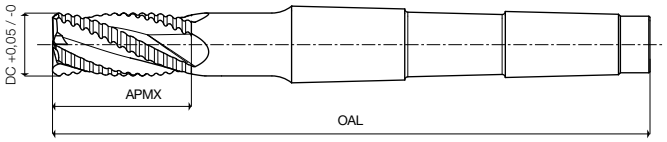
DCON = MORSE TAPER

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	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

parametri tecnici a pag. / *for technical parameters see page* 115

Series
21150

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



Skin	UNI 8250 DIN 845B ISO 1641/II	NR	λ°s 28	Z4÷8	
Coating	Standards	Execution	Helix	Teeth	Length

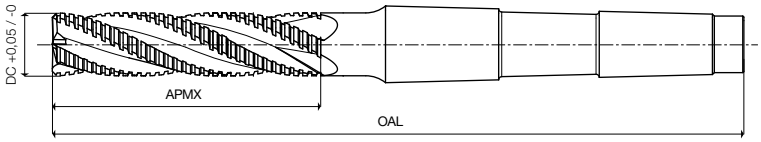
DCON = MORSE TAPER

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	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

parametri tecnici a pag. / *for technical parameters see page* 115

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
21150 NF	◪	◪	◪	○	○	●	●
21150 NR	◪	◪	◪	○	○	●	●

● recommended ◪ acceptable ○ not recommended



Skin | UNI 8250 DIN 845B ISO 1641/II | NF | λ°s 28 | Z4÷8 | Length

Coating | Standards | Execution | Helix | Teeth | Length

DCON = MORSE TAPER

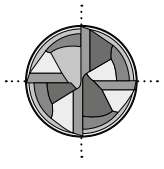
Series 21155

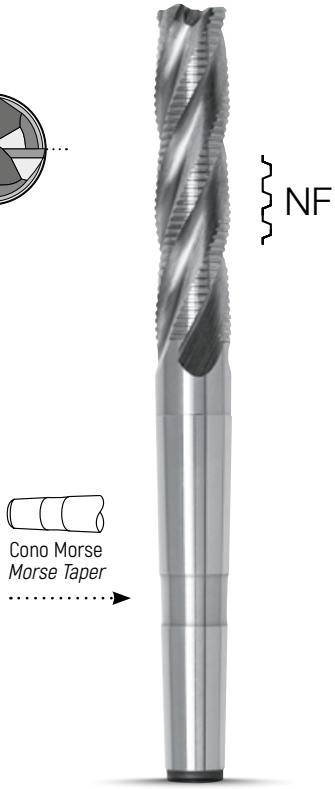
Frese a **SEMIFINIRE** tagliente al centro

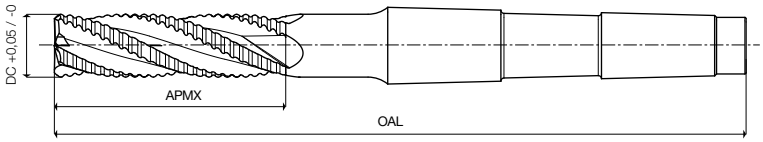
Semi-finishing end mills center cutting

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	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

parametri tecnici a pag. / *for technical parameters see page* 115







Skin | UNI 8250 DIN 845B ISO 1641/II | NR | λ°s 28 | Z4÷8 | Length

Coating | Standards | Execution | Helix | Teeth | Length

DCON = MORSE TAPER

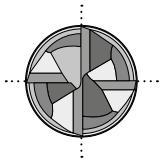
Series 21155

Frese a **SGROSSARE** tagliente al centro

Roughing end mills center cutting

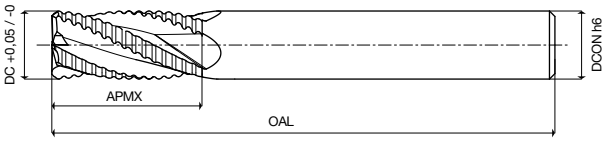
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	MORSE TAPER	Z
211551603 CM	**CMX**	16	63	148	2	4
211551803 CM	**CMX**	18	63	148	2	4
211552003 CM	**CMX**	20	75	177	3	4
211552203 CM	**CMX**	22	75	177	3	4
211552403 CM	**CMX**	24	90	192	3	5
211552503 CM	**CMX**	25	90	192	3	5
211552603 CM	**CMX**	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

parametri tecnici a pag. / *for technical parameters see page* 115

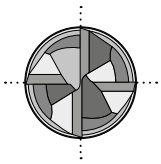


	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
21155 NF	◪	◪	◪	○	○	●	●
21155 NR	◪	◪	◪	○	○	●	●

Series
21305
Frese a **SGROSSARE**
Roughing end mills



Skin Inox	UNI 8244 DIN 844A ISO 1641/I	W on request	F on request	NR	λ°s 32	Z3÷5	
Coating	Standards			Execution	Helix	Teeth	Length

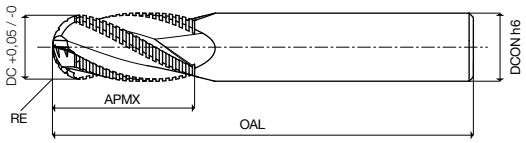


Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	Z
213050503 CM		CMX	5	13	57	6	3
213050603 CM		CMX	6	13	57	6	3
213050803 CM		CMX	8	19	69	10	4
213051003 CM		CMX	10	22	72	10	4
213051203 CM		CMX	12	26	83	12	4
213051403 CM		CMX	14	26	83	12	4
213051503 CM		CMX	15	32	92	16	4
213051603 CM		CMX	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* 116

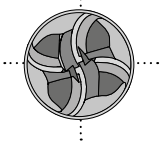
Series
21505
SU RICHIESTA *ON REQUEST*

Frese a **SEMIFINIRE**, testa semisferica
Ball nosed semi-finishing end mills
INFO: servizio.clienti@uop.it / *customer.service@uop.it*



Skin	ISO 1641/I	W on request	F on request	NF	λ°s 28	Z3÷5 BALL-NOSED	
Coating	Standards			Execution	Helix	Teeth	Length

BALL-NOSED



Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	RE	APMX	OAL	DCON h6	Z
215050601 CM		CMX	6	3	13	57	6	3
215050701 CM		CMX	7	3,5	16	66	10	3
215050801 CM		CMX	8	4	19	69	10	4
215050901 CM		CMX	9	4,5	19	69	10	4
215051001 CM		CMX	10	5	22	72	10	4
215051101 CM		CMX	11	5,5	22	79	12	4
215051201 CM		CMX	12	6	26	83	12	4
215051301 CM		CMX	13	6,5	26	83	12	4
215051401 CM		CMX	14	7	26	83	12	4
215051501 CM		CMX	15	7,5	32	92	16	4
215051601 CM		CMX	16	8	32	92	16	4
215051801 CM		CMX	18	9	32	92	16	4
215052001 CM		CMX	20	10	38	98	16	4
215052005 CM		CMX	20	10	38	104	20	4
215052201 CM		CMX	22	11	38	104	20	4

parametri tecnici a pag. / *for technical parameters see page* 116

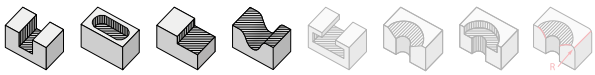
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
21305 NR	●	●	●	○	○	●	●
21505 NF	◒	◒	◒	○	○	●	●

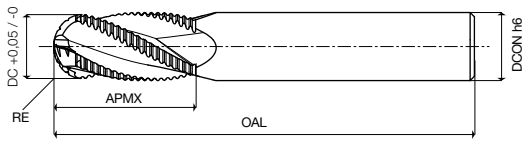
● recommended ◒ acceptable ○ not recommended

Series 21505

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

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	RE	APMX	OAL	DCON h6	Z
215052401	CM	CMX	24	12	45	121	25	5
215052501	CM	CMX	25	12,5	45	121	25	5
215053001	CM	CMX	30	15	45	121	25	5
215053201	CM	CMX	32	16	53	133	32	5





SU RICHIESTA *ON REQUEST*

Series 21505

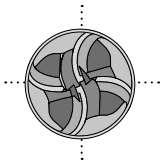
Frese a **SGROSSARE** , testa semisferica

Ball nosed roughing end mills

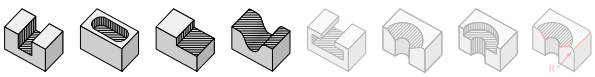
INFO: servizio.clienti@uop.it / *customer.service@uop.it*

Skin	ISO 1641/1	W on request	F on request	NR	λ°S 28	Z3÷6 BALL-NOSED	
Coating	Standards			Execution	Helix	Teeth	Length

BALL-NOSED



Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	RE	APMX	OAL	DCON h6	Z
215050603	CM	CMX	6	3	13	57	6	3
215050703	CM	CMX	7	3,5	16	66	10	3
215050803	CM	CMX	8	4	19	69	10	4
215050903	CM	CMX	9	4,5	19	69	10	4
215051003	CM	CMX	10	5	22	72	10	4
215051103	CM	CMX	11	5,5	22	79	12	4
215051203	CM	CMX	12	6	26	83	12	4
215051303	CM	CMX	13	6,5	26	83	12	4
215051403	CM	CMX	14	7	26	83	12	4
215051503	CM	CMX	15	7,5	32	92	16	4
215051603	CM	CMX	16	8	32	92	16	4
215051803	CM	CMX	18	9	32	92	16	4
215052003	CM	CMX	20	10	38	98	16	4
215052007	CM	CMX	20	10	38	104	20	4
215052203	CM	CMX	22	11	38	104	20	4
215052503	CM	CMX	25	12,5	45	121	25	5
215052603	CM	CMX	26	13	45	121	25	5
215052803	CM	CMX	28	14	45	121	25	5
215053003	CM	CMX	30	15	45	121	25	5
215053203	CM	CMX	32	16	53	133	32	5
215053603	CM	CMX	36	18	53	133	32	6
215054003	CM	CMX	40	20	63	143	32	6



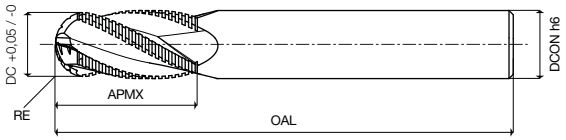
parametri tecnici a pag. / *for technical parameters see page* 116

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
21505 NF	◪	◪	◪	○	○	●	●
21505 NR	●	●	●	◪	○	●	●

Series
21520

SU RICHIESTA
ON REQUEST

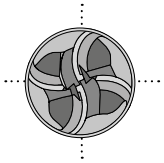
Frese a **SEMIFINIRE**, testa semisferica
Ball nosed semi-finishing end mills
INFO: servizio.clienti@uop.it / *customer.service@uop.it*



Skin	ISO 1641/I	W on request	F on request	NF	λ°s 28	Z4÷6 BALL-NOSED	
Coating	Standards			Execution	Helix	Teeth	Length

