RHSS2403



Rime

advanced tools production

FRESE IN HSS-E & PM

HSS-E & PM CUTTING MILLS

vai all'indice

Rime

advanced tools production

Catalogo HSS-E & PM

Frese ed alesatori
in acciaio HSS-Co8 e acciai da polveri

HSS-Co8 and powder-steel
cutting mills and reamers

Fraises et alésoirs en HSS-Co8
et Aciers Poudres

Fräser und reibahlen aus
HSS-Co8 und Pulverstahl



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L'AZIENDA

Da oltre mezzo secolo Rime è sinonimo di tecnologia e innovazione. Gli elevati standar qualitativi, la ricerca continua e il controllo della produzione che si svolge interamente nel nostro stabilimento di Villa Carcina, fanno di Rime uno dei più affidabili player tecnologici nel settore degli utensili Standard e Speciali in HSS e Metallo Duro.



dal 1962

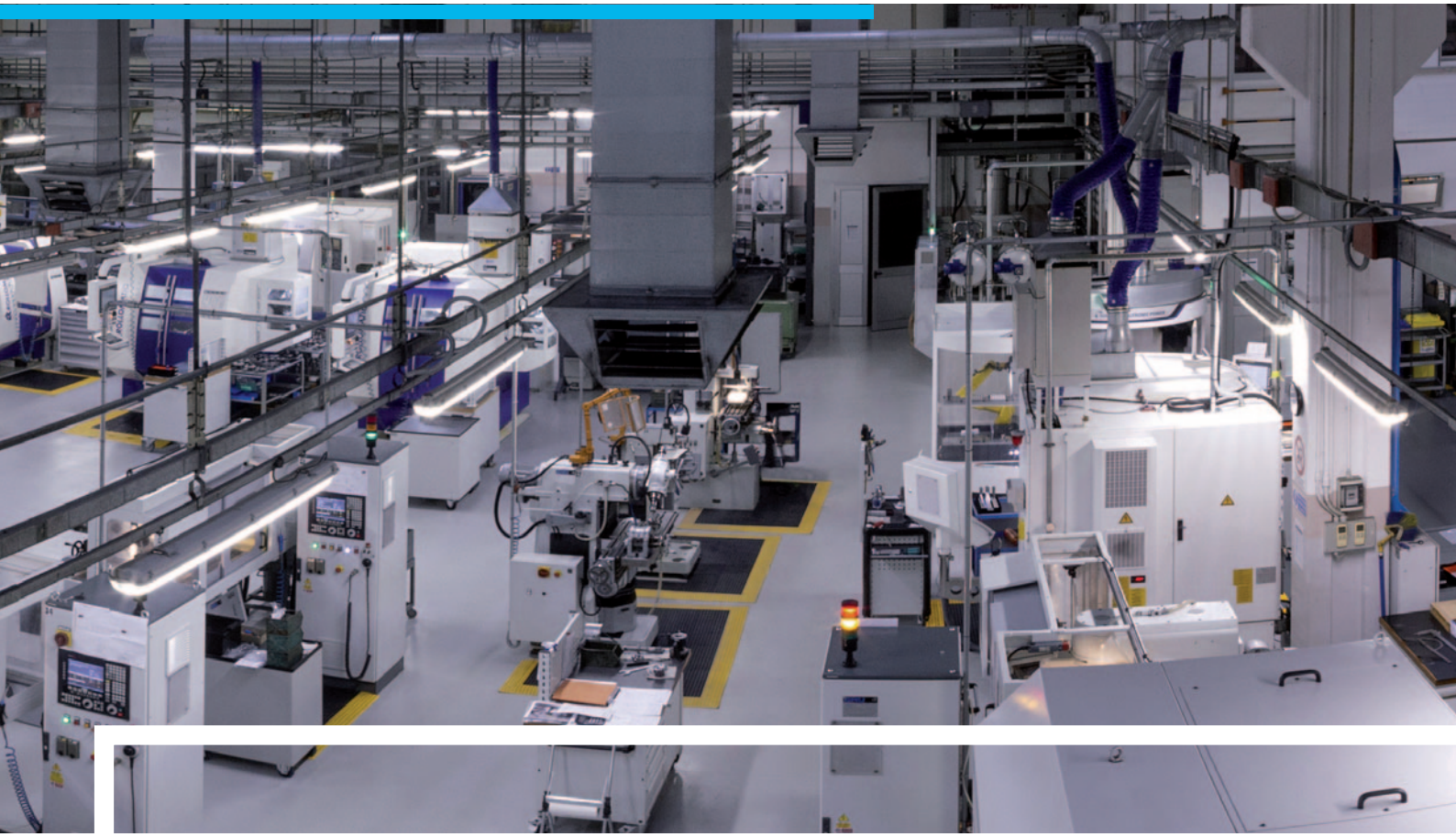
dal 1962
tecnologia, ricerca e qualità
since 1962
tecnology, research
and quality

Rime
advanced tools production
MADE IN ITALY

torna all'indice generale

THE FACTORY

For over half a century Rime has been synonymous of technology and innovation. High quality standards, continuous research and production control, which is carried out entirely in our Villa Carcina factory, make Rime one of the most reliable technological players in the field of HSSCo-PM and Solid Carbide Cutting Tools, Standard and Special.



300K
utensili all'anno
tools per year



35%
Export



torna all'indice generale

RICERCA E QUALITÀ
RESEARCH & QUALITY

100%
Made in Europe



100%
Made in Italy

Per mantenere elevati standard qualitativi monitoriamo costantemente la filiera dei partner tecnologici: dai fornitori delle materie prime, ai nuovi materiali di rivestimento, ai centri di affilatura sempre di ultima generazione, fino alla robotizzazione dei sistemi di produzione.

Il settore di Ricerca e Sviluppo assume oggi un valore centrale nella nostra azienda. L'uso dei più avanzati simulatori grafici ci consente di sperimentare virtualmente nuove geometrie e di ingegnerizzare completamente il processo produttivo.

Sistemi e macchinari sempre aggiornati per il controllo della qualità consentono di mantenere la produzione ai massimi livelli qualitativi.

In order to maintain high quality standards, we constantly monitor the supply chain of our technological partners: from row material suppliers , to new coating materials, to the latest generation of grinding centres and the robotisation of production systems.

Today, the Research and Development sector has a central value in our company.
The use of the most advanced graphic simulators allows us to experiment virtually with new geometries and to fully engineer the production process.

Systems and machinery always updated for quality control allow us to maintain thr production at the highest quality level.

Siamo certificati
ISO 9001 dal 2010.

We are certified
ISO 9001 since 2010.

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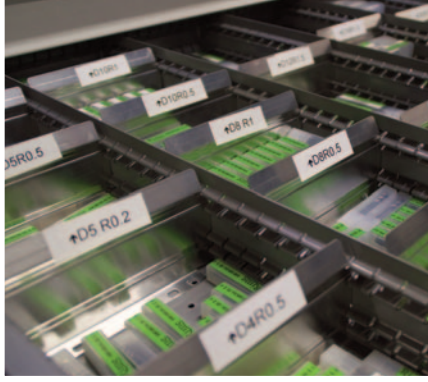
PRODUZIONE
PRODUCTION



torna all'indice generale



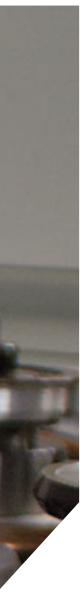




SERVIZI & RSI
SERVICE & CSR

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RIAFFILATURA E RICOPERTURA

La nostra azienda da sempre offre un servizio rapido di rigenerazione, con riaffilatura e rivestimento degli utensili prodotti. L'utilizzo di macchine affilatrici CNC di ultima generazione, di sistemi di controllo micrometrici e di personale dedicato altamente qualificato, garantiscono elevata qualità ed estrema rapidità nei tempi di esecuzione.

REGRINDING AND COATING

Our company has always offered a quick regeneration service, with regrinding and recoating of its cutters. The use of the latest generation of CNC grinding machines, micrometric control systems and dedicated highly professional staff with decades of experience guarantee high quality and extremely fast turnaround times.

MAGAZZINO

Tutti gli utensili standard a catalogo sono sempre a magazzino e in pronta consegna.

WAREHOUSE

All standard end mills are always in stock and ready for delivery.

TEMPI DI CONSEGNA

Per le frese a magazzino i tempi di consegna sono rapidissimi. La consegna avviene mediamente entro 24/48 ore.

DELIVERY TIMES

For milling cutters in stock, delivery times are very fast. The average delivery time is 24/48 hours.

RESPONSABILITÀ SOCIALE D'IMPRESA

Da sempre Rime è sensibile alle tematiche legate alla salvaguardia dell'ambiente. In tutti gli ambiti produttivi, la politica "green" che ci siamo imposti è perseguita con la massima attenzione.
In tutte le nostre fasi di lavorazione vengono seguite precise procedure e vengono utilizzati sistemi di recupero degli scarti di produzione e di risparmio energetico che ci permettono il rigoroso rispetto dell'ambiente e di tutte le norme relative alla sostenibilità ambientale.
Un grande parco fotovoltaico copre buona parte del nostro fabbisogno energetico e sofisticati impianti di recupero rigenerano i lubrificanti utilizzati durante la produzione.

CORPORATE SOCIAL RESPONSIBILITY

Rime has always been sensitive to environmental protection issues. In all production areas, we pay attention to the green policy that we have imposed on ourselves.
For all stages of processing, precise procedures are followed and systems are used for the recovery of production waste and energy saving that allow us to strictly respect the environment and all the rules relating to environmental sustainability.
A large photovoltaic park covers a large part of the energy we need and sophisticated recovery plants regenerate the lubricants used during production.

PRODUZIONE
PRODUCTION

Produciamo utensili standard in HSS e Metallo Duro ed utensili speciali. Negli ultimi anni il peso degli utensili speciali ha assunto una grande importanza, grazie alla collaborazione con grandi aziende che hanno favorito il processo di crescita del nostro know-how.

We produce standard tools in HSS and hard metal as well as special tools. In recent years, the production of special tools has taken on great importance, thanks to collaboration with large companies that have supported the growth of our know-how.

I nostri cataloghi propongono un'offerta molto ricca e articolata di prodotti standard, disponibili sempre a magazzino. Soluzioni di qualità assoluta in ogni settore delle lavorazioni meccaniche in cui sono richieste grande precisione ed elevate prestazioni.

Our catalogues propose a very rich range of standard products always available in stock.
We supply quality solutions in every sector of mechanical processing where high quality and high performance are required.



torna all'indice generale

FRESE E ALESATORI IN HSS CO-PM

Il nostro catalogo di utensili in HSS-E e PM è ad oggi uno dei più completi sul mercato per tipologia e numero di articoli offerti. Tutta la gamma dei prodotti viene realizzata con acciai della migliore qualità e provenienti dalla Comunità Europea.
L'abbinamento a rivestimeni di ultima generazione consentono di ottenere le massime prestazioni.

HSS CO-PM END MILLS AND REAMERS

Our catalogue of HSS-E and PM cutting tools is one of the most complete on the market in terms of the number of items and range offered.
All our production range is made with the best steels coming from European Union.
We match them with the best coatings of last generation, so that we get excellent performances.

FRESE E ALESATORI IN METALLO DURO

Il catalogo di utensili in Metallo Duro si arricchisce di continuo per tipologia di utensili e per misure. Attualmente l'applicazione di geometrie complesse e l'utilizzo di rivestimenti di ultima generazione consentono ai nostri utensili di poter lavorare qualsiasi tipo di materiale ad elevate prestazioni in sicurezza.
Anche per il Metallo Duro tutte le referenze sono a magazzino per un veloce servizio di consegna.

SOLID CARBIDE END MILLS AND REAMERS

The catalogue of solid carbide tools is constantly expanding in terms of tool types and sizes. Complex geometry mixed with the last generation of coatings make it possible to machine any type of material at highest performance in total safety.
All references for solid carbide are also in stock for a fast delivery service.



UTENSILI SPECIALI

SPECIAL TOOLS



Rime

advanced tools production



Frese Speciali

Mezzo secolo di esperienza e prestigiose collaborazioni con aziende nazionali e internazionali di rilievo ci hanno permesso di raggiungere un elevato standard qualitativo. Oggi progettiamo utensili per dare soluzioni innovative in applicazioni dove sono richieste un elevato grado di specializzazione, qualità e affidabilità. Grazie ad un moderno e sempre aggiornato parco macchine siamo in grado di realizzare utensili di ogni tipo per vari settori, sia in piccole sia in grandi serie. Realizziamo utensili partendo da materie prime diverse: Metallo Duro, HSS-Co e ASP (acciaio sinterizzato da polveri). Tra gli utensili prodotti troviamo: frese a candela, frese di forma, frese a manicotto, frese a disco, frese a "T", microfrese, punte cilindriche, punte a gradino, punte coniche, alesatori di forma, frese e alesatori in metallo duro saldo brasato, allargatori, stozzatori, lamatori, piccole brocce, punzoni, bulini, ecc.
Negli anni la nostra azienda si è specializzata in alcuni ambiti e in particolare:

Special Milling Cutters

Years of experience and a lot of prestigious collaborations with national and international companies have allowed us to achieve a very high level of quality of our products.
Today, thanks to a very modern and updated park machines, we are capable of manufacturing cutting tools of each type for various sectors, both in small and large series, designed to meet solutions where it is required a high degree of specialization, quality and reliability.
We manufacture cutting tools in HSS-Co, ASP (sintered powder steel) and in Solid Carbide as well. We produce milling cutters, form cutters, milling cutters sleeve, disc cutters, conical spot facers, "T" shape cutters, micro-end mills, step drills, taper drills, reamers shape, milling cutters and reamers brazed, countersinks, shaper, small broaches, punches, chisels, etc..
Over the years we have been specialized in certain sectors, particularly:

Settore Energia	Energy
Settore Automotive	Automotive
Settore Armiero	Army
Settore Aeronautico	Aeronautical
Settore Stampi e Matrici	Moulds and Dies



RIVESTIMENTI
COATINGS

CONSIGLIATO / RECOMMENDED
ACCETTABILE / ACCEPTABLE
SCONSIGLIATO / NOT RECOMMENDED

TIPO DI RIVESTIMENTO / COATING TYPE	RESISTENZA ALL'OSSIDAZIONE (°C) / OXIDATION RESISTANCE	(HV) DUREZZA / HARDNESS	ACCIAI / STEEL P	ACCIAI INOX / STAINLESS STEEL M	SUPER LEGHE / SUPER ALLOYS S	GHISE / CAST IRON K	LEGHE ALLUMINIO / ALUMINUM ALLOYS N3	ALLUMINIO E MAT. NON FERROSI / ALUMINUM AND NON-FERROUS MAT. N1 N2 N4 N5
SUPREME	1.100	3.200	■	■	■	■	□	□
ALU SUPREME	900	2.500	□	□	□	□	■	◪
TICN	450	3.000	■	◪	◪	■	◪	□
TIALN	900	2.700	■	◪	◪	■	□	□

su richiesta - on request

MATERIALI BASE
RAW MATERIAL

Materiali utilizzati per la costruzione delle frese RIME

* HSS/Co5 AISI M35
Acciaio ad elevato rendimento, permette una buona elasticità di lavorazione. Adatto per utensili soggetti ad urti.

HSS/Co8 AISI M42
Acciaio più utilizzato nella costruzione di frese; la sua elevata durezza, unita ad una buona tenacità e resilienza, consente la lavorazione degli acciai ad alta resistenza. Ottimo impiego nelle lavorazioni difficili con i rivestimenti TICN, TIALN e SUPREME di nuova generazione.

EMP3 PM Co8,5
Acciaio super rapido ottenuto con la metallurgia delle polveri; la struttura molto sottile di questo acciaio offre elevata tenacità ed elevata resistenza all'usura. Ottimo rendimento con il rivestimento SUPREME di nuova generazione.

EMP6 PM
Acciaio super rapido ottenuto con la metallurgia delle polveri con ottime caratteristiche di resistenza all'usura e durezza a caldo.
Il suo altissimo tenore di leghe gli consente prestazioni eccellenti nelle lavorazioni più difficili.
Associato al rivestimento SUPREME dà il massimo del rendimento.

Raw material used to manufacture RIME end mills

* HSS/Co5 AISI M35
High-efficiency steel allowing a good cutting speed and a good machining elasticity. Suitable for tools subjected to shocks.

HSS/Co8 AISI M42
Steel mainly used in manufacturing of end mills. Its great hardness along with its good toughness and impact resistance allows to machine high-resistance steels.Very good efficiency with TICN, TIALN and SUPREME coatings of the new generation.

EMP3 PM-Co8,5
PM sintered high-speed steel. Its very thin shape offers a great toughness and wear resistance. Very good efficiency with SUPREME coating of the new generation.

EMP6 PM
High-speed steel got by powder metallurgy. Characteristic of very good wear resistance and hot hardness. Its very high alloy content allows very good performances in the most difficult machinings.
When used with SUPREME coating, it gives the top performances.

advanced tools production

design and technology



4 acciai
4 steels

4 rivestimenti
4 coatings

SIMBOLI
SIMBOLS

Materiale di base
Raw material

HSS	Acciaio Super Rapido (AISI M2) High Speed Steel (AISI M2)
HSS-E C05	Acciaio Super Rapido 5% Co (AISI M35) High Speed Steel 5% Co (AISI M35)
HSS-E C08	Acciaio Super Rapido 8% Co (AISI M42) High Speed Steel 8% Co (AISI M42)
EMP3 (PM)	Acciaio Super Rapido 8.5% Co (EMP3 PM) High Speed Steel 8.5% Co (EMP3 PM)
EMP6 (PM)	Acciaio Super Rapido (EMP6 PM) High Speed Steel (EMP6 PM)

Caratteristiche tagliente
Types of cutting edge

N	Tagliente a finire Finishing cutting edge profile
W	Geometria per lavorazione di materiali particolarmente teneri e malleabili Geometry for light alloys
NR	Tagliente a sgrossare Roughing cutting edge profile
NF	Tagliente a semifinire sovrapposto Semifinishing cutting edge
NFR	Tagliente interrotto sovrapposto a sgrossare o semifinire Interrupted cutting edge for roughing or semifinishing
NFL	Tagliente interrotto sovrapposto a sgrossare o semifinire per lavorazione di alluminio e leghe leggere Interrupted cutting edge for roughing or semifinishing alluminium and light alloy
NRAL	Tagliente per sgrossatura alluminio Roughing cutting edge profile for aluminium

Forma dello spigolo tagliente
Shape of cutting edge



Utensile con spigolo a 90°
Square end cutters



Utensile con spigolo raggiato (torico)
Corner radius end mill



Utensile con smusso a 45° sullo spigolo tagliente (la dimensione dello smusso varia a seconda del diametro)
Chamfered end mill 45°

Forma delle teste
Head shape



Utensile a testa piana con spigolo vivo
Square end mill



Utensile a testa angolare
Angle catting mill



Utensile a testa torica
Corner radius end mill



Utensile a testa piana con guida
Square end mill with pilot



Utensile a testa sferica
Ball-nose end mill



Utensile a testa piana con smusso
Chamfered end mill



Utensile a quarto di cerchio concavo
Corner rounding milling cutter

Direzione di lavorazione
Machining direction



Adatto per lavorazione radiale, diagonale ed assiale
Suitable for radial, diagonal and axial machining



Adatto per lavorazione radiale e diagonale
Suitable for radial and diagonal machining



Adatto solo per lavorazione assiale
Suitable only for axial machining



Adatto solo per lavorazione radiale
Suitable only for radial machining

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Angolo elica e geometria denti
Spiral angle and teeth geometry



Angolo dell'elica dx
Spiral angle right



Angolo dell'elica sx
Spiral angle left



Divisione irregolare 3 tagli
Irregular division three cuts



Divisione irregolare 4 tagli
Irregular division four cuts



Divisione irregolare 5 tagli
Irregular division five cuts

Tipo di attacco codolo
Shank type



Foro cilindrico con cava di trascinamento trasversale DIN 138
Cylindrical hole and frontal tenon drive DIN 138



Codolo conico Morse con dente DIN 228B
Morse taper shank DIN 228B



Codolo conico Morse con foro filettato DIN 228A
Morse taper shank DIN 228A



Foro cilindrico con linguetta DIN 138
Cylindrical Hole with parallel key DIN 138



Codolo cilindrico filettato DIN 1835D
Threaded shank DIN 1835D



Codolo cilindrico DIN 1835A
Straight shank DIN 1835A



Codolo cilindrico con attacco Weldon DIN 1835B
Weldon shank DIN 1835B



Codolo cilindrico con quadro DIN 10
Shank with flat quare DIN 10

Applicazioni
Applications



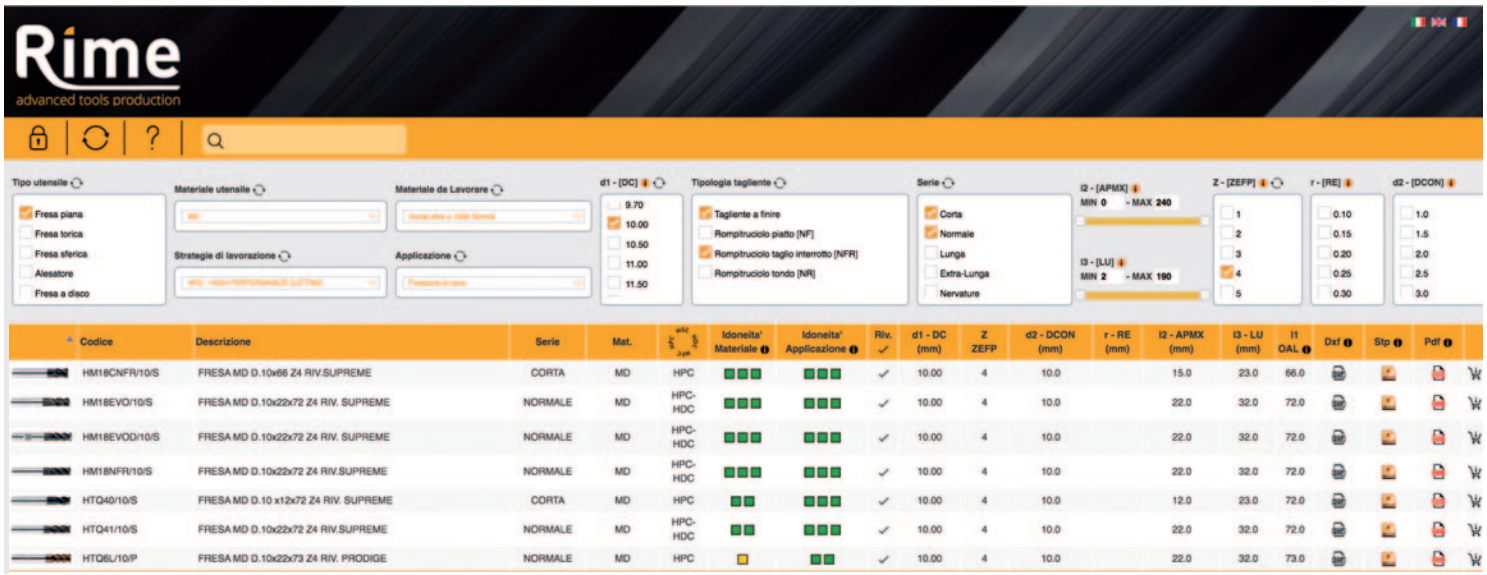
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Tool Explorer

Trova l'utensile
adatto in pochi click

Find the right tool
suitable in a few clicks





Un'interfaccia intuitiva e pratici menù ti guideranno nella scelta dell'utensile adatto alle tue esigenze.
E in più potrai:
- consultare i parametri di lavorazione
- scaricare il file 2D o 3D dell'utensile
- richiedere un preventivo

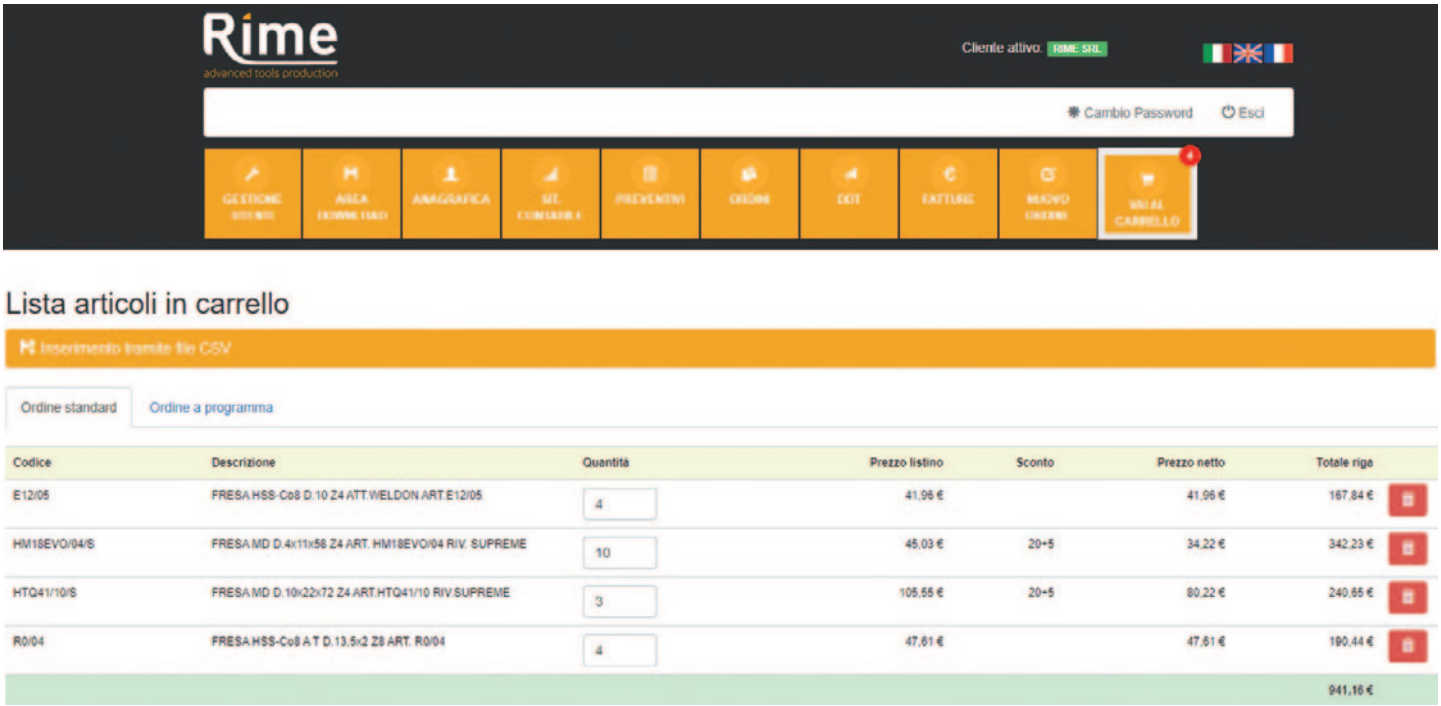
A simple interface and practical menu will guide you in choosing the right tool for your needs.
And then you can:
- consult the machining parameters
- download the 2D or 3D file of the tool
- request a quote

www.rime.net

E-shop

Dopo aver scelto l'utensile con Tool Explorer,
acquistalo con semplicità attraverso il nostro E-shop.

After choosing your tool with Tool Explorer,
order it easily through our E-shop.



- verifica disponibilità merce
- inserisci ordini
- verifica il tracking della spedizione
- consulta documenti

- *check availability of goods*
- *place orders*
- *check shipment tracking*
- *view documents*



TOOL EXPLORER ED E-SHOP
SEMPLICI, VELOCI, COMPLETI
E MULTI DEVICE
EXPLORER AND E-SHOP TOOLS
SIMPLE, FAST, COMPLETE
AND MULTI DEVICE

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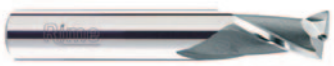
CONSIGLIATO-RECOMMENDED
ACCETTABILE-ACCEPTABLE
SCONSIGLIATO-NOT RECOMMENDED

MATERIALI LAVORABILI - WORKABLE MATERIALS
ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

ACCIAIO FRESE END MILLS STEEL
* HSS/Co5 AISI M35
HSS/Co8 AISI M42
EMP3 PM Co8,5
EMP6 PM

RIVESTIMENTI COATING
NUDE | SUPREME | ALU-SUPREME

SERIE A - Frese a due tagli per cave • Slotting two flutes end mills

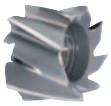
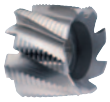
MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS	PAG.
	A1		2			1 ÷ 40	○		35
	A1H7		2			2 ÷ 16	○ ●		36
	A3		2			2 ÷ 40	○ ●		37
	A5		2			2 ÷ 32	○		38
	A7		2			2 ÷ 32	○ ●		39
	A8		2			16 ÷ 40	○		40
	A9		2			1 ÷ 22	○		41
	A10		2			2 ÷ 22	○		42
	A11		2			6 ÷ 20	○		43

SERIE B - Frese a tre tagli • Three flutes end mills

MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS	PAG.
	B0		3			2 ÷ 32	○		46
	B2		3			2 ÷ 32	○ ●		47
	B3		3			2 ÷ 22	○		48
	B5		3			2 ÷ 22	○		49
	B10		3			16 ÷ 40	○		50
	B11		3			16 ÷ 32	○		51

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SERIE C - Frese a disco, a manicotto e prismatiche • Shell end mills, side and face milling cutters, angular cutters

MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS						PAG.
*	C2					40 ÷ 125	○	■	■	◪	◪	◪	◪	54
*	C3					30 ÷ 110	○	■	■	◪	◪	◪	◪	55
	C5/A					40 ÷ 125	○	■	■	◪	◪	□	□	56
	C6/A					30 ÷ 75	○	■	■	◪	◪	□	□	57
	C5/B					40 ÷ 125	○	■	■	◪	◪	□	□	58
	C6/B					30 ÷ 75	○	■	■	◪	◪	□	□	59
*	C7					50 ÷ 125	○	■	■	◪	◪	◪	◪	60
*	C8					50 ÷ 250	○	■	■	◪	◪	◪	◪	62
*	C9					63 ÷ 160	○	■	■	◪	◪	□	□	64
*	C13					56 ÷ 100	○	■	■	◪	◪	◪	◪	65
*	C14					40 ÷ 100	○	■	■	◪	◪	◪	◪	66

SERIE E - Frese per sgrossatura • Roughing end mills

MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS						PAG.
	E0		3-4	45°		6 ÷ 22	○	■	■	◪	◪	□	□	71
	E2		3-5	45°		6 ÷ 32	○	■	■	◪	◪	□	□	72
	E4		4	45°		8 ÷ 22	○	■	■	◪	◪	□	□	73
	E6		4-5	45°		8 ÷ 32	○	■	■	◪	◪	□	□	74

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- CONSIGLIATO-RECOMMENDED
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MATERIALI LAVORABILI - WORKABLE MATERIALS

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

MAT. COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS	PAG.
E7		4-7	45°		16 ÷ 50	○		75
E8		4-7	45°		16 ÷ 50	○		76
E10		3-4	45°		6 ÷ 22	○		77
E12		3-6	45°		5 ÷ 40	○ ●		78
E13		4	45°		8 ÷ 22	○		79
E15		3-6	45°		6 ÷ 40	○ ●		80
E16		4-7	45°		16 ÷ 50	○ ●		81
E17		4-7	45°		16 ÷ 50	○ ●		82
E18		4-7	45°		20 ÷ 50	○		83

SERIE F - Frese per semifinitura • Semifinishing end mills

MAT. COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS	PAG.
F10		3-4	45°		6 ÷ 22	○		87
F12		3-6	45°		6 ÷ 40	○ ●		88
F13		4	45°		8 ÷ 22	○		89
F15		3-6	45°		6 ÷ 40	○ ●		90
F16		4-7	45°		16 ÷ 50	○ ●		91
F17		4-7	45°		16 ÷ 50	○ ●		92
F18		4-7	45°		20 ÷ 50	○		93

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SERIE G - Frese per finitura • Finishing end mills

MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS	PAG.
	G0		4-6			2 ÷ 32	○		97
	G2		4-8			2 ÷ 40	○ ●		98
	G3		4-6			2 ÷ 32	○		99
	G5		4-6			2 ÷ 32	○ ●		100
	G6		4			6 ÷ 22	○		101
	G7		4			6 ÷ 22	○		102
	G8		4-8			16 ÷ 50	○ ●		103
	G9		4-8			16 ÷ 50	○ ●		104
	G10		4-8			16 ÷ 40	○		105
	G11		4-6			4 ÷ 32	○		106
	G12		4-6			16 ÷ 32	○		107
	G13		4-6			16 ÷ 32	○		108
	G14		4			6 ÷ 20	○		109

SERIE UMAX - Frese a divisione irregolare per sgrossatura e finitura • Roughing and finishing end mills with irregular division

MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS	PAG.
	UM0		3-4	45°		4 ÷ 40	○ ●		112
	UM1		3-4	45°		6 ÷ 32	○ ●		113

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MAT. COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS	PAG.
UM4		3	45°		5 ÷ 20	○ ●	■ ■ ◪ ◪ □ □	114
UM5		3-4	45°		16 ÷ 50	○ ●	■ ■ ◪ ◪ ◪ □	115
UM7		3-4	45°		16 ÷ 50	○	■ ■ ◪ ◪ ◪ □	116
UM8		4-5	45°		16 ÷ 40	○	■ ■ ◪ ◪ ◪ □	117

SERIE R-S - Frese a "T" e di forma • "T" slot cutters, woodruff, conical and form cutters

MAT. COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS	PAG.
R0		8-12			10,5x2 ÷ 45,5x10	○	■ ■ ◪ ◪ ◪ ◪	121
R1		8			12,5x6 ÷ 32x14	○	■ ■ ◪ ◪ ◪ ◪	122
R2		5-10			18x8 ÷ 56x24	○	■ ■ ◪ ◪ ◪ □	123
R4		4-8			12,5x6 ÷ 40x18	○	■ ■ ◪ ◪ ◪ □	124
R3		8-10			12,5x6 ÷ 56x24	○	■ ■ ◪ ◪ ◪ ◪	125
* R5A		10-12	45°-60°		16 ÷ 32	○	■ ■ ◪ ◪ ◪ ◪	126
* R5B		10-12	45°-60°		16 ÷ 32	○	■ ■ ◪ ◪ ◪ ◪	127
* S2		4			5,9 ÷ 37	○	■ ■ ◪ ◪ ◪ ◪	128
* S3		4			5,9 ÷ 37	○	■ ■ ◪ ◪ ◪ ◪	129
S4		4-6			10 ÷ 60	○	■ ■ ◪ ◪ ◪ ◪	130
SC1		3			2,5 ÷ 4,5	○	■ ■ ◪ ◪ □ □	131
SC2		3			2,5 ÷ 6,5	○	■ ■ ◪ ◪ □ □	132

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MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS						PAG.
	SC3		3	V		2,5 ÷ 6,5	○	■	■	◪	◪	□	□	133

SERIE AL - Alesatori • Reamers

MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS						PAG.
	AL0		3-4	45°		2 ÷ 16	○	■	■	■	■	◪	◪	136
*	AL6		4-8	45°		2 ÷ 20	○	■	■	■	■	◪	◪	137
	AL7		4-6	45°		2 ÷ 12	○	■	■	■	■	◪	◪	138
	AL8		5-8	45°		2 ÷ 16	○	■	■	■	■	◪	◪	139
*	AL9		10-16	45°		24 ÷ 60	○	■	■	■	■	□	□	140
*	AL10		5-10	45°		24 ÷ 60	○	■	■	■	■	◪	◪	141

SERIE L - Frese per alluminio e leghe leggere • End mills for alluminium and light alloys

MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS						PAG.
	L1		2	⊔		2 ÷ 20	○	□	□	◪	□	■	■	144
	L2		2	⊔		3 ÷ 20	○	□	□	◪	□	■	■	145
	L4		2	⊔		2 ÷ 20	○	□	□	◪	□	■	■	146
	L5		2	⊔		3 ÷ 20	○	□	□	◪	□	■	■	147
	L6		2	∪		2 ÷ 20	○	□	□	◪	□	■	■	148
	L7		2	∪		2 ÷ 20	○	□	□	◪	□	■	■	149
	L8		3	⊔		2 ÷ 32	○ ●	◪	□	◪	◪	■	■	150
	L9		3	⊔		2 ÷ 32	○	◪	□	◪	◪	■	■	151

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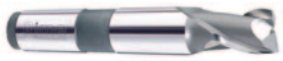
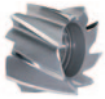
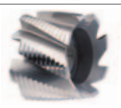
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MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS						PAG.
	L12		3	45°		6 ÷ 40	○ ●	◪	□	◪	◪	■	■	152
	L13		3	45°		6 ÷ 40	○ ●	◪	□	◪	◪	■	■	153
	L17		1			8 ÷ 10	○ ●	□	□	□	□	■	◪	154
	L18		1			4 ÷ 12	○ ●	□	□	□	□	■	◪	155
	L19		1			3 ÷ 8	○ ●	□	□	□	□	■	◪	156
*	L20		2			6 ÷ 7	○	□	□	□	□	■	◪	157

SERIE MG - Frese in EMP3 (HSS-CoPM) • End mills in EMP3 (HSS-CoPM)

MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS						PAG.
	MG0		2			16 ÷ 50	○	■	■	■	■	◪	◪	161
	MG1		2			2 ÷ 32	○ ●	■	■	■	■	◪	◪	162
	MG3		2			3 ÷ 32	○ ●	■	■	■	■	◪	◪	163
	MG4		3			2 ÷ 32	○ ●	■	■	■	■	◪	◪	164
	MG5		3			2 ÷ 22	○	■	■	■	■	◪	◪	165
	MG6					40 ÷ 125	○	■	■	■	■	□	□	166
	MG7					40 ÷ 125	○	■	■	■	■	□	□	167
	MG8		4-6			2 ÷ 32	○ ●	■	■	■	■	□	□	168
	MG9		4-6			2 ÷ 32	○	■	■	■	■	□	□	169
	MG10		4-8			16 ÷ 50	○ ●	■	■	■	■	□	□	170

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MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS						PAG.
	MG11		4-8			16 ÷ 50	○	■	■	■	■	□	□	171
	MG12		3-4	45°		4 ÷ 32	○ ●	■	■	■	■	◪	◪	172
	MG13		3-4	45°		16 ÷ 40	○ ●	■	■	■	■	◪	◪	173
	MG14		3-6	45°		6 ÷ 40	○ ●	■	■	■	■	□	□	174
	MG15		4-5	45°		8 ÷ 32	○ ●	■	■	■	■	□	□	175
	MG16		4-7	45°		16 ÷ 50	○ ●	■	■	■	■	□	□	176
	MG17		4-7	45°		16 ÷ 50	○	■	■	■	■	□	□	177
	MG18		3	45°		6 ÷ 25	○ ●	■	■	■	■	□	□	178
	MG19		2			6 ÷ 25	○	■	■	■	■	◪	◪	179
	MG20		2			6 ÷ 25	○	■	■	■	■	◪	◪	180
	MG22		3-6			6 ÷ 40	○	■	■	■	■	□	□	181
	MG23		4-5			8 ÷ 32	○	■	■	■	■	□	□	182
	MG24		4-7			16 ÷ 50	○	■	■	■	■	□	□	183
	MG25		4-7			16 ÷ 50	○	■	■	■	■	□	□	184
	MG26		3-6			6 ÷ 40	○	■	■	■	■	□	□	185
	MG27		4-5			8 ÷ 32	○	■	■	■	■	□	□	186
	MG28		4-7			16 ÷ 50	○	■	■	■	■	□	□	187
	MG29		4-7			16 ÷ 50	○	■	■	■	■	□	□	188

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MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS						PAG.
	MG30		3-6	45°		6 ÷ 32	○ ●	■	■	■	■	□	□	189
	MG31		3-6	45°		6 ÷ 32	○ ●	■	■	■	■	□	□	190
	MG32					4 ÷ 20	○							191

SERIE MR - Frese in EMP6 (HSS-CoPM) • End mills in EMP6 (HSS-CoPM)

MAT.	COD.		Z	TESTA HEAD	L	∅	RIV. COATING	MATERIALI - MATERIALS						PAG.
	MR1		2			4 ÷ 22	○ ●	■	■	■	■	◪	◪	194
	MR2		3			4 ÷ 22	○ ●	■	■	■	■	◪	◪	195
	MR3		3-4	45°		6 ÷ 32	○ ●	■	■	■	■	◪	◪	196
	MR4		4-6			6 ÷ 32	○ ●	■	■	■	■	□	□	197
	MR8		3-4	45°		6 ÷ 32	○ ●	■	■	■	■	◪	◪	198
	MR12		3-5	45°		6 ÷ 32	○ ●	■	■	■	■	□	□	199



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Slotting two flutes end mills

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Three flutes end mills

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Rime
advanced tools production



SERIE A

Frese a due denti per cave

Slotting two flutes end mills

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advanced tools production

design and technology

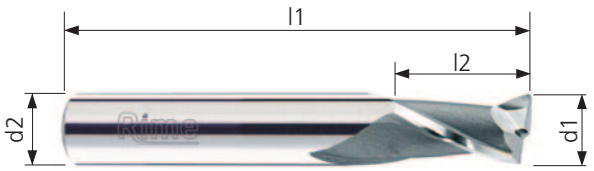
Rime
advanced tools production

Rime

SERIE
A

FRESE A DUE DENTI PER CAVE

NORM	TIPO-TYPE	Z2
UNI 8254 DIN 327B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E C08 | 90° | N | ≃30° | DIN 1835 A

NORMALE

A1

- FRESE A DUE DENTI PER CAVE - Un dente frontale tagliente fino al centro - Codolo cilindrico
- TWO-FLUTES SLOT CUTTERS - One end tooth cutting up to the centre - Straight shank
- FRAISES À RAINURES DEUX DENTS - Une dent bout coupante jusq'au centre - Queue cylindrique
- LANGLOCHFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS DE DOS LABIOS - Un labio que corta hasta el centro - Mango cilindrico
- FRESAS DE DUAS NAVALHAS - Encabadouro cilindrico
- Фреза 2-х зубая. Режущий торец. Цилиндрический хвостовик. Короткая серия

CODE	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
A1/01	1	3	47	6	2	•
A1/02	1.5	3	47	6	2	•
A1/03	2	4	48	6	2	•
A1/04	2.5	5	49	6	2	•
A1/05	3	5	49	6	2	•
A1/06	3.5	6	50	6	2	•
A1/07	4	7	51	6	2	•
A1/08	4.5	7	51	6	2	•
A1/09	5	8	52	6	2	•
A1/10	5.5	8	52	6	2	•
A1/11	6	8	52	6	2	•
A1/12	6.5	10	60	10	2	•
A1/13	7	10	60	10	2	•
A1/14	7.5	10	60	10	2	•
A1/15	8	11	61	10	2	•
A1/16	8.5	11	61	10	2	•
A1/17	9	11	61	10	2	•
A1/18	9.5	13	63	10	2	•
A1/19	10	13	63	10	2	•
A1/20	10.5	13	70	12	2	•
A1/21	11	13	70	12	2	•
A1/21/1	11.5	16	73	12	2	•
A1/22	12	16	73	12	2	•
A1/22/1	12.5	16	73	12	2	•
A1/23	13	16	73	12	2	•
A1/24	14	16	73	12	2	•
A1/25	15	19	79	16	2	•
A1/26	16	19	79	16	2	•
A1/27	17	19	79	16	2	•
A1/28	18	19	79	16	2	•
A1/29	19	22	88	20	2	•
A1/30	20	22	88	20	2	•
A1/31	21	22	88	20	2	•
A1/32	22	22	88	20	2	•
A1/33	23	22	98	25	2	•
A1/34	24	26	102	25	2	•
A1/35	25	26	102	25	2	•
A1/36	26	26	102	25	2	•
A1/37	28	26	102	25	2	•
A1/38	30	26	102	25	2	•
A1/39	32	32	112	32	2	•
A1/40	34	32	112	32	2	•
A1/41	35	32	112	32	2	•
A1/42	36	32	112	32	2	•
A1/43	38	38	118	32	2	•
A1/44	40	38	118	32	2	•

THREADED DIN 1835 D su richiesta on request

Ulteriori diametri a richiesta
Other diameters on demand

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■□
SEMIFINITURA - SEMIFINISHING ■■■□□
FINITURA - FINISHING ■■■□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	◪	□	■	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

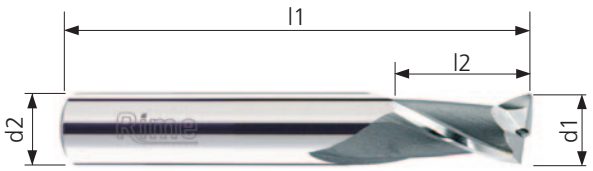
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Rime

SERIE
A

FRESE A DUE DENTI PER CAVE - TOLL. H7

NORM	TIPO-TYPE	Z2
UNI 8254 DIN 327B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 A

NORMALE

A1H7

- FRESE A DUE DENTI PER CAVE - Un dente frontale tagliente fino al centro - Codolo cilindrico - Tolleranza H7
- TWO-FLUTES SLOT CUTTERS - One end tooth cutting up to the centre - Straight shank - Tol H7
- FRAISES À RAINURES DEUX DENTS - Une dent bout coupante jusq'au centre - Queue cylindrique - Tol H7
- LANGLOCHFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Zylinderschaft - Tol H7
- FRESAS CILINDRICAS DE DOS LABIOS - Un labio que corta hasta el centro - Mango cilindrico - Tol H7
- FRESAS DE DUAS NAVALHAS - Encabadouro cilindrico - Tol H7
- Фреза 2-х зубая. Режущий торец. Цилиндрический хвостовик. Короткая серия - Tol H7

CODE (Co 8%)	d1 mm H7	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €
A1/03/H7	2	4	48	6	2	•	•
A1/05/H7	3	5	49	6	2	•	•
A1/07/H7	4	7	51	6	2	•	•
A1/09/H7	5	8	52	6	2	•	•
A1/11/H7	6	8	52	6	2	•	•
A1/13/H7	7	10	60	10	2	•	•
A1/15/H7	8	11	61	10	2	•	•
A1/17/H7	9	11	61	10	2	•	•
A1/19/H7	10	13	63	10	2	•	•
A1/21/H7	11	13	70	12	2	•	•
A1/22/H7	12	16	73	12	2	•	•
A1/23/H7	13	16	73	12	2	•	•
A1/24/H7	14	16	73	12	2	•	•
A1/26/H7	16	19	79	16	2	•	•

Ulteriori diametri a richiesta
Other diameters on demand

COATING **SUPREME**

CODE
A1H7/.../**S**

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Cutting data
pag. 201-224

Suggerimenti
Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	◪	□	■	■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

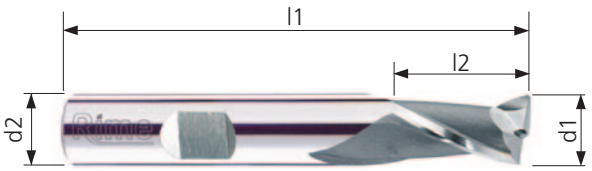
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
A

FRESE A DUE DENTI PER CAVE

NORM	TIPO-TYPE	Z2
UNI 8258 DIN 327D ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 B

NORMALE

A3

- FRESE A DUE DENTI PER CAVE - Un dente frontale tagliente fino al centro - Attacco Weldon
- TWO-FLUTES SLOT CUTTERS - One end tooth cutting up to the centre - Weldon shank
- FRAISES À RAINURES DEUX DENTS - Une dent bout coupante jusq'au centre -Queue cylindrique Weldon
- LANGLOCHFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS DE DOS LABIOS - Un labio que corta hasta el centro - Mango Weldon
- FRESAS DE DUAS NAVALHAS - Encabadouro Weldon
- Фреза 2-х зубая. Режущий торец. Хвостовик Weldon. Короткая серия

CODE (Co 8%)	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €
A3/00	2	4	48	6	2	•	•
A3/01	2.5	5	49	6	2	•	•
A3/02	3	5	49	6	2	•	•
A3/03	3.5	6	50	6	2	•	•
A3/04	4	7	51	6	2	•	•
A3/05	4.5	7	51	6	2	•	•
A3/06	5	8	52	6	2	•	•
A3/07	5.5	8	52	6	2	•	•
A3/08	6	8	52	6	2	•	•
A3/09	6.5	10	60	10	2	•	•
A3/10	7	10	60	10	2	•	•
A3/11	7.5	10	60	10	2	•	•
A3/12	8	11	61	10	2	•	•
A3/13	8.5	11	61	10	2	•	•
A3/14	9	11	61	10	2	•	•
A3/15	9.5	13	63	10	2	•	•
A3/16	10	13	63	10	2	•	•
A3/17	10.5	13	70	12	2	•	•
A3/18	11	13	70	12	2	•	•
A3/18/1	11.5	16	73	12	2	•	•
A3/19	12	16	73	12	2	•	•
A3/19/1	12.5	16	73	12	2	•	•
A3/20	13	16	73	12	2	•	•
A3/21	14	16	73	12	2	•	•
A3/22	15	19	79	16	2	•	•
A3/23	16	19	79	16	2	•	•
A3/24	17	19	79	16	2	•	•
A3/25	18	19	79	16	2	•	•
A3/26	19	22	88	20	2	•	•
A3/27	20	22	88	20	2	•	•
A3/28	21	22	88	20	2	•	•
A3/29	22	22	88	20	2	•	•
A3/30	23	22	98	25	2	•	•
A3/31	24	26	102	25	2	•	•
A3/32	25	26	102	25	2	•	•
A3/33	26	26	102	25	2	•	•
A3/34	28	26	102	25	2	•	•
A3/35	30	26	102	25	2	•	•
A3/36	32	32	112	32	2	•	•
A3/37	34	32	112	32	2	•	•
A3/38	35	32	112	32	2	•	•
A3/39	36	32	112	32	2	•	•
A3/40	38	38	118	32	2	•	•
A3/41	40	38	118	32	2	•	•

Ulteriori diametri a richiesta
Other diameters on demand

COATING **SUPREME**

CODE A3/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting ■ | Contornatura Side milling ◪ | Copia 3D 3D copying □ | Assiale Axial ■ | Rampa Ramping ■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

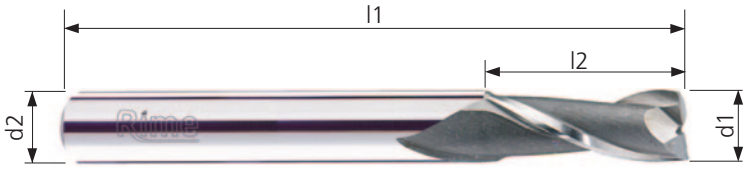
■ CONSIGLIATO RECOMMENDED
◪ ACCETTABILE ACCEPTABLE
□ SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
A

FRESE A DUE DENTI PER CAVE

NORM | TIPO-TYPE | Z2



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 A

LUNGA

A5

- FRESE A DUE DENTI PER CAVE - Un dente frontale tagliente fino al centro - Codolo cilindrico
- TWO-FLUTES SLOT CUTTERS - One end tooth cutting up to the centre - Straight shank
- FRAISES À RAINURES DEUX DENTS - Une dent bout coupante jusq'au centre - Queue cylindrique
- LANGLOCHFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS DE DOS LABIOS - Un labio que corta hasta el centro - Mango cilindrico
- FRESAS DE DUAS NAVALHAS - Encabadouro cilindrico
- Фреза 2-х зубая. Режущий торец. Цилиндрический хвостовик. Короткая серия

CODE	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
A5/00	2	9	54	6	2	•
A5/01	3	9	60	6	2	•
A5/02	3.5	13	67	6	2	•
A5/03	4	13	67	6	2	•
A5/04	4.5	13	68	6	2	•
A5/05	5	16	70	6	2	•
A5/06	5.5	16	76	6	2	•
A5/07	6	16	76	6	2	•
A5/08	6.5	16	76	10	2	•
A5/09	7	19	79	10	2	•
A5/10	7.5	19	79	10	2	•
A5/11	8	19	79	10	2	•
A5/12	8.5	22	83	10	2	•
A5/13	9	22	83	10	2	•
A5/14	9.5	22	83	10	2	•
A5/15	10	22	83	10	2	•
A5/16	10.5	25	95	12	2	•
A5/17	11	25	95	12	2	•
A5/18	12	28	98	12	2	•
A5/19	13	28	98	12	2	•
A5/20	14	32	102	12	2	•
A5/21	15	32	108	16	2	•
A5/22	16	32	108	16	2	•
A5/23	17	35	114	16	2	•
A5/24	18	35	114	16	2	•
A5/25	19	38	132	20	2	•
A5/26	20	38	132	20	2	•
A5/27	21	38	132	20	2	•
A5/28	22	41	141	25	2	•
A5/29	23	41	141	25	2	•
A5/30	24	41	152	25	2	•
A5/31	25	44	159	25	2	•
A5/32	26	44	159	25	2	•
A5/33	28	44	159	25	2	•
A5/34	30	50	159	25	2	•
A5/35	32	52	165	32	2	•

THREADED DIN 1835 D — su richiesta / on request

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping

Materiali Materials

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

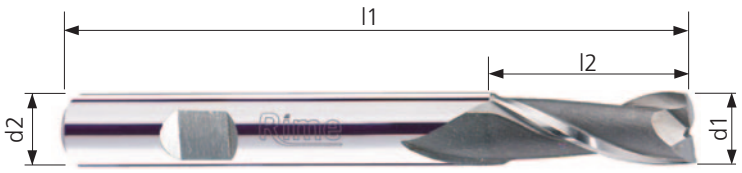
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
A

FRESE A DUE DENTI PER CAVE

NORM | TIPO-TYPE | Z2



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 B

LUNGA

A7

- FRESE A DUE DENTI PER CAVE - Un dente frontale tagliente fino al centro - Attacco Weldon
- TWO-FLUTES SLOT CUTTERS - One end tooth cutting up to the centre - Weldon shank
- FRAISES À RAINURES DEUX DENTS - Une dent bout coupante jusq'au centre - Queue cylindrique Weldon
- LANGLOCHFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS DE DOS LABIOS - Un labio que corta hasta el centro - Mango Weldon
- FRESAS DE DUAS NAVALHAS - Encabadouro Weldon
- Фреза 2-х зубая. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE (Co 8%)	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €	
A7/00	2	9	54	6	2	•	•	
A7/01	3	9	60	6	2	•	•	
A7/02	3.5	13	67	6	2	•	•	
A7/03	4	13	67	6	2	•	•	
A7/04	4.5	13	68	6	2	•	•	
A7/05	5	16	70	6	2	•	•	
A7/06	5.5	16	76	6	2	•	•	
A7/07	6	16	76	6	2	•	•	
A7/08	6.5	16	76	10	2	•	•	
A7/09	7	19	79	10	2	•	•	
A7/10	7.5	19	79	10	2	•	•	
A7/11	8	19	79	10	2	•	•	
A7/12	8.5	22	83	10	2	•	•	
A7/13	9	22	83	10	2	•	•	
A7/14	9.5	22	83	10	2	•	•	
A7/15	10	22	83	10	2	•	•	
A7/16	10.5	25	95	12	2	•	•	
A7/17	11	25	95	12	2	•	•	
A7/18	12	28	98	12	2	•	•	
A7/19	13	28	98	12	2	•	•	
A7/20	14	32	102	12	2	•	•	
A7/21	15	32	108	16	2	•	•	
A7/22	16	32	108	16	2	•	•	
A7/23	17	35	114	16	2	•	•	
A7/24	18	35	114	16	2	•	•	
A7/25	19	38	132	20	2	•	•	
A7/26	20	38	132	20	2	•	•	
A7/27	21	38	132	20	2	•	•	
A7/28	22	41	141	25	2	•	•	
A7/29	23	41	141	25	2	•	•	
A7/30	24	41	152	25	2	•	•	
A7/31	25	44	159	25	2	•	•	
A7/32	26	44	159	25	2	•	•	
A7/33	28	44	159	25	2	•	•	
A7/34	30	50	159	25	2	•	•	
A7/35	32	52	165	32	2	•	•	

Ulteriori diametri a richiesta
Other diameters on demand

COATING **SUPREME**

CODE
A7/.../**S**

Parametri
Cutting data
pag. 201-224

Suggerimenti
Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	◪	□	■	■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

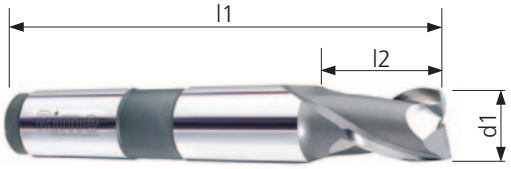
torna all'indice

Rime

SERIE
A

FRESE A DUE DENTI PER CAVE

NORM	TIPO-TYPE	Z2
UNI 8260A DIN 326D ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8	90°		
N	≃30°	DIN 228 A	

NORMALE

A8

- FRESE A DUE DENTI PER CAVE - Un dente frontale tagliente fino al centro - Codolo conico Morse con foro filettato
- TWO-FLUTES SLOT CUTTERS - One end tooth cutting up to the centre - Morse taper shank
- FRAISES À RAINURES DEUX DENTS - Une dent bout coupante jusq'au centre - Queue au cône Morse à trou fileté
- LANGLOCHFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS DE DOS LABIOS - Un labio que corta hasta el centro - Mango conico Morse con taladro roscado
- FRESAS DE DUAS NAVALHAS - Encabadouro cone Morse
- Фреза 2-х зубая. Режущий торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE	d1 mm e8	l2 mm	l1 mm	CM-MK	Z	Co 8% €
A8/01	16	19	104	2	2	•
A8/02	18	19	104	2	2	•
A8/03	20	22	124	3	2	•
A8/04	22	22	124	3	2	•
A8/05	24	26	128	3	2	•
A8/06	25	26	128	3	2	•
A8/07	26	26	128	3	2	•
A8/08	28	26	128	3	2	•
A8/09	30	32	134	3	2	•
A8/10	32	32	157	4	2	•
A8/11	34	32	157	4	2	•
A8/12	35	32	157	4	2	•
A8/13	36	32	157	4	2	•
A8/14	38	38	163	4	2	•
A8/15	40	38	163	4	2	•

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	◪	□	■	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

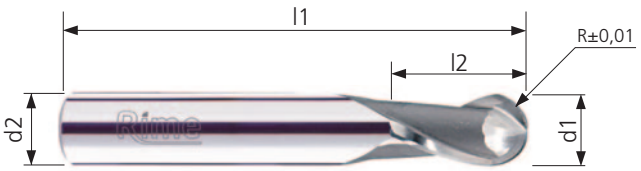
■ CONSIGLIATO RECOMMENDED
◪ ACCETTABILE ACCEPTABLE
□ SCONSIGLIATO NOT RECOMMENDED

