SILMAX

CATALOGO / CATALOG 2019

silmax.it

Silmax è certificata ISO 9001 dal 1996

Il certificato CISQ-ICIM no.0569/0 rilasciato il 16/07/1996 e successivamente rinnovato. ICIM certifica che il Sistema Qualità Silmax è conforme allo standard **(ISO 9001:2015)**.

Silmax is ISO 9001 certified since 1996

The CISQ-ICIM certificate No.0569/0 has been issued on 16/07/1996 and subsequently renewed. ICIM certifies that Silmax Quality System is in accordance with the standard norm **(ISO 9001:2015)**.

+500k

Utensili prodotti in 1 anno

Over 500K tools manufactured every year

45%

Prodotti standard

Standard products

55%

Prodotti speciali

Special products

HM/HSS

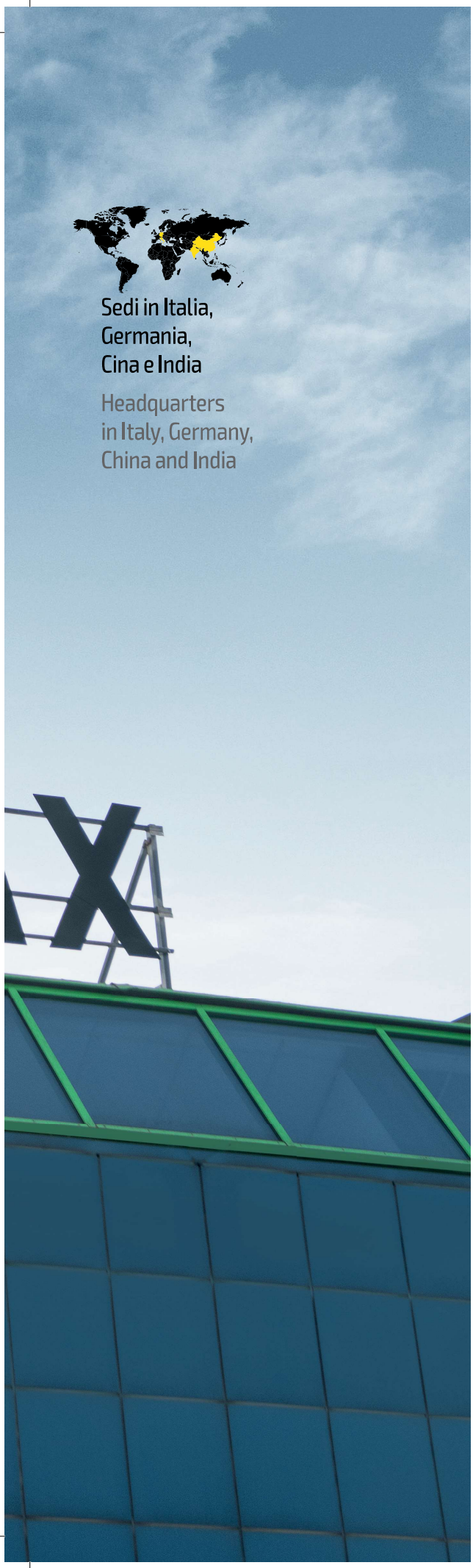
Utensili in HM e HSS standard e speciali

HM and HSS tools standard and special versions

100

Dipendenti

Employees



Azienda

Silmax, un'azienda dalle solide tradizioni italiane, è leader nella produzione di utensili da taglio sia in metallo duro che in acciaio super rapido. L'intero processo produttivo è svolto presso i nostri stabilimenti di Lanzo Torinese.

Qualità, innovazione, precisione e flessibilità sono da sempre i nostri punti di forza. Le nostre competenze sono riconosciute sia nei prodotti standard ma anche nella realizzazione di prodotti speciali per i quali proponiamo soluzioni personalizzate e tecnologicamente all'avanguardia, forti della nostra capacità innovativa e delle conoscenze maturate nel centro di ricerca e sviluppo.

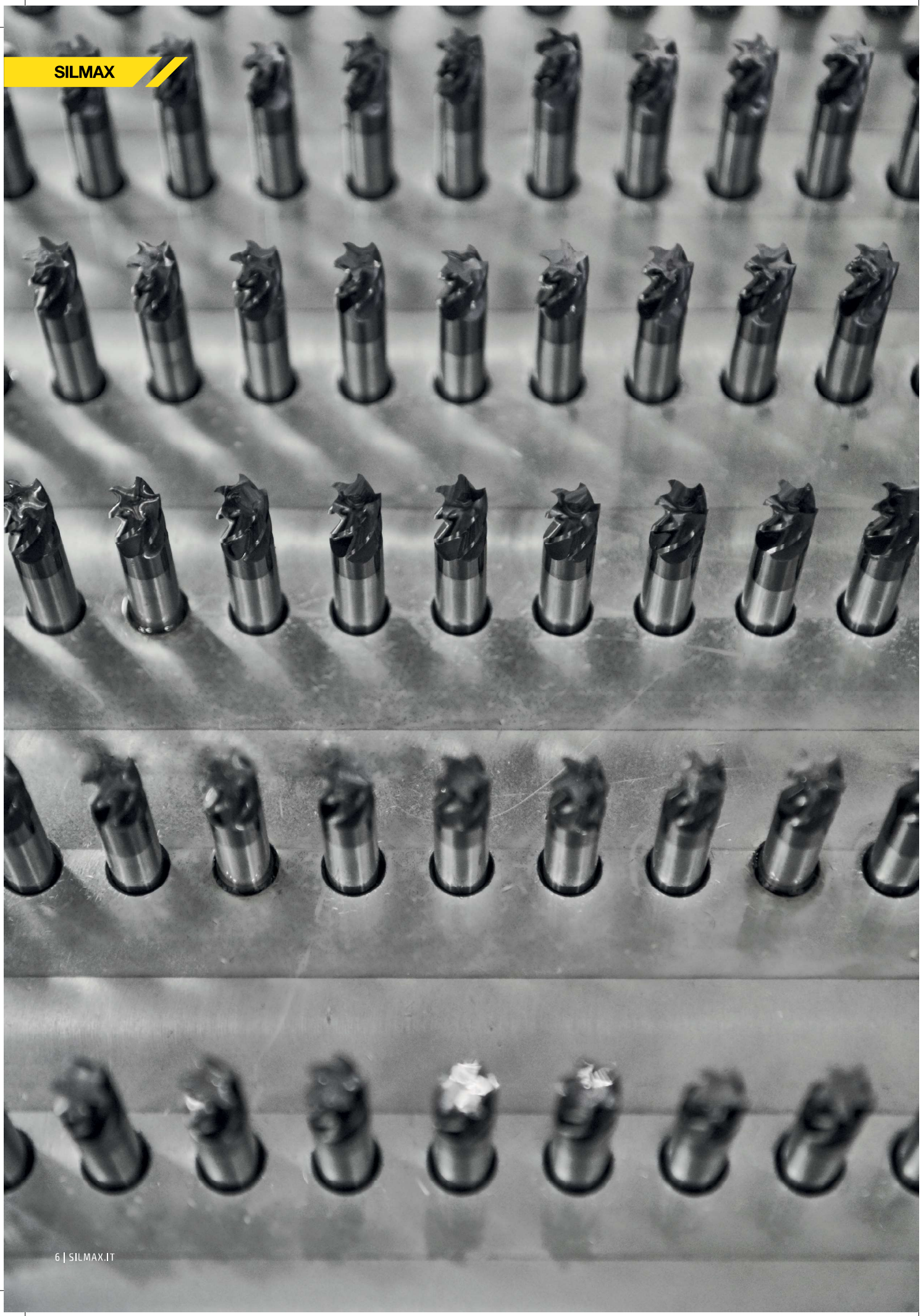
SilService è il nostro servizio per la rigenerazione (riaffilatura e ricopertura) degli utensili sia di nostra produzione che di terzi ai quali garantiamo un prodotto affidabile e performante come solo un produttore come noi può garantire.

Company

Silmax is a company with strong Italian traditions, leader in the production of carbide and high-speed steel cutting tools. The whole production process is carried out at our factory in Lanzo Torinese.

Quality, innovation, precision and flexibility have always been our strong points. Our abilities are recognized in standard products, but also in special tools, for which we propose customised and technologically advanced solutions, relying on our innovative capacity and on our know-how achieved in our Research & Development centre.

SilService is our reconditioning service (re-sharpening and re-coating) of tools of our production or manufactured by third parties, to whom we guarantee reliable and well-performing products.



Migliorare con nuovi prodotti
i processi produttivi dei clienti.

Improve the clients productive
processes with new products.

Incrementare
le performance.

Enhance
the performances.

Ridurre i costi e migliorare
la qualità dei prodotti.

Reduce the costs and
increase the products' quality.

Progettazione e ricerca

La progettazione di ogni prodotto ha come finalità principale la soddisfazione delle esigenze del cliente utilizzatore.

Silmax è dotata dei più avanzati simulatori grafici sviluppati per la progettazione di utensili di ultima tecnologia e di un'apposita architettura per la completa ingegnerizzazione del processo produttivo.

In questa fase di progettazione vengono definite tutte le caratteristiche geometriche dell'utensile, la tipologia di mole da utilizzare e i parametri di lavoro delle macchine affilatrici.

Centro ricerche

L'attività di Ricerca e Sviluppo in Silmax riveste un ruolo di fondamentale importanza consentendo all'azienda di essere tecnologicamente sempre all'avanguardia. Viene svolta in diversi ambiti:

1. **Ricerca di base**
   Relativa a lavori sperimentali e teorici finalizzati principalmente ad acquisire nuove conoscenze sui fenomeni del taglio dei materiali.

2. **Ricerca applicata**
   Relativa a lavori svolti al fine di acquisire nuove conoscenze su applicazioni pratiche degli utensili, sulle nuove geometrie, sui nuovi materiali e sulle nuove ricoperture.

3. **Sviluppo sperimentale**
   Si tratta di un lavoro sistematico, basato sulle conoscenze esistenti in Silmax, sulle conoscenze acquisite attraverso la ricerca e l'esperienza pratica, finalizzato a sviluppare o migliorare i nostri utensili.

Tali attività ci permettono di essere un partner di riferimento nella ricerca del miglioramento delle performance e dei processi dei nostri clienti. Sviluppiamo soluzioni in tutti i settori industriali, mettendo a disposizione del cliente le più aggiornate conoscenze e competenze nella tecnologia del taglio sia con utensili standard sia con utensili speciali.

Design and research

The design of each product principally aims at meeting the needs of end users.

Silmax is equipped with the most advanced graphic simulators – developed for designing tools based on the latest technology – and with a special architecture for the complete engineering of the production process.

In this designing phase, all geometrical characteristics of a tool are defined, as well as the type of grinding wheel to be used and the working parameters of sharpening machines.

R&D centre

Research and Development activity at Silmax plays a very important role, enabling our enterprise to be always technologically at the advanced. R&D activity is carried out at different levels:

1. **Basic research**
   Concerning experimental and theoretical activities, mostly aimed at acquiring new knowledge on the phenomena deriving from cutting materials.

2. **Applied research**
   Regarding activities aimed at acquiring new know-how on practical applications of tools, on new geometries, on new materials and on new coatings.

3. **Experimental development**
   It is a systematic activity, based on existing know-how and on knowledge available at Silmax and acquired through research and practical experience, aimed at developing and improving our tools.

These activities allow us to become a reference partner, when customers wish to improve their production performances and processes. We develop solutions for all industrial sectors, offering our customers our state-of-the art know-how and expertise in cutting technology, both for standard and special tools.

Utensili speciali

Silmax ha maturato, grazie ad un'esperienza pluridecennale, una forte propensione alla risoluzione di progetti complessi, realizzando, un'ampia gamma di utensili speciali, sia in metallo duro che in acciaio super rapido.

Lo sviluppo di un utensile speciale, utilizzando le conoscenze acquisite con le attività di Ricerca e Sviluppo, permette di realizzare un prodotto ottimizzato in termini di materiale di base, geometria dell'utensile, trattamento delle superfici e ricopertura PVD.

L'attività di consulenza svolta si concretizza nella preparazione di un'offerta inclusiva di disegni tecnici, indicazione dei parametri di taglio per un efficacie utilizzo dell'utensile e dei tempi di consegna che generalmente non superano le 3-4 settimane

Le nostre applicazioni sono utilizzate con grande soddisfazione in numerosi settori industriali: dall'energia all'aeronautico, alla meccanica di precisione, oleodinamica, ed in generale in tutte le lavorazioni con asportazione di truciolo.

Special tools

Thanks to its long-standing experience, Silmax developed a strong propensity to find solutions for complex projects, creating a wide range of special tools, both in carbide and in high-speed steel, studying the technical drawing and proceeding with the analysis of the specific application.

The development of a special tool by using the know-how acquired through the R&D activities allows the manufacture of a product that is optimised with regard to raw material, tool geometry, surface treatment and PVD coating.

Our consulting activity focuses on the preparation of an exclusive offer including technical drawings, indication of cutting parameters for an effective use of tools. Lead-time usually does not exceed 3-4 weeks.

Our tool applications are successfully used in many industrial sectors: energy, aerospace, precision mechanics, oil-hydraulics and, in general, for all types of machining requiring chip removal.

Rivestimento

Silmax, forte dell'esperienza maturata con la trentennale partnership con Balzer Oerlikon, ha realizzato nel 2013 presso la sede di Lanzo Torinese uno stabilimento dedicato alla ricopertura (in) PVD, con un impianto di INGENIA che utilizza la tecnologia Balzers Oerlikon ed un sistema di lavaggio ad ultrasuoni robotizzato, in conformità alle richieste tecniche della Balzers Oerlikon.

Preparazione delle superfici

Silmax si è dotata di una linea di lavaggio completamente automatizzata, secondo gli standard imposti dalla casa madre Balzers Oerlikon, che comprende due vasche di lavaggio ad ultrasuoni, una vasca di risciacquo osmotico ed un impianto di asciugatura. Dopo il ciclo di lavaggio gli utensili sono pronti per passare alla successiva fase del rivestimento.

Processo di rivestimento

Silmax si è affidata alla tecnologia sviluppata dalla Oerlikon Balzers, utilizzando l'impianto INGENIA di ultima generazione, con cui è in grado di produrre la maggior parte dei rivestimenti PVD Balinit.

L'impianto si caratterizza per le sue doti:

+ **di velocità**, con cariche rapide, da 3 a 4 ore, che permettono fino a 5 cariche al giorno di rivestimenti;
+ **di precisione**, con una inarrivabile precisione nel controllo dello spessore del rivestimento e dell'adesione del rivestimento;
+ **di flessibilità**, per quanto riguarda il cambio dei rivestimenti e dei processi.

Controllo qualità

Per garantire la massima qualità e rendimento dei rivestimenti, Silmax applica al proprio interno, tutte le procedure di qualità seguite nei centri di rivestimento Balzers.

All'interno dell'impianto, in ogni carica di rivestimento, vengono inseriti dei campioni che sono successivamente sottoposti ad un controllo per verificare la corretta adesione del rivestimento al substrato tramite indentazione ed il corretto spessore del rivestimento usando il Calotest e il microscopio.

Coating

Relying on the experience gained during its thirty-year partnership with Balzer Oerlikon, in 2013 Silmax opened a new factory dedicated to PVD coating in its premises of Lanzo Torinese, with an INGENIA plant using Balzers Oerlikon technology and a robotised, ultrasound, washing system, in accordance with the technical requirements of Balzers Oerlikon.

Surface preparation

Silmax is provided with a fully automated cleaning line, according to the standards imposed by the parent company Balzers Oerlikon, which includes two ultrasound, washing vats; one osmotic, rinsing vat and one drying system. After the cleaning cycle, tools are ready for the second step of the coating process.

Coating process

Silmax relies on the technology developed by Oerlikon Balzers, using a state-of-the art INGENIA system, with which it can produce the most part of PVD Balinit coatings.

This systems stands out for its characteristics of:

+ **speed:** quick loads, from 3 to 4 hours, enabling up to 5 coating loads a day;
+ **precision:** extraordinary precision in checking thickness and coating adhesion;
+ **flexibility**, with regard to the change of coatings and processes.

Quality control

To ensure the highest quality and performances of its internal coatings, Silmax applies all quality procedures followed in the Balzers coating centres.

In each coating load, some samples are introduced into the system and then checked, in order to verify the perfect adhesion of the coating to the underlayer by indentation, as well as the correct coating thickness by Calotest and a microscope.

SIL SERVICE

Silmax, consapevole della fondamentale importanza di offrire un servizio post vendita di qualità e di affidabilità, propone, già da diversi anni, alla propria Clientela, **Silservice** un servizio di rigenerazione di utensili che include la riaffilatura, la ricopertura e lo speciale trattamento 4S di propria concezione per la super finitura della superficie del filo tagliente degli utensili

L'utilizzo di macchine affilatrici CNC di ultima generazione, di sistemi di misurazione micrometrica, di un proprio impianto di ricopertura PVD, unitamente ad una comprovata esperienza nel trattamento di utensili da taglio permettono a Silmax di garantire elevata qualità ed estrema rapidità nei tempi di esecuzione.

Silmax, being aware of the importance of proposing a reliable and high-quality after-sale service, for several years has been offering its Customers **Silservice**, a service of tool reconditioning, including re-sharpening, recoating and the special 4S treatment, specially conceived by Silmax itself for a super-finishing of tool surface and cutting-edge.

The use of CNC sharpening machines of the latest generation of micrometric measuring systems, of the company-owned PVD-coating plant, along with proven experience in cutting-tool treatments enable Silmax to guarantee top quality and high speed of execution.

Riaffilatura e rigenerazione

Riaffilatura e rigenerazione di frese, punte e alesatori nelle versioni normali e speciali utilizzando gli stessi impianti a 5 assi usati per la loro produzione.

Esecuzione perfetta

Esecuzione perfetta con garanzia del produttore e collaudo effettuato su strumenti di controllo di alta precisione Zoller Genius e Walter Helicheck con emissione di certificato su richiesta.

Rivestimento PVD

Rivestimento PVD eseguito nel nostro centro di rivestimento interno in Lanzo Torinese con la tecnologia Balzers sia per HSS che HM come Alcrona, Futura, Alnova, Latuma e TiN.

Trattamento 4S

Trattamento 4S di super finitura superficiale del filo tagliente pre e post rivestimento, eseguito con impianto OTEC e verificato con strumento di misura Alicona.

Consegna rapida

Consegna rapida entro **10 giorni lavorativi** dal ricevimento degli utensili.

Re-sharpening and re-conditioning

Re-sharpening and re-conditioning of end mills, drills and reamers in standard and special versions are carried out on the same 5-axis plants used for their production.

Perfect execution

A perfect execution with the manufacturer's warranty and testing carried out with high-precision measurement instruments of Zoller Genius and Walter Helicheck, with issuing of certificate on request.

PVD Coating

PVD coating in our in-house coating centre in Lanzo Torinese is carried out using Balzers technology, such as Alcrona, Futura, Alnova, Latuma e TiN, both for HSS and HM tools.

4S Treatment

4S super-finishing surface treatment of cutting edge before and after the coating process, is carried out using an OTEC system and checked with an Alicona measuring instrument.

Fast delivery

Fast delivery within **10 working days** from receipt of tools.

Opzioni a richiesta

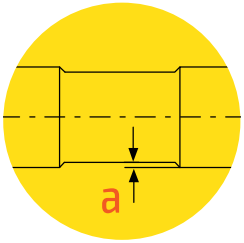
Silmax studia, sviluppa e produce un'ampia gamma di utensili speciali sia in metallo duro sia in acciaio super rapido sia su richiesta del cliente sia su specifico design.

Risulta inoltre possibile ottimizzare gli utensili standard a catalogo secondo le esigenze del cliente, assicurando una soluzione qualitativamente superiore. Le diverse opzioni disponibili a richiesta sono:

Options upon request

Silmax studies, develops and produces a wide range of special tools, both in carbide and high-speed steel, upon customer's request or made to customer's design.

In addition, it is possible to adapt standard tools available in our catalogue according to the customer's requirements, thus ensuring a higher-quality solution. The different options available upon request are:

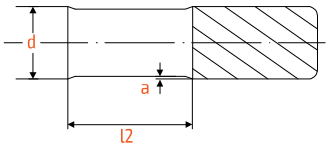


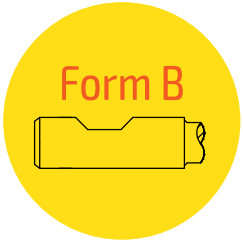
Ribassamento dopo il tagliente

Realizziamo ribassamenti tra la parte tagliente e il codolo.

Neck relief

It is possible to have a diameter reduction between the cutting edge and the shank.



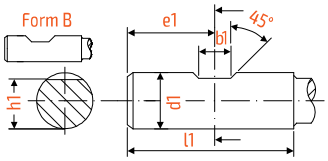


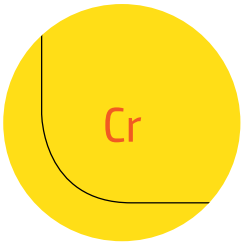
Attacco Weldon

A richiesta è possibile eseguire attacco Weldon.

Weldon Shank (DIN)

Weldon shank upon request.



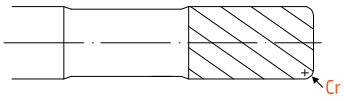


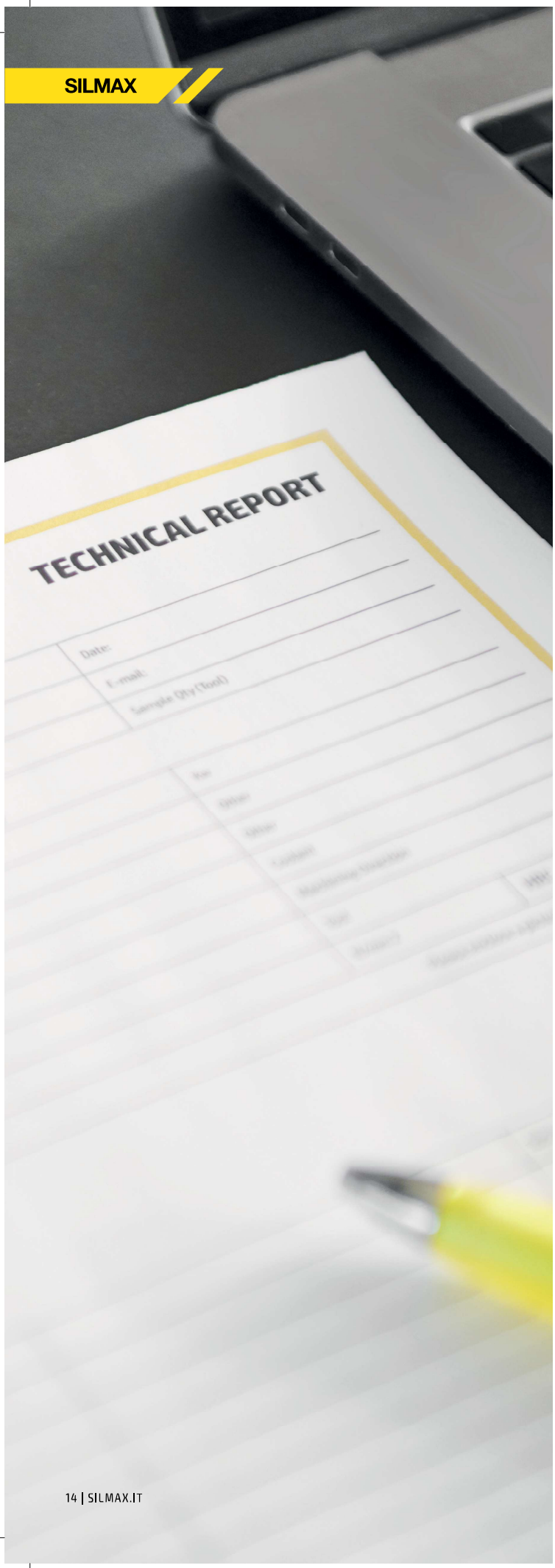
Raggi di raccordo

Si eseguono su richiesta anche raggi diversi dallo standard presentati a catalogo.

Corner radiuses

It is possible to have corner radiuses different from the standard ones shown in the catalogue.





Assistenza tecnica

Il reparto di Assistenza Tecnica, uno dei punti di forza di Silmax, è costantemente al servizio del cliente. Ingegneri altamente qualificati sono in grado di offrire una consulenza personalizzata, dopo aver analizzato le esigenze e le problematiche di lavorazione del cliente, fornendo le migliori strategie di utilizzo degli utensili Silmax.

Modulo di richiesta Informazioni

Per rispondere meglio alle vostre richieste è stato predisposto un modulo tecnico di richiesta informazioni, che può essere facilmente scaricato dal sito Web (www.silmax.it) ed inviato all' Assistenza Tecnica.

Technical assistance

The Department of Technical Assistance is one of the strong points at Silmax and it is always at the customer's disposal. Highly qualified engineers are able to offer customized consulting, after analysing the customer's needs and machining problems, providing the best strategies of use for Silmax tools.

Information application form

To better reply to your requests, we have produced a technical form for information inquiry, which can be downloaded from the website (www.silmax.it) and forwarded to the Technical Assistance Department.

Tel. +39.0123.940349
assistenza@silmax.it
silmax.it/assistance

Rivestimenti / Coatings

Tipologie / Types

	Balinit® Futura Nano	Balinit® Alcrona Pro	Balinit® Latuma	X-Hard	Balinit® Alnova	Diamond	AluSpeed® by Cemecon	Balinit® X-Pro
	HMF	HMG/NIG	HMC	HMH	HMY	HMD	HMA	HMX
Composizione chimica Chemical Composition	TiAlN	AlCrN	AlTiN	TiSiN	AlCrN	Diamond	TiB_2	AlCrN
Durezza (HV05) Hardness (HV05)	3300	3200	3300	3600	3200	8000-10000	3000	3200
Spessore (µm) Thickness (µm)	1-4	2-4	1-4	2-4	2-4	6-12	2-4	2-4
Temperatura massima di servizio (°C) Max. Service temperature (°C)	900	1200	900	1200	1200	600	800	1200
Applicazione Application	UNV	HPC UNV	HRC TIS	HRC	TIS	CMP	ALU	PHM

Lavorazioni / Machining

	Balinit® Futura Nano	Balinit® Alcrona Pro	Balinit® Latuma	X-Hard	Balinit® Alnova	Diamond	AluSpeed® by Cemecon	Balinit® X-Pro
	HMF	HMG/NIG	HMC	HMH	HMY	HMD	HMA	HMX
Acciaio Steel	● ●	● ● ●	● ● ●	● ●	●	-	-	● ● ●
Acciaio Temprato Hardened Steel	-	●	● ● ● <=58HRC	● ● ● >58HRC	-	-	-	● ●
Acciaio Inossidabile Stainless Steel	-	● ●	● ● ●	-	● ●	-	-	● ● ●
Superleghe Superalloys	●	●	● ●	-	● ● ●	-	-	● ●
Alluminio e leghe Aluminium & Alloys	-	●	-	-	-	● ●	● ● ●	● ●
Resina termoplastica Thermoplastics	●	●	●	-	-	● ● ●	● ●	● ●

Guida alla lettura / Reading guide

Macrofamiglia
Macrofamily

Tipo utensile
Tool type

Tipo lavorazione
Type of machining

SILMAX Carbide Frese / End Mills

Alu Smart Line

700/701

Parametri di lavoro / Working Parameters

Velocità di taglio
Cutting Speed

Diametro fresa
Tool diameter

Dettaglio parametri
Parameters detail

Materiale lavorato
Machining material

Materiale Material	Diametro Diameter	1,00 D, 0,25 D			0,20 D, 1,50 D		
Alluminio e leghe Aluminium & Alloys	m/min	Vc=600			Vc=700		
	D mm	fz mm/z	r mm/min	n rpm	fz mm/z	r mm/min	n rpm
	2,0	0,012	1146	95493	0,012	1337	111408
	3,0	0,018	1146	63662	0,018	1337	74272
	4,0	0,024	1146	47746	0,024	1337	55704
	5,0	0,050	1910	38197	0,050	2228	44563
	6,0	0,065	2069	31831	0,065	2414	37136
	8,0	0,094	2244	23873	0,094	2618	27852
	10,0	0,116	2215	19099	0,116	2585	22282
	12,0	0,134	2133	15915	0,134	2488	18568
	14,0	0,145	1978	13642	0,145	2308	15915
	16,0	0,163	1946	11937	0,163	2270	13926
	20,0	0,185	1767	9549	0,185	2061	11141
Rame e leghe Copper & Alloys	m/min	Vc=380			Vc=500		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,012	726	60479	0,012	955	79577
	3,0	0,018	726	40319	0,018	955	53052
	4,0	0,024	726	30239	0,024	955	39789
	5,0	0,050	1210	24192	0,050	1592	31831
	6,0	0,065	1310	20160	0,065	1724	26526
	8,0	0,094	1421	15120	0,094	1870	19894
	10,0	0,116	1403	12096	0,116	1846	15915
	12,0	0,134	1351	10080	0,134	1777	13263
	14,0	0,145	1253	8640	0,145	1648	11368
	16,0	0,163	1232	7560	0,163	1621	9947
	20,0	0,185	1119	6048	0,185	1472	7958
Resina termoplastica Thermoplastics	m/min	Vc=450			Vc=600		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,012	859	71620	0,012	1146	95493
	3,0	0,018	859	47746	0,018	1146	63662
	4,0	0,024	859	35810	0,024	1146	47746
	5,0	0,050	1432	28648	0,050	1910	38197
	6,0	0,065	1552	23873	0,065	2069	31831
	8,0	0,094	1683	17905	0,094	2244	23873
	10,0	0,116	1662	14324	0,116	2215	19099
	12,0	0,134	1600	11937	0,134	2133	15915
	14,0	0,145	1484	10231	0,145	1978	13642
	16,0	0,163	1459	8952	0,163	1946	11937
	20,0	0,185	1325	7162	0,185	1767	9549

Notes

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Famiglia
Family

Descrizione utensile
Tool description

Serie
Series

Disegno
Drawing

Linea
Line

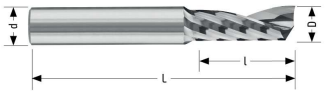
Leghe Leggere
Light Alloys

ALU

→ 141

700

Fresa monotagliente elica Dx, taglio Dx
Monolith cutter, right hand helix, right cut



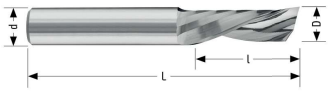
Silmax NORM | λ 25° DX | 6

90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated	AluSpeed®
2,0	2	40	10,0	1	HM0700020	HMA700020
3,0	3	40	12,0	1	HM0700030	HMA700030
4,0	4	40	15,0	1	HM0700040	HMA700040
5,0	5	50	16,0	1	HM0700050	HMA700050
6,0	6	60	20,0	1	HM0700060	HMA700060
8,0	8	63	22,0	1	HM0700080	HMA700080
10,0	10	72	25,0	1	HM0700100	HMA700100
12,0	12	83	30,0	1	HM0700120	HMA700120
14,0	14	83	30,0	1	HM0700140	HMA700140
16,0	16	92	35,0	1	HM0700160	HMA700160
20,0	20	104	40,0	1	HM0700200	HMA700200

701

Fresa monotagliente elica Sx, taglio Dx
Monolith cutter, left hand helix, right cut



Silmax NORM | λ 25° SX | 6

90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated	AluSpeed®
2,0	2	40	10,0	1	HM0701020	HMA701020
3,0	3	40	12,0	1	HM0701030	HMA701030
4,0	4	40	15,0	1	HM0701040	HMA701040
5,0	5	50	16,0	1	HM0701050	HMA701050
6,0	6	60	20,0	1	HM0701060	HMA701060
8,0	8	63	22,0	1	HM0701080	HMA701080
10,0	10	72	25,0	1	HM0701100	HMA701100
12,0	12	83	30,0	1	HM0701120	HMA701120
14,0	14	83	30,0	1	HM0701140	HMA701140
16,0	16	92	35,0	1	HM0701160	HMA701160
20,0	20	104	40,0	1	HM0701200	HMA701200

1	2	3	4	5	6	7	8	9	→ 16	→ 18
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Guida alla lettura Reading guide	Legenda Legend

CATALOGO/CATALOG | 141

Caratteristiche tecniche
Technical features

Materiali
Materials

Rivestimenti
Coatings

Codice articolo
Article code

Indice linee
Index of the lines

Tipo frontale
Profile type

Legenda materiali
Materials legend

Legenda / Legend

Numero di taglienti / Number of flutes

1 tagliente

Vano grande per il truciolo.

Buoni risultati nella profilatura.

Usato anche per foratura assiale nelle leghe di alluminio e in materiali con trucioli lunghi.

1 flute

Large chip room.

Good results in profiling.

Used for axial drilling in aluminium alloys and materials with long chips.

2 taglienti

Vano grande per il truciolo e piccolo diametro del nucleo.

Buoni risultati nella sgrossatura e nella fresatura di cave.

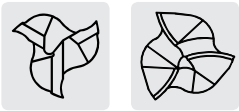
Usato anche per foratura assiale nelle leghe di alluminio e in materiali con trucioli lunghi.

2 flutes

Large chip room and small core diameter.

Good results in roughing and in slot milling.

Also used for plunging and drilling in aluminium alloys and materials with long chips.



3 taglienti

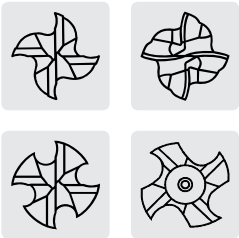
La fresa universale.

Ottima scelta per fresatura di cave.

3 flutes

The most universal milling tool.

Excellent choice for slot milling.



4 taglienti

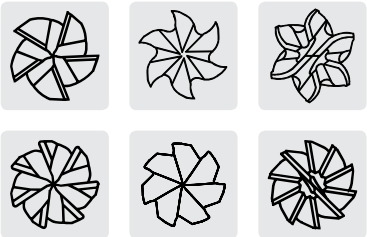
Geometria universale, impiegata per fresatura laterale e frontale e fresatura periferica.

Elevata rigidità dell'utensile dovuta al grande diametro del nucleo.

4 flutes

Universal geometry, used for side and face milling and peripheral milling.

High tool rigidity due to the large core diameter.



Multitagliente

Principalmente per finitura – buona finitura di superficie.

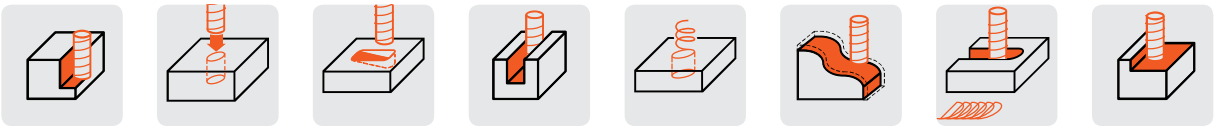
Permette un'elevata velocità di avanzamento.

Multi-flutes

Mainly for finishing - good surface finish. It allows a high feed rate.

Soft cut because there is always a flute in the workpiece material.

Tipologia di lavorazione / Type of machining



Fresatura laterale e frontale
Side and face milling

Penetrazione assiale
Plunging

Fresatura in rampa
Diagonal plunging

Fresatura di cava
Slotting

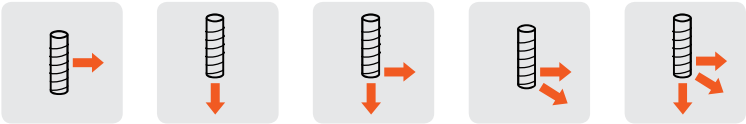
Interpolazione elicoidale
Helical interpolation

Copiatura 3D
3D Copy milling

Fresatura trocoidale
Trochoidal milling

Spianatura
Face milling

Direzioni di avanzamento / Feed direction



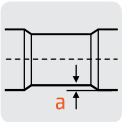
Materiali di base / Raw material

HSS PmCo

HSS Co8

HSSE

Ribassamento / Neck relief



Profili rompitruciolo / Chipbreaker profiles

HR X Fine

NRF F Form

NRB B Form

HN40

HPC SIL F2000

WF Alu Form

Flat Form

Geometria frontale / Profile geometry

Materiali / Materials

1 Acciaio
Steel

2 Ghise
Cast iron

3 Acciai Temprati
Hardened Steels

4 Acciaio Inox
Stainless Steel

5 Titanio
Titanium

6 Leghe Leggere
Light Alloys

7 PH Duplex

8 Superleghe
Superalloys

9 Compositi
Composite

Carbide

FRESE / END MILLS

UNV Universali Universal Line

Codice Code	Ø (D mm)	Z	Cava Slotting	Contornitura Side and face milling	Copiatura 3D 3D Copy	Trocoidale Trochoidal	Assiale Plunging	Rampa Diagonal plunging
107	2,0 ÷ 12,0	2	●	-	-	-	●	●
731	2,0 ÷ 20,0	2	●	-	-	-	●	●
172	1,0 ÷ 5,0	2	●	●	-	-	●	●
171	1,0 ÷ 20,0	2	●	●	-	-	●	●
173	3,0 ÷ 16,0	2	●	●	-	-	●	●
176	4,0 ÷ 16,0	2	●	●	-	-	●	●
121	0,5 ÷ 3,0	2	●	●	-	-	-	-
122	0,5 ÷ 3,0	2	-	-	●	-	-	-
737	0,1 ÷ 20,0	2	-	-	●	-	-	-
737R	1,0 ÷ 3,0	2	-	-	●	-	-	-
747	4,0 ÷ 16,0	2	-	-	●	-	-	-
108	2,0 ÷ 12,0	3	●	●	-	-	-	●
114	1,0 ÷ 5,0	3	●	●	-	-	-	●
111	0,6 ÷ 20,0	3	●	●	-	-	-	●
109	2,0 ÷ 12,0	4	-	●	-	-	-	-
116	2,0 ÷ 5,0	4	-	●	-	-	-	-
113	2,0 ÷ 25,0	4	-	●	-	-	-	-
123	3,0 ÷ 16,0	4	-	●	-	-	-	-
126	4,0 ÷ 16,0	4	-	●	-	-	-	-
131	1,0 ÷ 20,0	4	-	-	●	-	-	-
130	6,0 ÷ 20,0	4	-	-	●	-	-	-
106	6,0 ÷ 25,0	6/8	-	●	-	●	-	-
013F	4,0 ÷ 20,0	4	-	●	-	-	-	-

Acciaio Steel 1	Ghise Cast iron 2	Acciai Temprati Hardened steels 3	Acciaio Inox Stainless steel 4	Titanio Titanium 5	Leghe Leggere Light Alloys 6	PH Duplex 7	Superleghe Superalloys 8	Compositi Composite Materials 9	Pagina Page 31
●	●	-	●	-	-	-	-	-	34
●	●	-	●	-	-	-	-	-	35
●	●	-	●	-	-	-	-	-	36
●	●	-	●	-	-	-	-	-	37
●	●	-	●	-	-	-	-	-	38
●	●	-	●	-	-	-	-	-	38
●	●	-	●	-	-	-	-	-	39
●	●	-	●	-	-	-	-	-	39
●	●	-	●	-	-	-	-	-	40
●	●	-	●	-	-	-	-	-	41
●	●	-	●	-	-	-	-	-	41
●	●	-	●	-	-	-	-	-	42
●	●	-	●	-	-	-	-	-	42
●	●	-	●	-	-	-	-	-	43
●	●	-	●	-	-	-	-	-	44
●	●	-	●	-	-	-	-	-	44
●	●	-	●	-	-	-	-	-	45
●	●	-	●	-	-	-	-	-	46
●	●	-	●	-	-	-	-	-	46
●	●	-	●	-	-	-	-	-	47
●	●	-	●	-	-	-	-	-	47
●	●	-	●	-	-	-	-	-	48
●	●	-	-	-	-	-	-	-	49

HPC Alto Rendimento / High Performance

Codice / Code	Ø (D mm)	Z	Cava / Slotting	Contornitura / Side and face milling	Copiatura 3D / 3D Copy	Trocoidale / Trocholdal	Assiale / Plunging	Rampa / Diagonal plunging
113EV	3,0 ÷ 20,0	4	●	●	-	●	-	●
113EVR	4,0 ÷ 16,0	4	●	●	-	●	-	●
013EV	3,0 ÷ 20,0	4	●	●	-	-	-	●
013EVK	6,0 ÷ 12,0	4	●	●	-	-	-	●
013EVR	6,0 ÷ 16,0	4	●	●	-	-	-	●
NEW 158	3,0 ÷ 16,0	4	●	●	-	●	-	●
151	2,0 ÷ 20,0	3	●	●	-	-	●	●
152	4,0 ÷ 20,0	4	●	●	-	-	-	-
193	4,0 ÷ 16,0	4/5	-	●	-	●	-	-
196	4,0 ÷ 16,0	4/5/7	-	●	-	●	-	-
155	6,0 ÷ 20,0	6	-	●	-	-	-	-

HRC Stampi / Molds

Codice / Code	Ø (D mm)	Z	Cava / Slotting	Contornitura / Side and face milling	Copiatura 3D / 3D Copy	Trocoidale / Trocholdal	Assiale / Plunging	Rampa / Diagonal plunging
08W	3,0 ÷ 12,0	4	-	-	●	-	-	●
09W	3,0 ÷ 12,0	4	-	-	●	-	-	●
142	2,0 ÷ 16,0	4/6	-	●	●	-	-	●
144	2,0 ÷ 16,0	4/6	-	●	●	-	-	●
143	3,0 ÷ 16,0	6	-	●	-	●	-	-
145	6,0 ÷ 20,0	6	-	●	-	●	-	-
043	6,0 ÷ 20,0	4	●	●	-	●	-	●
NEW 725	3,0 ÷ 12,0	2	-	-	●	-	-	-
NEW 726	3,0 ÷ 12,0	2	-	-	●	-	-	-
727	1,0 ÷ 20,0	2	-	-	●	-	-	-
729	3,0 ÷ 20,0	2	-	-	●	-	-	-

Acciaio Steel	Ghise Cast iron	Acciai Temprati Hardened steels	Acciaio Inox Stainless steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Pagina Page
1	2	3	4	5	6	7	8	9	53
●	●	-	●	-	-	●	●	-	56
●	●	-	●	-	-	●	●	-	57
●	●	-	●	●	-	●	-	-	58
●	●	-	●	●	-	●	-	-	58
●	●	-	●	●	-	●	-	-	59
●	●	-	●	●	-	●	-	-	65
●	●	-	-	-	-	-	-	-	67
●	●	-	-	-	-	-	-	-	69
●	●	-	-	-	-	-	-	-	71
●	●	-	-	-	-	-	-	-	71
●	●	-	-	-	-	-	-	-	73
1	2	3	4	5	6	7	8	9	75
●	●	●	-	-	-	-	-	-	79
●	●	●	-	-	-	-	-	-	79
●	●	●	-	-	-	-	-	-	81
●	●	●	-	-	-	-	-	-	81
●	●	●	-	-	-	-	-	-	83
●	●	●	-	-	-	-	-	-	83
-	-	●	-	-	-	-	-	-	85
●	●	●	-	-	-	-	-	-	87
●	●	●	-	-	-	-	-	-	87
●	●	●	-	-	-	-	-	-	89
●	●	●	-	-	-	-	-	-	89

HRC Stampi / Molds

	Codice / Code	Ø (D mm)	Z	Cava / Slotting	Contornitura / Side and face milling	Copiatura 3D / 3D Copy	Trocoidale / Trochoidal	Assiale / Plunging	Rampa / Diagonal plunging
	149	3,0 ÷ 12,0	3	-	-	●	-	-	-
	147	6,0 ÷ 16,0	4	-	-	●	-	-	-
	191	1,0 ÷ 12,0	2	-	●	●	-	-	-
	190	1,0 ÷ 12,0	2	-	-	●	-	-	-
	192	1,0 ÷ 12,0	2	-	-	●	-	-	-
	721	0,2 ÷ 3,0	2	●	-	●	-	-	-
NEW	621	0,5 ÷ 3,0	2	●	-	●	-	-	-
NEW	521	0,5 ÷ 3,0	2	●	-	●	-	-	-
	722	0,2 ÷ 3,0	2	●	-	●	-	-	-
NEW	622	0,5 ÷ 3,0	2	●	-	●	-	-	-
NEW	522	0,5 ÷ 3,0	2	●	-	●	-	-	-
	724	1,5 ÷ 4,0	4	●	-	●	-	-	-

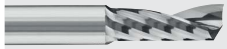
TIS Titainox e Superleghe / Titainox and Superalloys

	Codice / Code	Ø (D mm)	Z	Cava / Slotting	Contornitura / Side and face milling	Copiatura 3D / 3D Copy	Trocoidale / Trochoidal	Assiale / Plunging	Rampa / Diagonal plunging
	183	2,0 ÷ 20,0	3	●	●	-	●	●	●
	184	3,0 ÷ 25,0	4	●	●	-	●	-	●
	284	6,0 ÷ 25,0	4	●	●	-	●	-	●
	185	6,0 ÷ 20,0	5	●	●	-	●	-	●
	195	4,0 ÷ 16,0	4/5	-	●	-	●	-	-
	197	4,0 ÷ 16,0	4/5	-	●	-	●	-	-
	118	4,0 ÷ 20,0	4	●	●	-	-	-	●
	119	4,0 ÷ 20,0	4	●	●	-	-	-	●
	737	3,0 ÷ 16,0	2	-	-	●	-	-	-
	737R	1,0 ÷ 3,0	2	-	-	●	-	-	-
NEW	133	3,0 ÷ 12,0	4	-	-	●	-	-	-
NEW	154	6,0 ÷ 16,0	5	●	●	-	●	-	●
NEW	157	12,0 ÷ 16,0		-	●	-	●	-	●

Acciaio Steel	Ghise Cast iron	Acciai Temprati Hardened steels	Acciaio Inox Stainless steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Pagina Page
1	2	3	4	5	6	7	8	9	75
●	●	●	-	-	-	-	-	-	91
●	●	●	-	-	-	-	-	-	91
●	●	-	-	-	-	-	-	-	93
●	●	-	-	-	-	-	-	-	95
●	●	-	-	-	-	-	-	-	95
●	●	●	-	-	-	-	-	-	97
●	●	●	-	-	-	-	-	-	98
●	●	●	-	-	-	-	-	-	100
●	●	●	-	-	-	-	-	-	104
●	●	●	-	-	-	-	-	-	105
●	●	●	-	-	-	-	-	-	106
●	●	●	-	-	-	-	-	-	109

1	2	3	4	5	6	7	8	9	113
●	-	-	●	●	-	●	-	-	117
●	-	-	●	●	-	●	-	-	119
●	-	-	●	●	-	●	-	-	121
●	-	-	●	●	-	●	-	-	123
-	-	-	●	●	-	●	-	-	125
-	-	-	●	●	-	●	-	-	125
-	-	-	-	-	-	-	●	-	127
-	-	-	-	-	-	●	-	-	127
●	●	-	●	●	-	●	●	-	129
●	●	-	●	●	-	●	●	-	129
●	●	-	●	●	-	●	●	-	131
-	-	-	-	-	-	-	●	-	133
-	-	-	-	●	-	-	-	-	135

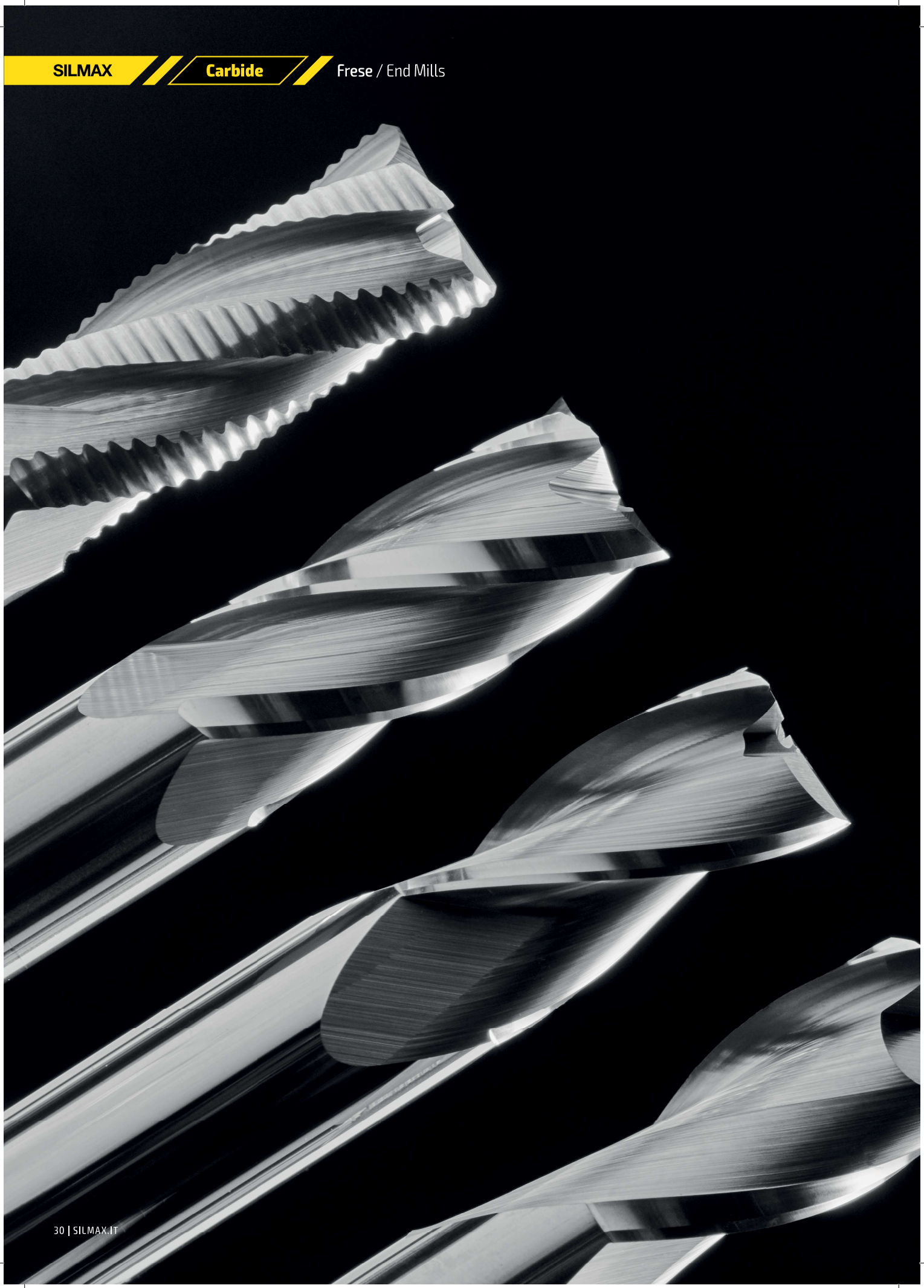
ALU Leghe Leggere / Light Alloys

	Codice Code	Ø (D mm)	Z	Cava Slotting	Contornitura Side and face milling	Copiatura 3D 3D Copy	Trocoidale Trochoidal	Assiale Plunging	Rampa Diagonal plunging
	700	2,0 ÷ 20,0	1	●	●	-	-	●	-
	701	2,0 ÷ 20,0	1	●	●	-	-	-	-
	175	2,0 ÷ 25,0	2	●	●	-	-	●	●
NEW 	177	6,0 ÷ 20,0	2	●	●	-	-	●	●
NEW 	735	6,0 ÷ 16,0	2	-	-	●	-	-	-
	765	3,0 ÷ 20,0	2	-	-	●	-	-	-
	115	4,0 ÷ 20,0	3/4	-	●	-	-	-	-
NEW 	125	3,0 ÷ 20,0	3	●	●	-	●	●	-
NEW 	127	6,0 ÷ 16,0	3	●	●	-	●	●	-
NEW 	129	10,0 ÷ 16,0	3	●	●	-	●	●	-
	015	10,0 ÷ 20,0	3	●	●	-	-	-	●

CMP Materiali Compositi / Composite Materials

	Codice Code	Ø (D mm)	Z	Cava Slotting	Contornitura Side and face milling	Copiatura 3D 3D Copy	Trocoidale Trochoidal	Assiale Plunging	Rampa Diagonal plunging
	740	6,00 ÷ 12,70	4/6 7/9	-	●	-	-	-	-
	750	3,00 ÷ 12,70	Multi	-	●	-	-	-	-
	751	3,00 ÷ 12,70	Multi	●	●	-	-	-	-
	752	3,00 ÷ 12,70	Multi	●	●	-	-	●	-
	760	6,00 ÷ 20,00	4	●	●	-	-	-	-
	770	4,76 ÷ 12,70	2	-	●	-	-	-	-
	780	2,00 ÷ 12,00	4	-	-	-	-	●	-

Acciaio Steel	Ghise Cast iron	Acciai Temprati Hardened steels	Acciaio Inox Stainless steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Pagina Page
1	2	3	4	5	6	7	8	9	137
-	-	-	-	-	●	-	-	-	141
-	-	-	-	-	●	-	-	-	141
-	-	-	-	-	●	-	-	-	143
-	-	-	-	-	●	-	-	-	143
-	-	-	-	-	●	-	-	-	145
-	-	-	-	-	●	-	-	-	145
-	-	-	-	-	●	-	-	-	147
-	-	-	-	-	●	-	-	-	149
-	-	-	-	-	●	-	-	-	151
-	-	-	-	-	●	-	-	-	151
-	-	-	-	-	●	-	-	-	153
1	2	3	4	5	6	7	8	9	155
-	-	-	-	-	-	-	-	●	159
-	-	-	-	-	-	-	-	●	161
-	-	-	-	-	-	-	-	●	161
-	-	-	-	-	-	-	-	●	161
-	-	-	-	-	-	-	-	●	163
-	-	-	-	-	-	-	-	●	165
-	-	-	-	-	-	-	-	●	166



Universali

Le frese Silmax della linea Universale sono un prodotto premium, soggetto ad una costante ottimizzazione dei materiali di base, delle geometrie, della qualità delle superfici di taglio e dei rivestimeti PVD.

Universal Line

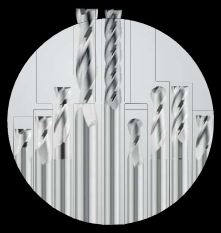
Silmax end mills belonging to the Universal Line are a premium product, subject to a constant optimisation of raw materials, geometries, cutting-surface quality and PVD coatings.

Universali
Universal Line

Per maggiori informazioni scarica la brochure digitale.

For further information download the digital brochure.

silmax.it/unv

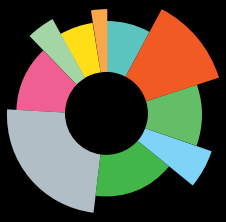


Ampia Gamma

+ Tipologia di utensili adatti a diverse applicazioni
+ Diverso numero di taglienti e geometrie di taglio
+ Diametri dal D. 0,1 al D. 25 mm

Wide Range

+ Typologies of tools suited to different applications
+ Different number of flutes and cutting geometries
+ Diameters from D. 0.1 to D.25 mm.

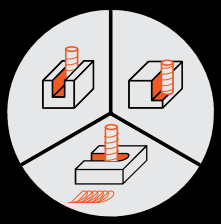


Multimateriale

Gli utensili sono stati progettati per lavorare, con parametri molto elevati, un'ampia gamma di acciai, basso e alto legati, ghise e acciai inossidabili.

Multi-material

These tools have been designed for machining a wide range of materials including steels, low-alloy and high-alloy steels, cast irons and stainless steels.



Multiapplicazione

La versatilità degli utensili proposti permette un utilizzo nelle più svariate lavorazioni, da quelle di sgrossatura e finitura, fino alle avanzate tecnologie del trocoidale.

Multi-application

The versatility of the tools proposed allows the use in different types of machining, from roughing and finishing to the advanced technologies of trochoidal milling.

Rivestimento PVD

Il rivestimento utilizzato è Balinit® Alcrona Pro, rivestimento estremamente resistente all'usura, con eccellenti livelli di durezza a caldo e stabilità agli shock termici.
Alcrona Pro® garantisce ottimi risultati anche nella lavorazione a secco e ad elevate velocità di taglio.

PVD Coating

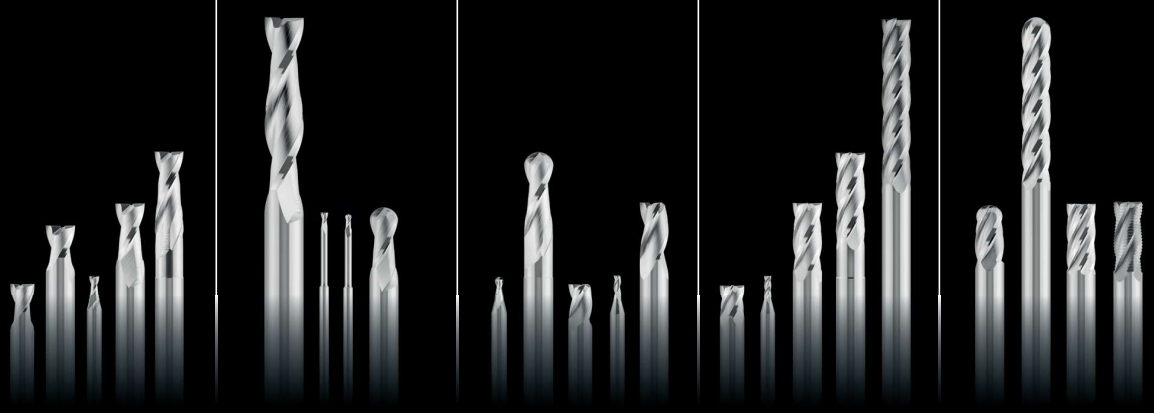
The coating used is Balinit® Alcrona Pro, an extremely wear-resistant coating, with excellent heat-hardness levels and thermal-shock stability.
Alcrona Pro® grants extraordinary results also in dry machining and in high cutting speeds.

SIL SERVICE

L'esperienza Silmax dimostra che un utensile correttamente affilato ha un rendimento uguale a quello nuovo.

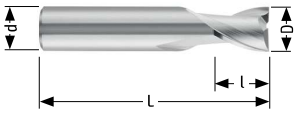
Silmax experience shows that a properly sharpened tool grants the same performances of a new tool.

- Riaffilatura e rigenerazione / Resharpening and Reconditioning
- Esecuzione perfetta / Perfect Execution
- Rivestimento PVD / PVD Coating
- Trattamento 4S / 4S Treatment
- Consegna rapida / Fast Delivery

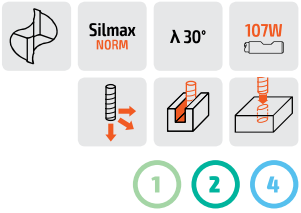


107

Fresa 2 taglienti serie extra corta
2 flute end mill, extra short version



HM 171
HM 173
HM 176



90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
2,0	6	38	3,0	2	HM0107020	HMF107020	HMG107020
2,5	6	38	3,0	2	HM0107025	HMF107025	HMG107025
3,0	6	38	4,0	2	HM0107030	HMF107030	HMG107030
3,5	6	38	4,0	2	HM0107035	HMF107035	HMG107035
4,0	6	38	5,0	2	HM0107040	HMF107040	HMG107040
4,5	6	38	5,0	2	HM0107045	HMF107045	HMG107045
5,0	6	38	6,0	2	HM0107050	HMF107050	HMG107050
6,0	6	38	7,0	2	HM0107060	HMF107060	HMG107060
7,0	8	43	9,0	2	HM0107070	HMF107070	HMG107070
8,0	8	43	9,0	2	HM0107080	HMF107080	HMG107080
9,0	10	50	11,0	2	HM0107090	HMF107090	HMG107090
10,0	10	50	11,0	2	HM0107100	HMF107100	HMG107100
12,0	12	63	12,0	2	HM0107120	HMF107120	HMG107120

Notes

731

Fresa 2 taglienti serie corta per sedi di chiavetta
2 flute key slot end mill, short version

6527 K
6528

λ 30°

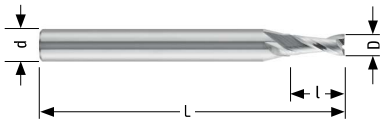
1 2 4

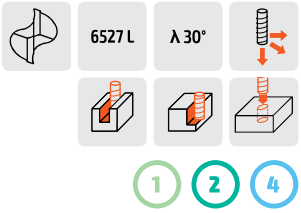
90°

D e8	d h6	L	l ap	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
2,0	6	50	3,0	2	HM0731020	HMF731020	HMG731020
2,5	6	50	3,0	2	HM0731025	HMF731025	HMG731025
3,0	6	50	4,0	2	HM0731030	HMF731030	HMG731030
3,5	6	50	4,0	2	HM0731035	HMF731035	HMG731035
4,0	6	54	5,0	2	HM0731040	HMF731040	HMG731040
4,5	6	54	5,0	2	HM0731045	HMF731045	HMG731045
5,0	6	54	6,0	2	HM0731050	HMF731050	HMG731050
5,5	6	54	6,0	2	HM0731055	HMF731055	HMG731055
6,0	6	54	7,0	2	HM0731060	HMF731060	HMG731060
7,0	8	58	9,0	2	HM0731070	HMF731070	HMG731070
8,0	8	58	9,0	2	HM0731080	HMF731080	HMG731080
9,0	10	66	11,0	2	HM0731090	HMF731090	HMG731090
10,0	10	66	11,0	2	HM0731100	HMF731100	HMG731100
11,0	12	73	12,0	2	HM0731110	HMF731110	HMG731110
12,0	12	73	12,0	2	HM0731120	HMF731120	HMG731120
13,0	14	75	14,0	2	HM0731130	HMF731130	HMG731130
14,0	14	75	14,0	2	HM0731140	HMF731140	HMG731140
15,0	16	82	16,0	2	HM0731150	HMF731150	HMG731150
16,0	16	82	16,0	2	HM0731160	HMF731160	HMG731160
17,0	18	84	18,0	2	HM0731170	HMF731170	HMG731170
18,0	18	84	18,0	2	HM0731180	HMF731180	HMG731180
19,0	20	92	20,0	2	HM0731190	HMF731190	HMG731190
20,0	20	92	20,0	2	HM0731200	HMF731200	HMG731200

172

Fresa 2 taglienti serie normale con gambo rinforzato
2 flute end mill regular version with reinforced shank





90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
1,0	6	53	3,0	2	HM0172010	HMF172010	HMG172010
1,0	6	53	4,0	2	HM0172010L	HMF172010L	HMG172010L
1,5	6	53	4,5	2	HM0172015	HMF172015	HMG172015
1,5	6	53	6,0	2	HM0172015L	HMF172015L	HMG172015L
2,0	6	53	6,0	2	HM0172020	HMF172020	HMG172020
2,0	6	53	8,0	2	HM0172020L	HMF172020L	HMG172020L
2,5	6	53	7,0	2	HM0172025	HMF172025	HMG172025
2,5	6	53	9,0	2	HM0172025L	HMF172025L	HMG172025L
3,0	6	53	7,0	2	HM0172030	HMF172030	HMG172030
3,0	6	53	12,0	2	HM0172030L	HMF172030L	HMG172030L
3,5	6	53	7,0	2	HM0172035	HMF172035	HMG172035
4,0	6	53	8,0	2	HM0172040	HMF172040	HMG172040
4,0	6	53	12,0	2	HM0172040L	HMF172040L	HMG172040L
5,0	6	57	10,0	2	HM0172050	HMF172050	HMG172050

1 Acciaio Steel | 2 Ghise Cast Iron | 3 Acciai Temprati Hardened Steel | 4 Acciaio Inox Stainless Steel | 5 Titanio Titanium | 6 Leghe Leggere Light Alloys | 7 PH Duplex | 8 Superleghe Superalloys | 9 Compositi Composite Materials | → 16 Guida alla lettura Reading guide | → 18 Legenda Legend

171

Fresa 2 taglienti serie normale
2 flute end mill regular version

HM 107
HM 173
HM 176

6527 L
6528

λ 30°

1 2 4

90°

D h10	d h6	L	l ap	90°	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
0,1	3	38	0,2	-	2	HM0171001	HMF171001	HMG171001
0,2	3	38	0,5	-	2	HM0171002	HMF171002	HMG171002
0,3	3	38	0,8	-	2	HM0171003	HMF171003	HMG171003
0,4	3	38	1,0	-	2	HM0171004	HMF171004	HMG171004
0,5	3	38	1,5	-	2	HM0171005	HMF171005	HMG171005
0,6	3	38	1,5	-	2	HM0171006	HMF171006	HMG171006
0,7	3	38	2,0	-	2	HM0171007	HMF171007	HMG171007
0,8	3	38	2,0	-	2	HM0171008	HMF171008	HMG171008
1,0	3	38	3,0	-	2	HM0171010	HMF171010	HMG171010
1,1	3	38	3,0	-	2	HM0171011	HMF171011	HMG171011
1,2	3	38	4,0	-	2	HM0171012	HMF171012	HMG171012
1,4	3	38	4,0	-	2	HM0171014	HMF171014	HMG171014
1,5	3	38	4,0	-	2	HM0171015	HMF171015	HMG171015
1,6	3	38	5,0	-	2	HM0171016	HMF171016	HMG171016
1,8	3	38	5,0	-	2	HM0171018	HMF171018	HMG171018
2,0	3	38	5,0	-	2	HM0171020	HMF171020	HMG171020
2,5	3	38	7,0	-	2	HM0171025	HMF171025	HMG171025
3,0	3	38	7,0	-	2	HM0171030	HMF171030	HMG171030
3,5	4	50	7,0	-	2	HM0171035	HMF171035	HMG171035
4,0	4	50	8,0	-	2	HM0171040	HMF171040	HMG171040
4,5	5	50	8,0	-	2	HM0171045	HMF171045	HMG171045
5,0	5	50	10,0	-	2	HM0171050	HMF171050	HMG171050
5,5	6	57	10,0	-	2	HM0171055	HMF171055	HMG171055
6,0	6	57	10,0	-	2	HM0171060	HMF171060	HMG171060
7,0	7	60	13,0	-	2	HM0171070	HMF171070	HMG171070
8,0	8	63	16,0	-	2	HM0171080	HMF171080	HMG171080
9,0	9	67	16,0	-	2	HM0171090	HMF171090	HMG171090
10,0	10	72	19,0	-	2	HM0171100	HMF171100	HMG171100
11,0	11	83	22,0	-	2	HM0171110	HMF171110	HMG171110
12,0	12	83	22,0	-	2	HM0171120	HMF171120	HMG171120
13,0	13	83	22,0	-	2	HM0171130	HMF171130	HMG171130
14,0	14	83	22,0	-	2	HM0171140	HMF171140	HMG171140
15,0	15	92	26,0	-	2	HM0171150	HMF171150	HMG171150
16,0	16	92	26,0	-	2	HM0171160	HMF171160	HMG171160
17,0	17	92	26,0	-	2	HM0171170	HMF171170	HMG171170
18,0	18	92	26,0	-	2	HM0171180	HMF171180	HMG171180
19,0	19	92	26,0	-	2	HM0171190	HMF171190	HMG171190
20,0	20	104	32,0	-	2	HM0171200	HMF171200	HMG171200

Cr

D h10	d h6	L	l ap	Cr	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
3,0	3	38	7,0	0,30	2	HM0171030CR03	HMF171030CR03	HMG171030CR03
4,0	4	50	8,0	0,50	2	HM0171040CR05	HMF171040CR05	HMG171040CR05
5,0	5	50	10,0	0,50	2	HM0171050CR05	HMF171050CR05	HMG171050CR05
6,0	6	57	10,0	0,50	2	HM0171060CR05	HMF171060CR05	HMG171060CR05
8,0	8	63	16,0	0,80	2	HM0171080CR08	HMF171080CR08	HMG171080CR08
10,0	10	72	19,0	1,00	2	HM0171100CR10	HMF171100CR10	HMG171100CR10
12,0	12	83	22,0	1,50	2	HM0171120CR15	HMF171120CR15	HMG171120CR15
14,0	14	83	22,0	1,50	2	HM0171140CR15	HMF171140CR15	HMG171140CR15
16,0	16	92	26,0	1,50	2	HM0171160CR15	HMF171160CR15	HMG171160CR15
18,0	18	92	26,0	1,50	2	HM0171180CR15	HMF171180CR15	HMG171180CR15
20,0	20	104	32,0	2,00	2	HM0171200CR20	HMF171200CR20	HMG171200CR20

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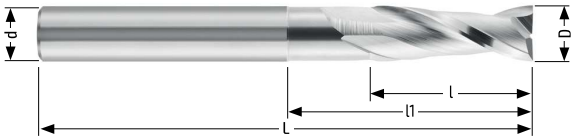
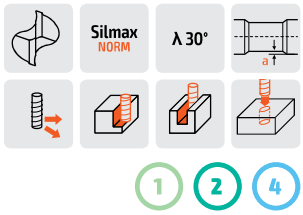
Fresa 2 taglienti serie media
2 flute micro end mill medium version



HM 107
HM 171
HM 176

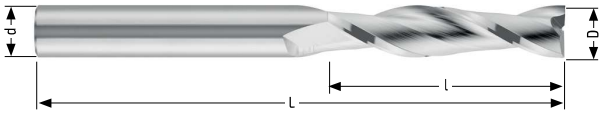


90°

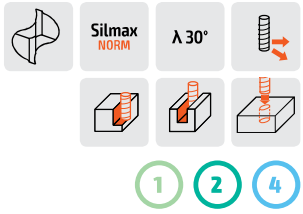
D h10	d h6	L	l ap	l1	a	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
3,0	3	62	14,0	-	-	2	HM0173030	HMF173030	HMG173030
4,0	4	62	16,0	-	-	2	HM0173040	HMF173040	HMG173040
5,0	5	62	20,0	-	-	2	HM0173050	HMF173050	HMG173050
6,0	6	78	20,0	30,0	0,15	2	HM0173060	HMF173060	HMG173060
7,0	7	78	24,0	34,0	0,15	2	HM0173070	HMF173070	HMG173070
8,0	8	78	25,0	35,0	0,15	2	HM0173080	HMF173080	HMG173080
9,0	9	78	25,0	35,0	0,15	2	HM0173090	HMF173090	HMG173090
10,0	10	105	28,0	48,0	0,15	2	HM0173100	HMF173100	HMG173100
11,0	11	105	28,0	48,0	0,15	2	HM0173110	HMF173110	HMG173110
12,0	12	105	32,0	52,0	0,20	2	HM0173120	HMF173120	HMG173120
13,0	13	105	32,0	52,0	0,20	2	HM0173130	HMF173130	HMG173130
14,0	14	105	32,0	52,0	0,20	2	HM0173140	HMF173140	HMG173140
15,0	15	130	40,0	60,0	0,20	2	HM0173150	HMF173150	HMG173150
16,0	16	130	40,0	60,0	0,20	2	HM0173160	HMF173160	HMG173160

176

Fresa 2 taglienti serie lunga
2 flute end mill, long version



HM 107
HM 171
HM 173



90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
4,0	4	80	32,0	2	HM0176040	HMF176040	HMG176040
6,0	6	105	42,0	2	HM0176060	HMF176060	HMG176060
8,0	8	105	50,0	2	HM0176080	HMF176080	HMG176080
10,0	10	120	50,0	2	HM0176100	HMF176100	HMG176100
12,0	12	160	65,0	2	HM0176120	HMF176120	HMG176120
14,0	14	160	70,0	2	HM0176140	HMF176140	HMG176140
16,0	16	160	70,0	2	HM0176160	HMF176160	HMG176160

1 Acciaio Steel | 2 Ghise Cast Iron | 3 Acciai Temprati Hardened Steel | 4 Acciaio Inox Stainless Steel | 5 Titanio Titanium | 6 Leghe Leggere Light Alloys | 7 PH Duplex | 8 Superleghe Superalloys | 9 Compositi Composite Materials | → 16 Guida alla lettura Reading guide | → 18 Legenda Legend

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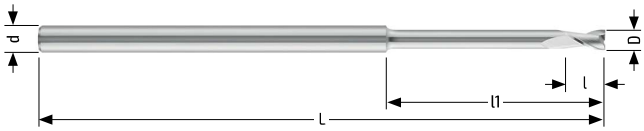
Fresa 2 taglienti per lavorazioni in profondità
2 flute end mill for deep milling



Silmax NORM | λ 30° | a | 1 2 4

90°

D +0/-0,02	d h6	L	l ap	l1	a	Z	Non rivestito Uncoated	Balinit® Alcrona
0,5	3	39	0,55	2,0	0,02	2	HM01210205	HMG1210205
0,5	3	39	0,55	4,0	0,02	2	HM01210405	HMG1210405
0,5	3	60	0,55	6,0	0,02	2	HM01210605	HMG1210605
0,8	3	39	1,00	4,0	0,02	2	HM01210408	HMG1210408
0,8	3	39	1,00	6,0	0,02	2	HM01210608	HMG1210608
0,8	3	60	1,00	9,0	0,02	2	HM01210908	HMG1210908
1,0	3	39	1,50	6,0	0,03	2	HM01210610	HMG1210610
1,0	3	39	1,50	9,0	0,03	2	HM01210910	HMG1210910
1,0	3	60	1,50	12,0	0,03	2	HM01211210	HMG1211210
1,5	3	39	2,25	6,0	0,03	2	HM01210615	HMG1210615
1,5	3	39	2,25	9,0	0,03	2	HM01210915	HMG1210915
1,5	3	60	2,25	12,0	0,03	2	HM01211215	HMG1211215
2,0	3	39	3,00	9,0	0,05	2	HM01210920	HMG1210920
2,0	3	39	3,00	12,0	0,05	2	HM01211220	HMG1211220
2,0	3	60	3,00	15,0	0,05	2	HM01211520	HMG1211520
2,5	4	50	3,70	12,0	0,05	2	HM01211225	HMG1211225
2,5	4	80	3,70	25,0	0,05	2	HM01212525	HMG1212525
3,0	4	50	4,50	15,0	0,05	2	HM01211530	HMG1211530
3,0	4	80	4,50	30,0	0,05	2	HM01213030	HMG1213030

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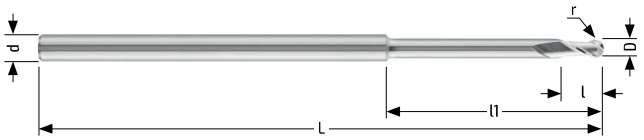
Fresa 2 taglienti semisferica per lavorazioni in profondità
2 flute ball nose end mill for deep milling

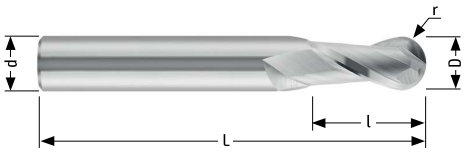


Silmax NORM | λ 30° | a | 1 2 4

D	d h6	L	l ap	l1	a	r ±0,01	Z	Non rivestito Uncoated	Balinit® Alcrona
0,5	3	39	0,55	2,0	0,02	0,25	2	HM01220205	HMG1220205
0,5	3	39	0,55	4,0	0,02	0,25	2	HM01220405	HMG1220405
0,5	3	60	0,55	6,0	0,02	0,25	2	HM01220605	HMG1220605
0,8	3	39	1,00	4,0	0,02	0,40	2	HM01220408	HMG1220408
0,8	3	39	1,00	6,0	0,02	0,40	2	HM01220608	HMG1220608
0,8	3	60	1,00	9,0	0,02	0,40	2	HM01220908	HMG1220908
1,0	3	39	1,50	6,0	0,03	0,50	2	HM01220610	HMG1220610
1,0	3	39	1,50	9,0	0,03	0,50	2	HM01220910	HMG1220910
1,0	3	60	1,50	12,0	0,03	0,50	2	HM01221210	HMG1221210
1,5	3	39	2,25	6,0	0,03	0,75	2	HM01220615	HMG1220615
1,5	3	39	2,25	9,0	0,03	0,75	2	HM01220915	HMG1220915
1,5	3	60	2,25	12,0	0,03	0,75	2	HM01221215	HMG1221215
2,0	3	39	3,00	9,0	0,05	1,00	2	HM01220920	HMG1220920
2,0	3	39	3,00	12,0	0,05	1,00	2	HM01221220	HMG1221220
2,0	3	60	3,00	15,0	0,05	1,00	2	HM01221520	HMG1221520
2,5	4	50	3,70	12,0	0,05	1,25	2	HM01221225	HMG1221225
2,5	4	80	3,70	25,0	0,05	1,25	2	HM01222525	HMG1222525
3,0	4	50	4,50	15,0	0,05	1,50	2	HM01221530	HMG1221530
3,0	4	80	4,50	30,0	0,05	1,50	2	HM01223030	HMG1223030

737

Fresa 2 taglienti serie normale semisferica
2 flute ball nose end mill regular version



HM 747

Silmax NORM

λ 30°

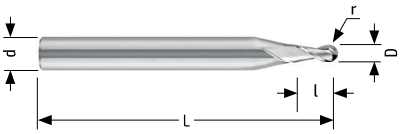
1 2 4

D h10	d h6	L	l ap	r	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
0,1	3	38	0,2	0,05	2	HM0737001	HMF737001	HMG737001
0,2	3	38	0,5	0,10	2	HM0737002	HMF737002	HMG737002
0,3	3	38	0,8	0,15	2	HM0737003	HMF737003	HMG737003
0,4	3	38	1,0	0,20	2	HM0737004	HMF737004	HMG737004
0,5	3	38	1,5	0,25	2	HM0737005	HMF737005	HMG737005
0,6	3	38	1,5	0,30	2	HM0737006	HMF737006	HMG737006
0,7	3	38	2,0	0,35	2	HM0737007	HMF737007	HMG737007
0,8	3	38	2,0	0,40	2	HM0737008	HMF737008	HMG737008
1,0	3	38	3,0	0,50	2	HM0737010	HMF737010	HMG737010
1,1	3	38	3,0	0,55	2	HM0737011	HMF737011	HMG737011
1,2	3	38	4,0	0,60	2	HM0737012	HMF737012	HMG737012
1,4	3	38	4,0	0,70	2	HM0737014	HMF737014	HMG737014
1,5	3	38	4,0	0,75	2	HM0737015	HMF737015	HMG737015
1,6	3	38	4,0	0,80	2	HM0737016	HMF737016	HMG737016
1,8	3	38	5,0	0,90	2	HM0737018	HMF737018	HMG737018
2,0	3	38	5,0	1,00	2	HM0737020	HMF737020	HMG737020
2,5	3	38	7,0	1,25	2	HM0737025	HMF737025	HMG737025
3,0	3	38	7,0	1,50	2	HM0737030	HMF737030	HMG737030
3,5	4	50	7,0	1,75	2	HM0737035	HMF737035	HMG737035
4,0	4	50	8,0	2,00	2	HM0737040	HMF737040	HMG737040
5,0	5	50	10,0	2,50	2	HM0737050	HMF737050	HMG737050
6,0	6	57	10,0	3,00	2	HM0737060	HMF737060	HMG737060
7,0	7	60	13,0	3,50	2	HM0737070	HMF737070	HMG737070
8,0	8	63	16,0	4,00	2	HM0737080	HMF737080	HMG737080
9,0	9	67	16,0	4,50	2	HM0737090	HMF737090	HMG737090
10,0	10	72	19,0	5,00	2	HM0737100	HMF737100	HMG737100
11,0	11	83	22,0	5,50	2	HM0737110	HMF737110	HMG737110
12,0	12	83	22,0	6,00	2	HM0737120	HMF737120	HMG737120
13,0	13	83	22,0	6,50	2	HM0737130	HMF737130	HMG737130
14,0	14	83	22,0	7,00	2	HM0737140	HMF737140	HMG737140
15,0	15	92	26,0	7,50	2	HM0737150	HMF737150	HMG737150
16,0	16	92	26,0	8,00	2	HM0737160	HMF737160	HMG737160
18,0	18	92	26,0	9,00	2	HM0737180	HMF737180	HMG737180
20,0	20	104	32,0	10,00	2	HM0737200	HMF737200	HMG737200

Notes

737R

Fresa 2 taglienti serie normale semisferica con gambo rinforzato
2 flute ball nose end mill regular version with reinforced shank



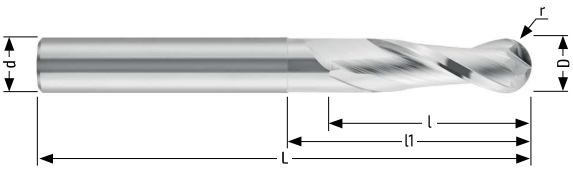
Silmax NORM
λ 30°

1 2 4

D h10	d h6	L	l ap	r	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
1,0	6	53	3,0	0,50	2	HM0737010R	HMF737010R	HMG737010R
1,5	6	53	4,0	0,75	2	HM0737015R	HMF737015R	HMG737015R
2,0	6	53	5,0	1,00	2	HM0737020R	HMF737020R	HMG737020R
2,5	6	53	7,0	1,25	2	HM0737025R	HMF737025R	HMG737025R
3,0	6	53	7,0	1,50	2	HM0737030R	HMF737030R	HMG737030R

747

Fresa 2 taglienti serie media semisferica
2 flute ball nose end mill medium version



HM 737 Z2-131 Z4

Silmax NORM
λ 30°

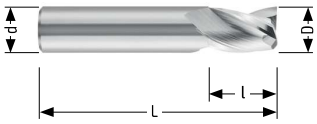
1 2 4

D h10	d h6	L	l ap	l1	a	r	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
4,0	4	62	16,0	-	-	2,00	2	HM0747040	HMF747040	HMG747040
5,0	5	62	20,0	-	-	2,50	2	HM0747050	HMF747050	HMG747050
6,0	6	78	20,0	30,0	0,15	3,00	2	HM0747060	HMF747060	HMG747060
8,0	8	78	25,0	35,0	0,15	4,00	2	HM0747080	HMF747080	HMG747080
10,0	10	105	28,0	48,0	0,15	5,00	2	HM0747100	HMF747100	HMG747100
12,0	12	105	32,0	52,0	0,20	6,00	2	HM0747120	HMF747120	HMG747120
16,0	16	130	40,0	60,0	0,20	8,00	2	HM0747160	HMF747160	HMG747160

1 Acciaio Steel	2 Ghise Cast Iron	3 Acciai Temprati Hardened Steel	4 Acciaio Inox Stainless Steel	5 Titanio Titanium	6 Leghe Leggere Light Alloys	7 PH Duplex	8 Superleghe Superalloys	9 Compositi Composite Materials	→ 16 Guida alla lettura Reading guide	→ 18 Legenda Legend

108

Fresa 3 taglienti serie extra corta
3 flute end mill extra short version



HM 111

Silmax NORM | λ 30° | 108W

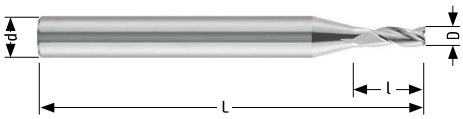
1 2 4

90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
2,0	6	38	4,0	3	HM0108020	HMF108020	HMG108020
2,5	6	38	4,0	3	HM0108025	HMF108025	HMG108025
3,0	6	38	5,0	3	HM0108030	HMF108030	HMG108030
3,5	6	38	6,0	3	HM0108035	HMF108035	HMG108035
4,0	6	38	7,0	3	HM0108040	HMF108040	HMG108040
4,5	6	38	8,0	3	HM0108045	HMF108045	HMG108045
5,0	6	38	8,0	3	HM0108050	HMF108050	HMG108050
6,0	6	38	8,0	3	HM0108060	HMF108060	HMG108060
7,0	8	43	11,0	3	HM0108070	HMF108070	HMG108070
8,0	8	43	11,0	3	HM0108080	HMF108080	HMG108080
9,0	10	50	13,0	3	HM0108090	HMF108090	HMG108090
10,0	10	50	13,0	3	HM0108100	HMF108100	HMG108100
12,0	12	63	14,0	3	HM0108120	HMF108120	HMG108120

114

Fresa 3 taglienti serie normale con gambo rinforzato
3 flute end mill with reinforced shank regular version



6527 L | λ 30°

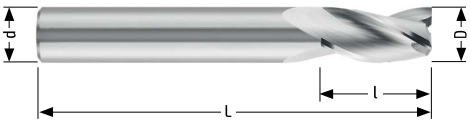
1 2 4

90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
1,0	6	53	3,0	3	HM0114010	HMF114010	HMG114010
1,5	6	53	4,5	3	HM0114015	HMF114015	HMG114015
1,5	6	53	6,0	3	HM0114015L	HMF114015L	HMG114015L
2,0	6	53	6,0	3	HM0114020	HMF114020	HMG114020
2,0	6	53	8,0	3	HM0114020L	HMF114020L	HMG114020L
2,5	6	53	7,0	3	HM0114025	HMF114025	HMG114025
2,5	6	53	10,0	3	HM0114025L	HMF114025L	HMG114025L
3,0	6	53	7,0	3	HM0114030	HMF114030	HMG114030
3,0	6	53	12,0	3	HM0114030L	HMF114030L	HMG114030L
3,5	6	53	7,0	3	HM0114035	HMF114035	HMG114035
4,0	6	53	8,0	3	HM0114040	HMF114040	HMG114040
4,0	6	53	12,0	3	HM0114040L	HMF114040L	HMG114040L
5,0	6	57	10,0	3	HM0114050	HMF114050	HMG114050

111

Fresa 3 taglienti serie normale
3 flute end mill regular version



HM 108

6527 L
6528

λ 30°

1 2 4

90°

D h10	d h6	L	l ap	90°	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
0,6	3	38	1,5	-	3	HM0111006	HMF111006	HMG111006
0,8	3	38	2,0	-	3	HM0111008	HMF111008	HMG111008
1,0	3	38	3,0	-	3	HM0111010	HMF111010	HMG111010
1,2	3	38	4,0	-	3	HM0111012	HMF111012	HMG111012
1,5	3	38	4,0	-	3	HM0111015	HMF111015	HMG111015
1,8	3	38	5,0	-	3	HM0111018	HMF111018	HMG111018
2,0	3	38	5,0	-	3	HM0111020	HMF111020	HMG111020
2,5	3	38	7,0	-	3	HM0111025	HMF111025	HMG111025
3,0	3	38	7,0	-	3	HM0111030	HMF111030	HMG111030
4,0	4	50	8,0	-	3	HM0111040	HMF111040	HMG111040
5,0	5	50	10,0	-	3	HM0111050	HMF111050	HMG111050
6,0	6	57	10,0	-	3	HM0111060	HMF111060	HMG111060
7,0	7	60	13,0	-	3	HM0111070	HMF111070	HMG111070
8,0	8	63	16,0	-	3	HM0111080	HMF111080	HMG111080
9,0	9	67	16,0	-	3	HM0111090	HMF111090	HMG111090
10,0	10	72	19,0	-	3	HM0111100	HMF111100	HMG111100
11,0	11	83	22,0	-	3	HM0111110	HMF111110	HMG111110
12,0	12	83	22,0	-	3	HM0111120	HMF111120	HMG111120
13,0	13	83	22,0	-	3	HM0111130	HMF111130	HMG111130
14,0	14	83	22,0	-	3	HM0111140	HMF111140	HMG111140
15,0	15	92	26,0	-	3	HM0111150	HMF111150	HMG111150
16,0	16	92	26,0	-	3	HM0111160	HMF111160	HMG111160
18,0	18	92	26,0	-	3	HM0111180	HMF111180	HMG111180
20,0	20	104	32,0	-	3	HM0111200	HMF111200	HMG111200

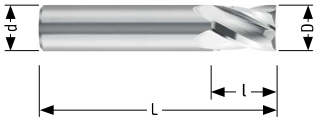
Cr

D h10	d h6	L	l ap	Cr	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
2	3	38	5,0	0,30	3	HM0111020CR03	HMF111020CR03	HMG111020CR03
3	3	38	7,0	0,30	3	HM0111030CR03	HMF111030CR03	HMG111030CR03
4	4	50	8,0	0,30	3	HM0111040CR03	HMF111040CR03	HMG111040CR03
4	4	50	8,0	0,50	3	HM0111040CR05	HMF111040CR05	HMG111040CR05
5	5	50	10,0	0,50	3	HM0111050CR05	HMF111050CR05	HMG111050CR05
6	6	57	10,0	0,20	3	HM0111060CR02	HMF111060CR02	HMG111060CR02
6	6	57	10,0	0,50	3	HM0111060CR05	HMF111060CR05	HMG111060CR05
6	6	57	10,0	0,80	3	HM0111060CR08	HMF111060CR08	HMG111060CR08
8	8	63	16,0	0,50	3	HM0111080CR05	HMF111080CR05	HMG111080CR05
8	8	63	16,0	0,80	3	HM0111080CR08	HMF111080CR08	HMG111080CR08
10	10	72	19,0	0,50	3	HM0111100CR05	HMF111100CR05	HMG111100CR05
10	10	72	19,0	1,00	3	HM0111100CR10	HMF111100CR10	HMG111100CR10
12	12	83	22,0	1,00	3	HM0111120CR10	HMF111120CR10	HMG111120CR10
12	12	83	22,0	1,50	3	HM0111120CR15	HMF111120CR15	HMG111120CR15
14	14	83	22,0	1,50	3	HM0111140CR15	HMF111140CR15	HMG111140CR15
16	16	92	26,0	1,00	3	HM0111160CR10	HMF111160CR10	HMG111160CR10
16	16	92	26,0	1,50	3	HM0111160CR15	HMF111160CR15	HMG111160CR15
18	18	92	26,0	1,50	3	HM0111180CR15	HMF111180CR15	HMG111180CR15
20	20	104	32,0	2,00	3	HM0111200CR20	HMF111200CR20	HMG111200CR20

