

HSS-PM CUTTING TOOLS





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HSS-PM CUTTING TOOLS

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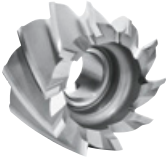

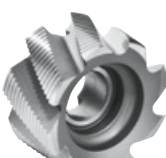



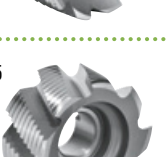
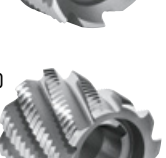
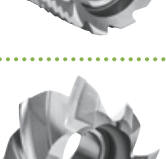
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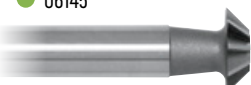
	Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghisa Cast iron	Pagina Page
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● 02120		Z6÷10 NR	- Sgrossatura, Spianatura Roughing, Facemilling	●	●	●	○	○	●	●	40
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SU RICHIESTA
ON REQUEST

○ SU RICHIESTA/ON REQUEST

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

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	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		
● 04105		Z16÷38	-	-	Apertura cava Slotting	●	●	●	○	○	●	●	41	
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









	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
● 10102		Z2	✓	Apertura cava Slotting	●	●	●	●	○	●	●	46
● 10105		Z2	✓	Apertura cava Slotting	●	●	●	●	○	●	●	47
● 10110		Z2	✓	Apertura cava Slotting	●	●	●	●	○	●	●	48
● 10125		Z2	✓	Apertura cava Slotting	●	●	●	●	○	●	●	49
● 10140		Z2 Ball-Nosed	✓	Copiatura Profiling	●	●	●	●	○	●	●	50
● 10155		Z2 Ball-Nosed	✓	Copiatura Profiling	●	●	●	●	○	●	●	51
● 10170		Z2	✓	Apertura cava Slotting	●	●	●	●	○	●	●	52
● 11405		Z1	✓	Apertura cava Slotting	○	○	○	●	●	○	○	52
● 12105		Z2	✓	Apertura cava Slotting	○	○	●	●	●	○	○	53
● 12120		Z2	✓	Apertura cava Slotting	○	○	●	●	●	○	○	54
● 12505		Z2 Ball-Nosed	✓	Copiatura Profiling	○	○	●	●	●	○	○	55
● 12520		Z2 Ball-Nosed	✓	Copiatura Profiling	○	○	●	●	●	○	○	55
● 14105		Z3	✓	Contornatura Shouldering	●	●	●	●	○	●	●	56
● 14120		Z3	✓	Contornatura Shouldering	●	●	●	●	○	●	●	57
● 14135		Z3	✓	Contornatura Shouldering	●	●	●	●	○	●	●	58
● 14150		Z3	✓	Contornatura Shouldering	●	●	●	●	○	●	●	58
● 14155		Z3	✓	Contornatura Shouldering	●	●	●	●	○	●	●	59










	Denti Teeth	Lunghezza Length	Center cutting	Applicazioni consigliate Recommended applications	Titanio Titanium	HSSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghisa Cast iron	Pagina Page
● 14160		Z3		✓	Contornatura Shouldering	●	●	●	○	●	●	59
● TORNADO 14505		Z3		✓	Contornatura Shouldering	●	●	●	○	○	●	60
○ TORNADO 14520		Z3		✓	Contornatura Shouldering	●	●	●	○	○	●	
● 14805		Z3		✓	Apertura cava, Contornatura Slotting, Shouldering	○	○	○	●	●	○	60
● 14820		Z3		✓	Apertura cava, Contornatura Slotting, Shouldering	○	○	○	●	●	○	61
● 14850		Z3		✓	Apertura cava, Contornatura Slotting, Shouldering	○	○	○	●	●	○	61
● 14855		Z3		✓	Apertura cava, Contornatura Slotting, Shouldering	○	○	○	●	●	○	62
● 15105		Z3 WF		✓	Semifinitura Semi-finishing	○	○	○	●	●	○	62
● 15120		Z3 WF		✓	Semifinitura Semi-finishing	○	○	○	●	●	○	63
● 17105		Z4÷8		✗	Finitura, Contornatura Finishing, Shouldering	○	○	●	○	○	●	63
● 17120		Z4÷8		✗	Finitura, Contornatura Finishing, Shouldering	○	○	●	○	○	●	64
● 17135		Z4÷6		✗	Finitura, Contornatura Finishing, Shouldering	○	○	●	○	○	●	65
● 17150		Z4÷8		✗	Finitura, Contornatura Finishing, Shouldering	○	○	●	○	○	●	65
● 17155		Z4÷8		✗	Finitura, Contornatura Finishing, Shouldering	○	○	●	○	○	●	66
● 17160		Z4÷8		✗	Finitura, Contornatura Finishing, Shouldering	○	○	●	○	○	●	66
● 17305		Z4÷8		✓	Finitura, Contornatura Finishing, Shouldering	●	●	●	●	○	●	67
● 17320		Z4÷8		✓	Finitura, Contornatura Finishing, Shouldering	●	●	●	●	○	●	67

SU RICHIESTA
ON REQUEST

	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
● 17350		Z4÷8		✓	Finitura, Contornatura Finishing, Shouldering	○	○	●	○	●	●	68
● 17355		Z4÷8		✓	Finitura, Contornatura Finishing, Shouldering	○	○	●	○	●	●	68
● 17505		Z4÷8 Ball-Nosed		✓	Copiatura Profiling	●	●	●	○	●	●	69
● 17520		Z4÷8 Ball-Nosed		✓	Copiatura Profiling	●	●	●	○	●	●	69
● 17550		Z4÷8 Ball-Nosed		✓	Copiatura Profiling	○	○	●	○	●	●	70
● 17555		Z4÷8 Ball-Nosed		✓	Copiatura Profiling	○	○	●	○	●	●	70
● 18105		Z4		✗	Finitura, Contornatura Finishing, Shouldering	●	●	●	○	●	●	71
● 19105		Z4 NF		✓	Semifinitura Semi-finishing	●	●	●	○	○	●	71
● 20105		Z3÷5 NF		✗	Semifinitura Semi-finishing	●	●	●	○	○	●	72
● 20105		Z3÷5 NR		✗	Sgrossatura Roughing	●	●	●	○	○	●	72
● 20120		Z4÷5 NF		✗	Semifinitura Semi-finishing	●	●	●	○	○	●	73
● 20120		Z4÷5 NR		✗	Sgrossatura Roughing	●	●	●	○	○	●	73
● 20150		Z4÷6 NF		✗	Semifinitura Semi-finishing	●	●	●	○	○	●	74
● 20150		Z4÷6 NR		✗	Sgrossatura Roughing	●	●	●	○	○	●	74
● 20160		Z4÷6 NF		✗	Semifinitura Semi-finishing	●	●	●	○	○	●	75
● 20160		Z4÷6 NR		✗	Sgrossatura Roughing	●	●	●	○	○	●	75
● 21105		Z3÷5 NF		✓	Semifinitura Semi-finishing	●	●	●	○	○	●	76

	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
● 21105	Z3÷6 NR		✓	Sgrossatura Roughing	●	●	●	●	○	●	●	76
● 21120	Z4÷6 NF		✓	Semifinitura Semi-finishing	●	●	●	○	○	●	●	77
● 21120	Z4÷6 NR		✓	Sgrossatura Roughing	●	●	●	●	○	●	●	77
● 21150	Z4÷8 NF		✓	Semifinitura Semi-finishing	●	●	●	○	○	●	●	78
● 21150	Z4/8 NR		✓	Sgrossatura Roughing	●	●	●	○	○	●	●	78
● 21155	Z4÷8 NF		✓	Semifinitura Semi-finishing	●	●	●	○	○	●	●	79
● 21155	Z4÷8 NR		✓	Sgrossatura Roughing	●	●	●	○	○	●	●	79
● 21305	Z3÷5 NR		✓	Sgrossatura Roughing	●	●	●	○	○	●	●	80
● 21505	Z3÷5 NF		✓	Semifinitura Semi-finishing	●	●	●	○	○	●	●	80
● 21505	Z3÷6 NR		✓	Sgrossatura Roughing	●	●	●	●	○	●	●	81
● 21520	Z4÷6 NF		✓	Semifinitura Semi-finishing	●	●	●	○	○	●	●	82
● 21520	Z4÷6 NR		✓	Sgrossatura Roughing	●	●	●	●	○	●	●	82
● 21550	Z4÷8 NF		✓	Semifinitura Semi-finishing	●	●	●	○	○	●	●	83
● 21550	Z4÷8 NR		✓	Sgrossatura Roughing	●	●	●	○	○	●	●	83
● 21555	Z4÷8 NF		✓	Semifinitura Semi-finishing	●	●	●	○	○	●	●	84
● 21555	Z4÷8 NR		✓	Sgrossatura Roughing	●	●	●	○	○	●	●	84
● 24115	Z2		✓	Apertura cava Slotting	●	●	●	○	○	●	●	85

		Denti Teeth	Lunghezza Length	Center cutting	Applicazioni consigliate Recommended applications	Titanio Titanium	HSSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghisa Cast iron	Pagina Page	
	● 24120		Z2		✓	Copiatura Profiling	●	●	●	○	○	●	●	85
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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
	● 27120		Z6÷8	-	-	Apertura cava "T" "T" Slotting	●	●	●	○	○	●	●	88
	● 27135		Z4÷8 NF	-	-	Apertura cava "T" "T" Slotting	●	●	●	○	○	●	●	88
	● 27150		Z8÷10	-	-	Apertura cava "T" "T" Slotting	●	●	●	○	○	●	●	89
	● 27155		Z4÷8 NF	-	-	Apertura cava "T" "T" Slotting	●	●	●	○	○	●	●	89
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	○ 27505		Z1	-	-	Svasatura Countersinking	●	●	●	○	○	●	●	
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	● 28105		Z4	-	-	Fresatura sedi viti Counterboring	●	●	●	○	○	●	●	91
SU RICHIESTA ON REQUEST	○ 28150		Z4	-	-	Fresatura sedi viti Counterboring	●	●	●	○	○	●	●	
	● 28150		Z4	-	-	Fresatura sedi viti Counterboring	●	●	●	○	○	●	●	92

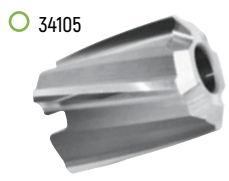
		Denti Teeth	Lunghezza Length	Applicazioni consigliate Recommended applications	Titanio Titanium	HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghisa Cast Iron	Pagina Page	
		28505	Z4÷6	-	Raccordatura Corner rounding	●	●	●	○	○	●	●	92
		29105	Z12÷14	-	Fresatura di forma Form milling	●	●	●	○	○	●	●	93
		29110	Z12÷14	-	Fresatura di forma Form milling	●	●	●	○	○	●	●	93
SU RICHIESTA ON REQUEST		30150	Z3÷6	-	Alesatura per fori passanti Through holes reaming	○	○	●	○	○	●	●	
		30502	Z3÷4	-	Alesatura per fori passanti Through holes reaming	○	○	●	○	○	●	●	94
		30505	Z3	-	Alesatura per fori passanti Through holes reaming	○	○	●	○	○	●	●	94
		30508	Z3	-	Alesatura per fori passanti Through holes reaming	○	○	●	○	○	●	●	95
		30510	Z3	-	Alesatura per fori passanti Through holes reaming	○	○	●	○	○	●	●	95
		31105	Z4÷12	-	Alesatura per fori passanti Through holes reaming	○	○	●	○	○	●	●	96
		32105	Z3÷7	-	Alesatura per fori passanti Through holes reaming	○	○	●	○	○	●	●	97
		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	○	○	○	○	○	●	●

Denti
Teeth

Lunghezza
Length

Applicazioni consigliate
Recommended applications

SU RICHIESTA
ON REQUEST



○ 34105

Z4

-

Allargatura per fori ciechi e passanti
Through and blind holes boring

○	○	●	○	○	●	●
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○ 34150

Z4



Allargatura per fori ciechi e passanti
Through and blind holes boring

○	○	●	○	○	●	●
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● 08105

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101

SU RICHIESTA
ON REQUEST



○ 08110

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○ 08115

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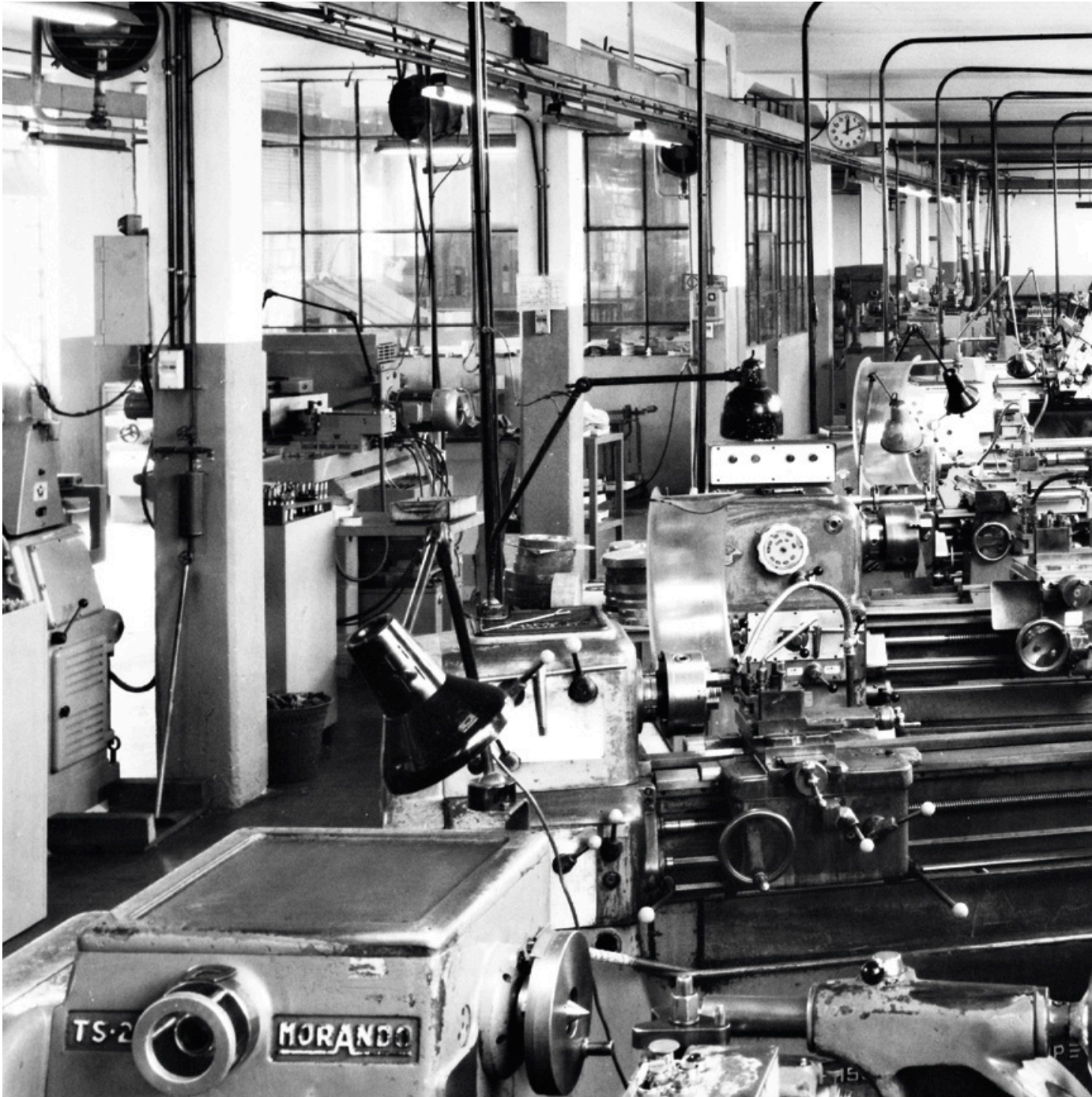


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WHO
WE
ARE

WHO WE ARE



SINCE 1966

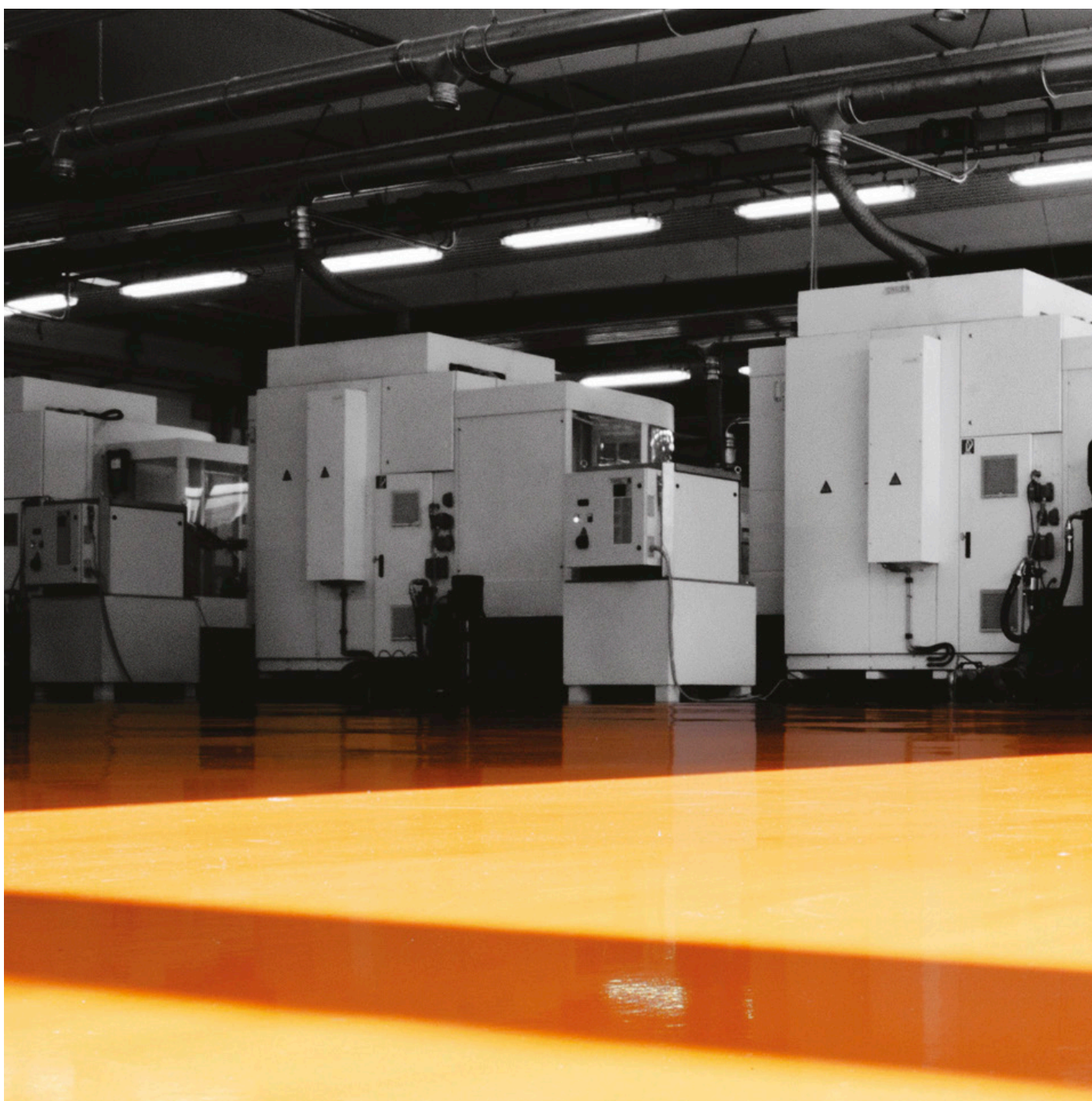
UOP S.p.A. è un'azienda produttrice di utensili integrali per asportazioni di truciolo.
Fondata nel 1966, dal 2003 è membro del Gruppo IMC.
Grazie ad una storia di crescita continua è ora una realtà apprezzata a livello internazionale.

*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

W H O W E A R E



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.



PRODUCTION
DEPARTMENT
HEADQUARTER



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 rappresentato 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 PVD 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 sviluppiamo 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

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

3

4

5 **Skin** UNI 5285A DIN 8587 ISO 3537 Coating Standards W on request F on request Execution N Teeth Z6-8

6

Cod. Art.	M-TK (mm)	X-S5 (mm)	COATED	DC (mm)	APMX (mm)	DN	LH	DAL	SCDN (mm)	Z
271201256 AM	CM	CMX	12,5	6	5	11	57	10	12	6
271201808 AM	CM	CMX	16	8	7	14	82	10	12	6
271201909 AM	CM	CMX	19	9	8	15	70	12	15	6
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

7

8

9 **Skin** UNI 5285A DIN 8587 ISO 3537 Coating Standards W on request F on request Execution NF Teeth Z4-8

10

Cod. Art.	M-TK (mm)	X-S5 (mm)	COATED	DC (mm)	APMX (mm)	DN	LH	DAL	SCDN (mm)	Z
271351256 AM	CM	CMX	12,5	6	5	11	57	10	12	4
271351808 AM	CM	CMX	16	8	7	14	82	10	12	6
271351808 AM	CM	CMX	18	8	8	15	70	12	15	6
271351909 AM	CM	CMX	19	9	8	15	70	12	15	6
271352109 AM	CM	CMX	21	9	10	18	74	12	15	8
271352210 AM	CM	CMX	22	10	10	17	74	12	15	8
271352511 AM	CM	CMX	25	11	12	20	82	16	15	8
271352812 AM	CM	CMX	28	12	13	22	85	16	15	8
271353214 AM	CM	CMX	32	14	15	25	90	16	15	8

11

9 Parametri di taglio/Cutting parameters

10

Materiali Materials	Cava Slotting ap = S ab = 1a		Cava Slotting ap = S ab = 1a	
	27120		27135	
Gruppo e descrizione Group and description	Vc [m/min.]		Vc [m/min.]	
	X-S5 UNCOATED	Skin	X-S5 UNCOATED	Skin
Grigio e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50
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
Alc. 304 - 405 - 420	-	15 - 20	-	15 - 20
Alc. 316 - 440	-	15 - 20	-	15 - 20
17-4 ph 9-5 ph	-	10 - 15	-	10 - 15
Leghe Cr - Co / Cr - Co alloy	-	10 - 15	-	10 - 15
Duplex F51	-	5 - 10	-	5 - 10
Super Duplex F55	-	5 - 10	-	5 - 10

11

DC	S	Avanzamento fz mm/tagliante FEED mm/tooth	
		27120	27135
12,5	6	0,035	0,039
16	8	0,040	0,045
18	8	0,045	0,050
19	9	0,050	0,056
21	9	0,055	0,062
22	10	0,060	0,067
25	11	0,064	0,072
28	12	0,068	0,076
32	14	0,072	0,081
36	16	0,076	0,085
40	18	0,080	0,090
45	20	0,083	0,093
50	22	0,086	0,096
56	24	0,090	0,101

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/tagliante
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:
High Speed Steel and Powder Metal 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.

