IGUTENSILI

HIGH PRECISION ***CUTTING TOOLS***

PRODUZIONE STANDARD

STANDARD PRODUCTION

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HIGH PRECISION CUTTING TOOLS

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2025

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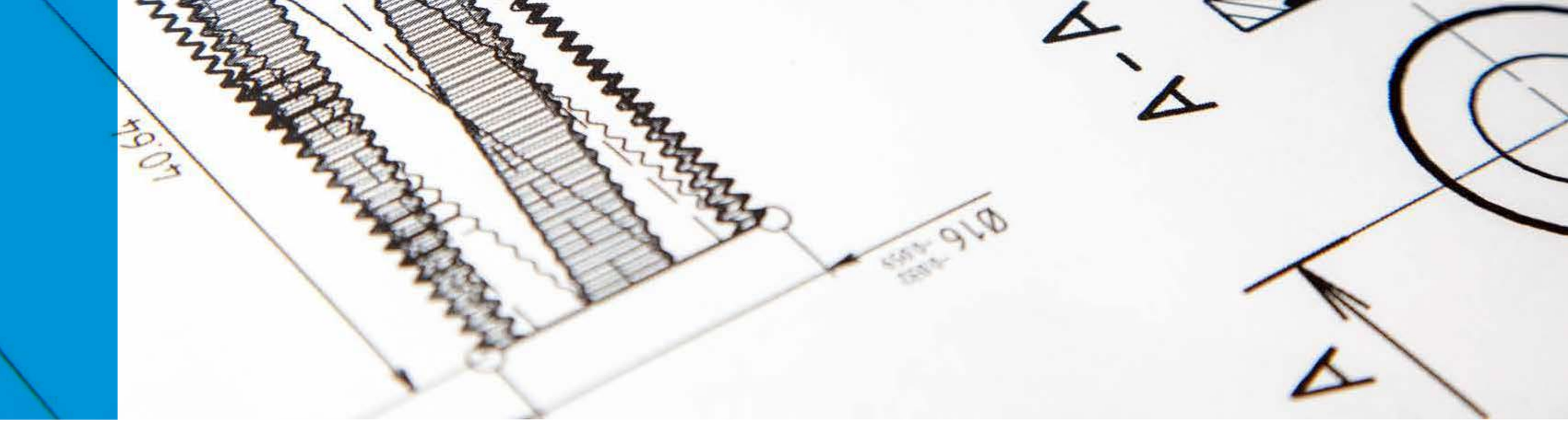


Il progresso non si ferma, IGUTENSILI nemmeno
Progress does not stand still, nor does IGUTENSILI

L'esperienza progettuale maturata in oltre 50 anni di attività, associata all'elevata potenzialità produttiva, rendono IGUTENSILI un punto di riferimento nel panorama nazionale ed estero per quanto concerne lo sviluppo e realizzazione di utensili per asportazione truciolo – elettroerosione – elettrosaldatura e asservimenti macchine utensili, il tutto concepito in funzione delle specifiche esigenze delle aziende cliente.

La scelta strategica di concentrare le proprie attività nelle lavorazioni speciali – semi standard e standard di altissima qualità, unitamente ai costanti investimenti per l'acquisizione e l'implementazione delle più innovative tecnologie di produzione, permettono ad IGUTENSILI di guadagnare e rafforzare ogni giorno la fiducia del mercato Italiano ed estero.

La molteplicità di materiali trasformati in utensili quali HSS / HSSE acciaio super rapido – ASP acciaio super rapido tecnologia delle polveri – HM metallo duro – PCD / CBN diamante policristallino e naturale – Tungsteno – Tungsteno Lantanio – Rame – Grafite, rendono possibile la creazione di una vastissima gamma di utensili per asportazione truciolo, elettroerosione ed elettrosaldatura.

The design experience gained in over 50 years of business, alongside the high production capacity, make IGUTENSILI a reference point both nationally and internationally in the development and creation of tools for chip removal – electro-erosion – electro-welding and machine tool tending, all of which are designed according to the specific needs of its customers.

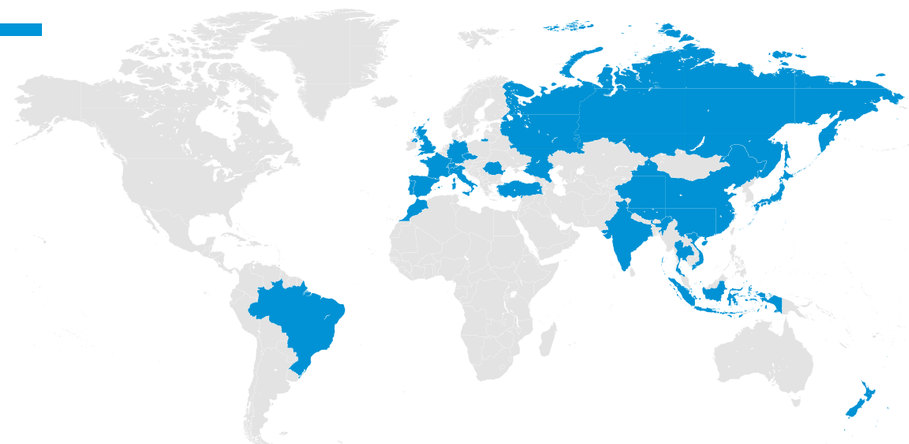
The strategic choice to focus its business on special machining – semi-standard and high-quality standards, together with constant investment in the acquisition and implementation of the most innovative production technologies, enable IGUTENSILI to earn and reaffirm the trust given by the Italian and foreign market every single day.

The diverse materials transformed into tools such as HSS/ HSSE high-speed steel – ASP high speed steel powder technology – HM hard metal – PCD/CBN polycrystalline and natural diamond – Tungsten – Tungsten Lanthanum – Copper – Graphite make it possible to create a vast range of tools for chip removal, electro-erosion and electro-welding.

La produzione di punte, punte a gradino, punte per alesare, punte ad inserti, alesatori ad alte prestazioni, maschi, frese per filettare, utensili di tornitura, utensili per scanalatura e troncatura, frese, frese ad inserti, elettrodi speciali a disegno e standard, ci permettono di servire al meglio tutti i settori industriali quali motorsport, aereonautica, automotive, elettrosaldatura, energia, ferroviari, meccanica, medicale, nautica, oleodinamica, ricerca.

The production of drill bits, stepped drill bits, reamer drill bits, insert drill bits, high performance reamers, taps, thread milling cutters, turning tools, grooving and parting tools, milling cutters, insert cutters, special and standard electrodes all allow us to better serve every industrial sector including MOTORSPORT – AVIATION – AUTOMOTIVE – ELECTRO-WELDING- ENERGY – RAILWAY – MECHANICS – MEDICAL – NAUTICAL – HYDRAULIC – RESEARCH.

Una realtà internazionale
An International Company



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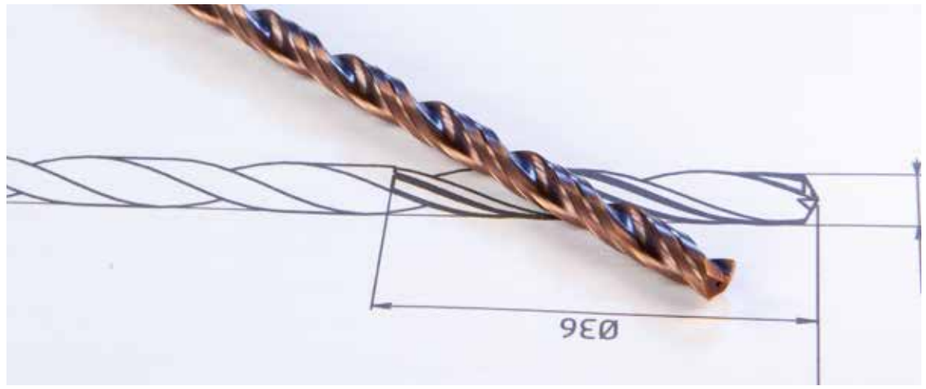
PIG

TECNOLOGIA DI FORATURA
PUNTE

DRILLING TECHNOLOGY
TIPS



Con le punte PIG di IGUTENSILI le lavorazioni di foratura vengono eseguite rapidamente e in modo produttivo senza rinunciare alla qualità della lavorazione.

Questi utensili sono impiegabili su di una vastissima gamma di macchinari a controllo numerico e/o tradizionali come CENTRI di LAVORO, CENTRI di TORNITURA, TRANSFER ed anche su LINEE DI PRODUZIONE AVANZATA.
PIG è in grado di forare profondità da 3xD fino a 30xD, l'utensile è dotato di REFRIGERAZIONE forzata INTERNA alla TESTA, garantendo in questo modo un'ottima lubrificazione nel punto di taglio ed una eccellente evacuazione del truciolo.

Gli utensili PIG, sono rivestiti NF o ALU in funzione del materiale da lavorare, raggiungono alti valori di taglio e lunga durata, garantendo sempre la massima stabilità del ciclo produttivo, è possibile eseguire operazione di affilatura e rivestimento, donando all'utensile stesso nuova vita con rendimenti eccellenti.

Da non sottovalutare la possibilità di produrre Punte PIG multi diametri speciali a disegno, con lo stesso utensile potremo eseguire foratura di cavità a gradini.

With the PIG tips by IGUTENSILI, drilling operations are carried out quickly and productively without sacrificing the quality of processing.

These tools can be used on a very wide range of CNC machines and/or traditional machinery such as WORK CENTRES, TURNING CENTRES, TRANSFER and even ADVANCED PRODUCTION LINES.
PIG is able to drill depths from 3xD up to 30xD, the tool is equipped with forced INTERNAL COOLANT, thus ensuring excellent lubrication at the drilling point and excellent chip evacuation.

PIG tools are NF or ALU coated according to the material to be processed, reaching high cutting values and long life, always guaranteeing maximum stability of the production cycle; it is possible to perform sharpening and coating operations, giving the tool a new life with excellent returns.

Not to underestimate the possibility of producing special multi-diameter customised PIG tips, with the same tool we will be able to drill stepped holes.