Notes

109

Fresa 4 taglienti serie extra corta
4 flute end mill extra short version



HM 113
HM 123
HM 126

Silmax NORM | λ 30° | 109W

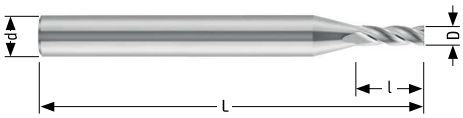
1 2 4

90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
2,0	6	38	4,0	4	HM0109020	HMF109020	HMG109020
3,0	6	38	5,0	4	HM0109030	HMF109030	HMG109030
4,0	6	38	7,0	4	HM0109040	HMF109040	HMG109040
5,0	6	38	8,0	4	HM0109050	HMF109050	HMG109050
6,0	6	38	8,0	4	HM0109060	HMF109060	HMG109060
8,0	8	43	11,0	4	HM0109080	HMF109080	HMG109080
10,0	10	50	13,0	4	HM0109100	HMF109100	HMG109100
12,0	12	63	14,0	4	HM0109120	HMF109120	HMG109120

116

Fresa 4 taglienti serie normale con gambo rinforzato
4 flute end mill with reinforced shank



6527 L | λ 30°

1 2 4

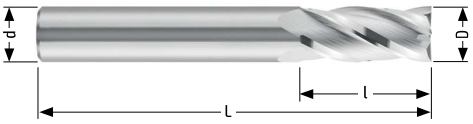
90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
2,0	6	53	7,0	4	HM0116020	HMF116020	HMG116020
2,5	6	53	8,0	4	HM0116025	HMF116025	HMG116025
3,0	6	53	8,0	4	HM0116030	HMF116030	HMG116030
3,5	6	53	10,0	4	HM0116035	HMF116035	HMG116035
4,0	6	53	11,0	4	HM0116040	HMF116040	HMG116040
5,0	6	57	13,0	4	HM0116050	HMF116050	HMG116050

Notes

113

Fresa 4 taglienti serie normale
4 flute end mill regular version



HM 109
HM 123
HM 126

6527 L
6528
λ 30°

1 2 4

90°

D h10	d h6	L	l ap	90°	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
2,0	3	38	7,0	-	4	HM0113020	HMF113020	HMG113020
2,5	3	38	8,0	-	4	HM0113025	HMF113025	HMG113025
3,0	3	38	8,0	-	4	HM0113030	HMF113030	HMG113030
3,5	4	50	10,0	-	4	HM0113035	HMF113035	HMG113035
4,0	4	50	11,0	-	4	HM0113040	HMF113040	HMG113040
4,5	5	50	11,0	-	4	HM0113045	HMF113045	HMG113045
5,0	5	50	13,0	-	4	HM0113050	HMF113050	HMG113050
5,5	6	57	13,0	-	4	HM0113055	HMF113055	HMG113055
6,0	6	57	13,0	-	4	HM0113060	HMF113060	HMG113060
6,5	7	60	16,0	-	4	HM0113065	HMF113065	HMG113065
7,0	7	60	16,0	-	4	HM0113070	HMF113070	HMG113070
7,5	8	63	19,0	-	4	HM0113075	HMF113075	HMG113075
8,0	8	63	19,0	-	4	HM0113080	HMF113080	HMG113080
8,5	9	67	19,0	-	4	HM0113085	HMF113085	HMG113085
9,0	9	67	19,0	-	4	HM0113090	HMF113090	HMG113090
9,5	10	72	22,0	-	4	HM0113095	HMF113095	HMG113095
10,0	10	72	22,0	-	4	HM0113100	HMF113100	HMG113100
11,0	11	83	26,0	-	4	HM0113110	HMF113110	HMG113110
12,0	12	83	26,0	-	4	HM0113120	HMF113120	HMG113120
13,0	13	83	26,0	-	4	HM0113130	HMF113130	HMG113130
14,0	14	83	26,0	-	4	HM0113140	HMF113140	HMG113140
15,0	15	92	32,0	-	4	HM0113150	HMF113150	HMG113150
16,0	16	92	32,0	-	4	HM0113160	HMF113160	HMG113160
18,0	18	92	32,0	-	4	HM0113180	HMF113180	HMG113180
20,0	20	104	38,0	-	4	HM0113200	HMF113200	HMG113200
25,0	25	121	45,0	-	4	HM0113250	HMF113250	HMG113250

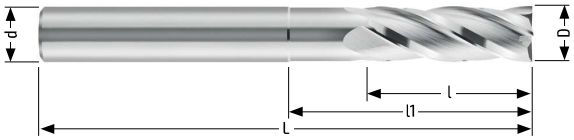
Cr

D h10	d h6	L	l ap	Cr	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
3,0	3	38	8,0	0,30	4	HM0113030CR03	HMF113030CR03	HMG113030CR03
4,0	4	50	11,0	0,30	4	HM0113040CR03	HMF113040CR03	HMG113040CR03
4,0	4	50	11,0	0,50	4	HM0113040CR05	HMF113040CR05	HMG113040CR05
5,0	5	50	13,0	0,50	4	HM0113050CR05	HMF113050CR05	HMG113050CR05
6,0	6	57	13,0	0,50	4	HM0113060CR05	HMF113060CR05	HMG113060CR05
6,0	6	57	13,0	0,80	4	HM0113060CR08	HMF113060CR08	HMG113060CR08
6,0	6	57	13,0	1,00	4	HM0113060CR10	HMF113060CR10	HMG113060CR10
8,0	8	63	19,0	0,50	4	HM0113080CR05	HMF113080CR05	HMG113080CR05
8,0	8	63	19,0	0,80	4	HM0113080CR08	HMF113080CR08	HMG113080CR08
10,0	10	72	22,0	0,50	4	HM0113100CR05	HMF113100CR05	HMG113100CR05
10,0	10	72	22,0	1,00	4	HM0113100CR10	HMF113100CR10	HMG113100CR10
12,0	12	83	26,0	1,00	4	HM0113120CR10	HMF113120CR10	HMG113120CR10
12,0	12	83	26,0	1,50	4	HM0113120CR15	HMF113120CR15	HMG113120CR15
14,0	14	83	26,0	1,50	4	HM0113140CR15	HMF113140CR15	HMG113140CR15
16,0	16	92	32,0	1,50	4	HM0113160CR15	HMF113160CR15	HMG113160CR15
18,0	18	92	32,0	1,50	4	HM0113180CR15	HMF113180CR15	HMG113180CR15
20,0	20	104	38,0	2,00	4	HM0113200CR20	HMF113200CR20	HMG113200CR20
25,0	25	121	45,0	2,00	4	HM0113250CR20	HMF113250CR20	HMG113250CR20

1	2	3	4	5	6	7	8	9	→ 16	→ 18
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Guida alla lettura Reading guide	Legenda Legend

123

Fresa 4 taglienti serie media
4 flute end mill medium version



HM 109
HM 113
HM 126

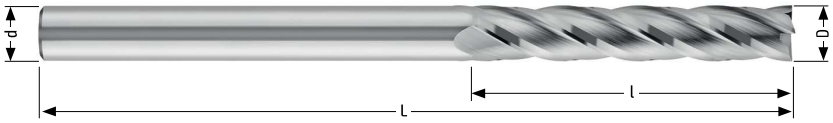
Silmax NORM
λ 30°

90°

D h10	d h6	L	l ap	l1	a	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
3,0	3	62	14,0	-	-	4	HM0123030	HMF123030	HMG123030
4,0	4	62	16,0	-	-	4	HM0123040	HMF123040	HMG123040
5,0	5	62	20,0	-	-	4	HM0123050	HMF123050	HMG123050
6,0	6	78	20,0	30,0	0,15	4	HM0123060	HMF123060	HMG123060
8,0	8	78	25,0	35,0	0,15	4	HM0123080	HMF123080	HMG123080
10,0	10	105	28,0	48,0	0,15	4	HM0123100	HMF123100	HMG123100
12,0	12	105	32,0	52,0	0,20	4	HM0123120	HMF123120	HMG123120
14,0	14	105	32,0	52,0	0,20	4	HM0123140	HMF123140	HMG123140
16,0	16	130	40,0	60,0	0,20	4	HM0123160	HMF123160	HMG123160

126

Fresa 4 taglienti serie normale
4 flute end mill long version



HM 109
HM 113
HM 123

Silmax NORM
λ 30°

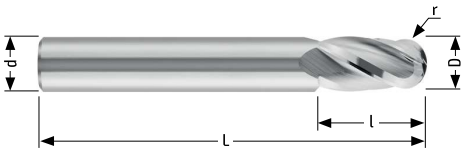
90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
4,0	4	80	32,0	4	HM0126040	HMF126040	HMG126040
6,0	6	105	42,0	4	HM0126060	HMF126060	HMG126060
8,0	8	105	50,0	4	HM0126080	HMF126080	HMG126080
10,0	10	120	50,0	4	HM0126100	HMF126100	HMG126100
12,0	12	160	65,0	4	HM0126120	HMF126120	HMG126120
14,0	14	160	70,0	4	HM0126140	HMF126140	HMG126140
16,0	16	160	70,0	4	HM0126160	HMF126160	HMG126160

Notes

131

Fresa 4 taglienti serie normale
4 flute end mill regular version



HM 747 Z2
HM 130 Z4

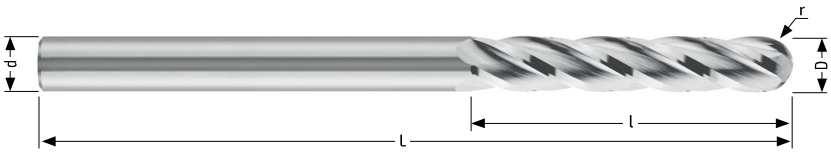
Silmax NORM
λ 30°

1 2 4

D h10	d h6	L	l ap	r	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
1,0	3	38	3,0	0,50	4	HM0131010	HMF131010	HMG131010
1,5	3	38	4,0	0,75	4	HM0131015	HMF131015	HMG131015
2,0	3	38	5,0	1,00	4	HM0131020	HMF131020	HMG131020
2,5	3	38	7,0	1,25	4	HM0131025	HMF131025	HMG131025
3,0	3	38	7,0	1,50	4	HM0131030	HMF131030	HMG131030
4,0	4	50	8,0	2,00	4	HM0131040	HMF131040	HMG131040
5,0	5	50	10,0	2,50	4	HM0131050	HMF131050	HMG131050
6,0	6	57	10,0	3,00	4	HM0131060	HMF131060	HMG131060
7,0	7	60	13,0	3,50	4	HM0131070	HMF131070	HMG131070
8,0	8	63	16,0	4,00	4	HM0131080	HMF131080	HMG131080
9,0	9	67	16,0	4,50	4	HM0131090	HMF131090	HMG131090
10,0	10	72	19,0	5,00	4	HM0131100	HMF131100	HMG131100
11,0	11	83	22,0	5,50	4	HM0131110	HMF131110	HMG131110
12,0	12	83	22,0	6,00	4	HM0131120	HMF131120	HMG131120
13,0	13	83	22,0	6,50	4	HM0131130	HMF131130	HMG131130
14,0	14	83	22,0	7,00	4	HM0131140	HMF131140	HMG131140
15,0	15	92	26,0	7,50	4	HM0131150	HMF131150	HMG131150
16,0	16	92	26,0	8,00	4	HM0131160	HMF131160	HMG131160
18,0	18	92	26,0	9,00	4	HM0131180	HMF131180	HMG131180
20,0	20	104	32,0	10,00	4	HM0131200	HMF131200	HMG131200

130

Fresa 4 taglienti serie lunga semisferica
4 flute ball nose end mill long version



HM 737 Z2-131 Z4

Silmax NORM
λ 30°

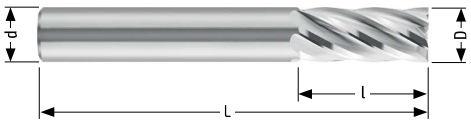
1 2 4

D h10	d h6	L	l ap	r	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
6,0	6	105	42,0	3,00	4	HM0130060	HMF130060	HMG130060
8,0	8	105	50,0	4,00	4	HM0130080	HMF130080	HMG130080
10,0	10	120	50,0	5,00	4	HM0130100	HMF130100	HMG130100
12,0	12	160	65,0	6,00	4	HM0130120	HMF130120	HMG130120
14,0	14	160	70,0	7,00	4	HM0130140	HMF130140	HMG130140
16,0	16	160	70,0	8,00	4	HM0130160	HMF130160	HMG130160
18,0	18	160	70,0	9,00	4	HM0130180	HMF130180	HMG130180
20,0	20	160	70,0	10,00	4	HM0130200	HMF130200	HMG130200

1	2	3	4	5	6	7	8	9	→ 16	→ 18
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Guida alla lettura Reading guide	Legenda Legend

106

Fresa 6/8 taglienti serie normale
6/8 flute end mill, regular version



6527 L

λ 30°

1 2 4

90°

D h10	d h6	L	l ap	90°	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
6,0	6	57	13,0	-	6	HM0106060	HMF106060	HMG106060
8,0	8	63	19,0	-	6	HM0106080	HMF106080	HMG106080
10,0	10	72	22,0	-	6	HM0106100	HMF106100	HMG106100
12,0	12	83	26,0	-	6	HM0106120	HMF106120	HMG106120
14,0	14	83	26,0	-	6	HM0106140	HMF106140	HMG106140
16,0	16	92	32,0	-	6	HM0106160	HMF106160	HMG106160
18,0	18	92	32,0	-	8	HM0106180	HMF106180	HMG106180
20,0	20	104	38,0	-	8	HM0106200	HMF106200	HMG106200
25,0	25	121	45,0	-	8	HM0106250	HMF106250	HMG106250

Cr

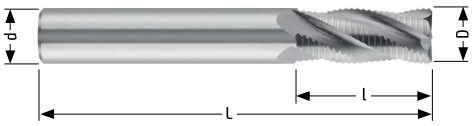
D h10	d h6	L	l ap	Cr	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
6	6	57	13,0	0,50	6	HM0106060CR05	HMF106060CR05	HMG106060CR05
8	8	63	19,0	0,80	6	HM0106080CR08	HMF106080CR08	HMG106080CR08
10	10	72	22,0	1,00	6	HM0106100CR10	HMF106100CR10	HMG106100CR10
12	12	83	26,0	1,50	6	HM0106120CR15	HMF106120CR15	HMG106120CR15
14	14	83	26,0	1,50	6	HM0106140CR15	HMF106140CR15	HMG106140CR15
16	16	92	32,0	1,50	6	HM0106106CR15	HMF106160CR15	HMG106160CR15
18	18	92	32,0	1,50	8	HM0106180CR15	HMF106180CR15	HMG106180CR15
20	20	104	38,0	2,00	8	HM0106200CR20	HMF106200CR20	HMG106200CR20
25	25	121	45,0	2,00	8	HM0106250CR20	HMF106250CR20	HMG106250CR20

Notes

013F

Fresa 4 taglienti a sgrossare serie normale con rompitruciolo
4 flute roughing end mill with chip breaker, regular version

6527 L
λ 30°



45°

D h11	d h6	L	l ap	45° +/-0,3	Z	Non rivestito Uncoated	Balinit® Futura	Balinit® Alcrona
4,0	6	57	13,0	0,4	4	HM0013F04	HMF013F04	HMG013F04
4,5	6	57	13,0	0,4	4	HM0013F045	HMF013F045	HMG013F045
5,0	6	57	13,0	0,5	4	HM0013F05	HMF013F05	HMG013F05
5,5	6	57	13,0	0,5	4	HM0013F055	HMF013F055	HMG013F055
6,0	6	57	13,0	0,5	4	HM0013F06	HMF013F06	HMG013F06
7,0	7	60	16,0	0,5	4	HM0013F07	HMF013F07	HMG013F07
8,0	8	63	19,0	0,5	4	HM0013F08	HMF013F08	HMG013F08
9,0	9	67	19,0	0,5	4	HM0013F09	HMF013F09	HMG013F09
10,0	10	72	22,0	0,5	4	HM0013F10	HMF013F10	HMG013F10
11,0	11	83	26,0	0,5	4	HM0013F11	HMF013F11	HMG013F11
12,0	12	83	26,0	0,6	4	HM0013F12	HMF013F12	HMG013F12
13,0	13	83	26,0	0,6	4	HM0013F13	HMF013F13	HMG013F13
14,0	14	83	26,0	0,6	4	HM0013F14	HMF013F14	HMG013F14
15,0	15	92	32,0	0,6	4	HM0013F15	HMF013F15	HMG013F15
16,0	16	92	32,0	0,6	4	HM0013F16	HMF013F16	HMG013F16
18,0	18	92	32,0	0,6	4	HM0013F18	HMF013F18	HMG013F18
20,0	20	104	38,0	0,7	4	HM0013F20	HMF013F20	HMG013F20

Parametri di lavoro / Working Parameters

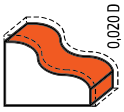
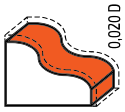
Materiale / Material	Diametro / Diameter	 1,00 D / 0,50 D			 0,20 D / 1,50 D			 1,00 D / 0,50 D			 0,20 D / 1,50 D			 0,20 D / 1,50 D			 0,20 D / 1,50 D		
	m/min	HMG Z = 2						HMG Z = 3						HMG Z = 4			HMG Z = 6		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
Acciaio <800 N/mm² Steel <800 N/mm²	2,0	0,002	76	19108	0,004	168	21019	0,003	161	17834	0,004	235	19618	0,004	448	28025	-	-	-
	4,0	0,006	106	9554	0,011	221	10510	0,006	161	8917	0,008	235	9809	0,014	777	14013	-	-	-
	6,0	0,010	122	6369	0,016	219	7006	0,016	278	5945	0,016	306	6539	0,024	897	9342	0,024	1345	9342
	8,0	0,015	147	4777	0,023	240	5255	0,023	305	4459	0,023	335	4904	0,031	874	7006	0,031	1311	7006
	10,0	0,020	151	3822	0,028	239	4204	0,028	304	3567	0,028	334	3924	0,037	824	5605	0,037	1237	5605
	12,0	0,023	149	3185	0,033	231	3503	0,033	294	2972	0,033	323	3270	0,041	772	4671	0,041	1158	4671
	16,0	0,029	140	2389	0,040	211	2627	0,040	268	2229	0,040	295	2452	0,049	680	3503	0,049	1020	3503
	20,0	0,034	129	1911	0,046	192	2102	0,046	245	1783	0,046	269	1962	0,054	606	2803	0,054	1213	2803
Acciaio <1000 N/mm² - Ghisa Steel <1000 N/mm² - Cast iron	m/min	HMG Z = 2						HMG Z = 3						HMG Z = 4			HMG Z = 6		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,002	62	15525	0,004	137	17078	0,002	87	14490	0,004	191	15939	0,004	364	22771	-	-	-
	4,0	0,004	58	7763	0,009	158	8539	0,005	109	7245	0,008	191	7970	0,012	540	11385	-	-	-
	6,0	0,009	91	5175	0,014	163	5693	0,014	207	4830	0,014	228	5313	0,022	668	7590	0,022	1002	7590
	8,0	0,016	124	3881	0,021	184	4270	0,021	234	3623	0,021	257	3985	0,029	665	5693	0,029	997	5693
	10,0	0,022	134	3105	0,027	185	3416	0,027	235	2898	0,027	259	3188	0,035	633	4554	0,035	950	4554
	12,0	0,026	135	2588	0,032	180	2846	0,032	229	2415	0,032	252	2657	0,039	597	3795	0,039	896	3795
	16,0	0,033	129	1941	0,039	166	2135	0,039	211	1811	0,039	232	1992	0,047	530	2846	0,047	794	2846
	20,0	0,039	121	1553	0,044	152	1708	0,044	193	1449	0,044	212	1594	0,052	475	2277	0,052	949	2277
Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	HMG Z = 2						HMG Z = 3						HMG Z = 4			HMG Z = 6		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,002	48	11943	0,004	105	13137	0,002	67	11146	0,004	147	12261	0,003	210	17516	-	-	-
	4,0	0,004	48	5971	0,008	104	6568	0,005	84	5573	0,008	147	6131	0,010	346	8758	-	-	-
	6,0	0,008	64	3981	0,013	114	4379	0,013	145	3715	0,013	159	4087	0,020	467	5839	0,020	701	5839
	8,0	0,015	91	2986	0,020	133	3284	0,020	169	2787	0,020	186	3065	0,027	476	4379	0,027	714	4379
	10,0	0,021	99	2389	0,026	135	2627	0,026	172	2229	0,026	190	2452	0,033	459	3503	0,033	689	3503
	12,0	0,025	101	1990	0,030	133	2189	0,030	169	1858	0,030	186	2044	0,037	436	2919	0,037	654	2919
	16,0	0,033	97	1493	0,038	123	1642	0,038	157	1393	0,038	173	1533	0,045	390	2189	0,045	585	2189
	20,0	0,038	91	1194	0,043	113	1314	0,043	144	1115	0,043	159	1226	0,050	351	1752	0,050	702	1752
Acciaio da stampi Mold Steel	m/min	HMG Z = 2						HMG Z = 3						HMG Z = 4			HMG Z = 6		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,001	18	5971	0,004	53	6568	0,002	33	5573	0,003	55	6131	0,003	105	8758	-	-	-
	4,0	0,003	18	2986	0,005	42	2787	0,005	42	2787	0,007	64	3065	0,010	173	4379	-	-	-
	6,0	0,008	32	1990	0,013	57	2189	0,013	72	1858	0,013	80	2044	0,020	234	2919	0,020	350	2919
	8,0	0,015	45	1493	0,020	66	1642	0,020	84	1393	0,020	93	1533	0,027	238	2189	0,027	357	2189
	10,0	0,021	50	1194	0,026	68	1314	0,026	86	1115	0,026	95	1226	0,033	230	1752	0,033	344	1752
	12,0	0,025	50	995	0,030	66	1095	0,030	85	929	0,030	93	1022	0,037	218	1460	0,037	327	1460
	16,0	0,033	49	746	0,038	62	821	0,038	78	697	0,038	86	766	0,045	195	1095	0,045	292	1095
	20,0	0,038	46	597	0,043	57	657	0,043	72	557	0,043	79	613	0,050	176	876	0,050	351	876

+10%	HM107	HM108	HM108	HM109	-	-
=	HM171	HM171	HM111	HM111	HM113	HM106
-15%	-	HM173 / HM176	-	HM123 / HM126	-	-

Correzione dell'avanzamentio (F) / Feed (F) correction

Notes

Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter	 0,25 D 1,50 D			 0,060 D 0,020 D			 0,060 D 0,020 D		
Acciaio <800 N/mm² Steel <800 N/mm²	m/min	HMG 013F			HMG 737			HMG 131		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	-	-	-	0,032	3721	57325	0,020	4690	57325
	4,0	0,022	987	11220	0,159	9109	28662	0,135	15467	28662
	6,0	0,030	897	7473	0,240	9172	19108	0,216	16510	19108
	8,0	0,042	931	5605	0,298	8528	14331	0,274	15680	14331
	10,0	0,050	905	4484	0,342	7846	11465	0,318	14591	11465
	12,0	0,058	863	3737	0,379	7235	9554	0,355	13553	9554
	16,0	0,069	776	2803	0,436	6251	7166	0,412	11814	7166
	20,0	0,078	701	2242	0,481	5512	5732	0,457	10474	5732
Acciaio <1000 N/mm² - Ghisa Steel <1000 N/mm² - Cast iron	m/min	HMG 013F			HMG 737			HMG 131		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	-	-	-	0,022	2092	46576	0,015	2765	46576
	4,0	0,018	653	9072	0,139	6470	23288	0,117	10890	23288
	6,0	0,028	668	6072	0,220	6831	15525	0,198	12296	15525
	8,0	0,039	711	4554	0,278	6463	11644	0,256	11902	11644
	10,0	0,048	699	3643	0,322	6002	9315	0,300	11184	9315
	12,0	0,055	671	3036	0,359	5568	7763	0,337	10453	7763
	16,0	0,067	608	2277	0,416	4846	5822	0,394	9179	5822
	20,0	0,076	551	1822	0,461	4292	4658	0,439	8175	4658
Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	HMG 013F			HMG 737			HMG 131		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	-	-	-	0,015	1099	35828	0,012	1772	35828
	4,0	0,015	420	7000	0,119	4260	1794	0,099	7087	17914
	6,0	0,025	467	4671	0,200	4777	11943	0,180	8599	11943
	8,0	0,037	512	3503	0,258	4614	8957	0,238	8510	8957
	10,0	0,045	509	2803	0,302	4330	7166	0,282	8088	7166
	12,0	0,053	493	2335	0,339	4044	5971	0,319	7611	5971
	16,0	0,064	450	1752	0,396	3548	4479	0,376	6739	4479
	20,0	0,073	410	1401	0,441	3159	3583	0,421	6030	3583
Acciaio da stampi Mold Steel	m/min	HMG 013F			HMG 737			HMG 131		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	-	-	-	0,015	550	17914	0,012	886	17914
	4,0	0,015	210	3500	0,119	2130	8957	0,099	3544	8957
	6,0	0,025	234	2335	0,200	2389	5971	0,180	4299	5971
	8,0	0,037	256	1752	0,258	2307	4479	0,238	4255	4479
	10,0	0,045	255	1401	0,302	2165	3583	0,282	4044	3583
	12,0	0,053	246	1168	0,339	2022	2986	0,319	3805	2986
	16,0	0,064	225	876	0,396	1774	2239	0,376	3369	2239
	20,0	0,073	205	701	0,441	1579	1791	0,421	3015	1791

+10%	-	-	-
=	HM013F	HM737	HM131
-15%	-	HM747	HM130

Correzione dell'avanzamentio (F) / Feed (F) correction

Notes

Alto Rendimento

Per soddisfare i più elevati standard qualitativi dei nostri clienti, Silmax propone utensili con rendimento ottimizzato per le tecnologie di fresatura ad alto rendimento.

Tutta la gamma viene costantemente aggiornata in base alle ultime novità tecnologiche. Un posto di primo piano è rappresentato dalle frese Evolution in metallo duro integrale per la sgrossatura e semifinitura di acciai con geometria asimmetrica ed affilatura frontale specifica per le lavorazioni in rampa fino a 24° d'angolo.

Tutte le frese hanno il trattamento 4S di superfinitura del filo tagliente particolarmente adatto per lavorazioni in condizione estreme in grado di garantire una produttività superiore di circa il 30% rispetto ad un utensile convenzionale.

Nella gamma novità assoluta è la 158, fresa a 4 taglienti con divisione irregolare e nucleo ribassato particolarmente performante per la lavorazione del titanio.

High Performance

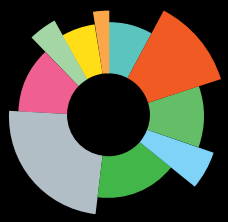
In order to meet the highest quality standards of our customers, Silmax proposes tools with optimised yield for high-performance milling technologies.

The whole range is constantly updated according to the latest technological innovations. Leading products in the line are the Evolution end mills, made of integral carbide for roughing and finishing steels, with asymmetrical geometry and specific face sharpening, for ramp machining up to a 24° angle.

All end mills have a super-finishing 4S-treated cutting edge, particularly suitable for machining in extreme conditions and capable of ensuring an increase in productivity of about 30% compared with a conventional tool.

Absolutely new in the range is the 4-flute end mill 158, with unequal flute spacing and double -core, particularly well-performing in a wide range of materials.

Alto Rendimento
High Performance

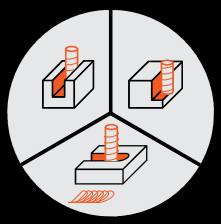


Multimateriale

Gli utensili sono stati progettati per lavorare, con parametri molto elevati, un'ampia gamma di acciai, basso e alto legati, ghise e acciai inossidabili.

Multi-material

These tools have been designed for machining a wide range of steels, low-alloy and high-alloy steels, cast irons and stainless steels.

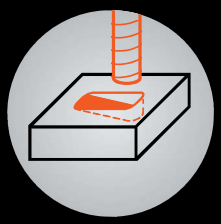


Multiapplicazione

+ Cava fino a 1,5XD, contornitura pesante e contornitura di finitura
+ Lavorare con le strategie della fresatura trocoidale

Multi-application

+ Slotting up to 1,5xD, heavy-duty side milling and finishing side milling
+ Machining with trochoidal milling strategies



Eseguire discese in rampa con angoli di discesa elevati

Execute ramp plunging with high plunging angles

Trattamento Silmax 4S

Trattamento Silmax 4S per il trattamento delle superfici e delle geometrie di taglio, enfatizzando le caratteristiche costruttive dell'utensile e migliorando:

+ Omogeneità del filo tagliente
+ Resistenza all'usura e riduzione degli sforzi di taglio
+ Adesione e resistenza del rivestimento
+ Incremento della produttività del 30%

Silmax 4S Treatment

Silmax 4S treatment for surfaces and cutting geometries, enhancing the tool construction characteristics and improving:

+ Cutting-edge homogeneity
+ Wear-resistance and reduction of shear stress
+ Coating adhesion and resistance
+ 30% increase in productivity

Rivestimento PVD

Il rivestimento utilizzato è Balinit® Alcrona Pro, rivestimento estremamente resistente all'usura, con eccellenti livelli di durezza a caldo e stabilità agli shock termici.
Alcrona Pro® garantisce ottimi risultati anche nella lavorazione a secco e ad elevate velocità di taglio.

PVD Coating

The coating used is Balinit® Alcrona Pro, an extremely wear-resistant coating, with excellent heat-hardness levels and thermal-shock stability.
Alcrona Pro® grants extraordinary results also in dry machining and in high cutting speeds.

Per maggiori informazioni
scarica la brochure digitale.

For further information
download the digital brochure.

silmax.it/hpc

113EV
Fresa 4 taglienti con eliche differenziate e divisione irregolare

4 flute end mill with variable helix and unequal flute spacing

→ 56

113EVR
Fresa 4 taglienti con eliche differenziate e divisione irregolare per lavorazioni in rampa

4 flute finishing end mill with variable helix and unequal f lute spacing for ramp milling

→ 57

013EV
Fresa 4 taglienti a rompitruciolo con eliche differenziate e divisione irregolare

4 flute roughing end mill with chip breaker, variable helix and unequal flute spacing

→ 58

013EVK
Fresa 4 taglienti a rompitruciolo con eliche differenziate e divisione irregolare per lavorazioni cava

4 flute roughing end mill with chip breaker, variable helix and unequal flute spacing for slot milling

→ 58

013EVR
Fresa 4 taglienti a rompitruciolo con eliche differenziate e divisione irregolare per lavorazioni in rampa

4 flute roughing end mill with chip breaker, variable helix and unequal flute spacing for ramp milling

→ 59

158 NEW
Fresa 4 taglienti con divisione irregolare e tagliente extra lungo

4 flute end mill with unequal flute spacing extra long version

→ 65

151
Fresa 3 taglienti per elevate asportazioni

3 flute roughing end mill for high chip removal

→ 67

152
Fresa 4 taglienti con eliche differenziate e divisione irregolare

4 flute end mill with unequal flute spacing and variable helix

→ 69

193
Fresa 5 taglienti con divisione irregolare e tagliente lungo

5 flute end mill with variable helix long version

→ 71

196
Fresa 5/7 taglienti con divisione irregolare e tagliente extra lungo

5/7 flute end mill with variable helix, extra long version

→ 71

155
Fresa multitagliente per superfinitura

Multi-flute end mill for super-finishing

→ 73

SIL SERVICE

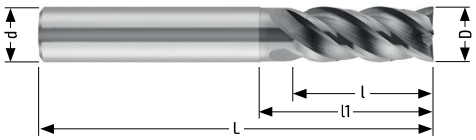
L'esperienza Silmax dimostra che un utensile correttamente affilato ha un rendimento uguale a quello nuovo.

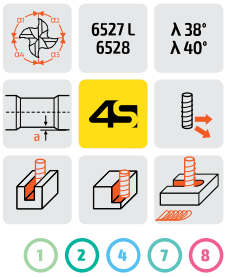
Silmax experience shows that a properly sharpened tool grants the same performances of a new tool.

- Riaffilatura e rigenerazione / Resharpening and Reconditioning
- Esecuzione perfetta / Perfect Execution
- Rivestimento PVD / PVD Coating
- Trattamento 4S / 4S Treatment
- Consegna rapida / Fast Delivery

Evolution
113EV

Fresa 4 taglienti con eliche differenziate e divisione irregolare
4 flute end mill with variable helix and unequal flute spacing





45°

D h10	d h6	L	l ap	l1	a	45° +0,05/+0	Z	Balinit® Alcrona
3,0	6	57	8,0	-	-	0,05	4	HMG113030REV
4,0	4	50	11,0	16,0	0,10	0,05	4	HMG113040EV
4,0	6	57	11,0	-	-	0,05	4	HMG113040REV
5,0	5	50	13,0	18,0	0,10	0,05	4	HMG113050EV
5,0	6	57	13,0	-	-	0,05	4	HMG113050REV
6,0	6	57	13,0	20,0	0,15	0,05	4	HMG113060EV
7,0	7	60	16,0	22,0	0,15	0,05	4	HMG113070EV
8,0	8	63	19,0	25,0	0,15	0,05	4	HMG113080EV
9,0	9	67	19,0	28,0	0,15	0,05	4	HMG113090EV
10,0	10	72	22,0	30,0	0,15	0,05	4	HMG113100EV
12,0	12	83	26,0	36,0	0,20	0,05	4	HMG113120EV
14,0	14	83	26,0	36,0	0,20	0,05	4	HMG113140EV
16,0	16	92	32,0	42,0	0,20	0,05	4	HMG113160EV
20,0	20	104	38,0	52,0	0,20	0,05	4	HMG113200EV

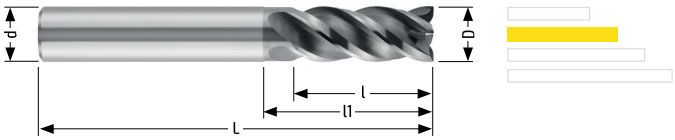
Cr

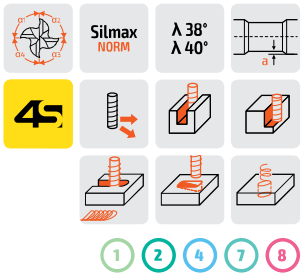
D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Alcrona
3,0	6	57	8,0	-	-	0,30	4	HMG113030REV03
3,0	6	57	8,0	-	-	0,50	4	HMG113030REV05
4,0	4	50	11,0	16,0	0,10	0,30	4	HMG113040EV03
4,0	6	57	11,0	-	-	0,30	4	HMG113040REV03
4,0	6	57	11,0	-	-	0,50	4	HMG113040REV05
5,0	6	57	13,0	-	-	0,30	4	HMG113050REV03
5,0	6	57	13,0	-	-	0,50	4	HMG113050REV05
6,0	6	57	13,0	20,0	0,15	0,50	4	HMG113060EV05
6,0	6	57	13,0	20,0	0,15	1,00	4	HMG113060EV10
8,0	8	63	19,0	25,0	0,15	0,50	4	HMG113080EV05
10,0	10	72	22,0	30,0	0,15	0,50	4	HMG113100EV05
10,0	10	72	22,0	30,0	0,15	1,00	4	HMG113100EV10
12,0	12	83	26,0	36,0	0,20	1,00	4	HMG113120EV10

Notes

113EVR

Fresa 4 taglienti con eliche differenziate e divisione irregolare per lavorazioni in rampa / 4 flute finishing end mill with variable helix and unequal flute spacing for ramp milling





Cr

D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Alcrona
4,0	6	57	11,0	16,0	0,15	0,10	4	HMG113040EVR
6,0	6	57	13,0	20,0	0,15	0,10	4	HMG113060EVR
8,0	8	63	19,0	25,0	0,15	0,15	4	HMG113080EVR
10,0	10	72	22,0	30,0	0,15	0,20	4	HMG113100EVR
12,0	12	83	26,0	36,0	0,20	0,20	4	HMG113120EVR
16,0	16	92	32,0	42,0	0,20	0,20	4	HMG113160EVR

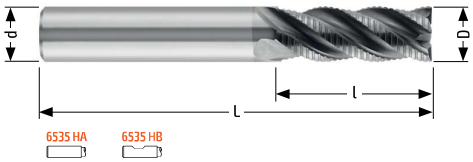
Evolution

013EV

Fresa 4 taglienti a rompitruciolo con eliche differenziate e divisione irregolare
4 flute roughing end mill with chip breaker, variable helix and unequal flute spacing

Silmax NORM | λ 38° λ 40° | 4S

1 2 4 5 7



45°

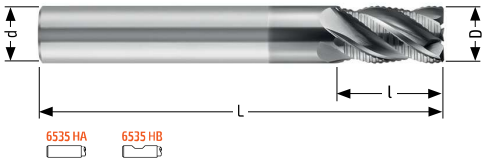
D h10	d h6	L	l ap	45°	6535	Z	Balinit® Alcrona
3,0	6	57	6,0	0,15	HA	3	HMG013F03EV
4,0	6	57	8,0	0,15	HA	3	HMG013F04EV
5,0	6	57	10,0	0,15	HA	3	HMG013F05EV
6,0	6	57	15,0	0,15	HA	4	HMG013F06EV
8,0	8	63	20,0	0,20	HA	4	HMG013F08EV
10,0	10	72	25,0	0,30	HA	4	HMG013F10EV
12,0	12	83	30,0	0,40	HB	4	HMG013F12EV
14,0	14	92	35,0	0,45	HB	4	HMG013F14EV
16,0	16	104	40,0	0,50	HB	4	HMG013F16EV
20,0	20	104	40,0	0,60	HB	4	HMG013F20EV
16,0	16	104	48,0	0,50	HA	6	HMG013F16EVZ6
20,0	20	134	60,0	0,60	HA	6	HMG013F20EVZ6

013EVK

Fresa 4 taglienti a rompitruciolo con eliche differenziate e divisione irregolare per lavorazioni cava / 4 flute roughing end mill with chip breaker, variable helix and unequal flute spacing for slot milling

Silmax NORM | λ 38° λ 40° | 4S

1 2 4 5 7



45°

D h10	d h6	L	l ap	45°	6535	Z	Balinit® Alcrona
6,0	6	57	9,00	0,15	HA	3	HMG013F06EVK
8,0	8	63	12,00	0,20	HA	4	HMG013F08EVK
10,0	10	72	15,00	0,30	HA	4	HMG013F10EVK
12,0	12	83	18,00	0,40	HB	4	HMG013F12EVK

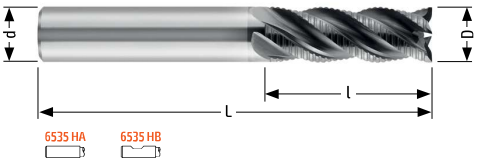
013EV Z6 Suggerite per operazioni di spallamento fino a 3xD, ridurre i parametri in proporzione all'asportazione.
Suitable for side milling operations up to 3xD. Cutting parameters should be inversely proportional to axial removal rates.

013EVK Maggiore rigidità, suggerite per lavorazioni in cava.
More stiffnes, recommended for slot milling.

Notes

013EVR

Fresa 4 taglienti a rompitruciolo con eliche differenziate e divisione irregolare per lavorazioni in rampa / 4 flute roughing end mill with chip breaker, variable helix and unequal flute spacing for ramp milling



Silmax NORM
λ 38°
λ 40°
4S

1 2 4 5 7

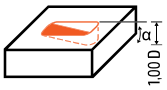
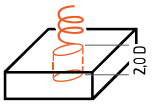
Cr

D h10	d h6	L	l ap	Cr	6535	Z	Balinit® Alcrona
6,0	6	57	15,0	0,10	HA	4	HMG013F06EVR
8,0	8	63	20,0	0,15	HA	4	HMG013F08EVR
10,0	10	72	25,0	0,20	HA	4	HMG013F10EVR
12,0	12	83	30,0	0,20	HB	4	HMG013F12EVR
16,0	16	104	40,0	0,20	HB	4	HMG013F16EVR

Evolution

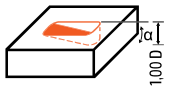
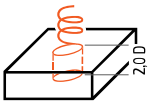
113EVR/113EV

Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter	113EVR						113EVR/113EV					
					 Df = 1,60 D ÷ 1,90 D			 1,00 D			 0,50 D		
Acciaio < 800 N/mm² Steel < 800 N/mm²		Rampa lineare/Straight ramp α=24°			Rampa elicoidale/Helical ramp α=20°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=150			Vc=170			Vc=150			Vc=170		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,010	637	15924	0,012	866	18047
	4,0	0,015	716	11937	0,020	1082	13528	0,015	716	11937	0,020	1082	13528
	5,0	-	-	-	-	-	-	0,020	764	9549	0,030	1299	10823
	6,0	0,030	955	7958	0,044	1587	9019	0,030	955	7958	0,044	1587	9019
	7,0	-	-	-	-	-	-	0,035	955	6821	0,051	1577	7730
	8,0	0,040	955	5968	0,058	1569	6764	0,040	955	5968	0,058	1569	6764
	9,0	-	-	-	-	-	-	0,043	912	5305	0,064	1539	6013
	10,0	0,047	898	4775	0,071	1537	5411	0,047	898	4775	0,071	1537	5411
	12,0	0,052	828	3979	0,076	1371	4509	0,052	828	3979	0,076	1371	4509
	14,0	-	-	-	-	-	-	0,058	791	3410	0,081	1252	3865
	16,0	0,061	728	2984	0,085	1150	3382	0,061	728	2984	0,085	1150	3382
	20,0	-	-	-	-	-	-	0,065	621	2387	0,090	974	2706
Acciaio <1000 N/mm² - Ghisa Steel <1000 N/mm² - Cast iron		Rampa lineare/Straight ramp α=22°			Rampa elicoidale/Helical ramp α=20°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=115			Vc=140			Vc=115			Vc=140		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,010	488	12208	0,012	713	14862
	4,0	0,015	549	9151	0,020	891	11141	0,015	549	9151	0,020	891	11141
	5,0	-	-	-	-	-	-	0,019	556	7321	0,030	1070	8913
	6,0	0,026	634	6101	0,040	1188	7427	0,026	634	6101	0,040	1188	7427
	7,0	-	-	-	-	-	-	0,031	648	5229	0,045	1146	6366
	8,0	0,035	641	4576	0,050	1114	5570	0,035	641	4576	0,050	1114	5570
	9,0	-	-	-	-	-	-	0,039	634	4067	0,054	1070	4951
	10,0	0,042	615	3661	0,060	1070	4456	0,042	615	3661	0,060	1070	4456
	12,0	0,047	573	3050	0,067	995	3714	0,047	573	3050	0,067	995	3714
	14,0	-	-	-	-	-	-	0,050	523	2615	0,071	904	3183
	16,0	0,054	494	2288	0,078	869	2785	0,054	494	2288	0,078	869	2785
	20,0	-	-	-	-	-	-	0,058	425	1830	0,085	758	2228
Acciaio < 1300 N/mm² Steel < 1300 N/mm²		Rampa lineare/Straight ramp α=20°			Rampa elicoidale/Helical ramp α=18°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=95			Vc=100			Vc=95			Vc=100		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,010	403	10085	0,012	510	10616
	4,0	0,012	363	7560	0,020	637	7958	0,012	363	7560	0,020	637	7958
	5,0	-	-	-	-	-	-	0,017	411	6048	0,030	764	6366
	6,0	0,022	444	5040	0,040	849	5305	0,022	444	5040	0,040	849	5305
	7,0	-	-	-	-	-	-	0,027	467	4320	0,045	819	4547
	8,0	0,031	469	3780	0,050	796	3979	0,031	469	3780	0,050	796	3979
	9,0	-	-	-	-	-	-	0,035	470	3360	0,054	764	3537
	10,0	0,037	448	3024	0,060	764	3183	0,037	448	3024	0,060	764	3183
	12,0	0,041	413	2520	0,067	711	2653	0,041	413	2520	0,067	711	2653
	14,0	-	-	-	-	-	-	0,046	397	2160	0,071	646	2274
	16,0	0,050	378	1890	0,078	621	1989	0,050	378	1890	0,078	621	1989
	20,0	-	-	-	-	-	-	0,052	314	1512	0,085	541	1592
Acciaio da stampi Mold Steel		Rampa lineare/Straight ramp α=20°			Rampa elicoidale/Helical ramp α=14°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=45			Vc=65			Vc=45			Vc=65		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,010	191	4777	0,012	331	6900
	4,0	0,012	172	3581	0,020	414	5173	0,012	172	3581	0,020	414	5173
	5,0	-	-	-	-	-	-	0,017	195	2865	0,030	497	4138
	6,0	0,022	210	2387	0,040	552	3448	0,022	210	2387	0,040	552	3448
	7,0	-	-	-	-	-	-	0,027	221	2046	0,045	532	2956
	8,0	0,031	222	1790	0,050	517	2586	0,031	222	1790	0,050	517	2586
	9,0	-	-	-	-	-	-	0,035	223	1592	0,054	497	2299
	10,0	0,037	212	1432	0,060	497	2069	0,037	212	1432	0,060	497	2069
	12,0	0,041	196	1194	0,067	462	1724	0,041	196	1194	0,067	462	1724
	14,0	-	-	-	-	-	-	0,046	188	1023	0,071	420	1478
	16,0	0,050	179	895	0,078	403	1293	0,050	179	895	0,078	403	1293
	20,0	-	-	-	-	-	-	0,052	149	716	0,085	352	1035

113EVR/113EV

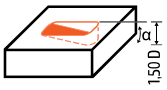
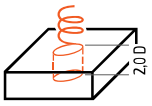
Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter	113EVR						113EVR/113EV					
													
					Df = 1,60 D ÷ 1,90 D			1,00 D			0,50 D		
Inox ferritico / Ferritic stainless steel		Rampa lineare/Straight ramp α=24°			Rampa elicoidale/Helical ramp α=20°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=60			Vc=70			Vc=60			Vc=70		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,010	255	6369	0,012	357	7431
	4,0	0,015	286	4775	0,020	446	5570	0,015	286	4775	0,020	446	5570
	5,0	-	-	-	-	-	-	0,019	290	3820	0,030	535	4456
	6,0	0,026	331	3183	0,040	594	3714	0,026	331	3183	0,040	594	3714
	7,0	-	-	-	-	-	-	0,031	338	2728	0,045	573	3183
	8,0	0,035	334	2387	0,050	557	2785	0,035	334	2387	0,050	557	2785
	9,0	-	-	-	-	-	-	0,039	331	2122	0,054	535	2476
	10,0	0,042	321	1910	0,060	535	2228	0,042	321	1910	0,060	535	2228
	12,0	0,047	299	1592	0,067	498	1857	0,047	299	1592	0,067	498	1857
	14,0	-	-	-	-	-	-	0,050	273	1364	0,071	452	1592
	16,0	0,054	258	1194	0,078	434	1393	0,054	258	1194	0,078	434	1393
	20,0	-	-	-	-	-	-	0,058	222	955	0,085	379	1114
Inox austenitico / Austenitic stainless Steel		Rampa lineare/Straight ramp α=18°			Rampa elicoidale/Helical ramp α=15°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=50			Vc=55			Vc=50			Vc=55		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,010	212	5308	0,012	280	5839
	4,0	0,012	191	3979	0,020	350	4377	0,012	191	3979	0,02	350	4377
	5,0	-	-	-	-	-	-	0,017	216	3183	0,03	420	3501
	6,0	0,022	233	2653	0,040	467	2918	0,022	233	2653	0,04	467	2918
	7,0	-	-	-	-	-	-	0,027	246	2274	0,045	450	2501
	8,0	0,031	247	1989	0,050	438	2188	0,031	247	1989	0,05	438	2188
	9,0	-	-	-	-	-	-	0,035	248	1768	0,054	420	1945
	10,0	0,037	236	1592	0,060	420	1751	0,037	236	1592	0,06	420	1751
	12,0	0,041	218	1326	0,067	391	1459	0,041	218	1326	0,067	391	1459
	14,0	-	-	-	-	-	-	0,046	209	1137	0,071	355	1251
	16,0	0,050	199	995	0,078	341	1094	0,050	199	995	0,078	341	1094
	20,0	-	-	-	-	-	-	0,052	166	796	0,085	298	875
Titanio / Titanium		Rampa lineare/Straight ramp α=18°			Rampa elicoidale/Helical ramp α=12°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=40			Vc=45			Vc=40			Vc=45		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,010	170	4246	0,012	229	4777
	4,0	0,015	191	3183	0,012	172	3581	0,015	191	3183	0,012	172	3581
	5,0	-	-	-	-	-	-	0,019	194	2546	0,014	160	2865
	6,0	0,026	221	2122	0,017	162	2387	0,026	221	2122	0,017	162	2387
	7,0	-	-	-	-	-	-	0,031	226	1819	0,020	164	2046
	8,0	0,035	223	1592	0,022	158	1790	0,035	223	1592	0,022	158	1790
	9,0	-	-	-	-	-	-	0,039	221	1415	0,024	153	1592
	10,0	0,042	214	1273	0,026	149	1432	0,042	214	1273	0,026	149	1432
	12,0	0,047	199	1061	0,031	148	1194	0,047	199	1061	0,031	148	1194
	14,0	-	-	-	-	-	-	0,050	182	909	0,035	143	1023
	16,0	0,054	172	796	0,040	143	895	0,054	172	796	0,040	143	895
	20,0	-	-	-	-	-	-	0,058	148	637	0,045	129	716
PH Duplex		Rampa lineare/Straight ramp α=18°			Rampa elicoidale/Helical ramp α=12°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=40			Vc=145			Vc=40			Vc=45		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,010	170	4246	0,012	229	4777
	4,0	0,012	153	3183	0,020	286	3581	0,012	153	3183	0,020	286	3581
	5,0	-	-	-	-	-	-	0,017	173	2546	0,030	344	2865
	6,0	0,022	187	2122	0,040	382	2387	0,022	187	2122	0,040	382	2387
	7,0	-	-	-	-	-	-	0,027	196	1819	0,045	368	2046
	8,0	0,031	197	1592	0,050	358	1790	0,031	197	1592	0,050	358	1790
	9,0	-	-	-	-	-	-	0,035	198	1415	0,054	344	1592
	10,0	0,037	188	1273	0,060	344	1432	0,037	188	1273	0,060	344	1432
	12,0	0,041	174	1061	0,067	320	1194	0,041	174	1061	0,067	320	1194
	14,0	-	-	-	-	-	-	0,046	167	909	0,071	291	1023
	16,0	0,050	159	796	0,078	279	895	0,050	159	796	0,078	279	895
	20,0	-	-	-	-	-	-	0,052	132	637	0,085	244	716

Evolution

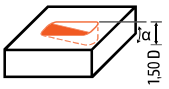
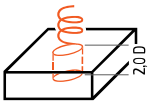
013EVR/013EV

Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	013EVR						013EVR/013EV					
					 Df = 1,60 D ÷ 1,90 D			 1,00 D			 0,50 D		
Acciaio < 800 N/mm² Steel < 800 N/mm²		Rampa lineare/Straight ramp α=24°			Rampa elicoidale/Helical ramp α=20°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=140			Vc=160			Vc=140			Vc=160		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,012	713	14854	0,014	951	16977
	4,0	-	-	-	-	-	-	0,018	802	11141	0,020	1019	12732
	5,0	-	-	-	-	-	-	0,024	856	8913	0,030	1222	10186
	6,0	0,032	951	7427	0,050	1698	8488	0,032	951	7427	0,050	1698	8488
	7,0	-	-	-	-	-	-	0,037	942	6366	0,057	1659	7276
	8,0	0,042	936	5570	0,064	1630	6366	0,042	936	5570	0,064	1630	6366
	9,0	-	-	-	-	-	-	0,045	891	4951	0,070	1585	5659
	10,0	0,049	873	4456	0,076	1548	5093	0,049	873	4456	0,076	1548	5093
	12,0	0,054	802	3714	0,082	1392	4244	0,054	802	3714	0,082	1392	4244
	14,0	-	-	-	-	-	-	0,060	764	3183	0,086	1251	3638
	16,0	0,063	702	2785	0,091	1159	3183	0,063	702	2785	0,091	1159	3183
	20,0	-	-	-	-	-	-	0,067	597	2228	0,096	978	2546
Acciaio <1000 N/mm² - Ghisa Steel <1000 N/mm² - Cast iron		Rampa lineare/Straight ramp α=22°			Rampa elicoidale/Helical ramp α=20°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=110			Vc=140			Vc=110			Vc=140		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,012	560	11671	0,014	832	14854
	4,0	-	-	-	-	-	-	0,018	630	8754	0,020	891	11141
	5,0	-	-	-	-	-	-	0,024	672	7003	0,030	1070	8913
	6,0	0,032	747	5836	0,050	1485	7427	0,032	747	5836	0,050	1485	7427
	7,0	-	-	-	-	-	-	0,037	740	5002	0,057	1451	6366
	8,0	0,042	735	4377	0,064	1426	5570	0,042	735	4377	0,064	1426	5570
	9,0	-	-	-	-	-	-	0,045	700	3890	0,070	1386	4951
	10,0	0,049	686	3501	0,076	1355	4456	0,049	686	3501	0,076	1355	4456
	12,0	0,054	630	2918	0,082	1218	3714	0,054	630	2918	0,082	1218	3714
	14,0	-	-	-	-	-	-	0,060	600	2501	0,086	1095	3183
	16,0	0,063	551	2188	0,091	1014	2785	0,063	551	2188	0,091	1014	2785
	20,0	-	-	-	-	-	-	0,067	469	1751	0,096	856	2228
Acciaio < 1300 N/mm² Steel < 1300 N/mm²		Rampa lineare/Straight ramp α=20°			Rampa elicoidale/Helical ramp α=18°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=95			Vc=100			Vc=95			Vc=100		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,012	484	10080	0,014	594	10610
	4,0	-	-	-	-	-	-	0,018	544	7560	0,020	637	7958
	5,0	-	-	-	-	-	-	0,024	581	6048	0,030	764	6366
	6,0	0,032	645	5040	0,050	1061	5305	0,032	645	5040	0,050	1061	5305
	7,0	-	-	-	-	-	-	0,037	639	4320	0,057	1037	4547
	8,0	0,042	635	3780	0,064	1019	3979	0,042	635	3780	0,064	1019	3979
	9,0	-	-	-	-	-	-	0,045	605	3360	0,070	990	3537
	10,0	0,049	593	3024	0,076	968	3183	0,049	593	3024	0,076	968	3183
	12,0	0,054	544	2520	0,082	870	2653	0,054	544	2520	0,082	870	2653
	14,0	-	-	-	-	-	-	0,060	518	2160	0,086	782	2274
	16,0	0,063	476	1890	0,091	724	1989	0,063	476	1890	0,091	724	1989
	20,0	-	-	-	-	-	-	0,067	405	1512	0,096	611	1592
Acciaio da stampi Mold Steel		Rampa lineare/Straight ramp α=20°			Rampa elicoidale/Helical ramp α=14°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=45			Vc=65			Vc=45			Vc=65		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,012	229	4775	0,014	386	6897
	4,0	-	-	-	-	-	-	0,018	258	3581	0,020	414	5173
	5,0	-	-	-	-	-	-	0,024	275	2865	0,030	497	4138
	6,0	0,032	306	2387	0,040	552	3448	0,032	306	2387	0,040	552	3448
	7,0	-	-	-	-	-	-	0,037	303	2046	0,045	532	2956
	8,0	0,042	301	1790	0,050	517	2586	0,042	301	1790	0,050	517	2586
	9,0	-	-	-	-	-	-	0,045	286	1592	0,054	497	2299
	10,0	0,049	281	1432	0,060	497	2069	0,049	281	1432	0,060	497	2069
	12,0	0,054	258	1194	0,067	462	1724	0,054	258	1194	0,067	462	1724
	14,0	-	-	-	-	-	-	0,060	246	1023	0,071	420	1478
	16,0	0,063	226	895	0,078	403	1293	0,063	226	895	0,078	403	1293
	20,0	-	-	-	-	-	-	0,067	192	716	0,085	352	1035

013EVR/013EV

Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter	013EVR						013EVR/013EV					
													
		α 1,50 D			2,00 D Df = 1,60 D ÷ 1,90 D			1,50 D 1,00 D			2,00 D 0,50 D		
Inox ferritico / Ferritic stainless steel		Rampa lineare/Straight ramp α=24°			Rampa elicoidale/Helical ramp α=20°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=60			Vc=70			Vc=60			Vc=70		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,009	229	6366	0,010	297	7427
	4,0	-	-	-	-	-	-	0,012	229	4775	0,016	357	5570
	5,0	-	-	-	-	-	-	0,017	260	3820	0,021	374	4456
	6,0	0,022	280	3183	0,026	386	3714	0,022	280	3183	0,026	386	3714
	7,0	-	-	-	-	-	-	0,033	360	2728	0,037	471	3183
	8,0	0,038	363	2387	0,042	468	2785	0,038	363	2387	0,042	468	2785
	9,0	-	-	-	-	-	-	0,041	348	2122	0,045	446	2476
	10,0	0,041	313	1910	0,045	401	2228	0,041	313	1910	0,045	401	2228
	12,0	0,045	286	1592	0,049	364	1857	0,045	286	1592	0,049	364	1857
	14,0	-	-	-	-	-	-	0,048	262	1364	0,052	331	1592
	16,0	0,052	248	1194	0,056	312	1393	0,052	248	1194	0,056	312	1393
	20,0	-	-	-	-	-	-	0,062	237	955	0,066	294	1114
Inox austenitico / Austenitic stainless Steel		Rampa lineare/Straight ramp α=18°			Rampa elicoidale/Helical ramp α=15°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=50			Vc=55			Vc=50			Vc=55		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,009	191	5305	0,010	233	5836
	4,0	-	-	-	-	-	-	0,012	191	3979	0,016	280	4377
	5,0	-	-	-	-	-	-	0,017	216	3183	0,021	294	3501
	6,0	0,022	233	2653	0,026	303	2918	0,022	233	2653	0,026	303	2918
	7,0	-	-	-	-	-	-	0,033	300	2274	0,037	370	2501
	8,0	0,038	302	1989	0,042	368	2188	0,038	302	1989	0,042	368	2188
	9,0	-	-	-	-	-	-	0,041	290	1768	0,045	350	1945
	10,0	0,041	261	1592	0,045	315	1751	0,041	261	1592	0,045	315	1751
	12,0	0,045	239	1326	0,049	286	1459	0,045	239	1326	0,049	286	1459
	14,0	-	-	-	-	-	-	0,048	218	1137	0,052	260	1251
	16,0	0,052	207	995	0,056	245	1094	0,052	207	995	0,056	245	1094
	20,0	-	-	-	-	-	-	0,062	197	796	0,066	231	875
Titanio / Titanium		Rampa lineare/Straight ramp α=18°			Rampa elicoidale/Helical ramp α=12°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=40			Vc=45			Vc=40			Vc=45		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,012	204	4244	0,014	267	4775
	4,0	-	-	-	-	-	-	0,018	229	3183	0,020	286	3581
	5,0	-	-	-	-	-	-	0,024	244	2546	0,030	344	2865
	6,0	0,032	272	2122	0,040	382	2387	0,032	272	2122	0,040	382	2387
	7,0	-	-	-	-	-	-	0,037	269	1819	0,045	368	2046
	8,0	0,042	267	1592	0,050	358	1790	0,042	267	1592	0,050	358	1790
	9,0	-	-	-	-	-	-	0,045	255	1415	0,054	344	1592
	10,0	0,049	250	1273	0,060	344	1432	0,049	250	1273	0,060	344	1432
	12,0	0,054	229	1061	0,067	320	1194	0,054	229	1061	0,067	320	1194
	14,0	-	-	-	-	-	-	0,060	218	909	0,071	291	1023
	16,0	0,063	201	796	0,078	279	895	0,063	201	796	0,078	279	895
	20,0	-	-	-	-	-	-	0,067	171	637	0,085	244	716
PH Duplex		Rampa lineare/Straight ramp α=18°			Rampa elicoidale/Helical ramp α=12°			Cava/Slot			Contornitura/Side milling		
	m/min	Vc=40			Vc=45			Vc=40			Vc=45		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	-	-	-	0,009	153	4244	0,010	191	4775
	4,0	-	-	-	-	-	-	0,012	153	3183	0,016	229	3581
	5,0	-	-	-	-	-	-	0,017	173	2546	0,021	241	2865
	6,0	0,022	187	2122	0,026	248	2387	0,022	187	2122	0,026	248	2387
	7,0	-	-	-	-	-	-	0,033	240	1819	0,037	303	2046
	8,0	0,038	242	1592	0,042	301	1790	0,038	242	1592	0,042	301	1790
	9,0	-	-	-	-	-	-	0,041	232	1415	0,045	286	1592
	10,0	0,041	209	1273	0,045	258	1432	0,041	209	1273	0,045	258	1432
	12,0	0,045	191	1061	0,049	234	1194	0,045	191	1061	0,049	234	1194
	14,0	-	-	-	-	-	-	0,048	175	909	0,052	213	1023
	16,0	0,052	166	796	0,056	201	895	0,052	166	796	0,056	201	895
	20,0	-	-	-	-	-	-	0,062	158	637	0,066	189	716

158

Parametri di lavoro / Working Parameters

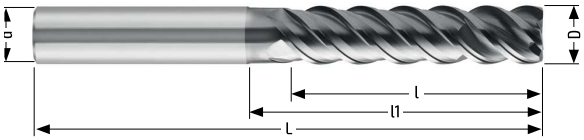
Materiale / Material	Diametro / Diameter	1,00 D (1,00 D)			0,05 D (FULL)		
Acciaio <800 N/mm² / Steel <800 N/mm²	m/min	Vc=130			Vc=250		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,004	221	13800	0,030	3185	26539
	4,0	0,010	414	10350	0,060	4777	19904
	6,0	0,015	414	6900	0,090	4777	13270
	8,0	0,020	414	5175	0,150	5971	9952
	10,0	0,030	497	4140	0,200	6369	7962
	12,0	0,035	483	3450	0,250	6635	6635
	16,0	0,040	414	2588	0,250	4976	4976
Acciaio <1000 N/mm² - Ghisa / Steel <1000 N/mm² - Cast iron	m/min	Vc=100			Vc=190		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,004	170	10616	0,030	2420	20170
	4,0	0,010	318	7962	0,060	3631	15127
	6,0	0,015	318	5308	0,090	3631	10085
	8,0	0,020	318	3981	0,150	4538	7564
	10,0	0,030	382	3185	0,200	4841	6051
	12,0	0,035	372	2654	0,250	5042	5042
	16,0	0,040	318	1990	0,250	3782	3782
Acciaio <1300 N/mm² / Steel <1300 N/mm²	m/min	Vc=80			Vc=160		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,004	136	8493	0,030	2038	16985
	4,0	0,010	255	6369	0,060	3057	12739
	6,0	0,015	255	4246	0,090	3057	8493
	8,0	0,020	255	3185	0,150	3822	6369
	10,0	0,030	306	2548	0,200	4076	5096
	12,0	0,035	297	2123	0,250	4246	4246
	16,0	0,040	255	1592	0,250	3185	3185
Acciai inossidabili / Stainless Steels	m/min	Vc=60			Vc=110		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,004	102	6369	0,030	1401	11677
	4,0	0,010	191	4777	0,060	2102	8758
	6,0	0,015	191	3185	0,090	2102	5839
	8,0	0,020	191	2389	0,150	2627	4379
	10,0	0,030	229	1911	0,200	2803	3503
	12,0	0,035	223	1592	0,250	2919	2919
	16,0	0,040	191	1194	0,250	2189	2189
Titanio / Titanium	m/min	Vc=60			Vc=90		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,004	102	6369	0,030	1146	9554
	4,0	0,010	191	4777	0,060	1720	7166
	6,0	0,015	191	3185	0,090	1720	4777
	8,0	0,020	191	2389	0,150	2150	3583
	10,0	0,030	229	1911	0,200	2293	2866
	12,0	0,035	223	1592	0,250	2389	2389
	16,0	0,040	191	1194	0,250	1791	1791

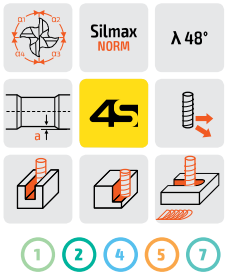
Notes

NEW

158

Fresa 4 taglienti con divisione irregolare e tagliente extra lungo
4 flute end mill with unequal flute spacing extra long version





45°

D e8	d h6	L	l ap	l1	a	45°	Z	Balinit® Alcrona
3,0	6	57	12,0	15,0	0,10	0,05	4	HMG158030
4,0	6	63	16,0	20,0	0,10	0,05	4	HMG158040
5,0	6	70	20,0	25,0	0,10	0,05	4	HMG158050
6,0	6	70	24,0	30,0	0,15	0,05	4	HMG158060
8,0	8	80	32,0	40,0	0,15	0,10	4	HMG158080
10,0	10	87	40,0	46,0	0,15	0,15	4	HMG158100
12,0	12	108	48,0	58,0	0,20	0,15	4	HMG158120
16,0	16	120	64,0	68,0	0,20	0,20	4	HMG158160

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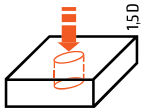
Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter									
Acciaio <800 N/mm² Steel <800 N/mm²	m/min	Vc=110			Vc=130			Vc=80		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,010	525	17516	0,010	621	20701	0,007	268	12739
	3,0	0,020	701	11677	0,020	828	13800	0,011	268	8493
	4,0	0,030	788	8758	0,030	932	10350	0,014	268	6369
	5,0	0,040	841	7006	0,040	994	8280	0,018	275	5096
	6,0	0,060	1051	5839	0,060	1242	6900	0,024	306	4246
	8,0	0,080	1051	4379	0,080	1242	5175	0,044	420	3185
	10,0	0,096	1009	3503	0,096	1192	4140	0,060	459	2548
	12,0	0,109	955	2919	0,109	1128	3450	0,073	465	2123
	16,0	0,129	847	2189	0,129	1001	2588	0,093	444	1592
	20,0	0,144	757	1752	0,144	894	2070	0,108	413	1274
Acciaio <1000 N/mm² - Ghisa Steel <1000 N/mm² - Cast iron	m/min	Vc=90			Vc=105			Vc=65		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,008	344	14331	0,008	401	16720	0,007	217	10350
	3,0	0,015	430	9554	0,015	502	11146	0,011	217	6900
	4,0	0,025	537	7166	0,025	627	8360	0,014	217	5175
	5,0	0,035	602	5732	0,035	702	6688	0,018	224	4140
	6,0	0,055	788	4777	0,055	920	5573	0,022	228	3450
	8,0	0,075	806	3583	0,075	940	4180	0,042	326	2588
	10,0	0,091	782	2866	0,091	913	3344	0,058	360	2070
	12,0	0,104	745	2389	0,104	869	2787	0,071	367	1725
	16,0	0,124	666	1791	0,124	777	2090	0,091	353	1294
	20,0	0,139	598	1433	0,139	697	1672	0,106	329	1035
Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	Vc=70			Vc=80			Vc=50		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,008	268	11146	0,008	306	12739	0,006	143	7962
	3,0	0,015	334	7431	0,015	382	8493	0,010	159	5308
	4,0	0,025	418	5573	0,025	478	6369	0,013	155	3981
	5,0	0,035	468	4459	0,035	535	5096	0,016	153	3185
	6,0	0,050	557	3715	0,050	637	4246	0,020	159	2654
	8,0	0,070	585	2787	0,070	669	3185	0,040	239	1990
	10,0	0,086	575	2229	0,086	657	2548	0,056	268	1592
	12,0	0,099	552	1858	0,099	631	2123	0,069	275	1327
	16,0	0,119	497	1393	0,119	568	1592	0,089	266	995
	20,0	0,134	448	1115	0,134	512	1274	0,104	248	796
Acciaio da stampi Mold Steel	m/min	Vc=35			Vc=40			Vc=40		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,008	134	5573	0,008	153	6369	0,006	115	6369
	3,0	0,015	167	3715	0,015	191	4246	0,010	127	4246
	4,0	0,025	209	2787	0,025	239	3185	0,013	124	3185
	5,0	0,035	234	2229	0,035	268	2548	0,016	122	2548
	6,0	0,050	279	1858	0,050	318	2123	0,020	127	2123
	8,0	0,070	293	1393	0,070	334	1592	0,040	191	1592
	10,0	0,086	288	1115	0,086	329	1274	0,056	214	1274
	12,0	0,099	276	929	0,099	315	1062	0,069	220	1062
	16,0	0,119	249	697	0,119	284	796	0,089	213	796
	20,0	0,134	224	557	0,134	256	637	0,104	199	637

Notes

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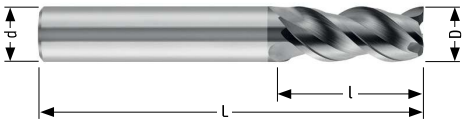
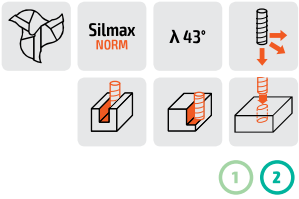
Fresa 3 taglienti per elevate asportazioni
3 flute roughing end mill for high chip removal





45°

D e8	d h6	L	l ap	45°	Z	Balinit® Alcrona
2,0	6	57	5,0	0,06	3	HMG151020
2,5	6	57	7,0	0,06	3	HMG151025
3,0	6	57	8,0	0,06	3	HMG151030
3,5	6	57	8,0	0,06	3	HMG151035
4,0	6	57	11,0	0,06	3	HMG151040
4,5	6	57	13,0	0,06	3	HMG151045
5,0	6	57	13,0	0,06	3	HMG151050
6,0	6	57	13,0	0,06	3	HMG151060
7,0	8	63	19,0	0,10	3	HMG151070
8,0	8	63	19,0	0,10	3	HMG151080
9,0	10	72	22,0	0,10	3	HMG151090
10,0	10	72	22,0	0,10	3	HMG151100
11,0	12	81	26,0	0,10	3	HMG151110
12,0	12	81	26,0	0,10	3	HMG151120
14,0	14	81	26,0	0,10	3	HMG151140
16,0	16	86	32,0	0,10	3	HMG151160
20,0	20	108	38,0	0,10	3	HMG151200

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Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	 1,00 D / 1,00 D			 1,50 D / 0,25 D			 1,50 D / 0,10 D		
Acciaio <800 N/mm² Steel <800 N/mm²	m/min	Vc=144			Vc=158			Vc=173		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,015	688	11465	0,030	1510	12580	0,040	2204	13774
	6,0	0,025	770	7643	0,048	1614	8408	0,078	2862	9172
	8,0	0,041	941	5732	0,064	1610	6306	0,094	2582	6879
	10,0	0,053	978	4586	0,076	1535	5045	0,106	2335	5503
	12,0	0,063	968	3822	0,086	1448	4204	0,116	2130	4586
	16,0	0,079	907	2866	0,102	1286	3153	0,132	1815	3439
	20,0	0,091	838	2293	0,114	1152	2522	0,144	1587	2752
Acciaio <1000 N/mm² - Ghisa Steel <1000 N/mm² - Cast iron	m/min	Vc=117			Vc=129			Vc140		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,012	447	9315	0,027	1109	10271	0,035	1561	11146
	6,0	0,023	574	6210	0,044	1202	6831	0,072	2131	7452
	8,0	0,039	725	4658	0,060	1226	5123	0,087	1952	5589
	10,0	0,051	763	3726	0,072	1182	4099	0,100	1781	4471
	12,0	0,061	760	3105	0,082	1122	3416	0,110	1634	3726
	16,0	0,077	718	2329	0,098	1004	2562	0,125	1402	2795
	20,0	0,089	666	1863	0,110	904	2049	0,138	1232	2236
Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	Vc=90			Vc=99			Vc=108		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,010	287	7166	0,025	788	7882	0,030	1032	8599
	6,0	0,021	401	4777	0,040	841	5255	0,065	1490	5732
	8,0	0,037	528	3583	0,056	880	3941	0,081	1390	4299
	10,0	0,049	563	2866	0,068	859	3153	0,093	1281	3439
	12,0	0,059	565	2389	0,078	821	2627	0,103	1182	2866
	16,0	0,075	537	1791	0,094	740	1971	0,119	1023	2150
	20,0	0,087	500	1433	0,106	670	1576	0,131	903	1720
Acciaio da stampi Mold Steel	m/min	Vc=45			Vc=50			Vc=54		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,025	358	3583	0,025	398	3981	0,025	430	4299
	6,0	0,045	430	2389	0,045	473	2627	0,045	516	2866
	8,0	0,061	436	1791	0,061	479	1971	0,061	523	2150
	10,0	0,073	419	1433	0,073	461	1576	0,073	503	1720
	12,0	0,083	397	1194	0,083	437	1314	0,083	477	1433
	16,0	0,099	355	896	0,099	390	985	0,099	425	1075
	20,0	0,111	319	717	0,111	351	788	0,111	383	860

Notes

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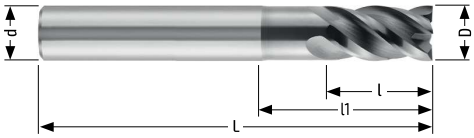
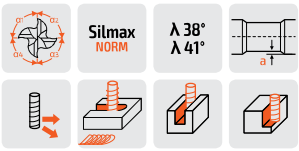
Fresa 4 taglienti con eliche differenziate e divisione irregolare
4 flute end mill with unequal flute spacing and variable helix





1 2

45°

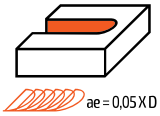
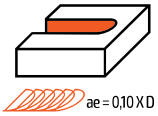
D e8	d h6	L	l ap	l1	a	45° +0,05/+0	Z	Balinit® Alcrona
4,0	6	57	6,0	-	-	0,05	4	HMG152040
5,0	6	57	7,5	-	-	0,05	4	HMG152050
6,0	6	57	9,0	18,0	0,15	0,05	4	HMG152060
8,0	8	63	12,0	24,0	0,15	0,05	4	HMG152080
10,0	10	72	15,0	30,0	0,15	0,05	4	HMG152100
12,0	12	83	18,0	36,0	0,20	0,05	4	HMG152120
16,0	16	92	24,0	42,0	0,20	0,05	4	HMG152160
20,0	20	104	30,0	52,0	0,20	0,05	4	HMG152200

Cr

D e8	d h6	L	l ap	l1	a	Cr	Z	Balinit® Alcrona
6,0	6,00	57	9,0	18,0	0,15	0,50	4	HMG152060CR05
8,0	8,00	63	12,0	24,0	0,15	0,50	4	HMG152080CR05
10,0	10,00	72	15,0	30,0	0,15	1,00	4	HMG152100CR10
12,0	12,00	83	18,0	36,0	0,20	1,00	4	HMG152120CR10
16,0	16,00	92	24,0	42,0	0,20	1,00	4	HMG152160CR10
20,0	20,00	104	30,0	52,0	0,20	1,00	4	HMG152200CR10

193

Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	 ae = 0,05 X D		 ae = 0,10 X D	
Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	Vc=210-280		Vc=210-280	
	D mm	hm mm	fz mm	hm mm	fz mm
	4,0	0,03	0,09	0,03	0,08
	6,0	0,04	0,13	0,04	0,10
	8,0	0,06	0,19	0,06	0,15
	10,0	0,07	0,22	0,07	0,18
	12,0	0,08	0,25	0,08	0,21
	16,0	0,09	0,28	0,09	0,23

196

Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	Vc=210-280		Vc=210-280	
	D mm	hm mm	fz mm	hm mm	fz mm
	4,0	0,03	0,08	0,03	0,06
	6,0	0,03	0,09	0,03	0,08
	8,0	0,05	0,16	0,05	0,13
	10,0	0,06	0,19	0,06	0,15
	12,0	0,07	0,22	0,07	0,18
	16,0	0,08	0,25	0,08	0,21

193

Materiale Material	Diametro Diameter	 0,05 D		 0,10 D	
Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	Vc=80-100		Vc=80-100	
	D mm	hm mm	fz mm	hm mm	fz mm
	4,0	0,03	0,09	0,03	0,08
	6,0	0,04	0,13	0,04	0,10
	8,0	0,06	0,19	0,06	0,15
	10,0	0,07	0,22	0,07	0,18
	12,0	0,08	0,25	0,08	0,21
	16,0	0,09	0,28	0,09	0,23

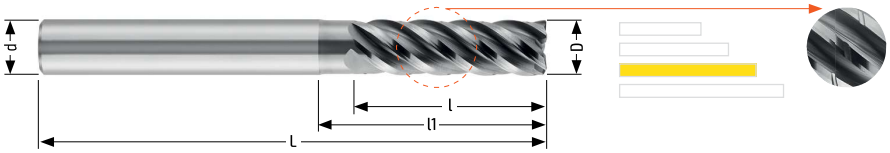
196

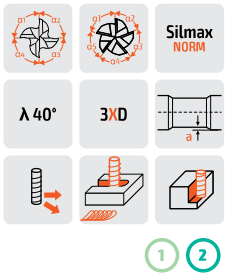
Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	Vc=80-100		Vc=80-100	
	D mm	hm mm	fz mm	hm mm	fz mm
	4,0	0,03	0,08	0,03	0,06
	6,0	0,03	0,09	0,03	0,08
	8,0	0,05	0,16	0,05	0,13
	10,0	0,06	0,19	0,06	0,15
	12,0	0,07	0,22	0,07	0,18
	16,0	0,08	0,25	0,08	0,21

Notes

193

Fresa 5 taglienti con divisione irregolare e tagliente lungo
5 flute end mill with variable helix long version





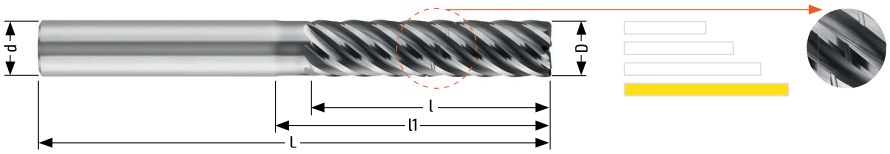
Cr

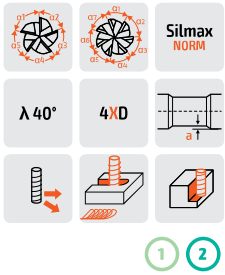
D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Alcrona
4,0	6	57	12,0	16,0	0,25	0,20	4	HMG193040
6,0	6	63	18,0	24,0	0,25	0,30	5	HMG193060
8,0	8	70	24,0	31,0	0,25	0,50	5	HMG193080
10,0	10	78	30,0	37,0	0,25	0,50	5	HMG193100
12,0	12	92	36,0	46,0	0,25	0,50	5	HMG193120
16,0	16	110	48,0	60,0	0,25	0,50	5	HMG193160
20,0	20	134	60,0	80,0	0,25	0,50	5	HMG193200*

(*) Diametro 20 mm a richiesta / Diameter 20 mm on request

196

Fresa 5/7 taglienti con divisione irregolare e tagliente extra lungo
5/7 flute end mill with variable helix, extra long version





Cr

D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Alcrona
4,0	6	57	16,0	20,0	0,25	0,20	4	HMG196040
6,0	6	70	24,0	30,0	0,25	0,30	5	HMG196060
8,0	8	80	32,0	40,0	0,25	0,50	5	HMG196080
8,0	8	80	32,0	40,0	0,25	0,50	7	HMG196080Z7
10,0	10	87	40,0	46,0	0,25	0,50	5	HMG196100
10,0	10	87	40,0	46,0	0,25	0,50	7	HMG196100Z7
12,0	12	108	48,0	58,0	0,25	0,50	7	HMG196120Z7
16,0	16	120	64,0	68,0	0,25	0,50	7	HMG196160Z7
20,0	20	134	80,0	-	-	0,50	7	HMG196200Z7*

Diametro 20 mm a richiesta / Diameter 20 mm on request

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Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter			
Acciaio <800 N/mm² / Steel <800 N/mm²	m/min	Vc=301		
	D mm	fz mm/z	F mm/min	n rpm
	6,0	0,036	3449	15966
	8,0	0,046	4413	11975
	10,0	0,054	4129	9580
	12,0	0,060	4811	7983
	16,0	0,070	4211	5987
	20,0	0,078	3743	4790
Acciaio <1000 N/mm² - Ghisa / Steel <1000 N/mm² - Cast iron	m/min	Vc=224		
	D mm	fz mm/z	F mm/min	n rpm
	6,0	0,033	2569	12972
	8,0	0,043	3352	9729
	10,0	0,051	3168	7783
	12,0	0,057	3714	6486
	16,0	0,067	3275	4865
	20,0	0,075	2924	3892
Acciaio <1300 N/mm² / Steel <1300 N/mm²	m/min	Vc=188		
	D mm	fz mm/z	F mm/min	n rpm
	6,0	0,030	1796	9979
	8,0	0,040	2399	7484
	10,0	0,048	2293	5987
	12,0	0,054	2707	4989
	16,0	0,064	2407	3742
	20,0	0,072	2160	2994
Acciaio da stampi / Mold Steel	m/min	Vc=94		
	D mm	fz mm/z	F mm/min	n rpm
	6,0	0,030	898	4989
	8,0	0,040	1200	3742
	10,0	0,048	1147	2994
	12,0	0,054	1354	2495
	16,0	0,064	1204	1871
	20,0	0,072	1080	1497

Fresa multitagliente per operazioni di super finitura su acciai fino a 52HRC.
Multi-flute cutters for super-finishing of steel up to 52HRC.

Notes

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Fresa multitagliente per superfinitura
Multi-flute end mill for super-finishing

Silmax NORM

λ 45°

1 2

90°

D e8	d h6	L	l ap	Z	Balinit® Alcrona
6,0	6	57	13,0	6	HMG155060
8,0	8	63	19,0	8	HMG155080
10,0	10	72	22,0	8	HMG155100
12,0	12	81	26,0	10	HMG155120
16,0	16	86	32,0	10	HMG155160
20,0	20	108	38,0	10	HMG155200

Stampi

La lavorazione degli stampi rappresenta una delle aree più difficili da affrontare nel settore dell'asportazione truciolo.

Le esigenze dei produttori di stampi devono soddisfare i più elevati standard qualitativi in termini di precisione, durata e affidabilità di utensili nella lavorazione di materiali che vanno, a seconda delle applicazioni, dagli acciai bonificati fino a quelli temprati di elevatissima durezza.

Per soddisfare queste esigenze abbiamo ampliato la gamma esistente ed introdotto utensili innovativi.

Molds

Mould machining represents one of the most difficult areas faced in the sector of chip removal.

The requirements of mould manufacturers have to meet the highest quality standards in terms of precision, durability and reliability of tools for machining materials ranging from quenched and tempered steels to extreme-hardness hardened steels, according to their different applications.

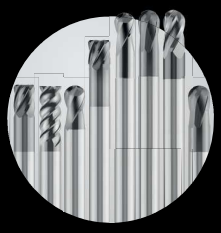
In order to meet these requirements, we have introduced innovative tools and expanded our existing range.

Stampi
Molds

Per maggiori informazioni scarica la brochure digitale.

For further information download the digital brochure.

silmax.it/hrc



Ampia Gamma

+ Tipologie di utensili adatti a diverse applicazioni
+ Diverso numero di taglienti e geometrie di taglio
+ Diametri dal D. 0,2 al D. 20 mm

Wide Range

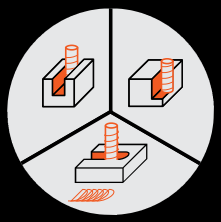
+ Typologies of tools suited to different applications
+ Different number of flutes and cutting geometries
+ Diameters from D. 0.2 to D. 20 mm

Multimateriale

Le frese per stampi sono state progettate per lavorare, con parametri elevati, materiali che vanno, a seconda delle applicazioni, dagli acciai bonificati fino agli acciai temprati di elevatissima durezza.

Multi-material

These end mills for molds have been designed for machining materials ranging from quenched and tempered steels to extreme-hardness hardened steels at high parameters, according to the different applications.



Multiapplicazione

La versatilità di questi utensili permette il loro utilizzo nelle più svariate lavorazioni, da quelle di sgrossatura e finitura, fino alle avanzate tecnologie del trocoidale.

Multi-application

The versatility of these tools allows their use in a large number of different applications, from roughing and finishing to the most advanced technologies of trochoidal milling.

Rivestimento PVD

PVD Balinit® Latuma

+ La migliore proposta per la lavorazione di acciai fino alla durezza di 58 HRC
+ Estremamente resistente all'usura
+ Elevata durezza a caldo e stabilità agli shock termici

PVD X-Hard

+ La migliore proposta per la lavorazione di acciai fino alla durezza di 65 HRC

PVD Coating

PVD Balinit® Latuma

+ The best offer for machining steels up to the hardness of 58 HRC
+ Extremely wear-resistant
+ High heat hardness and thermal-shock stability

PVD X-HARD

+ The best offer for machining steels up to the hardness of 65 HRC

SIL SERVICE

L'esperienza Silmax dimostra che un utensile correttamente affilato ha un rendimento uguale a quello nuovo.

Silmax experience shows that a properly sharpened tool grants the same performances of a new tool.