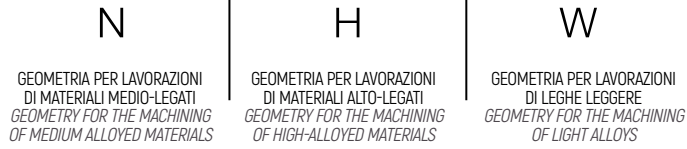
TABELLA RIVESTIMENTI UTENSILI STANDARD / TABLE OF COATINGS FOR OUR STANDARD TOOLS

RIVESTIMENTI COATINGS	BASE COMPOSITION	DUREZZA (HV) HARDNESS	RESISTENZA ALLOSSIDAZIONE (°C) OXIDATION RESISTANCE	COEFFICIENTE DI ATTRITO COEFFICIENT OF FRICTION	APPLICAZIONI APPLICATIONS
Skin	Base titanio e alluminio <i>Titanium and aluminium based</i>	3700	800°	0,5	Lavorazioni di acciai, ghise, acciai inossidabili, titanio, HRSA <i>Milling of steels, cast iron, stainless steels, titanium, HRSA</i>
SkinAlu	Base titanio e alluminio <i>Titanium and aluminium based</i>	3700	800°	0,1	Lavorazioni leghe leggere, materie plastiche, materiali non ferrosi <i>Machining for light alloys, plastic materials, non ferrous materials</i>
SkinInox	Base titanio e alluminio <i>Titanium and aluminium based</i>	3500	800°	0,05	Fresatura acciai inossidabili <i>Stainless steel milling</i>

SYMBOLS

EXECUTION

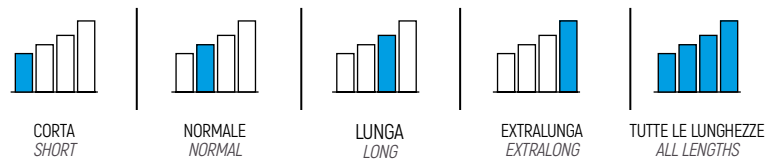
TAGLIENTI A FINIRE
FINISHING CUTTING EDGE PROFILE



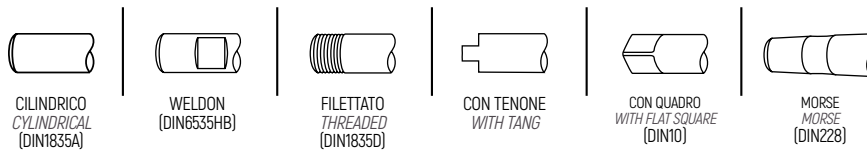
TAGLIENTI A SGROSSARE E SEMIFINIRE
ROUGHING AND SEMI-FINISHING CUTTING EDGE PROFILE



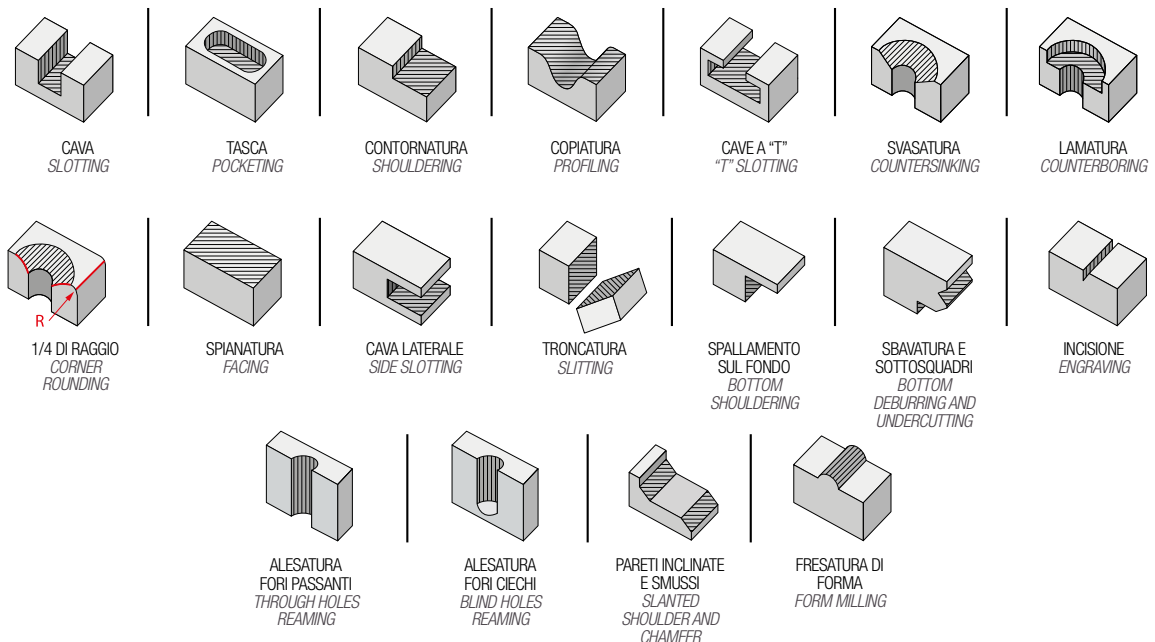
LENGTH



SHANK

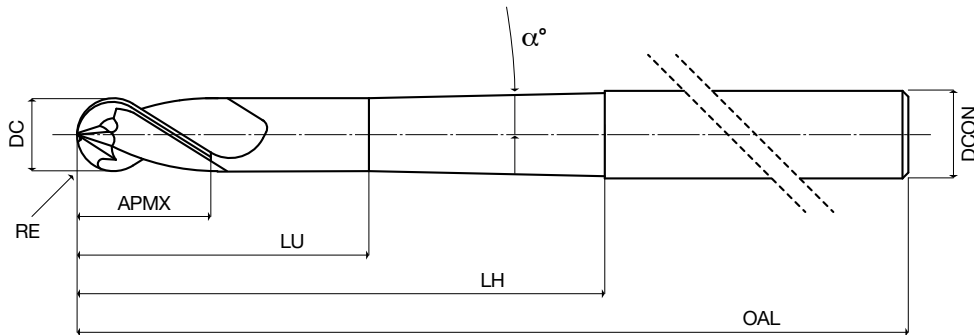


APPLICATION



ABBREVIATIONS

Nomenclatura secondo ISO 13399 - According to ISO 13399 nomenclature



DC	[mm]	DIAMETRO DEL TAGLIANTE CUTTING DIAMETER	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
DCON	[mm]	DIAMETRO DEL GAMBO SHANK DIAMETER	Z	[n]	NUMERO DEI DENTI NUMBER OF TEETH
DN	[mm]	DIAMETRO DELLO SCARICO NECK DIAMETER	RE	[mm]	RAGGIO RADIUS
OAL	[mm]	LUNGHEZZA TOTALE DELL'UTENSILE TOTAL LENGTH OF TOOL	S	[mm]	SPESSORE WIDTH
APMX	[mm]	LUNGHEZZA DEL TAGLIANTE 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			

FORMULAS

Vc	[m/min.]	VELOCITÀ DI TAGLIO CUTTING SPEED	n	[rpm]	GIRI AL MINUTO TOOL REVOLUTION
F	[mm/min.]	VELOCITÀ DI AVANZAMENTO FEED RATE	a_p	[mm]	PROFONDITÀ ASSIALE AXIAL DEPTH
fz	[mm]	AVANZAMENTO PER DENTE FEED PER TOOTH	a_e	[mm]	PROFONDITÀ RADIALE RADIAL DEPTH
fn	[mm]	AVANZAMENTO AL GIRO FEED PER REVOLUTION	Q	[cm ³ /min.]	VOLUME DI TRUCIOLATURA MATERIAL REMOVAL RATE

NUMERO DI GIRI
TOOL REVOLUTION

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

AVANZAMENTO PER DENTE
FEED PER TOOTH

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

VELOCITÀ DI TAGLIO
CUTTING SPEED

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

VOLUME DI TRUCIOLATURA
MATERIAL REMOVAL RATE

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

VELOCITÀ DI AVANZAMENTO
FEED RATE

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

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 -0,370	-0,270 -0,390	-0,280 -0,430	-0,290 -0,470	-0,300 -0,510	-0,310 -0,560	-0,320 -0,570	-0,340 -0,640	-0,360 -0,660	-0,380 -0,730	-0,410 -0,760	-0,460 -0,860	-0,520 -0,920	-0,580 -0,980	-0,660 -1,120	-0,740 -1,200	-0,820 -1,280	-0,920 -1,440	-1,050 -1,570	-1,200 -1,770	-1,350 -1,920	
d6	-0,020 -0,026	-0,030 -0,038	-0,040 -0,049	-0,050 -0,061	-0,065 -0,078	-0,080 -0,096	-0,100 -0,119	-0,120 -0,142	-0,145 -0,170	-0,170 -0,199	-0,190 -0,222	-0,210 -0,246	-0,230 -0,266	-0,250 -0,286	-0,270 -0,306	-0,290 -0,326	-0,310 -0,346	-0,330 -0,366	-0,350 -0,386	-0,370 -0,406	-0,390 -0,426	
e6	-0,014 -0,020	-0,020 -0,028	-0,025 -0,034	-0,032 -0,043	-0,040 -0,053	-0,050 -0,066	-0,060 -0,079	-0,072 -0,094	-0,085 -0,110	-0,100 -0,129	-0,110 -0,142	-0,125 -0,161	-0,140 -0,176	-0,155 -0,191	-0,170 -0,206	-0,185 -0,221	-0,195 -0,231	-0,205 -0,241	-0,215 -0,251	-0,225 -0,261	-0,235 -0,271	
e8	-0,014 -0,028	-0,020 -0,038	-0,025 -0,047	-0,032 -0,059	-0,040 -0,073	-0,050 -0,089	-0,060 -0,106	-0,072 -0,126	-0,085 -0,148	-0,100 -0,172	-0,110 -0,191	-0,125 -0,214	-0,140 -0,233	-0,155 -0,242	-0,170 -0,251	-0,185 -0,261	-0,195 -0,271	-0,205 -0,281	-0,215 -0,291	-0,225 -0,301	-0,235 -0,311	
e13	-0,014 -0,154	-0,020 -0,200	-0,025 -0,245	-0,032 -0,302	-0,040 -0,370	-0,050 -0,440	-0,060 -0,520	-0,072 -0,612	-0,085 -0,715	-0,100 -0,820	-0,110 -0,920	-0,125 -1,015	-0,140 -1,110	-0,155 -1,205	-0,170 -1,300	-0,185 -1,395	-0,195 -1,490	-0,205 -1,585	-0,215 -1,680	-0,225 -1,775	-0,235 -1,870	
f5	-0,006 -0,010	-0,010 -0,015	-0,013 -0,019	-0,016 -0,024	-0,020 -0,029	-0,025 -0,036	-0,030 -0,043	-0,036 -0,051	-0,043 -0,061	-0,050 -0,070	-0,056 -0,079	-0,062 -0,087	-0,070 -0,087	-0,078 -0,095	-0,086 -0,103	-0,094 -0,111	-0,102 -0,119	-0,110 -0,127	-0,118 -0,135	-0,126 -0,143	-0,134 -0,151	
f6	-0,006 -0,012	-0,010 -0,018	-0,013 -0,022	-0,016 -0,027	-0,020 -0,033	-0,025 -0,041	-0,030 -0,049	-0,036 -0,058	-0,043 -0,068	-0,050 -0,079	-0,056 -0,088	-0,062 -0,098	-0,070 -0,098	-0,078 -0,108	-0,086 -0,118	-0,094 -0,130	-0,102 -0,142	-0,110 -0,152	-0,118 -0,162	-0,126 -0,172	-0,134 -0,188	
f7	-0,006 -0,016	-0,010 -0,022	-0,013 -0,028	-0,016 -0,034	-0,020 -0,041	-0,025 -0,050	-0,030 -0,060	-0,036 -0,071	-0,043 -0,083	-0,050 -0,096	-0,056 -0,108	-0,062 -0,119	-0,070 -0,130	-0,078 -0,142	-0,086 -0,156	-0,094 -0,170	-0,102 -0,184	-0,110 -0,198	-0,118 -0,212	-0,126 -0,226	-0,134 -0,240	
f9	-0,006 -0,020	-0,010 -0,040	-0,013 -0,049	-0,016 -0,059	-0,020 -0,072	-0,025 -0,087	-0,030 -0,104	-0,036 -0,123	-0,043 -0,143	-0,050 -0,165	-0,056 -0,185	-0,062 -0,202	-0,070 -0,220	-0,078 -0,238	-0,086 -0,256	-0,094 -0,274	-0,102 -0,292	-0,110 -0,310	-0,118 -0,328	-0,126 -0,346	-0,134 -0,364	
g5	-0,002 -0,006	-0,004 -0,009	-0,005 -0,011	-0,006 -0,014	-0,007 -0,016	-0,009 -0,020	-0,010 -0,023	-0,012 -0,027	-0,014 -0,032	-0,015 -0,035	-0,017 -0,040	-0,018 -0,043	-0,020 -0,046	-0,022 -0,049	-0,024 -0,052	-0,026 -0,055	-0,028 -0,058	-0,030 -0,061	-0,032 -0,064	-0,034 -0,067	-0,036 -0,070	
g6	-0,002 -0,008	-0,004 -0,012	-0,005 -0,014	-0,006 -0,017	-0,007 -0,020	-0,009 -0,025	-0,010 -0,029	-0,012 -0,034	-0,014 -0,039	-0,015 -0,044	-0,017 -0,049	-0,018 -0,054	-0,020 -0,059	-0,022 -0,064	-0,024 -0,069	-0,026 -0,074	-0,028 -0,079	-0,030 -0,084	-0,032 -0,089	-0,034 -0,094	-0,036 -0,099	
g7	-0,002 -0,012	-0,004 -0,016	-0,005 -0,020	-0,006 -0,024	-0,007 -0,028	-0,009 -0,034	-0,010 -0,040	-0,012 -0,047	-0,014 -0,054	-0,015 -0,061	-0,017 -0,069	-0,018 -0,075	-0,020 -0,081	-0,022 -0,087	-0,024 -0,093	-0,026 -0,099	-0,028 -0,105	-0,030 -0,111	-0,032 -0,117	-0,034 -0,123	-0,036 -0,129	
h4	0,000 -0,003	0,000 -0,004	0,000 -0,004	0,000 -0,005	0,000 -0,006	0,000 -0,007	0,000 -0,008	0,000 -0,010	0,000 -0,012	0,000 -0,014	0,000 -0,016	0,000 -0,018	0,000 -0,020	0,000 -0,022	0,000 -0,024	0,000 -0,026	0,000 -0,028	0,000 -0,030	0,000 -0,032	0,000 -0,034	0,000 -0,036	
h5	0,000 -0,004	0,000 -0,005	0,000 -0,006	0,000 -0,008	0,000 -0,009	0,000 -0,011	0,000 -0,013	0,000 -0,015	0,000 -0,018	0,000 -0,020	0,000 -0,023	0,000 -0,025	0,000 -0,028	0,000 -0,030	0,000 -0,033	0,000 -0,036	0,000 -0,039	0,000 -0,042	0,000 -0,045	0,000 -0,048	0,000 -0,051	
h6	0,000 -0,006	0,000 -0,008	0,000 -0,009	0,000 -0,011	0,000 -0,013	0,000 -0,016	0,000 -0,019	0,000 -0,022	0,000 -0,025	0,000 -0,029	0,000 -0,032	0,000 -0,036	0,000 -0,039	0,000 -0,043	0,000 -0,047	0,000 -0,051	0,000 -0,055	0,000 -0,059	0,000 -0,063	0,000 -0,067	0,000 -0,071	
h7	0,000 -0,010	0,000 -0,012	0,000 -0,015	0,000 -0,018	0,000 -0,021	0,000 -0,025	0,000 -0,030	0,000 -0,035	0,000 -0,040	0,000 -0,046	0,000 -0,052	0,000 -0,057	0,000 -0,063	0,000 -0,069	0,000 -0,075	0,000 -0,081	0,000 -0,087	0,000 -0,093	0,000 -0,099	0,000 -0,105	0,000 -0,111	
h8	0,000 -0,014	0,000 -0,018	0,000 -0,022	0,000 -0,027	0,000 -0,033	0,000 -0,039	0,000 -0,046	0,000 -0,054	0,000 -0,063	0,000 -0,072	0,000 -0,081	0,000 -0,089	0,000 -0,099	0,000 -0,108	0,000 -0,118	0,000 -0,128	0,000 -0,138	0,000 -0,148	0,000 -0,158	0,000 -0,168	0,000 -0,178	
h9	0,000 -0,025	0,000 -0,030	0,000 -0,036	0,000 -0,043	0,000 -0,052	0,000 -0,062	0,000 -0,074	0,000 -0,087	0,000 -0,100	0,000 -0,115	0,000 -0,130	0,000 -0,140	0,000 -0,150	0,000 -0,160	0,000 -0,170	0,000 -0,180	0,000 -0,190	0,000 -0,200	0,000 -0,210	0,000 -0,220	0,000 -0,230	
h10	0,000 -0,040	0,000 -0,048	0,000 -0,058	0,000 -0,070	0,000 -0,084	0,000 -0,100	0,000 -0,120	0,000 -0,140	0,000 -0,160	0,000 -0,185	0,000 -0,210	0,000 -0,230	0,000 -0,250	0,000 -0,270	0,000 -0,290	0,000 -0,310	0,000 -0,330	0,000 -0,350	0,000 -0,370	0,000 -0,390	0,000 -0,410	
h11	0,000 -0,060	0,000 -0,075	0,000 -0,090	0,000 -0,110	0,000 -0,130	0,000 -0,160	0,000 -0,190	0,000 -0,220	0,000 -0,250	0,000 -0,290	0,000 -0,320	0,000 -0,360	0,000 -0,400	0,000 -0,440	0,000 -0,480	0,000 -0,520	0,000 -0,560	0,000 -0,600	0,000 -0,640	0,000 -0,680	0,000 -0,720	
h12	0,000 -0,100	0,000 -0,120	0,000 -0,150	0,000 -0,180	0,000 -0,210	0,000 -0,250	0,000 -0,300	0,000 -0,350	0,000 -0,400	0,000 -0,460	0,000 -0,520	0,000 -0,570	0,000 -0,630	0,000 -0,690	0,000 -0,750	0,000 -0,810	0,000 -0,870	0,000 -0,930	0,000 -0,990	0,000 -1,050	0,000 -1,110	
h13	0,000 -0,140	0,000 -0,180	0,000 -0,220	0,000 -0,270	0,000 -0,330	0,000 -0,390	0,000 -0,460	0,000 -0,540	0,000 -0,630	0,000 -0,720	0,000 -0,810	0,000 -0,890	0,000 -0,980	0,000 -1,070	0,000 -1,160	0,000 -1,250	0,000 -1,340	0,000 -1,430	0,000 -1,520	0,000 -1,610	0,000 -1,700	
h14	0,000 -0,250	0,000 -0,300	0,000 -0,360	0,000 -0,430	0,000 -0,520	0,000 -0,620	0,000 -0,740	0,000 -0,870	0,000 -1,000	0,000 -1,150	0,000 -1,300	0,000 -1,400	0,000 -1,500	0,000 -1,600	0,000 -1,700	0,000 -1,800	0,000 -1,900	0,000 -2,000	0,000 -2,100	0,000 -2,200	0,000 -2,300	
h15	0,000 -0,400	0,000 -0,480	0,000 -0,580	0,000 -0,700	0,000 -0,840	0,000 -1,000	0,000 -1,200	0,000 -1,400	0,000 -1,600	0,000 -1,850	0,000 -2,100	0,000 -2,300	0,000 -2,500	0,000 -2,700	0,000 -2,900	0,000 -3,100	0,000 -3,300	0,000 -3,500	0,000 -3,700	0,000 -3,900	0,000 -4,100	
h16	0,000 -0,600	0,000 -0,750	0,000 -0,900	0,000 -1,100	0,000 -1,300	0,000 -1,600	0,000 -1,900	0,000 -2,200	0,000 -2,500	0,000 -2,900	0,000 -3,200	0,000 -3,600	0,000 -4,000	0,000 -4,400	0,000 -4,800	0,000 -5,200	0,000 -5,600	0,000 -6,000	0,000 -6,400	0,000 -6,800	0,000 -7,200	
js14	+0,125 -0,125	+0,150 -0,150	+0,180 -0,180	+0,215 -0,215	+0,260 -0,260	+0,310 -0,310	+0,370 -0,370	+0,435 -0,435	+0,500 -0,500	+0,575 -0,575	+0,650 -0,650	+0,700 -0,700	+0,750 -0,750	+0,800 -0,800	+0,850 -0,850	+0,900 -0,900	+0,950 -0,950	+1,000 -1,000	+1,050 -1,050	+1,100 -1,100	+1,150 -1,150	
js16	+0,300 -0,300	+0,375 -0,375	+0,450 -0,450	+0,550 -0,550	+0,650 -0,650	+0,800 -0,800	+0,950 -0,950	+1,100 -1,100	+1,250 -1,250	+1,450 -1,450	+1,600 -1,600	+1,800 -1,800	+2,000 -2,000	+2,200 -2,200	+2,400 -2,400	+2,600 -2,600	+2,800 -2,800	+3,000 -3,000	+3,200 -3,200	+3,400 -3,400	+3,600 -3,600	
k5	+0,004 0,000	+0,006 +0,001	+0,007 +0,001	+0,009 +0,001	+0,011 +0,002	+0,013 +0,002	+0,015 +0,002	+0,018 +0,003	+0,021 +0,003	+0,024 +0,004	+0,027 +0,004	+0,029 +0,004	+0,031 +0,004	+0,033 +0,004	+0,035 +0,004	+0,037 +0,004	+0,039 +0,004	+0,041 +0,004	+0,043 +0,004	+0,045 +0,004	+0,047 +0,004	+0,049 +0,004