PIG

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

V = Velocità (m/min)
F = Avanzamento (mm)

V = Speed (m/min)
F = Feed (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

PIG

3xD Piena - 3xD Full drill	1A	11
5xD Piena - 5xD Full drill	1A	19
3xD Forata - 3xD with interior cooling	1A	11
5xD Forata - 5xD with interior cooling	1A	19
5xD Forata Alluminio - 5xD with interior cooling for aluminium	1A	19
8xD Forata Alluminio - 8xD with interior cooling for aluminium	1A	27
8xD Forata - 8xD with interior cooling	1A	27

	V(mm) Coated NF + Coated TIN	f ø d3 ÷ d5	f ø d5 ÷ d8	f ø d8 ÷ d12	f ø d12 ÷ d16		
P							P
	60 ÷ 80	0,10 ÷ 0,15	0,15 ÷ 0,22	0,16 ÷ 0,30	0,20 ÷ 0,35		
	60 ÷ 80	0,10 ÷ 0,15	0,15 ÷ 0,22	0,16 ÷ 0,30	0,20 ÷ 0,35	2.1	
	55 ÷ 70	0,08 ÷ 0,15	0,10 ÷ 0,20	0,15 ÷ 0,28	0,16 ÷ 0,32	3.1	
	40 ÷ 60	0,05 ÷ 0,15	0,08 ÷ 0,22	0,12 ÷ 0,26	0,16 ÷ 0,28	4.1	
						5.1	
M							M
						1.1	
						2.1	
						3.1	
						4.1	
K							K
	70 ÷ 120	0,15 ÷ 0,30	0,20 ÷ 0,35	0,25 ÷ 0,45	0,30 ÷ 0,50	1.1	
						1.2	
						2.1	
						2.2	
						3.1	
						3.2	
						4.1	
						4.2	
N							N
						1.1	
						1.2	
						1.3	
	100 ÷ 140	0,10 ÷ 0,30	0,15 ÷ 0,35	0,15 ÷ 0,35	0,20 ÷ 0,45	1.4	
	100 ÷ 140	0,10 ÷ 0,30	0,15 ÷ 0,35	0,15 ÷ 0,35	0,20 ÷ 0,45	1.5	
	100 ÷ 140	0,10 ÷ 0,30	0,15 ÷ 0,35	0,15 ÷ 0,35	0,20 ÷ 0,45	1.6	
						2.1	
						2.2	
						2.3	
						2.4	
						2.5	
						2.6	
						2.7	
						3.1	
						3.2	
						4.1	
						4.2	
						4.3	
						4.4	
						5.1	
						5.2	
						5.3	
S							S
						1.1	
						1.2	
						1.3	
						2.1	
						2.2	
						2.3	
						2.4	
						2.5	
						2.6	
							H
						1.1	
						1.2	
						1.3	
						1.4	
						1.5	

PIG

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	Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
	Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
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	Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
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	Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M	Acciai inossidabili	Stainless steel materials			
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2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
3.2			400-500 N/mm2	GJV 450	
4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N	Materiali non ferrosi	Non ferrous materials			
	Leghe di alluminio	Aluminium alloys			
1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
	Leghe di rame	Copper alloys			
2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
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2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
2.8			≤ 1400 N/mm2	(AMPCO® 45)	
	Leghe di magnesio	Magnesium alloys			
3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
	Materie plastiche	Synthetics			
4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
	Materiali speciali	Special materials			
5.1	Grafite	Graphite		C 8000	
5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S	Materiali speciali	Special materials			
	Leghe di titanio	Titanium alloys			
1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
	Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
2.3			≤ 1600 N/mm2	Inconel 718	2.4668
2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
2.5			≤ 1600 N/mm2	Haynes 25	2.4964
2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H	Materiali duri	Hard materials			
1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
1.2			50 - 55 HRC	Hardox 550	
1.3			55 - 60 HRC	Armox 600T	
1.4			60 - 63 HRC	Ferro-Titanit	
1.5			63 - 66 HRC	HSSE	

15xD Forata - 15xD with interior cooling
20xD Forata - 20xD with interior cooling
30xD Forata - 30xD with interior cooling

	1A 29					
	1A 31					
	1A 33					
		V(mm) Coated NF	f ø d4 ÷ d5	f ø d6 ÷ d8	f ø d10 ÷ d12	
P						P
	40 ÷ 60	0,08 ÷ 0,10	0,12 ÷ 0,14	0,16 ÷ 0,18		
	60 ÷ 80	0,10 ÷ 0,12	0,14 ÷ 0,18	0,20 ÷ 0,22		2.1
	55 ÷ 70	0,10 ÷ 0,12	0,14 ÷ 0,18	0,20 ÷ 0,22		3.1
	50 ÷ 70	0,08 ÷ 0,10	0,12 ÷ 0,14	0,16 ÷ 0,18		4.1
						5.1
M						M
	40/60	0,08/0,10	0,12/0,14	0,16/0,18		1.1
	40/60	0,08/0,10	0,12/0,14	0,16/0,18		2.1
						3.1
						4.1
K						K
						1.1
	80/100	0,12 ÷ 0,14	0,16 ÷ 0,18	0,20 ÷ 0,25		1.2
						2.1
						2.2
						3.1
						3.2
						4.1
						4.2
N						N
	120/170	0,10 ÷ 0,14	0,16 ÷ 0,20	0,22 ÷ 0,27		1.1
	120/170	0,10 ÷ 0,14	0,16 ÷ 0,20	0,22 ÷ 0,27		1.2
	120/170	0,10 ÷ 0,14	0,16 ÷ 0,20	0,22 ÷ 0,27		1.3
	120/170	0,10 ÷ 0,14	0,16 ÷ 0,20	0,22 ÷ 0,27		1.4
	120/170	0,10 ÷ 0,14	0,16 ÷ 0,20	0,22 ÷ 0,27		1.5
	100/140	0,10 ÷ 0,14	0,16 ÷ 0,20	0,22 ÷ 0,27		1.6
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
						2.7
						3.1
						3.2
						4.1
						4.2
						4.3
						4.4
						5.1
						5.2
						5.3
S						S
		0,08 ÷ 0,10	0,12 ÷ 0,14	0,16 ÷ 0,18		1.1
		0,08 ÷ 0,10	0,12 ÷ 0,14	0,16 ÷ 0,18		1.2
		0,08 ÷ 0,10	0,12 ÷ 0,14	0,16 ÷ 0,18		1.3
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
H						H
						1.1
						1.2
						1.3
						1.4
						1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

V = Velocità (m/min)
F = Avanzamento (mm)

V = Speed (m/min)
F = Feed (mm)

	Materiale	Material		Material examples	Mat. numbers
P	Acciai	Steel materials			
	Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
	Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
	Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
	Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
	Acciai da cementazione	Cementation steel		20MoCr3	1.7320
3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
	Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
	Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
	Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
	Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
	Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M	Acciai inossidabili	Stainless steel materials			
1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K	Ghise	Cast materials			
1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
3.2			400-500 N/mm2	GJV 450	
4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N	Materiali non ferrosi	Non ferrous materials			
	Leghe di alluminio	Aluminium alloys			
1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
	Leghe di rame	Copper alloys			
2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
2.8			≤ 1400 N/mm2	(AMPCO® 45)	
	Leghe di magnesio	Magnesium alloys			
3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
	Materie plastiche	Synthetics			
4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
	Materiali speciali	Special materials			
5.1	Grafite	Graphite		C 8000	
5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S	Materiali speciali	Special materials			
	Leghe di titanio	Titanium alloys			
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1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
	Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
2.3			≤ 1600 N/mm2	Inconel 718	2.4668
2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
2.5			≤ 1600 N/mm2	Haynes 25	2.4964
2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H	Materiali duri	Hard materials			
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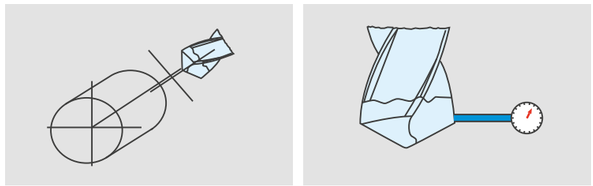
1.2			50 - 55 HRC	Hardox 550	
1.3			55 - 60 HRC	Armox 600T	
1.4			60 - 63 HRC	Ferro-Titanit	
1.5			63 - 66 HRC	HSSE	

Micro 5xD Forata - 5xD with interior cooling
Micro 8xD Forata - 8xD with interior cooling
Micro 12xD Forata - 12xD with interior cooling

	1A **35**					
	1A **37**					
	1A **39**					
	V(mm) coated NF	f ø d1 ÷ d1,5	f ø d1,6 ÷ d2	f ø d2,1 ÷ d2,9		
P						P
	15 ÷ 35	0,01 ÷ 0,02	0,02 ÷ 0,04	0,03 ÷ 0,06		
	25 ÷ 80	0,02 ÷ 0,04	0,03 ÷ 0,06	0,04 ÷ 0,08		2.1
	25 ÷ 80	0,02 ÷ 0,04	0,03 ÷ 0,06	0,04 ÷ 0,08		3.1
	20 ÷ 45	0,02 ÷ 0,04	0,03 ÷ 0,05	0,04 ÷ 0,06		4.1
						5.1
M						M
						1.1
						2.1
						3.1
						4.1
K						K
	25 ÷ 80	0,10 ÷ 0,20	0,15 ÷ 0,25	0,20 ÷ 0,30		1.1
						1.2
						2.1
						2.2
						3.1
						3.2
						4.1
						4.2
N						N
	25 ÷ 200	0,02 ÷ 0,06	0,03 ÷ 0,07	0,04 ÷ 0,10		1.1
						1.2
						1.3
						1.4
						1.5
						1.6
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
						2.7
						3.1
						3.2
						4.1
						4.2
						4.3
						4.4
						5.1
						5.2
						5.3
S						S
	15 ÷ 35	0,01 ÷ 0,02	0,02 ÷ 0,03	0,03 ÷ 0,05		1.1
	15 ÷ 35	0,01 ÷ 0,02	0,02 ÷ 0,03	0,03 ÷ 0,05		1.2
	15 ÷ 35	0,01 ÷ 0,02	0,02 ÷ 0,03	0,03 ÷ 0,05		1.3
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
H						H
						1.1
						1.2
						1.3
						1.4
						1.5

PRECAUZIONI PER L'UTILIZZO
PRECAUTIONS FOR USE

Concentricità
Run-Out



max. 0,02 mm

max. 0,04 mm

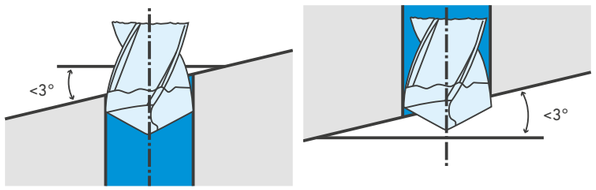
Indicazione relativa al refrigerante
La pressione del refrigerante dipende dalla profondità di foratura.

Indication regarding the coolant
The pressure of the coolant liquid depends on the depth of the drilling.