- Riaffilatura e rigenerazione / Resharpening and Reconditioning
- Esecuzione perfetta / Perfect Execution
- Rivestimento PVD / PVD Coating
- Trattamento 4S / 4S Treatment
- Consegna rapida / Fast Delivery

08w
Fresa 4 taglienti serie normale per elevati avanzamenti
4 flute, high feed end mill regular version
→ 79

09w
Fresa 4 taglienti serie lunga per elevati avanzamenti
4 flute high feed end mill long version
→ 79

142
Fresa 4/6 taglienti torica serie normale
4/6 flute corner radius end mill regular version
→ 81

144
Fresa 4/6 taglienti torica serie lunga
4/6 flute corner radius end mill long version
→ 81

143
Fresa 6 taglienti serie normale per la finitura di acciai temprati
6 flute end mill for hardened steels finishing regular version
→ 83

145
Fresa 6 taglienti serie lunga per la finitura di acciai temprati
6 flute end mill for hardened steels finishing long version
→ 83

043
Fresa 4 taglienti serie normale per la sgrossatura di acciai temprati
4 flute end mill for the roughing of hardened steels regular version
→ 85

725 NEW
Fresa 2 taglienti serie normale semisferica per elevate asportazioni
2 flute ball nose end mill for roughing
→ 87

726 NEW
Fresa 2 taglienti serie lunga semisferica per elevate asportazioni
2 flute ball nose end mill for roughing long version
→ 87

727
Fresa 2 tagli serie normale semisferica
2 flute ball nose end mill regular version
→ 89

729
Fresa 2 tagli serie lunga semisferica
2 flute ball nose end mill long version
→ 89

149
Fresa 3 taglienti serie lunga semisferica
3 flute ball nose end mill long version
→ 91

147
Fresa 4 taglienti serie lunga semisferica
4 flute ball nose end mill long version
→ 91

191
Fresa 2 taglienti torica con collarino conico per lavorazioni in profondità
2 flute corner radius end mill with tapered neck for deep milling
→ 93

190
Fresa 2 taglienti semisferica con collarino conico per lavorazioni in profondità
2 flute ball nose end mill with tapered neck for deep milling
→ 95

192
Fresa 2 taglienti semisferica con collarino conico per lavorazioni in profondità
2 flute ball nose end mill with tapered neck for deep milling
→ 95

721
Fresa 2 taglienti torica per nervature
2 flute corner radius end mill for ribbing
→ 97

621 NEW
Fresa 2 taglienti torica per nervature con gambo rinforzato
2 flute corner radius end mill for ribbing with reinforced shank
→ 98

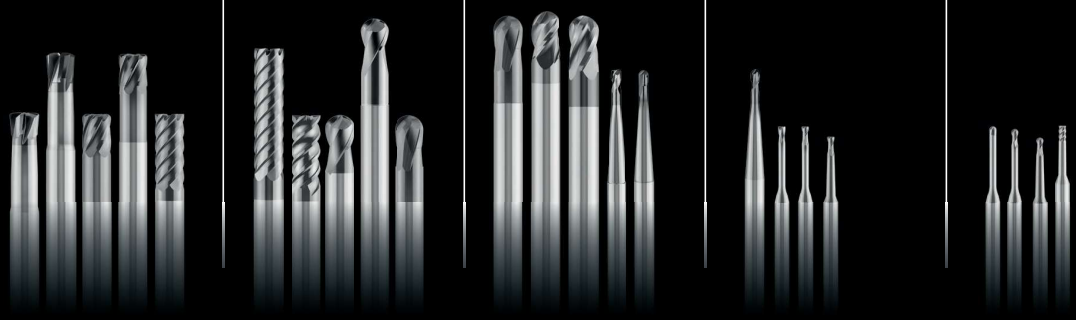
521 NEW
Fresa 2 taglienti torica per nervature con collarino conico e gambo rinforzato
2 flute corner radius end mill for deep milling with tapered neck and reinforced shank
→ 100

722
Fresa 2 taglienti semisferica per nervature
2 flute ball nose end mill for ribbing
→ 104

622 NEW
Fresa 2 taglienti semisferica per nervature con gambo rinforzato
2 flute ball nose end mill for ribbing with reinforced shank
→ 105

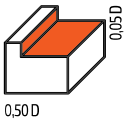
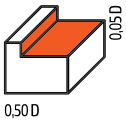
522 NEW
Fresa 2 taglienti semisferica per nervature con collarino conico e gambo rinforzato
2 flute ball nose end mill for ribbing with tapered neck and reinforced shank
→ 106

724
Fresa 4 taglienti torica per nervature
4 flute corner radius end mill for ribbing
→ 109



08w/09w

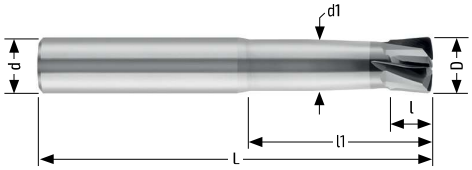
Parametri di lavoro / Working Parameters

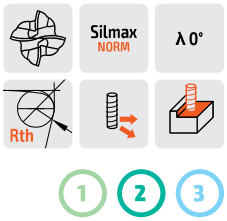
Materiale Material	Diametro Diameter	08w			09w		
							
HRC < 35	m/min	Vc=200			Vc=200		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,236	20000	21200	0,141	12000	21200
	4,0	0,314	20000	15900	0,189	12000	15900
	6,0	0,472	20000	10600	0,283	12000	10600
	8,0	0,625	20000	8000	0,375	12000	8000
	10,0	0,695	17800	6400	0,417	10680	6400
	12,0	0,698	14800	5300	0,419	8880	5300
HRC 35 ÷ 45	m/min	Vc=150			Vc=150		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,250	15900	15900	0,165	10500	15900
	4,0	0,305	14500	11900	0,183	8700	11900
	6,0	0,394	12600	8000	0,236	7560	8000
	8,0	0,396	9500	6000	0,238	5700	6000
	10,0	0,401	7700	4800	0,241	4620	4800
	12,0	0,400	6400	4000	0,240	3840	4000
HRC 45 ÷ 55	m/min	Vc=120			Vc=120		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,175	8900	12730	0,090	4590	12730
	4,0	0,200	7600	9500	0,120	4560	9500
	6,0	0,195	5000	6400	0,117	3000	6400
	8,0	0,198	3800	4800	0,119	2280	4800
	10,0	0,204	3100	3800	0,122	1860	3800
	12,0	0,195	2500	3200	0,117	1500	3200
HRC 55 ÷ 65	m/min	Vc=100			Vc=100		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,085	3600	10600	0,050	2120	10600
	4,0	0,097	3100	8000	0,058	1860	8000
	6,0	0,099	2100	5300	0,059	1260	5300
	8,0	0,100	1600	4000	0,060	960	4000
	10,0	0,102	1300	3200	0,061	780	3200
	12,0	0,106	1100	2600	0,063	660	2600

Notes

08w

Fresa 4 taglienti serie normale per elevati avanzamenti
4 flute, high feed end mill regular version



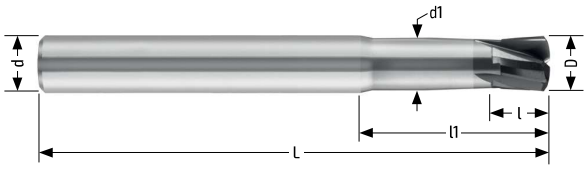


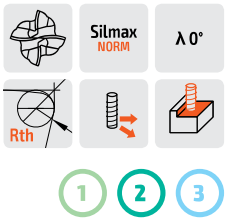
Cr

D h10	d h6	d1	L	l ap	l1	Rth	Cr	Z	Balinit® Latuma
3,0	6	2,6	57	3,0	8,0	0,40	0,30	4	HMC08W030
4,0	6	3,6	57	3,0	11,0	0,60	0,50	4	HMC08W040
5,0	6	4,6	57	4,0	15,0	0,60	0,50	4	HMC08W050
6,0	6	5,6	57	5,0	18,0	0,70	0,60	4	HMC08W060
8,0	8	7,3	63	6,0	24,0	0,80	0,60	4	HMC08W080
10,0	10	9,0	72	7,0	32,0	1,00	0,70	4	HMC08W100
12,0	12	11,0	83	8,0	36,0	1,20	0,80	4	HMC08W120

09w

Fresa 4 taglienti serie lunga per elevati avanzamenti
4 flute high feed end mill long version



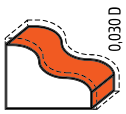


Cr

D h10	d h6	d1	L	l ap	l1	Rth	Cr	Z	Balinit® Latuma
3,0	6	2,6	78	3,0	8,0	0,40	0,30	4	HMC09W030
4,0	6	3,6	78	3,0	11,0	0,60	0,50	4	HMC09W040
5,0	6	4,6	78	4,0	15,0	0,60	0,50	4	HMC09W050
6,0	6	5,6	78	5,0	18,0	0,70	0,60	4	HMC09W060
8,0	8	7,3	92	6,0	24,0	0,80	0,60	4	HMC09W080
10,0	10	9,0	105	7,0	32,0	1,00	0,70	4	HMC09W100
12,0	12	11,0	105	8,0	36,0	1,20	0,80	4	HMC09W120

142 Serie LUNGA 144 F -15%, n -15% / LONG version 144 F -15%, n -15%

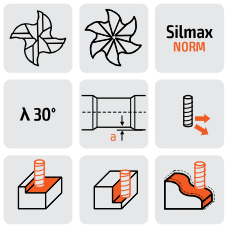
Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	 1,00 D / 0,20 D			 0,20 D / 0,50 D			 0,030 D / 0,030 D		
HRC < 35	m/min	Vc=143			Vc=110			Vc=220		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,015	1366	22771	0,012	841	17516	0,100	14013	35032
	3,0	0,025	1518	15180	0,021	981	11677	0,120	11210	23355
	4,0	0,050	2263	11380	0,030	1041	8754	0,140	9785	17507
	6,0	0,070	2124	7586	0,050	1167	5836	0,160	7470	11671
	8,0	0,084	1921	5690	0,064	1127	4377	0,174	6106	8754
	10,0	0,096	1740	4552	0,076	1058	3501	0,186	5197	7003
	12,0	0,105	2382	3793	0,085	1482	2918	0,195	6816	5836
	16,0	0,119	2032	2845	0,099	1300	2188	0,209	5490	4377
HRC 35 ÷ 45	m/min	Vc=107			Vc=90			Vc=180		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,010	682	17038	0,008	459	14331	0,050	5732	28662
	3,0	0,015	682	11359	0,011	420	9554	0,070	5350	19108
	4,0	0,025	844	8535	0,017	479	7162	0,090	5141	14324
	6,0	0,045	1024	5690	0,037	707	4775	0,110	4202	9549
	8,0	0,059	1014	4267	0,051	736	3581	0,124	3563	7162
	10,0	0,071	963	3414	0,063	717	2865	0,136	3106	5730
	12,0	0,080	1360	2845	0,072	1026	2387	0,145	4144	4775
	16,0	0,094	1204	2134	0,086	924	1790	0,159	3417	3581
HRC 45 ÷ 55	m/min	Vc=86			Vc=70			Vc=156		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,006	329	13694	0,005	223	11146	0,035	3478	24841
	3,0	0,008	292	9130	0,007	208	7431	0,050	3312	16561
	4,0	0,012	326	6828	0,011	252	5570	0,065	3214	12414
	6,0	0,029	528	4552	0,028	416	3714	0,085	2814	8276
	8,0	0,043	592	3414	0,042	472	2785	0,099	2468	6207
	10,0	0,055	596	2731	0,054	477	2228	0,111	2196	4966
	12,0	0,064	869	2276	0,063	698	1857	0,120	2971	4138
	16,0	0,078	799	1707	0,077	644	1393	0,134	2496	3104
HRC 55 ÷ 65	m/min	Vc=64			Vc=80			Vc=110		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,003	122	10191	0,003	153	12739	0,020	1401	17516
	3,0	0,005	136	6794	0,005	170	8493	0,032	1495	11677
	4,0	0,007	146	5121	0,007	136	4775	0,042	1461	8754
	6,0	0,021	287	3414	0,021	267	3183	0,062	1447	5836
	8,0	0,035	362	2560	0,035	338	2387	0,076	1337	4377
	10,0	0,047	381	2048	0,047	356	1910	0,088	1226	3501
	12,0	0,056	570	1707	0,056	531	1592	0,097	1692	2918
	16,0	0,070	538	1280	0,070	502	1194	0,111	1458	2188

1 Acciaio Steel | 2 Ghise Cast Iron | 3 Acciai Temprati Hardened Steel | 4 Acciaio Inox Stainless Steel | 5 Titanio Titanium | 6 Leghe Leggere Light Alloys | 7 PH Duplex | 8 Superleghe Superalloys | 9 Compositi Composite Materials | → 16 Guida alla lettura Reading guide | → 18 Legenda Legend

142

Fresa 4/6 taglienti torica serie normale
4/6 flute corner radius end mill regular version



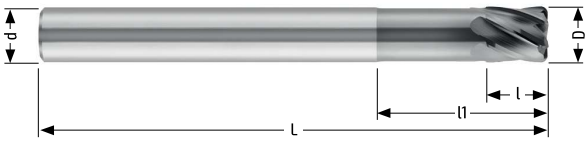
1 2 3

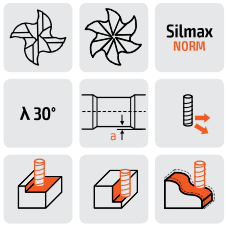
Cr

D e8	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma	X-Hard
2,0	6	57	3,0	4,0	0,10	0,30	4	HMC142020CR03R	HMH142020CR03R
3,0	6	57	4,0	6,0	0,10	0,30	4	HMC142030CR03R	HMH142030CR03R
4,0	6	57	5,0	8,0	0,10	0,30	4	HMC142040CR03R	HMH142040CR03R
5,0	6	57	6,0	10,0	0,10	0,30	4	HMC142050CR03R	HMH142050CR03R
6,0	6	57	7,0	-	-	0,30	4	HMC142060CR03	HMH142060CR03
6,0	6	57	7,0	-	-	0,50	4	HMC142060CR05	HMH142060CR05
6,0	6	57	7,0	-	-	1,00	4	HMC142060CR10	HMH142060CR10
8,0	8	63	9,0	-	-	0,30	4	HMC142080CR03	HMH142080CR03
8,0	8	63	9,0	-	-	0,50	4	HMC142080CR05	HMH142080CR05
8,0	8	63	9,0	-	-	1,00	4	HMC142080CR10	HMH142080CR10
10,0	10	72	11,0	-	-	0,50	4	HMC142100CR05	HMH142100CR05
10,0	10	72	11,0	-	-	1,00	4	HMC142100CR10	HMH142100CR10
10,0	10	72	11,0	-	-	1,50	4	HMC142100CR15	HMH142100CR15
12,0	12	81	12,0	-	-	1,00	6	HMC142120CR10	HMH142120CR10
12,0	12	81	12,0	-	-	1,50	6	HMC142120CR15	HMH142120CR15
16,0	16	86	16,0	-	-	1,50	6	HMC142160CR15	HMH142160CR15

144

Fresa 4/6 taglienti torica serie lunga
4/6 flute corner radius end mill, long version





1 2 3

Cr

D e8	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma	X-Hard
2,0	6	80	3,0	6,0	0,10	0,30	4	HMC144020CR03	HMH144020CR03
3,0	6	80	4,0	9,0	0,10	0,30	4	HMC144030CR03	HMH144030CR03
4,0	6	80	5,0	12,0	0,10	0,30	4	HMC144040CR03	HMH144040CR03
5,0	6	80	6,0	15,0	0,10	0,30	4	HMC144050CR03	HMH144050CR03
6,0	6	80	7,0	18,0	0,15	0,30	4	HMC144060CR03	HMH144060CR03
6,0	6	80	7,0	18,0	0,15	0,50	4	HMC144060CR05	HMH144060CR05
6,0	6	80	7,0	18,0	0,15	1,00	4	HMC144060CR10	HMH144060CR10
8,0	8	80	9,0	24,0	0,15	0,30	4	HMC144080CR03	HMH144080CR03
8,0	8	80	9,0	24,0	0,15	0,50	4	HMC144080CR05	HMH144080CR05
8,0	8	80	9,0	24,0	0,15	1,00	4	HMC144080CR10	HMH144080CR10
10,0	10	108	11,0	31,0	0,15	0,50	4	HMC144100CR05	HMH144100CR05
10,0	10	108	11,0	31,0	0,15	1,00	4	HMC144100CR10	HMH144100CR10
10,0	10	108	11,0	31,0	0,15	1,50	4	HMC144100CR15	HMH144100CR15
12,0	12	108	12,0	36,0	0,20	1,00	6	HMC144120CR10	HMH144120CR10
12,0	12	108	12,0	36,0	0,20	1,50	6	HMC144120CR15	HMH144120CR15
16,0	16	120	16,0	36,0	0,20	1,50	6	HMC144160CR15	HMH144160CR15

143

Materiale Material	Diametro Diameter	ap = 1,50 D ae = 0,02 D		
	m/min	Vc=243		
	D mm	fz mm/z	F mm/min	n rpm
HRC 40 ÷ 50	3,0	0,007	1083	25783
	4,0	0,014	1599	19337
	6,0	0,030	2320	12892
	8,0	0,042	2408	9669
	10,0	0,050	2341	7735
	12,0	0,058	2233	6446
	16,0	0,069	2008	4834
	m/min	Vc=180		
	D mm	fz mm/z	F mm/min	n rpm
HRC 50 ÷ 60	3,0	0,003	344	19100
	4,0	0,006	546	14324
	6,0	0,020	1146	9549
	8,0	0,032	1354	7162
	10,0	0,040	1390	5730
	12,0	0,048	1367	4775
	16,0	0,059	1273	3581
	m/min	Vc=120		
	D mm	fz mm/z	F mm/min	n rpm
HRC >60	3,0	0,002	153	12730
	4,0	0,004	221	9549
	6,0	0,015	573	6366
	8,0	0,027	759	4775
	10,0	0,035	812	3820
	12,0	0,043	816	3183
	16,0	0,054	777	2387

145

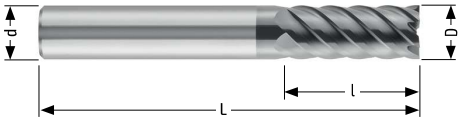
Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	ap = 1,50 D ae = 0,02 D			ap = 3,00 D ae = 0,02 D		
	m/min	Vc=220			Vc=110		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
HRC 40 ÷ 50	3,0	-	-	-	-	-	-
	4,0	-	-		-	-	-
	6,0	0,030	2088	11602	0,030	1050	5836
	8,0	0,042	2167	8702	0,042	1090	4377
	10,0	0,050	2107	6961	0,050	1060	3501
	12,0	0,058	2009	5801	0,058	1010	2918
	16,0	0,069	1807	4351	0,069	909	2188
	m/min	Vc=162			Vc=81		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
HRC 50 ÷ 60	3,0	-	-	-	-	-	-
	4,0	-	-		-	-	-
	6,0	0,020	1031	8594	0,020	516	4297
	8,0	0,032	1219	6446	0,032	609	3223
	10,0	0,040	1251	5157	0,040	626	2578
	12,0	0,048	1231	4297	0,048	615	2149
	16,0	0,059	1145	3223	0,059	572	1611
	m/min	Vc=108			Vc=54		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
HRC >60	3,0	-	-	-	-	-	-
	4,0	-	-		-	-	-
	6,0	0,015	516	5730	0,015	258	2865
	8,0	0,027	683	4297	0,027	342	2149
	10,0	0,035	731	3438	0,035	365	1719
	12,0	0,043	734	2865	0,043	367	1432
	16,0	0,054	699	2149	0,054	350	1074

Notes

143

Fresa 6 taglienti serie normale per la finitura di acciai temprati
6 flute end mill for the finishing of hardened steels regular version



Silmax NORM | λ 45° γ -10 | 45

1 2 3

90°

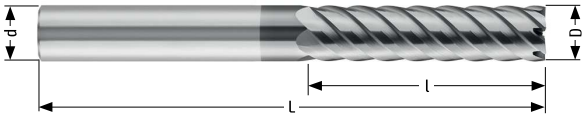
D e8	d h6	L	l ap	Cr	Z	Balinit® Latuma	X-Hard
3,0	6	57	7,0	-	6	HMC143030	HMH143030
4,0	6	57	9,0	-	6	HMC143040	HMH143040
5,0	6	57	11,0	-	6	HMC143050	HMH143050
6,0	6	57	13,0	-	6	HMC143060	HMH143060
8,0	8	63	19,0	-	6	HMC143080	HMH143080
10,0	10	72	22,0	-	6	HMC143100	HMH143100
12,0	12	81	26,0	-	6	HMC143120	HMH143120
16,0	16	86	32,0	-	6	HMC143160	HMH143160

Cr

D e8	d h6	L	l ap	Cr	Z	Balinit® Latuma	X-Hard
3,0	6	57	7,0	0,30	6	HMC143030CR03	HMH143030CR03
4,0	6	57	9,0	0,30	6	HMC143040CR03	HMH143040CR03
5,0	6	57	11,0	0,30	6	HMC143050CR03	HMH143050CR03
6,0	6	57	13,0	0,50	6	HMC143060CR05	HMH143060CR05
8,0	8	63	19,0	0,50	6	HMC143080CR05	HMH143080CR05
10,0	10	72	22,0	1,00	6	HMC143100CR10	HMH143100CR10
12,0	12	81	26,0	1,50	6	HMC143120CR15	HMH143120CR15
16,0	16	86	32,0	1,50	6	HMC143160CR15	HMH143160CR15

145

Fresa 6 taglienti serie lunga per la finitura di acciai temprati
6 flute end mill for the finishing of hardened steels long version



Silmax NORM | λ 45° γ -10 | 45

1 2 3

90°

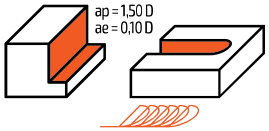
D e8	d h6	L	l ap	Z	Balinit® Latuma	X-Hard
6,0	6	80	24,0	6	HMC145060	HMH145060
8,0	8	80	32,0	6	HMC145080	HMH145080
10,0	10	108	40,0	6	HMC145100	HMH145100
12,0	12	108	48,0	6	HMC145120	HMH145120
16,0	16	130	64,0	6	HMC145160	HMH145160
20,0	20	160	80,0	6	HMC145200*	HMH145200*

* a richiesta / * on request

1 Acciaio Steel	2 Ghise Cast Iron	3 Acciai Temprati Hardened Steel	4 Acciaio Inox Stainless Steel	5 Titanio Titanium	6 Leghe Leggere Light Alloys	7 PH Duplex	8 Superleghe Superalloys	9 Compositi Composite Materials	→ 16 Guida alla lettura Reading guide	→ 18 Legenda Legend

043

Parametri di lavoro / Working Parameters

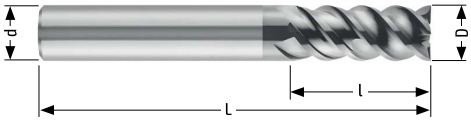


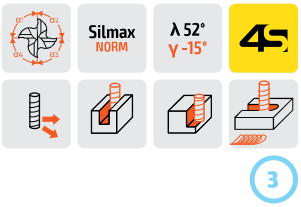
Materiale Material	Diametro Diameter						
HRC 30 ÷ 45	m/min	Vc=50			Vc=96		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,024	255	2654	0,024	489	5096
	8,0	0,036	283	1990	0,036	543	3822
	10,0	0,044	283	1592	0,044	543	3057
	12,0	0,052	275	1327	0,052	527	2548
	16,0	0,063	252	995	0,063	483	1911
	20,0	0,072	230	796	0,072	441	1529
HRC 45 ÷ 55	m/min	Vc=20			Vc=78		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,016	68	1062	0,016	265	4140
	8,0	0,028	88	796	0,028	342	3105
	10,0	0,036	93	637	0,036	362	2484
	12,0	0,044	93	531	0,044	362	2070
	16,0	0,055	88	398	0,055	343	1553
	20,0	0,064	82	318	0,064	319	1242
HRC 55 ÷ 65	m/min				Vc=20		
	D mm				fz mm/z	F mm/min	n rpm
	6,0				0,012	52	1083
	8,0				0,024	76	812
	10,0				0,032	84	650
	12,0				0,040	86	541
	16,0				0,051	83	406
	20,0				0,060	78	325

Notes

043

Fresa 4 taglienti serie normale per la sgrossatura di acciai temprati
4 flute end mill for the roughing of hardened steels regular version



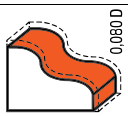
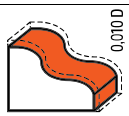
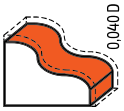
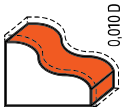
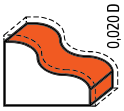


90°

D e8	d h6	L	l ap	Z	Balinit® Latuma	X-Hard
6,0	6	57	13,0	4	HMC043060	HMH043060
8,0	8	63	19,0	4	HMC043080	HMH043080
10,0	10	72	22,0	4	HMC043100	HMH043100
12,0	12	81	26,0	4	HMC043120	HMH043120
16,0	16	86	32,0	4	HMC043160	HMH043160
20,0	20	108	38,0	4	HMC043200	HMH043200

725/726

Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	725/726			725/726		
		 0,080 D			 0,010 D		
Acciaio < 1300 N/mm² Steel < 1300 N/mm²	m/min	Vc=250			Vc=290		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3	0,053	4178	26526	0,027	2492	30770
	4	0,070	4178	19894	0,036	2492	23077
	5	0,088	4202	15915	0,045	2492	18462
	6	0,120	4775	13263	0,054	2492	15385
	8	0,160	4775	9947	0,072	2492	11539
	10	0,200	4775	7958	0,090	2492	9231
	12	0,240	4775	6631	0,100	2308	7692
HRC 35-45	m/min	Vc=220			Vc=250		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3	0,053	3676	23343	0,027	2149	26526
	4	0,070	3676	17507	0,036	2149	19894
	5	0,088	3697	14006	0,045	2149	15915
	6	0,120	4202	11671	0,054	2149	13263
	8	0,160	4202	8754	0,072	2149	9947
	10	0,200	4202	7003	0,090	2149	7958
	12	0,240	4202	5836	0,100	1989	6631
Materiale Material	Diametro Diameter	 0,040 D			 0,010 D		
HRC 45-55	m/min	Vc=160			Vc=190		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3	0,024	1222	16977	0,016	968	20160
	4	0,030	1146	12732	0,022	998	15120
	5	0,037	1131	10186	0,029	1052	12096
	6	0,045	1146	8488	0,037	1119	10080
	8	0,060	1146	6366	0,052	1179	7560
	10	0,085	1299	5093	0,077	1397	6048
	12	0,100	1273	4244	0,092	1391	5040
Materiale Material	Diametro Diameter	 0,020 D			 0,005 D		
HRC 55-65	m/min	Vc=70			Vc=90		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3	0,008	167	7427	0,008	215	9549
	4	0,010	167	5570	0,010	215	7162
	5	0,013	167	4456	0,013	215	5730
	6	0,015	167	3714	0,015	215	4775
	8	0,020	167	2785	0,020	215	3581
	10	0,025	167	2228	0,025	215	2865
	12	0,030	167	1857	0,030	215	2387

Notes

NEW

725

Fresa 2 taglienti serie normale semisferica per elevate asportazioni
2 flute ball nose end mill for roughing

726

Silmax NORM | λ 30° γ -4° | 45

a ↑

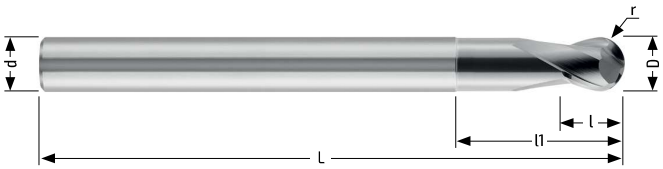
1 2 3

D	d h6	L	l ap	l1	a	r +/-0,01	Z	Balinit® Latuma	X-Hard
3,0	6	57	3,0	6,0	0,10	1,50	2	HMC725030	HMH725030
4,0	6	57	4,0	8,0	0,10	2,00	2	HMC725040	HMH725040
5,0	6	57	5,0	10,0	0,10	2,50	2	HMC725050	HMH725050
6,0	6	57	6,0	-	-	3,00	2	HMC725060	HMH725060
8,0	8	63	8,0	-	-	4,00	2	HMC725080	HMH725080
10,0	10	72	10,0	-	-	5,00	2	HMC725100	HMH725100
12,0	12	83	12,0	-	-	6,00	2	HMC725120	HMH725120

NEW

726

Fresa 2 taglienti serie lunga semisferica per elevate asportazioni
2 flute ball nose end mill for roughing, long version



725

Silmax NORM | λ 30° γ -4° | 45

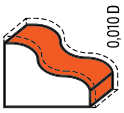
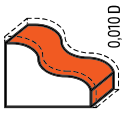
a ↑

1 2 3

D	d h6	L	l ap	l1	a	r +/-0,01	Z	Balinit® Latuma	X-Hard
3,0	6	78	3,0	6,0	0,10	1,50	2	HMC726030	HMH726030
4,0	6	78	4,0	8,0	0,10	2,00	2	HMC726040	HMH726040
5,0	6	105	5,0	10,0	0,10	2,50	2	HMC726050	HMH726050
6,0	6	105	6,0	18,0	0,15	3,00	2	HMC726060	HMH726060
8,0	8	105	8,0	24,0	0,15	4,00	2	HMC726080	HMH726080
10,0	10	120	10,0	30,0	0,15	5,00	2	HMC726100	HMH726100
12,0	12	125	12,0	36,0	0,2	6,00	2	HMC726120	HMH726120

727/729

Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	727			729		
							
HRC < 35	m/min	Vc=303			Vc=258		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	1,0	0,050	10504	105042	-	-	-
	2,0	0,060	6303	52521	-	-	-
	4,0	0,090	4727	26261	0,038	1542	20531
	6,0	0,110	3852	17507	0,070	1916	13687
	8,0	0,120	3151	13130	0,093	1910	10265
	10,0	0,130	2731	10504	0,111	1821	8212
	12,0	0,140	2451	8754	0,125	1717	6844
	16,0	0,160	2101	6565	0,148	1524	5133
	20,0	0,180	1736	4822	0,162	1330	4106
HRC 35 ÷ 45	m/min	Vc=280			Vc=194		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	1,0	0,050	8913	89127	-	-	-
	2,0	0,060	5348	44563	-	-	-
	4,0	0,090	4011	22282	0,028	849	15398
	6,0	0,110	3268	14854	0,060	1232	10265
	8,0	0,120	2674	11141	0,083	1278	7699
	10,0	0,130	2317	8913	0,101	1243	6159
	12,0	0,140	2080	7427	0,115	1185	5133
	16,0	0,160	1783	5570	0,138	1066	3850
	20,0	0,180	604	4456	0,144	890	3088
HRC 45 ÷ 55	m/min	Vc=220			Vc=155		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	1,0	0,050	7003	70028	-	-	-
	2,0	0,060	4202	35014	-	-	-
	4,0	0,090	3151	17507	0,018	436	12319
	6,0	0,110	2568	11671	0,050	821	8212
	8,0	0,120	2101	8754	0,073	899	6159
	10,0	0,130	1821	7003	0,091	895	4927
	12,0	0,140	1634	5836	0,105	866	4106
	16,0	0,160	1401	4377	0,128	791	3080
	20,0	0,180	1260	3501	0,138	681	2467
HRC 55 ÷ 65	m/min	Vc=180			Vc=116		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	1,0	0,050	5730	57296	-	-	-
	2,0	0,060	3438	28648	-	-	-
	4,0	0,090	2578	14324	0,013	235	9239
	6,0	0,110	2101	9549	0,040	493	6159
	8,0	0,120	1719	7162	0,063	582	4619
	10,0	0,130	1490	5730	0,081	598	3696
	12,0	0,140	1337	4775	0,095	588	3080
	16,0	0,160	1146	3581	0,118	547	2310
	20,0	0,180	1031	2865	0,130	480	1846

Notes

727

Fresa 2 tagli serie normale semisferica
2 flute ball nose end mill

729

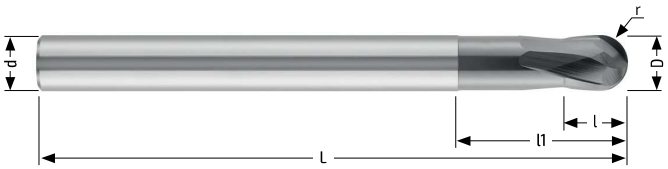
Silmax NORM | λ 17° γ -4°

1 2 3

D	d h6	L	l ap	l1	a	NEW r +/-0,005	Z	Balinit® Latuma	X-Hard
1,0	6	57	1,5	3,0	0,10	0,50	2	HMC727010	HMH727010
1,5	6	57	2,0	4,0	0,10	0,75	2	HMC727015	HMH727015
2,0	6	57	2,0	4,0	0,10	1,00	2	HMC727020	HMH727020
2,5	6	57	2,5	5,0	0,10	1,25	2	HMC727025	HMH727025
3,0	6	57	3,0	6,0	0,10	1,50	2	HMC727030	HMH727030
4,0	6	57	4,0	8,0	0,10	2,00	2	HMC727040	HMH727040
5,0	6	57	5,0	10,0	0,10	2,50	2	HMC727050	HMH727050
6,0	6	57	6,0	-	-	3,00	2	HMC727060	HMH727060
8,0	8	63	8,0	-	-	4,00	2	HMC727080	HMH727080
10,0	10	72	10,0	-	-	5,00	2	HMC727100	HMH727100
12,0	12	83	12,0	-	-	6,00	2	HMC727120	HMH727120
16,0	16	92	16,0	-	-	8,00	2	HMC727160	HMH727160
20,0	20	104	20,0	-	-	10,00	2	HMC727200	HMH727200

729

Fresa 2 tagli serie lunga semisferica
2 flute ball nose end mill, long version



727

Silmax NORM | λ 17° γ -4°

1 2 3

D	d h6	L	l ap	l1	a	NEW r +/-0,005	Z	Balinit® Latuma	X-Hard
3,0	6	78	3,0	9,0	0,10	1,50	2	HMC729030	HMH729030
4,0	6	78	4,0	9,0	0,10	2,00	2	HMC729040	HMH729040
5,0	6	105	5,0	15,0	0,10	2,50	2	HMC729050	HMH729050
6,0	6	105	6,0	18,0	0,15	3,00	2	HMC729060	HMH729060
8,0	8	105	8,0	24,0	0,15	4,00	2	HMC729080	HMH729080
10,0	10	120	10,0	30,0	0,15	5,00	2	HMC729100	HMH729100
12,0	12	125	12,0	36,0	0,20	6,00	2	HMC729120	HMH729120
16,0	16	130	16,0	48,0	0,20	8,00	2	HMC729160	HMH729160
20,0	20	160	20,0	60,0	0,20	10,00	2	HMC729200	HMH729200

1	2	3	4	5	6	7	8	9	→ 16	→ 18
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Guida alla lettura Reading guide	Legenda Legend

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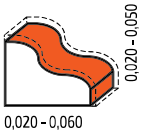
Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter			
HRC < 35	m/min	Vc=300		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,035	3342	31831
	4,0	0,058	4123	23873
	6,0	0,090	4297	15915
	8,0	0,113	4047	11937
	10,0	0,131	3749	9549
	12,0	0,145	3472	7958
	16,0	0,168	3016	5968
HRC 35 ÷ 45	m/min	Vc=270		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,030	2578	28648
	4,0	0,049	3130	21486
	6,0	0,081	3481	14324
	8,0	0,104	3352	10743
	10,0	0,122	3142	8594
	12,0	0,136	2932	7162
	16,0	0,159	2570	5371
HRC 45 ÷ 55	m/min	Vc=216		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,020	1375	22918
	4,0	0,035	1808	17189
	6,0	0,068	2320	11459
	8,0	0,091	2334	8594
	10,0	0,108	2235	6875
	12,0	0,123	2113	5730
	16,0	0,146	1882	4297
HRC 55 ÷ 65	m/min	Vc=175		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,008	446	18568
	4,0	0,017	731	13966
	6,0	0,050	1383	9311
	8,0	0,073	1519	6983
	10,0	0,090	1514	5586
	12,0	0,105	1466	4655
	16,0	0,128	1340	3491

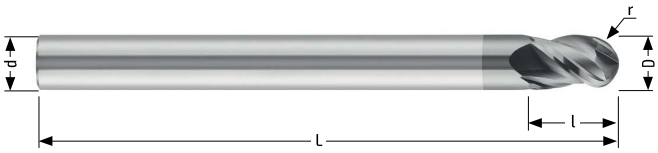
Sgrossatura n:-10% F:-10% / Roughing n:-10% F:-10%

Raccomandate per lavorazioni 5 assi / Recommended for 5 axis machining

Notes

149

Fresa 3 taglienti serie lunga semisferica
3 flute ball nose end mill, long version



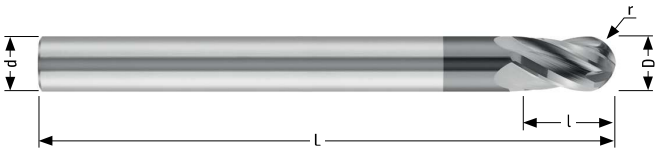
Silmax NORM
λ 40°
γ -4°

1 2 3

D	d h6	L	l ap	r f8	Z	Balinit® Latuma	X-Hard
3,0	6	78	4,5	1,50	3	HMC149030	HMH149030
4,0	6	78	6,0	2,00	3	HMC149040	HMH149040
5,0	6	78	7,5	2,50	3	HMC149050	HMH149050
6,0	6	78	9,0	3,00	3	HMC149060	HMH149060
8,0	8	104	12,0	4,00	3	HMC149080	HMH149080
10,0	10	104	15,0	5,00	3	HMC149100	HMH149100
12,0	12	104	18,0	6,00	3	HMC149120	HMH149120

147

Fresa 4 taglienti serie lunga semisferica
4 flute ball nose end mill, long version



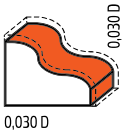
Silmax NORM
λ 30°
γ -10°

1 2 3

D	d h6	L	l ap	r f8	Z	Balinit® Latuma	X-Hard
6,0	6	80	10,0	3,00	4	HMC147060	HMH147060
8,0	8	80	16,0	4,00	4	HMC147080	HMH147080
10,0	10	108	19,0	5,00	4	HMC147100	HMH147100
12,0	12	108	22,0	6,00	4	HMC147120	HMH147120
16,0	16	130	26,0	8,00	4	HMC147160	HMH147160

191

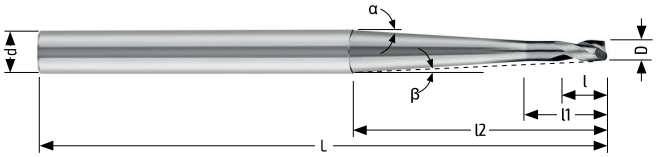
Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter			
Acciaio <800 N/mm² / Steel <800 N/mm²	m/min	Vc=256		
	D mm	fz mm/z	F mm/min	n rpm
	1,0	0,005	815	81487
	2,0	0,009	761	40764
	4,0	0,026	1054	20382
	5,0	0,031	1025	16306
	6,0	0,036	978	13588
	8,0	0,043	880	10191
	10,0	0,049	795	8153
	12,0	0,053	725	6794
Acciaio <1000 N/mm² - Ghisa / Steel <1000 N/mm² - Cast iron	m/min	Vc=208		
	D mm	fz mm/z	F mm/min	n rpm
	1,0	0,004	530	66208
	2,0	0,008	519	33121
	4,0	0,023	757	16561
	5,0	0,028	754	13248
	6,0	0,033	729	11040
	8,0	0,040	666	8280
	10,0	0,046	606	6624
	12,0	0,050	556	5520
Acciaio <1300 N/mm² / Steel <1300 N/mm²	m/min	Vc=160		
	D mm	fz mm/z	F mm/min	n rpm
	1,0	0,002	204	50930
	2,0	0,006	323	25478
	4,0	0,020	506	12739
	5,0	0,025	519	10191
	6,0	0,030	510	8493
	8,0	0,037	474	6369
	10,0	0,043	436	5096
	12,0	0,047	402	4246
Acciaio da stampi / Mold Steel	m/min	Vc=80		
	D mm	fz mm/z	F mm/min	n rpm
	1,0	0,002	102	25465
	2,0	0,006	161	12739
	4,0	0,020	253	6369
	5,0	0,025	259	5096
	6,0	0,030	255	4246
	8,0	0,037	237	3185
	10,0	0,043	218	2548
	12,0	0,047	201	2123

Notes

191

Fresa 2 taglienti torica con collarino conico per lavorazioni in profondità
2 flute corner radius end mill with tapered neck for deep milling



a = 0,02 - 0,05

Silmax NORM
λ 30°

Cr

D e8	d h6	L	l ap	l1	l2	α	β	Cr	Z	Balinit® Latuma
1,0	6	78	3,0	5,0	36,0	4,50	4,00	0,30	2	HMC19107801
1,5	6	78	3,0	6,0	35,0	4,30	3,80	0,30	2	HMC191078015
2,0	6	78	3,0	7,0	34,0	4,10	3,40	0,30	2	HMC19107802
2,0	6	105	3,0	7,0	61,0	2,10	1,90	0,30	2	HMC19110502
2,5	6	78	4,0	8,0	34,0	3,70	3,10	0,30	2	HMC191078025
2,5	6	105	4,0	8,0	61,0	1,80	1,70	0,30	2	HMC191105025
3,0	6	78	4,0	10,0	34,0	3,50	2,60	0,30	2	HMC19107803
3,0	6	105	4,0	10,0	61,0	1,60	1,40	0,30	2	HMC19110503
4,0	6	78	5,0	13,0	34,0	2,70	1,70	0,30	2	HMC19107804
4,0	6	105	5,0	13,0	61,0	1,20	1,00	0,30	2	HMC19110504
5,0	6	78	6,0	16,0	34,0	1,60	0,90	0,50	2	HMC19107805
5,0	6	105	6,0	16,0	61,0	0,60	0,50	0,50	2	HMC19110505
6,0	8	78	6,0	18,0	34,0	3,60	1,80	0,50	2	HMC19107806
6,0	8	105	6,0	18,0	61,0	1,30	1,00	0,50	2	HMC19110506
6,0	8	160	6,0	18,0	116,0	0,60	0,50	0,50	2	HMC19116006
8,0	10	105	8,0	24,0	57,0	1,70	1,10	0,50	2	HMC19110508
8,0	10	160	8,0	24,0	112,0	0,80	0,50	0,50	2	HMC19116008
10,0	12	105	10,0	30,0	51,0	2,70	1,20	1,00	2	HMC19110510
10,0	12	160	10,0	30,0	106,0	0,80	0,60	1,00	2	HMC19116010
12,0	16	160	12,0	36,0	102,0	1,70	1,20	1,00	2	HMC19116012

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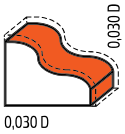
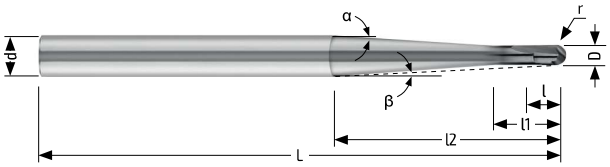
Parametri di lavoro / Working Parameters



Materiale Material	Diametro Diameter			
Acciaio <800 N/mm² Steel <800 N/mm²	m/min	Vc=288		
	D mm	fz mm/z	F mm/min	n rpm
	1,0	0,018	3300	91673
	2,0	0,039	3548	45860
	4,0	0,135	6187	22930
	5,0	0,180	6587	18344
	6,0	0,216	6604	15287
	8,0	0,274	6272	11465
	10,0	0,318	5836	9172
	12,0	0,355	5421	7643
Acciaio <1000 N/mm² - Ghisa Steel <1000 N/mm² - Cast iron	m/min	Vc=234		
	D mm	fz mm/z	F mm/min	n rpm
	1,0	0,011	1788	74485
	2,0	0,030	2212	37261
	4,0	0,117	4356	18631
	5,0	0,162	4815	14904
	6,0	0,198	4918	12420
	8,0	0,256	4761	9315
	10,0	0,300	4474	7452
	12,0	0,337	4181	6210
Acciaio <1300 N/mm² Steel <1300 N/mm²	m/min	Vc=180		
	D mm	fz mm/z	F mm/min	n rpm
	1,0	0,011	1260	57325
	2,0	0,025	1417	28662
	4,0	0,099	2835	14331
	5,0	0,144	3291	11465
	6,0	0,180	3439	9554
	8,0	0,238	3404	7166
	10,0	0,282	3235	5732
	12,0	0,319	3044	4777
Acciaio da stampi Mold Steel	m/min	Vc=90		
	D mm	fz mm/z	F mm/min	n rpm
	1,0	0,011	630	28648
	2,0	0,025	709	14331
	4,0	0,099	1417	7166
	5,0	0,144	1646	5732
	6,0	0,180	1720	4777
	8,0	0,238	1702	3583
	10,0	0,282	1618	2866
	12,0	0,319	1522	2389

190

Fresa 2 taglienti semisferica con collarino conico per lavorazioni in profondità
2 flute ball nose end mill with tapered neck for deep milling



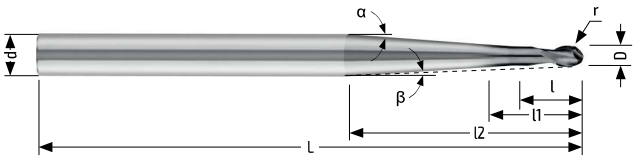
a = 0,02 - 0,05

Silmax NORM
λ 0°
a
1 2

D	d h6	L	l ap	l1	l2	α	β	r f8	Z	Balinit® Latuma
1,0	6	78	3,0	5,0	36,0	4,50	4,00	0,50	2	HMC19007801
1,5	6	78	3,0	6,0	35,0	4,30	3,80	0,75	2	HMC190078015
2,0	6	78	3,0	7,0	34,0	4,10	3,40	1,00	2	HMC19007802
2,0	6	105	3,0	7,0	61,0	2,10	1,90	1,00	2	HMC19010502
2,5	6	78	4,0	8,0	34,0	3,70	3,10	1,25	2	HMC190078025
2,5	6	105	4,0	8,0	61,0	1,80	1,70	1,25	2	HMC190105025
3,0	6	78	4,0	10,0	34,0	3,50	2,60	1,50	2	HMC19007803
3,0	6	105	4,0	10,0	61,0	1,60	1,40	1,50	2	HMC19010503
4,0	6	78	5,0	13,0	34,0	2,70	1,70	2,00	2	HMC19007804
4,0	6	105	5,0	13,0	61,0	1,20	1,00	2,00	2	HMC19010504
5,0	6	78	6,0	16,0	34,0	1,60	0,90	2,50	2	HMC19007805
5,0	6	105	6,0	16,0	61,0	0,60	0,50	2,50	2	HMC19010505
6,0	8	78	6,0	18,0	34,0	3,60	1,80	3,00	2	HMC19007806
6,0	8	105	6,0	18,0	61,0	1,30	1,00	3,00	2	HMC19010506
6,0	8	160	6,0	18,0	116,0	0,60	0,50	3,00	2	HMC19016006
8,0	10	105	8,0	24,0	57,0	1,70	1,10	4,00	2	HMC19010508
8,0	10	160	8,0	24,0	112,0	0,80	0,50	4,00	2	HMC19016008
10,0	12	105	10,0	30,0	51,0	2,70	1,20	5,00	2	HMC19010510
10,0	12	160	10,0	30,0	106,0	0,80	0,60	5,00	2	HMC19016010
12,0	16	160	12,0	36,0	102,0	1,70	1,20	6,00	2	HMC19016012

192

Fresa 2 taglienti semisferica con collarino conico per lavorazioni in profondità
2 flute ball nose end mill with tapered neck for deep milling



a = 0,02 - 0,05

Silmax NORM
λ 30°
a
1 2

D	d h6	L	l ap	l1	l2	α	β	r f8	Z	Balinit® Latuma
1,0	6	78	3,0	5,0	36,0	4,50	4,00	0,50	2	HMC19207801
1,5	6	78	3,0	6,0	35,0	4,30	3,80	0,75	2	HMC192078015
2,0	6	78	3,0	7,0	34,0	4,10	3,40	1,00	2	HMC19207802
2,0	6	105	3,0	7,0	61,0	2,10	1,90	1,00	2	HMC19210502
2,5	6	78	4,0	8,0	34,0	3,70	3,10	1,25	2	HMC192078025
2,5	6	105	4,0	8,0	61,0	1,80	1,70	1,25	2	HMC192105025
3,0	6	78	4,0	10,0	34,0	3,50	2,60	1,50	2	HMC19207803
3,0	6	105	4,0	10,0	61,0	1,60	1,40	1,50	2	HMC19210503
4,0	6	78	5,0	13,0	34,0	2,70	1,70	2,00	2	HMC19207804
4,0	6	105	5,0	13,0	61,0	1,20	1,00	2,00	2	HMC19210504
5,0	6	78	6,0	16,0	34,0	1,60	0,90	2,50	2	HMC19207805
5,0	6	105	6,0	16,0	61,0	0,60	0,50	2,50	2	HMC19210505
6,0	8	78	6,0	18,0	34,0	3,60	1,80	3,00	2	HMC19207806
6,0	8	105	6,0	18,0	61,0	1,30	1,00	3,00	2	HMC19210506
6,0	8	160	6,0	18,0	116,0	0,60	0,50	3,00	2	HMC19216006
8,0	10	105	8,0	24,0	57,0	1,70	1,10	4,00	2	HMC19210508
8,0	10	160	8,0	24,0	112,0	0,80	0,50	4,00	2	HMC19216008
10,0	12	105	10,0	30,0	51,0	2,70	1,20	5,00	2	HMC19210510
10,0	12	160	10,0	30,0	106,0	0,80	0,60	5,00	2	HMC19216010
12,0	16	160	12,0	36,0	102,0	1,70	1,20	6,00	2	HMC19216012

Nervature / Stiffening Ribs

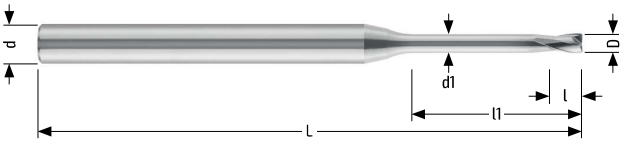
		Toriche / Corner radius							Sferiche / Ball nose					
		521A	521B	521C	521D	621H	721H	724H	522A	522B	522C	522D	622H	722H
D	l1	<30' Z2	<1° Z2	<1°30' Z2	<2° Z2	Z2	Z2	Z4	<30' Z2	<1° Z2	<1°30' Z2	<2° Z2	Z2	Z2
0,20	0,5					●			●	●		●	●	
	1,5						●							●
0,30	1,5								●	●		●		
	2,0													●
0,40	1,5								●	●		●		
	2,0						●							
	3,0						●							
	4,0						●							
0,50	2,0						●							●
	2,5	●	●		●				●	●		●		
	4,0						●							●
	5,0	●	●		●				●	●		●		
	6,0													●
	7,5	●	●		●				●	●		●		●
	8,0													●
	10,0					●							●	
0,60	2,0						●							●
	2,5					●							●	
	4,0						●							●
	5,0	●	●	●		●	●		●	●	●		●	●
	6,0						●							●
	7,5	●	●	●		●			●	●	●			
	8,0													●
	10,0								●	●	●			
0,70	2,0	●	●	●		●			●	●	●			
	4,0	●	●	●					●	●	●			
	6,0						●							●
0,80	4,0						●							
	5,0						●							●
	6,0						●							
	7,5						●							●
	8,0						●							
	10,0													●
1,00	4,0													●
	5,0					●							●	
	6,0						●							●
	7,5					●							●	
	8,0						●							●
	10,0	●	●	●		●	●		●	●	●		●	●
	12,0						●							●
	15,0	●	●	●		●			●	●	●			
	16,0													●
	17,5								●	●	●			
	20,0	●	●	●		●			●	●	●			
	25,0	●	●	●					●	●	●			
1,20	6,0						●							●
	8,0						●							
	12,0						●							●
1,40	6,0						●							
	8,0						●							●
	12,0						●							
	16,0													●
1,50	5,0												●	
	6,0						●							
	7,5					●							●	
	8,0						●							●
	10,0	●	●	●		●	●	●	●	●	●		●	
	12,0						●							●
	15,0	●	●	●		●			●	●	●			
	16,0						●	●						●
	17,5								●	●	●			
	20,0	●	●	●		●		●	●	●	●			
	25,0	●	●	●		●			●	●	●			

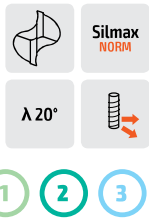
		Toriche / Corner radius							Sferiche / Ball nose					
		521A	521B	521C	521D	621H	721H	724H	522A	522B	522C	522D	622H	721H
D	l1	<30' Z2	<1° Z2	<1°30' Z2	<2° Z2	Z2	Z2	Z4	<30' Z2	<1° Z2	<1°30' Z2	<2° Z2	Z2	Z2
1,60	6,0						●							●
	8,0													
	12,0						●							●
	16,0						●							●
1,80	5,0												●	
	6,0						●							●
	7,5					●							●	
	8,0													
	10,0	●	●	●		●			●	●	●		●	
	12,0						●							●
	15,0	●	●	●		●			●	●	●			
	16,0						●							●
	17,5								●	●	●			
	20,0	●	●	●		●			●	●	●			
	25,0	●	●	●		●			●	●	●			
2,00	6,0						●							●
	10,0					●		●					●	
	12,0						●							●
	15,0	●	●	●		●			●	●	●		●	
	16,0						●	●						●
	17,5												●	
	20,0	●	●	●		●	●	●	●	●	●		●	●
	25,0	●	●	●		●			●	●	●		●	
	30,0	●	●	●					●	●	●			
	35,0	●	●	●					●	●	●			
	40,0	●	●	●					●	●	●			
	45,0	●	●	●					●	●	●			
2,50	10,0					●	●	●					●	●
	15,0	●	●	●		●			●	●	●		●	
	16,0						●	●						●
	17,5												●	
	20,0	●	●	●		●	●	●	●	●	●		●	●
	25,0	●	●	●		●	●		●	●	●		●	●
	30,0								●	●	●			
	35,0								●	●	●			
	40,0								●	●	●			
	45,0								●	●	●			
3,00	10,0					●	●	●					●	●
	15,0	●	●	●		●			●	●	●		●	
	16,0						●	●						●
	17,5												●	
	20,0	●	●	●		●	●	●	●	●	●		●	●
	25,0	●	●	●		●	●		●	●	●		●	●
	30,0	●	●	●			●		●	●	●			●
	35,0	●	●	●					●	●	●			
	40,0	●	●	●					●	●	●			
	45,0	●	●	●					●	●	●			
4,00	10,0							●						
	16,0							●						
	20,0							●						

Ribassamento "l1" a richiesta sui diametri disponibili, quantità minima 5 pezzi.
"l1" neck relief upon request on available diameters, minimum order 5pcs.

721

Fresa 2 taglienti torica per nervature
2 flute corner radius end mill for ribbing





Cr

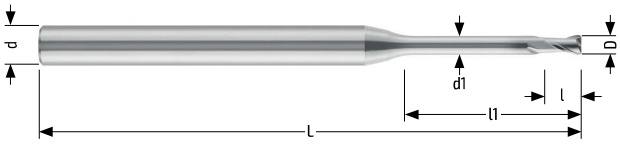
D h8	Cr +/-0,01	L	l ap	d h5	d1	Z	l1	Balinit® Latuma
0,2	0,05	45	0,30	4	0,18	2	0,5	HMC72100502
							1,5	HMC72101502
0,3	0,05	45	0,45	4	0,18	2	1,5	HMC72101503
0,4	0,05	45	0,60	4	0,37	2	2,0	HMC72102004
							2,0	HMC72104004
0,5	0,05	45	0,70	4	0,47	2	2,0	HMC72102005
							4,0	HMC72104005
							6,0	HMC72106005
0,6	0,06	45	0,90	4	0,57	2	2,0	HMC72102006
							4,0	HMC72104006
							6,0	HMC72106006
0,7	0,07	45	1,00	4	0,67	2	2,0	HMC72102007
							4,0	HMC72104007
							6,0	HMC72106007
0,8	0,08	45	1,20	4	0,77	2	4,0	HMC72104008
							6,0	HMC72106008
							8,0	HMC72108008
1,0	0,10	50	1,50	4	0,96	2	6,0	HMC72106010
							8,0	HMC72108010
							10,0	HMC72110010
							12,0	HMC72112010
1,2	0,12	50	1,80	4	1,15	2	6,0	HMC72106012
							8,0	HMC72108012
							12,0	HMC72112012
1,4	0,14	50	2,10	4	1,34	2	6,0	HMC72106014
							8,0	HMC72108014
							12,0	HMC72112014
1,5	0,15	50	2,30	4	1,44	2	6,0	HMC72106015
							8,0	HMC72108015
							10,0	HMC72110015
							12,0	HMC72112015
							16,0	HMC72116015
1,6	0,16	50	2,40	4	1,54	2	6,0	HMC72106016
							12,0	HMC72112016
							16,0	HMC72116016
1,8	0,18	50	2,70	4	1,73	2	6,0	HMC72106018
							12,0	HMC72112018
							16,0	HMC72116018
2,0	0,20	62	3,00	4	1,92	2	6,0	HMC72106020
							12,0	HMC72112020
							16,0	HMC72116020
							20,0	HMC72120020
2,5	0,25	62	3,70	4	2,40	2	10,0	HMC72110025
							16,0	HMC72116025
							20,0	HMC72120025
							25,0	HMC72125025
3,0	0,30	80	4,50	6	2,88	2	10,0	HMC72110030
							16,0	HMC72116030
							20,0	HMC72120030
							25,0	HMC72125030
							30,0	HMC72130030

Nervature / Stiffening Ribs

NEW

621

Fresa 2 taglienti torica per nervature con gambo rinforzato
2 flute corner radius end mill for ribbing with reinforced shank



Silmax NORM

λ 30°

1 2 3

Cr

D +0/-0,02	Cr +/-0,005	L	l ap	d h5	d1	Z	l1	Balinit® Latuma
0,5	0,05	50	1,20	6	0,45	2	2,5	HMC62102505005
							5,0	HMC62105005005
0,6	0,06	50	1,20	6	0,55	2	2,5	HMC62102506006
							5,0	HMC62105006006
1,0	0,10	50	2,50	6	0,95	2	5,0	HMC62105010010
							7,5	HMC62107510010
		60	2,50	6	0,95	2	10,0	HMC62110010010
							15,0	HMC62115010010
							20,0	HMC62120010010
	0,20	50	2,50	6	0,95	2	5,0	HMC62105010020
							7,5	HMC62107510020
		60	2,50	6	0,95	2	10,0	HMC62110010020
							15,0	HMC62115010020
							20,0	HMC62120010020
1,5	0,15	60	2,50	6	1,45	2	7,5	HMC62107515015
							10,0	HMC62110015015
							15,0	HMC62115015015
							20,0	HMC62120015015
							25,0	HMC62125015015
	0,30	60	2,50	6	1,45	2	7,5	HMC62107515030
							10,0	HMC62110015030
							15,0	HMC62115015030
							20,0	HMC62120015030
							25,0	HMC62125015030
1,8	0,18	60	2,50	6	1,70	2	7,5	HMC62107518018
							10,0	HMC62110018018
							15,0	HMC62115018018
							20,0	HMC62120018018
							25,0	HMC62125018018
	0,50	60	2,50	6	1,70	2	7,5	HMC62107518050
							10,0	HMC62110018050
							15,0	HMC62115018050
							20,0	HMC62120018050
							25,0	HMC62125018050
2,0	0,20	60	5,00	6	1,90	2	10,0	HMC62110020020
							15,0	HMC62115020020
							20,0	HMC62120020020
							25,0	HMC62125020020
	0,50	60	5,00	6	1,90	2	10,0	HMC62110020050
							15,0	HMC62115020050
							20,0	HMC62120020050
							25,0	HMC62125020050
2,5	0,20	60	5,00	6	2,40	2	10,0	HMC62110025020
							15,0	HMC62115025020
							20,0	HMC62120025020
							25,0	HMC62125025020
	0,50	60	5,00	6	2,40	2	10,0	HMC62110025050
							15,0	HMC62115025050
								HMC62120025050
							25,0	HMC62125025050

621

Cr

Fresa 2 taglienti torica per nervature con gambo rinforzato
2 flute corner radius end mill for ribbing with reinforced shank

D +0/-0,02	Cr +/-0,005	L	l ap	d h5	d1	Z	l1	Balinit® Latuma
3,0	0,20	60	5,00	6	2,90	2	10,0	HMC62110030020
							15,0	HMC62115030020
							20,0	HMC62120030020
							25,0	HMC62125030020
	0,50	60	5,00	6	2,90	2	10,0	HMC62110030050
							15,0	HMC62115030050
								HMC62120030050
							25,0	HMC62125030050

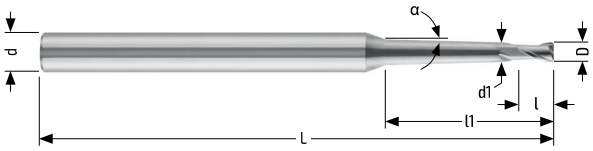
Nervature / Stiffening Ribs

NEW

521

Fresa 2 taglienti torica per nervature con collarino conico e gambo rinforzato

2 flute corner radius end mill for deep milling with tapered neck and reinforced shank



Silmax NORM

λ 30°

1 2 3

Cr

D +0/-0,02	Cr +/-0,005	L	l ap	d h5	d1	Z	α	l1	Balinit® Latuma
0,5	0,05	50	1,20	6	0,45	2	<0,5°	5,0	HMC521D05005005
								7,5	HMC521D07505005
								10,0	HMC521D10005005
							<1°	5,0	HMC521B05005005
								7,5	HMC521B07505005
								10,0	HMC521B10005005
							<2°	5,0	HMC521A05005005
								7,5	HMC521A07505005
								10,0	HMC521A10005005
0,8	0,08	50	2,50	6	0,75	2	<0,5°	5,0	HMC521D05008008
								7,5	HMC521D07508008
								10,0	HMC521D10008008
							<1°	5,0	HMC521B05008008
								7,5	HMC521B07508008
								10,0	HMC521B10008008
							<2°	5,0	HMC521A05008008
								7,5	HMC521A07508008
								10,0	HMC521A10008008
1,0	0,10	60	2,50	6	0,95	2	<0,5°	10,0	HMC521C10010010
								15,0	HMC521C15010010
								20,0	HMC521C20010010
								25,0	HMC521C25010010
							<1°	10,0	HMC521B10010010
								15,0	HMC521B15010010
								20,0	HMC521B20010010
								25,0	HMC521B25010010
							<1,5°	10,0	HMC521A10010010
								15,0	HMC521A15010010
								20,0	HMC521A20010010
								25,0	HMC521A25010010
	0,20	60	2,50	6	0,95	2	<0,5°	10,0	HMC521C10010020
								15,0	HMC521C15010020
								20,0	HMC521C20010020
								25,0	HMC521C25010020
							<1°	10,0	HMC521B10010020
								15,0	HMC521B15010020
								20,0	HMC521B20010020
								25,0	HMC521B25010020
							<1,5°	10,0	HMC521A10010020
								15,0	HMC521A15010020
								20,0	HMC521A20010020
								25,0	HMC521A25010020

Notes

521

Cr

Fresa 2 taglienti torica per nervature con collarino conico e gambo rinforzato
2 flute corner radius end mill for deep milling with tapered neck and reinforced shank

D +0/-0,02	Cr +/-0,005	L	l ap	d h5	d1	Z	α	l1	Balinit® Latuma
1,5	0,15	60	2,50	6	1,45	2	<0,5°	10,0	HMC521C10015015
								15,0	HMC521C15015015
								20,0	HMC521C20015015
								25,0	HMC521C25015015
							<1°	10,0	HMC521B10015015
								15,0	HMC521B15015015
								20,0	HMC521B20015015
								25,0	HMC521B25015015
							<1,5°	10,0	HMC521A10015015
								15,0	HMC521A15015015
								20,0	HMC521A20015015
								25,0	HMC521A25015015
1,5	0,30	60	2,50	6	1,45	2	<0,5°	10,0	HMC521C10015030
								15,0	HMC521C15015030
								20,0	HMC521C20015030
								25,0	HMC521C25015030
							<1°	10,0	HMC521B10015030
								15,0	HMC521B15015030
								20,0	HMC521B20015030
								25,0	HMC521B25015030
							<1,5°	10,0	HMC521A10015030
								15,0	HMC521A15015030
								20,0	HMC521A20015030
								25,0	HMC521A25015030
1,8	0,18	60	2,50	6	1,70	2	<0,5°	10,0	HMC521C10018018
								15,0	HMC521C15018018
								20,0	HMC521C20018018
								25,0	HMC521C25018018
							<1°	10,0	HMC521B10018018
								15,0	HMC521B15018018
								20,0	HMC521B20018018
								25,0	HMC521B25018018
							<1,5°	10,0	HMC521A10018018
								15,0	HMC521A15018018
								20,0	HMC521A20018018
								25,0	HMC521A25018018
1,8	0,50	60	2,50	6	1,70	1	<0,5°	10,0	HMC521C10018050
								15,0	HMC521C15018050
								20,0	HMC521C20018050
								25,0	HMC521C25018050
							<1°	10,0	HMC521B10018050
								15,0	HMC521B15018050
								20,0	HMC521B20018050
								25,0	HMC521B25018050
							<1,5°	10,0	HMC521A10018050
								15,0	HMC521A15018050
								20,0	HMC521A20018050
								25,0	HMC521A25018050

Nervature / Stiffening Ribs

NEW

521

Cr

Fresa 2 taglienti torica per nervature con collarino conico e gambo rinforzato

2 flute corner radius end mill for deep milling with tapered neck and reinforced shank

D +0/-0,02	Cr +/-0,005	L	l ap	d h5	d1	Z	α	l1	Balinit® Latuma
2,0	0,20	60	5,00	6	1,90	1	<0,5°	15,0	HMC521C15020020
								20,0	HMC521C20020020
								25,0	HMC521C25020020
							<1°	15,0	HMC521B15020020
								20,0	HMC521B20020020
								25,0	HMC521B25020020
							<1,5°	15,0	HMC521A15020020
								20,0	HMC521A20020020
								25,0	HMC521A25020020
		78	5,00	6	1,90	1	<0,5°	30,0	HMC521C30020020
								35,0	HMC521C35020020
								40,0	HMC521C40020020
								45,0	HMC521C45020020
							<1°	30,0	HMC521B30020020
								35,0	HMC521B35020020
								40,0	HMC521B40020020
								45,0	HMC521B45020020
							<1,5°	30,0	HMC521A30020020
								35,0	HMC521A35020020
								40,0	HMC521A40020020
								45,0	HMC521A45020020
	0,50	60	5,00	6	1,90	1	<0,5°	15,0	HMC521C15020050
								20,0	HMC521C20020050
								25,0	HMC521C25020050
							<1°	15,0	HMC521B15020050
								20,0	HMC521B20020050
								25,0	HMC521B25020050
							<1,5°	15,0	HMC521A15020050
								20,0	HMC521A20020050
								25,0	HMC521A25020050
		78	5,00	6	1,90	1	<0,5°	30,0	HMC521C30020050
								35,0	HMC521C35020050
								40,0	HMC521C40020050
								45,0	HMC521C45020050
							<1°	30,0	HMC521B30020050
								35,0	HMC521B35020050
								40,0	HMC521B40020050
								45,0	HMC521B45020050
							<1,5°	30,0	HMC521A30020050
								35,0	HMC521A35020050
								40,0	HMC521A40020050
								45,0	HMC521A45020050
2,5	0,20	60	5,00	6	2,40	2	<0,5°	15,0	HMC521C15025020
								20,0	HMC521C20025020
								25,0	HMC521C25025020
							<1°	15,0	HMC521B15025020
								20,0	HMC521B20025020
								25,0	HMC521B25025020
							<1,5°	15,0	HMC521A15025020
								20,0	HMC521A20025020
								25,0	HMC521A25025020
	0,50	60	5,00	6	2,40	2	<0,5°	15,0	HMC521C15025050
								20,0	HMC521C20025050
								25,0	HMC521C25025050
							<1°	15,0	HMC521B15025050
								20,0	HMC521B20025050
								25,0	HMC521B25025050
							<1,5°	15,0	HMC521A15025050
								20,0	HMC521A20025050
								25,0	HMC521A25025050

521

Cr

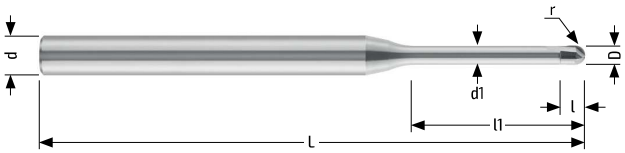
Fresa 2 taglienti torica per nervature con collarino conico e gambo rinforzato
2 flute corner radius end mill for deep milling with tapered neck and reinforced shank

D +0/-0,02	Cr +/-0,005	L	l ap	d h5	d1	Z	α	l1	Balinit® Latuma
3,0	0,20	60	5,00	6	2,90	2	<0,5°	15,0	HMC521C15030020
								20,0	HMC521C20030020
								25,0	HMC521C25030020
							<1°	15,0	HMC521B15030020
								20,0	HMC521B20030020
								25,0	HMC521B25030020
							<1,5°	15,0	HMC521A15030020
								20,0	HMC521A20030020
								25,0	HMC521A25030020
		78	5,00	6	2,90	2	<0,5°	30,0	HMC521C30030020
								35,0	HMC521C35030020
								40,0	HMC521C40030020
								45,0	HMC521C45030020
							<1°	30,0	HMC521B30030020
								35,0	HMC521B35030020
								40,0	HMC521B40030020
								45,0	HMC521B45030020
							<1,5°	30,0	HMC521A30030020
								35,0	HMC521A35030020
								40,0	HMC521A40030020
								45,0	HMC521A45030020
	0,50	60	5,00	6	2,90	2	<0,5°	15,0	HMC521C15030050
								20,0	HMC521C20030050
								25,0	HMC521C25030050
							<1°	15,0	HMC521B15030050
								20,0	HMC521B20030050
								25,0	HMC521B25030050
							<1,5°	15,0	HMC521A15030050
								20,0	HMC521A20030050
								25,0	HMC521A25030050
		78	5,00	6	2,90	2	<0,5°	30,0	HMC521C30030050
								35,0	HMC521C35030050
								40,0	HMC521C40030050
								45,0	HMC521C45030050
							<1°	30,0	HMC521B30030050
								35,0	HMC521B35030050
								40,0	HMC521B40030050
								45,0	HMC521B45030050
							<1,5°	30,0	HMC521A30030050
								35,0	HMC521A35030050
								40,0	HMC521A40030050
								45,0	HMC521A45030050

Nervature / Stiffening Ribs

722

Fresa 2 taglienti semisferica per nervature
2 flute ball nose end mill for ribbing



Silmax NORM

λ 0°

1 2 3

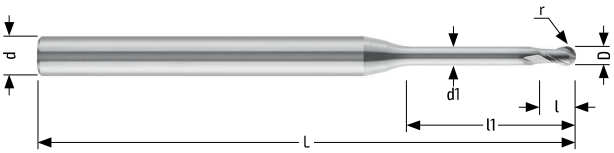
D	r +/-0,005	L	l ap	d h5	d1	Z	l1	Balinit® Latuma
0,2	0,10	45	0,16	4	0,18	2	0,5	HMC72200502
							1,5	HMC72201502
0,3	0,15	45	0,26	4	0,28	2	2,0	HMC72202003
0,4	0,20	45	0,30	4	0,37	2	1,5	HMC72201504
							3,0	HMC72203004
0,5	0,25	45	0,40	4	0,47	2	2,0	HMC72202005
							4,0	HMC72204005
							6,0	HMC72206005
							8,0	HMC72208005
0,6	0,30	45	0,50	4	0,57	2	2,0	HMC72202006
							4,0	HMC72204006
							6,0	HMC72206006
							8,0	HMC72208006
0,8	0,40	45	0,60	4	0,77	2	4,0	HMC72204008
							6,0	HMC72206008
							8,0	HMC72208008
							10,0	HMC72210008
1,0	0,50	50	0,80	4	0,96	2	4,0	HMC72204010
							6,0	HMC72206010
							8,0	HMC72208010
							10,0	HMC72210010
							12,0	HMC72212010
							16,0	HMC72216010
1,2	0,60	50	1,00	4	1,15	2	6,0	HMC72206012
							12,0	HMC72212012
1,4	0,70	50	1,10	4	1,34	2	8,0	HMC72208014
							16,0	HMC72216014
1,5	0,75	50	1,20	4	1,44	2	8,0	HMC72208015
							12,0	HMC72212015
							16,0	HMC72216015
1,6	0,80	50	1,30	4	1,54	2	8,0	HMC72208016
							12,0	HMC72212016
							16,0	HMC72216016
1,8	0,90	50	1,40	4	1,73	2	8,0	HMC72208018
							12,0	HMC72212018
							16,0	HMC72216018
2,0	1,00	62	1,60	4	1,92	2	6,0	HMC72206020
							10,0	HMC72210020
							12,0	HMC72212020
							16,0	HMC72216020
							20,0	HMC72220020
							25,0	HMC72225020
3,0	1,50	80	2,40	6	2,88	2	10,0	HMC72210030
							16,0	HMC72216030
							20,0	HMC72220030
							25,0	HMC72225030
							30,0	HMC72230030

Notes

NEW

622

Fresa 2 taglienti semisferica per nervature con gambo rinforzato
2 flute ball nose end mill for ribbing with reinforced shank



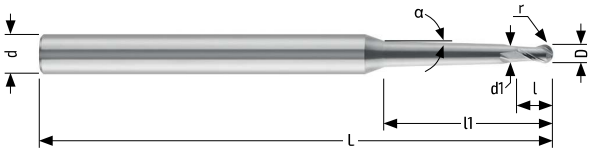
D	r +/-0,005	L	l ap	d h5	d1	Z	l1	Balinit® Latuma
0,5	0,25	50	1,20	6	0,45	2	2,0	HMC62202005
							5,0	HMC62205005
0,6	0,30	50	1,20	6	0,55	2	2,0	HMC62202006
							5,0	HMC62205006
1,0	0,50	50	2,50	6	0,95	2	5,0	HMC62205010
							7,5	HMC62207510
							10,0	HMC62210010
1,5	0,75	50	2,50	6	1,45	2	5,0	HMC62205015
							7,5	HMC62207515
							10,0	HMC62210015
1,8	0,90	50	2,50	6	1,70	2	5,0	HMC62205018
							7,5	HMC62207518
							10,0	HMC62210018
2,0	1,00	60	5,00	6	1,90	2	10,0	HMC62210020
							15,0	HMC62215020
							17,5	HMC62217520
							20,0	HMC62220020
							25,0	HMC62225020
2,5	1,25	60	5,00	6	2,40	2	10,0	HMC62210025
							15,0	HMC62215025
							17,5	HMC62217525
							20,0	HMC62220025
							25,0	HMC62225025
3,0	1,50	60	5,00	6	2,90	2	10,0	HMC62210030
							15,0	HMC62215030
							17,5	HMC62217530
							20,0	HMC62220030
							25,0	HMC62225030

Nervature / Stiffening Ribs

NEW

522

Fresa 2 taglienti semisferica per nervature con collarino conico e gambo rinforzato
2 flute ball nose end mill for ribbing with tapered neck and reinforced shank



a = 0,02 - 0,05

Silmax NORM

λ 30°

1 2 3

D	r +/-0,005	L	l ap	d h5	d1	Z	α	l1	Balinit® Latuma
0,5	0,25	50	1,20	6	0,45	2	<0,5°	5,0	HMC522A05005
								7,5	HMC522A07505
								10,0	HMC522A10005
							<1°	5,0	HMC522B05005
								7,5	HMC522B07505
								10,0	HMC522B10005
							<2°	5,0	HMC522D05005
								7,5	HMC522D07505
								10,0	HMC522D10005
0,6	0,30	50	1,20	6	0,55	2	<0,5°	5,0	HMC522A05006
								7,5	HMC522A07506
								10,0	HMC522A10006
							<1°	5,0	HMC522B05006
								7,5	HMC522B07506
								10,0	HMC522B10006
							<2°	5,0	HMC522D05006
								7,5	HMC522D07506
								10,0	HMC522D10006
0,8	0,40	50	2,50	6	0,75	2	<0,5°	5,0	HMC522A05008
								7,5	HMC522A07508
								10,0	HMC522A10008
							<1°	5,0	HMC522B05008
								7,5	HMC522B07508
								10,0	HMC522B10008
							<2°	5,0	HMC522D05008
								7,5	HMC522D07508
								10,0	HMC522D10008
1,0	0,50	60	2,50	6	0,95	2	<0,5°	10,0	HMC522A10010
								15,0	HMC522A15010
								17,5	HMC522A17510
								20,0	HMC522A20010
								25,0	HMC522A25010
							<1°	10,0	HMC522B10010
								15,0	HMC522B15010
								17,5	HMC522B17510
								20,0	HMC522B20010
								25,0	HMC522B25010
							<1,5°	10,0	HMC522C10010
								15,0	HMC522C15010
								17,5	HMC522C17510
								20,0	HMC522C20010
								25,0	HMC522C25010

Notes

522

Fresa 2 taglienti semisferica per nervature con collarino conico e gambo rinforzato
2 flute ball nose end mill for ribbing with tapered neck and reinforced shank

D	r +/-0,005	L	l ap	d h5	d1	Z	α	l1	Balinit® Latuma
1,5	0,75	60	2,50	6	1,45	2	<0,5°	10,0	HMC522A10015
								15,0	HMC522A15015
								17,5	HMC522A17515
								20,0	HMC522A20015
								25,0	HMC522A25015
							<1°	10,0	HMC522B10015
								15,0	HMC522B15015
								17,5	HMC522B17515
								20,0	HMC522B20015
								25,0	HMC522B25015
							<1,5°	10,0	HMC522C10015
								15,0	HMC522C15015
								17,5	HMC522C17515
								20,0	HMC522C20015
								25,0	HMC522C25015
1,8	0,90	60	2,50	6	1,70	2	<0,5°	10,0	HMC522A10018
								15,0	HMC522A15018
								17,5	HMC522A17518
								20,0	HMC522A20018
								25,0	HMC522A25018
							<1°	10,0	HMC522B10018
								15,0	HMC522B15018
								17,5	HMC522B17518
								20,0	HMC522B20018
								25,0	HMC522B25018
							<1,5°	10,0	HMC522C10018
								15,0	HMC522C15018
								17,5	HMC522C17518
								20,0	HMC522C20018
								25,0	HMC522C25018
2,0	1,00	60	5,00	6	1,90	2	<0,5°	15,0	HMC522A15020
								20,0	HMC522A20020
								25,0	HMC522A25020
							<1°	15,0	HMC522B15020
								20,0	HMC522B20020
								25,0	HMC522B25020
							<1,5°	15,0	HMC522C15020
								20,0	HMC522C20020
								25,0	HMC522C25020
		78	5,00	6	1,90	2	<0,5°	30,0	HMC522A30020
								35,0	HMC522A35020
								40,0	HMC522A40020
								45,0	HMC522A45020
							<1°	30,0	HMC522B30020
								35,0	HMC522B35020
								40,0	HMC522B40020
								45,0	HMC522B45020
							<1,5°	30,0	HMC522C30020
								35,0	HMC522C35020
								40,0	HMC522C40020
								45,0	HMC522C45020

Nervature / Stiffening Ribs

NEW

522

Fresa 2 taglienti semisferica per nervature con collarino conico e gambo rinforzato

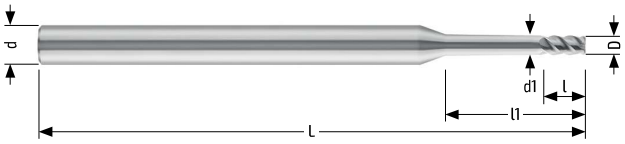
2 flute ball nose end mill for ribbing with tapered neck and reinforced shank

D	r +/-0,005	L	l ap	d h5	d1	Z	α	l1	Balinit® Latuma
2,5	1,25	60	5,00	6	2,40	2	<0,5°	15,0	HMC522A15025
								20,0	HMC522A20025
								25,0	HMC522A25025
							<1°	15,0	HMC522B15025
								20,0	HMC522B20025
								25,0	HMC522B25025
							<1,5°	15,0	HMC522C15025
								20,0	HMC522C20025
								25,0	HMC522C25025
		78	5,00	6	2,40	2	<0,5°	30,0	HMC522A30025
								35,0	HMC522A35025
								40,0	HMC522A40025
								45,0	HMC522A45025
							<1°	30,0	HMC522B30025
								35,0	HMC522B35025
								40,0	HMC522B40025
								45,0	HMC522B45025
							<1,5°	30,0	HMC522C30025
								35,0	HMC522C35025
								40,0	HMC522C40025
								45,0	HMC522C45025
3,0	1,50	60	5,00	6	2,90	2	<0,5°	15,0	HMC522A15030
								20,0	HMC522A20030
								25,0	HMC522A25030
							<1°	15,0	HMC522B15030
								20,0	HMC522B20030
								25,0	HMC522B25030
							<1,5°	15,0	HMC522C15030
								20,0	HMC522C20030
								25,0	HMC522C25030
		78	5,00	6	2,90	2	<0,5°	30,0	HMC522A30030
								35,0	HMC522A35030
								40,0	HMC522A40030
								45,0	HMC522A45030
							<1°	30,0	HMC522B30030
								35,0	HMC522B35030
								40,0	HMC522B40030
								45,0	HMC522B45030
							<1,5°	30,0	HMC522C30030
								35,0	HMC522C35030
								40,0	HMC522C40030
								45,0	HMC522C45030

Notes

724

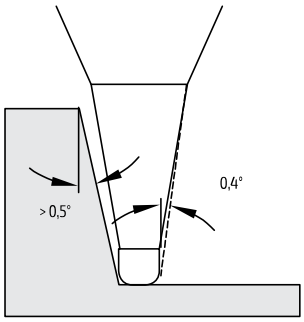
Fresa 4 taglienti torica per nervature
4 flute corner radius end mill for ribbing



Silmax NORM
λ 45°
1 2 3

Cr

D h8	Cr +/-0,01	L	l ap	d h5	d1	Z	l1	Balinit® Latuma
1,5	0,30	80	2,30	6	1,44	4	10,0	HMC72410015030
							16,0	HMC72416015030
							20,0	HMC72420015030
2,0	0,50	80	3,00	6	1,94	4	10,0	HMC72410020050
							16,0	HMC72416020050
							20,0	HMC72420020050
2,5	0,50	80	3,70	6	2,44	4	10,0	HMC72410025050
							16,0	HMC72416025050
							20,0	HMC72420025050
3,0	0,50	80	4,50	6	2,94	4	10,0	HMC72410030050
							16,0	HMC72416030050
							20,0	HMC72420030050
4,0	0,50	80	6,00	6	3,94	4	10,0	HMC72410040050
							16,0	HMC72416040050
							20,0	HMC72420040050



Parte ribassata con rastremazione per consentire la lavorazione di pareti con inclinazione superiore ad 0,5°.

Increased stability with 0,4° neck angle. Allowed machining with inclination of the rib >0,5°.

31 UNV Universali Universal Line
53 HPC Alto Rendimento High Performance
75 HRC Stampi Molds
113 TIS Titainox e Superleghe Titainox & Superalloys
137 ALU Leghe Leggere Light Alloys
155 CMP Materiali Compositi Composite Materials

Nervature / Stiffening Ribs

Frese toriche per Nervature
Corner radius end mills for ribbing

Parametri di lavoro
Working Parameters

521/621/721/724*	HRC < 35				HRC 35 ÷ 45				HRC 45 ÷ 55				HRC 55 ÷ 65			
L1/D <4	ae	0,25D	ap	0,05D	ae	0,25D	ap	0,05D	ae	0.2D	ap	0,05D	ae	0,18D	ap	0,05D
L1/D <8	ae	0,2D	ap	0,04D	ae	0,2D	ap	0,04D	ae	0.18D	ap	0,04D	ae	0,14D	ap	0,04D
L1/D <12	ae	0,16D	ap	0,03D	ae	0,16D	ap	0,03D	ae	0.14D	ap	0,03D	ae	0,12D	ap	0,01D
L1/D >12	ae	0,12D	ap	0,02D	ae	0,12D	ap	0,02D	ae	0.1D	ap	0,02D	ae	0,1D	ap	0,01D

D	cr	L1	L1/D	Vc	fz	F	n	Vc	fz	F	n	Vc	fz	F	n	Vc	fz	F	n
0,2	0,05	0,5	2,50	31	0,013	1296	49500	26	0,011	991	42075	23	0,010	777	37125	21	0,009	635	34650
0,2	0,05	1,5	7,50	31	0,010	1080	49500	24	0,010	792	39550	30	0,009	634	34897	30	0,007	477	32571
0,3	0,05	1,5	5,00	46	0,015	1558	49500	34	0,012	927	36352	34	0,010	693	32076	27	0,009	558	29937
0,4	0,05	2	5,00	59	0,017	1658	47520	42	0,015	1057	33660	44	0,013	829	29700	35	0,012	677	27720
0,4	0,05	4	10,00	53	0,015	1343	42768	38	0,015	952	30294	44	0,013	746	26730	35	0,012	609	24948
0,5	0,05	2	4,00	77	0,022	2250	49500	55	0,019	1354	35452	49	0,016	1021	31282	39	0,013	796	29196
0,5	0,05	4	8,00	64	0,020	1719	41057	45	0,017	990	29082	49	0,014	738	25660	39	0,012	595	23950
0,5	0,05	6	12,00	57	0,018	1337	36495	45	0,017	990	29082	39	0,012	567	22809	29	0,010	445	21288
0,6	0,05	2	3,33	93	0,029	2880	49500	66	0,022	1611	35452	58	0,019	1251	31282	46	0,016	954	29196
0,6	0,05	4	6,67	77	0,026	2150	41057	54	0,021	1237	29082	53	0,017	923	25660	42	0,015	744	23950
0,6	0,05	6	10,00	77	0,026	2150	41057	54	0,021	1237	29082	53	0,017	923	25660	42	0,015	744	23950
0,7	0,05	2	2,86	108	0,029	2880	49500	75	0,021	1466	34556	64	0,018	1044	28710	51	0,015	900	28458
0,7	0,05	4	5,71	90	0,026	2150	41057	68	0,020	1279	31371	58	0,017	980	27680	46	0,015	753	24449
0,7	0,05	6	8,57	90	0,026	2150	41057	65	0,020	1213	29688	58	0,017	928	26195	46	0,015	757	24449
0,8	0,05	4	5,00	119	0,021	2073	47520	84	0,019	1322	33660	66	0,017	1036	29700	53	0,015	846	27720
0,8	0,05	6	7,50	107	0,020	1710	42768	76	0,019	1189	30294	66	0,017	933	26730	53	0,015	762	24948
0,8	0,05	8	10,00	107	0,019	1679	42768	76	0,019	1211	30294	66	0,017	923	26730	53	0,015	771	24948
1,0	0,10	6	6,00	120	0,029	2267	38412	85	0,029	1606	27264	73	0,026	1260	24057	58	0,022	1028	22453
1,0	0,10	8	8,00	120	0,029	2267	38412	85	0,029	1606	27264	73	0,026	1260	24057	58	0,022	1028	22453
1,0	0,10	10	10,00	120	0,029	2267	38412	85	0,029	1606	27264	73	0,026	1260	24057	58	0,022	1028	22453
1,0	0,10	12	12,00	107	0,026	1791	34214	76	0,022	1110	24235	58	0,022	980	21384	43	0,019	783	19958
1,2	0,10	6	5,00	134	0,030	2160	35640	95	0,030	1521	25268	74	0,026	1191	22077	59	0,023	977	20599
1,2	0,10	8	6,67	134	0,030	2160	35640	93	0,029	1463	24841	74	0,026	1148	21918	59	0,022	937	20457
1,2	0,10	12	10,00	119	0,027	1773	31680	93	0,029	1463	24841	74	0,026	1148	21918	59	0,022	937	20457
1,4	0,10	6	4,29	148	0,032	2160	33660	102	0,030	1437	23272	74	0,027	1123	20097	59	0,024	927	18746
1,4	0,10	8	5,71	148	0,026	1764	33660	98	0,029	1320	22417	74	0,026	1036	19780	59	0,022	845	18461
1,4	0,10	12	8,57	137	0,028	1764	31185	98	0,029	1320	22417	74	0,026	1036	19780	59	0,022	845	18461
1,5	0,10	6	4,00	149	0,033	2094	31680	104	0,031	1395	22275	74	0,028	1089	19107	59	0,025	901	17820
1,5	0,10	8	5,33	141	0,029	1764	29937	99	0,029	1249	21205	74	0,026	980	18711	59	0,022	800	17463
1,5	0,10	10	6,67	141	0,029	1764	29937	99	0,029	1249	21205	74	0,026	980	18711	59	0,022	800	17463
1,5	0,10	12	8,00	141	0,029	1764	29937	99	0,029	1249	21205	74	0,026	980	18711	59	0,022	800	17463
1,5	0,10	16	10,70	125	0,026	1393	26532	88	0,022	864	18849	59	0,022	762	16632	44	0,019	609	15523
1,6	0,20	6	3,75	139	0,042	2340	27720	107	0,036	1549	21354	82	0,031	1177	18404	65	0,028	971	17166
1,6	0,20	12	7,50	129	0,034	1791	25740	101	0,033	1350	20145	74	0,029	1059	17775	59	0,027	918	16590
1,6	0,20	16	10,00	129	0,034	1791	25740	91	0,028	1042	18260	74	0,027	885	16112	59	0,023	712	15038
1,8	0,20	6	3,33	148	0,051	2700	26334	110	0,047	1859	19512	82	0,039	1354	16998	65	0,035	1110	15859
1,8	0,20	12	6,67	136	0,044	2135	24096	101	0,043	1553	18024	74	0,038	1218	15904	59	0,038	1153	14844
1,8	0,20	16	8,89	136	0,044	2135	24096	96	0,040	1399	17082	74	0,037	1131	15072	59	0,032	918	14067
2,0	0,20	6	3,00	156	0,061	3061	24948	111	0,061	2169	17671	82	0,049	1530	15592	65	0,042	1250	14553
2,0	0,20	12	6,00	141	0,055	2480	22453	99	0,055	1756	15904	74	0,049	1377	14033	59	0,053	1389	13097
2,0	0,20	16	8,00	141	0,055	2480	22453	99	0,055	1756	15904	74	0,049	1377	14033	59	0,042	1125	13097
2,0	0,20	20	10,00	141	0,055	2480	22453	99	0,055	1756	15904	74	0,049	1377	14033	59	0,042	1125	13097
2,5	0,20	10	4,00	162	0,058	2406	20730	115	0,058	1704	14684	74	0,049	1272	12957	59	0,042	1038	12092
2,5	0,20	16	6,40	162	0,058	2406	20730	115	0,058	1704	14684	74	0,049	1272	12956	59	0,042	1038	12092
2,5	0,20	20	8,00	155	0,055	2185	19780	110	0,055	1547	14010	74	0,049	1213	12362	59	0,042	991	11538
2,5	0,20	25	10,00	139	0,061	2185	17820	110	0,055	1548	14011	74	0,049	1214	12363	59	0,042	991	11538
3,0	0,30	10	3,33	179	0,061	2332	19008	126	0,061	1652	13464	82	0,049	1166	11880	65	0,042	952	11088
3,0	0,30	16	5,33	179	0,061	2332	19008	126	0,061	1652	13464	74	0,049	1166	11880	59	0,042	952	11088
3,0	0,30	20	6,67	161	0,055	1890	17107	114	0,055	1338	12117	74	0,049	1049	10692	59	0,042	857	9979
3,0	0,30	25	8,33	161	0,055	1890	17107	114	0,055	1338	12117	74	0,049	1049	10692	59	0,042	857	9979
3,0	0,30	30	10,00	161	0,055	1890	17107	114	0,055	1338	12117	74	0,049	1049	10692	59	0,042	857	9979

(*) Considerare avanzamento F / Consider feed speed F

31 UNV Universali Universal Line
53 HPC Alto Rendimento High Performance
75 HRC Stampi Molds
113 TIS Titainox e Superleghe Titainox & Superalloys
137 ALU Leghe Leggere Light Alloys
155 CMP Materiali Compositi Composite Materials

Frese Semisferiche per Nervature
Ball nose end mills for ribbing

Parametri di lavoro
Working Parameters

522/622/722	HRC < 35				HRC 35 > 45				HRC 45 ÷ 55				HRC 55 ÷ 65			
L1/D <4	ae	0,25D	ap	0,05D	ae	0,25D	ap	0,05D	ae	0,18D	ap	0,05D	ae	0,16D	ap	0,01D
L1/D <8	ae	0,2D	ap	0,04D	ae	0,2D	ap	0,04D	ae	0,14D	ap	0,04D	ae	0,12D	ap	0,01D
L1/D <12	ae	0,15D	ap	0,03D	ae	0,15D	ap	0,03D	ae	0,12D	ap	0,01D	ae	0,1D	ap	0.01D
L1/D >12	ae	0,1D	ap	0,02D	ae	0,1D	ap	0,02D	ae	0,1D	ap	0,01D	ae	0,1D	ap	0.01D

D	d	L1	L1/D	Vc	fz	F	n	Vc	fz	F	n	Vc	fz	F	n	Vc	fz	F	n
0,2	0,10	0,5	2,50	31	0,020	2025	49500	27	0,020	1822	44550	23	0,016	1215	37125	21	0,014	992	34650
0,2	0,10	1,5	7,50	24	0,018	1458	39600	22	0,018	1312	35640	18	0,016	972	29700	17	0,014	793	27720
0,3	0,15	2,0	6,67	46	0,018	1822	49500	41	0,018	1640	44550	34	0,016	1215	37125	32	0,014	992	34650
0,4	0,20	1,5	3,75	49	0,027	2160	39600	44	0,027	1944	35640	37	0,021	1296	29700	34	0,019	1058	27720
0,4	0,20	3,0	7,50	44	0,024	1749	35640	40	0,024	1575	32076	33	0,021	1166	26730	31	0,019	952	24948
0,5	0,25	2,0	4,00	62	0,027	2160	39600	55	0,027	1944	35640	46	0,021	1296	29700	43	0,019	1058	27720
0,5	0,25	4,0	8,00	55	0,024	1749	35640	50	0,024	1575	32076	41	0,021	1166	26730	39	0,019	952	24948
0,5	0,25	6,0	12,00	49	0,021	1382	31680	43	0,022	1243	27720	37	0,019	907	23760	34	0,016	725	22176
0,5	0,25	8,0	16,00	49	0,021	1382	31680	43	0,022	1243	27720	37	0,019	907	23760	34	0,016	725	22176
0,6	0,30	2,0	3,33	74	0,034	2700	39600	67	0,034	2430	35640	55	0,027	1620	29700	52	0,023	1323	27720
0,6	0,30	4,0	6,67	67	0,030	2187	35640	60	0,030	1968	32076	50	0,027	1458	26730	47	0,023	1190	24948
0,6	0,30	6,0	10,00	59	0,027	1728	31680	52	0,028	1555	27720	44	0,023	1134	23760	41	0,020	907	22176
0,6	0,30	8,0	13,30	59	0,027	1728	31680	52	0,028	1555	27720	44	0,023	1134	23760	41	0,020	907	22176
0,8	0,40	4,0	5,00	99	0,034	2700	39600	89	0,034	2430	35640	74	0,027	1620	29700	69	0,023	1323	27720
0,8	0,40	6,0	7,50	89	0,030	2187	35640	80	0,030	1968	32076	67	0,027	1458	26730	62	0,023	1190	24948
0,8	0,40	8,0	10,00	79	0,027	1728	31680	69	0,028	1555	27720	59	0,023	1134	23760	55	0,020	907	22176
0,8	0,40	10,0	12,50	79	0,027	1728	31680	69	0,028	1555	27720	59	0,023	1134	23760	55	0,020	907	22176
1,0	0,50	4,0	4,00	111	0,040	2916	35640	100	0,040	2624	32076	83	0,032	1749	26730	78	0,028	1429	24948
1,0	0,50	6,0	6,00	100	0,036	2361	32076	90	0,036	2125	28868	75	0,032	1575	24057	70	0,028	1286	22453
1,0	0,50	8,0	8,00	100	0,036	2361	32076	90	0,036	2125	28868	75	0,032	1575	24057	70	0,028	1286	22453
1,0	0,50	10,0	10,00	100	0,036	2361	32076	90	0,036	2125	28868	75	0,032	1575	24057	70	0,028	1286	22453
1,0	0,50	12,0	12,00	89	0,032	1866	28512	80	0,032	1679	25660	67	0,028	1224	21384	62	0,024	980	19958
1,0	0,50	16,0	16,00	89	0,028	1632	28512	80	0,028	1469	25660	67	0,024	1049	21384	62	0,020	816	19958
1,2	0,60	6,0	5,00	120	0,036	2361	32076	108	0,036	2125	28868	90	0,032	1575	24057	84	0,028	1286	22453
1,2	0,60	12,0	10,00	107	0,036	2099	28512	96	0,036	1890	25660	80	0,032	1399	21384	75	0,028	1143	19958
1,4	0,70	8,0	5,71	109	0,036	1836	24948	98	0,036	1653	22453	82	0,032	1224	18711	76	0,028	999	17463
1,4	0,70	16,0	11,40	97	0,032	1451	22176	87	0,032	1306	19958	73	0,028	952	16632	68	0,024	762	15523
1,5	0,75	8,0	5,33	117	0,036	1836	24948	105	0,036	1653	22453	88	0,032	1224	18711	82	0,028	999	17463
1,5	0,75	12,0	8,00	117	0,036	1836	24948	105	0,036	1653	22453	88	0,032	1224	18711	82	0,028	999	17463
1,5	0,75	16,0	10,70	104	0,032	1451	22176	94	0,032	1306	19958	78	0,028	952	16632	73	0,024	762	15523
1,6	0,80	8,0	5,00	129	0,045	2340	25740	116	0,045	2106	23166	97	0,036	1404	19305	90	0,031	1146	18018
1,6	0,80	12,0	7,50	116	0,040	1895	23166	104	0,040	1705	20849	87	0,036	1263	17374	81	0,031	1032	16216
1,6	0,80	16,0	10,00	103	0,036	1497	20592	93	0,036	1348	18532	77	0,031	982	15444	72	0,027	786	14414
1,8	0,90	8,0	4,44	131	0,040	1895	23166	131	0,045	2106	23166	109	0,036	1404	19305	101	0,031	1146	18018
1,8	0,90	12,0	6,67	131	0,040	1895	23166	117	0,040	1705	20849	98	0,036	1263	17374	91	0,031	1032	16216
1,8	0,90	16,0	8,89	131	0,040	1895	23166	117	0,040	1705	20849	98	0,036	1263	17374	91	0,031	1032	16216
2,0	1,00	6,0	3,00	130	0,068	2835	20790	117	0,068	2551	18711	97	0,054	1701	15592	91	0,047	1389	14553
2,0	1,00	10,0	5,00	130	0,068	2835	20790	117	0,068	2551	18711	97	0,054	1701	15592	91	0,047	1389	14553
2,0	1,00	12,0	6,00	117	0,061	2296	18711	105	0,061	2066	16839	88	0,054	1530	14033	82	0,047	1250	13097
2,0	1,00	16,0	8,00	117	0,061	2296	18711	105	0,061	2066	16839	88	0,054	1530	14033	82	0,047	1250	13097
2,0	1,00	20,0	10,00	117	0,061	2296	18711	105	0,061	2066	16839	88	0,054	1530	14033	82	0,047	1250	13097
2,0	1,00	25,0	12,50	104	0,054	1814	16632	94	0,054	1632	14968	78	0,047	1190	12474	73	0,040	952	11642
3,0	1,50	10,0	3,33	149	0,068	2160	15840	134	0,068	1944	14256	111	0,054	1296	11880	104	0,047	1058	11088
3,0	1,50	16,0	5,33	134	0,059	1710	14256	120	0,061	1575	12830	100	0,054	1166	10692	94	0,047	952	9979
3,0	1,50	20,0	6,67	134	0,059	1710	14256	120	0,061	1575	12830	100	0,054	1166	10692	94	0,047	952	9979
3,0	1,50	25,0	8,33	134	0,059	1710	14256	120	0,061	1575	12830	100	0,054	1166	10692	94	0,047	952	9979
3,0	1,50	30,0	10,00	119	0,054	1382	12672	107	0,054	1243	11404	89	0,047	907	9504	83	0,040	725	8870

Titainox e Superleghe

Titainox e Superleghe rappresentano l'innovativa proposta per la lavorazione di acciai inossidabili, titanio e superleghe in grado di raggiungere parametri di taglio nettamente superiori a quanto viene offerto nell'alto di gamma

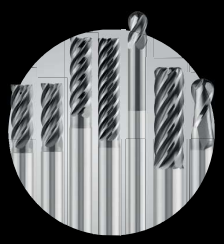
L'innovativo filo tagliente eseguito con una qualità superiore, il trattamento specifico della superficie di spoglia superiore unite al processo di superfinitura Silmax 4S permettono di combinare una finitura eccezionale (rugosità inferiore al micron) con il mantenimento della massima taglienza. Il risultato si traduce in un significativo aumento della velocità di taglio e degli avanzamenti.