TABLE OF TOLERANCES

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

TABLE OF TOLERANCES

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

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 0,000	+0,008 0,000	+0,009 0,000	+0,011 0,000	+0,013 0,000	+0,016 0,000	+0,019 0,000	+0,022 0,000	+0,025 0,000	+0,029 0,000	+0,032 0,000	+0,036 0,000									
H7	+0,010 0,000	+0,012 0,000	+0,015 0,000	+0,018 0,000	+0,021 0,000	+0,025 0,000	+0,030 0,000	+0,035 0,000	+0,040 0,000	+0,046 0,000	+0,052 0,000	+0,057 0,000									
H8	+0,014 0,000	+0,018 0,000	+0,022 0,000	+0,027 0,000	+0,033 0,000	+0,039 0,000	+0,046 0,000	+0,054 0,000	+0,063 0,000	+0,072 0,000	+0,081 0,000	+0,089 0,000									
H9	+0,025 0,000	+0,030 0,000	+0,036 0,000	+0,043 0,000	+0,052 0,000	+0,062 0,000	+0,074 0,000	+0,087 0,000	+0,100 0,000	+0,115 0,000	+0,130 0,000	+0,140 0,000									
H10	+0,040 0,000	+0,048 0,000	+0,058 0,000	+0,070 0,000	+0,084 0,000	+0,100 0,000	+0,120 0,000	+0,140 0,000	+0,160 0,000	+0,185 0,000	+0,210 0,000	+0,230 0,000									
H11	+0,060 0,000	+0,075 0,000	+0,090 0,000	+0,110 0,000	+0,130 0,000	+0,160 0,000	+0,190 0,000	+0,220 0,000	+0,250 0,000	+0,290 0,000	+0,320 0,000	+0,360 0,000									
H12	+0,100 0,000	+0,120 0,000	+0,150 0,000	+0,180 0,000	+0,210 0,000	+0,250 0,000	+0,300 0,000	+0,350 0,000	+0,400 0,000	+0,460 0,000	+0,520 0,000	+0,570 0,000									
H13	+0,140 0,000	+0,180 0,000	+0,220 0,000	+0,270 0,000	+0,330 0,000	+0,390 0,000	+0,460 0,000	+0,540 0,000	+0,630 0,000	+0,720 0,000	+0,810 0,000	+0,890 0,000									
H14	+0,250 0,000	+0,300 0,000	+0,360 0,000	+0,430 0,000	+0,520 0,000	+0,620 0,000	+0,740 0,000	+0,870 0,000	+1,000 0,000	+1,150 0,000	+1,300 0,000	+1,400 0,000									
H15	+0,400 0,000	+0,480 0,000	+0,580 0,000	+0,700 0,000	+0,840 0,000	+1,000 0,000	+1,200 0,000	+1,400 0,000	+1,600 0,000	+1,850 0,000	+2,100 0,000	+2,300 0,000									
J6	+0,002 -0,004	+0,005 -0,003	+0,005 -0,004	+0,006 -0,005	+0,008 -0,005	+0,010 -0,006	+0,013 -0,006	+0,016 -0,006	+0,018 -0,007	+0,022 -0,007	+0,025 -0,007	+0,029 -0,007									
J7	+0,004 -0,006	+0,006 -0,006	+0,008 -0,007	+0,010 -0,008	+0,012 -0,009	+0,014 -0,011	+0,018 -0,012	+0,022 -0,013	+0,026 -0,014	+0,030 -0,016	+0,036 -0,016	+0,039 -0,018									
J8	+0,006 -0,008	+0,010 -0,008	+0,012 -0,010	+0,015 -0,012	+0,020 -0,013	+0,024 -0,015	+0,028 -0,018	+0,034 -0,020	+0,041 -0,022	+0,047 -0,025	+0,055 -0,026	+0,060 -0,029									
JS6	+0,003 -0,003	+0,004 -0,004	+0,005 -0,005	+0,006 -0,006	+0,007 -0,007	+0,008 -0,080	+0,010 -0,010	+0,011 -0,011	+0,013 -0,013	+0,015 -0,015	+0,016 -0,016	+0,018 -0,018									
JS7	+0,005 -0,005	+0,006 -0,006	+0,008 -0,008	+0,009 -0,009	+0,011 -0,011	+0,013 -0,013	+0,015 -0,015	+0,018 -0,018	+0,020 -0,020	+0,023 -0,023	+0,026 -0,026	+0,029 -0,029									
JS8	+0,007 -0,007	+0,009 -0,009	+0,011 -0,011	+0,014 -0,014	+0,017 -0,017	+0,020 -0,020	+0,023 -0,023	+0,027 -0,027	+0,032 -0,032	+0,036 -0,036	+0,041 -0,041	+0,045 -0,045									
K6	0,000 -0,006	+0,002 -0,006	+0,002 -0,007	+0,002 -0,009	+0,002 -0,011	+0,003 -0,013	+0,004 -0,015	+0,004 -0,018	+0,004 -0,021	+0,005 -0,024	+0,005 -0,027	+0,007 -0,029									
K7	0,000 -0,010	+0,003 -0,009	+0,005 -0,010	+0,006 -0,012	+0,006 -0,015	+0,007 -0,018	+0,009 -0,021	+0,010 -0,025	+0,012 -0,028	+0,013 -0,033	+0,016 -0,036	+0,017 -0,040									
K8	0,000 -0,014	+0,005 -0,013	+0,006 -0,016	+0,008 -0,019	+0,010 -0,023	+0,012 -0,027	+0,014 -0,032	+0,016 -0,038	+0,020 -0,043	+0,022 -0,050	+0,025 -0,056	+0,028 -0,061									
M6	-0,002 -0,008	-0,001 -0,009	-0,003 -0,012	-0,004 -0,015	-0,004 -0,017	-0,004 -0,020	-0,005 -0,024	-0,006 -0,028	-0,008 -0,033	-0,008 -0,037	-0,009 -0,041	-0,010 -0,046									
M7	-0,002 -0,012	0,000 -0,012	0,000 -0,015	0,000 -0,018	0,000 -0,021	0,000 -0,025	0,000 -0,030	0,000 -0,035	0,000 -0,040	0,000 -0,046	0,000 -0,052	0,000 -0,057									
M8	- -	+0,002 -0,016	+0,001 -0,021	+0,002 -0,025	+0,004 -0,029	+0,005 -0,034	+0,005 -0,041	+0,006 -0,048	+0,008 -0,055	+0,009 -0,063	+0,009 -0,072	+0,011 -0,078									
N6	-0,004 -0,010	-0,005 -0,013	-0,007 -0,016	-0,009 -0,020	-0,011 -0,024	-0,012 -0,028	-0,014 -0,033	-0,016 -0,038	-0,020 -0,045	-0,022 -0,051	-0,025 -0,057	-0,026 -0,062									
N7	-0,004 -0,014	-0,004 -0,016	-0,004 -0,019	-0,005 -0,023	-0,007 -0,028	-0,008 -0,033	-0,009 -0,039	-0,010 -0,045	-0,012 -0,052	-0,014 -0,060	-0,014 -0,066	-0,016 -0,073									
N8	-0,004 -0,018	-0,002 -0,020	-0,003 -0,025	-0,003 -0,030	-0,003 -0,036	-0,003 -0,042	-0,004 -0,050	-0,004 -0,058	-0,004 -0,067	-0,005 -0,077	-0,005 -0,086	-0,005 -0,094									
P6	-0,006 -0,012	-0,009 -0,017	-0,012 -0,021	-0,015 -0,026	-0,018 -0,031	-0,021 -0,037	-0,026 -0,045	-0,030 -0,052	-0,036 -0,061	-0,041 -0,070	-0,047 -0,079	-0,051 -0,087									
P7	-0,006 -0,016	-0,008 -0,020	-0,009 -0,024	-0,011 -0,029	-0,014 -0,035	-0,017 -0,042	-0,021 -0,051	-0,024 -0,059	-0,028 -0,068	-0,033 -0,079	-0,036 -0,088	-0,041 -0,098									
P8	-0,006 -0,020	-0,012 -0,030	-0,015 -0,037	-0,018 -0,045	-0,022 -0,055	-0,026 -0,065	-0,032 -0,078	-0,037 -0,091	-0,043 -0,106	-0,050 -0,122	-0,056 -0,137	-0,062 -0,151									
R6	-0,010 -0,016	-0,012 -0,020	-0,016 -0,025	-0,020 -0,031	-0,024 -0,037	-0,029 -0,045	-0,035 -0,054	-0,044 -0,056	-0,047 -0,069	-0,056 -0,081	-0,058 -0,083	-0,061 -0,086	-0,068 -0,097	-0,071 -0,100	-0,075 -0,104	-0,085 -0,117	-0,089 -0,121	-0,097 -0,133	-0,103 -0,139		
R7	-0,010 -0,020	-0,011 -0,023	-0,013 -0,028	-0,016 -0,034	-0,020 -0,041	-0,025 -0,050	-0,030 -0,060	-0,032 -0,062	-0,038 -0,073	-0,041 -0,076	-0,048 -0,088	-0,050 -0,090	-0,053 -0,093	-0,060 -0,106	-0,063 -0,109	-0,067 -0,113	-0,074 -0,126	-0,078 -0,130	-0,087 -0,144	-0,093 -0,150	





HSS-PM LINE

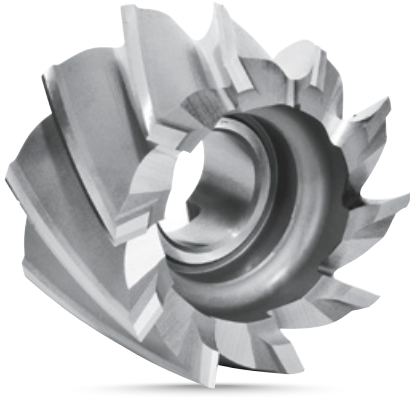
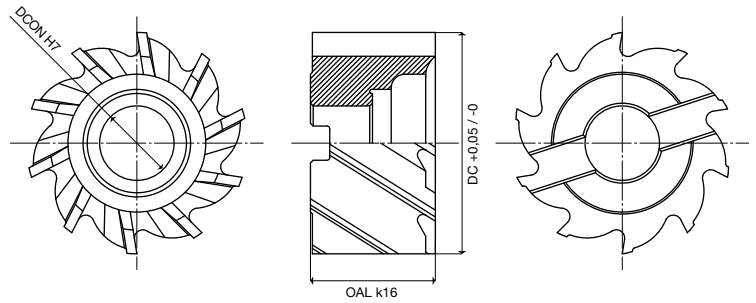
La linea di prodotti UOP HSS-PM LINE rappresenta una soluzione di eccezionale completezza di gamma nelle applicazioni di asportazione truciolo frutto di pluriennale esperienza. L'accoglienza che il mercato riserva ai prodotti in acciaio super rapido e da polveri (Powder Metal) permette a HSS-PM LINE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



Skin

Coating

UNI 3903
DIN 1880
ISO 2586

Standards

N

Execution

$\lambda^{\circ}s$
28

Helix

Z8÷10

Teeth

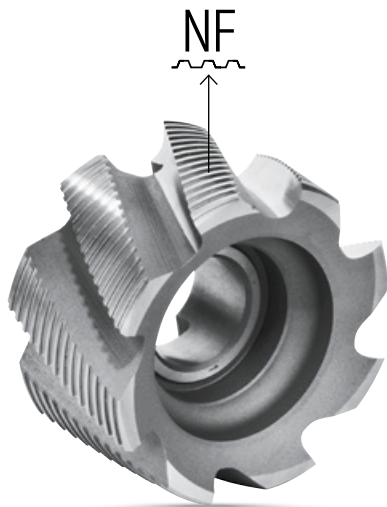
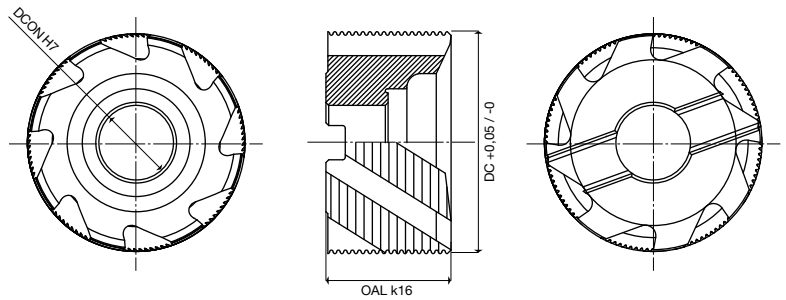
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	OAL k16	DCON H7	Z
021050400	CM	CMX	40	32	16	8
021050500	CM	CMX	50	36	22	8
021050630	CM	CMX	63	40	27	8
021050800	CM	CMX	80	45	27	10



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

Series 02110

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



Skin

Coating

UNI 3903
DIN 1880
ISO 2586

Standards

NF

Execution

$\lambda^{\circ}s$
28

Helix

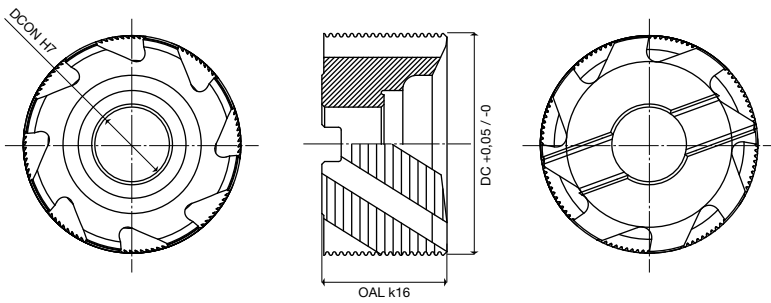
Z6÷8

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



Series 02110

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

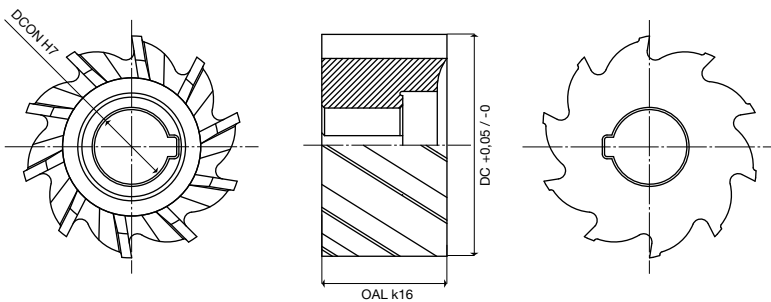
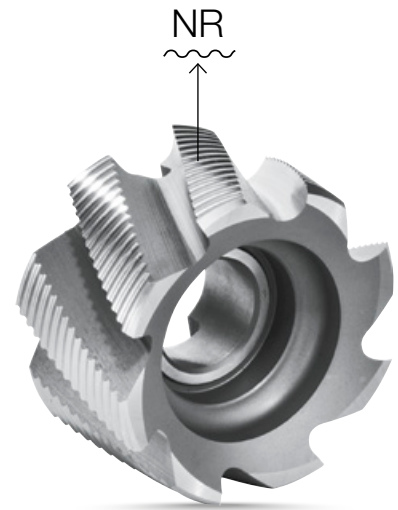
Skin | UNI 3903
DIN 1880
ISO 2586 | **NR** | λ° s
28 | Z6÷8

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



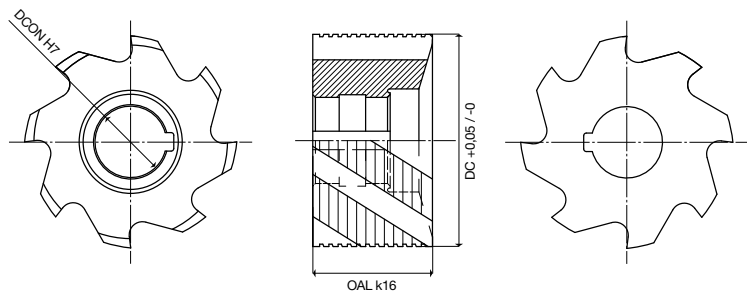
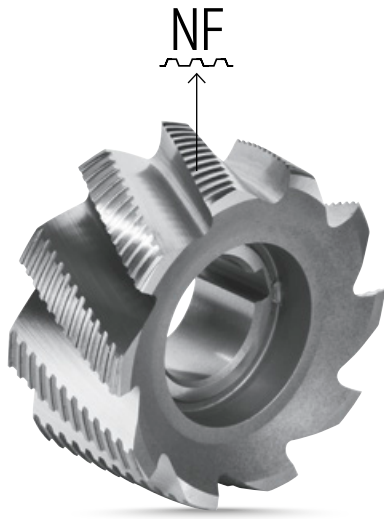
parametri tecnici a pag. / for technical parameters see page 103



	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
with longitudinal keyway*



Skin

Coating

DIN 841
ISO 2586

Standards

NF

Execution

$\lambda^{\circ}s$
28

Helix

Z6÷10

Teeth

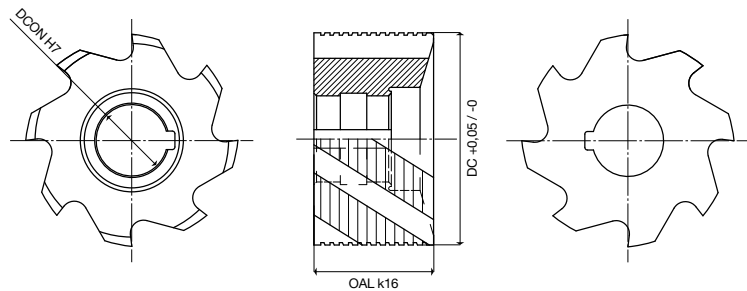
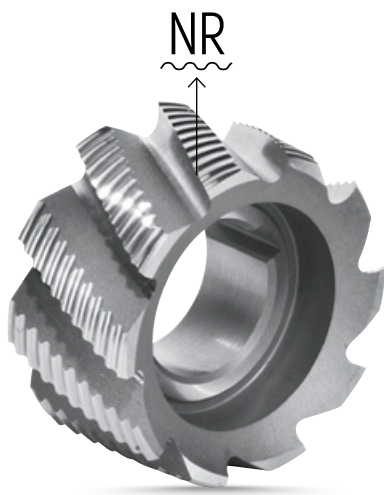
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	OAL k16	DCON H7	Z
021200300	CM	CMX	30	30	13	6
021200350	CM	CMX	35	35	16	6
021200400	CM	CMX	40	20	16	8
021200402	CM	CMX	40	40	16	6
021200500	CM	CMX	50	25	22	8
021200502	CM	CMX	50	50	22	8
021200600	CM	CMX	60	30	27	10
021200602	CM	CMX	60	60	27	10



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

Series 02120

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



Skin

Coating

DIN 841
ISO 2586

Standards

NR

Execution

$\lambda^{\circ}s$
28

Helix

Z6÷10

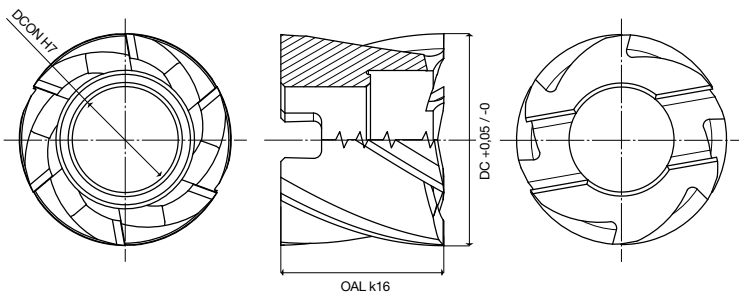
Teeth

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	●	●	●	○	○	●	●



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

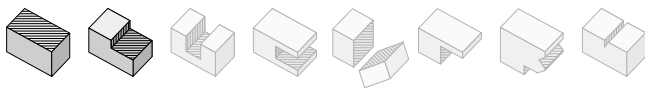
W

λ°s
40

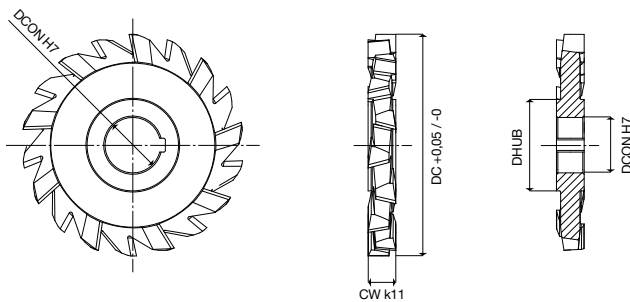
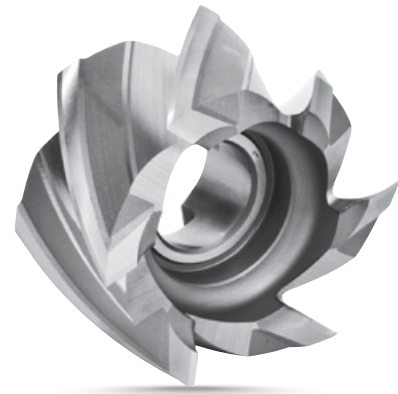
Z4÷6

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



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



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	CMX		50	4	26	16	20	16
041051050 CM	CMX		50	5	26	16	20	16
041051060 CM	CMX		50	6	26	16	20	16
041051070 CM	CMX		50	7	26	16	15	16
041051080 CM	CMX		50	8	26	16	15	16
041051090 CM	CMX		50	9	26	16	15	16
041051100 CM	CMX		50	10	26	16	15	16
041052040 CM	CMX		63	4	33	22	20	18
041052050 CM	CMX		63	5	33	22	15	18
041052060 CM	CMX		63	6	33	22	15	18
041052070 CM	CMX		63	7	33	22	15	18
041052080 CM	CMX		63	8	33	22	15	18
041052090 CM	CMX		63	9	33	22	15	18
041052100 CM	CMX		63	10	33	22	15	18
041052120 CM	CMX		63	12	33	22	10	18
041052140 CM	CMX		63	14	33	22	10	18
041052160 CM	CMX		63	16	33	22	10	16
041052180 CM	CMX		63	18	33	22	10	16
041052200 CM	CMX		63	20	33	22	10	16
041053040 CM	CMX		80	4	36	22	20	20
041053041 CM	CMX		80	4	40	27	20	20
041053050 CM	CMX		80	5	36	22	15	20
041053051 CM	CMX		80	5	40	27	15	20
041053060 CM	CMX		80	6	36	22	15	20
041053061 CM	CMX		80	6	40	27	15	20

→ continua alla pagina successiva / continued on next page

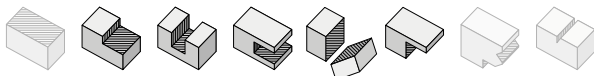
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chise Cast iron
02135	○	○	○	○	○	○	○
04105	●	●	●	○	○	●	●



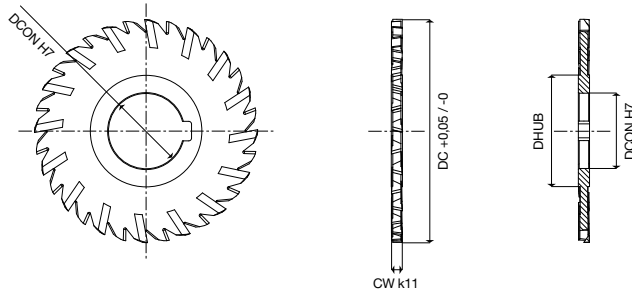
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	CW k11	DHUB	DCON H7	λ°S	Z
041053070	CM	CMX	80	7	36	22	15	20
041053071	CM	CMX	80	7	40	27	15	20
041053080	CM	CMX	80	8	36	22	15	20
041053081	CM	CMX	80	8	40	27	15	20
041053090	CM	CMX	80	9	36	22	15	20
041053091	CM	CMX	80	9	40	27	15	20
041053100	CM	CMX	80	10	36	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

→ continua alla pagina successiva / continued on next page

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

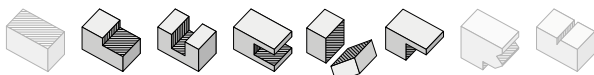


parametri tecnici a pag. / for technical parameters see page 104



Skin | ✓ | H | Z32÷60
 Coating | Quality UOP | Execution | Teeth

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



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

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

Series 04105

Frese a disco a tre tagli
elicoideali alternati
Side and face milling cutters
staggered teeth



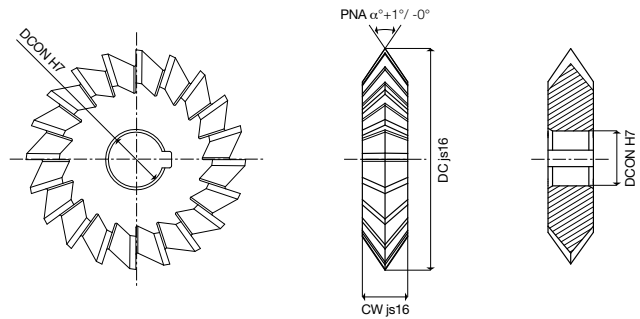
Series 04110

Seghe circolari a tre tagli
elicoideali alternati
Side and face milling cutters
straight teeth