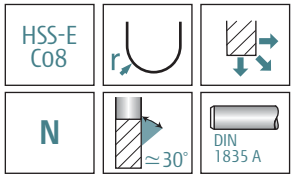
Rime

SERIE
A

FRESE A DUE DENTI A TESTA SEMISFERICA

NORM	TIPO-TYPE	Z2
UNI DIN ISO 1641/I	SHORT · NORMAL · LONG · EXTRA-LONG	





NORMALE

A9

- FRESE A DUE DENTI A TESTA SEMISFERICA - Due denti frontali taglienti fino al centro - Codolo cilindrico
- BALL-NOSED TWO-FLUTES END MILLS - Two end teeth cutting up to the centre - Straight shank
- FRAISES DEUX DENTS RADIÉES À BOUT HÉMISPHÉRIQUE - Deux dents bout coupantes jusq'au centre - Queue cylindrique
- HALBRUNDKOPFFRÄSER, ZWEISCHNEIDER - Zwei Schneiden mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS DE DOS LABIOS - Cabeza semiesférica - Dos labios que cortan hasta el centro - Mango cilindrico
- FRESAS BOLEADA DE DUAS NAVALHAS - Encabadouro cilindrico
- Фреза 2-х зубая. Сферический торец. Цилиндрический хвостовик. Средняя серия

CODE	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
A9/00	1	3	47	6	2	•
A9/00/1	1.5	3	47	6	2	•
A9/01	2	4	48	6	2	•
A9/02	3	5	49	6	2	•
A9/03	4	7	51	6	2	•
A9/04	5	8	52	6	2	•
A9/05	6	8	52	6	2	•
A9/06	7	10	60	10	2	•
A9/07	8	11	61	10	2	•
A9/08	9	11	61	10	2	•
A9/09	10	13	63	10	2	•
A9/10	11	13	70	12	2	•
A9/11	12	16	73	12	2	•
A9/12	13	16	73	12	2	•
A9/13	14	16	73	12	2	•
A9/14	15	19	79	16	2	•
A9/15	16	19	79	16	2	•
A9/15/1	17	19	79	16	2	•
A9/16	18	19	79	16	2	•
A9/17	20	22	88	20	2	•
A9/18	22	22	88	20	2	•

Rime

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	◪	■	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

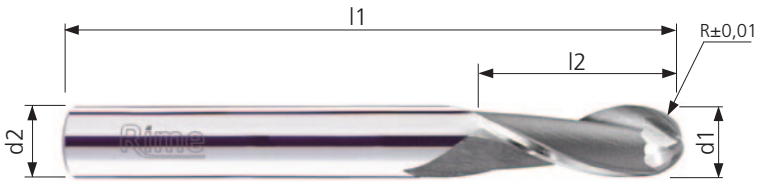
torna all'indice

Rime

SERIE
A

FRESE A DUE DENTI A TESTA SEMISFERICA

NORM | TIPO-TYPE | Z2



HSS-E C08 | N | r | ≃30° | DIN 1835 A

LUNGA

A10

- FRESE A DUE DENTI A TESTA SEMISFERICA - Due denti frontali taglienti fino al centro - Codolo cilindrico
- BALL-NOSED TWO-FLUTES END MILLS - Two end teeth cutting up to the centre - Straight shank
- FRAISES DEUX DENTS RADIÉES À BOUT HÉMISPHÉRIQUE - Deux dents bout coupantes jusq'au centre - Queue cylindrique
- HALBRUNDKOPFFRÄSER, ZWEISCHNEIDER - Zwei Schneiden mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS DE DOS LABIOS - Cabeza semiesférica - Dos labios que cortan hasta el centro - Mango cilindrico
- FRESAS BOLEADA DE DUAS NAVALHAS - Encabadouro cilindrico
- Фреза 2-х зубая. Сферический торец. Цилиндрический хвостовик. Удлиненная серия

CODE	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
A10/00	2	9	54	6	2	•
A10/01	3	9	60	6	2	•
A10/03	4	13	67	6	2	•
A10/05	5	16	70	6	2	•
A10/07	6	16	76	6	2	•
A10/09	7	19	79	10	2	•
A10/11	8	19	79	10	2	•
A10/13	9	22	83	10	2	•
A10/15	10	22	83	10	2	•
A10/17	11	25	95	12	2	•
A10/18	12	28	98	12	2	•
A10/19	13	28	98	12	2	•
A10/20	14	32	102	12	2	•
A10/21	15	32	108	16	2	•
A10/22	16	32	108	16	2	•
A10/24	18	35	114	16	2	•
A10/26	20	38	132	20	2	•
A10/28	22	41	141	25	2	•

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping

Materiali Materials

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

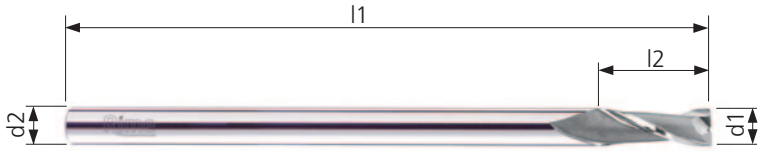
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
A

FRESE A DUE DENTI

NORM | TIPO-TYPE | Z2



HSS-E C08 | 90° | N | ≃30° | DIN 1835 A

EXTRA-LUNGA

A11

- FRESE A DUE DENTI - Un dente frontale tagliente fino al centro - Codolo cilindrico
- COPY MILLING CUTTERS - One end tooth cutting up to the centre - Straight shank
- FRAISES POUR MACHINES À COPIER - Une dent bout coupante jusq'au centre - Queue cylindrique
- NACHFORMFRÄSER - Eine Schneide mit Zentrumschnitt - Zylinderschaft
- FRESAS EN COPIADO - Un labio que corta hasta el centro - Mango cilindrico
- FRESAS DE COPIA - Encabadouro cilindrico
- Фреза 2-х зубая. Режущий торец. Цилиндрический хвостовик. Ультра-длинная серия

CODE	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
A11/01	6	25	180	6	2	•
A11/02	8	25	180	8	2	•
A11/03	10	30	200	10	2	•
A11/04	12	30	200	12	2	•
A11/05	16	35	200	16	2	•
A11/06	20	35	200	20	2	•

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	◪	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

■ CONSIGLIATO RECOMMENDED
◪ ACCETTABILE ACCEPTABLE
□ SCONSIGLIATO NOT RECOMMENDED



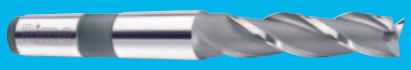
Rime
advanced tools production



SERIE B

Frese a tre denti

Three flutes end mills

		pag.
B0		46
B2		47
B3		48
B5		49
B10		50
B11		51

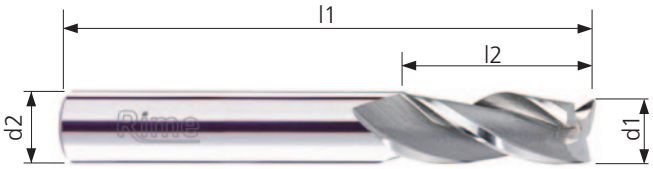
torna all'indice

Rime

SERIE
B

FRESE A TRE DENTI

NORM	TIPO-TYPE	Z3
UNI 8244 DIN 844A ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 A

NORMALE

B0

- FRESE A TRE DENTI - Un dente frontale tagliente fino al centro - Codolo cilindrico
- THREE-FLUTES END MILLS - One end tooth cutting up to the centre - Straight shank
- FRAISES À CYLINDRES FRONTALES À TROIS TAILLES - Une dent bout coupante jusq'au centre - Queue cylindrique
- SCHAFTFRÄSER, DREISCHNEIDER - Eine Schneide mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS DE TRÉS LABIOS - Un labio que corta hasta el centro - Mango cilindrico
- FRESAS DE TRÊS NAVALHAS - Encabadouro cilindrico
- Фреза 3-х зубая. Режущий торец. Цилиндрический хвостовик. Средняя серия

CODE	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
B0/01	2	7	51	6	3	•
B0/02	2.5	8	52	6	3	•
B0/03	3	8	52	6	3	•
B0/04	3.5	10	54	6	3	•
B0/05	4	11	55	6	3	•
B0/06	4.5	11	55	6	3	•
B0/07	5	13	57	6	3	•
B0/08	5.5	13	57	6	3	•
B0/09	6	13	57	6	3	•
B0/10	6.5	16	66	10	3	•
B0/11	7	16	66	10	3	•
B0/11/1	7.5	19	69	10	3	•
B0/12	8	19	69	10	3	•
B0/12/1	8.5	19	69	10	3	•
B0/13	9	19	69	10	3	•
B0/13/1	9.5	22	72	10	3	•
B0/14	10	22	72	10	3	•
B0/14/1	10.5	22	79	12	3	•
B0/15	11	22	79	12	3	•
B0/16	12	26	83	12	3	•
B0/17	13	26	83	12	3	•
B0/18	14	26	83	12	3	•
B0/19	15	32	92	16	3	•
B0/20	16	32	92	16	3	•
B0/21	17	32	92	16	3	•
B0/22	18	32	92	16	3	•
B0/23	19	38	104	20	3	•
B0/24	20	38	104	20	3	•
B0/25	22	38	104	20	3	•
B0/26	24	45	121	25	3	•
B0/27	25	45	121	25	3	•
B0/28	26	45	121	25	3	•
B0/29	28	45	121	25	3	•
B0/30	30	45	121	25	3	•
B0/31	32	53	133	32	3	•

THREADED DIN 1835 D — su richiesta / on request

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

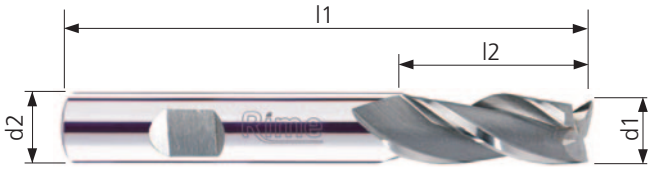
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
B

FRESE A TRE DENTI

NORM	TIPO-TYPE	Z3
UNI 8248 DIN 844B ISO 1641/I	SHORT · NORMAL · LONG · EXTRA-LONG	



HSS-E Co8 · 90° · N · ≃30° · DIN 1835 B

NORMALE

B2

- FRESE A TRE DENTI - Un dente frontale tagliente fino al centro - Attacco Weldon
- THREE-FLUTES END MILLS - One end tooth cutting up to the centre - Weldon shank
- FRAISES À CYLINDRES FRONTALES À TROIS TAILLES - Une dent bout coupante jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER, DREISCHNEIDER - Eine Schneide mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS DE TRÉS LABIOS - Un labio que corta hasta el centro - Mango Weldon
- FRESAS DE TRÊS NAVALHAS - Encabadouro Weldon
- Фреза 3-х зубая. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (Co 8%)	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €	
B2/01	2	7	51	6	3	•	•	
B2/02	2.5	8	52	6	3	•	•	
B2/03	3	8	52	6	3	•	•	
B2/04	3.5	10	54	6	3	•	•	
B2/05	4	11	55	6	3	•	•	
B2/06	4.5	11	55	6	3	•	•	
B2/07	5	13	57	6	3	•	•	
B2/08	5.5	13	57	6	3	•	•	
B2/09	6	13	57	6	3	•	•	
B2/10	6.5	16	66	10	3	•	•	
B2/11	7	16	66	10	3	•	•	
B2/11/1	7.5	19	69	10	3	•	•	
B2/12	8	19	69	10	3	•	•	
B2/12/1	8.5	19	69	10	3	•	•	
B2/13	9	19	69	10	3	•	•	
B2/13/1	9.5	22	72	10	3	•	•	
B2/14	10	22	72	10	3	•	•	
B2/14/1	10.5	22	79	12	3	•	•	
B2/15	11	22	79	12	3	•	•	
B2/16	12	26	83	12	3	•	•	
B2/17	13	26	83	12	3	•	•	
B2/18	14	26	83	12	3	•	•	
B2/19	15	32	92	16	3	•	•	
B2/20	16	32	92	16	3	•	•	
B2/21	17	32	92	16	3	•	•	
B2/22	18	32	92	16	3	•	•	
B2/23	19	38	104	20	3	•	•	
B2/24	20	38	104	20	3	•	•	
B2/25	22	38	104	20	3	•	•	
B2/26	24	45	121	25	3	•	•	
B2/27	25	45	121	25	3	•	•	
B2/28	26	45	121	25	3	•	•	
B2/29	28	45	121	25	3	•	•	
B2/30	30	45	121	25	3	•	•	
B2/31	32	53	133	32	3	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Ulteriori diametri a richiesta
Other diameters on demand

COATING **SUPREME**

CODE B2/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting · Contornatura Side milling · Copia 3D 3D copying · Assiale Axial · Rampa Ramping

Materiali Materials

ACCIAI STEELS · GHISE CAST IRON · ACCIAI INOSSIDABILI STAINLESS STEELS · SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM · LEGHE LEGGERE LIGHT ALLOYS · MATERIALI NON FERROSI NON FERROUS MATERIAL

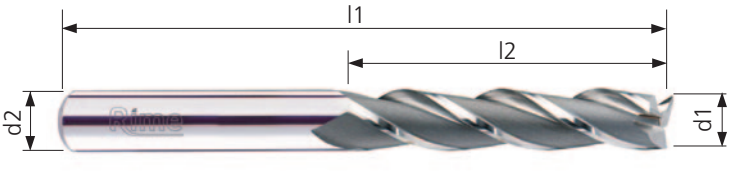
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
B

FRESE A TRE DENTI

NORM	TIPO-TYPE	Z3
UNI 8245 DIN 844A ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 A

LUNGA

B3

- FRESE A TRE DENTI - Un dente frontale tagliente fino al centro - Codolo cilindrico
- THREE-FLUTES END MILLS - One end tooth cutting up to the centre - Straight shank
- FRAISES À CYLINDRES FRONTALES À TROIS TAILLES - Une dent bout coupante jusq'au centre - Queue cylindrique
- SCHAFTFRÄSER, DREISCHNEIDER - Eine Schneide mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS DE TRÉS LABIOS - Un labio que corta hasta el centro - Mango cilindrico
- FRESAS DE TRÊS NAVALHAS - Encabadouro cilindrico
- Фреза 3-х зубая. Режущий торец. Цилиндрический хвостовик. Удлиненная серия

CODE	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
B3/01	2	10	54	6	3	•
B3/02	3	12	56	6	3	•
B3/03	4	19	63	6	3	•
B3/04	5	24	68	6	3	•
B3/05	6	24	68	6	3	•
B3/06	7	30	80	10	3	•
B3/07	8	38	88	10	3	•
B3/08	10	45	95	10	3	•
B3/09	12	53	110	12	3	•
B3/10	14	53	110	12	3	•
B3/11	16	63	123	16	3	•
B3/12	18	63	123	16	3	•
B3/13	20	75	141	20	3	•
B3/14	22	75	141	20	3	•

THREADED DIN 1835 D — su richiesta / on request

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

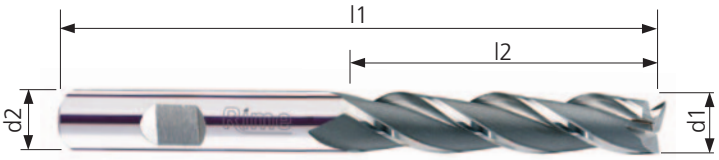
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
B

FRESE A TRE DENTI

NORM	TIPO-TYPE	Z3
UNI 8249 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 B

LUNGA

B5

- FRESE A TRE DENTI - Un dente frontale tagliente fino al centro - Attacco Weldon
- THREE-FLUTES END MILLS - One end tooth cutting up to the centre - Weldon shank
- FRAISES À CYLINDRES FRONTALES À TROIS TAILLES - Une dent bout coupante jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER, DREISCHNEIDER - Eine Schneide mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS DE TRÉS LABIOS - Un labio que corta hasta el centro - Mango Weldon
- FRESAS DE TRÊS NAVALHAS - Encabadouro Weldon
- Фреза 3-х зубая. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
B5/01	2	10	54	6	3	•
B5/02	3	12	56	6	3	•
B5/03	4	19	63	6	3	•
B5/04	5	24	68	6	3	•
B5/05	6	24	68	6	3	•
B5/06	7	30	80	10	3	•
B5/07	8	38	88	10	3	•
B5/07/1	9	45	95	10	3	•
B5/08	10	45	95	10	3	•
B5/08/1	11	53	110	12	3	•
B5/09	12	53	110	12	3	•
B5/09/1	13	53	110	12	3	•
B5/10	14	53	110	12	3	•
B5/10/1	15	63	123	16	3	•
B5/11	16	63	123	16	3	•
B5/12	18	63	123	16	3	•
B5/13	20	75	141	20	3	•
B5/14	22	75	141	20	3	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■□□
SEMIFINITURA - SEMIFINISHING ■■■□□
FINITURA - FINISHING ■■■□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

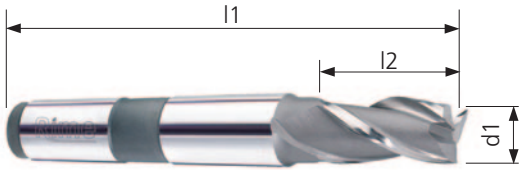
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
B

FRESE A TRE DENTI

NORM	TIPO-TYPE	Z3
UNI 8250 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃30° | DIN 228 A

NORMALE

B10

- FRESE A TRE DENTI - Un dente frontale tagliente fino al centro - Codolo conico Morse con foro filettato
- THREE-FLUTES END MILLS - One end tooth cutting up to the centre - Morse taper shank
- FRAISES À CYLINDRES FRONTALES À TROIS TAILLES - Une dent bout coupante jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER, DREISCHNEIDER - Eine Schneide mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS DE TRÉS LABIOS - Un labio que corta hasta el centro - Mango conico Morse con taladro roscado
- FRESAS DE TRÊS NAVALHAS - Encabadouro cone Morse con taladro roscado
- Фреза 3-х зубая. Режущий торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE	d1 mm e8	l2 mm	l1 mm	CM-MK	Z	Co 8% €
B10/01	16	32	117	2	3	•
B10/02	18	32	117	2	3	•
B10/03	20	38	140	3	3	•
B10/04	22	38	140	3	3	•
B10/05	24	45	147	3	3	•
B10/06	25	45	147	3	3	•
B10/07	26	45	147	3	3	•
B10/08	28	45	147	3	3	•
B10/09	30	53	155	3	3	•
B10/10	32	53	178	4	3	•
B10/11	34	53	178	4	3	•
B10/12	35	53	178	4	3	•
B10/13	36	53	178	4	3	•
B10/14	38	63	188	4	3	•
B10/15	40	63	188	4	3	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

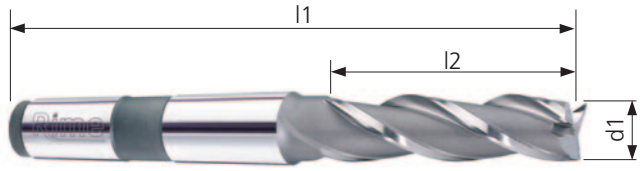
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
B

FRESE A TRE DENTI

NORM	TIPO-TYPE	Z3
UNI 8251 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃30° | DIN 228 A

LUNGA

B11

- FRESE A TRE DENTI - Un dente frontale tagliente fino al centro - Codolo conico Morse con foro filettato
- THREE-FLUTES END MILLS - One end tooth cutting up to the centre - Morse taper shank
- FRAISES À CYLINDRES FRONTALES À TROIS TAILLES - Une dent bout coupante jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER, DREISCHNEIDER - Eine Schneide mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS DE TRÉS LABIOS - Un labio que corta hasta el centro - Mango conico Morse con taladro roscado
- FRESAS DE TRÊS NAVALHAS - Cone Morse con taladro roscado
- Фреза 3-х зубая. Режущий торец. Хвостовик конус Морзе с резьбой. Удлиненная серия

CODE	d1 mm e8	l2 mm	l1 mm	CM-MK	Z	Co 8% €
B11/01	16	63	148	2	3	•
B11/02	18	63	148	2	3	•
B11/03	20	75	177	3	3	•
B11/04	22	75	177	3	3	•
B11/05	24	90	192	3	3	•
B11/06	25	90	192	3	3	•
B11/07	26	90	192	3	3	•
B11/08	28	90	192	3	3	•
B11/09	30	90	192	3	3	•
B11/10	32	106	231	4	3	•

Toll. reale sul Ø *Real Tol. on Ø* +0 -0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

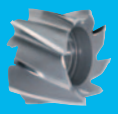
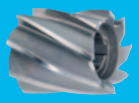
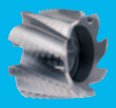
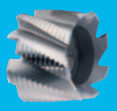
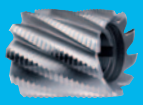
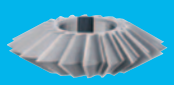
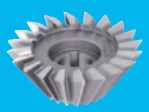

Rime
advanced tools production



SERIE C

Frese a disco, a manicotto e prismatiche

Shell end mills, side and face milling cutters, angular cutters

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C6/A		57
C5/B		58
C6/B		59
C7		60
C8		62
C9		64
C13		65
C14		66

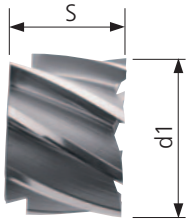
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Rime

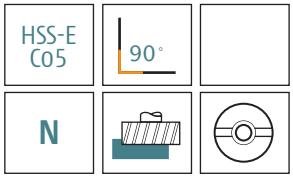
SERIE
C

FRESE FRONTALI - FINITURA

NORM	TIPO-TYPE
UNI 3903 DIN 841-1880 ISO 2586	SHORT · NORMAL · LONG · EXTRA-LONG







C2

- FRESE FRONTALI - FINITURA - Denti elicoidali rinforzati - Cava trascinamento trasversale
- SHELL END MILLS - Reinforced helical teeth - Slot for transverse dragging
- FRAISES À CYLINDRES FRONTALES - Denture hélicoïdale renforcée - Fente de traînement transversal
- WALZENSTIRNFRÄSER - Verstärkte Spiralzähne - Mitnehmerquernut Schlitz
- FRESAS CILINDRICAS FRONTALES - Labios helicoidales reforzados - Agujero condiucimiento trasversal
- FRESAS CILINDRICAS FRONTAIS
- Фреза торцевая с усиленным зубом

CODE	d1 mm js16	s mm k16	d mm H7	Z	Co 5% €
C2/01	40	32	16	8	•
C2/02	50	36	22	8	•
C2/03	63	40	27	8	•
C2/04	80	45	27	10	•
C2/05	100	50	32	12	•
C2/06	125	56	40	14	•

Toll. reale sul Ø / *Real Tol. on Ø* +0,05 -0

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■□□□□
SEMIFINITURA - SEMIFINISHING ■■□□□
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Spianatura Face milling
□	■	□	□	□	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

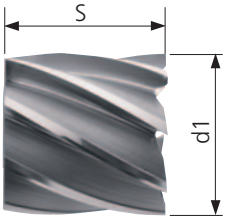
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

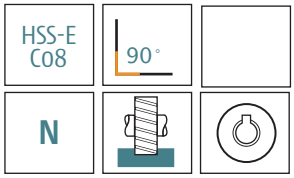
SERIE
C

FRESE FRONTALI - FINITURA

NORM	TIPO-TYPE
UNI 3903 DIN 841-1880 ISO 2586	SHORT · NORMAL · LONG · EXTRA-LONG







C3

- FRESE FRONTALI - FINITURA - Denti elicoidali rinforzati - Spacco longitudinale
- SHELL END MILLS - Reinforced helical teeth - Longitudinal slot
- FRAISES À CYLINDRES FRONTALES - Denture hélicoïdale renforcée - Fente longitudinale
- WALZENSTIRNFRÄSER - Verstärkte Spiralzähne - Mitnehmerlängsnut
- FRESAS CILINDRICAS FRONTALES - Labios helicoidales reforzados - Hendidura longitudinal
- FRESAS CILINDRICAS FRONTAIS
- Фреза торцевая с усиленным зубом. Шпоночный паз

CODE	d1 mm js16	s mm k16	d mm H7	Z	Co 5% €
C3/01	30	30	13	8	•
C3/02	35	35	16	8	•
C3/03	40	20	16	8	•
C3/04	40	40	16	8	•
C3/05	50	25	22	8	•
C3/06	50	50	22	8	•
C3/07	60	30	27	8	•
C3/08	60	60	27	8	•
C3/09	75	35	27	10	•
C3/10	75	75	27	10	•
C3/11	90	35	27	12	•
C3/12	110	35	32	14	•

Toll. reale sul Ø
Real Tol. on Ø +0,05 -0

Parametri
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pag. 201-224

Suggerimenti
Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Spianatura Face milling
☐	■	☐	☐	☐	■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

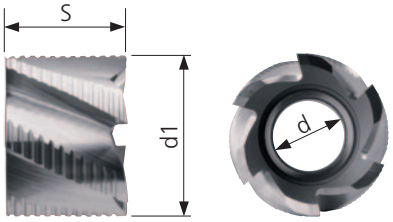
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED ☐

Rime

SERIE
C

FRESE FRONTALI - SEMIFINITURA

NORM	TIPO-TYPE
UNI 3903 DIN 841-1880 ISO 2586	SHORT · NORMAL · LONG · EXTRA-LONG



HSS-E Co8 · 45° · NF

C5A

- FRESE FRONTALI - SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato. Esecuzione per semifinitura - Cava trascinamento trasversale
- SHELL END MILLS - Helical teeth with form relieved entirely ground chip-breaker. Semifinishing type -Slot for transverse dragging
- FRAISES À CYLINDRES FRONTALES - Denture hélicoïdale avec brise-copeaux dépouillé entièrement rectifié. Exécution pour demi-fini - Fente de traînement transversal
- WALZENSTIRNFRÄSER - Schrägschneiden mit voll eingeschliffenem Mitnehmerquernut. Ausführung zur Halbbearbeitung - Querbetriebs Schlitz
- FRESAS CILINDRICAS FRONTALES - Labios helicoidal con arranca de viruta completamente rectificado para semiacabado - Agujero conducimiento trasversal
- FRESAS CILINDRICAS FRONTAIS - Fresa concha com navalha reforçada normal
- Фреза торцевая для получистовой обработки со стружколомом, с усиленным зубом

CODE	d1 mm js16	s mm k16	d mm H7	Z	Co 8% €
C5/01/A	40	32	16	6	•
C5/02/A	50	36	22	6	•
C5/03/A	63	40	27	8	•
C5/04/A	80	45	27	8	•
C5/05/A	100	50	32	10	•
C5/06/A	125	56	40	12	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
Cutting data
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■□□
SEMIFINITURA - SEMIFINISHING ■■■■■
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Spianatura Face milling
□	■	□	□	□	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

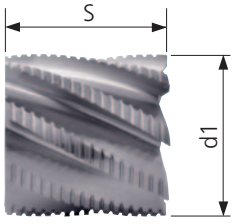
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
C

FRESE FRONTALI - SEMIFINITURA

NORM	TIPO-TYPE
UNI 3903 DIN 841-1880 ISO 2586	SHORT · NORMAL · LONG · EXTRA-LONG





HSS-E Co8 · 45° · NF

C6A

- FRESE FRONTALI - SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato. Esecuzione per semifinitura - Spacco longitudinale
- SHELL END MILLS - Helical teeth with form relieved entirely ground chip-breaker. Semifinishing type - Longitudinal slot
- FRAISES À CYLINDRES FRONTALES- Denture hélicoïdale avec brise-copeaux dépouillé entièrement rectifié. Exécution pour demi-fini - Fente longitudinale
- WALZENSTIRNFRÄSER - Schrägschneiden mit voll eingeschliffenem Mitnehmerlängsnut. Ausführung zur Halbbearbeitung - Longitudinaler Schlitz
- FRESAS CILINDRICAS FRONTALES - Labios helicoidal con arranca de viruta completamente rectificado para semiacabado - Hendidura longitudinal
- FRESAS CILINDRICAS FRONTAIS - Ripa fina
- Фреза торцевая для получистовой обработки со стружколомом, с усиленным зубом. Шпоночный паз

CODE	d1 mm js16	s mm k16	d mm H7	Z	Co 8% €
C6/01/A	30	30	13	6	•
C6/02/A	35	35	16	6	•
C6/03/A	40	20	16	8	•
C6/04/A	40	40	16	6	•
C6/05/A	50	25	22	8	•
C6/06/A	50	50	22	8	•
C6/07/A	60	30	27	10	•
C6/08/A	60	60	27	10	•
C6/09/A	75	35	27	10	•
C6/10/A	75	75	27	10	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

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Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■□□
SEMIFINITURA - SEMIFINISHING ■■■■■
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Spianatura Face milling
□	■	□	□	□	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

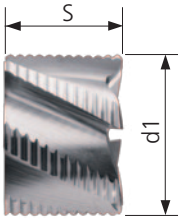
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

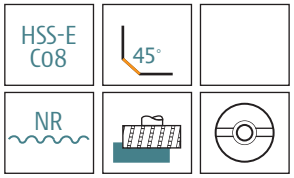
SERIE
C

FRESE FRONTALI - SGROSSATURA

NORM	TIPO-TYPE
UNI 3903	SHORT NORMAL LONG EXTRA-LONG
DIN 841-1880	
ISO 2586	







C5B

- FRESE FRONTALI - SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato. Esecuzione per sgrossatura - Cava trascinamento trasversale
- SHELL END MILLS - Helical teeth with form relieved entirely ground chip-breaker. Roughing type - Slot for transverse dragging
- FRAISES À CYLINDRES FRONTALES - Denture hélicoïdale avec brise-copeaux dépouillé entièrement rectifié. Exécution pour dégrossir - Fente de traînement transversal
- WALZENSTIRNFRÄSER - Schrägschneiden mit voll eingeschliffenem Mitnehmerquernut. Ausführung zum Schruppen - Querbetriebs Schlitz
- FRESAS CILINDRICAS FRONTALES - Labios helicoidal con arranca de viruta completamente rectificado para desbaste - Agujero conducimiento trasversal
- FRESAS CILINDRICAS FRONTAIS - Fresa concha com quebra-apara normal
- Фреза торцевая для черновой обработки

CODE	d1 mm js16	s mm k16	d mm H7	Z	Co 8% €
C5/01/B	40	32	16	6	•
C5/02/B	50	36	22	6	•
C5/03/B	63	40	27	8	•
C5/04/B	80	45	27	8	•
C5/05/B	100	50	32	10	•
C5/06/B	125	56	40	12	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

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Suggerimenti
Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Spianatura Face milling
■	■	□	□	□	■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

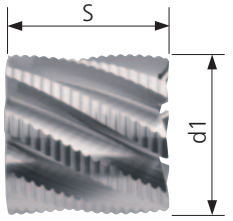
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

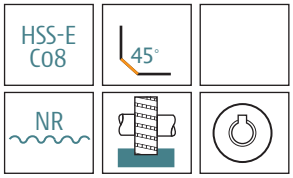
SERIE
C

FRESE FRONTALI - SGROSSATURA

NORM	TIPO-TYPE
UNI 3903	SHORT · NORMAL · LONG · EXTRA-LONG
DIN 841-1880	
ISO 2586	







CORTA

C6B

- FRESE FRONTALI - SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato. Esecuzione per sgrossatura - Spacco longitudinale
- SHELL END MILLS - Helical teeth with form relieved entirely ground chip-breaker. Roughing type - Longitudinal slot
- FRAISES À CYLINDRES FRONTALES - Denture hélicoïdale avec brise-copeaux dépouillé entièrement rectifié. Exécution pour dégrossir - Fente longitudinale
- WALZENSTIRNFRÄSER - Schrägschneiden mit voll eingeschliffenem Mitnehmerlängsnut. Ausführung zum Schruppen - Longitudinaler Schlitz
- FRESAS CILINDRICAS FRONTALES - Labios helicoidal con arranca de viruta completamente rectificado para desbaste - Hendidura longitudinal
- FRESAS CILINDRICAS FRONTAIS - Fresa concha com quebra-apara normal
- Фреза торцевая для черновой обработки. Шпоночный паз

CODE	d1 mm js16	s mm k16	d mm H7	Z	Co 8% €
C6/01/B	30	30	13	6	•
C6/02/B	35	35	16	6	•
C6/03/B	40	20	16	8	•
C6/04/B	40	40	16	6	•
C6/05/B	50	25	22	8	•
C6/06/B	50	50	22	8	•
C6/07/B	60	30	27	10	•
C6/08/B	60	60	27	10	•
C6/09/B	75	35	27	10	•
C6/10/B	75	75	27	10	•

Toll. reale sul Ø
Real Tol. on Ø ±0,05

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Suggerimenti
Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Spianatura Face milling
□	■	□	□	□	■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
C

FRESE A DISCO A TRE TAGLI - DENTI DRITTI





NORM	TIPO-TYPE
UNI 3905B DIN 885B ISO 2587	SHORT NORMAL LONG EXTRA-LONG

HSS-E Co5 | 90° | N

C7

- FRESE A DISCO A TRE TAGLI - Denti diritti
- SIDE AND FACE MILLING CUTTERS - Straight teeth
- FRAISSES EN DISQUE À TROIS TAILLES - Denture droite
- SCHEIBENFRÄSER - Geradeverzhant
- FRESAS A DISCO DE TRÉS LABIOS - Labios derechos
- FRESAS DE TRÊS NAVALHAS - Topo dereito
- Фреза 3-х зубая. Режущий торец. Хвостовик Weldon. Средняя серия

CODE	d1 mm js16	s mm k11	d mm H7	Z	Co 5% €
C7/01	50	4	16	20	•
C7/02	50	5	16	20	•
C7/03	50	6	16	20	•
C7/04	50	7	16	18	•
C7/05	50	8	16	18	•
C7/06	50	9	16	18	•
C7/07	50	10	16	18	•
C7/08	63	4	22	20	•
C7/09	63	5	22	20	•
C7/10	63	6	22	20	•
C7/11	63	7	22	20	•
C7/12	63	8	22	20	•
C7/13	63	9	22	20	•
C7/14	63	10	22	18	•
C7/15	63	12	22	18	•
C7/16	63	14	22	18	•
C7/17	63	16	22	18	•
C7/18	63	18	22	18	•
C7/19	63	20	22	18	•
C7/20	80	4	22	24	•
C7/20/1	80	4	27	24	•
C7/21	80	5	22	24	•
C7/21/1	80	5	27	24	•
C7/22	80	6	22	24	•
C7/22/1	80	6	27	24	•
C7/23	80	7	22	22	•
C7/23/1	80	7	27	22	•
C7/24	80	8	22	22	•
C7/24/1	80	8	27	22	•
C7/25	80	9	22	22	•
C7/25/1	80	9	27	22	•
C7/26	80	10	22	20	•
C7/26/1	80	10	27	20	•
C7/27	80	12	22	20	•
C7/27/1	80	12	27	20	•
C7/28	80	14	22	20	•
C7/28/1	80	14	27	20	•
C7/29	80	16	22	20	•
C7/29/1	80	16	27	20	•
C7/30	80	18	22	20	•
C7/30/1	80	18	27	20	•
C7/31	80	20	22	20	•
C7/31/1	80	20	27	20	•
C7/32	100	4	27	26	•

Toll. reale sul Ø / *Real Tol. on Ø* +0,05 -0

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■□
SEMIFINITURA - SEMIFINISHING ■■■■□
FINITURA - FINISHING ■■■■□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	□	□	□	□

Materiali Materials

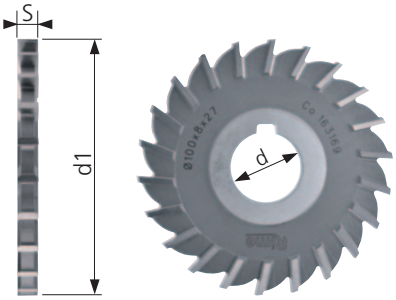
ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE C

FRESE A DISCO A TRE TAGLI - DENTI DRITTI



NORM	TIPO-TYPE
UNI 3905B DIN 885B ISO 2587	SHORT NORMAL LONG EXTRA-LONG

HSS-E Co5 | 90° | N

C7

- FRESE A DISCO A TRE TAGLI - Denti diritti
- SIDE AND FACE MILLING CUTTERS - Straight teeth
- FRAISSES EN DISQUE À TROIS TAILLES - Denture droite
- SCHEIBENFRÄSER - Geradeverzhant
- FRESAS A DISCO DE TRÉS LABIOS - Labios derechos
- FRESAS DE TRÊS NAVALHAS - Topo dereito
- Фреза 3-х зубая. Режущий торец. Хвостовик Weldon. Средняя серия

CODE	d1 mm js16	s mm k11	d mm H7	Z	Co 5% €
C7/32/1	100	4	32	26	•
C7/33	100	5	27	26	•
C7/33/1	100	5	32	26	•
C7/34	100	6	27	24	•
C7/34/1	100	6	32	24	•
C7/35	100	7	27	24	•
C7/35/1	100	7	32	24	•
C7/36	100	8	27	22	•
C7/36/1	100	8	32	22	•
C7/37	100	9	27	22	•
C7/37/1	100	9	32	22	•
C7/38	100	10	27	22	•
C7/38/1	100	10	32	22	•
C7/39	100	12	27	22	•
C7/39/1	100	12	32	22	•
C7/40	100	14	27	22	•
C7/40/1	100	14	32	22	•
C7/41	100	15	27	22	•
C7/41/1	100	15	32	22	•
C7/42	100	16	27	22	•
C7/42/1	100	16	32	22	•
C7/43	100	18	27	22	•
C7/43/1	100	18	32	22	•
C7/44	100	20	27	20	•
C7/44/1	100	20	32	20	•
C7/45	100	22	27	20	•
C7/45/1	100	22	32	20	•
C7/46	100	25	27	20	•
C7/46/1	100	25	32	20	•
C7/47	125	5	32	30	•
C7/48	125	6	32	30	•
C7/49	125	8	32	28	•
C7/50	125	10	32	28	•
C7/51	125	12	32	28	•
C7/52	125	14	32	26	•
C7/53	125	16	32	26	•
C7/54	125	18	32	26	•
C7/55	125	20	32	26	•

Toll. reale sul Ø / *Real Tol. on Ø* +0,05 -0

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	□	□	□	□

Materiali Materials

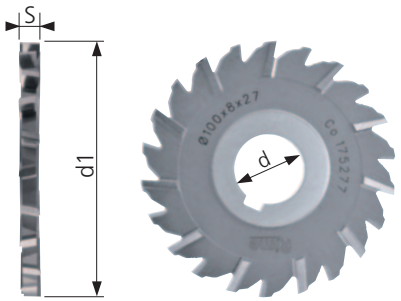
ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
C

FRESE A DISCO A TRE TAGLI - DENTI ALTERNATI



NORM	TIPO-TYPE
UNI 3905A DIN 885A ISO 2587	SHORT NORMAL LONG EXTRA-LONG

HSS-E Co5 | 90° | N

C8

- FRESE A DISCO A TRE TAGLI - Denti alternati
- SIDE AND FACE MILLING CUTTERS - Staggered teeth
- FRAISSES EN DISQUE À TROIS TAILLES - Denture alternée
- SCHEIBENFRÄSER - Kreuzverzahnt
- FRESAS A DISCO DE TRÉS LABIOS - Labios alternados
- FRESAS DE TRÊS NAVALHAS - Topo alternado
- Фреза дисковая с тремя режущими гранями с разнонаправленными зубьями

CODE	d1 mm js16	s mm k11	d mm H7	Z	Co 5% €
C8/01	50	4	16	18	•
C8/02	50	5	16	18	•
C8/03	50	6	16	18	•
C8/04	50	7	16	18	•
C8/05	50	8	16	18	•
C8/06	50	9	16	16	•
C8/07	50	10	16	16	•
C8/08	63	4	22	22	•
C8/09	63	5	22	20	•
C8/10	63	6	22	20	•
C8/11	63	7	22	20	•
C8/12	63	8	22	20	•
C8/13	63	9	22	18	•
C8/14	63	10	22	18	•
C8/15	63	12	22	18	•
C8/16	63	14	22	18	•
C8/17	63	16	22	16	•
C8/18	63	18	22	16	•
C8/19	63	20	22	14	•
C8/20	80	4	22	24	•
C8/20/1	80	4	27	24	•
C8/21	80	5	22	22	•
C8/21/1	80	5	27	22	•
C8/22	80	6	22	22	•
C8/22/1	80	6	27	22	•
C8/23	80	7	22	20	•
C8/23/1	80	7	27	20	•
C8/24	80	8	22	20	•
C8/24/1	80	8	27	20	•
C8/25	80	9	22	20	•
C8/25/1	80	9	27	20	•
C8/26	80	10	22	18	•
C8/26/1	80	10	27	18	•
C8/27	80	12	22	18	•
C8/27/1	80	12	27	18	•
C8/28	80	14	22	18	•
C8/28/1	80	14	27	18	•
C8/29	80	16	22	16	•
C8/29/1	80	16	27	16	•
C8/30	80	18	22	16	•
C8/30/1	80	18	27	16	•
C8/31	80	20	22	16	•
C8/31/1	80	20	27	16	•
C8/32	100	4	27	26	•
C8/32/1	100	4	32	26	•
C8/33	100	5	27	26	•
C8/33/1	100	5	32	26	•
C8/34	100	6	27	24	•
C8/34/1	100	6	32	24	•
C8/35	100	7	27	24	•
C8/35/1	100	7	32	24	•
C8/36	100	8	27	22	•
C8/36/1	100	8	32	22	•
C8/37	100	9	27	22	•
C8/37/1	100	9	32	22	•

Toll. reale sul Ø *Real Tol. on Ø* +0,05 -0

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	□	□	□	□

Materiali Materials

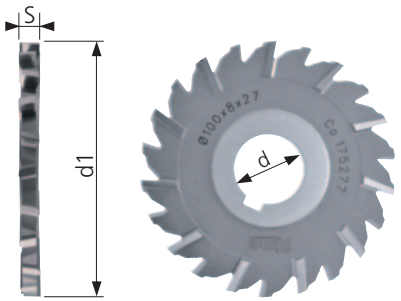
ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE C

FRESE A DISCO A TRE TAGLI - DENTI ALTERNATI



NORM	TIPO-TYPE
UNI 3905A DIN 885A ISO 2587	SHORT NORMAL LONG EXTRA-LONG

HSS-E C05 | 90° | N

C8

- FRESE A DISCO A TRE TAGLI - Denti alternati
- SIDE AND FACE MILLING CUTTERS - Staggered teeth
- FRAISSES EN DISQUE À TROIS TAILLES - Denture alternée
- SCHEIBENFRÄSER - Kreuzverzahnt
- FRESAS A DISCO DE TRÉS LABIOS - Labios alternados
- FRESAS DE TRÊS NAVALHAS - Topo alternado
- Фреза дисковая с тремя режущими гранями с разнонаправленными зубьями

CODE	d1 mm js16	s mm k11	d mm H7	Z	Co 5% €
C8/38	100	10	27	22	•
C8/38/1	100	10	32	22	•
C8/39	100	12	27	20	•
C8/39/1	100	12	32	20	•
C8/40	100	14	27	18	•
C8/40/1	100	14	32	18	•
C8/41	100	15	27	18	•
C8/41/1	100	15	32	18	•
C8/42	100	16	27	18	•
C8/42/1	100	16	32	18	•
C8/43	100	18	27	18	•
C8/43/1	100	18	32	18	•
C8/44	100	20	27	18	•
C8/44/1	100	20	32	18	•
C8/45	100	22	27	18	•
C8/45/1	100	22	32	18	•
C8/46	100	25	27	18	•
C8/46/1	100	25	32	18	•
C8/47	125	5	32	30	•
C8/48	125	6	32	30	•
C8/48/1	125	7	32	28	•
C8/49	125	8	32	28	•
C8/49/1	125	9	32	24	•
C8/50	125	10	32	24	•
C8/51	125	12	32	22	•
C8/52	125	14	32	22	•
C8/53	125	16	32	20	•
C8/54	125	18	32	20	•
C8/55	125	20	32	20	•
C8/56	125	22	32	20	•
C8/57	125	25	32	18	•
C8/58	160	6	32	30	•
C8/59	160	8	32	28	•
C8/60	160	10	32	26	•
C8/61	160	12	32	26	•
C8/62	160	14	32	24	•
C8/63	160	16	32	24	•
C8/64	160	18	32	22	•
C8/65	160	20	32	22	•
C8/66	160	22	32	22	•
C8/67	160	25	32	22	•
C8/68	200	8	40	34	•
C8/69	200	10	40	32	•
C8/70	200	12	40	30	•
C8/71	200	14	40	30	•
C8/72	200	16	40	28	•
C8/73	200	18	40	28	•
C8/74	200	20	40	26	•
C8/75	200	22	40	26	•
C8/76	200	25	40	24	•
C8/77	200	28	40	24	•
C8/78	200	32	40	22	•
C8/79	250	20	50	34	•
C8/80	250	30	50	26	•

Toll. reale sul Ø / *Real Tol. on Ø* +0,05 -0

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■□
SEMIFINITURA - SEMIFINISHING ■■■■□
FINITURA - FINISHING ■■■■□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	□	□	□	□

Materiali Materials

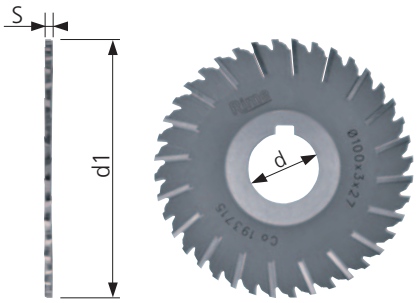
ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
C

SEGHE CIRCOLARI A TRE TAGLI - DENTI ALTERNATI



NORM: STANDARD Rime

TIPO-TYPE: SHORT · NORMAL · LONG · EXTRA-LONG

HSS-E
Co5

90°

N

C9

- SEGHE CIRCOLARI A TRE TAGLI - Denti elicoidali alternati
- THREE-FLUTED CIRCULAR SAWS - Staggered teeth
- SCIES CIRCULAIRES TROIS TAILLES - Denture alternée
- KREISSÄGEN - Schräg-Kreuzverzahnt
- SIERRA CIRCULAR DE TRÉS LABIOS - Labios helicoidales alternados
- SERRA CIRCULAR DE TRÊS NAVALHAS - Navalhas helicoidales alternada
- Фреза дисковая с тремя режущими гранями с разнонаправленными зубьями

CODE	d1 mm js16	s mm k11	d mm H7	Z	Co 5% €
C9/01	63	1.6	22	32	•
C9/02	63	2	22	32	•
C9/03	63	2.5	22	32	•
C9/04	63	3	22	28	•
C9/05	63	3.5	22	28	•
C9/06	80	2	22	32	•
C9/07	80	2.5	22	32	•
C9/08	80	3	22	32	•
C9/09	80	3.5	22	32	•
* C9/10/1	100	1.6	27	40	•
C9/10	100	2	27	40	•
C9/11	100	2.5	27	40	•
C9/12	100	3	27	40	•
C9/13	100	3.5	27	40	•
C9/14	125	2	32	44	•
C9/15	125	2.5	32	44	•
C9/16	125	3	32	44	•
C9/17	125	3.5	32	40	•
C9/18	125	4	32	40	•
C9/19	160	3	32	50	•
C9/19/1	160	3.5	32	50	•
C9/20	160	4	32	50	•
C9/21	160	5	32	50	•

* Ad esaurimento - Until stock last

Toll. reale sul Ø
Real Tol. on Ø +0,05 -0

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	□	□	□	□

Materiali Materials

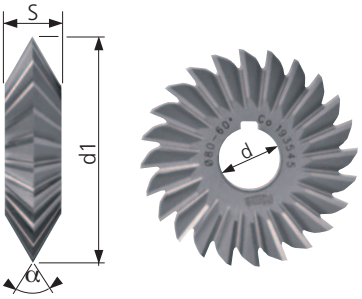
ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
C

FRESE AD ANGOLO PRISMATICHE



NORM	TIPO-TYPE
UNI 3907 DIN 847 ISO 6108	SHORT NORMAL LONG EXTRA-LONG

HSS-E Co5	45°-60°-90°	
N		

C13

- FRESE AD ANGOLO PRISMATICHE
- DOUBLE EQUAL-ANGLE CUTTERS
- FRAISES D'ANGLE PRISMATIQUES
- PRISMENFRÄSER
- FRESAS DE ANGULO PRISMATICO
- FRESAS DE ANGULO PRISMATICO
- Фреза дисковая угловая

CODE	d1 mm js16	α 0°+1°	s mm k11	d mm H7	Z	Co 5% €
C13/01	56		10	16	24	•
C13/02	63	45°	12	22	22	•
C13/03	80		16	22	26	•
C13/04	100		18	27	30	•
C13/05	56		12	16	22	•
C13/06	63	60°	16	22	20	•
C13/07	80		20	22	24	•
C13/08	100		25	27	26	•
C13/09	56		14	16	22	•
C13/10	63	90°	18	22	20	•
C13/11	80		22	22	22	•
C13/12	100		28	27	24	•

Parametri
Cutting data
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Suggerimenti
Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni
Workings

Apertura cava Slotting
Contornatura Side milling
Copia 3D 3D copying
Assiale Axial
Rampa Ramping
Cava a "V" "V" Slotting

Materiali
Materials

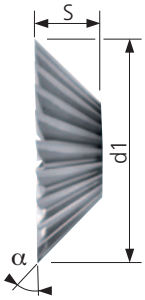
ACCIAI STEELS
GHISE CAST IRON
ACCIAI INOSSIDABILI STAINLESS STEELS
SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM
LEGHE LEGGERE LIGHT ALLOYS
MATERIALI NON FERROSI NON FERROUS MATERIAL

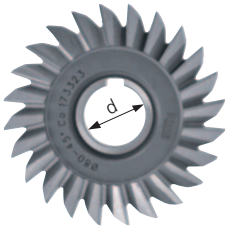
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
C

FRESE FRONTALI AD ANGOLO





NORM	TIPO-TYPE
UNI 3908 DIN 842A	SHORT NORMAL LONG EXTRA-LONG

HSS-E Co5	45°-50°-60°	
N		

C14

- FRESE FRONTALI AD ANGOLO
- SINGLE ANGLE CUTTERS
- FRAISES FRONTALES D'ANGLE
- WINKELSTIRNFRÄSER
- FRESAS FRONTALES D'ANGULO
- FRESAS DE ANGULO FRONTAIS
- Фреза торцевая с обратным конусом

CODE	d1 mm js16	α ±25'	s mm k16	d mm H7	Z	Co 5% €
C14/01	40		12	10	18	•
C14/02	50		15	13	20	•
C14/03	63	45°	18	16	20	•
C14/04	80		23	22	24	•
C14/05	100		30	27	24	•
C14/08	40		13	10	16	•
C14/09	50		16	13	18	•
C14/10	63	50°	20	16	20	•
C14/11	80		25	22	22	•
C14/12	100		32	27	26	•
C14/15	40		13	10	18	•
C14/16	50		16	13	18	•
C14/17	63	60°	20	16	18	•
C14/18	80		25	22	20	•
C14/19	100		32	27	22	•

Parametri
Cutting data
pag. 201-224

Suggerimenti
Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Cava ad angolo Angle slotting
☐	☐	☐	☐	☐	■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED ☐

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Rime

advanced tools production

design and high productivity


Rime
advanced tools production



SERIE E

Frese per sgrossatura

Roughing end mills

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advanced tools production

design and technology

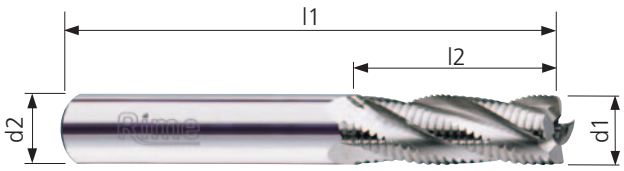
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advanced tools production

Rime

SERIE
E

FRESE PER SGROSSATURA

NORM | TIPO-TYPE | Z3÷Z4



HSS-E Co8 | 45° | NR | ≃30° | DIN 1835 A

NORMALE

E0

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Codolo cilindrico
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Straight shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Queue cylindrique
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Mango cilindrico
- FRESAS DE DESBASTE FRONTAL - Fresa cilindrica sem corte ao centro com quebra-apara - Encabadouro cilindrico
- Фреза концевая для черновой обработки. Цилиндрический хвостовик. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
E0/01	6	16	60	6	3	•
E0/02	8	22	64	10	4	•
E0/03	10	28	70	10	4	•
E0/04	12	32	80	12	4	•
E0/05	14	32	80	12	4	•
E0/06	15	36	90	16	4	•
E0/07	16	36	90	16	4	•
E0/08	18	40	100	16	4	•
E0/09	20	45	110	20	4	•
E0/10	22	45	110	20	4	•

THREADED DIN 1835 D — su richiesta / on request

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	□	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

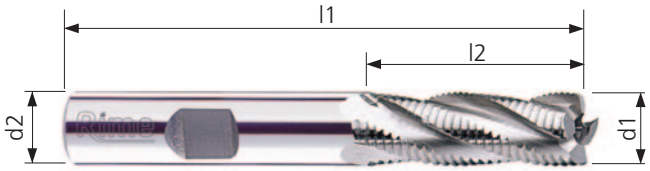
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
E

FRESE PER SGROSSATURA

NORM | TIPO-TYPE | Z3÷Z5



HSS-E Co8 | 45° | NR | ≃30° | DIN 1835 B

NORMALE

E2

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Attacco Weldon
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Weldon shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Queue cylindrique Weldon
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Weldon
- FRESAS FRONTAIS PARA DESBASTE - Fresa sem corte ao centro com quebra-apara - Encabadouro Weldon
- Фреза концевая для черновой обработки. Хвостовик Weldon. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
E2/01	6	16	60	6	3	•
E2/02	8	22	64	10	4	•
E2/03	10	28	70	10	4	•
E2/04	12	32	80	12	4	•
E2/05	14	32	80	12	4	•
E2/06	15	36	90	16	4	•
E2/07	16	36	90	16	4	•
E2/08	18	40	100	16	4	•
E2/09	20	45	110	20	4	•
E2/10	22	45	110	20	4	•
E2/11	24	45	120	25	5	•
E2/12	25	50	125	25	5	•
E2/13	26	50	125	25	5	•
E2/14	28	50	125	25	5	•
E2/15	30	63	135	25	5	•
E2/16	32	63	145	32	5	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Ulteriori diametri a richiesta / *Other diameters on demand*

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	□	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

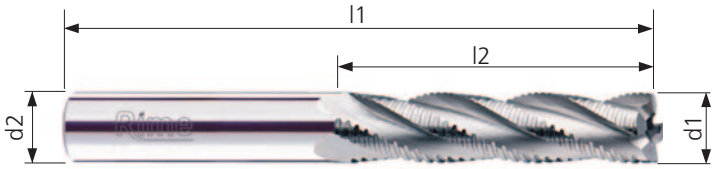
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
E

FRESE PER SGROSSATURA

NORM | TIPO-TYPE | Z4



HSS-E Co8 | 45° | NR | ≃30° | DIN 1835 A

LUNGA

E4

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Codolo cilindrico
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Straight shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Queue cylindrique
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zylinderschaft
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Mango cilindrico
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Fresa sem corte ao centro com quebra-apara - Encabadouro cilindrico
- Фреза концевая для черновой обработки. Цилиндрический хвостовик. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
E4/01	8	35	85	10	4	•
E4/02	10	42	90	10	4	•
E4/03	12	48	95	12	4	•
E4/04	14	48	100	12	4	•
E4/05	15	54	104	16	4	•
E4/06	16	54	104	16	4	•
E4/07	18	60	120	16	4	•
E4/08	20	62	128	20	4	•
E4/09	22	64	130	20	4	•

THREADED DIN 1835 D — su richiesta / on request

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Ulteriori diametri a richiesta
Other diameters on demand

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Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting ■ | Contornatura Side milling ■ | Copia 3D 3D copying □ | Assiale Axial □ | Rampa Ramping □

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

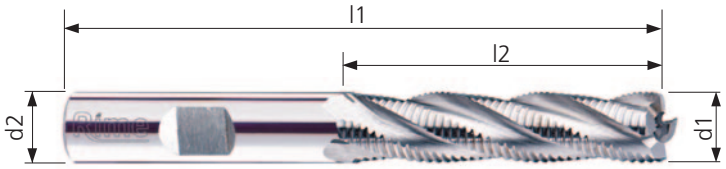
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
E

FRESE PER SGROSSATURA

NORM | TIPO-TYPE | Z4÷Z5



HSS-E Co8 | 45° | NR | ≃30° | DIN 1835 B

LUNGA

E6

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Attacco Weldon
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Weldon shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Queue cylindrique Weldon
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Weldon
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Fresa sem corte ao centro com quebra-apara - Weldon
- Фреза концевая для черновой обработки. Хвостовик Weldon. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
E6/01	8	35	85	10	4	•
E6/02	10	42	90	10	4	•
E6/03	12	48	95	12	4	•
E6/04	14	48	100	12	4	•
E6/05	15	54	104	16	4	•
E6/06	16	54	104	16	4	•
E6/07	18	60	120	16	4	•
E6/08	20	62	128	20	4	•
E6/09	22	64	130	20	4	•
E6/10	24	66	135	25	5	•
E6/11	25	70	145	25	5	•
E6/12	28	70	145	25	5	•
E6/13	30	80	155	25	5	•
E6/14	32	80	160	32	5	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	□	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

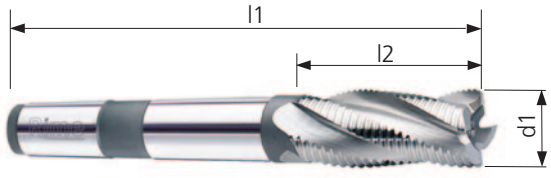
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
E

FRESE PER SGROSSATURA

NORM | TIPO-TYPE | Z4÷Z7



HSS-E Co8 | 45° | NR | ≃30° | DIN 228 A

NORMALE

E7

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Codolo conico Morse con foro filettato
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Morse taper shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Fresa sem corte ao centro com quebra-apara - Encabadouro cone Morse con taladro roscado
- Фреза концевая для черновой обработки. Хвостовик конус Морзе с резьбой. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €
E7/01	16	36	115	2	4	•
E7/02	18	40	120	2	4	•
E7/03	20	45	125	2	4	•
E7/04	22	45	125	2	4	•
E7/05	24	50	150	3	5	•
E7/06	25	50	150	3	5	•
E7/07	26	56	155	3	5	•
E7/08	28	56	155	3	5	•
E7/09	30	63	165	3	5	•
E7/10	32	63	188	4	5	•
E7/11	34	70	195	4	5	•
E7/12	35	70	195	4	6	•
E7/13	36	70	195	4	6	•
E7/14	38	70	195	4	6	•
E7/15	40	70	195	4	6	•
E7/16	45	80	205	4	6	•
E7/17	50	90	215	4	7	•
E7/18	50	90	250	5	7	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