NF

BALL-NOSED



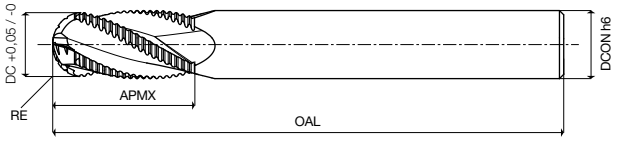
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	RE	APMX	OAL	DCON h6	Z
215200801 CM		CMX	8	4	38	88	10	4
215201001 CM		CMX	10	5	45	95	10	4
215201201 CM		CMX	12	6	53	110	12	4
215201401 CM		CMX	14	7	53	110	12	4
215201501 CM		CMX	15	7,5	63	123	16	4
215201601 CM		CMX	16	8	63	123	16	4
215201805 CM		CMX	18	9	63	129	20	4
215202005 CM		CMX	20	10	75	141	20	4
215202201 CM		CMX	22	11	75	141	20	4
215202501 CM		CMX	25	12,5	90	166	25	5
215203001 CM		CMX	30	15	90	166	25	5
215203201 CM		CMX	32	16	106	186	32	5
215203601 CM		CMX	36	18	106	186	32	6
215204001 CM		CMX	40	20	125	205	32	6

parametri tecnici a pag. / *for technical parameters see page* 116

Series
21520

SU RICHIESTA
ON REQUEST

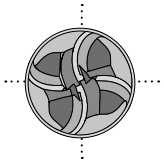
Frese a **SGROSSARE** , testa semisferica
Ball nosed roughing end mills
INFO: servizio.clienti@uop.it / *customer.service@uop.it*



Skin	ISO 1641/I	W on request	F on request	NR	λ°s 28	Z4÷6 BALL-NOSED	
Coating	Standards			Execution	Helix	Teeth	Length

NR

BALL-NOSED

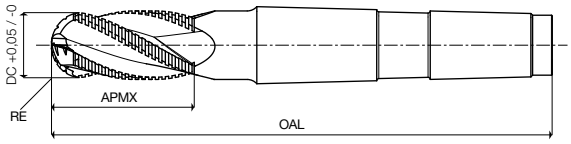


Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	RE	APMX	OAL	DCON h6	Z
215200803 CM		CMX	8	4	38	88	10	4
215201003 CM		CMX	10	5	45	95	10	4
215201203 CM		CMX	12	6	53	110	12	4
215201403 CM		CMX	14	7	53	110	12	4
215201503 CM		CMX	15	7,5	63	123	16	4
215201603 CM		CMX	16	8	63	123	16	4
215201803 CM		CMX	18	9	63	123	16	4
215202007 CM		CMX	20	10	75	141	20	4
215202203 CM		CMX	22	11	75	141	20	4
215202503 CM		CMX	25	12,5	90	166	25	5
215203003 CM		CMX	30	15	90	166	25	5
215203203 CM		CMX	32	16	106	186	32	5
215203603 CM		CMX	36	18	106	186	32	6
215204003 CM		CMX	40	20	125	205	32	6

parametri tecnici a pag. / *for technical parameters see page* 116

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
21520 NF	◪	◪	◪	○	○	●	●
21520 NR	●	●	●	◪	○	●	●

● recommended ◪ acceptable ○ not recommended



SU RICHIESTA *ON REQUEST*

Series **21550**

Frese a **SEMIFINIRE**, testa semisferica

Ball nosed semi-finishing end mills

INFO: servizio.clienti@uop.it / *customer.service@uop.it*

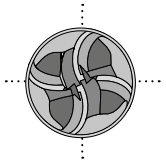
Skin	ISO 1641/I	NF	λ°s 28	Z4÷8 BALL-NOSED	
Coating	Standards	Execution	Helix	Teeth	Length

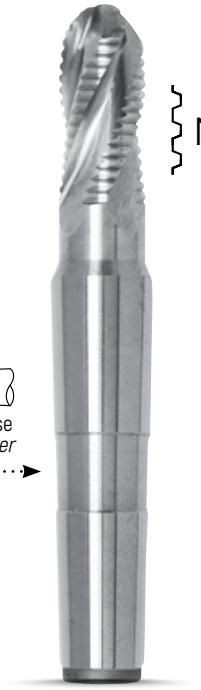
DCON = MORSE TAPER

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	RE	APMX	OAL	MORSE TAPER	Z
215501601 CM	**CMX**	16	8	32	117	2	4
215501801 CM	**CMX**	18	9	32	117	2	4
215502001 CM	**CMX**	20	10	38	140	3	4
215502201 CM	**CMX**	22	11	38	140	3	4
215502401 CM	**CMX**	24	12	45	147	3	5
215502501 CM	**CMX**	25	12,5	45	147	3	5
215502601 CM	**CMX**	26	13	45	147	3	5
215502801 CM	**CMX**	28	14	45	147	3	5
215503001 CM	**CMX**	30	15	53	155	3	5
215503201 CM	**CMX**	32	16	53	178	4	5
215503401 CM	**CMX**	34	17	53	178	4	5
215503501 CM	**CMX**	35	17,5	53	178	4	6
215503601 CM	**CMX**	36	18	53	178	4	6
215503801 CM	**CMX**	38	19	63	188	4	6
215504001 CM	**CMX**	40	20	63	188	4	6
215504501 CM	**CMX**	45	22,5	63	188	4	6
215505001 CM	**CMX**	50	25	75	233	5	7
215505601 CM	**CMX**	56	28	75	233	5	7
215506301 CM	**CMX**	63	31,5	90	248	5	8

parametri tecnici a pag. / *for technical parameters see page* 116

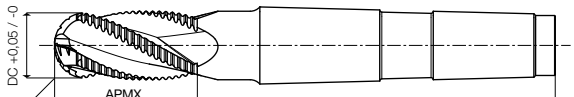
BALL-NOSED





NF

Cono Morse
Morse Taper



SU RICHIESTA *ON REQUEST*

Series **21550**

Frese a **SGROSSARE** , testa semisferica

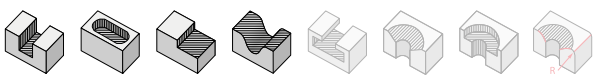
Ball nosed roughing end mills

INFO: servizio.clienti@uop.it / *customer.service@uop.it*

Skin	ISO 1641/I	NR	λ°s 28	Z4÷8 BALL-NOSED	
Coating	Standards	Execution	Helix	Teeth	Length

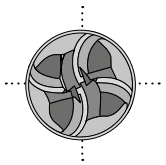
DCON = MORSE TAPER

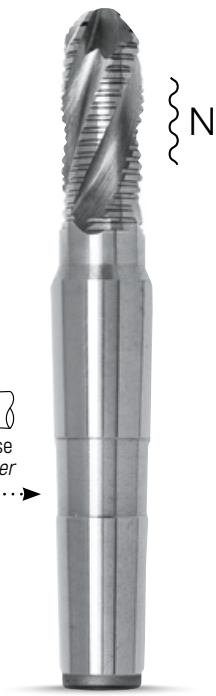
Cod. Art. X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	RE	APMX	OAL	MORSE TAPER	Z
215501603 CM	**CMX**	16	8	32	117	2	4
215501803 CM	**CMX**	18	9	32	117	2	4
215502003 CM	**CMX**	20	10	38	140	3	4
215502203 CM	**CMX**	22	11	38	140	3	4
215502403 CM	**CMX**	24	12	45	147	3	5
215502503 CM	**CMX**	25	12,5	45	147	3	5
215502603 CM	**CMX**	26	13	45	147	3	5
215502803 CM	**CMX**	28	14	45	147	3	5
215503003 CM	**CMX**	30	15	53	155	3	5
215503203 CM	**CMX**	32	16	53	178	4	5
215503403 CM	**CMX**	34	17	53	178	4	5
215503503 CM	**CMX**	35	17,5	53	178	4	6
215503603 CM	**CMX**	36	18	53	178	4	6
215503803 CM	**CMX**	38	19	63	188	4	6
215504003 CM	**CMX**	40	20	63	188	4	6
215504503 CM	**CMX**	45	22,5	63	188	4	6
215505003 CM	**CMX**	50	25	75	233	5	7
215505603 CM	**CMX**	56	28	75	233	5	7
215506303 CM	**CMX**	63	31,5	90	248	5	8



parametri tecnici a pag. / *for technical parameters see page* 116

BALL-NOSED





NR

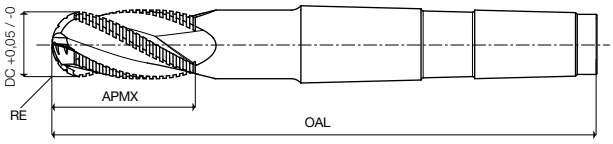
Cono Morse
Morse Taper

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
21550 NF	◪	◪	◪	○	○	●	●
21550 NR	◪	◪	◪	○	○	●	●

Series
21555

SU RICHIESTA *ON REQUEST*

Frese a **SEMIFINIRE**, testa semisferica
Ball nosed semi-finishing end mills
INFO: servizio.clienti@uop.it / *customer.service@uop.it*



Skin	ISO 1641/I	NF	λ°s 28	Z4÷8 BALL-NOSED	
Coating	Standards	Execution	Helix	Teeth	Length

DCON = MORSE TAPER

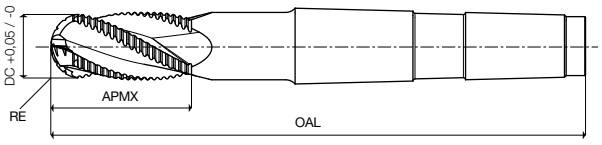
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	RE	APMX	OAL	MORSE TAPER	Z
215551601	CM	CMX	16	8	63	148	2	4
215551801	CM	CMX	18	9	63	148	2	4
215552001	CM	CMX	20	10	75	177	3	4
215552201	CM	CMX	22	11	75	177	3	4
215552401	CM	CMX	24	12	90	192	3	5
215552501	CM	CMX	25	12,5	90	192	3	5
215552601	CM	CMX	26	13	90	192	3	5
215552801	CM	CMX	28	14	90	192	3	5
215553001	CM	CMX	30	15	90	192	3	5
215553201	CM	CMX	32	16	106	231	4	5
215553401	CM	CMX	34	17	106	231	4	5
215553501	CM	CMX	35	17,5	106	231	4	6
215553601	CM	CMX	36	18	106	231	4	6
215553801	CM	CMX	38	19	125	250	4	6
215554001	CM	CMX	40	20	125	250	4	6
215554501	CM	CMX	45	22,5	125	250	4	6
215555001	CM	CMX	50	25	150	308	5	7
215555601	CM	CMX	56	28	150	308	5	7
215556301	CM	CMX	63	31,5	180	338	5	8

parametri tecnici a pag. / *for technical parameters see page* 116

Series
21555

SU RICHIESTA *ON REQUEST*

Frese a **SGROSSARE** , testa semisferica
Ball nosed roughing end mills
INFO: servizio.clienti@uop.it / *customer.service@uop.it*



Skin	ISO 1641/I	NR	λ°s 28	Z4÷8 BALL-NOSED	
Coating	Standards	Execution	Helix	Teeth	Length