Series 06105

Frese ad angolo prismatiche
Double equal angle cutters



Skin

UNI 3907
DIN 847
ISO 6108

H

Z20÷30

Coating

Standards

Execution

Teeth

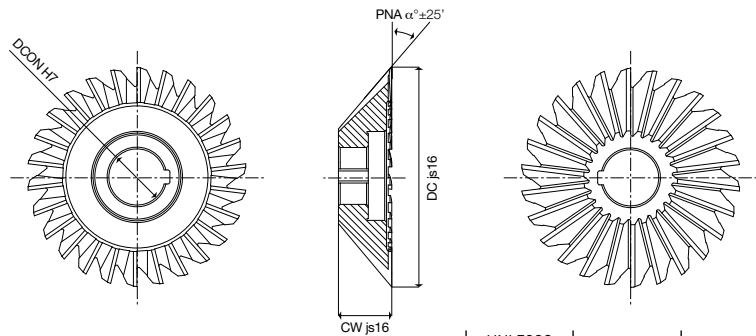


Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC js16	PNA $\alpha^\circ \pm 1^\circ / - 0^\circ$	CW js16	DCON H7	Z
061054056	CM	CMX	56	45	10	16	24
061054063	CM	CMX	63	45	12	22	22
061054080	CM	CMX	80	45	16	22	26
061054100	CM	CMX	100	45	18	27	30
061056056	CM	CMX	56	60	12	16	22
061056063	CM	CMX	63	60	16	22	20
061056080	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

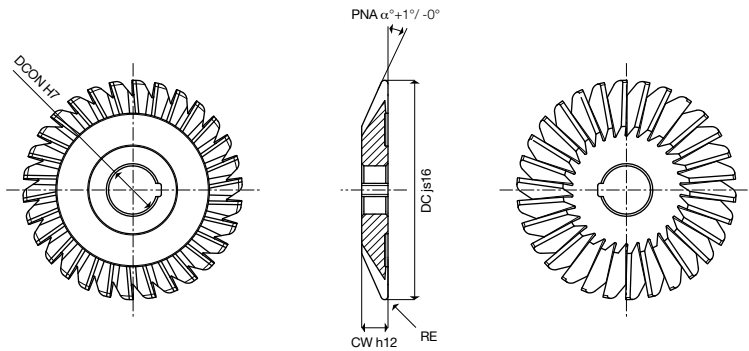
Execution

Teeth



Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC js16	PNA $\alpha^\circ \pm 25^\circ$	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



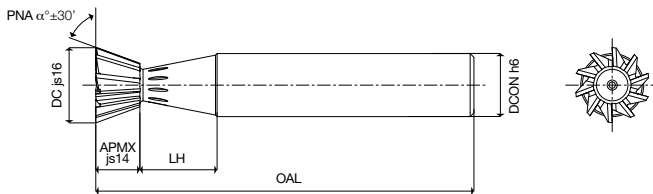


Series
06120
Frese ad angolo per utensili
Angular cutters for toolmaking

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 $\alpha^\circ \pm 1^\circ / -0^\circ$	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 W on request F on request Execution Teeth

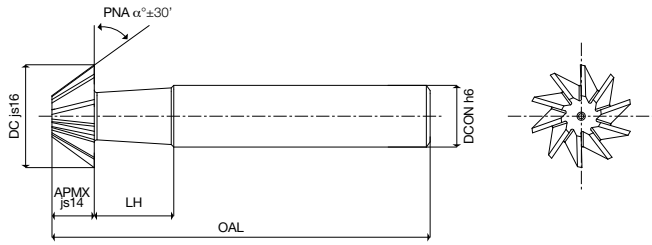
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC js16	PNA $\alpha^\circ \pm 30^\circ$	APMX js14	LH	OAL	DCON h6	Z
061304516 AM	CM	CMX	16	45	4	11,3	60	12	10	
061304520 AM	CM	CMX	20	45	5	13,5	63	12	10	
061304525 AM	CM	CMX	25	45	6,3	13	67	12	10	
061304532 AM	CM	CMX	32	45	8	14	71	16	12	
061306016 AM	CM	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	HSSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chise 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 Execution

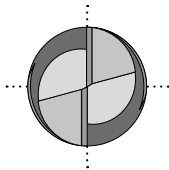
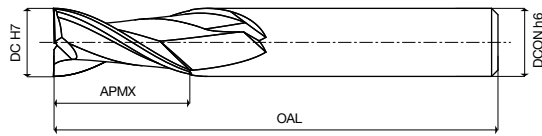
Z10÷12 Teeth

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 1641/1

W on request

F on request

N Execution

λ°S 32 Helix

Z2 Teeth



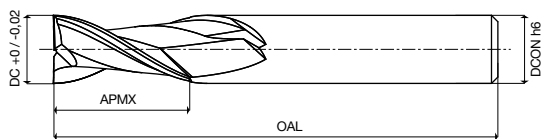
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC H7	APMX	OAL	DCON h6	Z
101020100	CM	CMX	1	3	47	6	2
101020150	CM	CMX	1,5	3	47	6	2
101020200	CM	CMX	2	4	48	6	2
101020250	CM	CMX	2,5	5	49	6	2
101020300	CM	CMX	3	5	49	6	2
101020350	CM	CMX	3,5	6	50	6	2
101020400	CM	CMX	4	7	51	6	2
101020450	CM	CMX	4,5	7	51	6	2
101020500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

→ continua alla pagina successiva / continued on next 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



Skin | Quality UOP | W on request | F on request | Execution | $\lambda^{\circ}s$ 32 | Teeth | Length

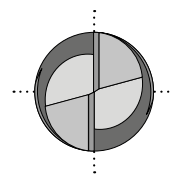
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0/-0,02	APMX	OAL	DCON h6	Z
101050200 CM	CMX		2	5	36	4	2
101050300 CM	CMX		3	8	40	4	2
101050400 CM	CMX		4	8	40	4	2
101050500 CM	CMX		5	10	45	6	2
101050600 CM	CMX		6	10	45	6	2
101050700 CM	CMX		7	12	50	8	2
101050800 CM	CMX		8	12	50	8	2
101050900 CM	CMX		9	12	50	8	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

Series 10105

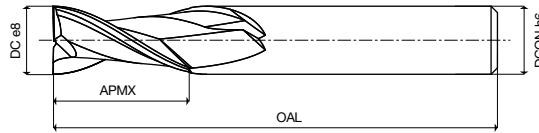
Frese a due taglienti
Two flute end mills



10105 | Titanio Titanium | HRSA | Acciaio inossidabile Stainless steels | Materiali non ferrosi Non ferrous materials | Leghe leggere Light alloys | Acciai Steels | Chiese Cast iron

Series 10110

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



Skin

Coating

UNI 8254
DIN 327B
ISO 1641/1

Standards



W on request



F on request

N

Execution

$\lambda^{\circ}S$
32

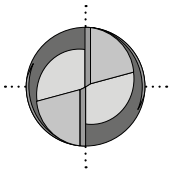
Helix

Z2

Teeth



Length



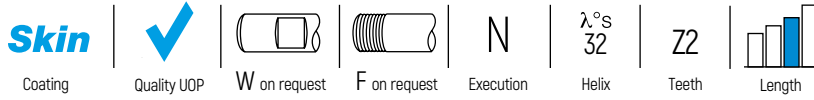
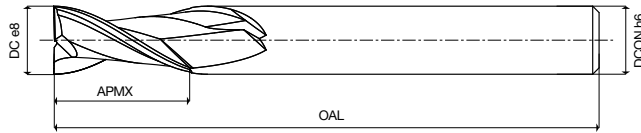
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC e8	APMX	OAL	DCON h6	Z
101100100	CM	CMX	1	3	47	6	2
101100150	CM	CMX	1,5	3	47	6	2
101100200	CM	CMX	2	4	48	6	2
101100250	CM	CMX	2,5	5	49	6	2
101100300	CM	CMX	3	5	49	6	2
101100350	CM	CMX	3,5	6	50	6	2
101100400	CM	CMX	4	7	51	6	2
101100450	CM	CMX	4,5	7	51	6	2
101100500	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

Series 10125

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



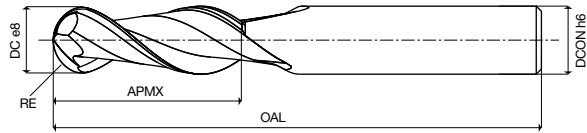
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC e8	APMX	OAL	DCON h6	Z
101250300 CM	CMX	3	9	60	6	2	
101250350 CM	CMX	3,5	13	67	6	2	
101250400 CM	CMX	4	13	67	6	2	
101250450 CM	CMX	4,5	13	70	6	2	
101250500 CM	CMX	5	16	70	6	2	
101250550 CM	CMX	5,5	16	76	6	2	
101250600 CM	CMX	6	16	76	6	2	
101250650 CM	CMX	6,5	16	76	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	



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

Series 10140

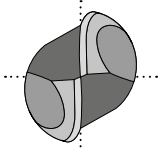
Frese a due taglienti a testa semisferica
Ball nosed two flute end mills



Skin | ISO 1641/1 | W on request | F on request | N | Execution | λ^{cs} 32 | Helix | Z2 BALL-NOSED | 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

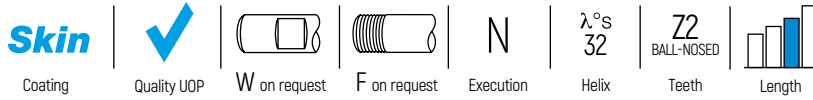
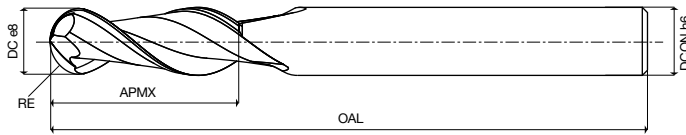
BALL-NOSED



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

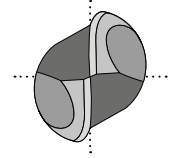
Series 10155

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



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

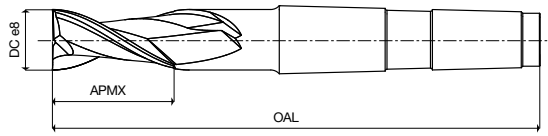
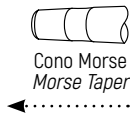
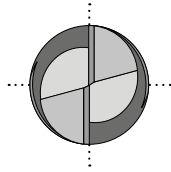
BALL-NOSED



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

Series 10170

Frese a due taglienti
Two flute end mills



Skin

UNI 8260A
DIN 326
ISO 1641/1

N

$\lambda^{\circ}S$
32

Z2



DCON = MORSE TAPER

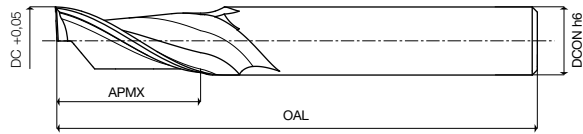
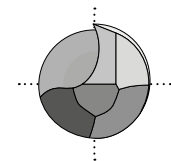
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC e8	APMX	OAL	MORSE TAPER	Z
101702000	CM	CMX	20	22	124	3	2
101702500	CM	CMX	25	26	128	3	2
101703000	CM	CMX	30	32	134	3	2
101703200	CM	CMX	32	32	157	4	2
101703600	CM	CMX	36	32	157	4	2
101704000	CM	CMX	40	38	163	4	2



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

Series 11405

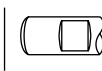
Frese a un tagliente elicoidale
Single flute end mills



Skin
Alu



Quality UOP



W on request



F on request

W

Execution

$\lambda^{\circ}S$
32

Helix

Z1

Teeth

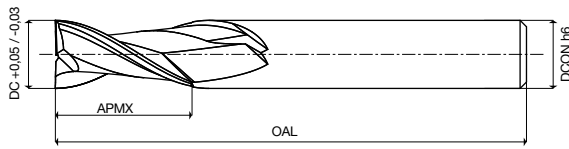


Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	D"	APMX	OAL	DCON h6	Z
114050317	CM	CMX	3,17	1/8	11	55	6,35	1
114050400	CM	CMX	4		11	55	6	1
114050500	CM	CMX	5		13	60	6	1
114050600	CM	CMX	6		13	60	6	1
114050800	CM	CMX	8		19	70	10	1
114051000	CM	CMX	10		22	75	10	1
114051200	CM	CMX	12		25	80	12	1



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

Series
12105
Frese a due taglienti
Two flute end mills



Skin
Alu

Coating

UNI 8244
DIN 844A
ISO 1641/1

Standards



W on request



F on request



Execution

λ° S

40

Helix

Z2

Teeth

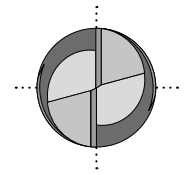


Length

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

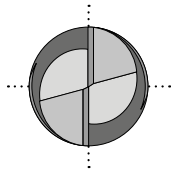
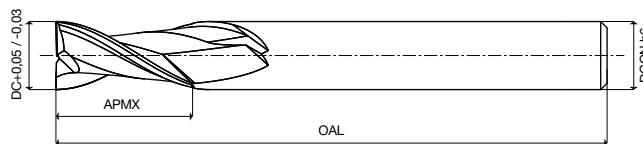


parametri tecnici a pag. / for technical parameters see page 108



Series 12120

Frese a due taglienti
Two flute end mills



Skin
Alu

Coating

UNI 8244
DIN 844A
ISO 1641/1

Standards



W on request



F on request

W

Execution

λ° s
40

Helix

Z2

Teeth

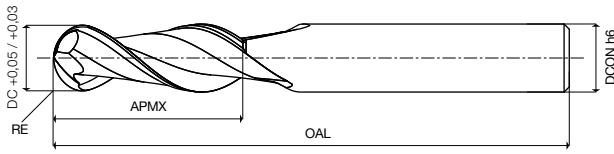


Length

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



Skin
Alu

ISO 1641/1
Quality UOP

W on request

F on request

Execution

W

$\lambda^{\circ}S$
40

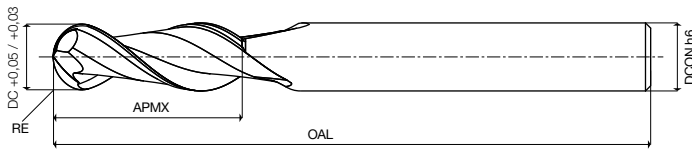
Z2

Length

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



Skin
Alu

ISO 1641/1
Quality UOP

W on request

F on request

Execution

W

$\lambda^{\circ}S$
40

Z2

Length

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

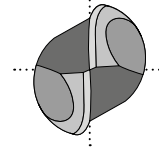
SU
RICHIESTA
ON REQUEST

Series 12505

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

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

BALL-NOSED



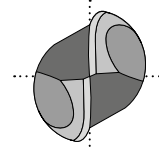
SU
RICHIESTA
ON REQUEST

Series 12520

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

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

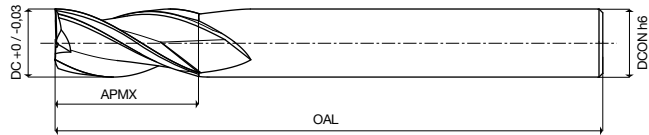
BALL-NOSED



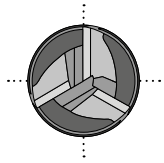
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
12505	○	○	●	●	●	○	○
12520	○	○	●	●	●	○	○

Series 14105

Frese a tre taglienti
Three flute end mills



Skin | UNI 8244 | DIN 844A | ISO 1641/1 | W on request | F on request | N | Execution | $\lambda^{\circ S}$ 32 | Z3 | Length



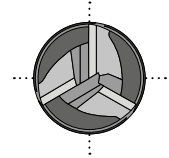
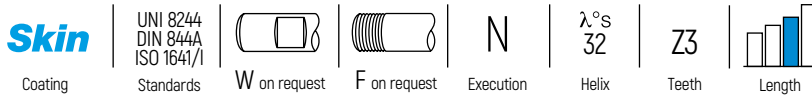
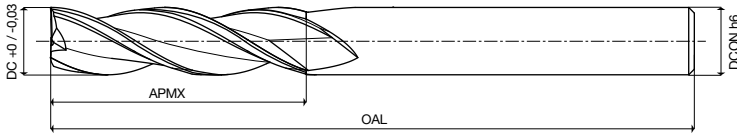
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0/-0.03	APMX	OAL	DCON h6	Z
141050200	CM	CMX	2	7	51	6	3
141050250	CM	CMX	2,5	8	52	6	3
141050300	CM	CMX	3	8	52	6	3
141050350	CM	CMX	3,5	10	54	6	3
141050400	CM	CMX	4	11	55	6	3
141050450	CM	CMX	4,5	11	55	6	3
141050500	CM	CMX	5	13	57	6	3
141050550	CM	CMX	5,5	13	57	6	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

Series 14120

Frese a tre taglienti
Three flute end mills



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

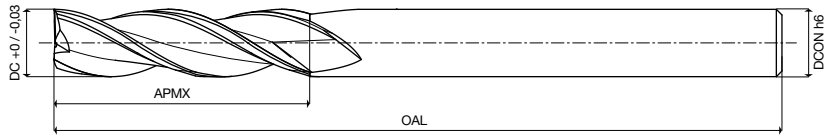
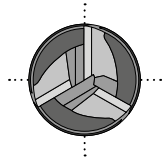


parametri tecnici a pag. / for technical parameters see page 109



Series 14135

Frese a tre taglienti
Three flute end mills



Skin
Coating

✓
Quality UOP

W on request

F on request

N
Execution

$\lambda^{\circ}S$
32
Helix

Z3
Teeth

Length

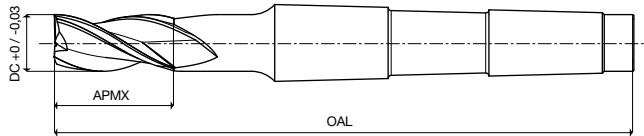
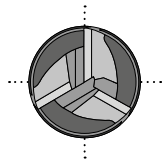
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0/-0,03	APMX	OAL	DCON h6	Z
141350600	CM	CMX	6	56	106	10	3
141350700	CM	CMX	7	63	113	10	3
141350800	CM	CMX	8	63	113	10	3
141350900	CM	CMX	9	70	120	10	3
141351000	CM	CMX	10	70	120	10	3
141351100	CM	CMX	11	80	137	12	3
141351200	CM	CMX	12	80	137	12	3
141351300	CM	CMX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



Skin
Coating

UNI 8250
DIN 845B
ISO 1641/II
Standards

N
Execution

$\lambda^{\circ}S$
32
Helix

Z3
Teeth

Length

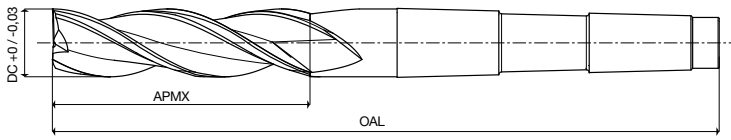
DCON = MORSE TAPER

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





Series 14155

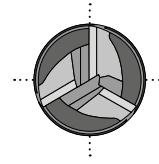
Frese a tre taglienti
Three flute end mills

Skin | UNI 8250 | DIN 845B | ISO 1641/II | N | λ°S 32 | Z3 | Length | DC ON = MORSE TAPER

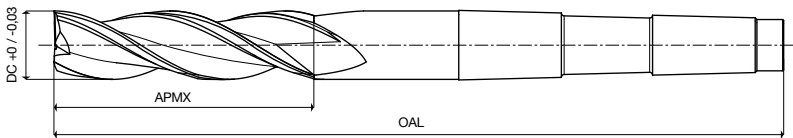
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0/-0,03	APMX	OAL	MORSE TAPER	Z
141552000	CM	CMX	20	75	177	3	3
141552200	CM	CMX	22	75	177	3	3
141552400	CM	CMX	24	90	192	3	3
141552500	CM	CMX	25	90	192	3	3
141553000	CM	CMX	30	90	192	3	3
141553200	CM	CMX	32	106	231	4	3
141553600	CM	CMX	36	106	231	4	3
141554000	CM	CMX	40	125	250	4	3



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



Cono Morse
Morse Taper



Series 14160

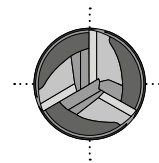
Frese a tre taglienti
Three flute end mills

Skin | Quality UOP | N | λ°S 32 | Z3 | Length | DC ON = 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



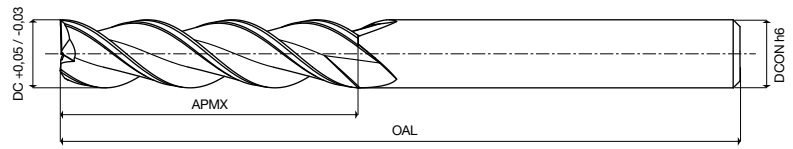
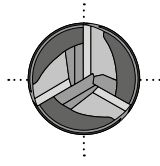
Cono Morse
Morse Taper



	Titanio Titanium	HSSA	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

Coating

UNI 8244
DIN 844A
ISO 1641/1

Standards

W on request

F on request

H

Execution

$\lambda^{\circ}S$
55

Helix

Z3

Teeth

Length

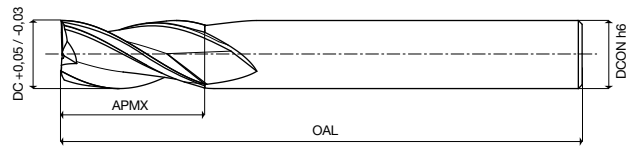
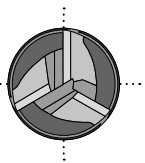
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	Z
145050300	CM	CMX	3	8	52	6	3
145050400	CM	CMX	4	11	55	6	3
145050500	CM	CMX	5	13	57	6	3
145050600	CM	CMX	6	13	57	6	3
145050700	CM	CMX	7	16	66	10	3
145050800	CM	CMX	8	19	69	10	3
145050900	CM	CMX	9	19	69	10	3
145051000	CM	CMX	10	22	72	10	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

Coating

Quality UOP

W on request

F on request

W

Execution

$\lambda^{\circ}S$
40

Helix

Z3

Teeth

Length

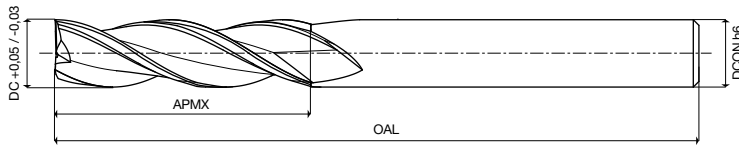
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	Z
148050300	CM	CMX	3	14	58	6	3
148050400	CM	CMX	4	18	62	6	3
148050500	CM	CMX	5	20	64	6	3
148050600	CM	CMX	6	22	66	6	3
148050700	CM	CMX	7	22	72	10	3
148050800	CM	CMX	8	25	75	10	3
148050900	CM	CMX	9	25	75	10	3
148051000	CM	CMX	10	28	78	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

Series 14820

Frese a tre taglienti
Three flute end mills



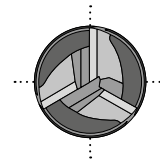
Skin | | | | | $\lambda^{\circ}S$ 40 | Z3 |