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Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	□	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

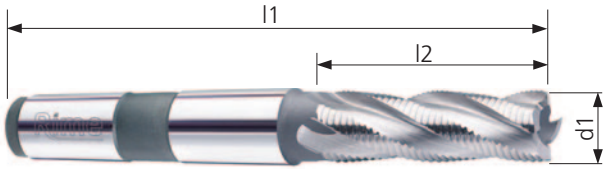
torna all'indice

Rime

SERIE
E

FRESE PER SGROSSATURA

NORM | TIPO-TYPE | Z4÷Z7



HSS-E Co8 | 45° | NR | ≃30° | DIN 228 A

LUNGA

E8

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Codolo conico Morse con foro filettato
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Morse taper shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Fresa sem corte ao centro com quebra-apara - Encabadouro cone Morse
- Фреза концевая для черновой обработки. Хвостовик конус Морзе с резьбой. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €
E8/01	16	55	140	2	4	•
E8/02	18	60	145	2	4	•
E8/03	20	65	148	2	4	•
E8/04	22	65	166	3	4	•
E8/05	24	70	171	3	5	•
E8/06	25	70	171	3	5	•
E8/07	26	70	176	3	5	•
E8/08	28	80	186	3	5	•
E8/09	30	85	210	4	5	•
E8/10	32	90	215	4	5	•
E8/11	34	90	215	4	5	•
E8/12	35	90	215	4	6	•
E8/13	36	90	215	4	6	•
E8/14	38	95	220	4	6	•
E8/15	40	95	220	4	6	•
E8/16	45	100	225	4	6	•
E8/17	50	110	235	4	7	•
E8/18	50	120	275	5	7	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	□	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

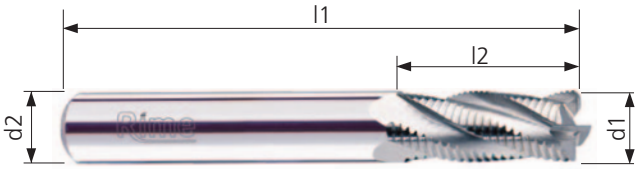
torna all'indice

Rime

SERIE
E

FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z3÷Z4
UNI 8244 DIN 844A ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 45° | NR | ≃30° | DIN 1835 A

NORMALE

E10

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo cilindrico
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Straight shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Deux dents bout coupantes jusq'au centre - Queue cylindrique
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango cilindrico
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Fresa com corte ao centro com quebra-apara - Encabadouro cilindrico
- Фреза концевая для черновой обработки. Режущий торец. Цилиндрический хвостовик. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
E10/01	6	13	57	6	3	•
E10/02	8	19	69	10	4	•
E10/03	10	22	72	10	4	•
E10/04	12	26	83	12	4	•
E10/05	14	26	83	12	4	•
E10/06	15	32	92	16	4	•
E10/07	16	32	92	16	4	•
E10/08	18	32	92	16	4	•
E10/09	20	38	104	20	4	•
E10/10	22	38	104	20	4	•

THREADED DIN 1835 D su richiesta on request

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

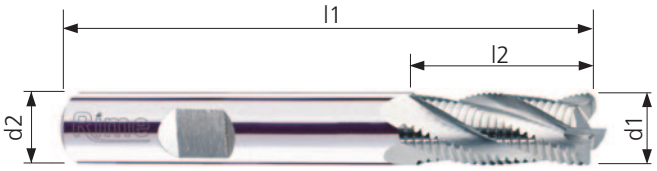
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
E

FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z3÷6
UNI 8244 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 45° | NR | ≃30° | DIN 1835 B

NORMALE

E12

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Attacco Weldon
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Weldon shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Weldon-Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Fresa com corte ao centro com quebra-apara - Encabadouro Weldon
- Фреза концевая для черновой обработки. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €
E12/00	5	13	57	6	3	•	•
E12/01	6	13	57	6	3	•	•
E12/02	7	16	66	10	3	•	•
E12/03	8	19	69	10	4	•	•
E12/04	9	19	69	10	4	•	•
E12/05	10	22	72	10	4	•	•
E12/06	11	22	79	12	4	•	•
E12/07	12	26	83	12	4	•	•
E12/08	13	26	83	12	4	•	•
E12/09	14	26	83	12	4	•	•
E12/10	15	32	92	16	4	•	•
E12/11	16	32	92	16	4	•	•
E12/12	17	32	92	16	4	•	•
E12/13	18	32	92	16	4	•	•
E12/13/1	19	38	104	20	4	•	•
E12/14	20	38	104	20	4	•	•
E12/15	22	38	104	20	4	•	•
E12/16	24	45	121	25	5	•	•
E12/17	25	45	121	25	5	•	•
E12/18	26	45	121	25	5	•	•
E12/19	28	45	121	25	5	•	•
E12/20	30	45	121	25	5	•	•
E12/21	32	53	133	32	5	•	•
E12/22	36	53	133	32	6	•	•
E12/23	40	63	143	32	6	•	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **SUPREME**

CODE E12/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

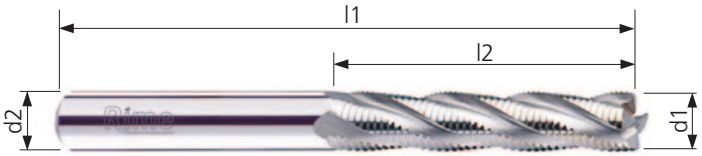
■ CONSIGLIATO RECOMMENDED
◪ ACCETTABILE ACCEPTABLE
□ SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
E

FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z4
UNI 8245 DIN 844A ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E C08 | 45° | NR | ≃30° | DIN 1835 A

LUNGA

E13

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo cilindrico
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Straight shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Deux dents bout coupantes jusq'au centre - Queue cylindrique
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango cilindrico
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Fresa com corte ao centro com quebra-apara - Encabadouro cilindrico
- Фреза концевая для черновой обработки. Режущий торец. Цилиндрический хвостовик. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
E13/01	8	38	88	10	4	•
E13/02	10	45	95	10	4	•
E13/03	12	53	110	12	4	•
E13/04	14	53	110	12	4	•
E13/05	15	63	123	16	4	•
E13/06	16	63	123	16	4	•
E13/07	18	63	123	16	4	•
E13/08	20	75	141	20	4	•
E13/09	22	75	141	20	4	•

THREADED DIN 1835 D su richiesta on request

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

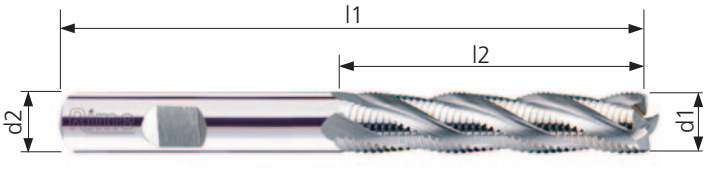
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Rime

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FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z3÷6
UNI 8245 DIN 844B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 45° | NR | ≃30° | DIN 1835 B

LUNGA

E15

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Attacco Weldon
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Weldon shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Fresa com corte ao centro com quebra-apara - Encabadouro Weldon
- Фреза концевая для черновой обработки. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €
E15/00	6	24	68	6	3	•	•
E15/00/1	7	30	80	10	3	•	•
E15/01	8	38	88	10	4	•	•
E15/01/1	9	45	95	10	4	•	•
E15/02	10	45	95	10	4	•	•
E15/02/1	11	53	110	12	4	•	•
E15/03	12	53	110	12	4	•	•
E15/03/1	13	53	110	12	4	•	•
E15/04	14	53	110	12	4	•	•
E15/05	15	63	123	16	4	•	•
E15/06	16	63	123	16	4	•	•
E15/06/1	17	63	123	16	4	•	•
E15/07	18	63	123	16	4	•	•
E15/08	20	75	141	20	4	•	•
E15/09	22	75	141	20	4	•	•
E15/10	24	90	166	25	5	•	•
E15/11	25	90	166	25	5	•	•
E15/12	28	90	166	25	5	•	•
E15/13	30	90	166	25	5	•	•
E15/14	32	106	186	32	5	•	•
E15/15	36	106	186	32	6	•	•
E15/16	40	125	205	32	6	•	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **SUPREME**

CODE E15/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

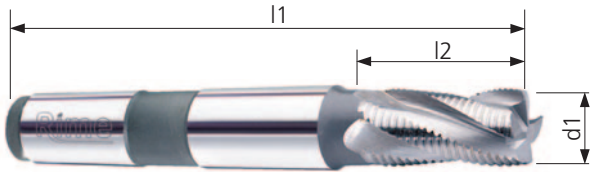
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

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FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z4÷7
UNI 8250 8251 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 45° | NR | ≃30° | DIN 228 A

NORMALE

E16

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Fresa com corte ao centro com quebra-apara - Encabadouro cone Morse
- Фреза концевая для черновой обработки. Режущий торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €	SUPREME €	
E16/01	16	32	117	2	4	•	•	
E16/02	18	32	117	2	4	•	•	
E16/03	20	38	140	3	4	•	•	
E16/04	22	38	140	3	4	•	•	
E16/05	24	45	147	3	5	•	•	
E16/06	25	45	147	3	5	•	•	
E16/07	26	45	147	3	5	•	•	
E16/08	28	45	147	3	5	•	•	
E16/09	30	53	155	3	5	•	•	
E16/10	32	53	178	4	5	•	•	
E16/11	34	53	178	4	5	•	•	
E16/12	35	53	178	4	6	•	•	
E16/13	36	53	178	4	6	•	•	
E16/14	38	63	188	4	6	•	•	
E16/15	40	63	188	4	6	•	•	
E16/16	45	63	188	4	6	•	•	
E16/17	50	75	200	4	7	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **SUPREME**

CODE E16/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

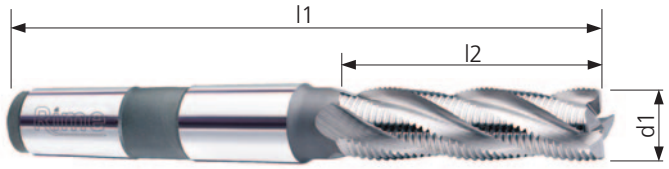
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

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FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z4÷7
UNI 8250 8251 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 45° | NR | ≃30° | DIN 228 A

LUNGA

E17

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Fresa com corte ao centro com quebra-apara - Encabadouro cone Morse
- Фреза концевая для черновой обработки. Режущий торец. Хвостовик конус Морзе с резьбой. Удлиненная серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €	SUPREME €	
E17/01	16	63	148	2	4	•	•	
E17/02	18	63	148	2	4	•	•	
E17/03	20	75	177	3	4	•	•	
E17/04	22	75	177	3	4	•	•	
E17/05	24	90	192	3	5	•	•	
E17/06	25	90	192	3	5	•	•	
E17/07	26	90	192	3	5	•	•	
E17/08	28	90	192	3	5	•	•	
E17/09	30	90	192	3	5	•	•	
E17/10	32	106	231	4	5	•	•	
E17/11	34	106	231	4	5	•	•	
E17/12	35	106	231	4	6	•	•	
E17/13	36	106	231	4	6	•	•	
E17/14	38	125	250	4	6	•	•	
E17/15	40	125	250	4	6	•	•	
E17/16	45	125	250	4	6	•	•	
E17/17	50	150	275	4	7	•	•	

Toll. reale sul Ø *Real Tol. on Ø* ±0,05

COATING **SUPREME**

CODE E17/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

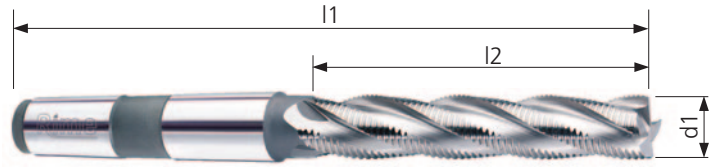
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

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FRESE PER SGROSSATURA

NORM | TIPO-TYPE | Z4÷7



HSS-E Co8 | 45° | NR | ≃30° | DIN 228 A

EXTRA-LUNGA

E18

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Fresa com corte ao centro com quebra-apara - Encabadouro cone Morse con taladro roscado
- Фреза концевая для черновой обработки. Режущий торец. Хвостовик конус Морзе с резьбой. Ультрадлинная серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €
E18/03	20	110	212	3	4	•
E18/04	22	110	212	3	4	•
E18/05	24	125	227	3	5	•
E18/06	25	125	250	4	5	•
E18/07	26	125	250	4	5	•
E18/08	28	135	260	4	5	•
E18/09	30	140	265	4	5	•
E18/10	32	150	275	4	6	•
E18/11	34	150	275	4	6	•
E18/12	35	150	275	4	6	•
E18/13	36	150	275	4	6	•
E18/14	38	180	305	4	6	•
E18/15	40	180	305	4	6	•
E18/16	45	190	315	4	7	•
E18/17	50	200	360	5	7	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □


Rime
advanced tools production



SERIE F

Frese per semifinitura

Semifinishing end mills

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F15		90
F16		91
F17		92
F18		93

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advanced tools production

design and technology

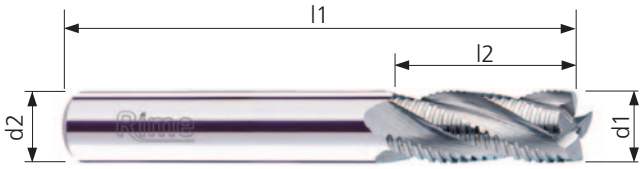
Rime
advanced tools production

Rime

SERIE
F

FRESE PER SEMIFINITURA

NORM	TIPO-TYPE	Z3÷4
UNI 8244 DIN 844A ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E C08 | 45° | NF | ≃30° | DIN 1835 A

NORMALE

F10

- FRESE PER SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo cilindrico
- ROUGHING AND SEMIFINISHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Straight shank
- FRAISES FRONTALES ÉBAUCHE - SEMI FINITION - Denture hélicoïdale avec brise-copeaux profil plat - Deux dents bout coupantes jusq'au centre - Queue cylindrique
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS FRONTALES PARA SEMIACABADO - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango cilindrico
- FRESAS CILINDRICAS FRONTALES PARA SEMIACABAMENTO - Fresa com corte ao centro com quebra-apara - Encabadouro cilindrico
- Фреза для получистовой обработки со стружколомом. Режущий торец. Цилиндрический хвостовик. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
F10/01	6	13	57	6	3	•
F10/02	8	19	69	10	4	•
F10/03	10	22	72	10	4	•
F10/04	12	26	83	12	4	•
F10/05	14	26	83	12	4	•
F10/06	15	32	92	16	4	•
F10/07	16	32	92	16	4	•
F10/08	18	32	92	16	4	•
F10/09	20	38	104	20	4	•
F10/10	22	38	104	20	4	•

THREADED DIN 1835 D su richiesta on request

Toll. reale sul Ø *Real Tol. on Ø* ±0,05

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

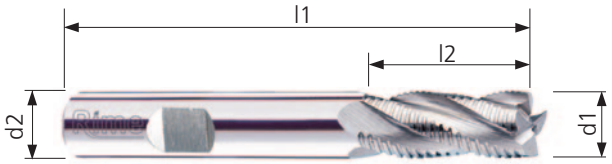
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
F

FRESE PER SEMIFINITURA

NORM	TIPO-TYPE	Z3÷6
UNI 8244 DIN 844B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 45° | NF | ≃30° | DIN 1835 B

NORMALE

F12

- FRESE PER SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Attacco Weldon
- ROUGHING AND SEMIFINISHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Weldon shank
- FRAISES FRONTALES ÉBAUCHE - SEMI FINITION - Denture hélicoïdale avec brise-copeaux profil plat - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA SEMIACABADO - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS PARA SEMIACABAMENTO - Fresa com corte ao centro com quebra-apara - Encabadouro Weldon
- Фреза для получистовой обработки со стружколомом. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €	
F12/01	6	13	57	6	3	•	•	
F12/02	7	16	66	10	3	•	•	
F12/03	8	19	69	10	4	•	•	
F12/04	9	19	69	10	4	•	•	
F12/05	10	22	72	10	4	•	•	
F12/06	11	22	79	12	4	•	•	
F12/07	12	26	83	12	4	•	•	
F12/08	13	26	83	12	4	•	•	
F12/09	14	26	83	12	4	•	•	
F12/10	15	32	92	16	4	•	•	
F12/11	16	32	92	16	4	•	•	
F12/12	17	32	92	16	4	•	•	
F12/13	18	32	92	16	4	•	•	
F12/13/1	19	38	104	20	4	•	•	
F12/14	20	38	104	20	4	•	•	
F12/15	22	38	104	20	4	•	•	
F12/16	24	45	121	25	5	•	•	
F12/17	25	45	121	25	5	•	•	
F12/18	26	45	121	25	5	•	•	
F12/19	28	45	121	25	5	•	•	
F12/20	30	45	121	25	5	•	•	
F12/21	32	53	133	32	5	•	•	
F12/22	36	53	133	32	6	•	•	
F12/23	40	63	143	32	6	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **SUPREME**

CODE F12/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

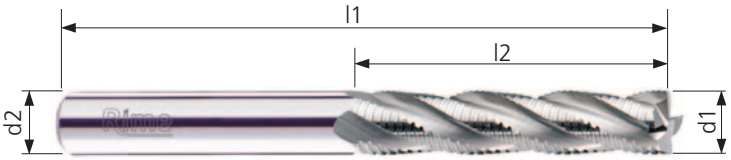
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
F

FRESE PER SEMIFINITURA

NORM	TIPO-TYPE	Z4
UNI 8254 DIN 844A ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 45° | NF | ≃30° | DIN 1835 A

LUNGA

F13

- FRESE PER SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo cilindrico
- ROUGHING AND SEMIFINISHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Straight shank
- FRAISES FRONTALES ÉBAUCHE - SEMI FINITION - Denture hélicoïdale avec brise-copeaux profil plat - Deux dents bout coupantes jusq'au centre - Queue cylindrique
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS FRONTALES PARA SEMIACABADO - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango cilindrico
- FRESAS CILINDRICAS FRONTAIS PARA SEMIACABAMENTO - Fresa com corte ao centro com quebra-apara - Encabadouro cilindrico
- Фреза для получистовой обработки со стружколомом. Режущий торец. Цилиндрический хвостовик. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
F13/01	8	38	88	10	4	•
F13/02	10	45	95	10	4	•
F13/03	12	53	110	12	4	•
F13/04	14	53	110	12	4	•
F13/05	15	63	123	16	4	•
F13/06	16	63	123	16	4	•
F13/07	18	63	123	16	4	•
F13/08	20	75	141	20	4	•
F13/09	22	75	141	20	4	•

THREADED DIN 1835 D — su richiesta / on request

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■□□
SEMIFINITURA - SEMIFINISHING ■■■■■
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

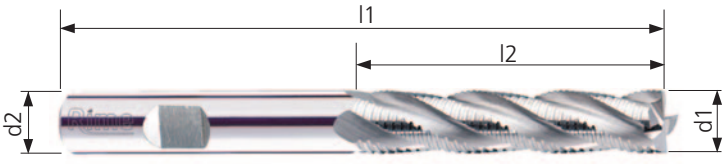
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

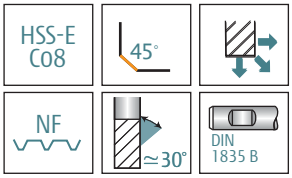
Rime

SERIE
F

FRESE PER SEMIFINITURA

NORM	TIPO-TYPE	Z3÷6
UNI 8245 DIN 844B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	





LUNGA

F15

- FRESE PER SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Attacco Weldon
- ROUGHING AND SEMIFINISHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Weldon shank
- FRAISES FRONTALES ÉBAUCHE - SEMI FINITION - Denture hélicoïdale avec brise-copeaux profil plat - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA SEMIACABADO - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS PARA SEMIACABAMENTO - Fresa com corte ao centro com quebra-apara - Encabadouro Weldon
- Фреза для получистовой обработки со стружколомом. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €	
F15/00	6	24	68	6	3	•	•	
F15/00/1	7	30	80	10	3	•	•	
F15/01	8	38	88	10	4	•	•	
F15/01/1	9	45	95	10	4	•	•	
F15/02	10	45	95	10	4	•	•	
F15/02/1	11	53	110	12	4	•	•	
F15/03	12	53	110	12	4	•	•	
F15/03/1	13	53	110	12	4	•	•	
F15/04	14	53	110	12	4	•	•	
F15/05	15	63	123	16	4	•	•	
F15/06	16	63	123	16	4	•	•	
F15/06/1	17	63	123	16	4	•	•	
F15/07	18	63	123	16	4	•	•	
F15/08	20	75	141	20	4	•	•	
F15/09	22	75	141	20	4	•	•	
F15/10	24	90	166	25	5	•	•	
F15/11	25	90	166	25	5	•	•	
F15/12	28	90	166	25	5	•	•	
F15/13	30	90	166	25	5	•	•	
F15/14	32	106	186	32	5	•	•	
F15/15	36	106	186	32	6	•	•	
F15/16	40	125	205	32	6	•	•	

Toll. reale sul Ø ±0,05
Real Tol. on Ø

COATING **SUPREME**

CODE F15/.../**S**

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

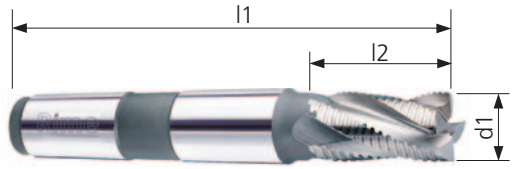
■ CONSIGLIATO RECOMMENDED
◪ ACCETTABILE ACCEPTABLE
□ SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
F

FRESE PER SEMIFINITURA

NORM	TIPO-TYPE	Z4÷7
UNI 8250 8251 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 45° | NF | ≃30° | DIN 228 A

NORMALE

F16

- FRESE PER SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- ROUGHING AND SEMIFINISHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES FRONTALES ÉBAUCHE - SEMI FINITION - Denture hélicoïdale avec brise-copeaux profil plat -Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES PARA SEMIACABADO - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS PARA SEMIACABAMENTO - Fresa com corte ao centro com quebra-apara - Encabadouro cone Morse con taladro roscado
- Фреза для получистовой обработки со стружколомом. Режущий торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €	SUPREME €	
F16/01	16	32	117	2	4	•	•	
F16/02	18	32	117	2	4	•	•	
F16/03	20	38	140	3	4	•	•	
F16/04	22	38	140	3	4	•	•	
F16/05	24	45	147	3	5	•	•	
F16/06	25	45	147	3	5	•	•	
F16/07	26	45	147	3	5	•	•	
F16/08	28	45	147	3	5	•	•	
F16/09	30	53	155	3	5	•	•	
F16/10	32	53	178	4	5	•	•	
F16/11	34	53	178	4	5	•	•	
F16/12	35	53	178	4	6	•	•	
F16/13	36	53	178	4	6	•	•	
F16/14	38	63	188	4	6	•	•	
F16/15	40	63	188	4	6	•	•	
F16/16	45	63	188	4	6	•	•	
F16/17	50	75	200	4	7	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **SUPREME**

CODE F16/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

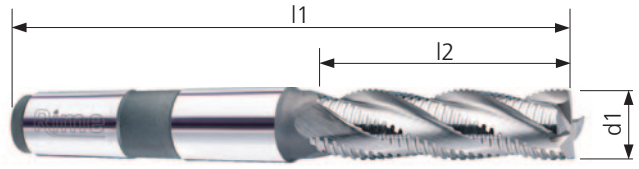
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
F

FRESE PER SEMIFINITURA

NORM	TIPO-TYPE	Z4÷7
UNI 8250 8251 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 45° | NF | ≃30° | DIN 228 A

LUNGA

F17

- FRESE PER SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- ROUGHING AND SEMIFINISHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES FRONTALES ÉBAUCHE - SEMI FINITION - Denture hélicoïdale avec brise-copeaux profil plat -Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES PARA SEMIACABADO - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS PARA SEMIACABAMENTO - Fresa com corte ao centro com quebra-apara - Encabadouro cone Morse con taladro roscado
- Фреза для получистовой обработки со стружколомом. Режущий торец. Хвостовик конус Морзе с резьбой. Удлиненная серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €	SUPREME €
F17/01	16	63	148	2	4	•	•
F17/02	18	63	148	2	4	•	•
F17/03	20	75	177	3	4	•	•
F17/04	22	75	177	3	4	•	•
F17/05	24	90	192	3	5	•	•
F17/06	25	90	192	3	5	•	•
F17/07	26	90	192	3	5	•	•
F17/08	28	90	192	3	5	•	•
F17/09	30	90	192	3	5	•	•
F17/10	32	106	231	4	5	•	•
F17/11	34	106	231	4	5	•	•
F17/12	35	106	231	4	6	•	•
F17/13	36	106	231	4	6	•	•
F17/14	38	125	250	4	6	•	•
F17/15	40	125	250	4	6	•	•
F17/16	45	125	250	4	6	•	•
F17/17	50	150	275	4	7	•	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **SUPREME**

CODE F17/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

■ CONSIGLIATO RECOMMENDED
◪ ACCETTABILE ACCEPTABLE
□ SCONSIGLIATO NOT RECOMMENDED

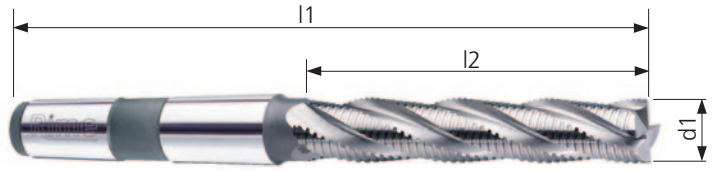
Rime

SERIE
F

FRESE PER SEMIFINITURA

NORM | TIPO-TYPE | Z4÷7

SHORT · NORMAL · LONG · EXTRA-LONG



HSS-E C08 | 45° | NF | ≃30° | DIN 228 A

EXTRA-LUNGA

F18

- FRESE PER SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- ROUGHING AND SEMIFINISHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES FRONTALES ÉBAUCHE - SEMI FINITION - Denture hélicoïdale avec brise-copeaux profil plat -Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES PARA SEMIACABADO - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS PARA SEMIACABAMENTO - Fresa com corte ao centro com quebra-apara - Encabadouro cone Morse com taladro roscado
- Фреза для получистовой обработки со стружколомом. Режущий торец. Хвостовик конус Морзе с резьбой. Ультрадлинная серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €
F18/03	20	110	212	3	4	•
F18/04	22	110	212	3	4	•
F18/05	24	125	227	3	5	•
F18/06	25	125	250	4	5	•
F18/07	26	125	250	4	5	•
F18/08	28	135	260	4	5	•
F18/09	30	140	265	4	5	•
F18/10	32	150	275	4	6	•
F18/11	34	150	275	4	6	•
F18/12	35	150	275	4	6	•
F18/13	36	150	275	4	6	•
F18/14	38	180	305	4	6	•
F18/15	40	180	305	4	6	•
F18/16	45	190	315	4	7	•
F18/17	50	200	360	5	7	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
Cutting data
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■□□
SEMIFINITURA - SEMIFINISHING ■■■■■
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

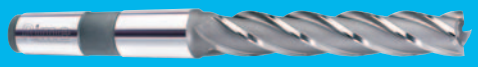

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advanced tools production



SERIE G

Frese per finitura

Finishing end mills

		pag.
G0		97
G2		98
G3		99
G5		100
G6		101
G7		102
G8		103
G9		104
G10		105
G11		106
G12		107
G13		108
G14		109

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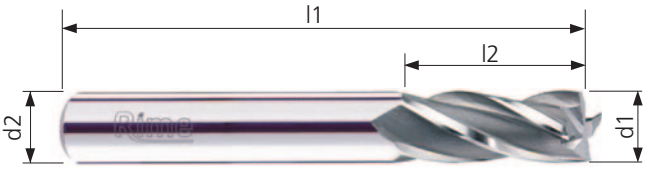

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FRESE PER FINITURA

NORM	TIPO-TYPE	Z4÷6
UNI 8244 DIN 844A ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E C08 | 90° | N | ≃30° | DIN 1835 A

NORMALE

G0

- FRESE PER FINITURA - Codolo cilindrico
- END MILLS - Straight shank
- FRAISES À CYLINDRES - Queue cylindrique
- SCHAFTFRÄSER - Zylinderschaft
- FRESAS CILINDRICAS FRONTALES - Mango cilindrico
- FRESAS FRONTAIS - Encabadouro cilindrico
- Фреза концевая для чистовой обработки. Цилиндрический хвостовик. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
G0/01	2	7	51	6	4	•
G0/02	2.5	8	52	6	4	•
G0/03	3	8	52	6	4	•
G0/04	3.5	10	54	6	4	•
G0/05	4	11	55	6	4	•
G0/06	4.5	11	55	6	4	•
G0/07	5	13	57	6	4	•
G0/08	5.5	13	57	6	4	•
G0/09	6	13	57	6	4	•
G0/10	6.5	16	66	10	4	•
G0/11	7	16	66	10	4	•
G0/12	8	19	69	10	4	•
G0/13	9	19	69	10	4	•
G0/14	10	22	72	10	4	•
G0/15	11	22	79	12	4	•
G0/16	12	26	83	12	4	•
G0/17	13	26	83	12	4	•
G0/18	14	26	83	12	4	•
G0/19	15	32	92	16	4	•
G0/20	16	32	92	16	4	•
G0/21	17	32	92	16	4	•
G0/22	18	32	92	16	4	•
G0/23	19	38	104	20	4	•
G0/24	20	38	104	20	4	•
G0/25	22	38	104	20	4	•
G0/26	24	45	121	25	5	•
G0/27	25	45	121	25	5	•
G0/28	26	45	121	25	5	•
G0/29	28	45	121	25	5	•
G0/30	30	45	121	25	6	•
G0/31	32	53	133	32	6	•

THREADED DIN 1835 D — su richiesta / on request

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

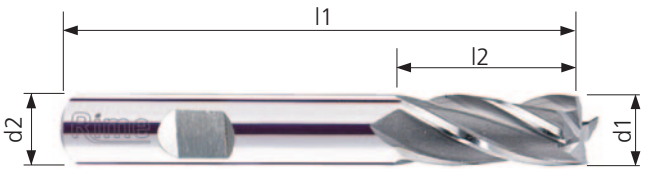
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
G

FRESE PER FINITURA

NORM	TIPO-TYPE	Z4÷8
UNI 8248 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 B

NORMALE

G2

- FRESE PER FINITURA - Due denti frontali taglienti fino al centro - Attacco Weldon
- END MILLS - Two end teeth cutting up to the centre - Weldon shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS FRONTAIS - Duas navalhas que cortam ao centro - Encabadouro Weldon
- Фреза концевая для чистовой обработки. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €	
G2/01	2	7	51	6	4	•	•	
G2/02	2.5	8	52	6	4	•	•	
G2/03	3	8	52	6	4	•	•	
G2/04	3.5	10	54	6	4	•	•	
G2/05	4	11	55	6	4	•	•	
G2/06	4.5	11	55	6	4	•	•	
G2/07	5	13	57	6	4	•	•	
G2/08	5.5	13	57	6	4	•	•	
G2/09	6	13	57	6	4	•	•	
G2/10	6.5	16	66	10	4	•	•	
G2/11	7	16	66	10	4	•	•	
G2/12	8	19	69	10	4	•	•	
G2/12/1	8.5	19	69	10	4	•	•	
G2/13	9	19	69	10	4	•	•	
G2/14	10	22	72	10	4	•	•	
G2/14/1	10.5	22	79	12	4	•	•	
G2/15	11	22	79	12	4	•	•	
G2/16	12	26	83	12	4	•	•	
G2/17	13	26	83	12	4	•	•	
G2/18	14	26	83	12	4	•	•	
G2/19	15	32	92	16	4	•	•	
G2/20	16	32	92	16	4	•	•	
G2/21	17	32	92	16	4	•	•	
G2/22	18	32	92	16	4	•	•	
G2/23	19	38	104	20	4	•	•	
G2/24	20	38	104	20	4	•	•	
G2/25	22	38	104	20	4	•	•	
G2/26	24	45	121	25	5	•	•	
G2/27	25	45	121	25	5	•	•	
G2/28	26	45	121	25	5	•	•	
G2/29	28	45	121	25	5	•	•	
G2/30	30	45	121	25	6	•	•	
G2/31	32	53	133	32	6	•	•	
G2/32	36	53	133	32	6	•	•	
G2/33	40	63	143	32	8	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

COATING **SUPREME**

CODE G2/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■□□□□
SEMIFINITURA - SEMIFINISHING ■■□□□
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

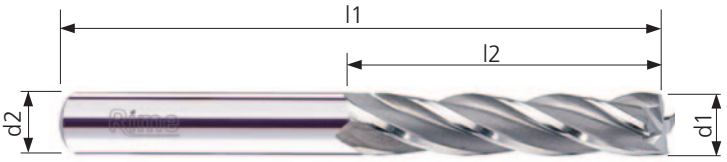
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
G

FRESE PER FINITURA

NORM	TIPO-TYPE	Z4÷6
UNI 8245 DIN 844A ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃ 30° | DIN 1835 A

LUNGA

G3

- FRESE PER FINITURA - Codolo cilindrico
  END MILLS - Straight shank
- FRAISES À CYLINDRES - Queue cylindrique
  SCHAFTFRÄSER - Zylinderschaft
- FRESAS CILINDRICAS FRONTALES - Mango cilindrico
  FRESAS CILINDRICAS FRONTAIS - Encabadouro cilindrico
  Фреза концевая для чистовой обработки. Цилиндрический хвостовик. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
G3/01	2	10	54	6	4	•
G3/02	3	12	56	6	4	•
G3/03	4	19	63	6	4	•
G3/04	5	24	68	6	4	•
G3/05	6	24	68	6	4	•
G3/06	7	30	80	10	4	•
G3/07	8	38	88	10	4	•
G3/08	10	45	95	10	4	•
G3/09	12	53	110	12	4	•
G3/10	14	53	110	12	4	•
G3/10/1	15	63	123	16	4	•
G3/11	16	63	123	16	4	•
G3/12	18	63	123	16	4	•
G3/13	20	75	141	20	4	•
G3/14	22	75	141	20	4	•
G3/15	24	90	166	25	5	•
G3/16	25	90	166	25	5	•
G3/17	26	90	166	25	5	•
G3/18	28	90	166	25	5	•
G3/19	30	90	166	25	6	•
G3/20	32	106	186	32	6	•

THREADED DIN 1835 D — su richiesta / on request

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

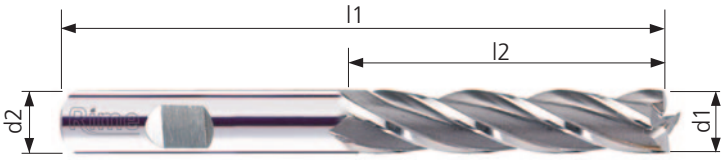
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
G

FRESE PER FINITURA

NORM	TIPO-TYPE	Z4÷6
UNI 8249 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 B

LUNGA

G5

- FRESE PER FINITURA - Due denti frontali taglienti fino al centro - Attacco Weldon
- END MILLS - Two end teeth cutting up to the centre - Weldon shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS - Quatro navalhas que cortam ao centro longa - Encabadouro Weldon
- Фреза концевая для чистовой обработки. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €
G5/01	2	10	54	6	4	•	•
G5/02	3	12	56	6	4	•	•
G5/03	4	19	63	6	4	•	•
G5/04	5	24	68	6	4	•	•
G5/05	6	24	68	6	4	•	•
G5/06	7	30	80	10	4	•	•
G5/07	8	38	88	10	4	•	•
G5/07/1	9	45	95	10	4	•	•
G5/08	10	45	95	10	4	•	•
G5/08/1	11	53	110	12	4	•	•
G5/09	12	53	110	12	4	•	•
G5/09/1	13	53	110	12	4	•	•
G5/10	14	53	110	12	4	•	•
G5/10/1	15	63	123	16	4	•	•
G5/11	16	63	123	16	4	•	•
G5/11/1	17	63	123	16	4	•	•
G5/12	18	63	123	16	4	•	•
G5/13	20	75	141	20	4	•	•
G5/14	22	75	141	20	4	•	•
G5/15	24	90	166	25	5	•	•
G5/16	25	90	166	25	5	•	•
G5/17	26	90	166	25	5	•	•
G5/18	28	90	166	25	5	•	•
G5/19	30	90	166	25	6	•	•
G5/20	32	106	186	32	6	•	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

COATING **SUPREME**

CODE G5/.../**S**

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Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

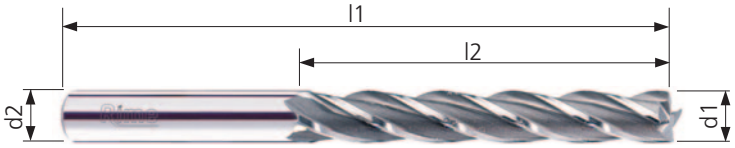
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
G

FRESE PER FINITURA

NORM | TIPO-TYPE | Z4



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 A

EXTRA-LUNGA

G6

- FRESE PER FINITURA - Due denti frontali taglienti fino al centro - Codolo cilindrico
- END MILLS - Two end teeth cutting up to the centre - Straight shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusq'au centre - Queue cylindrique
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Mango cilindrico
- FRESAS CILINDRICAS FRONTAIS - Quatro navalhas que cortam ao centro extra longa - Encabadouro cilindrico
- Фреза концевая для чистовой обработки. Режущий торец. Цилиндрический хвостовик. Ультрадлинная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
G6/01	6	56	106	10	4	•
G6/02	8	63	113	10	4	•
G6/03	10	70	120	10	4	•
G6/04	12	80	137	12	4	•
G6/05	14	80	137	12	4	•
G6/06	16	90	150	16	4	•
G6/07	18	100	166	20	4	•
G6/08	20	110	176	20	4	•
G6/09	22	110	176	20	4	•

Toll. reale sul Ø *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

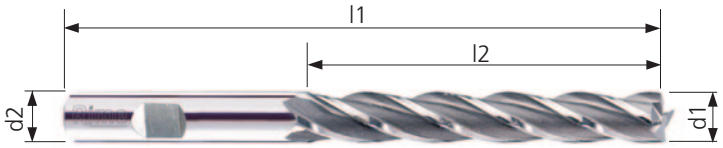
torna all'indice

Rime

SERIE
G

FRESE PER FINITURA

NORM | TIPO-TYPE | Z4



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 B

EXTRA-LUNGA

G7

- FRESE PER FINITURA - Due denti frontali tagienti fino al centro - Attacco Weldon
- END MILLS - Two end teeth cutting up to the centre - Weldon shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS - Quatro navalhas que cortam ao centro extra longa - Encabadouro Weldon
- Фреза концевая для чистовой обработки. Режущий торец. Хвостовик Weldon. Ультрадлинная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
G7/01	6	56	106	10	4	•
G7/02	8	63	113	10	4	•
G7/03	10	70	120	10	4	•
G7/04	12	80	137	12	4	•
G7/05	14	80	137	12	4	•
G7/06	16	90	150	16	4	•
G7/07	18	100	166	20	4	•
G7/08	20	110	176	20	4	•
G7/09	22	110	176	20	4	•

Toll. reale sul Ø
Real Tol. on Ø +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

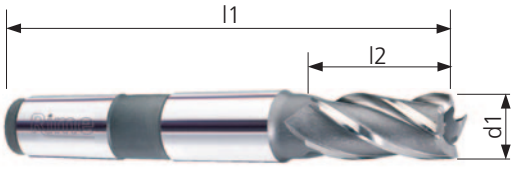
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
G

FRESE PER FINITURA

NORM	TIPO-TYPE	Z4÷8
UNI 8250 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃30° | DIN 228 A

NORMALE

G8

- FRESE PER FINITURA - Codolo conico Morse con foro filettato
- END MILLS - Morse taper shank
- FRAISES À CYLINDRES - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS - Quatro navalhas sem corte ao centro normal - Encabadouro Morse con taladro roscado
- Фреза концевая для чистовой обработки. Хвостовик конус Морзе с резьбой. Средняя серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €	SUPREME €
G8/01	16	32	117	2	4	•	•
G8/02	18	32	117	2	4	•	•
G8/03	20	38	140	3	4	•	•
G8/04	22	38	140	3	4	•	•
G8/05	24	45	147	3	5	•	•
G8/06	25	45	147	3	5	•	•
G8/07	26	45	147	3	5	•	•
G8/08	28	45	147	3	5	•	•
G8/09	30	53	155	3	6	•	•
G8/10	32	53	178	4	6	•	•
G8/11	34	53	178	4	6	•	•
G8/12	35	53	178	4	6	•	•
G8/13	36	53	178	4	6	•	•
G8/14	38	63	188	4	6	•	•
G8/15	40	63	188	4	8	•	•
G8/16	45	63	188	4	8	•	•
G8/17	50	75	233	5	8	•	•

Toll. reale sul Ø *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

COATING **SUPREME**

CODE G8/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	□	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

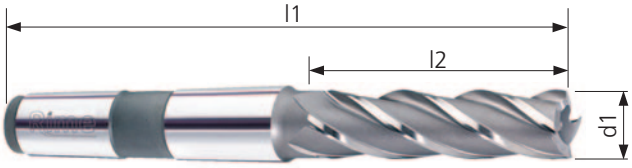
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
G

FRESE PER FINITURA

NORM	TIPO-TYPE	Z4÷8
UNI 8251 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | N | ≃30° | DIN 228 A

LUNGA

G9

- FRESE PER FINITURA - Codolo conico Morse con foro filettato
- END MILLS - Morse taper shank
- FRAISES À CYLINDRES - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS - Quatro navalhas sem corte ao centro longa - Encabadouro Morse
- Фреза концевая для чистовой обработки. Хвостовик конус Морзе с резьбой. Удлиненная серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €	SUPREME €	
G9/01	16	63	148	2	4	•	•	
G9/02	18	63	148	2	4	•	•	
G9/03	20	75	177	3	4	•	•	
G9/04	22	75	177	3	4	•	•	
G9/05	24	90	192	3	5	•	•	
G9/06	25	90	192	3	5	•	•	
G9/07	26	90	192	3	5	•	•	
G9/08	28	90	192	3	5	•	•	
G9/09	30	90	192	3	6	•	•	
G9/10	32	106	231	4	6	•	•	
G9/11	34	106	231	4	6	•	•	
G9/12	35	106	231	4	6	•	•	
G9/13	36	106	231	4	6	•	•	
G9/14	38	125	250	4	6	•	•	
G9/15	40	125	250	4	8	•	•	
G9/16	45	125	250	4	8	•	•	
G9/17	50	150	308	5	8	•	•	

Toll. reale sul Ø *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

COATING **SUPREME**

CODE G9/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	□	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

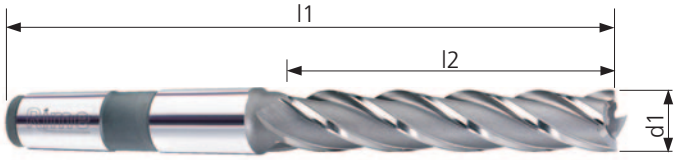
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
G

FRESE PER FINITURA

NORM | TIPO-TYPE | Z4÷8



HSS-E C08 | 90° | N | ≃30° | DIN 228 A

EXTRA-LUNGA

G10

- FRESE PER FINITURA - Codolo conico Morse con foro filettato
- END MILLS - Morse taper shank
- FRAISES À CYLINDRES - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS - Quatro navalhas sem corte ao centro extra longa - Encabadouro Morse con taladro roscado
- Фреза концевая для чистовой обработки. Хвостовик конус Морзе с резьбой. Ультрадлинная серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €
G10/01	16	90	175	2	4	•
G10/02	18	100	202	3	4	•
G10/03	20	110	212	3	4	•
G10/04	22	110	212	3	4	•
G10/05	25	125	250	4	5	•
G10/06	28	135	260	4	5	•
G10/07	30	140	265	4	6	•
G10/08	32	150	275	4	6	•
G10/09	35	150	275	4	6	•
G10/10	36	150	275	4	6	•
G10/11	38	180	305	4	6	•
G10/12	40	180	305	4	8	•

Toll. reale sul Ø *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ☐☐☐☐☐
SEMIFINITURA - SEMIFINISHING ☐☐☐☐☐
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	☐	☐	☐

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	☐	☐

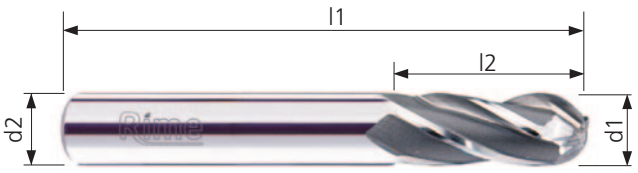
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED ☐

Rime

SERIE
G

FRESE PER FINITURA A TESTA SEMISFERICA

NORM	TIPO-TYPE	Z4÷6
ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | r | N | ≃30° | DIN 1835 A

NORMALE

G11

- FRESE PER FINITURA A TESTA SEMISFERICA - Due denti frontali taglienti fino al centro - Codolo cilindrico
- BALL-NOSED END MILLS - Two end teeth cutting up to the centre - Straight shank
- FRAISES À CYLINDRES À BOUT HÉMISPHERÏQUE - Deux dents bout coupantes jusq'au centre - Queue cylindrique
- HALBRUNDKOPFFRÄSER - Zwei Schneiden mit Zentrumschnitt - Zylinderschaft
- FRESAS CILINDRICAS FRONTALES CABEZA SEMIESFÉRICA - Dos labios que cortan hasta el centro - Mango cilindrico
- FRESAS CILINDRICAS FRONTAIS BOLEADAS - Quatro navalhas que cortam ao centro normal - Encabadouro cilindrico
- Фреза концевая для чистовой обработки. Сферический торец. Цилиндрический хвостовик. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
G11/03	4	11	55	6	4	•
G11/04	5	13	57	6	4	•
G11/05	6	13	57	6	4	•
G11/06	8	19	69	10	4	•
G11/07	10	22	72	10	4	•
G11/08	12	26	83	12	4	•
G11/09	14	26	83	12	4	•
G11/10	15	32	92	16	4	•
G11/11	16	32	92	16	4	•
G11/12	18	32	92	16	4	•
G11/13	20	38	104	20	4	•
G11/14	22	38	104	20	4	•
G11/15	24	45	121	25	5	•
G11/16	25	45	121	25	5	•
G11/17	26	45	121	25	5	•
G11/18	28	45	121	25	5	•
G11/19	30	45	121	25	6	•
G11/20	32	53	133	32	6	•

THREADED DIN 1835 D — su richiesta / on request

WELDON DIN 1835 B — su richiesta / on request

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■□□□□
SEMIFINITURA - SEMIFINISHING ■■□□□
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
□	◪	■	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

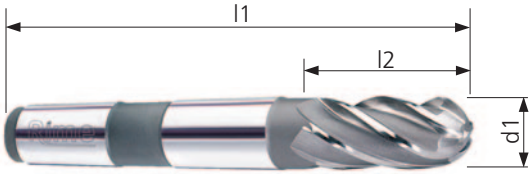
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
G

FRESE PER FINITURA A TESTA SEMISFERICA

NORM	TIPO-TYPE	Z4÷6
ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8	r	
N	≃30°	DIN 228 A

NORMALE

G12

- FRESE PER FINITURA A TESTA SEMISFERICA - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- BALL-NOSED END MILLS - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES À CYLINDRES À BOUT HÉMISPHERÏQUE - Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- HALBRUNDKOPFFRÄSER - Zwei Schneiden mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES CABEZA SEMIESFÉRICA - Dos labios que cortan hasta el centro - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS BOLEADAS - Quatro navalhas que cortam ao centro normal - Encabadouro cone Morse con taladro roscado
- Фреза концевая для чистовой обработки. Сферический торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €
G12/01	16	32	117	2	4	•
G12/01/1	18	32	117	2	4	•
G12/02	20	38	140	3	4	•
G12/03	22	38	140	3	4	•
G12/04	24	45	147	3	5	•
G12/05	25	45	147	3	5	•
G12/05/1	26	45	147	3	5	•
G12/06	28	45	147	3	5	•
G12/07	30	53	155	3	6	•
G12/08	32	53	178	4	6	•

Toll. reale sul Ø
Real Tol. on Ø +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■□□□□
SEMIFINITURA - SEMIFINISHING ■■□□□
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
□	◪	■	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

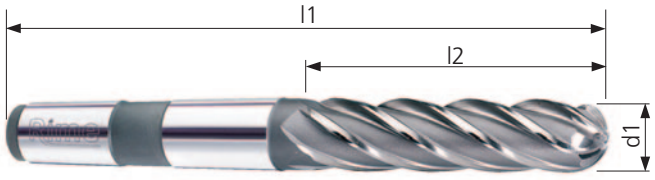
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
G

FRESE PER FINITURA A TESTA SEMISFERICA

NORM	TIPO-TYPE	Z4÷6
ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8	r	
N	≃30°	DIN 228 A

LUNGA

G13

- FRESE PER FINITURA A TESTA SEMISFERICA - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- BALL-NOSED END MILLS - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES À CYLINDRES À BOUT HÉMISPHERÏQUE - Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- HALBRUNDKOPFFRÄSER - Zwei Schneiden mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES CABEZA SEMIESFÉRICA - Dos labios que cortan hasta el centro - Mango conico Morse con taladro roscado
- Fresas cilindricas boleadas longas de quatro navalhas que cortam ao centro - Encabadouro cone Morse con taladro roscado
- Фреза концевая для чистовой обработки. Сферический торец. Хвостовик конус Морзе с резьбой. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €
G13/01	16	63	148	2	4	•
G13/01/1	18	63	148	2	4	•
G13/02	20	75	177	3	4	•
G13/03	22	75	177	3	4	•
G13/04	24	90	192	3	5	•
G13/05	25	90	192	3	5	•
G13/05/1	26	90	192	3	5	•
G13/06	28	90	192	3	5	•
G13/07	30	90	192	3	6	•
G13/08	32	106	231	4	6	•

Toll. reale sul Ø *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■□□□□
SEMIFINITURA - SEMIFINISHING ■□□□□
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
□	◪	■	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

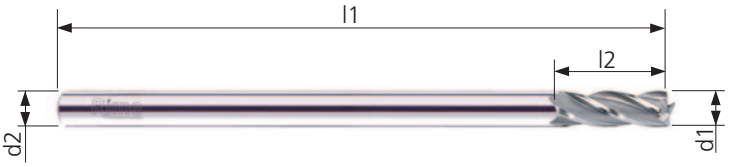
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
G

FRESE PER FINITURA EXTRA-LUNGA

NORM | TIPO-TYPE | Z4



HSS-E Co8 | 90° | N | ≃30° | DIN 1835 A

EXTRA-LUNGA

G14

- FRESE PER FINITURA EXTRA-LUNGA - Due denti frontali taglienti fino al centro - Codolo cilindrico
- COPY MILLING CUTTERS FOR FINISHING - Two end teeth cutting up to the centre -Straight shank
- FRAISES POUR FINITION À COPIER - Deux dents bout coupantes jusq'au centre - Queue cylindrique
- NACHFORMFRÄSER - Zwei Schneiden mit Zentrumschnitt - Zylinderschaft
- FRESAS EN COPIADO - Dos labios que cortan hasta el centro - Mango cilindrico
- FRESAS DE COPIA - Dos navalhas que cortam ao centro - Encabadouro cilindrico
- Фреза концевая с режущим торцем. Цилиндрический хвостовик. Ультрадлинная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
G14/01	6	25	180	6	4	•
G14/02	8	25	180	8	4	•
G14/03	10	30	200	10	4	•
G14/04	12	30	200	12	4	•
G14/06	16	35	200	16	4	•
G14/08	20	35	200	20	4	•

Toll. reale sul Ø *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■□□□□
SEMIFINITURA - SEMIFINISHING ■□□□□
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	◪	□	◪	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □


Rime
advanced tools production



SERIE UMAX

Frese per sgrossatura e finitura

Roughing and finishing end mills

		pag.
UM0		112
UM1		113
UM4		114
UM5		115
UM7		116
UM8		117

Serie UMAX

La fresa UMAX è una fresa universale pertanto può eseguire lavori sia di sgrossatura sia di finitura.
Principali caratteristiche della fresa UMAX:
1) grande capacità di asportazione di truciolo anche da materiali molto difficili
2) con la stessa fresa si ottiene un'ottima finitura.

UMAX Series

UMAX end mills are universal mills, which can carry out different roughing and finishing workings.
The main characteristics of UMAX end mills are as follows:
1) they can easily remove shaving also from very difficult materials
2) a very good finishing degree can be granted by using the same end mill.