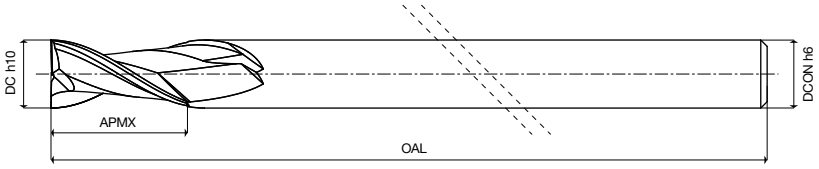
DCON = MORSE TAPER

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	RE	APMX	OAL	MORSE TAPER	Z
215551603	CM	CMX	16	8	63	148	2	4
215551803	CM	CMX	18	9	63	148	2	4
215552003	CM	CMX	20	10	75	177	3	4
215552203	CM	CMX	22	11	75	177	3	4
215552403	CM	CMX	24	12	90	192	3	5
215552503	CM	CMX	25	12,5	90	192	3	5
215552603	CM	CMX	26	13	90	192	3	5
215552803	CM	CMX	28	14	90	192	3	5
215553003	CM	CMX	30	15	90	192	3	5
215553203	CM	CMX	32	16	106	231	4	5
215553403	CM	CMX	34	17	106	231	4	5
215553503	CM	CMX	35	17,5	106	231	4	6
215553603	CM	CMX	36	18	106	231	4	6
215553803	CM	CMX	38	19	125	250	4	6
215554003	CM	CMX	40	20	125	250	4	6
215554503	CM	CMX	45	22,5	125	250	4	6
215555003	CM	CMX	50	25	150	308	5	7
215555603	CM	CMX	56	28	150	308	5	7
215556303	CM	CMX	63	31,5	180	338	5	8

parametri tecnici a pag. / *for technical parameters see page* 116

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
21555 NF	◕	◕	◕	○	○	●	●
21555 NR	◕	◕	◕	○	○	●	●

● recommended ◕ acceptable ○ not recommended



Skin | Quality UOP | W on request | F on request | N | λ°S 32 | Z2 | Length

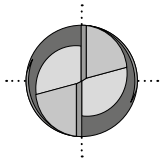
Coating

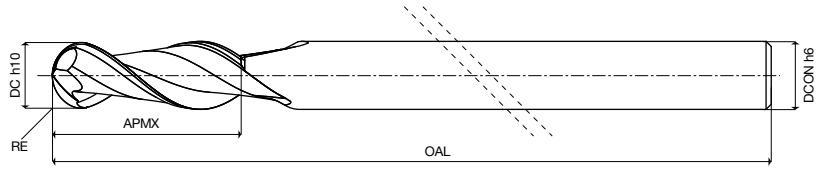
Series 24115

Frese a due taglienti
Two flute end mills

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC h10	APMX	OAL	DCON h6	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

parametri tecnici a pag. / *for technical parameters see page* 117





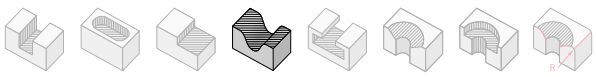
Skin | Quality UOP | W on request | F on request | N | λ°S 32 | Z2 BALL-NOSED | Length

Coating

Series 24120

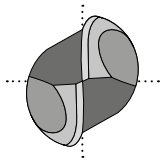
Frese a due taglienti a testa semisferica
Ball-nosed two flute slot drills

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC h10	RE	APMX	OAL	DCON h6	Z
241201000 CM	**CMX**	10	5	30	200	10	2
241201200 CM	**CMX**	12	6	30	200	12	2
241201600 CM	**CMX**	16	8	35	200	16	2
241202000 CM	**CMX**	20	10	35	200	20	2
241202500 CM	**CMX**	25	12,5	40	200	25	2



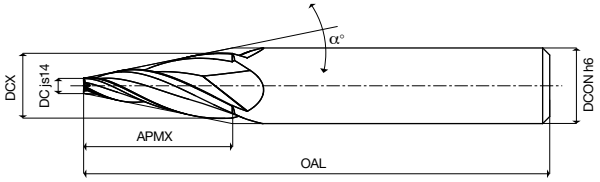
parametri tecnici a pag. / *for technical parameters see page* 117

BALL-NOSED

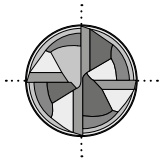


	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
24115	◪	◪	◪	○	○	●	●
24120	◪	◪	◪	○	○	●	●

Series
25105
Frese coniche per stampi
Conicità 9° 28' - 5° 43' - 2° 52'
Tapered end mills



Skin	UNI 8265 DIN 1889EA ISO	W	F	N	Z3÷5	λ°s 25
Coating	Standards	W on request	F on request	Execution	Teeth	Helix

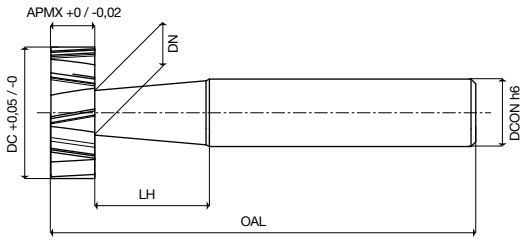


	Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC js14	DCX	APMX	OAL	DCON h6	Z
conicità 1/3 α° 9° 28'	251051050 CM		CMX	2,5	13	31,5	85	12	3
	251051100 CM		CMX	4	16	36	96	16	4
	251051150 CM		CMX	4	22,7	56	116	16	4
	251051200 CM		CMX	4	34	90	170	32	4
	251051250 CM		CMX	6	20	42	100	16	4
	251051300 CM		CMX	6	27	63	138	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
conicità 1/5 α° 5° 43'	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
conicità 1/10 α° 2° 52'	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

parametri tecnici a pag. / *for technical parameters see page* 117

Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
○	○	◕	○	○	●	●

● recommended ◕ acceptable ○ not recommended



Skin — Coating
UNI 8263
DIN 850B
ISO — Standards
W on request
F on request
H — Execution
Z8÷12 — Teeth

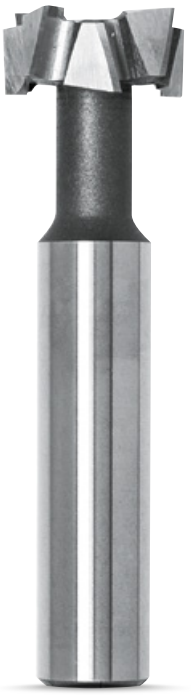
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC +0,05 -0	APMX +0/-0,02	DN	LH	OAL	DCON h6	λ°	Z
271051020 AM		**CM**	**CMX**	10,5	2	4	9	50	6	13	8
271051025 AM		**CM**	**CMX**	10,5	2,5	4	9	50	6	13	8
271051030 AM		**CM**	**CMX**	10,5	3	4,2	8	50	6	13	8
271051302 AM		**CM**	**CMX**	13,5	2	4,6	12	56	10	15	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

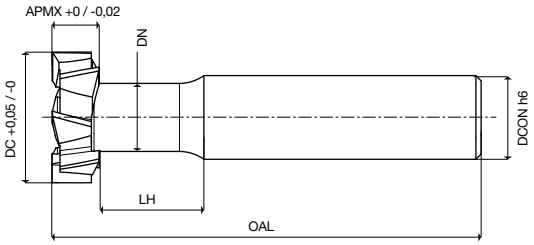
parametri tecnici a pag. / *for technical parameters see page* 118

Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
◕	◕	●	○	○	●	●

Series 27120

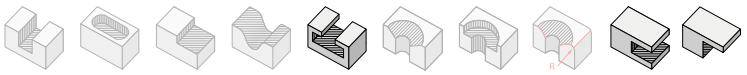
Frese per scanalature a T
T-slot cutters





Skin — Coating
UNI 7339A / DIN 851 / ISO 3337 — Standards
W on request
F on request
N — Execution
Z6÷8 — Teeth

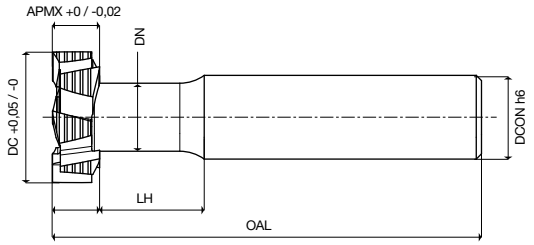
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC +0,05 -0	APMX +0/-0,02	DN	LH	OAL	DCON h6	λ°	Z
271201256 AM	**CM**	**CMX**	12,5	6	5	11	57	10	12	6
271201608 AM	**CM**	**CMX**	16	8	7	14	62	10	12	6
271201808 AM	**CM**	**CMX**	18	8	8	15	70	12	15	6
271201909 AM	**CM**	**CMX**	19	9	8	15	70	12	15	8
271202109 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



parametri tecnici a pag. / *for technical parameters see page* 118

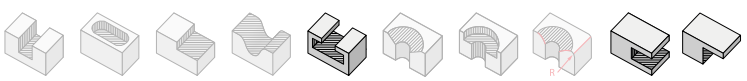
Series 27135

Frese per scanalature a T
T-slot cutters



Skin — Coating
UNI 7339A / DIN 851 / ISO 3337 — Standards
W on request
F on request
NF — Execution
Z4÷8 — Teeth

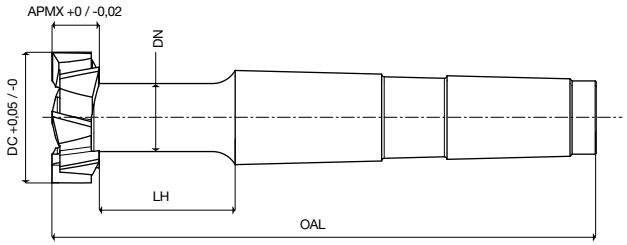
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC +0,05 -0	APMX +0/-0,02	DN	LH	OAL	DCON h6	Z
271351256 AM	**CM**	**CMX**	12,5	6	5	11	57	10	4
271351608 AM	**CM**	**CMX**	16	8	7	14	62	10	6
271351808 AM	**CM**	**CMX**	18	8	8	15	70	12	6
271351909 AM	**CM**	**CMX**	19	9	8	15	70	12	6
271352109 AM	**CM**	**CMX**	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



parametri tecnici a pag. / *for technical parameters see page* 118

	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 NF	◪	◪	●	○	○	●	●

● recommended ◪ acceptable ○ not recommended



Series 27150

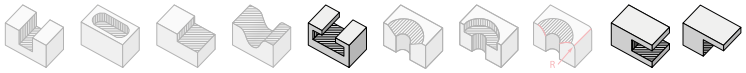
Frese per scanalature a T
T-slot cutters