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
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	

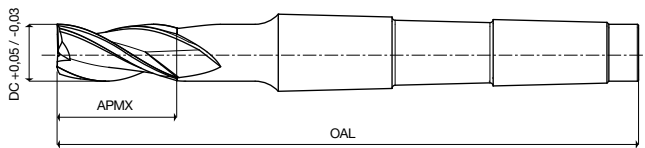


parametri tecnici a pag. / for technical parameters see page 110



Series 14850

Frese a tre taglienti
Three flute end mills



Skin
Alu | | | $\lambda^{\circ}S$ 40 | Z3 |

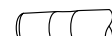
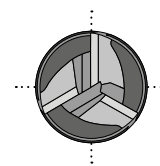
Coating Quality UOP Execution Helix Teeth Length

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



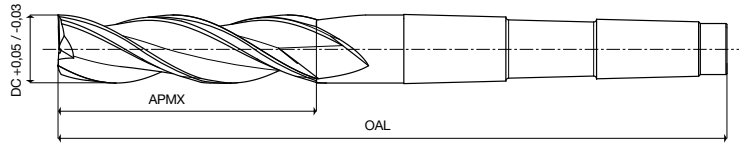
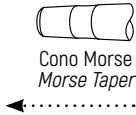
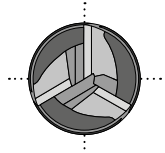
Cono Morse
Morse Taper



	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



Skin
Alu



W

λ° S
40

Z3



DCON = MORSE TAPER

Coating

Quality UOP

Execution

Helix

Teeth

Length

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



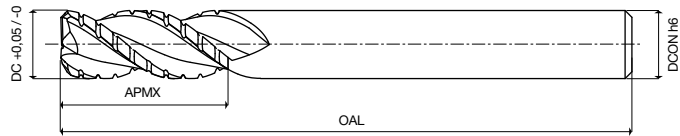
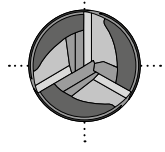
parametri tecnici a pag. / for technical parameters see page 110

Series 15105

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

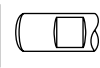


WF



Skin
Alu

UNI 8244
DIN 844A
ISO 1641/1



WF

λ° S
40

Z3



Coating

Standards

W on request

F on request

Execution

Helix

Teeth

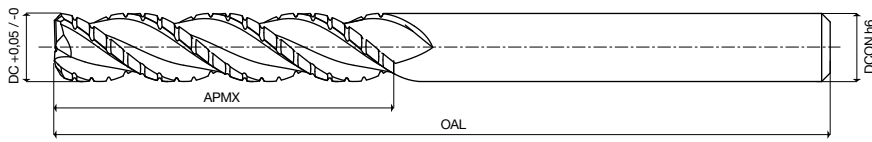
Length

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



Skin
Alu

Coating

UNI 8244
DIN 844A
ISO 1641/1

Standards



W on request



F on request



Execution

λ° S
40

Helix

Z3

Teeth



Length

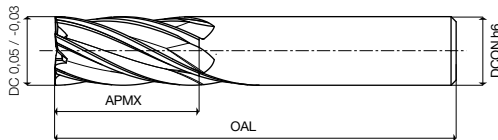
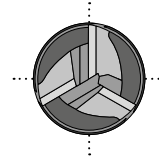
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	Z
151200600 CM	CMX	6	24	68	6	3	
151200800 CM	CMX	8	38	88	10	3	
151201000 CM	CMX	10	45	95	10	3	
151201200 CM	CMX	12	53	110	12	3	
151201400 CM	CMX	14	53	110	12	3	
151201500 CM	CMX	15	63	123	16	3	
151201600 CM	CMX	16	63	123	16	3	
151201800 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 15120

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



Skin

Coating

UNI 8244
DIN 844A
ISO 1641/1

Standards



W on request



F on request



Execution

λ° S
32

Helix

Z4÷8

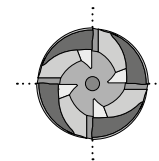
Teeth



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	

→ continua alla pagina successiva / continued on next page



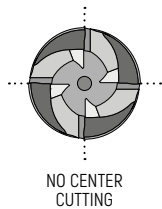
NO CENTER
CUTTING



Series 17105

Frese a **FINIRE**
Finishing end mills

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



Series 17105

→ continuazione della pagina precedente / continuation of the previous page

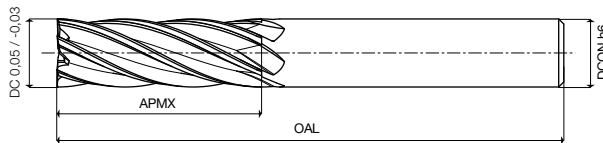
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	Z
171051500	CM	CMX	15	32	92	16	4
171051600	CM	CMX	16	32	92	16	4
171051700	CM	CMX	17	32	92	16	4
171051800	CM	CMX	18	32	92	16	4
171051900	CM	CMX	19	38	98	16	4
171052000	CM	CMX	20	38	98	16	4
171052001	CM	CMX	20	38	104	20	4
171052500	CM	CMX	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



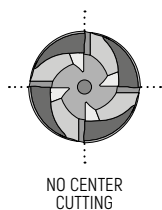
Skin | UNI 8244
DIN 844A
ISO 1641/1 | W on request | F on request | N | λ°S 32 | Z4÷8 | Length

Coating Standards Execution Helix Teeth

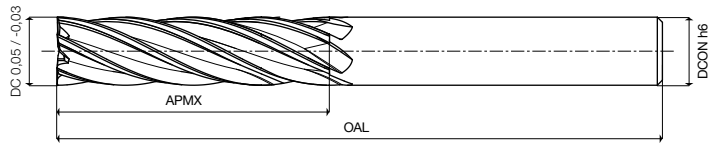
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	DCON h6	Z
171200200	CM	CMX	2	10	54	6	4
171200300	CM	CMX	3	12	56	6	4
171200400	CM	CMX	4	19	63	6	4
171200500	CM	CMX	5	24	68	6	4
171200600	CM	CMX	6	24	68	6	4
171200700	CM	CMX	7	30	80	10	4
171200800	CM	CMX	8	38	88	10	4
171200900	CM	CMX	9	38	88	10	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
171202200	CM	CMX	22	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	○	○	●	○	○	●	●



Series 17135

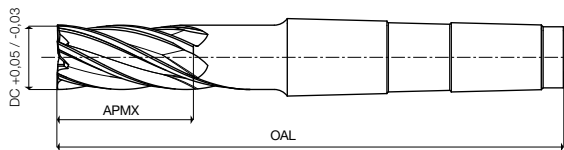
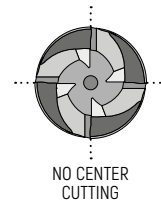
Frese a **FINIRE**
Finishing end mills

Skin | Quality UOP | W on request | F on request | Execution **N** | Helix $\lambda^{\circ}S$ 32 | Teeth **Z4÷6** | 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

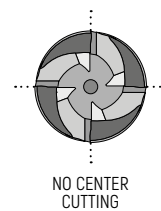
Skin | UNI 8250
DIN 845B
ISO 1641/II | Execution **N** | Helix $\lambda^{\circ}S$ 32 | Teeth **Z4÷8** | Length

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	



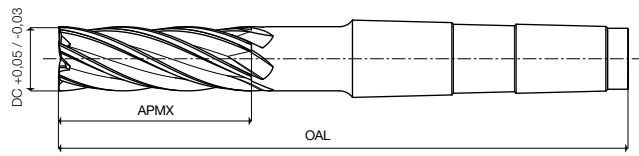
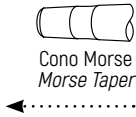
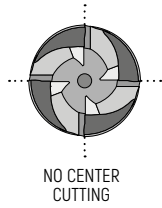
parametri tecnici a pag. / for technical parameters see page 111



	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



Skin

UNI 8250
DIN 845B
ISO 1647/II

N

$\lambda^{\circ}S$
32

Z4÷8



DCON = MORSE TAPER

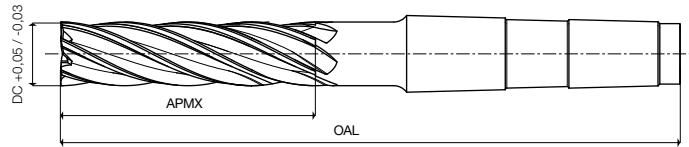
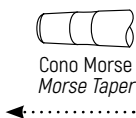
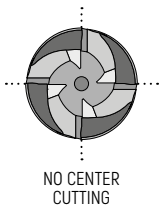
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	MORSE TAPER	Z
171551600	CM	CMX	16	63	148	2	4
171551800	CM	CMX	18	63	148	2	4
171552000	CM	CMX	20	75	177	3	4
171552500	CM	CMX	25	90	192	3	5
171553000	CM	CMX	30	90	192	3	6
171553200	CM	CMX	32	106	231	4	6
171553600	CM	CMX	36	106	231	4	6
171554000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



Skin



Quality UOP

N

$\lambda^{\circ}S$
32

Z4÷8



DCON = MORSE TAPER

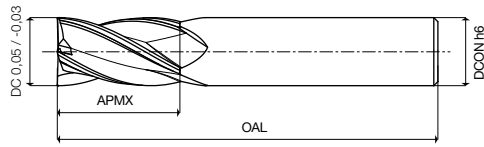
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	MORSE TAPER	Z
171602000	CM	CMX	20	110	212	3	4
171602500	CM	CMX	25	125	250	4	5
171603000	CM	CMX	30	140	265	4	6
171603200	CM	CMX	32	150	275	4	6
171603600	CM	CMX	36	150	275	4	6
171604000	CM	CMX	40	180	305	4	8
171604500	CM	CMX	45	190	315	4	8
171605000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



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

Series 17305

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



Skin

Coating

UNI 8244
DIN 844A
ISO 1641/1

Standards

W on request

F on request

Execution

N

λ° s

32

Helix

Z4÷8

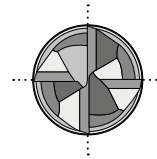
Teeth

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

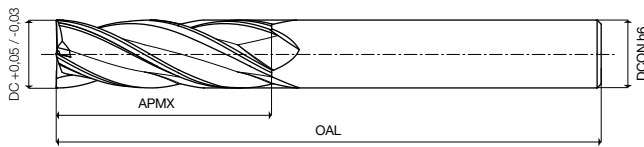


parametri tecnici a pag. / for technical parameters see page 111



Series 17320

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



Skin

Coating

UNI 8244
DIN 844A
ISO 1641/1

Standards

W on request

F on request

Execution

N

λ° s

32

Helix

Z4÷8

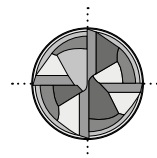
Teeth

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



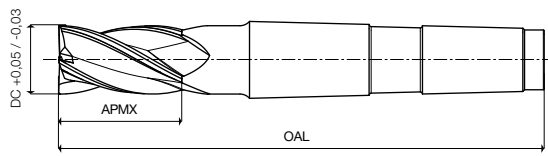
parametri tecnici a pag. / for technical parameters see page 111



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

Series 17350

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



Skin

UNI 8244
DIN 845A
ISO 1641/1

N

$\lambda^{\circ}S$
32

Z4÷8



DCON = MORSE TAPER

Coating

Standards

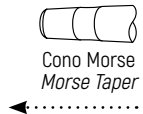
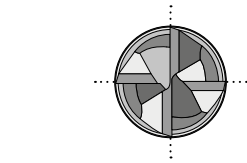
Execution

Helix

Teeth

Length

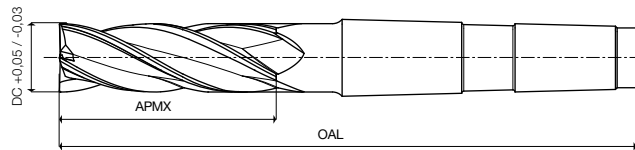
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0,03	APMX	OAL	MORSE TAPER	Z
173502000	CM	CMX	20	38	140	3	4
173502500	CM	CMX	25	45	147	3	5
173503000	CM	CMX	30	53	155	3	6
173503200	CM	CMX	32	53	178	4	6
173503600	CM	CMX	36	53	178	4	6
173504000	CM	CMX	40	63	188	4	8
173504500	CM	CMX	45	63	188	4	8
173505000	CM	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 1641/1/1

N

$\lambda^{\circ}S$
32

Z4÷8



DCON = MORSE TAPER

Coating

Standards

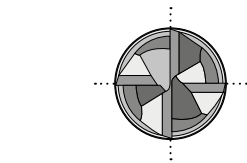
Execution

Helix

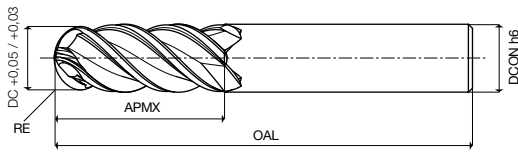
Teeth

Length

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



Skin

ISO 1641/1

N

$\lambda^{\circ}S$
32

Z4÷8



Coating

Standards

Execution

Helix

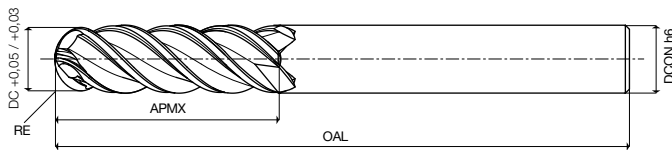
Teeth

Length

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



Skin

ISO 1641/1

N

$\lambda^{\circ}S$
32

Z4÷8



Coating

Standards

Execution

Helix

Teeth

Length

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

SU RICHIESTA
ON REQUEST

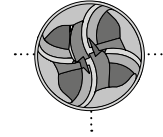
Series 17505

Frese a testa emisferica

Ball nosed end mills

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

BALL-NOSED



SU RICHIESTA
ON REQUEST

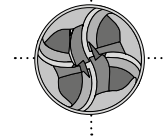
Series 17520

Frese a testa emisferica

Ball nosed end mills

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

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
17505	●	●	●	●	○	●	●
17520	●	●	●	●	○	●	●

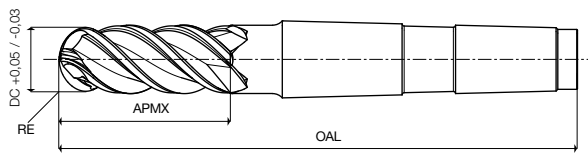
Series 17550

SU RICHIESTA
ON REQUEST

Frese a testa semisferica

Ball nosed end mills

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



Skin

ISO 1641/1

N

$\lambda^{\circ}S$
32

Z4÷8



Coating

Standards

Execution

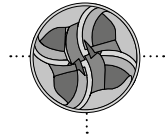
Helix

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

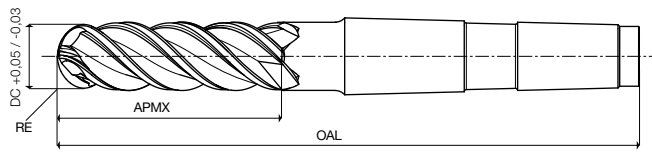
Series 17555

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 1641/1

N

$\lambda^{\circ}S$
32

Z4÷8



Coating

Standards

Execution

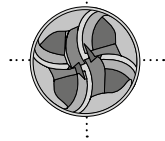
Helix

Teeth

Length



BALL-NOSED



Cono Morse
Morse Taper



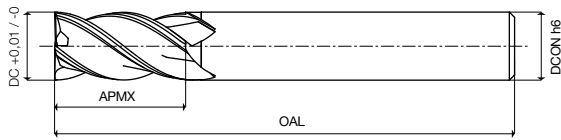
DCON = MORSE TAPER

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	○	○	●	○	○	●	●



Series 18105

Frese per finitura
Finishing end mills

Skin

UNI 8244
DIN 844A
ISO 1641/1



N

$\lambda^{\circ}s$
45

Z4



Coating

Standards

W on request

F on request

Execution

Helix

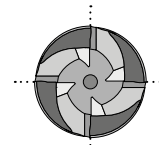
Teeth

Length

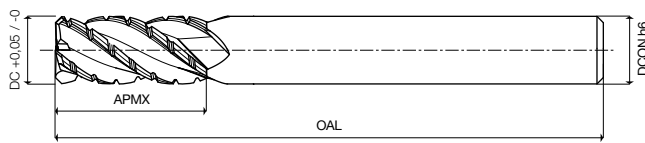
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,01/-0	APMX	OAL	DCON h6	Z
181050200 CM	CMX	2	7	51	6	4	
181050300 CM	CMX	3	8	52	6	4	
181050400 CM	CMX	4	11	55	6	4	
181050500 CM	CMX	5	13	57	6	4	
181050600 CM	CMX	6	13	57	6	4	
181050800 CM	CMX	8	19	69	10	4	
181051000 CM	CMX	10	22	72	10	4	
181051200 CM	CMX	12	26	83	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
tagliante interrotto
Semi-finishing end mills
Interrupted cutting edge

Skin

UNI 8244
DIN 844A
ISO 1641/1



NF

$\lambda^{\circ}s$
40

Z4



Coating

Standards

W on request

F on request

Execution

Helix

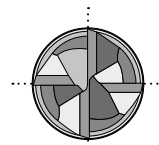
Teeth

Length

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



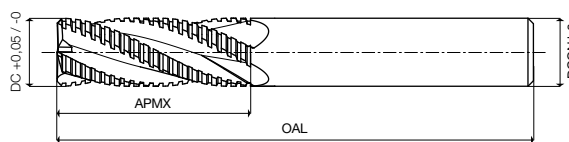
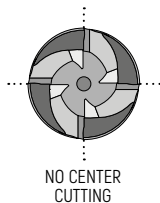
NF



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

Series 20105

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



Skin

Coating

Quality UOP

W on request

F on request

Execution NF

Helix $\lambda^{\circ}S$ 28

Teeth Z3÷5

Length

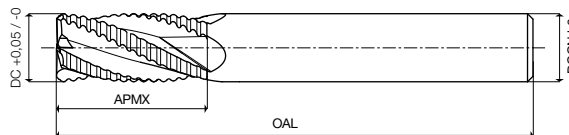
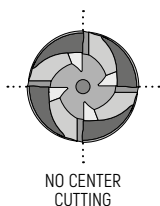
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	Z
201050601 CM	CMX		6	16	60	6	3
201050801 CM	CMX		8	22	64	10	4
201051001 CM	CMX		10	28	70	10	4
201051201 CM	CMX		12	32	80	12	4
201051401 CM	CMX		14	32	80	12	4
201051601 CM	CMX		16	36	90	16	4
201051801 CM	CMX		18	40	100	16	4
201052001 CM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

Execution NR

Helix $\lambda^{\circ}S$ 28

Teeth Z3÷5

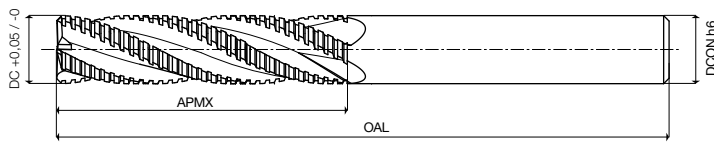
Length

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	●	●	●	●	○	●	●



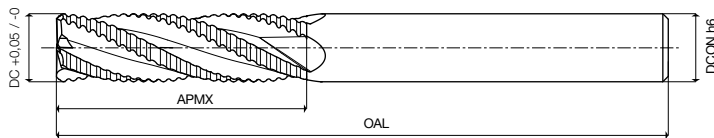
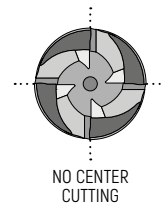
Series
20120
Frese a **SEMIFINIRE**
Semi-finishing end mills

Skin | Quality UOP | W on request | F on request | Execution | $\lambda^{\circ S}$ 28 | $Z4\div 5$ | 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



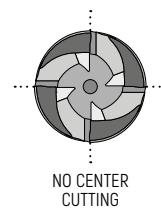
Series
20120
Frese a **SGROSSARE**
Roughing end mills

Skin | Quality UOP | W on request | F on request | Execution | $\lambda^{\circ S}$ 28 | $Z4\div 5$ | 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	



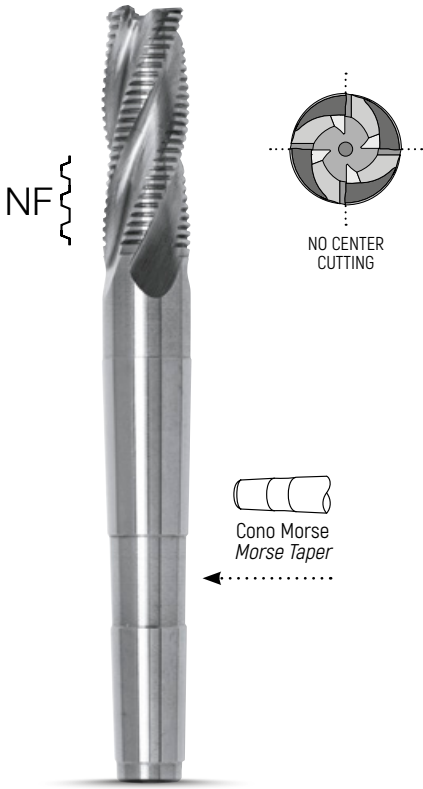
parametri tecnici a pag. / for technical parameters see page 114



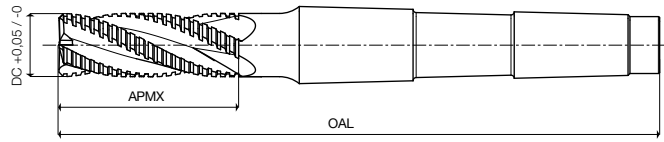
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
20120 NF	●	●	●	○	○	●	●
20120 NR	●	●	●	●	○	●	●

Series 20150

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



Cono Morse
Morse Taper



Skin

Quality UOP

Execution NF

Helix $\lambda^{\circ}S$ 28

Teeth Z4÷6

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



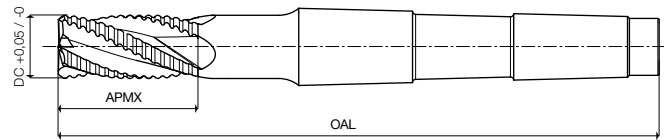
parametri tecnici a pag. / for technical parameters see page 114

Series 20150

Frese a **SGROSSARE**
Roughing end mills



Cono Morse
Morse Taper



Skin

Quality UOP

Execution NR

Helix $\lambda^{\circ}S$ 28

Teeth Z4÷6

Length

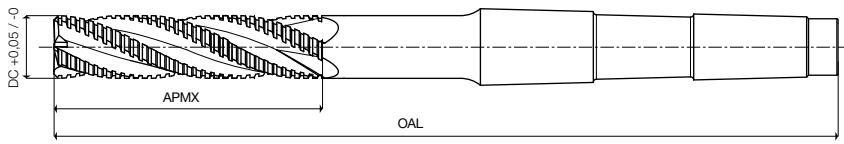
DCON = MORSE TAPER

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	●	●	●	○	○	●	●



Skin | ✓ | NF | $\lambda^{\circ}S$ 28 | Z4÷6 |

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

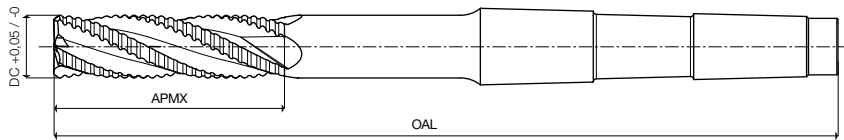
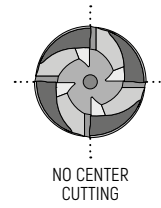
DCON = MORSE TAPER