1xD: 8 bar
3xD: 8 bar
5xD: 12 bar
8xD: 25 bar

max. 1xD

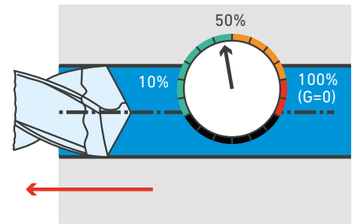
Angolo max di entrata e uscita
Max. angle of entry and exit



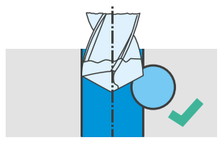
IGUTENSILI

Foro passante
Through hole

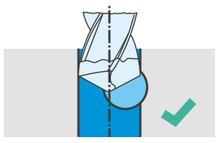
Non è possibile la corsa rapida durante la fase di ritorno
Fast run isn't possible during the return phase



Condizioni di lavorazione
Processing conditions

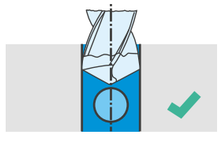


Foro trasversale non oltre la mezzeria
Cross hole not beyond the centerline



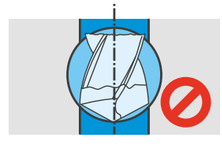
Foro trasversale oltre la mezzeria
Cross hole beyond the centerline

Congiungimento con il foro opposto
Joint with the opposite hole



Foro trasversale minore del foro da eseguire
Cross hole smaller than the hole to perform

Foro trasversale dello stesso diametro del foro da eseguire
Cross hole of the same diameter as the hole to perform



Foro trasversale maggiore del foro da eseguire
Cross hole larger than the hole to be made

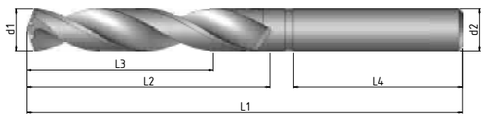
IGUTENSILI

PIG 3xD

VHM | 3xD | d1=m7 | DIN 6535 HA | 140°

DIN6537

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated NF	Coated NF
MATERIALI LAVORABILI WORKING MATERIALS page 1A • 3	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6

d1	d2	L1	L2	L3	L4		
2.50	6.00	62	20	14	36	PIG531.0250	
2.80	6.00	62	20	14	36	PIG531.0280	
3.00	6.00	62	20	14	36	PIG531.0300	PIG540.0300
3.10	6.00	62	20	14	36	PIG531.0310	PIG540.0310
3.17	6.00	62	20	14	36	PIG531.0317	PIG540.0317
3.20	6.00	62	20	14	36	PIG531.0320	PIG540.0320
3.25	6.00	62	20	14	36	PIG531.0325	PIG540.0325
3.30	6.00	62	20	14	36	PIG531.0330	PIG540.0330
3.40	6.00	62	20	14	36	PIG531.0340	PIG540.0340
3.50	6.00	62	20	14	36	PIG531.0350	PIG540.0350
3.57	6.00	62	20	14	36	PIG531.0357	PIG540.0357
3.60	6.00	62	20	17	36	PIG531.0360	PIG540.0360
3.70	6.00	62	20	17	36	PIG531.0370	PIG540.0370
3.80	6.00	66	24	17	36	PIG531.0380	PIG540.0380
3.90	6.00	66	24	17	36	PIG531.0390	PIG540.0390
3.97	6.00	66	24	17	36	PIG531.0397	PIG540.0397
4.00	6.00	66	24	17	36	PIG531.0400	PIG540.0400
4.10	6.00	66	24	17	36	PIG531.0410	PIG540.0410
4.20	6.00	66	24	17	36	PIG531.0420	PIG540.0420
4.30	6.00	66	24	17	36	PIG531.0430	PIG540.0430
4.37	6.00	66	24	17	36	PIG531.0437	PIG540.0437
4.40	6.00	66	24	17	36	PIG531.0440	PIG540.0440
4.50	6.00	66	24	17	36	PIG531.0450	PIG540.0450
4.60	6.00	66	24	20	36	PIG531.0460	PIG540.0460
4.65	6.00	66	24	20	36	PIG531.0465	PIG540.0465
4.70	6.00	66	24	20	36	PIG531.0470	PIG540.0470
4.76	6.00	66	28	20	36	PIG531.0476	PIG540.0476
4.80	6.00	66	28	20	36	PIG531.0480	PIG540.0480
4.90	6.00	66	28	20	36	PIG531.0490	PIG540.0490
5.00	6.00	66	28	20	36	PIG531.0500	PIG540.0500
5.10	6.00	66	28	20	36	PIG531.0510	PIG540.0510
5.16	6.00	66	28	20	36	PIG531.0516	PIG540.0516
5.20	6.00	66	28	20	36	PIG531.0520	PIG540.0520
5.30	6.00	66	28	20	36	PIG531.0530	PIG540.0530
5.40	6.00	66	28	20	36	PIG531.0540	PIG540.0540
5.50	6.00	66	28	20	36	PIG531.0550	PIG540.0550
5.55	6.00	66	28	20	36	PIG531.0555	PIG540.0555
5.56	6.00	66	28	20	36	PIG531.0556	PIG540.0556

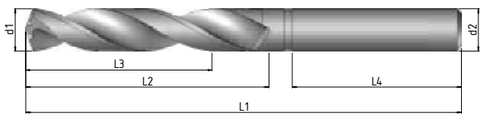
IGUTENSILI

PIG 3xD

VHM | 3xD | d1=m7 | DIN 6535 HA | 140°

DIN6537

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated NF	Coated NF
MATERIALI LAVORABILI WORKING MATERIALS page 1A • 3	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6

d1	d2	L1	L2	L3	L4		
5.60	6.00	66	28	20	36	PIG531.0560	PIG540.0560
5.70	6.00	66	28	20	36	PIG531.0570	PIG540.0570
5.80	6.00	66	28	20	36	PIG531.0580	PIG540.0580
5.90	6.00	66	28	20	36	PIG531.0590	PIG540.0590
5.95	6.00	66	28	20	36	PIG531.0595	PIG540.0595
6.00	6.00	66	28	20	36	PIG531.0600	PIG540.0600
6.10	8.00	79	34	24	36	PIG531.0610	PIG540.0610
6.20	8.00	79	34	24	36	PIG531.0620	PIG540.0620
6.30	8.00	79	34	24	36	PIG531.0630	PIG540.0630
6.35	8.00	79	34	24	36	PIG531.0635	PIG540.0635
6.40	8.00	79	34	24	36	PIG531.0640	PIG540.0640
6.50	8.00	79	34	24	36	PIG531.0650	PIG540.0650
6.60	8.00	79	34	24	36	PIG531.0660	PIG540.0660
6.70	8.00	79	34	24	36	PIG531.0670	PIG540.0670
6.75	8.00	79	34	24	36	PIG531.0675	PIG540.0675
6.80	8.00	79	34	24	36	PIG531.0680	PIG540.0680
6.90	8.00	79	34	24	36	PIG531.0690	PIG540.0690
7.00	8.00	79	34	24	36	PIG531.0700	PIG540.0700
7.10	8.00	79	41	29	36	PIG531.0710	PIG540.0710
7.14	8.00	79	41	29	36	PIG531.0714	PIG540.0714
7.20	8.00	79	41	29	36	PIG531.0720	PIG540.0720
7.30	8.00	79	41	29	36	PIG531.0730	PIG540.0730
7.40	8.00	79	41	29	36	PIG531.0740	PIG540.0740
7.50	8.00	79	41	29	36	PIG531.0750	PIG540.0750
7.54	8.00	79	41	29	36	PIG531.0754	PIG540.0754
7.60	8.00	79	41	29	36	PIG531.0760	PIG540.0760
7.70	8.00	79	41	29	36	PIG531.0770	PIG540.0770
7.80	8.00	79	41	29	36	PIG531.0780	PIG540.0780
7.90	8.00	79	41	29	36	PIG531.0790	PIG540.0790
7.94	8.00	79	41	29	36	PIG531.0794	PIG540.0794
8.00	8.00	79	41	29	36	PIG531.0800	PIG540.0800
8.10	10.00	89	47	35	40	PIG531.0810	PIG540.0810
8.20	10.00	89	47	35	40	PIG531.0820	PIG540.0820
8.30	10.00	89	47	35	40	PIG531.0830	PIG540.0830
8.33	10.00	89	47	35	40	PIG531.0833	PIG540.0833
8.40	10.00	89	47	35	40	PIG531.0840	PIG540.0840
8.50	10.00	89	47	35	40	PIG531.0850	PIG540.0850
8.60	10.00	89	47	35	40	PIG531.0860	PIG540.0860

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PIG 3xD

VHM | 3xD | d1=m7 | DIN 6535 HA | 140°

DIN6537

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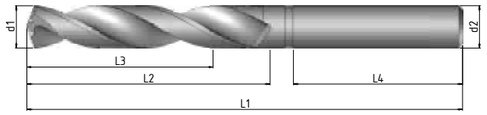
CUSTOMIZED DESIGN ON REQUEST



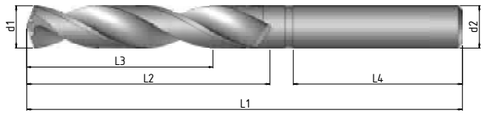
						R 30° - RR	R 30° - RR
							
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT						Coated NF	Coated NF
MATERIALI LAVORABILI WORKING MATERIALS page 1A • 3						P1.1-P1.5 K1.1-K4.2 N1.4-N1.6	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6
d1	d2	L1	L2	L3	L4		
8.70	10.00	89	47	35	40	PIG531.0870	PIG540.0870
8.73	10.00	89	47	35	40	PIG531.0873	PIG540.0873
8.80	10.00	89	47	35	40	PIG531.0880	PIG540.0880
8.90	10.00	89	47	35	40	PIG531.0890	PIG540.0890
9.00	10.00	89	47	35	40	PIG531.0900	PIG540.0900
9.10	10.00	89	47	35	40	PIG531.0910	PIG540.0910
9.13	10.00	89	47	35	40	PIG531.0913	PIG540.0913
9.20	10.00	89	47	35	40	PIG531.0920	PIG540.0920
9.25	10.00	89	47	35	40	PIG531.0925	PIG540.0925
9.30	10.00	89	47	35	40	PIG531.0930	PIG540.0930
9.40	10.00	89	47	35	40	PIG531.0940	PIG540.0940
9.50	10.00	89	47	35	40	PIG531.0950	PIG540.0950
9.60	10.00	89	47	35	40	PIG531.0960	PIG540.0960
9.70	10.00	89	47	35	40	PIG531.0970	PIG540.0970
9.80	10.00	89	47	35	40	PIG531.0980	PIG540.0980
9.92	10.00	89	47	35	40	PIG531.0992	PIG540.0992
10.00	10.00	89	47	35	40	PIG531.1000	PIG540.1000
10.10	12.00	102	55	40	45	PIG531.1010	PIG540.1010
10.20	12.00	102	55	40	45	PIG531.1020	PIG540.1020
10.30	12.00	102	55	40	45	PIG531.1030	PIG540.1030
10.40	12.00	102	55	40	45	PIG531.1040	PIG540.1040
10.50	12.00	102	55	40	45	PIG531.1050	PIG540.1050
10.60	12.00	102	55	40	45	PIG531.1060	PIG540.1060
10.70	12.00	102	55	40	45	PIG531.1070	PIG540.1070
10.80	12.00	102	55	40	45	PIG531.1080	PIG540.1080
10.90	12.00	102	55	40	45	PIG531.1090	PIG540.1090
11.00	12.00	102	55	40	45	PIG531.1100	PIG540.1100
11.10	12.00	102	55	40	45	PIG531.1110	PIG540.1110
11.20	12.00	102	55	40	45	PIG531.1120	PIG540.1120
11.30	12.00	102	55	40	45	PIG531.1130	PIG540.1130
11.40	12.00	102	55	40	45	PIG531.1140	PIG540.1140
11.50	12.00	102	55	40	45	PIG531.1150	PIG540.1150
11.60	12.00	102	55	40	45	PIG531.1160	PIG540.1160
11.70	12.00	102	55	40	45	PIG531.1170	PIG540.1170
11.80	12.00	102	55	40	45	PIG531.1180	PIG540.1180
11.90	12.00	102	55	40	45	PIG531.1190	PIG540.1190
12.00	12.00	102	55	40	45	PIG531.1200	PIG540.1200
12.10	14.00	107	60	43	45	PIG531.1210	PIG540.1210
12.20	14.00	107	60	43	45	PIG531.1220	PIG540.1220