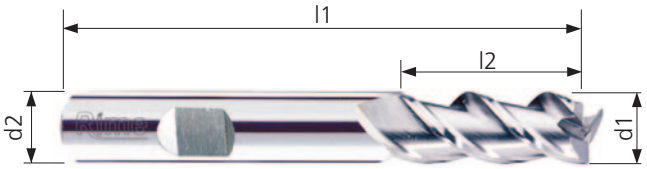
torna all'indice

Rime

SERIE
Umax

FRESE CILINDRICHE FRONTALI AD ALTE PRESTAZIONI

NORM | TIPO-TYPE | Z3 | Z4



HSS-E Co8 | 45° 0,05–0,15 | IRREGULAR | DIN 1835 B

N | 45° | IRREGULAR

NORMALE

UM0

- FRESE CILINDRICHE FRONTALI - Due denti frontali taglienti fino al centro - Elica destra 45° - Divisione irregolare - Attacco Weldon
- END MILLS - Two end teeth cutting up to the centre - 45° right hand spiral - Irregular division - Weldon shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusqu'au centre - Hélice 45° à droite - Division irréguliere - Queue cylindrique Weldon
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - 45° rechts spiralgenutet - Unregelmäßige Teilung - Weldon-Spannfläche
- FRESAS CILINDRICAS FRONTALEs - Dos labios que cortan hasta el centro - Hélice derecha - División irregular - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS - Duas navalhas de corte ao centro normal - Encabadouro Weldon
- Фреза концевая с непостоянным шагом зуба. Угол винтовой канавки 45°. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €
UM0/01	4	11	55	6	3	•	•
UM0/02	5	13	57	6	3	•	•
UM0/03	6	13	57	6	3	•	•
UM0/04	7	16	66	10	3	•	•
UM0/05	8	20	69	10	3	•	•
UM0/06	9	20	69	10	3	•	•
UM0/07	10	22	72	10	3	•	•
UM0/08	11	26	83	12	3	•	•
UM0/09	12	26	83	12	3	•	•
UM0/10	13	26	83	12	3	•	•
UM0/11	14	26	83	12	3	•	•
UM0/12	15	36	92	16	3	•	•
UM0/13	16	36	92	16	3	•	•
UM0/14	17	40	100	16	4	•	•
UM0/15	18	40	100	16	4	•	•
UM0/15/1	19	40	100	16	4	•	•
UM0/16	20	45	110	20	4	•	•
UM0/17	22	45	110	20	4	•	•
UM0/18	25	50	125	25	4	•	•
UM0/19	28	56	125	25	4	•	•
UM0/20	30	63	140	25	4	•	•
UM0/21	32	63	140	32	4	•	•
UM0/22	35	70	160	32	4	•	•
UM0/23	38	70	160	32	4	•	•
UM0/24	40	70	160	32	4	•	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

COATING **SUPREME**

CODE UM0/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

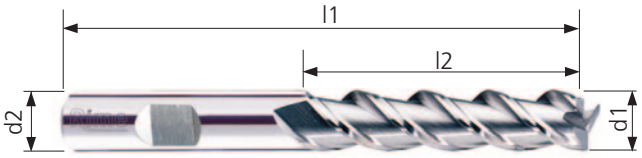
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
Umax

FRESE CILINDRICHE FRONTALI AD ALTE PRESTAZIONI

NORM | TIPO-TYPE | Z3 | Z4



HSS-E C08 | 45° 0,05–0,15 | IRREGULAR | DIN 1835 B

N | 45° | IRREGULAR

LUNGA

UM1

- FRESE CILINDRICHE FRONTALI - Due denti frontali taglienti fino al centro - Elica destra 45° - Divisione irregolare - Attacco Weldon
- END MILLS - Two end teeth cutting up to the centre - 45° right hand spiral - Irregular division - Weldon shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusq'au centre - Hélice 45° à droite - Division irréguliere - Queue cylindrique Weldon
- SCHAFTFRÄSER - Zwei Schneides mit Zentrumschnitt - 45° rechts spiralgenutet - Unregelmäßige Teilung - Weldon - Spannfläche
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Hélice derecha 45° - División irregular - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS - Três navalhas de corte ao centro longa - Encabadouro Weldon
- Фреза концевая с непостоянным шагом зуба. Угол винтовой канавки 45°. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €	
UM1/01	6	26	68	6	3	•	•	
UM1/02	8	38	88	10	3	•	•	
UM1/03	10	45	95	10	3	•	•	
UM1/04	12	50	100	12	3	•	•	
UM1/05	14	50	100	12	3	•	•	
UM1/06	16	56	110	16	3	•	•	
UM1/07	18	63	125	16	4	•	•	
UM1/08	20	70	140	20	4	•	•	
UM1/09	22	70	140	20	4	•	•	
UM1/10	25	80	156	25	4	•	•	
UM1/11	28	90	166	25	4	•	•	
UM1/12	30	90	166	25	4	•	•	
UM1/13	32	90	166	32	4	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

Ulteriori diametri a richiesta
Other diameters on demand

COATING **SUPREME**

CODE UM1/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

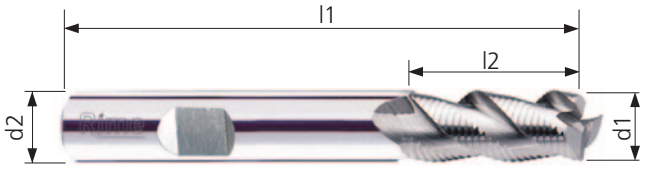
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
Umax

FRESE CILINDRICHE FRONTALI AD ALTE PRESTAZIONI

NORM | TIPO-TYPE | Z3



HSS-E Co8 | 45° 0,05–0,15 | NR | 45° | DIN 1835 B

NORMALE

UM4

- FRESE CILINDRICHE FRONTALI - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Un dente frontale tagliente fino al centro - Elica destra 45° - Attacco Weldon
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - One end tooth cutting up to the centre - 45° right hand spiral - Weldon shank
- FRAISES FRONTALES À CYLINDRES À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Une dent bout coupante jusq'au centre - Hélice 45° à droite - Queue cylindrique Weldon
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spanbrecher - Eine Schneide mit Zentrumschnitt - 45° rechts spiralgenutet - Weldon-Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta - Un labio que corta hasta el centro - Hélice derecha 45°- Mango Weldon
- FRESAS DE TRÊS NAVALHAS COM QUEBRA APARA E CORTE AO CENTRO NORMAL - Encabadouro Weldon
- Фреза концевая для черновой обработки с непостоянным шагом зуба. Угол винтовой канавки 45°. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €	SUPREME €	
UM4/00	5	13	57	6	3	•	•	
UM4/01	6	13	57	6	3	•	•	
UM4/02	7	16	66	10	3	•	•	
UM4/03	8	19	69	10	3	•	•	
UM4/04	9	19	69	10	3	•	•	
UM4/05	10	22	72	10	3	•	•	
UM4/06	11	22	79	12	3	•	•	
UM4/07	12	26	83	12	3	•	•	
UM4/08	13	26	83	12	3	•	•	
UM4/09	14	26	83	12	3	•	•	
UM4/10	15	32	92	16	3	•	•	
UM4/11	16	32	92	16	3	•	•	
UM4/12	17	32	92	16	3	•	•	
UM4/13	18	32	92	16	3	•	•	
UM4/14	20	38	104	20	3	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

COATING **SUPREME**

CODE UM4/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	■	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	□	□

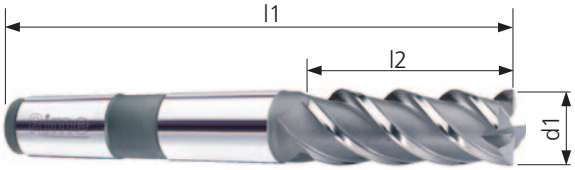
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
Umax

FRESE CILINDRICHE FRONTALI AD ALTE PRESTAZIONI

NORM | TIPO-TYPE | Z3÷4



HSS-E C08 | 45° 0,05–0,15 | IRREGULAR | DIN 228 A

N | 45° | IRREGULAR

NORMALE

UM5

- FRESE CILINDRICHE FRONTALI - Due denti frontali taglienti fino al centro - Elica destra 45° Divisione irregolare - Codolo conico Morse con foro filettato
- END MILLS - Two end teeth cutting up to the centre - 45° right hand spiral - Irregular division - Morse taper shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusqu'au centre - Hélice 45° à droite - Division irréguliere - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - 45° rechts spiralgenutet - Unregelmäßige Teilung - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Hélice derecha 45° - División irregular - Mango cónico Morse con taladro roscado
- FRESAS DE TRÊS NAVALHAS - Corte ao centro normal - Encabadouro cone Morse con taladro roscado
- Фреза концевая с непостоянным шагом зуба. Угол винтовой канавки 45°. Режущий торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE (Co 8%)	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €	SUPREME €
UM5/01	16	36	115	2	3	•	•
UM5/02	18	40	120	2	4	•	•
UM5/03	20	45	145	3	4	•	•
UM5/04	22	45	145	3	4	•	•
UM5/05	24	50	150	3	4	•	•
UM5/06	25	50	150	3	4	•	•
UM5/07	26	56	155	3	4	•	•
UM5/08	28	56	155	3	4	•	•
UM5/09	30	63	165	3	4	•	•
UM5/10	32	63	185	4	4	•	•
UM5/11	34	70	195	4	4	•	•
UM5/12	35	70	195	4	4	•	•
UM5/13	36	70	195	4	4	•	•
UM5/14	38	70	195	4	4	•	•
UM5/15	40	70	195	4	4	•	•
UM5/16	45	80	205	4	4	•	•
UM5/17	50	90	215	4	4	•	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

COATING **SUPREME**

CODE UM5/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	■	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	□

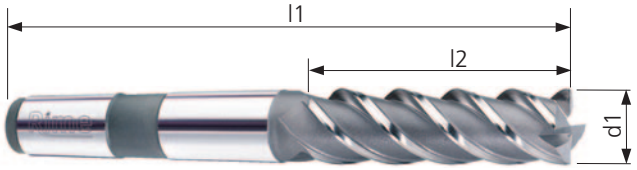
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
Umax

FRESE CILINDRICHE FRONTALI AD ALTE PRESTAZIONI

NORM | TIPO-TYPE | Z3÷4



HSS-E C08 | 45° 0,05–0,15 | IRREGULAR | DIN 228 A
N | 45° | IRREGULAR

LUNGA

UM7

- FRESE CILINDRICHE FRONTALI - Due denti frontali taglienti fino al centro - Elica destra 45° - Divisione irregolare - Codolo conico Morse con foro filettato
- END MILLS - Two end teeth cutting up to the centre - 45° right hand spiral - Irregular division - Morse taper shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusqu'au centre - Hélice 45° à droite - Division irréguliere - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - 45° rechts spiralgenutet - Unregelmäßige Teilung - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Hélice derecha 45° - División irregular - Mango cónico Morse taladro roscado
- FRESAS DE TRÊS NAVALHAS - Corte ao centro longa - Encabadouro cone Morse con taladro roscado
- Фреза концевая с непостоянным шагом зуба. Угол винтовой канавки 45°. Режущий торец. Хвостовик конус Морзе с резьбой. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €
UM7/01	16	56	135	2	3	•
UM7/02	18	63	145	2	4	•
UM7/03	20	70	170	3	4	•
UM7/04	22	70	170	3	4	•
UM7/05	24	80	180	3	4	•
UM7/06	25	80	180	3	4	•
UM7/07	26	80	180	3	4	•
UM7/08	28	90	215	4	4	•
UM7/09	30	90	215	4	4	•
UM7/10	32	100	225	4	4	•
UM7/11	34	110	235	4	4	•
UM7/12	35	110	235	4	4	•
UM7/13	36	110	235	4	4	•
UM7/14	38	110	235	4	4	•
UM7/15	40	110	235	4	4	•
UM7/16	45	120	245	4	4	•
UM7/17	50	140	265	4	4	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping

Materiali Materials

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

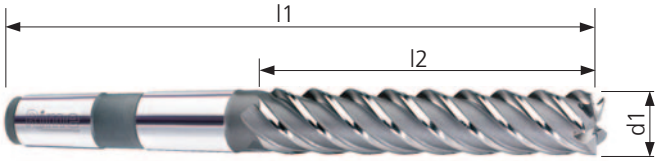
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
Umax

FRESE CILINDRICHE FRONTALI AD ALTE PRESTAZIONI

NORM | TIPO-TYPE | Z4÷5



HSS-E C08 | N | 45° 0,05-0,15 | 45° | IRREGULAR | IRREGULAR | DIN 228 A

EXTRA-LUNGA

UM8

- FRESE CILINDRICHE FRONTALI - Due denti frontali taglienti fino al centro - Elica destra 45° Divisione irregolare - Codolo conico Morse con foro filettato
- END MILLS - Two end teeth cutting up to the centre - 45° right hand spiral - Irregular division - Morse taper shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusq'au centre - Hélice 45° à droite - Division irréguliere - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - 45° rechts spiralgenutet - Unregelmäßige Teilung - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Hélice derecha 45° - División irregular - Mango cónico Morse con taladro roscado
- FRESAS DE TRÊS NAVALHAS - Corte ao centro extra longa - Encabadouro cone Morse con taladro roscado
- Фреза концевая с непостоянным шагом зуба. Угол винтовой канавки 45°. Режущий торец. Хвостовик конус Морзе с резьбой. Ультрадлинная серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	Co 8% €
UM8/01	16	90	170	2	4	•
UM8/02	18	100	200	3	4	•
UM8/03	20	110	210	3	4	•
UM8/04	22	110	210	3	4	•
UM8/05	25	125	225	3	5	•
UM8/06	28	140	265	4	5	•
UM8/07	30	140	265	4	5	•
UM8/08	32	160	285	4	5	•
UM8/09	35	180	305	4	5	•
UM8/10	40	200	335	4	5	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

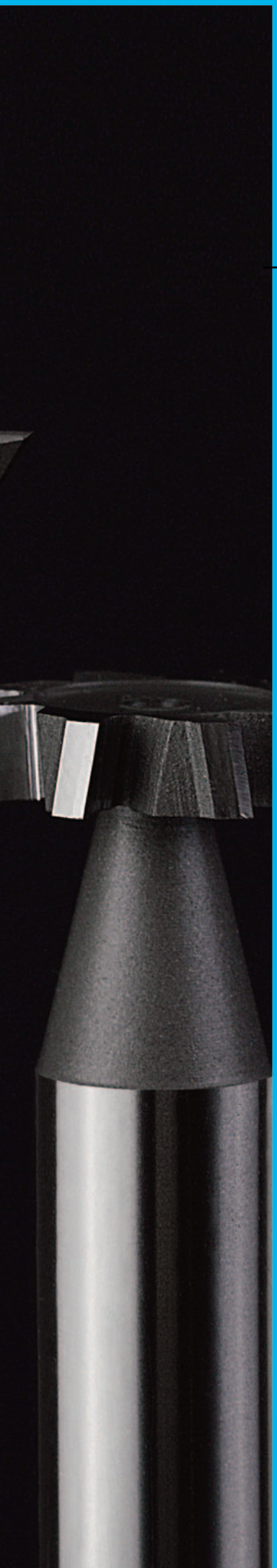
Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
☐	■	☐	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	☐	☐	☐

■ CONSIGLIATO RECOMMENDED
◪ ACCETTABILE ACCEPTABLE
☐ SCONSIGLIATO NOT RECOMMENDED


Rime
advanced tools production



SERIE R-S

Frese a "T" e di forma

"T" slot cutters, woodruff, conical and form cutters

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R4		124
R3		125
R5/A		126
R5/B		127
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S3		129
S4		130
SC1		131
SC2		132
SC3		133

torna all'indice

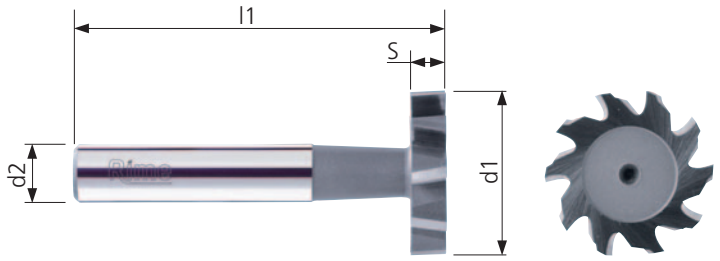

advanced tools production
design and technology
Rime
advanced tools production

Rime

SERIE
R-S

FRESE PER SEDI DI LINGUETTE AMERICANE

NORM	TIPO-TYPE	Z8÷12
UNI 8263 DIN 850B	SHORT NORMAL LONG EXTRA-LONG	



HSS-E
C08

90°

N

DIN
1835 A

R0

- FRESE PER SEDI DI LINGUETTE AMERICANE - Denti elicoidali alternati - Codolo cilindrico
- WOODRUFF KEYSEAT CUTTERS - Staggered helical teeth - Straight shank
- FRAISES POUR CLAVETTES WOODRUFF - Denture hélicoïdale alternée - Queue cylindrique
- SCHLITZFRÄSER FÜR SCHEIBENFEDER-NUTEN - Kreuzverzahnt - Zylinderschaft
- FRESAS WOODRUFF - Labios helicoidales alternados - Mango cilindrico
- FRESAS WOODRUFF - Oito navalhas helicoidales alternados - Encabadouro cilindrico
- Фреза "Т-образная" с разнонаправленными зубьями. Цилиндрический хвостовик

CODE	d1 x s mm	l1 mm	d2 mm h6	Z	Co 8% €
R0/01	10.5x2	50	6	8	•
R0/02	10.5x2.5	50	6	8	•
R0/03	10.5x3	50	6	8	•
R0/04	13.5x2	56	10	8	•
R0/05	13.5x3	56	10	8	•
R0/06	13.5x4	56	10	8	•
R0/07	16.5x3	56	10	8	•
R0/08	16.5x4	56	10	8	•
R0/09	16.5x5	56	10	8	•
R0/10	16.5x6	56	10	8	•
R0/11	19.5x3	63	10	8	•
R0/12	19.5x4	63	10	8	•
R0/13	19.5x5	63	10	8	•
R0/14	19.5x6	63	10	8	•
R0/15	22.5x4	63	10	10	•
R0/16	22.5x5	63	10	10	•
R0/17	22.5x6	63	10	10	•
R0/18	22.5x8	63	10	10	•
R0/19	25.5x5	63	10	10	•
R0/20	25.5x6	63	10	10	•
R0/21	25.5x7	63	10	10	•
R0/22	25.5x8	63	10	10	•
R0/23	28.5x6	63	10	10	•
R0/24	28.5x7	63	10	10	•
R0/25	28.5x8	63	10	10	•
R0/26	28.5x10	71	12	10	•
R0/27	32.5x6	71	12	10	•
R0/28	32.5x7	71	12	10	•
R0/29	32.5x8	71	12	10	•
R0/30	32.5x10	71	12	10	•
R0/31	45.5x10	71	12	12	•

THREADED DIN 1835 D — su richiesta / on request

WELDON DIN 1835 B — su richiesta / on request

Toll. reale sullo spessore / *Real Tol. on thickness* +0 -0,02

Toll. reale sul Ø / *Real Tol. on Ø* +0,05 -0

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Chiavetta Key seat
■	□	□	□	□	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

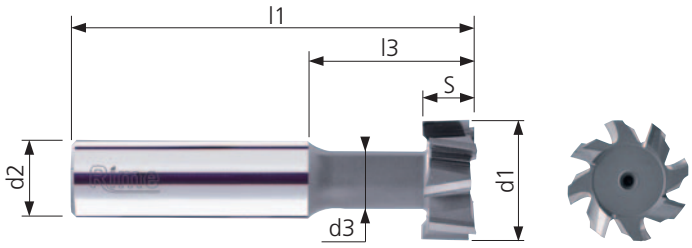
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
R-S

FRESE PER SCANALATURE A "T"

NORM	TIPO-TYPE	Z8
UNI 7339A DIN 851AA ISO 3337	SHORT NORMAL LONG EXTRA-LONG	



HSS-E C08 | 90° | N | DIN 1835 A

R1

- FRESE PER SCANALATURE A "T" - Denti elicoidali alternati - Codolo cilindrico
- "T"-SLOT CUTTERS - Staggered helical teeth - Straight shank
- FRAISES POUR RAINURES À "T" - Denture hélicoïdale alternée - Queue cylindrique
- SCHAFTFRÄSER FÜR T-NUTEN - Kreuzverzahnt - Zylinderschaft
- FRESAS EN "T" - Labios helicoidales alternados - Mango cilindrico
- FRESAS EN "T" - Oito navalhas helicoidales alternados - Encabadouro cilindrico
- Фреза "Т-образная" с разнонаправленными зубьями. Цилиндрический хвостовик

CODE	d1 x s mm	l1 mm	l3 mm	d2 mm h6	d3 mm h6	Z	Co 8% €
R1/01	12.5x6	57	17	10	5,8	8	•
R1/02	16x8	62	22	10	7,0	8	•
R1/03	18x8	70	25	12	7,5	8	•
R1/04	19x9	70	26	12	8,0	8	•
R1/05	21x9	74	29	12	9,5	8	•
R1/06	22x10	74	30	12	10,0	8	•
R1/07	25x11	82	34	16	12,0	8	•
R1/08	28x12	85	37	16	13,0	8	•
R1/09	32x14	90	42	16	15,0	8	•

THREADED DIN 1835 D — su richiesta / on request

WELDON DIN 1835 B — su richiesta / on request

Toll. reale sullo spessore / *Real Tol. on thickness* +0 -0,02

Toll. reale sul Ø / *Real Tol. on Ø* +0,05 -0

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting ■ | Contornatura Side milling ◪ | Copia 3D 3D copying □ | Assiale Axial □ | Rampa Ramping □ | Cava a "T" "T" slotting ■

Materiali Materials

ACCIAI STEELS ■ | GHISE CAST IRON ■ | ACCIAI INOSSIDABILI STAINLESS STEELS ◪ | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM ◪ | LEGHE LEGGERE LIGHT ALLOYS ◪ | MATERIALI NON FERROSI NON FERROUS MATERIAL ◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

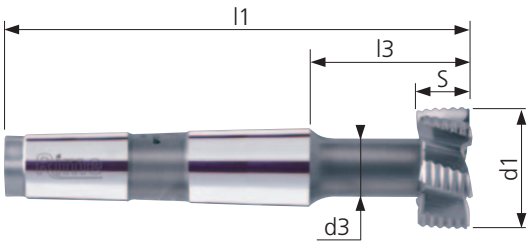
SERIE
R-S

FRESE PER SCANALATURE A "T" PER SGROSSATURA

NORM: DIN 851B / ISO 3337

TIPO-TYPE: SHORT · NORMAL · LONG · EXTRA-LONG

Z5÷10





HSS-E Co8 · 45° · NR · DIN 228 A

R2

- FRESE PER SCANALATURE A "T" PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Codolo conico Morse con foro filettato
- "T"-SLOT ROUGHING CUTTERS - Helical teeth with form relieved entirely ground chip-breaker - Morse taper shank
- FRAISES POUR RAINURES À "T" À DEGROSSIR - Denture hélicoïdale avec brise-copeaux dépouillé entièrement rectifié - Queue au cône Morse à trou fileté
- SCHAFTSCHRUPPFRÄSER FÜR T-NUTEN - Schrägschneiden mit voll eingeschliffenem Spanbrecher - Morsekegelschaft und Anzugsgewinde
- FRESAS PARA RANURAS EN "T" PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Mango cónico Morse taladro roscado
- FRESAS PARA RANHURAS EM "T" PARA DESBASTE - Cinco navalhas helicoidal com quebra apara - Encabadouro cone Morse con taladro roscado
- Фреза "Т-образная" для черновой обработки. Хвостовик конус Морзе с резьбой

CODE	d1 x s mm	d3 mm h6	l1 mm	l3 mm	CM-MK	Z	Co 8% €
R2/03	18x8	7,5	82	25	1	5	•
R2/04	19x9	8,0	82	25	1	5	•
R2/05	21x9	9,5	102	33	2	5	•
R2/06	22x10	10,0	102	33	2	5	•
R2/07	25x11	12,0	104	35	2	5	•
R2/08	28x12	13,5	106	37	2	6	•
R2/09	32x14	15,0	111	42	2	6	•
R2/10	36x16	17,0	133	47	3	8	•
R2/11	40x18	19,0	140	54	3	8	•
R2/12	45x20	20,5	143	57	3	8	•
R2/13	50x22	27,0	177	68	4	8	•
R2/14	56x24	27,0	182	70	4	10	•

Toll. reale sullo spessore *Real Tol. on thickness* +0 -0,02

Toll. reale sul Ø *Real Tol. on Ø* +0,05 -0

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Cava a "T" "T" slotting
■	◪	□	□	□	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	□

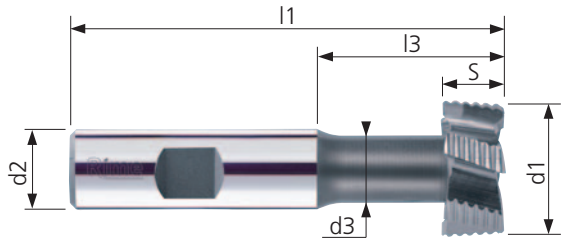
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
R-S

FRESE PER SCANALATURE A "T" PER SGROSSATURA

NORM	TIPO-TYPE	Z4÷8
DIN 851B ISO 3337	SHORT NORMAL LONG EXTRA-LONG	





HSS-E C08 | 45° | NR | DIN 1835 B

R4

- FRESE PER SCANALATURE A "T" PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Attacco Weldon
- "T"-SLOT ROUGHING CUTTERS - Helical teeth with form relieved entirely ground chip-breaker - Weldon shank
- FRAISES POUR RAINURES À "T" À DEGROSSIR - Denture hélicoïdale avec brise-copeaux dépouillé entièrement rectifié - Queue cylindrique Weldon
- SCHAFTSCHRUPPFRÄSER FÜR T-NUTEN - Schrägschneiden mit voll eingeschliffenem Spanbrecher - Weldon-Spannfläche
- FRESAS PARA RANURAS EN "T" PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Mango Weldon
- FRESAS PARA RANHURAS EM "T" PARA DESBASTE - Cinco navalhas helicoidal com quebra apara - Encabadouro Weldon
- Фреза "Т-образная" для черновой обработки. Хвостовик Weldon

CODE	d1 x s mm	l1 mm	l3 mm	d2 mm h6	d3 mm h6	Z	Co 8% €
R4/01	12.5x6	57	17	10	5,8	4	•
R4/02	16x8	62	24	10	8,0	5	•
R4/03	18x8	70	25	12	7,5	5	•
R4/04	19x9	70	25	12	8,0	5	•
R4/05	21x9	74	29	12	9,5	5	•
R4/06	22x10	74	33	12	10,0	5	•
R4/07	25x11	82	35	16	12,0	5	•
R4/08	28x12	85	37	16	13,5	6	•
R4/09	32x14	90	42	16	15,0	6	•
R4/10	36x16	108	47	25	17,0	6	•
R4/11	40x18	108	54	25	19,0	8	•

Toll. reale sullo spessore *Real Tol. on thickness* +0 -0,02

Toll. reale sul Ø *Real Tol. on Ø* +0,05 -0

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Cava a "T" "T"slotting
■	◪	□	□	□	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	□

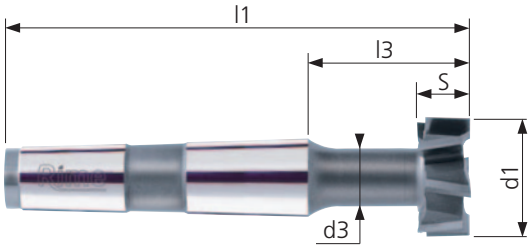
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
R-S

FRESE PER SCANALATURE A "T"

NORM	TIPO-TYPE	Z8÷10
UNI 7339B DIN 851B ISO 3337	SHORT NORMAL LONG EXTRA-LONG	





HSS-E C08 | N | DIN 228 A

R3

- FRESE PER SCANALATURE A "T" - Denti elicoidali alternati - Codolo conico Morse con foro filettato
- "T"-SLOT CUTTERS - Stagged helical teeth - Morse taper shank
- FRAISES POUR RAINURES À "T" - Denture hélicoïdale alternée - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER FÜR T-NUTEN - Kreuzverzahnt - Morsekegelschaft und Anzugsgewinde
- FRESAS PARA RANURAS EN "T" - Labios helicoidales alternados - Mango cónico Morse con taladro roscado
- FRESAS PARA RANHURAS EN "T" - Oito navalhas helicoidales alternados - Encabadouro cone Morse con taladro roscado
- Фреза "Т-образная" с разнонаправленными зубьями. Хвостовик конус Морзе с резьбой

CODE	d1 x s mm	d3 mm h6	l1 mm	l3 mm	CM-MK	Z	Co 8% €
R3/01	12.5x6	5,8	72	15,5	1	8	•
R3/02	16x8	7,0	77	20,0	1	8	•
R3/03	18x8	7,5	82	25,0	1	8	•
R3/04	19x9	8,0	82	25,0	1	8	•
R3/05	21x9	9,5	102	33,0	2	8	•
R3/06	22x10	10,0	102	33,0	2	8	•
R3/07	25x11	12,0	104	35,0	2	8	•
R3/08	28x12	13,5	106	37,0	2	8	•
R3/09	32x14	15,0	111	42,00	2	8	•
R3/10	36x16	17,0	133	47,00	3	8	•
R3/11	40x18	19,0	140	54,00	3	8	•
R3/12	45x20	20,5	143	57,00	3	8	•
R3/13	50x22	27,0	177	68,00	4	10	•
R3/14	56x24	27,0	182	70,00	4	10	•

Toll. reale sullo spessore *Real Tol. on thickness* +0 -0,02

Toll. reale sul Ø *Real Tol. on Ø* +0,05 -0

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Cava a "T" "T" slotting
■	◪	□	□	□	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

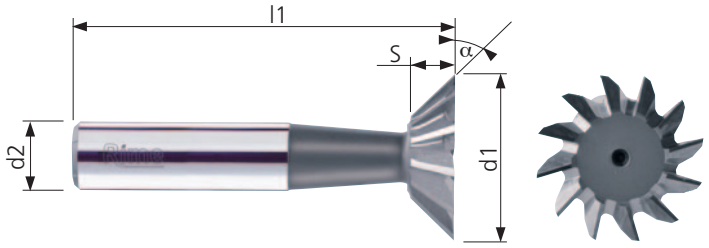
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

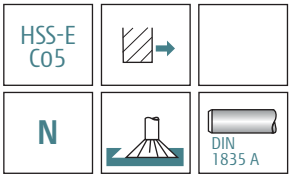
Rime

SERIE
R-S

FRESE AD ANGOLO DIVERGENTE

NORM	TIPO-TYPE	Z10÷12
UNI 8262-A DIN 1833-A ISO 3859	SHORT NORMAL LONG EXTRA-LONG	





R5A

- FRESE AD ANGOLO DIVERGENTE - Forma "A" divergente - Codolo cilindrico
- ANGLE CUTTER - Straight shank
- FRAISES D'ANGLE - Queue cylindrique
- WINKELFRÄSER - Zylinderschaft
- FRESAS EN ANGULO - Mango cilindrico
- FRESAS EN ANGULO - Encabadouro cilindrico
- Фреза с обратным конусом. Цилиндрический хвостовик

CODE	d1 mm js16	α ±30'	s mm	l1 mm	d2 mm h6	Z	Co 5% €
R5A/01	16		4	60	12	10	•
R5A/02	20	45°	5	63	12	10	•
R5A/03	25		6.3	67	16	10	•
R5A/04	32		8	71	16	12	•
R5A/05	16		6.3	60	12	10	•
R5A/06	20	60°	8	63	12	10	•
R5A/07	25		10	67	16	10	•
R5A/08	32		12.5	71	16	12	•

Toll. reale sull'angolo
Real Tol. on angle ±30'

Parametri
Cutting data
pag. 201-224

Suggerimenti
Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Cava ad angolo Angle slotting
□	□	□	□	□	■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

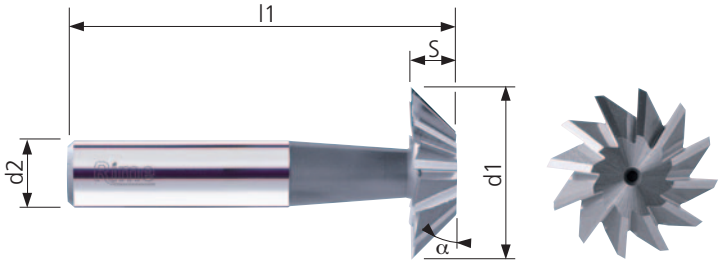
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
R-S

FRESE AD ANGOLO CONVERGENTE

NORM	TIPO-TYPE	Z10÷12
UNI 8262-B DIN 1833-B ISO 3859	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co5

N

DIN 1835 A

R5B

- FRESE AD ANGOLO CONVERGENTE - Forma "B" convergente - Codolo cilindrico
- ANGLE CUTTER - Straight shank
- FRAISES D'ANGLE - Queue cylindrique
- WINKELFRÄSER - Zylinderschaft
- FRESAS EN ANGULO - Mango cilindrico
- FRESAS EN ANGULO - Encabadouro cilindrico
- Фреза с прямым конусом. Цилиндрический хвостовик

CODE	d1 mm js16	α ±30'	s mm	l1 mm	d2 mm h6	Z	Co 5% €
R5B/01	16		4	60	12	10	•
R5B/02	20	45°	5	63	12	10	•
R5B/03	25		6.3	67	16	10	•
R5B/04	32		8	71	16	12	•
R5B/05	16		6.3	60	12	10	•
R5B/06	20	60°	8	63	12	10	•
R5B/07	25		10	67	16	10	•
R5B/08	32		12.5	71	16	12	•

Toll. reale sull'angolo
Real Tol. on angle ±30'

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting ☐ | Contornatura Side milling ☐ | Copia 3D 3D copying ☐ | Assiale Axial ☐ | Rampa Ramping ☐ | Cava ad angolo Angle slotting ■

Materiali Materials

ACCIAI STEELS ■ | GHISE CAST IRON ■ | ACCIAI INOSSIDABILI STAINLESS STEELS ◪ | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM ◪ | LEGHE LEGGERE LIGHT ALLOYS ◪ | MATERIALI NON FERROSI NON FERROUS MATERIAL ◪

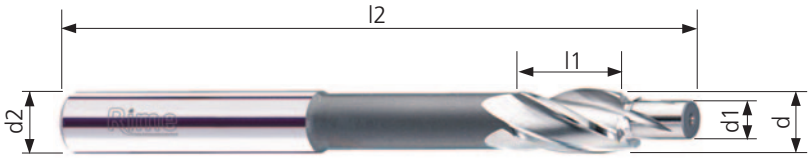
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED ☐

Rime

SERIE
R-S

FRESE PER SEDI DI VITI

NORM	TIPO-TYPE	Z4
UNI 6841 DIN 373	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co5 | ≃30° | N | DIN 1835 A

S2

- FRESE PER SEDI DI VITI - Per viti a testa cilindrica con esagono incassato - Denti elicoidali con guida - Codolo cilindrico
- COUNTERBORES WITH SOLID PILOT - For screws with cylindrical head - Helical teeth - Straight shank
- FRAISES À PIVOT FIXE - Pour vis tête cylindrique - Denture hélicoïdale avec guide - Queue cylindrique
- FLACHSENKER - Für Zylinderschrauben mit Innensechskant - Schrägverzahnt mit Führung - Zylinderschaft
- FRESAS ALOJAMIENTO TORNILLOS - Para tornillos cabeza cilíndrica con hexágono encajado - Labios helicoidales con guía - Mango cilindrico
- FRESAS PARA PARAFUSOS DE CABEÇA CILINDRICA (TIPO UMBRAKO) - Encabadouro cilindrico
- Зенкер с направляющей. Цилиндрический хвостовик

CODE	d vite	D vite	h vite	d mm h8	d1 mm h8	l1 mm	l2 mm	d2 mm h6	Z	Co 5% €
S2/01	M3	5.5	3	5.9	3.2	12	70	6	4	•
S2/02	M4	7	4	7.4	4.3	12	70	8	4	•
S2/03	M5	9	5	9.4	5.3	14	90	10	4	•
S2/04	M6	10	6	10.4	6.4	16	100	10	4	•
S2/05	M8	13	8	13.5	8.4	20	115	12	4	•
S2/06	M10	16	10	16.5	10.5	25	120	12	4	•
S2/07	M12	18	12	19	13	25	120	16	4	•
S2/08	M14	22	14	23	15	30	130	16	4	•
S2/09	M16	24	16	25	17	35	155	20	4	•
S2/10	M18	27	18	28	19	40	160	20	4	•
S2/11	M20	30	20	31	21	50	180	20	4	•
S2/12	M22	33	22	34	23	50	185	22	4	•
S2/13	M24	36	24	37	25	50	200	22	4	•

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■□□□□
SEMIFINITURA - SEMIFINISHING ■□□□□
FINITURA - FINISHING ■■■■□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
□	□	□	■	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

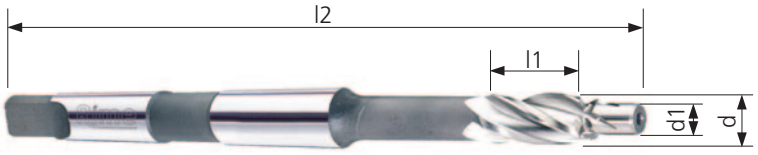
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
R-S

FRESE PER SEDI DI VITI

NORM	TIPO-TYPE	Z4
UNI 6842 DIN 375	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co5 | ≃30° | N | DIN 228 B

S3

- FRESE PER SEDI DI VITI - Per viti a testa cilindrica con esagono incassato - Denti elicoidali con guida - Codolo conico Morse con tenone
- COUNTERBORES WITH SOLID PILOT - For screws with cylindrical head - Helical teeth - Straight shank
- FRAISES À PIVOT FIXE - Pour vis tête cylindrique - Denture hélicoïdale avec guide - Queue au cône Morse avec tenon
- FLACHSENKER - Für Zylinderschrauben mit Innensechskant - Schrägverzahnt mit Führung - Morsekegelschaft mit Austreiblappen
- FRESAS ALOJAMIENTO TORNILLOS - Para tornillos cabeza cilíndrica con hexágono encajado - Labios helicoidales con guía - Mango cónico Morse con tentona
- FRESAS PARA PARAFUSOS DE CABEÇA CILINDRICA (TIPO UMBRAKO) - Encabadouro Morse
- Зенкер с направляющей. Хвостовик конус Морзе

CODE	d vite	D vite	h vite	d mm h8	d1 mm h8	l1 mm	l2 mm	CM-MK	Z	Co 5% €
S3/01	M3	5.5	3	5.9	3.2	12	105	1	4	•
S3/02	M4	7	4	7.4	4.3	12	105	1	4	•
S3/03	M5	9	5	9.4	5.3	14	118	1	4	•
S3/04	M6	10	6	10.4	6.4	16	125	1	4	•
S3/05	M8	13	8	13.5	8.4	20	140	1	4	•
S3/06	M10	16	10	16.5	10.5	25	160	2	4	•
S3/07	M12	18	12	19	13	25	160	2	4	•
S3/08	M14	22	14	23	15	30	170	2	4	•
S3/09	M16	24	16	25	17	35	180	2	4	•
S3/10	M18	27	18	28	19	40	180	2	4	•
S3/11	M20	30	20	31	21	50	215	3	4	•
S3/12	M22	33	22	34	23	50	220	3	4	•
S3/13	M24	36	24	37	25	50	230	3	4	•

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■□□□□
SEMIFINITURA - SEMIFINISHING ■□□□□
FINITURA - FINISHING ■■■■□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
□	□	□	■	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	◪	◪	◪	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

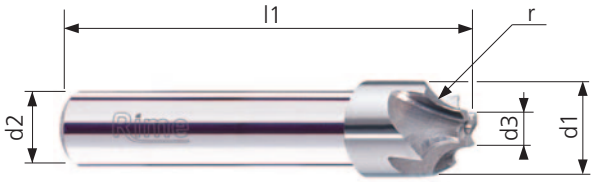
torna all'indice

Rime

SERIE
R-S

FRESE DI FORMA A QUARTO DI CERCHIO CONCAVO

NORM	TIPO-TYPE	Z4÷6
UNI 8264 DIN 6518A	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8		
N		DIN 1835 A

S4

- FRESE DI FORMA A QUARTO DI CERCHIO CONCAVO - Denti dritti - Codolo cilindrico
- CORNER ROUNDING END MILLS - Straight toothing - Straight shank
- FRAISES CONCAVES 1/4 DE CERCLE - Denture droite - Queue cylindrique
- VIERTELRUND - PROFILIFRÄSER - Geradverzahnt - Zylinderschaft
- FRESAS DE FORMAS DE UN CUARTO DE CIRCULO - Labios derechos - Mango cilindrico
- FRESAS UM QUARTO DE CIRCULO - Quatro navalhas direitas - Encabadouro cilindrico
- Фреза для снятия радиусных фасок. Цилиндрический хвостовик

CODE	r mm H11	d1 max mm	d3 mm	l1 mm	d2 mm h6	Z	Co 8% €
S4/01	1	10	8	60	10	4	•
S4/02	1.5	10	7	60	10	4	•
S4/03	2	10	6	60	10	4	•
S4/04	2.5	10	5	60	10	4	•
S4/05	3	12	6	60	12	4	•
S4/05/1	3.5	15	8	60	12	4	•
S4/06	4	15	7	60	12	4	•
S4/06/1	4.5	18	9	70	12	4	•
S4/07	5	18	8	70	16	4	•
S4/07/1	5.5	21	10	70	16	4	•
S4/08	6	21	9	70	16	4	•
S4/08/1	6.5	24	11	70	16	4	•
S4/09	7	24	10	70	16	4	•
S4/09/1	7.5	24	9	70	16	4	•
S4/10	8	24	8	70	16	4	•
S4/11	9	28	10	85	20	4	•
S4/12	10	28	8	85	20	4	•
S4/13	11	35	13	90	20	4	•
S4/14	12	35	11	100	20	4	•
S4/15	12.5	35	10	100	20	4	•
S4/16	13	42	16	100	25	4	•
S4/17	14	42	14	100	25	4	•
S4/18	15	48	18	105	25	5	•
S4/19	16	48	16	105	25	5	•
S4/20	18	52	16	115	32	5	•
S4/21	20	60	20	115	32	6	•

WELDON DIN 1835 B su richiesta on request

Ulteriori raggi a richiesta
Other radius on requirements

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping | Raggiatura Rounding

Materiali Materials

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

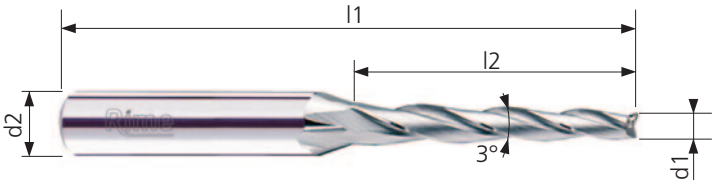
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

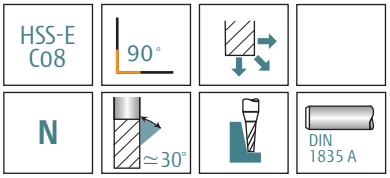
Rime

SERIE
R-S

FRESE CONICHE 1°30’
(3° TOTALI)

NORM | TIPO-TYPE | Z3





SC1

- FRESE CONICHE - Conicità 1°30’ laterali - Tre denti elicoidali - Codolo cilindrico
- TAPER END MILLS - Taper 1°30’ - Three helical flutes - Straight shank
- FRAISES CONIQUES - Conicité 1°30’ - Denture hélicoïdale trois dents - Queue cylindrique
- KONISCHE FRÄSER - Kegel 1°30’ - Dreischneider - Zylinderschaft
- FRESAS CONICAS PARA MOLDES - Cónico 1°30’ lateral - Tres labios helicoidales - Mango cilindrico
- FRESAS CONICAS PARA MOLDES - Cónico 1°30’ lateral - Três navalhas helicoidales - Encabadouro cilindrico
- Фреза 3-зубая коническая для штампов и прессформ. Цилиндрический хвостовик

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
SC1/01	2.5	30	70	6	3	•
SC1/02	2.5	40	80	8	3	•
SC1/03	3	30	75	8	3	•
SC1/04	3	40	85	8	3	•
SC1/05	3	50	95	10	3	•
SC1/06	3.5	30	75	8	3	•
SC1/07	3.5	40	85	8	3	•
SC1/08	4.5	30	75	8	3	•
SC1/09	4.5	40	85	10	3	•

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping | Contornatura Side milling

Materiali Materials

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

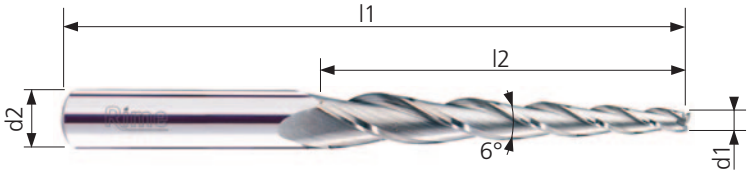
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

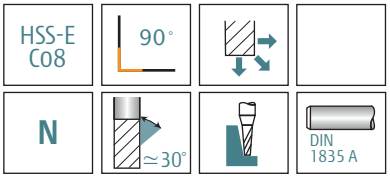
Rime

SERIE
R-S

FRESE CONICHE 3°
(6° TOTALI)

NORM | TIPO-TYPE | Z3





SC2

- FRESE CONICHE - Conicità 3° laterali - Tre denti elicoidali - Codolo cilindrico
- TAPER END MILLS - Taper 3° - Three helical flutes - - Straight shank
- FRAISES CONIQUES - Conicité 3° - Denture hélicoïdale trois dents - Queue cylindrique
- KONISCHE FRÄSER - Kegel 3° - Dreischneider - Zylinderschaft
- FRESAS CONICAS - Cónico 3° lateral - Tres labios helicoidales - Mango cilindrico
- FRESAS CONICAS - Conico 3° lateral - Três navalhas helicoidales - Encabadouro cilindrico
- Фреза 3-зубая коническая для штампов и прессформ. Цилиндрический хвостовик

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
SC2/01	2.5	20	65	6	3	•
SC2/02	2.5	25	70	8	3	•
SC2/03	2.5	30	75	8	3	•
SC2/04	2.5	40	85	8	3	•
SC2/05	3	20	65	8	3	•
SC2/06	3	25	70	8	3	•
SC2/07	3	30	75	8	3	•
SC2/08	3	40	85	8	3	•
SC2/09	3	50	95	10	3	•
SC2/10	3.5	20	65	8	3	•
SC2/11	3.5	25	70	8	3	•
SC2/12	3.5	30	75	8	3	•
SC2/13	3.5	40	85	10	3	•
SC2/14	3.5	50	100	10	3	•
SC2/15	4	30	75	10	3	•
SC2/16	4.5	20	65	8	3	•
SC2/17	4.5	25	70	10	3	•
SC2/18	4.5	30	75	10	3	•
SC2/19	4.5	40	85	10	3	•
SC2/20	4.5	70	120	12	3	•
SC2/21	4.5	80	140	14	3	•
SC2/22	6.5	70	125	14	3	•
SC2/23	6.5	100	165	20	3	•

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping | Contornatura Side milling

Materiali Materials

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

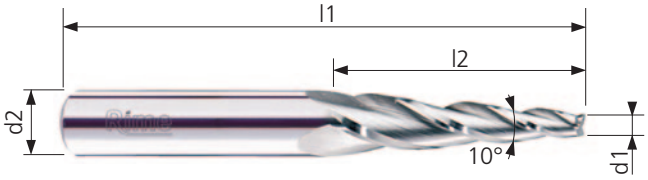
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

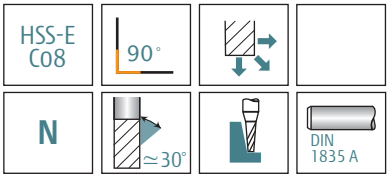
Rime

SERIE
R-S

FRESE CONICHE 5°
(10° TOTALI)

NORM | TIPO-TYPE | Z3





SC3

- FRESE CONICHE - Conicità 5° laterali - Tre denti elicoidali - Codolo cilindrico
- TAPER END MILIS - Taper 5° - Three helical flutes - Straight shank
- FRAISES CONIQUES - Conicité 5° - Denture hélicoïdale trois dents - Queue cylindrique
- KONISCHE FRÄSER - Kegel 5° - Dreischneider - Zylinderschaft
- FRESAS CONICAS - Conico 5° lateral - Tres labios helicoidales - Mango cilindrico
- FRESAS CONICAS - Conico 5° lateral - Três navalhas helicoidales - Encabadouro cilindrico
- Фреза 3-зубая коническая для штампов и прессформ. Цилиндрический хвостовик

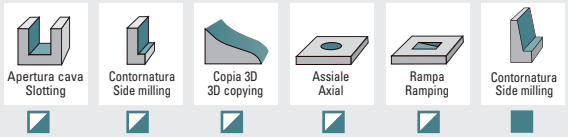
CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
SC3/01	2.5	20	65	8	3	•
SC3/02	2.5	25	70	8	3	•
SC3/03	2.5	30	75	10	3	•
SC3/04	2.5	40	85	10	3	•
SC3/05	2.5	50	100	12	3	•
SC3/06	3	20	65	8	3	•
SC3/07	3	25	70	8	3	•
SC3/08	3	30	75	10	3	•
SC3/09	3	40	85	10	3	•
SC3/10	3	50	95	12	3	•
SC3/11	3.5	20	65	8	3	•
SC3/12	3.5	25	70	8	3	•
SC3/13	3.5	30	75	10	3	•
SC3/14	3.5	40	90	12	3	•
SC3/15	3.5	50	100	14	3	•
SC3/16	4	35	85	12	3	•
SC3/17	4.5	20	65	10	3	•
SC3/18	4.5	25	70	10	3	•
SC3/19	4.5	30	80	12	3	•
SC3/20	4.5	40	90	12	3	•
SC3/21	4.5	50	105	16	3	•
SC3/22	4.5	60	115	16	3	•
SC3/23	4.5	66	125	16	3	•
SC3/24	4.5	85	145	20	3	•
SC3/25	5.5	20	65	10	3	•
SC3/26	5.5	25	70	12	3	•
SC3/27	5.5	30	80	12	3	•
SC3/28	5.5	40	90	14	3	•
SC3/29	5.5	50	105	16	3	•
SC3/30	5.5	60	115	16	3	•
SC3/31	6.5	40	90	14	3	•
SC3/32	6.5	54	110	16	3	•
SC3/33	6.5	60	115	16	3	•
SC3/34	6.5	70	125	20	3	•
SC3/35	6.5	80	140	20	3	•
SC3/36	6.5	100	165	20	3	•
SC3/37	6.5	100	215	20	3	•

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings



Materiali Materials

ACCIAI STEELS
GHISE CAST IRON
ACCIAI INOSSIDABILI STAINLESS STEELS
SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM
LEGHE LEGGERE LIGHT ALLOYS
MATERIALI NON FERROSI NON FERROUS MATERIAL

CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED



Rime

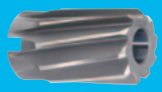
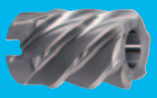
advanced tools production



SERIE AL

Alesatori

Reamers

		pag.
AL0		136
AL6		137
AL7		138
AL8		139
AL9		140
AL10		141

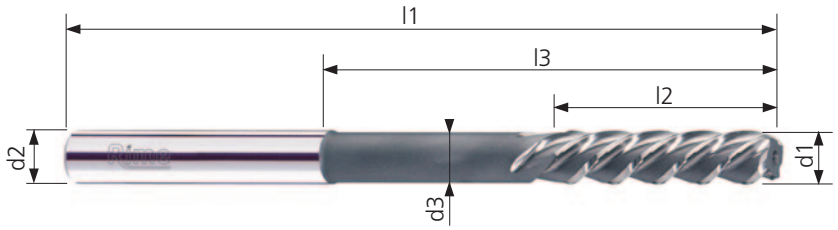
torna all'indice

Rime

SERIE
AL

ALESATORI CILINDRICI

NORM	TIPO-TYPE	Z3÷Z4
DIN 212E ISO 521	SHORT NORMAL LONG EXTRA-LONG	



HSS-E C08 | 45° | N | 45° | DIN 1835 A

NORMALE

AL0

- ALESATORI CILINDRICI - Taglio discendente elica 45° sinistra - Codolo cilindrico
- CYLINDER REAMERS - Left-hand 45° helical teeth - Straight shank
- ALÉSOIRS À CYLINDRES - Denture hélicoïdale à 45° à gauche - Queue cylindrique
- MASCHINEN - REIBAHLEN - 45° links schrägverzahnt - Zylinderschaft
- ESCARIADORES CILÍNDRICOS - Labios hélice izquierda 45° - Mango cilindrico
- ESCARIADORES CILINDRICOS - Três navalhas hélice ezquerdea 45° - Encabadouro cilindrico
- Развертка. Левая спираль 45°. Цилиндрический хвостовик. Средняя серия

CODE	d1 mm H7	l2 mm	l1 mm	l3 mm	d2 mm h6	d3 mm	Z	Co 8% €
AL0/01	2	11	49	24	2	1.9	3	•
AL0/02	2.5	14	57	29	2.5	2.4	3	•
AL0/03	3	15	61	33	3	2.9	3	•
AL0/04	3.5	18	70	40	3.5	3.4	3	•
AL0/05	4	19	75	43	4	3.7	3	•
AL0/06	4.5	21	80	45	4.5	4.2	3	•
AL0/07	5	23	86	51	5	4.7	3	•
AL0/08	5.5	26	93	55	5.5	5.2	3	•
AL0/09	6	26	93	55	6	5.6	3	•
AL0/10	6.5	28	101	61	6.5	6.1	3	•
AL0/11	7	31	109	67	7	6.6	3	•
AL0/12	8	33	117	72	8	7.6	3	•
AL0/13	9	36	125	75	9	8.4	3	•
AL0/14	10	38	133	83	10	9.4	4	•
AL0/15	11	41	142	90	11	10.3	4	•
AL0/16	12	44	151	96	12	11.3	4	•
AL0/17	13	44	151	96	13	12.2	4	•
AL0/18	14	47	160	100	14	12.8	4	•
AL0/19	15	50	162	102	15	13.8	4	•
AL0/20	16	52	170	107	16	14.8	4	•

Diametri decimali e tolleranze diverse da H7 si forniscono a richiesta
Decimal diameter and different tolerance from H7 upon requirements

Parametri
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING ■■■■■
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
□	□	□	■	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

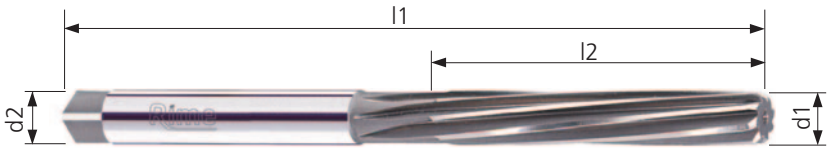
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

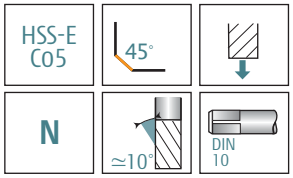
Rime

SERIE
AL

ALESATORI A MANO

NORM	TIPO-TYPE	Z4÷Z8
UNI 6852 DIN 206B ISO 236/I	SHORT · NORMAL · LONG · EXTRA-LONG	





NORMALE

AL6

- ALESATORI A MANO - Denti elicoidali sinistri taglio destro - Codolo cilindrico con quadro - Per fori cilindrici
- HAND REAMERS - Left-hand helical teeth, right-hand cutting - Straight shank with square - For parallel holes
- ALÉSOIRS À MAIN - Denture hélicoïdale à gauche, coupe à droite - Queue cylindrique carrée - Pour trous cylindriques
- HAND - REIBAHLEN - Spiralgenutet, rechtsschneidend, Linksdrall Zylinderschaft mit Vierkantmitnehmer - Für zylindrische Bohrungen
- ESCARIADORES A MANO - Labios helicoidales izquierda, cortante derecho - Mango cilindrico con cuadro - Para agujeros cilíndricos
- ESCARIADORES A MANO - Navalhas helicodiales esquerda, cortante dereito - Encabadouro cilindrico con cuadro - Para agujeros cilíndricos
- Развертка ручная. Левая спираль, правое вращение. Средняя серия

CODE	d1 mm H7	l2 mm	l1 mm	d2 mm h6	Z	Co 5% €
AL6/00	2	25	50	2	4	•
AL6/01	3	31	62	3	4	•
AL6/02	4	38	76	4	5	•
AL6/03	5	44	87	5	5	•
AL6/04	6	47	93	6	5	•
AL6/05	7	54	107	7	6	•
AL6/06	8	58	115	8	6	•
AL6/07	9	62	124	9	6	•
AL6/08	10	66	133	10	6	•
AL6/09	11	71	142	11	8	•
AL6/10	12	76	152	12	8	•
AL6/11	13	76	152	13	8	•
AL6/12	14	81	163	14	8	•
AL6/13	15	81	163	15	8	•
AL6/14	16	87	175	16	8	•
AL6/15	17	87	175	17	8	•
AL6/16	18	93	188	18	8	•
AL6/17	19	93	188	19	8	•
AL6/18	20	100	201	20	8	•

Diametri decimali e tolleranze diverse da H7 si forniscono a richiesta
Decimal diameter and different tolerance from H7 upon requirements

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING ■■■■■
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
□	□	□	■	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

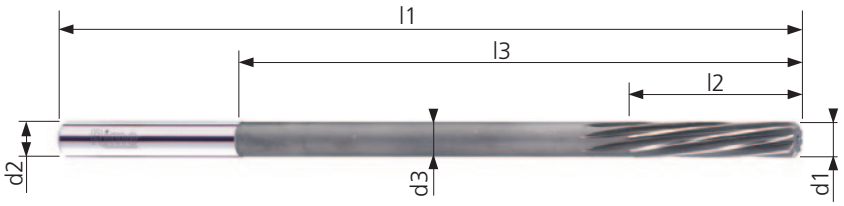
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
AL

ALESATORI A MACCHINA

NORM	TIPO-TYPE	Z4÷Z8
DIN 212D ISO 521	SHORT NORMAL LONG EXTRA-LONG	



HSS-E C08 | 45° | N | ≃10° | DIN 1835 A

EXTRA-LUNGA

AL7

- ALESATORI A MACCHINA - Denti elicoidali sinistri taglio destro - Codolo cilindrico
- MACHINE REAMERS, EXTRA-LONG TYPE - Left-hand helical teeth, right-hand cutting - Straight shank
- ALESOIRS POUR MACHINES, TYP EXTRA LONG - Denture hélicoïdale à gauche, coupe à droite - Queue cylindrique
- MASCHINEN - REIBAHLEN, EXTRA LANGE AUSFÜHRUNG - Spiralgenutet, rechtsschneidend, Linksdrall - Zylinderschaft
- ESCARIADORES A MAQUINA - Labios helicoidales izquierda, cortante derecho - Mango cilindrico
- ESCARIADORES A MANO - Navalhas helicoidais esquerda, cortante dereito - Encabadouro cilindrico
- Развертка машинная. Левая спираль, правое вращение. Цилиндрический хвостовик. Ультрадлинная серия

CODE	d1 mm H7	l2 mm	l1 mm	l3 mm	d2 mm h6	d3 mm	Z	Co 8% €
AL7/01	2	18	110	75	2	1.9	4	•
AL7/02	2.5	20	120	80	2.5	2.4	4	•
AL7/03	3	20	120	80	3	2.9	4	•
AL7/04	3.5	30	150	110	3.5	3.4	6	•
AL7/05	4	30	150	110	4	3.9	6	•
AL7/06	4.5	35	180	135	4.5	4.4	6	•
AL7/07	5	35	180	135	5	4.9	6	•
AL7/08	5.5	40	200	150	5.5	5.4	6	•
AL7/09	6	40	200	150	6	5.9	6	•
AL7/10	6.5	45	200	150	6.5	6.4	6	•
AL7/11	7	45	200	150	7	6.9	6	•
AL7/12	8	45	200	150	8	7.9	6	•
AL7/13	9	50	220	160	9	8.9	6	•
AL7/14	10	50	220	160	10	9.8	6	•
AL7/15	11	55	250	190	11	10.8	8	•
AL7/16	12	55	250	190	12	11.8	8	•

Diametri decimali e tolleranze diverse da H7 si forniscono a richiesta
Decimal diameter and different tolerance from H7 upon requirements

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING ■■■■■
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
□	□	□	■	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

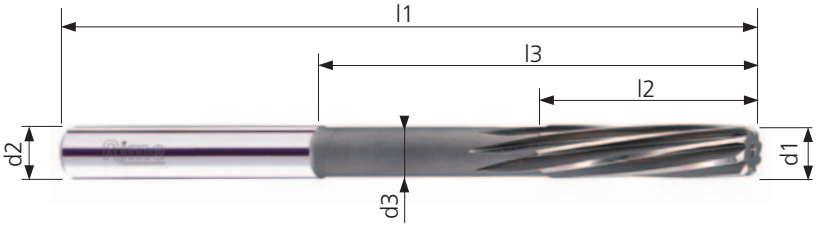
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
AL

ALESATORI A MACCHINA

NORM	TIPO-TYPE	Z5÷88
UNI 6853 DIN 212D ISO 521	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 45° | N | ≃10° | DIN 1835 A

NORMALE

AL8

- ALESATORI A MACCHINA - Denti elicoidali sinistri taglio destro - Codolo cilindrico - Per fori cilindrici
- MACHINE REAMERS - Left-hand helical teeth, right-hand cutting - Straight shank. For parallel holes
- ALÉSOIRS POUR MACHINES - Denture hélicoïdale à gauche, coupe à droite - Queue cylindrique. Pour trous cylindriques
- MASCHINEN - REIBAHLEN - Spiralgenutet, rechtsschneidend, Linksdrall - Zylinderschaft. Für zylindrische Bohrungen
- ESCARIADORES A MÁQUINA - Labios helicoidales izquierda, cortante derecho - Mango cilindrico - Para agujeros cilíndricos
- ESCARIADORES Á MAQUINA - Quatro navalhas helicoidais esquerda, cortante dereito - Encabadouro cilindrico - Para agujeros cilindricos
- Развертка машинная. Левая спираль, правое вращение. Цилиндрический хвостовик. Средняя серия

CODE	d1 mm H7	l2 mm	l1 mm	l3 mm	d2 mm h6	d3 mm	Z	Co 8% €
AL8/01	2	11	49	24	2	1.9	5	•
AL8/02	2.5	14	57	29	2.5	2.4	5	•
AL8/03	3	15	61	33	3	2.9	5	•
AL8/04	3.5	18	70	39	3.5	3.4	5	•
AL8/05	4	19	75	43	4	3.7	5	•
AL8/06	4.5	21	80	45	4.5	4.2	5	•
AL8/07	5	23	86	51	5	4.7	5	•
AL8/08	5.5	26	93	55	5.5	5.2	6	•
AL8/09	6	26	93	55	6	5.6	6	•
AL8/10	6.5	28	101	61	6.5	6.1	6	•
AL8/11	7	31	109	67	7	6.6	6	•
AL8/12	8	33	117	72	8	7.6	6	•
AL8/13	9	36	125	75	9	8.4	6	•
AL8/14	10	38	133	83	10	9.4	6	•
AL8/15	11	41	142	90	11	10.3	8	•
AL8/16	12	44	151	96	12	11.3	8	•
AL8/17	13	44	151	96	13	12.2	8	•
AL8/18	14	47	160	100	14	12.8	8	•
AL8/19	15	50	162	102	15	13.8	8	•
AL8/20	16	52	170	107	16	14.8	8	•

Parametri
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
☐	☐	☐	■	☐

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

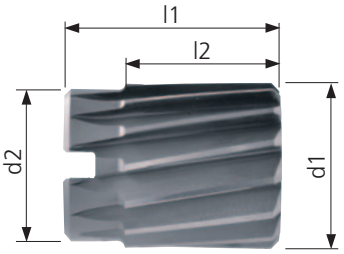
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED ☐