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 **SEMIFINIRE**
Semi-finishing end mills



Skin | ✓ | NR | $\lambda^{\circ}S$ 28 | Z4÷6 |

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

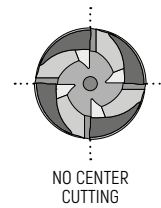
DCON = MORSE TAPER

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

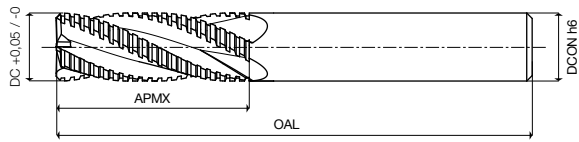
Series
20160
Frese a **SGROSSARE**
Roughing end mills



	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 1641/1



$\lambda^{\circ}S$
28

Z3÷5



Coating

Standards

W on request

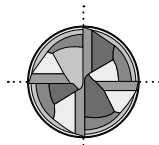
F on request

Execution

Helix

Teeth

Length



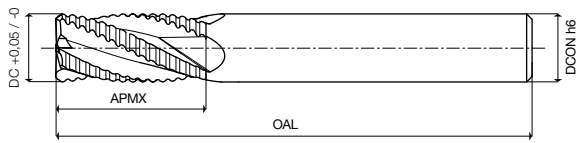
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	Z
211050601	CM	CMX	6	13	57	6	3
211050701	CM	CMX	7	16	66	10	3
211050801	CM	CMX	8	19	69	10	4
211050901	CM	CMX	9	19	69	10	4
211051001	CM	CMX	10	22	72	10	4
211051101	CM	CMX	11	22	79	12	4
211051201	CM	CMX	12	26	83	12	4
211051301	CM	CMX	13	26	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 1641/1



$\lambda^{\circ}S$
28

Z3÷6



Coating

Standards

W on request

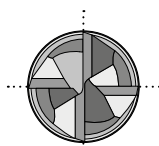
F on request

Execution

Helix

Teeth

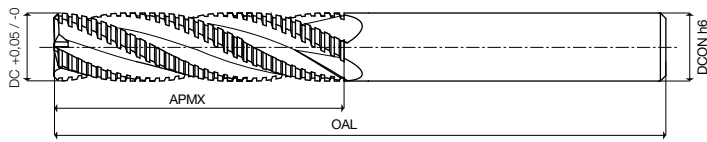
Length



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



Series 21120

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

Skin

Coating

UNI 8244
DIN 844A
ISO 1641/1

Standards



W on request



F on request



Execution

$\lambda^{\circ}S$
28

Helix

Z4÷6

Teeth

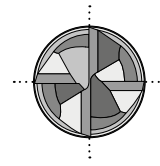


Length

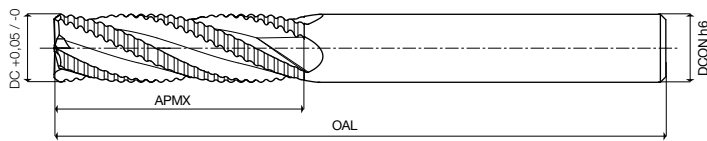
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	DCON h6	Z
211200801 CM		CMX	8	38	88	10	4
211201001 CM		CMX	10	45	95	10	4
211201201 CM		CMX	12	53	110	12	4
211201401 CM		CMX	14	53	110	12	4
211201501 CM		CMX	15	63	123	16	4
211201601 CM		CMX	16	63	123	16	4
211201805 CM		CMX	18	63	129	20	4
211202005 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



NF



Series 21120

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

Skin

Coating

UNI 8244
DIN 844A
ISO 1641/1

Standards



W on request



Execution

$\lambda^{\circ}S$
28

Helix

Z4÷6

Teeth

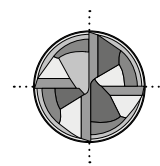


Length

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

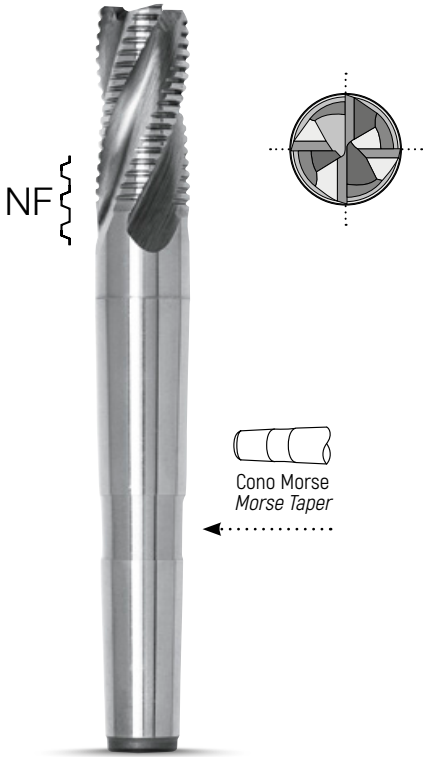
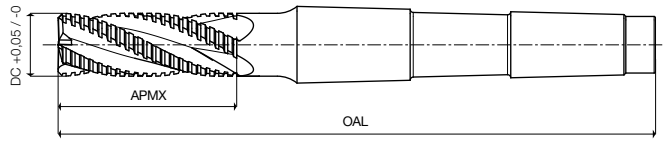


NR

	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Chise 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

$\lambda^{\circ}S$
28

Z4÷8



DCON = MORSE TAPER

Coating

Standards

Execution

Helix

Teeth

Length

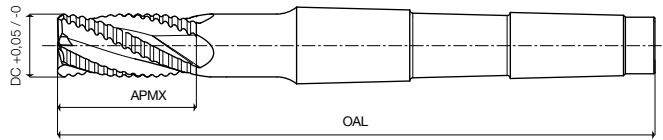
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	APMX	OAL	MORSE TAPER	Z
211501601	CM	CMX	16	32	117	2	4
211501801	CM	CMX	18	32	117	2	4
211502001	CM	CMX	20	38	140	3	4
211502201	CM	CMX	22	38	140	3	4
211502401	CM	CMX	24	45	147	3	5
211502501	CM	CMX	25	45	147	3	5
211502601	CM	CMX	26	45	147	3	5
211502801	CM	CMX	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

$\lambda^{\circ}S$
28

Z4÷8



DCON = MORSE TAPER

Coating

Standards

Execution

Helix

Teeth

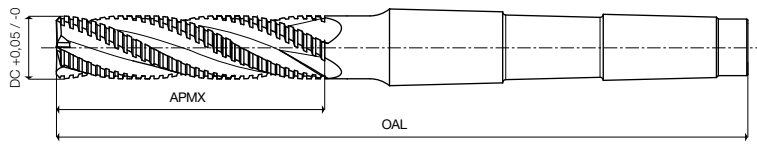
Length

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	●	●	●	○	○	●	●



Series 21155

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

Skin

UNI 8250
DIN 845B
ISO 1641/II

NF

$\lambda^{\circ}S$
28

Z4÷8



Coating

Standards

Execution

Helix

Teeth

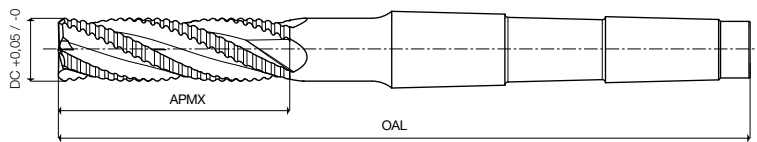
Length

DOON = MORSE TAPER

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



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



Series 21155

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

Skin

UNI 8250
DIN 845B
ISO 1641/II

NR

$\lambda^{\circ}S$
28

Z4÷8



Coating

Standards

Execution

Helix

Teeth

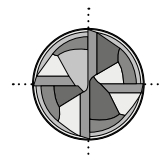
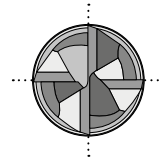
Length

DOON = MORSE TAPER

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



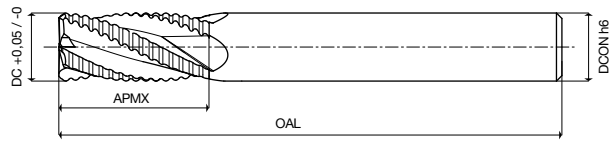
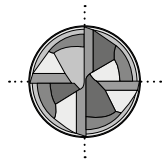
parametri tecnici a pag. / for technical parameters see page 115



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

Series 21305

Frese a **SGROSSARE**
Roughing end mills



Skin
Inox
Coating

UNI 8244
DIN 844A
ISO 1641/1
Standards

W on request

F on request

NR
Execution

$\lambda^{\circ}S$
32
Helix

Z3÷5
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



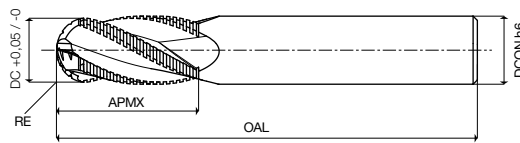
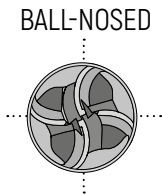
parametri tecnici a pag. / for technical parameters see page 116

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
Coating

ISO 1641/1
Standards

W on request

F on request

NF
Execution

$\lambda^{\circ}S$
28
Helix

Z3÷5
Teeth

Length

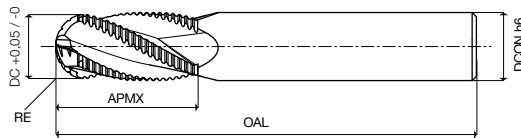
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	RE	APMX	OAL	DCON h6	Z
215050601	CM	CMX	6	3	13	57	6	3
215050701	CM	CMX	7	3,5	16	66	10	3
215050801	CM	CMX	8	4	19	69	10	4
215050901	CM	CMX	9	4,5	19	69	10	4
215051001	CM	CMX	10	5	22	72	10	4
215051101	CM	CMX	11	5,5	22	79	12	4
215051201	CM	CMX	12	6	26	83	12	4
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	●	●	●	○	○	●	●

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



Skin | ISO 1641/1 | W on request | F on request | NR | $\lambda^{\circ S}$ 28 | Z3÷6 | Length

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	●	●	●	●	○	●	●

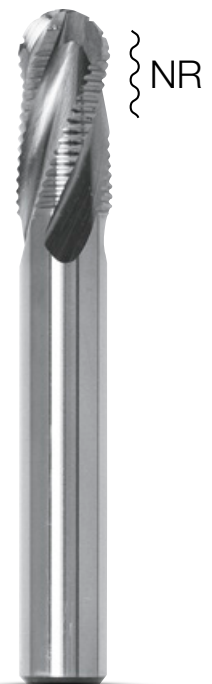
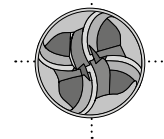
SU RICHIESTA
ON REQUEST

Series 21505

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

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

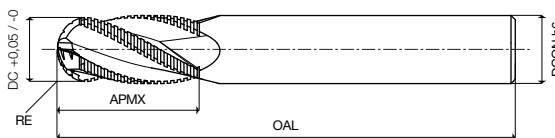
BALL-NOSED



Series 21520

SU RICHIESTA
ON REQUEST

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



Skin

ISO 1641/1



W on request



F on request



Execution NF

$\lambda^{\circ}S$
28

Helix

Z4÷6

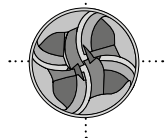
Teeth



Length



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

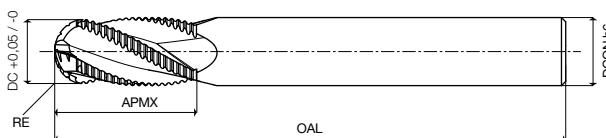


parametri tecnici a pag. / for technical parameters see page 116

Series 21520

SU RICHIESTA
ON REQUEST

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



Skin

ISO 1641/1



W on request



F on request



Execution NR

$\lambda^{\circ}S$
28

Helix

Z4÷6

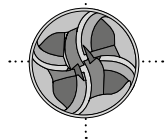
Teeth



Length



BALL-NOSED

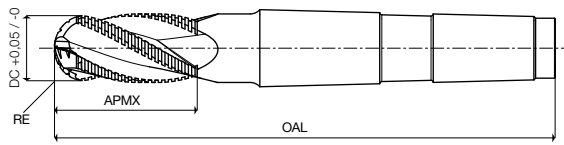


Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC +0,05/-0	RE	APMX	OAL	DCON h6	Z
215200803	CM	CMX	8	4	38	88	10	4
215201003	CM	CMX	10	5	45	95	10	4
215201203	CM	CMX	12	6	53	110	12	4
215201403	CM	CMX	14	7	53	110	12	4
215201503	CM	CMX	15	7,5	63	123	16	4
215201603	CM	CMX	16	8	63	123	16	4
215201803	CM	CMX	18	9	63	123	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	●	●	●	●	○	●	●



Skin

Coating

ISO 1641/1

Standards

NF

Execution

$\lambda^{\circ}S$
28

Helix

Z4÷8

Teeth



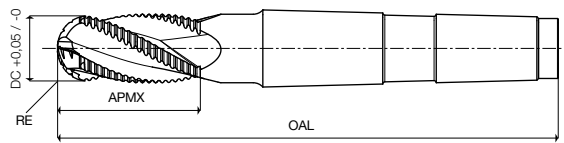
Length

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



Skin

Coating

ISO 1641/1

Standards

NR

Execution

$\lambda^{\circ}S$
28

Helix

Z4÷8

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

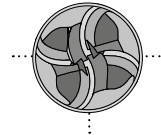
SU RICHIESTA
ON REQUEST

Series 21550

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

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

BALL-NOSED



Cono Morse
Morse Taper

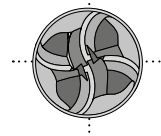
SU RICHIESTA
ON REQUEST

Series 21550

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

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

BALL-NOSED



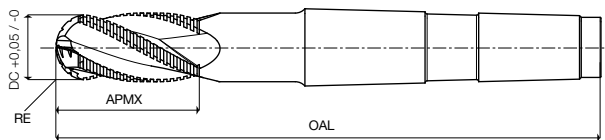
Cono Morse
Morse Taper

	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 emisferica
Ball nosed semi-finishing end mills
INFO: servizio.clienti@uop.it / customer.service@uop.it



Skin

ISO 1641/1

NF

$\lambda^{\circ S}$
28

Z4÷8



DCON = MORSE TAPER

Coating

Standards

Execution

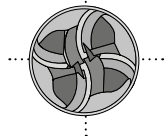
Helix

Teeth

Length



BALL-NOSED



Cono Morse
Morse Taper

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

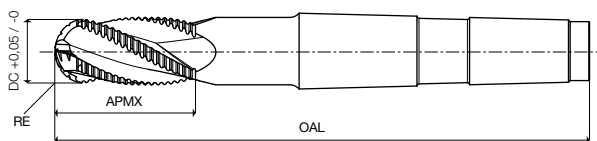


parametri tecnici a pag. / for technical parameters see page 116

Series
21555

SU RICHIESTA
ON REQUEST

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



Skin

ISO 1641/1

NR

$\lambda^{\circ S}$
28

Z4÷8



DCON = MORSE TAPER

Coating

Standards

Execution

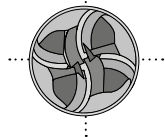
Helix

Teeth

Length



BALL-NOSED



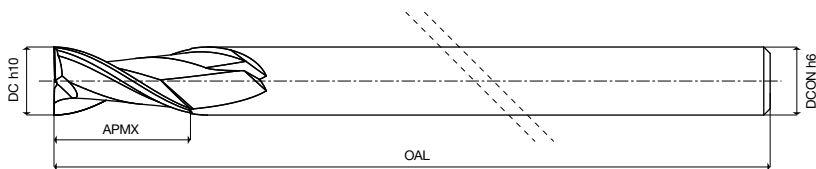
Cono Morse
Morse Taper

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



Skin | Quality UOP | W on request | F on request | Execution **N** | Helix $\lambda^{\circ}S$ 32 | Teeth **Z2** | Length

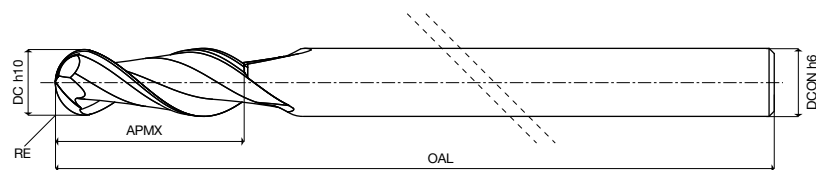
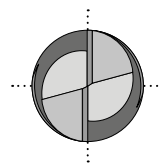
Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC h10	APMX	OAL	DCON h6	Z
241151000 CM	CMX	CMX	10	30	200	10	2
241151200 CM	CMX	CMX	12	30	200	12	2
241151600 CM	CMX	CMX	16	35	200	16	2
241152000 CM	CMX	CMX	20	35	200	20	2
241152500 CM	CMX	CMX	25	40	200	25	2



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

Series 24115

Frese a due taglienti
Two flute end mills



Skin | Quality UOP | W on request | F on request | Execution **N** | Helix $\lambda^{\circ}S$ 32 | Teeth **Z2** BALL-NOSED | Length

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

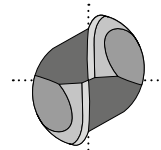


parametri tecnici a pag. / for technical parameters see page 117

Series 24120

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

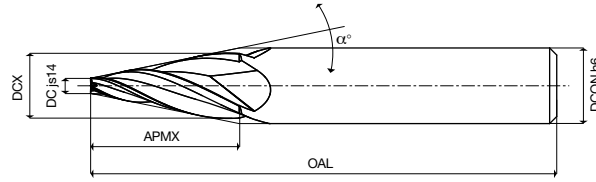
BALL-NOSED



	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

Coating

UNI 8265
DIN 1889EA
ISO

Standards



W on request



F on request



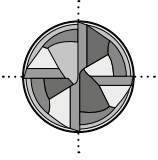
Execution

Z3÷5

Teeth

λ_s 25

Helix



conicità 1/3
 α ° 9° 28'

Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC js14	DCX	APMX	OAL	DCON h6	Z
251051050	CM	CMX	2,5	13	31,5	85	12	3
251051100	CM	CMX	4	16	36	96	16	4
251051150	CM	CMX	4	22,7	56	116	16	4
251051200	CM	CMX	4	34	90	170	32	4
251051250	CM	CMX	6	20	42	100	16	4
251051300	CM	CMX	6	27	63	138	25	4
251051350	CM	CMX	6	40	102	182	32	4
251051400	CM	CMX	8	25	50	125	25	4
251051450	CM	CMX	8	32	72	152	32	4
251051500	CM	CMX	8	45,5	112	192	32	4
251051550	CM	CMX	12	32	60	140	32	4

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'

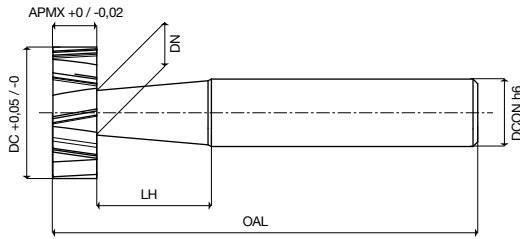
251053050	CM	CMX	4	8	40	90	10	4
251053100	CM	CMX	6	10	40	90	10	4
251053150	CM	CMX	6	12	60	117	12	4
251053200	CM	CMX	8	12,5	45	95	12	4
251053250	CM	CMX	8	16	80	140	16	4
251053300	CM	CMX	12	17	50	110	16	4
251053350	CM	CMX	12	20	80	140	16	4
251053400	CM	CMX	12	25	130	205	25	4
251053450	CM	CMX	16	21,6	56	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

Series 27105

Frese per sedi
di linguette americane (Woodruff)
Woodruff cutters



Skin

Coating

UNI 8263
DIN 850B
ISO

Standards

W on request

F on request

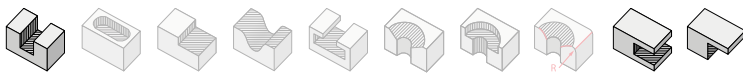
H

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



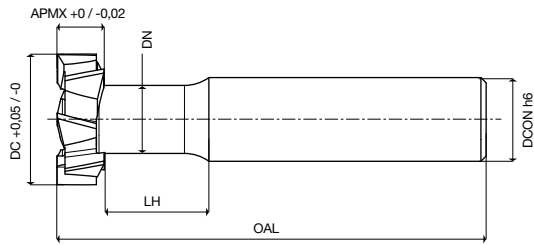
parametri tecnici a pag. / for technical parameters see page 118



HSS-PM Cutting Tools

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

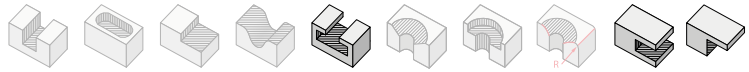
N

Execution

Z6÷8

Teeth

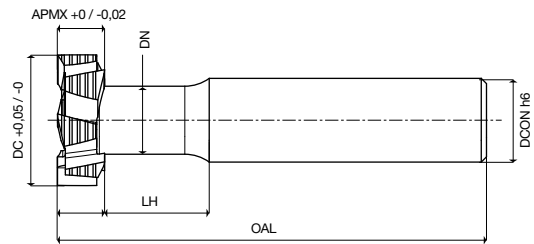
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC +0,05 -0	APMX +0/-0,02	DN	LH	OAL	DCON h6	λ°	Z
271201256	AM	CM	CMX	12,5	6	5	11	57	10	12	6
271201608	AM	CM	CMX	16	8	7	14	62	10	12	6
271201808	AM	CM	CMX	18	8	8	15	70	12	15	6
271201909	AM	CM	CMX	19	9	8	15	70	12	15	8
271202109	AM	CM	CMX	21	9	10	18	74	12	15	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

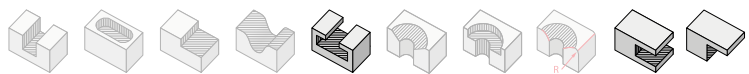
NF

Execution

Z4÷8

Teeth

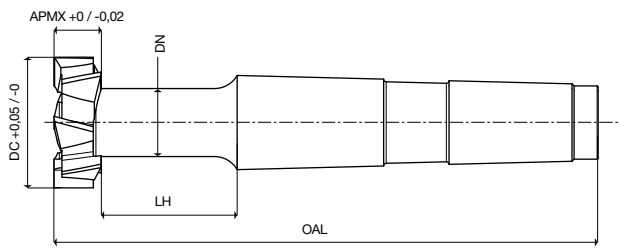
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8,5%)	COATED	DC +0,05 -0	APMX +0/-0,02	DN	LH	OAL	DCON h6	Z
271351256	AM	CM	CMX	12,5	6	5	11	57	10	4
271351608	AM	CM	CMX	16	8	7	14	62	10	6
271351808	AM	CM	CMX	18	8	8	15	70	12	6
271351909	AM	CM	CMX	19	9	8	15	70	12	6
271352109	AM	CM	CMX	21	9	10	18	74	12	6
271352210	AM	CM	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