PIG 3xD

VHM | 3xD | d1=m7 | DIN 6535 HA | 140°

DIN6537

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



						R 30° - RR	R 30° - RR
							
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT						Coated NF	Coated NF
MATERIALI LAVORABILI WORKING MATERIALS page 1A • 3						P1.1-P1.5 K1.1-K4.2 N1.4-N1.6	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6
d1	d2	L1	L2	L3	L4		
12.30	14.00	107	60	43	45	PIG531.1230	PIG540.1230
12.40	14.00	107	60	43	45	PIG531.1240	PIG540.1240
12.50	14.00	107	60	43	45	PIG531.1250	PIG540.1250
12.60	14.00	107	60	43	45	PIG531.1260	PIG540.1260
12.70	14.00	107	60	43	45	PIG531.1270	PIG540.1270
12.80	14.00	107	60	43	45	PIG531.1280	PIG540.1280
12.90	14.00	107	60	43	45		PIG540.1290
13.00	14.00	107	60	43	45	PIG531.1300	PIG540.1300
13.10	14.00	107	60	43	45	PIG531.1310	PIG540.1310
13.20	14.00	107	60	43	45		PIG540.1320
13.30	14.00	107	60	43	45		PIG540.1330
13.40	14.00	107	60	43	45		PIG540.1340
13.50	14.00	107	60	43	45	PIG531.1350	PIG540.1350
13.60	14.00	107	60	43	45		PIG540.1360
13.70	14.00	107	60	43	45	PIG531.1370	PIG540.1370
13.80	14.00	107	60	43	45	PIG531.1380	PIG540.1380
13.90	14.00	107	60	43	45		PIG540.1390
14.00	14.00	107	60	43	45	PIG531.1400	PIG540.1400
14.10	16.00	115	65	45	48	PIG531.1410	PIG540.1410
14.20	16.00	115	65	45	48	PIG531.1420	PIG540.1420
14.30	16.00	115	65	45	48	PIG531.1430	PIG540.1430
14.40	16.00	115	65	45	48		PIG540.1440
14.50	16.00	115	65	45	48	PIG531.1450	PIG540.1450
14.60	16.00	115	65	45	48		PIG540.1460
14.70	16.00	115	65	45	48	PIG531.1470	PIG540.1470
14.80	16.00	115	65	45	48		PIG540.1480
14.90	16.00	115	65	45	48		PIG540.1490
15.00	16.00	115	65	45	48	PIG531.1500	PIG540.1500
15.50	16.00	115	65	45	48	PIG531.1550	PIG540.1550
15.70	16.00	115	65	45	48	PIG531.1570	PIG540.1570
16.00	16.00	115	65	45	48	PIG531.1600	PIG540.1600
16.50	18.00	123	73	51	48	PIG531.1650	PIG540.1650
17.00	18.00	123	73	51	48	PIG531.1700	PIG540.1700
17.50	18.00	123	73	51	48	PIG531.1750	PIG540.1750
18.00	18.00	123	73	51	48	PIG531.1800	PIG540.1800
18.50	20.00	131	79	55	50	PIG531.1850	PIG540.1850
19.00	20.00	131	79	55	50	PIG531.1900	PIG540.1900
19.50	20.00	131	79	55	50	PIG531.1950	PIG540.1950
20.00	20.00	131	79	55	50	PIG531.2000	PIG540.2000

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PIG 5xD

VHM | 5xD | d1=m7 | DIN 6535 HA | 140°

DIN6537

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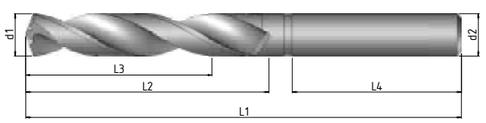
CUSTOMIZED DESIGN ON REQUEST



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated NF	Coated NF
MATERIALI LAVORABILI WORKING MATERIALS page 1A • 3	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6

d1	d2	L1	L2	L3	L4		
3.00	6.00	66	28	23	36	PIG532.0300	PIG550.0300
3.10	6.00	66	28	23	36	PIG532.0310	PIG550.0310
3.17	6.00	66	28	23	36	PIG532.0317	PIG550.0317
3.20	6.00	66	28	23	36	PIG532.0320	PIG550.0320
3.25	6.00	66	28	23	36	PIG532.0325	PIG550.0325
3.30	6.00	66	28	23	36	PIG532.0330	PIG550.0330
3.40	6.00	66	28	23	36	PIG532.0340	PIG550.0340
3.50	6.00	66	28	23	36	PIG532.0350	PIG550.0350
3.57	6.00	66	28	23	36	PIG532.0357	PIG550.0357
3.60	6.00	66	28	23	36	PIG532.0360	PIG550.0360
3.70	6.00	66	28	23	36	PIG532.0370	PIG550.0370
3.80	6.00	74	36	29	36	PIG532.0380	PIG550.0380
3.90	6.00	74	36	29	36	PIG532.0390	PIG550.0390
3.97	6.00	74	36	29	36	PIG532.0397	PIG550.0397
4.00	6.00	74	36	29	36	PIG532.0400	PIG550.0400
4.10	6.00	74	36	29	36	PIG532.0410	PIG550.0410
4.20	6.00	74	36	29	36	PIG532.0420	PIG550.0420
4.30	6.00	74	36	29	36	PIG532.0430	PIG550.0430
4.37	6.00	74	36	29	36	PIG532.0437	PIG550.0437
4.40	6.00	74	36	29	36	PIG532.0440	PIG550.0440
4.50	6.00	74	36	29	36	PIG532.0450	PIG550.0450
4.60	6.00	74	36	29	36	PIG532.0460	PIG550.0460
4.65	6.00	74	36	29	36	PIG532.0465	PIG550.0465
4.70	6.00	74	36	29	36	PIG532.0470	PIG550.0470
4.76	6.00	82	44	35	36	PIG532.0476	PIG550.0476
4.80	6.00	82	44	35	36	PIG532.0480	PIG550.0480
4.90	6.00	82	44	35	36	PIG532.0490	PIG550.0490
5.00	6.00	82	44	35	36	PIG532.0500	PIG550.0500
5.10	6.00	82	44	35	36	PIG532.0510	PIG550.0510
5.16	6.00	82	44	35	36	PIG532.0516	PIG550.0516
5.20	6.00	82	44	35	36	PIG532.0520	PIG550.0520
5.30	6.00	82	44	35	36	PIG532.0530	PIG550.0530
5.40	6.00	82	44	35	36	PIG532.0540	PIG550.0540
5.50	6.00	82	44	35	36	PIG532.0550	PIG550.0550
5.55	6.00	82	44	35	36	PIG532.0555	PIG550.0555
5.56	6.00	82	44	35	36	PIG532.0556	PIG550.0556
5.60	6.00	82	44	35	36	PIG532.0560	PIG550.0560
5.70	6.00	82	44	35	36	PIG532.0570	PIG550.0570

R 30° - RR
Coated ALU
N1.1-N1.6
N2.1-N2.8
N3.1-N3.2
N4.1-N4.4
N5.1-N5.2

PIG700.0300
PIG700.0310
PIG700.0330
PIG700.0350
PIG700.0370
PIG700.0380
PIG700.0400
PIG700.0420
PIG700.0450
PIG700.0480
PIG700.0500
PIG700.0510
PIG700.0520
PIG700.0550

PIG 5xD

VHM | 5xD | d1=m7 | DIN 6535 HA | 140°

DIN6537

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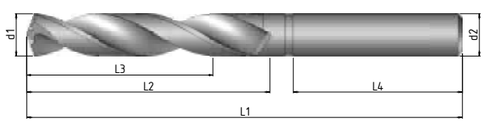
CUSTOMIZED DESIGN ON REQUEST



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated NF	Coated NF
MATERIALI LAVORABILI WORKING MATERIALS page 1A • 3	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6

d1	d2	L1	L2	L3	L4		
5.80	6.00	82	44	35	36	PIG532.0580	PIG550.0580
5.90	6.00	82	44	35	36	PIG532.0590	PIG550.0590
5.95	6.00	82	44	35	36	PIG532.0595	PIG550.0595
6.00	6.00	82	44	35	36	PIG532.0600	PIG550.0600
6.10	8.00	91	53	43	36	PIG532.0610	PIG550.0610
6.20	8.00	91	53	43	36	PIG532.0620	PIG550.0620
6.30	8.00	91	53	43	36	PIG532.0630	PIG550.0630
6.35	8.00	91	53	43	36	PIG532.0635	PIG550.0635
6.40	8.00	91	53	43	36	PIG532.0640	PIG550.0640
6.50	8.00	91	53	43	36	PIG532.0650	PIG550.0650
6.60	8.00	91	53	43	36	PIG532.0660	PIG550.0660
6.70	8.00	91	53	43	36	PIG532.0670	PIG550.0670
6.75	8.00	91	53	43	36	PIG532.0675	PIG550.0675
6.80	8.00	91	53	43	36	PIG532.0680	PIG550.0680
6.90	8.00	91	53	43	36	PIG532.0690	PIG550.0690
7.00	8.00	91	53	43	36	PIG532.0700	PIG550.0700
7.10	8.00	91	53	43	36	PIG532.0710	PIG550.0710
7.14	8.00	91	53	43	36	PIG532.0714	PIG550.0714
7.20	8.00	91	53	43	36	PIG532.0720	PIG550.0720
7.30	8.00	91	53	43	36	PIG532.0730	PIG550.0730
7.40	8.00	91	53	43	36	PIG532.0740	PIG550.0740
7.50	8.00	91	53	43	36	PIG532.0750	PIG550.0750
7.54	8.00	91	53	43	36	PIG532.0754	PIG550.0754
7.60	8.00	91	53	43	36	PIG532.0760	PIG550.0760
7.70	8.00	91	53	43	36	PIG532.0770	PIG550.0770
7.80	8.00	91	53	43	36	PIG532.0780	PIG550.0780
7.90	8.00	91	53	43	36	PIG532.0790	PIG550.0790
7.94	8.00	91	53	43	36	PIG532.0794	PIG550.0794
8.00	8.00	91	53	43	36	PIG532.0800	PIG550.0800
8.10	10.00	103	61	49	40	PIG532.0810	PIG550.0810
8.20	10.00	103	61	49	40	PIG532.0820	PIG550.0820
8.30	10.00	103	61	49	40	PIG532.0830	PIG550.0830
8.33	10.00	103	61	49	40	PIG532.0833	PIG550.0833
8.40	10.00	103	61	49	40	PIG532.0840	PIG550.0840
8.50	10.00	103	61	49	40	PIG532.0850	PIG550.0850
8.60	10.00	103	61	49	40	PIG532.0860	PIG550.0860
8.70	10.00	103	61	49	40	PIG532.0870	PIG550.0870
8.73	10.00	103	61	49	40	PIG532.0873	PIG550.0873