Rime

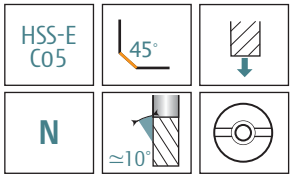
SERIE
AL

ALESATORI A MACCHINA TIPO MANICOTTO

NORM	TIPO-TYPE	Z10÷Z16
UNI 6855 DIN 219B ISO 2402	SHORT NORMAL LONG EXTRA-LONG	







AL9

- ALESATORI A MACCHINA TIPO MANICOTTO - Foro conico 1:30 - Dentatura elicoidale sinistra 10°
- SHELL MACHINE REAMERS - 1:30 taper hole - 10° left helical teeth
- ALÉSOIRS CREUX - Alésage conique 1:30 - Denture hélicoïdale 10° gauche
- AUFSTECK - REIBAHLEN - Kegelbohrung 1:30 - 10° schrägverzahnt
- ESCARIADORES A MÁQUINA TIPO MANICOTTO - Agujero cónico 1:30 - Labios helicoidales 10°
- ESCARIADORES A MAQUINA TIPO MANICOTTO - Agujero conico 1:30 - Navalhas helicoidales 10°
- Развертка насадная

CODE	d1 mm H7	l2 mm	l1 mm	d2 mm	d foro mm (conicità 1:30)	Z	Co 5% €
AL9/01	24	32	45	22	13	10	•
AL9/02	25	32	45	23	13	10	•
AL9/03	26	32	45	24	13	10	•
AL9/04	27	32	45	25	13	10	•
AL9/05	28	32	45	26	13	10	•
AL9/06	29	32	45	27	13	10	•
AL9/07	30	32	45	28	13	10	•
AL9/08	31	36	50	28	16	10	•
AL9/09	32	36	50	29	16	10	•
AL9/10	33	36	50	30	16	10	•
AL9/11	34	36	50	31	16	10	•
AL9/12	35	36	50	32	16	10	•
AL9/13	36	40	56	33	19	12	•
AL9/14	37	40	56	34	19	12	•
AL9/15	38	40	56	35	19	12	•
AL9/16	39	40	56	36	19	12	•
AL9/17	40	40	56	37	19	12	•
AL9/18	42	40	56	39	19	12	•
AL9/19	44	45	63	40	22	12	•
AL9/20	45	45	63	41	22	12	•
AL9/21	46	45	63	42	22	14	•
AL9/22	48	45	63	44	22	14	•
AL9/23	49	45	63	45	22	14	•
AL9/24	50	45	63	46	22	14	•
AL9/25	52	50	71	48	27	14	•
AL9/26	55	50	71	51	27	14	•
AL9/27	58	50	71	54	27	14	•
AL9/28	60	50	71	56	27	16	•

Diametri decimali e tolleranze diverse da H7 si forniscono a richiesta
Decimal diameter and different tolerance from H7 upon requirements

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ☐☐☐☐☐
SEMIFINITURA - SEMIFINISHING ☐☐☐☐☐
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
☐	☐	☐	■	☐

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	☐	☐

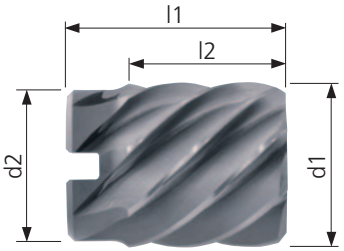
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED ☐

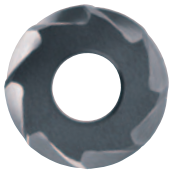
Rime

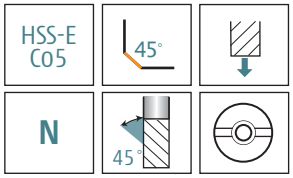
SERIE
AL

ALESATORI A MACCHINA TIPO MANICOTTO

NORM	TIPO-TYPE	Z5÷Z10
UNI 6855 DIN 219 ISO 2402	SHORT NORMAL LONG EXTRA-LONG	







AL10

- ALESATORI A MACCHINA TIPO MANICOTTO - Foro conico 1:30 - Dentatura elicoidale sinistra 45°
- SHELL MACHINE REAMERS - 1:30 taper hole - 45° left helical teeth
- ALÉSOIRS CREUX - Alésage conique 1:30 Denture hélicoïdale 45° gauche
- AUFSTECK - REIBAHLEN - Kegelbohrung 1:30 - 45° schrägverzahnt
- ESCARIADORES A MÁQUINA TIPO MANICOTTO - Agujero conico 1:30 - Labios 45°
- ESCARIADORES A MAQUINA TIPO MANICOTTO - Agujero conico 1:30 - Labios 45°
- Развертка насадная с углом винтовой канавки 45°

CODE	d1 mm H7	l2 mm	l1 mm	d2 mm	d foro mm (conicità 1:30)	Z	Co 5% €
AL10/01	24	32	45	22	13	5	•
AL10/02	25	32	45	23	13	5	•
AL10/03	26	32	45	24	13	5	•
AL10/04	27	32	45	25	13	5	•
AL10/05	28	32	45	26	13	5	•
AL10/06	29	32	45	27	13	6	•
AL10/07	30	32	45	28	13	6	•
AL10/08	31	36	50	28	16	6	•
AL10/09	32	36	50	29	16	6	•
AL10/10	33	36	50	30	16	7	•
AL10/11	34	36	50	31	16	7	•
AL10/12	35	36	50	32	16	7	•
AL10/13	36	40	56	33	19	8	•
AL10/14	37	40	56	34	19	8	•
AL10/15	38	40	56	35	19	8	•
AL10/16	39	40	56	36	19	8	•
AL10/17	40	40	56	37	19	8	•
AL10/18	42	40	56	39	19	8	•
AL10/19	44	45	63	40	22	8	•
AL10/20	45	45	63	41	22	8	•
AL10/21	46	45	63	42	22	8	•
AL10/22	48	45	63	44	22	8	•
AL10/23	49	45	63	45	22	8	•
AL10/24	50	45	63	46	22	8	•
AL10/25	52	50	71	48	27	8	•
AL10/26	55	50	71	51	27	8	•
AL10/27	58	50	71	54	27	10	•
AL10/28	60	50	71	56	27	10	•

Diametri decimali e tolleranze diverse da H7 si forniscono a richiesta
Decimal diameter and different tolerance from H7 upon requirements

Parametri
Cutting data
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
☐	☐	☐	■	☐

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED ☐

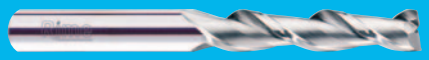

Rime
advanced tools production



SERIE L

Frese per alluminio e leghe leggere

End mills for aluminium and light alloys

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L6		148
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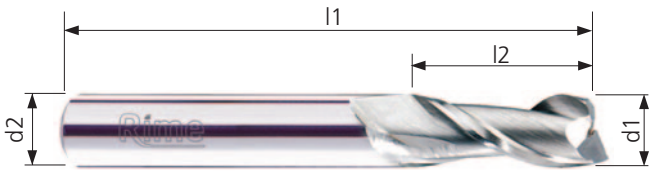
torna all'indice

Rime

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FRESE A DUE DENTI

NORM	TIPO-TYPE	Z2
UNI 8244 8245 DIN 844A ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | W | 40° | DIN 1835 A

NORMALE

L1

- FRESE A DUE DENTI - Un dente frontale tagliente fino al centro - Lavorazione di alluminio, leghe leggere, materiali teneri e malleabili - Codolo cilindrico
- TWO-FLUTES END MILLS - One end tooth cutting up to the centre - To machine aluminium, light alloys - Straight shank
- FRAISES À CYLINDRES DEUX DENTS - Une dent bout coupante jusq'au centre - Pour l'usinage de aluminium, alliages légers - Queque cylindrique
- SCHAFTFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Zur Bearbeitung von Aluminium, Leichtlegierungen - Zylinderschaft
- FRESAS CILINDRICAS DOS LABIOS - un labio que cortan hasta el centro - Para mecanizar el aluminio y ligas ligeras - Mango cilindrico
- FRESAS CILINDRICAS DUAS NAVALHAS - um naval que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Encabadouro cilindrico
- Фреза 2-х зубая для работ по алюминию, легким сплавам, хрупким и пластичным материалам. Режущий торец. Цилиндрический хвостовик. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
L1/01	2	7	51	6	2	•
L1/01/1	2.5	8	52	6	2	•
L1/02	3	8	52	6	2	•
L1/03	4	11	55	6	2	•
L1/04	5	13	57	6	2	•
L1/05	6	13	57	6	2	•
L1/06	7	16	66	10	2	•
L1/07	8	19	69	10	2	•
L1/08	9	19	69	10	2	•
L1/09	10	22	72	10	2	•
L1/10	11	22	79	12	2	•
L1/11	12	26	83	12	2	•
L1/12	13	26	83	12	2	•
L1/13	14	26	83	12	2	•
L1/14	15	32	92	16	2	•
L1/15	16	32	92	16	2	•
L1/16	18	32	92	16	2	•
L1/17	20	38	104	20	2	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Parametri
Cutting data
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	■	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
□	□	◪	□	■	■

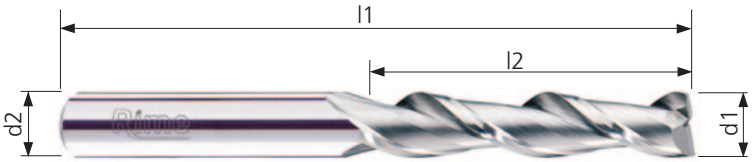
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
L

FRESE A DUE DENTI

NORM	TIPO-TYPE	Z2
UNI 8244 8245 DIN 844A ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



HSS-E Co8 | 90° | W | 40° | DIN 1835 A

LUNGA

L2

- FRESE A DUE DENTI - Un dente frontale tagliente fino al centro - Lavorazione di alluminio, leghe leggere, materiali teneri e malleabili - Codolo cilindrico
- TWO-FLUTES END MILLS - One end tooth cutting up to the centre - To machine aluminium, light alloys - Straight shank
- FRAISES À CYLINDRES DEUX DENTS - Une dent bout coupante jusq'au centre - Pour l'usinage de aluminium, alliages légers - Queue cylindrique
- SCHAFTFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Zur Bearbeitung von Aluminium, Leichtlegierungen - Zylinderschaft
- FRESAS CILINDRICAS DOS LABIOS - Un labio que cortan hasta el centro - Para mecanizar el aluminio y ligas ligeras - Mango cilindrico
- FRESAS CILINDRICAS DUAS NAVALHAS - Um naval que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Encabadouro cilindrico
- Фреза 2-х зубая для работ по алюминию, легким сплавам, хрупким и пластичным материалам. Режущий торец. Цилиндрический хвостовик. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	Co 8% €
L2/01	3	12	56	6	2	•
L2/02	4	19	63	6	2	•
L2/03	5	24	68	6	2	•
L2/04	6	24	68	6	2	•
L2/05	7	30	80	10	2	•
L2/06	8	38	88	10	2	•
L2/07	9	38	88	10	2	•
L2/08	10	45	95	10	2	•
L2/09	11	45	102	12	2	•
L2/10	12	53	110	12	2	•
L2/11	13	53	110	12	2	•
L2/12	14	53	110	12	2	•
L2/13	15	63	123	16	2	•
L2/14	16	63	123	16	2	•
L2/15	18	63	123	16	2	•
L2/16	20	75	141	20	2	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting ■ | Contornatura Side milling ■ | Copia 3D 3D copying □ | Assiale Axial ■ | Rampa Ramping ■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
□	□	◪	□	■	■

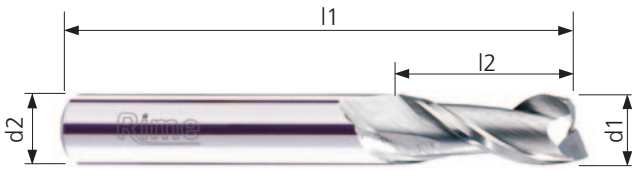
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

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L

FRESE A DUE DENTI

NORM	TIPO-TYPE	Z2
UNI 8244 DIN 844A ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 90° | W | 40° | DIN 1835 A

NORMALE

L4

- FRESE A DUE DENTI - Un dente frontale tagliente fino al centro - Lavorazione di alluminio, leghe leggere, materiali teneri e malleabili - Codolo cilindrico
- TWO-FLUTES END MILLS - One end tooth cutting up to the centre - To machine aluminium, light alloys - Straight shank
- FRAISES À CYLINDRES DEUX DENTS - Une dent bout coupante jusq'au centre - Pour l'usinage de aluminium, alliages légers - Queue cylindrique
- SCHAFTFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Zur Bearbeitung von Aluminium, Leichtlegierungen - Zylinderschaft
- FRESAS CILINDRICAS DOS LABIOS - Un labio que cortan hasta el centro - Para mecanizar el aluminio y ligas ligeras - Mango cilindrico
- FRESAS CILINDRICAS DUAS NAVALHAS - Um naval que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Encabadouro cilindrico
- Фреза 2-х зубая для работ по алюминию, легким сплавам, хрупким и пластичным материалам. Режущий торец. Цилиндрический хвостовик. Средняя серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
L4/01	2	7	51	6	2	•
L4/02	3	8	52	6	2	•
L4/03	4	11	55	6	2	•
L4/04	5	13	57	6	2	•
L4/05	6	13	57	6	2	•
L4/06	7	16	66	10	2	•
L4/07	8	19	69	10	2	•
L4/08	9	19	69	10	2	•
L4/09	10	22	72	10	2	•
L4/10	11	22	79	12	2	•
L4/11	12	26	83	12	2	•
L4/12	13	26	83	12	2	•
L4/13	14	26	83	12	2	•
L4/14	15	32	92	16	2	•
L4/15	16	32	92	16	2	•
L4/16	18	32	92	16	2	•
L4/17	20	38	104	20	2	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting ■ | Contornatura Side milling ■ | Copia 3D 3D copying □ | Assiale Axial ■ | Rampa Ramping ■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
□	□	◪	□	■	■

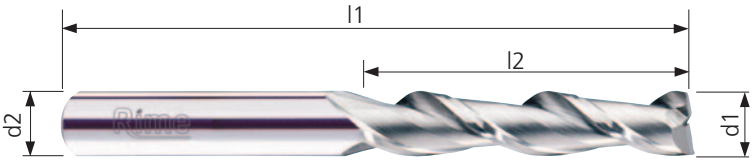
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
L

FRESE A DUE DENTI

NORM	TIPO-TYPE	Z2
UNI 8244 8245 DIN 844A ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 90° | W | 40° | DIN 1835 A

LUNGA

L5

- FRESE A DUE DENTI - Un dente frontale tagliente fino al centro - Lavorazione di alluminio, leghe leggere, materiali teneri e malleabili - Codolo cilindrico
- TWO-FLUTES END MILLS - One end tooth cutting up to the centre - To machine aluminium, light alloys - Straight shank
- FRAISES À CYLINDRES DEUX DENTS - Une dent bout coupante jusq'au centre - Pour l'usinage de aluminium, alliages légers - Queue cylindrique
- SCHAFTFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Zur Bearbeitung von Aluminium, Leichtlegierungen - Zylinderschaft
- Fresas cilindricas dos labios - Un labio que cortan hasta el centro - Para mecanizar el aluminio y ligas ligeras - Mango cilindrico
- Fresas cilindricas duas navalhas - Um naval que corta hasta el centro -Para mecanizar el aluminio y ligas ligeras - Encabadouro cilindrico
- Фреза 2-х зубая для работ по алюминию, легким сплавам, хрупким и пластичным материалам. Режущий торец. Цилиндрический хвостовик. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
L5/01	3	12	56	6	2	•
L5/02	4	19	63	6	2	•
L5/03	5	24	68	6	2	•
L5/04	6	24	68	6	2	•
L5/05	7	30	80	10	2	•
L5/06	8	38	88	10	2	•
L5/07	9	38	88	10	2	•
L5/08	10	45	95	10	2	•
L5/09	11	45	102	12	2	•
L5/10	12	53	110	12	2	•
L5/11	13	53	110	12	2	•
L5/12	14	53	110	12	2	•
L5/13	15	63	123	16	2	•
L5/14	16	63	123	16	2	•
L5/15	18	63	123	16	2	•
L5/16	20	75	141	20	2	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	■	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
□	□	◪	□	■	■

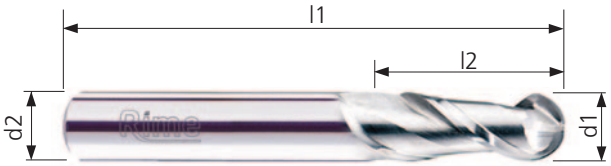
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

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FRESE A DUE DENTI A TESTA SEMISFERICA

NORM	TIPO-TYPE	Z2
ISO 1641/I	SHORT · NORMAL · LONG · EXTRA-LONG	



EMP3 (PM) · r · W · 40° · DIN 1835 A

NORMALE

L6

- FRESE A DUE DENTI A TESTA SEMISFERICA - Due denti frontali taglienti fino al centro - Lavorazione di alluminio, leghe leggere, materiali teneri e malleabili - Codolo cilindrico
- BALL-NOSED TWO-FLUTES END MILLS - Two end teeth cutting up to the centre - To machine aluminium, light alloys - Straight shank
- FRAISES À CYLINDRES DEUX DENTS À BOUT HÉMISPHERIQUE - Deux dents bout coupantes jusq'au centre - Pour l'usinage de aluminium, alliages légers - Queue cylindrique
- HALBRUNDKOPFFRÄSER, ZWEISCHNEIDER - Zwei Schneiden mit Zentrumschnitt - Zur Bearbeitung von Aluminium, Leichtlegierungen - Zylinderschaft
- FRESAS CILINDRICAS DOS LABIOS CABEZA SEMIESFÉRICA - Dos labios que cortan hasta el centro - Para mecanizar el aluminio y ligas ligeras - Mango cilindrico
- FRESAS CILINDRICAS BOLEADA DUAS NAVALHAS - Um naval que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Encabadouro cilindrico
- Фреза 2-х зубая для работ по алюминию, легким сплавам, хрупким и пластичным материалам. Сферический торец. Цилиндрический хвостовик. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
L6/00	2	7	51	6	2	•
L6/00/1	3	8	52	6	2	•
L6/01	4	11	55	6	2	•
L6/02	5	13	57	6	2	•
L6/03	6	13	57	6	2	•
L6/04	7	16	66	10	2	•
L6/05	8	19	69	10	2	•
L6/06	9	19	69	10	2	•
L6/07	10	22	72	10	2	•
L6/08	11	22	79	12	2	•
L6/09	12	26	83	12	2	•
L6/10	13	26	83	12	2	•
L6/11	14	26	83	12	2	•
L6/12	15	32	92	16	2	•
L6/13	16	32	92	16	2	•
L6/14	18	32	92	16	2	•
L6/15	20	38	104	20	2	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting · Contornatura Side milling · Copia 3D 3D copying · Assiale Axial · Rampa Ramping

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
☐	☐	◪	☐	■	■

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED ☐

Rime

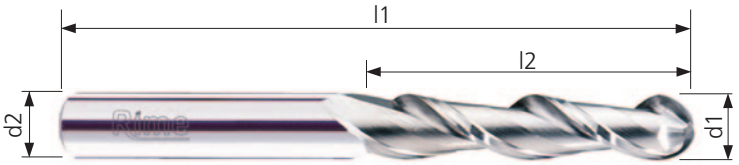
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FRESE A DUE DENTI A TESTA SEMISFERICA

NORM ISO 1641/I

TIPO-TYPE: SHORT · NORMAL · LONG · EXTRA-LONG

Z2



EMP3 (PM)

W

40°

DIN 1835 A

LUNGA

L7

- FRESE A DUE DENTI A TESTA SEMISFERICA - Due denti frontali taglienti fino al centro - Lavorazione di alluminio, leghe leggere, materiali teneri e malleabili - Codolo cilindrico
- BALL-NOSED TWO-FLUTES END MILLS - Two end teeth cutting up to the centre - To machine aluminium, light alloys - Straight shank
- FRAISES À CYLINDRES DEUX DENTS À BOUT HÉMISPHERIQUE - Deux dents bout coupantes jusq'au centre - Pour l'usinage de aluminium, alliages légers - Queue cylindrique
- HALBRUNDKOPFFRÄSER, ZWEISCHNEIDER - Zwei Schneiden mit Zentrumschnitt - Zur Bearbeitung von Aluminium, Leichtlegierungen - Zylinderschaft
- FRESAS CILINDRICAS DOS LABIOS CABEZA SEMIESFÉRICA - Dos labios que cortan hasta el centro - Para mecanizar el aluminio y ligas ligeras - Mango cilindrico
- FRESAS CILINDRICAS BOLEADA DUAS NAVALHAS - Duas navalhas que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Encabadouro cilindrico
- Фреза 2-х зубая для работ по алюминию, легким сплавам, хрупким и пластичным материалам. Сферический торец. Цилиндрический хвостовик. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
L7/00	2	11	54	6	2	•
L7/00/1	3	12	56	6	2	•
L7/01	4	19	63	6	2	•
L7/02	5	24	68	6	2	•
L7/03	6	24	68	6	2	•
L7/04	7	30	80	10	2	•
L7/05	8	38	88	10	2	•
L7/06	9	38	88	10	2	•
L7/07	10	45	95	10	2	•
L7/08	11	45	102	12	2	•
L7/09	12	53	110	12	2	•
L7/10	13	53	110	12	2	•
L7/11	14	53	110	12	2	•
L7/12	15	63	123	16	2	•
L7/13	16	63	123	16	2	•
L7/14	18	63	123	16	2	•
L7/15	20	75	141	20	2	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting · Contornatura Side milling · Copia 3D 3D copying · Assiale Axial · Rampa Ramping

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
☐	☐	◪	☐	■	■

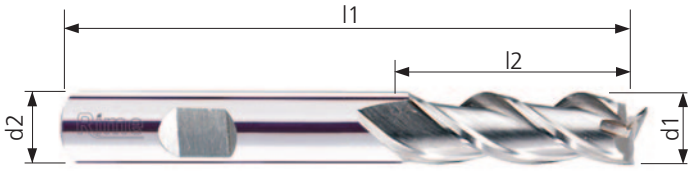
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED ☐

Rime

SERIE
L

FRESE A TRE DENTI

NORM | TIPO-TYPE | Z3



EMP3 (PM) | 90° | W | 40° | DIN 1835 B

NORMALE

L8

- FRESE A TRE DENTI - Un dente frontale tagliente fino al centro - Lavorazione di alluminio, leghe leggere, materiali teneri e malleabili - Attacco Weldon
- THREE-FLUTES END MILLS - One end tooth cutting up to the centre - To machine aluminium, light alloys - Weldon shank
- FRAISES À CYLINDRES TROIS DENTS - Une dent bout coupante jusq'au centre - Pour l'usinage de aluminium, alliages légers - Queue cylindrique Weldon
- SCHAFTFRÄSER, DREISCHNEIDER - Eine Schneide mit Zentrumschnitt - Zur Bearbeitung von Aluminium, Leichtlegierungen - Weldon-Spannfläche
- FRESAS CILINDRICAS FRONTALES TRES LABIOS - Un labio que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Mango Weldon
- FRESAS CILINDRICAS FRONTALES TRES NAVALHAS - Um naval que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Encabadouro Weldon
- Фреза 3-х зубая для работ по алюминию, легким сплавам, хрупким и пластичным материалам. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	ALU SUPREME €
L8/00	2	7	51	6	3	•	•
L8/01	3	14	58	6	3	•	•
L8/02	4	18	62	6	3	•	•
L8/03	5	20	64	6	3	•	•
L8/04	6	22	66	6	3	•	•
L8/05	7	22	72	10	3	•	•
L8/06	8	25	75	10	3	•	•
L8/07	9	25	75	10	3	•	•
L8/08	10	28	78	10	3	•	•
L8/09	12	32	89	12	3	•	•
L8/10	14	32	89	12	3	•	•
L8/11	16	36	96	16	3	•	•
L8/12	18	40	100	16	3	•	•
L8/13	20	45	110	20	3	•	•
L8/14	22	45	110	20	3	•	•
L8/15	25	50	125	25	3	•	•
L8/16	28	56	132	25	3	•	•
L8/17	30	63	140	25	3	•	•
L8/18	32	63	143	32	3	•	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

COATING **ALU-SUPREME**

CODE L8/.../**AS**

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
☐	☐	◪	◪	■	■

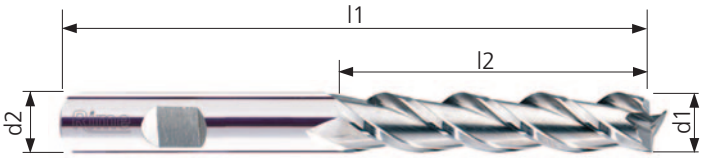
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED ☐

Rime

SERIE
L

FRESE A TRE DENTI

NORM | TIPO-TYPE | Z3



EMP3 (PM) | 90° | W | 40° | DIN 1835 B

LUNGA

L9

- FRESE A TRE DENTI - Un dente frontale tagliente fino al centro - Lavorazione di alluminio, leghe leggere, materiali teneri e malleabili - Attacco Weldon
- THREE-FLUTES END MILLS - One end tooth cutting up to the centre - To machine aluminium, light alloys - Weldon shank
- FRAISES À CYLINDRES TROIS DENTS - Une dent bout coupante jusq'au centre - Pour l'usinage de aluminium, alliages légers - Queue cylindrique Weldon
- SCHAFTFRÄSER, DREISCHNEIDER - Eine Schneide mit Zentrumschnitt - Zur Bearbeitung von Aluminium, Leichtlegierungen - Weldon-Spannfläche
- FRESAS CILINDRICAS FRONTALES TRES LABIOS - Un labio que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Mango Weldon
- FRESAS CILINDRICAS FRONTALES TRÉS NAVALHAS - Um naval que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Encabadouro Weldon
- Фреза 3-х зубая для работ по алюминию, легким сплавам, хрупким и пластичным материалам. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
L9/00	2	12	54	6	3	•
L9/01	3	18	62	6	3	•
L9/02	4	22	65	6	3	•
L9/03	5	26	70	6	3	•
L9/04	6	30	75	6	3	•
L9/05	7	34	84	10	3	•
L9/06	8	34	84	10	3	•
L9/07	9	40	90	10	3	•
L9/08	10	40	90	10	3	•
L9/09	12	56	113	12	3	•
L9/10	14	63	120	12	3	•
L9/11	16	63	123	16	3	•
L9/12	18	71	131	16	3	•
L9/13	20	71	137	20	3	•
L9/14	22	80	146	20	3	•
L9/15	25	80	156	25	3	•
L9/16	28	90	166	25	3	•
L9/17	30	90	166	25	3	•
L9/18	32	90	170	32	3	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping

Materiali Materials

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

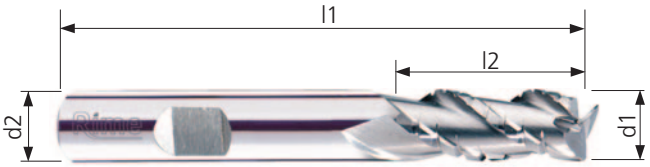
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
L

FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z3
UNI 8248 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 45° 0,2–0,5 | NFL | 40° | DIN 1835 B

NORMALE

L12

- FRESE PER SGROSSATURA - Denti elicoidali con taglio interrotto - Un dente frontale tagliente fino al centro - Lavorazione di alluminio, leghe leggere, materiali teneri e malleabili - Attacco Weldon
- ROUGHING END MILLS - Helical teeth with chip-breaker - One end tooth cutting up to the centre - To machine aluminium, light alloys - Weldon shank
- FRAISES À CYLINDRES À DÉGROSSIR - Denture hélicoïdale avec brise-copeaux - Une dent bout coupante jusq'au centre - Pour l'usinage de aluminium, alliages légers - Queue cylindrique Weldon
- SCHAFTFRÄSER DREISCHNEIDER - Schrägschneiden mit Spanbrecher - Eine Schneide mit Zentrumschnitt - Zur Bearbeitung von Aluminium, Leichtlegierungen - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta - Un labio que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Mango cónico Weldon
- FRESAS CILINDRICAS FRONTALES PARA DESTASTE - Navalhas helicoidal com quebra apara - Um navalha que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Encabadouro Weldon
- Фреза 3-х зубая для черновой обработки алюминия, легких сплавов, хрупких и пластичных материалов. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	ALU SUPREME €	
L12/01	6	13	57	6	3	•	•	
L12/02	7	16	66	10	3	•	•	
L12/03	8	19	69	10	3	•	•	
L12/04	9	19	69	10	3	•	•	
L12/05	10	22	72	10	3	•	•	
L12/06	12	26	83	12	3	•	•	
L12/07	14	26	83	12	3	•	•	
L12/08	15	32	92	16	3	•	•	
L12/09	16	32	92	16	3	•	•	
L12/10	18	32	92	16	3	•	•	
L12/11	20	38	104	20	3	•	•	
L12/12	22	38	104	20	3	•	•	
L12/13	25	45	121	25	3	•	•	
L12/14	28	45	121	25	3	•	•	
L12/15	30	45	121	25	3	•	•	
L12/16	32	53	133	32	3	•	•	
L12/17	36	53	133	32	3	•	•	
L12/18	40	53	143	32	3	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **ALU-SUPREME**

CODE L12/.../**AS**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING ■■■□□
FINITURA - FINISHING ■■□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
◪	□	◪	◪	■	■

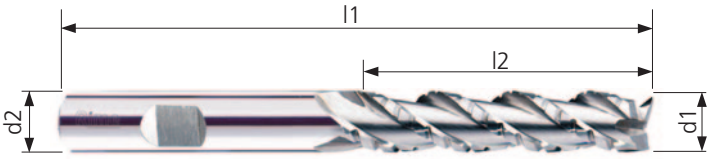
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
L

FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z3
UNI 8249 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 45° 0,2–0,5 | | NFL | 40° | DIN 1835 B

LUNGA

L13

- FRESE PER SGROSSATURA - Denti elicoidali con taglio interrotto - Un dente frontale tagliente fino al centro - Lavorazione di alluminio, leghe leggere, materiali teneri e malleabili - Attacco Weldon
- ROUGHING END MILLS - Helical teeth with chip-breaker - One end tooth cutting up to the centre - To machine aluminium, light alloys - Weldon shank
- FRAISES À CYLINDRES À DÉGROSSIR - Denture hélicoïdale avec brise-copeaux - Une dent bout coupante jusq'au centre - Pour l'usinage de aluminium, alliages légers - Queue cylindrique Weldon
- SCHAFTFRÄSER DREISCHNEIDER - Schrägschneiden mit Spanbrecher - Eine Schneide mit Zentrumschnitt - Zur Bearbeitung von Aluminium, Leichtlegierungen - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta - Un labio que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Mango cónico Weldon
- FRESAS CILINDRICAS FRONTALES PARA DESTASTE - Navalhas helicoidal com quebra apara - Um navalha que corta hasta el centro - Para mecanizar el aluminio y ligas ligeras - Encabadouro Weldon
- Фреза 3-х зубая для черновой обработки алюминия, легких сплавов, хрупких и пластичных материалов. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	ALU SUPREME €	
L13/01	6	24	68	6	3	•	•	
L13/02	8	38	88	10	3	•	•	
L13/03	10	45	95	10	3	•	•	
L13/04	12	53	110	12	3	•	•	
L13/05	14	53	110	12	3	•	•	
L13/06	15	63	123	16	3	•	•	
L13/07	16	63	123	16	3	•	•	
L13/08	18	63	123	16	3	•	•	
L13/09	20	75	141	20	3	•	•	
L13/10	22	75	141	20	3	•	•	
L13/11	25	90	166	25	3	•	•	
L13/12	28	90	166	25	3	•	•	
L13/13	30	90	166	25	3	•	•	
L13/14	32	106	186	32	3	•	•	
L13/15	36	106	186	32	3	•	•	
L13/16	40	125	205	32	3	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **ALU-SUPREME**

CODE L13/.../**AS**

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING ■■■□□
FINITURA - FINISHING ■■□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
◪	□	◪	◪	■	■

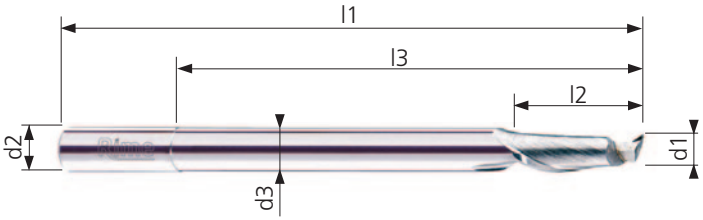
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
L

FRESE MONOTAGLIENTE PER LEGHE LEGGERE

NORM | TIPO-TYPE | Z1



HSS-E C08 | 90° | W | ≃35° | DIN 1835 A

L17

CODE (Co 8%)	d1 mm js14	l1 mm	l2 mm	l3 mm	d2 mm h6	d3 mm	Co 8% €	ALU SUPREME €
L17/01	8	100	15	80	8	7.9	•	•
L17/02	8	120	15	100	8	7.9	•	•
L17/03	10	100	15	75	8	9.0	•	•
L17/04	10	100	15	75	10	9.9	•	•

FRESE MONOTAGLIENTE PER LEGHE LEGGERE - Codolo cilindrico

SINGLE-FLUTES END MILLS TO MACHINE LIGHT ALLOYS - Straight shank

FRAISES À UNE TAILLE POUR L'USINAGE D'ALLIAGES LÉGERS - Queue cylindrique

EINSCHNEIDEFRÄSER ZUR BEARBEITUNG VON LEICHTMETALLE - Zylinderschaft

FRESAS MONO CORTANTE PARA LIGAS LIGERAS - Mango cilindrico

FRESAS MONO CORTANTES PARA LIGAS LIGERAS - Encabadouro cilindrico

Фреза однозубая для обработки легких сплавов. Цилиндрический хвостовик

Ulteriori diametri a richiesta
Other diameters on demand

COATING **ALU-SUPREME**

CODE L17/.../**AS**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping

Materiali Materials

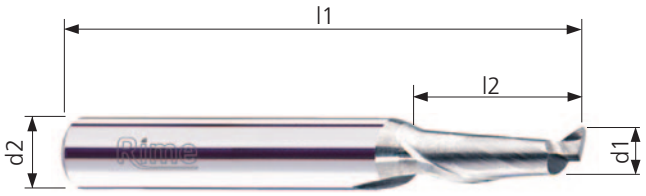
ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

SERIE
L

FRESE MONOTAGLIENTE PER LEGHE LEGGERE

NORM | TIPO-TYPE | Z1



EMP3 (PM) | 90° | W | ≃35° | DIN 1835 A

L18

- FRESE MONOTAGLIENTE PER LEGHE LEGGERE - Codolo cilindrico
- SINGLE-FLUTES END MILLS TO MACHINE LIGHT ALLOYS - Straight shank
- FRAISES À UNE TAILLE POUR L'USINAGE D'ALLIAGES LÉGERS - Queue cylindrique
- EINSCHNEIDEFRÄSER ZUR BEARBEITUNG VON LEICHTMETALLE - Zylinderschaft
- FRESAS MONO CORTANTE PARA LIGAS LIGERAS - Mango cilindrico
- FRESAS MONO CORTANTES PARA LIGAS LIGEIRAS - Encabadouro cilindrico
- Фреза однозубая для обработки легких сплавов. Цилиндрический хвостовик

CODE (EMP3)	d1 mm js14	l1 mm	l2 mm	d2 mm h6	EMP3 €	ALU SUPREME €	
L18/01	4	55	11	6	•	•	
L18/02	5	60	13	6	•	•	
L18/03	6	57	13	6	•	•	
L18/04	7	65	16	10	•	•	
L18/05	8	70	19	10	•	•	
L18/06	10	75	22	10	•	•	
L18/07	12	80	25	12	•	•	

COATING **ALU-SUPREME**

CODE L18/.../**AS**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■□□

SEMIFINITURA - SEMIFINISHING ■■■□□

FINITURA - FINISHING ■■■□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	◪	□	■	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
□	□	□	□	■	◪

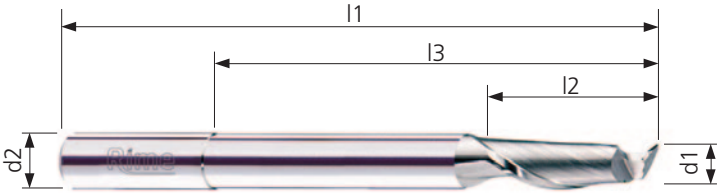
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
L

FRESE MONOTAGLIENTE PER LEGHE LEGGERE

NORM | TIPO-TYPE | Z1



HSS-E C08 | 90° | W | ≃35° | DIN 1835 A

L19

- FRESE MONOTAGLIENTE PER LEGHE LEGGERE - Codolo cilindrico
- SINGLE-FLUTED END MILLS TO MACHINE LIGHT ALLOYS - Straight shank
- FRAISES À UNE TAILLE POUR L'USINAGE D'ALLIAGES LÉGERS - Queue cylindrique
- EINSCHNEIDEFRÄSER ZUR BEARBEITUNG VON LEICHTMETALLE - Zylinderschaft
- FRESAS MONO CORTANTE PARA LIGAS LIGERAS - Mango cilindrico
- FRESAS MONO CORTANTES PARA LIGAS LIGEIRAS - Encabadouro cilindrico
- Фреза однозубая для обработки легких сплавов. Цилиндрический хвостовик

CODE (Co 8%)	d1 mm js14	l1 mm	l2 mm	l3 mm	d2 mm h6	Co 8% €	ALU SUPREME €	
L19/02	3	68	12	20	8	•	•	
L19/03	4	68	12	20	8	•	•	
L19/04	5	62	15	20	6	•	•	
L19/05	5	68	15	23	8	•	•	
L19/06	5	68	15	23	10	•	•	
L19/07	6	68	15	23	8	•	•	
L19/08	8	80	15	60	8	•	•	

COATING **ALU-SUPREME**

CODE L19/.../**AS**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping

Materiali Materials

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

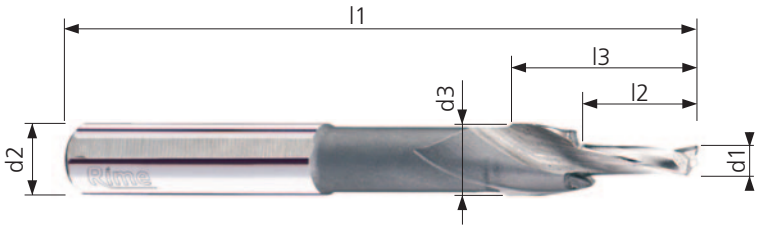
Rime

SERIE
L

FRESE PER FORARE A DUE DIAMETRI

NORM: STANDARD Rime

TIPO-TYPE: SHORT · NORMAL · LONG · EXTRA-LONG



HSS

W

≃30°

DIN 1835 A

L20

- FRESE PER FORARE A DUE DIAMETRI - Due denti per lavorazione leghe leggere - Codolo cilindrico
- TWO-FLUTES END MILLS BORING TWO DIFFERENT DIAMETRES TO MACHINE LIGHT ALLOYS - Straight shank
- FRAISES À DEUX TAILLES À FORER DEUX DIAMÈTRES POUR L'USINAGE D'ALLIAGES LÉGERS - Queue cylindrique
- ZWEISCHNEIDEN-STUFENFRÄSER ZUR BEARBEITUNG VON LEICHTMETALLE - Zylinderschaft
- FRESAS PARA TALADRAR CON DOS DIÁMETROS - Dos labios para mecanizar ligas ligeras - Mango cilindrico
- FRESAS PARA TALADRAR COM DOIS DIAMETROS - Duas navalhas para mecanizar ligas ligeiras - Encabadouro cilindrico
- Фреза-сверло ступенчатое для обработки легких сплавов. Цилиндрический хвостовик

CODE	d1 mm js14	d3 mm	l1 mm	l2 mm	l3 mm	d2 mm h6	HSS €
L20/01	6	12	85	18	30	10	•
L20/02	6.5	13.5	85	18	30	10	•
L20/03	5.5	11.5	100	18	30	10	•
L20/04	6	11.5	100	18	30	10	•
L20/05	6	12	100	18	30	12	•
L20/06	6.5	13.5	100	18	30	10	•
L20/07	7	13	100	18	30	12	•
L20/08	7	15	100	18	30	12	•
L20/09	7	18.5	100	18	30	12	•

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
☐	☐	☐	■	☐

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
☐	☐	☐	☐	■	◪

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED ☐

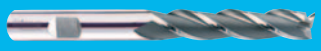
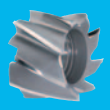
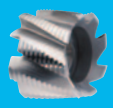

Rime
advanced tools production



SERIE MG

Frese in PM (EMP3)

End mills in PM (EMP3)

		pag.			pag.
MG0		161	MG17		177
MG1		162	MG18		178
MG3		163	MG19		179
MG4		164	MG20		180
MG5		165	MG22		181
MG6		166	MG23		182
MG7		167	MG24		183
MG8		168	MG25		184
MG9		169	MG26		185
MG10		170	MG27		186
MG11		171	MG28		187
MG12		172	MG29		188
MG13		173	MG30		189
MG14		174	MG31		190
MG15		175	MG32		191
MG16		176			

torna all'indice



advanced tools production

design and technology

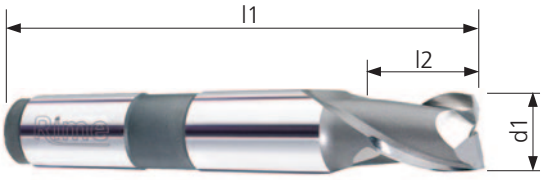
Rime
advanced tools production

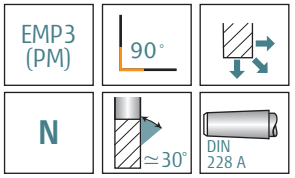
Rime

SERIE
MG

FRESE A DUE DENTI PER CAVE

NORM	TIPO-TYPE	Z2
UNI 8260A DIN 326D ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	





NORMALE

MG0

- FRESE A DUE DENTI PER CAVE - Un dente frontale tagliente fino al centro - Codolo conico Morse con foro filettato
- TWO-FLUTES SLOT CUTTERS - One end tooth cutting up to the centre - Morse taper shank
- FRAISES À RAINURES DEUX DENTS - Une dent bout coupante jusq'au centre - Queue au cône Morse à trou fileté
- LANGLOCHFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS DE DOS LABIOS - Un labio que corta hasta el centro - Mango cónico Morse con taladro roscado
- FRESAS CILINDRICAS DE DUAS NAVALHAS - Encabadouro cone Morse con taladro roscado
- Фреза 2-х зубая. Режущий торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE	d1 mm e8	l2 mm	l1 mm	CM-MK	Z	EMP3 €
MG0/01	16	19	104	2	2	•
MG0/03	18	19	104	2	2	•
MG0/05	20	22	124	3	2	•
MG0/06	21	22	124	3	2	•
MG0/07	22	22	124	3	2	•
MG0/08	23	22	124	3	2	•
MG0/09	24	26	128	3	2	•
MG0/10	25	26	128	3	2	•
MG0/11	26	26	128	3	2	•
MG0/12	27	26	128	3	2	•
MG0/13	28	26	128	3	2	•
MG0/14	29	26	128	3	2	•
MG0/15	30	32	134	3	2	•
MG0/16	32	32	157	4	2	•
MG0/17	34	32	157	4	2	•
MG0/18	35	32	157	4	2	•
MG0/19	36	32	157	4	2	•
MG0/20	38	38	163	4	2	•
MG0/21	40	38	163	4	2	•
MG0/22	45	38	163	4	2	•
MG0/23	50	45	170	4	2	•

Ulteriori diametri a richiesta
Other diameters on demand

Parametri
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Suggerimenti
Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni
Workings

Apertura cava Slotting ■
Contornatura Side milling ◪
Copia 3D 3D copying □
Assiale Axial ■
Rampa Ramping ■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

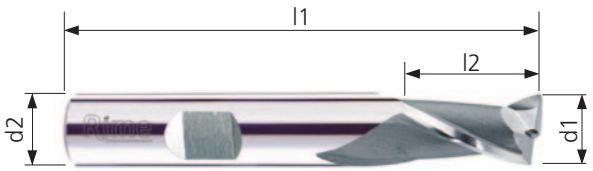
■ CONSIGLIATO RECOMMENDED
◪ ACCETTABILE ACCEPTABLE
□ SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
MG

FRESE A DUE DENTI PER CAVE

NORM	TIPO-TYPE	Z2
UNI 8258 DIN 327D ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 90° | N | ≃30° | DIN 1835 B

NORMALE

MG1

- FRESE A DUE DENTI PER CAVE - Un dente frontale tagliente fino al centro - Attacco Weldon
- TWO-FLUTES SLOT CUTTERS - One end tooth cutting up to the centre - Weldon shank
- FRAISES À RAINURES DEUX DENTS - Une dent bout coupante jusq'au centre - Queue cylindrique Weldon
- LANGLOCHFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS DE DOS LABIOS - Un labio que corta hasta el centro - Mango Weldon
- FRESAS CILINDRICAS DE DUAS NAVALHAS - Encabadouro Weldon
- Фреза 2-х зубая. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP3)	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	SUPREME €
MG1/00	2	4	48	6	2	•	•
MG1/01	3	5	49	6	2	•	•
MG1/02	3.5	6	50	6	2	•	•
MG1/03	4	7	51	6	2	•	•
MG1/04	4.5	7	51	6	2	•	•
MG1/05	5	8	52	6	2	•	•
MG1/06	5.5	8	52	6	2	•	•
MG1/07	6	8	52	6	2	•	•
MG1/08	6.5	10	60	10	2	•	•
MG1/09	7	10	60	10	2	•	•
MG1/10	7.5	10	60	10	2	•	•
MG1/11	8	11	61	10	2	•	•
MG1/12	8.5	11	61	10	2	•	•
MG1/13	9	11	61	10	2	•	•
MG1/14	9.5	13	63	10	2	•	•
MG1/15	10	13	63	10	2	•	•
MG1/16	10.5	13	70	12	2	•	•
MG1/17	11	13	70	12	2	•	•
MG1/18	12	16	73	12	2	•	•
MG1/19	13	16	73	12	2	•	•
MG1/20	14	16	73	12	2	•	•
MG1/21	15	19	79	16	2	•	•
MG1/22	16	19	79	16	2	•	•
MG1/23	17	19	79	16	2	•	•
MG1/24	18	19	79	16	2	•	•
MG1/25	19	22	88	20	2	•	•
MG1/26	20	22	88	20	2	•	•
MG1/27	22	22	88	20	2	•	•
MG1/28	23	22	98	25	2	•	•
MG1/29	24	26	102	25	2	•	•
MG1/30	25	26	102	25	2	•	•
MG1/31	26	26	102	25	2	•	•
MG1/32	28	26	102	25	2	•	•
MG1/33	30	26	102	25	2	•	•
MG1/34	32	32	112	32	2	•	•

COATING **SUPREME**

CODE MG1/.../**S**

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Suggerimenti
Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni
Workings

Apertura cava Slotting ■ | Contornatura Side milling ◪ | Copia 3D 3D copying □ | Assiale Axial ■ | Rampa Ramping ■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

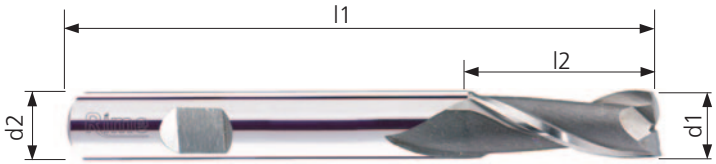
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE A DUE DENTI PER CAVE

NORM | TIPO-TYPE | Z2



EMP3 (PM) | 90° | N | ≃30° | DIN 1835 B

LUNGA

MG3

- FRESE A DUE DENTI PER CAVE - Un dente frontale tagliente fino al centro - Attacco Weldon
- TWO-FLUTES SLOT CUTTERS - One end tooth cutting up to the centre - Weldon shank
- FRAISES À RAINURES DEUX DENTS - Une dent bout coupante jusq'au centre - Queue cylindrique Weldon
- LANGLOCHFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS DE DOS LABIOS - Un labio que corta hasta el centro - Mango Weldon
- FRESAS CILINDRICAS DE DUAS NAVAL-HAS - Encabadouro Weldon
- Фреза 2-х зубая. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE (EMP3)	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	SUPREME €
MG3/01	3	9	58	6	2	•	•
MG3/02	3.5	13	67	6	2	•	•
MG3/03	4	13	67	6	2	•	•
MG3/04	4.5	13	68	6	2	•	•
MG3/05	5	16	70	6	2	•	•
MG3/06	5.5	16	76	6	2	•	•
MG3/07	6	16	76	6	2	•	•
MG3/08	6.5	16	76	10	2	•	•
MG3/09	7	19	79	10	2	•	•
MG3/10	7.5	19	79	10	2	•	•
MG3/11	8	19	79	10	2	•	•
MG3/12	8.5	22	83	10	2	•	•
MG3/13	9	22	83	10	2	•	•
MG3/14	9.5	22	83	10	2	•	•
MG3/15	10	22	83	10	2	•	•
MG3/16	10.5	25	95	12	2	•	•
MG3/17	11	25	95	12	2	•	•
MG3/18	12	28	98	12	2	•	•
MG3/19	13	28	98	12	2	•	•
MG3/20	14	32	102	12	2	•	•
MG3/21	15	32	108	16	2	•	•
MG3/22	16	32	108	16	2	•	•
MG3/23	17	35	114	16	2	•	•
MG3/24	18	35	114	16	2	•	•
MG3/25	19	38	132	20	2	•	•
MG3/26	20	38	132	20	2	•	•
MG3/27	21	38	132	20	2	•	•
MG3/28	22	41	141	25	2	•	•
MG3/29	23	41	141	25	2	•	•
MG3/30	24	41	152	25	2	•	•
MG3/31	25	44	159	25	2	•	•
MG3/32	26	44	159	25	2	•	•
MG3/33	28	44	159	25	2	•	•
MG3/34	30	50	159	25	2	•	•
MG3/35	32	52	165	32	2	•	•

COATING **SUPREME**

CODE MG3/.../**S**

Parametri
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping

Materiali Materials

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

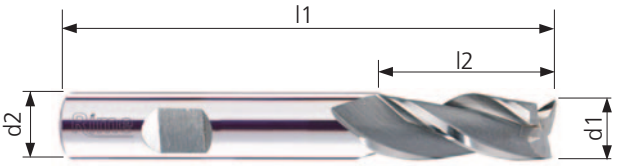
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
MG

FRESE A TRE DENTI

NORM	TIPO-TYPE	Z3
UNI 8248 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 90° | N | ≃30° | DIN 1835 B

NORMALE

MG4

- FRESE A TRE DENTI - Un dente frontale tagliente fino al centro - Attacco Weldon
- THREE-FLUTES END MILLS - One end tooth cutting up to the centre - Weldon shank
- FRAISES À CYLINDRES TROIS DENTS - Une dent bout coupante jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER, DREISCHNEIDER - Eine Schneide mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES DE TRES LABIOS - Un labio que corta hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS DE TRÊS NAVALHAS - Encabadouro Weldon
- Фреза 3-х зубая. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP3)	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	SUPREME €
MG4/01	2	7	51	6	3	•	•
MG4/02	2,5	8	52	6	3	•	•
MG4/03	3	8	52	6	3	•	•
MG4/04	3,5	10	54	6	3	•	•
MG4/05	4	11	55	6	3	•	•
MG4/06	4,5	11	55	6	3	•	•
MG4/07	5	13	57	6	3	•	•
MG4/08	5,5	13	57	6	3	•	•
MG4/09	6	13	57	6	3	•	•
MG4/10	6,5	16	66	10	3	•	•
MG4/11	7	16	66	10	3	•	•
MG4/11/1	7,5	19	69	10	3	•	•
MG4/12	8	19	69	10	3	•	•
MG4/12/1	8,5	19	69	10	3	•	•
MG4/13	9	19	69	10	3	•	•
MG4/13/1	9,5	22	72	10	3	•	•
MG4/14	10	22	72	10	3	•	•
MG4/15	11	22	79	12	3	•	•
MG4/16	12	26	83	12	3	•	•
MG4/17	13	26	83	12	3	•	•
MG4/18	14	26	83	12	3	•	•
MG4/19	15	32	92	16	3	•	•
MG4/20	16	32	92	16	3	•	•
MG4/21	17	32	92	16	3	•	•
MG4/22	18	32	92	16	3	•	•
MG4/23	19	38	104	20	3	•	•
MG4/24	20	38	104	20	3	•	•
MG4/25	22	38	104	20	3	•	•
MG4/26	24	45	121	25	3	•	•
MG4/27	25	45	121	25	3	•	•
MG4/28	26	45	121	25	3	•	•
MG4/29	28	45	121	25	3	•	•
MG4/30	30	45	121	25	3	•	•
MG4/31	32	53	133	32	3	•	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

COATING **SUPREME**

CODE MG4/.../**S**

Parametri
Cutting data
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting ■ | Contornatura Side milling ■ | Copia 3D 3D copying □ | Assiale Axial ◪ | Rampa Ramping ◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

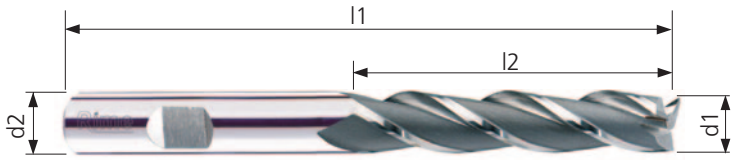
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE A TRE DENTI

NORM	TIPO-TYPE	Z3
UNI 8249 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 90° | N | ≃30° | DIN 1835 B

LUNGA

MG5

- FRESE A TRE DENTI - Un dente frontale tagliente fino al centro - Attacco Weldon
- THREE-FLUTES END MILLS - One end tooth cutting up to the centre - Weldon shank
- FRAISES À CYLINDRES TROIS DENTS - Une dent bout coupante jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER, DREISCHNEIDER - Eine Schneide mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES DE TRES LABIOS - Un labio que corta hasta el centro, mango Weldon
- FRESAS CILINDRICAS FRONTAIS DE TRÊS NAVALHAS - Encabadouro Weldon
- Фреза 3-х зубая. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
MG5/01	2	10	54	6	3	•
MG5/02	3	12	56	6	3	•
MG5/03	4	19	63	6	3	•
MG5/04	5	24	68	6	3	•
MG5/05	6	24	68	6	3	•
MG5/06	7	30	80	10	3	•
MG5/07	8	38	88	10	3	•
MG5/08	10	45	95	10	3	•
MG5/09	12	53	110	12	3	•
MG5/10	14	53	110	12	3	•
MG5/11	16	63	123	16	3	•
MG5/12	18	63	123	16	3	•
MG5/13	20	75	141	20	3	•
MG5/14	22	75	141	20	3	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping

Materiali Materials

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

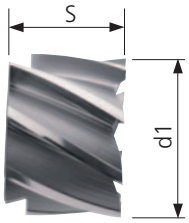
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

Rime

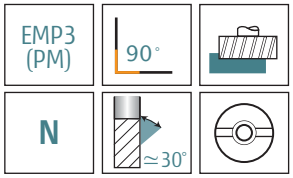
SERIE
MG

FRESE FRONTALI - FINITURA

NORM	TIPO-TYPE
UNI 3903 DIN 1880 ISO 2586	SHORT · NORMAL · LONG · EXTRA-LONG







MG6

- FRESE FRONTALI - FINITURA - Denti elicoidali rinforzati - Cava trascinamento trasversale
- SHELL END MILLS - Reinforced helical teeth
- FRAISES À CYLINDRES FRONTALES - Denture hélicoïdale renforcée
- WALZENFRÄSER MIT QUERNUT - Verstärkte Spiralzähne
- FRESAS CILINDRICAS FRONTALES - Labios helicoidales reforzados
- FRESAS CILINDRICAS FRONTAIS - Oito navalhas helicoidais
- Фреза торцевая с усиленным зубом

CODE	d1 mm js6	s mm k16	d mm H7	Z	EMP3 €
MG6/01	40	32	16	8	•
MG6/02	50	36	22	8	•
MG6/03	63	40	27	8	•
MG6/04	80	45	27	10	•
MG6/05	100	50	32	12	•
MG6/06	125	56	40	14	•

Toll. reale sul Ø
Real Tol. on Ø -0 +0,05

Parametri
Cutting data
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Suggerimenti
Suggestion

SGROSSATURA - ROUGHING ■□□□□
SEMIFINITURA - SEMIFINISHING ■■□□□
FINITURA - FINISHING ■■■■■

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Spianatura Face milling
□	◪	□	□	□	■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

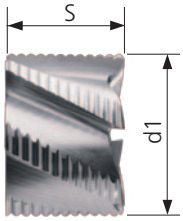
CONSIGLIATO
RECOMMENDED ■
ACCETTABILE
ACCEPTABLE ◪
SCONSIGLIATO
NOT RECOMMENDED □

Rime

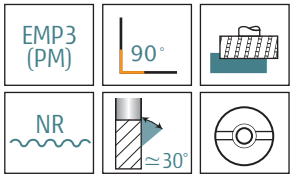
SERIE
MG

FRESE FRONTALI - SGROSSATURA

NORM		TIPO-TYPE
UNI	3903	SHORT NORMAL LONG EXTRA-LONG
DIN	1880	
ISO	2586	







MG7

- FRESE FRONTALI - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Cava trascinamento trasversale
- SHELL END MILLS - Helical teeth with form relieved entirely ground chip-breaker
- FRAISES À CYLINDRES FRONTALES - Denture hélicoïdale avec brise-copeaux dépouillé entièrement rectifié
- WALZENFRÄSER MIT QUERNUT - Schrägschneiden mit voll eingeschliffenem Spanbrecher
- FRESAS CILINDRICAS FRONTALES - Labios helicoidales con arranca de viruta completamente rectificado
- FRESAS CILINDRICAS FRONTAIS - Seis navalhas helicoidais com quebra apara
- Фреза торцевая со стружколомом

CODE	d1 mm js6	s mm k16	d mm H7	Z	EMP3 €
MG7/01	40	32	16	6	•
MG7/02	50	36	22	6	•
MG7/03	63	40	27	8	•
MG7/04	80	45	27	8	•
MG7/05	100	50	32	10	•
MG7/06	125	56	40	12	•

Toll. reale sul Ø
Real Tol. on Ø -0 +0,05

Parametri
Cutting data
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Suggerimenti
Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping	Spianatura Face milling
□	◪	□	□	□	■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

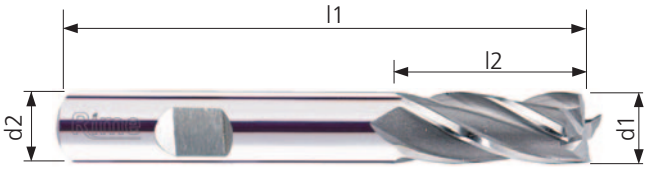
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE PER FINITURA