Skin | UNI 7339A DIN 851B ISO 3337 | N | Z8÷10

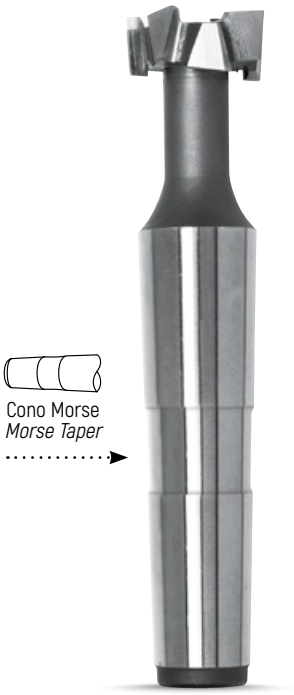
Coating | Standards | Execution | Teeth

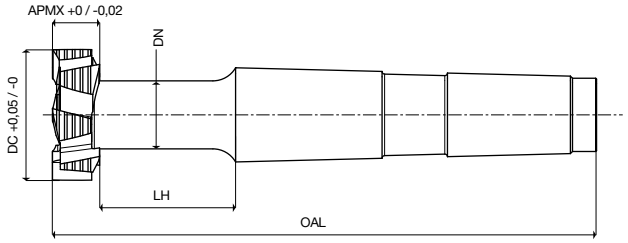
DCON = MORSE TAPER

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX +0 / -0,02	DN	LH	OAL	MORSE TAPER	λ°	Z
271501256	-	CM	CMX	12,5	6	5	9	72	1	12	8
271501608	-	CM	CMX	16	8	7	12	77	1	12	8
271501808	-	CM	CMX	18	8	8	17	82	1	15	8
271501909	-	CM	CMX	19	9	8	16	82	1	15	8
271502109	-	CM	CMX	21	9	10	24	102	2	15	8
271502210	-	CM	CMX	22	10	10	23	102	2	15	8
271502511	-	CM	CMX	25	11	12	24	104	2	15	8
271502812	-	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



parametri tecnici a pag. / *for technical parameters see page* 118





Series 27155

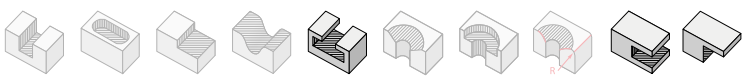
Frese per scanalature a T
T-slot cutters

Skin | UNI 7339A DIN 851B ISO 3337 | NF | Z4÷8

Coating | Standards | Execution | Teeth

DCON = MORSE TAPER

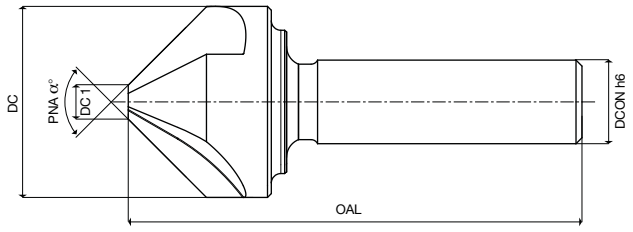
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX +0 / -0,02	DN	LH	OAL	MORSE TAPER	Z
271551256	-	CM	CMX	12,5	6	5	9	72	1	4
271551608	-	CM	CMX	16	8	7	12	77	1	6
271551808	-	CM	CMX	18	8	8	17	82	1	6
271551909	-	CM	CMX	19	9	8	16	82	1	6
271552109	-	CM	CMX	21	9	10	24	102	2	6
271552210	-	CM	CMX	22	10	10	23	102	2	6
271552511	-	CM	CMX	25	11	12	24	104	2	8
271552812	-	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



parametri tecnici a pag. / *for technical parameters see page* 118

	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 NF	◪	◪	●	○	○	●	●

Series
27505
Frese coniche a svasare
Countersinks



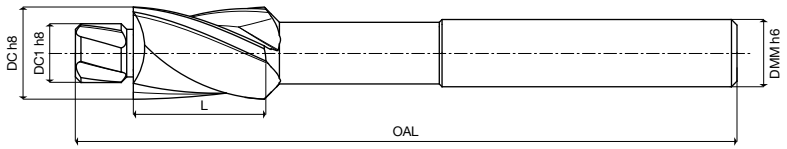
Skin	UNI 6847 DIN 334-335 ISO	N	Z3
Coating	Standards	Execution	Teeth

Cod. Art.	M-TK (HSS-E)	COATED	DC	DC 1	PNA α°	OAL	DCON h6	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	120	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

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

● recommended ◕ acceptable ○ not recommended

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
27505	◕	◕	◕	○	○	●	●



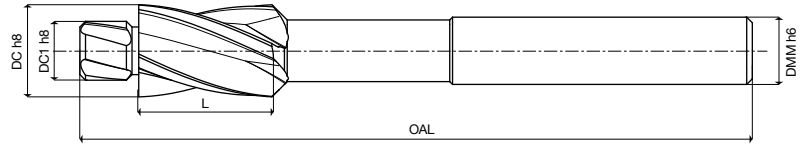
Series 28105

Frese per sedi di viti
Counterbores

Skin	UNI 6841	N	Z2
Coating	Standards	Execution	Teeth

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	SCREW	DC h8	DC1 h8	L	OAL	DMM h6	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

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



Series 28105

Frese per sedi di viti
Counterbores

Skin	UNI 6841	N	Z4
Coating	Standards	Execution	Teeth

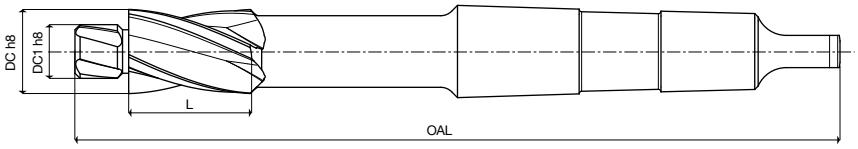
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	SCREW	DC h8	DC1 h8	L	OAL	DMM h6	Z
281050304	**AM**	**CM**	**CMX**	m3	5,9	3,2	12	70	6	4
281050404	**AM**	**CM**	**CMX**	m4	7,4	4,3	12	70	8	4
281050504	**AM**	**CM**	**CMX**	m5	9,4	5,3	14	90	10	4
281050604	**AM**	**CM**	**CMX**	m6	10,4	6,4	16	100	10	4
281050804	**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

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

	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	◪	◪	◪	○	○	●	●

Series 28150

Frese per sedi di viti
Counterbores



Cono Morse
Morse Taper

Skin | UNI 6842 | N | Z4
Coating | Standards | Execution | Teeth

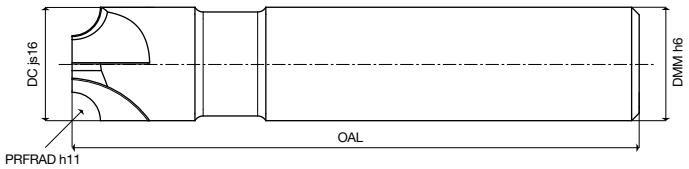
DCON = MORSE TAPER

Cod. Art. X-85 (PM Co 8,5%)	COATED	SCREW	DC h8	DC1 h8	L	OAL	MORSE TAPER	Z
281501204 CM	**CMX**	M12	19	13	25	160	2	4
281501404 CM	**CMX**	M14	23	15	32	170	2	4
281501604 CM	**CMX**	M16	25	17	35	180	2	4
281501804 CM	**CMX**	M18	28	19	40	180	2	4
281502004 CM	**CMX**	M20	31	21	50	215	3	4
281502204 CM	**CMX**	M22	34	23	50	220	3	4
281502404 CM	**CMX**	M24	37	25	50	230	3	4

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

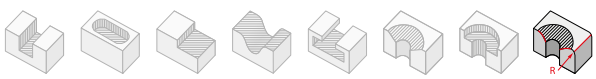
Series 28505

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



Skin | UNI 8264 DIN 6518A ISO | W on request | F on request | N | Z4÷6
Coating | Standards | | | Execution | Teeth

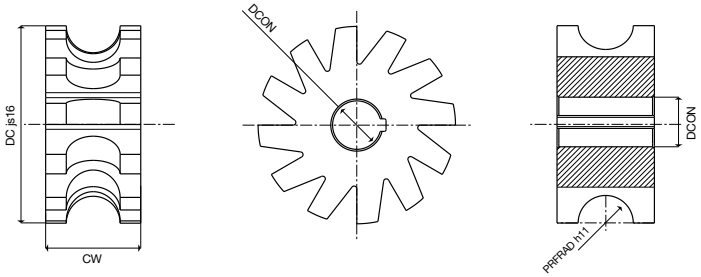
Cod. Art. M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	PRFRAD h11	DC js16	OAL	DMM dh6	Z
285050100 AM	**CM**	**CMX**	1	10	60	10	4
285050150 AM	**CM**	**CMX**	1,5	10	60	10	4
285050200 AM	**CM**	**CMX**	2	10	60	10	4
285050250 AM	**CM**	**CMX**	2,5	10	60	10	4
285050300 AM	**CM**	**CMX**	3	12	60	12	4
285050400 AM	**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
285051000 AM	**CM**	**CMX**	10	28	85	20	4
285051200 AM	**CM**	**CMX**	12	35	100	20	4
285051250 AM	**CM**	**CMX**	12,5	35	100	20	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



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

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
28150	◕	◕	◕	○	○	●	●
28505	◕	◕	◕	○	○	●	●

● recommended ◕ acceptable ○ not recommended



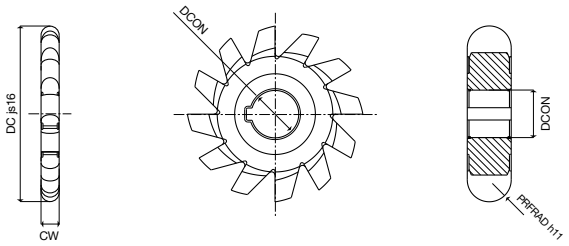
Series 29105

Frese a profilo costante concavo
Form relieved concave milling cutters

Skin | UNI 4499 DIN ISO | N | Z12÷14
Coating | Standards | Execution | Teeth

Cod. Art. M-TK (HSS-E)	COATED	PRFRAD h11	DC js16	CW	DCON	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

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



Series 29110

Frese a profilo costante convesso
Form relieved convex milling cutters

Skin | UNI 4499 DIN 856 ISO | N | Z12÷14
Coating | Standards | Execution | Teeth

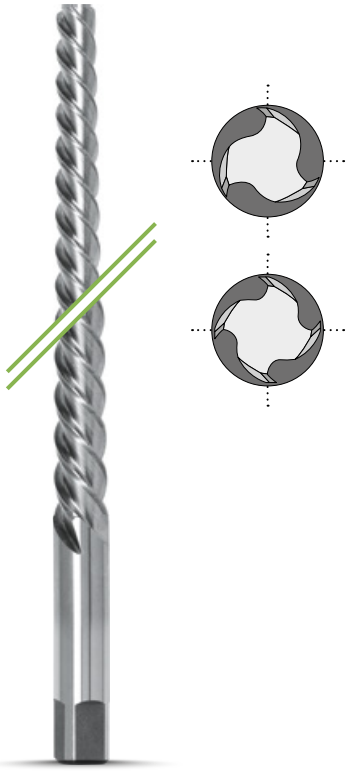
Cod. Art. M-TK (HSS-E)	COATED	PRFRAD h11	DC js16	CW	DCON	Z
291100100 AM	AMX	1	50	2	22	14
291100150 AM	AMX	1,5	50	3	22	14
291100200 AM	AMX	2	50	4	22	14
291100250 AM	AMX	2,5	56	5	22	14
291100300 AM	AMX	3	56	6	22	14
291100350 AM	AMX	3,5	63	7	22	14
291100400 AM	AMX	4	63	8	22	14
291100450 AM	AMX	4,5	63	9	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

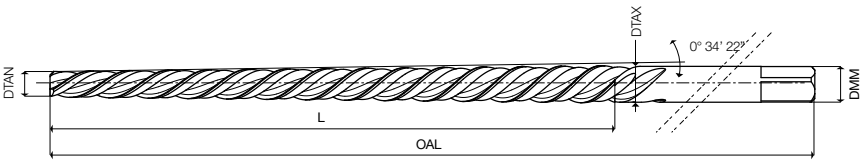
parametri tecnici a pag. / *for technical parameters see page* 120