Titainox and Superalloys

Titainox and Superalloys represent the innovative proposal for machining stainless steels, titanium and superalloys, capable of achieving cutting parameters much higher than those offered in the market.

The innovative superior-quality cutting edge, the specific radial rake angle surface treatment, together with Silmax 4S super-finishing process allows combining an extraordinary finishing (surface roughness below 1 micron) while ensuring the highest cutting performance. The result is a significant increase in cutting speed and feeds.

Titainox e Superleghe
Titainox & Superalloys

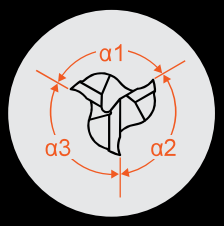


Ampia Gamma

+ Gamma di utensili a 3, 4, 5 e 7 taglienti per un utilizzo ottimale nelle differenti applicazioni

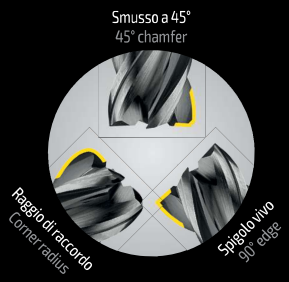
Wide Range

+ Wide range of 3-, 4-, 5- and 7-flute tools for an optimal use in different applications



Divisioni irregolari dei taglienti per l'eliminazione delle vibrazioni

Unequal flute spacing to prevent vibrations



Differenti affilature frontali per un range di applicazioni ad ampio spettro

Different face sharpening for a large number of applications

Trattamento Silmax 4S

+ Omogeneità del filo tagliente
+ Resistenza all'usura e riduzione degli sforzi di taglio.
+ Adesione e resistenza del rivestimento
+ Scorrevolezza delle superfici

Silmax 4S Treatment

+ Cutting-edge consistency
+ Wear-resistance and reduction of shear stress
+ Coating adhesion and resistance
+ Smooth surfaces minimising friction

Rivestimento PVD

Il rivestimento PVD Balinit® Latuma rappresenta oggi la migliore proposta per la lavorazione di Titanio e Acciai inossidabili. È una ricopertura estremamente resistente all'usura, con elevata durezza a caldo e un'ottima stabilità agli shock termici.

PVD Coating

The PVD Balinit® Latuma coating currently represents the best proposal for machining titanium and stainless steels. It is an extremely wear-resistant coating, offering high heat hardness and excellent thermal-shock stability.

Per maggiori informazioni
scarica la brochure digitale.

For further information
download the digital brochure.

silmax.it/tis

183
Fresa 3 taglienti per lavorazioni ad elevate asportazioni

3 flute end mill for high chip removal

→ 117

184
Fresa 4 taglienti per lavorazioni ad elevate asportazioni

4 flute end mill for high chip removal

→ 119

284
Fresa 4 taglienti per lavorazioni ad elevate asportazioni con fori di lubrificazione

4 flute end mill for high chip removal with internal coolant

→ 121

185
Fresa 5 taglienti per lavorazioni ad elevate asportazioni

5 flute end mill for high chip removal

→ 123

195
Fresa 5 taglienti con divisione irregolare e tagliente lungo

5 flute end mill with unequal flute spacing, long version

→ 125

197
Fresa 5/7 taglienti con divisione irregolare e tagliente extra lungo

5/7 flute end mill with unequal flute spacing, extra long version

→ 125

118
Fresa 4 taglienti per lavorazioni di superleghe

4 flute end mill for the machining of superalloys

→ 127

119
Fresa 4 taglienti per lavorazioni di duplex

4 flute end mill for the machining of duplex

→ 127

737
Fresa 2 taglienti semisferica serie normale

2 flute ball nose end mill, regular version

→ 129

737R
Fresa 2 taglienti semisferica serie normale

2 flute ball nose end mill, regular version

→ 129

133 NEW
Fresa 4 taglienti semisferica serie lunga

4 flute ball nose end mill, long version

→ 131

154 NEW
Fresa a 5 taglienti serie normale per lavorazioni di superleghe

5 flute end mill, regular version for the machining of superalloys

→ 133

157 NEW
Fresa a 7 taglienti serie lunga per lavorazioni di titanio

7 flute end mill for the machining of Titanium, long version

→ 135

SIL SERVICE

L'esperienza Silmax dimostra che un utensile correttamente affilato ha un rendimento uguale a quello nuovo.

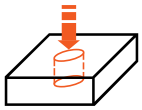
Silmax experience shows that a properly sharpened tool grants the same performances of a new tool.

- Riaffilatura e rigenerazione / Resharpening and Reconditioning
- Esecuzione perfetta / Perfect Execution
- Rivestimento PVD / PVD Coating
- Trattamento 4S / 4S Treatment
- Consegna rapida / Fast Delivery

Titainox

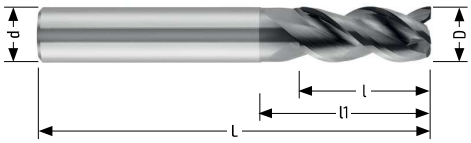
183

Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter	 1,00 D			 1,50 D			 ap = 0,5 D		
Inox ferritico / Ferritic stainless steel	m/min	Vc=130			Vc=130			Vc=130		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,010	621	20690	0,015	931	20690	0,004	248	20690
	4,0	0,020	621	10345	0,025	776	10345	0,008	248	10345
	6,0	0,028	579	6897	0,033	683	6897	0,013	269	6897
	8,0	0,035	543	5173	0,040	621	5173	0,018	279	5173
	10,0	0,044	546	4138	0,049	608	4138	0,023	286	4138
	12,0	0,053	548	3448	0,058	600	3448	0,030	310	3448
	14,0	0,061	541	2956	0,066	585	2956	0,035	310	2956
	16,0	0,070	543	2586	0,075	582	2586	0,035	272	2586
	20,0	0,078	484	2069	0,088	546	2069	0,043	267	2069
Inox austenitico / Austenitic stainless Steel	m/min	Vc=110			Vc=110			Vc=110		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,010	525	17507	0,015	788	17507	0,004	210	17507
	4,0	0,020	525	8754	0,025	657	8754	0,008	210	8754
	6,0	0,028	490	5836	0,033	578	5836	0,013	228	5836
	8,0	0,035	460	4377	0,040	525	4377	0,018	236	4377
	10,0	0,044	462	3501	0,049	515	3501	0,023	242	3501
	12,0	0,053	464	2918	0,058	508	2918	0,030	263	2918
	14,0	0,061	458	2501	0,066	495	2501	0,035	263	2501
	16,0	0,070	460	2188	0,075	492	2188	0,035	230	2188
	20,0	0,078	410	1751	0,088	462	1751	0,043	226	1751
Titanio / Titanium	m/min	Vc=90			Vc=80			Vc=90		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,003	129	14324	0,005	191	12732	0,004	172	14324
	4,0	0,008	172	7162	0,013	248	6366	0,008	172	7162
	6,0	0,016	229	4775	0,021	267	4244	0,013	186	4775
	8,0	0,023	247	3581	0,028	267	3183	0,018	193	3581
	10,0	0,032	275	2865	0,037	283	2546	0,023	198	2865
	12,0	0,041	294	2387	0,046	293	2122	0,030	215	2387
	14,0	0,049	301	2046	0,054	295	1819	0,035	215	2046
	16,0	0,058	312	1790	0,063	301	1592	0,035	188	1790
	20,0	0,066	284	1432	0,076	290	1273	0,043	185	1432
Acciaio < 800 N/mm² / Steel < 800 N/mm²	m/min	Vc=170			Vc=180			Vc=170		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,007	568	27056	0,007	602	28684	0,003	244	27056
	4,0	0,016	649	13528	0,018	773	14324	0,007	284	13528
	6,0	0,024	649	9019	0,027	773	9549	0,011	298	9019
	8,0	0,032	649	6764	0,036	773	7162	0,015	304	6764
	10,0	0,040	649	5411	0,045	773	5730	0,019	308	5411
	12,0	0,048	649	4509	0,054	773	4775	0,022	298	4509
	14,0	0,055	638	3865	0,060	737	4093	0,024	278	3865
	16,0	0,060	609	3382	0,065	698	3581	0,026	264	3382
	20,0	0,075	609	2706	0,080	698	2865	0,028	227	2706
Acciaio <1000 N/mm² - Ghisa / Steel <1000 N/mm² - Cast iron	m/min	Vc=130			Vc=150			Vc=130		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,007	434	20690	0,007	501	23873	0,003	186	20690
	4,0	0,016	497	10345	0,018	645	11937	0,007	217	10345
	6,0	0,024	497	6897	0,027	645	7958	0,011	228	6897
	8,0	0,032	497	5173	0,036	645	5968	0,015	233	5173
	10,0	0,040	497	4138	0,045	645	4775	0,019	236	4138
	12,0	0,048	497	3448	0,054	645	3979	0,022	228	3448
	14,0	0,055	488	2956	0,060	614	3410	0,024	213	2956
	16,0	0,060	466	2586	0,065	582	2984	0,026	202	2586
	20,0	0,075	466	2069	0,080	573	2387	0,028	174	2069

183

Fresa 3 taglienti per lavorazioni ad elevate asportazioni
3 flute end mill for high chip removal



λ 42° | 6527 L

1 4 5 7

45°

D h10	d h6	L	l ap	l1	a	45°	Z	Balinit® Latuma
2,0	6	57	5,0	8,0	0,10	0,05	3	HMC183020
2,5	6	57	6,0	9,0	0,10	0,05	3	HMC183025
3,0	6	57	8,0	11,0	0,10	0,10	3	HMC183030
3,5	6	57	8,0	13,0	0,10	0,10	3	HMC183035
4,0	6	57	9,0	16,0	0,10	0,10	3	HMC183040
4,5	6	57	10,0	16,0	0,10	0,10	3	HMC183045
5,0	6	57	13,0	18,0	0,10	0,10	3	HMC183050
6,0	6	57	13,0	20,0	0,15	0,10	3	HMC183060
8,0	8	63	19,0	25,0	0,15	0,15	3	HMC183080
10,0	10	72	22,0	30,0	0,15	0,15	3	HMC183100
12,0	12	83	26,0	36,0	0,20	0,15	3	HMC183120
16,0	16	92	32,0	42,0	0,20	0,20	3	HMC183160
20,0	20	104	38,0	52,0	0,20	0,20	3	HMC183200

90°

D h10	d h6	L	l ap	l1	a	90°	Z	Balinit® Latuma
2,0	6	57	5,0	8,0	0,10	-	3	HMC183020X
2,5	6	57	6,0	9,0	0,10	-	3	HMC183025X
3,0	6	57	8,0	11,0	0,10	-	3	HMC183030X
3,5	6	57	8,0	13,0	0,10	-	3	HMC183035X
4,0	6	57	9,0	16,0	0,10	-	3	HMC183040X
4,5	6	57	10,0	16,0	0,10	-	3	HMC183045X
5,0	6	57	13,0	18,0	0,10	-	3	HMC183050X
6,0	6	57	13,0	20,0	0,15	-	3	HMC183060X
7,0	8	63	19,0	25,0	0,15	-	3	HMC183070X
8,0	8	63	19,0	25,0	0,15	-	3	HMC183080X
9,0	10	72	22,0	30,0	0,15	-	3	HMC183090X
10,0	10	72	22,0	30,0	0,15	-	3	HMC183100X
12,0	12	83	26,0	36,0	0,20	-	3	HMC183120X
14,0	14	83	30,0	40,0	0,20	-	3	HMC183140X
16,0	16	92	32,0	42,0	0,20	-	3	HMC183160X
20,0	20	104	38,0	52,0	0,20	-	3	HMC183200X

1	2	3	4	5	6	7	8	9	→ 16	→ 18
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Guida alla lettura Reading guide	Legenda Legend

Titainox

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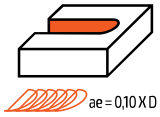
Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter	 1,00 D			 1,50 D			 ae = 0,10 X D		
Inox ferritico / Ferritic stainless steel	m/min	Vc=140			Vc=130			Vc=170		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,013	772	14854	0,013	717	13793	0,020	1443	18038
	4,0	0,020	891	11141	0,020	828	10345	0,060	3247	13528
	6,0	0,030	891	7427	0,030	828	6897	0,130	4690	9019
	8,0	0,040	891	5570	0,040	828	5173	0,160	4329	6764
	10,0	0,050	891	4456	0,050	828	4138	0,190	4113	5411
	12,0	0,060	891	3714	0,060	828	3448	0,220	3968	4509
	14,0	0,065	828	3183	0,065	768	2956	0,250	3865	3865
	16,0	0,070	780	2785	0,070	724	2586	0,250	3382	3382
	20,0	0,080	713	2228	0,080	662	2069	0,300	3247	2706
	25,0	0,090	642	1783	0,090	596	1655	0,350	3030	2165
Inox austenitico / Austenitic stainless Steel	m/min	Vc=120			Vc=110			Vc=150		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,013	662	12732	0,013	607	11671	0,020	1273	15915
	4,0	0,020	764	9549	0,020	700	8754	0,060	2865	11937
	6,0	0,030	764	6366	0,030	700	5836	0,130	4138	7958
	8,0	0,040	764	4775	0,040	700	4377	0,160	3820	5968
	10,0	0,050	764	3820	0,050	700	3501	0,190	3629	4775
	12,0	0,060	764	3183	0,060	700	2918	0,220	3501	3979
	14,0	0,065	709	2728	0,065	650	2501	0,250	3410	3410
	16,0	0,070	668	2387	0,070	613	2188	0,250	2984	2984
	20,0	0,080	611	1910	0,080	560	1751	0,300	2865	2387
	25,0	0,090	550	1528	0,090	504	1401	0,350	2674	1910
Titanio / Titanium	m/min	Vc=80			Vc=80			Vc=100		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,004	136	8488	0,011	373	8488	0,020	849	10610
	4,0	0,006	153	6366	0,015	382	6366	0,060	1910	7958
	6,0	0,009	153	4244	0,023	390	4244	0,130	2759	5305
	8,0	0,012	153	3183	0,030	382	3183	0,160	2546	3979
	10,0	0,015	153	2546	0,040	407	2546	0,190	2419	3183
	12,0	0,020	170	2122	0,050	424	2122	0,220	2334	2653
	14,0	0,025	182	1819	0,055	400	1819	0,250	2274	2274
	16,0	0,030	191	1592	0,060	382	1592	0,250	1989	1989
	20,0	0,040	204	1273	0,075	382	1273	0,300	1910	1592
	25,0	0,050	204	1019	0,090	367	1019	0,350	1783	1273
Acciaio < 800 N/mm² / Steel < 800 N/mm²	m/min	Vc=195			Vc=210			Vc=220		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,008	662	20690	0,008	713	22282	0,020	1867	23343
	4,0	0,012	745	15518	0,012	802	16711	0,060	4202	17507
	6,0	0,020	828	10345	0,020	891	11141	0,130	6069	11671
	8,0	0,030	931	7759	0,030	1003	8356	0,160	5602	8754
	10,0	0,040	993	6207	0,040	1070	6685	0,190	5322	7003
	12,0	0,050	1035	5173	0,050	1114	5570	0,220	5135	5836
	14,0	0,055	975	4434	0,055	1050	4775	0,250	5002	5002
	16,0	0,060	931	3879	0,060	1003	4178	0,250	4377	4377
	20,0	0,070	869	3104	0,070	936	3342	0,300	4202	3501
	25,0	0,080	795	2483	0,080	856	2674	0,350	3922	2801
Acciaio <1000 N/mm² - Ghisa / Steel <1000 N/mm² - Cast iron	m/min	Vc=140			Vc=150			Vc=180		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,008	475	14854	0,008	509	15915	0,020	1528	19099
	4,0	0,012	535	11141	0,012	573	11937	0,060	3438	14324
	6,0	0,020	594	7427	0,020	637	7958	0,130	4966	9549
	8,0	0,030	668	5570	0,030	716	5968	0,160	4584	7162
	10,0	0,040	713	4456	0,040	764	4775	0,190	4354	5730
	12,0	0,050	743	3714	0,050	796	3979	0,220	4202	4775
	14,0	0,055	700	3183	0,055	750	3410	0,250	4093	4093
	16,0	0,060	668	2785	0,060	716	2984	0,250	3581	3581
	20,0	0,070	624	2228	0,070	668	2387	0,300	3438	2865
	25,0	0,080	570	1783	0,080	611	1910	0,350	3209	2292

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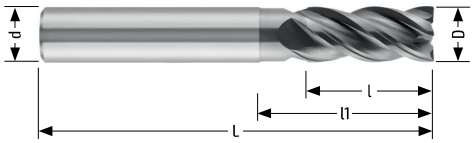
Fresa 4 taglienti per lavorazioni ad elevate asportazioni
4 flute end mill for high chip removal

λ 38° | 6527 L



1 4 5 7

45°

D h10	d h6	L	l ap	l1	a	45°	Z	Balinit® Latuma
3,0	6	57	8,0	11,0	0,10	0,10	4	HMC184030
4,0	6	57	9,0	16,0	0,10	0,10	4	HMC184040
5,0	6	57	13,0	18,0	0,10	0,10	4	HMC184050
6,0	6	57	13,0	20,0	0,15	0,10	4	HMC184060
8,0	8	63	19,0	25,0	0,15	0,15	4	HMC184080
10,0	10	72	22,0	30,0	0,15	0,15	4	HMC184100
12,0	12	83	26,0	36,0	0,20	0,15	4	HMC184120
16,0	16	92	32,0	42,0	0,20	0,20	4	HMC184160
20,0	20	104	38,0	52,0	0,20	0,20	4	HMC184200
25,0	25	125	45,0	65,0	0,25	0,20	4	HMC184250

Cr

D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	0,50	4	HMC184060CR05
6,0	6	57	13,0	20,0	0,15	1,00	4	HMC184060CR10
8,0	8	63	19,0	25,0	0,15	0,50	4	HMC184080CR05
8,0	8	63	19,0	25,0	0,15	1,00	4	HMC184080CR10
8,0	8	63	19,0	25,0	0,15	2,00	4	HMC184080CR20
10,0	10	72	22,0	30,0	0,20	0,50	4	HMC184100CR05
10,0	10	72	22,0	30,0	0,20	1,00	4	HMC184100CR10
10,0	10	72	22,0	30,0	0,20	2,00	4	HMC184100CR20
12,0	12	83	26,0	36,0	0,20	0,50	4	HMC184120CR05
12,0	12	83	26,0	36,0	0,20	1,00	4	HMC184120CR10
12,0	12	83	26,0	36,0	0,20	2,00	4	HMC184120CR20
12,0	12	83	26,0	36,0	0,20	3,00	4	HMC184120CR30
16,0	16	92	32,0	42,0	0,20	1,00	4	HMC184160CR10
16,0	16	92	32,0	42,0	0,20	2,00	4	HMC184160CR20
16,0	16	92	32,0	42,0	0,20	3,00	4	HMC184160CR30
16,0	16	92	32,0	42,0	0,20	4,00	4	HMC184160CR40
20,0	20	104	38,0	52,0	0,20	1,00	4	HMC184200CR10
20,0	20	104	38,0	52,0	0,20	2,00	4	HMC184200CR20
20,0	20	104	38,0	52,0	0,20	3,00	4	HMC184200CR30
20,0	20	104	38,0	52,0	0,20	4,00	4	HMC184200CR40
25,0	25	124	45,0	65,0	0,22	2,00	4	HMC184250CR20
25,0	25	124	45,0	65,0	0,25	3,00	4	HMC184250CR30
25,0	25	124	45,0	65,0	0,25	4,00	4	HMC184250CR40

90°

D h10	d h6	L	l ap	l1	a	90°	Z	Balinit® Latuma
3,0	6	57	8,0	11,0	0,10	-	4	HMC184030X
4,0	6	57	9,0	16,0	0,10	-	4	HMC184040X
5,0	6	57	13,0	18,0	0,10	-	4	HMC184050X
6,0	6	57	13,0	20,0	0,15	-	4	HMC184060X
8,0	8	63	19,0	25,0	0,15	-	4	HMC184080X
10,0	10	72	22,0	30,0	0,15	-	4	HMC184100X
12,0	12	83	26,0	36,0	0,20	-	4	HMC184120X
16,0	16	92	32,0	42,0	0,20	-	4	HMC184160X
20,0	20	104	38,0	52,0	0,20	-	4	HMC184200X
25,0	25	124	45,0	65,0	0,25	-	4	HMC184250X

Titainox

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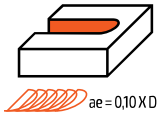
Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter	 1,00 D / 1,00 D			 0,40 D / 1,50 D			 ae = 0,10 X D		
Inox ferritico / Ferritic stainless steel	m/min	Vc=140			Vc=130			Vc=170		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,030	891	7427	0,030	828	6897	0,130	4690	9019
	8,0	0,040	891	5570	0,040	828	5173	0,160	4329	6764
	10,0	0,050	891	4456	0,050	828	4138	0,190	4113	5411
	12,0	0,060	891	3714	0,060	828	3448	0,220	3968	4509
	16,0	0,070	780	2785	0,070	724	2586	0,250	3382	3382
	20,0	0,080	713	2228	0,080	662	2069	0,300	3247	2706
	25,0	0,090	642	1783	0,090	596	1655	0,350	3030	2165
Inox austenitico / Austenitic stainless Steel	m/min	Vc=120			Vc=110			Vc=150		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,030	764	6366	0,030	700	5836	0,130	4138	7958
	8,0	0,040	764	4775	0,040	700	4377	0,160	3820	5968
	10,0	0,050	764	3820	0,050	700	3501	0,190	3629	4775
	12,0	0,060	764	3183	0,060	700	2918	0,220	3501	3979
	16,0	0,070	668	2387	0,070	613	2188	0,250	2984	2984
	20,0	0,080	611	1910	0,080	560	1751	0,300	2865	2387
	25,0	0,090	550	1528	0,090	504	1401	0,350	2674	1910
Titanio / Titanium	m/min	Vc=80			Vc=80			Vc=100		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,009	153	4244	0,023	390	4244	0,130	2759	5305
	8,0	0,012	153	3183	0,030	382	3183	0,160	2546	3979
	10,0	0,015	153	2546	0,040	407	2546	0,190	2419	3183
	12,0	0,020	170	2122	0,050	424	2122	0,220	2334	2653
	16,0	0,030	191	1592	0,060	382	1592	0,250	1989	1989
	20,0	0,040	204	1273	0,075	382	1273	0,300	1910	1592
	25,0	0,050	204	1019	0,090	367	1019	0,350	1783	1273
Acciaio < 800 N/mm² / Steel < 800 N/mm²	m/min	Vc=195			Vc=210			Vc=220		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,020	828	10345	0,020	891	11141	0,130	6069	11671
	8,0	0,030	931	7759	0,030	1003	8356	0,160	5602	8754
	10,0	0,040	993	6207	0,040	1070	6685	0,190	5322	7003
	12,0	0,050	1035	5173	0,050	1114	5570	0,220	5135	5836
	16,0	0,060	931	3879	0,060	1003	4178	0,250	4377	4377
	20,0	0,070	869	3104	0,070	936	3342	0,300	4202	3501
	25,0	0,080	795	2483	0,080	856	2674	0,350	3922	2801
Acciaio <1000 N/mm² - Ghisa / Steel <1000 N/mm² - Cast iron	m/min	Vc=140			Vc=150			Vc=180		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,020	594	7427	0,020	637	7958	0,130	4966	9549
	8,0	0,030	668	5570	0,030	716	5968	0,160	4584	7162
	10,0	0,040	713	4456	0,040	764	4775	0,190	4354	5730
	12,0	0,050	743	3714	0,050	796	3979	0,220	4202	4775
	16,0	0,060	668	2785	0,060	716	2984	0,250	3581	3581
	20,0	0,070	624	2228	0,070	668	2387	0,300	3438	2865
	25,0	0,080	570	1783	0,080	611	1910	0,350	3209	2292

Notes

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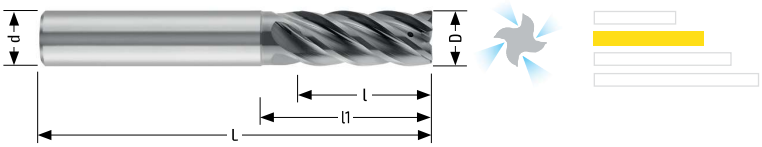
Fresa 4 taglienti per lavorazioni ad elevate asportazioni con fori di lubrificazione
4 flute end mill for high chip removal with internal coolant



λ 38°

6527 L

1 4 5 7

45°

D h10	d h6	L	l ap	l1	a	45°	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	0,10	4	HMC284060
8,0	8	63	19,0	25,0	0,15	0,15	4	HMC284080
10,0	10	72	22,0	30,0	0,15	0,15	4	HMC284100
12,0	12	83	26,0	36,0	0,20	0,15	4	HMC284120
16,0	16	92	32,0	42,0	0,20	0,20	4	HMC284160
20,0	20	104	38,0	52,0	0,20	0,20	4	HMC284200
25,0	25	124	45,0	65,0	0,25	0,20	4	HMC284250

Cr

D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma
6,0	6	63	13,0	20,0	0,15	0,50	4	HMC284060CR05
6,0	6	63	13,0	20,0	0,15	1,00	4	HMC284060CR10
8,0	8	63	19,0	25,0	0,15	0,50	4	HMC284080CR05
8,0	8	63	19,0	25,0	0,15	1,00	4	HMC284080CR10
8,0	8	63	19,0	25,0	0,15	2,00	4	HMC284080CR20
10,0	10	72	22,0	30,0	0,15	0,50	4	HMC284100CR05
10,0	10	72	22,0	30,0	0,15	1,00	4	HMC284100CR10
10,0	10	72	22,0	30,0	0,15	2,00	4	HMC284100CR20
12,0	12	83	26,0	36,0	0,20	0,50	4	HMC284120CR05
12,0	12	83	26,0	36,0	0,20	1,00	4	HMC284120CR10
12,0	12	83	26,0	36,0	0,20	2,00	4	HMC284120CR20
12,0	12	83	26,0	36,0	0,20	3,00	4	HMC284120CR30
16,0	16	92	32,0	42,0	0,20	1,00	4	HMC284160CR10
16,0	16	92	32,0	42,0	0,20	2,00	4	HMC284160CR20
16,0	16	92	32,0	42,0	0,20	3,00	4	HMC284160CR30
16,0	16	92	32,0	42,0	0,20	4,00	4	HMC284160CR40
20,0	20	104	38,0	52,0	0,20	2,00	4	HMC284200CR20
20,0	20	104	38,0	52,0	0,20	3,00	4	HMC284200CR30
20,0	20	104	38,0	52,0	0,20	4,00	4	HMC284200CR40
25,0	25	124	45,0	65,0	0,25	2,00	4	HMC284250CR20
25,0	25	124	45,0	65,0	0,25	3,00	4	HMC284250CR30
25,0	25	124	45,0	65,0	0,25	4,00	4	HMC284250CR40

90°

D h10	d h6	L	l ap	l1	a	90°	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	-	4	HMC284060X
8,0	8	63	19,0	25,0	0,15	-	4	HMC284080X
10,0	10	72	22,0	30,0	0,15	-	4	HMC284100X
12,0	12	83	26,0	36,0	0,20	-	4	HMC284120X
16,0	16	92	32,0	42,0	0,20	-	4	HMC284160X
20,0	20	104	38,0	52,0	0,20	-	4	HMC284200X
25,0	25	124	45,0	65,0	0,25	-	4	HMC284250X

1 Acciaio Steel | 2 Ghise Cast Iron | 3 Acciai Temprati Hardened Steel | 4 Acciaio Inox Stainless Steel | 5 Titanio Titanium | 6 Leghe Leggere Light Alloys | 7 PH Duplex | 8 Superleghe Superalloys | 9 Compositi Composite Materials | → 16 Guida alla lettura Reading guide | → 18 Legenda Legend

Titainox

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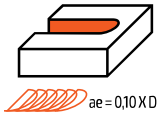
Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter	 1,00 D / 1,00 D			 0,40 D / 1,50 D			 ae = 0,10 X D		
Inox ferritico / Ferritic stainless steel	m/min	Vc=130			Vc=130			Vc=170		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,015	517	6897	0,030	1035	6897	0,130	5862	9019
	8,0	0,025	647	5173	0,040	1035	5173	0,160	5411	6764
	10,0	0,035	724	4138	0,050	1035	4138	0,190	5141	5411
	12,0	0,045	776	3448	0,060	1035	3448	0,220	4960	4509
	16,0	0,055	711	2586	0,070	905	2586	0,250	4228	3382
	20,0	0,060	621	2069	0,080	828	2069	0,300	4058	2706
Inox austenitico / Austenitic stainless Steel	m/min	Vc=110			Vc=110			Vc=150		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,015	438	5836	0,030	875	5836	0,130	5173	7958
	8,0	0,025	547	4377	0,040	875	4377	0,160	4775	5968
	10,0	0,035	613	3501	0,050	875	3501	0,190	4536	4775
	12,0	0,045	657	2918	0,060	875	2918	0,220	4277	3979
	16,0	0,055	602	2188	0,070	766	2188	0,250	3730	2984
	20,0	0,060	525	1751	0,080	700	1751	0,300	3581	2387
Titanio / Titanium	m/min	Vc=80			Vc=80			Vc=80		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,006	127	4244	0,023	477	4244	0,130	2759	4244
	8,0	0,008	127	3183	0,030	477	3183	0,160	2546	3183
	10,0	0,010	127	2546	0,040	509	2546	0,190	2419	2546
	12,0	0,012	127	2122	0,050	531	2122	0,220	2334	2122
	16,0	0,016	127	1592	0,060	477	1592	0,250	1989	1592
	20,0	0,024	153	1273	0,070	446	1273	0,300	1910	1273
Acciaio < 800 N/mm² / Steel < 800 N/mm²	m/min	Vc=170			Vc=195			Vc=220		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,020	902	9019	0,030	1552	10345	0,130	7586	11671
	8,0	0,030	1051	6764	0,040	1552	7759	0,160	7003	8754
	10,0	0,040	1082	5411	0,050	1552	6207	0,190	6653	7003
	12,0	0,045	1015	4509	0,060	1552	5173	0,220	6419	5836
	16,0	0,055	930	3382	0,068	1319	3879	0,250	5471	4377
	20,0	0,065	879	2706	0,075	1164	3104	0,300	5252	3501
Acciaio <1000 N/mm² - Ghisa / Steel <1000 N/mm² - Cast iron	m/min	Vc=130			Vc=150			Vc=180		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,020	690	6897	0,030	1194	7958	0,130	6207	9549
	8,0	0,030	776	5173	0,040	1194	5968	0,160	5730	7162
	10,0	0,040	828	4138	0,050	1194	4775	0,190	5443	5730
	12,0	0,045	776	3448	0,060	1194	3979	0,220	5252	4775
	16,0	0,055	711	2586	0,068	1015	2984	0,250	4476	3581
	20,0	0,065	621	2069	0,075	895	2387	0,300	4297	2865

Notes

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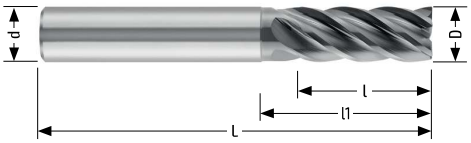
Fresa 5 taglienti per lavorazioni ad elevate asportazioni
5 flute end mill for high chip removal



6527 L | λ 38°

1 4 5 7

45°

D h10	d h6	L	l ap	l1	a	45°	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	0,10	5	HMC185060
8,0	8	63	19,0	25,0	0,15	0,15	5	HMC185080
10,0	10	72	22,0	30,0	0,15	0,15	5	HMC185100
12,0	12	83	26,0	36,0	0,20	0,15	5	HMC185120
16,0	16	92	32,0	42,0	0,20	0,20	5	HMC185160
20,0	20	104	38,0	52,0	0,20	0,20	5	HMC185200

Cr

D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	0,50	5	HMC185060CR05
6,0	6	57	13,0	20,0	0,15	1,00	5	HMC185060CR10
8,0	8	63	19,0	25,0	0,15	0,50	5	HMC185080CR05
8,0	8	63	19,0	25,0	0,15	1,00	5	HMC185080CR10
8,0	8	63	19,0	25,0	0,15	2,00	5	HMC185080CR20
10,0	10	72	22,0	30,0	0,15	0,50	5	HMC185100CR05
10,0	10	72	22,0	30,0	0,15	1,00	5	HMC185100CR10
10,0	10	72	22,0	30,0	0,15	2,00	5	HMC185100CR20
12,0	12	83	26,0	36,0	0,20	0,50	5	HMC185120CR05
12,0	12	83	26,0	36,0	0,20	1,00	5	HMC185120CR10
12,0	12	83	26,0	36,0	0,20	2,00	5	HMC185120CR20
12,0	12	83	26,0	36,0	0,20	3,00	5	HMC185120CR30
16,0	16	92	32,0	42,0	0,20	1,00	5	HMC185160CR10
16,0	16	92	32,0	42,0	0,20	2,00	5	HMC185160CR20
16,0	16	92	32,0	42,0	0,20	3,00	5	HMC185160CR30
16,0	16	92	32,0	42,0	0,20	4,00	5	HMC185160CR40
20,0	20	104	38,0	52,0	0,20	2,00	5	HMC185200CR20
20,0	20	104	38,0	52,0	0,20	3,00	5	HMC185200CR30
20,0	20	104	38,0	52,0	0,20	4,00	5	HMC185200CR40

90°

D h10	d h6	L	l ap	l1	a	90°	Z	Balinit® Latuma
6,0	6	57	13,0	20,0	0,15	-	5	HMC185060X
8,0	6	63	19,0	25,0	0,15	-	5	HMC185080X
10,0	10	72	22,0	30,0	0,20	-	5	HMC185100X
12,0	12	83	26,0	36,0	0,20	-	5	HMC185120X
16,0	16	92	32,0	42,0	0,20	-	5	HMC185160X
20,0	20	104	38,0	52,0	0,20	-	5	HMC185200X

1	2	3	4	5	6	7	8	9	→ 16	→ 18
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Guida alla lettura Reading guide	Legenda Legend

Titainox

195/197

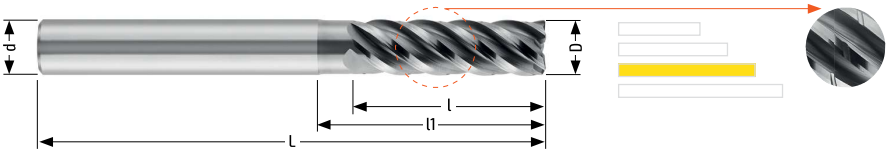
Parametri di lavoro / Working Parameters

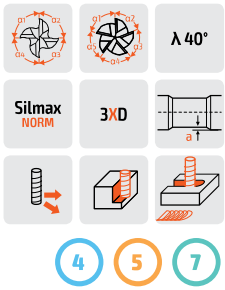
Materiale / Material	Diametro / Diameter	0,02 D FULL			ae = 0,05 X D		
Inox ferritico / Ferritic stainless steel	m/min	Vc=130			Vc=220		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,018	745	10345	0,050	3501	17507
	6,0	0,026	897	6897	0,080	4669	11671
	8,0	0,034	879	5173	0,130	5690	8754
	10,0	0,043	890	4138	0,160	5602	7003
	12,0	0,055	948	3448	0,190	5544	5836
	16,0	0,070	905	2586	0,220	4814	4377
	20,0	0,080	1159	2069	0,280	6863	3501
Inox austenitico / Austenitic stainless Steel	m/min	Vc=120			Vc=190		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,018	688	9549	0,050	3024	15120
	6,0	0,026	828	6366	0,080	4032	10080
	8,0	0,034	812	4775	0,130	4914	7560
	10,0	0,043	821	3820	0,160	4838	6048
	12,0	0,055	875	3183	0,190	4788	5040
	16,0	0,070	836	2387	0,220	4158	3780
	20,0	0,080	1070	1910	0,280	5927	3024
Titanio / Titanium	m/min	Vc=65			Vc=160		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,018	372	5173	0,050	2546	12732
	6,0	0,026	448	3448	0,080	3395	8488
	8,0	0,034	440	2586	0,130	4138	6366
	10,0	0,043	445	2069	0,160	4074	5093
	12,0	0,055	474	1724	0,190	4032	4244
	16,0	0,070	453	1293	0,220	3501	3183
	20,0	0,080	579	1035	0,280	4991	2546
Acciaio < 800 N/mm² / Steel < 800 N/mm²	m/min	Vc=180			Vc=250		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,018	1031	14324	0,050	3979	19894
	6,0	0,026	1241	9549	0,080	5305	13263
	8,0	0,034	1218	7162	0,130	6466	9947
	10,0	0,043	1232	5730	0,160	6366	7958
	12,0	0,055	1313	4775	0,190	6300	6631
	16,0	0,070	1253	3581	0,220	5471	4974
	20,0	0,080	1604	2865	0,280	7799	3979
Acciaio <1000 N/mm² - Ghisa / Steel <1000 N/mm² - Cast iron	m/min	Vc=140			Vc=220		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,018	802	11141	0,050	3501	17507
	6,0	0,026	966	7427	0,080	4669	11671
	8,0	0,034	947	5570	0,130	5690	8754
	10,0	0,043	958	4456	0,160	5602	7003
	12,0	0,055	1021	3714	0,190	5544	5836
	16,0	0,070	975	2785	0,220	4814	4377
	20,0	0,080	1248	2228	0,280	6863	3501

Notes

195

Fresa 5 taglienti con divisione irregolare e tagliente lungo
5 flute end mill with unequal flute spacing, long version



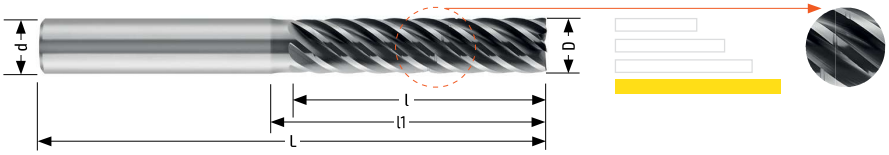


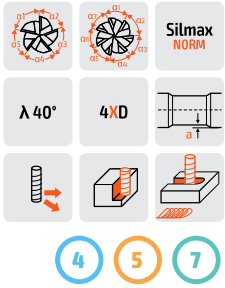
Cr

D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma
4,0	6	57	12,0	16,0	0,25	0,20	4	HMC195040
6,0	6	63	18,0	24,0	0,25	0,30	5	HMC195060
8,0	8	70	24,0	31,0	0,25	0,50	5	HMC195080
10,0	10	78	30,0	37,0	0,25	0,50	5	HMC195100
12,0	12	92	36,0	46,0	0,25	0,50	5	HMC195120
16,0	16	110	48,0	60,0	0,25	0,50	5	HMC195160
20,0	20	134	60,0	80,0	0,25	0,50	5	HMC195200

197

Fresa 5/7 taglienti con divisione irregolare e tagliente extra lungo
5/7 flute end mill with unequal flute spacing, extra long version





Cr

D h10	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma
4,0	6	57	16,0	20,0	0,25	0,20	4	HMC197040
6,0	6	70	24,0	30,0	0,25	0,30	5	HMC197060
8,0	8	80	32,0	40,0	0,25	0,50	5	HMC197080
8,0	8	80	32,0	40,0	0,25	0,50	7	HMC197080Z7
10,0	10	87	40,0	46,0	0,25	0,50	5	HMC197100
10,0	10	87	40,0	46,0	0,25	0,50	7	HMC197100Z7
12,0	12	108	48,0	58,0	0,25	0,50	5	HMC197120
12,0	12	108	48,0	58,0	0,25	0,50	7	HMC197120Z7
16,0	16	120	64,0	68,0	0,25	0,50	7	HMC197160Z7
20,0	20	134	80,0	-	-	0,50	7	HMC197200Z7

Superleghe / Superalloys

118

Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	 1,00 D / 1,00 D			 0,25 D / 1,50 D			 0,10 D / 1,50 D		
Superleghe Superalloys	m/min	Vc=27			Vc=28			Vc=30		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm)	fz mm/z	F mm/min	n rpm
	4,0	0,010	86	2150	0,012	107	2229	0,014	134	2389
	6,0	0,018	103	1433	0,020	116	1486	0,023	143	1592
	8,0	0,026	110	1075	0,027	120	1115	0,032	150	1194
	10,0	0,035	119	860	0,038	134	892	0,044	166	955
	12,0	0,045	129	717	0,050	147	743	0,057	182	796
	16,0	0,054	116	537	0,060	134	557	0,068	161	597
	20,0	0,060	103	430	0,066	118	446	0,075	143	478
Superleghe difficili da lavorare Hard Machinable Superalloys	m/min	Vc=24			Vc=28			Vc=30		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm)	fz mm/z	F mm/min	n rpm
	4,0	0,010	86	2150	0,012	107	2229	0,014	134	2389
	6,0	0,012	61	1274	0,013	77	1486	0,015	96	1592
	8,0	0,017	65	955	0,018	80	1115	0,021	100	1194
	10,0	0,023	70	764	0,025	89	892	0,029	111	955
	12,0	0,030	76	637	0,033	98	743	0,038	121	796
	16,0	0,036	69	478	0,040	89	557	0,045	107	597
	20,0	0,040	61	382	0,044	78	446	0,050	96	478
Superleghe molto difficili Very Hard Machinable Superalloys	m/min	Vc=20			Vc=22			Vc=22		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm)	fz mm/z	F mm/min	n rpm
	4,0	0,010	86	2150	0,012	107	2229	0,014	134	2389
	6,0	0,012	51	1062	0,013	61	1168	0,015	70	1168
	8,0	0,017	54	796	0,018	63	876	0,021	74	876
	10,0	0,023	59	637	0,025	70	701	0,029	81	701
	12,0	0,030	64	531	0,033	77	584	0,038	89	584
	16,0	0,036	57	398	0,040	70	438	0,045	79	438
	20,0	0,040	51	318	0,044	62	350	0,050	70	350

119

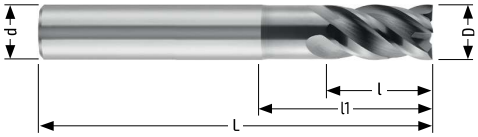
Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	 1,00 D / 1,00 D			 0,25 D / 1,50 D			 0,10 D / 1,50 D		
Ph/Duplex	m/min	Vc=60			Vc=60			Vc=60		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	0,009	172	4775	0,009	172	4775	0,012	229	4775
	6,0	0,016	205	3180	0,015	190	3180	0,020	255	3180
	8,0	0,022	210	2390	0,022	210	2390	0,030	285	2390
	10,0	0,030	230	1910	0,029	220	1910	0,040	305	1910
	12,0	0,040	255	1590	0,038	240	1590	0,050	320	1590
	16,0	0,047	225	1190	0,045	215	1190	0,060	285	1190
	20,0	0,052	200	960	0,050	190	950	0,065	250	950

Notes

118

Fresa 4 taglienti per lavorazioni di superleghe
4 flute end mill for the machining of superalloys



Silmax NORM | λ 38° λ 41°

8

45°

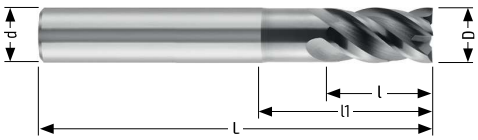
D e8	d h6	L	l ap	l1	a	45°	Z	Balinit® Latuma	Balinit® Alnova
4,0	6	57	6,0	-	-	0,05	4	HMC118040	HMY118040
5,0	6	57	7,5	-	-	0,05	4	HMC118050	HMY118050
6,0	6	57	9,0	18,0	0,15	0,05	4	HMC118060	HMY118060
8,0	8	63	12,0	24,0	0,15	0,05	4	HMC118080	HMY118080
10,0	10	72	15,0	30,0	0,15	0,05	4	HMC118100	HMY118100
12,0	12	83	18,0	36,0	0,20	0,05	4	HMC118120	HMY118120
16,0	16	92	24,0	42,0	0,20	0,05	4	HMC118160	HMY118160
20,0	20	104	30,0	52,0	0,20	0,05	4	HMC118200	HMY118200

Cr

D e8	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma	Balinit® Alnova
6,0	6	57	9,0	18,0	0,15	0,50	4	HMC118060CR05	HMY118060CR05
8,0	8	63	12,0	24,0	0,15	0,50	4	HMC118080CR05	HMY118080CR05
10,0	10	72	15,0	30,0	0,15	1,00	4	HMC118100CR10	HMY118100CR10
12,0	12	83	18,0	36,0	0,20	1,00	4	HMC118120CR10	HMY118120CR10
16,0	16	92	24,0	42,0	0,20	1,00	4	HMC118160CR10	HMY118160CR10
20,0	20	104	30,0	52,0	0,20	1,00	4	HMC118200CR10	HMY118200CR10

119

Fresa 4 taglienti per lavorazioni di duplex
4 flute end mill for the machining of duplex



Silmax NORM | λ 38° λ 41°

7

45°

D e8	d h6	L	l ap	l1	a	45°	Z	Balinit® Latuma
4,0	6	57	6,0	-	-	0,05	4	HMC119040
5,0	6	57	7,5	-	-	0,05	4	HMC119050
6,0	6	57	9,0	18,0	0,15	0,05	4	HMC119060
8,0	8	63	12,0	24,0	0,15	0,05	4	HMC119080
10,0	10	72	15,0	30,0	0,15	0,05	4	HMC119100
12,0	12	83	18,0	36,0	0,20	0,05	4	HMC119120
16,0	16	92	24,0	42,0	0,20	0,05	4	HMC119160
20,0	20	104	30,0	52,0	0,20	0,05	4	HMC119200

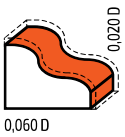
Cr

D e8	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma
6,0	6	57	9,0	18,0	0,15	0,50	4	HMC119060CR05
8,0	8	63	12,0	24,0	0,15	0,50	4	HMC119080CR05
10,0	10	72	15,0	30,0	0,15	1,00	4	HMC119100CR10
12,0	12	83	18,0	36,0	0,20	1,00	4	HMC119120CR10
16,0	16	92	24,0	42,0	0,20	1,00	4	HMC119160CR10
20,0	20	104	30,0	52,0	0,20	1,00	4	HMC119200CR10

Superleghe / Superalloys

737

Parametri di lavoro / Working Parameters

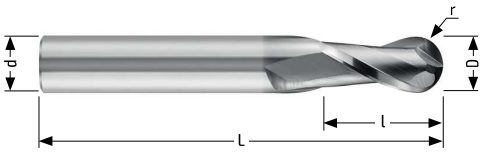


Materiale Material	Diametro Diameter			
Ph/Duplex	m/min	Vc=60		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,116	1477	6366
	4,0	0,149	1420	4775
	6,0	0,191	1218	3183
	8,0	0,234	1116	2387
	10,0	0,268	1023	1910
	12,0	0,310	988	1592
	16,0	0,353	842	1194
Leghe di titanio Titanium Alloys	m/min	Vc=55		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,116	1354	5836
	4,0	0,149	1302	4377
	6,0	0,191	1116	2918
	8,0	0,234	1023	2188
	10,0	0,268	938	1751
	12,0	0,310	905	1459
	16,0	0,353	772	1094
Inox martensitici Ferritic/Martensitic Inox	m/min	Vc=120		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,160	4074	12732
	4,0	0,200	3822	9554
	6,0	0,250	3185	6369
	8,0	0,300	2866	4777
	10,0	0,340	2599	3822
	12,0	0,390	2484	3185
	16,0	0,440	2102	2389
Inox austenitici Austenitic Inox	m/min	Vc=90		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,140	2674	9550
	4,0	0,175	2508	7166
	6,0	0,225	2150	4777
	8,0	0,275	1971	3583
	10,0	0,315	1806	2866
	12,0	0,365	1744	2389
	16,0	0,415	1487	1791
Superleghe Superalloys	m/min	Vc=35		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,085	654	3714
	4,0	0,110	613	2787
	6,0	0,150	557	1858
	8,0	0,180	501	1393
	10,0	0,210	468	1115
	12,0	0,240	446	929
	16,0	0,280	390	697

Notes

737

Fresa 2 taglienti semisferica serie normale
2 flute ball nose end mill, regular version



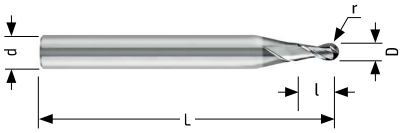
Silmax NORM
λ 30°

1 2 4 5 7 8

D h10	d h6	L	l ap	r	Z	Balinit® Latuma	Balinit® Alnova
3,0	3	38	7,0	1,50	2	HMC737030	HMY737030
4,0	4	50	8,0	2,00	2	HMC737040	HMY737040
5,0	5	50	10,0	2,50	2	HMC737050	HMY737050
6,0	6	57	10,0	3,00	2	HMC737060	HMY737060
8,0	8	63	16,0	4,00	2	HMC737080	HMY737080
10,0	10	72	19,0	5,00	2	HMC737100	HMY737100
12,0	12	83	22,0	6,00	2	HMC737120	HMY737120
16,0	16	92	26,0	8,00	2	HMC737160	HMY737160

737R

Fresa 2 taglienti serie normale semisferica con gambo rinforzato
2 flute ball nose end mill regular version with reinforced shank



Silmax NORM
λ 30°

1 2 4 5 7 8

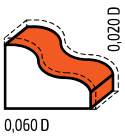
D h10	d h6	L	l ap	r	Z	Balinit® Latuma	Balinit® Alnova
1,0	6	53	3,0	0,50	2	HMC737010R	HMY737010R
1,5	6	53	4,0	0,75	2	HMC737015R	HMY737015R
2,0	6	53	5,0	1,00	2	HMC737020R	HMY737020R
2,5	6	53	7,0	1,25	2	HMC737025R	HMY737025R
3,0	6	53	7,0	1,50	2	HMC737030R	HMY737030R

1 Acciaio Steel	2 Ghise Cast Iron	3 Acciai Temprati Hardened Steel	4 Acciaio Inox Stainless Steel	5 Titanio Titanium	6 Leghe Leggere Light Alloys	7 PH Duplex	8 Superleghe Superalloys	9 Compositi Composite Materials	→ 16 Guida alla lettura Reading guide	→ 18 Legenda Legend

Superleghe / Superalloys

133

Parametri di lavoro / Working Parameters



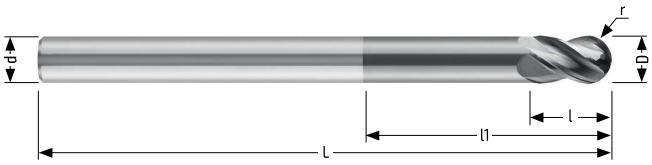
Materiale / Material	Diametro / Diameter			
Ph/Duplex	m/min	Vc=60		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,075	1910	6366
	4,0	0,100	1910	4775
	6,0	0,127	1617	3183
	8,0	0,155	1480	2387
	10,0	0,178	1360	1910
	12,0	0,205	1305	1592
Titanio / Titanium	m/min	Vc=55		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,075	1751	5836
	4,0	0,100	1751	4377
	6,0	0,127	1482	2918
	8,0	0,155	1357	2188
	10,0	0,178	1247	1751
	12,0	0,205	1196	1459
Inox martensitici / Ferritic/Martensitic Inox	m/min	Vc=120		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,105	5348	12732
	4,0	0,133	5083	9554
	6,0	0,166	4229	6369
	8,0	0,200	3822	4777
	10,0	0,225	3440	3822
	12,0	0,260	3312	3185
Inox austenitici / Austenitic Stainless Steel	m/min	Vc=90		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,080	3056	9550
	4,0	0,116	3325	7166
	6,0	0,150	2866	4777
	8,0	0,183	2623	3583
	10,0	0,210	2407	2866
	12,0	0,243	2322	2389
Superleghe / Superalloys	m/min	Vc=35		
	D mm	fz mm/z	F mm/min	n rpm
	3,0	0,050	743	3714
	4,0	0,070	780	2787
	6,0	0,100	743	1858
	8,0	0,120	669	1393
	10,0	0,140	624	1115
	12,0	0,160	595	929

Notes

NEW

133

Fresa 4 taglienti semisferica serie lunga
4 flute ball nose end mill, long version



Silmax NORM
λ 35°
γ 38°

D +0/-0,03	d h6	L	l ap	l1	a	r	Z	Balinit® Latuma	Balinit® Alnova
3,0	6	78	7,0	16,0	0,10	1,50	4,00	HMC133030	HMY133030
4,0	6	78	8,0	21,0	0,10	2,00	4,00	HMC133040	HMY133040
5,0	6	105	10,0	26,0	0,10	2,50	4,00	HMC133050	HMY133050
6,0	6	105	10,0	31,0	0,15	3,00	4,00	HMC133060	HMY133060
8,0	8	105	16,0	41,0	0,15	4,00	4,00	HMC133080	HMY133080
10,0	10	120	19,0	52,0	0,15	5,00	4,00	HMC133100	HMY133100
12,0	12	125	22,0	62,0	0,20	6,00	4,00	HMC133120	HMY133120

Superleghe / Superalloys

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Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter	 0,25 D 1,50 D			 0,10 D 1,50 D			 0,05 D 2,00 D		
Superleghe Superalloys	m/min	Vc=28			Vc=30			Vc=60		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,020	149	1486	0,023	183	1592	0,046	732	3185
	8,0	0,027	151	1115	0,032	191	1194	0,064	764	2389
	10,0	0,038	169	892	0,044	210	955	0,088	841	1911
	12,0	0,050	186	743	0,057	227	796	0,114	908	1592
	16,0	0,060	167	557	0,068	203	597	0,136	812	1194
Superleghe difficili da lavorare Hard Machinable Superalloys	m/min	Vc=28			Vc=30			Vc=60		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,013	97	1486	0,015	119	1592	0,030	478	3185
	8,0	0,018	100	1115	0,021	125	1194	0,042	502	2389
	10,0	0,025	112	892	0,029	138	955	0,058	554	1911
	12,0	0,033	123	743	0,038	151	796	0,076	605	1592
	16,0	0,040	111	557	0,045	134	597	0,090	537	1194
Superleghe molto difficili Very Hard Machinable Superalloys	m/min	Vc=22			Vc=22			Vc=45		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,013	76	1168	0,015	88	1168	0,030	358	2389
	8,0	0,018	79	876	0,021	92	876	0,042	376	1791
	10,0	0,025	88	701	0,029	102	701	0,058	416	1433
	12,0	0,033	96	584	0,038	111	584	0,076	454	1194
	16,0	0,040	88	438	0,045	99	438	0,090	403	896

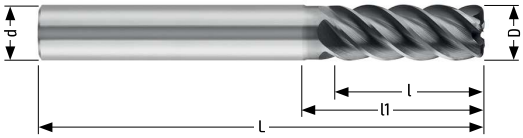
Parametri validi per componenti ricavati dal pieno in condizioni di rigidità elevata
Cutting parameters for components made from solid with high rigidity

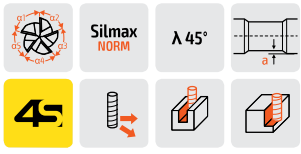
Notes

NEW

154

Fresa a 5 taglienti serie normale per lavorazioni di superleghe
5 flute end mill, regular version for the machining of superalloys





45°

D e8	d h6	L	l ap	l1	a	45° +0,05/+0	Z	Balinit® Latuma	Balinit® Alnova
6,0	6	57	13,0	20,0	0,15	0,10	5	HMC154060	HMY154060
8,0	8	63	19,0	25,0	0,15	0,15	5	HMC154080	HMY154080
10,0	10	72	22,0	30,0	0,15	0,15	5	HMC154100	HMY154100
12,0	12	83	26,0	36,0	0,20	0,15	5	HMC154120	HMY154120
16,0	16	92	32,0	42,0	0,20	0,20	5	HMC154160	HMY154160

Cr

D e8	d h6	L	l ap	l1	a	Cr	Z	Balinit® Latuma	Balinit® Alnova
6,0	6	57	13,0	20,0	0,15	0,50	5	HMC154060CR05	HMY154060CR05
6,0	6	57	13,0	20,0	0,15	1,00	5	HMC154060CR10	HMY154060CR10
8,0	8	63	19,0	25,0	0,15	0,50	5	HMC154080CR05	HMY154080CR05
8,0	8	63	19,0	25,0	0,15	1,00	5	HMC154080CR10	HMY154080CR10
8,0	8	63	19,0	25,0	0,15	2,00	5	HMC154080CR20	HMY154080CR20
10,0	10	72	22,0	30,0	0,15	0,50	5	HMC154100CR05	HMY154100CR05
10,0	10	72	22,0	30,0	0,15	1,00	5	HMC154100CR10	HMY154100CR10
10,0	10	72	22,0	30,0	0,15	2,00	5	HMC154100CR20	HMY154100CR20
12,0	12	83	26,0	36,0	0,20	0,50	5	HMC154120CR05	HMY154120CR05
12,0	12	83	26,0	36,0	0,20	1,00	5	HMC154120CR10	HMY154120CR10
12,0	12	83	26,0	36,0	0,20	2,00	5	HMC154120CR20	HMY154120CR20
12,0	12	83	26,0	36,0	0,20	3,00	5	HMC154120CR30	HMY154120CR30
16,0	16	92	32,0	42,0	0,20	1,00	5	HMC154160CR10	HMY154160CR10
16,0	16	92	32,0	42,0	0,20	2,00	5	HMC154160CR20	HMY154160CR20
16,0	16	92	32,0	42,0	0,20	3,00	5	HMC154160CR30	HMY154160CR30
16,0	16	92	32,0	42,0	0,20	4,00	5	HMC154160CR40	HMY154160CR40

Superleghe / Superalloys

157

Parametri di lavoro / Working Parameters

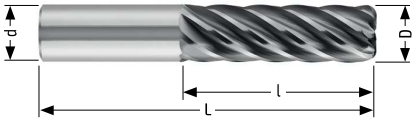
Materiale Material	Diametro Diameter						
	m/min	Vc=80			Vc=80		
Titanio Titanium	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	12,0	0,055	817	2122	0,065	966	2122
	16,0	0,072	802	1592	0,085	947	1592

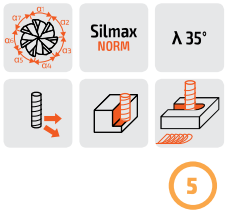
Notes

NEW

157

Fresa a 7 taglienti serie lunga per lavorazioni di titanio
7 flute end mill for the machining of Titanium, long version





45°

D h10	d h6	L	l ap	45°	Z	Balinit® Latuma
12,0	12	83	32	0,25	7	HMC157120M
16,0	16	82	40	0,30	7	HMC157160S
16,0	16	92	50	0,30	7	HMC157160M
16,0	16	104	60	0,30	7	HMC157160L

Cr

D h10	d h6	L	l ap	Cr	Z	Balinit® Latuma
12,0	12	83	32	1,00	7	HMC157120MCR10
12,0	12	83	32	2,00	7	HMC157120MCR20
12,0	12	83	32	3,00	7	HMC157120MCR30
12,0	12	83	32	4,00	7	HMC157120MCR40
16,0	16	82	40	1,00	7	HMC157160SCR10
16,0	16	82	40	2,00	7	HMC157160SCR20
16,0	16	82	40	3,00	7	HMC157160SCR30
16,0	16	82	40	4,00	7	HMC157160SCR40
16,0	16	82	40	5,00	7	HMC157160SCR50
16,0	16	92	50	1,00	7	HMC157160MCR10
16,0	16	92	50	2,00	7	HMC157160MCR20
16,0	16	92	50	3,00	7	HMC157160MCR30
16,0	16	92	50	4,00	7	HMC157160MCR40
16,0	16	92	50	5,00	7	HMC157160MCR50
16,0	16	104	60	1,00	7	HMC157160LCR10
16,0	16	104	60	2,00	7	HMC157160LCR20
16,0	16	104	60	3,00	7	HMC157160LCR30
16,0	16	104	60	4,00	7	HMC157160LCR40
16,0	16	104	60	5,00	7	HMC157160LCR50

Leghe Leggere

Silmax presenta ALU Smart Line, gamma con prestazioni superiori, adatta a soddisfare le più svariate esigenze di asportazione del truciolo.

Light Alloys

Silmax presents ALU Smart Line, a high-performance range, suited to meet the varying requirements of chip removal.

Leghe Leggere
Light Alloys

Multifunzione

Ampio spettro di applicazioni: dai componenti per il settore aereonautico ai profilati per serramenti.

Multi-purpose

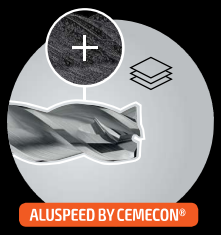
Large number of applications: from aeronautics components to doors and windows sections.

Geometrie di taglio

La gamma è caratterizzata da geometrie di taglio specifiche e versatili.

Cutting geometries

The range is characterised by specific and versatile cutting geometries.

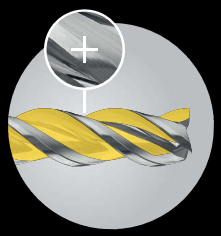


Rivestimento AluSpeed by Cemecon®

Nuovo rivestimento ultra scorrevole per le situazioni più impegnative e per materiali tendenti all'abrasione.

Aluspeed Coating by Cemecon®

New, ultra-smooth coating for the most demanding situations and specifically developed for easily abraded materials.

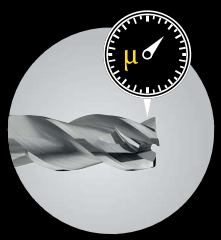


Super finiture superfici taglienti

Le super finiture delle superfici taglienti garantiscono le massime prestazioni per le più svariate esigenze di asportazione truciolo.

Super-finishing of cutting surfaces

The super-finishing treatments of cutting surfaces ensure the maximum performances for the varying requirements of chip removal.



Centrature millesimali

Per una perfetta bilanciatura ad elevati regimi di rotazione.

Micrometric Precision Centering

For perfect balancing at high rotating conditions.

Per maggiori informazioni
scarica la brochure digitale.

For further information
download the digital brochure.

silmax.it/alu

700
Fresa monotagliente elica Dx, taglio Dx

Monolith cutter, right hand helix, right cut

→ 141

701
Fresa monotagliente elica Sx, taglio Dx

Monolith cutter, left hand helix, right cut

→ 141

175
Fresa 2 taglienti serie normale

2 flute end mill, regular version

→ 143

177 NEW
Fresa 2 taglienti serie lunga

2 flute end mill, long version

→ 143

735 NEW
Fresa 2 taglienti serie normale semisferica

2 flute ball nose end mill, regular version

→ 145

765
Fresa 2 taglienti semisferica per elevate asportazioni

2 flute ball nose end mill, for high chip removal

→ 145

115
Fresa 3 taglienti serie normale

3 flute end mill, regular version

→ 147

125 NEW
Fresa 3 taglienti serie normale con divisone irregolare

3 flute end mill, regular version with unequal flute spacing

→ 149

127 NEW
Fresa 3 taglienti serie lunga con divisone irregolare

3 flute end mill, long version with unequal flute spacing

→ 151

129 NEW
Fresa 3 taglienti serie lunga con divisone irregolare

3 flute end mill, long version with unequal flute spacing

→ 151

015
Fresa 3 taglienti a sgrossare serie normale con rompitruciolo

3 flute roughing end mill with chip breaker, regular version

→ 153

SIL SERVICE

L'esperienza Silmax dimostra che un utensile correttamente affilato ha un rendimento uguale a quello nuovo.

Silmax experience shows that a properly sharpened tool grants the same performances of a new tool.

- Riaffilatura e rigenerazione / Resharpening and Reconditioning
- Esecuzione perfetta / Perfect Execution
- Rivestimento PVD / PVD Coating
- Trattamento 4S / 4S Treatment
- Consegna rapida / Fast Delivery

Alu Smart Line

700/701

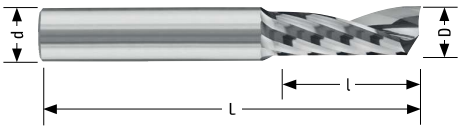
Parametri di lavoro / Working Parameters

Materiale / Material	Diametro / Diameter						
Allumino e leghe / Aluminium & Alloys	m/min	Vc=600			Vc=700		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,012	1146	95493	0,012	1337	111408
	3,0	0,018	1146	63662	0,018	1337	74272
	4,0	0,024	1146	47746	0,024	1337	55704
	5,0	0,050	1910	38197	0,050	2228	44563
	6,0	0,065	2069	31831	0,065	2414	37136
	8,0	0,094	2244	23873	0,094	2618	27852
	10,0	0,116	2215	19099	0,116	2585	22282
	12,0	0,134	2133	15915	0,134	2488	18568
	14,0	0,145	1978	13642	0,145	2308	15915
	16,0	0,163	1946	11937	0,163	2270	13926
	20,0	0,185	1767	9549	0,185	2061	11141
Rame e leghe / Copper & Alloys	m/min	Vc=380			Vc=500		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,012	726	60479	0,012	955	79577
	3,0	0,018	726	40319	0,018	955	53052
	4,0	0,024	726	30239	0,024	955	39789
	5,0	0,050	1210	24192	0,050	1592	31831
	6,0	0,065	1310	20160	0,065	1724	26526
	8,0	0,094	1421	15120	0,094	1870	19894
	10,0	0,116	1403	12096	0,116	1846	15915
	12,0	0,134	1351	10080	0,134	1777	13263
	14,0	0,145	1253	8640	0,145	1648	11368
	16,0	0,163	1232	7560	0,163	1621	9947
	20,0	0,185	1119	6048	0,185	1472	7958
Resina termoplastica / Thermoplastics	m/min	Vc=450			Vc=600		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,012	859	71620	0,012	1146	95493
	3,0	0,018	859	47746	0,018	1146	63662
	4,0	0,024	859	35810	0,024	1146	47746
	5,0	0,050	1432	28648	0,050	1910	38197
	6,0	0,065	1552	23873	0,065	2069	31831
	8,0	0,094	1683	17905	0,094	2244	23873
	10,0	0,116	1662	14324	0,116	2215	19099
	12,0	0,134	1600	11937	0,134	2133	15915
	14,0	0,145	1484	10231	0,145	1978	13642
	16,0	0,163	1459	8952	0,163	1946	11937
	20,0	0,185	1325	7162	0,185	1767	9549

Notes

700

Fresa monotagliente elica Dx, taglio Dx
Monolith cutter, right hand helix, right cut

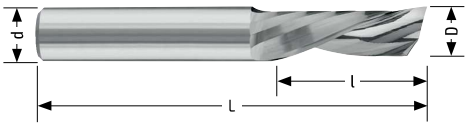


90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated	AluSpeed®
2,0	2	40	10,0	1	HM0700020	HMA700020
3,0	3	40	12,0	1	HM0700030	HMA700030
4,0	4	40	15,0	1	HM0700040	HMA700040
5,0	5	50	16,0	1	HM0700050	HMA700050
6,0	6	60	20,0	1	HM0700060	HMA700060
8,0	8	63	22,0	1	HM0700080	HMA700080
10,0	10	72	25,0	1	HM0700100	HMA700100
12,0	12	83	30,0	1	HM0700120	HMA700120
14,0	14	83	30,0	1	HM0700140	HMA700140
16,0	16	92	35,0	1	HM0700160	HMA700160
20,0	20	104	40,0	1	HM0700200	HMA700200

701

Fresa monotagliente elica Sx, taglio Dx
Monolith cutter, left hand helix, right cut



90°

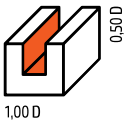
D h10	d h6	L	l ap	Z	Non rivestito Uncoated	AluSpeed®
2,0	2	40	10,0	1	HM0701020	HMA701020
3,0	3	40	12,0	1	HM0701030	HMA701030
4,0	4	40	15,0	1	HM0701040	HMA701040
5,0	5	50	16,0	1	HM0701050	HMA701050
6,0	6	60	20,0	1	HM0701060	HMA701060
8,0	8	63	22,0	1	HM0701080	HMA701080
10,0	10	72	25,0	1	HM0701100	HMA701100
12,0	12	83	30,0	1	HM0701120	HMA701120
14,0	14	83	30,0	1	HM0701140	HMA701140
16,0	16	92	35,0	1	HM0701160	HMA701160
20,0	20	104	40,0	1	HM0701200	HMA701200

1 Acciaio Steel | 2 Ghise Cast Iron | 3 Acciai Temprati Hardened Steel | 4 Acciaio Inox Stainless Steel | 5 Titanio Titanium | 6 Leghe Leggere Light Alloys | 7 PH Duplex | 8 Superleghe Superalloys | 9 Compositi Composite Materials | → 16 Guida alla lettura Reading guide | → 18 Legenda Legend

Alu Smart Line

175/177* (*) Parametri di lavoro da ridurre del 15% / Working parameters to be reduced by 15%

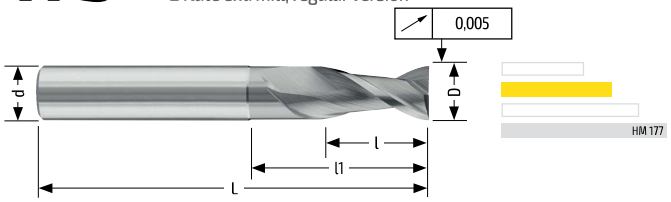
Parametri di lavoro / Working Parameters

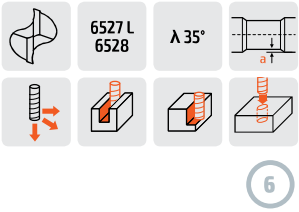
Materiale / Material	Diametro / Diameter	 1,00 D / 0,50 D			 0,50 D / 1,50 D		
Allumino e leghe / Aluminium & Alloys	m/min	Vc=600			Vc=800		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,010	1910	95493	0,010	2546	127324
	3,0	0,016	2037	63662	0,016	2716	84883
	4,0	0,025	2387	47746	0,025	3183	63662
	5,0	0,040	3056	38197	0,040	4074	50930
	6,0	0,060	3820	31831	0,060	5093	42441
	8,0	0,075	3581	23873	0,075	4775	31831
	10,0	0,100	3820	19099	0,100	5093	25465
	12,0	0,120	3820	15915	0,120	5093	21221
	14,0	0,135	3683	13642	0,135	4911	18189
	16,0	0,150	3581	11937	0,150	4775	15915
	20,0	0,175	3342	9549	0,175	4456	12732
	25,0	0,200	3056	7639	0,200	4074	10186
Rame e leghe / Copper & Alloys	m/min	Vc=370			Vc=500		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,010	1178	58887	0,010	1592	79577
	3,0	0,016	1256	39258	0,016	1698	53052
	4,0	0,025	1472	29444	0,025	1989	39789
	5,0	0,040	1884	23555	0,040	2546	31831
	6,0	0,060	2355	19629	0,060	3183	26526
	8,0	0,075	2208	14722	0,075	2984	19894
	10,0	0,100	2355	11777	0,100	3183	15915
	12,0	0,120	2355	9815	0,120	3183	13263
	14,0	0,135	2271	8412	0,135	3069	11368
	16,0	0,150	2208	7361	0,150	2984	9947
	20,0	0,175	2061	5889	0,175	2785	7958
	25,0	0,200	1884	4711	0,200	2546	6366
Resina termoplastica / Thermoplastics	m/min	Vc=450			Vc=600		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	2,0	0,010	1432	71620	0,010	1910	95493
	3,0	0,016	1528	47746	0,016	2037	63662
	4,0	0,025	1790	35810	0,025	2387	47746
	5,0	0,040	2292	28648	0,040	3056	38197
	6,0	0,060	2865	23873	0,060	3820	31831
	8,0	0,075	2686	17905	0,075	3581	23873
	10,0	0,100	2865	14324	0,100	3820	19099
	12,0	0,120	2865	11937	0,120	3820	15915
	14,0	0,135	2762	10231	0,135	3683	13642
	16,0	0,150	2686	8952	0,150	3581	11937
	20,0	0,175	2507	7162	0,175	3342	9549
	20,0	0,175	2507	7162	0,175	3342	9549

1 Acciaio Steel | 2 Ghise Cast Iron | 3 Acciai Temprati Hardened Steel | 4 Acciaio Inox Stainless Steel | 5 Titanio Titanium | 6 Leghe Leggere Light Alloys | 7 PH Duplex | 8 Superleghe Superalloys | 9 Compositi Composite Materials | → 16 Guida alla lettura Reading guide | → 18 Legenda Legend

175

Fresa 2 taglienti serie normale
2 flute end mill, regular version





90°

D h6	d h6	L	l ap	l1	a	90°	Z	Non rivestito Uncoated	AluSpeed®
2,0	3	50	6,0	-	-	-	2	HM0175020	HMA175020
3,0	3	50	7,0	18,0	0,10	-	2	HM0175030	HMA175030
4,0	4	50	8,0	19,0	0,10	-	2	HM0175040	HMA175040
5,0	5	50	10,0	21,0	0,10	-	2	HM0175050	HMA175050
6,0	6	57	10,0	21,0	0,15	-	2	HM0175060	HMA175060
8,0	8	63	16,0	27,0	0,15	-	2	HM0175080	HMA175080
10,0	10	72	19,0	30,0	0,15	-	2	HM0175100	HMA175100
12,0	12	83	22,0	38,0	0,20	-	2	HM0175120	HMA175120
14,0	14	83	22,0	38,0	0,20	-	2	HM0175140	HMA175140
16,0	16	92	26,0	42,0	0,20	-	2	HM0175160	HMA175160
20,0	20	104	32,0	54,0	0,20	-	2	HM0175200	HMA175200
25,0	25	121	40,0	68,0	0,20	-	2	HM0175250	HMA175250

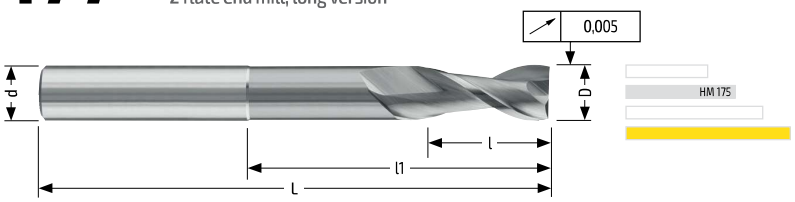
Cr

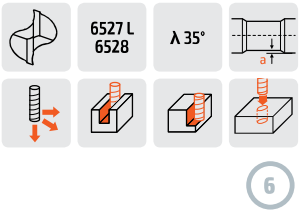
D h10	d h6	L	l ap	l1	a	Cr	Z	Non rivestito Uncoated	AluSpeed®
2,0	3	50	6,0	-	-	0,30	2	HM0175020CR03	HMA175020CR03
3,0	3	50	7,0	18,0	0,10	0,30	2	HM0175030CR03	HMA175030CR03
4,0	4	50	8,0	19,0	0,10	0,30	2	HM0175040CR03	HMA175040CR03
4,0	4	50	8,0	19,0	0,10	0,50	2	HM0175040CR05	HMA175040CR05
5,0	5	50	10,0	21,0	0,10	0,50	2	HM0175050CR05	HMA175050CR05
6,0	6	57	10,0	21,0	0,15	0,50	2	HM0175060CR05	HMA175060CR05
8,0	8	63	16,0	27,0	0,15	0,50	2	HM0175080CR05	HMA175080CR05
8,0	8	63	16,0	27,0	0,15	0,80	2	HM0175080CR08	HMA175080CR08
10,0	10	72	19,0	30,0	0,15	0,50	2	HM0175100CR05	HMA175100CR05
10,0	10	72	19,0	30,0	0,15	1,00	2	HM0175100CR10	HMA175100CR10
12,0	12	83	22,0	38,0	0,20	1,00	2	HM0175120CR10	HMA175120CR10
12,0	12	83	22,0	38,0	0,20	1,50	2	HM0175120CR15	HMA175120CR15
14,0	14	83	22,0	38,0	0,20	1,50	2	HM0175140CR15	HMA175140CR15
16,0	16	92	26,0	42,0	0,20	1,00	2	HM0175160CR10	HMA175160CR10
16,0	16	92	26,0	42,0	0,20	1,50	2	HM0175160CR15	HMA175160CR15
20,0	20	104	32,0	54,0	0,20	2,00	2	HM0175200CR20	HMA175200CR20

NEW

177

Fresa 2 taglienti serie lunga
2 flute end mill, long version





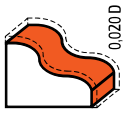
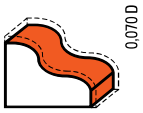
90°

D h10	d h6	L	l ap	l1	a	Z	Non rivestito Uncoated	AluSpeed®
6,0	6	75	13,0	32,0	0,15	2	HM0177060	HMA177060
8,0	8	78	19,0	42,0	0,15	2	HM0177080	HMA177080
10,0	10	104	22,0	55,0	0,15	2	HM0177100	HMA177100
12,0	12	110	26,0	64,0	0,20	2	HM0177120	HMA177120
16,0	16	130	32,0	75,0	0,20	2	HM0177160	HMA177160
20,0	20	150	38,0	90,0	0,20	2	HM0177200	HMA177200

Alu Smart Line

735/765

Parametri di lavoro / Working Parameters

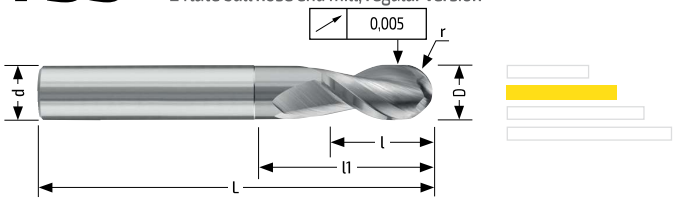
Materiale Material	Diametro Diameter	735			765		
							
Allumino e leghe Aluminium & Alloys	m/min	Vc=650			Vc=800		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	0,022	3737	84926
	4,0	-	-	-	0,035	4459	63694
	6,0	0,055	3793	34484	0,055	4669	42441
	8,0	0,080	4138	25863	0,080	5093	31831
	10,0	0,100	4138	20690	0,100	5093	25465
	12,0	0,120	4138	17242	0,120	5093	21221
	16,0	0,130	3362	12931	0,130	4138	15915
	20,0	-	-	-	0,180	4584	12732
Rame e leghe Copper & Alloys	m/min	Vc=450			Vc=500		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	0,022	2335	53079
	4,0	-	-	-	0,035	2787	39809
	6,0	0,055	2626	23873	0,055	2918	26526
	8,0	0,080	2865	17905	0,080	3183	19894
	10,0	0,100	2865	14324	0,100	3183	15915
	12,0	0,120	2865	11937	0,120	3183	13263
	16,0	0,130	2328	8952	0,130	2586	9947
	20,0	-	-	-	0,180	2865	7958
Resina termoplastica Thermoplastics	m/min	Vc=500			Vc=600		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	-	-	-	0,022	2803	63694
	4,0	-	-	-	0,035	3344	47771
	6,0	0,055	2918	26526	0,055	3501	31831
	8,0	0,080	3183	19894	0,080	3820	23873
	10,0	0,100	3183	15915	0,100	3820	19099
	12,0	0,120	3183	13263	0,120	3820	15915
	16,0	0,130	2586	9947	0,130	3104	11937
	20,0	-	-	-	0,180	3438	9549

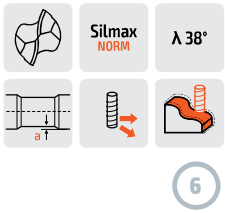
Notes

NEW

735

Fresa 2 taglienti serie normale semisferica
2 flute ball nose end mill, regular version

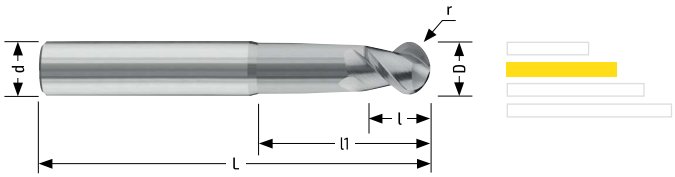


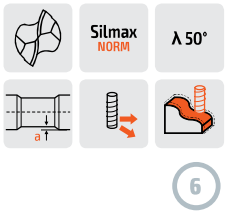


D h6	d h6	L	l ap	l1	a	r +/- 0,01	Z	Non rivestito Uncoated	AluSpeed®
6,0	6	57	10,0	21,0	0,15	3,00	2	HM0735060	HMA735060
8,0	8	63	16,0	27,0	0,15	4,00	2	HM0735080	HMA735080
10,0	10	72	19,0	30,0	0,15	5,00	2	HM0735100	HMA735100
12,0	12	83	22,0	38,0	0,20	6,00	2	HM0735120	HMA735120
16,0	16	92	26,0	42,0	0,20	8,00	2	HM0735160	HMA735160

765

Fresa 2 taglienti semisferica per elevate asportazioni
2 flute ball nose end mill, for high chip removal





D h10	d h6	L	l ap	l1	a	r f8	Z	Non rivestito Uncoated	AluSpeed®
3,0	3	50	3,0	22,0	0,15	1,50	2	HM0765030	HMA765030
4,0	4	50	4,0	22,0	0,20	2,00	2	HM0765040	HMA765040
5,0	5	50	5,0	22,0	0,20	2,50	2	HM0765050	HMA765050
6,0	6	57	6,0	21,0	0,25	3,00	2	HM0765060	HMA765060
8,0	8	63	8,0	27,0	0,35	4,00	2	HM0765080	HMA765080
10,0	10	72	10,0	32,0	0,50	5,00	2	HM0765100	HMA765100
12,0	12	83	12,0	38,0	0,50	6,00	2	HM0765120	HMA765120
16,0	16	92	16,0	44,0	0,80	8,00	2	HM0765160	HMA765160
20,0	20	104	20,0	54,0	0,90	10,00	2	HM0765200	HMA765200

Alu Smart Line

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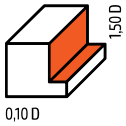
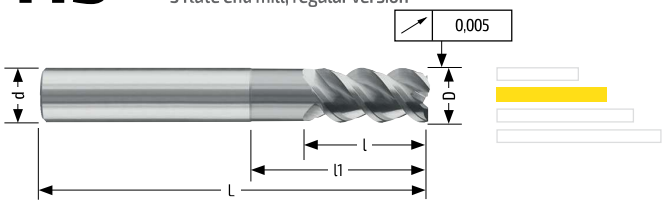
Parametri di lavoro / Working Parameters

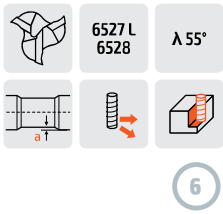
Materiale Material	Diametro Diameter			
Alluminio e leghe Aluminium & Alloys	m/min	Vc=800		
	D mm	fz mm/z	F mm/min	n rpm
	4,0	0,020	3820	63662
	5,0	0,035	5348	50930
	6,0	0,050	6366	42441
	8,0	0,070	6685	31831
	10,0	0,090	6875	25465
	12,0	0,105	6685	21221
	14,0	0,110	6002	18189
	16,0	0,130	6207	15915
	20,0	0,160	6112	12732
Rame e leghe Copper & Alloys	m/min	Vc=500		
	D mm	fz mm/z	F mm/min	n rpm
	4,0	0,020	2387	39789
	5,0	0,035	3342	31831
	6,0	0,050	3979	26526
	8,0	0,070	4178	19894
	10,0	0,090	4297	15915
	12,0	0,105	4178	13263
	14,0	0,110	3752	11368
	16,0	0,130	3879	9947
	20,0	0,160	3820	7958
Resina termoplastica Thermoplastics	m/min	Vc=600		
	D mm	fz mm/z	F mm/min	n rpm
	4,0	0,020	2865	47746
	5,0	0,035	4011	38197
	6,0	0,050	4775	31831
	8,0	0,070	5013	23873
	10,0	0,090	5157	19099
	12,0	0,105	5013	15915
	14,0	0,110	4502	13642
	16,0	0,130	4655	11937
	20,0	0,160	4584	9549