NORM	TIPO-TYPE	Z4÷6
UNI 8248 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 90° | N | ≃30° | DIN 1835 B

NORMALE

MG8

- FRESE PER FINITURA - Due denti frontali taglienti fino al centro - Attacco Weldon
- END MILLS - Two end teeth cutting up to the centre - Weldon shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS - Quatro navalhas normais com corte ao centro - Encabadouro Weldon
- Фреза концевая для чистовой обработки. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	SUPREME €	
MG8/01	2	7	51	6	4	•	•	
MG8/01/1	2,5	8	52	6	4	•	•	
MG8/02	3	8	52	6	4	•	•	
MG8/02/1	3,5	10	54	6	4	•	•	
MG8/03	4	11	55	6	4	•	•	
MG8/03/1	4,5	11	55	6	4	•	•	
MG8/04	5	13	57	6	4	•	•	
MG8/04/1	5,5	13	57	6	4	•	•	
MG8/05	6	13	57	6	4	•	•	
MG8/05/1	6,5	16	66	10	4	•	•	
MG8/06	7	16	66	10	4	•	•	
MG8/06/1	7,5	19	69	10	4	•	•	
MG8/07	8	19	69	10	4	•	•	
MG8/07/1	8,5	19	69	10	4	•	•	
MG8/08	9	19	69	10	4	•	•	
MG8/09	10	22	72	10	4	•	•	
MG8/10	11	22	79	12	4	•	•	
MG8/11	12	26	83	12	4	•	•	
MG8/12	13	26	83	12	4	•	•	
MG8/13	14	26	83	12	4	•	•	
MG8/14	15	32	92	16	4	•	•	
MG8/15	16	32	92	16	4	•	•	
MG8/16	17	32	92	16	4	•	•	
MG8/17	18	32	92	16	4	•	•	
MG8/18	19	38	104	20	4	•	•	
MG8/19	20	38	104	20	4	•	•	
MG8/20	22	38	104	20	4	•	•	
MG8/21	24	45	121	25	5	•	•	
MG8/22	25	45	121	25	5	•	•	
MG8/23	26	45	121	25	5	•	•	
MG8/24	28	45	121	25	5	•	•	
MG8/25	30	45	121	25	6	•	•	
MG8/26	32	53	133	32	6	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

COATING **SUPREME**

CODE MG8/.../**S**

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

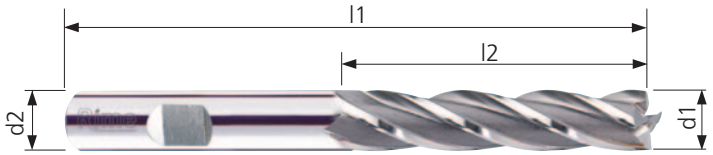
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE PER FINITURA

NORM	TIPO-TYPE	Z4÷6
UNI 8249 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 90° | N | ≃30° | DIN 1835 B

LUNGA

MG9

- FRESE PER FINITURA - Due denti frontali taglienti fino al centro - Attacco Weldon
- END MILLS - Two end teeth cutting up to the centre - Weldon shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusq'au centre -Queue cylindrique Weldon
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS - Quatro navalhas longas com corte ao centro - Encabadouro Weldon
- Фреза концевая для чистовой обработки. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
MG9/01	2	10	54	6	4	•
MG9/02	3	12	56	6	4	•
MG9/03	4	19	63	6	4	•
MG9/04	5	24	68	6	4	•
MG9/05	6	24	68	6	4	•
MG9/06	7	30	80	10	4	•
MG9/07	8	38	88	10	4	•
MG9/08	10	45	95	10	4	•
MG9/09	12	53	110	12	4	•
MG9/10	14	53	110	12	4	•
MG9/11	16	63	123	16	4	•
MG9/12	18	63	123	16	4	•
MG9/13	20	75	141	20	4	•
MG9/14	22	75	141	20	4	•
MG9/15	24	90	166	25	5	•
MG9/16	25	90	166	25	5	•
MG9/17	26	90	166	25	5	•
MG9/18	28	90	166	25	5	•
MG9/19	30	90	166	25	6	•
MG9/20	32	106	186	32	6	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

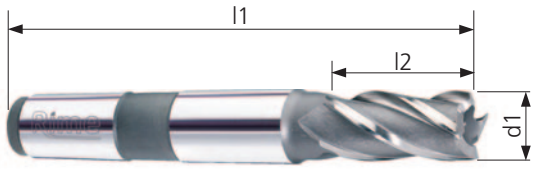
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE PER FINITURA

NORM	TIPO-TYPE	Z4÷8
UNI 8250 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 90° | N | ≃30° | DIN 228 A

NORMALE

MG10

- FRESE PER FINITURA - Codolo conico Morse con foro filettato
- END MILLS - Morse taper shank
- FRAISES À CYLINDRES FRONTALES - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALEs - Mango cónico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS - Quatro navalhas normais - Encabadouro cone Morse con taladro roscado
- Фреза концевая для чистовой обработки. Режущий торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	EMP3 €	SUPREME €	
MG10/01	16	32	117	2	4	•	•	
MG10/02	18	32	117	2	4	•	•	
MG10/03	20	38	140	3	4	•	•	
MG10/04	22	38	140	3	4	•	•	
MG10/05	24	45	147	3	5	•	•	
MG10/06	25	45	147	3	5	•	•	
MG10/07	26	45	147	3	5	•	•	
MG10/08	28	45	147	3	5	•	•	
MG10/09	30	53	155	3	6	•	•	
MG10/10	32	53	178	4	6	•	•	
MG10/11	34	53	178	4	6	•	•	
MG10/12	35	53	178	4	6	•	•	
MG10/13	36	53	178	4	6	•	•	
MG10/14	38	63	188	4	6	•	•	
MG10/15	40	63	188	4	8	•	•	
MG10/16	45	63	188	4	8	•	•	
MG10/17	50	75	233	5	8	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

COATING **SUPREME**

CODE MG10/.../**S**

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	□	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

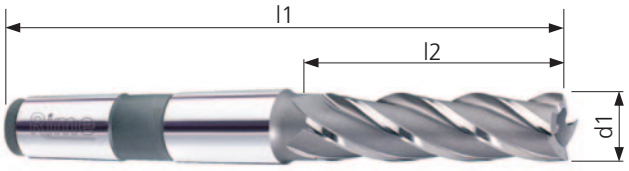
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE PER FINITURA

NORM	TIPO-TYPE	Z4÷8
UNI 8251 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 90° | N | ≃30° | DIN 228 A

LUNGA

MG11

- FRESE PER FINITURA - Codolo conico Morse con foro filettato
- END MILLS - Morse taper shank
- FRAISES À CYLINDRES FRONTALES - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES - Mango cónico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS - Quatro navalhas longas - Encabadouro cone Morse con taladro roscado
- Фреза концевая для чистовой обработки. Режущий торец. Хвостовик конус Морзе с резьбой. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	EMP3 €
MG11/01	16	63	148	2	4	•
MG11/02	18	63	148	2	4	•
MG11/03	20	75	177	3	4	•
MG11/04	22	75	177	3	4	•
MG11/05	24	90	192	3	5	•
MG11/06	25	90	192	3	5	•
MG11/07	26	90	192	3	5	•
MG11/08	28	90	192	3	5	•
MG11/09	30	90	192	3	6	•
MG11/10	32	106	231	4	6	•
MG11/11	34	106	231	4	6	•
MG11/12	35	106	231	4	6	•
MG11/13	36	106	231	4	6	•
MG11/14	38	125	250	4	6	•
MG11/15	40	125	250	4	8	•
MG11/16	45	125	250	4	8	•
MG11/17	50	150	308	5	8	•

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■□□□□
SEMIFINITURA - SEMIFINISHING ■□□□□
FINITURA - FINISHING ■■■■■

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	□	□

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

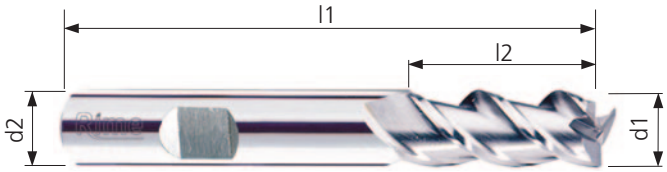
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE CILINDRICHE FRONTALI

NORM | TIPO-TYPE | Z3 | Z4



EMP3 (PM) | 45° 0,05-0,15 | IRREGULAR | IRREGULAR | N | 45° | | DIN 1835 B

NORMALE

MG12

- FRESE CILINDRICHE FRONTALI - Due denti frontali taglienti fino al centro - Elica destra 45° - Divisione irregolare - Attacco Weldon
- END MILLS - Two end teeth cutting up to the centre - 45° right hand spiral - Irregular division - Weldon shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusqu'au centre - Hélice 45° à droite - Division irrégulier - Queue cylindrique Weldon
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - 45° rechts spiralgenutet - Ungleiche schneidenteilung - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Hélice derecha 45° - División irregular - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS - Três navalhas normais com corte ao centro - Hélice direita 45° - Divisão irregular - Encabadouro Weldon
- Фреза концевая с непостоянным шагом зуба. Угол винтовой канавки 45°. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	SUPREME €	
MG12/03	4	11	55	6	3	•	•	
MG12/04	5	13	57	6	3	•	•	
MG12/05	6	13	57	6	3	•	•	
MG12/06	7	16	66	10	3	•	•	
MG12/07	8	20	69	10	3	•	•	
MG12/08	9	20	69	10	3	•	•	
MG12/09	10	22	72	10	3	•	•	
MG12/10	11	26	83	12	3	•	•	
MG12/11	12	26	83	12	3	•	•	
MG12/12	13	26	83	12	3	•	•	
MG12/13	14	26	83	12	3	•	•	
MG12/14	15	36	92	16	3	•	•	
MG12/15	16	36	92	16	3	•	•	
MG12/16	17	40	100	16	4	•	•	
MG12/17	18	40	100	16	4	•	•	
MG12/18	20	45	110	20	4	•	•	
MG12/19	22	45	110	20	4	•	•	
MG12/20	25	50	125	25	4	•	•	
MG12/21	28	56	125	25	4	•	•	
MG12/22	30	63	140	25	4	•	•	
MG12/23	32	63	140	32	4	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

COATING **SUPREME**

CODE MG12/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	■	■

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

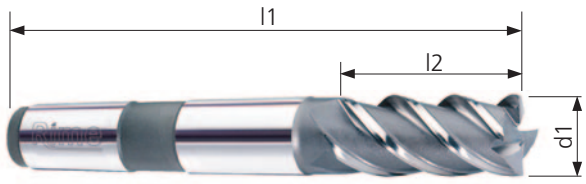
■ CONSIGLIATO RECOMMENDED
◪ ACCETTABILE ACCEPTABLE
□ SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
MG

FRESE CILINDRICHE FRONTALI

NORM | TIPO-TYPE | Z3÷4



EMP3 (PM) | 45° 0,05–0,15 | IRREGULAR | IRREGULAR

N | 45° | | DIN 228 A

NORMALE

MG13

- FRESE CILINDRICHE FRONTALI - Due denti frontali taglienti fino al centro - Elica destra 45° - Divisione irregolare - Codolo conico Morse con foro filettato
- END MILLS - Two end teeth cutting up to the centre - 45° right hand spiral - Irregular division - Morse taper shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusqu'au centre - Hélice 45° à droite - Division irrégulier - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - 45° rechts spiralgenutet - Ungleiche schneidenteilung -Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Hélice derecha 45° - División irregular - Mango conico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTAIS - Três navalhas normais com corte ao centro - Hélice direita 45° - Divisão irregular - Encabadouro cone Morse con taladro roscado
- Фреза концевая с непостоянным шагом зуба. Угол винтовой канавки 45°. Режущий торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	EMP3 €	SUPREME €	
MG13/01	16	36	115	2	3	•	•	
MG13/02	18	40	120	2	4	•	•	
MG13/03	20	45	145	3	4	•	•	
MG13/04	22	45	145	3	4	•	•	
MG13/05	24	50	150	3	4	•	•	
MG13/06	25	50	150	3	4	•	•	
MG13/07	26	56	155	3	4	•	•	
MG13/08	28	56	155	3	4	•	•	
MG13/09	30	63	165	3	4	•	•	
MG13/10	32	63	185	4	4	•	•	
MG13/11	34	70	195	4	4	•	•	
MG13/12	35	70	195	4	4	•	•	
MG13/13	36	70	195	4	4	•	•	
MG13/14	38	70	195	4	4	•	•	
MG13/15	40	70	195	4	4	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

COATING **SUPREME**

CODE MG13/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	■	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

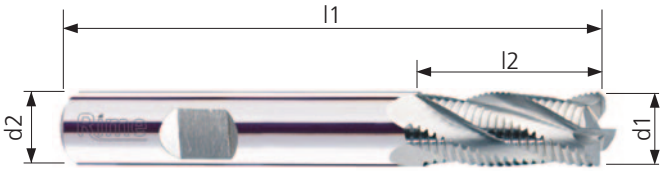
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z3÷6
UNI 8248 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 45° | NR | ≃30° | DIN 1835 B

NORMALE

MG14

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Attacco Weldon
- ROUGHING END MILLS -Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Weldon shank
- FRAISES FRONTALES À CYLINDRES À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spanbrecher - Zwei Schneiden mit Zentrumschnitt - Weldon-Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Três navalhas normais com quebra apara com corte ao centro - Encabadouro Weldon
- Фреза концевая для черновой обработки. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	SUPREME €	
MG14/01	6	13	57	6	3	•	•	
MG14/02	7	16	66	10	3	•	•	
MG14/03	8	19	69	10	4	•	•	
MG14/04	9	19	69	10	4	•	•	
MG14/05	10	22	72	10	4	•	•	
MG14/06	11	22	79	12	4	•	•	
MG14/07	12	26	83	12	4	•	•	
MG14/08	13	26	83	12	4	•	•	
MG14/09	14	26	83	12	4	•	•	
MG14/10	15	32	92	16	4	•	•	
MG14/11	16	32	92	16	4	•	•	
MG14/12	17	32	92	16	4	•	•	
MG14/13	18	32	92	16	4	•	•	
MG14/14	20	38	104	20	4	•	•	
MG14/15	22	38	104	20	4	•	•	
MG14/16	24	45	121	25	5	•	•	
MG14/17	25	45	121	25	5	•	•	
MG14/18	26	45	121	25	5	•	•	
MG14/19	28	45	121	25	5	•	•	
MG14/20	30	45	121	25	5	•	•	
MG14/21	32	53	133	32	5	•	•	
MG14/22	36	53	133	32	6	•	•	
MG14/23	40	63	143	32	6	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **SUPREME**

CODE MG14/.../**S**

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

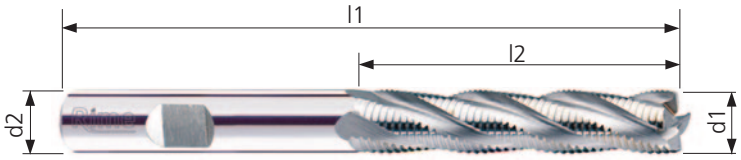
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

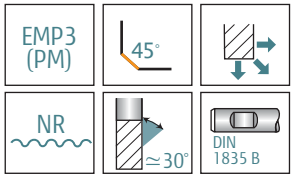
Rime

SERIE
MG

FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z4÷5
UNI 8249 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	





LUNGA

MG15

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Attacco Weldon
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Weldon shank
- FRAISES FRONTALES À CYLINDRES À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spanbrecher - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Quatro navalhas longas quebra apara com corte ao centro - Encabadouro Weldon
- Фреза концевая для черновой обработки. Режущий торец. Хвостовик Weldon. Удлиненная серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	SUPREME €	
MG15/01	8	38	88	10	4	•	•	
MG15/02	10	45	95	10	4	•	•	
MG15/03	12	53	110	12	4	•	•	
MG15/04	14	53	110	12	4	•	•	
MG15/05	15	63	123	16	4	•	•	
MG15/06	16	63	123	16	4	•	•	
MG15/07	18	63	123	16	4	•	•	
MG15/08	20	75	141	20	4	•	•	
MG15/09	22	75	141	20	4	•	•	
MG15/10	24	90	166	25	5	•	•	
MG15/11	25	90	166	25	5	•	•	
MG15/12	28	90	166	25	5	•	•	
MG15/13	30	90	166	25	5	•	•	
MG15/14	32	106	186	32	5	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **SUPREME**

CODE MG15/.../**S**

Parametri
Cutting data
pag. 201-224

Suggerimenti
Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

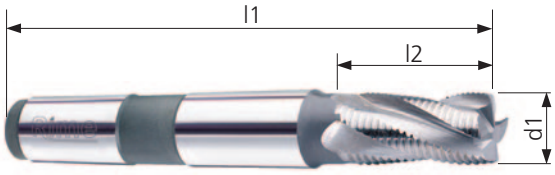
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z4÷7
UNI 8250 8251 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 45° | NR | ≃30° | DIN 228 A

NORMALE

MG16

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES FRONTALES À CYLINDRES À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango conico Morse taladro roscado
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Quatro navalhas normais quebra apara com corte ao centro - Encabadouro cone Morse con taladro roscado
- Фреза концевая для черновой обработки. Режущий торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	EMP3 €	SUPREME €	
MG16/01	16	32	117	2	4	•	•	
MG16/02	18	32	117	2	4	•	•	
MG16/03	20	38	140	3	4	•	•	
MG16/04	22	38	140	3	4	•	•	
MG16/05	24	45	147	3	5	•	•	
MG16/06	25	45	147	3	5	•	•	
MG16/07	26	45	147	3	5	•	•	
MG16/08	28	45	147	3	5	•	•	
MG16/09	30	53	155	3	5	•	•	
MG16/10	32	53	178	4	5	•	•	
MG16/11	34	53	178	4	5	•	•	
MG16/12	35	53	178	4	6	•	•	
MG16/13	36	53	178	4	6	•	•	
MG16/14	38	63	188	4	6	•	•	
MG16/15	40	63	188	4	6	•	•	
MG16/16	45	63	188	4	6	•	•	
MG16/17	50	75	200	4	7	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **SUPREME**

CODE MG16/.../**S**

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

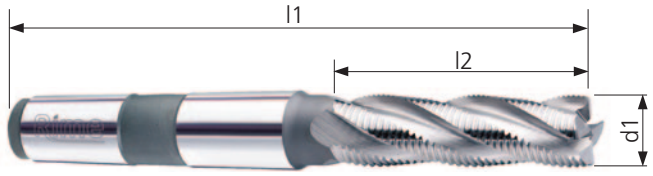
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z4÷7
UNI 8250 8251 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | 45° | NR | ≃30° | DIN 228 A

LUNGA

MG17

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES FRONTALES À CYLINDRES À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango conico Morse taladro roscado
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Quatro navalhas longas quebra apara com corte ao centro - Encabadouro cone Morse con taladro roscado
- Фреза концевая для черновой обработки. Режущий торец. Хвостовик конус Морзе с резьбой. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	EMP3 €
MG17/01	16	63	148	2	4	•
MG17/02	18	63	148	2	4	•
MG17/03	20	75	177	3	4	•
MG17/04	22	75	177	3	4	•
MG17/05	24	90	192	3	5	•
MG17/06	25	90	192	3	5	•
MG17/07	26	90	192	3	5	•
MG17/08	28	90	192	3	5	•
MG17/09	30	90	192	3	5	•
MG17/10	32	106	231	4	5	•
MG17/11	34	106	231	4	5	•
MG17/12	35	106	231	4	6	•
MG17/13	36	106	231	4	6	•
MG17/14	38	125	250	4	6	•
MG17/15	40	125	250	4	6	•
MG17/16	45	125	250	4	6	•
MG17/17	50	150	275	4	7	•

Toll. reale sul Ø
Real Tol. on Ø ±0,05

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

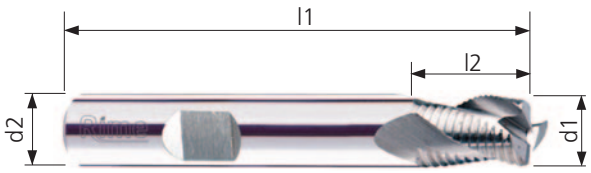
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE PER SGROSSATURA

NORM ISO 1641/I | TIPO-TYPE | Z3



EMP3 (PM) | 45° | NR | ≃30° | DIN 1835 B

CORTA

MG18

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamenterettificato - Un dente frontale tagliente fino al centro - Attacco Weldon
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - One end tooth cutting up to the centre - Weldon shank
- FRAISES FRONTALES À CYLINDRES À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Une dent bout coupante jusq'au centre - Queue cylindrique Weldon
- LANGLOCHFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Eine Schneide mit Zentrumschnitt Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta - Un labio que corta hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS PARA DESBASTE - Três navalhas curtas quebra apara com corte ao centro - Encabadouro Weldon
- Фреза концевая для черновой обработки. Режущий торец. Хвостовик Weldon. Короткая серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	SUPREME €	
MG18/01	6	8	52	6	3	•	•	
MG18/02	8	11	61	10	3	•	•	
MG18/03	10	13	63	10	3	•	•	
MG18/04	12	13	73	12	3	•	•	
MG18/05	14	16	73	12	3	•	•	
MG18/06	15	19	79	16	3	•	•	
MG18/07	16	19	79	16	3	•	•	
MG18/08	18	19	79	16	3	•	•	
MG18/09	20	22	88	20	3	•	•	
MG18/10	22	22	88	20	3	•	•	
MG18/11	25	26	102	25	3	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

COATING **SUPREME**

CODE MG18/.../**S**

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	■	■

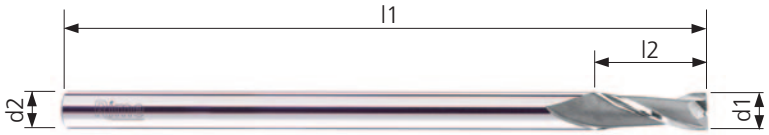
Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

FRESE A DUE DENTI PER CAVE
EXTRALUNGA

NORM | TIPO-TYPE | Z2



EMP3 (PM) | 45° | N | ≃30° | DIN 1835 A

EXTRA-LUNGA

CODE	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
MG19/00	6	25	180	6	2	•
MG19/00/1	8	25	180	8	2	•
MG19/01	10	30	200	10	2	•
MG19/02	12	30	200	12	2	•
MG19/03	16	35	200	16	2	•
MG19/04	20	35	200	20	2	•
MG19/05	25	40	200	25	2	•

MG19

- FRESE A DUE DENTI PER CAVE - EXTRALUNGA - Un dente frontale tagliente fino al centro - Codolo cilindrico
- COPY MILLING CUTTERS - One end tooth cutting up to the centre - Straight shank
- FRAISES POUR MACHINES À COPIER - Une dent bout coupante jusq'au centre - Queue cylindrique
- NACHFORMFRÄSER - Eine Schneide mit Zentrumschnitt - Zylinderschaft
- FRESAS EN COPIADO - Un labio que corta hasta el centro - Mango cilindrico
- FRESAS DE COPIA EXTRA LONGAS - Um naval com corte ao centro - Encabadouro cilindrico
- Фреза концевая. Режущий торец. Цилиндрический хвостовик. Ультрадлинная серия

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	◪	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

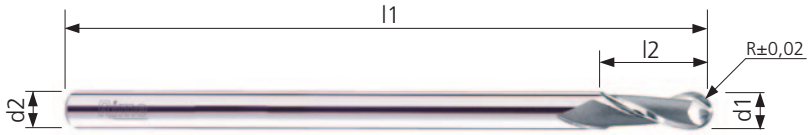
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE A DUE DENTI A TESTA SFERICA
EXTRALUNGA

NORM | TIPO-TYPE | Z2



EMP3 (PM) | N | ≃30° | DIN 1835 A

EXTRA-LUNGA

MG20

- FRESE A DUE DENTI A TESTA SFERICA - EXTRALUNGA - Due denti elicoidali testa semisferica - Codolo cilindrico
- COPY MILLING CUTTERS - Two ball-nosed helical teeth - Straight shank
- FRAISES POUR MACHINES À COPIER - Deux dents hélicoïdales à bout hémi-sferïque - Queue cylindrique
- NACHFORMFRÄSER - Zwei Halbrun-dkopf-Schrägzähne - Zylinderschaft
- FRESAS EN COPIADO - Dos labios heli-coidales cabeza hemisférica - Mango cilindrico
- FRESAS DE COPIA EXTRA LONGAS - Duas navalhas helicoidais cabeça bo-leada - Encabadouro cilindrico
- Фреза концевая. Сферический торец. Цилиндрический хвостовик. Ультра-длинная серия.

CODE	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
MG20/00	6	25	180	6	2	•
MG20/00/1	8	25	180	8	2	•
MG20/01	10	30	200	10	2	•
MG20/02	12	30	200	12	2	•
MG20/03	16	35	200	16	2	•
MG20/04	20	35	200	20	2	•
MG20/05	25	40	200	25	2	•

Parametri Cutting data pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting | Contornatura Side milling | Copia 3D 3D copying | Assiale Axial | Rampa Ramping

Materiali Materials

ACCIAI STEELS | GHISE CAST IRON | ACCIAI INOSSIDABILI STAINLESS STEELS | SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM | LEGHE LEGGERE LIGHT ALLOYS | MATERIALI NON FERROSI NON FERROUS MATERIAL

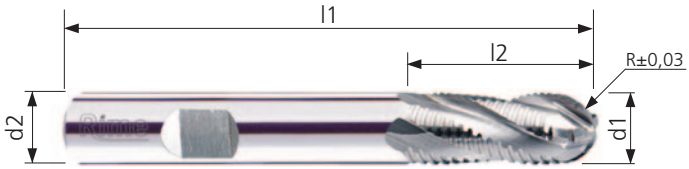
CONSIGLIATO RECOMMENDED
ACCETTABILE ACCEPTABLE
SCONSIGLIATO NOT RECOMMENDED

Rime

SERIE
MG

FRESE A TESTA SEMISFERICA PER SGROSSATURA E SEMIFINITURA

NORM	TIPO-TYPE	Z3÷6
ISO 1641/II	SHORT · NORMAL · LONG · EXTRA-LONG	



EMP3 (PM) · NF · ≃30° · DIN 1835 B

NORMALE

MG22

- FRESE A TESTA SEMISFERICA PER SGROSSATURA E SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Attacco Weldon
- ROUGHING AND SEMIFINISHING BALL-NOSED END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Weldon shank
- FRAISES FRONTALES À CYLINDRES À BOUT HÉMISPHERIQUE À DEGROSSIR ET DEMIFINIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- HALBRUNDKOPFRÄSER - Schrägschneiden mit voll eingeschliffenem Spanbrecher - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES CABEZA SEMIESFÉRICA PARA DESBASTE Y SEMI ACABAR - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS BOLEADAS PARA DESBASTE E SEMI ACABAMENTO - Três navalhas normais quebra apara com corte ao centro - Encabadouro Weldon
- Фреза для черновой и получистовой обработки со стружколомом. Сферический торец. Хвостовик Weldon. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
MG22/01	6	13	57	6	3	•
MG22/02	7	16	66	10	3	•
MG22/03	8	19	69	10	4	•
MG22/04	9	19	69	10	4	•
MG22/05	10	22	72	10	4	•
MG22/06	11	22	79	12	4	•
MG22/07	12	26	83	12	4	•
MG22/08	13	26	83	12	4	•
MG22/09	14	26	83	12	4	•
MG22/10	15	32	92	16	4	•
MG22/11	16	32	92	16	4	•
MG22/12	17	32	92	16	4	•
MG22/13	18	32	92	16	4	•
MG22/14	20	38	104	20	4	•
MG22/15	22	38	104	20	4	•
MG22/16	24	45	121	25	5	•
MG22/17	25	45	121	25	5	•
MG22/18	26	45	121	25	5	•
MG22/19	28	45	121	25	5	•
MG22/20	30	45	121	25	5	•
MG22/21	32	53	133	32	5	•
MG22/22	36	53	133	32	6	•
MG22/23	40	63	143	32	6	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting · Contornatura Side milling · Copia 3D 3D copying · Assiale Axial · Rampa Ramping

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

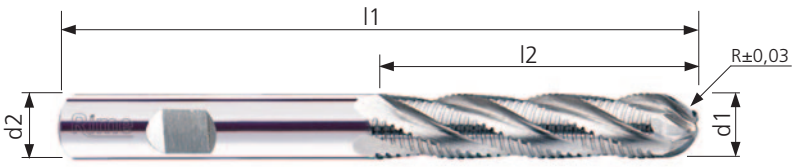
SERIE
MG

FRESE A TESTA SEMISFERICA PER SGROSSATURA E SEMIFINITURA

NORM: ISO 1641/II

TIPO-TYPE: SHORT · NORMAL · LONG · EXTRA-LONG

Z4÷5



EMP3 (PM)

NF

≃30°

DIN 1835 B

LUNGA

MG23

- FRESE A TESTA SEMISFERICA PER SGROSSATURA E SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Attacco Weldon
- ROUGHING AND SEMIFINISHING BALL-NOSED END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Weldon shank
- FRAISES FRONTALES À CYLINDRES À BOUT HÉMISPHERIQUE À DEGROSSIR ET DEMIFINIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- HALBRUNDKOPFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES CABEZA SEMIESFÉRICA PARA DESBASTE Y SEMI ACABAR - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS BOLEADAS PARA DESBASTE E SEMI ACABAMENTO - Quatro navalhas longas quebra apara com corte ao centro - Encabadouro Weldon
- Фреза для черновой и получистовой обработки со стружколомом. Сферический торец. Хвостовик Weldon. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
MG23/01	8	38	88	10	4	•
MG23/02	10	45	95	10	4	•
MG23/03	12	53	110	12	4	•
MG23/04	14	53	110	12	4	•
MG23/05	15	63	123	16	4	•
MG23/06	16	63	123	16	4	•
MG23/07	18	63	123	16	4	•
MG23/08	20	75	141	20	4	•
MG23/09	22	75	141	20	4	•
MG23/10	24	90	166	25	5	•
MG23/11	25	90	166	25	5	•
MG23/12	28	90	166	25	5	•
MG23/13	30	90	166	25	5	•
MG23/14	32	106	186	32	5	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
Cutting data
pag. 201-224

Suggerimenti / Suggestion

SGROSSATURA - ROUGHING ■■■□□

SEMIFINITURA - SEMIFINISHING ■■■■■

FINITURA - FINISHING □□□□□

Lavorazioni / Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	◪	◪	◪

Materiali / Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

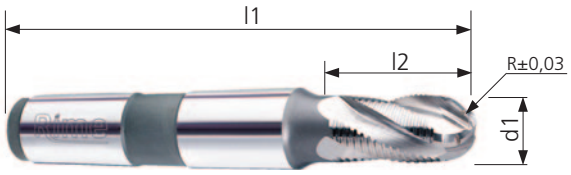
SERIE
MG

FRESE A TESTA SEMISFERICA PER SGROSSATURA E SEMIFINITURA

NORM: ISO 1641/II

TIPO-TYPE: SHORT · NORMAL · LONG · EXTRA-LONG

Z4÷7



EMP3 (PM)

NF

≃ 30°

DIN 228 A

NORMALE

MG24

- FRESE A TESTA SEMISFERICA PER SGROSSATURA E SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper hank
- FRAISES FRONTALES À CYLINDRES À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES CABEZA SEMIESFÉRICA PARA DESBASTE Y SEMI ACABAR - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango cónico Morse taladro roscado
- FRESAS CILINDRICAS FRONTALES BOLEADA PARA DESBASTE E SEMI ACABAMENTO - Navalhas helicoidal com quebra apara - Duas navalhas que cortan hasta el centro - Encabadouro conico - Morse taladro roscado
- Фреза для черновой и получистовой обработки со стружколомом. Сферический торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE	d1 mm js14	l2 mm	l1 m	CM-MK	Z	EMP3 €
MG24/01	16	32	117	2	4	•
MG24/02	18	32	117	2	4	•
MG24/03	20	38	140	3	4	•
MG24/04	22	38	140	3	4	•
MG24/05	24	45	147	3	5	•
MG24/06	25	45	147	3	5	•
MG24/07	26	45	147	3	5	•
MG24/08	28	45	147	3	5	•
MG24/09	30	53	155	3	5	•
MG24/10	32	53	178	4	5	•
MG24/11	34	53	178	4	5	•
MG24/12	35	53	178	4	6	•
MG24/13	36	53	178	4	6	•
MG24/14	38	63	188	4	6	•
MG24/15	40	63	188	4	6	•
MG24/16	45	63	188	4	6	•
MG24/17	50	75	200	4	7	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■□□

SEMIFINITURA - SEMIFINISHING ■■■■■

FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	◪	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

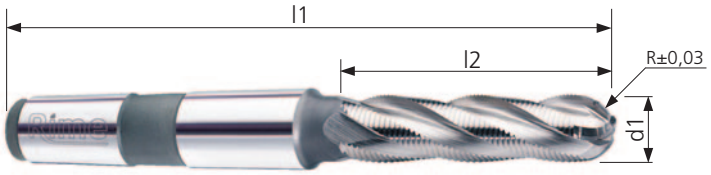
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE A TESTA SEMISFERICA PER SGROSSATURA E SEMIFINITURA

NORM	TIPO-TYPE	Z4÷7
ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | NF | ≃30° | DIN 228 A

LUNGA

MG25

- FRESE A TESTA SEMISFERICA PER SGROSSATURA E SEMIFINITURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES FRONTALES À CYLINDRES À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES CABEZA SEMIESFÉRICA PARA DESBASTE Y SEMI ACABAR - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango conico Morse taladro roscado
- FRESAS CILINDRICAS FRONTALES BOLEADA PARA DESBASTE E SEMI ACABAMENTO - Navalhas helicoidal com quebra apara - Duas navalhas que cortan hasta el centro - Encabadouro conico - Morse taladro roscado
- Фреза для черновой и получистовой обработки со стружколомом. Сферический торец. Хвостовик конус Морзе с резьбой. Удлиненная серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	EMP3 €
MG25/01	16	63	148	2	4	•
MG25/02	18	63	148	2	4	•
MG25/03	20	75	177	3	4	•
MG25/04	22	75	177	3	4	•
MG25/05	24	90	192	3	5	•
MG25/06	25	90	192	3	5	•
MG25/07	26	90	192	3	5	•
MG25/08	28	90	192	3	5	•
MG25/09	30	90	192	3	5	•
MG25/10	32	106	231	4	5	•
MG25/11	34	106	231	4	5	•
MG25/12	35	106	231	4	6	•
MG25/13	36	106	231	4	6	•
MG25/14	38	125	250	4	6	•
MG25/15	40	125	250	4	6	•
MG25/16	45	125	250	4	6	•
MG25/18	50	150	275	4	7	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■□□
SEMIFINITURA - SEMIFINISHING ■■■■■
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	◪	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

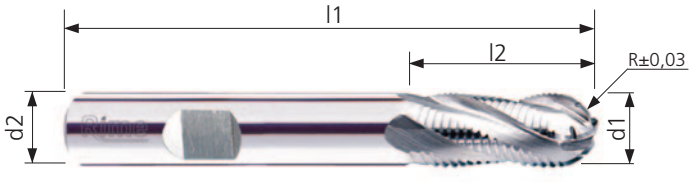
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE A TESTA SEMISFERICA PER SGROSSATURA

NORM	TIPO-TYPE	Z3÷6
ISO 1641/I	SHORT · NORMAL · LONG · EXTRA-LONG	



EMP3 (PM) · r · NR · ≃30° · DIN 1835 B

NORMALE

MG26

- FRESE A TESTA SEMISFERICA PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Attacco Weldon
- ROUGHING BALL-NOSED END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Weldon shank
- FRAISES FRONTALES À CYLINDRES À BOUT HÉMISPHERIQUE À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- HALBRUNDKOPFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES CABEZA SEMIESFÉRICA PARA DESBASTE - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTALES BOLEADA PARA DESBASTE - Navalhas helicoidal com quebra apara - Duas navalhas que cortan hasta el centro - Encabadouro Weldon
- Фреза для черновой обработки. Сферический торец. Хвостовик Weldon. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
MG26/01	6	13	57	6	3	•
MG26/02	7	16	66	10	3	•
MG26/03	8	19	69	10	4	•
MG26/04	9	19	69	10	4	•
MG26/05	10	22	72	10	4	•
MG26/06	11	22	79	12	4	•
MG26/07	12	26	83	12	4	•
MG26/08	13	26	83	12	4	•
MG26/09	14	26	83	12	4	•
MG26/10	15	32	92	16	4	•
MG26/11	16	32	92	16	4	•
MG26/12	17	32	92	16	4	•
MG26/13	18	32	92	16	4	•
MG26/14	20	38	104	20	4	•
MG26/15	22	38	104	20	4	•
MG26/16	24	45	121	25	5	•
MG26/17	25	45	121	25	5	•
MG26/18	26	45	121	25	5	•
MG26/19	28	45	121	25	5	•
MG26/20	30	45	121	25	5	•
MG26/21	32	53	133	32	5	•
MG26/22	36	53	133	32	6	•
MG26/23	40	63	143	32	6	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting ◪ · Contornatura Side milling ■ · Copia 3D 3D copying ◪ · Assiale Axial ◪ · Rampa Ramping ◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

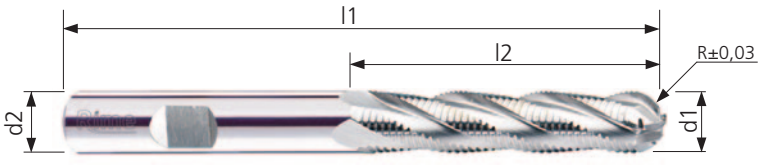
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE A TESTA SEMISFERICA PER SGROSSATURA

NORM	TIPO-TYPE	Z4÷5
ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | r | NR | ≃30° | DIN 1835 B

LUNGA

MG27

CODE	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €
MG27/01	8	38	88	10	4	•
MG27/02	10	45	95	10	4	•
MG27/03	12	53	110	12	4	•
MG27/04	14	53	110	12	4	•
MG27/05	15	63	123	16	4	•
MG27/06	16	63	123	16	4	•
MG27/07	18	63	123	16	4	•
MG27/08	20	75	141	20	4	•
MG27/09	22	75	141	20	4	•
MG27/10	24	90	166	25	5	•
MG27/11	25	90	166	25	5	•
MG27/12	28	90	166	25	5	•
MG27/13	30	90	166	25	5	•
MG27/14	32	106	186	32	5	•

- FRESE A TESTA SEMISFERICA PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Attacco Weldon
- ROUGHING BALL-NOSED END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Weldon shank
- FRAISES FRONTALES À CYLINDRES À BOUT HÉMISPHERIQUE À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- HALBRUNDKOPFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Weldon-Spannfläche
- FRESAS CILINDRICAS FRONTALES CABEZA SEMIESFÉRICA PARA DESBASTE - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTALES BOLEADA PARA DESBASTE - Navalhas helicoidal com quebra apara - Duas navalhas que cortan hasta el centro - Encabadouro Weldon
- Фреза для черновой обработки. Сферический торец. Хвостовик Weldon. Удлиненная серия

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	◪	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

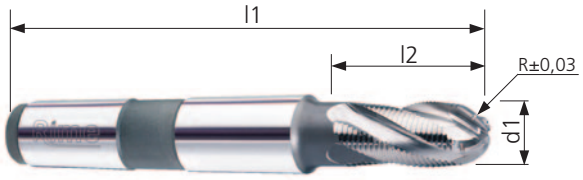
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE A TESTA SEMISFERICA PER SGROSSATURA

NORM	TIPO-TYPE	Z4÷7
UNI 8250 8251 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | r | NR | ≃30° | DIN 228 A

NORMALE

MG28

- FRESE A TESTA SEMISFERICA PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper shank
- FRAISES FRONTALES À CYLINDRES À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté
- SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde
- FRESAS CILINDRICAS FRONTALES CABEZA SEMIESFÉRICA PARA DESBASTE - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango cónico Morse con taladro roscado
- FRESAS CILINDRICAS FRONTALES BOLEADA PARA DESBASTE - Navalhas helicoidal com quebra apara - Duas navalhas que cortan hasta el centro - Encabadouro conico - Morse taladro roscado
- Фреза для черновой обработки. Сферический торец. Хвостовик конус Морзе с резьбой. Средняя серия

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	EMP3 €
MG28/01	16	32	117	2	4	•
MG28/02	18	32	117	2	4	•
MG28/03	20	38	140	3	4	•
MG28/04	22	38	140	3	4	•
MG28/05	24	45	147	3	5	•
MG28/06	25	45	147	3	5	•
MG28/07	26	45	147	3	5	•
MG28/08	28	45	147	3	5	•
MG28/09	30	53	155	3	5	•
MG28/10	32	53	178	4	5	•
MG28/11	34	53	178	4	5	•
MG28/12	35	53	178	4	6	•
MG28/13	36	53	178	4	6	•
MG28/14	38	63	188	4	6	•
MG28/15	40	63	188	4	6	•
MG28/16	45	63	188	4	6	•
MG28/17	50	75	200	4	7	•

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	◪	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

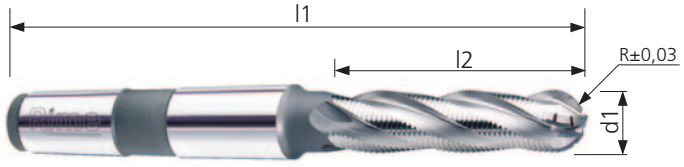
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE A TESTA SEMISFERICA PER SGROSSATURA

NORM	TIPO-TYPE	Z4÷7
UNI 8250 8251 DIN 845B ISO 1641/II	SHORT NORMAL LONG EXTRA-LONG	



EMP3 (PM) | NR | ≃30° | DIN 228 A

LUNGA

MG29

CODE	d1 mm js14	l2 mm	l1 mm	CM-MK	Z	EMP3 €
MG29/01	16	63	148	2	4	•
MG29/02	18	63	148	2	4	•
MG29/03	20	75	177	3	4	•
MG29/04	22	75	177	3	4	•
MG29/05	24	90	192	3	5	•
MG29/06	25	90	192	3	5	•
MG29/07	26	90	192	3	5	•
MG29/08	28	90	192	3	5	•
MG29/09	30	90	192	3	5	•
MG29/10	32	106	231	4	5	•
MG29/11	34	106	231	4	5	•
MG29/12	35	106	231	4	6	•
MG29/13	36	106	231	4	6	•
MG29/14	38	125	250	4	6	•
MG29/15	40	125	250	4	6	•
MG29/16	45	125	250	4	6	•
MG29/17	50	150	275	4	7	•

FRESE A TESTA SEMISFERICA PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Codolo conico Morse con foro filettato

ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Morse taper shank

FRAISES FRONTALES À CYLINDRES À DEGROSSIR - Denture hélicoïdale avec brise-copeaux - Deux dents bout coupantes jusq'au centre - Queue au cône Morse à trou fileté

SCHAFTFRÄSER - Schrägschneiden mit voll eingeschliffenem Spannbrecher - Zwei Schneiden mit Zentrumschnitt - Morsekegelschaft und Anzugsgewinde

FRESAS CILINDRICAS FRONTALES CABEZA SEMIESFÉRICA PARA DESBASTE - Labios helicoidal con arranca de viruta - Dos labios que cortan hasta el centro - Mango conico Morse con taladro roscado

FRESAS CILINDRICAS FRONTALES BOLEADA PARA DESBASTE - Navalhas helicoidal com quebra apara - duas navalhas que cortan hasta el centro - Encabadouro cónico - Morse taladro roscado

Фреза для черновой обработки. Сферический торец. Хвостовик конус Морзе с резьбой. Удлиненная серия

Toll. reale sul Ø / *Real Tol. on Ø* ±0,05

Parametri
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

Lavorazioni Workings

Apertura cava Slotting ◪ | Contornatura Side milling ■ | Copia 3D 3D copying ◪ | Assiale Axial ◪ | Rampa Ramping ◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

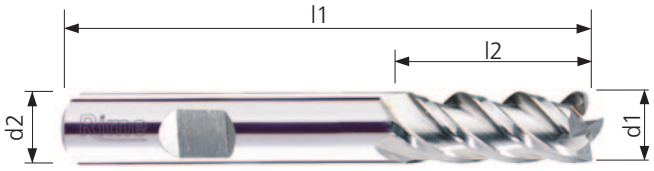
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MG

FRESE CILINDRICHE FRONTALI AD ALTE PRESTAZIONI

NORM	TIPO-TYPE	Z3÷6
UNI 8248 DIN 844B ISO 1641/I	SHORT · NORMAL · LONG · EXTRA-LONG	



EMP3 (PM) | 45° 0,05–0,25 | | IRREGULAR y_4 y_1 y_3 y_2

N | HPC | 45° | DIN 1835 B

NORMALE

MG30

- FRESE CILINDRICHE FRONTALI AD ALTE PRESTAZIONI - Due denti frontali taglienti fino al centro - Elica destra 45° - Divisione irregolare - Attacco Weldon
- END MILLS - Two end teeth cutting up to the centre - 45° right hand spiral - Irregular division - Weldon shank
- FRAISES À CYLINDRES - Deux dents bout coupantes jusqu'au centre - Hélice 45° à droite - Division irreguliere - Queue cylindrique Weldon
- SCHAFTFRÄSER MIT SPANBRECHER - Zwei Schneiden mit Zentrumschnitt - 45° rechts spiralgenutet - Ungleiche schneidenteilung - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES, DOS LABIOS QUE CORTAN HASTA EL CENTRO - Hélice derecha 45° - División irregular - Mango Weldon
- FRESAS CILINDRICAS FRONTALES - Duas navalhas que cortan hasta el centro - Hélice dereita 45° - Divisão irregular - Encabadouro Weldon
- Фреза концевая с непостоянным шагом зуба. Угол винтовой канавки 45°. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	SUPREME €	
MG30/01	6	13	57	6	3	•	•	
MG30/02	8	19	69	10	4	•	•	
MG30/03	10	22	72	10	4	•	•	
MG30/04	12	26	83	12	4	•	•	
MG30/05	14	26	83	12	4	•	•	
MG30/06	16	32	92	16	4	•	•	
MG30/07	18	32	92	16	4	•	•	
MG30/08	20	38	104	20	4	•	•	
MG30/09	22	38	104	20	4	•	•	
MG30/10	25	45	121	25	4	•	•	
MG30/11	28	45	121	25	6	•	•	
MG30/12	30	45	121	25	6	•	•	
MG30/13	32	53	133	32	6	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* ±0,03

COATING **SUPREME**

CODE MG30/.../**S**

Parametri
Cutting data
pag. 201-224

Suggerimenti
Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

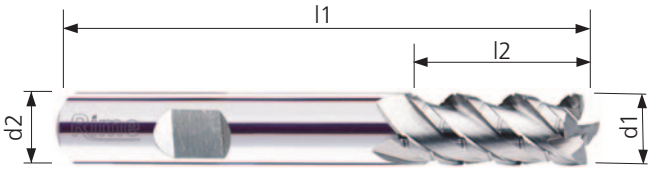
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

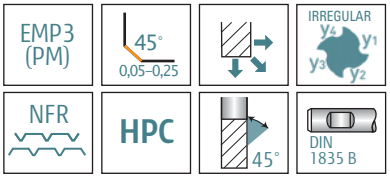
Rime

SERIE
MG

FRESE A TAGLIO INTERROTTO AD ALTE PRESTAZIONI

NORM	TIPO-TYPE	Z3÷6
UNI 8248 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	





NORMALE

MG31

- FRESE A TAGLIO INTERROTTO AD ALTE PRESTAZIONI - Due denti frontali taglienti fino al centro - Elica destra 45° - Divisione irregolare - Attacco Weldon
- END MILLS WITH CHIP-BREAKER - Two end teeth cutting up to the centre - 45° right hand spiral - Irregular division - Weldon shank
- FRAISES CYLINDRES AVEC BRISE-COPEAUX - Deux dents bout coupantes jusq'au centre - Hélice 45° à droite - Division irreguliere - Queue cylindrique Weldon
- SCHAFTFRÄSER MIT SPANNBRECHER - Zwei Schneiden mit Zentrumschnitt - 45° rechts spiralgenutet - Ungleiche schneidenteilung- Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES CON ARRANCA DE VIRUTA - Dos labios que cortan hasta el centro- Hélice derecha 45° - División irregular - Mango Weldon
- FRESAS CILINDRICAS FRONTALES COM QUEBRA APARA - Duas navalhas que cortan hasta el centro - Hélice dereita 45° - Divisão irregular - Encabadouro Weldon
- Фреза концевая со стружколомом. Угол винтовой канавки 45°. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP3)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP3 €	SUPREME €	
MG31/01	6	13	57	6	3	•	•	
MG31/02	8	19	69	10	4	•	•	
MG31/03	10	22	72	10	4	•	•	
MG31/04	12	26	83	12	4	•	•	
MG31/05	14	26	83	12	4	•	•	
MG31/06	16	32	92	16	4	•	•	
MG31/07	18	32	92	16	4	•	•	
MG31/08	20	38	104	20	4	•	•	
MG31/09	22	38	104	20	4	•	•	
MG31/10	25	45	121	25	4	•	•	
MG31/11	28	45	121	25	6	•	•	
MG31/12	30	45	121	25	6	•	•	
MG31/13	32	53	133	32	6	•	•	

Toll. reale sul Ø
Real Tol. on Ø ±0,05

COATING **SUPREME**

CODE
MG31/.../**S**

Parametri
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Suggerimenti
Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING ■■■■■
FINITURA - FINISHING ■■□□□

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

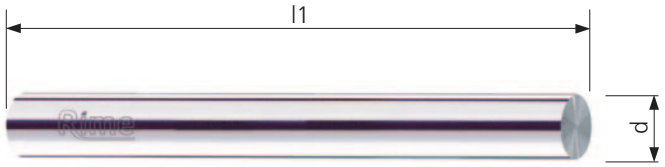
Rime

SERIE
MG

BARRETTE TONDE
TEMPRATE E RETTIFICATE

NORM
UNI 3868

TIPO-TYPE
SHORT NORMAL LONG EXTRA-LONG



EMP3
(PM)

MG32

- BARRETTE TEMPRATE E RETTIFICATE
- ROUND TOOL BITS
- BARREAUX ROND TREMPEES
- ROHLINGE
- BARRETAS REDONDAS TRACTADAS
- BRUS TRACTADAS
- Заготовка-цилиндр шлифованная

CODE	d h8	l j16	EMP3 €
MG32/01	4	100	•
MG32/02	6	100	•
MG32/03	6	200	•
MG32/04	8	100	•
MG32/05	8	200	•
MG32/06	10	100	•
MG32/07	10	200	•
MG32/08	12	100	•
MG32/09	12	200	•
MG32/10	14	200	•
MG32/11	16	200	•
MG32/12	18	200	•
MG32/13	20	200	•


Rime
advanced tools production



SERIE MR

Frese in EMP6

EMP6 end mills

		pag.
MR1		194
MR2		195
MR3		196
MR4		197
MR8		198
MR12		199

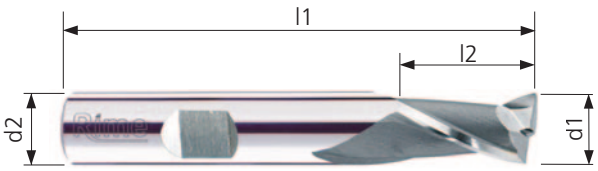
torna all'indice

Rime

SERIE
MR

FRESE A DUE DENTI PER CAVE

NORM	TIPO-TYPE	Z2
UNI 8258 DIN 327D ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP6 (PM) | 90° | N | ≃30° | DIN 1835 B

NORMALE

MR1

- FRESE A DUE DENTI PER CAVE - Un dente frontale tagliente fino al centro - Attacco Weldon
- TWO-FLUTES SLOT CUTTERS - One end tooth cutting up to the centre - Weldon shank
- FRAISES À RAINURES DEUX DENTS - Une dent bout coupante jusq'au centre - Queue cylindrique Weldon
- LANGLOCHFRÄSER, ZWEISCHNEIDER - Eine Schneide mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES DE DOS LABIOS - Un labio que corta hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTALES DE DUAS NAVALHAS - Um naval que corta hasta el centro - Encabadouro Weldon
- Фреза 2-х зубая. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP6)	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	EMP6 €	SUPREME €	
MR1/02	4	7	51	6	2	•	•	
MR1/03	5	8	52	6	2	•	•	
MR1/04	6	8	52	6	2	•	•	
MR1/05	7	10	60	10	2	•	•	
MR1/06	8	11	61	10	2	•	•	
MR1/07	9	11	61	10	2	•	•	
MR1/08	10	13	63	10	2	•	•	
MR1/09	11	13	70	12	2	•	•	
MR1/10	12	16	73	12	2	•	•	
MR1/11	13	16	73	12	2	•	•	
MR1/12	14	16	73	12	2	•	•	
MR1/13	15	19	79	16	2	•	•	
MR1/14	16	19	79	16	2	•	•	
MR1/15	17	19	79	16	2	•	•	
MR1/16	18	19	79	16	2	•	•	
MR1/17	19	22	88	20	2	•	•	
MR1/18	20	22	88	20	2	•	•	
MR1/19	22	22	88	20	2	•	•	

COATING **SUPREME**

CODE
MR1/.../**S**

Parametri
Cutting data
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Suggerimenti
Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	◪	□	■	■

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

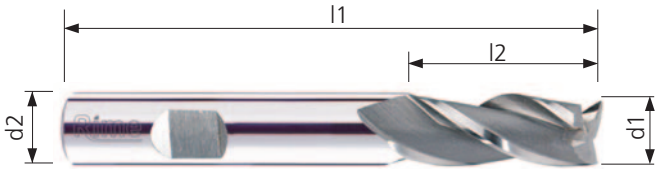
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MR

FRESE A TRE DENTI

NORM	TIPO-TYPE	Z3
UNI 8248 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP6 (PM) | 90° | N | ≃30° | DIN 1835 B

NORMALE

MR2

- FRESE A TRE DENTI - Un dente frontale tagliente fino al centro - Attacco Weldon
- THREE-FLUTES END MILLS - One end tooth cutting up to the centre - Weldon shank
- FRAISES CYLINDRES TROIS DENTS - Une dent bout coupante jusq'au centre - Queue cylindrique Weldon
- SCHATFRÄSER, DREISCHNEIDER - Eine Schneide mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES DE TRES LABIOS - Un labio que corta hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTALES DE TRÉS NAVALHAS - Um naval que corta hasta el centro - Encabadouro Weldon
- Фреза 3-х зубая. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP6)	d1 mm e8	l2 mm	l1 mm	d2 mm h6	Z	EMP6 €	SUPREME €	
MR2/03	4	11	55	6	3	•	•	
MR2/04	5	13	57	6	3	•	•	
MR2/05	6	13	57	6	3	•	•	
MR2/06	7	16	66	10	3	•	•	
MR2/07	8	19	69	10	3	•	•	
MR2/08	10	22	72	10	3	•	•	
MR2/09	12	26	83	12	3	•	•	
MR2/10	14	26	83	12	3	•	•	
MR2/11	16	32	92	16	3	•	•	
MR2/12	18	32	92	16	3	•	•	
MR2/13	20	38	104	20	3	•	•	
MR2/14	22	38	104	20	3	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 -0,03

COATING **SUPREME**

CODE MR2/.../**S**

Parametri
Cutting data
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

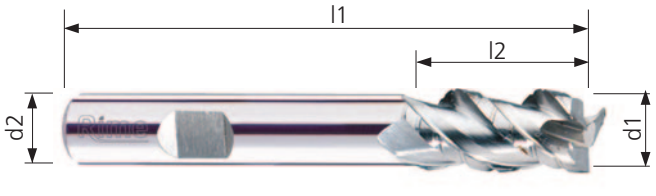
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MR

FRESE A TAGLIO INTERROTTO AD ALTE PRESTAZIONI

NORM | TIPO-TYPE | Z3 | Z4



EMP6 (PM) | 45° 0,05–0,25 | IRREGULAR | NFR | HPC | 45° | IRREGULAR | DIN 1835 B

NORMALE

MR3

- FRESE A TAGLIO INTERROTTO AD ALTE PRESTAZIONI - Un dente frontale tagliente fino al centro - Elica destra 45° - Divisione irregolare - Attacco Weldon
- END MILLS WITH CHIP-BREAKER - One end tooth cutting up to the centre - 45° right hand spiral - Irregular division - Weldon shank
- FRAISES CYLINDRES AVEC BRISE-COPEAUX - Une dent bout coupante jusq'au centre - Hélice 45° à droite - Division irreguliere - Queue cylindrique Weldon
- SCHATFRÄSER, LANGLOCH - Eine Schneide mit Zentrumschnitt - 45° rechts spiralgenutet - Unregelmäßige-Teilung - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES CORTE INTERRUMPO - Un labio que corta hasta el centro, Hélice derecha 45° - División irregular - Mango Weldon
- FRESAS CILINDRICAS FRONTAIS CORTE INTERRUMPIDO - Um naval que corta ao centro - Hélice dereita 45° - Divisão irregular - Encabadouro Weldon
- Фреза концевая со стружколомом с непостоянным шагом зуба. Угол винтовой канавки 45°. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP6)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP6 €	SUPREME €	
MR3/03	6	13	57	6	3	•	•	
MR3/04	8	20	69	10	3	•	•	
MR3/05	10	22	72	10	3	•	•	
MR3/06	12	26	83	12	3	•	•	
MR3/07	14	26	83	12	3	•	•	
MR3/08	16	36	90	16	3	•	•	
MR3/09	18	40	100	16	4	•	•	
MR3/10	20	45	110	20	4	•	•	
MR3/12	25	50	125	25	4	•	•	
MR3/14	30	63	140	25	4	•	•	
MR3/15	32	63	140	32	4	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

COATING **SUPREME**

CODE MR3/.../**S**

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting ■ | Contornatura Side milling ■ | Copia 3D 3D copying □ | Assiale Axial ◪ | Rampa Ramping ◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

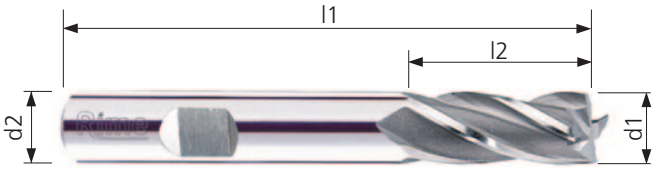
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MR

FRESE PER FINITURA

NORM	TIPO-TYPE	Z4÷6
UNI 8248 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP6 (PM) | 90° | N | ≃30° | DIN 1835 B