	R 30° - RR
	Coated ALU
	N1.1-N1.6
	N2.1-N2.8
	N3.1-N3.2
	N4.1-N4.4
	N5.1-N5.2

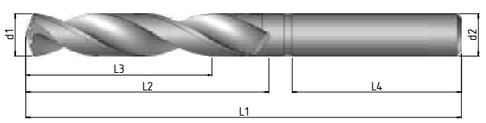
PIG700.0580	
PIG700.0600	
PIG700.0630	
PIG700.0650	
PIG700.0680	
PIG700.0700	
PIG700.0750	
PIG700.0780	
PIG700.0800	
PIG700.0850	

PIG 5xD

VHM | 5xD | d1=m7 | DIN 6535 HA | 140°

DIN6537

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30° - RR	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated NF	Coated NF	Coated ALU
MATERIALI LAVORABILI WORKING MATERIALS page 1A • 3	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6	N1.1-N1.6 N2.1-N2.8 N3.1-N3.2 N4.1-N4.4 N5.1-N5.2

d1	d2	L1	L2	L3	L4			
8.80	10.00	103	61	49	40	PIG532.0880	PIG550.0880	PIG700.0880
8.90	10.00	103	61	49	40	PIG532.0890	PIG550.0890	
9.00	10.00	103	61	49	40	PIG532.0900	PIG550.0900	PIG700.0900
9.10	10.00	103	61	49	40	PIG532.0910	PIG550.0910	
9.13	10.00	103	61	49	40	PIG532.0913	PIG550.0913	
9.20	10.00	103	61	49	40	PIG532.0920	PIG550.0920	PIG700.0920
9.25	10.00	103	61	49	40	PIG532.0925	PIG550.0925	
9.30	10.00	103	61	49	40	PIG532.0930	PIG550.0930	
9.40	10.00	103	61	49	40	PIG532.0940	PIG550.0940	
9.50	10.00	103	61	49	40	PIG532.0950	PIG550.0950	PIG700.0950
9.60	10.00	103	61	49	40	PIG532.0960	PIG550.0960	
9.70	10.00	103	61	49	40	PIG532.0970	PIG550.0970	
9.80	10.00	103	61	49	40	PIG532.0980	PIG550.0980	PIG700.0980
9.90	10.00	103	61	49	40	PIG532.0990	PIG550.0990	
10.00	10.00	103	61	49	40	PIG532.1000	PIG550.1000	PIG700.1000
10.10	12.00	118	71	56	45	PIG532.1010	PIG550.1010	
10.20	12.00	118	71	56	45	PIG532.1020	PIG550.1020	PIG700.1020
10.30	12.00	118	71	56	45	PIG532.1030	PIG550.1030	
10.40	12.00	118	71	56	45	PIG532.1040	PIG550.1040	
10.50	12.00	118	71	56	45	PIG532.1050	PIG550.1050	PIG700.1050
10.60	12.00	118	71	56	45	PIG532.1060	PIG550.1060	
10.70	12.00	118	71	56	45	PIG532.1070	PIG550.1070	
10.80	12.00	118	71	56	45	PIG532.1080	PIG550.1080	PIG700.1080
10.90	12.00	118	71	56	45	PIG532.1090	PIG550.1090	
11.00	12.00	118	71	56	45	PIG532.1100	PIG550.1100	PIG700.1100
11.10	12.00	118	71	56	45	PIG532.1110	PIG550.1110	
11.20	12.00	118	71	56	45	PIG532.1120	PIG550.1120	
11.30	12.00	118	71	56	45	PIG532.1130	PIG550.1130	
11.40	12.00	118	71	56	45	PIG532.1140	PIG550.1140	
11.50	12.00	118	71	56	45	PIG532.1150	PIG550.1150	PIG700.1150
11.60	12.00	118	71	56	45	PIG532.1160	PIG550.1160	
11.70	12.00	118	71	56	45	PIG532.1170	PIG550.1170	
11.80	12.00	118	71	56	45	PIG532.1180	PIG550.1180	PIG700.1180
11.90	12.00	118	71	56	45	PIG532.1190	PIG550.1190	
12.00	12.00	118	71	56	45	PIG532.1200	PIG550.1200	PIG700.1200
12.10	14.00	124	77	60	45	PIG532.1210	PIG550.1210	
12.20	14.00	124	77	60	45	PIG532.1220	PIG550.1220	

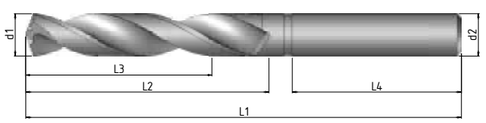
IGUTENSILI

PIG 5xD

VHM | 5xD | d1=m7 | DIN 6535 HA | 140°

DIN6537

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30° - RR	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated NF	Coated NF	Coated ALU
MATERIALI LAVORABILI WORKING MATERIALS page 1A • 3	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6	N1.1-N1.6 N2.1-N2.8 N3.1-N3.2 N4.1-N4.4 N5.1-N5.2

d1	d2	L1	L2	L3	L4			
12.30	14.00	124	77	60	45	PIG532.1230	PIG550.1230	
12.40	14.00	124	77	60	45		PIG550.1240	
12.50	14.00	124	77	60	45	PIG532.1250	PIG550.1250	
12.60	14.00	124	77	60	45	PIG532.1260	PIG550.1260	
12.70	14.00	124	77	60	45	PIG532.1270	PIG550.1270	
12.80	14.00	124	77	60	45	PIG532.1280	PIG550.1280	
12.90	14.00	124	77	60	45	PIG532.1290	PIG550.1290	
13.00	14.00	124	77	60	45	PIG532.1300	PIG550.1300	
13.10	14.00	124	77	60	45	PIG532.1310	PIG550.1310	
13.20	14.00	124	77	60	45		PIG550.1320	
13.30	14.00	124	77	60	45		PIG550.1330	
13.40	14.00	124	77	60	45		PIG550.1340	
13.50	14.00	124	77	60	45		PIG550.1350	
13.60	14.00	124	77	60	45		PIG550.1360	
13.70	14.00	124	77	60	45	PIG532.1370	PIG550.1370	
13.80	14.00	124	77	60	45	PIG532.1380	PIG550.1380	
13.90	14.00	124	77	60	45	PIG532.1390	PIG550.1390	
14.00	14.00	124	77	60	45	PIG532.1400	PIG550.1400	
14.10	16.00	133	83	63	48	PIG532.1410	PIG550.1410	
14.20	16.00	133	83	63	48	PIG532.1420	PIG550.1420	
14.30	16.00	133	83	63	48		PIG550.1430	
14.40	16.00	133	83	63	48		PIG550.1440	
14.50	16.00	133	83	63	48	PIG532.1450	PIG550.1450	
14.70	16.00	133	83	63	48	PIG532.1470	PIG550.1470	
14.80	16.00	133	83	63	48	PIG532.1480	PIG550.1480	
14.90	16.00	133	83	63	48		PIG550.1490	
15.00	16.00	133	83	63	48	PIG532.1500	PIG550.1500	
15.20	16.00	133	83	63	48	PIG532.1520	PIG550.1520	
15.50	16.00	133	83	63	48	PIG532.1550	PIG550.1550	
15.70	16.00	133	83	63	48	PIG532.1570	PIG550.1570	
16.00	16.00	133	83	63	48	PIG532.1600	PIG550.1600	
16.50	18.00	143	93	71	48	PIG532.1650	PIG550.1650	
17.00	18.00	143	93	71	48	PIG532.1700	PIG550.1700	
17.50	18.00	143	93	71	48	PIG532.1750	PIG550.1750	
18.00	18.00	143	93	71	48	PIG532.1800	PIG550.1800	
18.50	20.00	153	101	77	50	PIG532.1850	PIG550.1850	
19.00	20.00	153	101	77	50	PIG532.1900	PIG550.1900	
19.50	20.00	153	101	77	50	PIG532.1950	PIG550.1950	
20.00	20.00	153	101	77	50	PIG532.2000	PIG550.2000	