Notes

115

Fresa 3 taglienti serie normale
3 flute end mill, regular version





90°

D h6	d h6	L	l ap	l1	a	90°	Z	Non rivestito Uncoated	AluSpeed®
4,0	4	50	8,0	19,0	0,10	-	3	HM0115040	HMA115040
5,0	5	50	10,0	21,0	0,10	-	3	HM0115050	HMA115050
6,0	6	57	10,0	21,0	0,15	-	3	HM0115060	HMA115060
7,0	7	60	13,0	24,0	0,15	-	3	HM0115070	HMA115070
8,0	8	63	16,0	27,0	0,15	-	3	HM0115080	HMA115080
9,0	9	67	16,0	27,0	0,15	-	3	HM0115090	HMA115090
10,0	10	72	19,0	30,0	0,15	-	3	HM0115100	HMA115100
12,0	12	83	22,0	38,0	0,20	-	3	HM0115120	HMA115120
14,0	14	83	22,0	38,0	0,20	-	3	HM0115140	HMA115140
16,0	16	92	26,0	42,0	0,20	-	3	HM0115160	HMA115160
20,0	20	104	32,0	54,0	0,20	-	4	HM0115200	HMA115200

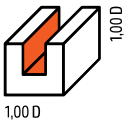
Cr

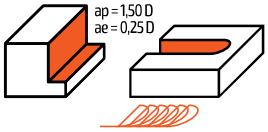
D h10	d h6	L	l ap	l1	a	Cr	Z	Non rivestito Uncoated	AluSpeed®
4,0	4	50	8,0	19,0	0,10	0,30	3	HM0115040CR03	HMA115040CR03
5,0	5	50	10,0	21,0	0,10	0,30	3	HM0115050CR03	HMA115050CR03
6,0	6	57	10,0	21,0	0,15	0,30	3	HM0115060CR03	HMA115060CR03
7,0	7	60	13,0	24,0	0,15	0,30	3	HM0115070CR03	HMA115070CR03
8,0	8	63	16,0	27,0	0,15	0,30	3	HM0115080CR03	HMA115080CR03
9,0	9	67	16,0	27,0	0,15	0,50	3	HM0115090CR05	HMA115090CR05
10,0	10	72	19,0	30,0	0,15	0,50	3	HM0115100CR05	HMA115100CR05
12,0	12	83	22,0	38,0	0,20	0,50	3	HM0115120CR05	HMA115120CR05
14,0	14	83	22,0	38,0	0,20	1,00	3	HM0115140CR10	HMA115140CR10
16,0	16	92	26,0	42,0	0,20	1,00	3	HM0115160CR10	HMA115160CR10
20,0	20	104	32,0	54,0	0,20	1,00	4	HM0115200CR10	HMA115200CR10

Alu Smart Line

125

Parametri di lavoro / Working Parameters





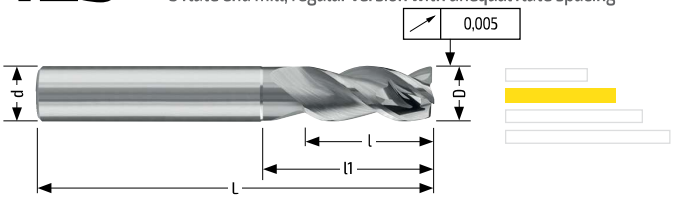
Materiale / Material	Diametro / Diameter						
Alluminio e leghe / Aluminium & Alloys	m/min	Vc=600			Vc=800		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,012	2292	63662	0,012	3056	84883
	4,0	0,020	2865	47746	0,020	3820	63662
	5,0	0,035	4011	38197	0,035	5348	50930
	6,0	0,050	4775	31831	0,050	6366	42441
	8,0	0,070	5013	23873	0,070	6685	31831
	10,0	0,090	5157	19099	0,090	6875	25465
	12,0	0,105	5013	15915	0,105	6685	21221
	14,0	0,110	4502	13642	0,110	6002	18189
	16,0	0,130	4655	11937	0,130	6207	15915
	20,0	0,160	4584	9549	0,160	6112	12732
Rame e leghe / Copper & Alloys	m/min	Vc=350			Vc=500		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,012	1337	37136	0,012	1910	53052
	4,0	0,020	1671	27852	0,020	2387	39789
	5,0	0,035	2340	22282	0,035	3342	31831
	6,0	0,050	2785	18568	0,050	3979	26526
	8,0	0,070	2924	13926	0,070	4178	19894
	10,0	0,090	3008	11141	0,090	4297	15915
	12,0	0,105	2924	9284	0,105	4178	13263
	14,0	0,110	2626	7958	0,110	3752	11368
	16,0	0,130	2716	6963	0,130	3879	9947
	20,0	0,160	2674	5570	0,160	3820	7958
Resina termoplastica / Thermoplastics	m/min	Vc=450			Vc=600		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	3,0	0,012	1719	47746	0,012	2292	63662
	4,0	0,020	2149	35810	0,020	2865	47746
	5,0	0,035	3008	28648	0,035	4011	38197
	6,0	0,050	3581	23873	0,050	4775	31831
	8,0	0,070	3760	17905	0,070	5013	23873
	10,0	0,090	3867	14324	0,090	5157	19099
	12,0	0,105	3760	11937	0,105	5013	15915
	14,0	0,110	3376	10231	0,110	4502	13642
	16,0	0,130	3491	8952	0,130	4655	11937
	20,0	0,160	3438	7162	0,160	4584	9549

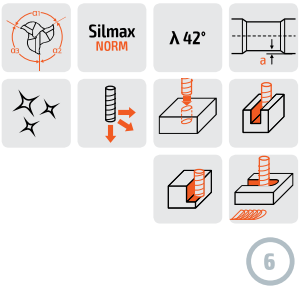
Notes

NEW

125

Fresa 3 taglienti serie normale con divisone irregolare
3 flute end mill, regular version with unequal flute spacing





6

45°

D h6	d h6	L	l ap	l1	a	45° +0,05/+0	Z	Non rivestito Uncoated	AluSpeed®
3,0	6	57	8,0	-	-	0,05	3	HM0125030	HMA125030
4,0	6	57	11,0	-	-	0,05	3	HM0125040	HMA125040
5,0	6	57	13,0	-	-	0,10	3	HM0125050	HMA125050
6,0	6	57	13,0	20,0	0,15	0,10	3	HM0125060	HMA125060
8,0	8	63	19,0	25,0	0,15	0,15	3	HM0125080	HMA125080
10,0	10	72	22,0	30,0	0,15	0,20	3	HM0125100	HMA125100
12,0	12	83	26,0	36,0	0,20	0,25	3	HM0125120	HMA125120
16,0	16	92	32,0	42,0	0,20	0,30	3	HM0125160	HMA125160
20,0	20	104	38,0	52,0	0,20	0,35	3	HM0125200	HMA125200

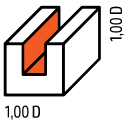
Cr

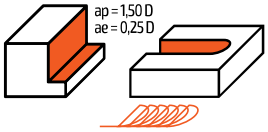
D h6	d h6	L	l ap	l1	a	Cr	Z	Non rivestito Uncoated	AluSpeed®
6,0	6	57	13,0	20,0	0,15	0,50	3	HM0125060CR05	HMA125060CR05
8,0	8	63	19,0	25,0	0,15	0,50	3	HM0125080CR05	HMA125080CR05
8,0	8	63	19,0	25,0	0,15	1,00	3	HM0125080CR10	HMA125080CR10
10,0	10	72	22,0	30,0	0,15	1,00	3	HM0125100CR10	HMA125100CR10
10,0	10	72	22,0	30,0	0,15	1,50	3	HM0125100CR15	HMA125100CR15
10,0	10	72	22,0	30,0	0,15	2,00	3	HM0125100CR20	HMA125100CR20
12,0	12	83	26,0	36,0	0,20	1,00	3	HM0125120CR10	HMA125120CR10
12,0	12	83	26,0	36,0	0,20	1,50	3	HM0125120CR15	HMA125120CR15
12,0	12	83	26,0	36,0	0,20	2,00	3	HM0125120CR20	HMA125120CR20
16,0	16	92	32,0	42,0	0,20	1,00	3	HM0125160CR10	HMA125160CR10
16,0	16	92	32,0	42,0	0,20	2,00	3	HM0125160CR20	HMA125160CR20
16,0	16	92	32,0	42,0	0,20	3,00	3	HM0125160CR30	HMA125160CR30
20,0	20	104	38,0	52,0	0,20	2,00	3	HM0125200CR20	HMA125200CR20
20,0	20	104	38,0	52,0	0,20	3,00	3	HM0125200CR30	HMA125200CR30

Alu Smart Line

127/129

Parametri di lavoro / Working Parameters





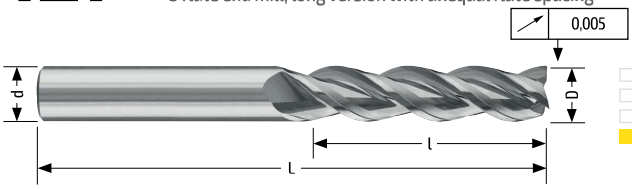
Materiale / Material	Diametro / Diameter						
Alluminio e leghe / Aluminium & Alloys	m/min	Vc=600			Vc=800		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,060	5730	31831	0,060	7639	42441
	8,0	0,075	5371	23873	0,075	7162	31831
	10,0	0,100	5730	19099	0,100	7639	25465
	12,0	0,120	5730	15915	0,120	7639	21221
	16,0	0,150	5371	11937	0,150	7162	15915
Rame e leghe / Copper & Alloys	m/min	Vc=350			Vc=500		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,060	3342	18568	0,060	4775	26526
	8,0	0,075	3133	13926	0,075	4476	19894
	10,0	0,100	3342	11141	0,100	4775	15915
	12,0	0,120	3342	9284	0,120	4775	13263
	16,0	0,150	3133	6963	0,150	4476	9947
Resina termoplastica / Thermoplastics	m/min	Vc=450			Vc=600		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,060	4297	23873	0,060	5730	31831
	8,0	0,075	4029	17905	0,075	5371	23873
	10,0	0,100	4297	14324	0,100	5730	19099
	12,0	0,120	4297	11937	0,120	5730	15915
	16,0	0,150	4029	8952	0,150	5371	11937

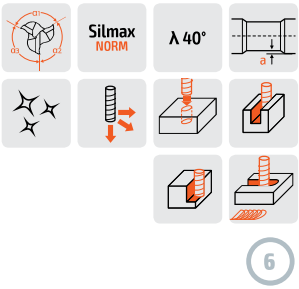
Notes

NEW

127

Fresa 3 taglienti serie lunga con divisone irregolare
3 flute end mill, long version with unequal flute spacing





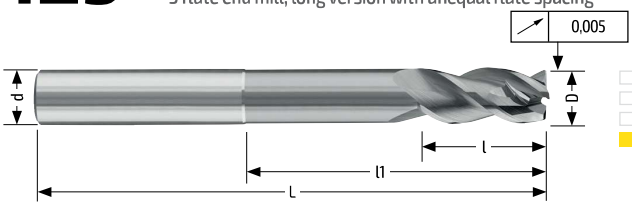
45°

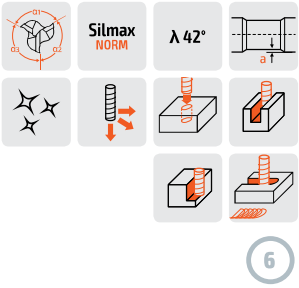
D h6	d h6	L	l ap	45° +0,05/+0	Z	Non rivestito Uncoated	AluSpeed®
6,0	6	75	26,0	0,10	3	HM0127060	HMA127060
8,0	8	78	36,0	0,15	3	HM0127080	HMA127080
10,0	10	104	45,0	0,20	3	HM0127100	HMA127100
12,0	12	110	53,0	0,25	3	HM0127120	HMA127120
16,0	16	130	63,0	0,30	3	HM0127160	HMA127160

NEW

129

Fresa 3 taglienti serie lunga con divisone irregolare
3 flute end mill, long version with unequal flute spacing





45°

D h6	d h6	L	l ap	l1	a	45° +0,05/+0	Z	Non rivestito Uncoated	AluSpeed®
10,0	10	104	22,0	55,0	0,15	0,20	3	HM0129100	HMA129100
12,0	12	110	26,0	64,0	0,20	0,25	3	HM0129120	HMA129120
16,0	16	130	32,0	75,0	0,20	0,30	3	HM0129160	HMA129160

Alu Smart Line

015

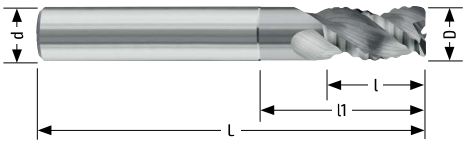
Parametri di lavoro / Working Parameters

Materiale Material	Diametro Diameter						
Alluminio e leghe Aluminium & Alloys	m/min	Vc=600			Vc=880		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	8,0	0,120	8594	23873	0,110	11555	35014
	10,0	0,150	8594	19099	0,135	11345	28011
	12,0	0,170	8117	15915	0,155	10854	23343
	16,0	0,200	7162	11937	0,185	9716	17507
	20,0	0,230	6589	9549	0,215	9034	14006
Rame e leghe Copper & Alloys	m/min	Vc=350			Vc=500		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	8,0	0,120	5013	13926	0,110	6565	19894
	10,0	0,150	5013	11141	0,140	6685	15915
	12,0	0,170	4735	9284	0,160	6366	13263
	16,0	0,200	4178	6963	0,190	5670	9947
	20,0	0,230	3844	5570	0,220	5252	7958
Resina termoplastica Thermoplastics	m/min	Vc=300			Vc=400		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	8,0	0,120	4297	11937	0,110	5252	15915
	10,0	0,150	4297	9549	0,140	5348	12732
	12,0	0,170	4058	7958	0,160	5093	10610
	16,0	0,200	3581	5968	0,190	4536	7958
	20,0	0,230	3295	4775	0,220	4202	6366

Notes

015

Fresa 3 taglienti a sgrossare serie normale con rompitruciolo
3 flute roughing end mill with chip breaker, regular version

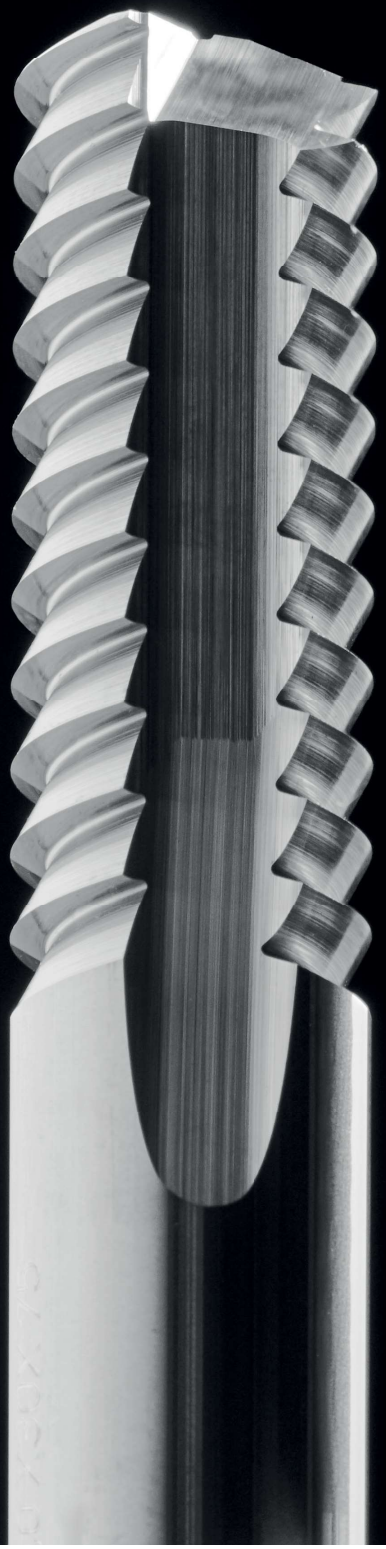


Silmax NORM
λ 40°

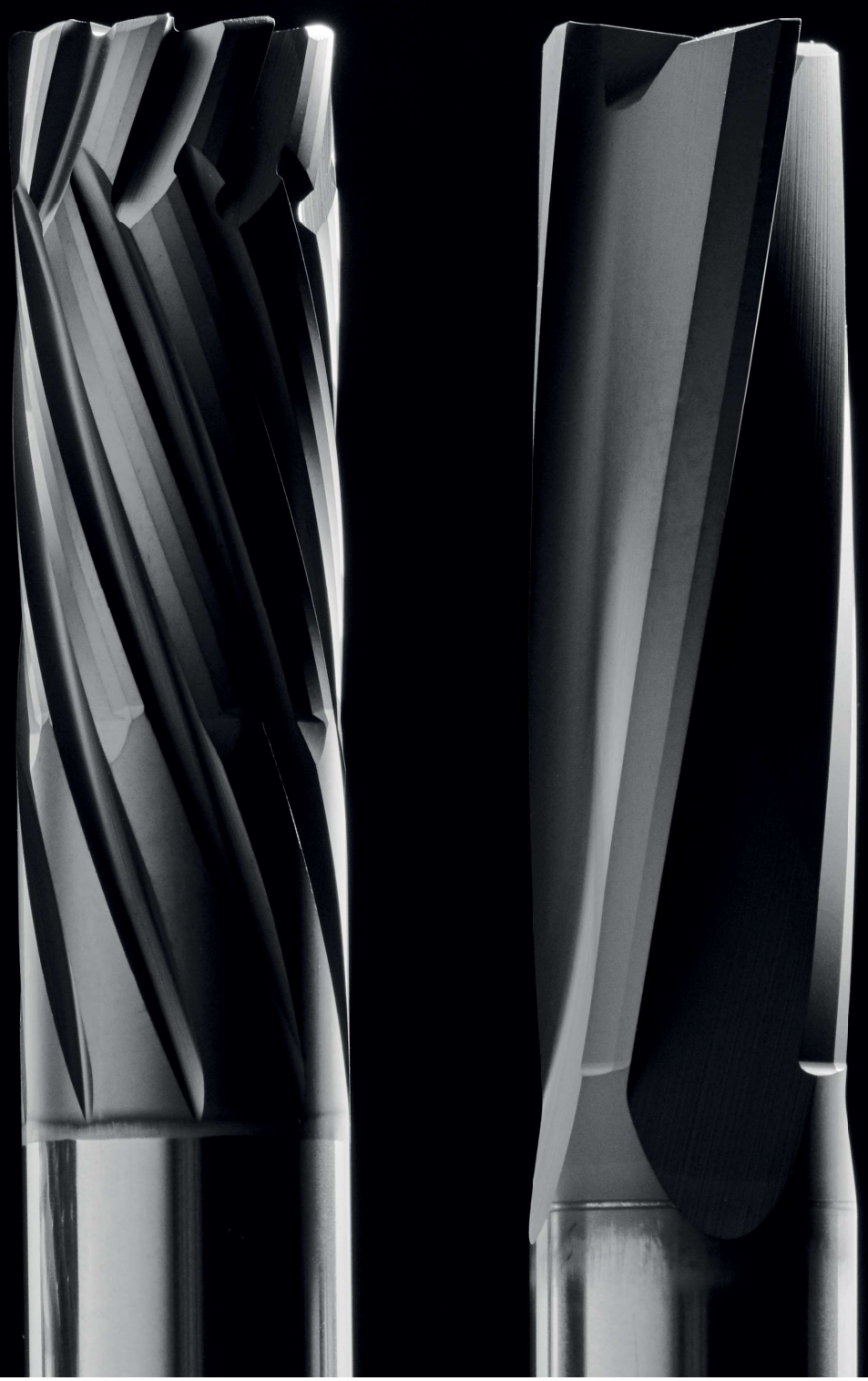
6

Cr

D h10	d h6	L	l ap	l1	a	Cr	Z	Non rivestito Uncoated	AluSpeed®
8,0	8	63	12,0	24,0	0,15	1,00	3	HM0015080	HMA015080
10,0	10	72	15,0	30,0	0,15	1,00	3	HM0015100	HMA015100
12,0	12	83	18,0	36,0	0,20	1,00	3	HM0015120	HMA015120
16,0	16	92	24,0	42,0	0,20	1,00	3	HM0015160	HMA015160
20,0	20	104	30,0	52,0	0,20	1,00	3	HM0015200	HMA015200



Materiali Compositi
Composite Materials



Materiali Compositi
Composite Materials

Per maggiori informazioni scarica la brochure digitale.

For further information download the digital brochure.

silmax.it/cmp

Materiale polimerico rinforzato con fibre di carbonio

Dal punto di vista strutturale, il materiale composito è caratterizzato da proprietà meccaniche elevatissime (resistenza alla corrosione, isolamento termico e buone proprietà ignifughe). Per contro, la struttura interna risulta non-omogenea e di difficile lavorabilità.

Polymeric material reinforced with fiberglass

From a structural point of view, this material is characterised by very high mechanical qualities (corrosion-resistance, thermal isolation and good fireproof properties). On the contrary, the internal structure is not consistent and of difficult machinability.

Materiale polimerico rinforzato con fibra di vetro (comunemente chiamato Fiberglass)

Dal punto di vista strutturale, il materiale è caratterizzato da elevate proprietà meccaniche come resistenza, flessione e di impermeabilità. Il materiale viene impiegato nella costruzione di aerei ultraleggeri e scafi di piccole imbarcazioni.

Polymeric material reinforced with fiberglass (commonly called Fiberglass)

From a structural point of view, this material is characterised by high mechanical qualities, such as resistance, flexibility and impermeability. This material is employed in the construction of ultra-light airplanes and hulls of small boats.

Materiale polimerico rinforzato con fibra aramidica (Kevlar)

La fibra di Kevlar è una fibra sintetica aramidica che ha come caratteristica principale l'alta resistenza meccanica alla trazione. Per le sue caratteristiche di resistenza viene utilizzata come fibra di rinforzo per la costruzione di giubbotti antiproiettile, di attrezzature per gli sport estremi e per componenti usati in aeromobili, imbarcazioni e vetture da competizione

Polymeric material reinforced with aramid fiber (Kevlar)

Kevlar fiber is a synthetic aramid fiber, having high mechanical tensile strength as its main feature. Due to its characteristics of resistance, it is used as a reinforcing fiber for the production of bulletproof jackets, equipment for extreme sports and components used in aircrafts, watercrafts and racing vehicles.

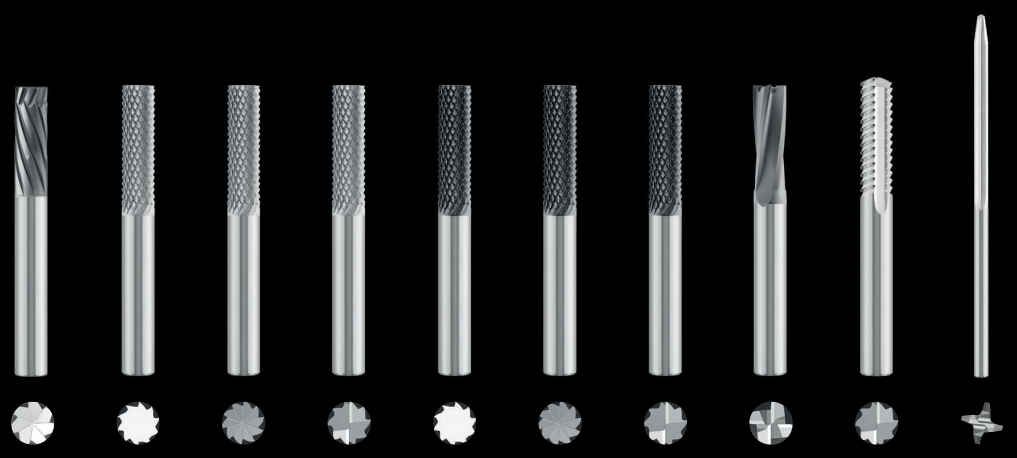
SIL SERVICE

L'esperienza Silmax dimostra che un utensile correttamente affilato ha un rendimento uguale a quello nuovo.

Silmax experience shows that a properly sharpened tool grants the same performances of a new tool.

- Riaffilatura e rigenerazione / Resharpening and Reconditioning
- Esecuzione perfetta / Perfect Execution
- Rivestimento PVD / PVD Coating
- Trattamento 4S / 4S Treatment
- Consegna rapida / Fast Delivery

Scelta dell'utensile
Cutting tool selection



	HMD 740	HMO 750	HMO 751	HMO 752	HMD 750	HMD 751	HMD 752	HMD 760	HMO 770	HMO 780
Tipo utensile Cutting Tool Type	Cr	90°	90°	90°	90°	90°	90°	Cr	90°	
Dimensioni Dimensions	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch
Diamante Diamond	●	-	-	-	●	●	●	●	-	-
Uncoated Non rivestito	-	●	●	●	-	-	-	-	●	●
Tipo di lavorazione Application										-
	-	-	-	-	-	-	-	-		
										-
CFRP – CFRP	●	○	○	○	●	●	●	●	-	●
CFRP – CFRP Sandwich (Al)	●	○	○	○	●	●	●	●	-	●
CFRP – CFRP Sandwich (Ti)	●	○	○	○	●	●	●	-	-	●
CFRP – CFRP Honeycomb	-	○	○	○	○	○	○	●	●	●
AFRP – Kevlar	-	-	-	-	-	-	-	-	●	●
GFRP – GRP	●	○	○	○	●	●	●	●	-	●
GFRP – GRP Sandwich (Al)	●	○	○	○	●	●	●	●	-	●
GFRP – GRP Sandwich (Ti)	●	○	○	○	●	●	●	-	-	●
GFRP – GRP Honeycomb	-	○	○	○	○	○	○	-	●	●

● Scelta consigliata / Recommended choice ○ Alternativa / Alternative

Caratteristiche Geometriche

La geometria a tagli incrociati determina forze di taglio dirette verso l'interno del pannello, eliminando il fenomeno della delaminazione su entrambi i lati.

Geometrical Features

Its cross-cut geometry generates cutting forces directed to the inside of the panel, thus preventing delamination on both sides.

740

Parametri di lavoro / Working Parameters

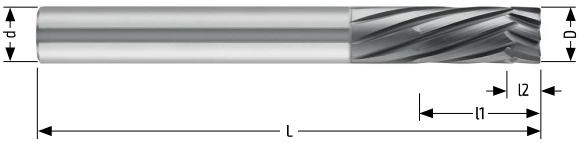
	Diametro Diameter	CFRP / CFRP Sandwich (Al) / CFRP Sandwich (Ti)								
CFRP		 1,00 D / 1,00 D			 1,00 D / 0,40 D			 1,00 D / 0,02 D		
	m/min	Vc=100			Vc=150			Vc=200		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,018	380	5310	0,036	1145	7960	0,048	2035	10610
	8,0	0,024	575	3980	0,048	1720	5970	0,064	3055	7960
	10,0	0,030	670	3180	0,060	2005	4770	0,080	3565	6370
	12,0	0,036	860	2650	0,072	2580	3980	0,096	4590	5310

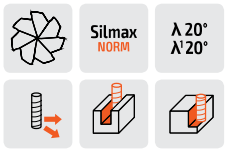
	Diametro Diameter	GRP / GRP Sandwich (Al) / GRP Sandwich (Ti)								
GRP		 0,80 D / 1,00 D			 1,00 D / 0,40 D			 1,00 D / 0,20 D		
	m/min	Vc=50			Vc=75			Vc=100		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,018	190	2650	0,024	380	3980	0,036	765	5310
	8,0	0,024	285	1990	0,032	570	2980	0,048	1145	3980
	10,0	0,030	285	1590	0,040	670	2390	0,060	1335	3180
	12,0	0,036	430	1330	0,048	860	1990	0,072	1715	2650

Notes

740

Fresa ad eliche incrociate
Left / right helix end mill





9

Cr

D h10	d h6	L	l1 ap1	l2 ap2	r	Z	Diamond
6,00	6,00	64	12,0	3,0	0,50	4	HMD740060
6,35	6,35	64	13,0	3,2	0,40	4	HMD740063
8,00	8,00	78	20,0	4,0	0,50	6	HMD740080
9,53	9,53	78	19,0	4,8	0,40	7	HMD740095
10,00	10,00	85	20,0	5,0	0,50	7	HMD740100
12,00	12,00	104	24,0	6,0	0,50	9	HMD740120
12,70	12,70	104	26,0	6,4	0,40	9	HMD740127

Caratteristiche Geometriche

Fresa multi tagliente sviluppata per la lavorazione di pannelli CFRP. La sua geometria di taglio consente l'eliminazione dei fenomeni di delaminazione e sfilacciamento.

Geometrical Features

Multi-flute end mill developed for machining CFRP panels. Its cutting geometry prevents delamination and unravelling.

750/751/752

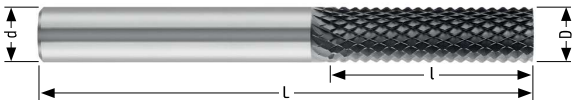
Parametri di lavoro / Working Parameters

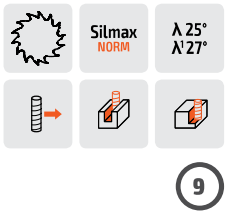
	Diametro Diameter	CFRP / CFRP Sandwich (Al) / CFRP Sandwich (Ti)						Honeycomb					
		 1,00 D / 1,00 D			 2,00 D / 0,35 D			 1,00 D / 1,00 D			 2,00 D / 0,35 D		
CFRP	m/min	Vc=100			Vc=200			Vc=150			Vc=200		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	-	510	7960	-	1530	15920	-	765	11940	-	1530	15920
	5,0	-	635	6370	-	1910	12730	-	955	9550	-	1910	12730
	6,0	-	765	5310	-	2290	10610	-	1145	7960	-	2290	10610
	8,0	-	890	3980	-	2675	7960	-	1335	5970	-	2675	7960
	10,0	-	1020	3180	-	3060	6370	-	1525	4770	-	3070	6370
	12,0	-	1145	2650	-	3440	5310	-	1720	3980	-	3440	5310

	Diametro Diameter	GRP / GRP Sandwich (Al) / GRP Sandwich (Ti)						Honeycomb					
		 1,00 D / 1,00 D			 2,00 D / 0,35 D			 1,00 D / 1,00 D			 2,00 D / 0,35 D		
GRP	m/min	Vc=50			Vc=100			Vc=150			Vc=200		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	4,0	-	255	3980	-	765	7960	-	765	11940	-	1530	15920
	5,0	-	320	3180	-	955	6370	-	955	9550	-	1910	12730
	6,0	-	380	2650	-	1145	5310	-	1145	7960	-	2290	10610
	8,0	-	445	1990	-	1335	3980	-	1335	5970	-	2675	7960
	10,0	-	510	1590	-	1525	3180	-	1525	4770	-	3060	6370
	12,0	-	575	1330	-	1715	2650	-	1720	3980	-	3440	5310

750

Fresa multitagliente
Multi-flute end mill



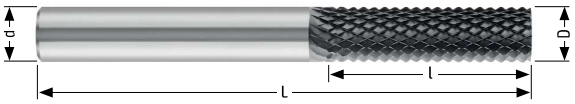


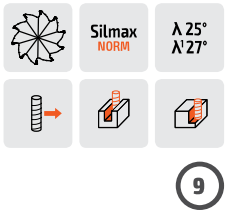
90°

D h10	d h6	L	l ap	Non rivestito Uncoated	Diamond
3,00	3,00	50	9,0	HM0750030	HMD750030
4,00	4,00	50	12,0	HM0750040	HMD750040
5,00	5,00	50	15,0	HM0750050	HMD750050
6,00	6,00	64	18,0	HM0750060	HMD750060
6,35	6,35	64	19,0	HM0750063	HMD750063
8,00	8,00	75	24,0	HM0750080	HMD750080
9,53	9,53	89	29,0	HM0750095	HMD750095
10,00	10,00	85	30,0	HM0750100	HMD750100
12,00	12,00	104	36,0	HM0750120	HMD750120
12,70	12,70	104	38,0	HM0750127	HMD750127

751

Fresa multitagliente con frontale a lamare
Multi-flute end mill with spot-facing end



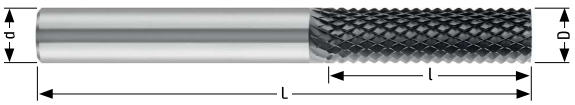


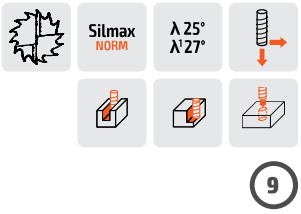
90°

D h10	d h6	L	l ap	Non rivestito Uncoated	Diamond
3,00	3,00	50	9,0	HM0751030	HMD751030
4,00	4,00	50	12,0	HM0751040	HMD751040
5,00	5,00	50	15,0	HM0751050	HMD751050
6,00	6,00	64	18,0	HM0751060	HMD751060
6,35	6,35	64	19,0	HM0751063	HMD751063
8,00	8,00	75	24,0	HM0751080	HMD751080
9,53	9,53	89	29,0	HM0751095	HMD751095
10,00	10,00	85	30,0	HM0751100	HMD751100
12,00	12,00	104	36,0	HM0751120	HMD751120
12,70	12,70	104	38,0	HM0751127	HMD751127

752

Fresa multitagliente con frontale a forare
Multi-flute end mill with drilling end





90°

D h10	d h6	L	l ap	Non rivestito Uncoated	Diamond
3,00	3,00	50	9,0	HM0752030	HMD752030
4,00	4,00	50	12,0	HM0752040	HMD752040
5,00	5,00	50	15,0	HM0752050	HMD752050
6,00	6,00	64	18,0	HM0752060	HMD752060
6,35	6,35	64	19,0	HM0752063	HMD752063
8,00	8,00	75	24,0	HM0752080	HMD752080
9,53	9,53	89	29,0	HM0752095	HMD752095
10,00	10,00	85	30,0	HM0752100	HMD752100
12,00	12,00	104	36,0	HM0752120	HMD752120
12,70	12,70	104	38,0	HM0752127	HMD752127

Caratteristiche Geometriche

Geometria a taglio continuo con basso valore di elica sviluppata per la lavorazione in contornatura e per l'apertura di tasche.

Geometrical Features

Continuous-cut geometry with low helix value for front and side milling and pocketing.

760

Parametri di lavoro / Working Parameters

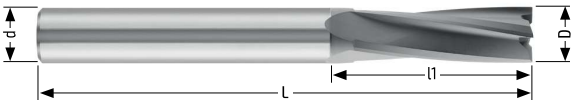
	Diametro Diameter	CFRP / CFRP Sandwich (Al) / CFRP Sandwich (Ti)								
		 1,00 D / 1,00 D			 2,00 D / 0,40 D			 2,00 D / 0,10 D		
CFRP	m/min	Vc=100			Vc=200			Vc=200		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,036	765	5310	0,036	1530	10610	0,030	1275	10610
	8,0	0,048	765	3980	0,048	1530	7960	0,040	1275	7960
	10,0	0,060	765	3180	0,060	1530	6370	0,050	1275	6370
	12,0	0,072	765	2650	0,072	1530	5310	0,060	1275	5310
	16,0	0,096	765	1990	0,096	1530	3980	0,080	1275	3980
	20,0	0,120	765	1590	0,120	1525	3180	0,100	1270	3180

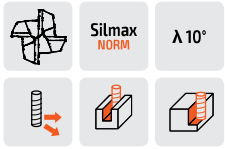
	Diametro Diameter	GRP / GRP Sandwich (Al) / GRP Sandwich (Ti)								
		 0,70 D / 1,00 D			 2,00 D / 0,30 D			 2,00 D / 0,10 D		
GRP	m/min	Vc=50			Vc=100			Vc=100		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,024	255	2650	0,024	510	5310	0,018	380	5310
	8,0	0,032	255	1990	0,032	510	3980	0,024	380	3980
	10,0	0,040	255	1590	0,040	510	3180	0,030	380	3180
	12,0	0,048	255	1330	0,048	510	2650	0,036	380	2650
	16,0	0,064	255	990	0,064	510	1990	0,048	380	1990
	20,0	0,080	255	800	0,080	510	1590	0,060	380	1590

Notes

760

Fresa con geometria a taglio continuo
End mill with continuous cutting geometry





9

Cr

D h10	d h6	L	l1 ap	Cr	Z	Diamond
6,00	6,00	64	18,0	0,20	4	HMD760060
8,00	8,00	78	24,0	0,20	4	HMD760080
10,00	10,00	78	30,0	0,20	4	HMD760100
12,00	12,00	104	36,0	0,20	4	HMD760120
16,00	16,00	104	48,0	0,20	4	HMD760160
20,00	20,00	134	60,0	0,20	4	HMD760200

Caratteristiche Geometriche

Affilatura progettata con un'innovativa geometria di taglio combinato. Studiata specificatamente per la lavorazione dei materiali AFRP e le strutture a nido d'ape.

Geometrical Features

Sharpening designed with an innovative combined-cut geometry. Specifically developed for machining AFRP materials and honeycomb structures.

770

Parametri di lavoro / Working Parameters

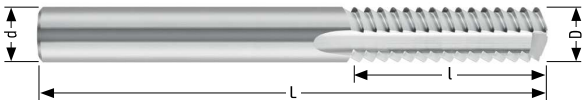
	Diametro Diameter	Honeycomb					
		 1,00 D / 1,00 D			 2,00 D / 0,35 D		
	m/min	Vc=200			Vc=250		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
CFRP	5,0	-	1146	12739	-	2292	145987
	6,0	-	1374	10616	-	2748	121656
	8,0	-	1602	7962	-	3210	91242
	10,0	-	1830	6369	-	3684	72994
	12,0	-	2064	5308	-	4128	60828

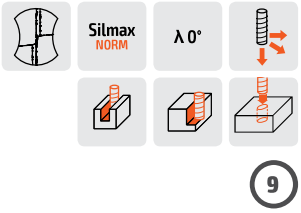
	Diametro Diameter	Honeycomb					
		 1,00 D / 1,00 D			 2,00 D / 0,35 D		
	m/min	Vc=200			Vc=250		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
GRP	5,0	-	1146	12739	-	2292	145987
	6,0	-	1374	10616	-	2748	121656
	8,0	-	1602	7962	-	3210	91242
	10,0	-	1830	6369	-	3684	72994
	12,0	-	2064	5308	-	4128	60828

	Diametro Diameter	Kevlar					
		 1,00 D / 1,00 D			 2,00 D / 0,35 D		
	m/min	Vc=200			Vc=250		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
AFRP	5,0	-	1242	15924	-	2483	22293
	6,0	-	1489	13270	-	2977	18577
	8,0	-	1736	9952	-	3478	13933
	10,0	-	1983	7962	-	3978	11146
	12,0	-	2236	6635	-	4472	9289

770

Fresa a geometria di taglio combinata
End mill with combined cutting edge geometry





90°

D h10	d h6	L	l ap	Z	Non rivestito Uncoated
4,76	4,76	75	25,0	2	HM0760047
5,00	5,00	75	25,0	2	HM0760050
6,00	6,00	75	30,0	2	HM0760060
6,35	6,35	75	30,0	2	HM0760063
8,00	8,00	75	30,0	2	HM0760080
9,53	9,53	75	30,0	2	HM0760095
10,00	10,00	75	30,0	2	HM0760100
12,00	12,00	75	30,0	2	HM0760120
12,70	12,70	75	30,0	2	HM0760127

Caratteristiche Geometriche

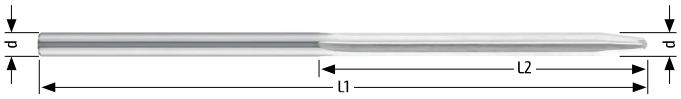
Geometria frontale sviluppata in particolare per la foratura manuale. Garantisce un grado di finitura eccezionale eliminando i fenomeni di delaminazione. Utensile particolarmente indicato per la lavorazione dei materiali compositi a base di carbonio di difficile lavorabilità.

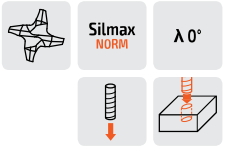
Geometrical Features

Front geometry specifically developed for manual drilling. It ensures an exceptional finishing grade, preventing delamination. A tool that is particularly suitable for machining carbon-based composite materials of difficult machinability.

780

Punta a geometria frontale
Front geometry drill





9

D h6	d h6	L	l2 ap	Z	Non rivestito Uncoated
2,00	2,00	100	50,0	4	HM0780020
2,48	2,48	100	50,0	4	HM0780024
3,00	3,00	100	50,0	4	HM0780030
3,17	3,17	100	50,0	4	HM0780031
4,00	4,00	100	50,0	4	HM0780040
4,21	4,21	100	50,0	4	HM0780042
4,82	4,82	100	50,0	4	HM0780048
5,05	5,05	100	50,0	4	HM0780050
5,53	5,53	100	50,0	4	HM0780055
6,00	6,00	100	50,0	4	HM0780060
6,35	6,35	100	50,0	4	HM0780063
6,60	6,60	100	50,0	4	HM0780066
7,00	7,00	100	50,0	4	HM0780070
7,92	7,92	100	50,0	4	HM0780079
8,00	8,00	100	50,0	4	HM0780080
8,63	8,63	100	50,0	4	HM0780086
9,00	9,00	100	50,0	4	HM0780090
10,00	10,00	100	50,0	4	HM0780100
12,00	12,00	100	50,0	4	HM0780120

1 Acciaio Steel | 2 Ghise Cast Iron | 3 Acciai Temprati Hardened Steel | 4 Acciaio Inox Stainless Steel | 5 Titanio Titanium | 6 Leghe Leggere Light Alloys | 7 PH Duplex | 8 Superleghe Superalloys | 9 Compositi Composite Materials | → 16 Guida alla lettura Reading guide | → 18 Legenda Legend

170 PHM Punte Alto Rendimento High Performance Drills
186 PHG Punte a Gradino Step Drills
188 PHC Punte a Centrare Center Drills
190 ALR Alesatori Centesimale Reamers

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For further information download the digital brochure.
silmax.it/hm-drills

FORATURA
DRILLING

PHM Punte Alto Rendimento / High Performance Drills

Codice / Code	Ø (D mm)	1 Acciaio / Steel	2 Ghise / Cast iron	3 Acciai Temprati / Hardened steels	4 Acciaio Inox / Stainless steel	5 Titanio / Titanium	6 Leghe Leggere / Light Alloys	7 PH Duplex	8 Superleghe / Superalloys	9 Compositi / Composite Materials	Pagina / Page
3030A	2,6 ÷ 16,0	●	●	-	●	●	-	●	●	●	172
3031A	3,0 ÷ 20,0	●	●	-	●	●	-	●	●	●	174
3050A	0,3 ÷ 16,0	●	●	-	●	●	-	●	●	●	176
3051A	3,0 ÷ 20,0	●	●	-	●	●	-	●	●	●	178
3081A	1,0 ÷ 16,0	●	●	-	●	●	-	●	●	●	181

PHG Punte a Gradino / Step Drills

Codice / Code	Ø (D mm)	1	2	3	4	5	6	7	8	9	Pagina / Page
3825	M4 ÷ M12	●	●	-	●	●	-	●	●	●	187
3835	M4 ÷ M12	●	●	-	●	●	-	●	●	●	187

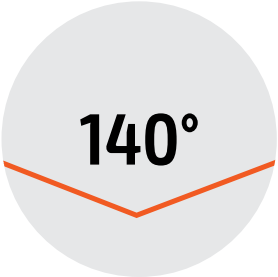
PHC Punte a Centrare / Center Drills

Codice / Code	Ø (D mm)	1	2	3	4	5	6	7	8	9	Pagina / Page
351	1,0 ÷ 5,0	●	●	-	●	●	●	●	●	●	188
357	3,0 ÷ 16,0	●	●	-	●	●	●	●	●	●	189
358	3,0 ÷ 12,0	●	●	-	●	●	●	●	●	●	189

ALR Alesatori Centesimali / Reamers

Codice / Code	Ø (D mm)	1	2	3	4	5	6	7	8	9	Pagina / Page
503	0,9 ÷ 12,47	●	●	-	●	●	●	●	●	●	191

PUNTE ALTO RENDIMENTO
HIGH PERFORMANCE DRILLS

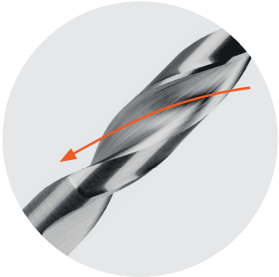


Affilatura frontale a 140°.

140° front sharpening.

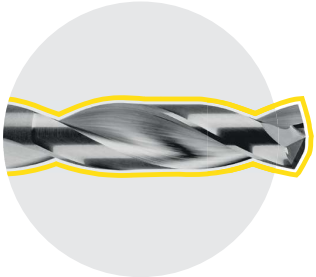
Incisione a raggio frontale con distribuzione uniforme delle pressioni di taglio.

Curved cutting edge for a better cutting pressure distribution.



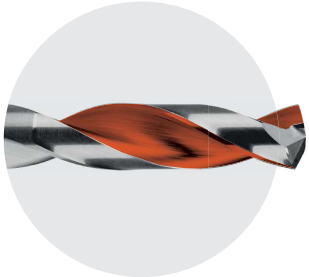
Gole sagomate per la formazione e l'evacuazione ottimale del truciolo.

Formed flutes for an optimal chip formation and removal.



Onatura innovativa del tagliente.

Innovative honing of the cutting edge.



Finitura delle superfici ad elevata scorrevolezza.

Finishing for super-smooth surfaces.

SIL SERVICE

L'esperienza Silmax dimostra che un utensile correttamente affilato ha un rendimento uguale a quello nuovo.

Silmax experience shows that a properly sharpened tool grants the same performances of a new tool.

- Riaffilatura e rigenerazione — Resharpening and Reconditioning
- Esecuzione perfetta — Perfect Execution
- Rivestimento PVD — PVD Coating
- Trattamento 4S — 4S Treatment
- Consegna rapida — Fast Delivery

170 PHM Punte Alto Rendimento High Performance Drills
186 PHG Punte a Gradino Step Drills
188 PHC Punte a Centrare Center Drills
190 ALR Alesatori Centesimale Reamers

Tabella disponibilità punte ad alto rendimento / High performance drills availability

d1 h8	3030A 3XD	3031A 3XD	3050A 5XD	3051A 5XD	3081A 8XD
0,30			●		
0,40			●		
0,50			●		
0,60			●		
0,70			●		
0,80			●		
0,90			●		
1,00			●		●
1,05			●		
1,10			●		
1,15			●		
1,20			●		●
1,30			●		
1,40			●		
1,50			●		●
1,60			●		●
1,70			●		
1,80			●		●
1,90			●		
2,00			●		●
2,10			●		
2,20			●		
2,30			●		
2,40			●		
2,50			●		●
2,60	●		●		
2,70	●		●		
2,80	●		●		
2,90	●		●		
3,00	●	●	●	●	●
3,10	●	●	●	●	○
3,20	●	●	●	●	●
3,30	●	●	●	●	●
3,40	●	●	●	●	●
3,50	●	●	●	●	●
3,60	●	●	●	●	○
3,70	●	●	●	●	○
3,80	●	●	●	●	○
3,90	●	●	●	●	○
4,00	●	●	●	●	●
4,10	●	●	●	●	○
4,20	●	●	●	●	●
4,30	●	●	●	●	●
4,40	●	●	●	●	○
4,50	●	●	●	●	●
4,60	●	●	●	●	○
4,70	●	●	●	●	○
4,80	●	●	●	●	●
4,90	●	●	●	●	○
5,00	●	●	●	●	●
5,10	●	●	●	●	●
5,20	●	●	●	●	○
5,30	●	●	●	●	○
5,40	●	●	●	●	○
5,50	●	●	●	●	●
5,60	●	●	●	●	○

d1 h8	3030A 3XD	3031A 3XD	3050A 5XD	3051A 5XD	3081A 8XD
5,70	●	●	●	●	○
5,80	●	●	●	●	●
5,90	●	●	●	●	○
6,00	●	●	●	●	●
6,10	●	●	●	●	●
6,20	●	●	○	●	○
6,30	●	●	●	●	●
6,40	●	●	○	●	○
6,50	●	●	●	●	●
6,60	●	●	○	●	●
6,70	●	●	○	●	○
6,80	●	●	●	●	●
6,90	●	●	●	●	●
7,00	●	●	●	●	●
7,10	○	●	○	●	○
7,20	●	●	○	●	○
7,30	○	●	○	●	○
7,40	●	●	●	●	○
7,50	●	●	●	●	●
7,60	○	●	○	●	○
7,70	○	●	○	●	○
7,80	●	●	●	●	●
7,90	●	●	○	●	○
8,00	●	●	●	●	●
8,10	●	●	○	●	○
8,20	●	●	○	●	○
8,30	●	●	○	●	○
8,40	○	●	○	●	○
8,50	●	●	●	●	●
8,60	●	●	●	●	○
8,70	●	●	●	●	●
8,80	●	●	●	●	○
8,90	●	●	○	●	○
9,00	●	●	●	●	●
9,10	●	●	○	●	○
9,20	○	●	○	●	○
9,30	●	●	●	●	●
9,40	○	●	○	●	○
9,50	●	●	●	●	●
9,60	○	●	○	●	○
9,70	○	●	○	●	○
9,80	●	●	●	●	●
9,90	●	●	○	●	○
10,00	●	●	●	●	●
10,10	○	●	○	●	○
10,20	●	●	●	●	○
10,30	○	●	○	●	●
10,40	○	●	○	●	○
10,50	●	●	●	●	●
10,60	●	●	●	●	○
10,70	○	●	○	●	○
10,80	●	●	●	●	○
10,90	○	●	○	●	○
11,00	●	●	●	●	●
11,10	○	●	○	●	○
11,20	○	●	●	●	○

d1 h8	3030A 3XD	3031A 3XD	3050A 5XD	3051A 5XD	3081A 8XD
11,30	●	●	○	●	○
11,40	●	●	○	●	●
11,50	●	●	●	●	●
11,60	○	●	○	●	○
11,70	●	●	○	●	○
11,80	●	●	●	●	○
11,90	●	●	●	●	●
12,00	●	●	●	●	●
12,10	○	●	○	○	○
12,20	○	●	●	●	○
12,30	●	○	○	●	○
12,40	○	○	○	●	○
12,50	●	●	●	●	●
12,60	○	○	●	●	○
12,70	○	○	●	●	○
12,80	●	●	●	●	○
12,90	○	○	○	●	○
13,00	●	●	●	●	●
13,10	○	○	○	●	○
13,20	○	○	○	●	○
13,30	○	○	○	○	○
13,40	○	○	○	○	○
13,50	●	●	●	●	●
13,60	○	○	○	○	○
13,70	○	○	○	○	○
13,80	●	●	●	●	○
13,90	○	○	○	○	○
14,00	●	●	●	●	●
14,10	●	○	○	○	○
14,20	●	●	○	●	○
14,30	○	○	○	○	○
14,40	○	○	○	○	○
14,50	●	●	●	●	●
14,60	○	○	○	○	○
14,70	○	○	○	○	○
14,80	●	●	●	●	○
14,90	○	○	○	○	○
15,00	●	●	●	●	●
15,10	●	○	○	○	○
15,20	○	○	○	●	○
15,30	●	○	○	○	○
15,40	○	○	○	○	○
15,50	●	●	●	●	○
15,60	○	○	○	○	○
15,70	○	○	○	○	○
15,80	●	●	●	●	○
15,90	○	○	○	○	○
16,00	●	●	●	●	●
16,50	○	●	○	●	○
17,00	○	●	○	●	○
17,50	○	●	○	●	○
18,00	○	●	○	●	○
18,50	○	●	○	●	○
19,00	○	●	○	●	○
19,50	○	●	○	●	○
20,00	○	●	○	●	○

○ Disponibili su richiesta. D 3,0 – D 10,0: quantità minima 10 pz. / D 10,1 – D 20,0: quantità minima 5 pz.
Available on request. D 3,0 – D 10,0: min quantity 10 pcs / D 10,1 – D 20,0: min quantity 5 pcs

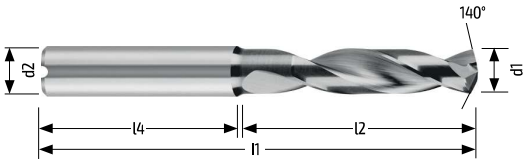
0A Senza fori di lubrificazione. Without internal coolant.

1A Con fori di lubrificazione. With internal coolant.

3030A

Punta 3xD senza fori

3xD drill without internal coolant



DIN 6537K

1 2 4 5 7 8 9

140°

Balinit® X-Pro	d1 m7	d2 h6	l2	l4	l1
HMX3030A026	2,6	6	20	36	62
HMX3030A027	2,7				
HMX3030A028	2,8				
HMX3030A029	2,9				
HMX3030A030	3,0				
HMX3030A031	3,1				
HMX3030A032	3,2				
HMX3030A033	3,3				
HMX3030A034	3,4				
HMX3030A035	3,5				
HMX3030A036	3,6				
HMX3030A037	3,7				
HMX3030A038	3,8	6	24	36	66
HMX3030A039	3,9				
HMX3030A040	4,0				
HMX3030A041	4,1				
HMX3030A042	4,2				
HMX3030A043	4,3				
HMX3030A044	4,4				
HMX3030A045	4,5				
HMX3030A046	4,6				
HMX3030A047	4,7				
HMX3030A048	4,8	6	28		
HMX3030A049	4,9				
HMX3030A050	5,0				
HMX3030A051	5,1				
HMX3030A052	5,2				
HMX3030A053	5,3				
HMX3030A054	5,4				
HMX3030A055	5,5				
HMX3030A056	5,6				
HMX3030A057	5,7				
HMX3030A058	5,8				
HMX3030A059	5,9				
HMX3030A060	6,0				
HMX3030A061	6,1	8	34	36	79
HMX3030A062	6,2				
HMX3030A063	6,3				
HMX3030A064	6,4				
HMX3030A065	6,5				
HMX3030A066	6,6				
HMX3030A067	6,7				
HMX3030A068	6,8				
HMX3030A069	6,9				
HMX3030A070	7,0				
HMX3030A072	7,2	8	41		
HMX3030A074	7,4				
HMX3030A075	7,5				
HMX3030A078	7,8				
HMX3030A079	7,9				
HMX3030A080	8,0				

3030A

Punta 3xD senza fori
3xD drill without internal coolant

140°

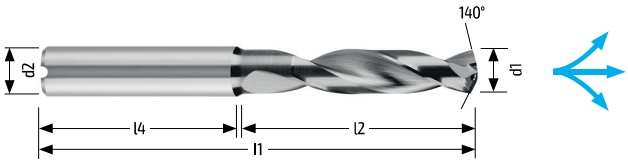
Balinit® X-Pro	d1 m7	d2 h6	l2	l4	l1
HMX3030A081	8,1	10	47	40	89
HMX3030A082	8,2				
HMX3030A083	8,3				
HMX3030A085	8,5				
HMX3030A086	8,6				
HMX3030A087	8,7				
HMX3030A088	8,8				
HMX3030A089	8,9				
HMX3030A090	9,0				
HMX3030A091	9,1				
HMX3030A093	9,3				
HMX3030A095	9,5				
HMX3030A098	9,8				
HMX3030A099	9,9				
HMX3030A100	10,0				
HMX3030A102	10,2	12	55	45	102
HMX3030A105	10,5				
HMX3030A106	10,6				
HMX3030A108	10,8				
HMX3030A110	11,0				
HMX3030A113	11,3				
HMX3030A114	11,4				
HMX3030A115	11,5				
HMX3030A117	11,7				
HMX3030A118	11,8				
HMX3030A119	11,9				
HMX3030A120	12,0				
HMX3030A123	12,3	14	60	45	107
HMX3030A125	12,5				
HMX3030A128	12,8				
HMX3030A130	13,0				
HMX3030A135	13,5				
HMX3030A138	13,8				
HMX3030A140	14,0				
HMX3030A141	14,1	16	65	48	115
HMX3030A142	14,2				
HMX3030A145	14,5				
HMX3030A148	14,8				
HMX3030A150	15,0				
HMX3030A151	15,1				
HMX3030A153	15,3				
HMX3030A155	15,5				
HMX3030A158	15,8				
HMX3030A160	16,0				

3031A

Punta 3xD con fori
3xD drill with internal coolant

DIN 6537K | DIN 6535 HA (Standard)

1 2 4 5 7 8 9



140°

Balinit® X-Pro	d1 m7	d2 h6	l2	l4	l1
HMX3031A030	3,0	6	20	36	62
HMX3031A031	3,1				
HMX3031A032	3,2				
HMX3031A033	3,3				
HMX3031A034	3,4				
HMX3031A035	3,5				
HMX3031A036	3,6				
HMX3031A037	3,7				
HMX3031A038	3,8	6	24	36	66
HMX3031A039	3,9				
HMX3031A040	4,0				
HMX3031A041	4,1				
HMX3031A042	4,2				
HMX3031A043	4,3				
HMX3031A044	4,4				
HMX3031A045	4,5				
HMX3031A046	4,6				
HMX3031A047	4,7				
HMX3031A048	4,8	6	28		
HMX3031A049	4,9				
HMX3031A050	5,0				
HMX3031A051	5,1				
HMX3031A052	5,2				
HMX3031A053	5,3				
HMX3031A054	5,4				
HMX3031A055	5,5				
HMX3031A056	5,6				
HMX3031A057	5,7				
HMX3031A058	5,8				
HMX3031A059	5,9				
HMX3031A060	6,0				
HMX3031A061	6,1	8	34	36	79
HMX3031A062	6,2				
HMX3031A063	6,3				
HMX3031A064	6,4				
HMX3031A065	6,5				
HMX3031A066	6,6				
HMX3031A067	6,7				
HMX3031A068	6,8				
HMX3031A069	6,9				
HMX3031A070	7,0				
HMX3031A071	7,1	8	41		
HMX3031A072	7,2				
HMX3031A073	7,3				
HMX3031A074	7,4				
HMX3031A075	7,5				
HMX3031A076	7,6				
HMX3031A077	7,7				
HMX3031A078	7,8				
HMX3031A079	7,9				
HMX3031A080	8,0				

3031A

Punta 3xD con fori
3xD drill with internal coolant

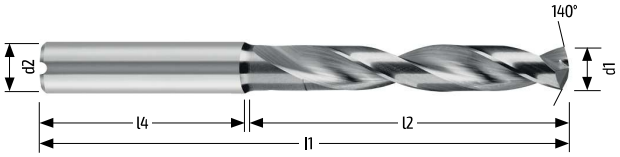
140°

Balinit® X-Pro	d1 m7	d2 h6	l2	l4	l1
HMX3031A081	8,1	10	47	40	89
HMX3031A082	8,2				
HMX3031A083	8,3				
HMX3031A084	8,4				
HMX3031A085	8,5				
HMX3031A086	8,6				
HMX3031A087	8,7				
HMX3031A088	8,8				
HMX3031A089	8,9				
HMX3031A090	9,0				
HMX3031A091	9,1				
HMX3031A092	9,2				
HMX3031A093	9,3				
HMX3031A094	9,4				
HMX3031A095	9,5				
HMX3031A096	9,6				
HMX3031A097	9,7				
HMX3031A098	9,8				
HMX3031A099	9,9				
HMX3031A100	10,0				
HMX3031A101	10,1	12	55	45	102
HMX3031A102	10,2				
HMX3031A103	10,3				
HMX3031A104	10,4				
HMX3031A105	10,5				
HMX3031A106	10,6				
HMX3031A107	10,7				
HMX3031A108	10,8				
HMX3031A109	10,9				
HMX3031A110	11,0				
HMX3031A111	11,1				
HMX3031A112	11,2				
HMX3031A113	11,3				
HMX3031A114	11,4				
HMX3031A115	11,5				
HMX3031A116	11,6				
HMX3031A117	11,7				
HMX3031A118	11,8				
HMX3031A119	11,9				
HMX3031A120	12,0				
HMX3031A121	12,1	14	60	45	107
HMX3031A122	12,2				
HMX3031A125	12,5				
HMX3031A128	12,8				
HMX3031A130	13,0				
HMX3031A135	13,5				
HMX3031A138	13,8				
HMX3031A140	14,0				
HMX3031A142	14,2	16	65	48	115
HMX3031A145	14,5				
HMX3031A148	14,8				
HMX3031A150	15,0				
HMX3031A155	15,5				
HMX3031A158	15,8				
HMX3031A160	16,0				
HMX3031A165	16,5	18	73	48	123
HMX3031A170	17,0				
HMX3031A175	17,5				
HMX3031A180	18,0				
HMX3031A185	18,5	20	79	50	131
HMX3031A190	19,0				
HMX3031A195	19,5				
HMX3031A200	20,0				

3050A

Punta 5xD senza fori

5xD drill without internal coolant



DIN 6537L

DIN 6535 HA (Standard)

WIN DIN 6535 HE (On request)

1 2 4 5 7 8 9

140°

Balinit® X-Pro	d1 m7	d2 h6	l2	l4	l1
HMX3050A003	0,3	3	1,5	-	38
HMX3050A004	0,4		2,0		
HMX3050A005	0,5		4,0		
HMX3050A006	0,6		4,5		
HMX3050A007	0,7		5,6		
HMX3050A008	0,8		6,5		
HMX3050A009	0,9		7,0		
HMX3050A010	1,0		9		
HMX3050A011	1,1				
HMX3050A012	1,2		10		
HMX3050A013	1,3				
HMX3050A014	1,4		12		
HMX3050A015	1,5				
HMX3050A016	1,6		11,5		
HMX3050A017	1,7				
HMX3050A018	1,8				
HMX3050A019	1,9				
HMX3050A004	0,4		2,0		
HMX3050A005	0,5		4,0		
HMX3050A006	0,6		4,5		
HMX3050A007	0,7		5,6		
HMX3050A008	0,8		6,5		
HMX3050A009	0,9		7,0		
HMX3050A010	1,0		9		
HMX3050A011	1,1				
HMX3050A020	2,0	3	13	-	50
HMX3050A021	2,1				
HMX3050A022	2,2		14		
HMX3050A023	2,3				
HMX3050A024	2,4		15		
HMX3050A025	2,5				
HMX3050A026	2,6	6	28	36	66
HMX3050A027	2,7				
HMX3050A028	2,8				
HMX3050A029	2,9				
HMX3050A030	3,0				
HMX3050A031	3,1				
HMX3050A032	3,2				
HMX3050A033	3,3				
HMX3050A034	3,4				
HMX3050A035	3,5				
HMX3050A036	3,6				
HMX3050A037	3,7				
HMX3050A038	3,8	6	36	36	74
HMX3050A039	3,9				
HMX3050A040	4,0				
HMX3050A041	4,1				
HMX3050A042	4,2				
HMX3050A043	4,3				
HMX3050A044	4,4				
HMX3050A045	4,5				
HMX3050A046	4,6				
HMX3050A047	4,7				

3050A

Punta 5xD senza fori
5xD drill without internal coolant

140°

Balinit® X-Pro	d1 m7	d2 h6	l2	l4	l1
HMX3050A048	4,8	6	44	36	82
HMX3050A049	4,9				
HMX3050A050	5,0				
HMX3050A051	5,1				
HMX3050A052	5,2				
HMX3050A053	5,3				
HMX3050A054	5,4				
HMX3050A055	5,5				
HMX3050A056	5,6				
HMX3050A057	5,7				
HMX3050A058	5,8				
HMX3050A059	5,9				
HMX3050A060	6,0				
HMX3050A061	6,1	8	53	36	91
HMX3050A063	6,3				
HMX3050A065	6,5				
HMX3050A068	6,8				
HMX3050A069	6,9				
HMX3050A070	7,0				
HMX3050A074	7,4				
HMX3050A075	7,5				
HMX3050A078	7,8				
HMX3050A080	8,0				
HMX3050A085	8,5	10	61	40	103
HMX3050A086	8,6				
HMX3050A087	8,7				
HMX3050A088	8,8				
HMX3050A090	9,0				
HMX3050A093	9,3				
HMX3050A095	9,5				
HMX3050A098	9,8				
HMX3050A100	10,0				
HMX3050A102	10,2	12	71	45	118
HMX3050A105	10,5				
HMX3050A106	10,6				
HMX3050A108	10,8				
HMX3050A110	11,0				
HMX3050A112	11,2				
HMX3050A115	11,5				
HMX3050A118	11,8				
HMX3050A119	11,9				
HMX3050A120	12,0				
HMX3050A122	12,2	14	77	45	124
HMX3050A125	12,5				
HMX3050A126	12,6				
HMX3050A127	12,7				
HMX3050A128	12,8				
HMX3050A130	13,0				
HMX3050A135	13,5				
HMX3050A138	13,8				
HMX3050A140	14,0				
HMX3050A145	14,5	16	83	48	133
HMX3050A148	14,8				
HMX3050A150	15,0				
HMX3050A155	15,5				
HMX3050A158	15,8				
HMX3050A160	16,0				

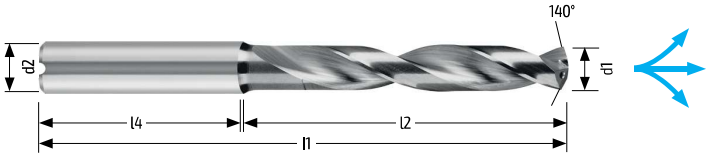
3051A

Punta 5xD con fori

5xD drill with internal coolant

DIN 6537L | DIN 6535 HA (Standard)

1 2 4 5 7 8 9



140°

Balinit® X-Pro	d1 m7	d2 h6	l2	l4	l1
HMX3051A030	3,0	6	28	36	66
HMX3051A031	3,1				
HMX3051A032	3,2				
HMX3051A033	3,3				
HMX3051A034	3,4				
HMX3051A035	3,5				
HMX3051A036	3,6				
HMX3051A037	3,7				
HMX3051A038	3,8	6	36	36	74
HMX3051A039	3,9				
HMX3051A040	4,0				
HMX3051A041	4,1				
HMX3051A042	4,2				
HMX3051A043	4,3				
HMX3051A044	4,4				
HMX3051A045	4,5				
HMX3051A046	4,6				
HMX3051A047	4,7				
HMX3051A048	4,8	6	44	36	82
HMX3051A049	4,9				
HMX3051A050	5,0				
HMX3051A051	5,1				
HMX3051A052	5,2				
HMX3051A053	5,3				
HMX3051A054	5,4				
HMX3051A055	5,5				
HMX3051A056	5,6				
HMX3051A057	5,7				
HMX3051A058	5,8				
HMX3051A059	5,9				
HMX3051A060	6,0				
HMX3051A061	6,1	8	53	36	91
HMX3051A062	6,2				
HMX3051A063	6,3				
HMX3051A064	6,4				
HMX3051A065	6,5				
HMX3051A066	6,6				
HMX3051A067	6,7				
HMX3051A068	6,8				
HMX3051A069	6,9				
HMX3051A070	7,0				
HMX3051A071	7,1				
HMX3051A072	7,2				
HMX3051A073	7,3				
HMX3051A074	7,4				
HMX3051A075	7,5				
HMX3051A076	7,6				
HMX3051A077	7,7				
HMX3051A078	7,8				
HMX3051A079	7,9				
HMX3051A080	8,0				

3051A

Punta 5xD con fori
5xD drill with internal coolant

140°

Balinit® X-Pro	d1 m7	d2 h6	l2	l4	l1
HMX3051A081	8,1	10	61	40	103
HMX3051A082	8,2				
HMX3051A083	8,3				
HMX3051A084	8,4				
HMX3051A085	8,5				
HMX3051A086	8,6				
HMX3051A087	8,7				
HMX3051A088	8,8				
HMX3051A089	8,9				
HMX3051A090	9,0				
HMX3051A091	9,1				
HMX3051A092	9,2				
HMX3051A093	9,3				
HMX3051A094	9,4				
HMX3051A095	9,5				
HMX3051A096	9,6				
HMX3051A097	9,7				
HMX3051A098	9,8				
HMX3051A099	9,9				
HMX3051A100	10,0				
HMX3051A101	10,1	12	71	45	118
HMX3051A102	10,2				
HMX3051A103	10,3				
HMX3051A104	10,4				
HMX3051A105	10,5				
HMX3051A106	10,6				
HMX3051A107	10,7				
HMX3051A108	10,8				
HMX3051A109	10,9				
HMX3051A110	11,0				
HMX3051A111	11,1				
HMX3051A112	11,2				
HMX3051A113	11,3				
HMX3051A114	11,4				
HMX3051A115	11,5				
HMX3051A116	11,6				
HMX3051A117	11,7				
HMX3051A118	11,8				
HMX3051A119	11,9				
HMX3051A120	12,0				
HMX3051A122	12,2	14	77	45	124
HMX3051A123	12,3				
HMX3051A124	12,4				
HMX3051A125	12,5				
HMX3051A126	12,6				
HMX3051A127	12,7				
HMX3051A128	12,8				
HMX3051A129	12,9				
HMX3051A130	13,0				
HMX3051A131	13,1				
HMX3051A132	13,2				
HMX3051A135	13,5				
HMX3051A138	13,8				
HMX3051A140	14,0				

Notes

3051A

Punta 5xD con fori
5xD drill with internal coolant

140°

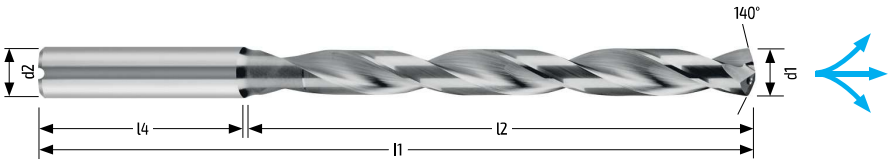
Balinit® X-Pro	d1 m7	d2 h6	l2	l4	l1
HMX3051A142	14,2	16	83	48	133
HMX3051A145	14,5				
HMX3051A148	14,8				
HMX3051A150	15,0				
HMX3051A152	15,2				
HMX3051A155	15,5				
HMX3051A158	15,8				
HMX3051A160	16,0				
HMX3051A165	16,5	18	93	48	143
HMX3051A170	17,0				
HMX3051A175	17,5				
HMX3051A180	18,0				
HMX3051A185	18,5	20	101	50	153
HMX3051A190	19,0				
HMX3051A195	19,5				
HMX3051A200	20,0				

3081A

Punta 8xD con fori
8xD drill with internal coolant

Silmax NORM | DIN 6535 HA (Standard)

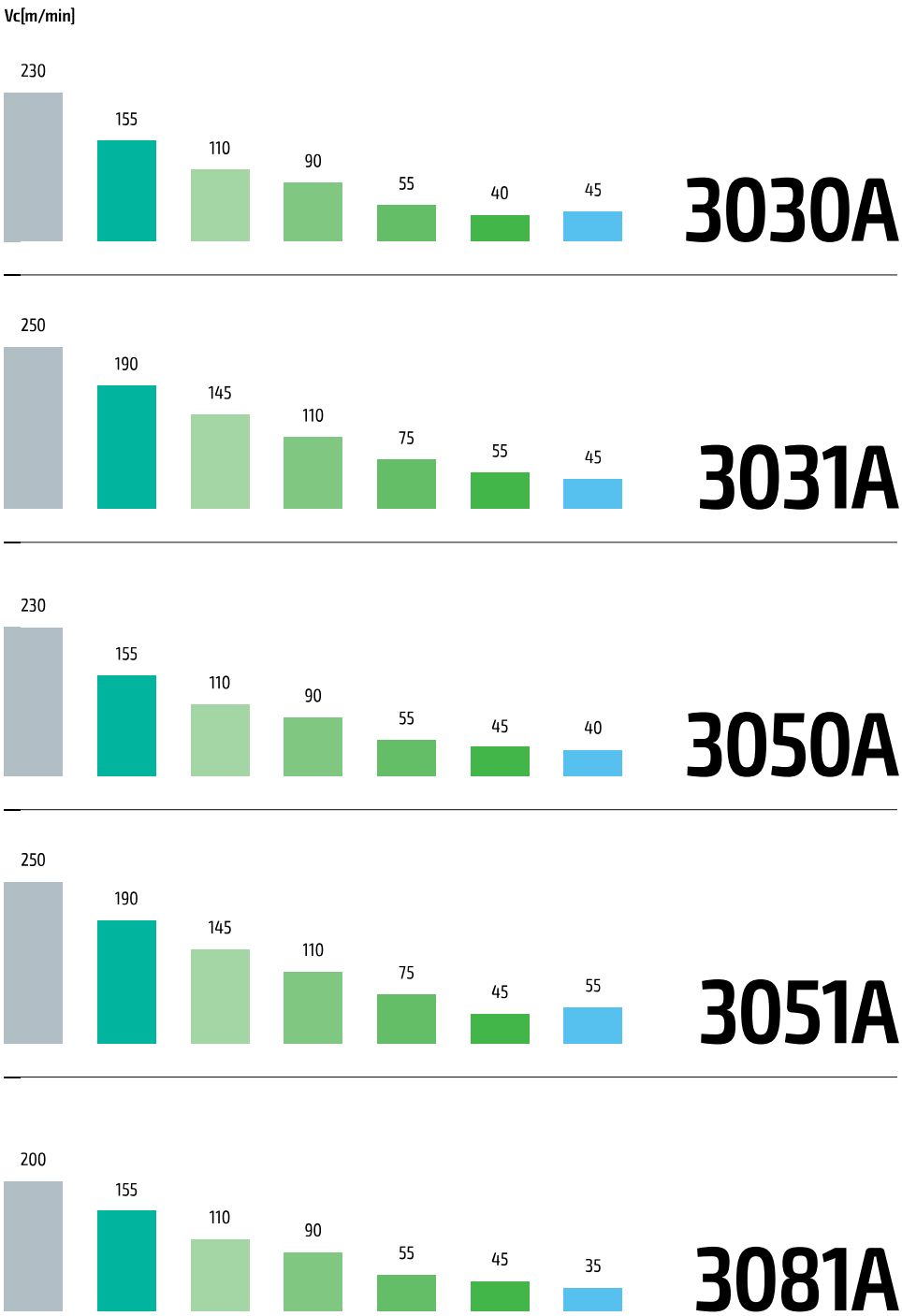
1 2 4 5 7 8 9



140°

Balinit® X-Pro	d1 h8	d2 h6	l2	l4	l1
HMX3081A010	1,0	3	16	-	77
HMX3081A012	1,2	3	19		
HMX3081A015	1,5	3	24		
HMX3081A016	1,6	3	25		
HMX3081A018	1,8	3	28	-	84
HMX3081A020	2,0	3	32		
HMX3081A025	2,5	3	40	-	91
HMX3081A030	3,0	6	36	36	74
HMX3081A032	3,2				
HMX3081A033	3,3				
HMX3081A034	3,4				
HMX3081A035	3,5				
HMX3081A040	4,0	6	57	36	82
HMX3081A042	4,2				
HMX3081A043	4,3				
HMX3081A045	4,5				
HMX3081A048	4,8	6	57	36	95
HMX3081A050	5,0				
HMX3081A051	5,1				
HMX3081A055	5,5				
HMX3081A058	5,8				
HMX3081A060	6,0				
HMX3081A061	6,1	8	76	36	114
HMX3081A063	6,3				
HMX3081A065	6,5				
HMX3081A066	6,6				
HMX3081A068	6,8				
HMX3081A069	6,9				
HMX3081A070	7,0				
HMX3081A075	7,5				
HMX3081A078	7,8				
HMX3081A080	8,0				
HMX3081A085	8,5	10	96	40	138
HMX3081A087	8,7				
HMX3081A090	9,0				
HMX3081A093	9,3				
HMX3081A095	9,5				
HMX3081A098	9,8				
HMX3081A100	10,0				
HMX3081A103	10,3	12	115	45	162
HMX3081A105	10,5				
HMX3081A110	11,0				
HMX3081A114	11,4				
HMX3081A115	11,5				
HMX3081A119	11,9				
HMX3081A120	12,0				
HMX3081A125	12,5	14	134	45	181
HMX3081A130	13,0				
HMX3081A135	13,5				
HMX3081A140	14,0				
HMX3081A145	14,5	16	153	48	203
HMX3081A150	15,0				
HMX3081A160	16,0				

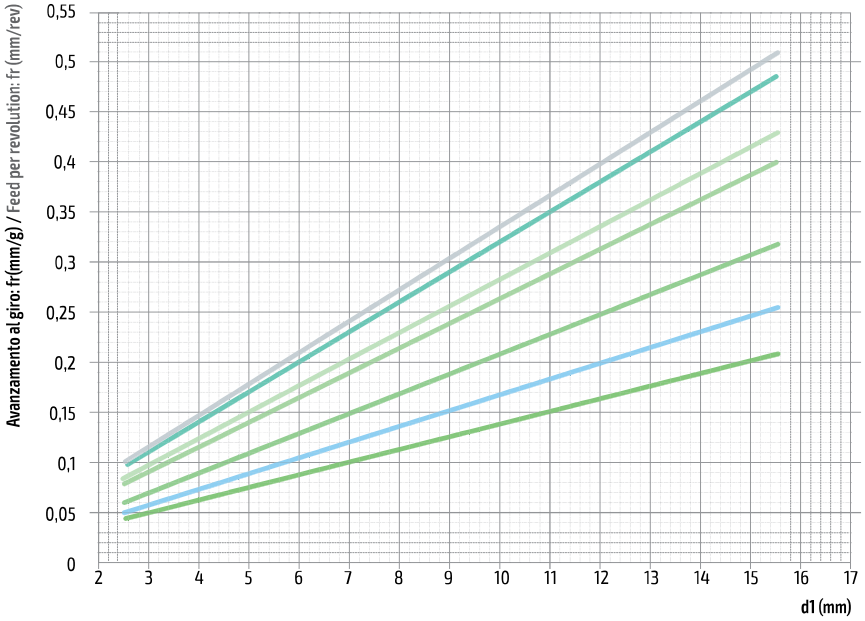
Parametri di lavoro / Working Parameters



1	2	3	4	5	6	7	8	9
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials

3030A

Parametri di lavoro / Working Parameters



Ghisa = Vc 155 m/min
Cast Iron = Vc 155 m/min

Acciaio < 800 N/mm² = Vc 110 m/min
Steel < 800 N/mm² = Vc 110 m/min

Alluminio e leghe = Vc 230 m/min
Aluminium & Alloys = Vc 230 m/min

Acciaio < 1000 N/mm² = Vc 90 m/min
Steel < 1000 N/mm² = Vc 90 m/min

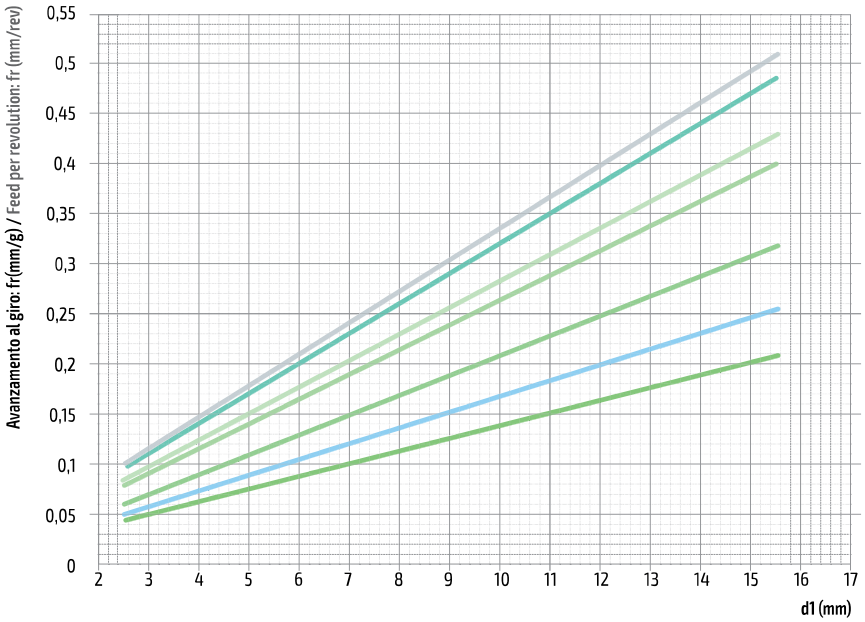
Acciaio < 1300 N/mm² = Vc 55 m/min
Steel < 1300 N/mm² = Vc 55 m/min

Acciaio inossidabile = Vc 45 m/min
Stainless Steel = Vc 45 m/min

Acciaio da stampi = Vc 40 m/m
Mold Steel = Vc 40 m/min

3031A

Parametri di lavoro / Working Parameters



Alluminio e leghe = Vc 250 m/min
Aluminium & Alloys = Vc 250 m/min

Ghisa = Vc 190 m/min
Cast Iron = Vc 190 m/min

Acciaio < 800 N/mm² = Vc 145 m/min
Steel < 800 N/mm² = Vc 145 m/min

Acciaio < 1000 N/mm² = Vc 110 m/min
Steel < 1000 N/mm² = Vc 110 m/min

Acciaio < 1300 N/mm² = Vc 75 m/min
Steel < 1300 N/mm² = Vc 75 m/min

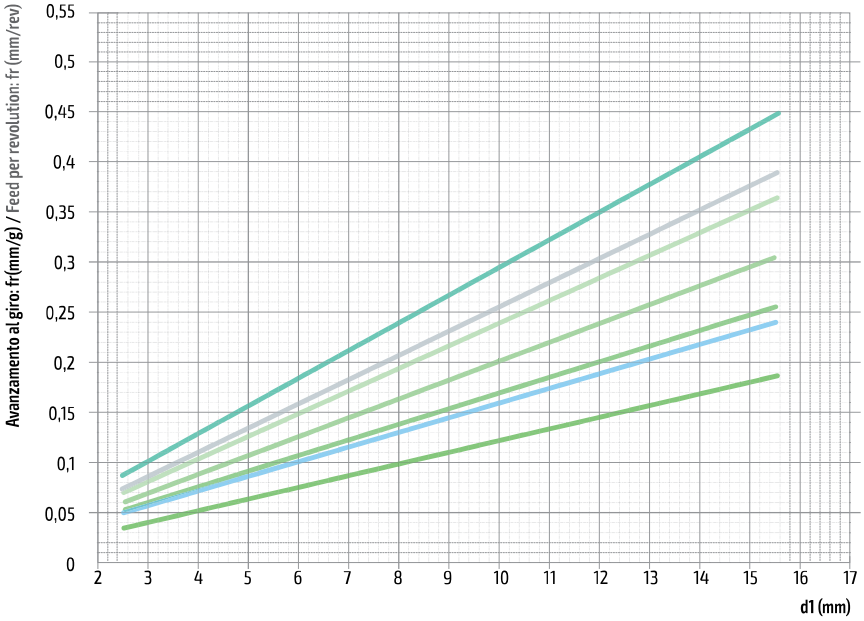
Acciaio inossidabile = Vc 55 m/min
Stainless Steel = Vc 55 m/min

Acciaio da stampi = Vc 45 m/min
Mold Steel = Vc 45 m/min

Notes

3050A

Parametri di lavoro / Working Parameters



Ghisa = Vc 155 m/min
Cast Iron = Vc 155 m/min

Acciaio < 800 N/mm² = Vc 110 m/min
Steel < 800 N/mm² = Vc 110 m/min

Alluminio e leghe = Vc 230 m/min
Aluminium & Alloys = Vc 230 m/min

Acciaio < 1000 N/mm² = Vc 90 m/min
Steel < 1000 N/mm² = Vc 90 m/min

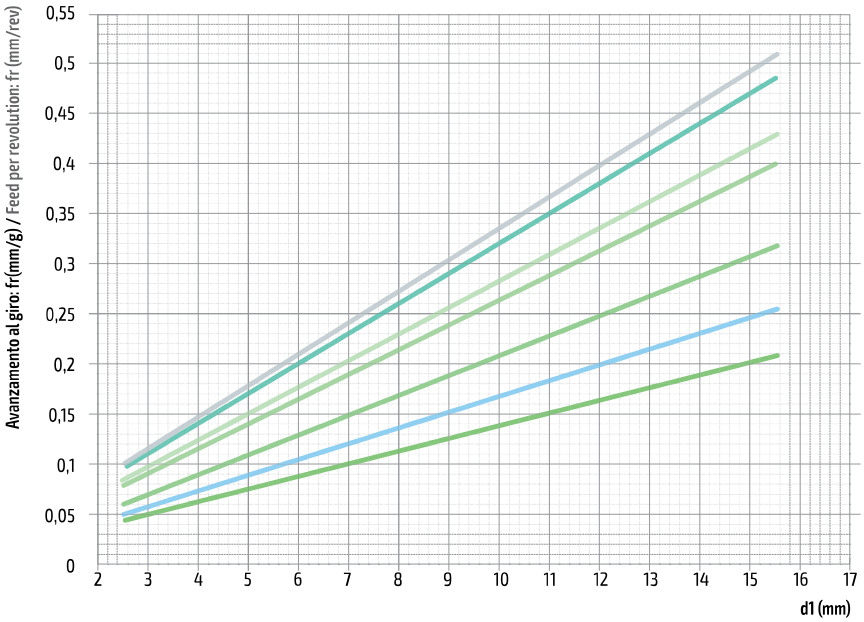
Acciaio < 1300 N/mm² = Vc 55 m/min
Steel < 1300 N/mm² = Vc 55 m/min

Acciaio inossidabile = Vc 45 m/min
Stainless Steel = Vc 45 m/min

Acciaio da stampi = Vc 40 m/m
Mold Steel = Vc 40 m/min

3051A

Parametri di lavoro / Working Parameters



Alluminio e leghe = Vc 250 m/min
Aluminium & Alloys = Vc 250 m/min

Ghisa = Vc 190 m/min
Cast Iron = Vc 190 m/min

Acciaio < 800 N/mm² = Vc 145 m/min
Acciaio < 800 N/mm² = Vc 145 m/min

Acciaio < 1000 N/mm² = Vc 110 m/min
Steel < 1000 N/mm² = Vc 110 m/min

Acciaio < 1300 N/mm² = Vc 75 m/min
Steel < 1300 N/mm² = Vc 75 m/min

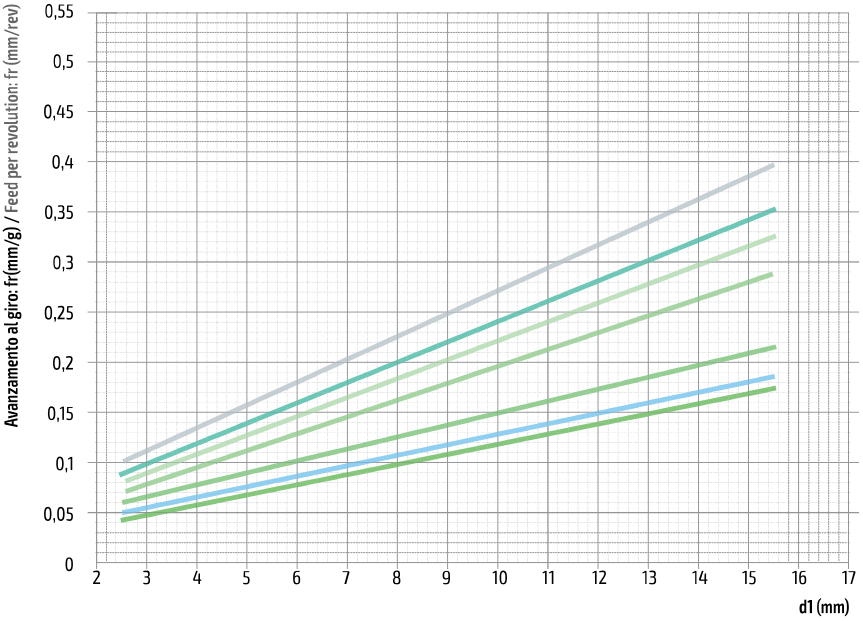
Acciaio inossidabile = Vc 55 m/min
Stainless Steel = Vc 55 m/min

Acciaio da stampi = Vc 45 m/min
Mold Steel = Vc 45 m/min

Notes

3081A

Parametri di lavoro / Working Parameters



Alluminio e leghe = Vc 200 m/min
Aluminium & Alloys = Vc 200 m/min

Ghisa = Vc 155 m/min
Cast Iron = Vc 155 m/min

Acciaio < 800 N/mm² = Vc 110 m/min
Steel < 800 N/mm² = Vc 110 m/min

Acciaio < 1000 N/mm² = Vc 90 m/min
Steel < 1000 N/mm² = Vc 90 m/min

Acciaio < 1300 N/mm² = Vc 55 m/min
Steel < 1300 N/mm² = Vc 55 m/min

Acciaio inossidabile = Vc 45 m/min
Stainless Steel = Vc 45 m/min

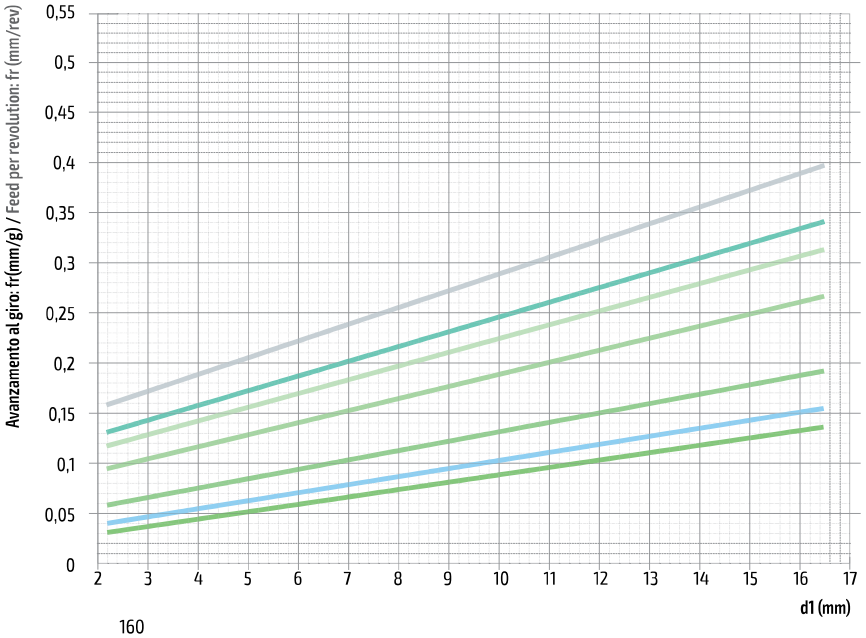
Acciaio da stampi = Vc 35 m/min
Mold Steel = Vc 35 m/min