NORMALE

MR4

- FRESE PER FINITURA - Due denti frontali taglienti fino al centro - Attacco Weldon
- END MILLS - Two end teeth cutting up to the centre - Weldon shank
- FRAISES CYLINDRES - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Zwei Schneiden mit Zentrumschnitt - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTALES - Duas navalhas que corta ao centro - Encabadouro Weldon
- Фреза для чистовой обработки. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP6)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP6 €	SUPREME €	
MR4/01	6	13	57	6	4	•	•	
MR4/02	7	16	66	10	4	•	•	
MR4/03	8	19	69	10	4	•	•	
MR4/04	9	19	69	10	4	•	•	
MR4/05	10	22	72	10	4	•	•	
MR4/06	12	26	83	12	4	•	•	
MR4/07	14	26	83	12	4	•	•	
MR4/07/1	15	32	92	16	4	•	•	
MR4/08	16	32	92	16	4	•	•	
MR4/09	18	32	92	16	4	•	•	
MR4/10	20	38	104	20	4	•	•	
MR4/11	22	38	104	20	4	•	•	
MR4/12	25	45	121	25	5	•	•	
MR4/13	28	45	121	25	5	•	•	
MR4/14	30	45	121	25	6	•	•	
MR4/15	32	53	133	32	6	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

COATING **SUPREME**

CODE MR4/.../**S**

Parametri
Cutting data
pag. 201-224

Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
◪	■	□	◪	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

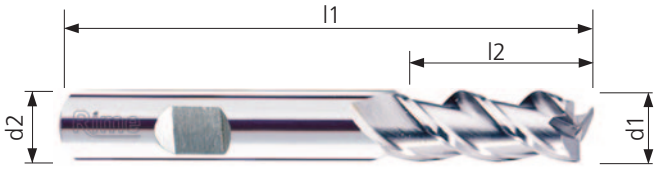
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MR

FRESE CILINDRICHE FRONTALI AD ALTE PRESTAZIONI

NORM | TIPO-TYPE | Z3 | Z4



EMP6 (PM) | 45° 0,05–0,25 | IRREGULAR y_1 y_2 y_3

N | HPC | 45° | DIN 1835 B

NORMALE

MR8

- FRESE CILINDRICHE FRONTALI - Un dente frontale tagliente fino al centro - Elica destra 45° - Divisione irregolare - Attacco Weldon
- END MILLS - One end tooth cutting up to the centre - 45° right hand spiral - Irregular division -Weldon shank
- FRAISES CYLINDRES - Une dent bout coupante jusq'au centre - Hélice 45° à droite - Division irreguliere - Queue cylindrique Weldon
- SCHAFTFRÄSER - Eine Schneide mit Zentrumschnitt - 45° rechts spiralgenutet - Unregelmäßige - Teilung - Weldon Spannfläche
- FRESAS CILINDRICAS FRONTALES - Un labio que corta hasta el centro - Hélice derecha 45° - División irregular - Mango Weldon
- FRESAS CILINDRICAS FRONTALES - Um naval que corta ao centro - Hélice dereita - Divisão irregular - Encabadouro Weldon
- Фреза концевая с непостоянным шагом зуба. Угол винтовой канавки 45°. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP6)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP6 €	SUPREME €	
MR8/01	6	13	57	6	3	•	•	
MR8/02	8	20	69	10	3	•	•	
MR8/03	10	22	72	10	3	•	•	
MR8/04	12	26	83	12	3	•	•	
MR8/04/1	14	26	83	12	3	•	•	
MR8/05	16	36	92	16	3	•	•	
MR8/05/1	18	40	100	16	4	•	•	
MR8/06	20	45	110	20	4	•	•	
MR8/07	25	50	125	25	4	•	•	
MR8/08	30	63	140	25	4	•	•	
MR8/09	32	63	140	32	4	•	•	

Toll. reale sul Ø / *Real Tol. on Ø* +0 +0,03

COATING **SUPREME**

CODE MR8/.../**S**

Parametri
Cutting data
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Suggerimenti Suggestion

SGROSSATURA - ROUGHING
SEMIFINITURA - SEMIFINISHING
FINITURA - FINISHING

Lavorazioni Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	■	◪

Materiali Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	◪	◪

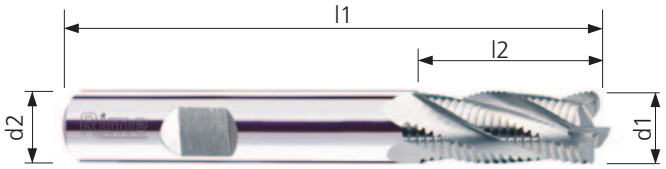
CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □

Rime

SERIE
MR

FRESE PER SGROSSATURA

NORM	TIPO-TYPE	Z3÷5
UNI 8248 DIN 844B ISO 1641/I	SHORT NORMAL LONG EXTRA-LONG	



EMP6 (PM) | 45° | NR | ≃30° | DIN 1835 B

NORMALE

MR12

- FRESE PER SGROSSATURA - Denti elicoidali con rompitruciolo spogliato completamente rettificato - Due denti frontali taglienti fino al centro - Attacco Weldon
- ROUGHING END MILLS - Helical teeth with form relieved entirely ground chip-breaker - Two end teeth cutting up to the centre - Weldon shank
- FRAISES FRONTALES ÉBAUCHE - Denture hélicoïdale avec brise-copeaux profil rond - Deux dents bout coupantes jusq'au centre - Queue cylindrique Weldon
- SCHAFTFRÄSER - Schrägschneiden mit volleingeschliffenem Spanbrecher - Zwei Schneiden mit Zentrumschnitt - Weldon-Spannfläche
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Labios helicoidal con arranca de viruta completamente rectificado - Dos labios que cortan hasta el centro - Mango Weldon
- FRESAS CILINDRICAS FRONTALES PARA DESBASTE - Navalhas helicoidal com quebra apara - Duas navalhas corta ao centro - Encabadouro Weldon
- Фреза для черновой обработки. Режущий торец. Хвостовик Weldon. Средняя серия

CODE (EMP6)	d1 mm js14	l2 mm	l1 mm	d2 mm h6	Z	EMP6 €	SUPREME €	
MR12/01	6	13	57	6	3	•	•	
MR12/03	8	19	69	10	4	•	•	
MR12/05	10	22	72	10	4	•	•	
MR12/07	12	26	83	12	4	•	•	
MR12/09	14	26	83	12	4	•	•	
MR12/10	15	32	92	16	4	•	•	
MR12/11	16	32	92	16	4	•	•	
MR12/13	18	32	92	16	4	•	•	
MR12/14	20	38	104	20	4	•	•	
MR12/15	22	38	104	20	4	•	•	
MR12/17	25	45	121	25	5	•	•	
MR12/19	28	45	121	25	5	•	•	
MR12/20	30	45	121	25	5	•	•	
MR12/21	32	53	133	32	5	•	•	

Toll. reale sul Ø
Real Tol. on Ø ±0,05

COATING **SUPREME**

CODE
MR12/.../**S**

Parametri
Cutting data
pag. 201-224

Suggerimenti
Suggestion

SGROSSATURA - ROUGHING ■■■■■
SEMIFINITURA - SEMIFINISHING □□□□□
FINITURA - FINISHING □□□□□

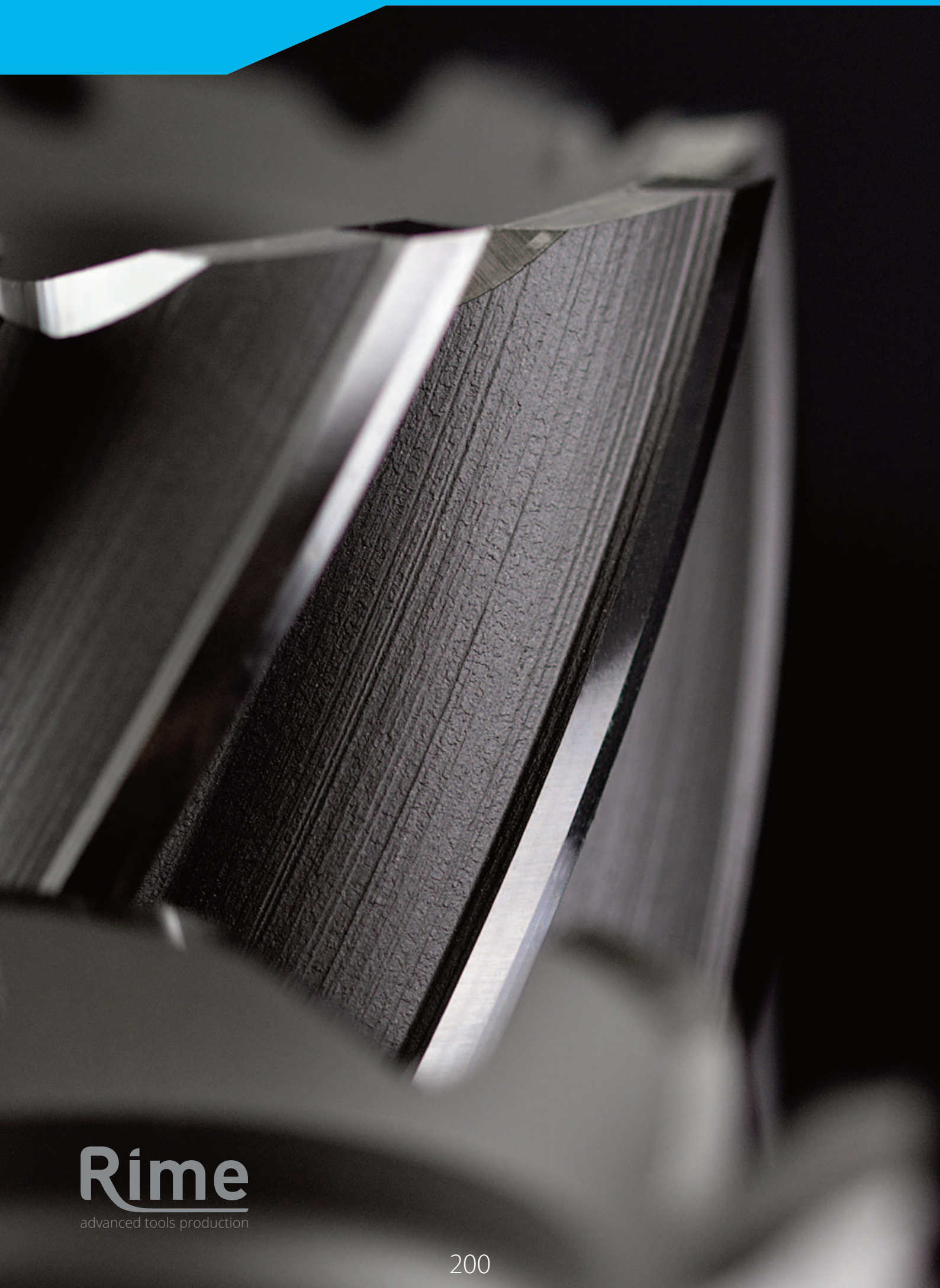
Lavorazioni
Workings

Apertura cava Slotting	Contornatura Side milling	Copia 3D 3D copying	Assiale Axial	Rampa Ramping
■	■	□	◪	◪

Materiali
Materials

ACCIAI STEELS	GHISE CAST IRON	ACCIAI INOSSIDABILI STAINLESS STEELS	SUPER LEGHE - TITANIO SUPERALLOYS - TITANIUM	LEGHE LEGGERE LIGHT ALLOYS	MATERIALI NON FERROSI NON FERROUS MATERIAL
■	■	■	■	□	□

CONSIGLIATO RECOMMENDED ■
ACCETTABILE ACCEPTABLE ◪
SCONSIGLIATO NOT RECOMMENDED □



Rime
advanced tools production

HSS-E & PM

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Informazioni tecniche 201
Technical information

Classificazione materiali (ISO) 206
Classification of material (ISO)

Parametri di lavorazione 212
Cutting data

FAQ 225

Dati di taglio per frese RIME in HSS Co8 - EMP3 EMP6

I valori espressi sulle tabelle alle pagine seguenti devono essere considerati come indicativi e usati come aiuto per ottenere i migliori risultati nell'impiego delle nostre frese.
Dalle tabelle si può rilevare la combinazione più adatta per ricavare velocità di taglio, numero dei giri e di avanzamento con corrispondente profondità e larghezza di taglio relativamente al diametro delle frese da impiegare.
I tipi di materiale da lavorare sono divisi in 6 gruppi. Ogni gruppo comprende qualità di materiali che presentano valori simili di truciolabilità.
Nella scelta dei dati di taglio occorre tenere presente il gruppo a cui appartiene il materiale.
Normalmente è necessario un adattamento dei dati di taglio così trovati con quelli consentiti dalle macchine utensili a disposizione.

Data on cutting rate of RIME end mills in HSS Co8 EMP3 - EMP6

The data shown in the tables hereafter shall be only indicative and used as a support to get the best performances by RIME end mills.
Therefore, the tables can be helpful in finding the most suitable combination of cutting speed, number of revolutions per minute and feed progress with relevant cut depth and width with regard to diameter of the end mills to be used.
The types of metals to be machined are divided into 6 groups. Each group includes metal quality classes having similar "chipasability" rates.
When choosing a certain cutting class, always keep in mind the group the metal is part of.
However, the data on cutting rate herein generally need to be matched to the machine tools available.

Le premesse per un'esatta applicazione dei dati di taglio

1) Impiego delle frese RIME in HSS/Co8 - EMP3 - EMP6
2) I valori di taglio indicati valgono per frese a codolo cilindrico con lunghezza di taglio media e corta. (Valori iniziali ± 15%).
Per le frese con taglio lungo l'avanzamento deve essere ridotto del 40%, per le frese extralunghe del 60%, mentre la velocità di taglio va ridotta del 20%
3) Uso di un liquido di raffreddamento adatto (generalmente emulsione).
4) Macchina operatrice, bloccaggio del pezzo in lavorazione e dell'utensile devono essere stabili onde evitare pericolose vibrazioni.

To get a suitable application of cutting data the directions hereafter shall be followed

1) use RIME HSS/Co8 - EMP3 - EMP6;
2) the cutting rates herein shown are referred to end mills with cylindrical shaft having an average and short cut length. (starting rates ±15%).
If end mills have extra -long cut then the feed has to be reduced of 60%; for the end mills with long cut the feed has to be reduced of 40%; for both cases (long and extra-long cut) the cutting speed has to be reduced of 20%.
3) use a suitable coolant (normally an emulsion);
4) machine tool, clamping of the piece machined and tool shall be stable, so to prevent any dangerous vibrations.

Adeguamento numeri giri ed avanzamento alla fresatrice

Le fresatrici in uso hanno generalmente possibilità di selezionare sia numero di giri del mandrino che gli avanzamenti.
I valori rilevati dalle tabelle di taglio, nella maggior parte dei casi, devono essere adattati ai valori della macchina operatrice.
Gli aggiustamenti devono essere tali da non variare sensibilmente il carico per dente.

Adjustment of the number of revolutions and feed on a milling machine

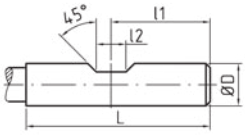
The milling machines now available normally allow to select both the number of mandrel revolutions and feed.
Most of the values shown in the tables hereafter shall be adjusted to the values of the machine.
Every adjustment shall be so not to change the load on each flute considerably.

Codolo delle frese - Estratto Tab. DIN 1835
Mill shank according DIN 1835

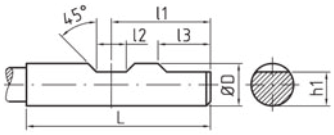
Type A



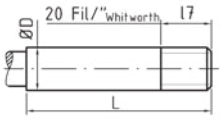
Type B



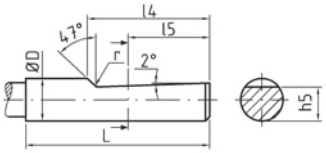
Type B



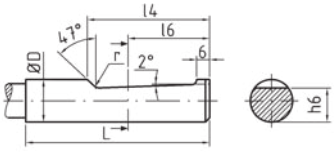
Type D



Type E



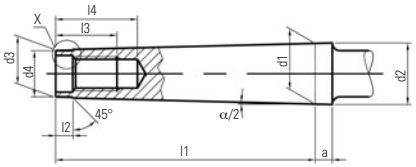
Type E

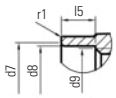


D h6	L +2 -0	l1 +0 -1	h1 h13	l2 +0,05 -0	l3 +1 -0	l4 +0 -1	l5 nom.	h5 h11	l6 nom.	h6 h13	r min	l7 +2 -0
4	28	-	-	-	-	-	-	-	-	-	-	4
6	36	18	4,8	4,2	-	25	18	4,8	18	5,3	1,2	10
8	36	18	6,6	5,5	-	25	18	6,6	18	7,1	1,2	10
10	40	20	8,4	7	-	28	20	8,4	20	8,9	1,2	10
12	45	22,5	10,4	8	-	33	22,5	10,4	22,5	10,9	1,2	10
14	45	-	-	-	-	33	22,5	-	22,5	12,4	1,2	-
16	48	24	14,2	10	-	36	24	14,2	24	14,5	1,6	10
18	48	-	-	-	-	36	24	-	24	16,2	1,6	-
20	50	25	18,2	11	-	38	25	18,2	25	18,2	1,6	15
25	56	32	23	12	17	44	32	23	32	23	1,6	15
32	60	36	30	14	19	48	35	30	35	30	1,6	15

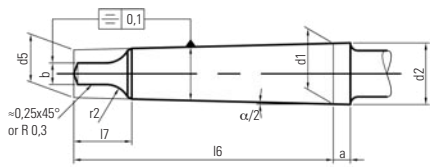
Attacchi per utensili - Codolo secondo DIN 228
Mill shank according DIN 228

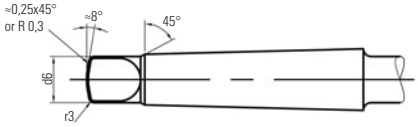
DIN 228-A





DIN 228-B



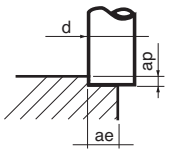


Mkα/2	a	b	d1	d2	d3	d4	d5	d6	d7	d8	d9	l1	l2	l3	l4	l5	l6	l7	r1	r2	r3
0 1°29'27"	3,0	3,9	9,045	9,2	6,4	6,0	6,1	6,0	-	-	-	50,0	4	-	-	-	56,5	10,5	0,2	4	1,0
1 1°25'43"	3,5	5,2	12,065	12,2	9,4	9,0	9,0	8,7	8,5	6,4	M6	53,0	5	16	22,0	4,0	62,0	13,5	0,2	5	1,2
2 1°25'50"	5,0	6,3	17,780	18,0	14,6	14,0	14,0	13,5	13,2	10,5	M10	64,0	5	24	31,5	5,0	75,0	16,0	0,2	6	1,6
3 1°26'16"	5,0	7,9	23,825	24,1	19,8	19,0	19,1	18,5	16,0	13,0	M12	81,0	7	24	33,5	5,5	94,0	20,0	0,6	7	2,0
4 1°29'15"	6,5	11,9	31,267	31,6	25,9	25,0	25,2	24,5	21,5	17,0	M16	102,5	9	32	42,5	8,2	117,5	24,0	1,0	8	2,5
5 1°30'26"	6,5	15,9	44,399	44,7	37,6	35,7	36,5	35,7	26,0	21,0	M20	129,5	10	40	52,5	10,0	149,5	29,0	2,5	10	3,0

Scostamenti previsti dalle norme UNI per le frese - valori in mm 0,001
Deviations in end mills and cutters fore seen by uni norms values in MM 0,001

Ø	mm	H7	H11	d9	d11	e8	h6	h8	h11	h12	js12	js16	k11	k16
oltre	1,6	0	0	-20	-20	-14	0	0	0	0	+125	+300	+60	+600
fino	3	+9	+60	-45	-80	-28	-7	-14	-60	-100	-125	-300	0	0
oltre	3	0	0	-30	-30	-20	-0	0	0	0	+150	+375	+75	+750
fino	6	+12	+75	-60	-105	-38	-8	-19	-75	-120	-150	-375	0	0
oltre	6	0	0	-40	-40	-25	0	0	0	0	+180	+450	+90	+900
fino	10	+15	+90	-76	-130	-47	-9	-22	-90	-150	-180	-450	0	0
oltre	10	0	0	-50	-50	-32	0	0	0	0	+215	+550	+110	+1100
fino	18	+18	+110	-93	-160	-59	-11	-27	-110	-180	-215	-550	0	0
oltre	18	0	0	-65	-65	-40	0	0	0	0	+260	+650	+130	+1300
fino	30	+21	+130	-117	-195	-73	-13	-33	-130	-210	-260	-650	0	0
oltre	30	0	0	-80	-80	-50	0	0	0	0	+310	+800	+160	+1600
fino	50	+25	+160	-142	-240	-89	-16	-39	-160	-250	-310	-800	0	0
oltre	50	0	0	-100	-100	-60	0	0	0	0	+370	+950	+190	+1900
fino	80	+30	+190	-174	-290	-106	-19	-46	-190	-300	-370	-950	0	0
oltre	80	0	0	-120	-120	-72	0	0	0	0	+435	+1100	+220	+2200
fino	120	+35	+220	-207	+304	-126	-22	-54	-220	-350	-435	-1100	0	0
oltre	120	0	0	-145	-145	-85	0	0	0	0	+500	+1250	+250	+2500
fino	180	+40	+250	-243	-395	-148	-25	-63	-250	-400	-500	-1250	0	0
oltre											+575	+1450		
fino											-575	-1450		

FORMULE - FORMULAS



$$Vc = \frac{d \cdot \pi \cdot n}{1000}$$

$$n = \frac{Vc \cdot 1000}{d \cdot \pi}$$

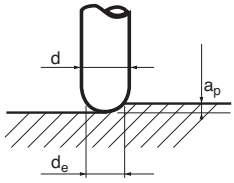
$$Vf = fz \cdot n \cdot z$$

$$fn = fz \cdot z$$

$$Q = \frac{a_p \cdot a_e \cdot v_f}{1000}$$

$$fn = \frac{Vf}{n}$$

z = n° denti - *n° flutes*
d = diametro fresa - *end mill diameter*
Vc = velocità di taglio m/min - *cutting speed m/min*
Vf = avanzamento mm/min (F) - *feed mm/min (F)*
n = numero giri/min (S) - *RPM (S)*
fz = avanzamento per dente - *feed x tooth*
fn = avanzamento al giro - *feed mm x rotation*
a_e = profondità radiale di passata - *radial depth of cut*
a_p = profondità assiale di passata - *axial depth of cut*
Q = volume di truciolatura cm^3/min - *material removal rate* cm^3/min



$$d_e = 2\sqrt{a_p (d - a_p)}$$

$$V_e = \frac{n \cdot \pi \cdot d_e}{1000}$$

$$n = \frac{V_e \cdot 1000}{d \cdot \pi}$$

d = diametro fresa - *end mill diameter*
d_e = diametro effettivo di taglio (mm) - *effective diameter of cutting (mm)*
V_e = velocità di taglio effettiva (m/min) - *effective cutting speed (m/min)*
a_p = profondità assiale di passata - *axial depth of cut*
n = n° giri del mandrino (giri/min) - *RPM (S)*

DUREZZA MATERIALI - Tabella comparativa
HARDNESS - Comparative table

R_m(N/mm²)	HV10	HB	HRC
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

R_m(N/mm²)	HV10	HB	HRC
920	287	273	28
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	402	43
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

CLASSIFICAZIONE MATERIALI (ISO) - CLASSIFICATION OF MATERIALS (ISO)

		DESCRIZIONE MATERIALI	*MATERIALS DESCRIPTION*	Rm (N/mm²)	Durezza Hardness (HB)	Esempi - Example
		Acciai, acciai inossidabili ferritici e martensitici	**Steels, ferritic and martensitic stainless steels**			
P	1	Acciai molto teneri al carbonio Acciai ferritici Acciai non legati	Soft carbon steel Ferritic steel Unalloyed steels	<450	<120	S235JR; S275J2G3; C10; C15; C20; C22; 11 Mn 4Si
	2	Acciai automatici Acciai debolmente legati	Free-machining steel Low alloys steel	400 <700	<200	10SPb2; 11 SMn30; 15 SMn13; 11SMnPb37; C15Pb; C22Pb
	3	Acciai da costruzione Acciai al carbonio con tenore di carbonio basso-medio (C <0,5%) Acciaio debolmente legati	Constructions steels Carbon steel (low/medium carbon C<0,5%) Low alloys steel	450 < 850	<250	S355JR; C30E; C35E C40E; C50E; C55E
	4	Acciai con tenore di carbonio medio-alto (C>0,5%) Acciai medio-duri per trattamenti termici Acciai legati	Carbon steel (medium/high carbon C>0,5%) Medium/High steel for heat treatment Alloys steel	550 <850	<350 <450	13CrMo4-5; 17CrNiMo6 42CrMo4; 50CrV4; 34CrNiMo6; C60; C75
	5	Acciai da utensili Acciai inossidabili ferritici, martensitici	Tools steel Ferritic and martensitic stainless steel	700 <900	<250 <350	X18CrN28; X12Cr13(AISI 410); X38CrMo16; X17CrNi16-2; AISI 403; AISI 405; AISI 416; AISI 430; AISI 434; AISI 439
	6	Acciai da utensili di difficile lavorabilità Acciai con elevata durezza Acciai inossidabili ferritici, martensitici	Tools steel of hard machinability High hardness steel Ferritic and martensitic stainless steel	900 <1500	>350	X40CrMoV5-1; X105CrMo17 (AISI 440C); X20Cr13(AISI 420); AISI 431; AISI 440A; AISI 440B; AISI 446; X210Cr12; HS 6-5-2; HS 2-10-1-8; HS 18-0-1
		Acciaio temprato e ghisa fusa	**Hardened steel and chilled iron**			
H	1	Acciai temprati, ghisa fusa in conchiglia	Hardened steel, chilled cast iron	<1600	<49 HRC	X38CrMo16; X40CrMoV5-1; G-X300CrMo15-3
	2	Acciai temprati, ghisa fusa in conchiglia	Hardened steel, chilled cast iron	>1620	>49 <55 HRC	C35E;GX200CrNiMo14-1
	3	Acciai temprati, ghisa fusa in conchiglia	Hardened steel, chilled cast iron	>1980	>55 <60 HRC	C40E; C50E; 42CrMo4; 34CrNiMo6; X105CrMo17 (AISI 440C)
	4	Acciai temprati, ghisa fusa in conchiglia	Hardened steel, chilled cast iron		>60 HRC	C55E; C60; G-X 300 CrMo 15 3
		Acciai inossidabili automatici, austenitici e Duplex	**Free-machining, austenitic and Duplex stainless steel**			
M	1	Acciai inossidabili di facile lavorabilità Acciai inossidabili austenitici	Stainless steel of easy machinability Austenitic stainless steel	<850	<250	AISI 301; AISI 303; AISI 304 AISI 305; AISI 308
	2	Acciai inossidabili di media lavorabilità Acciai inossidabili austenitici e Duplex	Stainless steel of medium machinability Austenitic stainless steel and Duplex	<1100	<320	AISI 304L; AISI 309; AISI 310S AISI 316; AISI 321; AISI 347 H
	3	Acciai inossidabili di difficile lavorabilità Duplex, Super Duplex e acciai inox PH	Hard machinability stainless steel Duplex, Super Duplex, inox PH	<900	<200 <275	17-7 PH; AISI 630; 15-5PH; 17-4PH AISI 330; AISI 316LN; AISI 329 LN
		Ghisa	**Cast iron**			
K	1	Ghise malleabili. Ghise grigie	Malleable cast iron. Grey cast iron	>500	<250	GJL-100; GJL-150; GJL-200
	2	Ghise debolmente legate. Ghise nodulari	Low alloys cast iron. Nodular cast iron	>500 <1000	>150 <300	GJL-250; GJL-300; GJL-350
	3	Ghise a grafite compatta	Compacted-graphite cast iron	<700	<250	GJS-600-3; GJMB-650-2; GJS-700-2
	4	Ghise altamente legate di difficile lavorabilità Ghise nodulari austemperate	High alloys cast iron (hard to machine) Austempered nodular cast iron	>700 <1000	>300 <450	GJS-800-2; GJSA-XNiCr30-3 GJSA-XNi35; GMB 65
		Superleghe - Titanio	**Super alloys - Titanium**			
S	1	Leghe a base di ferro resistente al calore	Iron alloys heat-resistant	>500 <1200	<280	Discalloy; Lapelloy; Incoloy 800; Incoloy 909; Custom 455
	2	Leghe di nichel e leghe di cobalto resistenti al calore	Nichel alloys and cobalt alloys heat-resistant	>1000 <1450	>250 <450	Hastelloy X; Ninomic 75 Inconel 600; Inconel 718; Inconel 625; Waspalloy; Nimocast 713; Udimet 500; Rene 41; Stellite 31
	3	Titanio, leghe di titanio a media durezza	Titanium, titanium alloys with medium hardness	<1100	<320	TiCu2; Ti4; TiAl3V2,5
	4	Leghe di titanio a durezza elevata	Titanium alloys with high hardness	>1100 <1400	>300 <400	TiAl6V4; TiAl5Fe2 5; TiAl6Sn2Zr4Mo2; TiAl4Mo4Sn2
		Leghe leggere / Materiali non ferrosi	**Light alloys / Non ferrous material**			
N	1	Leghe di alluminio: Si <0,5%	Aluminium alloys (Si<0,5%)	<500	<90	Al99,9; AlMg1; AlMg5; AlCuMgPb
	2	Leghe di alluminio: Si >0,5% <10%	Aluminium alloys (Si>0,5% <10%)	<400	>70 <100	AlSi9Mg; AlSi17Cu5; AlSi10Mg; AlSi7Mg
	3	Leghe di alluminio: ad alto contenuto di Si >10%	Aluminium alloys (Si >10%)	>200 <320	>60 <120	AlSi17Cu4Mg; AlSi18CuNiMg; AlSi21CuNiMg
	4	Rame e leghe di rame	Copper and copper alloys	>200 <650	>60 <200	CuZn36Pb1,5; CuSn20; CuSn2 CuNi18Zn19Pb; CuZn40Al2
	5	Materiali plastici	Plastics materials			
		Grafite	**Graphite**			
O		Grafite	Graphite	<100		

GRUPPI DI MATERIALI DA LAVORARE - GROUPS OF MATERIALS TO BE MACHINED

L'industria di costruzione di componenti metallici richiede sempre più tipi di materiali con caratteristiche molto specifiche per ottenere prodotti di eccellenza con caratteristiche fisico-chimiche il più idonee possibile alla singola applicazione. Trattamenti termici e leganti influenzano notevolmente la geometria dell'utensile da utilizzare e relativi parametri di taglio.
I materiali sono quindi stati suddivisi secondo degli standard ISO in sei grandi gruppi per specifiche legate alla lavorabilità.

ISO P: Gruppo di acciai più ampio, comprende materiali poco legati fino a materiali molto legati. Si possono trovare getti di acciaio, acciai inossidabili ferritici e martensitici, acciai con diverso tenore di carbonio e durezze differenti. Tendenzialmente hanno una buona lavorabilità.

ISO H: Gruppo di acciai identificato dalla durezza compresa tra i 45 e 65 HRC e delle ghise fuse in conchiglia con durezze nell'ordine dei 400-600HB. La loro caratteristica è l'elevata durezza e per questo sono di difficile lavorabilità. Il tagliente soffre a causa dell'azione abrasiva e della generazione di calore.

ISO M: Gruppo di acciai inossidabili con un minimo di Cr del 12% ed altre leghe come Ni e Mo.
Si trovano acciai ferritici, martensitici, austenitici e austenitici-ferritici (Duplex). La lavorabilità di questi materiali è influenzata negativamente da una grande quantità di calore rilasciato al tagliente, da fenomeni di usura ad intaglio e tagliente di riporto.

ISO K: Gruppo di materiali che comprende le ghise grigie, le ghise malleabili, le ghise nodulari, le ghise a grafite compatta e austemperate. La lavorabilità varia a seconda della resistenza e della durezza ed è caratterizzata da un truciolo corto e da una forte azione abrasiva dovuta al contenuto di Si.

ISO S: Gruppo di materiali che comprende le Superleghe Resistenti al Calore (HRSA) e leghe di Titanio. Sono materiali fortemente legati a base di Fe, Ni, Co e Ti. La lavorabilità è molto ridotta in quanto sono materiali con tendenza all'incollamento, che creano taglienti di riporto e che si incrudiscono durante la lavorazione generando molto calore.
Sono simili ai materiali del gruppo M, ma decisamente più difficili da lavorare.

ISO N: Gruppo di metalli non ferrosi come l'alluminio, il rame, l'ottone, ecc. Hanno una buona lavorabilità anche con velocità di taglio elevate. Nelle leghe di alluminio l'azione abrasiva è dettata dalla presenza di Si oltre il 10-13%.

The manufacturing industry of metal components requires more and more types of materials with specific characteristics to get products with excellent physical-chemical characteristics suitable for the single application.
Thermal treatments and binders greatly influence the geometry of the tool to be used and related cutting parameters. The materials have been divided according to the ISO standard into six major groups related to specific workability.

***ISO P**: Wide group of steels including low and high alloy materials.*
You can find steel castings, ferritic and martensitic stainless steels, steels with different carbon content and different hardness. Usually they have a good workability.

***ISO H**: Group of steels identified by the hardness between 45 and 65 HRC and chill cast irons with hardness in the range of 400-600 HB.*
Their characteristic is its high hardness and therefore are difficult to machine.
The cutting edge suffers due to the abrasive action and heat generation.

***ISO M**: Group of stainless steels with a minimum of 12% of Cr and other alloys such as Ni and Mo.*
You can find ferritic, martensitic, austenitic and austenitic-ferritic (duplex) steels.
The machinability of these materials is negatively affected by a large amount of heat released on the cutting edge, by effects of notch wear and built-up edge.

***ISO K**: Group of material including gray cast iron, malleable cast iron, the nodular cast iron, compacted graphite cast iron and austemperate.*
The workability varies according to the strength and hardness and is characterized by a short chips and a strong abrasive action due to the content of Si.

***ISO S**: Group of materials including Heat Resistant Super Alloys (HRSA) and Titanium Alloys. They are strongly bound to the base of Fe, Ni, Co and Ti.*
The workability is very low as they are sticky materials, which create edges and that work-harden during machining generating much heat.
They are similar to the materials of the group M, but much more difficult to work.

***ISO N**: Group of non-ferrous metals such as aluminium, copper, brass and so on.*
They have a good workability even with high cutting speeds.
With aluminium alloys, the abrasive action depends on the presence in amounts more than 10-13% of the content of Si.

MATERIALI - MATERIALS

Acciai (ISO P)

L'acciaio è una lega composta da ferro (elemento principale) e carbonio con percentuale non superiore a 2.06%.
Esso può essere non legato quando ha un tenore di carbonio inferiore allo 0,8% ed è costituito esclusivamente da ferro (Fe), senza altri elementi leganti.
L'acciaio legato, invece, ha un tenore di carbonio inferiore all'1,7%, e contiene elementi leganti come Ni, Cr, Mo, V e W.
Gli acciai legati si distinguono in debolmente legati, quando gli elementi leganti sono presenti in quantità inferiore al 5%, e in fortemente legati, quando gli elementi leganti sono presenti in quantità superiore al 5%.
Gli acciai possono essere non trattati, temprati o rinvenuti (bonificati) con una durezza nell'ordine di 400 HB.
Gli elementi leganti, il trattamento termico e il processo di fabbricazione influiscono sulla lavorabilità dell'acciaio.
Negli acciai a basso tenore di carbonio vi è una tendenza maggiore all'incollamento del truciolo.
La lavorabilità degli acciai debolmente legati dipende dal tenore di lega e dal trattamento termico a cui sono stati sottoposti (durezza). I materiali trattati producono più calore durante la lavorazione, che può provocare una deformazione plastica del tagliente.
Negli acciai fortemente legati la lavorabilità, in generale, è inversamente proporzionale al tenore di carbonio e alla durezza. Anche per questi acciai il rischio è l'eccessiva produzione di calore che può provocare deformazione plastica del tagliente.
Le forze di taglio e quindi la potenza richiesta per lavorarli restano comunque contenute.

Steels (ISO P)

Steel is an alloy composed by iron (main element) and carbon with a percentage no more than 2,06%. It can not be tied when it has a carbon content less than 0.8% and is made up exclusively of iron (Fe), without other alloying elements.
However the stainless steel has a carbon content of less than 1,7% and contains alloying elements such as Ni, Cr, Mo, V and W.
Alloy steels are divided into weakly bound, when alloying elements are present with a percentage less than 5% and strongly bound when alloying elements are present in percentage greater than 5%.
The steels can be not-treated, hardened or tempered (quenched steel) with a hardness in the range of 400 HB.
The alloying elements, the heat treatment and the manufacturing process affect the machinability of the steel.
Steels with low carbon content have a greater tendency to stick the chip.
The machinability of low-alloy steels depends on the alloy content and heat treatment to which they were subjected (hardness). The treated materials produce more heat during processing, which may cause a plastic deformation of the cutting edge.
Usually the machinability of the high-alloy steels is inversely proportional to the carbon content and hardness. Even for these steels the excessive production of heat may cause plastic deformation of the cutting edge.
The cutting forces and consequently the required power to machine them should not be high.

ISO	Gr.	Esempio/Example	W.-Nr	AISI/SAE
P	1	S275J2G3	1.0144	A573 Gr.70
		C10	1.0301	
		S235JR	1.0037	
		C15	1.0401	
		C20	1.0414	
		C22	1.0402	
		11Mn4Si	1.0492	
	2	10SPb20	1.0722	
		11 SMn30	1.0715	
		15 SMn13	1.0725	
		11 SMnPb30	1.0718	
		C15Pb		
		C22Pb		
		11 SMnPb37	1.0737	
	3	S355JR	1.0570	
		C30E	1.1178	
		C35E	1.1181	
		C40E	1.1186	
		C50E	1.1206	
		C55E	1.1203	
	4	13 CrMo 4 5	1.7335	A182-F11
		17CrNiMo 6	1.6587	
		42 CrMo 4	1.7225	AISI 4140
		50CrV4	1.8159	
		C60	1.0601	AISI 1060
		C75	1.0605	AISI 1074
		34CrNiMo6	1.6582	AISI 4340
	5	10 CrMo 9 10	1.7380	
		105 WCr6	1.2419	
		14 CrMoV 6 9	1.7735	
		107 CrV 3	1.2210	
		41 CrAlMo 7 10	1.8509	
		90 MnCrV 8	1.2842	
		X 45 NiCrMo 4	1.2767	
		34 CrAlNi 7	1.8550	
		X 38 CrMo 16	1.2316	D-4
	6	54 NiCrMoV 6	1.2711	
		57 NiCrMoV 7 7	1.2744	
		81 CrMoV 42 16	1.2369	
		X 100 CrMoV 5	1.2363	
		X 210 Cr 12	1.2080	D-3
		X 32 CrMoV 3-3	1.2365	H10
		X 38 CrMoV 5-1	1.2343	H11
		X 40 CrMoV 5 1	1.2344	H13
		HS 6-5-2	1.3343	
		HS 10-4-3-10	1.3207	
		HS 12-1-2	1.3318	
		HS 2-9-2	1.3348	
		HS 2-10-1-8	1.3247	
		HS 18-0-1	1.3355	

Acciai temprati e ghise fuse (ISO H)

A questo gruppo di materiali appartengono acciai temprati e rinvenuti con durezza >45< 68 HRC, acciai da costruzione (40 – 45 HRC), acciai da cementazione (~60 HRC), acciai per utensili (~68 HRC), ghise fuse (>50 HRC). In finitura, il truciolo risulta abbastanza controllabile. Un problema riscontrabile potrebbe essere un'usura maggiore del tagliente ed una deformazione plastica dello stesso. Le forze di taglio e le potenze richieste sono molto elevate.

Hardened steels and cast irons (ISO H)

Quenched and tempered steels with a hardness >45<68 HRC are under this group of materials. Structural steel (40-45 HRC), case hardened steel (~ 60 HRC), tool steel (~ 68 HRC), molten cast iron (> 50 HRC).
During the finishing the chip is quite controllable. A problem could be an important wear and a plastic deformation of the cutting edge. The cutting forces and the required power are very high.

ISO	Gr.	Esempio/Example	W.-Nr	AISI/SAE
H	1	X38 CrMo 16	1.2316	D-4
		X40 CrMoV5-1	1.2344	
		G-X 300 CrMo 15-3	0.9635	A532
	2	C35E	1.1181	
		GX200 CrNiMo 14-1	0.96	
	3	C40E	1.1186	
		C50E	1.1206	
		42 CrMo 4	1.7225	AISI 4140
		34CrNiMo 6	1.6582	AISI 4340
	4	X 105 CrMo 17	1.4125	AISI 440 C
		C55E	1.1203	
		C60	1.0601	AISI 1060
		G-X300 CrMo 15-3	0.9635	A532

Acciai inossidabili (ISO P5/P6 e ISO M)

Gli acciai inossidabili hanno il ferro (Fe) come elemento principale, un tenore di carbonio basso (C ≤ 0,05 %) e un tenore di Cromo >12%.
Con aggiunte di nichel (Ni), cromo (Cr), molibdeno (Mo), niobio (Nb) e titanio (Ti), è possibile ottenere caratteristiche diverse, come la resistenza alla corrosione e la resistenza alle alte temperature.
Il cromo combinandosi con l'ossigeno (O) crea uno strato passivante di Cr_2O_3 sulla superficie dell'acciaio, che rende il materiale resistente alla corrosione.
La lavorabilità dell'acciaio inossidabile varia a seconda degli elementi leganti, dei trattamenti termici e dai processi di fabbricazione. In generale, la lavorazione genera truciolo lungo.
Gli acciai inossidabili si distinguono principalmente per il tipo di microstruttura: ferritica, martensitica, austenitica, austeno-ferritica (duplex).
Il controllo truciolo è abbastanza buono nei materiali ferritici e martensitici (lavorabilità ISO P), mentre diventa più problematico nelle versioni austenitiche e duplex (ISO M).
La lavorazione genera forze di taglio elevate, tagliente di riporto, calore e superfici incrudite.
Con un alto tenore di carbonio (>0,2%) l'usura sul fianco è relativamente accentuata.
La struttura austenitica ad alto tenore di azoto (N) determina una lavorabilità inferiore, mentre si ha un maggiore incrudimento per deformazione.Il molibdeno (Mo) e l'azoto (N) aumentano la resistenza alla corrosione e la resistenza alle alte temperature, ma determinano una diminuzione della lavorabilità.
Aggiungendo del Ni ad un acciaio inox ferritico a base di Cr si ottiene una matrice a base mista contenente sia ferrite che austenite. Il materiale risultante è detto duplex.
I materiali duplex hanno un'elevata resistenza sia a trazione sia alla corrosione, ma hanno una lavorabilità generalmente scarsa.

Stainless steel (ISO M and ISO P5/P6)

The main element of the stainless steel is the iron (Fe); stainless steel has also a low content of carbon (C ≤ 0.05%) and a content of Chrome >12%. With additions of nickel (Ni), chromium (Cr), molybdenum (Mo), niobium (Nb) and titanium (Ti), it is possible to obtain different characteristics, such as resistance to corrosion and resistance to high temperatures.
The chromium combining with oxygen (O) creates a passivating layer of Cr_2O_3 on the surface of the steel, which makes the material resistant to corrosion.
The machinability of stainless steel varies depending on the alloying elements, on heat treatments and on manufacturing process. In general, the process generates long chips. Stainless steels are distinguished mainly by the type of microstructure: ferritic, martensitic, austenitic, austenitic-ferritic (duplex).
The control of the chip is quite good in ferritic and martensitic steels (machinability ISO P), while is more problematic in austenitic and duplex (ISO M)
The process generates high cutting forces, built-up edge, heat and work-hardened surfaces.

ISO	Gr.	Esempio/Example	W.-Nr	AISI/SAE
P	5	X 18 CrN 28	1.4749	AISI 446
		X 12 Cr 13	1.4006	AISI 410
		X 17 CrNi16-2	1.4057	AISI 431
		X 6 Cr 13	1.4000	AISI 403
		X 6 CrAl 13	1.4002	AISI 405
		X 12 CrS 1-3	1.4005	AISI 416
		X 6 Cr 17	1.4016	AISI 430
		X 6 CrMo 17-1	1.4113	AISI 434
		X 3 CrTi 17	1.4510	AISI 439
	6	X105 CrMo 17	1.4125	AISI 440 C
		X 20 Cr 13	1.4021	AISI 420
		X 30 Cr 13	1.4028	AISI 420
		X 39 Cr 13	1.4031	AISI 420
		X 46 Cr 13	1.4034	AISI 420
		X70 CrMo 15	1.4109	AISI 440 A
		X90 CrMoV18	1.4112	AISI 440 B
		X18 CrN 28	1.4749	AISI 446
M	1	X 10 CrNiS 18 9	1.4305	AISI 303
		X 5 CrNi 18 9	1.4301	AISI 304
		X 5 CrNi 18 12	1.4303	AISI 308
		X 4 CrNi 18 11	1.4303	AISI 305
		X 9 CrNi 18 8	1.4310	AISI 301
		X 12 CrNi 18 8	1.4300	AISI 302
		X5CrNiNb 18 10	1.4546	AISI 348
	2	X 2 CrNiMo 17 13 2	1.4404	AISI 316L
		X6 CrNiTi 18 10	1.4541	AISI 321
		X 2 CrNiMo 18 16 4	1.4438	AISI 317L
		X2CrNi19 11	1.4306	AISI 304L
		X 15 CrNiSi 20 12	1.4828	AISI 309
		X5CrNiMo 18 10	1.4401	AISI 316
		X6 CrNiNb 18 10	1.4550	AISI 347 H
		X 12 CrNi 25 21	1.4335	AISI 310 S
	3	X 2 CrNiMoN 22 5	1.4462	AISI 318
		X 12 NiCrSi 35 16	1.4864	AISI 330
		X8CrNiMo27 5	1.4460	AISI 329
		X2CrNiMoN18 16 4	1.4438	AISI 317L
		X6CrNiMoTi17 12 2	1.4571	AISI 316 Ti
		X6CrNiMoNb17 12 2	1.4580	AISI 316Cb
		X2CrNiMoN17 12 2	1.4406	AISI 316LN
		X2CrNiMoN22 5 3	1.4462	AISI 329 LN
		X5CrNiCuNb16-4	1.4542	AISI 630-17-4PH
			1.4545	15-5 PH
		X7CrNiAl17-7	1.4564	17-7 PH

When carbon content is high (> 0.2%) the flank wear is important.
The austenitic structure with a high content of nitrogen (N) determines a lower machinability, while it has a higher strain hardening.
The molybdenum (Mo) and nitrogen (N) determine a decrease in the machinability while increasing the resistance to high temperatures
By adding Ni to a ferritic stainless steel based on Cr is obtained a matrix based mixed containing both ferrite and austenite. The resulting material is called duplex.
The duplex materials have a high resistance both to the traction and corrosion, but generally they have a poor workability.

M

Ghisa (ISO K)

La ghisa è un composto di Fe-C con una percentuale di carbonio superiore al 2.06% e con una percentuale relativamente elevata di Si (1-3%).
Il cromo (Cr), il molibdeno (Mo) e il vanadio (V) formano dei carburi, che aumentano la resistenza e la durezza, riducendo però la lavorabilità.
La lavorazione produce trucioli corti ed un buon controllo degli stessi nella maggior parte delle condizioni.
La forza di taglio può variare da 790 – 1350 N/mm².
Le lavorazioni a velocità elevate, specialmente nelle ghise con inclusioni di sabbia, provocano usura da abrasione.
Le ghise generalmente vengono lavorate a secco, ma possono essere utilizzate anche in condizioni "umide", sostanzialmente per ridurre al minimo la contaminazione delle polveri dovuta al carbonio e al ferro.

Cast iron (ISO K)

Cast iron is made by Fe-C with a carbon percentage higher than 2.6% and with a high percentage of Si (1-3%). The chromium (Cr), the molybdenum (Mo) and the vanadium (V) creates carbides, which increase the strength and hardness, while reducing the machinability. The process produces short chips and, in the majority of the cases, a good checking of them. The cutting force can vary from 790 - 1350 N / mm ². The machining at high speeds, especially in cast irons with sand, causing abrasive wear. Usually cast irons are dry processed, but can also be used in "wet", in order to minimize the contamination of dust from carbon and iron.

ISO	Gr.	Esempio/Example	W.-Nr	AISI/SAE
K	1	GJL-100	0.6010	
		GJL-150	0.6015	
		GJL-200	0.6020	
	2	GJL-250	0.6025	
		GJL-300	0.6030	
		GJL-350	0.6035	
	3	GJS-600-3	0.7060	
		GJMB-650-2	0.8165	
		GJS-700-2	0.7070	
	4	GJS-800-2	0.7080	
		GJSA-XNiCr30-3		
		GJSA-XNi35	0.7683	
		GMB 65	0.8065	

Superleghe e leghe in titanio (ISO S)

Questo gruppo contiene Superleghe a base di ferro, nichel e cobalto, resistenti al calore (HRSA), e leghe di titanio.

• Le superleghe hanno un'elevata resistenza alla corrosione e ciò permette di mantenere la loro durezza e resistenza alle alte temperature (fino a 1000°C).
La versione a base di nichel è quella più utilizzata. Tra i materiali induriti per precipitazione figurano: Inconel, Waspalloy, Udimet. Tra i materiali induriti per solubilizzazione (non temprabili) figura l'Inconel 625.
I materiali a base di ferro derivano dagli acciai inossidabili austenitici e sono quelli che presentano la minore resistenza al calore.
La lavorabilità è migliore nel caso di leghe a base di ferro e risulta inferiore nel caso di leghe a base di nichel e a base di cobalto.
Essendo materiali con un'elevata resistenza alle alte temperature durante la lavorazione si producono trucioli segmentati.
La forza di taglio può variare da 2400-3100 N/mm².
La notevole resistenza, la tendenza ad incrudimento e ad indurimento per adesione determinano fenomeni di usura per il tagliente.

• Il titanio e le sue leghe hanno una lavorabilità scarsa rispetto agli acciai di tipo generico e agli acciai inossidabili.
Il titanio ha una scarsa conducibilità termica; mantiene la sua resistenza alle alte temperature, il che genera forze di taglio elevate e calore in corrispondenza del tagliente.
I trucioli prodotti durante la lavorazione sono sottili e molto spezzettati, con tendenza ad escoriare la superficie lavorata, e generano forze di taglio concentrate in prossimità del tagliente.
La forza di taglio può variare da 1300-1400 N/mm².

ISO	Gr.	Esempio/Example	W.-Nr	AISI/SAE
S	1			Discalloy
			1.4876	Incoloy 800
				Incoloy 909
				Lapelloy
				Custom 455
	2		2.4665	Hastelloy X
			2.4640	Inconel 600
			2.4668	Inconel 718
			2.4630	Ninomic 75
				Nimonic 90
			2.4634	Nimonic 105
			2.6554	Waspalloy
			2.4983	Udimet 500
			2.4654	Rene 41
				Stellite 31
				Hyanes 188
				Mar-M302
				Alacrite 601
			2.4670	Nimocast 713
			2.4360	Monel 400
				Rene 95
				Rene 100
				Rene 220

Super alloys - HRSA and titanium alloys (ISO S)

This group contains Super alloys based on heat-resistant iron, on nickel and cobalt (HRSA) and on titanium alloys.

• The super alloys have a high resistance to corrosion and this allows to maintain their hardness and resistance to high temperatures (up to 1000 ° C).
The nickel-based version is the most widely used. Among the precipitation hardening materials we find: Inconel, Waspalloy, Udimet. Among the hardened materials for solubilization (not hardenable) we find Inconel 625.
The materials based on iron are derived from the austenitic stainless steels and are those that have a weak resistance to heat.
The workability is improved in the case of alloys based on iron and is lower in the case of alloys based on nickel and cobalt based.
As these materials have a high resistance to high temperatures during processing are produced segmented chip.
The cutting force can vary from 2400-3100 N/mm ².
The considerable resistance, the tendency to strain hardening and hardening cause the phenomena of adhesion wear of the cutting edge.

• The titanium and its alloys have a poor workability compared to generic type steels and stainless steels.
Titanium has a low thermal conductivity; it keeps its strength at high temperatures, which generates high cutting forces and heat in correspondence of the cutting edge.
The chips produced during machining are thin and very fragmented, with a tendency to excoriate the machined surface and generate shear forces close to the cutting edge.
The cutting force can vary from 1300-1400 N/mm ².

ISO	Gr.	Esempio/Example	W.-Nr	AISI/SAE
S	3	TiCu2	3.7124	R507000
		Ti4	3.7065	
		TiAl6V6Sn2	3.7174	
		TiAl3V2.5	3.7195	
	4	TiAl6Sn2Zr4Mo2	3.7144	R54620
		TiAl6V4	3.7165	R56400
		TiAl5Fe2,5	3.7110	
		TiAl4Mo4Sn2	3.7184	
		TiAl6Zr5	3.7154	
		Ti6Al2Sn4Zr6Mo		

Leghe leggere/materiali non ferrosi (ISO N)

Questo gruppo contiene metalli teneri, non ferrosi, con durezze inferiori a 130 HB, ad eccezione dei bronzi ad alta resistenza (>225 HB)
Il gruppo più consistente è rappresentato dalle leghe di alluminio (Al) con meno del 12-13% di silicio (Si), il rame e le sue leghe: ottone (CuZn), bronzo (CuSn), leghe di magnesio ed infine i materiali plastici.
La lavorazione di queste leghe produce normalmente truciolo lungo.
La forza di taglio può variare da 350-700 N/mm²
L'Alluminio puro è tendente all'incollamento e richiede taglienti affilati e alta velocità mentre l'alluminio eutettico con tenore di Si superiore al 12% è molto abrasivo.

Light alloys/non-ferrous materials (ISO N)

This group is made of soft metals, non-ferrous, with hardness less than 130 HB, with the exception of the bronzes at high resistance (> 225 HB)
The largest group is represented by alloys of aluminum (Al) with less than 12-13% of silicon (Si), copper and its alloys: brass (CuZn), bronze (CuSn), magnesium alloys and finally the plastic materials.
Usually the processing of aluminium alloys produces long chip.
The cutting force can vary from 350-700 N/mm ²
The Pure aluminum is tending to stick and requires sharp cutting edges and high speed while the eutectic aluminum with content of Si more than 12% is very abrasive.

ISO	Gr.	Esempio/Example	W.-Nr	AISI/SAE
N	1	Al99.5	3.0255	1000
		AlCuMgPb	3.1645	
		AlMg 1	3.3315	5005
		AlMg 5	3.3555	
	2	AlSi9 Mg	3.2373	
		AlSi17Cu5		
		AlSi10Mg		
		AlSi 7 Mg		
	3	AlSi17Cu4Mg		
		AlSi18CuNiMg		
		AlSi21CuNiMg		
	4	CuZn20		
		CuSn2		
		CuNi 18 Zn 19 Pb		
		CuZn 36 Pb 1,5	2.0330	
		CuZn 40 Al2	2.0550	

La grafite e i compositi in carbone non sono materiali metallici.

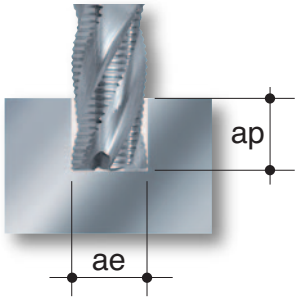
The graphite and carbon composites are not metallic materials.