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
29105/29110	◕	◕	◕	○	○	●	●

Series
30502

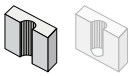
Alesatori conici, **conicità 2%**
Tapered reamers, ***taper 2%***





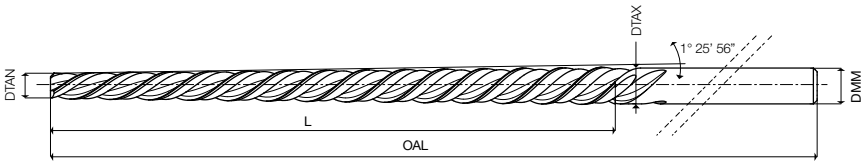
Skin — Coating | Flat square | UNI 6857 DIN ISO — Standards | N — Execution | λ°s 45 — Helix | Z3÷4 — Teeth

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DNOM	DTAN	DTAX	L	OAL	DMM	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



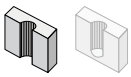
Series
30505

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



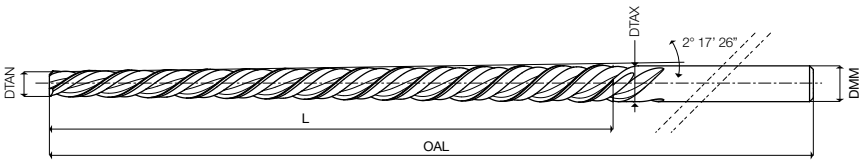
Skin — Coating | Quality UOP | W on request | F on request | N — Execution | λ°s 45 — Helix | Z3 — Teeth

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DNOM	DTAN	DTAX	L	OAL	DMM	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



	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	○	○	◕	○	○	●	●

● recommended ◕ acceptable ○ not recommended



Series 30508

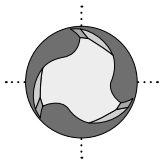
Alesatori conici, **conicità 8%**

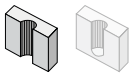
Tapered reamers, ***taper 8%***

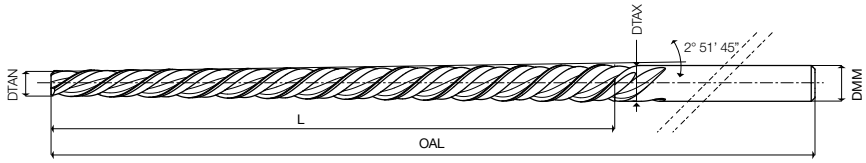
Skin | ✓ | W on request | F on request | N | λ°S 45 | Z3

Coating | Quality UOP | W on request | F on request | Execution | Helix | Teeth

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DNOM	DTAN	DTAX	L	OAL	DMM	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







Series 30510

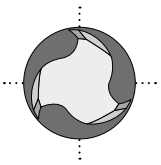
Alesatori conici, **conicità 10%**

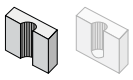
Tapered reamers, ***taper 10%***

Skin | ✓ | W on request | F on request | N | λ°S 45 | Z3

Coating | Quality UOP | W on request | F on request | Execution | Helix | Teeth

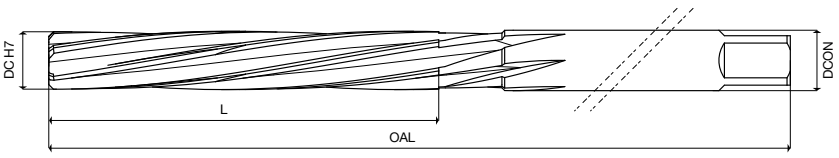
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DNOM	DTAN	DTAX	L	OAL	DMM	Z
305100600 CM		**CMX**	6	2	6	40	90	6	3
305100800 CM		**CMX**	8	3	8	50	100	8	3
305101000 CM		**CMX**	10	4	10	60	115	10	3
305101200 CM		**CMX**	12	5	12	70	130	12	3



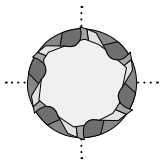


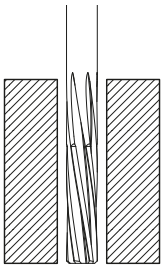
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
30508	○	○	◒	○	○	●	●
30510	○	○	◒	○	○	●	●

Series
31105
Alesatori fissi a mano
Tapered reamers



Skin		UNI 6852 DIN 206B ISO 236/1	N	λ°S 10	Z4÷12
Coating	Flat square	Standards	Execution	Helix	Teeth

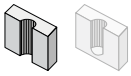




ALESATURA
FORI PASSANTI
THROUGH HOLES REAMING

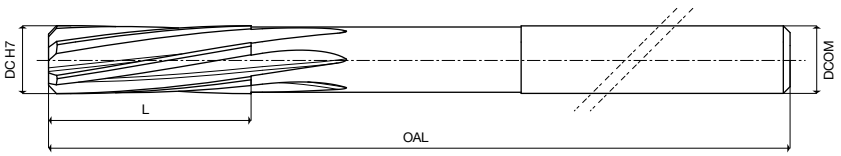
Cod. Art.	M-TK (HSS-E)	COATED	DC H7	L	OAL	DCON	Z
311050300 AM		**AMX**	3	31	62	3	4
311050400 AM		**AMX**	4	38	76	4	5
311050500 AM		**AMX**	5	44	87	5	5
311050600 AM		**AMX**	6	47	93	6	5
311050700 AM		**AMX**	7	54	107	7	5
311050800 AM		**AMX**	8	58	115	8	6
311050900 AM		**AMX**	9	62	124	9	6
311051000 AM		**AMX**	10	66	133	10	6
311051100 AM		**AMX**	11	71	142	11	7
311051200 AM		**AMX**	12	76	152	12	7
311051300 AM		**AMX**	13	76	152	13	7
311051400 AM		**AMX**	14	81	163	14	7
311051500 AM		**AMX**	15	81	163	15	7
311051600 AM		**AMX**	16	87	175	16	7
311051700 AM		**AMX**	17	87	175	17	7
311051800 AM		**AMX**	18	93	188	18	8
311051900 AM		**AMX**	19	93	188	19	8
311052000 AM		**AMX**	20	100	201	20	8
311052100 AM		**AMX**	21	100	201	21	8
311052200 AM		**AMX**	22	107	215	22	8
311052300 AM		**AMX**	23	107	215	23	8
311052400 AM		**AMX**	24	115	231	24	8
311052500 AM		**AMX**	25	115	231	25	8
311052600 AM		**AMX**	26	115	231	26	8
311052700 AM		**AMX**	27	124	247	27	10
311052800 AM		**AMX**	28	124	247	28	10
311052900 AM		**AMX**	29	124	247	29	10
311053000 AM		**AMX**	30	124	247	30	10
311053200 AM		**AMX**	32	133	265	32	10
311053400 AM		**AMX**	34	142	284	34	10
311053500 AM		**AMX**	35	142	284	35	10
311053600 AM		**AMX**	36	142	284	36	10
311053800 AM		**AMX**	38	152	305	38	10
311054000 AM		**AMX**	40	152	305	40	10
311054500 AM		**AMX**	45	163	326	45	12
311055000 AM		**AMX**	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



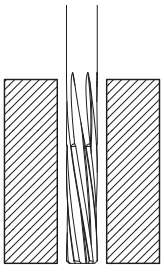
31105	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
	○	○	◒	○	○	●	●

● recommended ◒ acceptable ○ not recommended

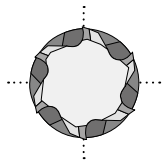


Series
32105
Alesatori a macchina
Machine reamers

Skin	UNI 6853 DIN 212D ISO 521			N	Z3÷7
Coating	Standards	W on request	F on request	Execution	Teeth



ALESATURA
FORI PASSANTI
THROUGH HOLES REAMING



Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC H7	L	OAL	DCOM	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
321050610 CM		CMX	6,1	28	101	6,1	10	6
321050620 CM		CMX	6,2	28	101	6,2	10	6

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

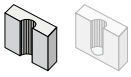
Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
○	○	◒	○	○	●	●

Series 32105

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

Cod. Art. X-85 (PM Co 8,5%)	COATED	DC H7	L	OAL	DMM h6	λ°	Z
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

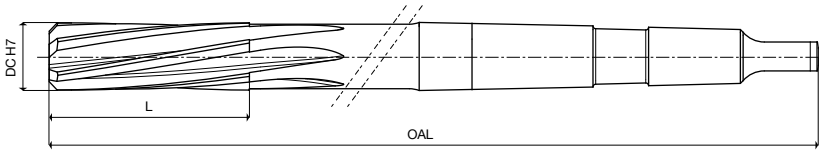
Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request



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

● recommended ◪ acceptable ○ not recommended

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
32105	○	○	◪	○	○	●	●

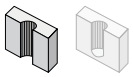


Series 32150

Alesatori a macchina
Machine reamers

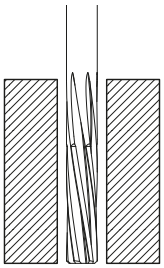
Skin	UNI 6854 DIN 208B ISO 521	N	λ°s 10	Z7÷10
Coating	Standards	Execution	Helix	Teeth

Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC H7	L	OAL	MORSE TAPER	Z
321501600 AM	**CM**	**CMX**	16	52	210	2	7
321501700 AM	**CM**	**CMX**	17	54	214	2	7
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

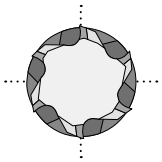


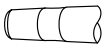
Diametri intermedi e tolleranze diverse da H7 si forniscono a richiesta
In-between diameters and tolerances different from H7 are supplied on request

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



ALESATURA
FORI PASSANTI
THROUGH HOLES REAMING





Cono Morse
Morse Taper

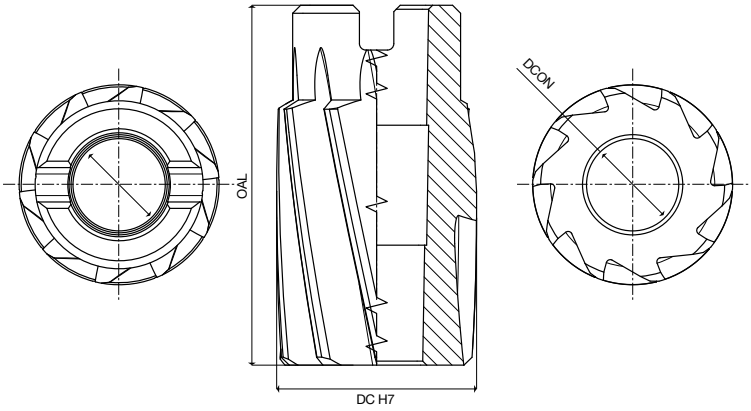
Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
○	○	◕	○	○	●	●

Series
33105

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

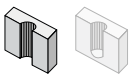
Diametri intermedi e tolleranze diverse da H7
si forniscono a richiesta

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



Skin	UNI 6855 DIN 219B ISO 2402	N	λ°S 10	Z8÷20
Coating	Standards	Execution	Helix	Teeth