Notes

PUNTE A GRADINO
STEP DRILLS

Scelta dell'utensile / Choice of the tool

		P	d1 (max)	d1 (Standard Material)	d1 (* Critical Material)
ISO	M4	0,70	3,42	3,30	3,40
	M5	0,80	4,33	4,20	4,30
	M6	1,00	5,15	5,00	5,10
	M8	1,25	6,91	6,80	6,90
	M10	1,50	8,68	8,50	8,65
	M12	1,75	10,44	10,25	10,40
UNC	1/4	20,00	5,26	5,10	-
	3/8	16,00	8,15	7,90	-
	1/2	13,00	11,02	10,50	-



Alluminio e leghe = Vc 160 m/min
Aluminium & Alloys = Vc 160 m/min

Ghisa = Vc 90 m/min
Cast Iron = Vc 90 m/min

Acciaio < 800 N/mm² = Vc 90 m/min
Acciaio < 800 N/mm² = Vc 90 m/min

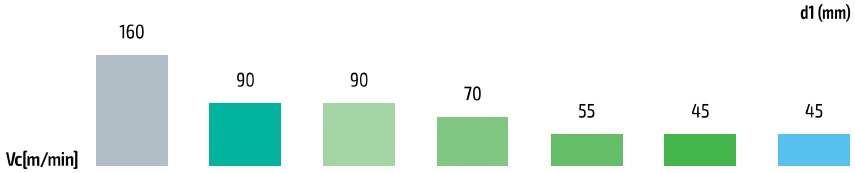
Acciaio < 1000 N/mm² = Vc 70 m/min
Steel < 1000 N/mm² = Vc 70 m/min

Materiali critici / Critical materials

Acciaio < 1300 N/mm² = Vc 45 m/min
Acciaio < 1300 N/mm² = Vc 45 m/min

Acciaio inossidabile = Vc 45 m/min
Stainless Steel = Vc 45 m/min

Acciaio da stampi = Vc 45 m/min
Mold Steel = Vc 34 m/min

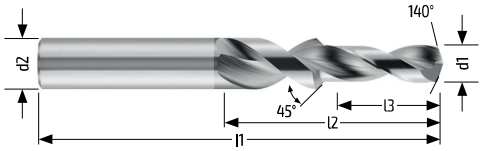


3825

Punta per prefori di maschiatura ad esecuzione dello smusso con fori di lubrificazione
Step drill for core drill sizes for taps with internal coolant

Silmax NORM | λ 30° | 2,5d1

1 2 4 5 7 8 9



Con fori di lubrificazione / With internal coolant

140°

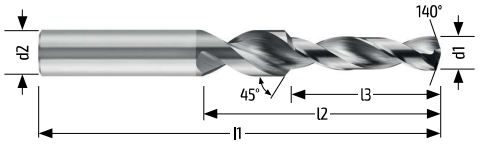
FIL ISO	FIL UNC	d1 m7	d2 h6	l1	l2	l3	Balinit® X-Pro
M4	-	3,30	6	64	23	10	HMX382510330
M4*	-	3,40	6	64	23	10	HMX382510340
M5	-	4,20	6	64	26	13	HMX382510420
M5*	-	4,30	6	64	26	13	HMX382510430
M6	-	5,00	8	74	32	15	HMX382510500
M6*	1/4-20	5,10	8	74	32	15	HMX382510510
M8	-	6,80	10	90	42	20	HMX382510680
M8*	-	6,90	10	90	42	20	HMX382510690
-	3/8-16	7,90	12	105	50	24	HMX382510790
M10	-	8,50	12	105	51	25	HMX382510850
M10*	-	8,65	12	105	51	25	HMX382510865
M12	-	10,25	14	107	60	30	HMX382511025
M12*	-	10,40	14	107	60	30	HMX382511040
-	1/2-13	10,50	14	120	62	32	HMX382511050

3835

Punta per prefori di maschiatura ad esecuzione dello smusso con fori di lubrificazione
Step drill for core drill sizes for taps with internal coolant

Silmax NORM | λ 30° | 3,5d1

1 2 4 5 7 8 9



Con fori di lubrificazione / With internal coolant

140°

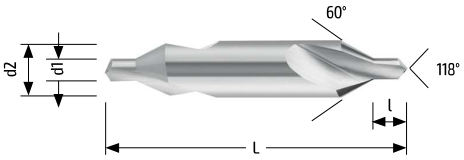
FIL ISO	FIL UNC	d1 m7	d2 h6	l1	l2	l3	Balinit® X-Pro
M4	-	3,30	6	64	27	14	HMX383510330
M4*	-	3,40	6	64	27	14	HMX383510340
M5	-	4,20	6	68	31	18	HMX383510420
M5*	-	4,30	6	68	31	18	HMX383510430
M6	-	5,00	8	78	38	21	HMX383510500
M6*	1/4-20	5,10	8	78	38	21	HMX383510510
M8	-	6,80	10	98	50	28	HMX383510680
M8*	-	6,90	10	98	50	28	HMX383510690
-	3/8 - 16	7,90	12	107	60	34	HMX383510790
M10	-	8,50	12	107	61	35	HMX383510850
M10*	-	8,65	12	107	61	35	HMX383510865
M12	-	10,25	14	120	72	42	HMX383511025
M12*	-	10,40	14	120	72	42	HMX383511040
-	1/2-13	10,50	14	127	75	45	HMX383511050

1	2	3	4	5	6	7	8	9		
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	→ 16 Guida alla lettura Reading guide	→ 18 Legenda Legend

PUNTE A CENTRARE
CENTER DRILLS

351

Punta a centrare
Center drill



DIN 333A | Form A | λ 0°

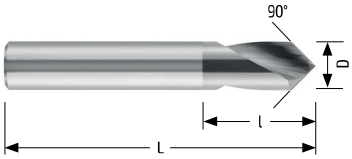
1 2 4 5 6 7 8 9

60°

d1 k12	d2 h6	L	l ap	Non rivestito Uncoated	Balinit Alcrona®
1,00	3,15	31	1,3-1,6	HM0351100	HMG351100
1,25	3,15	31	1,6-1,9	HM0351125	HMG351125
1,60	4,00	35	2,0-2,4	HM0351160	HMG351160
2,00	5,00	40	2,5-2,9	HM0351200	HMG351200
2,50	6,30	45	3,1-3,6	HM0351250	HMG351250
3,15	8,00	50	3,9-4,4	HM0351315	HMG351315
4,00	10,00	55	5,0-5,6	HM0351400	HMG351400
5,00	12,50	63	6,3-6,9	HM0351500	HMG351500

357

Punta a centrare
Center drill



ISO 10898 | λ 20°

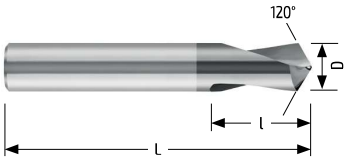
1 2 4 5 6 7 8 9

90°

D h6	L	l ap	Non rivestito Uncoated	Balinit Alcrona®
3,00	45	10,0	HM0357003	HMG357003
4,00	50	12,0	HM0357004	HMG357004
5,00	50	15,0	HM0357005	HMG357005
6,00	50	18,0	HM0357006	HMG357006
8,00	64	23,0	HM0357008	HMG357008
10,00	67	24,0	HM0357010	HMG357010
12,00	74	24,0	HM0357012	HMG357012
16,00	92	32,0	HM0357016	HMG357016

358

Punta a centrare
Center drill



ISO 10898 | λ 20°

1 2 4 5 6 7 8 9

120°

D h6	L	l ap	Non rivestito Uncoated	Balinit Alcrona®
3,00	45	10,0	HM0358003	HMG358003
4,00	50	12,0	HM0358004	HMG358004
5,00	50	15,0	HM0358005	HMG358005
6,00	50	18,0	HM0358006	HMG358006
8,00	64	23,0	HM0358008	HMG358008
10,00	67	24,0	HM0358010	HMG358010
12,00	74	24,0	HM0358012	HMG358012

1	2	3	4	5	6	7	8	9		
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	→ 16 Guida alla lettura Reading guide	→ 18 Legenda Legend

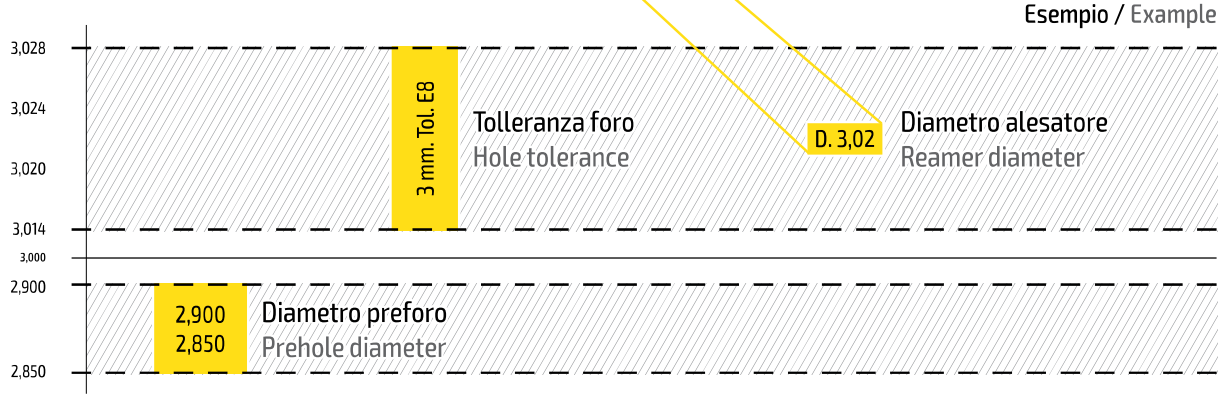
ALESATORI CENTESIMALI
REAMERS

503

Scelta dell'alesatore / Choice of the reamer

Toll.	D. 2 mm	D. 3 mm	D. 4 mm	D. 5 mm	D. 6 mm	D. 8 mm	D. 10 mm	D. 12 mm
D10	2,04	3,04	4,05	5,06	6,06	8,07	10,08	12,10
E8	2,02	3,02	4,03	5,03	6,03	8,03	10,03	12,04
E9	2,03	3,03	4,04	5,04	6,04	8,05	10,05	12,06
F7	2,01	3,01	4,01	5,01	6,01	8,02	10,02	12,02
F8	2,01	3,01	4,02	5,02	6,02	8,02	10,02	12,03
G7	-	-	-	-	-	8,01	10,01	12,01
H6	2,00	3,00	4,00	5,00	6,00	8,00	10,00	12,00
H7	-	-	-	-	-	-	-	-
H8	-	-	4,01	5,01	6,01	8,01	10,01	12,01
H9	2,01	3,01	4,02	5,02	6,02	8,02	10,02	12,03
M7	1,99	2,99	3,99	4,99	5,99	7,99	9,99	11,99
N7	1,99	2,99	3,99	4,99	5,99	7,98	9,98	11,98
P7	1,99	2,99	3,98	4,98	5,98	7,98	9,98	11,97
R7	1,98	2,98	3,98	4,98	5,98	7,98	9,98	11,97

Esempio / Example



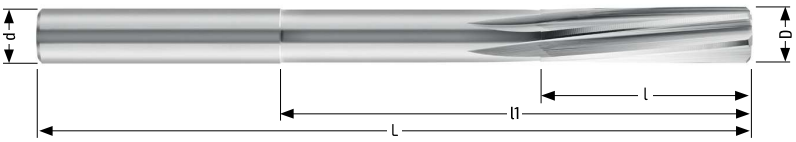
	Vc m/min	20-25	12-18	10-15	7-12	6-10	25-30	40-60
		Acciaio / Steel <800 N/mm²	Acciaio / Steel <1000 N/mm²	Acciaio / Steel <1300 N/mm²	Acciaio inossidabile Stainless Steel	Superleghe Superalloys	Rame e leghe Copper & Alloys	Alluminio e leghe Aluminium & Alloys
f/giro f/rpm	D.2 mm	0,10	0,08	0,08	0,07	0,07	0,12	0,15
	D.6 mm	0,12	0,10	0,09	0,08	0,10	0,18	0,18
	D.10 mm	0,18	0,15	0,14	0,12	0,12	0,20	0,25
	D.16 mm	0,18	0,20	0,18	0,15	0,15	0,25	0,30

503

Alesatore centesimale
Reamer

DIN 212B

1 2 4 5
6 7 8 9



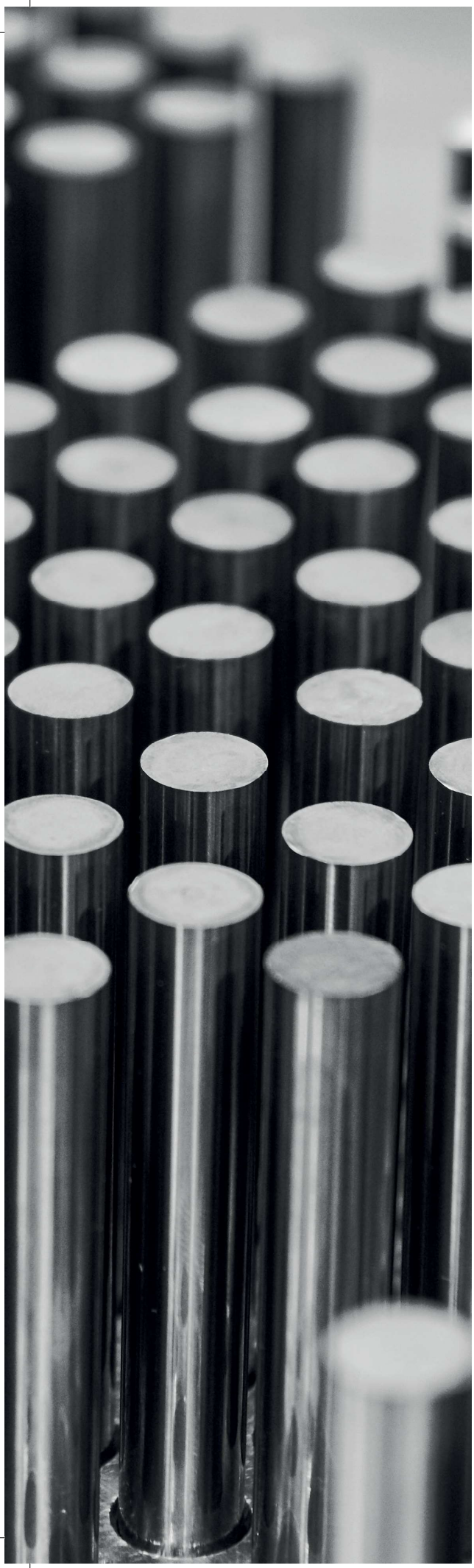
D	Tolerance h9	d	l	L	l1	Z	Non rivestito Uncoated	Balinit® Alcrona
0,90 ÷ 0,99 (× 0,01 mm)	+0,004/+0	D	8	40	-	4	HM0503...	HMG503...
1,00 ÷ 1,50 (× 0,01 mm)	+0,004/+0	D	8	40	-	4	HM0503...	HMG503...
1,51 ÷ 1,90 (× 0,01 mm)	+0,004/+0	D	9	43	-	4	HM0503...	HMG503...
1,91 ÷ 2,12 (× 0,01 mm)	+0,004/+0	2,0	11	49	26	4	HM0503...	HMG503...
2,13 ÷ 2,36 (× 0,01 mm)	+0,004/+0	2,0	12	53	-	4	HM0503...	HMG503...
2,37 ÷ 2,48 (× 0,01 mm)	+0,004/+0	2,3	14	57	-	4	HM0503...	HMG503...
2,49 ÷ 2,65 (× 0,01 mm)	+0,004/+0	2,5	14	57	-	4	HM0503...	HMG503...
2,66 ÷ 2,96 (× 0,01 mm)	+0,004/+0	2,5	15	61	-	4	HM0503...	HMG503...
2,97 ÷ 3,35 (× 0,01 mm)	+0,004/+0	3,0	16	65	40	4	HM0503...	HMG503...
3,36 ÷ 3,75 (× 0,01 mm)	+0,004/+0	3,5	18	70	45	4	HM0503...	HMG503...
3,76 ÷ 4,02 (× 0,01 mm)	+0,004/+0	4,0	19	75	46	6	HM0503...	HMG503...
4,03 ÷ 4,25 (× 0,01 mm)	+0,004/+0	4,0	19	80	46	6	HM0503...	HMG503...
4,26 ÷ 4,52 (× 0,01 mm)	+0,004/+0	4,5	21	80	46	6	HM0503...	HMG503...
4,53 ÷ 4,75 (× 0,01 mm)	+0,004/+0	5,0	21	86	51	6	HM0503...	HMG503...
4,76 ÷ 5,02 (× 0,01 mm)	+0,004/+0	5,0	23	86	51	6	HM0503...	HMG503...
5,03 ÷ 5,52 (× 0,01 mm)	+0,004/+0	5,5	26	93	56	6	HM0503...	HMG503...
5,53 ÷ 6,00 (× 0,01 mm)	+0,004/+0	6,0	26	93	56	6	HM0503...	HMG503...
6,01 ÷ 6,52 (× 0,01 mm)	+0,005/+0	6,0	28	100	63	6	HM0503...	HMG503...
6,53 ÷ 6,70 (× 0,01 mm)	+0,005/+0	6,0	28	100	63	6	HM0503...	HMG503...
6,71 ÷ 7,02 (× 0,01 mm)	+0,005/+0	7,0	31	109	68	6	HM0503...	HMG503...
7,03 ÷ 7,50 (× 0,01 mm)	+0,005/+0	7,0	31	109	68	6	HM0503...	HMG503...
7,51 ÷ 8,02 (× 0,01 mm)	+0,005/+0	8,0	33	117	74	6	HM0503...	HMG503...
8,03 ÷ 8,50 (× 0,01 mm)	+0,005/+0	8,0	33	117	74	6	HM0503...	HMG503...
8,51 ÷ 9,02 (× 0,01 mm)	+0,005/+0	9,0	36	125	80	6	HM0503...	HMG503...
9,03 ÷ 9,50 (× 0,01 mm)	+0,005/+0	9,0	36	125	80	6	HM0503...	HMG503...
9,51 ÷ 10,02 (× 0,01 mm)	+0,005/+0	10,0	38	133	86	6	HM0503...	HMG503...
10,03 ÷ 10,60 (× 0,01 mm)	+0,005/+0	10,0	38	133	86	6	HM0503...	HMG503...
10,61 ÷ 11,47 (× 0,01 mm)	+0,005/+0	10,0	41	142	95	6	HM0503...	HMG503...
11,48 ÷ 12,02 (× 0,01 mm)	+0,005/+0	12,0	44	150	103	6	HM0503...	HMG503...
12,03 ÷ 12,47 (× 0,01 mm)	+0,005/+0	12,0	44	151	104	6	HM0503...	HMG503...

Come ordinare (esempio) How to order (example)	Rivestimento Coating	Codice Code	Diametro Diameter	Codice per ordine Code to place order
	HMG	503	0403 (= 4,03mm)	HMG5030403

170 PHM Punte Alto Rendimento High Performance Drills
186 PHG Punte a Gradino Step Drills
188 PHC Punte a Centrare Center Drills
190 ALR Alesatori Centesimale Reamers

1 Acciaio Steel	2 Ghise Cast Iron	3 Acciai Temprati Hardened Steel	4 Acciaio Inox Stainless Steel	5 Titanio Titanium	6 Leghe Leggere Light Alloys	7 PH Duplex	8 Superleghe Superalloys	9 Compositi Composite Materials	→ 16 Guida alla lettura Reading guide	→ 18 Legenda Legend


D=Φ 10mm BT



ALTRO
OTHER PRODUCTS

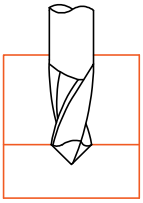
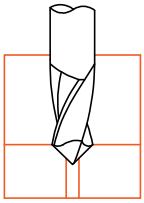
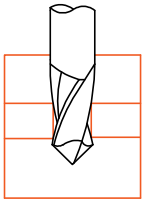
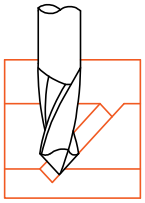
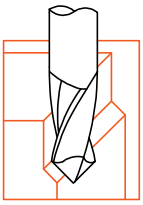
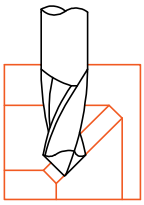
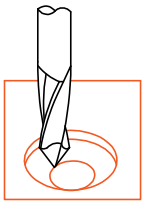
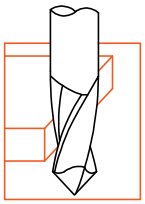
ALH Altre Frese Other Mills	Codice Code	Ø (D mm)	Pagina Page
	320	1,0 ÷ 10,0	195
	330	1,0 ÷ 10,0	195
	10G	r0,5 ÷ r2,5	196

LIM Lime Rotative Rotary Burrs	Codice Code	Ø (D mm)	197
	401	6,0 ÷ 16,0	198
	405	6,0 ÷ 16,0	199
	410	6,0 ÷ 16,0	200
	420	6,0 ÷ 16,0	201
	430	6,0 ÷ 16,0	202
	440	6,0 ÷ 16,0	203
	450	6,0 ÷ 16,0	204
	460	6,0 ÷ 16,0	205
	470	6,0 ÷ 16,0	206
	475	6,0 ÷ 16,0	207
	480	6,0 ÷ 16,0	208
	490	6,0 ÷ 12,0	209
	495	6,0 ÷ 12,0	210

BUL Bulini Burins	Codice Code	Ø (D mm)	211
	205	1,5 ÷ 3,0	211
	210	3,0 ÷ 16,0	211
	220	3,0 ÷ 16,0	211

ALTRE FRESE
OTHER MILLS

V Plus (320-330)

330 Centratura / Centering	320 330 Smusso / Chamfering	330 Foratura / Drilling	330 Cava a V / V-Grooving
			
320 330 Smusso longitudinale / Longitudinal chamfering	**320 330 Smusso longitudinale / Longitudinal chamfering**	**330 Foratura interpolata / Interpolation drilling**	**320 330 Contornitura / Contouring**
			

Suggerimenti per lavorare / Suggestions for machining

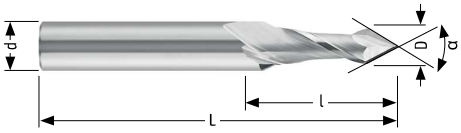
	m/min	Vc=55-100		
Acciaio < 800 N/mm² / Steel < 800 N/mm²	D mm	fz mm/z	fz mm/z	fz mm/z
Acciaio < 1000 N/mm² / Steel < 1000 N/mm²	3,0-4,0	0,050	0,050	0,008
	5,0-6,0	0,080	0,080	0,014
	8,0-10,0	0,140	0,140	0,025
	12,0	0,200	0,190	0,040
	m/min	Vc=40-60		
Acciaio < 1300 N/mm² / Steel < 1300 N/mm²	D mm	fz mm/z	fz mm/z	fz mm/z
Acciaio da stampi / Mold Steel	3,0-4,0	0,045	0,004	0,008
	5,0-6,0	0,070	0,006	0,013
	8,0-10,0	0,120	0,012	0,025
	12,0	0,180	0,016	0,040
	m/min	Vc=30-40		
Acciaio inossidabile / Stainless Steel	D mm	fz mm/z	fz mm/z	fz mm/z
Superleghe / Superalloys	3,0-4,0	0,040	0,003	0,008
	5,0-6,0	0,060	0,005	0,013
	8,0-10,0	0,110	0,010	0,025
	12,0	0,160	0,013	0,035
	m/min	Vc=70-160		
Rame e leghe / Copper & Alloys	D mm	fz mm/z	fz mm/z	fz mm/z
	3,0-4,0	0,100	0,008	0,010
	5,0-6,0	0,150	0,010	0,015
	8,0-10,0	0,250	0,017	0,030
	12,0	0,300	0,020	0,045
	m/min	Vc=210		
Alluminio e leghe Resina termoplastica / Aluminium & alloys Thermoplastics	D mm	fz mm/z	fz mm/z	fz mm/z
	3,0-4,0	0,050	0,008	0,008
	5,0-6,0	0,090	0,013	0,013
	8,0-10,0	0,160	0,023	0,030
	12,0	0,200	0,030	0,045

194 ALH Altre Frese Other Mills
197 LIM Lime Rotative Rotary Burrs
211 BUL Bulini Burrs

320

VPlus 60°

V Plus | Silmax NORM | λ 30°



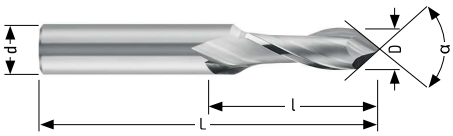
60°

D h9	d h6	L	l	α ±1°	Z	Non rivestito Uncoated	Balinit® Alcrona
1,0	3	39	2,0	60	2	HM0320010	HMG320010
2,0	3	39	4,0	60	2	HM0320020	HMG320020
3,0	4	50	6,0	60	2	HM0320030	HMG320030
4,0	5	50	8,0	60	2	HM0320040	HMG320040
5,0	6	50	10,0	60	2	HM0320050	HMG320050
6,0	8	60	12,0	60	2	HM0320060	HMG320060
8,0	10	70	16,0	60	2	HM0320080	HMG320080
10,0	12	70	18,0	60	2	HM0320100	HMG320100

330

VPlus 90°

V Plus | Silmax NORM | λ 30°



90°

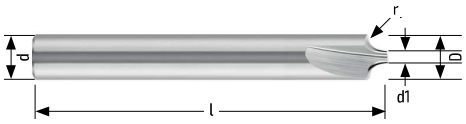
D h9	d h6	L	l	α ±1°	Z	Non rivestito Uncoated	Balinit® Alcrona
1,0	3	39	2,0	90	2	HM0330010	HMG330010
2,0	3	39	4,0	90	2	HM0330020	HMG330020
3,0	4	50	6,0	90	2	HM0330030	HMG330030
4,0	5	50	8,0	90	2	HM0330040	HMG330040
5,0	6	50	10,0	90	2	HM0330050	HMG330050
6,0	8	60	12,0	90	2	HM0330060	HMG330060
8,0	10	70	16,0	90	2	HM0330080	HMG330080
10,0	12	70	18,0	90	2	HM0330100	HMG330100

Notes

10G

Frese a quarto di cerchio
Quarter circle cutter

Silmax NORM | λ 0°



r ±0,02	D h6	d h6	d1	L	Z	Non rivestito Uncoated	Balinit® Alcrona
0,50	4,0	4	1,5	50	2	HM010G005	HMG10G005
0,60	4,0	4	1,5	50	2	HM010G006	HMG10G006
0,80	4,0	4	1,5	50	2	HM010G008	HMG10G008
1,00	4,0	4	1,5	50	2	HM010G101	HMG10G101
1,25	6,0	6	2,0	50	2	HM010G112	HMG10G112
1,50	6,0	6	2,0	50	2	HM010G115	HMG10G115
2,00	8,0	8	2,5	50	2	HM010G102	HMG10G102
2,50	8,0	8	2,5	50	2	HM010G125	HMG10G125

10G

Parametri di lavoro / Working Parameters

	m/min	Vc=130		
Acciaio <800 N/mm² Steel <800 N/mm²	D mm	fz mm/z	F mm/min	n rpm
	4,0	0,020	414	10345
	6,0	0,025	345	6897
	8,0	0,030	310	5173

	m/min	Vc=100		
Acciaio <1000 N/mm² Steel <1000 N/mm² Ghisa - Cast iron	D mm	fz mm/z	F mm/min	n rpm
	4,0	0,015	239	7958
	6,0	0,020	212	5305
	8,0	0,025	199	3979

	m/min	Vc=80		
Acciaio <1300 N/mm² Steel <1300 N/mm²	D mm	fz mm/z	F mm/min	n rpm
	4,0	0,010	102	5093
	6,0	0,015	102	3395
	8,0	0,020	102	2546

	m/min	Vc=60		
Acciaio inossidabile Stainless Steel	D mm	fz mm/z	F mm/min	n rpm
	4,0	0,010	95	4775
	6,0	0,015	95	3183
	8,0	0,020	95	2387

	m/min	Vc=60		
Titanio Titanium	D mm	fz mm/z	F mm/min	n rpm
	4,0	0,010	95	4775
	6,0	0,015	95	3183
	8,0	0,020	95	2387

	m/min	Vc=160		
Rame e leghe Copper & Alloys	D mm	fz mm/z	F mm/min	n rpm
	4,0	0,015	382	12732
	6,0	0,020	340	8488
	8,0	0,025	318	6366

	m/min	Vc=180		
Alluminio e leghe Aluminium & Alloys	D mm	fz mm/z	F mm/min	n rpm
	4,0	0,010	286	14324
	6,0	0,015	286	9549
	8,0	0,020	286	7162

Notes

194
ALH
Altre Frese
Other Mills
197
LIM
Lime Rotative
Rotary Burrs
211
BUL
Bulini
Burrs

LIME ROTATIVE
ROTARY BURRS

Suggerimenti per lavorare / Suggestions for machining

Materiale Material	Double Cut (0)	Alu Cut (A)	Single Cut (S)	Diamond Cut (D)
Alluminio, leghe leggere / Aluminium, Soft Alloys	-	●	-	-
Bronzo, Ottone, Rame / Bronze, Brass, Copper	●	-	-	-
Carbonio / Carbon	●	-	●	●
Ghisa / Cast Iron	●	-	●	-
Leghe di Magnesio / Magnesium Alloys	●	●	●	-
Masonite / Masonite	-	-	-	●
Materie plastiche / Plastics	●	●	-	-
Gomma / Hard Rubber	-	●	-	-
Acciai al carbonio / Steel Carbon	●	-	●	-
Acciai legati ≤ 52 HRC / Steel Alloy ≤ 52 HRC	●	-	●	-
Acciai legati ≤ 58 HRC / Steel Alloy ≤ 58 HRC	●	-	-	●
Acciaio da stampi / Mold Steel	●	-	●	-
Acciaio inossidabile / Stainless Steel	●	-	●	●
Acciaio saldato / Steel Weldments	●	-	●	-
Leghe di titanio / Titanium Alloys	●	-	●	●
Leghe di zinco / Zinc Alloys	-	-	●	-

Suggerimenti per lavorare / Suggestions for machining

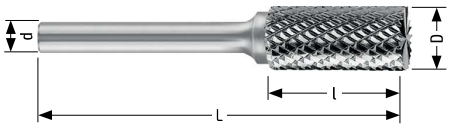
	D mm	n min	n max
Acciaio < 800 N/mm² / Steel < 800 N/mm² Acciaio < 1000 N/mm² / Steel < 1000 N/mm²	6,0	45.000	60.000
	8,0	35.000	50.000
	10,0	30.000	40.000
	12,0	22.000	30.000
	16,0	18.000	24.000
	D mm	**n** min	**n** max
Acciaio < 1300 N/mm² / Steel < 1300 N/mm² Rame e leghe / Copper & Alloys	6,0	30.000	60.000
	8,0	24.000	50.000
	10,0	19.000	40.000
	12,0	15.000	30.000
	16,0	12.000	24.000
	D mm	**n** min	**n** max
Acciaio da stampi / Mold Steel Acciaio inossidabile / Stainless Steel	6,0	15.000	45.000
	8,0	12.000	35.000
	10,0	10.000	30.000
	12,0	7.000	22.000
	16,0	6.000	18.000
	D mm	**n** min	**n** max
Alluminio e leghe / Aluminium & Alloys Resina termoplastica / Thermoplastics	6,0	22.000	70.000
	8,0	18.000	60.000
	10,0	15.000	50.000
	12,0	11.000	38.000
	16,0	9.000	30.000

401

Lima cilindrica
Cylindrical shape rotary burr

ZYA

DIN 8033



	D ± 0,1	d h7	L	l	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	16,0	HM04016060	HMG4016060
	8,0	6	65	18,0	HM04016080	HMG4016080
	10,0	6	65	20,0	HM04016100	HMG4016100
	12,0	6	70	25,0	HM04016120	HMG4016120
	16,0	8	70	25,0	HM04018160	HMG4018160
 Alu Cut (A)	6,0	6	50	16,0	HM0401606A	HMG401606A
	8,0	6	65	18,0	HM0401608A	HMG401608A
	10,0	6	65	20,0	HM0401610A	HMG401610A
	12,0	6	70	25,0	HM0401612A	HMG401612A
	16,0	8	70	25,0	HM0401816A	HMG401816A
 Single Cut (S)	6,0	6	50	16,0	HM0401606S	HMG401606S
	8,0	6	65	18,0	HM0401608S	HMG401608S
	10,0	6	65	20,0	HM0401610S	HMG401610S
	12,0	6	70	25,0	HM0401612S	HMG401612S
	16,0	8	70	25,0	HM0401816S	HMG401816S
 Diamond Cut (D)	6,0	6	50	16,0	HM0401606D	HMG401606D
	8,0	6	65	18,0	HM0401608D	HMG401608D
	10,0	6	65	20,0	HM0401610D	HMG401610D
	12,0	6	70	25,0	HM0401612D	HMG401612D
	16,0	8	70	25,0	HM0401816D	HMG401816D

Notes

194
ALH
Altre Frese
Other Mills

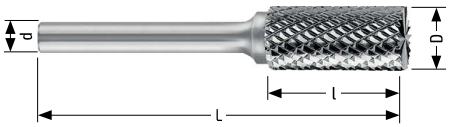
197
LIM
Lime Rotative
Rotary Burrs

211
BUL
Bulini
Burrs

405

Lima cilindrica testa affilata
Cylindrical shape rotary burr, sharpened end

ZYA (S)
DIN 8033



	D ± 0,1	d h7	L	l	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	16,0	HM04056060	HMG4056060
	8,0	6	65	18,0	HM04056080	HMG4056080
	10,0	6	65	20,0	HM04056100	HMG4056100
	12,0	6	70	25,0	HM04056120	HMG4056120
	16,0	8	70	25,0	HM04058160	HMG4058160
 Alu Cut (A)	6,0	6	50	16,0	HM0405606A	HMG405606A
	8,0	6	65	18,0	HM0405608A	HMG405608A
	10,0	6	65	20,0	HM0405610A	HMG405610A
	12,0	6	70	25,0	HM0405612A	HMG405612A
	16,0	8	70	25,0	HM0405816A	HMG405816A
 Single Cut (S)	6,0	6	50	16,0	HM0405606S	HMG405606S
	8,0	6	65	18,0	HM0405608S	HMG405608S
	10,0	6	65	20,0	HM0405610S	HMG405610S
	12,0	6	70	25,0	HM0405612S	HMG405612S
	16,0	8	70	25,0	HM0405816S	HMG405816S
 Diamond Cut (D)	6,0	6	50	16,0	HM0405606D	HMG405606D
	8,0	6	65	18,0	HM0405608D	HMG405608D
	10,0	6	65	20,0	HM0405610D	HMG405610D
	12,0	6	70	25,0	HM0405612D	HMG405612D
	16,0	8	70	25,0	HM0405816D	HMG405816D

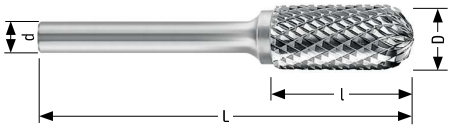
Notes

410

Lima cilindrica testa sferica
Cylindrical shape rotary burr, radius end

WRC

DIN 8033



	D ± 0,1	d h7	L	l	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	16,0	HM04106060	HMG4106060
	8,0	6	65	18,0	HM04106080	HMG4106080
	10,0	6	65	20,0	HM04106100	HMG4106100
	12,0	6	70	25,0	HM04106120	HMG4106120
	16,0	8	70	25,0	HM04108160	HMG4108160
 Alu Cut (A)	6,0	6	50	16,0	HM0410606A	HMG410606A
	8,0	6	65	18,0	HM0410608A	HMG410608A
	10,0	6	65	20,0	HM0410610A	HMG410610A
	12,0	6	70	25,0	HM0410612A	HMG410612A
	16,0	8	70	25,0	HM0410816A	HMG410816A
 Single Cut (S)	6,0	6	50	16,0	HM0410606S	HMG410606S
	8,0	6	65	18,0	HM0410608S	HMG410608S
	10,0	6	65	20,0	HM0410610S	HMG410610S
	12,0	6	70	25,0	HM0410612S	HMG410612S
	16,0	8	70	25,0	HM0410816S	HMG410816S
 Diamond Cut (D)	6,0	6	50	16,0	HM0410606D	HMG410606D
	8,0	6	65	18,0	HM0410608D	HMG410608D
	10,0	6	65	20,0	HM0410610D	HMG410610D
	12,0	6	70	25,0	HM0410612D	HMG410612D
	16,0	8	70	25,0	HM0410816D	HMG410816D

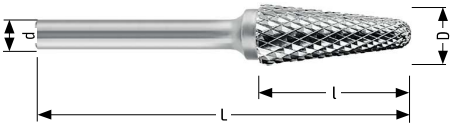
Notes

194 ALH Altre Frese Other Mills
197 LIM Lime Rotative Rotary Burrs
211 BUL Bulini Burrs

420

Lima conica testa sferica
Conical shape rotary burr, radius end

KEL | DIN 8033 | α R



	D ± 0,1	d h7	L	l	R	α	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	20,0	1,5	10°	HM04206060	HMG4206060
	8,0	6	65	20,0	1,5	14°	HM04206080	HMG4206080
	10,0	6	65	20,0	2,9	14°	HM04206100	HMG4206100
	12,0	6	75	30,0	2,6	14°	HM04206120	HMG4206120
	16,0	8	83	38,0	4,8	14°	HM04208160	HMG4208160
 Alu Cut (A)	6,0	6	50	20,0	1,5	10°	HM0420606A	HMG420606A
	8,0	6	65	20,0	1,5	14°	HM0420608A	HMG420608A
	10,0	6	65	20,0	2,9	14°	HM0420610A	HMG420610A
	12,0	6	75	30,0	2,6	14°	HM0420612A	HMG420612A
	16,0	8	83	38,0	4,8	14°	HM0420816A	HMG420816A
 Single Cut (S)	6,0	6	50	20,0	1,5	10°	HM0420606S	HMG420606S
	8,0	6	65	20,0	1,5	14°	HM0420608S	HMG420608S
	10,0	6	65	20,0	2,9	14°	HM0420610S	HMG420610S
	12,0	6	75	30,0	2,6	14°	HM0420612S	HMG420612S
	16,0	8	83	38,0	4,8	14°	HM0420816S	HMG420816S
 Diamond Cut (D)	6,0	6	50	20,0	1,5	10°	HM0420606D	HMG420606D
	8,0	6	65	20,0	1,5	14°	HM0420608D	HMG420608D
	10,0	6	65	20,0	2,9	14°	HM0420610D	HMG420610D
	12,0	6	75	30,0	2,6	14°	HM0420612D	HMG420612D
	16,0	8	83	38,0	4,8	14°	HM0420816D	HMG420816D

Notes

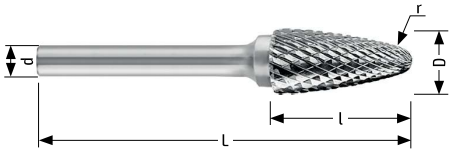
430

Lima a ogiva testa sferica

Tree shape rotary burr, radius end

RBF

DIN 8033



	D ± 0,1	d h7	L	l	R	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	18,0	1,5	HM04306060	HMG4306060
	8,0	6	65	20,0	1,8	HM04306080	HMG4306080
	10,0	6	65	20,0	2,5	HM04306100	HMG4306100
	12,0	6	70	25,0	2,5	HM04306120	HMG4306120
	16,0	8	73	28,0	3,6	HM04308160	HMG4308160
 Alu Cut (A)	6,0	6	50	18,0	1,5	HM0430606A	HMG430606A
	8,0	6	65	20,0	1,8	HM0430608A	HMG430608A
	10,0	6	65	20,0	2,5	HM0430610A	HMG430610A
	12,0	6	70	25,0	2,5	HM0430612A	HMG430612A
	16,0	8	73	28,0	3,6	HM0430816A	HMG430816A
 Single Cut (S)	6,0	6	50	18,0	1,5	HM0430606S	HMG430606S
	8,0	6	65	20,0	1,8	HM0430608S	HMG430608S
	10,0	6	65	20,0	2,5	HM0430610S	HMG430610S
	12,0	6	70	25,0	2,5	HM0430612S	HMG430612S
	16,0	8	73	28,0	3,6	HM0430816S	HMG430816S
 Diamond Cut (D)	6,0	6	50	18,0	1,5	HM0430606D	HMG430606D
	8,0	6	65	20,0	1,8	HM0430608D	HMG430608D
	10,0	6	65	20,0	2,5	HM0430610D	HMG430610D
	12,0	6	70	25,0	2,5	HM0430612D	HMG430612D
	16,0	8	73	28,0	3,6	HM0430816D	HMG430816D

Notes

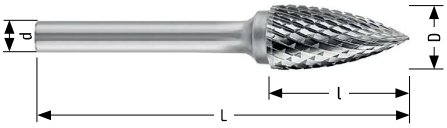
194
ALH
Altre Frese
Other Mills
197
LIM
Lime Rotative
Rotary Burrs
211
BUL
Bulini
Burrs

440

Lima a ogiva
Tree shape rotary burr

SPG

DIN 8033



	D ± 0,1	d h7	L	l	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	18,0	HM04406060	HMG4406060
	8,0	6	65	20,0	HM04406080	HMG4406080
	10,0	6	65	20,0	HM04406100	HMG4406100
	12,0	6	70	25,0	HM04406120	HMG4406120
	16,0	8	75	30,0	HM04408160	HMG4408160
 Alu Cut (A)	6,0	6	50	18,0	HM0440606A	HMG440606A
	8,0	6	65	20,0	HM0440608A	HMG440608A
	10,0	6	65	20,0	HM0440610A	HMG440610A
	12,0	6	70	25,0	HM0440612A	HMG440612A
	16,0	8	75	30,0	HM0440816A	HMG440816A
 Single Cut (S)	6,0	6	50	18,0	HM0440606S	HMG440606S
	8,0	6	65	20,0	HM0440608S	HMG440608S
	10,0	6	65	20,0	HM0440610S	HMG440610S
	12,0	6	70	25,0	HM0440612S	HMG440612S
	16,0	8	75	30,0	HM0440816S	HMG440816S
 Diamond Cut (D)	6,0	6	50	18,0	HM0440606D	HMG440606D
	8,0	6	65	20,0	HM0440608D	HMG440608D
	10,0	6	65	20,0	HM0440610D	HMG440610D
	12,0	6	70	25,0	HM0440612D	HMG440612D
	16,0	8	75	30,0	HM0440816D	HMG440816D

Notes

450

Lima conica
Cone shape rotary burr

SKM | DIN 8033 | α

	D ± 0,1	d h7	L	l	α	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	18,0	19	HM04506060	HMG4506060
	8,0	6	65	20,0	22	HM04506080	HMG4506080
	10,0	6	65	20,0	28	HM04506100	HMG4506100
	12,0	6	70	25,0	27	HM04506120	HMG4506120
	16,0	8	70	25,0	35	HM04508160	HMG4508160
 Alu Cut (A)	6,0	6	50	18,0	19	HM0450606A	HMG450606A
	8,0	6	65	20,0	22	HM0450608A	HMG450608A
	10,0	6	65	20,0	28	HM0450610A	HMG450610A
	12,0	6	70	25,0	27	HM0450612A	HMG450612A
	16,0	8	70	25,0	35	HM0450816A	HMG450816A
 Single Cut (S)	6,0	6	50	18,0	19	HM0450606S	HMG450606S
	8,0	6	65	20,0	22	HM0450608S	HMG450608S
	10,0	6	65	20,0	28	HM0450610S	HMG450610S
	12,0	6	70	25,0	27	HM0450612S	HMG450612S
	16,0	8	70	25,0	35	HM0450816S	HMG450816S
 Diamond Cut (D)	6,0	6	50	18,0	19	HM0450606D	HMG450606D
	8,0	6	65	20,0	22	HM0450608D	HMG450608D
	10,0	6	65	20,0	28	HM0450610D	HMG450610D
	12,0	6	70	25,0	27	HM0450612D	HMG450612D
	16,0	8	70	25,0	35	HM0450816D	HMG450816D

Notes

194
ALH
Altre Frese
Other Mills
197
LIM
Lime Rotative
Rotary Burrs
211
BUL
Bulini
Burrs

460

Lima ovale
Oval shape rotary burr

TRE

DIN 8033

	D ± 0,1	d h7	L	l	R	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	9,0	2,8	HM04606060	HMG4606060
	8,0	6	59	14,0	3,7	HM04606080	HMG4606080
	10,0	6	61	16,0	4,0	HM04606100	HMG4606100
	12,0	6	66	21,0	5,0	HM04606120	HMG4606120
	16,0	8	70	25,0	6,5	HM04608160	HMG4608160
 Alu Cut (A)	6,0	6	50	9,0	2,8	HM0460606A	HMG460606A
	8,0	6	59	14,0	3,7	HM0460608A	HMG460608A
	10,0	6	61	16,0	4,0	HM0460610A	HMG460610A
	12,0	6	66	21,0	5,0	HM0460612A	HMG460612A
	16,0	8	70	25,0	6,5	HM0460816A	HMG460816A
 Single Cut (S)	6,0	6	50	9,0	2,8	HM0460606S	HMG460606S
	8,0	6	59	14,0	3,7	HM0460608S	HMG460608S
	10,0	6	61	16,0	4,0	HM0460610S	HMG460610S
	12,0	6	66	21,0	5,0	HM0460612S	HMG460612S
	16,0	8	70	25,0	6,5	HM0460816S	HMG460816S
 Diamond Cut (D)	6,0	6	50	9,0	2,8	HM0460606D	HMG460606D
	8,0	6	59	14,0	3,7	HM0460608D	HMG460608D
	10,0	6	61	16,0	4,0	HM0460610D	HMG460610D
	12,0	6	66	21,0	5,0	HM0460612D	HMG460612D
	16,0	8	70	25,0	6,5	HM0460816D	HMG460816D

Notes

470

Lima conica 90°
90° Cone shape rotary burr

KSK | DIN 8033 | 90°

	D ± 0,1	d h7	L	l	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	3,0	HM04706060	HMG4706060
	10,0	6	54	5,0	HM04706100	HMG4706100
	16,0	6	59	8,0	HM04706160	HMG4706160
 Alu Cut (A)	6,0	6	50	3,0	HM0470606A	HMG470606A
	10,0	6	54	5,0	HM0470610A	HMG470610A
	16,0	6	59	8,0	HM0470616A	HMG470616A
 Single Cut (S)	6,0	6	50	3,0	HM0470606S	HMG470606S
	10,0	6	54	5,0	HM0470610S	HMG470610S
	16,0	6	59	8,0	HM0470616S	HMG470616S
 Diamond Cut (D)	6,0	6	50	3,0	HM0470606D	HMG470606D
	10,0	6	54	5,0	HM0470610D	HMG470610D
	16,0	6	59	8,0	HM0470616D	HMG470616D

Notes

194
ALH
Altre Frese
Other Mills
197
LIM
Lime Rotative
Rotary Burrs
211
BUL
Bulini
Burrs

475

Lima conica 60°
60° Cone shape rotary burr

KSJ | DIN 8033 | 60°

	D ± 0,1	d h7	L	l	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	5,0	HM04756060	HMG4756060
	10,0	6	57	8,5	HM04756100	HMG4756100
	16,0	6	64	13,8	HM04756160	HMG4756160
 Alu Cut (A)	6,0	6	50	5,0	HM0475606A	HMG475606A
	10,0	6	57	8,5	HM0475610A	HMG475610A
	16,0	6	64	13,8	HM0475616A	HMG475616A
 Single Cut (S)	6,0	6	50	5,0	HM0475606S	HMG475606S
	10,0	6	57	8,5	HM0475610S	HMG475610S
	16,0	6	64	13,8	HM0475616S	HMG475616S
 Diamond Cut (D)	6,0	6	50	5,0	HM0475606D	HMG475606D
	10,0	6	57	8,5	HM0475610D	HMG475610D
	16,0	6	64	13,8	HM0475616D	HMG475616D

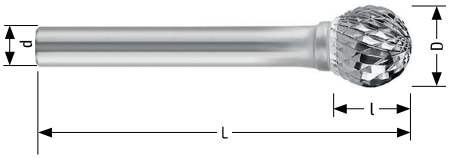
Notes

480

Lima sferica
Ball shape rotary burr

KUD

DIN 8033



	D ± 0,1	d h7	L	l	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	5,0	HM04806060	HMG4806060
	8,0	6	52	7,0	HM04806080	HMG4806080
	10,0	6	54	9,0	HM04806100	HMG4806100
	12,0	6	56	11,0	HM04806120	HMG4806120
	16,0	8	60	15,0	HM04808160	HMG4808160
 Alu Cut (A)	6,0	6	50	5,0	HM0480606A	HMG480606A
	8,0	6	52	7,0	HM0480608A	HMG480608A
	10,0	6	54	9,0	HM0480610A	HMG480610A
	12,0	6	56	11,0	HM0480612A	HMG480612A
	16,0	8	60	15,0	HM0480816A	HMG480816A
 Single Cut (S)	6,0	6	50	5,0	HM0480606S	HMG480606S
	8,0	6	52	7,0	HM0480608S	HMG480608S
	10,0	6	54	9,0	HM0480610S	HMG480610S
	12,0	6	56	11,0	HM0480612S	HMG480612S
	16,0	8	60	15,0	HM0480816S	HMG480816S
 Diamond Cut (D)	6,0	6	50	5,0	HM0480606D	HMG480606D
	8,0	6	52	7,0	HM0480608D	HMG480608D
	10,0	6	54	9,0	HM0480610D	HMG480610D
	12,0	6	56	11,0	HM0480612D	HMG480612D
	16,0	8	60	15,0	HM0480816D	HMG480816D

Notes

194
ALH
Altre Frese
Other Mills

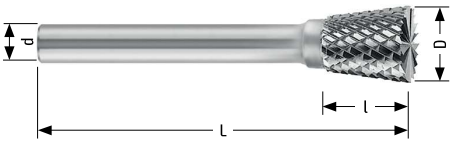
197
LIM
Lime Rotative
Rotary Burrs

211
BUL
Bulini
Burrs

490

Lima conica
Inverted cone shape rotary burr

WKN | DIN 8033 | α



	D ± 0,1	d h7	L	l	α	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	7,0	10	HM04906060	HMG4906060
	8,0	6	53	8,0	10	HM04906080	HMG4906080
	10,0	6	55	13,0	10	HM04906100	HMG4906100
	12,0	6	57	13,0	20	HM04906120	HMG4906120
 Alu Cut (A)	6,0	6	50	7,0	10	HM0490606A	HMG490606A
	8,0	6	53	8,0	10	HM0490608A	HMG490608A
	10,0	6	55	13,0	10	HM0490610A	HMG490610A
	12,0	6	57	13,0	20	HM0490612A	HMG490612A
 Single Cut (S)	6,0	6	50	7,0	10	HM0490606S	HMG490606S
	8,0	6	53	8,0	10	HM0490608S	HMG490608S
	10,0	6	55	13,0	10	HM0490610S	HMG490610S
	12,0	6	57	13,0	20	HM0490612S	HMG490612S
 Diamond Cut (D)	6,0	6	50	7,0	10	HM0490606D	HMG490606D
	8,0	6	53	8,0	10	HM0490608D	HMG490608D
	10,0	6	55	13,0	10	HM0490610D	HMG490610D
	12,0	6	57	13,0	20	HM0490612D	HMG490612D

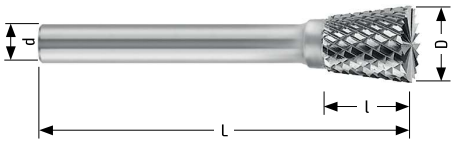
Notes

495

Lima conica testa affilata

Inverted cone shape rotary burr, sharpened end

WKN (S) DIN 8033 α



	D ± 0,1	d h7	L	l	α	Non rivestito Uncoated	Balinit® Alcrona
 Double Cut (0)	6,0	6	50	7,0	10	HM04956060	HMG4956060
	8,0	6	53	8,0	10	HM04956080	HMG4956080
	10,0	6	55	13,0	10	HM04956100	HMG4956100
	12,0	6	57	13,0	20	HM04956120	HMG4956120
 Alu Cut (A)	6,0	6	50	7,0	10	HM0495606A	HMG495606A
	8,0	6	53	8,0	10	HM0495608A	HMG495608A
	10,0	6	55	13,0	10	HM0495610A	HMG495610A
	12,0	6	57	13,0	20	HM0495612A	HMG495612A
 Single Cut (S)	6,0	6	50	7,0	10	HM0495606S	HMG495606S
	8,0	6	53	8,0	10	HM0495608S	HMG495608S
	10,0	6	55	13,0	10	HM0495610S	HMG495610S
	12,0	6	57	13,0	20	HM0495612S	HMG495612S
 Diamond Cut (D)	6,0	6	50	7,0	10	HM0495606D	HMG495606D
	8,0	6	53	8,0	10	HM0495608D	HMG495608D
	10,0	6	55	13,0	10	HM0495610D	HMG495610D
	12,0	6	57	13,0	20	HM0495612D	HMG495612D

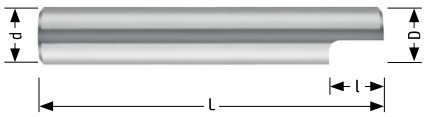
Notes

194
ALH
Altre Frese
Other Mills

197
LIM
Lime Rotative
Rotary Burrs

211
BUL
Bulini
Burins

BULINI
BURINS



205

Bulino
Burin

210
220

D h7	d	L	l	Non rivestito Uncoated
1,5	4,0	51	3,0	HM0205030
2,0	5,0	51	4,0	HM0205040
2,5	7,0	51	5,0	HM0205050
3,0	8,0	57	6,0	HM0205060

210

Bulino
Burin

205
220

D h7	d	L	l	Non rivestito Uncoated
3,0	1,5	100	4,0	HM0210030
4,0	2,0	100	5,0	HM0210040
5,0	2,5	100	7,0	HM0210050
6,0	3,0	100	8,0	HM0210060
7,0	3,5	100	8,0	HM0210070
8,0	4,0	100	10,0	HM0210080
9,0	4,5	100	10,0	HM0210090
10,0	5,0	100	13,0	HM0210100
12,0	6,0	100	16,0	HM0210120
14,0	7,0	100	18,0	HM0210140
16,0	8,0	110	20,0	HM0210160

220

Bulino
Burin

205
210

D h7	d	L	l	Non rivestito Uncoated
3,0	1,5	150	4,0	HM0220030
4,0	2,0	150	5,0	HM0220040
5,0	2,5	150	7,0	HM0220050
6,0	3,0	150	8,0	HM0220060
7,0	3,5	150	8,0	HM0220070
8,0	4,0	150	10,0	HM0220080
9,0	4,5	150	10,0	HM0220090
10,0	5,0	150	13,0	HM0220100
12,0	6,0	150	16,0	HM0220120
14,0	7,0	150	18,0	HM0220140
16,0	8,0	150	20,0	HM0220160

HSS

FRESE / END MILLS

PM Frese in Acciaio Sinterizzato
Powder Metal End Mills

Codice Code	Ø (D mm)	Z	Cava Slotting	Contornitura Side and face milling	Copiatura 3D 3D Copy	Assiale Plunging
038A	6,0 ÷ 25,0	4	●	●	-	-
013S	5,0 ÷ 32,0	4/6	●	●	-	-
013A	5,0 ÷ 40,0	4/6	●	●	-	-
041A	4,0 ÷ 36,0	3/4	●	●	-	●
093A	6,0 ÷ 25,0	4	●	●	-	-
023A	6,0 ÷ 32,0	4/6	●	●	-	-
113A	6,0 ÷ 32,0	4/6	-	●	-	-
118A	4,0 ÷ 32,0	4/6	-	●	-	-
193A	6,0 ÷ 25,0	4	-	●	-	-
123A	6,0 ÷ 25,0	4	-	●	-	-

SGR Frese a Sgrossare in HSSCo8
Roughing End Mills in HSSCo8

Codice Code	Ø (D mm)	Z				
038F	5,0 ÷ 32,0	4-6	●	●	-	-
011F	6,0 ÷ 40,0	3	●	●	-	●
015	6,0 ÷ 32,0	3	●	●	-	●
013	6,0 ÷ 40,0	4/6	●	●	-	-
013F	4,5 ÷ 50,0	4/6	●	●	-	-
013R	16,0 ÷ 50,0	4/6	●	●	-	-
031F	6,0 ÷ 32,0	3/4/6	●	●	●	-
093F	6,0 ÷ 32,0	4/6	●	●	-	-
023F	6,0 ÷ 40,0	4/6	●	●	-	-
025	6,0 ÷ 40,0	3	●	●	-	●
052F	16,0 ÷ 40,0	4/6	●	●	-	-
060B	16,0 ÷ 50,0	4/5/6	●	●	-	-
075F	16,0 ÷ 50,0	3	●	●	●	-

Acciaio Steel	Ghise Cast iron	Acciai Temprati Hardened steels	Acciaio Inox Stainless steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Pagina Page
1	2	3	4	5	6	7	8	9	221
●	●	-	●	●	-	●	-	-	222
●	●	-	●	●	-	●	-	-	222
●	●	-	●	●	-	●	-	-	223
●	●	-	●	●	-	●	-	-	224
●	●	-	●	●	-	●	-	-	225
●	●	-	●	●	-	●	-	-	225
●	●	-	●	●	-	●	-	-	226
●	●	-	●	●	-	●	-	-	226
●	●	-	●	●	-	●	-	-	227
●	●	-	●	●	-	●	-	-	227

1	2	3	4	5	6	7	8	9	231
●	●	-	-	-	-	-	-	-	232
●	●	-	-	-	-	-	-	-	233
-	-	-	-	-	●	-	-	-	233
●	●	-	-	-	-	-	-	-	234
●	●	-	-	-	-	-	-	-	235
●	●	-	-	-	-	-	-	-	236
●	●	-	-	-	-	-	-	-	236
●	●	-	-	-	-	-	-	-	237
●	●	-	-	-	-	-	-	-	237
-	-	-	-	-	●	-	-	-	238
●	●	-	-	-	-	-	-	-	238
●	●	-	-	-	-	-	-	-	239
●	●	-	-	-	-	-	-	-	239

FIN Frese a Finire in HSSCo8
Finishing End Mills in HSSCo8

Codice Code	Ø (D mm)	Z	Cava Slotting	Contornitura Side and face milling	Copiatura 3D 3D Copy	Assiale Plunging
731	1,5 ÷ 40,0	2	●	-	-	●
735	1,5 ÷ 20,0	2	●	●	-	●
730	0,5 ÷ 5,5	2	●	-	-	●
108	1,0 ÷ 20,0	3	●	●	-	●
138	5,0 ÷ 32,0	4/6	-	●	-	-
171	1,5 ÷ 40,0	2	●	●	-	●
173	4,0 ÷ 25,0	2	●	●	-	●
111	1,5 ÷ 32	3	●	●	-	●
115	6,0 ÷ 50,0	3	-	●	-	●
113	1,5 ÷ 50,0	4/6	-	●	-	-
113R	16,0 ÷ 25,0	4	-	●	-	-
118	4,0 ÷ 32,0	4/6	-	●	-	-
738	2,0 ÷ 20,0	2	-	●	●	-
737	0,5 ÷ 20,0	2	-	●	●	-
131	6 ÷ 32,0	4/6	-	●	●	-
121	6,0 ÷ 25,0	4/6	-	●	-	-
193	6,0 ÷ 32,0	4/6	-	●	-	-
1712	6,0 ÷ 40,0	2	-	●	-	●
174	6,0 ÷ 25,0	2	-	●	-	●
128	3,0 ÷ 20,0	3	-	●	-	●
125	6,0 ÷ 40,0	3	-	●	-	●
123	6,0 ÷ 50,0	4/6	-	●	-	-
145	6,0 ÷ 25,0	4	-	●	-	-
146	6,0 ÷ 20,0	2	-	●	-	●
148	6,0 ÷ 20,0	2	-	●	●	-
750	10,0 ÷ 40,0	2	●	●	-	●
152	16,0 ÷ 45,0	4/6	-	●	-	-
160	16,0 ÷ 50,0	4/5/6/8	-	●	-	-

Acciaio Steel 1	Ghise Cast iron 2	Acciai Temprati Hardened steels 3	Acciaio Inox Stainless steel 4	Titanio Titanium 5	Leghe Leggere Light Alloys 6	PH Duplex 7	Superleghe Superalloys 8	Compositi Composite Materials 9	Pagina Page 243
●	●	-	-	-	●	-	-	-	244
●	●	-	-	-	●	-	-	-	245
●	●	-	-	-	●	-	-	-	246
●	●	-	-	-	-	-	-	-	247
●	●	-	-	-	-	-	-	-	248
●	●	-	-	-	●	-	-	-	249
●	●	-	-	-	●	-	-	-	250
●	●	-	-	-	-	-	-	-	251
-	-	-	-	-	●	-	-	-	252
●	●	-	-	-	-	-	-	-	253
●	●	-	-	-	-	-	-	-	254
●	●	-	-	-	●	-	-	-	254
●	●	-	-	-	●	-	-	-	255
●	●	-	-	-	●	-	-	-	256
●	●	-	-	-	●	-	-	-	256
●	●	-	-	-	-	-	-	-	257
●	●	-	-	-	-	-	-	-	257
●	●	-	-	-	●	-	-	-	258
●	●	-	-	-	●	-	-	-	258
●	●	-	-	-	-	-	-	-	259
-	-	-	-	-	●	-	-	-	259
●	●	-	-	-	-	-	-	-	260
●	●	-	-	-	-	-	-	-	261
●	●	-	-	-	●	-	-	-	261
●	●	-	-	-	●	-	-	-	262
●	●	-	-	-	●	-	-	-	262
●	●	-	-	-	-	-	-	-	263
●	●	-	-	-	-	-	-	-	263

FRF Frese Frontali e a Disco
Shell End Mills and Side Milling Cutters

	Codice Code	Ø (D mm)	Z	Cava Slotting	Contornitura Side and face milling	Copiatura 3D 3D Copy	Assiale Plunging
	080F	40,0 ÷ 125,0	6 ÷ 12	●	●	-	-
	180	40,0 ÷ 160,0	6 ÷ 14	-	●	-	-
	101	50,0 ÷ 160,0	14 ÷ 26	●	-	-	-
	102	63,0 ÷ 125,0	20 ÷ 30	●	-	-	-
	10E	50,0 ÷ 100,0	12/14	●	-	-	-
	10F	50,0 ÷ 100,0	12/14	-	●	-	-
	10A	50,0 ÷ 100,0	16/18/20	●	-	-	-
	10B	40,0 ÷ 100,0	14 ÷ 20	-	●	-	-

ALT Altre Frese
Other Mills

	Codice Code	Ø (D mm)	Z				
	005F	12,5 ÷ 40,0	4 ÷ 8	●	●	-	-
	105T	12,5 ÷ 32,0	6/8	-	●	-	-
	1W5	10,5 ÷ 25,5	6/8	-	●	-	-
	10C	16,0 ÷ 25,0	8/10	-	●	-	-
	10D	16,0 ÷ 25,0	8/10	-	●	-	-
	10G	8,0 ÷ 58,0	4/6	-	●	-	-

Acciaio Steel	Ghise Cast iron	Acciai Temprati Hardened steels	Acciaio Inox Stainless steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Pagina Page
1	2	3	4	5	6	7	8	9	267
●	●	-	●	●	-	●	-	-	268
●	●	-	●	●	-	●	-	-	268
●	●	-	●	●	-	●	-	-	269
●	●	-	●	●	-	●	-	-	271
●	●	-	●	●	-	●	-	-	272
●	●	-	●	●	-	●	-	-	273
●	●	-	●	●	-	●	-	-	273
●	●	-	●	●	-	●	-	-	274
1	2	3	4	5	6	7	8	9	277
●	●	-	●	●	-	●	-	-	278
●	●	-	●	●	-	●	-	-	278
●	●	-	●	●	-	●	-	-	279
●	●	-	●	●	-	●	-	-	279
●	●	-	●	●	-	●	-	-	280
●	●	-	●	●	-	●	-	-	280

Frese in Acciaio Sinterizzato

Powder Metal End Mills

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Fresa a sgrossare serie corta
Roughing end mill, short version
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193A
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→ 227

123A
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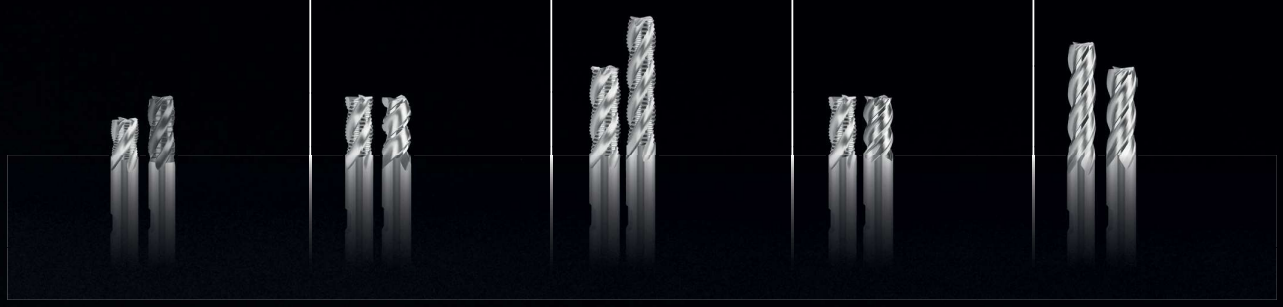
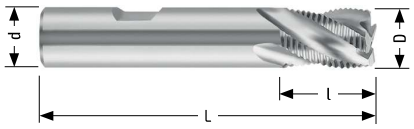


038A

Fresa a sgrossare serie corta
Roughing end mill, short version



013A
093A
023A

HSS PmCo | HR X Fine | ISO 1641/I DIN 327 | λ 30° | 014F DIN 1835D

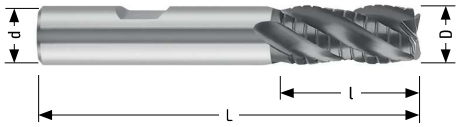
1 2 4 5 7

45°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	52	8	4	SIL038A06	NIG038A06
8,0	10	61	11	4	SIL038A08	NIG038A08
10,0	10	63	13	4	SIL038A10	NIG038A10
12,0	12	73	16	4	SIL038A12	NIG038A12
14,0	12	73	16	4	SIL038A14	NIG038A14
16,0	16	79	19	4	SIL038A16	NIG038A16
18,0	16	79	19	4	SIL038A18	NIG038A18
20,0	20	88	22	4	SIL038A20	NIG038A20
25,0	25	102	26	4	SIL038A25	NIG038A25

013S

Fresa a sgrossare serie normale
Roughing end mill, regular version



HSS PmCo | HPC SIL F2000 | ISO 1641/I DIN 844K | λ 30°

1 2 4 5 7

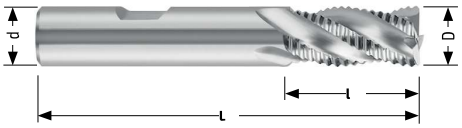
45°

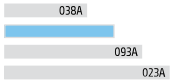
D k12	d h6	L	l	Z	Balinit® Alcrona
5,0	6	57	13	4	NIG013S05
6,0	6	57	13	4	NIG013S06
7,0	10	66	16	4	NIG013S07
8,0	10	69	19	4	NIG013S08
9,0	10	69	19	4	NIG013S09
10,0	10	72	22	4	NIG013S10
11,0	12	79	22	4	NIG013S11
12,0	12	83	26	4	NIG013S12
13,0	12	83	26	4	NIG013S13
14,0	12	83	26	4	NIG013S14
15,0	12	83	26	4	NIG013S15
16,0	16	92	32	4	NIG013S16
17,0	16	92	32	4	NIG013S17
18,0	16	92	32	4	NIG013S18
19,0	16	92	32	4	NIG013S19
20,0	20	104	38	4	NIG013S20
22,0	20	104	38	4	NIG013S22
25,0	25	121	45	4	NIG013S25
28,0	25	121	45	4	NIG013S28
30,0	25	121	45	6	NIG013S30
32,0	32	133	53	6	NIG013S32

Notes

013A

Fresa a sgrossare serie normale
Roughing end mill, regular version





HSS PmCo | HR X Fine | ISO 1641/I DIN 844K | λ 30°

1 2 4 5 7

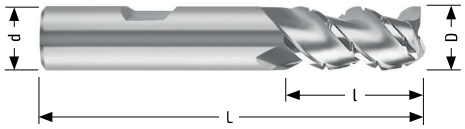
45°

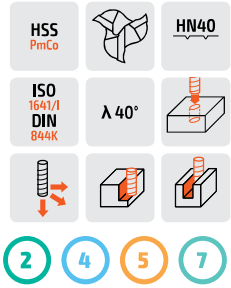
D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
5,0	6	57	13	4	SIL013A05	NIG013A05
6,0	6	57	13	4	SIL013A06	NIG013A06
7,0	10	66	16	4	SIL013A07	NIG013A07
8,0	10	69	19	4	SIL013A08	NIG013A08
9,0	10	69	19	4	SIL013A09	NIG013A09
10,0	10	72	22	4	SIL013A10	NIG013A10
11,0	12	79	22	4	SIL013A11	NIG013A11
12,0	12	83	26	4	SIL013A12	NIG013A12
13,0	12	83	26	4	SIL013A13	NIG013A13
14,0	12	83	26	4	SIL013A14	NIG013A14
15,0	12	83	26	4	SIL013A15	NIG013A15
16,0	16	92	32	4	SIL013A16	NIG013A16
17,0	16	92	32	4	SIL013A17	NIG013A17
18,0	16	92	32	4	SIL013A18	NIG013A18
19,0	16	92	32	4	SIL013A19	NIG013A19
20,0	20	104	38	4	SIL013A20	NIG013A20
22,0	20	104	38	4	SIL013A22	NIG013A22
25,0	25	121	45	4	SIL013A25	NIG013A25
28,0	25	121	45	6	SIL013A28	NIG013A28
30,0	25	121	45	6	SIL013A30	NIG013A30
32,0	32	133	53	6	SIL013A32	NIG013A32
36,0	32	133	53	6	SIL013A36	NIG013A36
40,0	40	155	63	6	SIL013A40	NIG013A40

041A

Fresa a sgrossare e semifinire serie normale

Roughing and semi-finishing end mill, regular version





1 2 4 5 7

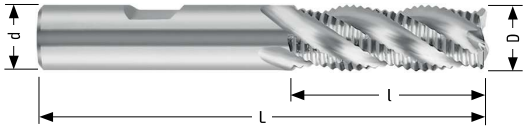
45°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
4,0	6	55	11	3	SIL041A04	NIG041A04
5,0	6	57	13	3	SIL041A05	NIG041A05
6,0	6	57	13	3	SIL041A06	NIG041A06
7,0	10	66	16	3	SIL041A07	NIG041A07
8,0	10	69	19	3	SIL041A08	NIG041A08
9,0	10	69	19	3	SIL041A09	NIG041A09
10,0	10	72	22	3	SIL041A10	NIG041A10
11,0	12	79	22	3	SIL041A11	NIG041A11
12,0	12	83	26	3	SIL041A12	NIG041A12
14,0	12	83	26	3	SIL041A14	NIG041A14
16,0	16	92	32	3	SIL041A16	NIG041A16
18,0	16	92	32	3	SIL041A18	NIG041A18
20,0	20	104	38	4	SIL041A20	NIG041A20
22,0	20	104	38	4	SIL041A22	NIG041A22
24,0	25	121	45	4	SIL041A24	NIG041A24
25,0	25	121	45	4	SIL041A25	NIG041A25
26,0	25	121	45	4	SIL041A26	NIG041A26
28,0	25	121	45	4	SIL041A28	NIG041A28
30,0	25	121	45	4	SIL041A30	NIG041A30
32,0	32	133	53	4	SIL041A32	NIG041A32
36,0	32	133	53	4	SIL041A36	NIG041A36

Notes

093A

Fresa a sgrossare serie media
Roughing end mill medium version



038A
013A
023A

HSS PmCo | HR X Fine | Silmax NORM | λ 30°

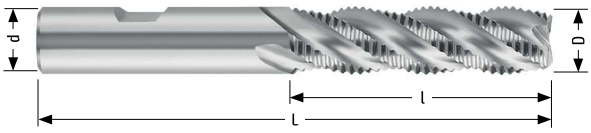
1 2 4 5 7

45°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	62	18	4	SIL093A06	NIG093A06
8,0	10	75	25	4	SIL093A08	NIG093A08
10,0	10	83	33	4	SIL093A10	NIG093A10
12,0	12	96	39	4	SIL093A12	NIG093A12
14,0	12	96	39	4	SIL093A14	NIG093A14
16,0	16	105	45	4	SIL093A16	NIG093A16
18,0	16	105	45	4	SIL093A18	NIG093A18
20,0	20	121	55	4	SIL093A20	NIG093A20
22,0	20	121	55	4	SIL093A22	NIG093A22
25,0	25	141	65	4	SIL093A25	NIG093A25

023A

Fresa a sgrossare serie lunga
Roughing end mill long version



038A
013A
093A

HSS PmCo | HR X Fine | ISO 1641/1 DIN 844L | λ 30°

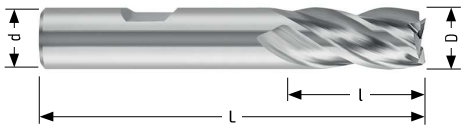
1 2 4 5 7

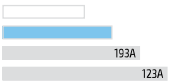
45°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	68	24	4	SIL023A06	NIG023A06
8,0	10	88	38	4	SIL023A08	NIG023A08
10,0	10	95	45	4	SIL023A10	NIG023A10
12,0	12	110	53	4	SIL023A12	NIG023A12
14,0	12	110	53	4	SIL023A14	NIG023A14
16,0	16	123	63	4	SIL023A16	NIG023A16
18,0	16	123	63	4	SIL023A18	NIG023A18
20,0	20	141	75	4	SIL023A20	NIG023A20
22,0	20	141	75	4	SIL023A22	NIG023A22
25,0	25	166	90	4	SIL023A25	NIG023A25
30,0	25	166	90	6	SIL023A30	NIG023A30
32,0	32	186	106	6	SIL023A32	NIG023A32

113A

Fresa a finire serie normale
Finishing end mill regular version





HSS PmCo | HS | ISO 1641/I DIN 844K | λ 30°

1 2 4 5 7

90°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	57	13	4	SIL113A06	NIG113A06
7,0	10	66	16	4	SIL113A07	NIG113A07
8,0	10	69	19	4	SIL113A08	NIG113A08
9,0	10	69	19	4	SIL113A09	NIG113A09
10,0	10	72	22	4	SIL113A10	NIG113A10
11,0	12	79	22	4	SIL113A11	NIG113A11
12,0	12	83	26	4	SIL113A12	NIG113A12
13,0	12	83	26	4	SIL113A13	NIG113A13
14,0	12	83	26	4	SIL113A14	NIG113A14
15,0	12	83	26	4	SIL113A15	NIG113A15
16,0	16	92	32	4	SIL113A16	NIG113A16
17,0	16	92	32	4	SIL113A17	NIG113A17
18,0	16	92	32	4	SIL113A18	NIG113A18
19,0	16	92	32	4	SIL113A19	NIG113A19
20,0	20	104	38	4	SIL113A20	NIG113A20
22,0	20	104	38	4	SIL113A22	NIG113A22
25,0	25	121	45	4	SIL113A25	NIG113A25
28,0	25	121	45	6	SIL113A28	NIG113A28
30,0	25	121	45	6	SIL113A30	NIG113A30
32,0	32	133	53	6	SIL113A32	NIG113A32

118A

Fresa a finire serie normale
Finishing end mill regular version

HSS PmCo | HS | ISO 1641/I DIN 844K | λ 40°

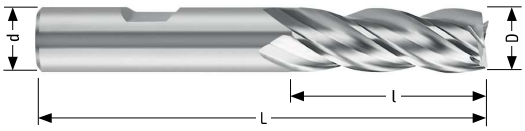
1 2 4 5 7

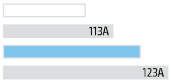
90°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
4,0	6	55	11	4	SIL118A04	NIG118A04
5,0	6	57	13	4	SIL118A05	NIG118A05
6,0	6	57	13	4	SIL118A06	NIG118A06
7,0	10	66	16	4	SIL118A07	NIG118A07
8,0	10	69	19	4	SIL118A08	NIG118A08
9,0	10	69	19	4	SIL118A09	NIG118A09
10,0	10	72	22	4	SIL118A10	NIG118A10
12,0	12	83	26	4	SIL118A12	NIG118A12
14,0	12	83	26	4	SIL118A14	NIG118A14
16,0	16	92	32	4	SIL118A16	NIG118A16
18,0	16	92	32	4	SIL118A18	NIG118A18
20,0	20	104	38	6	SIL118A20	NIG118A20
22,0	20	104	38	6	SIL118A22	NIG118A22
25,0	25	121	45	6	SIL118A25	NIG118A25
28,0	25	121	45	6	SIL118A28	NIG118A28
30,0	25	121	45	6	SIL118A30	NIG118A30
32,0	32	133	53	6	SIL118A32	NIG118A32

193A

Fresa a finire serie media
Finishing end mill medium version





HSS PmCo | HS | Silmax NORM | λ 30°

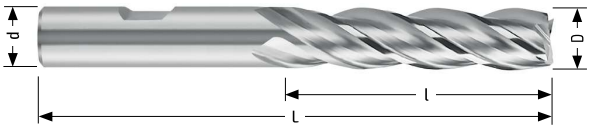
1 2 4 5 7

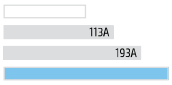
90°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	62	18	4	SIL193A06	NIG193A06
8,0	10	75	25	4	SIL193A08	NIG193A08
10,0	10	83	33	4	SIL193A10	NIG193A10
12,0	12	96	39	4	SIL193A12	NIG193A12
14,0	12	96	39	4	SIL193A14	NIG193A14
16,0	16	105	45	4	SIL193A16	NIG193A16
18,0	16	105	45	4	SIL193A18	NIG193A18
20,0	20	121	55	4	SIL193A20	NIG193A20
22,0	20	121	55	4	SIL193A22	NIG193A22
25,0	25	141	65	4	SIL193A25	NIG193A25

123A

Fresa a finire serie lunga
Finishing end mill long version





HSS PmCo | HS | ISO 1641/1 DIN 844K | λ 30°

1 2 4 5 7

90°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	68	24	4	SIL123A06	NIG123A06
8,0	10	88	38	4	SIL123A08	NIG123A08
10,0	10	95	45	4	SIL123A10	NIG123A10
12,0	12	110	53	4	SIL123A12	NIG123A12
14,0	12	110	53	4	SIL123A14	NIG123A14
16,0	16	123	63	4	SIL123A16	NIG123A16
18,0	16	123	63	4	SIL123A18	NIG123A18
20,0	20	141	75	4	SIL123A20	NIG123A20
22,0	20	141	75	4	SIL123A22	NIG123A22
25,0	25	166	90	4	SIL123A25	NIG123A25

1 Acciaio Steel | 2 Ghise Cast Iron | 3 Acciai Temprati Hardened Steel | 4 Acciaio Inox Stainless Steel | 5 Titanio Titanium | 6 Leghe Leggere Light Alloys | 7 PH Duplex | 8 Superleghe Superalloys | 9 Compositi Composite Materials | → 16 Guida alla lettura Reading guide | → 18 Legenda Legend

PM - Frese a sgrossare / PM - Roughing end mills

Parametri di lavoro / Working Parameters

Serie corta (short version) + 20% / Serie media (medium version) -20% / Serie lunga (long version) -40%

Materiali Materials	Diametro Diameter	1,00 D (1,00 D)									0,25 D (1,50 D)								
		PMCoS - NIG			SIL F2000 - NIG			PMCoS - SIL			PMCoS - NIG			SIL F2000 - NIG			PMCoS - SIL		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
Acciaio <800 N/mm² Steel <800 N/mm²	6,0	0,012	220	4460	0,021	380	4460	0,012	130	2670	0,025	450	4460	0,042	750	4460	0,024	260	2670
	8,0	0,019	250	3340	0,031	420	3340	0,018	140	2000	0,035	470	3340	0,059	790	3340	0,035	280	2000
	10,0	0,029	310	2680	0,049	520	2680	0,028	180	1600	0,045	480	2680	0,076	810	2680	0,044	280	1600
	12,0	0,037	330	2230	0,063	560	2230	0,036	190	1330	0,056	500	2230	0,094	840	2230	0,055	290	1330
	16,0	0,049	330	1670	0,084	560	1670	0,048	190	1000	0,075	500	1670	0,126	840	1670	0,073	290	1000
	20,0	0,063	340	1340	0,104	560	1340	0,063	200	800	0,095	510	1340	0,159	850	1340	0,094	300	800
	25,0	0,077	330	1070	0,131	560	1070	0,074	190	640	0,117	500	1070	0,199	850	1070	0,113	290	640
		PMCoS - NIG			SIL F2000 - NIG			PMCoS - SIL			PMCoS - NIG			SIL F2000 - NIG			PMCoS - SIL		
Acciaio <1000 N/mm² Steel <1000 N/mm²	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,012	190	4030	0,020	290	3660	0,011	110	2410	0,024	380	4030	0,040	580	3660	0,023	220	2410
	8,0	0,018	220	3030	0,030	330	2750	0,018	130	1810	0,033	400	3030	0,056	620	2750	0,032	230	1810
	10,0	0,027	260	2420	0,045	400	2200	0,026	150	1450	0,042	410	2420	0,072	630	2200	0,041	240	1450
	12,0	0,036	290	2020	0,060	440	1830	0,035	170	1210	0,053	430	2020	0,089	650	1830	0,052	250	1210
	16,0	0,048	290	1510	0,080	440	1370	0,047	170	900	0,071	430	1510	0,119	650	1370	0,069	250	900
	20,0	0,060	290	1210	0,100	440	1100	0,059	170	720	0,091	440	1210	0,150	660	1100	0,090	260	720
	25,0	0,075	290	970	0,125	440	880	0,073	170	580	0,113	440	970	0,188	660	880	0,112	260	580
		PMCoS - NIG			SIL F2000 - NIG			PMCoS - SIL			PMCoS - NIG			SIL F2000 - NIG			PMCoS - SIL		
Acciaio <1300 N/mm² Steel <1300 N/mm²	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,011	130	3080	0,018	200	2810	0,010	70	1840	0,021	260	3080	0,036	400	2810	0,020	150	1840
	8,0	0,016	150	2310	0,027	230	2110	0,014	80	1380	0,029	270	2310	0,050	420	2110	0,029	160	1380
	10,0	0,024	180	1850	0,041	280	1690	0,023	100	1110	0,038	280	1850	0,064	430	1690	0,036	160	1110
	12,0	0,032	200	1540	0,053	300	1410	0,030	110	920	0,047	290	1540	0,080	450	1410	0,046	170	920
	16,0	0,043	200	1150	0,071	300	1050	0,043	120	690	0,063	290	1150	0,107	450	1050	0,062	170	690
	20,0	0,054	200	920	0,089	300	840	0,050	110	550	0,082	300	920	0,137	460	840	0,077	170	550
	25,0	0,064	190	740	0,110	300	680	0,063	110	440	0,101	300	740	0,169	460	680	0,097	170	440
		PMCoS - NIG			SIL F2000 - NIG			PMCoS - SIL			PMCoS - NIG			SIL F2000 - NIG			PMCoS - SIL		
Acciaio da stampi Mold Steel	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,009	70	1910	0,015	110	1800	0,009	40	1140	0,018	140	1910	0,032	230	1800	0,018	80	1140
	8,0	0,014	80	1430	0,024	130	1350	0,012	40	850	0,026	150	1430	0,044	240	1350	0,024	80	850
	10,0	0,022	100	1150	0,037	160	1080	0,022	60	690	0,035	160	1150	0,056	240	1080	0,033	90	690
	12,0	0,029	110	960	0,047	170	900	0,026	60	570	0,042	160	960	0,069	250	900	0,039	90	570
	16,0	0,038	110	720	0,063	170	680	0,035	60	430	0,056	160	720	0,096	260	680	0,052	90	430
	20,0	0,048	110	570	0,079	170	540	0,044	60	340	0,070	160	570	0,120	260	540	0,066	90	340
	25,0	0,060	110	460	0,099	170	430	0,056	60	270	0,087	160	460	0,151	260	430	0,083	90	270

Notes

PM - Frese a finire / PM - Finishing end mills

Parametri di lavoro / Working Parameters

Serie Corta (Short Version) + 20% / Serie Media (Medium Version) -20% / Serie Lunga (Long Version) -40%

Materiali / Materials	Diametro / Diameter	 0,04 D 1,50 D			 0,10 D 1,50 D						 0,04 D 1,50 D		
		113A NIG			113A SIL			118A NIG			118A SIL		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
Acciaio <800 N/mm² Steel <800 N/mm²	6,0	0,020	330	4460	0,018	190	2670	0,020	330	4460	0,018	190	2670
	8,0	0,040	500	3340	0,036	290	2000	0,040	500	3340	0,036	290	2000
	10,0	0,050	540	2680	0,045	290	1600	0,050	540	2680	0,045	190	1600
	12,0	0,060	540	2230	0,054	290	1330	0,060	540	2230	0,054	290	1330
	16,0	0,080	540	1670	0,072	290	1000	0,080	540	1670	0,072	290	1000
	20,0	0,100	550	1340	0,090	290	800	0,070	550	1340	0,063	300	800
	25,0	0,130	540	1070	0,117	300	640	0,080	540	1070	0,072	280	640
		113A NIG			113A SIL			118A NIG			118A SIL		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
Acciaio <1000 N/mm² Steel <1000 N/mm²	6,0	0,020	290	4030	0,018	190	2670	0,020	290	4030	0,018	190	2670
	8,0	0,040	430	3030	0,036	290	2000	0,040	430	3030	0,036	290	2000
	10,0	0,050	460	2420	0,045	290	1600	0,050	460	2420	0,045	290	1600
	12,0	0,060	460	2020	0,054	290	1330	0,060	460	2020	0,054	290	1330
	16,0	0,080	470	1510	0,072	290	1000	0,080	470	1510	0,072	290	1000
	20,0	0,100	470	1210	0,090	290	800	0,060	470	1210	0,054	260	800
	25,0	0,120	460	970	0,108	280	640	0,080	460	970	0,072	280	640
		113A NIG			113A SIL			118A NIG			118A SIL		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
Acciaio <1300 N/mm² Steel <1300 N/mm²	6,0	0,020	200	3080	0,018	190	2670	0,020	200	3080	0,018	190	2670
	8,0	0,030	290	2310	0,027	220	2000	0,030	290	2310	0,027	220	2000
	10,0	0,040	310	1850	0,036	230	1600	0,040	310	1850	0,036	230	1600
	12,0	0,050	310	1540	0,045	240	1330	0,050	310	1540	0,045	240	1330
	16,0	0,070	320	1150	0,063	250	1000	0,070	320	1150	0,063	250	1000
	20,0	0,090	320	920	0,081	260	800	0,060	320	920	0,054	260	800
	25,0	0,100	310	740	0,090	230	640	0,070	310	740	0,063	240	640
		113A NIG			113A SIL			118A NIG			118A SIL		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
Acciaio da stampi Mold Steel	6,0	0,010	110	1910	0,009	100	2670	0,010	110	1910	0,009	100	2670
	8,0	0,030	160	1430	0,027	220	2000	0,030	160	1430	0,027	220	2000
	10,0	0,040	170	1150	0,036	230	1600	0,040	170	1150	0,036	230	1600
	12,0	0,040	170	960	0,036	190	1330	0,040	170	960	0,036	190	1330
	16,0	0,060	180	720	0,054	220	1000	0,060	180	720	0,054	220	1000
	20,0	0,080	180	570	0,072	230	800	0,050	180	570	0,045	220	800
	25,0	0,090	170	460	0,081	210	640	0,060	170	460	0,054	210	640