Series 27150

Frese per scanalature a T
T-slot cutters



Skin

UNI 7339A
DIN 851B
ISO 3337

N

Z8±10

Coating

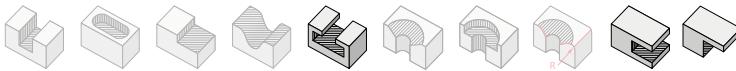
Standards

Execution

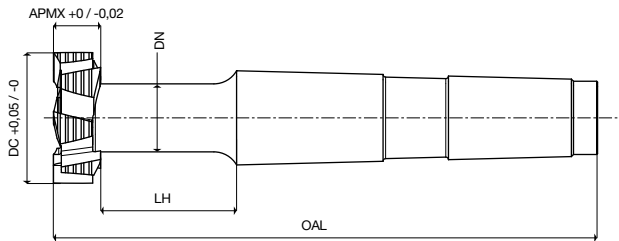
Teeth

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



Skin

UNI 7339A
DIN 851B
ISO 3337

NF

Z4±8

Coating

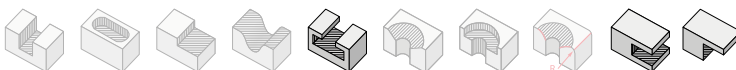
Standards

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



Cono Morse
Morse Taper

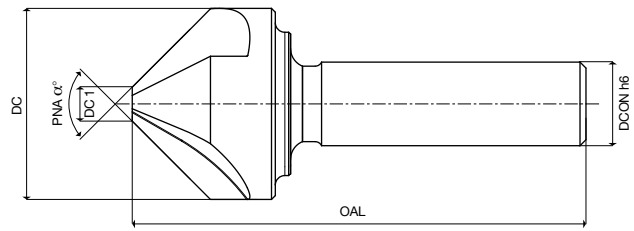
Series 27155

Frese per scanalature a T
T-slot cutters

	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

Coating

UNI 6847
DIN 334-335
ISO

Standards

N

Execution

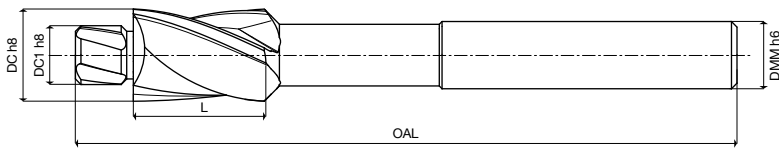
Z3

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



Series 28105

Frese per sedi di viti
Counterbores

Skin

Coating

UNI 6841

Standards

N

Execution

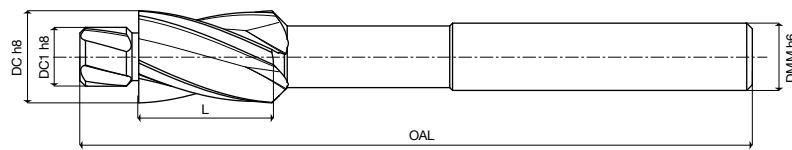
Z2

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	CMX	M3	5,9	3,2	12	70	6	2
281050402 AM	CM	CMX	CMX	M4	7,4	4,3	12	70	8	2
281050502 AM	CM	CMX	CMX	M5	9,4	5,3	14	90	10	2
281050602 AM	CM	CMX	CMX	M6	10,4	6,4	16	100	10	2
281050802 AM	CM	CMX	CMX	M8	13,5	8,4	20	115	12	2
281051002 AM	CM	CMX	CMX	M10	16,5	10,5	25	120	12	2
281051202 AM	CM	CMX	CMX	M12	19	13	25	120	16	2
281051402 AM	CM	CMX	CMX	M14	23	15	30	130	16	2
281051602 AM	CM	CMX	CMX	M16	25	17	35	155	20	2
281051802 AM	CM	CMX	CMX	M18	28	19	40	160	20	2
281052002 AM	CM	CMX	CMX	M20	31	21	50	180	20	2
281052202 AM	CM	CMX	CMX	M22	34	23	50	185	22	2
281052402 AM	CM	CMX	CMX	M24	37	25	50	200	22	2



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



Skin

Coating

UNI 6841

Standards

N

Execution

Z4

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	CMX	m3	5,9	3,2	12	70	6	4
281050404 AM	CM	CMX	CMX	m4	7,4	4,3	12	70	8	4
281050504 AM	CM	CMX	CMX	m5	9,4	5,3	14	90	10	4
281050604 AM	CM	CMX	CMX	m6	10,4	6,4	16	100	10	4
281050804 AM	CM	CMX	CMX	m8	13,5	8,4	20	115	12	4
281051004 AM	CM	CMX	CMX	m10	16,5	10,5	25	120	12	4
281051204 AM	CM	CMX	CMX	m12	19	13	25	120	16	4
281051404 AM	CM	CMX	CMX	m14	23	15	30	130	16	4
281051604 AM	CM	CMX	CMX	m16	25	17	35	155	20	4
281051804 AM	CM	CMX	CMX	m18	28	19	40	160	20	4
281052004 AM	CM	CMX	CMX	m20	31	21	50	180	20	4
281052204 AM	CM	CMX	CMX	m22	34	23	50	185	22	4
281052404 AM	CM	CMX	CMX	m24	37	25	50	200	22	4



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



Series 28105

Frese per sedi di viti
Counterbores



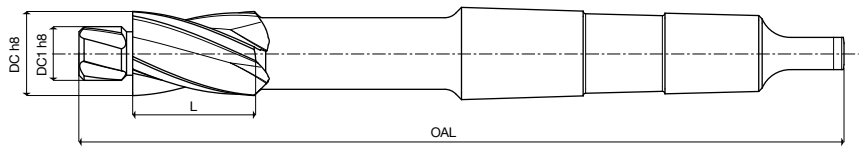
	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
28105	●	●	●	○	○	●	●
28105	●	●	●	○	○	●	●

Series 28150

Frese per sedi di viti
Counterbores



Cono Morse
Morse Taper



Skin

UNI 6842

N

Z4

Coating

Standards

Execution

Teeth

DCON = MORSE TAPER

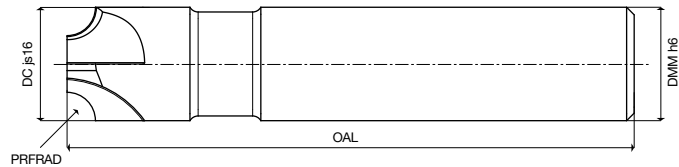
Cod. Art.	X-85 (PM Co 8,5%)	COATED	SCREW	DC h8	DC1 h8	L	OAL	MORSE TAPER	Z
281501204 CM	CMX	M12	19	13	25	160	2	4	
281501404 CM	CMX	M14	23	15	32	170	2	4	
281501604 CM	CMX	M16	25	17	35	180	2	4	
281501804 CM	CMX	M18	28	19	40	180	2	4	
281502004 CM	CMX	M20	31	21	50	215	3	4	
281502204 CM	CMX	M22	34	23	50	220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



N

Z4÷6

Coating

Standards

W on request

F on request

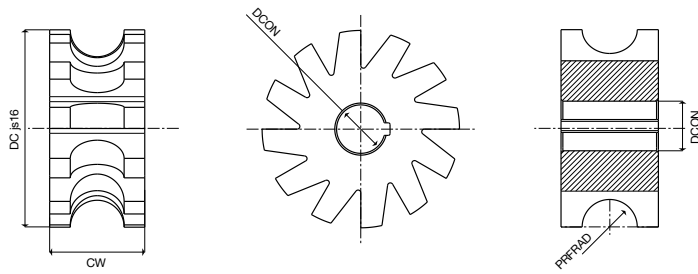
Execution

Teeth

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



Series 29105

Frese a profilo costante concavo
Form relieved concave milling cutters

Cod. Art.	M-TK (HSS-E)	COATED	PRFRAD	DC js16	CW	DCON	Z
291050100 AM	AMX	AMX	1	56	8	22	14
291050150 AM	AMX	AMX	1,5	56	8	22	14
291050200 AM	AMX	AMX	2	56	9	22	14
291050250 AM	AMX	AMX	2,5	56	10	22	14
291050300 AM	AMX	AMX	3	63	12	22	14
291050350 AM	AMX	AMX	3,5	63	14	22	14
291050400 AM	AMX	AMX	4	63	16	22	14
291050450 AM	AMX	AMX	4,5	63	18	22	12
291050500 AM	AMX	AMX	5	63	20	22	12
291050550 AM	AMX	AMX	5,5	63	22	22	12
291050600 AM	AMX	AMX	6	70	24	22	12
291050650 AM	AMX	AMX	6,5	70	26	22	12
291050700 AM	AMX	AMX	7	70	28	22	12
291050750 AM	AMX	AMX	7,5	80	30	27	12
291050800 AM	AMX	AMX	8	80	32	27	12
291050850 AM	AMX	AMX	8,5	80	34	27	12
291050900 AM	AMX	AMX	9	90	36	27	12
291050950 AM	AMX	AMX	9,5	90	38	27	12
291051000 AM	AMX	AMX	10	90	40	27	12

Skin

Coating

UNI 4499
DIN
ISO

Standards

N

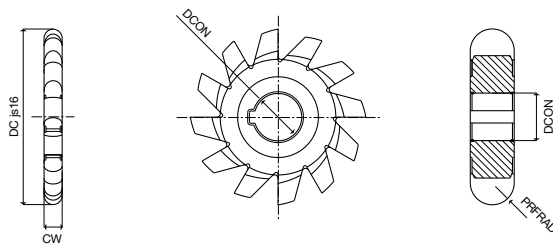
Execution

Z12÷14

Teeth



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



Series 29110

Frese a profilo costante convesso
Form relieved convex milling cutters

Cod. Art.	M-TK (HSS-E)	COATED	PRFRAD	DC js16	CW	DCON	Z
291100100 AM	AMX	AMX	1	50	2	22	14
291100150 AM	AMX	AMX	1,5	50	3	22	14
291100200 AM	AMX	AMX	2	50	4	22	14
291100250 AM	AMX	AMX	2,5	56	5	22	14
291100300 AM	AMX	AMX	3	56	6	22	14
291100350 AM	AMX	AMX	3,5	63	7	22	14
291100400 AM	AMX	AMX	4	63	8	22	14
291100450 AM	AMX	AMX	4,5	63	9	22	14
291100500 AM	AMX	AMX	5	63	10	22	14
291100550 AM	AMX	AMX	5,5	70	11	22	14
291100600 AM	AMX	AMX	6	70	12	22	14
291100650 AM	AMX	AMX	6,5	70	13	22	14
291100700 AM	AMX	AMX	7	70	14	22	14
291100750 AM	AMX	AMX	7,5	70	15	22	12
291100800 AM	AMX	AMX	8	70	16	22	12
291100850 AM	AMX	AMX	8,5	90	17	27	12
291100900 AM	AMX	AMX	9	90	18	27	12
291100950 AM	AMX	AMX	9,5	90	19	27	12
291101000 AM	AMX	AMX	10	90	20	27	12
291101100 AM	AMX	AMX	11	90	22	27	12
291101200 AM	AMX	AMX	12	90	24	27	12
291101250 AM	AMX	AMX	12,5	100	25	27	12
291101300 AM	AMX	AMX	13	100	26	27	12
291101400 AM	AMX	AMX	14	100	28	27	12
291101500 AM	AMX	AMX	15	110	30	32	12
291101600 AM	AMX	AMX	16	110	32	32	12
291101700 AM	AMX	AMX	17	110	34	32	12
291101800 AM	AMX	AMX	18	110	36	32	12
291101900 AM	AMX	AMX	19	125	38	32	12
291102000 AM	AMX	AMX	20	125	40	32	12

Skin

Coating

UNI 4499
DIN 856
ISO

Standards

N

Execution

Z12÷14

Teeth



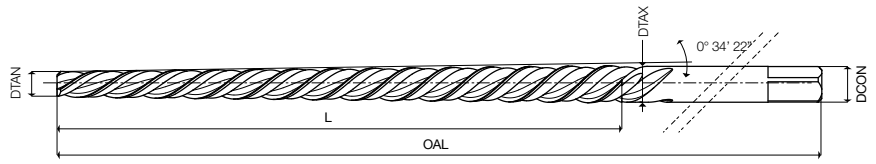
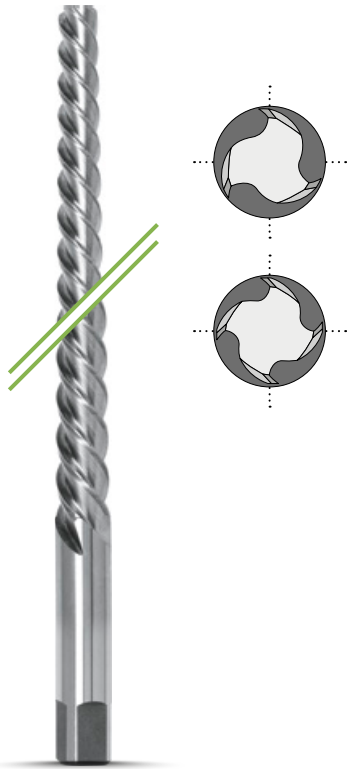
parametri tecnici a pag. / for technical parameters see page 120



29105/29110

Series 30502

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



Skin

Coating



Flat square

UNI 6857
DIN
ISO

Standards

N

Execution

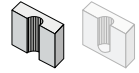
$\lambda^{\circ}S$
45

Helix

Z3÷4

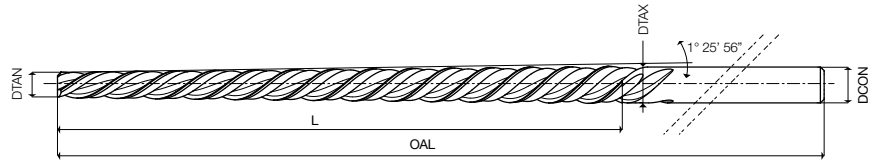
Teeth

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

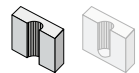
$\lambda^{\circ}S$
45

Helix

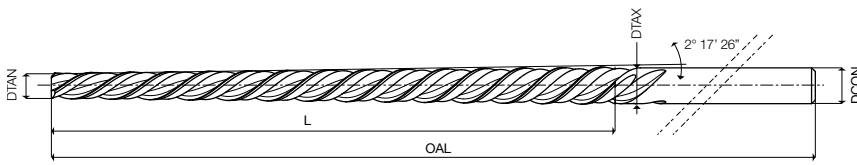
Z3

Teeth

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

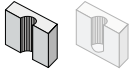


	Titanio Titanium	HRSA HRSA	Acciai inossidabili Stainless steels	Materiali non ferrosi Non ferrous materials	Leghe leggere Light alloys	Acciai Steels	Ghise Cast iron
30502	○	○	●	○	○	●	●
30505	○	○	●	○	○	●	●



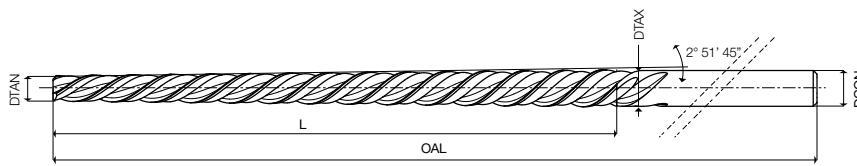
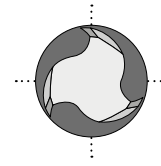
Skin | | | | N | λ°_S 45 | Z3
 Coating | Quality UOP | W on request | F on request | Execution | Helix | Teeth

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



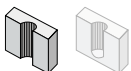
Series 30508

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



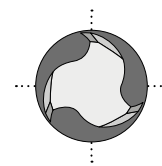
Skin | | | | N | λ°_S 45 | Z3
 Coating | Quality UOP | W on request | F on request | Execution | Helix | Teeth

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



Series 30510

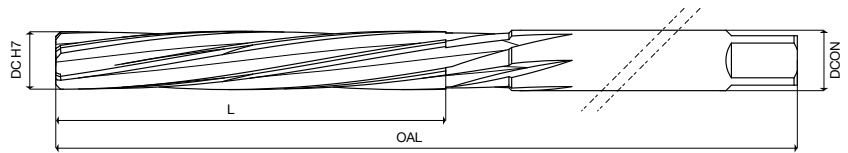
Alesatori conici, **conicità 10%**
 Tapered reamers, **taper 10%**



	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

Coating



Flat square

UNI 6852
DIN 206B
ISO 236/1

Standards

N

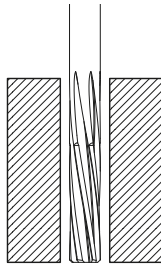
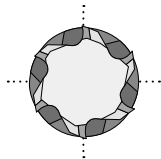
Execution

$\lambda^{\circ}S$
10

Helix

Z4÷12

Teeth

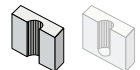


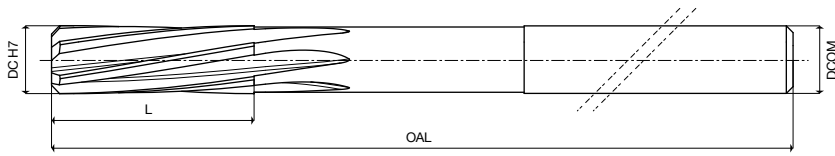
ALESATURA
FORI PASSANTI
THROUGH HOLES
REAMING



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





Series 32105

Alesatori a macchina
Machine reamers

Skin

Coating

UNI 6853
DIN 212D
ISO 521

Standards



W on request



F on request

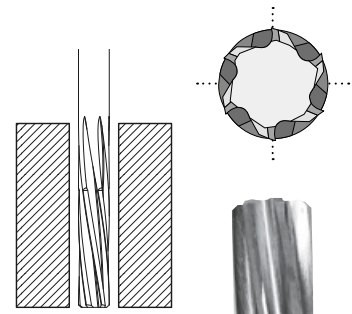
N

Execution

Z3÷7

Teeth

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	



ALESATURA
FORI PASSANTI
THROUGH HOLES
REAMING

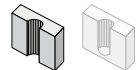


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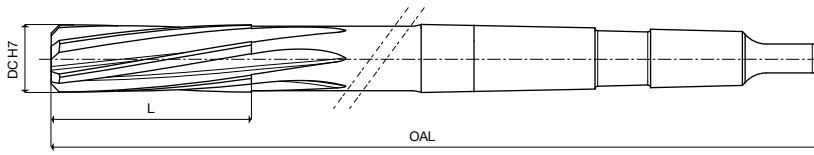


Cod. Art.	X-85 (PM Co 8,5%)	COATED	DC H7	L	OAL	DMM h6	λ°	Z
321050630	CM	CMX	6,3	28	101	6,3	10	6
321050640	CM	CMX	6,4	28	101	6,4	10	6
321050650	CM	CMX	6,5	28	101	6,5	10	6
321050660	CM	CMX	6,6	28	101	6,6	10	6
321050670	CM	CMX	6,7	31	109	6,7	10	6
321050680	CM	CMX	6,8	31	109	6,8	10	6
321050690	CM	CMX	6,9	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



Series 32150

Alesatori a macchina
Machine reamers

Skin

UNI 6854
DIN 208B
ISO 521

N

$\lambda^{\circ}S$
10

Z7÷10

Coating

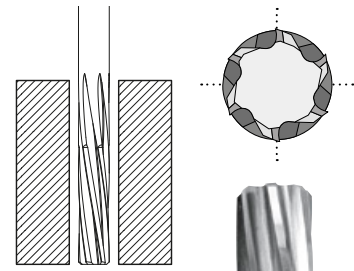
Standards

Execution

Helix

Teeth

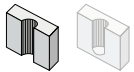
Cod. Art.	M-TK (HSS-E)	X-85 (PM Co 8.5%)	COATED	DC H7	L	OAL	MORSE TAPER	Z
321501600 AM	CM	CMX		16	52	210	2	7
321501700 AM	CM	CMX		17	54	214	2	7
321501800 AM	CM	CMX		18	56	219	2	8
321501900 AM	CM	CMX		19	58	223	2	8
321502000 AM	CM	CMX		20	60	228	2	8
321502100 AM	CM	CMX		21	62	232	2	8
321502200 AM	CM	CMX		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



ALESATURA
FORI PASSANTI
THROUGH HOLES
REAMING



Cono Morse
Morse Taper



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

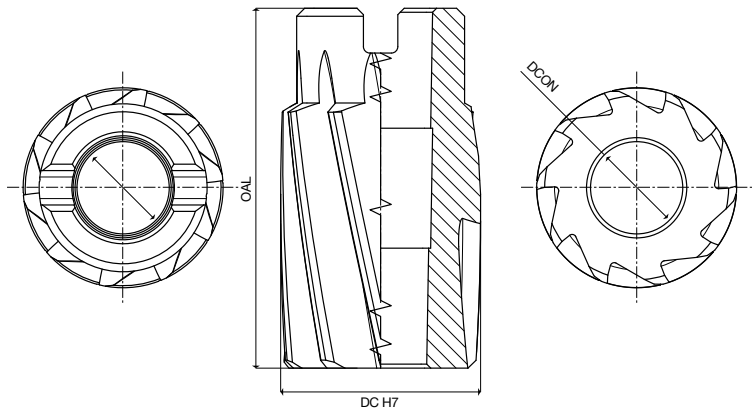
parametri tecnici a pag. / for technical parameters see page 121

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

$\lambda^{\circ}S$
10

Z8±20

Coating

Standards

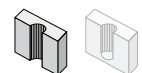
Execution

Helix

Teeth

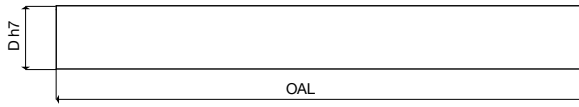


Cod. Art.	M-TK (HSS-E)	COATED	DC H7	OAL	DCON	Z
331050200 AM	AMX	AMX	20	40	10	8
331050210 AM	AMX	AMX	21	40	10	8
331050220 AM	AMX	AMX	22	40	10	8
331050230 AM	AMX	AMX	23	40	10	8
331050240 AM	AMX	AMX	24	45	13	10
331050250 AM	AMX	AMX	25	45	13	10
331050260 AM	AMX	AMX	26	45	13	10
331050270 AM	AMX	AMX	27	45	13	10
331050280 AM	AMX	AMX	28	45	13	10
331050290 AM	AMX	AMX	29	45	13	10
331050300 AM	AMX	AMX	30	45	13	10
331050310 AM	AMX	AMX	31	50	16	10
331050320 AM	AMX	AMX	32	50	16	10
331050330 AM	AMX	AMX	33	50	16	10
331050340 AM	AMX	AMX	34	50	16	10
331050350 AM	AMX	AMX	35	50	16	10
331050360 AM	AMX	AMX	36	56	19	12
331050370 AM	AMX	AMX	37	56	19	12
331050380 AM	AMX	AMX	38	56	19	12
331050390 AM	AMX	AMX	39	56	19	12
331050400 AM	AMX	AMX	40	56	19	12
331050420 AM	AMX	AMX	42	56	19	12
331050440 AM	AMX	AMX	44	63	22	12
331050450 AM	AMX	AMX	45	63	22	12
331050460 AM	AMX	AMX	46	63	22	14
331050470 AM	AMX	AMX	47	63	22	14
331050480 AM	AMX	AMX	48	63	22	14
331050490 AM	AMX	AMX	49	63	22	14
331050500 AM	AMX	AMX	50	63	22	14
331050520 AM	AMX	AMX	52	71	27	14
331050550 AM	AMX	AMX	55	71	27	14
331050580 AM	AMX	AMX	58	71	27	14
331050600 AM	AMX	AMX	60	71	27	16
331050620 AM	AMX	AMX	62	80	32	16
331050650 AM	AMX	AMX	65	80	32	16
331050680 AM	AMX	AMX	68	80	32	16
331050700 AM	AMX	AMX	70	80	32	16
331050720 AM	AMX	AMX	72	90	40	16
331050750 AM	AMX	AMX	75	90	40	16
331050780 AM	AMX	AMX	78	90	40	16
331050800 AM	AMX	AMX	80	90	40	20
331050820 AM	AMX	AMX	82	90	40	20
331050850 AM	AMX	AMX	85	90	40	20
331050880 AM	AMX	AMX	88	100	50	20
331050900 AM	AMX	AMX	90	100	50	20
331050920 AM	AMX	AMX	92	100	50	20
331050950 AM	AMX	AMX	95	100	50	20
331050980 AM	AMX	AMX	98	100	50	20
331051000 AM	AMX	AMX	100	100	50	20