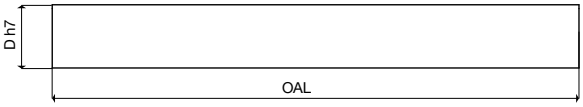
Cod. Art. M-TK (HSS-E)	COATED	DC H7	OAL	DCON	Z
331050200 AM	**AMX**	20	40	10	8
331050210 AM	**AMX**	21	40	10	8
331050220 AM	**AMX**	22	40	10	8
331050230 AM	**AMX**	23	40	10	8
331050240 AM	**AMX**	24	45	13	10
331050250 AM	**AMX**	25	45	13	10
331050260 AM	**AMX**	26	45	13	10
331050270 AM	**AMX**	27	45	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



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

● recommended ◒ acceptable ○ not recommended

33105	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
	○	○	◒	○	○	●	●

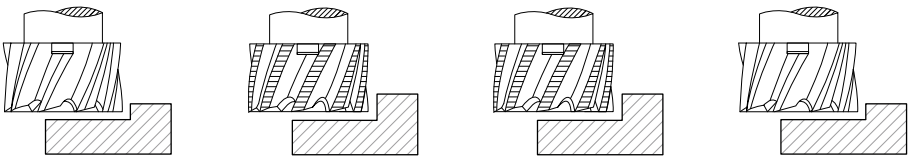


Quality UOP | Cylindrical | Length

Cod. Art.	X-85 (PM Co 8,5%)	D h7	OAL
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**	6	100
081050615	**CM**	6	150
081050620	**CM**	6	200
081050810	**CM**	8	100
081050815	**CM**	8	150
081050820	**CM**	8	200
081051010	**CM**	10	100
081051015	**CM**	10	150
081051020	**CM**	10	200
081051210	**CM**	12	100
081051215	**CM**	12	150
081051220	**CM**	12	200
081051410	**CM**	14	100
081051415	**CM**	14	150
081051420	**CM**	14	200
081051610	**CM**	16	100
081051615	**CM**	16	150
081051620	**CM**	16	200
081051810	**CM**	18	100
081051815	**CM**	18	150
081051820	**CM**	18	200
081052010	**CM**	20	100
081052015	**CM**	20	150
081052020	**CM**	20	200
081052510	**CM**	25	100
081052515	**CM**	25	150
081052520	**CM**	25	200
081053010	**CM**	30	100
081053015	**CM**	30	150
081053020	**CM**	30	200
081053030	**CM**	30	300

Parametri di taglio
Cutting parameters

Parametri di taglio/*Cutting parameters*

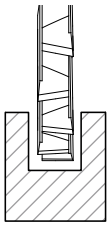


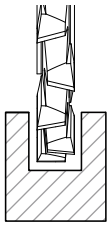
Materiali *Materials*		Contornatura *Shouldering*		Spianatura *Facemilling*		Spianatura *Facemilling*		Contornatura *Shouldering*		
Serie *Series*		02105 - 02115		02110 NF 02120 NF		02110 NR 02120 NR		02135		
	Gruppo e descrizione *Group and description*	Vc (m /min)		Vc (m /min)		Vc (m /min)		Vc (m /min)		
		X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin	M-TK NON RIVESTITA UNCOATED	X-85 NON RIVESTITA UNCOATED	X-85 SkinAlu
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 alloy*	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60	–	–	–
	Alto legato *High alloy*	20 - 25	40 - 50	20 - 25	40 - 50	20 - 25	40 - 50	–	–	–
	Acciaio da stampi e utensili *Tool and die 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	-	-	-
Materiali non ferrosi - Leghe leggere *Non ferrous materials - Light alloys*	Alluminio non legato *Unalloyed aluminium*	–	–	–	–	–	–	90 - 100	110 - 120	250 - 260
	Alluminio Si < 6% *si < 6% aluminium*	–	–	–	–	–	–	50 - 60	70 - 80	170 - 180
	Materiali termoplastici *Thermoplastic materials*	–	–	–	–	–	–	110 - 120	130 - 140	270 - 280
	Rame/Ottone *Copper/Brass*	–	–	–	–	–	–	25 - 30	30 - 35	75 - 80

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*		
	02105 - 02115 - 02110 NF- 02120 NF - 02110 NR - 02120 NR		
	ap = 0,1ø ae = 0,75ø	ap = 0,15ø - 0,25ø ae = 0,75ø	ap = 0,1ø ae = 0,75ø
30	-	-	0,114
35	-	-	0,116
40	0,083	0,070	0,117
50	0,090	0,080	0,120
60	-	-	0,123
63	0,100	0,090	-
80	0,111	0,100	-

NB: In sgrossatura: aumentando ap, diminuire fz
In roughing: increasing ap, decreasing fz

Parametri di taglio/*Cutting parameters*

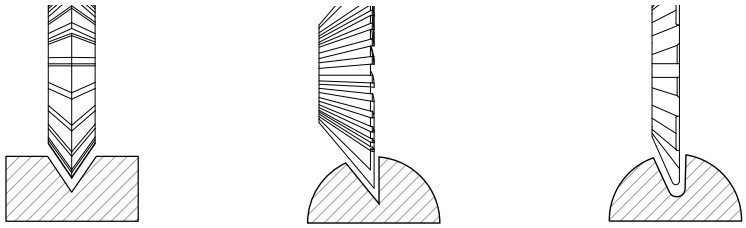




Materiali *Materials*		Cava *Slotting*		Cava *Slotting*	
Serie *Series*		04105		04110	
	Gruppo e descrizione *Group and description*	**Vc (m /min)**		**Vc (m /min)**	
		X-85 NON RIVESTITA UNCOATED	X-85 **Skin**	X-85 NON RIVESTITA UNCOATED	X-85 **Skin**
Ghisa *Cast iron*	Grigia e sferoidale *Grey and 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 alloy*	25 - 30	70 - 75	25 - 30	70 - 75
	Alto legato *High alloy*	20 - 30	60 - 70	20 - 30	60 - 70
	Acciaio da stampi e utensili *Tool and die 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

DC	CW	Avanzamento fz mm/tagliente | *FEED mm/tooth*	
		ap = 0,1ø ae = CW	ap = 0,1ø ae = CW
50	4÷10	0,030 ÷ 0,035	0,030 ÷ 0,035
63	4÷20	0,050 ÷ 0,060	0,035 ÷ 0,038
80	4÷20	0,065 ÷ 0,070	0,041 ÷ 0,044
100	4÷25	0,075 ÷ 0,085	0,047 ÷ 0,050
125	5÷28	0,090 ÷ 0,100	0,055 ÷ 0,060
160	6÷32	0,105 ÷ 0,115	0,065
200	8÷32	0,120 ÷ 0,125	0,070
250	14÷32	0,128 ÷ 0,140	0,075

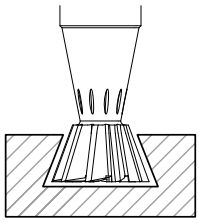
Parametri di taglio/*Cutting parameters*

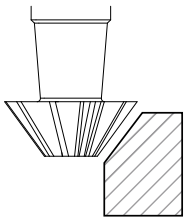


Materiali *Materials*		Fresatura di forma *Form milling*		Fresatura di forma *Form milling*		Fresatura di forma *Form milling*	
Serie *Series*		06105		06110		06120	
	Gruppo e descrizione *Group and description*	Vc (m /min)		Vc (m /min)		Vc (m /min)	
		X-85 NON RIVESTITA UNCOATED	X-85 **Skin**	X-85 NON 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 alloy*	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloy*	20 - 25	40 - 50	20 - 25	40 - 50	20 - 25	40 - 50
	Acciaio da stampi e utensili *Tool and die Steel*	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*		
	ap = 0,1ø ae = CW	ap = 0,1ø ae = CW	ap = 0,1ø ae = CW
40	-	0,040	-
50	-	0,050	-
56	0,055	-	0,055
63	0,060	0,060	-
80	0,070	0,070	0,070
100	0,080	0,080	0,080

Parametri di taglio/*Cutting parameters*



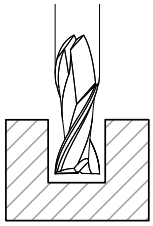
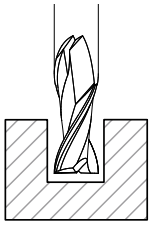
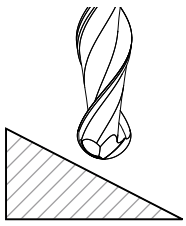


Materiali *Materials*		Fresatura di forma *Form milling*			Fresatura di forma *Form milling*	
Serie *Series*		06130			06145	
	Gruppo e descrizione *Group and description*	Vc (m /min)			Vc (m /min)	
		M-TK NON RIVESTITA UNCOATED	X-85 NON RIVESTITA UNCOATED	X-85 **Skin**	X-85 NON RIVESTITA UNCOATED	X-85 **Skin**
Ghisa *Cast iron*	Grigia e sferoidale *Grey and spheroidal*	20 - 25	20 - 25	45 - 50	20 - 25	45 - 50
Acciaio *Steel*	Basso contenuto di C *Low Carbon content*	30 - 35	30 - 35	60 - 70	30 - 35	60 - 70
	Medio contenuto di C *Medium Carbon content*	25 - 30	25 - 30	50 - 60	25 - 30	50 - 60
	Basso legato *Low alloy*	25 - 30	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloy*	20 - 25	20 - 25	40 - 50	20 - 25	40 - 50
	Acciaio da stampi e utensili *Tool and die Steel*	15 - 20	15 - 20	30 - 40	15 - 20	30 - 40

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*	
	ap = APMX ae = 0,1ø	ap = APMX ae = --
40	-	0,030
50	-	0,040
56	0,045	-
63	0,050	0,050
80	0,060	0,060
100	0,070	0,070

NB: Fresa adatta a lavorare in cava già esistente.
La fresa non è adatta per apertura cava.
End-mill suitable to work in existing slot.
End-mill not suitable for slotting.