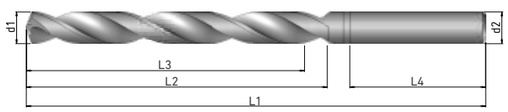
IGUTENSILI

PIG 8xD

VHM | 8xD | d1=m7 | DIN 6535 HA | 140°

NORME INTERNE
INTERNAL STATEMENT

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST

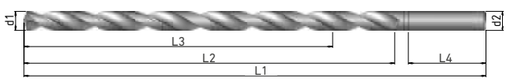


			R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT			Coated NF	Coated ALU
MATERIALI LAVORABILI WORKING MATERIALS page 1A • 3			P1.1-P1.5 K1.1-K4.2 N1.4-N1.6	N1.1-N1.6 N2.1-N2.8 N3.1-N3.2 N4.1-N4.4 N5.1-N5.2
d1	d2	L1	L2	L3	L4		
3.50	6.00	72	34	29	36	PIG560.0350	
3.70	6.00	72	34	29	36	PIG560.0370	
3.80	6.00	81	43	36	36	PIG560.0380	
4.00	6.00	81	43	36	36	PIG560.0400	PIG750.0400
4.20	6.00	81	43	36	36	PIG560.0420	PIG750.0420
4.50	6.00	81	43	36	36	PIG560.0450	PIG750.0450
4.80	6.00	95	57	48	36	PIG560.0480	PIG750.0480
5.00	6.00	95	57	48	36	PIG560.0500	PIG750.0500
5.10	6.00	95	57	48	36	PIG560.0510	PIG750.0510
5.20	6.00	95	57	48	36	PIG560.0520	PIG750.0520
5.50	6.00	95	57	48	36	PIG560.0550	PIG750.0550
5.80	6.00	95	57	48	36	PIG560.0580	PIG750.0580
6.00	6.00	95	57	48	36	PIG560.0600	PIG750.0600
6.30	8.00	114	76	64	36	PIG560.0630	PIG750.0630
6.50	8.00	114	76	64	36	PIG560.0650	PIG750.0650
6.80	8.00	114	76	64	36	PIG560.0680	PIG750.0680
7.00	8.00	114	76	64	36	PIG560.0700	PIG750.0700
7.50	8.00	114	76	64	36	PIG560.0750	PIG750.0750
7.80	8.00	114	76	64	36	PIG560.0780	PIG750.0780
8.00	8.00	114	76	64	36	PIG560.0800	PIG750.0800
8.50	10.00	142	95	80	40	PIG560.0850	PIG750.0850
8.80	10.00	142	95	80	40	PIG560.0880	PIG750.0880
9.00	10.00	142	95	80	40	PIG560.0900	PIG750.0900
9.20	10.00	142	95	80	40	PIG560.0920	PIG750.0920
9.50	10.00	142	95	80	40	PIG560.0950	PIG750.0950
9.80	10.00	142	95	80	40	PIG560.0980	PIG750.0980
10.00	10.00	142	95	80	40	PIG560.1000	PIG750.1000
10.20	12.00	162	114	96	45	PIG560.1020	PIG750.1020
10.50	12.00	162	114	96	45	PIG560.1050	PIG750.1050
10.80	12.00	162	114	96	45	PIG560.1080	PIG750.1080
11.00	12.00	162	114	96	45	PIG560.1100	PIG750.1100
11.50	12.00	162	114	96	45	PIG560.1150	PIG750.1150
11.80	12.00	162	114	96	45	PIG560.1180	PIG750.1180
12.00	12.00	162	114	96	45	PIG560.1200	PIG750.1200

PIG 15xD

NORME INTERNE
INTERNAL STATEMENT

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



VHM | 15xD | d1=m7 | DIN 6535 HA | 140°

	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated NF
MATERIALI LAVORABILI WORKING MATERIALS page 1A • 5	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6

d1	d2	L1	L2	L3	L4	
4.00	6.00	108	68	60	36	**PIG580.0400**
4.50	6.00	115	78	68	36	**PIG580.0450**
5.00	6.00	125	84	75	36	**PIG580.0500**
5.50	6.00	130	92	83	36	**PIG580.0550**
6.00	6.00	140	100	90	36	**PIG580.0600**
6.50	8.00	145	108	98	36	**PIG580.0650**
7.00	8.00	170	130	105	36	**PIG580.0700**
7.50	8.00	170	130	113	36	**PIG580.0750**
8.00	8.00	170	130	120	36	**PIG580.0800**
8.50	10.00	208	163	128	40	**PIG580.0850**
9.00	10.00	208	163	135	40	**PIG580.0900**
9.50	10.00	208	163	143	40	**PIG580.0950**
10.00	10.00	208	163	150	40	**PIG580.1000**
10.50	12.00	245	195	158	45	**PIG580.1050**
11.00	12.00	245	195	165	45	**PIG580.1100**
11.50	12.00	245	195	173	45	**PIG580.1150**
12.00	12.00	245	195	180	45	**PIG580.1200**

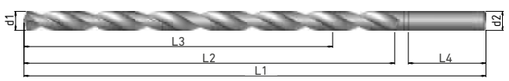
IGUTENSILI

PIG

PIG 20xD

NORME INTERNE
INTERNAL STATEMENT

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



VHM | 20xD | d1=m7 | DIN 6535 HA | 140°

	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated NF
MATERIALI LAVORABILI WORKING MATERIALS page 1A • 5	P1.1-P1.5 K1.1-K4.2 N1.4-N1.6

d1	d2	L1	L2	L3	L4	
5.00	6.00	155	116	100	36	**PIG590.0500**
6.00	6.00	172	135	120	36	**PIG590.0600**
6.50	8.00	186	145	130	36	**PIG590.0650**
7.00	8.00	201	160	140	36	**PIG590.0700**
7.50	8.00	211	170	150	36	**PIG590.0750**
8.00	8.00	221	181	160	36	**PIG590.0800**
8.50	10.00	236	192	170	40	**PIG590.0850**
9.00	10.00	247	203	180	40	**PIG590.0900**
9.50	10.00	259	214	190	40	**PIG590.0950**
10.00	10.00	267	225	200	40	**PIG590.1000**

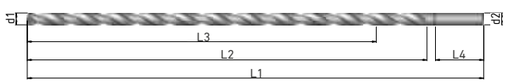
IGUTENSILI

PIG

PIG 30xD

NORME INTERNE
INTERNAL STATEMENT

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



VHM | 20xD | d1=m7 | DIN 6535 HA | 140°

R 30° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Coated NF

MATERIALI LAVORABILI
WORKING MATERIALS
page 1A • 5
P1.1-P1.5
K1.1-K4.2
N1.4-N1.6

d1	d2	L1	L2	L3	L4	
3.00	6.00	140	100	90	36	**PIG630.0300**
3.50	6.00	157	117	105	36	**PIG630.0350**
4.00	6.00	173	133	120	36	**PIG630.0400**
4.50	6.00	190	150	135	36	**PIG630.0450**
5.00	6.00	206	166	150	36	**PIG630.0500**
5.50	6.00	223	183	165	36	**PIG630.0550**
6.00	6.00	239	199	180	36	**PIG630.0600**
7.00	8.00	272	232	210	36	**PIG630.0700**
8.00	8.00	305	265	240	36	**PIG630.0800**

IGUTENSILI

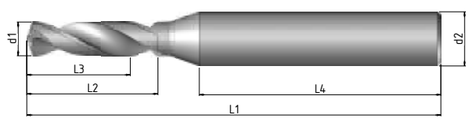
PIG

IGUTENSILI

MICRO 5xD

NORME INTERNE
INTERNAL STATEMENT

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



VHM | 5xD | d1=m7 | DIN 6535 HA | 140°

R 30° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT: Coated NF

MATERIALI LAVORABILI
WORKING MATERIALS
page 1A • 7
P1.1-P1.5
K1.1-K4.2
N1.4-N1.6

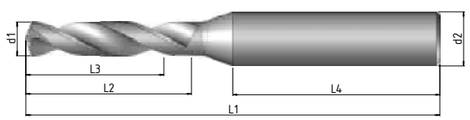
d1	d2	L1	L2	L3	L4	
1.00	3.00	55	8	5	28	**PIG770.0100**
1.10	3.00	55	12	5.5	28	**PIG770.0110**
1.20	3.00	55	12	6	28	**PIG770.0120**
1.30	3.00	55	12	6.5	28	**PIG770.0130**
1.40	3.00	55	12	7	28	**PIG770.0140**
1.50	3.00	55	12	7.5	28	**PIG770.0150**
1.60	3.00	65	16	8	28	**PIG770.0160**
1.70	3.00	65	16	8.5	28	**PIG770.0170**
1.80	3.00	65	16	9	28	**PIG770.0180**
1.90	3.00	65	16	9.5	28	**PIG770.0190**
2.00	3.00	65	16	10	28	**PIG770.0200**
2.10	3.00	74	20	10.5	28	**PIG770.0210**
2.20	3.00	74	20	11	28	**PIG770.0220**
2.30	3.00	74	20	11.5	28	**PIG770.0230**
2.40	3.00	74	20	12	28	**PIG770.0240**
2.50	3.00	74	20	12.5	28	**PIG770.0250**
2.60	3.00	81	23	13	28	**PIG770.0260**
2.70	3.00	81	23	13.5	28	**PIG770.0270**
2.80	3.00	81	23	14	28	**PIG770.0280**
2.90	3.00	81	23	14.5	28	**PIG770.0290**

PIG

MICRO 8xD

NORME INTERNE
INTERNAL STATEMENT

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



VHM | 8xD | d1=m7 | DIN 6535 HA | 140°

R 30° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Coated NF

MATERIALI LAVORABILI
WORKING MATERIALS
page 1A • 7
P1.1-P1.5
K1.1-K4.2
N1.4-N1.6

d1	d2	L1	L2	L3	L4	
1.00	3.00	55	11	8	28	**PIG780.0100**
1.10	3.00	55	17	8.8	28	**PIG780.0110**
1.20	3.00	55	17	9.6	28	**PIG780.0120**
1.30	3.00	55	17	10.4	28	**PIG780.0130**
1.40	3.00	55	17	11.2	28	**PIG780.0140**
1.50	3.00	55	17	12	28	**PIG780.0150**
1.60	3.00	65	22	12.8	28	**PIG780.0160**
1.70	3.00	65	22	13.6	28	**PIG780.0170**
1.80	3.00	65	22	14.4	28	**PIG780.0180**
1.90	3.00	65	22	15.2	28	**PIG780.0190**
2.00	3.00	65	22	16	28	**PIG780.0200**
2.10	3.00	74	28	16.8	28	**PIG780.0210**
2.20	3.00	74	28	17.6	28	**PIG780.0220**
2.30	3.00	74	28	18.4	28	**PIG780.0230**
2.40	3.00	74	28	19.2	28	**PIG780.0240**
2.50	3.00	74	28	20	28	**PIG780.0250**
2.60	3.00	81	32	20.8	28	**PIG780.0260**
2.70	3.00	81	32	21.6	28	**PIG780.0270**
2.80	3.00	81	32	22.4	28	**PIG780.0280**
2.90	3.00	81	32	23.2	28	**PIG780.0290**

IGUTENSILI

PIG

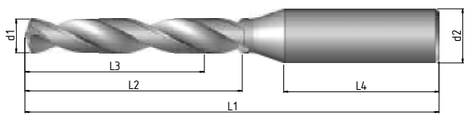
IGUTENSILI

MICRO 12xD

VHM | 12xD | d1=m7 | DIN 6535 HA | 140°

NORME INTERNE
INTERNAL STATEMENT

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 30° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT: Coated NF

MATERIALI LAVORABILI
WORKING MATERIALS
page 1A • 7
P1.1-P1.5
K1.1-K4.2
N1.4-N1.6

d1	d2	L1	L2	L3	L4	
1.00	3.00	55	15	12	28	**PIG790.0100**
1.10	3.00	55	23	13.2	28	**PIG790.0110**
1.20	3.00	55	23	14.4	28	**PIG790.0120**
1.30	3.00	55	23	15.6	28	**PIG790.0130**
1.40	3.00	55	23	16.8	28	**PIG790.0140**
1.50	3.00	55	23	18	28	**PIG790.0150**
1.60	3.00	65	30	19.2	28	**PIG790.0160**
1.70	3.00	65	30	20.4	28	**PIG790.0170**
1.80	3.00	65	30	21.6	28	**PIG790.0180**
1.90	3.00	65	30	22.8	28	**PIG790.0190**
2.00	3.00	65	30	24	28	**PIG790.0200**
2.10	3.00	74	38	25.2	28	**PIG790.0210**
2.20	3.00	74	38	26.4	28	**PIG790.0220**
2.30	3.00	74	38	27.6	28	**PIG790.0230**
2.40	3.00	74	38	28.8	28	**PIG790.0240**
2.50	3.00	74	38	30	28	**PIG790.0250**
2.60	3.00	81	44	31.2	28	**PIG790.0260**
2.70	3.00	81	44	32.4	28	**PIG790.0270**
2.80	3.00	81	44	33.6	28	**PIG790.0280**
2.90	3.00	81	44	34.8	28	**PIG790.0290**

IGUTENSILI

PIG

PAW

TECNOLOGIA DI FORATURA/ALESATURA
PUNTE ALESATRICI

DRILLING/REAMING TECHNOLOGY
REAMING BITS

Con le punte alesatrici PAW di IGUTENSILI le lavorazioni di foratura vengono eseguite rapidamente e in modo produttivo senza rinunciare alla qualità della lavorazione. Questi utensili sono impiegabili su di una vastissima gamma di macchinari a controllo numerico e/o tradizionali come CENTRI di LAVORO, CENTRI di TORNITURA, TRANSFER ed anche su LINEE DI PRODUZIONE AVANZATA ove è possibile abbattere sia i tempi di lavorazione che di attrezzaggio, in alcuni casi è stato possibile eliminare intere stazioni di lavoro. L'utensile PAW-Foratore-Alesatore è une conseguenza di questo impegno nel realizzare forature alesate in modo VELOCE e con la massima EFFICACIA.