Notes

Frese a Sgrossare in HSSCo8

Roughing End Mills in HSSCo8

038F
Fresa a sgrossare serie corta
Roughing end mill, short version
→ 232

011F
Frese a sgrossare serie normale
Roughing end mill, regular version
→ 233

015
Fresa a sgrossare serie normale
Roughing end mill, regular version
→ 233

013
Fresa a sgrossare serie normale
Roughing end mill, regular version
→ 234

013F
Fresa a sgrossare serie normale
Roughing end mill, regular version
→ 235

013R
Fresa a sgrossare serie normale
Roughing end mill, regular version
→ 236

031F
Fresa a sgrossare serie normale
Roughing end mill, regular version
→ 236

093F
Fresa a sgrossare serie media
Roughing end mill, medium version
→ 237

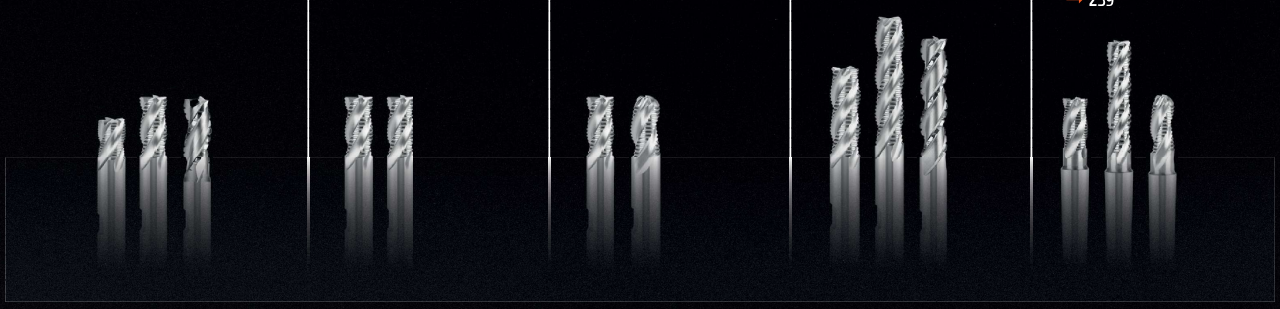
023F
Fresa a sgrossare serie lunga
Roughing end mill, long version
→ 237

025
Fresa a sgrossare serie lunga
Roughing end mill, long version
→ 238

052F
Fresa a sgrossare serie lunga
Roughing end mill, regular version
→ 238

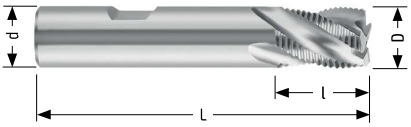
060B
Fresa a sgrossare serie lunga
Roughing end mill, long version
→ 239

075F
Fresa semisferica a sgrossare serie normale
Ball nose roughing end mill, regular version
→ 239



038F

Fresa a sgrossare serie corta
Roughing end mill, regular version



013F
093F
023F

HSS Co8
NRF F Form
ISO 1641/1 DIN 327
λ 30° γ 12°
014F DIN 1835D

1 2

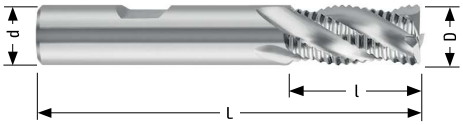
45°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
5,0	6	52	8	4	SIL038F05	NIG038F05
6,0	6	52	8	4	SIL038F06	NIG038F06
7,0	10	60	10	4	SIL038F07	NIG038F07
8,0	10	61	11	4	SIL038F08	NIG038F08
9,0	10	61	11	4	SIL038F09	NIG038F09
10,0	10	63	13	4	SIL038F10	NIG038F10
11,0	12	70	13	4	SIL038F11	NIG038F11
12,0	12	73	16	4	SIL038F12	NIG038F12
13,0	12	73	16	4	SIL038F13	NIG038F13
14,0	12	73	16	4	SIL038F14	NIG038F14
15,0	12	73	16	4	SIL038F15	NIG038F15
16,0	16	79	19	4	SIL038F16	NIG038F16
17,0	16	79	19	4	SIL038F17	NIG038F17
18,0	16	79	19	4	SIL038F18	NIG038F18
19,0	16	79	19	4	SIL038F19	NIG038F19
20,0	20	88	22	4	SIL038F20	NIG038F20
22,0	20	88	22	4	SIL038F22	NIG038F22
25,0	25	102	26	4	SIL038F25	NIG038F25
30,0	25	102	26	6	SIL038F30	NIG038F30
32,0	32	112	32	6	SIL038F32	NIG038F32

Notes

011F

Fresa a sgrossare serie normale
Roughing end mill, regular version



HSS Co8 | NRF F Form | ISO 1641/I DIN 844K | λ 30° γ 12°

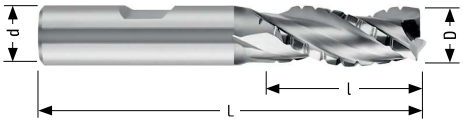
1 2

45°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	57	13	3	SIL011F06	NIG011F06
8,0	10	69	19	3	SIL011F08	NIG011F08
9,0	10	69	19	3	SIL011F09	NIG011F09
10,0	10	72	22	3	SIL011F10	NIG011F10
11,0	12	79	22	3	SIL011F11	NIG011F11
12,0	12	83	26	3	SIL011F12	NIG011F12
13,0	12	83	26	3	SIL011F13	NIG011F13
14,0	12	83	26	3	SIL011F14	NIG011F14
16,0	16	92	32	3	SIL011F16	NIG011F16
18,0	16	92	32	3	SIL011F18	NIG011F18
20,0	20	104	38	3	SIL011F20	NIG011F20
22,0	20	104	38	3	SIL011F22	NIG011F22
25,0	25	121	45	3	SIL011F25	NIG011F25
30,0	25	121	45	3	SIL011F30	NIG011F30
32,0	32	133	53	3	SIL011F32	NIG011F32
40,0	40	155	63	3	SIL011F40	NIG011F40

015

Fresa a sgrossare serie normale
Roughing end mill, regular version



025

HSS Co8 | WF Alu Form | ISO 1641/I DIN 844K | 017F DIN 1835D | λ 35° γ 17°

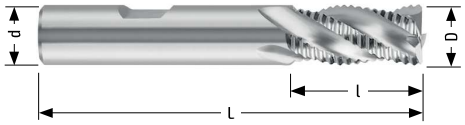
6

45°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	57	13	3	SIL015006	NIG015006
8,0	10	69	19	3	SIL015008	NIG015008
10,0	10	72	22	3	SIL015010	NIG015010
12,0	12	83	26	3	SIL015012	NIG015012
16,0	16	92	32	3	SIL015016	NIG015016
20,0	20	104	38	3	SIL015020	NIG015020
25,0	25	121	45	3	SIL015025	NIG015025
30,0	25	121	45	3	SIL015030	NIG015030
32,0	32	133	53	3	SIL015032	NIG015032

013

Fresa a sgrossare serie normale
Roughing end mill, regular version



HSS Co8 | NFZ SiLFZ | ISO 1641/I DIN 844K | 016F DIN 1835D | λ 30° γ 10°

1 2

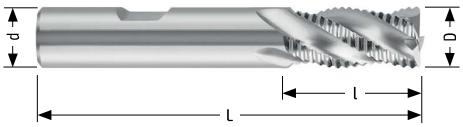
45°

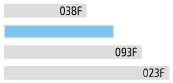
D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	57	13	4	SIL013006	NIG013006
8,0	10	69	19	4	SIL013008	NIG013008
10,0	10	72	22	4	SIL013010	NIG013010
12,0	12	83	26	4	SIL013012	NIG013012
14,0	12	83	26	4	SIL013014	NIG013014
16,0	16	92	32	4	SIL013016	NIG013016
18,0	16	92	32	4	SIL013018	NIG013018
20,0	20	104	38	4	SIL013020	NIG013020
22,0	20	104	38	4	SIL013022	NIG013022
25,0	25	121	45	4	SIL013025	NIG013025
30,0	25	121	45	6	SIL013030	NIG013030
32,0	32	133	53	6	SIL013032	NIG013032
40,0	40	155	63	6	SIL013040	NIG013040

Notes

013F

Fresa a sgrossare serie normale
Roughing end mill, regular version





HSS Co8 | NF2 Sil F2 | ISO 1641/1 DIN 844K | 016F DIN 1835D | λ 30° γ 12°

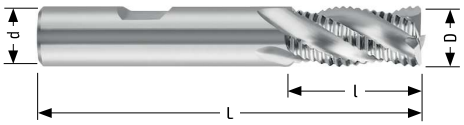
1 2

45°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
4,5	6	55	11	4	SIL013F045	NIG013F045
5,0	6	57	13	4	SIL013F05	NIG013F05
5,5	6	57	13	4	SIL013F055	NIG013F055
6,0	6	57	13	4	SIL013F06	NIG013F06
6,5	10	66	16	4	SIL013F065	NIG013F065
7,0	10	66	16	4	SIL013F07	NIG013F07
7,5	10	69	19	4	SIL013F075	NIG013F075
8,0	10	69	19	4	SIL013F08	NIG013F08
8,5	10	69	19	4	SIL013F085	NIG013F085
9,0	10	69	19	4	SIL013F09	NIG013F09
9,5	10	72	22	4	SIL013F095	NIG013F095
10,0	10	72	22	4	SIL013F10	NIG013F10
10,5	12	79	22	4	SIL013F105	NIG013F105
11,0	12	79	22	4	SIL013F11	NIG013F11
12,0	12	83	26	4	SIL013F12	NIG013F12
13,0	12	83	26	4	SIL013F13	NIG013F13
14,0	12	83	26	4	SIL013F14	NIG013F14
15,0	12	83	26	4	SIL013F15	NIG013F15
16,0	16	92	32	4	SIL013F16	NIG013F16
17,0	16	92	32	4	SIL013F17	NIG013F17
18,0	16	92	32	4	SIL013F18	NIG013F18
19,0	16	92	32	4	SIL013F19	NIG013F19
20,0	20	104	38	4	SIL013F20	NIG013F20
22,0	20	104	38	4	SIL013F22	NIG013F22
24,0	25	121	45	4	SIL013F24	NIG013F24
25,0	25	121	45	4	SIL013F25	NIG013F25
26,0	25	121	45	4	SIL013F26	NIG013F26
28,0	25	121	45	6	SIL013F28	NIG013F28
30,0	25	121	45	6	SIL013F30	NIG013F30
32,0	32	133	53	6	SIL013F32	NIG013F32
36,0	32	133	53	6	SIL013F36	NIG013F36
40,0	40	155	63	6	SIL013F40	NIG013F40
45,0	40	155	63	6	SIL013F45	NIG013F45
50,0	50	177	75	6	SIL013F50	NIG013F50

013R

Fresa a sgrossare serie normale
Roughing end mill, regular version



Con fori di lubrificazione / With internal coolant

HSS Co8 | NRF F Form | ISO 1641/1 DIN 844K | λ 30° γ 12°

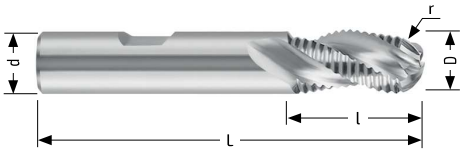
1 2

45°

D k12	d h6	L	l	Z	Balinit® Alcrona
16,0	16	92	32	4	RMG013F16
18,0	16	92	32	4	RMG013F18
20,0	20	104	38	4	RMG013F20
22,0	20	104	38	4	RMG013F22
25,0	25	121	45	4	RMG013F25
28,0	25	121	45	6	RMG013F28
30,0	25	121	45	6	RMG013F30
32,0	32	133	53	6	RMG013F32
36,0	32	133	53	6	RMG013F36
40,0	40	155	63	6	RMG013F40
50,0	50	177	75	6	RMG013F50

031F

Fresa a sgrossare serie normale
Roughing end mill, regular version



HSS Co8 | NRF F Form | ISO 1641/1 DIN 1889/1 | 033F DIN 1835D | λ 30° γ 12°

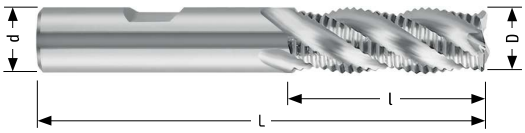
1 2

D k12	d h6	L	l	r	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	57	13	3,00	3	SIL031F06	NIG031F06
8,0	10	69	19	4,00	3	SIL031F08	NIG031F08
10,0	10	72	22	5,00	3	SIL031F10	NIG031F10
12,0	12	83	26	6,00	3	SIL031F12	NIG031F12
14,0	12	83	26	7,00	4	SIL031F14	NIG031F14
16,0	16	92	32	8,00	4	SIL031F16	NIG031F16
18,0	16	92	32	9,00	4	SIL031F18	NIG031F18
20,0	20	104	38	10,00	4	SIL031F20	NIG031F20
22,0	20	104	38	11,00	4	SIL031F22	NIG031F22
25,0	25	121	45	12,50	6	SIL031F25	NIG031F25
30,0	25	121	45	15,00	6	SIL031F30	NIG031F30
32,0	32	133	53	16,00	6	SIL031F32	NIG031F32

Notes

093F

Fresa a sgrossare serie media
Roughing end mill, medium version



038F
013F
023F

HSS Co8 | NRF F Form | Silmax NORM | λ 30° γ 12°

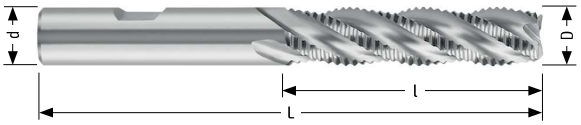
1 2

45°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	62	18	4	SIL093F06	NIG093F06
8,0	10	75	25	4	SIL093F08	NIG093F08
10,0	10	83	33	4	SIL093F10	NIG093F10
12,0	12	96	39	4	SIL093F12	NIG093F12
14,0	12	96	39	4	SIL093F14	NIG093F14
16,0	16	105	45	4	SIL093F16	NIG093F16
18,0	16	105	45	4	SIL093F18	NIG093F18
20,0	20	121	55	4	SIL093F20	NIG093F20
22,0	20	121	55	4	SIL093F22	NIG093F22
25,0	25	141	65	4	SIL093F25	NIG093F25
28,0	25	141	65	6	SIL093F28	NIG093F28
30,0	25	141	65	6	SIL093F30	NIG093F30
32,0	32	158	78	6	SIL093F32	NIG093F32

023F

Fresa a sgrossare serie lunga
Roughing end mill, long version



038F
013F
093F

HSS Co8 | NRF F Form | Silmax NORM | 026F DIN 1835D | λ 30° γ 12°

1 2

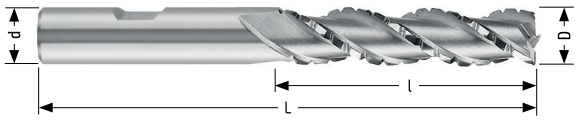
45°

D k12	d h6	L	l	Z	Non rivestito Uncoated	NIG
6,0	6	68	24	4	SIL023F06	NIG023F06
8,0	10	88	38	4	SIL023F08	NIG023F08
10,0	10	95	45	4	SIL023F10	NIG023F10
12,0	12	110	53	4	SIL023F12	NIG023F12
14,0	12	110	53	4	SIL023F14	NIG023F14
16,0	16	123	63	4	SIL023F16	NIG023F16
18,0	16	123	63	4	SIL023F18	NIG023F18
20,0	20	141	75	4	SIL023F20	NIG023F20
22,0	20	141	75	4	SIL023F22	NIG023F22
25,0	25	166	90	4	SIL023F25	NIG023F25
30,0	25	166	90	6	SIL023F30	NIG023F30
32,0	32	186	106	6	SIL023F32	NIG023F32
36,0	32	186	106	6	SIL023F36	NIG023F36
40,0	40	217	125	6	SIL023F40	NIG023F40

1	2	3	4	5	6	7	8	9	→ 16	→ 18
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Guida alla lettura Reading guide	Legenda Legend

025

Fresa a sgrossare serie lunga
Roughing end mill, long version



HSS Co8 | WF Alu Form | ISO 1641/I DIN 844L | 027F DIN 1835D | λ 35° γ 17°

6

45°

D k12	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	68	24	3	SIL025006	NIG025006
8,0	10	88	38	3	SIL025008	NIG025008
10,0	10	95	45	3	SIL025010	NIG025010
12,0	12	110	53	3	SIL025012	NIG025012
16,0	16	123	63	3	SIL025016	NIG025016
20,0	20	141	75	3	SIL025020	NIG025020
25,0	25	166	90	3	SIL025025	NIG025025
30,0	25	166	90	3	SIL025030	NIG025030
32,0	32	186	106	3	SIL025032	NIG025032
40,0	40	217	125	3	SIL025040	NIG025040

052F

Fresa a sgrossare serie normale
Roughing end mill, regular version

HSS Co8 | NRF F Form | ISO 1641/I DIN 845K | λ 30° γ 12°

1 2

45°

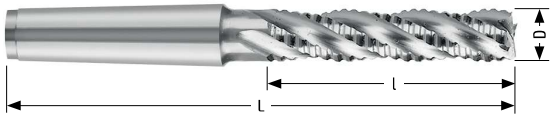
D k12	L	l	Mk	Z	Non rivestito Uncoated	Balinit® Alcrona
16,0	117	32	2	4	SIL052F16	NIG052F16
18,0	117	32	2	4	SIL052F18	NIG052F18
20,0	123	38	2	4	SIL052F20	NIG052F20
22,0	140	38	3	4	SIL052F22	NIG052F22
25,0	147	45	3	4	SIL052F25	NIG052F25
28,0	147	45	3	6	SIL052F28	NIG052F28
30,0	147	45	3	6	SIL052F30	NIG052F30
32,0	155	53	3	6	SIL052F32	NIG052F32
36,0	178	53	4	6	SIL052F36	NIG052F36
40,0	188	63	4	6	SIL052F40	NIG052F40

Notes

060B

Fresa a sgrossare serie lunga
Roughing end mill, long version

HSS Co8 | NRB B Form | ISO 1641/1 DIN 845L | λ 30° γ 12°



1 2

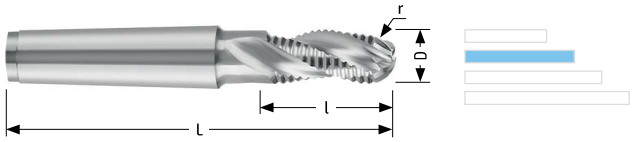
45°

D k12	L	l	Mk	Z	Non rivestito Uncoated	Balinit® Alcrona
16,0	148	63	2	4	SIL060B16	NIG060B16
18,0	148	63	2	4	SIL060B18	NIG060B18
20,0	177	75	3	4	SIL060B20	NIG060B20
22,0	177	75	3	4	SIL060B22	NIG060B22
25,0	192	90	3	5	SIL060B25	NIG060B25
28,0	192	90	3	5	SIL060B28	NIG060B28
30,0	192	90	3	5	SIL060B30	NIG060B30
32,0	231	106	4	5	SIL060B32	NIG060B32
36,0	231	106	4	5	SIL060B36	NIG060B36
40,0	250	125	4	6	SIL060B40	NIG060B40
50,0	308	150	5	6	SIL060B50	NIG060B50

075F

Fresa semisferica a sgrossare serie normale
Ball nose roughing end mill, regular version

HSS Co8 | NRF F Form | ISO 1641/1 DIN 1889/2 | λ 30° γ 12°



1 2

D k12	L	l	Mk	r	Z	Non rivestito Uncoated	Balinit® Alcrona
16,0	117	32	2	8,00	3	SIL075F16	NIG075F16
20,0	123	38	2	10,00	3	SIL075F20	NIG075F20
25,0	147	45	3	12,50	3	SIL075F25	NIG075F25
28,0	147	45	3	14,00	3	SIL075F28	NIG075F28
30,0	147	45	3	15,00	3	SIL075F30	NIG075F30
32,0	155	53	3	16,00	3	SIL075F32	NIG075F32
36,0	178	53	4	18,00	3	SIL075F36	NIG075F36
40,0	188	63	4	20,00	3	SIL075F40	NIG075F40
50,0	233	75	5	25,00	3	SIL075F50	NIG075F50

1 Acciaio Steel	2 Ghise Cast Iron	3 Acciai Temprati Hardened Steel	4 Acciaio Inox Stainless Steel	5 Titanio Titanium	6 Leghe Leggere Light Alloys	7 PH Duplex	8 Superleghe Superalloys	9 Compositi Composite Materials	→ 16 Guida alla lettura Reading guide	→ 18 Legenda Legend

SGR

Parametri di lavoro / Working Parameters

Serie corta (short version) + 20% / Serie media (medium version) -20% / Serie lunga (long version) -40%

Materiale / Material	Diametro / Diameter												
		NIG Z=3			NIG Z=4			NIG Z=3			NIG Z=4		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
Acciaio <800 N/mm² / Steel <800 N/mm²	6,0	0,010	107	3560	0,010	180	3560	0,030	320	3560	0,030	360	3560
	8,0	0,020	160	2670	0,020	200	2670	0,030	240	2670	0,030	370	2670
	10,0	0,030	192	2130	0,030	240	2130	0,040	256	2130	0,040	380	2130
	12,0	0,040	214	1780	0,040	270	1780	0,060	320	1780	0,060	400	1780
	16,0	0,050	200	1330	0,050	270	1330	0,080	319	1330	0,080	400	1330
	20,0	0,060	193	1070	0,060	270	1070	0,100	321	1070	0,100	410	1070
	25,0	0,080	204	850	0,080	260	850	0,120	306	850	0,120	400	850
		NIG Z=3			NIG Z=4			NIG Z=3			NIG Z=4		
Acciaio <1000 N/mm² / Steel <1000 N/mm²	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,010	97	3240	0,010	150	3240	0,020	194	3240	0,020	310	3240
	8,0	0,020	146	2430	0,020	170	2430	0,030	219	2430	0,030	320	2430
	10,0	0,030	175	1940	0,030	210	1940	0,040	233	1940	0,040	330	1940
	12,0	0,040	194	1620	0,040	230	1620	0,050	243	1620	0,050	350	1620
	16,0	0,050	182	1210	0,050	230	1210	0,070	254	1210	0,070	340	1210
	20,0	0,060	175	970	0,060	230	970	0,090	262	970	0,090	350	970
	25,0	0,070	164	780	0,070	230	780	0,110	257	780	0,110	350	780
		NIG Z=3			NIG Z=4			NIG Z=3			NIG Z=4		
Acciaio <1300 N/mm² / Steel <1300 N/mm²	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,010	73	2440	0,010	73	2440	0,020	146	2440	0,020	210	2440
	8,0	0,020	110	1830	0,020	110	1830	0,030	165	1830	0,030	220	1830
	10,0	0,020	88	1460	0,020	88	1460	0,040	175	1460	0,040	220	1460
	12,0	0,030	110	1220	0,030	110	1220	0,050	183	1220	0,050	230	1220
	16,0	0,040	110	920	0,040	110	920	0,060	166	920	0,060	230	920
	20,0	0,050	110	730	0,050	110	730	0,080	175	730	0,080	240	730
	25,0	0,070	124	590	0,070	124	590	0,100	177	590	0,100	240	590
		NIG Z=3			NIG Z=4			NIG Z=3			NIG Z=4		
Acciaio da stampi / Mold Steel	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,010	46	1540	0,010	60	1540	0,020	92	1540	0,020	120	1540
	8,0	0,010	35	1150	0,010	60	1150	0,030	104	1150	0,030	120	1150
	10,0	0,020	55	920	0,020	80	920	0,030	83	920	0,030	120	920
	12,0	0,030	69	770	0,030	90	770	0,040	92	770	0,040	130	770
	16,0	0,040	70	580	0,040	90	580	0,060	104	580	0,060	130	580
	20,0	0,050	69	460	0,050	90	460	0,070	97	460	0,070	130	460
	25,0	0,060	67	370	0,060	90	370	0,090	100	370	0,090	130	370

Notes

SGR

Parametri di lavoro / Working Parameters

Serie corta (short version) + 20% / Serie media (medium version) -20% / Serie lunga (long version) -40%

Materiale / Material	Diametro / Diameter	1,00 D – NIG Z=3			1,00 D – SIL Z=3			0,50 D – NIG Z=3			0,50 D – SIL Z=3		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
Alluminio e Leghe < 6% Si / Aluminium & Alloys < 6% Si	6,0	0,019	530	9500	0,015	200	4510	0,038	1070	9500	0,030	410	4510
	8,0	0,028	600	7130	0,023	230	3380	0,052	1120	7130	0,042	430	3380
	10,0	0,043	740	5700	0,034	280	2710	0,067	1150	5700	0,054	440	2710
	12,0	0,056	800	4750	0,044	300	2260	0,084	1200	4750	0,068	460	2260
	16,0	0,075	800	3560	0,059	300	1690	0,112	1200	3560	0,091	460	1690
	20,0	0,094	800	2850	0,074	300	1350	0,140	1200	2850	0,114	460	1350
	25,0	0,117	800	2280	0,093	300	1080	0,175	1200	2280	0,142	460	1080
Alluminio e Leghe > 6% Si / Aluminium & Alloys > 6% Si		NIG Z=3			SIL Z=3			NIG Z=3			SIL Z=3		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,015	300	6580	0,012	110	3130	0,030	590	6580	0,024	230	3130
	8,0	0,022	330	4940	0,018	130	2350	0,042	620	4940	0,034	240	2350
	10,0	0,035	410	3950	0,028	160	1880	0,054	640	3950	0,043	240	1880
	12,0	0,045	440	3290	0,036	170	1570	0,068	670	3290	0,053	250	1570
	16,0	0,059	440	2470	0,048	170	1170	0,090	670	2470	0,071	250	1170
	20,0	0,074	440	1970	0,060	170	940	0,113	670	1970	0,089	250	940
	25,0	0,093	440	1580	0,077	170	740	0,141	670	1580	0,113	250	740
Rame e Leghe / Copper & Alloys		NIG Z=3			SIL Z=3			NIG Z=3			SIL Z=3		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,012	240	6900	0,012	130	3710	0,018	200	3710	0,018	200	3710
	8,0	0,019	290	5170	0,019	150	2780	0,030	250	2780	0,030	250	2780
	10,0	0,026	320	4140	0,026	170	2220	0,045	290	2220	0,045	290	2220
	12,0	0,040	410	3450	0,040	220	1850	0,065	360	1850	0,065	360	1850
	16,0	0,055	420	2580	0,055	220	1390	0,085	350	1390	0,085	350	1390
	20,0	0,075	460	2070	0,075	240	1110	0,115	380	1110	0,115	380	1110
	25,0	0,090	440	1650	0,090	240	890	0,155	410	890	0,155	410	890
Resina Termo Plastica / Thermo Plastics		NIG Z=3			SIL Z=3			NIG Z=3			SIL Z=3		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,020	500	8490	0,020	250	4240	0,050	1270	8490	0,050	630	4240
	8,0	0,030	570	6360	0,030	280	3180	0,070	1330	6360	0,070	660	3180
	10,0	0,040	610	5090	0,040	300	2540	0,080	1220	5090	0,080	600	2540
	12,0	0,050	630	4240	0,050	310	2120	0,090	1140	4240	0,090	570	2120
	16,0	0,065	620	3180	0,065	310	1590	0,120	1140	3180	0,120	570	1590
	20,0	0,075	570	2540	0,075	280	1270	0,150	1140	2540	0,150	570	1270
	25,0	0,090	540	2030	0,090	270	1010	0,170	1030	2030	0,170	510	1010

Notes

SIL SERVICE

L'esperienza Silmax dimostra che un utensile correttamente affilato ha un rendimento uguale a quello nuovo.

Silmax experience shows that a properly sharpened tool grants the same performances of a new tool.

- Riaffilatura e rigenerazione / Resharpening and Reconditioning
- Esecuzione perfetta / Perfect Execution
- Rivestimento PVD / PVD Coating
- Trattamento 4S / 4S Treatment
- Consegna rapida / Fast Delivery

Frese a Finire in HSSCo8

Finishing End Mills in HSSCo8

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Fresa a finire serie corta
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Fresa a finire serie corta
Finishing end mill, short version
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730
Fresa a finire serie corta
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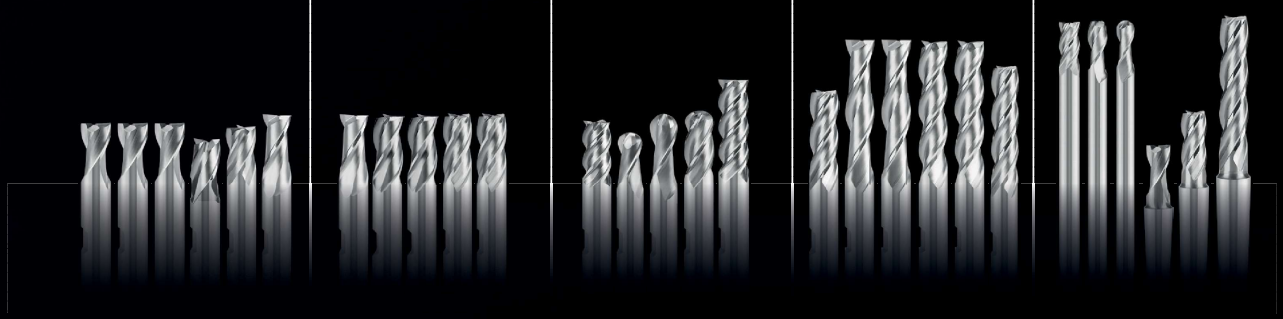
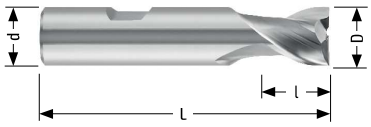
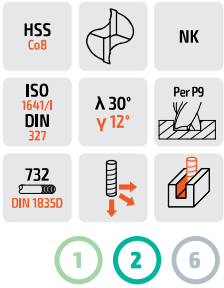


731

Fresa a finire serie corta
Finishing end mill, short version

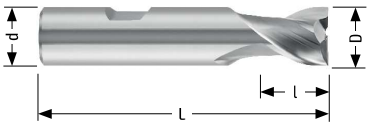




D e8	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
1,5	6	49	4,0	2	VAN731015	NIG731015
2,0	6	49	4,0	2	VAN731020	NIG731020
2,5	6	49	5,0	2	VAN731025	NIG731025
3,0	6	49	5,0	2	VAN731030	NIG731030
3,5	6	51	7,0	2	VAN731035	NIG731035
4,0	6	51	7,0	2	VAN731040	NIG731040
4,5	6	51	7,0	2	VAN731045	NIG731045
5,0	6	52	8,0	2	VAN731050	NIG731050
5,5	6	52	8,0	2	VAN731055	NIG731055
6,0	6	52	8,0	2	VAN731060	NIG731060
6,5	10	60	10,0	2	VAN731065	NIG731065
7,0	10	60	10,0	2	VAN731070	NIG731070
7,5	10	61	11,0	2	VAN731075	NIG731075
8,0	10	61	11,0	2	VAN731080	NIG731080
8,5	10	61	11,0	2	VAN731085	NIG731085
9,0	10	61	11,0	2	VAN731090	NIG731090
9,5	10	63	13,0	2	VAN731095	NIG731095
10,0	10	63	13,0	2	VAN731100	NIG731100
10,5	12	70	13,0	2	VAN731105	NIG731105
11,0	12	70	13,0	2	VAN731110	NIG731110
11,5	12	73	16,0	2	VAN731115	NIG731115
12,0	12	73	16,0	2	VAN731120	NIG731120
12,5	12	73	16,0	2	VAN731125	NIG731125
13,0	12	73	16,0	2	VAN731130	NIG731130
13,5	12	73	16,0	2	VAN731135	NIG731135
14,0	12	73	16,0	2	VAN731140	NIG731140
14,5	12	73	16,0	2	VAN731145	NIG731145
15,0	12	73	16,0	2	VAN731150	NIG731150
16,0	16	79	19,0	2	VAN731160	NIG731160
17,0	16	79	19,0	2	VAN731170	NIG731170
18,0	16	79	19,0	2	VAN731180	NIG731180
19,0	16	79	19,0	2	VAN731190	NIG731190
20,0	20	88	22,0	2	VAN731200	NIG731200
22,0	20	88	22,0	2	VAN731220	NIG731220
25,0	25	102	26,0	2	VAN731250	NIG731250
28,0	25	102	26,0	2	VAN731280	NIG731280
30,0	25	102	26,0	2	VAN731300	NIG731300
32,0	32	112	32,0	2	VAN731320	NIG731320
36,0	32	112	32,0	2	VAN731360	NIG731360
40,0	40	130	38,0	2	VAN731400	NIG731400

735

Fresa a finire serie corta
Finishing end mill, short version



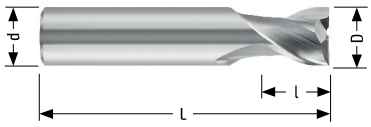
HSS Co8 | NK | ISO 1641/I DIN 327 | λ 30° γ 12° | Per h7 - h9 | 736 DIN 1835D

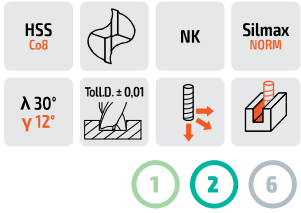
1 2 6

D	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
1,5	6	49	4,0	2	VAN735015	NIG735015
2,0	6	49	4,0	2	VAN735020	NIG735020
2,5	6	49	5,0	2	VAN735025	NIG735025
3,0	6	49	5,0	2	VAN735030	NIG735030
3,5	6	51	7,0	2	VAN735035	NIG735035
4,0	6	51	7,0	2	VAN735040	NIG735040
4,5	6	51	7,0	2	VAN735045	NIG735045
5,0	6	52	8,0	2	VAN735050	NIG735050
5,5	6	52	8,0	2	VAN735055	NIG735055
6,0	6	52	8,0	2	VAN735060	NIG735060
6,5	10	60	10,0	2	VAN735065	NIG735065
7,0	10	60	10,0	2	VAN735070	NIG735070
7,5	10	61	11,0	2	VAN735075	NIG735075
8,0	10	61	11,0	2	VAN735080	NIG735080
8,5	10	61	11,0	2	VAN735085	NIG735085
9,0	10	61	11,0	2	VAN735090	NIG735090
9,5	10	63	13,0	2	VAN735095	NIG735095
10,0	10	63	13,0	2	VAN735100	NIG735100
11,0	12	70	13,0	2	VAN735110	NIG735110
12,0	12	73	16,0	2	VAN735120	NIG735120
13,0	12	73	16,0	2	VAN735130	NIG735130
14,0	12	73	16,0	2	VAN735140	NIG735140
15,0	12	73	16,0	2	VAN735150	NIG735150
16,0	16	79	19,0	2	VAN735160	NIG735160
17,0	16	79	19,0	2	VAN735170	NIG735170
18,0	16	79	19,0	2	VAN735180	NIG735180
19,0	16	79	19,0	2	VAN735190	NIG735190
20,0	20	88	22,0	2	VAN735200	NIG735200

730

Fresa a finire serie corta
Finishing end mill, short version





D ±0.01	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
0,5	3	37	1,5	2	VAN730005	NIG730005
0,6	3	37	1,5	2	VAN730006	NIG730006
0,7	4	37	2,0	2	VAN730007	NIG730007
0,8	4	37	2,0	2	VAN730008	NIG730008
0,9	4	37	2,5	2	VAN730009	NIG730009
1,0	4	37	3,0	2	VAN730010	NIG730010
1,2	4	37	4,0	2	VAN730012	NIG730012
1,4	4	37	4,0	2	VAN730014	NIG730014
1,5	4	37	4,0	2	VAN730015	NIG730015
1,6	4	37	4,0	2	VAN730016	NIG730016
1,7	4	37	5,0	2	VAN730017	NIG730017
1,8	4	37	5,0	2	VAN730018	NIG730018
2,0	4	37	5,0	2	VAN730020	NIG730020
2,5	4	40	7,0	2	VAN730025	NIG730025
3,0	5	44	8,0	2	VAN730030	NIG730030
3.5	5	44	10,0	2	VAN730035	NIG730035
4,0	6	51	12,0	2	VAN730040	NIG730040
4,5	6	51	12,0	2	VAN730045	NIG730045
5,0	6	52	14,0	2	VAN730050	NIG730050
5,5	6	52	14,0	2	VAN730055	NIG730055

Notes

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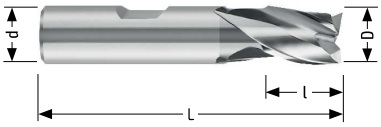
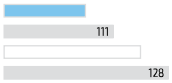
Fresa a finire serie corta
Finishing end mill, short version





HSS Co8 | NK | ISO 1641/1 DIN 327 | λ 30° γ 12° | Per P9

1 2

D e8	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
1,0	6	49	4,0	3	SIL108010	NIG108010
1,5	6	49	4,0	3	SIL108015	NIG108015
2,0	6	49	4,0	3	SIL108020	NIG108020
2,5	6	49	5,0	3	SIL108025	NIG108025
3,0	6	49	5,0	3	SIL108030	NIG108030
3,5	6	51	7,0	3	SIL108035	NIG108035
3,8	6	51	7,0	3	SIL108038	NIG108038
4,0	6	51	7,0	3	SIL108040	NIG108040
4,5	6	51	7,0	3	SIL108045	NIG108045
4,8	6	52	8,0	3	SIL108048	NIG108048
5,0	6	52	8,0	3	SIL108050	NIG108050
5,5	6	52	8,0	3	SIL108055	NIG108055
6,0	6	52	8,0	3	SIL108060	NIG108060
6,5	10	60	10,0	3	SIL108065	NIG108065
7,0	10	60	10,0	3	SIL108070	NIG108070
7,5	10	61	11,0	3	SIL108075	NIG108075
8,0	10	61	11,0	3	SIL108080	NIG108080
8,5	10	61	11,0	3	SIL108085	NIG108085
9,0	10	61	11,0	3	SIL108090	NIG108090
9,5	10	63	13,0	3	SIL108095	NIG108095
10,0	10	63	13,0	3	SIL108100	NIG108100
11,0	12	70	13,0	3	SIL108110	NIG108110
12,0	12	73	16,0	3	SIL108120	NIG108120
13,0	12	73	16,0	3	SIL108130	NIG108130
14,0	12	73	16,0	3	SIL108140	NIG108140
15,0	12	73	16,0	3	SIL108150	NIG108150
16,0	16	79	19,0	3	SIL108160	NIG108160
17,0	16	79	19,0	3	SIL108170	NIG108170
18,0	16	79	19,0	3	SIL108180	NIG108180
19,0	16	79	19,0	3	SIL108190	NIG108190
20,0	20	88	22,0	3	SIL108200	NIG108200

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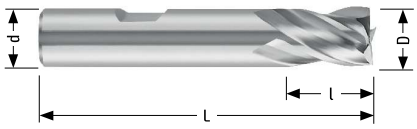
Fresa a finire serie corta
Finishing end mill, short version



113
193
123

HSS Co8 | NS | ISO 1641/1 DIN 327 | λ 30° γ 12°

1 2

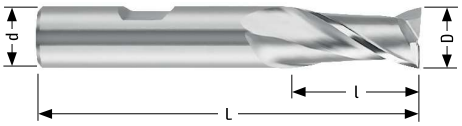
90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
5,0	6	52	8,0	4	SIL138005	NIG138005
6,0	6	52	8,0	4	SIL138006	NIG138006
7,0	10	60	10,0	4	SIL138007	NIG138007
8,0	10	61	11,0	4	SIL138008	NIG138008
9,0	10	61	11,0	4	SIL138009	NIG138009
10,0	10	63	13,0	4	SIL138010	NIG138010
11,0	12	70	13,0	4	SIL138011	NIG138011
12,0	12	73	16,0	4	SIL138012	NIG138012
13,0	12	73	16,0	4	SIL138013	NIG138013
14,0	12	73	16,0	4	SIL138014	NIG138014
15,0	12	73	16,0	4	SIL138015	NIG138015
16,0	16	79	19,0	4	SIL138016	NIG138016
17,0	16	79	19,0	4	SIL138017	NIG138017
18,0	16	79	19,0	4	SIL138018	NIG138018
19,0	16	79	19,0	4	SIL138019	NIG138019
20,0	20	88	22,0	4	SIL138020	NIG138020
22,0	20	88	22,0	4	SIL138022	NIG138022
25,0	25	102	26,0	4	SIL138025	NIG138025
28,0	25	102	26,0	6	SIL138028	NIG138028
30,0	25	102	26,0	6	SIL138030	NIG138030
32,0	32	113	32,0	6	SIL138032	NIG138032

Notes

171

Fresa a finire serie normale
Finishing end mill, regular version



1712

HSS Co8 | NS | ISO 1641/1 DIN 844K | λ 30° γ 12° | 172 DIN 1835D

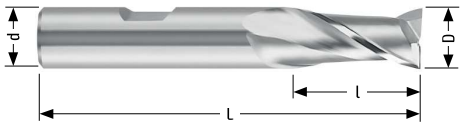
1 2 6

90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
1,5	6	52	7,0	2	SIL1710015	NIG1710015
2,0	6	52	7,0	2	SIL1710020	NIG1710020
2,5	6	52	8,0	2	SIL1710025	NIG1710025
3,0	6	52	8,0	2	SIL171003	NIG171003
3,5	6	54	10,0	2	SIL1710035	NIG1710035
4,0	6	55	11,0	2	SIL171004	NIG171004
4,5	6	55	11,0	2	SIL1710045	NIG1710045
5,0	6	57	13,0	2	SIL171005	NIG171005
5,5	6	57	13,0	2	SIL1710055	NIG1710055
6,0	6	57	13,0	2	SIL171006	NIG171006
7,0	10	66	16,0	2	SIL171007	NIG171007
8,0	10	69	19,0	2	SIL171008	NIG171008
9,0	10	69	19,0	2	SIL171009	NIG171009
10,0	10	72	22,0	2	SIL171010	NIG171010
11,0	12	79	22,0	2	SIL171011	NIG171011
12,0	12	83	26,0	2	SIL171012	NIG171012
13,0	12	83	26,0	2	SIL171013	NIG171013
14,0	12	83	26,0	2	SIL171014	NIG171014
15,0	12	83	26,0	2	SIL171015	NIG171015
16,0	16	92	32,0	2	SIL171016	NIG171016
17,0	16	92	32,0	2	SIL171017	NIG171017
18,0	16	92	32,0	2	SIL171018	NIG171018
19,0	16	92	32,0	2	SIL171019	NIG171019
20,0	20	104	38,0	2	SIL171020	NIG171020
22,0	20	104	38,0	2	SIL171022	NIG171022
25,0	25	121	45,0	2	SIL171025	NIG171025
28,0	25	121	45,0	2	SIL171028	NIG171028
30,0	25	121	45,0	2	SIL171030	NIG171030
32,0	32	133	53,0	2	SIL171032	NIG171032
36,0	32	133	53,0	2	SIL171036	NIG171036
40,0	40	155	63,0	2	SIL171040	NIG171040

173

Fresa a finire serie normale
Finishing end mill, regular version



174

HSS Co8 | W | ISO 1641/1 DIN 844K | λ 35° γ 17°

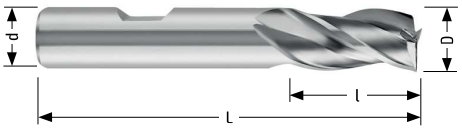
1 2 6

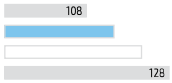
90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
4,0	6	55	11,0	2	SIL173004	NIG173004
5,0	6	57	13,0	2	SIL173005	NIG173005
6,0	6	57	13,0	2	SIL173006	NIG173006
7,0	10	66	16,0	2	SIL173007	NIG173007
8,0	10	69	19,0	2	SIL173008	NIG173008
9,0	10	69	19,0	2	SIL173009	NIG173009
10,0	10	72	22,0	2	SIL173010	NIG173010
11,0	12	79	22,0	2	SIL173011	NIG173011
12,0	12	83	26,0	2	SIL173012	NIG173012
13,0	12	83	26,0	2	SIL173013	NIG173013
14,0	12	83	26,0	2	SIL173014	NIG173014
15,0	12	83	26,0	2	SIL173015	NIG173015
16,0	16	92	32,0	2	SIL173016	NIG173016
17,0	16	92	32,0	2	SIL173017	NIG173017
18,0	16	92	32,0	2	SIL173018	NIG173018
19,0	16	92	32,0	2	SIL173019	NIG173019
20,0	20	104	38,0	2	SIL173020	NIG173020
25,0	25	121	45,0	2	SIL173025	NIG173025

111

Fresa a finire serie normale
Finishing end mill, regular version





HSS Co8 | NS | ISO 1641/1 DIN 844K | λ 30° γ 12° | 114 DIN 1835D

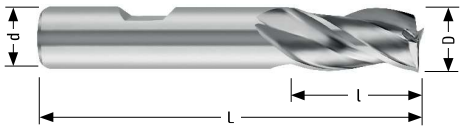
1 2

90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
1,5	6	52	7,0	3	SIL111015	NIG111015
2,0	6	52	7,0	3	SIL111020	NIG111020
2,5	6	52	8,0	3	SIL111025	NIG111025
3,0	6	52	8,0	3	SIL111030	NIG111030
3,5	6	54	10,0	3	SIL111035	NIG111035
3,8	6	55	11,0	3	SIL111038	NIG111038
4,0	6	55	11,0	3	SIL111040	NIG111040
4,5	6	55	11,0	3	SIL111045	NIG111045
4,8	6	57	13,0	3	SIL111048	NIG111048
5,0	6	57	13,0	3	SIL111050	NIG111050
5,5	6	57	13,0	3	SIL111055	NIG111055
5,8	6	57	13,0	3	SIL111057	NIG111057
6,0	6	57	13,0	3	SIL111060	NIG111060
6,5	10	66	16,0	3	SIL111065	NIG111065
6,8	10	66	16,0	3	SIL111067	NIG111067
7,0	10	66	16,0	3	SIL111070	NIG111070
7,5	10	69	19,0	3	SIL111075	NIG111075
7,8	10	69	19,0	3	SIL111077	NIG111077
8,0	10	69	19,0	3	SIL111080	NIG111080
8,5	10	69	19,0	3	SIL111085	NIG111085
8,7	10	69	19,0	3	SIL111087	NIG111087
9,0	10	69	19,0	3	SIL111090	NIG111090
9,5	10	72	22,0	3	SIL111095	NIG111095
9,7	10	72	22,0	3	SIL111097	NIG111097
10,0	10	72	22,0	3	SIL111100	NIG111100
10,7	12	79	22,0	3	SIL111107	NIG111107
11,0	12	79	22,0	3	SIL111110	NIG111110
11,7	12	83	26,0	3	SIL111117	NIG111117
12,0	12	83	26,0	3	SIL111120	NIG111120
12,7	12	83	26,0	3	SIL111127	NIG111127
13,0	12	83	26,0	3	SIL111130	NIG111130
13,7	12	83	26,0	3	SIL111137	NIG111137
14,0	12	83	26,0	3	SIL111140	NIG111140
14,7	12	83	26,0	3	SIL111147	NIG111147
15,0	12	83	26,0	3	SIL111150	NIG111150
15,7	16	92	32,0	3	SIL111157	NIG111157
16,0	16	92	32,0	3	SIL111160	NIG111160
17,0	16	92	32,0	3	SIL111170	NIG111170
17,7	16	92	32,0	3	SIL111177	NIG111177
18,0	16	92	32,0	3	SIL111180	NIG111180
19,0	16	92	32,0	3	SIL111190	NIG111190
19,7	20	104	38,0	3	SIL111197	NIG111197
20,0	20	104	38,0	3	SIL111200	NIG111200
22,0	20	104	38,0	3	SIL111220	NIG111220
25,0	25	121	45,0	3	SIL111250	NIG111250
28,0	25	121	45,0	3	SIL111280	NIG111280
30,0	25	121	45,0	3	SIL111300	NIG111300
32,0	32	133	53,0	3	SIL111320	NIG111320

115

Fresa a finire serie normale
Finishing end mill, regular version



ALU

HSS Co8 | W | ISO 1641/I DIN 844K | λ 35° γ 17° | 117 DIN 1835D | 6

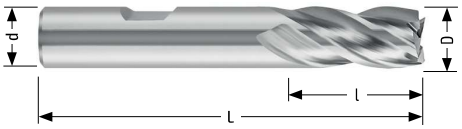
90°

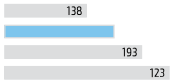
D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	57	13,0	3	SIL115006	NIG115006
8,0	10	69	19,0	3	SIL115008	NIG115008
10,0	10	72	22,0	3	SIL115010	NIG115010
12,0	12	83	26,0	3	SIL115012	NIG115012
14,0	12	83	26,0	3	SIL115014	NIG115014
16,0	16	92	32,0	3	SIL115016	NIG115016
18,0	16	92	32,0	3	SIL115018	NIG115018
20,0	20	104	38,0	3	SIL115020	NIG115020
25,0	25	121	45,0	3	SIL115025	NIG115025
30,0	25	121	45,0	3	SIL115030	NIG115030
32,0	32	133	53,0	3	SIL115032	NIG115032
40,0	32	155	63,0	3	SIL115040	NIG115040
50,0	32	177	75,0	3	SIL115050	NIG115050

Notes

113

Fresa a finire serie normale
Finishing end mill, regular version





HSS Co8 | NS | ISO 1641/I DIN 844K | λ 30° γ 12° | 116 DIN 1835D

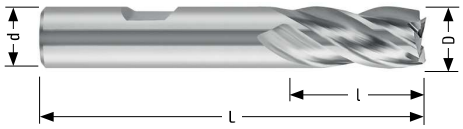
1 2

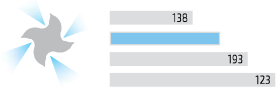
90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
1,5	6	52	7,0	4	SIL1130015	NIG1130015
2,0	6	52	7,0	4	SIL1130020	NIG1130020
2,5	6	52	8,0	4	SIL1130025	NIG1130025
3,0	6	52	8,0	4	SIL1130030	NIG1130030
3,5	6	54	10,0	4	SIL1130035	NIG1130035
4,0	6	55	11,0	4	SIL1130040	NIG1130040
4,5	6	55	11,0	4	SIL1130045	NIG1130045
5,0	6	57	13,0	4	SIL1130050	NIG1130050
5,5	6	57	13,0	4	SIL1130055	NIG1130055
6,0	6	57	13,0	4	SIL113006	NIG113006
7,0	10	66	16,0	4	SIL113007	NIG113007
8,0	10	69	19,0	4	SIL113008	NIG113008
9,0	10	69	19,0	4	SIL113009	NIG113009
10,0	10	72	22,0	4	SIL113010	NIG113010
11,0	12	79	22,0	4	SIL113011	NIG113011
12,0	12	83	26,0	4	SIL113012	NIG113012
13,0	12	83	26,0	4	SIL113013	NIG113013
14,0	12	83	26,0	4	SIL113014	NIG113014
15,0	12	83	26,0	4	SIL113015	NIG113015
16,0	16	92	32,0	4	SIL113016	NIG113016
17,0	16	92	32,0	4	SIL113017	NIG113017
18,0	16	92	32,0	4	SIL113018	NIG113018
19,0	16	92	32,0	4	SIL113019	NIG113019
20,0	20	104	38,0	4	SIL113020	NIG113020
22,0	20	104	38,0	4	SIL113022	NIG113022
24,0	25	121	45,0	4	SIL113024	NIG113024
25,0	25	121	45,0	4	SIL113025	NIG113025
26,0	25	121	45,0	4	SIL113026	NIG113026
28,0	25	121	45,0	6	SIL113028	NIG113028
30,0	25	121	45,0	6	SIL113030	NIG113030
32,0	32	133	53,0	6	SIL113032	NIG113032
36,0	32	133	53,0	6	SIL113036	NIG113036
40,0	40	155	63,0	6	SIL113040	NIG113040
50,0	50	177	75,0	6	SIL113050	NIG113050

113R

Fresa a finire serie normale
Finishing end mill, regular version





HSS Co8 | NS | ISO 1641/I DIN 844K | λ 30° γ 12° | 116 DIN 1835D

1 2

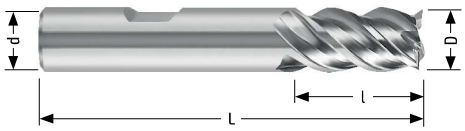
Con fori di lubrificazione / With internal coolant

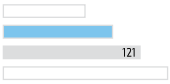
90°

D k10	d h6	L	l	Z	Balinit® Alcrona
16,0	16	92	32,0	4	RMG113016
18,0	16	92	32,0	4	RMG113018
20,0	20	104	38,0	4	RMG113020
22,0	20	104	38,0	4	RMG113022
25,0	25	121	45,0	4	RMG113025

118

Fresa a finire serie normale
Finishing end mill, regular version





HSS Co8 | NS | ISO 1641/I DIN 844K | λ 40° γ 14° | 119 DIN 1835D

1 2 6

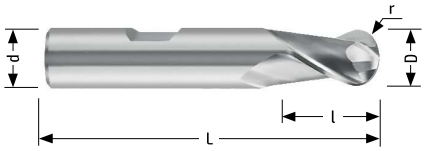
90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
4,0	6	55	11,0	4	SIL118004	NIG118004
5,0	6	57	13,0	4	SIL118005	NIG118005
6,0	6	57	13,0	4	SIL118006	NIG118006
7,0	10	66	16,0	4	SIL118007	NIG118007
8,0	10	69	19,0	4	SIL118008	NIG118008
9,0	10	69	19,0	4	SIL118009	NIG118009
10,0	10	72	22,0	4	SIL118010	NIG118010
11,0	12	79	22,0	4	SIL118011	NIG118011
12,0	12	83	26,0	4	SIL118012	NIG118012
13,0	12	83	26,0	4	SIL118013	NIG118013
14,0	12	83	26,0	4	SIL118014	NIG118014
15,0	12	83	26,0	4	SIL118015	NIG118015
16,0	16	92	32,0	4	SIL118016	NIG118016
17,0	16	92	32,0	4	SIL118017	NIG118017
18,0	16	92	32,0	4	SIL118018	NIG118018
19,0	16	92	32,0	4	SIL118019	NIG118019
20,0	20	104	38,0	6	SIL118020	NIG118020
22,0	20	104	38,0	6	SIL118022	NIG118022
25,0	25	121	45,0	6	SIL118025	NIG118025
28,0	25	121	45,0	6	SIL118028	NIG118028
30,0	25	121	45,0	6	SIL118030	NIG118030
32,0	32	133	53,0	6	SIL118032	NIG118032

Notes

738

Fresa semisferica a finire serie corta
Ball nose finishing end mill, short version



737

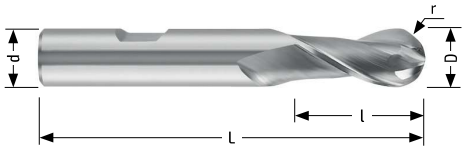
HSS Co8 | NS | ISO 1641/I DIN 327 | λ 30° γ 12° | 116 DIN 1835D

1 2 6

D k10	d h6	L	l	r	Z	Non rivestito Uncoated	Balinit® Alcrona
2,0	6	49	4,0	1,00	2	VAN738020	NIG738020
2,5	6	49	5,0	1,25	2	VAN738025	NIG738025
3,0	6	49	5,0	1,50	2	VAN738030	NIG738030
4,0	6	51	7,0	2,00	2	VAN738040	NIG738040
5,0	6	52	8,0	2,50	2	VAN738050	NIG738050
5,5	6	52	8,0	2,75	2	VAN738055	NIG738055
6,0	6	52	8,0	3,00	2	VAN738060	NIG738060
7,0	10	60	10,0	3,50	2	VAN738070	NIG738070
8,0	10	61	11,0	4,00	2	VAN738080	NIG738080
10,0	10	63	13,0	5,00	2	VAN738100	NIG738100
12,0	12	73	16,0	6,00	2	VAN738120	NIG738120
14,0	12	73	16,0	7,00	2	VAN738140	NIG738140
15,0	12	73	16,0	7,50	2	VAN738150	NIG738150
16,0	16	79	19,0	8,00	2	VAN738160	NIG738160
18,0	16	79	19,0	9,00	2	VAN738180	NIG738180
20,0	20	88	22,0	10,00	2	VAN738200	NIG738200

737

Fresa semisferica a finire serie normale
Ball nose finishing end mill, regular version



738

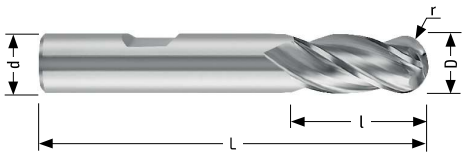
HSS Co8 | NS | ISO 1641/1 DIN 1889/1 | λ 30° γ 12°

1 2 6

D k10	d h6	L	l	r	Z	Non rivestito Uncoated	Balinit® Alcrona
0,5	3	37	1.5	0,25	2	VAN737005	NIG737005
0,8	4	37	2,0	0,40	2	VAN737008	NIG737008
1,0	4	37	3,0	0,50	2	VAN737010	NIG737010
1,2	4	37	4,0	0,60	2	VAN737012	NIG737012
1,5	4	37	4,0	0,75	2	VAN737015	NIG737015
1,8	4	37	5,0	0,90	2	VAN737018	NIG737018
2,0	6	52	7,0	1,00	2	VAN737020	NIG737020
2,5	6	52	8,0	1,25	2	VAN737025	NIG737025
3,0	6	52	8,0	1,50	2	VAN737030	NIG737030
4,0	6	55	11,0	2,00	2	VAN737040	NIG737040
5,0	6	57	13,0	2,50	2	VAN737050	NIG737050
6,0	6	57	13,0	3,00	2	VAN737060	NIG737060
7,0	10	66	16,0	3,50	2	VAN737070	NIG737070
8,0	10	69	19,0	4,00	2	VAN737080	NIG737080
10,0	10	72	22,0	5,00	2	VAN737100	NIG737100
12,0	12	83	26,0	6,00	2	VAN737120	NIG737120
14,0	12	83	26,0	7,00	2	VAN737140	NIG737140
16,0	16	92	32,0	8,00	2	VAN737160	NIG737160
18,0	16	92	32,0	9,00	2	VAN737180	NIG737180
20,0	20	104	38,0	10,00	2	VAN737200	NIG737200

131

Fresa semisferica a finire serie normale
Ball nose finishing end mill, regular version



HSS Co8 | NS | ISO 1641/1 DIN 1889/1 | λ 30° γ 12° | 133 DIN 1835D

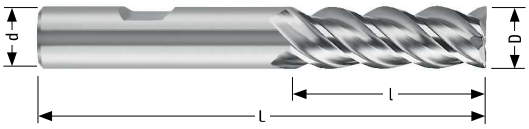
1 2 6

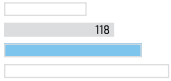
D k10	d h6	L	l	r	Z	Non rivestito Uncoated	Balinit® Alcrona
6,00	6	57	13,0	3,00	4	SIL131006	NIG131006
8,00	10	69	19,0	4,00	4	SIL131008	NIG131008
10,00	10	72	22,0	5,00	4	SIL131010	NIG131010
12,00	12	83	26,0	6,00	4	SIL131012	NIG131012
14,00	12	83	26,0	7,00	4	SIL131014	NIG131014
16,00	16	92	32,0	8,00	4	SIL131016	NIG131016
18,00	16	92	32,0	9,00	4	SIL131018	NIG131018
20,00	20	104	38,0	10,00	6	SIL131020	NIG131020
22,00	20	104	38,0	11,00	6	SIL131022	NIG131022
25,00	25	121	45,0	12,50	6	SIL131025	NIG131025
30,00	25	121	45,0	15,00	6	SIL131030	NIG131030
32,00	32	133	53,0	16,00	6	SIL131032	NIG131032

121

Fresa a finire serie media
Finishing end mill, medium version

HSS Co8 | NS | Silmax NORM
λ 40° γ 14°





1 2

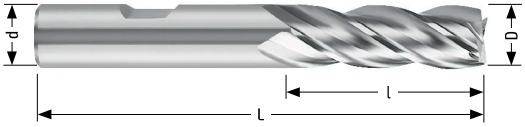
90°

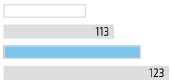
D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6	6	62	18	4	SIL121006	NIG121006
8	10	75	25	4	SIL121008	NIG121008
10	10	83	33	4	SIL121010	NIG121010
12	12	96	39	4	SIL121012	NIG121012
14	12	96	39	4	SIL121014	NIG121014
16	16	105	45	4	SIL121016	NIG121016
18	16	105	45	4	SIL121018	NIG121018
20	20	121	55	6	SIL121020	NIG121020
25	25	141	65	6	SIL121025	NIG121025

193

Fresa a finire serie media
Finishing end mill, medium version

HSS Co8 | NS | Silmax NORM
λ 30° γ 12°





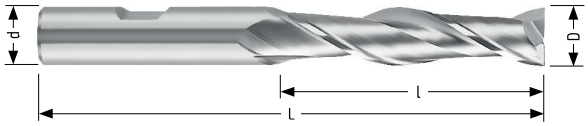
1 2

90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	62	18,0	4	SIL193006	NIG193006
8,0	10	75	25,0	4	SIL193008	NIG193008
10,0	10	83	33,0	4	SIL193010	NIG193010
12,0	12	96	39,0	4	SIL193012	NIG193012
14,0	12	96	39,0	4	SIL193014	NIG193014
16,0	16	105	45,0	4	SIL193016	NIG193016
18,0	16	105	45,0	4	SIL193018	NIG193018
20,0	20	121	55,0	4	SIL193020	NIG193020
22,0	20	121	55,0	4	SIL193022	NIG193022
25,0	25	141	65,0	4	SIL193025	NIG193025
28,0	25	141	65,0	6	SIL193028	NIG193028
30,0	25	141	65,0	6	SIL193030	NIG193030
32,0	32	158	78,0	6	SIL193032	NIG193032

1712

Fresa a finire serie lunga
Finishing end mill, long version



171

HSS Co8 | NS | ISO 1641/I DIN 844L | λ 30° γ 12° | 1722 DIN 1835D

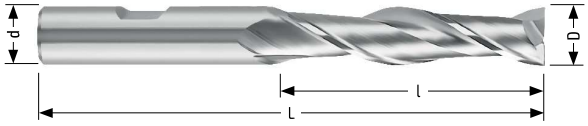
1 2 6

90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	68	24,0	2	SIL171206	NIG171206
8,0	10	88	38,0	2	SIL171208	NIG171208
10,0	10	95	45,0	2	SIL171210	NIG171210
12,0	12	110	53,0	2	SIL171212	NIG171212
14,0	12	110	53,0	2	SIL171214	NIG171214
16,0	16	123	63,0	2	SIL171216	NIG171216
18,0	16	123	63,0	2	SIL171218	NIG171218
20,0	20	141	75,0	2	SIL171220	NIG171220
22,0	20	141	75,0	2	SIL171222	NIG171222
25,0	25	166	90,0	2	SIL171225	NIG171225
28,0	25	166	90,0	2	SIL171228	NIG171228
30,0	25	166	90,0	2	SIL171230	NIG171230
32,0	32	186	106,0	2	SIL171232	NIG171232
36,0	32	186	106,0	2	SIL171236	NIG171236
40,0	40	217	125,0	2	SIL171240	NIG171240

174

Fresa a finire serie lunga
Finishing end mill, long version



173

HSS Co8 | W | ISO 1641/I DIN 844L | λ 35° γ 17° | 1722 DIN 1835D

1 2 6

90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	68	24,0	2	SIL174006	NIG174006
8,0	10	88	38,0	2	SIL174008	NIG174008
10,0	10	95	45,0	2	SIL174010	NIG174010
12,0	12	110	53,0	2	SIL174012	NIG174012
14,0	12	110	53,0	2	SIL174014	NIG174014
16,0	16	123	63,0	2	SIL174016	NIG174016
18,0	16	123	63,0	2	SIL174018	NIG174018
20,0	20	141	75,0	2	SIL174020	NIG174020
25,0	25	166	90,0	2	SIL174025	NIG174025

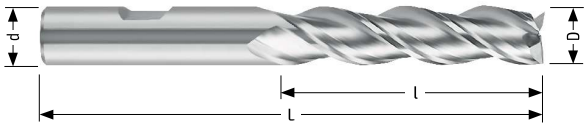
Notes

128

Fresa a finire serie lunga
Finishing end mill, long version

HSS Co8 | NS | ISO 1641/I DIN 844L | λ 30° γ 12°

1 2



108
111

90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
3,0	6	56	12,0	3	SIL128003	NIG128003
4,0	6	63	19,0	3	SIL128004	NIG128004
5,0	6	68	24,0	3	SIL128005	NIG128005
6,0	6	68	24,0	3	SIL128006	NIG128006
7,0	10	80	30,0	3	SIL128007	NIG128007
8,0	10	88	38,0	3	SIL128008	NIG128008
9,0	10	88	38,0	3	SIL128009	NIG128009
10,0	10	95	45,0	3	SIL128010	NIG128010
12,0	12	110	53,0	3	SIL128012	NIG128012
14,0	12	110	53,0	3	SIL128014	NIG128014
15,0	12	110	53,0	3	SIL128015	NIG128015
16,0	16	123	63,0	3	SIL128016	NIG128016
18,0	16	123	63,0	3	SIL128018	NIG128018
20,0	20	141	75,0	3	SIL128020	NIG128020

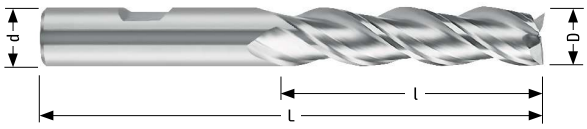
125

Fresa a finire serie lunga
Finishing end mill, long version

HSS Co8 | W | ISO 1641/I DIN 844L | λ 35° γ 17° | 127 DIN 1835D

6

ALU



115

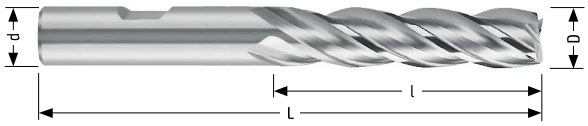
90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	68	24,0	3	SIL125006	NIG125006
8,0	10	88	38,0	3	SIL125008	NIG125008
10,0	10	95	45,0	3	SIL125010	NIG125010
12,0	12	110	53,0	3	SIL125012	NIG125012
14,0	12	110	53,0	3	SIL125014	NIG125014
16,0	16	123	63,0	3	SIL125016	NIG125016
18,0	16	123	63,0	3	SIL125018	NIG125018
20,0	20	141	75,0	3	SIL125020	NIG125020
25,0	25	166	90,0	3	SIL125025	NIG125025
30,0	25	166	90,0	3	SIL125030	NIG125030
32,0	32	186	106,0	3	SIL125032	NIG125032
40,0	32	217	125,0	3	SIL125040	NIG125040

1	2	3	4	5	6	7	8	9		
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	→ 16 Guida alla lettura Reading guide	→ 18 Legenda Legend

123

Fresa a finire serie lunga
Finishing end mill, long version



138
113
193

HSS Co8 | NS | ISO 1641/1 DIN 844L | λ 30° γ 12° | 126 DIN 1835D | 1 | 2

90°

D k10	d h6	L	l	Z	Non rivestito Uncoated	Balinit® Alcrona
6,0	6	68	24,0	4	SIL123006	NIG123006
8,0	10	88	38,0	4	SIL123008	NIG123008
10,0	10	95	45,0	4	SIL123010	NIG123010
12,0	12	110	53,0	4	SIL123012	NIG123012
14,0	12	110	53,0	4	SIL123014	NIG123014
16,0	16	123	63,0	4	SIL123016	NIG123016
18,0	16	123	63,0	4	SIL123018	NIG123018
20,0	20	141	75,0	4	SIL123020	NIG123020
22,0	20	141	75,0	4	SIL123022	NIG123022
25,0	25	166	90,0	4	SIL123025	NIG123025
28,0	25	166	90,0	6	SIL123028	NIG123028
30,0	25	166	90,0	6	SIL123030	NIG123030
32,0	32	186	106,0	6	SIL123032	NIG123032
36,0	32	186	106,0	6	SIL123036	NIG123036
40,0	40	217	125,0	6	SIL123040	NIG123040
50,0	50	252	150,0	6	SIL123050	NIG123050

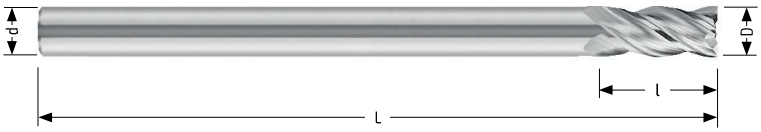
Notes

145

Fresa a finire serie extra lunga
Finishing end mill, extra long version

HSS CoB | NS | Silmax NORM
λ 30° γ 10°

1 2



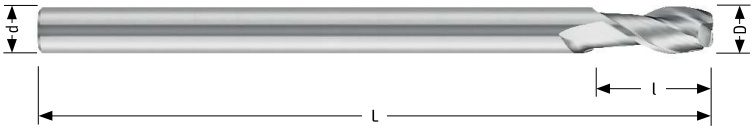
D k10	d h6	L	l	Z	Non rivestito Uncoated
6,0	6	180	25,0	4	SIL145006
8,0	8	180	25,0	4	SIL145008
10,0	10	200	30,0	4	SIL145010
12,0	12	200	30,0	4	SIL145012
14,0	14	200	35,0	4	SIL145014
16,0	16	200	35,0	4	SIL145016
20,0	20	200	35,0	4	SIL145020
25,0	25	200	40,0	4	SIL145025

146

Fresa a finire serie extra lunga
Finishing end mill, extra long version

HSS CoB | NS | Silmax NORM
λ 30° γ 10°

1 2 6

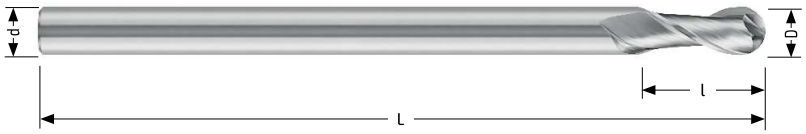


D k10	d h6	L	l	Z	Non rivestito Uncoated
6,0	6	180	25,0	2	SIL146006
8,0	8	180	25,0	2	SIL146008
10,0	10	200	30,0	2	SIL146010
12,0	12	200	30,0	2	SIL146012
14,0	14	200	35,0	2	SIL146014
16,0	16	200	35,0	2	SIL146016
20,0	20	200	35,0	2	SIL146020

1	2	3	4	5	6	7	8	9	→ 16	→ 18
Acciaio Steel	Ghise Cast Iron	Acciai Temprati Hardened Steel	Acciaio Inox Stainless Steel	Titanio Titanium	Leghe Leggere Light Alloys	PH Duplex	Superleghe Superalloys	Compositi Composite Materials	Guida alla lettura Reading guide	Legenda Legend

148

Fresa a finire serie extra lunga
Finishing end mill, extra long version



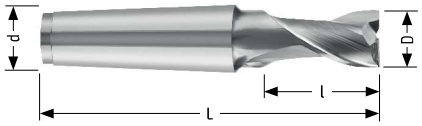
HSS Co8 | NS | Silmax NORM | λ 30° γ 10°

1 2 6

D k10	d h6	L	l	r	Z	Non rivestito Uncoated
6,0	6	180	25,0	3,00	2	SIL148006
8,0	8	180	25,0	4,00	2	SIL148008
10,0	10	200	30,0	5,00	2	SIL148010
12,0	12	200	30,0	6,00	2	SIL148012
14,0	14	200	35,0	7,00	2	SIL148014
16,0	16	200	35,0	8,00	2	SIL148016
20,0	20	200	35,0	10,00	2	SIL148020

750

Fresa a finire serie corta
Finishing end mill, short version



HSS Co8 | NK | ISO 1641/II DIN 326 | λ 30° γ 12° | Toll.D. e8

1 2 6

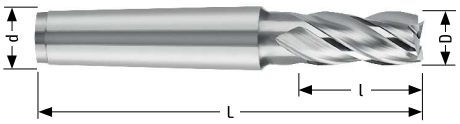
D e8	L	l	Mk	Z	Non rivestito Uncoated	Balinit® Alcrona
10,0	83	13,0	1	2	VAN750010	NIG750010
12,0	86	16,0	1	2	VAN750012	NIG750012
14,0	86	16,0	1	2	VAN750014	NIG750014
16,0	104	19,0	2	2	VAN750016	NIG750016
18,0	104	19,0	2	2	VAN750018	NIG750018
20,0	107	22,0	2	2	VAN750020	NIG750020
22,0	107	22,0	2	2	VAN750022	NIG750022
24,0	128	26,0	3	2	VAN750010	NIG750010
25,0	128	26,0	3	2	VAN750012	NIG750012
26,0	128	26,0	3	2	VAN750014	NIG750014
28,0	128	26,0	3	2	VAN750016	NIG750016
30,0	128	26,0	3	2	VAN750018	NIG750018
32,0	134	32,0	3	2	VAN750020	NIG750020
35,0	157	32,0	4	2	VAN750022	NIG750022
36,0	157	32,0	4	2	VAN750036	NIG750036
38,0	163	38,0	4	2	VAN750038	NIG750038
40,0	163	38,0	4	2	VAN750040	NIG750040

Notes

152

Fresa a finire serie normale
Finishing end mill, regular version

HSS CoB | NS | ISO 1641/II DIN 845K | λ 30° γ 12°



1 2

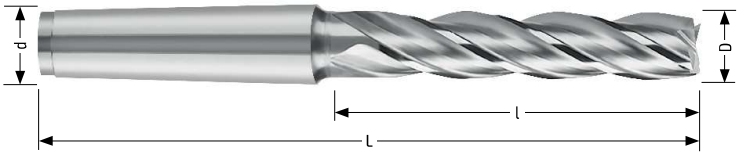
90°

D k10	L	l	Mk	Z	Non rivestito Uncoated	Balinit® Alcrona
16,0	117	32,0	2	4	SIL152016	NIG152016
18,0	117	32,0	2	4	SIL152018	NIG152018
20,0	123	38,0	2	4	SIL152020	NIG152020
22,0	140	38,0	3	4	SIL152022	NIG152022
25,0	147	45,0	3	4	SIL152025	NIG152025
28,0	147	45,0	3	6	SIL152028	NIG152028
30,0	147	45,0	3	6	SIL152030	NIG152030
32,0	155	53,0	3	6	SIL152032	NIG152032
36,0	178	53,0	4	6	SIL152036	NIG152036
40,0	188	63,0	4	6	SIL152040	NIG152040
45,0	188	63,0	4	6	SIL152045	NIG152045

160

Fresa a finire serie lunga
Finishing end mill, long version

HSS CoB | NS | ISO 1641/II DIN 845L | λ 30° γ 12°



1 2

90°

D k10	L	l	Mk	Z	Non rivestito Uncoated	Balinit® Alcrona
16,0	148	63,0	2	4	SIL160016	NIG160016
18,0	148	63,0	2	5	SIL160018	NIG160018
20,0	177	75,0	3	5	SIL160020	NIG160020
22,0	177	75,0	3	5	SIL160022	NIG160022
25,0	192	90,0	3	6	SIL160025	NIG160025
28,0	192	90,0	3	6	SIL160028	NIG160028
30,0	192	90,0	3	6	SIL160030	NIG160030
32,0	231	106,0	4	6	SIL160032	NIG160032
36,0	231	106,0	4	6	SIL160036	NIG160036
40,0	250	125,0	4	6	SIL160040	NIG160040
50,0	308	150,0	5	8	SIL160050	NIG160050
Mk - DIN2207						
40,0	273	125,0	4	6	SIL160140	NIG160140
50,0	336	150,0	5	8	SIL160150	NIG160150

1 Acciaio Steel	2 Ghise Cast Iron	3 Acciai Temprati Hardened Steel	4 Acciaio Inox Stainless Steel	5 Titanio Titanium	6 Leghe Leggere Light Alloys	7 PH Duplex	8 Superleghe Superalloys	9 Compositi Composite Materials	→ 16 Guida alla lettura Reading guide	→ 18 Legenda Legend

FIN

Parametri di lavoro / Working Parameters

Serie Corta (Short Version) + 20% / Serie Media (Medium Version) -20% / Serie Lunga (Long Version) -40%

Materiale Material	Diametro Diameter	NIG Z=4			SIL Z=4			NIG Z=3			SIL Z=3			NIG Z=2			SIL Z=2		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
Acciaio <800 N/mm² Steel <800 N/mm²	6,0	0,019	270	3560	0,015	100	1700	0,020	210	3560	0,016	85	1700	0,022	160	3560	0,018	60	1700
	8,0	0,037	400	2670	0,030	150	1270	0,029	230	2670	0,025	95	1270	0,032	170	2670	0,028	70	1270
	10,0	0,050	430	2130	0,039	160	1020	0,038	240	2130	0,031	95	1020	0,042	180	2130	0,034	70	1020
	12,0	0,060	430	1780	0,047	160	850	0,048	250	1780	0,037	95	850	0,053	190	1780	0,041	70	850
	16,0	0,081	430	1330	0,066	170	640	0,064	25	1330	0,050	95	640	0,071	190	1330	0,055	70	640
	20,0	0,103	440	1070	0,083	170	510	0,071	230	1070	0,053	80	510	0,079	170	1070	0,059	60	510
	25,0	0,126	430	850	0,098	160	410	0,079	200	850	0,060	75	410	0,088	150	850	0,067	55	410
Acciaio <1000 N/mm² Steel <1000 N/mm²		NIG Z=4			SIL Z=4			NIG Z=3			SIL Z=3			NIG Z=2			SIL Z=2		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,018	230	3240	0,015	90	1540	0,021	200	3240	0,017	80	1540	0,023	150	3240	0,019	60	1540
	8,0	0,036	350	2430	0,028	130	1150	0,032	230	2430	0,027	95	1150	0,035	170	2430	0,03	70	1150
	10,0	0,048	370	1940	0,038	140	920	0,041	240	1940	0,034	95	920	0,046	180	1940	0,038	70	920
	12,0	0,057	370	1620	0,045	140	770	0,053	260	1620	0,041	95	770	0,059	190	1620	0,045	70	770
	16,0	0,076	370	1210	0,06	140	580	0,067	240	1210	0,054	95	580	0,074	180	1210	0,06	70	580
	20,0	0,098	380	970	0,076	140	460	0,074	210	970	0,059	80	460	0,082	160	970	0,065	60	460
	25,0	0,119	370	780	0,095	140	370	0,081	190	780	0,061	70	370	0,090	140	78	0,068	50	370
Acciaio <1300 N/mm² Steel <1300 N/mm²		NIG Z=4			SIL Z=4			NIG Z=3			SIL Z=3			NIG Z=2			SIL Z=2		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,016	160	2440	0,013	60	1170	0,018	130	2440	0,015	50	1170	0,020	100	2440	0,017	40	1170
	8,0	0,031	230	1830	0,026	90	880	0,030	160	1830	0,021	55	880	0,033	120	1830	0,023	40	880
	10,0	0,043	250	1460	0,036	100	700	0,037	160	1460	0,032	70	700	0,041	120	1460	0,036	50	700
	12,0	0,051	250	1220	0,043	100	580	0,048	170	1220	0,039	70	580	0,053	130	1220	0,043	50	580
	16,0	0,068	250	920	0,057	100	440	0,059	160	920	0,051	70	440	0,065	120	920	0,057	50	440
	20,0	0,086	250	730	0,071	100	350	0,061	130	730	0,051	55	350	0,068	100	730	0,057	40	350
	25,0	0,106	250	590	0,089	100	280	0,061	110	590	0,057	50	280	0,068	80	590	0,063	35	280
Acciaio da stampi Mold Steel		NIG Z=4			SIL Z=4			NIG Z=3			SIL Z=3			NIG Z=2			SIL Z=2		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,015	90	1540	0,01	30	740	0,017	80	1540	0,018	40	740	0,019	60	1540	0,020	30	740
	8,0	0,028	130	1150	0,022	50	560	0,023	80	1150	0,024	40	560	0,026	60	1150	0,027	30	560
	10,0	0,038	140	920	0,028	50	450	0,034	95	920	0,030	40	450	0,038	70	920	0,033	30	450
	12,0	0,045	140	770	0,034	50	370	0,041	95	770	0,037	40	370	0,045	70	770	0,041	30	370
	16,0	0,060	140	580	0,045	50	280	0,054	95	580	0,049	40	280	0,060	70	580	0,054	30	280
	20,0	0,076	140	460	0,057	50	220	0,059	80	460	0,050	30	220	0,065	60	460	0,056	25	220
	25,0	0,095	140	370	0,069	50	180	0,061	70	370	0,055	30	180	0,068	50	370	0,061	22	180

Notes

FIN

Parametri di lavoro / Working Parameters

Serie Corta (Short Version) + 20% / Serie Media (Medium Version) -20% / Serie Lunga (Long Version) -40%

Materiale / Material	Diametro / Diameter	NIG Z=3			SIL Z=3			NIG Z=2			SIL Z=2		
	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
Alu e Leghe < 6% Si / Alu & alloys < 6% Si	6,0	0,028	900	10620	0,022	340	5040	0,028	600	10620	0,022	227	5040
	8,0	0,056	1340	7960	0,045	510	3780	0,056	893	7960	0,045	340	3780
	10,0	0,075	1430	6370	0,061	550	3030	0,075	953	6370	0,061	367	3030
	12,0	0,090	1430	5310	0,073	550	2520	0,090	953	5310	0,073	367	2520
	16,0	0,122	1460	3980	0,097	550	1890	0,122	973	3980	0,097	367	1890
	20,0	0,154	1470	3180	0,124	560	1510	0,154	980	3180	0,124	373	1510
	25,0	0,187	1430	2550	0,152	550	1210	0,187	953	2550	0,152	367	1210
		NIG Z=3			SIL Z=3			NIG Z=3			SIL Z=3		
Alu e Leghe > 6% Si / Alu & alloys > 6% Si	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,023	500	7380	0,018	190	3500	0,023	333	7380	0,018	127	3500
	8,0	0,045	750	5530	0,035	280	2630	0,045	500	5530	0,035	187	2630
	10,0	0,060	800	4430	0,048	300	2100	0,060	533	4430	0,048	200	2100
	12,0	0,072	800	3690	0,057	300	1750	0,072	533	3690	0,057	200	1750
	16,0	0,097	810	2770	0,079	310	1310	0,097	540	2770	0,079	207	1310
	20,0	0,122	810	2210	0,098	310	1050	0,122	540	2210	0,098	207	1050
	25,0	0,151	800	1770	0,119	300	840	0,151	533	1770	0,119	200	840
		NIG Z=3			SIL Z=3			NIG Z=3			SIL Z=3		
Rame e Leghe / Copper & alloys	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,018	370	6900	0,012	130	3710	0,018	240	6900	0,012	80	3710
	8,0	0,030	460	5170	0,019	150	2780	0,030	310	5170	0,019	100	2780
	10,0	0,045	550	4140	0,026	170	2220	0,045	370	4140	0,026	110	2220
	12,0	0,065	670	3450	0,040	220	1850	0,065	440	3450	0,040	140	1850
	16,0	0,085	650	2580	0,055	220	1390	0,085	430	2580	0,055	150	1390
	20,0	0,115	710	2070	0,075	240	1110	0,115	470	2070	0,075	160	1110
	25,0	0,155	760	1650	0,090	240	890	0,155	510	1650	0,090	160	890
		NIG Z=3			SIL Z=3			NIG Z=3			SIL Z=3		
Resina Termo Plastica / Thermo Plastics	D mm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm	fz mm/z	F mm/min	n rpm
	6,0	0,050	1270	8490	0,020	250	4240	0,050	840	8490	0,020	160	4240
	8,0	0,070	1330	6360	0,030	280	3180	0,070	890	6360	0,030	190	3180
	10,0	0,080	1220	5090	0,040	300	2540	0,080	810	5090	0,040	200	2540
	12,0	0,090	1140	4240	0,050	310	2120	0,090	760	4240	0,050	210	2120
	16,0	0,120	1140	3180	0,065	310	1590	0,120	760	3180	0,065	200	1590
	20,0	0,150	1140	2540	0,075	280	1270	0,150	760	2540	0,075	190	1270
	25,0	0,170	1030	2030	0,090	270	1010	0,170	690	2030	0,090	180	1010

Notes

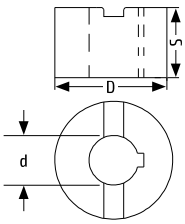
Frese Frontali e a Disco

Shell End Mills and Side Milling Cutters

080F

Fresa frontale a sgrossare

Shell end mill for roughing



HSS Co8 | NRF F Form | ISO 2586 | DIN 1880 | DIN 841 | λ 30° γ 12°

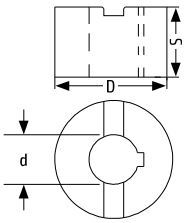
1 2 4 5 7

D k12	S k12	d h7	Din	Z	Non rivestito Uncoated	Balinit® Alcrona
40,0	32,0	16	1880	6	SIL08F040	NIG08F040
40,0	40,0	16	841	6	SIL08F404	NIG08F404
50,0	36,0	22	1880	6	SIL08F050	NIG08F050
50,0	50,0	22	841	6	SIL08F505	NIG08F505
60,0	60,0	27	841	8	SIL08F606	NIG08F606
63,0	40,0	27	1880	8	SIL08F063	NIG08F063
75,0	75,0	27	841	10	SIL08F757	NIG08F757
80,0	45,0	27	1880	10	SIL08F080	NIG08F080
100,0	50,0	32	1880	10	SIL08F100	NIG08F100
125,0	56,0	40	1880	12	SIL08F125	NIG08F125

180

Fresa frontale a finire

Shell end mill for finishing



HSS Co8 | NS | ISO 2586 | DIN 1880 | DIN 841 | λ 30° γ 12°

1 2 4 5 7

D k10	S k12	d h7	Din	Z	Non rivestito Uncoated	Balinit® Alcrona
40,0	32,0	16	1880	6	SIL180040	NIG180040
40,0	40,0	16	841	6	SIL180404	NIG180404
50,0	36,0	22	1880	8	SIL180050	NIG180050
50,0	50,0	22	841	8	SIL180505	NIG180505
60,0	60,0	27	841	8	SIL180606	NIG180606
63,0	40,0	27	1880	8	SIL180063	NIG180063
75,0	75,0	27	841	8	SIL180757	NIG180757
80,0	45,0	27	1880	10	SIL180080	NIG180080
100,0	50,0	32	1880	10	SIL180100	NIG180100
125,0	56,0	40	1880	12	SIL180125	NIG180125
160,0	63,0	50	1880	14	SIL180160	NIG180160

Notes

101

Fresa a disco a denti alternati
Side milling cutter
with staggered teeth

HSS Co | ISO 2587 | DIN 885A | λ 12° γ 10°

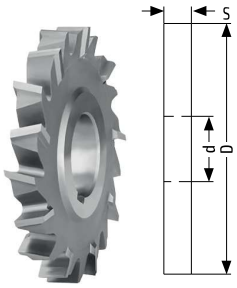
1 2 4 5 7

D js16	S k11	d h7	Z	Non rivestito Uncoated
50,0	3,0	16	14	SIL101103
50,0	4,0	16	14	SIL101104
50,0	5,0	16	14	SIL101105
50,0	6,0	16	14	SIL101106
50,0	7,0	16	14	SIL101107
50,0	8,0	16	14	SIL101108
50,0	9,0	16	14	SIL101109
50,0	10,0	16	14	SIL101110
63,0	3,0	22	16	SIL101203
63,0	4,0	22	16	SIL101204
63,0	5,0	22	16	SIL101205
63,0	6,0	22	16	SIL101206
63,0	7,0	22	14	SIL101207
63,0	8,0	22	14	SIL101208
63,0	9,0	22	14	SIL101209
63,0	10,0	22	14	SIL101210
63,0	12,0	22	14	SIL101212
63,0	14,0	22	16	SIL101214
80,0	3,0	27	18	SIL101303
80,0	4,0	27	18	SIL101304
80,0	5,0	27	18	SIL101305
80,0	6,0	27	18	SIL101306
80,0	7,0	27	16	SIL101307
80,0	8,0	27	16	SIL101308
80,0	9,0	27	16	SIL101309
80,0	10,0	27	16	SIL101310
80,0	12,0	27	16	SIL101312
80,0	14,0	27	16	SIL101314
80,0	16,0	27	16	SIL101316
100,0	3,0	32	22	SIL101403
100,0	4,0	32	22	SIL101404
100,0	5,0	32	22	SIL101405
100,0	6,0	32	22	SIL101406
100,0	7,0	32	18	SIL101407
100,0	8,0	32	18	SIL101408
100,0	9,0	32	18	SIL101409
100,0	10,0	32	18	SIL101410
100,0	12,0	32	18	SIL101412
100,0	14,0	32	18	SIL101414
100,0	16,0	32	18	SIL101416

101

Fresa a disco a denti alternati

Side milling cutter
with staggered teeth



HSS Co | ISO 2587 | DIN 885A | λ 12° γ 10°

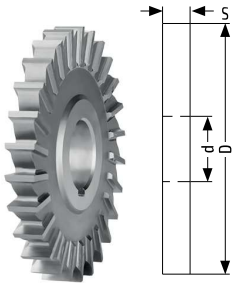
1 2 4 5 7

D js16	S k11	d h7	Z	Non rivestito Uncoated
125,0	4,0	32	24	SIL101504
125,0	5,0	32	24	SIL101505
125,0	6,0	32	24	SIL101506
125,0	7,0	32	20	SIL101507
125,0	8,0	32	20	SIL101508
125,0	10,0	32	20	SIL101510
125,0	12,0	32	20	SIL101512
125,0	14,0	32	20	SIL101514
125,0	16,0	32	20	SIL101516
125,0	18,0	32	20	SIL101518
125,0	20,0	32	20	SIL101520
160,0	5,0	40	26	SIL101605
160,0	6,0	40	26	SIL101606
160,0	7,0	40	26	SIL101607
160,0	8,0	40	26	SIL101608
160,0	10,0	40	22	SIL101610
160,0	12,0	40	22	SIL101612
160,0	14,0	40	22	SIL101614
160,0	16,0	40	24	SIL101616
160,0	18,0	40	24	SIL101618
160,0	20,0	40	22	SIL101620