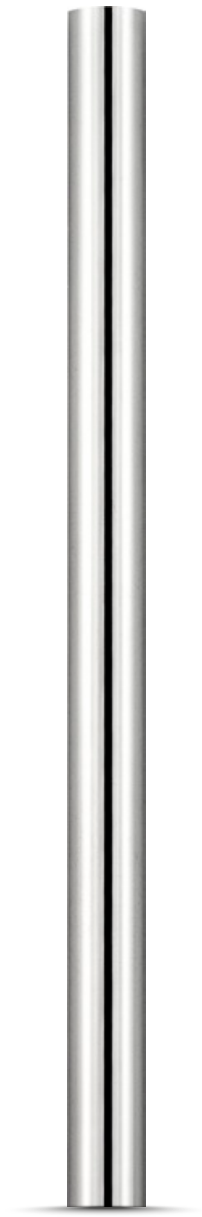


parametri tecnici a pag. / for technical parameters see page 121

Series
08105
Barrette tonde
Round toolbits

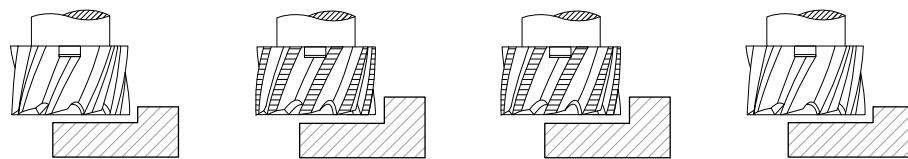


Cod. Art.	X-85 (PM Co 8.5%)	D h7	OAL
081050310	CM	3	100
081050410	CM	4	100
081050415	CM	4	150
081050420	CM	4	200
081050510	CM	5	100
081050515	CM	5	150
081050520	CM	5	200
081050610	CM	6	100
081050615	CM	6	150
081050620	CM	6	200
081050810	CM	8	100
081050815	CM	8	150
081050820	CM	8	200
081051010	CM	10	100
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 Skin Alu
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50	-	-	-
	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 Steel	Acciaio da stampi e utensili Tool and die Steel	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40	-	-	-
	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	-	-	-
Acciaio Inossidabile Stainless Steel	Duplex F51	-	-	-	-	-	5 - 10	-	-	-
	Super Duplex F55	-	-	-	-	-	5 - 10	-	-	-
	Alluminio non legato Unalloyed aluminium	-	-	-	-	-	-	90 - 100	110 - 120	250 - 260
Materiali non ferrosi - Leghe leggere Non ferrous materials - Light alloys	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
		-	-	-	-	-	-	-	-	-

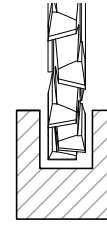
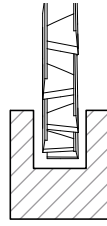
DC

Avanzamento fz mm/tagliente | FEED mm/tooth

	02105 - 02115 - 02110 NF- 02120 NF - 02110 NR - 02120 NR		
	ap = 0,10 ae = 0,750	ap = 0,150 - 0,250 ae = 0,750	ap = 0,10 ae = 0,750
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

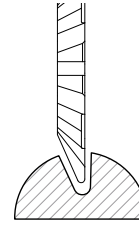
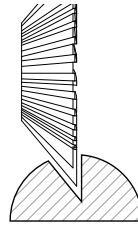
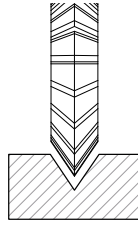
Parametri di taglio / Cutting parameters



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
Chiusa Close Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C Low Carbon content	30 - 35	70 - 80	30 - 35	70 - 80
Acciaio Steel	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

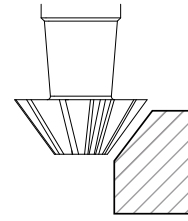
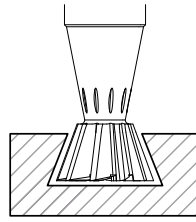
Parametri di taglio / *Cutting parameters*



Materiali <i>Materials</i>		Fresatura di forma <i>Form milling</i>		Fresatura di forma <i>Form milling</i>		Fresatura di forma <i>Form milling</i>	
Serie <i>Series</i>		06105		06110		06120	
Gruppo e descrizione <i>Group and description</i>		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
Dhisa <i>Cast Iron</i>	Grigia e sferoidale <i>Grey and spheroidal</i>	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C <i>Low Carbon content</i>	30 - 35	60 - 70	30 - 35	60 - 70	30 - 35	60 - 70
	Medio contenuto di C <i>Medium Carbon content</i>	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
Acciaio <i>Steel</i>	Basso legato <i>Low alloy</i>	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato <i>High alloy</i>	20 - 25	40 - 50	20 - 25	40 - 50	20 - 25	40 - 50
	Acciaio da stampi e utensili <i>Tool and die Steel</i>	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40

DC	Avanzamento fz mm/tagliente <i>FEED mm/tooth</i>		
	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

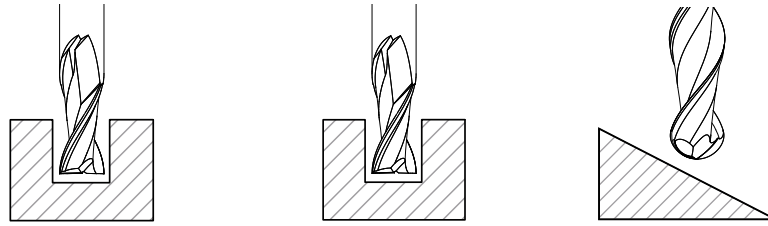


Materiali Materials		Fresatura di forma Form milling			Fresatura di forma Form milling	
Serie Series		06130			06145	
Gruppo e descrizione Group and description		Vc (m / min)			Vc (m / min)	
		M-TK NON RIVESTITA UNCOATED	X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin
Grisa Cast iron	Grigia e sferoidale Grey and spheroidal	20 - 25	20 - 25	45 - 50	20 - 25	45 - 50
	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
Acciaio Steel	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/tagliante 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*

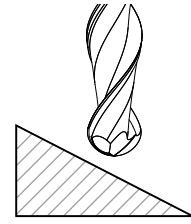
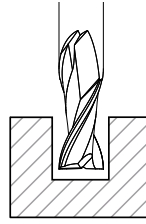
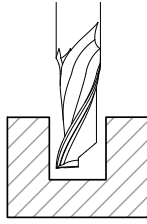


Materiali <i>Materials</i>		Cava <i>Slotting</i>		Cava <i>Slotting</i>		Copiatura <i>Profiling</i>	
Serie <i>Series</i>		10102 - 10105 10170*		10110 - 10125*		10140 - 10155*	
Gruppo e descrizione <i>Group and description</i>		Vc (m/min)		Vc (m/min)		Vc (m/min)	
		X-85 NON RIVESTITA UNCOATED	X-85 Skin Inox	X-85 NON RIVESTITA UNCOATED	X-85 Skin Inox	X-85 NON RIVESTITA UNCOATED	X-85 Skin Inox
Ghisa <i>Cast Iron</i>	Grigia e sferoidale <i>Grey and spheroidal</i>	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C <i>Low Carbon content</i>	30 - 35	60 - 70	30 - 35	60 - 70	30 - 35	60 - 70
Acciaio <i>Steel</i>	Medio contenuto di C <i>Medium Carbon content</i>	30 - 35	50 - 60	30 - 35	50 - 60	30 - 35	50 - 60
	Basso legato <i>Low alloy</i>	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato <i>High alloy</i>	20 - 30	40 - 50	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili <i>Tool and die Steel</i>	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40
Acciaio Inossidabile <i>Stainless Steel</i>	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
Superlega resistente al calore <i>Super Alloys</i>	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 / <i>Titanium alloys</i>	-	-	-	10 - 15	-	10 - 15

DC	Avanzamento fz mm/tagliente <i>FEED mm/tooth</i>		
	ap = 0,5 ϕ ae = 1 ϕ	ap = 0,5 ϕ ae = 1 ϕ	ap = 0,2 ϕ ae = 0,2 ϕ
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

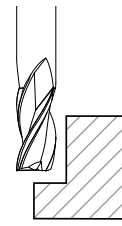
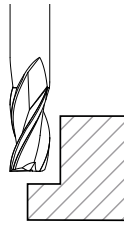


Materiali Materials	Cava Slotting		Cava Slotting		Copiatura Profiling	
Serie Series	11405		12105 - 12120*		12505 - 12520*	
Gruppo e descrizione Group and description	Vc (m /min)		Vc (m /min)		Vc (m /min)	
	X-85 NON RIVESTITA UNCOATED	X-85 SkinAlu	X-85 NON RIVESTITA UNCOATED	X-85 SkinAlu	X-85 NON RIVESTITA 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	250 - 260
	Alluminio Si < 6% si < 6% aluminium	70 - 80	170 - 180	70 - 80	170 - 180	170 - 180
	Materiali termoplastici Thermoplastic materials	-	-	130 - 140	270 - 280	270 - 280
	Rame/Ottone Copper/Brass	-	-	30 - 35	75 - 80	75 - 80

DC	Avanzamento fz mm/tagliente FEED mm/tooth				
	11405 - 12105 - 12120*				ap = 0,05Ø ae = 0,05Ø
	ap = 1Ø ae = 1Ø	ap = 0,5Ø ae = 0,5Ø	ap = 1,5Ø ae = 0,15Ø	ap = 1,5Ø ae = 0,1Ø	
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



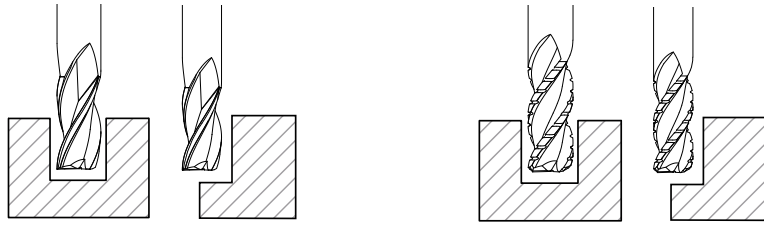
Materiali Materials		Contornatura Shouldering		Contornatura Shouldering	
Serie Series		14105 - 14120* - 14135**		14150 - 14155* 14160** - 14505	
Gruppo e descrizione Group and description		Vc (m / min)		Vc (m / min)	
		X-85 NON RIVESTITA UNCOATED	X-85 Skin Inox	X-85 NON RIVESTITA UNCOATED	X-85 Skin Inox
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C Low Carbon content	30 - 35	60 - 70	30 - 35	60 - 70
Acciaio Steel	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	-	-
Superlega 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

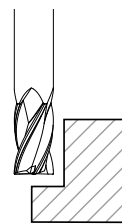
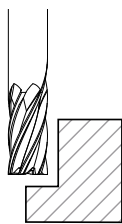


Materiali Materials	Contornatura Shouldering		Semifinitura Semi-finishing		
Serie Series	14805 - 14820* - 14850 - 14855*		15105 WF - 15120* WF		
Gruppo e descrizione Group and description	Vc (m/min)				
	X-85 NON RIVESTITA UNCOATED	X-85 Skin Alu	X-85 NON RIVESTITA UNCOATED	X-85 Skin Alu	
Materiali non ferrosi - Leghe leggere Non ferrous materials - Light alloys	Alluminio non legato Unalloyed aluminium	110 - 120	250 - 260	110 - 120	250 - 260
	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 = 1 ϕ ae = 1 ϕ	ap = 1,5 ϕ ae = 0,5 ϕ	ap = 1,5 ϕ ae = 0,15 ϕ	ap = 1 ϕ ae = 1 ϕ	ap = 1,5 ϕ ae = 0,5 ϕ
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 SkinInox
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C Low Carbon content	30 - 35	60 - 70	30 - 35	60 - 70
Acciaio Steel	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
Superlega 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

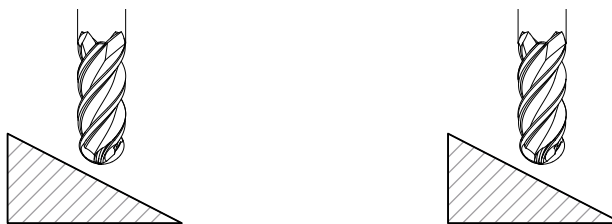
ap = 1,5Ø | ae = 0,15Ø

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, serie 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
	Basso contenuto di C Low Carbon content	30 - 35	60 - 70	30 - 35	60 - 70
Acciaio Steel	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 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

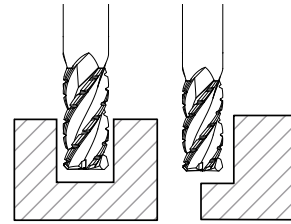
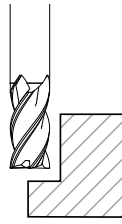
Avanzamento fz mm/tagliente | FEED mm/tooth

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



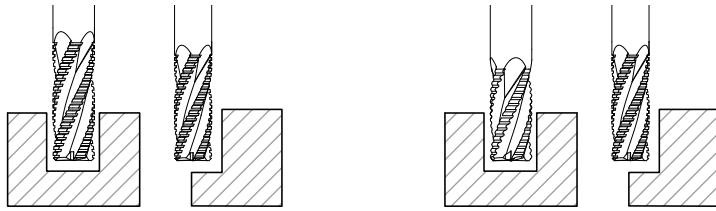
Materiali Materials		Contornatura Shouldering		Semifinitura Semi-finishing	
Serie Series		18105		19105 NF	
Gruppo e descrizione Group and description		Vc (m /min)		Vc (m /min)	
		X-85 NON RIVESTITA UNCOATED	X-85 Skin Inox	X-85 NON RIVESTITA UNCOATED	X-85 Skin Inox
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C Low Carbon content	30 - 35	60 - 70	30 - 35	60 - 70
Acciaio Steel	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	-	-
Superlega 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 Skin Inox	X-85 NON RIVESTITA UNCOATED	X-85 Skin Inox
Chiusa Close fin	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50
	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
Acciaio Steel	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
Superlega 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

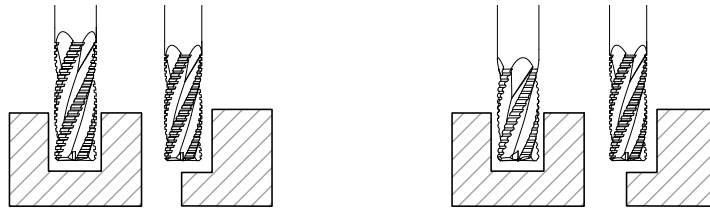
ap = 1,5Ø | ae = 1Ø
ap = 1,5Ø | ae = 0,5Ø

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

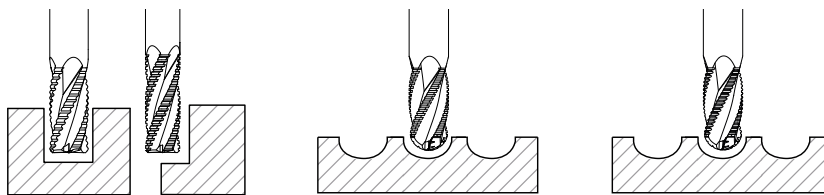


Materiali Materials		Semifinitura Semi-finishing		Sgrossatura Roughing	
Serie Series		21105 NF - 21120* NF 21150 NF - 21150 NR 21155* NF - 21155* NR		21105 NR 21120* NR	
Gruppo e descrizione Group and description		Vc (m /min)		Vc (m /min)	
		X-85 NON RIVESTITA UNCOATED	X-85 Skin	X-85 NON RIVESTITA UNCOATED	X-85 Skin Inox
Ghisa Cast Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C Low Carbon content	30 - 35	60 - 70	30 - 35	60 - 70
Acciaio Steel	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
Superalloy 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 Skin inox	X-85 NON RIVESTITA UNCOATED	X-85 Skin inox	X-85 NON RIVESTITA UNCOATED	X-85 Skin inox
Ghiaia Cast Iron	Grigia e sferoidale Grey and spheroidal	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C Low Carbon content	30 - 35	60 - 70	30 - 35	60 - 70	30 - 35	60 - 70
Acciaio Steel	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 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

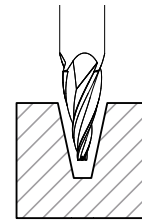
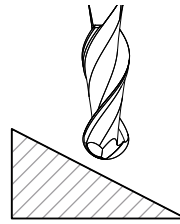
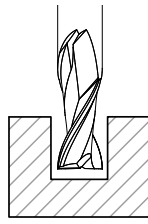
Avanzamento fz mm/tagliente | FEED mm/tooth

	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 <i>Materials</i>		Cava <i>Slotting</i>		Copiatura <i>Profiling</i>		Contornatura <i>Shouldering</i>	
Serie <i>Series</i>		24115		24120		25105	
Gruppo e descrizione <i>Group and description</i>		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 <i>Cast iron</i>	Grigia e sferoidale <i>Grey and spheroidal</i>	20 - 25	45 - 50	20 - 25	45 - 50	20 - 25	45 - 50
	Basso contenuto di C <i>Low Carbon content</i>	30 - 35	60 - 70	30 - 35	60 - 70	30 - 35	60 - 70
Acciaio <i>Steel</i>	Medio contenuto di C <i>Medium Carbon content</i>	30 - 35	50 - 60	30 - 35	50 - 60	30 - 35	50 - 60
	Basso legato <i>Low alloy</i>	25 - 30	50 - 60	25 - 30	50 - 60	25 - 30	50 - 60
	Alto legato <i>High alloy</i>	20 - 30	40 - 50	20 - 30	40 - 50	20 - 30	40 - 50
	Acciaio da stampi e utensili <i>Tool and die Steel</i>	15 - 20	30 - 40	15 - 20	30 - 40	15 - 20	30 - 40

DC	Avanzamento fz mm/tagliente <i>FEED mm/tooth</i>		
	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

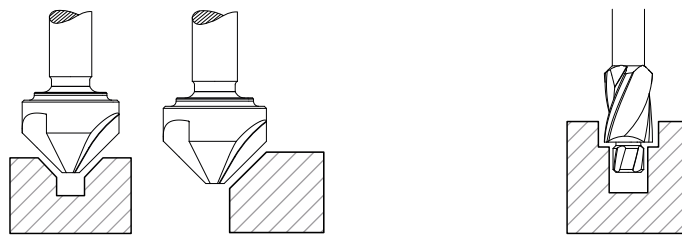


Materiali Materials		Cava laterale Side slotting			Cava "T" "T" slot		
Serie Series		27105			27120 - 27135 27150 - 27155		
Gruppo e descrizione Group and description		Vc (m / min)			Vc (m / min)		
		M-TK NON RIVESTITA UNCOATED	X-85 NON RIVESTITA UNCOATED	X-85 SkinInox	M-TK NON RIVESTITA UNCOATED	X-85 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
	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
Acciaio Steel	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/tagliante | 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 <i>Materials</i>	Svasatura <i>Countersink</i>	Fresatura sedi viti <i>Cornerboring</i>
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Serie
Series

27505

28105 - 28150

Gruppo e descrizione
Group and description

Vc (m/min)

Vc (m/min)

Ghisa
Cast Iron

Grigia e sferoidale
Grey and spheroidal

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

15 - 20

20 - 25

45 - 50

15 - 20

20 - 25

45 - 50

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

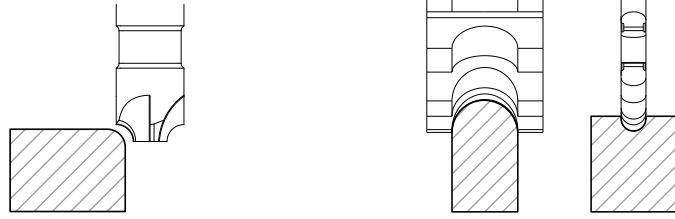
30 - 40

DC

Avanzamento fz mm/giro | *FEED mm/rev.*

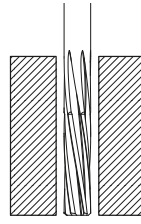
6	0,060	0,060
8	0,080	0,080
10	0,085	0,085
12	0,100	0,100
16	0,120	0,120
20	0,140	0,140
25	0,180	0,180
30	0,220	0,220
35	0,250	0,250
40	0,270	0,270
50	0,300	0,300

Parametri di taglio / *Cutting parameters*



Materiali <i>Materials</i>		Raccordatura <i>Corner rounding</i>			Fresatura di forma <i>Form milling</i>		
Serie <i>Series</i>		28505			29105 - 29110		
Gruppo e descrizione <i>Group and description</i>		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 <i>Cast Iron</i>	Grigia e sferoidale <i>Grey and spheroidal</i>	15 - 20	20 - 25	45 - 50	20 - 25	20 - 25	45 - 50
	Basso contenuto di C <i>Low Carbon content</i>	25 - 30	30 - 35	60 - 70	30 - 35	30 - 35	60 - 70
Acciaio <i>Steel</i>	Medio contenuto di C <i>Medium Carbon content</i>	25 - 30	30 - 35	50 - 60	30 - 35	30 - 35	50 - 60
	Basso legato <i>Low alloy</i>	20 - 25	25 - 30	50 - 60	25 - 30	25 - 30	50 - 60
	Alto legato <i>High alloy</i>	15 - 25	20 - 30	40 - 50	20 - 30	20 - 30	40 - 50
	Acciaio da stampi e utensili <i>Tool and die Steel</i>	10 - 15	15 - 20	30 - 40	15 - 20	15 - 20	30 - 40
PRFRAD		Avanzamento fz mm/giro <i>FEED mm/rev.</i>					
1 - 20		0,020 - 0,080					

Parametri di taglio / *Cutting parameters*



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

DC	Avanzamento fz mm/giro <i>FEED mm/rev.</i>
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





HSS-PM | CUTTING TOOLS



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