ISO	Gr.	Esempio/Example	W.-Nr	AISI/SAE
0	1	CKF		

SGROSSATURA•ROUGHING

APERTURA CAVA - SLOTTING ap=1xd ae=1xd

CODE
- E12
- UM0
- MG14
- MG31
- MR12
- MR3



! **SERIE LUNGA** diminuire avanzamento (F) del 40% e velocita di taglio (Vc) del 20%
SERIE EXTRA LUNGA diminuire avanzamento (F) del 60% e velocita di taglio (Vc) del 20%

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SERIE EXTRA LONG please reduce the value of the feed (F) of 60% and cutting speed (Vc) of 20%

P1 P2 P3 | P4 P5 K1 K2 | P5 P6 K3 K4 | M1 M2 M3 | S1 S2 S3 S4

E12 UM0	HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme	
	Vc 25÷35		Vc 55÷65		Vc 20÷30		Vc 40÷50		Vc 10÷15		Vc 30÷35		Vc 5÷10		Vc 20÷25		Vc 5÷10		Vc 10÷15	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	1600	75	3400	160	1270	55	2500	110	830	30	1800	65	460	20	1150	50	330	15	720	32
8	1290	85	2800	180	960	65	1916	130	625	35	1370	75	380	25	900	60	250	22	540	42
10	1050	95	2800	185	700	75	1500	160	485	40	1060	85	280	25	700	65	190	20	420	42
12	860	100	1750	200	610	80	1250	165	415	45	915	100	230	30	600	80	165	22	350	45
16	650	110	1300	220	450	85	950	180	310	48	685	105	180	35	450	85	125	22	260	45
20	500	115	1000	230	350	75	760	165	250	50	550	135	140	35	350	90	96	20	200	40
25	410	120	830	240	290	70	610	145	200	50	440	110	115	35	280	85	80	24	170	50
30	350	120	700	240	240	60	510	130	160	55	365	125	90	35	225	85	65	25	140	52
40	260	125	530	250	180	75	380	160	125	55	270	120	70	35	175	85	50	30	100	55
50	200	125	400	250	145	75	300	155	100	55	220	120	60	35	150	85	40	35	85	65

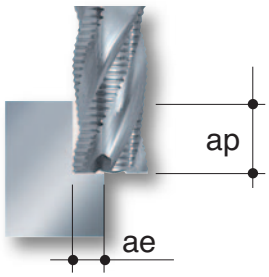
MG14 MG31	EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme	
	Vc 35÷45		Vc 70÷80		Vc 25÷35		Vc 45÷55		Vc 15÷20		Vc 35÷40		Vc 10÷15		Vc 25÷30		Vc 5÷10		Vc 15÷20	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	2200	100	4100	185	1650	70	2700	115	940	35	1980	70	830	35	1440	60	385	18	880	40
8	1660	110	3100	205	1250	85	2080	140	710	40	1500	85	625	40	1080	70	290	23	660	52
10	1270	115	2400	215	960	105	1610	170	550	45	1160	95	430	40	840	75	220	22	510	52
12	1100	125	2080	235	830	110	1380	180	465	50	1000	110	410	55	720	95	195	25	440	55
16	830	140	1560	260	625	120	1050	200	350	55	750	115	310	60	540	105	145	25	330	55
20	650	150	1250	280	480	105	800	170	280	55	600	120	240	60	430	110	110	22	260	52
25	530	155	1000	290	400	95	660	160	220	55	480	120	200	60	350	105	90	27	210	60
30	440	150	830	285	330	85	550	140	180	60	400	135	165	65	280	110	75	28	170	64
40	330	155	630	300	250	100	410	170	140	60	295	130	125	65	210	105	60	36	130	75
50	260	160	500	310	200	100	330	170	110	60	240	130	100	60	170	100	45	40	105	85

MR12 MR3	EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme	
	Vc 50÷60		Vc 85÷95		Vc 35÷45		Vc 55÷65		Vc 25÷30		Vc 40÷45		Vc 15÷20		Vc 30÷35		Vc 5÷10		Vc 15÷20	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	3050	140	4500	200	2200	95	3200	140	1440	50	2300	85	1100	45	1500	65	440	20	1000	45
8	2300	145	3750	240	1660	110	2450	200	1080	60	1750	100	850	55	1250	80	330	26	750	60
10	1750	155	2850	255	1270	135	1900	210	840	70	1300	105	650	60	1000	90	250	25	580	60
12	1500	170	2500	290	1100	145	1600	225	720	80	1160	125	550	70	820	105	220	28	500	65
16	1150	180	1850	295	830	160	1200	240	540	85	880	135	410	80	630	120	165	28	375	65
20	900	205	1500	320	650	140	980	210	430	85	700	140	320	80	480	120	125	25	285	60
25	730	210	1200	340	530	130	740	180	350	90	560	140	260	80	380	115	105	105	240	70
30	600	200	1000	340	440	110	650	165	290	100	450	155	220	85	320	125	85	32	200	75
40	500	240	750	360	330	135	460	190	215	95	350	155	160	80	240	120	65	38	150	40
50	370	225	600	370	260	135	390	200	170	95	280	155	135	80	185	110	55	45	120	100

SGROSSATURA•ROUGHING

CONTORNATURA - SIDE MILLING ap=1,5xd ae=0,5xd

CODE
- E12
- UM0
- MG14
- MG31
- MR12
- MR3



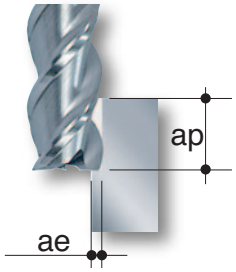
! **SERIE LUNGA** diminuire avanzamento (F) del 40% e velocita di taglio (Vc) del 20%
SERIE EXTRA LUNGA diminuire avanzamento (F) del 60% e velocita di taglio (Vc) del 20%

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SERIE EXTRA LONG please reduce the value of the feed (F) of 60% and cutting speed (Vc) of 20%

	P1 P2 P3				P4 P5 K1 K2				P5 P6 K3 K4				M1 M2 M3				S1 S2 S3 S4			
E12 UM0	HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme	
	Vc 25÷35		Vc 55÷65		Vc 20÷30		Vc 40÷50		Vc 10÷15		Vc 30÷35		Vc 5÷10		Vc 20÷25		Vc 5÷10		Vc 10÷15	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	1600	90	3400	190	1270	70	2500	140	830	40	1800	85	460	30	1150	75	330	22	720	45
8	1290	100	2800	215	960	75	1916	150	625	45	1370	100	380	36	900	85	250	30	540	55
10	1050	115	2050	220	700	80	1500	170	485	50	1060	120	280	38	700	95	190	26	420	58
12	860	120	1750	240	610	95	1250	195	415	65	915	145	230	44	600	115	165	30	350	60
16	650	140	1300	300	450	105	950	220	310	70	685	155	180	46	450	115	125	30	260	62
20	500	150	1000	300	350	115	760	250	250	70	550	155	140	50	350	125	95	30	200	62
25	410	160	830	320	290	115	610	240	200	75	440	165	115	55	280	135	80	35	170	70
30	350	165	700	330	240	120	510	255	160	75	365	170	90	55	225	140	65	40	140	80
40	260	175	530	350	180	130	380	275	125	80	270	175	70	50	175	125	50	45	100	90
50	200	170	400	340	145	130	300	270	100	80	220	175	60	50	150	125	40	40	85	85
MG14 MG31	EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme	
	Vc 40÷45		Vc 70÷80		Vc 25÷35		Vc 45÷55		Vc 15÷20		Vc 35÷40		Vc 10÷15		Vc 25÷30		Vc 5÷10		Vc 15÷20	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	2200	120	4100	230	1650	90	2700	150	940	45	1980	95	830	55	1440	95	385	25	880	58
8	1660	125	3100	240	1250	95	2080	160	710	50	1500	110	625	60	1080	100	290	35	660	78
10	1270	140	2400	260	960	110	1610	185	550	60	1160	130	430	60	840	115	220	30	510	70
12	1100	150	2080	290	830	130	1380	215	465	75	1000	155	410	80	720	140	195	35	440	80
16	830	175	1560	330	625	145	1050	245	350	80	750	170	310	80	540	140	145	35	330	80
20	650	190	1250	370	480	155	800	260	280	80	600	170	240	85	430	155	110	30	260	82
25	530	205	1000	390	400	155	660	255	220	85	480	180	200	95	350	165	90	38	210	90
30	440	205	830	390	330	165	550	275	180	85	400	185	165	100	280	170	75	45	170	100
40	330	220	630	410	250	180	410	295	140	90	295	190	125	90	210	150	60	54	130	110
50	260	220	500	410	200	180	330	295	110	90	240	190	100	85	170	140	45	45	105	105
MR12 MR3	EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme	
	Vc 50÷60		Vc 85÷95		Vc 35÷45		Vc 55÷65		Vc 25÷30		Vc 40÷45		Vc 15÷20		Vc 30÷35		Vc 5÷10		Vc 15÷20	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	3050	170	4500	250	2200	120	3200	175	1440	70	2300	110	1100	70	1500	100	440	30	1000	65
8	2300	175	3750	285	1660	130	2450	230	1080	80	1750	125	850	80	1250	120	330	40	750	85
10	1750	190	2850	305	1270	145	1900	220	840	95	1300	145	650	90	1000	135	250	40	580	80
12	1500	205	2500	340	1100	170	1600	265	720	110	1160	180	550	105	820	155	220	40	500	90
16	1150	240	1850	385	830	195	1200	290	540	120	880	200	410	105	630	160	165	40	375	90
20	900	270	1500	430	650	215	980	320	430	120	700	195	320	115	480	170	125	40	285	90
25	730	280	1200	470	530	205	740	290	350	130	560	210	260	125	380	180	105	45	240	100
30	600	280	1000	470	440	220	650	325	290	135	450	210	220	135	320	195	85	50	200	115
40	500	330	750	500	330	240	460	330	215	140	350	225	160	115	240	170	65	55	150	130
50	370	310	600	500	260	235	390	350	170	135	280	225	135	110	185	155	55	55	120	120

CONTORNATURA - SIDE MILLING ap=2xd ae=0,1xd

CODE
- UM0
- MG12
- MG30
- MR8



! **SERIE LUNGA** diminuire avanzamento (F) del 40% e velocita di taglio (Vc) del 20%
SERIE EXTRA LUNGA diminuire avanzamento (F) del 60% e velocita di taglio (Vc) del 20%

! **LONG SERIES** please reduce the value of the feed (F) of 40% and cutting speed (Vc of 20%
SERIE EXTRA LONG please reduce the value of the feed (F) of 60% and cutting speed (Vc) of 20%

UM0

	P1 P2 P3				P4 P5 K1 K2				P5 P6 K3 K4				M1 M2 M3				S1 S2 S3 S4			
	HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme	
	Vc 25÷35		Vc 55÷65		Vc 20÷30		Vc 40÷50		Vc 10÷15		Vc 30÷35		Vc 5÷10		Vc 20÷25		Vc 5÷10		Vc 10÷15	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	1600	130	3400	275	1270	90	2500	175	830	65	1800	140	460	28	1150	75	330	25	720	55
8	1290	135	2800	290	960	100	1916	200	625	70	1370	155	380	35	900	95	250	35	540	70
10	1050	140	2050	275	700	100	1500	215	485	75	1060	165	280	45	700	110	190	35	415	70
12	860	160	1750	325	610	115	1250	235	415	80	915	175	230	50	600	115	165	35	360	70
16	650	175	1300	350	450	120	950	255	310	90	685	200	180	55	450	125	125	35	270	70
20	500	190	1000	380	350	135	760	295	250	95	550	210	140	60	350	135	95	35	200	70
25	410	200	830	405	290	140	610	295	200	100	440	220	115	64	280	140	80	38	170	75
30	350	205	700	410	240	145	510	310	160	100	365	230	90	65	325	145	65	40	140	80
40	260	210	530	430	180	155	380	325	125	105	270	225	70	65	175	150	50	45	110	90
50	200	210	400	420	145	155	300	320	100	105	220	230	60	65	150	150	40	45	86	85

MG12 MG30

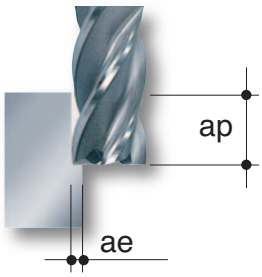
	EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme	
	Vc 35÷45		Vc 70÷80		Vc 25÷35		Vc 45÷55		Vc 15÷20		Vc 35÷40		Vc 10÷15		Vc 25÷30		Vc 5÷10		Vc 15÷20	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	2200	180	4100	330	1650	115	2700	190	940	75	1980	155	830	54	1440	94	385	28	880	66
8	1660	170	3100	320	1250	130	2080	215	710	80	1500	170	625	68	1080	118	290	40	660	92
10	1260	170	2400	320	960	135	1610	230	550	85	1160	180	430	68	840	135	220	40	510	92
12	1100	205	2080	385	830	155	1380	260	465	90	1000	190	410	86	720	150	195	40	440	92
16	830	225	1560	420	625	165	1050	280	350	100	750	215	310	92	540	160	145	40	330	92
20	650	245	1250	475	480	185	800	310	280	105	600	230	240	100	430	180	110	40	260	94
25	530	260	1000	485	400	195	660	320	220	110	480	240	200	110	350	190	90	42	210	100
30	440	255	830	485	330	200	550	330	180	115	400	250	165	120	280	200	75	45	170	105
40	330	265	630	505	250	215	410	355	140	120	295	250	125	115	210	190	60	55	130	115
50	260	275	500	525	200	215	330	350	110	115	240	250	100	108	170	180	45	50	105	115

MR8

	EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme	
	Vc 50÷60		Vc 85÷95		Vc 35÷45		Vc 55÷65		Vc 25÷30		Vc 40÷45		Vc 15÷20		Vc 30÷35		Vc 5÷10		Vc 15÷20	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	3050	245	4500	365	2200	155	3200	225	1440	115	2300	180	1100	71	1500	100	440	35	1000	75
8	2700	240	3750	390	1660	175	2450	305	1080	120	1750	195	850	92	1250	135	330	45	750	100
10	1750	230	2850	380	1270	180	1900	275	840	130	1300	200	650	105	1000	160	260	45	580	105
12	1500	280	2500	465	1100	205	1600	320	720	140	1160	225	550	115	820	170	220	45	500	105
16	1150	310	1850	495	830	220	1200	335	540	155	880	255	410	125	630	195	165	45	375	105
20	900	340	1500	570	650	250	980	345	430	165	700	265	320	135	480	200	125	45	285	105
25	730	355	1200	585	530	255	740	355	350	175	560	280	260	140	380	210	105	50	240	110
30	600	350	1000	585	440	265	650	390	290	180	450	280	220	155	320	225	85	50	190	115
40	500	400	750	600	330	285	460	300	215	180	350	295	160	145	240	220	65	55	150	130
50	370	390	600	630	260	280	390	300	170	180	280	295	135	145	185	200	55	60	120	130

CONTORNATURA - SIDE MILLING ap=1,5xd ae=0,1xd

CODE
G2
MG8
MR4



SERIE LUNGA diminuire avanzamento (F) del 40% e velocita di taglio (Vc) del 20%
SERIE EXTRA LUNGA diminuire avanzamento (F) del 60% e velocita di taglio (Vc) del 20%

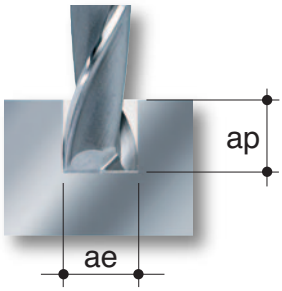
LONG SERIES please reduce the value of the feed (F) of 40% and cutting speed (Vc of 20%
SERIE EXTRA LONG please reduce the value of the feed (F) of 60% and cutting speed (Vc) of 20%

	P1 P2 P3				P4 P5 K1 K2				P5 P6 K3 K4				M1 M2 M3				S1 S2 S3 S4			
G2	HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme	
	Vc 25÷35		Vc 55÷65		Vc 20÷30		Vc 40÷50		Vc 10÷15		Vc 30÷35		Vc 5÷10		Vc 20÷25		Vc 5÷10		Vc 10÷15	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	1600	90	3400	190	1270	60	2500	120	830	45	1800	100	460	30	1150	60	330	22	720	48
8	1290	105	2800	230	960	75	1916	150	625	55	1370	120	380	40	900	75	250	30	540	65
10	1050	115	2050	225	700	85	1500	182	485	60	1060	130	280	40	700	80	190	30	415	65
12	860	135	1750	275	610	100	1250	205	415	70	915	155	230	45	600	90	165	30	360	65
16	650	150	1300	300	450	120	950	255	310	80	685	175	180	48	450	100	125	30	270	70
20	500	175	1000	350	350	130	760	280	250	85	550	185	140	50	350	110	95	30	200	65
25	410	180	830	365	290	130	610	275	200	90	440	200	115	50	280	125	80	32	170	70
30	350	190	700	380	240	135	510	285	160	90	365	205	90	55	225	130	65	30	140	60
40	260	190	530	385	180	150	380	315	125	100	270	215	70	55	175	135	50	25	110	60
50	200	190	400	380	145	150	300	310	100	100	220	220	60	60	150	150	40	25	85	55
MG8	EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme	
	Vc 35÷45		Vc 70÷80		Vc 25÷35		Vc 45÷55		Vc 15÷20		Vc 35÷40		Vc 10÷15		Vc 25÷30		Vc 5÷10		Vc 10÷15	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	2200	125	4100	230	1650	75	2700	125	940	75	1980	105	830	55	1440	90	385	25	880	60
8	1660	135	3100	250	1250	95	2080	160	710	80	1500	130	625	60	1080	105	290	35	660	80
10	1270	140	2400	260	960	115	1610	195	550	85	1160	145	430	65	840	115	220	35	510	80
12	1100	170	2080	325	830	135	1380	225	465	90	1000	170	410	75	720	135	195	35	440	80
16	830	190	1560	360	625	165	1050	280	350	100	750	195	310	80	540	140	145	35	330	85
20	650	225	1250	435	480	180	800	295	280	105	600	205	240	85	430	150	110	35	260	85
25	530	235	1000	440	400	180	660	295	220	110	480	215	200	88	350	155	90	36	210	85
30	440	240	830	450	330	185	550	310	180	115	400	225	165	100	280	170	75	35	170	70
40	330	240	630	460	250	210	410	340	140	120	290	235	125	98	210	165	60	30	130	70
50	260	245	500	475	200	205	330	340	110	115	240	230	100	100	170	170	45	28	105	70
MR4	EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme	
	Vc 50÷60		Vc 85÷95		Vc 35÷45		Vc 55÷65		Vc 25÷30		Vc 40÷45		Vc 15÷20		Vc 30÷35		Vc 5÷10		Vc 10÷15	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
6	3050	170	4500	250	2200	105	3200	150	1440	80	2300	125	1100	70	1500	98	440	30	1000	68
8	2300	185	3750	305	1660	130	2450	230	1080	95	1750	155	850	85	1250	120	330	40	750	90
10	1750	190	2850	310	1270	155	1900	235	840	105	1300	160	650	90	1000	140	260	40	580	90
12	1500	235	2500	390	1100	180	1600	275	720	120	1160	195	550	105	820	155	220	40	500	90
16	1150	265	1850	425	830	220	1200	235	540	140	880	225	410	105	630	160	165	40	375	90
20	900	315	1500	525	650	240	980	265	430	145	700	240	320	110	480	165	125	40	285	90
25	730	320	1200	525	530	235	740	330	350	160	560	250	260	115	380	165	105	40	240	95
30	600	325	1000	540	440	245	650	365	290	165	450	255	220	135	320	190	85	35	190	80
40	500	365	750	550	330	275	460	385	215	170	350	280	160	125	240	185	65	35	150	80
50	370	350	600	570	260	270	390	405	170	170	280	280	135	130	185	180	55	35	120	80

CHIAVETTE•KEYWAY (Frese Z2 end mills)

APERTURA CAVA - SLOTTING ap=0,5xd ae=d

CODE
- A3
- MG1
- MR1



! **SERIE LUNGA** diminuire avanzamento (F) del 40% e velocita di taglio (Vc) del 20%
SERIE EXTRA LUNGA diminuire avanzamento (F) del 60% e velocita di taglio (Vc) del 20%

! **LONG SERIES** please reduce the value of the feed (F) of 40% and cutting speed (Vc of 20%
SERIE EXTRA LONG please reduce the value of the feed (F) of 60% and cutting speed (Vc) of 20%

	P1 P2 P3				P4 P5 K1 K2				P5 P6 K3 K4				M1 M2 M3			
A3	HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme	
	Vc 25÷35		Vc 55÷65		Vc 20÷30		Vc 40÷50		Vc 10÷15		Vc 30÷35		Vc 5÷10		Vc 20÷25	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
4	2480	60	4600	100	1910	55	3800	115	1190	30	2700	70	640	18	1670	55
6	1600	80	3400	170	1270	60	2500	120	830	35	1800	75	460	20	1150	58
8	1290	90	2800	195	960	70	1916	140	625	45	1370	100	380	20	900	45
10	1050	105	2050	205	700	75	1500	160	485	50	1060	110	280	25	700	60
12	860	115	1750	230	610	80	1250	165	415	55	915	120	230	25	600	70
16	650	110	1300	220	450	80	950	170	310	55	685	120	180	26	450	65
20	500	100	1000	200	350	70	760	150	250	45	550	100	140	25	350	55
25	410	120	830	240	290	70	610	145	200	40	440	90	115	20	280	45
30	350	110	700	215	240	65	510	140	160	35	365	80	90	16	225	35
40	260	110	530	220	180	65	380	135	125	30	270	65	70	12	175	30

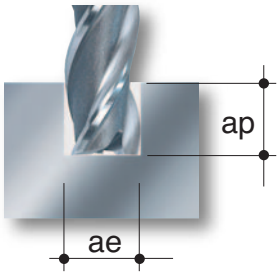
MG1	EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme	
	Vc 35÷45		Vc 70÷80		Vc 25÷35		Vc 45÷55		Vc 15÷20		Vc 35÷40		Vc 10÷15		Vc 25÷30	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
4	3400	75	5600	120	2470	75	4020	120	1400	35	2900	82	1180	34	2150	58
6	2200	110	4100	205	1650	80	2700	125	940	40	1980	85	830	36	1440	60
8	1660	115	3100	215	1250	90	2080	150	710	50	1500	110	625	33	1080	55
10	1260	125	2400	240	960	105	1610	170	550	55	1160	120	430	38	840	75
12	1100	145	2080	275	830	110	1380	180	465	60	1000	130	410	48	720	85
16	830	140	1560	265	625	110	1050	185	350	60	750	135	310	45	540	75
20	530	105	1250	250	480	95	800	160	280	50	600	110	240	40	430	70
25	440	130	1000	290	400	95	660	160	220	45	480	95	200	34	350	60
30	330	105	830	260	330	90	550	150	180	40	400	85	165	28	280	48
40	260	110	630	265	250	90	410	150	140	35	295	70	125	22	210	36

MR1	EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme	
	Vc 50÷60		Vc 85÷95		Vc 35÷45		Vc 55÷65		Vc 25÷30		Vc 40÷45		Vc 15÷20		Vc 30÷35	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
4	4600	110	6800	125	3250	100	4770	145	2100	55	3400	90	1600	48	2200	60
6	3050	150	4500	225	2200	105	3200	150	1440	60	2300	95	1100	50	1500	65
8	2300	160	3750	260	1660	120	2450	210	1080	80	1750	125	850	45	1250	65
10	1750	175	2850	285	1270	135	1900	210	840	85	1300	135	650	60	1000	75
12	1500	200	2500	330	1100	145	1600	225	720	95	1160	155	550	50	820	90
16	1150	195	1850	315	830	145	1200	220	540	95	880	155	410	50	630	90
20	900	180	1500	300	650	130	980	195	430	75	700	125	320	45	480	80
25	730	210	1200	350	530	130	740	180	350	70	560	110	260	45	380	65
30	630	195	1000	310	440	120	650	175	290	65	450	100	220	40	320	55
40	500	210	750	315	330	120	460	165	215	50	350	85	160	30	240	40

CHIAVETTE•KEYWAY (Frese Z3 end mills)

APERTURA CAVA - SLOTTING ap=0,5xd ae=d

CODE
- B2
- MG4
- MR2



! **SERIE LUNGA** diminuire avanzamento (F) del 40% e velocita di taglio (Vc) del 20%
SERIE EXTRA LUNGA diminuire avanzamento (F) del 60% e velocita di taglio (Vc) del 20%

! **LONG SERIES** please reduce the value of the feed (F) of 40% and cutting speed (Vc of 20%
SERIE EXTRA LONG please reduce the value of the feed (F) of 60% and cutting speed (Vc) of 20%

	P1 P2 P3				P4 P5 K1 K2				P5 P6 K3 K4				M1 M2 M3			
B2	HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme	
	Vc 25÷35		Vc 55÷65		Vc 20÷30		Vc 40÷50		Vc 10÷15		Vc 30÷35		Vc 5÷10		Vc 20÷25	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
4	2480	90	4600	145	1910	75	3800	145	1190	55	2700	125	640	27	1670	72
6	1600	120	3400	255	1270	80	2500	150	830	60	1800	130	460	30	1150	75
8	1290	135	2800	290	960	90	1916	180	625	70	1370	155	380	30	900	75
10	1050	150	2050	290	700	95	1500	205	485	80	1060	175	280	30	700	75
12	860	165	1750	330	610	105	1250	215	415	80	915	175	230	35	600	85
16	650	165	1300	325	450	105	950	220	310	70	685	155	180	36	450	90
20	500	140	1000	280	350	110	760	240	250	65	550	145	140	28	350	70
25	410	130	830	265	290	110	610	210	200	55	440	120	115	26	280	60
30	350	120	700	240	240	105	510	225	160	45	365	105	90	21	225	50
40	260	120	530	245	180	100	380	210	125	30	270	65	70	20	175	45

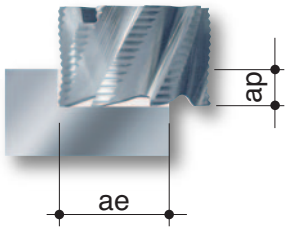
MG4	EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme	
	Vc 35÷45		Vc 70÷80		Vc 25÷35		Vc 45÷55		Vc 15÷20		Vc 35÷40		Vc 10÷15		Vc 25÷30	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
4	3400	110	5600	175	2470	100	4020	160	1400	65	2900	140	1180	52	2150	87
6	2200	165	4100	305	1650	105	2700	165	940	70	1980	145	830	55	1440	90
8	1660	175	3100	320	1250	115	2080	195	710	80	1500	170	625	50	1080	85
10	1260	180	2400	340	960	130	1610	215	550	90	1160	190	430	50	840	85
12	1100	155	2080	395	830	145	1380	235	465	90	1000	190	410	60	720	100
16	830	205	1560	390	625	145	1050	245	350	80	750	170	310	60	340	100
20	530	150	1250	350	480	150	800	250	280	75	600	155	240	50	430	85
25	440	140	1000	315	400	150	660	250	220	60	480	130	200	45	350	70
30	330	115	830	285	330	145	550	240	180	50	400	110	165	35	280	55
40	260	120	630	290	250	140	410	230	140	35	295	70	125	30	210	45

MR2	EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme		EMP6		EMP6 Supreme	
	Vc 50÷60		Vc 85÷95		Vc 35÷45		Vc 55÷65		Vc 25÷30		Vc 40÷45		Vc 15÷20		Vc 30÷35	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
4	4600	165	6800	190	3250	130	4770	195	2100	100	3400	160	1600	67	2200	92
6	3050	345	4500	335	2200	135	3200	200	1440	103	2300	165	1100	70	1500	95
8	2300	315	3750	390	1660	155	2450	275	1080	120	1750	195	850	65	1250	95
10	1750	325	2850	405	1270	170	1900	265	840	140	1300	215	650	65	1000	105
12	1500	335	2500	475	1100	190	1600	290	720	140	1160	225	550	75	820	115
16	1150	290	1850	465	830	195	1200	290	540	120	880	200	410	80	630	120
20	900	250	1500	420	650	205	980	310	430	110	700	180	320	65	480	95
25	730	230	1200	380	530	200	740	280	350	95	560	155	260	55	380	80
30	600	205	1000	340	440	190	650	285	290	80	450	125	220	45	320	65
40	500	230	750	345	330	185	460	255	215	50	350	85	160	35	240	50

SGROSSATURA•ROUGHING

SPIANATURA - SMOOTHING ap=0,3xd ae=0,75xd

CODE
- C5/B
- C6/B
- MG7

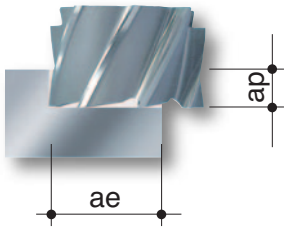


	P1 P2 P3				P4 P5 K1 K2				P5 P6 K3 K4				M1 M2 M3			
C5/B C6/B	HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme		HSSCo8		HSSCo8 Supreme	
	Vc 25÷30		Vc 65÷75		Vc 20÷25		Vc 40÷50		Vc 10÷15		Vc 30÷35		Vc 5÷10		Vc 20÷25	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
40	260	105	560	225	190	75	375	150	115	45	265	105	75	30	180	70
50	210	110	430	225	150	80	300	160	93	55	210	125	60	30	150	75
63	170	125	400	290	125	90	250	180	78	58	175	130	48	35	115	80
80	160	120	370	280	120	90	235	175	70	58	165	135	40	35	90	80
100	130	130	280	280	90	95	185	195	58	65	130	145	30	35	70	80
125	95	120	200	270	75	85	140	160	45	65	100	145	22	30	60	80

MG7	EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme	
	Vc 35÷40		Vc 70÷80		Vc 30÷35		Vc 50÷55		Vc 15÷20		Vc 35÷40		Vc 10÷15		Vc 25÷30	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
40	330	130	610	245	250	100	400	160	140	55	300	115	115	45	215	85
50	270	140	490	255	200	105	320	170	115	70	240	140	90	35	170	65
63	220	160	410	300	165	120	265	190	95	70	200	150	75	50	135	95
80	210	160	380	285	155	115	250	190	90	75	190	155	60	55	105	100
100	160	160	308	308	125	130	200	210	70	80	150	170	45	50	80	95
125	125	170	230	315	95	110	150	170	55	80	115	165	38	50	70	95

SPIANATURA - SMOOTHING ap=0,1xd ae=0,75xd

CODE
- C2
- C3
- MG6



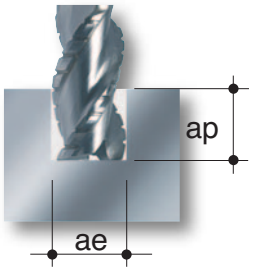
		P1	P2	P3		P4	P5	K1	K2		P5	P6	K3	K4		M1	M2	M3	
C2 C3	HSSCo8			HSSCo8 Supreme		HSSCo8			HSSCo8 Supreme		HSSCo8			HSSCo8 Supreme		HSSCo8			HSSCo8 Supreme	
	Vc 25÷30			Vc 65÷75		Vc 20÷25			Vc 40÷50		Vc 10÷15			Vc 30÷35		Vc 5÷10			Vc 20÷25	
d	n		F	n	F	n		F	n	F	n		F	n	F	n		F	n	F
40	260		120	560	260	190		100	375	200	115		60	265	140	75		40	180	65
50	210		130	430	260	150		105	300	210	93		65	210	145	60		40	150	96
63	170		140	400	330	125		105	250	210	78		75	175	170	48		38	115	85
80	160		135	370	310	120		110	235	215	70		75	165	175	40		40	90	100
100	130		130	280	280	90		110	185	225	58		75	130	170	30		45	70	90
125	95		125	200	260	75		105	140	195	45		70	100	155	22		40	60	90

MG6	EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme		EMP3		EMP3 Supreme	
	Vc 35÷40		Vc 70÷80		Vc 30÷35		Vc 50÷55		Vc 15÷20		Vc 35÷40		Vc 10÷15		Vc 25÷30	
d	n	F	n	F	n	F	n	F	n	F	n	F	n	F	n	F
40	330	150	610	280	250	130	400	210	140	75	300	155	115	50	215	76
50	270	165	490	300	200	140	320	225	115	80	240	170	90	58	170	100
63	220	180	410	335	165	140	265	225	95	90	200	190	75	48	135	85
80	210	175	380	320	155	140	250	230	90	95	190	205	60	75	105	135
100	160	160	310	310	125	155	200	245	70	90	150	195	45	70	80	125
125	125	170	230	310	95	135	150	210	55	85	115	180	38	65	70	120

SGROSSATURA•ROUGHING

APERTURA CAVA - SLOTTING ap=1xd ae =1xd

CODE
L12
MR3

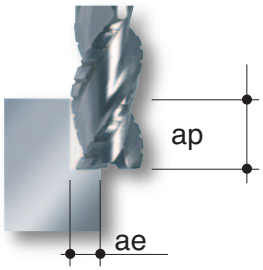


	N1	N2			N3	N4		
L12	EMP3		EMP3 ALU Supreme		EMP3		EMP3 ALU Supreme	
	Vc 140÷160		Vc 190÷210		Vc 90÷110		Vc 130÷150	
d	n	F	n	F	n	F	n	F
6	7970	435	10620	575	5310	285	7440	450
8	5980	520	7970	685	3990	345	5580	500
10	4780	645	6370	790	3190	420	4460	610
12	3990	600	5310	760	2660	425	3720	590
16	2990	575	3990	775	1990	385	2790	545
20	2390	600	3190	755	1600	370	2230	560
25	1920	550	2550	720	1280	320	1790	505
30	1600	560	2130	750	1070	360	1490	565
40	1200	540	1600	660	800	320	1120	475
50	960	445	1280	555	640	280	900	435

MR3	EMP6		EMP6 ALU Supreme		EMP6		EMP6 ALU Supreme	
	Vc 180÷200		Vc 220÷240		Vc 130÷150		Vc 180÷200	
d	n	F	n	F	n	F	n	F
6	10090	545	12210	660	7440	405	10090	560
8	7570	645	9160	735	5580	485	7570	730
10	6060	750	7330	900	4460	580	6060	925
12	5050	735	6110	860	3720	560	5050	980
16	3790	715	4580	825	2790	545	3790	975
20	3030	720	3670	835	2230	505	3030	1020
25	2420	640	2930	770	1790	450	2420	1000
30	2020	735	2450	815	1490	595	2020	1010
40	1520	690	1840	775	1120	465	1520	835
50	1210	560	1470	670	900	385	1210	685

CONTORNATURA - SIDE MILLING ap=1,5xd ae= 0,5xd

CODE
L12
MR3



	N1	N2			N3	N4		
L12	EMP3		EMP3 ALU Supreme		EMP3		EMP3 ALU Supreme	
	Vc 140÷160		Vc 190÷210		Vc 90÷110		Vc 130÷150	
d	n	F	n	F	n	F	n	F
6	7970	465	10620	590	5310	320	7440	485
8	5980	600	7970	770	3990	400	5580	555
10	4780	735	6370	975	3190	480	4460	535
12	3990	740	5310	1030	2660	515	3720	720
16	2990	805	3990	1025	1990	545	2790	780
20	2390	810	3190	1075	1600	520	2230	820
25	1920	785	2550	1055	1280	495	1790	655
30	1600	710	2130	920	1070	425	1490	625
40	1200	595	1600	800	800	385	1120	550
50	960	540	1280	720	640	360	900	475

MR3	EMP6		EMP6 ALU Supreme		EMP6		EMP6 ALU Supreme	
	Vc 180÷200		Vc 220÷240		Vc 130÷150		Vc 180÷200	
d	n	F	n	F	n	F	n	F
6	10090	605	12210	735	7440	450	10090	605
8	7570	735	9160	895	5580	560	7570	790
10	6060	920	7330	995	4460	670	6060	1000
12	5050	920	6110	1130	3720	670	5050	1060
16	3790	1005	4580	1215	2790	745	3790	1050
20	3030	1010	3670	1255	2230	760	3030	1100
25	2420	1000	2930	1220	1790	670	2420	1080
30	2020	875	2450	1070	1490	795	2020	1205
40	1520	735	1840	905	1120	595	1520	950
50	1210	675	1470	825	900	485	1210	740

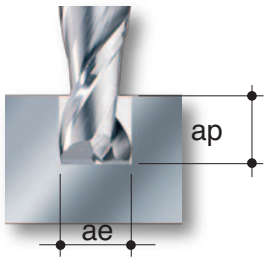
Per l'alluminio puro i parametri possono essere aumentati del 50%
SERIE LUNGA Diminuire l'avanzamendo (F) del 40% e la velocità di taglio (Vt) del 20% -
SERIE EXTRA-LUNGA Diminuire l'avanzamento (F) del 60% e la velocità di taglio (Vt) del 20%

Parameters for pure aluminium can be raised by 50%
LONG SERIES Please reduce the value of the feed (F) of 40% and cutting speed (Vt) of 20%
SERIE EXTRA LONG Please reduce the value of the feed (F) of 60% and cutting speed (Vt) of 20%

SGROSSATURA•ROUGHING

APERTURA CAVA - SLOTTING ap=0,5xd ae=1xd

CODE
- L1
- L4



L1	N1 N2				N3 N4				UM0
	HSSCo8		HSSCo8 ALU Supreme		HSSCo8		HSSCo8 ALU Supreme		
	Vc 120÷140		Vc 180÷200		Vc 80÷100		Vc 100÷120		
d	n	F	n	F	n	F	n	F	
6	6900	280	10090	365	4780	175	5840	215	
8	5180	310	7570	440	3590	210	4380	260	
10	4140	380	6060	560	2870	260	3510	315	
12	3450	365	5050	490	2390	250	2920	305	
16	2590	340	3790	480	1800	235	2190	285	
20	2070	270	3030	380	1440	165	1760	205	
25	1660	235	2420	335	1150	150	1410	180	
30	1380	265	2020	355	960	160	1170	195	
40	1040	220	1520	335	720	150	880	185	
50	830	205	1210	275	580	125	710	185	

L4									MG12 L8
	EMP3		EMP3 ALU Supreme		EMP3		EMP3 ALU Supreme		
	Vc 140÷160		Vc 190÷210		Vc 100÷120		Vc 130÷150		
d	n	F	n	F	n	F	n	F	
6	7970	290	10620	385	5840	210	7440	300	
8	5980	350	7970	455	4380	255	5580	335	
10	4780	430	6370	530	3510	310	4460	405	
12	3990	400	5310	510	2920	310	3720	395	
16	2990	385	3990	520	2190	280	2790	350	
20	2390	300	3190	380	1760	205	2230	280	
25	1920	275	2550	360	1410	175	1790	255	
30	1600	280	2130	375	1170	200	1490	285	
40	1200	270	1600	330	880	175	1120	240	
50	960	225	1280	280	710	155	900	220	

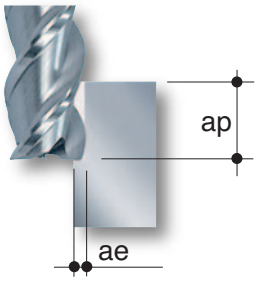
Per l'alluminio puro i parametri possono essere aumentati del 50%
SERIE LUNGA Diminuire l'avanzamendo (F) del 40% e la velocità di taglio (Vt) del 20% -
SERIE EXTRA-LUNGA Diminuire l'avanzamento (F) del 60% e la velocità di taglio (Vt) del 20%

Parameters for pure aluminium can be raised by 50%
LONG SERIES Please reduce the value of the feed (F) of 40% and cutting speed (Vt) of 20%
SERIE EXTRA LONG Please reduce the value of the feed (F) of 60% and cutting speed (Vt) of 20%

FINITURA•FINISHING

CONTORNATURA - SIDE MILLING ap=2xd ae=0,1xd

CODE
- UM0
- MG12
- L8
- MR8



	N1 N2				N3 N4				UM0
	HSSCo8		HSSCo8 ALU Supreme		HSSCo8		HSSCo8 ALU Supreme		
	Vc 120÷140		Vc 180÷200		Vc 80÷100		Vc 100÷120		
	n	F	n	F	n	F	n	F	
	6900	450	10090	605	4780	295	5840	360	
	5180	515	7570	730	3590	350	4380	425	
	4140	625	6060	905	2870	430	3510	525	
	3450	670	5050	1010	2390	460	2920	560	
	2590	725	3790	1020	1800	475	2190	580	
	2070	785	3030	1010	1440	475	1760	580	
	1660	610	2420	970	1150	450	1410	550	
	1380	580	2020	890	960	395	1170	480	
	1040	510	15120	760	720	350	880	430	
	830	440	1210	670	580	315	710	385	

									MG12 L8
	EMP3		EMP3 ALU Supreme		EMP3		EMP3 ALU Supreme		
	Vc 140÷160		Vc 190÷210		Vc 100÷120		Vc 130÷150		
	n	F	n	F	n	F	n	F	
	7970	465	10620	590	5840	350	7440	485	
	5980	600	7970	770	4380	440	5580	555	
	4780	735	6370	975	3510	525	4460	670	
	3990	740	5310	1030	2920	570	3720	720	
	2990	805	3990	1025	2190	600	2790	745	
	2390	810	3190	1075	1760	575	2230	820	
	1920	785	2550	1055	1410	545	1790	655	
	1600	710	2130	920	1170	470	1490	625	
	1200	595	1600	800	880	420	1120	550	
	960	540	1280	720	710	395	900	475	

	EMP6		EMP6 ALU Supreme		EMP6		EMP6 ALU Supreme		MR8
	Vc 180÷200		Vc 220÷240		Vc 130÷150		Vc 180÷200		
	n	F	n	F	n	F	n	F	
	10090	605	12210	735	7440	450	10090	560	
	7570	735	9160	895	5580	560	7570	730	
	6060	920	7330	995	4460	670	6060	925	
	5050	920	6110	1130	3720	670	5050	980	
	3790	1005	4580	1215	2790	745	3790	975	
	3030	1010	3670	1255	2230	760	3030	1020	
	2420	960	2930	1220	1790	670	2420	1000	
	2020	875	2450	1070	1490	595	2020	875	
	1520	735	1840	905	1120	535	1520	760	
	1210	675	1470	825	900	485	1210	685	

ALESATURA•REAMING

CODE
- AL0
- AL6
- AL7
- AL8
- AL9
- AL10



ISO	MATERIALI/MATERIALS	Vt m/min	Fn mm/giro Ø 2÷16	Ø 24÷40	Ø 42÷60
P1 P3 P2	• acciai - steel 490-690 N/mm²	10÷15	0,10÷0,25	0,25÷0,35	0,35÷0,40
P4 K1 P5 K2	• acciai - steel 780-980 N/mm² • ghise - cast iron (HB<180)	8÷12	0,08÷0,20	0,20÷0,30	0,35÷0,40
P5 K3 P6 K4	• acciai - steel 900 -1400 N/mm² • acciai inox ferritici e martensitici - ferritic and martensitic stainless steel • ghise - cast iron (HB>180)	6÷10	0,08÷0,20	0,20÷0,30	0,35÷0,40
M1 M3 M2	• acciai inox austenitici, Duplex, Super Duplex e PH • austenitic, Duplex, Super Duplex and PH stainless steel	4÷6	0,08÷0,20	0,20÷0,30	0,35÷0,40
S1 S3 S2 S4	• super leghe - super alloys • titanio - titanium	4÷6	0,08÷0,20	0,20÷0,30	0,35÷0,40
N1 N2 N3 N4	• leghe di alluminio (Si<10%) - alluminium alloys (Si<10%) • leghe di alluminio (Si>10%) - alluminium alloys (Si>10%) • rame e leghe di rame - copper and copper alloys	20÷40	0,15÷0,30	0,30÷0,40	0,40÷0,50

! Utensili rivestiti: aumentare ~ 50% velocità di taglio (Vt) - *Coated cutting tools: increase ~ 50% cutting speed (Vt)*

SCANALATURE A T SGROSSATURA - "T" GROOVING FOR ROUGHING

CODE
- R2
- R4



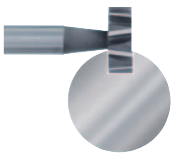
ISO	MATERIALI/MATERIALS	Vt m/min	fz mm Ø 12÷21	Ø 22÷56
P1 P3 P2	• acciai - steel 490-690 N/mm²	20÷35	0,025÷0,05	0,055÷0,70
P4 K1 P5 K2	• acciai - steel 780-980 N/mm² • ghise - cast iron (HB<180)	20÷30	0,02÷0,035	0,04÷0,06
P5 K3 P6 K4	• acciai - steel 900 -1400 N/mm² • acciai inox ferritici e martensitici - ferritic and martensitic stainless steel • ghise - cast iron (HB>180)	10÷15	0,02÷0,035	0,04÷0,06
M1 M3 M2	• acciai inox austenitici, Duplex, Super Duplex e PH • austenitic, Duplex, Super Duplex and PH stainless steel	5÷10	0,02÷0,035	0,04÷0,06
S1 S3 S2 S4	• super leghe - super alloys • titanio - titanium	5÷10	0,02÷0,035	0,04÷0,06
N1 N2 N3 N4	• leghe di alluminio (Si<10%) - alluminium alloys (Si<10%) • leghe di alluminio (Si>10%) - alluminium alloys (Si>10%) • rame e leghe di rame - copper and copper alloys	100÷150	0,02÷0,035	0,04÷0,06

! Utensili rivestiti: aumentare ~ 50% velocità di taglio (Vt) - *Coated cutting tools: increase ~ 50% cutting speed (Vt)*

CHIAVETTE E SCANALATURE A T - KEYWAY AND "T" GROOVING

CODE
- R0
- R1
- R3



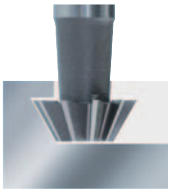


ISO	MATERIALI/MATERIALS	Vt m/min	fz mm Ø 10÷21	Ø 22÷56
P1 P3 P2	• acciai - steel 490-690 N/mm²	25÷35	0,015÷0,03	0,03÷0,06
P4 K1 P5 K2	• acciai - steel 780-980 N/mm² • ghise - cast iron (HB<180)	20÷30	0,015÷0,03	0,03÷0,06
P5 K3 P6 K4	• acciai - steel 900 -1400 N/mm² • acciai inox ferritici e martensitici - ferritic and martensitic stainless steel • ghise - cast iron (HB>180)	10÷15	0,015÷0,03	0,03÷0,06
M1 M3 M2	• acciai inox austenitici, Duplex, Super Duplex e PH • austenitic, Duplex, Super Duplex and PH stainless steel	5÷10	0,015÷0,03	0,025÷0,045
S1 S3 S2 S4	• super leghe - super alloys	5÷10	0,015÷0,03	0,03÷0,06
N1 N2 N3 N4	• leghe di alluminio (Si<10%) - alluminium alloys (Si<10%) • leghe di alluminio (Si>10%) - alluminium alloys (Si>10%) • rame e leghe di rame - copper and copper alloys	100÷150	0,02÷0,03	0,035÷0,07

! Utensili rivestiti: aumentare ~ 50% velocità di taglio (Vt) - *Coated cutting tools: increase ~ 50% cutting speed (Vt)*

FRESE AD ANGOLO - ANGLE CUTTERS

CODE
R5A
R5B





ISO	MATERIALI/MATERIALS	Vt m/min	fz mm Ø 16÷20	fz mm Ø 25÷32
P1 P2 P3	• acciai - steel 490-690 N/mm²	25÷35	0,02÷0,025	0,03÷0,04
P4 P5 K1 K2	• acciai - steel 780-980 N/mm² • ghise - cast iron (HB<180)	20÷30	0,015÷0,025	0,03÷0,04
P5 P6 K3 K4	• acciai - steel 900 -1400 N/mm² • acciai inox ferritici e martensitici - ferritic and martensitic stainless steel • ghise - cast iron (HB>180)	10÷15	0,015÷0,025	0,03÷0,04
M1 M2 M3	• acciai inox austenitici, Duplex, Super Duplex e PH • austenitic, Duplex, Super Duplex and PH stainless steel	5÷10	0,015÷0,025	0,03÷0,04
S1 S2 S3 S4	• super leghe - super alloys	5÷10	0,015÷0,025	0,025÷0,035
N1 N2 N3 N4	• leghe di alluminio (Si<10%) - alluminium alloys (Si<10%) • leghe di alluminio (Si>10%) - alluminium alloys (Si>10%) • rame e leghe di rame - copper and copper alloys	100÷150	0,02÷0,025	0,03÷0,05

! Utensili rivestiti: aumentare ~ 50% velocità di taglio (Vt) - *Coated cutting tools: increase ~ 50% cutting speed (Vt)*

FRESE A QUARTO DI CERCHIO CONCAVO - CORNER ROUNDING END MILLS

CODE
S4



ISO	MATERIALI/MATERIALS	Vt m/min	fz mm Ø 10÷24	fz mm Ø 28÷60
P1 P2 P3	• acciai - steel 490-690 N/mm²	25÷35	0,02÷0,04	0,04÷0,06
P4 P5 K1 K2	• acciai - steel 780-980 N/mm² • ghise - cast iron (HB<180)	20÷30	0,02÷0,04	0,04÷0,06
P5 P6 K3 K4	• acciai - steel 900 -1400 N/mm² • acciai inox ferritici e martensitici - ferritic and martensitic stainless steel • ghise - cast iron (HB>180)	10÷20	0,02÷0,04	0,04÷0,06
M1 M2 M3	• acciai inox austenitici, Duplex, Super Duplex e PH • austenitic, Duplex, Super Duplex and PH stainless steel	5÷10	0,015÷0,03	0,03÷0,05
S1 S2 S3 S4	• super leghe - super alloys	5÷10	0,015÷0,03	0,03÷0,05
N1 N2 N3 N4	• leghe di alluminio (Si<10%) - alluminium alloys (Si<10%) • leghe di alluminio (Si>10%) - alluminium alloys (Si>10%) • rame e leghe di rame - copper and copper alloys	100÷150	0,02÷0,04	0,04÷0,08

! Utensili rivestiti: aumentare ~ 50% velocità di taglio (Vt) - *Coated cutting tools: increase ~ 50% cutting speed (Vt)*

FRESE A DISCO - SIDE AND FACE MILLING CUTTERS

CODE
C7
C8
C9

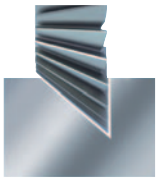


ISO	MATERIALI/MATERIALS	Vt m/min	fz mm
P1 P2 P3	• acciai - steel 490-690 N/mm²	25÷35	0,04÷0,08
P4 P5 K1 K2	• acciai - steel 780-980 N/mm² • ghise - cast iron (HB<180)	20÷30	0,03÷0,06
P5 P6 K3 K4	• acciai - steel 900 -1400 N/mm² • acciai inox ferritici e martensitici - ferritic and martensitic stainless steel • ghise - cast iron (HB>180)	10÷15	0,02÷0,05
M1 M2 M3	• acciai inox austenitici, Duplex, Super Duplex e PH • austenitic, Duplex, Super Duplex and PH stainless steel	5÷10	0,02÷0,04
S1 S2 S3 S4	• super leghe - super alloys	5÷10	0,02÷0,04
N1 N2 N3 N4	• leghe di alluminio (Si<10%) - alluminium alloys (Si<10%) • leghe di alluminio (Si>10%) - alluminium alloys (Si>10%) • rame e leghe di rame - copper and copper alloys	100÷150	0,04÷0,08

! Utensili rivestiti: aumentare ~ 50% velocità di taglio (Vt) - *Coated cutting tools: increase ~ 50% cutting speed (Vt)*

FRESE AD ANGOLO - ANGLE CUTTERS

CODE
C13
C14





ISO.	MATERIALI/MATERIALS	Vt m/min	fz mm
P1 P2 P3	• acciai - steel 490-690 N/mm²	25÷35	0,03÷0,05
P4 P5 K1 K2	• acciai - steel 780-980 N/mm² • ghise - cast iron (HB<180)	20÷30	0,03÷0,05
P5 P6 K3 K4	• acciai - steel 900 -1400 N/mm² • acciai inox ferritici e martensitici - ferritic and martensitic stainless steel • ghise - cast iron (HB>180)	10÷15	0,02÷0,04
M1 M2 M3	• acciai inox austenitici, Duplex, Super Duplex e PH • austenitic, Duplex, Super Duplex and PH stainless steel	5÷10	0,02÷0,04
S1 S2 S3 S4	• super leghe - super alloys	5÷10	0,02÷0,03
N1 N2 N3 N4	• leghe di alluminio (Si<10%) - alluminium alloys (Si<10%) • leghe di alluminio (Si>10%) - alluminium alloys (Si>10%) • rame e leghe di rame - copper and copper alloys	100÷150	0,04÷0,06

! Utensili rivestiti: aumentare ~ 50% velocità di taglio (Vt) - *Coated cutting tools: increase ~ 50% cutting speed (Vt)*

FRESE SEDI VITI - MILLING OF SCREW SEAT

CODE
S2
S3



ISO	MATERIALI/MATERIALS	Vt m/min	Fn mm/giro	
			Ø 5,5÷18	Ø 22÷36
P1 P2 P3	• acciai - steel 490-690 N/mm²	20÷30	0,10÷0,20	0,15÷0,25
P4 P5 K1 K2	• acciai - steel 780-980 N/mm² • ghise - cast iron (HB<180)	10÷20	0,08÷0,20	0,15÷0,25
P5 P6 K3 K4	• acciai - steel 900 -1400 N/mm² • acciai inox ferritici e martensitici - ferritic and martensitic stainless steel • ghise - cast iron (HB>180)	10÷20	0,08÷0,15	0,10÷0,20
M1 M2 M3	• acciai inox austenitici, Duplex, Super Duplex e PH • austenitic, Duplex, Super Duplex and PH stainless steel	10÷15	0,08÷0,15	0,10÷0,20
S1 S2 S3 S4	• super leghe - super alloys	5÷10	0,08÷0,15	0,10÷0,20
N1 N2 N3 N4	• leghe di alluminio (Si<10%) - alluminium alloys (Si<10%) • leghe di alluminio (Si>10%) - alluminium alloys (Si>10%) • rame e leghe di rame - copper and copper alloys	25÷45	0,15÷0,25	0,20÷0,30

! Utensili rivestiti: aumentare ~ 50% velocità di taglio (Vt) - *Coated cutting tools: increase ~ 50% cutting speed (Vt)*

FAQ

FAQ - Frequency Answer Question

Scheggiatura del tagliente
Possibili azioni risolutive
- Diminuire l'avanzamento per dente
- Aumentare la velocità di taglio
- Verificare rigidità della macchina
- Verificare Run-out utensile
- Verificare scelta appropriata della geometria dell'utensile
- Difficoltà nell'evacuazione del truciolo, verificare percorso utensile e pressione o direzione del refrigerante.

Usura del tagliente
Possibili azioni risolutive
- Diminuire la velocità di taglio
- Aumentare l'avanzamento per dente
- Utensile con materiale poco resistente all'usura, utilizzare Metallo Duro o Acciaio con caratteristiche maggiori di resistenza all'usura
- Verificare scelta appropriata della geometria dell'utensile
- Verificare scelta appropriata del rivestimento

Craterizzazione del tagliente
Possibili azioni risolutive
- Diminuire la velocità di taglio
- Diminuire l'avanzamento a dente
- Utensile con materiale poco resistente all'usura, utilizzare Metallo Duro o Acciaio con caratteristiche maggiori di resistenza all'usura
- Aumentare il flusso/pressione di refrigerante
- Verificare scelta appropriata del rivestimento

Tagliente di riporto
Possibili azioni risolutive
- Diminuire la profondità di passata
- Aumentare la velocità di taglio
- Aumentare l'avanzamento per dente
- Aumentare flusso/pressione refrigerante

Scarsa finitura superficiale
Possibili azioni risolutive
- Diminuire avanzamento per dente
- Diminuire la fase del tagliente
- Diminuire la profondità di passata
- Aumentare la velocità di taglio
- Verificare la rigidità della macchina
- Utilizzare fresa con angolo elica più accentuato
- Utilizzare fresa con numero maggiore di taglienti
- Verificare Run-out della fresa

Presenza di vibrazioni durante la lavorazione
Possibili azioni risolutive
- Diminuire la profondità di passata
- Diminuire la velocità di taglio
- Valutare la stabilità della macchina
- Verificare la stabilità del pezzo
- Verificare la densità del refrigerante
- Utilizzare una fresa con più denti
- Usare una fresa più corta
- Utilizzare una fresa a divisione irregolare
- Diminuire l'angolo di spoglia

Mancata precisione dimensionale
Possibili azioni risolutive
- Diminuire profondità della passata di taglio
- Migliorare rigidità del mandrino e della pinza di fissaggio
- Utilizzare una fresa con più denti

Truciolo lungo (gomitolo)
Possibili azioni risolutive
- Ridurre avanzamento o velocità
- Utilizzare una fresa con meno denti
- Aumentare il flusso del refrigerante
- Provare geometrie diverse del tagliente

Sbavature
Possibili azioni risolutive
- Anticipare la riaffilatura
- Correggere i parametri e l'angolo di taglio

Rottura della fresa
Possibili azioni risolutive
- Ridurre velocità ed avanzamento per dente
- Utilizzare una fresa più corta
- Anticipare riaffilatura
- Verificare tenuta mandrino
- Verificare Run-out

Presenza di scheggiature sul pezzo
Possibili azioni risolutive
- Diminuire l'avanzamento per dente
- Diminuire la profondità di passata
- Diminuire la fase del tagliente

Sovraccarico della macchina
Possibili azioni risolutive
- Diminuire la velocità di taglio
- Diminuire l'avanzamento per dente
- Diminuire la profondità di passata
- Sostituire l'utensile con uno che abbia una geometria più idonea

Non perpendicolarità della parete
Possibili azioni risolutive
- Verificare la concentricità della fresa sulla macchina
- Diminuire la velocità di taglio
- Diminuire profondità e larghezza di taglio
- Diminuire la lunghezza totale
- Utilizzare una fresa con più denti

Edge chipping
Possible corrective actions
- Decrease feed per tooth
- Increase the cutting speed
- Check rigidity of the machine
- Check run-out of the cutter
- Ensure appropriate choice of cutter geometry
- Difficulties in the evacuation of the chip: please test the cutter path or direction and pressure of the refrigerant

Tool wear
Possible corrective actions
- Reduce the cutting speed
- Increase feed per tooth
- Cutter with carbide material of low resistance to wear, please use carbide with most features of wear resistance
- Ensure appropriate choice of cutter geometry
- Ensure appropriate choice of the coating

Edge cratering
Possible corrective actions
- Reduce the cutting speed
- Decrease the feed per tooth
- Cutter with carbide material of low resistance to wear, please use carbide with most features of wear resistance
- Increase the flow/pressure refrigerant
- Ensure appropriate choice of the coating

Up edge
Possible corrective actions
- Decrease the depth of cut
- Increase the cutting speed
- Increase feed per tooth
- Increase flow/pressure refrigerant

Poor work piece surface
Possible corrective actions
- Decrease feed per tooth
- Decrease the depth of cut
- Increase the cutting speed
- Check the rigidity of the machine
- Use a cutter with helix angle sharper
- Use a cutter with greater number of cutting edges
- Check the run-out of the cutter

Presence of vibration during machining
Possible corrective actions
- Decrease the depth of cut
- Reduce the cutting speed
- Check the stability of the machine
- Check the stability of the piece
- Check the refrigerant density
- Use an end mill with more teeth
- Use a shorter cutter
- Use a cutter with irregular division
- Decrease the rake angle

Presence of chips on the piece
Possible corrective actions
- Decrease feed per tooth
- Decrease the depth of cut
- Decrease the phase of the cutting edge

Overload the machine
Possible corrective actions
- Reduce the cutting speed
- Decrease feed per tooth
- Decrease the depth of cut
- Replace the tool with one that has a geometry more suitable

Do not perpendicular wall
Possible corrective actions
- Check the concentricity of the cutter on the machine
- Reduce the cutting speed
- Decrease depth and width of cut
- Decrease the total length
- Use cutter with more teeth

No dimensional accuracy
Possible corrective actions
- Decrease depth of the cutting pass
- Improve the rigidity of the spindle and the clamp
- Use cutter with more teeth

Chip forming ball
Possible corrective actions
- Reduce feed or speed
- Use cutter with less number of teeth
- Increase the flow of the refrigerant
- Try different geometries of the cutting edge

Flash
Possible corrective actions
- Anticipate regrinding
- Correct the parameters and the cutting angle

Broken cutter
Possible corrective actions
- Reduce speed and feed per tooth
- Use a shorter cutter
- Anticipate regrinding
- Check the spindle
- Check the run-out

ATTENZIONE: i suggerimenti dati sono puramente indicativi e non garantiscono la risoluzione del problema che potrebbe essere creato da molteplici cause. Per una conferma sulla scelta dell'utensile e sull'analisi della problematica v'invitiamo a contattare l'ufficio tecnico Rime per una risposta più precisa.

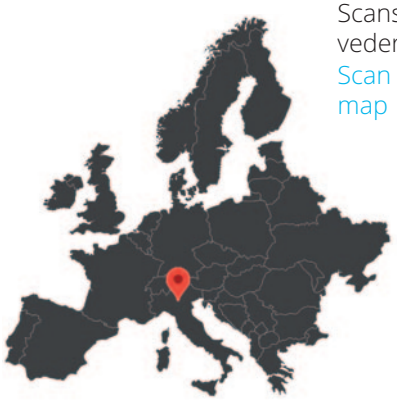
WARNING: the suggestions given are for guidance only and do not guarantee the resolution of the problem that could be created by multiple causes. In order to have the confirmation of the selection tool and analysis of the problem, please contact the RIME technical department for a more precise answer.

CONTATTI
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