Parametri di taglio/*Cutting parameters*

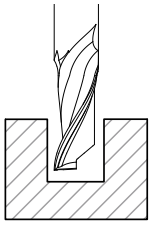
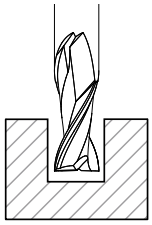
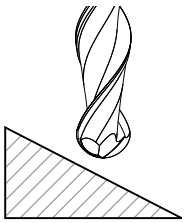




Materiali *Materials*		Cava *Slotting*		Cava *Slotting*		Copiatura *Profiling*	
Serie *Series*		10102 - 10105 10170*		10110 - 10125*		10140 - 10155*	
		Vc (m /min)		Vc (m /min)		Vc (m /min)	
	Gruppo e descrizione *Group and description*	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox
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 alloy*	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloy*	20 - 30	40 - 50	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die 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
	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

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*		
	ap = 0,5ø ae = 1ø	ap = 0,5ø ae = 1ø	ap = 0,2ø ae = 0,2ø
3	0,009	0,009	0,009
4	0,013	0,013	0,013
5	0,015	0,015	0,016
6	0,018	0,018	0,018
8	0,025	0,025	0,025
10	0,030	0,030	0,035
12	0,040	0,040	0,050
16	0,065	0,065	0,090
20	0,090	0,090	0,110
25	0,090	0,090	0,110
30	0,100	0,100	0,120
40	0,110	0,110	-
50	0,120	0,120	-

*series **10125**; series **10155**; fz consigliato | recommended **-50%**

Parametri di taglio/*Cutting parameters*

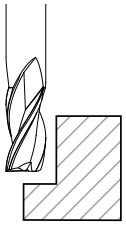




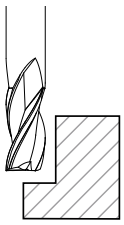
Materiali *Materials*		Cava *Slotting*		Cava *Slotting*		Copiatura *Profiling*	
Serie *Series*		11405		12105 - 12120*		12505 - 12520*	
Gruppo e descrizione ***Group and description***		**Vc (m /min)**		**Vc (m /min)**		**Vc (m /min)**	
		X-85 NON RIVESTITA UNCOATED	X-85 SkinAlu	X-85 NON RIVESTITA UNCOATED	X-85 SkinAlu	X-85 NON RIVESTITA UNCOATED	X-85 SkinAlu
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
	Rame/Ottone *Copper/Brass*	–	–	30 - 35	75 - 80	30 - 35	75 - 80

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*				
	11405 - 12105 - 12120*				
	ap = 1ø ae = 1ø	ap = 0,5ø ae = 0,5ø	ap = 1,5ø ae = 0,15ø	ap = 1,5ø ae = 0,1ø	ap = 0,05ø ae = 0,05ø
3	0,007	0,007	0,007	0,007	0,006
4	0,008	0,008	0,010	0,010	0,010
5	0,010	0,010	0,016	0,016	0,015
6	0,012	0,012	0,020	0,020	0,020
8	0,016	0,016	0,030	0,032	0,035
10	0,022	0,022	0,040	0,045	0,050
12	0,024	0,030	0,050	0,060	0,070
16	-	-	0,080	0,100	0,120
20	-	-	0,105	0,120	0,145

* series **12120**, serie **12520** fz consigliato | recommended **-50%**

Parametri di taglio/*Cutting parameters*



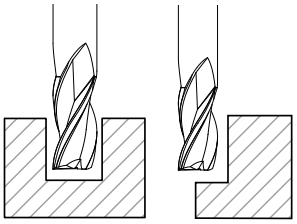


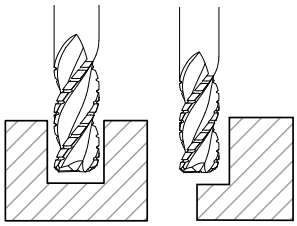
Materiali *Materials*		Contornatura *Shouldering*		Contornatura *Shouldering*	
Serie *Series*		14105 - 14120* - 14135**		14150 - 14155* 14160** - 14505	
	Gruppo e descrizione *Group and description*	Vc (m /min)		Vc (m /min)	
		X-85 NON RIVESTITA UNCOATED	X-85 SkinInox	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox
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 alloy*	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloy*	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die Steel*	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	–	–
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*	130 - 140	270 - 280	–	–
	Rame/Ottone *Copper/Brass*	30 - 35	75 - 80	–	–

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*	
	ap = 1,5ø | ae = 0,5ø	ap = 1,5ø | ae = 0,15ø
3	0,010	0,010
4	0,015	0,015
5	0,020	0,020
6	0,023	0,025
8	0,024	0,035
10	0,030	0,045
12	0,035	0,056
16	0,054	0,090
20	0,070	0,120
30	0,080	0,120
40	0,090	0,130
50	0,100	0,140

* series **14120**, serie **14155** fz consigliato | recommended **-30%**
series **14135, serie **14160** fz consigliato | recommended **-50%**

Parametri di taglio/*Cutting parameters*



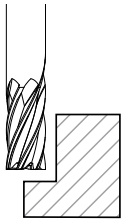


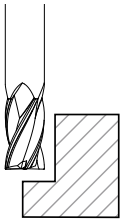
Materiali *Materials*		Contornatura *Shouldering*		Semifinitura *Semi-finishing*	
Serie *Series*		14805 - 14820* - 14850 - 14855*		15105 WF - 15120* WF	
	Gruppo e descrizione ***Group and description***	**Vc (m /min)**			
		X-85 NON RIVESTITA UNCOATED	X-85 SkinAlu	X-85 NON RIVESTITA UNCOATED	X-85 SkinAlu
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

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*				
	ap = 1ø ae = 1ø	ap = 1,5ø ae = 0,5ø	ap = 1,5ø ae = 0,15ø	ap = 1ø ae = 1ø	ap = 1,5ø ae = 0,5ø
3	0,007	0,007	0,007	-	-
4	0,008	0,008	0,010	-	-
5	0,010	0,010	0,016	0,012	0,015
6	0,012	0,012	0,020	0,016	0,020
8	0,016	0,016	0,030	0,022	0,025
10	0,022	0,022	0,040	0,026	0,030
12	0,024	0,030	0,050	0,036	0,040
16	0,030	0,036	0,080	0,045	0,050
20	0,036	0,045	0,105	0,050	0,060
25	0,040	0,050	0,110	0,060	0,070
30	0,045	0,055	0,120	0,070	0,080
40	0,050	0,060	0,130	0,080	0,090

* series **14820**, serie **14855**, serie **15120** fz consigliato | recommended **-50%**

Parametri di taglio/*Cutting parameters*



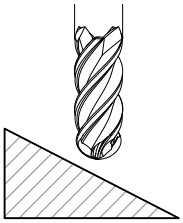


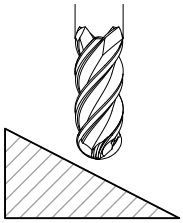
Materiali *Materials*		Contornatura *Shouldering*		Contornatura *Shouldering*	
Serie *Series*		17105 - 17120* - 17135** - 17150 17155* - 17160** - 17350 - 17355**		17305 - 17320*	
	Gruppo e descrizione *Group and description*	**Vc (m /min)**		**Vc (m /min)**	
		X-85 NON RIVESTITA UNCOATED	X-85 **Skin**	X-85 NON RIVESTITA UNCOATED	X-85 **Skin**Inox
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 alloy*	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloy*	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die Steel*	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
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

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*
	ap = 1,5ø | ae = 0,15ø
3	0,010
4	0,015
5	0,020
6	0,025
8	0,035
10	0,045
12	0,056
16	0,090
20	0,120

* series **17120**; series **17155**, serie **17320** fz consigliato | recommended **-30%**
** series **17135**, serie **17160**, seirie **17355** fz consigliato | recommended **-50%**

Parametri di taglio/*Cutting parameters*



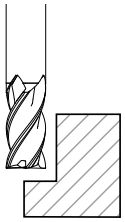


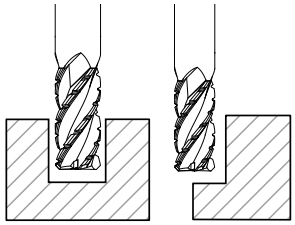
Materiali *Materials*		Copiatura *Profiling*		Copiatura *Profiling*	
Serie *Series*		17505 - 17520*		17550 - 17555*	
	Gruppo e descrizione ***Group and description***	**Vc (m /min)**		**Vc (m /min)**	
		X-85 NON RIVESTITA UNCOATED	X-85 **Skin**Inox	X-85 NON RIVESTITA UNCOATED	X-85 **Skin**
Ghisa *Cast iron*	Grigia e sferoidale *Grey and spheroidal*	20 - 25	45 - 50	20 - 25	45 - 50
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 alloy*	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloy*	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die Steel*	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	–	–
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	–	–

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*
	ap = 0,005ø | ae = 0,005ø
3	0,007
4	0,009
5	0,012
6	0,014
8	0,021
10	0,028
12	0,038
16	0,065
20	0,090

* series **17520**; series **17555** fz consigliato | recommended **-30%**

Parametri di taglio/*Cutting parameters*

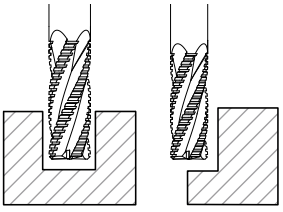


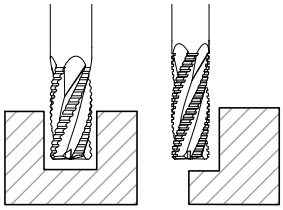


Materiali *Materials*		Contornatura *Shouldering*		Semifinitura *Semi-finishing*	
	Serie *Series*	18105		19105 NF	
	Gruppo e descrizione *Group and description*	**Vc (m /min)**		**Vc (m /min)**	
		X-85 NON RIVESTITA UNCOATED	X-85 SkinInox	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox
Ghisa *Cast iron*	Grigia 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 alloy*	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloy*	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die Steel*	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	–	–
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*	130 - 140	270 - 280	–	–
	Rame/Ottone *Copper/Brass*	30 - 35	75 - 80	–	–

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*	
	ap = 1,5ø | ae = 0,15ø	ap = 1,5ø | ae = 1ø ap = 1,5ø | ae = 0,5ø
3	0,010	-
4	0,015	-
5	0,020	-
6	0,025	0,012
8	0,035	0,016
10	0,045	0,022
12	0,056	0,026
16	0,090	0,036
20	0,120	0,045

Parametri di taglio/*Cutting parameters*



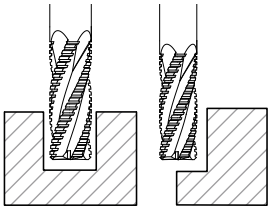


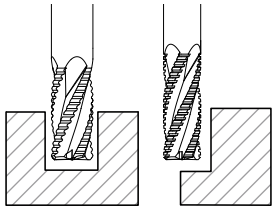
Materiali *Materials*		Semifinitura *Semi-finishing*		Sgrossatura *Roughing*	
Serie *Series*		20105 NF - 20120* NF 20150 NF - 20150 NR 20160** NF - 20160** NR		20105 NR 20120* NR	
	Gruppo e descrizione *Group and description*	**Vc (m /min)**		**Vc (m /min)**	
		X-85 NON RIVESTITA UNCOATED	X-85 SkinInox	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox
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 alloy*	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloy*	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die 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

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*
	ap = 1,5ø | ae = 1ø ap = 1,5ø | ae =0,5ø
6	0,012
8	0,016
10	0,022
12	0,026
16	0,036
20	0,045

* serie **20120NF**, serie **20120NR** fz consigliato | recommended **-30%**
** serie **20160NF**, serie **20160NR** fz consigliato | recommended **-50%**

Parametri di taglio/*Cutting parameters*



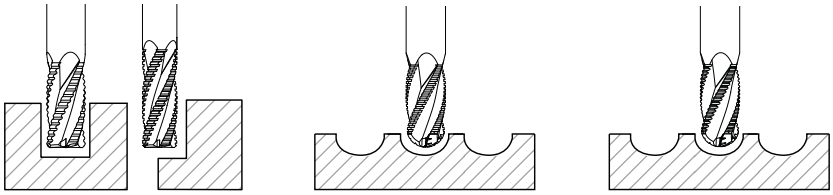


Materiali *Materials*		Semifinitura *Semi-finishing*		Sgrossatura *Roughing*	
Serie *Series*		21105 NF - 21120* NF 21150 NF - 21150 NR 21155* NF - 21155* NR		21105 NR 21120* NR	
	Gruppo e descrizione *Group and description*	**Vc (m /min)**		**Vc (m /min)**	
		X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox
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 alloy*	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloy*	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die Steel*	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