Con la sintesi di due strumenti e, di conseguenza, due lavorazioni accorpate con unico utensile, si offrono ampi margini di risparmio, tempi macchina ridotti, gestione utensileria semplificata. Nel PAW-Foratore-Alesatore due taglienti sono riservati alla sgrossatura, a seguire entrano in azione altri sei taglienti addetti alla super finitura del foro, PAW è in grado di forare profondità pari a 3xD / 5xD, l'utensile è dotato di REFRIGERAZIONE forzata INTERNA alla TESTA, garantendo in questo modo un'ottima lubrificazione nel punto di taglio ed una eccellente evacuazione del truciolo. Esse assicurano rugosità ridotte, massima precisione dimensionale e circolarità meglio degli alesatori tradizionali, riducendo al minimo la produzione di bave eliminando così successive operazioni di pulizia / sbavatura.

Gli utensili PAW-Foratore-Alesatore, sono rivestiti TNFS o DIP in funzione del materiale da lavorare, raggiungono alti valori di taglio e lunga durata, garantendo sempre la massima stabilità del ciclo produttivo, inoltre i PAW-Foratore-Alesatore, nonostante la complessa tecnologia costruttiva, permettono le operazioni di affilatura e rivestimento, donando all'utensile stesso nuova vita con rendimenti eccellenti. Da non sottovalutare la possibilità di produrre Punte Alesatrici PAW multi diametri speciali a disegno, con lo stesso utensile potremo eseguire foratura di cavità a gradini, non solo si potranno eliminare gli alesatori ma anche altri utensili di preforatura in sagoma.

With PAW reaming tips by IGUTENSILI, drilling operations are carried out quickly and productively without sacrificing the quality of processing.
These tools can be used on a very wide range of CNC machines and/or traditional machinery such as WORK CENTRES, TURNING CENTRES, TRANSFER and even ADVANCED PRODUCTION LINES where it is possible to reduce both processing and tooling times, in some cases it was possible to eliminate entire workstations.
The PAW-Drilling-Reamer tool is a consequence of this commitment in making bored holes QUICKLY and with the maximum EFFECTIVENESS.

The union of the two tools and, consequently, two machining processes merged into a single tool, offer significant savings, reduced machine times and simplified tool management.
In the PAW-Drilling-Reamer two cutting edges are reserved for roughing, followed by another six cutting edges involved in the super finishing of the hole, PAW is able to drill depths equal to 3xD / 5xD, the tool is equipped with INTERNAL forced COOLANT, thus guaranteeing excellent lubrication at the cutting point and excellent chip evacuation.
These tools ensure reduced roughness, maximum dimensional accuracy and circularity better than traditional reamers, reducing burr production to a minimum, thus eliminating subsequent cleaning/deburring operations.

The PAW-Drilling-Reamer tools are TNFS or DIP coated according to the material to be processed, reaching high cutting values and long life, always guaranteeing the maximum stability of the production cycle; also the PAW-Drilling-Reamer, despite the complex manufacturing technology, allow sharpening and coating operations, giving the tool a new lease of life with excellent yields.
Not to underestimate the possibility of producing special multi-diameter customised PAW reamer bits, with the same tool we will be able to drill stepped holes, not only can reamers be eliminated but also other pre-drilling shaping tools.

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
F = Avanzamento

Vc = Cutting speed (m/min)
F = Feed

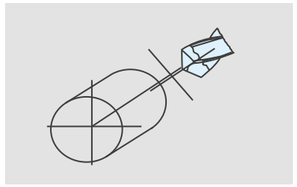
		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

PAW 20 FN 3XD	2B 7	
PAW 20 FT 3XD	2B 7	
PAW 20 FN 5XD		2B 13
PAW 20 FT 5XD		2B 13
PAW 90 FN 3XD	2B 19	
PAW 90 FT 3XD	2B 19	
PAW 90 FN 5XD		2B 25
PAW 90 FT 5XD		2B 25
PAW 20 FN 3XD_TR	2B 7	
PAW 20 FT 3XD_TR	2B 7	
PAW 20 FN 5XD_TR		2B 13
PAW 20 FT 5XD_TR		2B 13
PAW 90 FN 3XD_TR	2B 19	
PAW 90 FT 3XD_TR	2B 19	
PAW 90 FN 5XD_TR		2B 25
PAW 90 FT 5XD_TR		2B 25

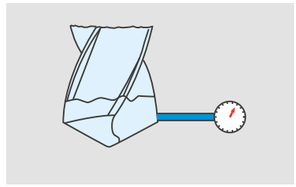
Vc Coated TNFS - DIP 3xD	Vc Coated TNFS - DIP 5xD	F = 3 to 5 mm	F =5 to 8 mm	F =8 to 12 mm	F =12 to 16 mm	
						P
70 - 90	70 - 90	0,10 - 0,18	0,15 - 0,25	0,18 - 0,30	0,20 - 0,35	1.1
60 - 80	60 - 80	0,10 - 0,20	0,15 - 0,28	0,18 - 0,35	0,20 - 0,38	2.1
60 - 70	60 - 70	0,10 - 0,20	0,15 - 0,28	0,18 - 0,35	0,20 - 0,38	3.1
40 - 60	40 - 60	0,10 - 0,15	0,12 - 0,20	0,14 - 0,25	0,16 - 0,30	4.1
40 - 50	40 - 50	0,10 - 0,15	0,12 - 0,20	0,14 - 0,25	0,16 - 0,30	5.1
						M
45 -55 Max 1x Ø	45 -55 Max 1x Ø	0,04 -0,12	0,12 - 0,20	0,16 - 0,24	0,18 - 0,28	1.1
45 -55 Max 1x Ø	45 -55 Max 1x Ø	0,04 -0,12	0,12 - 0,20	0,16 - 0,24	0,18 - 0,28	2.1
45 -55 Max 1x Ø	45 -55 Max 1x Ø	0,04 -0,12	0,12 - 0,20	0,16 - 0,24	0,18 - 0,28	3.1
45 -55 Max 1x Ø	45 -55 Max 1x Ø	0,04 -0,12	0,12 - 0,20	0,16 - 0,24	0,18 - 0,28	4.1
						K
70 - 90	70 - 90	0,15 - 0,25	0,20 - 0,35	0,25 - 0,45	0,30 - 0,50	1.1
70 - 90	70 - 90	0,15 - 0,25	0,20 - 0,35	0,25 - 0,45	0,30 - 0,50	1.2
						2.1
						2.2
55 - 70	55 - 70	0,12 - 0,20	0,15 - 0,25	0,20 - 0,35	0,25 - 0,40	3.1
45 - 60	45 - 60	0,10 - 0,18	0,15 - 0,25	0,18 - 0,30	0,20 - 0,35	3.2
						4.1
						4.2
						N
90 - 120	90 - 120	0,10 - 0,20	0,15 - 0,25	0,20 - 0,30	0,25 - 0,35	1.1
90 - 120	90 - 120	0,10 - 0,20	0,15 - 0,25	0,20 - 0,30	0,25 - 0,35	1.2
90 - 120	90 - 120	0,10 - 0,20	0,15 - 0,25	0,20 - 0,30	0,25 - 0,35	1.3
80 - 100	80 - 100	0,10 - 0,20	0,15 - 0,25	0,20 - 0,30	0,25 - 0,35	1.4
80 - 100	80 - 100	0,10 - 0,20	0,15 - 0,25	0,20 - 0,30	0,25 - 0,35	1.5
80 - 100	80 - 100	0,10 - 0,20	0,15 - 0,25	0,20 - 0,30	0,25 - 0,35	1.6
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
						2.7
						3.1
						3.2
						4.1
						4.2
						4.3
						4.4
						5.1
						5.2
						5.3
						S
						1.1
						1.2
						1.3
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
						H
						1.1
						1.2
						1.3
						1.4
						1.5

PRECAUZIONI PER L'UTILIZZO
PRECAUTIONS FOR USE

Concentricità
Run-Out



max. 0,01 mm



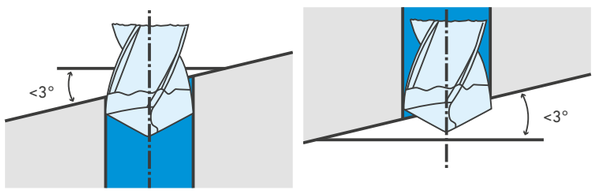
max. 0,01 mm

Indicazione relativa al refrigerante
La pressione del refrigerante dipende dalla profondità di foratura.

Indication regarding the coolant
The pressure of the coolant liquid depends on the depth of the drilling.

-> 20 bar al naso mandrino
- Emulsione >= 10% + additivi EP

Angolo max di entrata e uscita
Max. angle of entry and exit



Importante

- Si consiglia, essendo un utensile idoneo alla foratura senza centrino, di eseguire approccio dolce, accostando l'utensile al pezzo da forare dimezzando i parametri di lavoro effettivi (50%), affondando circa il 5% del diametro utensile (es. punta diametro 10mm affondare circa 0,5mm)
In questo modo darete la possibilità all'utensile stesso di auto centrarsi ed iniziare la lavorazione in modo ottimale.
Fatto questo potrete iniziare la foratura portando i parametri al 100%

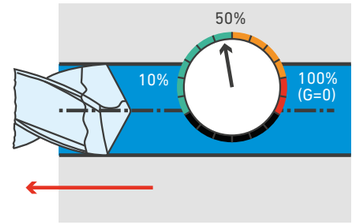
Important

- It is recommended, as it is a tool suitable for drilling without a center drill, to approach gently by bringing the tool close to the piece to be drilled, reducing the actual working parameters by 50%, and sinking about 5% of the tool's diameter (e.g., for a 10mm diameter bit, sink about 0.5mm).
This way, you will give the tool the opportunity to self-center and start the work optimally. Once this is done, you can start drilling by bringing the parameters to 100%.