Notes

102

Fresa a disco a denti diritti
Side milling cutter
with straight teeth



HSS Co | ISO 2587 | DIN 885B | λ 0° γ 10°

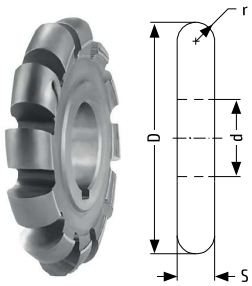
1 2 4 5 7

D js16	S k11	d h7	Z	Non rivestito Uncoated
63,0	4,0	22	22	SIL102204
63,0	5,0	22	22	SIL102205
63,0	6,0	22	22	SIL102206
63,0	8,0	22	22	SIL102208
63,0	10,0	22	22	SIL102210
63,0	12,0	22	20	SIL102212
63,0	14,0	22	20	SIL102214
80,0	6,0	27	24	SIL102306
80,0	8,0	27	24	SIL102308
80,0	10,0	27	24	SIL102310
80,0	12,0	27	24	SIL102312
80,0	14,0	27	20	SIL102314
80,0	16,0	27	20	SIL102316
100,0	6,0	27	26	SIL102406
100,0	8,0	27	26	SIL102408
100,0	10,0	27	26	SIL102410
100,0	12,0	27	26	SIL102412
100,0	14,0	27	22	SIL102414
100,0	16,0	27	22	SIL102416
125,0	10,0	32	30	SIL102510
125,0	12,0	32	24	SIL102512
125,0	14,0	32	24	SIL102514
125,0	16,0	32	24	SIL102516
125,0	18,0	32	24	SIL102518
125,0	20,0	32	24	SIL102520

10E

Fresa semicircolare

Half circle cutter



HSS Co8 | ISO 3860 | DIN 856 | λ 0° γ 8°

1 2 4 5 7

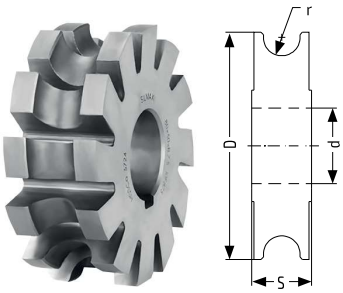
r h11	D js16	S	d h7	Z	Non rivestito Uncoated
2,0	50,0	4,0	16	14	SIL10E502
2,5	63,0	5,0	22	12	SIL10E625
3,0	63,0	6,0	22	12	SIL10E603
3,5	63,0	7,0	22	12	SIL10E635
4,0	63,0	8,0	22	12	SIL10E604
4,5	63,0	9,0	22	12	SIL10E645
5,0	63,0	10,0	22	12	SIL10E605
5,5	80,0	11,0	27	12	SIL10E855
6,0	80,0	12,0	27	12	SIL10E806
6,5	80,0	13,0	27	12	SIL10E865
7,0	80,0	14,0	27	12	SIL10E807
7,5	80,0	15,0	27	12	SIL10E875
8,0	80,0	16,0	27	12	SIL10E808
8,5	100,0	17,0	32	12	SIL10E185
9,0	100,0	18,0	32	12	SIL10E109
9,5	100,0	19,0	32	12	SIL10E195
10,0	100,0	20,0	32	12	SIL10E110

Notes

221 PM Frese in Acciaio Sinterizzato Powder Metal End Mills
231 SGR Frese a Sgrossare in HSSCo8 Roughing End Mills in HSSCo8
243 FIN Frese a Finire in HSSCo8 Finishing End Mills in HSSCo8
267 FRF Frese Frontali e a Disco Shell End Mills and Side Milling Cutters
277 ALT Altre Frese Other mills

10F

Fresa semicircolare
Half circle cutter



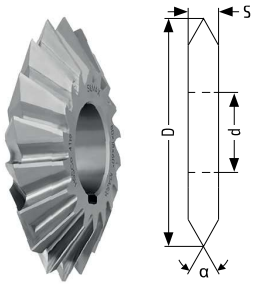
HSS Co8 | ISO 3860 | DIN 885A | λ 0° γ 8°

1 2 4 5 7

r h11	D js16	S	d h7	Z	Non rivestito Uncoated
2,0	50,0	9,0	16	14	SIL10F502
2,5	63,0	10,0	22	12	SIL10F625
3,0	63,0	12,0	22	12	SIL10F603
3,5	63,0	14,0	22	12	SIL10F635
4,0	63,0	16,0	22	12	SIL10F604
4,5	63,0	18,0	22	12	SIL10F645
5,0	63,0	20,0	22	12	SIL10F605
5,5	80,0	22,0	27	12	SIL10F855
6,0	80,0	24,0	27	12	SIL10F806
6,5	80,0	26,0	27	12	SIL10F865
7,0	80,0	28,0	27	12	SIL10F807
7,5	80,0	30,0	27	12	SIL10F875
8,0	80,0	32,0	27	12	SIL10F808
8,5	100,0	34,0	32	12	SIL10F185
9,0	100,0	34,0	32	12	SIL10F109
9,5	100,0	36,0	32	12	SIL10F195
10,0	100,0	36,0	32	12	SIL10F110

10A

Fresa ad angolo
Double angle cutter



HSS Co8 | ISO 6108 | DIN 847 | λ 0° γ 0°

1 2 4 5 7

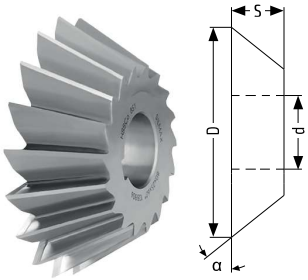
α ± 30'	D js16	S js16	d h7	Z	Non rivestito Uncoated
45°	50,0	8,0	16	16	SIL10A504
45°	63,0	10,0	22	18	SIL10A634
45°	80,0	12,0	27	18	SIL10A804
45°	100,0	18,0	32	20	SIL10A104
60°	50,0	10,0	16	16	SIL10A506
60°	63,0	14,0	22	18	SIL10A636
60°	80,0	18,0	27	18	SIL10A806
60°	100,0	25,0	32	20	SIL10A106
90°	50,0	14,0	16	16	SIL10A509
90°	63,0	20,0	22	18	SIL10A639
90°	80,0	22,0	27	18	SIL10A809
90°	100,0	32,0	32	20	SIL10A109

1 Acciaio Steel	2 Ghise Cast Iron	3 Acciai Temprati Hardened Steel	4 Acciaio Inox Stainless Steel	5 Titanio Titanium	6 Leghe Leggere Light Alloys	7 PH Duplex	8 Superleghe Superalloys	9 Compositi Composite Materials	→ 16 Guida alla lettura Reading guide	→ 18 Legenda Legend

10B

Fresa ad angolo

Double angle cutter



HSS Co8 | DIN 842A | λ 0° γ 3°

1 2 4 5 7

α ± 30'	D js16	S js16	d h7	Z	Non rivestito Uncoated
45°	40,0	10,0	10	14	SIL10B404
45°	50,0	13,0	13	16	SIL10B504
45°	63,0	18,0	16	16	SIL10B634
45°	80,0	22,0	22	18	SIL10B804
45°	100,0	28,0	27	20	SIL10B104
50°	40,0	13,0	10	14	SIL10B405
50°	50,0	16,0	13	16	SIL10B505
50°	63,0	20,0	16	16	SIL10B635
50°	80,0	25,0	22	18	SIL10B805
50°	100,0	32,0	27	20	SIL10B105
60°	40,0	13,0	10	14	SIL10B406
60°	50,0	16,0	13	16	SIL10B506
60°	63,0	20,0	16	16	SIL10B636
60°	80,0	25,0	22	18	SIL10B806
60°	100,0	32,0	27	20	SIL10B106

Notes

180/080F

Parametri di lavoro / Working Parameters

	m/min →	VC=30-35	VC=25-30	VC=20-25	VC=15-20	VC=15-20	VC=45-50	VC=60-80
	D [mm] ↓	Acciaio / Steel ≤ 800 N/mm ²	Acciaio / Steel ≤ 1000 N/mm ²	Acciaio / Steel ≤ 1300 N/mm ²	Acciaio inossidabile Stainless Steel	Titanio Titanium	Rame e leghe Copper & Alloys	Alluminio e leghe Aluminum & Alloys
fz [mm]	32,0	0,060	0,060	0,060	0,060	0,060	0,060	0,060
	40,0	0,065	0,065	0,065	0,065	0,065	0,065	0,065
	50,0	0,070	0,070	0,070	0,070	0,070	0,070	0,070
	60,0	0,080	0,080	0,080	0,080	0,080	0,080	0,080
	80,0	0,100	0,100	0,100	0,100	0,100	0,100	0,100
	100,0	0,120	0,120	0,120	0,120	0,120	0,120	0,120
	125,0	0,130	0,130	0,130	0,130	0,130	0,130	0,130
	160,0	0,140	0,140	0,140	0,140	0,140	0,140	0,140

101/102

Parametri di lavoro / Working Parameters

	m/min →	Vc=30-35	Vc=25-30	Vc=20-25	Vc=15-20	Vc=15-20	Vc=45-50	Vc=60-80
	D [mm] ↓	Acciaio / Steel ≤ 800 N/mm ²	Acciaio / Steel ≤ 1000 N/mm ²	Acciaio / Steel ≤ 1300 N/mm ²	Acciaio inossidabile Stainless Steel	Titanio Titanium	Rame e leghe Copper & Alloys	Alluminio e leghe Aluminum & Alloys
fz [mm]	50,0	0,060	0,060	0,060	0,060	0,060	0,060	0,060
	63,0	0,070	0,070	0,070	0,070	0,070	0,070	0,070
	80,0	0,080	0,080	0,080	0,080	0,080	0,080	0,080
	100,0	0,090	0,090	0,090	0,090	0,090	0,090	0,090
	125,0	0,100	0,100	0,100	0,100	0,100	0,100	0,100
	160,0	0,120	0,120	0,120	0,120	0,120	0,120	0,120

10E/10F/10A/10B

Parametri di lavoro / Working Parameters

	m/min →	Vc=30-35	Vc=25-30	Vc=20-25	Vc=15-20	Vc=15-20	Vc=45-50	Vc=60-80
	D [mm] ↓	Acciaio / Steel ≤ 800 N/mm ²	Acciaio / Steel ≤ 1000 N/mm ²	Acciaio / Steel ≤ 1300 N/mm ²	Acciaio inossidabile Stainless Steel	Titanio Titanium	Rame e leghe Copper & Alloys	Alluminio e leghe Aluminum & Alloys
fz [mm]	40,0	0,035	0,035	0,035	0,035	0,035	0,035	0,035
	50,0	0,045	0,045	0,045	0,045	0,045	0,045	0,045
	63,0	0,055	0,055	0,055	0,055	0,055	0,055	0,055
	80,0	0,065	0,065	0,065	0,065	0,065	0,065	0,065
	100,0	0,075	0,075	0,075	0,075	0,075	0,075	0,075
	125,0	0,085	0,085	0,085	0,085	0,085	0,085	0,085

Altre Frese
Other Mills

005F
Fresa a "T" a sgrossare
Roughing T-slot mill
→ 278

105T
Fresa a "T" a finire
Finishing T-slot mill
→ 278

1W5
Fresa Woodruff
Woodruff mill
→ 279

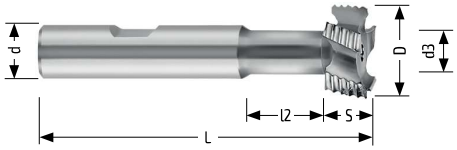
10C
Fresa ad angolo convergente
Dovetail mill with convergent taper angle
→ 279

10D
Fresa ad angolo divergente
Dovetail mill with divergent taper angle
→ 280

10G
Fresa a quarto di cerchio
Quarter circle mill
→ 280

005F

Fresa a "T" a sgrossare
Roughing T-slot mill



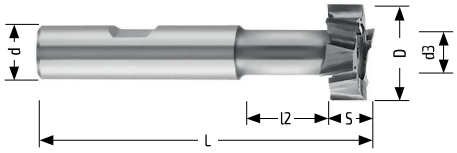
HSS Co8 | NRF F Form | ISO 3337 | DIN 851AB | λ 25° γ 10°

1 2 4 5 7

D k12	S d11	L h6	d	d3	l2	Z	Non rivestito Uncoated	Balinit® Alcrona
12,5	6,0	57	10	5	7	4	SIL005F12	NIG005F12
16,0	8,0	62	10	7	10	5	SIL005F16	NIG005F16
18,0	8,0	70	12	8	13	5	SIL005F18	NIG005F18
21,0	9,0	74	12	10	16	5	SIL005F21	NIG005F21
22,0	10,0	82	16	10	16	5	SIL005F22	NIG005F22
25,0	11,0	82	16	12	17	5	SIL005F25	NIG005F25
30,0	12,0	90	16	14	22	6	SIL005F30	NIG005F30
32,0	14,0	90	16	15	22	6	SIL005F32	NIG005F32
36,0	16,0	108	25	17	27	6	SIL005F36	NIG005F36
40,0	18,0	108	25	19	27	8	SIL005F40	NIG005F40

105T

Fresa a "T" a finire
Finishing T-slot mill



HSSE | ISO 3337 | DIN 851AB | N | λ 15° γ 12°

1 2 4 5 7

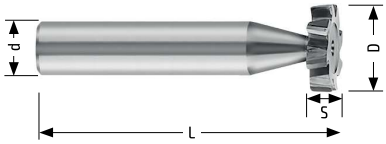
D d11	S d11	L	d h6	d3	l2	Z	Non rivestito Uncoated	Balinit® Alcrona
12,5	6,0	57	10	5	7	6	SIL105T12	NIG105T12
16,0	8,0	62	10	7	10	6	SIL105T16	NIG105T16
18,0	8,0	70	12	8	13	6	SIL105T18	NIG105T18
19,0	9,0	70	12	8	13	6	SIL105T19	NIG105T19
21,0	9,0	74	12	10	16	6	SIL105T21	NIG105T21
22,0	10,0	74	12	10	16	6	SIL105T22	NIG105T22
25,0	11,0	82	16	12	17	6	SIL105T25	NIG105T25
28,0	12,0	85	16	13	20	6	SIL105T28	NIG105T28
32,0	14,0	90	16	15	22	8	SIL105T32	NIG105T32

1W5

Fresa Woodruff
Woodruff mill

HSSE | DIN 850B | λ 10° γ 10°

1 2 4 5 7



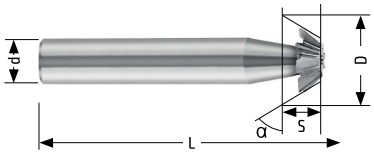
D h12	S e8	L h8	d	Z	Non rivestito Uncoated
10,5	2,0	50	6	6	SIL1W5102
10,5	2,5	50	6	6	SIL1W5125
10,5	3,0	50	6	6	SIL1W5103
13,5	2,0	56	10	8	SIL1W5132
13,5	3,0	56	10	8	SIL1W5133
13,5	4,0	56	10	8	SIL1W5134
16,5	3,0	56	10	8	SIL1W5163
16,5	4,0	56	10	8	SIL1W5164
16,5	5,0	56	10	8	SIL1W5165
16,5	6,0	56	10	8	SIL1W5166
19,5	3,0	56	10	8	SIL1W5193
19,5	4,0	56	10	8	SIL1W5194
19,5	5,0	56	10	8	SIL1W5195
19,5	6,0	56	10	8	SIL1W5196
22,5	4,0	56	10	8	SIL1W5224
22,5	5,0	56	10	8	SIL1W5225
22,5	6,0	56	10	8	SIL1W5226
22,5	8,0	56	10	8	SIL1W5228
25,5	5,0	56	10	8	SIL1W5255
25,5	6,0	56	10	8	SIL1W5256
25,5	7,0	56	10	8	SIL1W5257
25,5	8,0	56	10	8	SIL1W5258

10C

Fresa ad angolo convergente
Dovetail mill with convergent taper angle

HSSE | DIN 1833B | λ 0° γ 0°

1 2 4 5 7



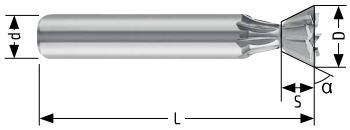
α +/-30'	D js16	S js14	L	d h8	Z	Non rivestito Uncoated
45°	16,0	4,0	60	12	8	SIL10C164
45°	20,0	5,0	63	12	8	SIL10C204
45°	25,0	6,3	67	16	10	SIL10C254
60°	16,0	6,3	60	12	8	SIL10C166
60°	20,0	8,0	63	12	8	SIL10C206
60°	25,0	10,0	67	16	10	SIL10C256
70°	16,0	7,0	60	12	8	SIL10C167
70°	20,0	9,0	63	12	8	SIL10C207
70°	25,0	11,0	67	16	10	SIL10C257

10D

Fresa ad angolo divergente
Dovetail mill with divergent taper angle

HSSE | DIN 1833B | λ 0° γ 0°

1 2 4 5 7



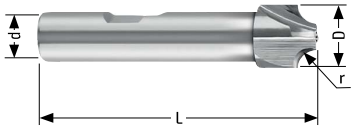
α +/-30'	D js16	S js14	L	d h8	Z	Non rivestito Uncoated
45°	16,0	4,0	60	12	8	SIL10D164
45°	20,0	5,0	63	12	8	SIL10D204
45°	25,0	6,3	67	16	10	SIL10D254
60°	16,0	6,3	60	12	8	SIL10D166
60°	20,0	8,0	63	12	8	SIL10D206
60°	25,0	10,0	67	16	10	SIL10D256
70°	16,0	7,0	60	12	8	SIL10D167
70°	20,0	9,0	63	12	8	SIL10D207
70°	25,0	11,0	67	16	10	SIL10D257

10G

Fresa a quarto di cerchio
Quarter circle mill

HSSE | DIN 6518B | λ 0° γ 6°

1 2 4 5 7

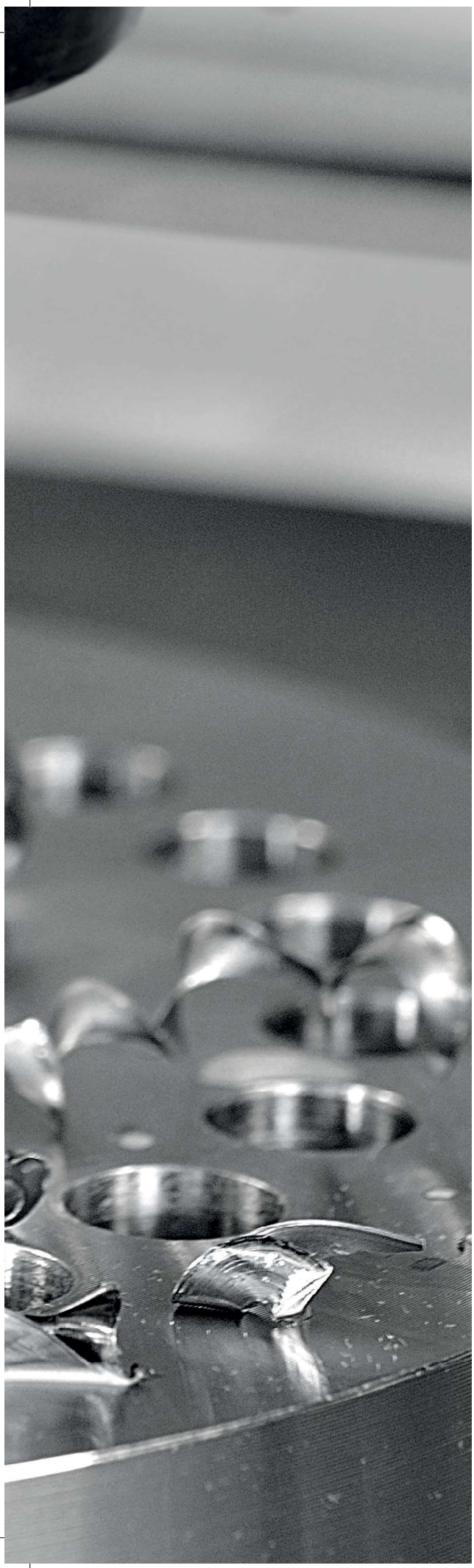


r H11	D	L	d h6	Z	Non rivestito Uncoated	Balinit® Alcrona
1,0	8,0	60	10	4	SIL10G101	NIG10G101
1,5	9,0	60	10	4	SIL10G115	NIG10G115
2,0	10,0	60	10	4	SIL10G102	NIG10G102
2,5	11,0	60	12	4	SIL10G125	NIG10G125
3,0	12,0	60	12	4	SIL10G103	NIG10G103
3,5	14,0	60	12	4	SIL10G135	NIG10G135
4,0	14,0	60	12	4	SIL10G104	NIG10G104
4,5	16,0	60	12	4	SIL10G145	NIG10G145
5,0	16,0	60	16	4	SIL10G205	NIG10G205
5,5	20,0	67	16	4	SIL10G255	NIG10G255
6,0	20,0	67	16	4	SIL10G206	NIG10G206
6,5	24,0	71	16	4	SIL10G265	NIG10G265
7,0	24,0	71	16	4	SIL10G207	NIG10G207
7,5	24,0	71	16	4	SIL10G275	NIG10G275
8,0	24,0	71	16	4	SIL10G208	NIG10G208
8,5	28,0	85	20	4	SIL10G385	NIG10G385
9,0	28,0	85	20	4	SIL10G309	NIG10G309
9,5	28,0	85	20	4	SIL10G395	NIG10G395
10,0	28,0	85	20	4	SIL10G310	NIG10G310
11,0	32,0	90	20	4	SIL10G311	NIG10G311
12,0	34,0	90	20	4	SIL10G312	NIG10G312
14,0	44,0	100	20	6	SIL10G414	NIG10G414
15,0	46,0	100	20	6	SIL10G415	NIG10G415
16,0	48,0	100	20	6	SIL10G516	NIG10G516
18,0	52,0	112	20	6	SIL10G618	NIG10G618
20,0	58,0	112	20	6	SIL10G620	NIG10G620

005F/105T/1W5/10C/10D/10G

Parametri di lavoro / Working Parameters

	m/min →	Vc=30-35	Vc=25-30	Vc=20-25	Vc=15-20	Vc=15-20	Vc=45-50	Vc=60-80
	D [mm] ↓	Acciaio / Steel ≤ 800 N/mm ²	Acciaio / Steel ≤ 1000 N/mm ²	Acciaio / Steel ≤ 1300 N/mm ²	Acciaio inossidabile Stainless Steel	Titanio Titanium	Rame e leghe Copper & Alloys	Alluminio e leghe Aluminum & Alloys
fz [mm]	8	0,005	0,005	0,005	0,005	0,005	0,005	0,005
	10	0,010	0,010	0,010	0,010	0,010	0,010	0,010
	12	0,015	0,015	0,015	0,015	0,015	0,015	0,015
	16	0,025	0,025	0,025	0,025	0,025	0,025	0,025
	18	0,030	0,030	0,030	0,030	0,030	0,030	0,030
	20	0,035	0,035	0,035	0,035	0,035	0,035	0,035
	22	0,040	0,040	0,040	0,040	0,040	0,040	0,040
	25	0,045	0,045	0,045	0,045	0,045	0,045	0,045
	28	0,050	0,050	0,050	0,050	0,050	0,050	0,050
	30	0,055	0,055	0,055	0,055	0,055	0,055	0,055
	32	0,060	0,060	0,060	0,060	0,060	0,060	0,060
	36	0,065	0,065	0,065	0,065	0,065	0,065	0,065
	40	0,070	0,070	0,070	0,070	0,070	0,070	0,070
	44	0,075	0,075	0,075	0,075	0,075	0,075	0,075
	48	0,080	0,080	0,080	0,080	0,080	0,080	0,080
	58	0,090	0,090	0,090	0,090	0,090	0,090	0,090



FORATURA
DRILLING

PCC Punte a Centrare / Center Drills	Codice / Code	Ø (D mm)	Pagina / Page
	351	1,0 ÷ 6,3	284
	355	1,6 ÷ 6,3	284
	350	1,0 ÷ 4,0	285
	352	1,0 ÷ 6,3	285
	356	1,6 ÷ 6,3	286
	353	1,5 ÷ 6,0	286
	357	3,0 ÷ 20,0	287
	358	3,0 ÷ 20,0	287

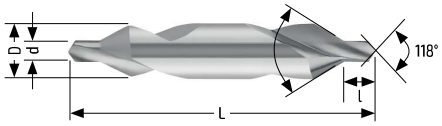
UTP Punte a Eliche Indipendenti / Subland Drills	Codice / Code	Ø (D mm)	288
	301	M3 ÷ M10	288
	302	M5 ÷ M20	289
	311	M3 ÷ M8	290
	312	M5 ÷ M14	290
	321	M3 ÷ M12	291
	322	M8 ÷ M20	291

PUNTE A CENTRARE
CENTER DRILLS

351

Punta a centrare
Center drill

HSSE | Form A | DIN 333A



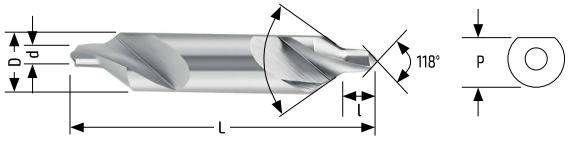
60°

D h7	d k12	L	l	Non rivestito Uncoated	Balinit® Alcrona
3,15	1,00	31	1,3-1,6	PCC351100	NIG351100
3,15	1,25	31	1,6-1,9	PCC351125	NIG351125
4,00	1,60	35	2,0-2,4	PCC351160	NIG351160
5,00	2,00	40	2,5-2,9	PCC351200	NIG351200
6,30	2,50	45	3,1-3,6	PCC351250	NIG351250
8,00	3,15	50	3,9-4,4	PCC351315	NIG351315
10,00	4,00	55	5,0-5,6	PCC351400	NIG351400
12,50	5,00	63	6,3-6,9	PCC351500	NIG351500
16,00	6,30	71	8,0-8,6	PCC351630	NIG351630

355

Punta a centrare con piatto sul gambo
Center drill with flatted shank

HSSE | Form A | DIN 333A



60°

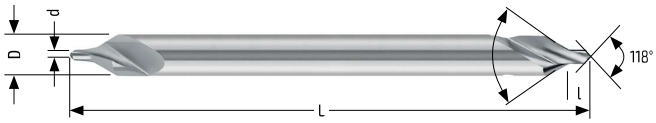
D h7	d k12	L	l	P	Non rivestito Uncoated	Balinit® Alcrona
4,00	1,60	35	2,0-2,4	3,25	PCC355160	NIG355160
5,00	2,00	40	2,5-2,9	4,20	PCC355200	NIG355200
6,30	2,50	45	3,1-3,6	5,35	PCC355250	NIG355250
8,00	3,15	50	3,9-4,4	6,95	PCC355315	NIG355315
10,00	4,00	55	5,0-5,6	8,40	PCC355400	NIG355400
12,50	5,00	63	6,3-6,9	10,95	PCC355500	NIG355500
16,00	6,30	71	8,0-8,6	14,00	PCC355630	NIG355630

284
PCC
Punte a Centrare
Center Drills
288
UTP
Punte a Eliche Indipendenti
Subland Drills

350

Punta a centrare serie lunga
Center drill long version

HSSE | Form A | Silmax NORM

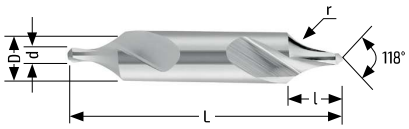


D h7	d k12	L	l	Non rivestito Uncoated	Balinit® Alcrona
4,00	1,00	100	1,3-1,6	PCC350100	NIG350100
5,00	1,50	100	2,0-2,4	PCC350150	NIG350150
6,00	2,00	100	2,5-2,9	PCC350200	NIG350200
8,00	2,50	100	3,1-3,6	PCC350250	NIG350250
8,00	3,00	100	3,9-4,4	PCC350300	NIG350300
10,00	4,00	100	5,0-5,6	PCC350400	NIG350400

352

Punta a centrare
Center drill

HSSE | Form R | DIN 333R



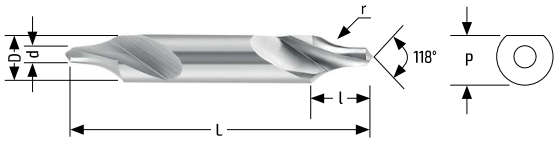
D h7	d k12	L	l	r	Non rivestito Uncoated	Balinit® Alcrona
3,15	1,00	31	3,0-3,3	2,90	PCC352100	NIG352100
3,15	1,25	31	3,3-3,6	3,15	PCC352125	NIG352125
4,00	1,60	35	4,2-4,7	4,00	PCC352160	NIG352160
5,00	2,00	40	5,0-5,4	5,00	PCC352200	NIG352200
6,30	2,50	45	6,3-6,8	6,30	PCC352250	NIG352250
8,00	3,15	50	8,0-8,5	8,00	PCC352315	NIG352315
10,00	4,00	55	10,0-10,6	10,00	PCC352400	NIG352400
12,50	5,00	63	12,5-13,1	12,50	PCC352500	NIG352500
16,00	6,30	71	16,0-16,6	16,00	PCC352630	NIG352630

Notes

356

Punta a centrare con piatto sul gambo
Center drill with flatted shank

HSSE | Form R | DIN 333R

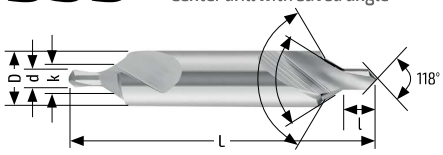


D h7	d k12	L	l	r	P	Non rivestito Uncoated	Balinit® Alcrona
4,00	1,60	35	4,2-4,7	4,0	3,25	PCC356160	NIG356160
5,00	2,00	40	5,0-5,4	5,0	4,20	PCC356200	NIG356200
6,30	2,50	45	6,3-6,8	6,3	5,35	PCC356250	NIG356250
8,00	3,15	50	8,0-8,5	8,0	6,95	PCC356315	NIG356315
10,00	4,00	55	10,0-10,6	10,0	8,40	PCC356400	NIG356400
12,50	5,00	63	12,5-13,1	12,5	10,95	PCC356500	NIG356500
16,00	6,30	71	16,0-16,6	16,0	14,00	PCC356630	NIG356630

353

Punta a centrare con paracentro
Center drill with saved angle

HSSE | Form B | DIN 333B



D h7	d k12	L	l	k	Non rivestito Uncoated	Balinit® Alcrona
5,00	1,50	40	2,0-2,4	3,00	PCC353150	NIG353150
6,00	2,00	45	2,5-2,9	4,00	PCC353200	NIG353200
8,00	2,50	50	3,1-3,6	5,50	PCC353250	NIG353250
10,00	3,00	55	3,9-4,4	7,00	PCC353300	NIG353300
10,00	4,00	55	5,0-5,6	8,00	PCC353400	NIG353400
12,00	5,00	63	6,3-6,9	9,00	PCC353500	NIG353500
18,00	6,00	77	8,0-8,6	12,00	PCC353600	NIG353600

Notes

284
PCC
Punte a Centrare
Center Drills
288
UTP
Punte a Eliche Indipendenti
Subland Drills

357

Punta a centrare
Center drill

HSSE | NC | ISO 10898 | λ 20°

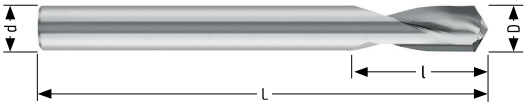
90°

D h7	L	l	Non rivestito Uncoated	Balinit® Alcrona
3,00	50	10	PCC357003	NIG357003
4,00	52	12	PCC357004	NIG357004
5,00	60	15	PCC357005	NIG357005
6,00	66	20	PCC357006	NIG357006
8,00	79	25	PCC357008	NIG357008
10,00	89	25	PCC357010	NIG357010
12,00	102	30	PCC357012	NIG357012
14,00	115	35	PCC357014	NIG357014
16,00	115	35	PCC357016	NIG357016
20,00	131	40	PCC357020	NIG357020

358

Punta a centrare
Center drill

HSSE | NC | ISO 10898 | λ 20°



120°

D h7	L	l	Non rivestito Uncoated	Balinit® Alcrona
3,00	50	10	PCC358003	NIG358003
4,00	52	12	PCC358004	NIG358004
5,00	60	15	PCC358005	NIG358005
6,00	66	20	PCC358006	NIG358006
8,00	79	25	PCC358008	NIG358008
10,00	89	25	PCC358010	NIG358010
12,00	102	30	PCC358012	NIG358012
16,00	114	35	PCC358016	NIG358016
20,00	130	40	PCC358020	NIG358020

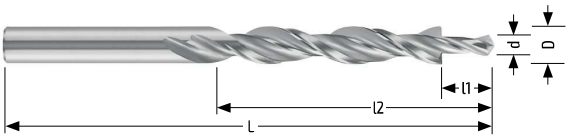
Notes

PUNTE A ELICHE INDIPENDENTI
SUBLAND DRILLS

301

Punta a eliche indipendenti
Subland drill

HSS | DIN 8376



180°

Fil	d h9	D h8	l1	l2	L	Non rivestito Uncoated
M3	3,4	6,0	9	57	93	UTP301003
M3	3,2	5,9	6	52	88	UTP301031
M3	3,2	5,9	11	57	93	UTP301032
M4	4,5	8,0	11	75	117	UTP301004
M4	4,3	7,4	6	56	98	UTP301041
M4	4,3	7,4	13	63	105	UTP301042
M5	5,5	10,0	13	87	133	UTP301005
M5	5,3	9,4	6	65	110	UTP301051
M5	5,3	9,4	16	75	120	UTP301052
M6	6,6	11,0	15	94	142	UTP301006
M6	6,4	10,4	10	83	133	UTP301061
M6	6,4	10,4	20	83	133	UTP301062
*M8	9,0	15,0	19	114	169	UTP301008
M8	8,4	13,5	13	100	160	UTP301081
M8	8,4	13,5	23	100	160	UTP301082
*M10	11,0	18,0	23	130	191	UTP301010
*M10	10,5	16,5	15	105	176	UTP301101
*M10	10,5	16,5	25	115	186	UTP301102

* Gambo D. 13,5 / * Shank D. 13,5

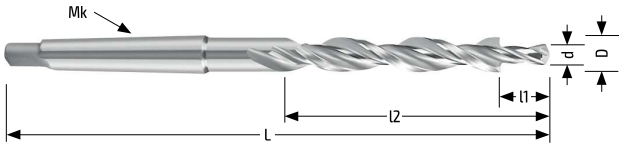
284
PCC
Punte a Centrare
Center Drills

288
UTP
Punte a Eliche Indipendenti
Subland Drills

302

Punta a eliche indipendenti
Subland drill

HSS | DIN 8377



180°

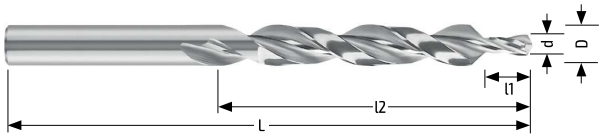
Fil	d h9	D h8	l1	l2	L	Mk	Non rivestito Uncoated
M5	5,5	10,0	13	87	168	1	UTP302005
M5	5,3	9,4	6	77	158	1	UTP302051
M5	5,3	9,4	16	87	168	1	UTP302052
M6	6,6	11,0	15	94	175	1	UTP302006
M6	6,4	10,4	10	84	165	1	UTP302061
M6	6,4	10,4	20	94	175	1	UTP302062
M8	9,0	15,0	19	114	212	2	UTP302008
M8	9,0	15,0	10	105	203	2	UTP302080
M8	8,4	13,5	13	104	189	1	UTP302081
M8	8,4	13,5	23	114	199	1	UTP302082
M10	11,0	18,0	23	130	228	2	UTP302010
M10	11,0	18,0	13	120	218	2	UTP302100
M10	10,5	16,5	15	120	218	2	UTP302101
M10	10,5	16,5	25	130	228	2	UTP302102
M12	14,0	20,0	27	140	238	2	UTP302012
M12	14,0	20,0	17	130	228	2	UTP302120
M12	13,0	19,0	17	130	228	2	UTP302121
M12	13,0	19,0	27	140	238	2	UTP302122
M14	16,0	24,0	31	160	281	3	UTP302014
M14	16,0	24,0	21	150	271	3	UTP302140
M14	15,0	23,0	21	150	271	3	UTP302141
M14	15,0	23,0	31	160	281	3	UTP302142
M16	18,0	26,0	35	165	286	3	UTP302016
M16	18,0	26,0	25	155	276	3	UTP302160
M16	17,0	25,0	25	155	276	3	UTP302161
M16	17,0	25,0	35	165	286	3	UTP302162
M18	20,0	30,0	39	175	296	3	UTP302018
M18	20,0	30,0	29	165	286	3	UTP302180
M18	19,0	28,0	29	165	286	3	UTP302181
M18	19,0	28,0	39	175	296	3	UTP302182
M20	22,0	33,0	43	185	334	4	UTP302020
M20	22,0	33,0	33	175	324	4	UTP302200
M20	21,0	31,0	33	175	300	3	UTP302201
M20	21,0	31,0	43	185	310	3	UTP302202

Notes

311

Punta a eliche indipendenti
Subland drill

HSS | DIN 8374



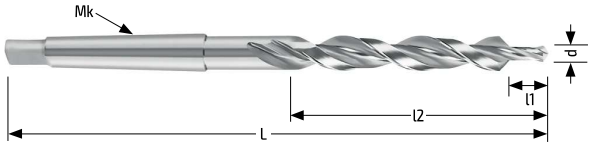
Fil	d h9	D h8	l1	l2	L	Non rivestito Uncoated
M3	3,4	6,6	9	63	101	UTP311003
M3	3,2	6,3	11	52	90	UTP311032
M4	4,5	9,0	11	81	125	UTP311004
M4	4,3	8,3	13	63	105	UTP311042
M5	5,5	11,0	13	94	142	UTP311005
M5	5,3	10,4	16	83	133	UTP311052
M6	6,6	13,0	15	101	151	UTP311006
M6	6,4	12,4	20	90	142	UTP311062
*M8	9,0	17,2	19	130	191	UTP311008
*M8	8,4	16,5	23	115	186	UTP311082

* Gambo D. 13,5 / * Shank D. 13,5

312

Punta a eliche indipendenti
Subland drill

HSS | DIN 8375



Fil	d h9	D h8	l1	l2	L	Mk	Non rivestito Uncoated
M5	5,5	11,0	13	94	175	1	UTP312005
M5	5,3	10,4	16	84	168	1	UTP312052
M6	6,6	13,0	15	101	182	1	UTP312006
M6	6,4	12,4	20	95	182	1	UTP312062
M8	9,0	17,2	19	130	228	2	UTP312008
M8	8,4	16,5	23	120	223	2	UTP312082
M10	11,0	21,5	23	150	248	2	UTP312010
M10	10,5	20,5	25	135	240	2	UTP312102
M12	13,0	25,0	28	155	281	3	UTP312122
M14	15,0	28,0	31	165	291	3	UTP312142

Notes

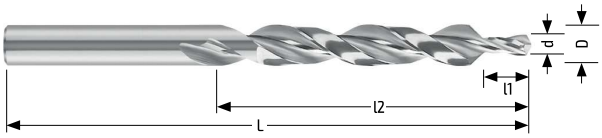
284
PCC
Punte a Centrare
Center Drills

288
UTP
Punte a Eliche Indipendenti
Subland Drills

321

Punta a eliche indipendenti per fori da filettare
Subland drill for tapped holes

HSS | DIN 8378



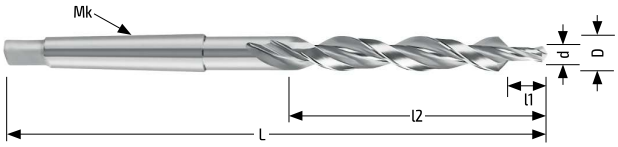
Fil	d h9	D h8	l1	l2	L	Non rivestito Uncoated
M3	2,5	3,4	9	39	70	UTP321003
M4	3,3	4,5	11	47	80	UTP321004
M5	4,2	5,5	14	57	93	UTP321005
M6	5,0	6,6	16	63	101	UTP321006
M8	6,8	9,0	21	81	125	UTP321008
M10	8,5	11,0	25	94	142	UTP321010
*M12	10,2	14,0	30	108	160	UTP321012

* Gambo D. 13,5 / * Shank D. 13,5

322

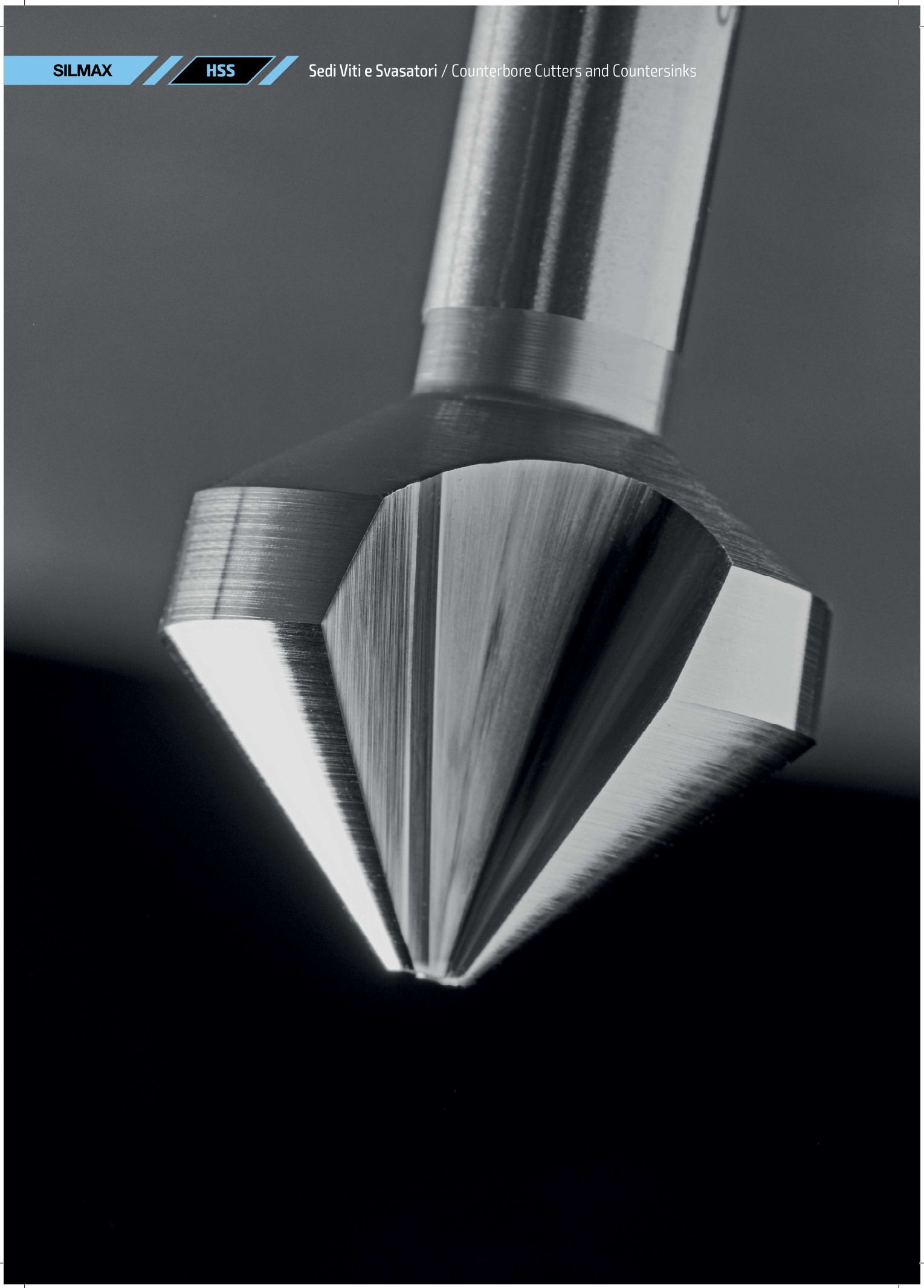
Punta a gradino per fori da filettare
Subland drill for tapped holes

HSS | DIN 8379

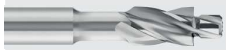


Fil	d h9	D h8	l1	l2	L	Mk	Non rivestito Uncoated
M8	6,8	9,0	21	81	162	1	UTP322008
M10	8,5	11,0	25	94	175	1	UTP322010
M12	10,2	14,0	30	108	189	1	UTP322012
M14	12,0	16,0	34	120	218	2	UTP322014
M16	14,0	18,0	38	130	228	2	UTP322016
M18	15,5	20,0	43	140	238	2	UTP322018
M20	17,5	22,0	47	150	248	2	UTP322020

Notes



SEDI VITI E SVASATORI
COUNTERBORE CUTTERS AND COUNTERSINKS

FSB Frese per Sedi Viti Counterbore Cutters	Codice Code	Ø (D mm)	Pagina Page
	401	M3 ÷ M12	294
	402	M10 ÷ M20	294
	403	M3 ÷ M10	294

PSV Svasatori Countersinks	Codice Code	Ø (D mm)	295
	361	6,3 ÷ 25,0	295
	362	4,3 ÷ 31,0	295
	367	12,4 ÷ 31,0	296
	363	8,0 ÷ 25,0	296

FRESE PER SEDI VITI
COUNTERBORE CUTTERS

401

Sedi viti
Counterborers

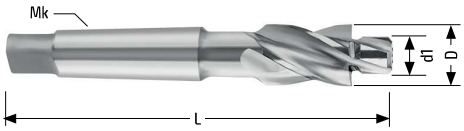
HSSE | ISO 4205 | DIN 373

dv	d1 e8	D z9	L	d h8	Z	Non rivestito Uncoated
M3	3,2	6,0	71	6	4	FSB401003
M4	4,3	7,4	71	8	4	FSB401004
M5	5,3	9,4	80	10	4	FSB401005
M6	6,4	10,4	80	10	4	FSB401006
M8	8,4	13,5	100	12	4	FSB401008
M10	10,5	16,5	100	12	4	FSB401010
M12	13,0	20,0	100	12	4	FSB401012

402

Sedi viti
Counterborers

HSSE | ISO 4205 | DIN 373

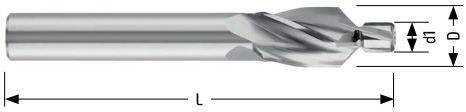


dv	d1 e8	D z9	L	Mk	Z	Non rivestito Uncoated
M10	10,5	16,5	145	2	4	FSB402010
M12	13,0	20,0	150	2	4	FSB402012
M14	15,0	23,0	160	2	4	FSB402014
M16	17,0	25,0	165	2	4	FSB402016
M18	19,0	28,0	175	2	4	FSB402018
M20	21,0	31,0	200	3	4	FSB402020

403

Sedi viti
Counterborers

HSSE | ISO 4206 | DIN 1866



dv	d1 e8	D z9	L	d h8	Z	Non rivestito Uncoated
M3	3,2	6,5	71	6	4	FSB403003
M4	4,3	8,6	71	8	4	FSB403004
M5	5,3	10,6	80	10	4	FSB403005
M6	6,4	12,6	80	10	4	FSB403006
M8	8,4	16,7	100	12	4	FSB403008
M10	10,5	20,7	100	12	4	FSB403010

294
FSB
Frese per Sedi Viti
Counterbore Cutters
295
PSV
Svasatori
Countersinks

SVASATORI
COUNTERSINKS

361

Svasatore
Countersink

HSSE | Z3 | DIN 334C

60°

D z9	d1	d h9	L	Non rivestito Uncoated	Balinit® Alcrona
6,3	1,5	5	47	PSV361063	NIG361063
8,3	2,0	6	52	PSV361083	NIG361083
10,4	2,5	6	53	PSV361104	NIG361104
12,4	3,0	8	60	PSV361124	NIG361124
16,5	4,0	10	65	PSV361165	NIG361165
20,5	4,0	10	69	PSV361205	NIG361205
25,0	5,0	10	75	PSV361250	NIG361250

362

Svasatore
Countersink

HSSE | Z3 | DIN 335C

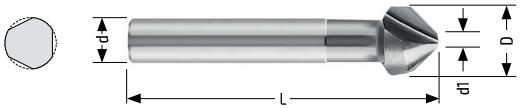
90°

D z9	d1	d h9	L	Non rivestito Uncoated	Balinit® Alcrona
4,3	1,3	4	40	PSV362043	NIG362043
5,3	1,5	4	40	PSV362053	NIG362053
6,3	2,0	5	45	PSV362063	NIG362063
7,3	2,0	6	50	PSV362073	NIG362073
8,3	2,5	6	50	PSV362083	NIG362083
9,4	3,0	6	50	PSV362094	NIG362094
10,4	3,0	6	50	PSV362104	NIG362104
12,4	3,0	8	56	PSV362124	NIG362124
16,5	4,0	10	60	PSV362165	NIG362165
20,5	4,0	10	63	PSV362205	NIG362205
25,0	4,0	10	67	PSV362250	NIG362250
31,0	4,0	12	71	PSV362310	NIG362310

367

Svasatore per l'impiego a mano
Countersinking with flatted shanks

HSSE | Z3 | DIN 335C



90°

D z9	d1	d h9	L	Non rivestito Uncoated	Balinit® Alcrona
12,4	3,0	8	56	PSV367124	NIG367124
16,5	4,0	10	60	PSV367165	NIG367165
20,5	4,0	10	63	PSV367205	NIG367205
25,0	4,0	10	67	PSV367250	NIG367250
31,0	4,0	12	71	PSV367310	NIG367310

363

Svasatore
Countersinking cutter

HSSE | Z3 | DIN 335C

120°

D z9	d1	d h9	L	Non rivestito Uncoated	Balinit® Alcrona
8,0	2,0	6	49	PSV363080	NIG363080
12,5	2,8	8	54	PSV363125	NIG363125
16,0	3,2	10	57	PSV363160	NIG363160
20,0	3,5	10	59	PSV363200	NIG363200
25,0	3,8	10	63	PSV363250	NIG363250

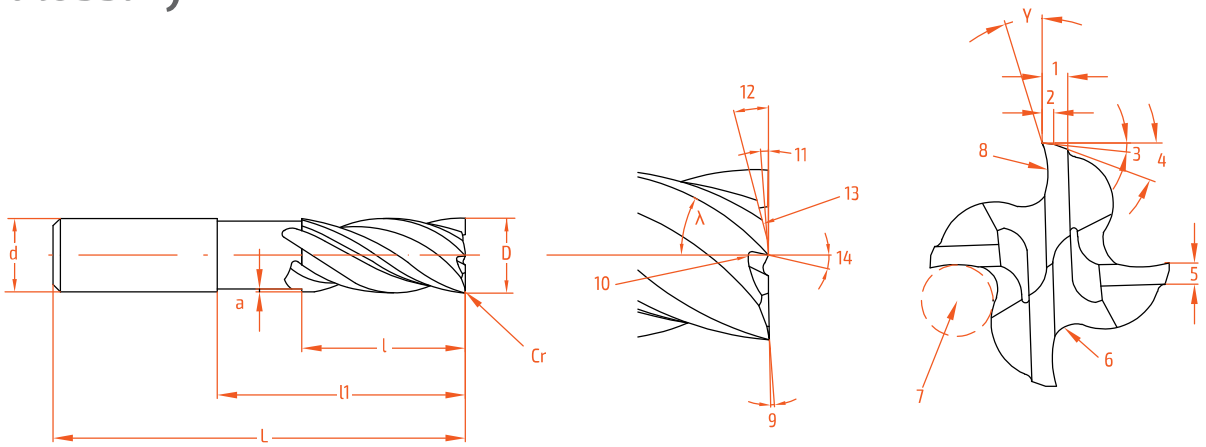
Notes


SILMAX


Mitutoyo
No.2046S
45°
d1

Informazioni tecniche
Technical info

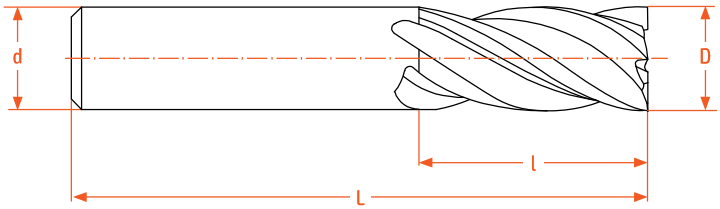
Glossario
Glossary



D	Diametro della Fresa	Mill diameter
d	Diametro del Gambo	Shank diameter
L	Lunghezza totale	Overall lenght
l	Lunghezza di taglio	Lenght of cut
l1	Lunghezza ribassata	Neck length
a	Ribassamento del codolo	Neck relief
Cr	Raggio di raccordo	Corner radius
r	Raggio	Radius
z	Numero dei denti	Number of teeth
λ	Angolo d'elica	Helix angle
Y	Angolo di spoglia radiale superiore (Mordente)	Radial rake angle

1	Larghezza spoglia radiale primaria	Radial primary relief width
2	Larghezza del dente	Land width
3	Angolo prima spoglia radiale	Radial primary relief angle
4	Seconda spoglia radiale	Radial secondary clearance angle
5	Larghezza spoglia assiale primaria	Axial primary relief width
6	Gola	Flute
7	Vano truciolo	Chip room
8	Piano di Mordente	Cutting face
9	Angolo di rastremazione frontale	End cutting edge concavity angle
10	Gola frontale	End gash
11	Prima spoglia frontale	Axial primary relief angle
12	Angolo seconda spoglia frontale	Axial secondary clearance angle
13	Denti frontali	End teeth
14	Angolo di spoglia frontale superiore (Mordente)	Axial rake angle

Norma DIN
DIN-Standard



Serie / Series	CARBIDE								HSS											
	Corta / Short				Lunga / Long				Corta / Short			Normale / Regular			Media / Medium			Lunga / Long		
DIN	6527K				6527L				327			844K			Silmax Norm			844L		
D.	d	L	l z=2/3	l z=4	d	L	l z=2/3	l z=4	d	L	l	d	L	l	d	L	l	d	L	l
1,0	3	38	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,5	3	38	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,0	3	38	3	4	3	38	6	7	6	48	4	6	51	7	-	-	-	6	54	10
2,0	6	50	3	4	-	-	-	-							-	-	-			
2,5	3	38	3	4	3	38	7	8	6	49	5	6	52	8	-	-	-	6	56	12
2,5	6	50	3	4	-	-		-	-	-	-	-	-	-	-	-	-			
3,0	3	38	4	5	3	38	7	8	6	49	5	6	52	8	-	-	-	6	56	12
3,0	6	50	4	5	6	57	7	8	-	-	-	-	-	-	-	-	-	-	-	-
3,5	6	50	4	6	6	57	7	10	-	-	-	-	-	-	-	-	-	-	-	-
4,0	6	54	5	8	6	57	8	11	6	51	7	6	55	11	-	-	-	6	63	19
5,0	6	54	6	9	6	57	10	13	6	52	8	6	57	13	-	-	-	6	68	24
6,0	6	54	7	10	6	57	10	13	6	52	8	6	57	13	6	62	18	6	68	24
7,0	8	58	8	11	8	63	13	16	10	60	10	10	66	16	-	-	-	10	80	30
8,0	8	58	9	12	8	63	16	19	10	61	11	10	69	19	10	75	25	10	88	38
9,0	10	66	10	13	10	72	16	19	10	61	11	10	69	19	-	-	-	10	88	38
10,0	10	66	11	14	10	72	19	22	10	63	13	10	72	22	10	83	33	10	95	45
11,0	-	-	-	-	-	-	-	-	12	70	13	12	79	22	-	-	-	12	102	45
12,0	12	73	12	16	12	83	22	26	12	73	16	12	83	26	12	96	39	12	110	53
13,0	-	-	-	-	-	-	-	-	12	73	16	12	83	26	-	-	-	12	110	53
14,0	14	75	14	18	14	83	22	26	12	73	16	12	83	26	12	96	39	12	110	53
15,0	-	-	-	-	-	-	-	-	12	73	16	12	83	26	-	-	-	12	110	53
16,0	16	82	16	22	16	92	26	32	16	79	19	16	92	32	16	105	45	16	123	63
17,0	-	-	-	-	-	-	-	-	16	79	19	16	92	32	-	-	-	16	123	63
18,0	18	84	18	24	18	92	26	32	16	79	19	16	92	32	16	105	45	16	123	63
19,0	-	-	-	-	-	-	-	-	16	79	19	16	92	32	-	-	-	16	123	63
20,0	20	92	20	26	20	104	32	38	20	88	22	20	104	38	20	121	55	20	141	75
22,0	-	-	-	-	-	-	-	-	20	88	22	20	104	38	20	121	55	20	141	75
24,0	-	-		-	-	-	-	-	25	102	26	25	121	45	-	-	-	25	166	90
25,0	-	-	-	-	-	-	-	-	25	102	26	25	121	45	25	141	65	25	166	90
26,0	-	-		-	-	-	-	-	25	102	26	25	121	45	-	-	-	25	166	90
28,0	-	-	-	-	-	-	-	-	25	102	26	25	121	45	25	141	65	25	166	90
30,0	-	-		-	-	-	-	-	25	102	26	25	121	45	25	141	65	25	166	90
32,0	-	-	-	-	-	-	-	-	32	112	32	32	133	53	32	158	78	32	186	106
40,0	-	-		-	-	-	-	-	40	130	38	40	155	63	-	-	-	40	217	125
45,0	-	-	-	-	-	-	-	-	40	130	38	-	-	-	-	-	-	40	217	125
50,0	-	-		-	-	-	-	-	50	147	45	50	177	75	-	-	-	50	252	150

Tolleranze / Allowances

µm = 0,001 mm

D mm	1 ÷ 3	3 ÷ 6	6 ÷ 10	10 ÷ 18	18 ÷ 30	30 ÷ 50	50 ÷ 80	80 ÷ 120
m7	+12 +2	+16 +4	+21 +6	+25 +7	+29 +8	+34 +9	+41 +11	+48 +13
d11	-20 -80	-30 -105	-40 -130	-50 -160	-65 -195	-80 -240	-100 -290	-120 -340
e8	-14 -28	-20 -38	-25 -47	-32 -59	-40 -73	-50 -89	60 -106	-72 -126
f8	-6 -20	-10 -28	-13 -35	-16 -43	-20 -53	- -	- -	- -
h5	0 -4	0 -5	0 -6	0 -8	0 -9	0 -11	0 -13	0 -15
h6	0 -6	0 -8	0 -9	0 -11	0 -13	0 -16	0 -19	0 -22
h7	0 -10	0 -12	0 -15	0 -18	0 -21	0 -25	0 -30	0 -35
h8	0 -14	0 -18	0 -22	0 -27	0 -33	0 -39	0 -46	0 -54
h9	0 -25	0 -30	0 -36	0 -43	0 -52	0 -62	0 -74	0 -87
h10	0 -40	0 -48	0 -58	0 -70	0 -84	0 -100	0 -120	0 -140
h11	0 -60	0 -75	0 -90	0 -110	0 -130	0 -160	0 -190	0 -220
h12	0 -100	0 -120	0 -150	0 -180	0 -210	0 -250	0 -300	0 -350
js16	+300 -300	+375 -375	+450 -450	+550 -550	+650 -650	+800 -800	+950 -950	+1100 -1100
k10	+40 0	+48 0	+58 0	+70 0	+84 0	+100 0	+120 0	+140 0
k11	+60 0	+75 0	+90 0	+110 0	+130 0	+160 0	+190 0	+220 0
k12	+100 0	+120 0	+150 0	+180 0	+210 0	+250 0	+300 0	+350 0
P9	-6 -31	-12 -42	-15 -51	-18 -61	-22 -74	-26 -88	-32 -106	-37 -124
H11	+60 0	+75 0	+90 0	+110 0	+130 0	+160 0	+190 0	+220 0

D mm	1 ÷ 3	3 ÷ 6	6 ÷ 10	10 ÷ 14	14 ÷ 18	18 ÷ 24	24 ÷ 30	30 ÷ 40
z9	+51 +26	+65 +35	+78 +42	+93 +50	+103 +60	+125 +73	+140 +88	+174 +112

Tabella durezze / Hardness table

Rm (N/mm²)	HV 10 (Vickers)	HB (Brinnel)	HRC (Rockwell)
240	75	71	-
255	80	76	-
270	85	81	-
285	90	86	-
305	95	90	-
320	100	95	-
335	105	100	-
350	110	105	-
370	115	109	-
385	120	114	-
400	125	119	-
415	130	124	-
430	135	128	-
450	140	133	-
465	145	138	-
480	150	143	-
495	155	147	-
510	160	152	-
530	165	157	-
545	170	162	-
560	175	166	-
575	180	171	-
595	185	176	-
610	190	181	-
625	195	185	-
640	200	190	-
660	205	195	-
675	210	199	-
690	215	204	-
705	220	209	-
720	225	214	-
740	230	219	-
755	235	223	-
770	240	228	-
785	245	233	-
800	250	238	22
820	255	242	23
835	260	247	24
860	268	255	25
870	272	258	26
900	280	266	27
920	287	273	28

Rm (N/mm²)	HV 10 (Vickers)	HB (Brinnel)	HRC (Rockwell)
940	293	278	29
970	302	287	30
995	310	295	31
1020	317	301	32
1050	327	311	33
1080	336	319	34
1110	345	328	35
1140	355	337	36
1170	364	346	37
1200	373	354	38
1230	382	363	39
1260	392	372	40
1300	403	383	41
1330	413	393	42
1360	423	413	44
1400	434	413	44
1440	446	424	45
1480	458	435	46
1530	473	449	47
1570	484	460	48
1620	497	472	49
1680	514	488	50
1730	527	501	51
1790	544	517	52
1845	560	532	53
1910	578	549	54
1980	596	567	55
2050	615	584	56
2140	639	607	57
-	655	622	58
-	675	-	59
-	698	-	60
-	720	-	61
-	745	-	62
-	773	-	63
-	800	-	64
-	829	-	65
-	864	-	66
-	900	-	67
-	940	-	68
-	-	-	-
-	-	-	-

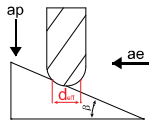
Formule / Formulas

R_m (N/mm²)	HV 10 (Vickers)	HB (Brinnel)
Velocità di rotazione / Revolutions per minute	[giri/minuto] [Rpm]	$n = \frac{Vc \times 1000}{D \times \Pi}$
Avanzamento / Feed speed	[mm/min]	$F = Fz \times z \times n$
Velocità di taglio / Cutting speed	[m/min]	$Vc = \frac{D \times \Pi \times n}{1000}$
Avanzamento per giro / Feed per revolution	[mm]	$f = fz \times z$
Avanzamento per dente / Feed per tooth	[mm]	$fz = \frac{F}{z \times n}$
Volume di truciolo / Chip removal rate	[cm³/min]	$Q = \frac{ae \times ap \times F}{1000}$

Diametro effettivo per frese semisferiche con angolo di penetrazione 0°<β<90°

Effective diameter for ball nose end mills at a set angle 0°<β<90°

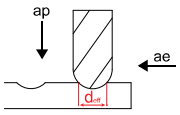
$$D_{eff} = D \times \sin\left[\beta + \cos^{-1}\left(\frac{D-2\times ap}{D}\right)\right] \quad [mm]$$



Diametro effettivo per frese semisferiche con angolo di penetrazione β=0°

Effective diameter for ball nose end mills at a set angle β=0°

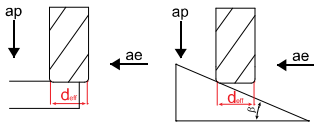
$$D_{eff} = 2 \times \sqrt{(D \times ap - ap^2)} \quad [mm]$$



Diametro effettivo per frese toriche con angolo di penetrazione 0°<β<90°

Effective diameter for corner radius end mills at a set angle 0°<β<90°

$$D_{eff} = D - 2 \times Cr + 2 \times Cr \times \sin\left[\beta + \cos^{-1}\left(1 - \frac{ap}{Cr}\right)\right] \quad [mm]$$



Parametro Parameter	Unità di misura Units of measurement	Description Descrizione
D	[mm]	Diametro della fresa / End mill diameter
z	[Nr]	Numero dei denti / Number of teeth
Cr	[mm]	Raggio di raccordo / Corner radius
ae	[mm]	Profondità radiale di passata / Cutting width
ap	[mm]	Profondità assiale di passata / Cutting depth
D_{eff}	[mm]	Diametro in impegno effettivo / Effective engagement diameter
β	[gradi] [degrees]	Angolo di penetrazione / Setting angle

Gruppo materiali / Materials group

Acciaio <800 N/mm²
Steel <800 N/mm²

Non legati / Unalloyed

Wrknr	DIN
1.0402	C22
1.0406	C25
1.0501	C35
1.0503	C45
1.1133	20Mn5
1.1231	Ck67
1.1248	Ck75
1.1274	Ck101

Legati / Alloyed

Wrknr	DIN
1.3505	100Cr6
1.5752	14NiCr14
1.5919	15CrNi6
1.6523	21NiCrMo2
1.6546	40NiCrMo2 2
1.6587	17CrNiMo6
1.7015	15Cr3
1.7131	16MnCr5
1.7176	55Cr3
1.7218	25CrMo4
1.7220	34CrMo4
1.7223	41CrMo4
1.8159	50CrV4

Acciaio <1000 N/mm²
Steel <1000 N/mm²

Non legati / Unalloyed

Wrknr	DIN
1.0535	C55
1.0601	C60
1.1157	40Mn4
1.1165	30Mn5
1.1167	36Mn5
1.1170	28Mn6
1.1203	Ck55
1.1206	Ck50
1.1221	Ck60

Legati / Alloyed

Wrknr	DIN
1.5710	36NiCr6
1.5755	31NiCr14
1.6511	36CrNiMo4
1.7033	34Cr4
1.7034	37Cr4
1.7035	41Cr4
1.7045	42Cr4
1.7218	25CrMo4
1.7220	34CrMo4
1.7223	41CrMo4
1.7225	42CrMo4
1.8159	50CrV4
1.8507	34CrAlMo5
1.8509	41CrAlMo7
1.8515	31CrMo12

Acciai legati per utensili
Alloyed tool steels

Wrknr	DIN
1.2067	100Cr6
1.2330	35CrMo4
1.2332	47CrMo4
1.2510	100MnCrW4
1.2516	120WV4
1.2542	45WCrV7
1.2833	100V1
1.2842	90MnCrV8

Ghisa
Cast Iron

Wrknr	DIN
0.6010	GG-15
0.6015	GG-10
0.6020	GG-20
0.6030	GG-30
0.6040	GG-40

Acciaio <1300 N/mm²
Steel <1300 N/mm²

Legati / Alloyed

Wrknr	DIN
1.5710	36NiCr6
1.6511	36CrNiMo4
1.6580	30CrNiMo8
1.6582	34CrNiMo6
1.7220	34CrMo4
1.7223	41CrMo4
1.7225	42CrMo4
1.7361	32CrMo12
1.8159	50CrV4

Acciai legati per utensili
Alloyed tool steels

Wrknr	DIN
1.2311	40CrMnMo7
1.2343	X38CrMoV5 1
1.2344	X40CrMoV5 1
1.2365	X32CrMoV3 3
1.2581	X30WCrV9 3
1.2714	56NiCrMoV7

Acciaio da stampi
Mold steel

Acciai legati per utensili
Alloyed tool steels

Wrknr	DIN
1.2080	X210Cr12
1.2201	X165CrV12
1.2376	X96CrMoV12
1.2379	X155CrMo12 1
1.2436	X210CrW12
1.2601	X165CrMoV12
1.2609	X165CrVMo12 1
1.2631	X50CrMoW9 1 1
1.2706	X3NiCrMo18 8 5
1.2709	X3NiCrMoTi18 9 5
1.2880	X165CrCoMo12

Acciai resistenti al calore
Heat-resistant steels

Wrknr	DIN
1.4718	X45CrSi9 3
1.4742	X10CrAl18
1.4845	X12CrNi25 21
1.4878	X12CrNiTi18 9
1.4914	-
1.4920	X15CrMo12 1
1.4923	X22CrMoV12 1
1.4924	-

Gruppo materiali
Materials group

Acciaio inossidabile / Stainless Steel

Ferritico/martensitico / Ferritic/martensitic

Wrknr	Std	DIN
1.4057	AISI 431	X20CrNi17 2
1.4301	AISI 304	X5CrNi18 9
1.4000	AISI 403	X6Cr13
1.4005	AISI 416	X12CrS13
1.4006	AISI 410	X10Cr13
1.4021	AISI 420	X20Cr13
1.4057	AISI 431	X20CrNi17 2
1.4104	AISI 430 F	X12CrMoS17
1.4112	AISI 440 B	X90CrMoV18
1.4113	AISI 434	X6CrMo17
1.4125	AISI 440 C	X105CrMo17

Austenitico / Austenitic

Wrknr	Std	DIN
1.4303	AISI 308	X5CrNi18 12
1.4305	AISI 303	X10CrNiS18 9
1.4306	AISI 304 L	X2CrNi19 11
1.4310	AISI 301	X12CrNi17 7
1.4401	AISI 316	ZX5CrNiMo18 10
1.4404	AISI 316 L	X2CrNiMo17 13 2
1.4406	AISI 316 LN	X2CrNiMoN17 12 2
1.4435	AISI 316 L	X2CrNiMo18 14 3
1.4436	AISI 316	X5CrNiMo17 13 3
1.4438	AISI 317 L	X2CrNiMo18 16 4
1.4460	AISI 329	X8CrNiMo27 5
1.4541	AISI 321	X6CrNiTi18 10
1.4550	AISI 347-348	X6CrNiNb18 10
1.4571	AISI 316 Ti	X6CrNiMoTi17 12 2
1.4573	AISI 316 Ti	X10CrNiMoTi18 12
1.4580	AISI 316 Cb	X6CrNiMoNb17 12 2
1.4583	AISI 318	X10CrNiMoNb18 12

Titanio / Titanium

Leghe di Titanio 340-450HB / Titanium alloys 340-450HB

Wrknr	Std	DIN
3.7124	-	TiCu2
3.7144	-	TiAl6Sn2Zr4Mo2
3.7154	-	TiAl6Zr5
3.7165	-	TiAl6V4
3.7174	-	TiAl6V6Sn2
3.7184	-	TiAl4Mo4Sn2
-	-	Ti6Al6V2Sn
-	-	Ti7Al4Mo
-	-	Ti8Al1Mo1V
-	-	Ti6Al2Sn4Zr2MoSi
-	-	Ti5Al6Sn2Zr1Mo0.25Si
-	-	Ti6Al4VELI
-	-	Ti6Al2Sn4Zr6Mo
-	-	Ti6Al6V2Sn
-	-	Ti7Al4Mo

Leghe CrCo / CrCo Alloys

Wrknr	Std	DIN
-	ASTM F75	Co28Cr6Mo
-	ASTM F99	Co28Cr6Mo
-	ASTM F90	Co20Cr15W10Ni
-	ASTM F562	Co35Ni20Cr10Mo

PH Duplex

PH

Wrknr	Std	DIN
1.4504	17-7 PH	-
1.4542	AISI630	X5CrNiCuNb17 4
1.4545	15-5 PH	-
1.4564	17-7 PH	-
-	17-4 PH	-

Duplex

Wrknr	Std	DIN
-	A240 (S31200)	-
1.4410	-	-
1.4462	-	-

Superleghe / Superalloys

Superleghe / Superalloys

Wrknr	Std	DIN
1.4876	Incoloy 800	X10NiCrAlTi32 20
1.4945	-	X6 CrNiWNb16 16
1.4962	-	X12CrNiWTi 16 3
2.4360	Monel 400	NiCu30Fe
2.4375	Monel K500	NiCu30Al
2.4603	Hastelloy X	NiCr30FeMo
2.4617	Hastelloy B-2	-
2.4630	Nimonic 75	NiCr20Ti
2.4631	Nimonic 80A	NiCr20TiAl
2.4634	Nimonic 105	NiCo20Cr15MoAlTi
2.4640	Inconel 600	NiCr15Fe
2.4668	Inconel 718	NiCr19Fe18Nb5Mg
2.4670	Nimocast 713	-
2.4674	Nimocast PK24	-
2.4816	Inconel 600	NiCr15Fe
2.4856	Inconel 625	NiCr22Mo9Nb
2.4858	Inconel 600	NiCr21Mo

Superleghe difficili da lavorare / Superalloys difficult to work

Wrknr	Std	DIN
1.4943	Z6NCTDV	X4NiCrTi 25 15
-	25.15B	-
1.4980	A-286	X5NiCrTi
2.4603	Hastelloy X	NiCr30FeMo
2.4617	Hastelloy B-2	
2.4632	Nimonic 90	NiCr20Co18Ti
2.4668	Inconel 718	NiCr19Fe18Nb5Mg
2.4670	Nimocast 713	-
2.4674	Nimocast PK24	-
2.4812	Hastelloy C	-
2.4856	Inconel 625	NiCr22Mo9Nb
2.4983	Udimet 500	-

Superleghe molto difficili da lavorare
Superalloys very difficult to work

Wrknr	Std	DIN
-	Alacrite 601	-
-	Alacrite 602	-
-	AMS 5759	-
-	IN-738	-
-	MAR-M200	-
-	MAR-M246	-
-	MAR-M302	-
-	MAR-M322	-
-	MAR-M432	-
-	MAR-M509	-
2.4654	Rene 41	-
-	Rene 77	-
-	Rene 95	-
-	Rene 100	-
-	Rene 220	-
-	Stellite	-
2.6554	Waspaloy	-

Alluminio e leghe
Aluminium and Alloys

Alluminio puro / Pure Aluminum

Wrknr	DIN
3.0205	AI99

Leghe malleabili non indurite (30-80HB)
Non-hardened malleable alloys (30-80HB)

Wrknr	DIN
3.0505	AlMn0.5Mg0.5
3.0506	AlMn0.6
3.0515	AlMn1
3.0517	AlMnCu
3.0525	AlMn1Mg0.5
3.0526	AlMn1Mg1
3.0915	AlFeSi
3.3307	AI99.85Mg0.5
3.3308	Al99.5Mg0.5
3.3315	AlMg1
3.3316	AlMg1.5
3.3317	Al99.85Mg1
3.3318	Al99.9Mg1
3.3326	AlMg1.8
3.3345	AlMg4.5
3.3523	AlMg2.5
3.3525	AlMg2Mn03
3.3527	AlMg2Mn0.8
3.3535	AlMg3
3.3537	AlMg2.7Mn
3.3545	AlMg4Mn
3.3547	AlMg4.5Mn
3.3549	AlMg5Mn
3.3555	AlMg5

Leghe malleabili indurite (70-150HB)
Hardened malleable alloys (70-150HB)

Wrknr	DIN
3.0615	AlMgSiPb
3.1255	AlCuSiMn
3.1305	AlCu2.5Mg0.5
3.1325	AlCuMg1
3.1355	AlCuMg2
3.1645	AlCuMgPb
3.1655	AlCuBiPb
3.2307	Al99.85MgSi
3.2315	AlMgSi1
3.3206	AlMgSi0.5
3.3208	Al99.9MgSi
3.3210	AlMgSi0.7
3.3211	AlMg1SiCu
3.4335	AlZn4.5Mg1
3.4337	AI99.8ZnMg
3.4345	AlZnMgCu0.5
3.4365	AlZnMgCu1.5
3.1371	G-AlCu4TiMg

Rame e leghe
Copper and Alloys

Non Legati / Unalloyed

Wrknr	DIN
2.0040	OF-Cu

Leghe malleabili non indurite
Non-hardened malleable alloys

Wrknr	DIN
2.0205	CuZn0.5

Leghe malleabili indurite
Hardened malleable alloys

Wrknr	DIN
2.0850	CuNi2Be

A truciolo lungo
Long-chip

Wrknr	DIN
2.0220	CuZn5

A truciolo corto
Short-chip

Wrknr	DIN
2.0331	CuZn36Pb1.5

Leghe CuNiZn a truciolo corto
Short-chip CuNiZn alloys

Wrknr	DIN
2.0730	CuNi12Zn24

Leghe a base CuNi
CuNi-based alloys

Wrknr	DIN
2.0830	CuNi25

Resina Termo Plastica
Thermoplastics

Leghe malleabili non indurite (30-80HB)
Non-hardened malleable alloys (30-80HB)

Wrknr	DIN
P E	Baylon
P P	Daplen
P V C	Coroplast
P S	Hostyron
P M M A	Acrylglas
P T F E	Hostaflon
P A	Akulon
P C	Makralon
P I	-
P F	Alberit
M F	Albanit
U F	Bakelite
P U R	Baydur
S I	Baysilon
U P	Alpolit
U P	Viapal
E P	Araldit
B F K	-
C F K	-
G F K	-
M F K	-
S F K	-

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CARBIDE

HSS

Condizioni generali di vendita

1 **Catalogo prodotti e offerte.** Le nostre offerte sono vincolanti per entrambi le parti se seguite da accettazione scritta o da comportamento concludente. Silmax si riserva di modificare i prodotti e i dati tecnici inseriti nel proprio catalogo senza nessun obbligo di preavviso. Non saranno accettati ordini di valore inferiore ai 100,00 €, al netto dell'I.V.A. Le ordinazioni che ci pervengono si considerano accettate solo se seguite da una conferma per iscritto.

2 **Prezzi.** Le forniture di utensili normalizzati saranno fatturate ai prezzi indicati nel Listino Silmax in vigore e si intendono al netto dell'I.V.A. Silmax si riserva di modificare il listino senza obbligo di preavviso. Per i prodotti realizzati su richiesta del cliente, i prezzi indicati nelle nostre offerte sono applicati per il periodo di validità delle offerte medesime non potranno essere modificati. Per la merce, offerta o venduta, destinata all'estero i prezzi potranno essere soggetti a revisione qualora si verificassero variazioni di cambio di prezzo all'origine prima della spedizione o del pagamento del materiale, oppure variazioni delle tariffe e tasse doganali e d'importazione nel periodo intercorrente tra la data della nostra offerta e quella della consegna effettiva della merce al cliente.

3 **Trasporti.** Le spese di trasporto a destino e qualunque altra spesa o tassa che dovesse gravare sulle merci si intende ad esclusivo carico dell'acquirente, salvo diverso accordo, da pattuirsi per iscritto al momento dell'ordine. In nessun caso, poi, potremo essere chiamati a rispondere per mancata, ritardata o irregolare consegna da parte dei ferrovie, mezzi di trasporto aereo, di navigazione o su terra, restando inteso che la merce – anche se, per speciali accordi, venduta in porto franco – viaggia sempre a rischio e pericolo dell'acquirente ai sensi dell'art.1510 c.c. La mancata, ritardata o irregolare consegna dovuta alle suddette cause, quindi da noi indipendenti, non potrà costituire motivo di annullamento dell'ordine, né di mancato o ritardato pagamento, né, infine, di reclamo da parte dell'acquirente.

4 **Consegne**. I termini di consegna indicati ed accettati sono orientativi e valevoli solamente in condizioni normali di lavoro. Eventuali cause di forza maggiore, quali, a titolo esemplificativo, guerre, scioperi, epidemie, incidenti, il ritardo o l'interruzione dei qualsivoglia tipi di trasporto, la penuria di materiali ed ogni altro fatto che comporti il ritardo, la sospensione o l'interruzione totale o parziale del lavoro e/o del contratto, ci autorizzano a sospendere ovvero ad annullare la fornitura e/o il contratto, senza alcuna responsabilità o penalità da parte nostra.

5 **Pagamenti.** Il prezzo d'acquisto della merce, comprese le spese per l'eventuale imballaggio e qualsiasi altro onere gravante sulla merce, deve essere corrisposto in contanti al momento della fornitura, salvo espressa diversa indicazione concordata al momento dell'ordine. Ci riserviamo la facoltà di richiedere il pagamento [parzialmente] anticipato per ordinazioni importanti o per forniture speciali. In caso di ritardato pagamento, l'acquirente si obbliga a corrispondere gli interessi di mora nella misura superiore del 2% al tasso prime-rate ABI.

6 **Tolleranza.** Le tolleranze costruttive degli utensili normalizzati sono indicate nel catalogo prodotti in vigore. Per i prodotti non normalizzati ed eseguiti su richiesta del Cliente, saranno ritenute valide le tolleranze standard, salvo diversa richiesta espressa al momento dell'ordine. Per gli stessi prodotti inoltre non è possibile garantire un'assoluta esattezza nella quantità dei pezzi forniti, sarà quindi sempre ammessa la tolleranza d'uso (+/-10% della quantità ordinata) sia sui prodotti finiti, sia sui singoli elementi che li costituiscono, salvo espresse indicazioni contrarie concordate in fase di ordinazione.

7 **Garanzia.** Silmax garantisce che i prodotti siano esenti da difetti e vizi di fabbricazione, ed un buon funzionamento per un periodo di sei mesi. In ogni caso, la garanzia non si estende all'obbligo di risarcire danni diretti o indiretti, a cose o a persone, che possano derivare dall'impiego dei prodotti Silmax, anche in caso di rottura.

8 **Resi, reclami e contestazioni.** Eventuali resi di materiali saranno accettati da SILMAX solo se preventivamente autorizzati, e qualora fossero da imputare ad una causa a noi estranea ci riserviamo di richiedere un risarcimento dei costi sostenuti. Eventuali reclami riguardanti vizi, difetti, mancanza di qualità della merce fornita dovranno essere effettuati entro otto giorni dalla scoperta e fatti pervenire entro il termine perentorio di sei mesi dal ricevimento delle merci stesse, termine decorso il quale non verranno più accettati.

In tal caso, il nostro obbligo resta limitato al rimborso del prezzo di vendita od alla sostituzione pura e semplice, a nostra scelta, di quella parte di merce che, a giudizio esclusivo dei nostri tecnici, sarà ritenuta difettosa di materiale o di costruzione, ovvero, sempre a nostra scelta, potremo accettare la restituzione delle merci oggetto del reclamo, che dovranno essere rispedite in porto franco, a rischio del mittente in difetto di che ci riserviamo di rifiutarne il diritto. Resta inteso che eventuali contestazioni o reclami riguardanti una singola fornitura di merce non avranno alcun effetto sul pagamento di forniture pregresse o ancora da eseguirsi, di cui al resto dell'ordine. In nessun caso, poi, e per nessun motivo potremo essere tenuti a corrispondere qualsiasi indennizzo per eventuali danni diretti o indiretti, a cose o a persone, che possano derivare dall'impiego dei prodotti contestati. I prodotti sostituiti o rimborsati restano di nostra proprietà.

9 **Clausola risolutiva espressa.** Fermo restando l'obbligo di rispettare le clausole del presente contratto, in caso di mancato pagamento del prezzo nei termini di cui all'art.5, il contratto si intenderà immediatamente e automaticamente risolto, senza bisogno di preavviso, ai sensi di cui all'art.1456 del Codice Civile, ed il compratore si obbliga a restituire il prodotto a richiesta della venditrice.

10 **Foro Competente.** Nella inauspicabile ipotesi in cui dovessero insorgere dispute e/o controversie in merito alla interpretazione e/o esecuzione delle singole vendite, sono esclusivamente competenti le Autorità Giudiziari del Foro di Torino.

General sales conditions

1 **Product catalog and offers:** Our offers are binding for both parties if followed by written acceptance or by implication. Silmax reserves the right to change products and technical data included in its catalog without notice.

We will not accept orders with a value of less than € 100.00, excluding VAT. The orders we receive are considered accepted only if followed by written confirmation.

2 **Prices:** The supply of standard tools will be invoiced at the prices indicated in the list Silmax in force and shall exclude VAT. Silmax reserves the right to change the pricelist without notice. For products made on customer demand, the prices quoted in our offers are applied to the same period of validity of tenders and can not be changed. For goods offered or sold, for foreign countries, prices may be subject to revision if changes occur in exchange for money or source of payment before shipment of material, or changes in tariffs and taxes in import and customs period between the date of our offer and the actual delivery of goods to the customer.

3 **Shipment:** The shipping costs to the destination and any other expenses and taxes that were imposed on goods are the responsibility of the buyer, unless otherwise agreed in written form with the order. In no case then, can we be held accountable for failure, irregular or delayed delivery by rail, air transport, shipping or on land, it being understood that the goods - even if, for special arrangements, sold carriage free - always at risk of the purchaser under Article 1510 cc The failure, irregular or delayed delivery due to these causes, then we have independent, will not constitute grounds for cancellation of the order, nor any failure or delay in payment, or further claims of the buyer.

4 **Delivery:** The delivery times indicated and accepted are only guidelines and are calculated under normal working conditions. Any force majeure, including but not limited to war, strike, epidemic, accident, delay or interruption of any kind of transportation, shortage of materials and any other events that causes the delay, interruption or discontinuation total or part of the work and / or contract, to entitle us to suspend or cancel the supply and / or contract without any penalty or liability on our part.

5 **Payment:** the purchase price of the commodity, including the costs of any packaging and any other charges levied on the goods, must be paid in cash upon delivery, unless expressly stated otherwise agreed at time of order. We reserve the right to require payment [partially] in advance for large orders or special deliveries. In case of delayed payment, the buyer agrees to pay interest on late payments in excess of 2% above the first-rate of the ABI (Italian Banking Association).

6 **Allowance:** The allowances of the tools are given in the current product catalog. For products not standardized that are produced after customer request, the valid standard allowances will be valid, unless others were requested and confirmed at time of ordering. For the products we can not guarantee an absolute accuracy in the quantity of parts supplied, you should always use permitted allowance (+ / -10% of the quantity ordered) and finished products, both on the individual elements that constitute them unless expressly provided otherwise agreed in the order.

7 **Warranty:** Silmax ensures that products are free from defects and bad workmanship, and good for a period of six months. In any case the guarantee does not cover further damages and liabilities, direct or indirect, to property or persons, which may result from the use of products Silmax, even in case of breakage.

8 **Returns, Claims and Disputes:** Returns of materials will only be accepted if approved in advance by Silmax, and should they be attributed to a cause unrelated to us we reserve the right to claim compensation for those costs. Any complaints about defects, problems, lack of quality of the goods supplied must be made within eight days of discovery and submitted within a deadline of six months of receipt of the goods, after which term will no longer be accepted.

In this case, our obligation is limited to a refund of the purchase price or replacement pure and simple, at our option, that part of goods which, at the sole discretion of our technicians, will be considered defective in materials or construction, or , always at our discretion, we accept the return of the goods subject of the claim, which must be returned postage paid, at the risk of the sender. Otherwise we reserve the right to refuse. It is understood that any dispute or claim concerning an individual supply of goods will have no effect on the payment of supplies pre-existing or yet to be performed, of for the rest of the order. In no case, then, for any reason we will be obliged to pay any compensation for any direct or indirect damage, to property or persons, which may result from the use of the disputed products. Replacement products or refunds shall remain our property.

9 **Termination clause:** subject to the requirement to comply with the provisions of this contract, in case of failure to pay the price as provided for in Article 5, the contract will be immediately and automatically terminated, without notice, in accordance with under Article art.1456 of the Civil Code, and the buyer is obligated to return the product at the request of the seller.

10 **Jurisdiction:** In cases where disputes arise and/or disputes regarding the interpretation and/or execution of individual transactions, are solely competent: Judicial Authority of the Court of Turin.

Notes

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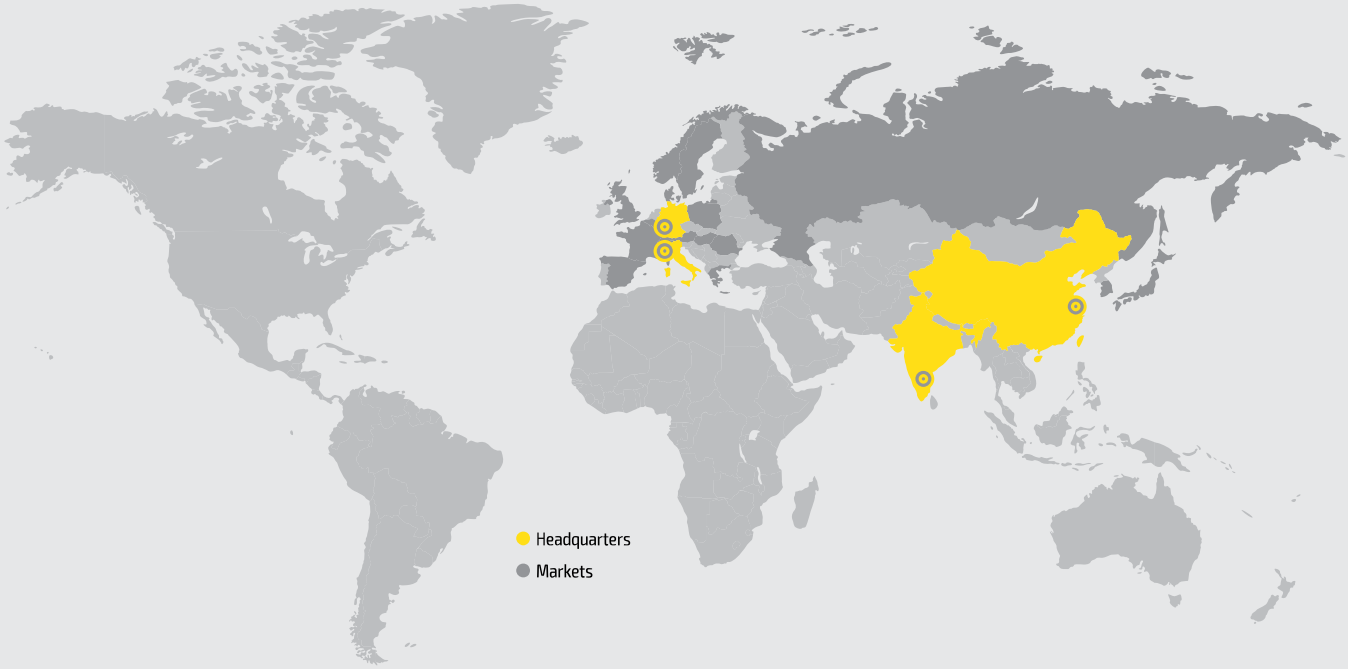

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Visita silmax.it per essere sempre aggiornato sulle novità di Silmax.

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Con il Toolkit sarà facilissimo individuare l'utensile più adatto per le tue lavorazioni.

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