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*			
	ap = 1ø | ae = 1ø	ap = 1,5ø | ae = 0,4ø	ap = 1ø | ae = 1ø	ap = 1,5ø | ae = 0,4ø
6	0,012	0,025	0,012	0,025
8	0,016	0,035	0,016	0,035
10	0,022	0,045	0,022	0,045
12	0,026	0,055	0,026	0,055
16	0,036	0,070	0,036	0,070
20	0,045	0,085	0,045	0,085

* serie **21120NF**, serie **21155NF**, serie **21120NR** fz consigliato | recommended **-50%**

Parametri di taglio/*Cutting parameters*

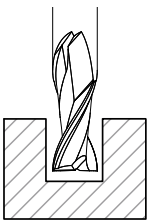


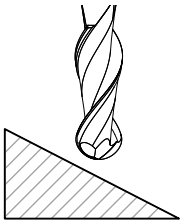
Materiali *Materials*		Sgrossatura *Roughing*		Semifinitura *Semi-finishing*		Sgrossatura *Roughing*	
Serie *Series*		21305 NR		21505 NF - 21520* NF 21550 NF - 21550 NR 21555** NF - 21555** NR		21505 NR 21520* NR	
	Gruppo e descrizione *Group and description*	**Vc (m /min)**		**Vc (m /min)**		**Vc (m /min)**	
		X-85 NON RIVESTITA UNCOATED	X-85 SkinInox	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox
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 alloy*	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloy*	20 - 30	40 - 50	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die 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
	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	–	–	–	–
	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	–	–	–	–

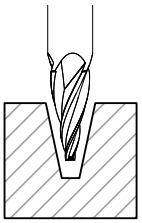
DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*		
	ap = 1ø ae = 1ø	ap = 1,5ø ae = 0,4ø	ap = 0,4ø ae = 0,9ø
6	0,013	0,022	0,014
8	0,016	0,028	0,020
10	0,022	0,035	0,025
12	0,026	0,045	0,030
16	0,038	0,070	0,040
20	0,050	0,090	0,050

* serie **21520NF**, serie **21520NR** fz consigliato | recommended **-30%**
** serie **21555NF**, serie **21555NR** fz consigliato | recommended **-50%**

Parametri di taglio/*Cutting parameters*



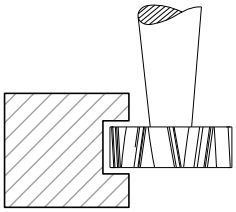


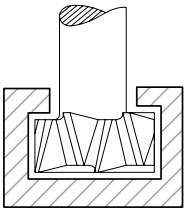


Materiali *Materials*		Cava *Slotting*		Copiatura *Profiling*		Contornatura *Shouldering*	
Serie *Series*		24115		24120		25105	
	Gruppo e descrizione *Group and description*	Vc (m /min)		Vc (m /min)		Vc (m /min)	
		X-85 NON RIVESTITA UNCOATED	X-85 **Skin**	X-85 NON RIVESTITA UNCOATED	X-85 **Skin**	X-85 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*	30 - 35	50 - 60	30 - 35	50 - 60	30 - 35	50 - 60
	Basso legato *Low alloy*	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato *High alloy*	20 - 30	40 - 50	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die Steel*	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40

DC	Avanzamento fz mm/tagliente | *FEED mm/tooth*		
	ap = 0,1ø ae = 1ø	ap = 0,05ø ae = 0,005ø	ap = APMX ae = 0,005ø
3	0,005	0,005	0,003
4	0,007	0,007	0,005
5	0,010	0,010	0,006
6	0,012	0,012	0,007
8	0,017	0,017	0,010
10	0,022	0,022	0,014
12	0,028	0,028	0,019
16	0,045	0,045	0,032
20	0,060	0,060	0,045
25	0,065	0,065	0,050

Parametri di taglio/*Cutting parameters*



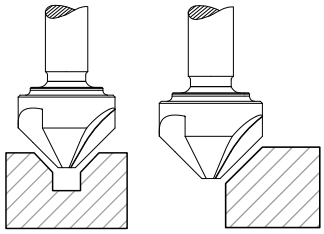


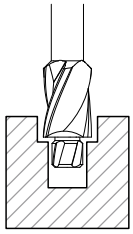
Materiali *Materials*		Cava laterale *Side slotting*			Cava "T" *"T" slot*		
Serie *Series*		27105			27120 - 27135 27150 - 27155		
	Gruppo e descrizione *Group and description*	Vc (m /min)			Vc (m /min)		
		M-TK NON RIVESTITA UNCOATED	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox	M-TK NON RIVESTITA UNCOATED	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox
Ghisa *Cast Iron*	Grigia e sferoidale *Grey and spheroidal*	15 - 20	20 - 25	45 - 50	15 - 20	20 - 25	45 - 50
Acciaio *Steel*	Basso contenuto di C *Low Carbon content*	25 - 30	30 - 35	60 - 70	25 - 30	30 - 35	60 - 70
	Medio contenuto di C *Medium Carbon content*	25 - 30	30 - 35	50 - 60	25 - 30	30 - 35	50 - 60
	Basso legato *Low alloy*	20 - 25	25 - 30	50 - 60	20 - 25	25 - 30	50 - 60
	Alto legato *High alloy*	15 - 25	20 - 30	40 - 50	15 - 25	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die Steel*	10 - 15	15 - 20	30 - 40	10 - 15	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

Avanzamento fz mm/tagliente | *FEED mm/tooth*

		D	S		D	S	
		D	2	0,020	12,5	6	0,035
		D	2,5	0,020	16	8	0,040
		D	3	0,025	18	8	0,045
		D	4	0,025	19	9	0,050
		D	5	0,030	21	9	0,055
		D	6	-	22	10	0,060
		D	7	-	25	11	0,064
		D	8	-	28	12	0,068
		D	10		32	14	0,072
					36	16	0,076
					40	18	0,080
					45	20	0,083
					50	22	0,086
					56	24	0,090

Parametri di taglio/*Cutting parameters*

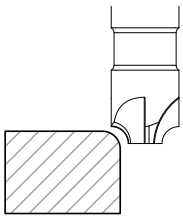


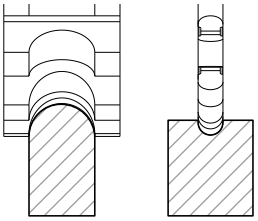


Materiali *Materials*		Svasatura *Countersink*			Fresatura sedi viti *Cornerboring*		
Serie *Series*		27505			28105 - 28150		
	Gruppo e descrizione *Group and description*	Vc (m /min)			Vc (m /min)		
		M-TK NON RIVESTITA UNCOATED	X-85 NON RIVESTITA UNCOATED	X-85 **Skin**	M-TK NON RIVESTITA UNCOATED	X-85 NON RIVESTITA UNCOATED	X-85 **Skin**
Ghisa *Cast iron*	Grigia e sferoidale *Grey and spheroidal*	15 - 20	20 - 25	45 - 50	15 - 20	20 - 25	45 - 50
Acciaio *Steel*	Basso contenuto di C *Low Carbon content*	25 - 30	30 - 35	60 - 70	25 - 30	30 - 35	60 - 70
	Medio contenuto di C *Medium Carbon content*	25 - 30	30 - 35	50 - 60	25 - 30	30 - 35	50 - 60
	Basso legato *Low alloy*	20 - 25	25 - 30	50 - 60	20 - 25	25 - 30	50 - 60
	Alto legato *High alloy*	15 - 25	20 - 30	40 - 50	15 - 25	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die Steel*	10 - 10	15 - 20	30 - 40	10 - 15	15 - 20	30 - 40

DC	Avanzamento fz mm/giro | *FEED mm/rev.*	
6	0,060	0,060
8	0,080	0,080
10	0,085	0,085
12	0,100	0,100
16	0,120	0,120
20	0,140	0,140
25	0,180	0,180
30	0,220	0,220
35	0,250	0,250
40	0,270	0,270
50	0,300	0,300

Parametri di taglio/*Cutting parameters*

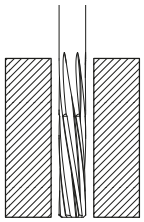




Materiali *Materials*		Raccordatura *Corner rounding*			Fresatura di forma *Form milling*		
Serie *Series*		28505			29105 - 29110		
			Vc (m /min)			Vc (m /min)	
Gruppo e descrizione *Group and description*		M-TK NON RIVESTITA UNCOATED	X-85 NON RIVESTITA UNCOATED	X-85 Skin	M-TK NON RIVESTITA UNCOATED	X-85 NON RIVESTITA UNCOATED	X-85 Skin
Ghisa *Cast iron*	Grigia e sferoidale *Grey and spheroidal*	15 - 20	20 - 25	45 - 50	20 - 25	20 - 25	45 - 50
Acciaio *Steel*	Basso contenuto di C *Low Carbon content*	25 - 30	30 - 35	60 - 70	30 - 35	30 - 35	60 - 70
	Medio contenuto di C *Medium Carbon content*	25 - 30	30 - 35	50 - 60	30 - 35	30 - 35	50 - 60
	Basso legato *Low alloy*	20 - 25	25 - 30	50 - 60	25 - 30	25 - 30	50 - 60
	Alto legato *High alloy*	15 - 25	20 - 30	40 - 50	20 - 30	20 - 30	40 - 50
	Acciaio da stampi e utensili *Tool and die Steel*	10 - 15	15 - 20	30 - 40	15 - 20	15 - 20	30 - 40

PRFRAD	Avanzamento fz mm/giro | *FEED mm/rev.*
1 - 20	0,020 - 0,080

Parametri di taglio/*Cutting parameters*



Materiali *Materials*		Alesatura per fori passanti *Through holes reaming*		
Serie *Series*		32105 - 32150 - 33105		
	Gruppo e descrizione ***Group and description***	**Vc (m /min)**		
		M-TK NON RIVESTITA UNCOATED	X-85 NON RIVESTITA UNCOATED	X-85 **Skin**
Ghisa *Cast Iron*	Grigia e sferoidale *Grey and spheroidal*	10 - 12	12 - 16	20 - 25
Acciaio *Steel*	Basso contenuto di C *Low Carbon content*	10 - 12	12 - 16	20 - 25
	Medio contenuto di C *Medium Carbon content*	8 - 10	10 - 12	18 - 22
	Basso legato *Low alloy*	8 - 10	10 - 12	18 - 22
	Alto legato *High alloy*	6 - 8	8 - 10	16 - 20
	Acciaio da stampi e utensili *Tool and die Steel*	6 - 8	8 - 10	16 - 20

DC	Avanzamento fz mm/giro | *FEED mm/rev.*
1 - 3	0,060 - 0,080
4 -6	0,100 - 0,120
8 -12	0,130 - 0,180
16 - 25	0,250 - 0,400
30 - 50	0,450 - 0,600
60 - 80	0,650 - 0,800
90 - 100	0,850 - 1,000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