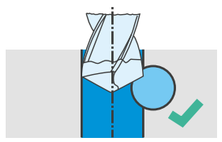
```
G90 G54 S1000 M3      (APPROCH) (PARAMETERS 50%)
G0 X0. Y0.
G43 H1 Z2.
G1 Z-.50 F50
S2000                 (DRILLING) (PARAMETERS 100%)
Z-30 F100
```

Foro passante
Through hole

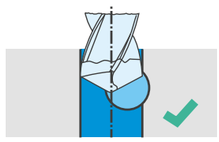
Non è possibile la corsa rapida durante la fase di ritorno
Fast run isn't possible during the return phase



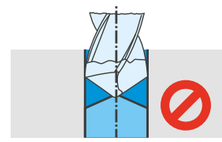
Condizioni di lavorazione
Processing conditions



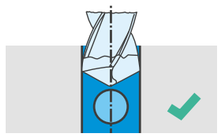
Foro trasversale non oltre la mezzeria
Cross hole not beyond the centerline



Foro trasversale oltre la mezzeria
Cross hole beyond the centerline

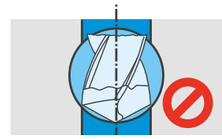


Congiungimento con il foro opposto
Joint with the opposite hole



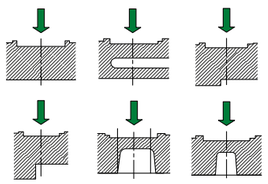
Foro trasversale minore del foro da eseguire
Cross hole smaller than the hole to perform

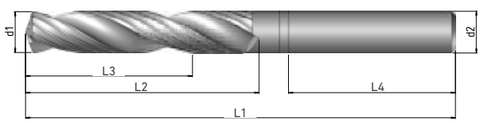
Foro trasversale dello stesso diametro del foro da eseguire
Cross hole of the same diameter as the hole to perform



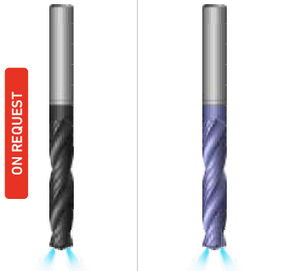
Foro trasversale maggiore del foro da eseguire
Cross hole larger than the hole to be made

PAW20 3xD





VHM | 3xD | Ø d1 ± 0,003 | 140°



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

d1	d2	L1	L2	L3	L4		
2,61/2.99	6.0	62	20	14	36	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
3.00	6.0	62	20	14	36	PAW.20.FN.0300.3D	PAW.20.FT.0300.3D
3.01 **H7**	6.0	62	20	14	36	PAW.20.FN.0301.3D	PAW.20.FT.0301.3D
3.02	6.0	62	20	14	36	PAW.20.FN.0302.3D	PAW.20.FT.0302.3D
3.03/3,20	6.0	62	20	14	36	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
3.21/3,99	6.0	66	24	17	36	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
4.00	6.0	66	24	17	36	PAW.20.FN.0400.3D	PAW.20.FT.0400.3D
4.01 **H7**	6.0	66	24	17	36	PAW.20.FN.0401.3D	PAW.20.FT.0401.3D
4.02	6.0	66	24	17	36	PAW.20.FN.0402.3D	PAW.20.FT.0402.3D
4.03/4,20	6.0	66	24	17	36	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
4.21/4,99	6.0	66	28	20	36	PAW.20.FN.XXXX.3D	PAW.20.FT.XXX.3D
5.00	6.0	66	28	20	36	PAW.20.FN.0500.3D	PAW.20.FT.0500.3D
5.01 **H7**	6.0	66	28	20	36	PAW.20.FN.0501.3D	PAW.20.FT.0501.3D
5.02	6.0	66	28	20	36	PAW.20.FN.0502.3D	PAW.20.FT.0502.3D
5.03/5,99	6.0	66	28	20	36	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
6.00	6.0	66	28	20	36	PAW.20.FN.0600.3D	PAW.20.FT.0600.3D
6.01 **H7**	6.0	66	28	20	36	PAW.20.FN.0601.3D	PAW.20.FT.0601.3D
6.02	6.0	66	28	20	36	PAW.20.FN.0602.3D	PAW.20.FT.0602.3D
6.03/6,99	8.0	79	34	24	36	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
7.00	8.0	79	34	24	36	PAW.20.FN.0700.3D	PAW.20.FT.0700.3D
7.01 **H7**	8.0	79	34	24	36	PAW.20.FN.0701.3D	PAW.20.FT.0701.3D
7.02	8.0	79	34	24	36	PAW.20.FN.0702.3D	PAW.20.FT.0702.3D
7.03/7,99	8.0	79	41	29	36	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
8.00	8.0	79	41	29	36	PAW.20.FN.0800.3D	PAW.20.FT.0800.3D
8.01 **H7**	8.0	79	41	29	36	PAW.20.FN.0801.3D	PAW.20.FT.0801.3D
8.02	8.0	79	41	29	36	PAW.20.FN.0802.3D	PAW.20.FT.0802.3D
8.03/8,99	10.0	89	47	35	40	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D

IGUTENSILI

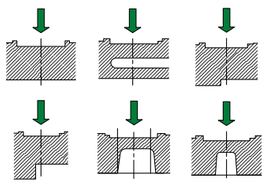
PAW

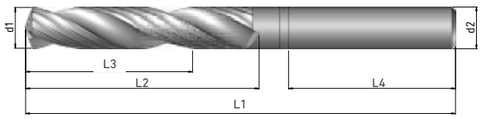
R 30° - RR	R 30° - RR
Coated DIP	Coated TNFS
N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.0300.3D_TR	PAW.20.FT.0300.3D_TR
PAW.20.FN.0301.3D_TR	PAW.20.FT.0301.3D_TR
PAW.20.FN.0302.3D_TR	PAW.20.FT.0302.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.0400.3D_TR	PAW.20.FT.0400.3D_TR
PAW.20.FN.0401.3D_TR	PAW.20.FT.0401.3D_TR
PAW.20.FN.0402.3D_TR	PAW.20.FT.0402.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.0500.3D_TR	PAW.20.FT.0500.3D_TR
PAW.20.FN.0501.3D_TR	PAW.20.FT.0501.3D_TR
PAW.20.FN.0502.3D_TR	PAW.20.FT.0502.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.0600.3D_TR	PAW.20.FT.0600.3D_TR
PAW.20.FN.0601.3D_TR	PAW.20.FT.0601.3D_TR
PAW.20.FN.0602.3D_TR	PAW.20.FT.0602.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.0700.3D_TR	PAW.20.FT.0700.3D_TR
PAW.20.FN.0701.3D_TR	PAW.20.FT.0701.3D_TR
PAW.20.FN.0702.3D_TR	PAW.20.FT.0702.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.0800.3D_TR	PAW.20.FT.0800.3D_TR
PAW.20.FN.0801.3D_TR	PAW.20.FT.0801.3D_TR
PAW.20.FN.0802.3D_TR	PAW.20.FT.0802.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR

IGUTENSILI

PAW20 3xD





VHM | 3xD | Ø d1 ± 0,003 | 140°

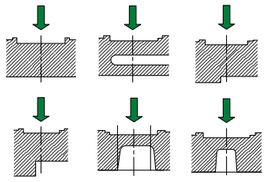
	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

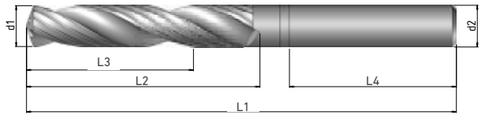
	R 30° - RR	R 30° - RR
	Coated DIP	Coated TNFS
	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

d1	d2	L1	L2	L3	L4				
9.00	10.0	89	47	35	40	PAW.20.FN.0900.3D	PAW.20.FT.0900.3D	PAW.20.FN.0900.3D_TR	PAW.20.FT.0900.3D_TR
9.01 **H7**	10.0	89	47	35	40	PAW.20.FN.0901.3D	PAW.20.FT.0901.3D	PAW.20.FN.0901.3D_TR	PAW.20.FT.0901.3D_TR
9.02	10.0	89	47	35	40	PAW.20.FN.0902.3D	PAW.20.FT.0902.3D	PAW.20.FN.0902.3D_TR	PAW.20.FT.0902.3D_TR
9.03/9,99	10.0	89	47	35	40	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D	PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
10.00	10.0	89	47	35	40	PAW.20.FN.1000.3D	PAW.20.FT.1000.3D	PAW.20.FN.1000.3D_TR	PAW.20.FT.1000.3D_TR
10.01 **H7**	10.0	89	47	35	40	PAW.20.FN.1001.3D	PAW.20.FT.1001.3D	PAW.20.FN.1001.3D_TR	PAW.20.FT.1001.3D_TR
10.02	10.0	89	47	35	40	PAW.20.FN.1002.3D	PAW.20.FT.1002.3D	PAW.20.FN.1002.3D_TR	PAW.20.FT.1002.3D_TR
10.03/10,99	12.0	102	55	40	45	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D	PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
11.00	12.0	102	55	40	45	PAW.20.FN.1100.3D	PAW.20.FT.1100.3D	PAW.20.FN.1100.3D_TR	PAW.20.FT.1100.3D_TR
11.01 **H7**	12.0	102	55	40	45	PAW.20.FN.1101.3D	PAW.20.FT.1101.3D	PAW.20.FN.1101.3D_TR	PAW.20.FT.1101.3D_TR
11.02	12.0	102	55	40	45	PAW.20.FN.1102.3D	PAW.20.FT.1102.3D	PAW.20.FN.1102.3D_TR	PAW.20.FT.1102.3D_TR
11.03/11,99	12.0	102	55	40	45	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D	PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
12.00	12.0	102	55	40	45	PAW.20.FN.1200.3D	PAW.20.FT.1200.3D	PAW.20.FN.1200.3D_TR	PAW.20.FT.1200.3D_TR
12.01 **H7**	12.0	102	55	40	45	PAW.20.FN.1201.3D	PAW.20.FT.1201.3D	PAW.20.FN.1201.3D_TR	PAW.20.FT.1201.3D_TR
12.02	12.0	102	55	40	45	PAW.20.FN.1202.3D	PAW.20.FT.1202.3D	PAW.20.FN.1202.3D_TR	PAW.20.FT.1202.3D_TR
12.03/12,99	14.0	107	60	43	45	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D	PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
13.00	14.0	107	60	43	45	PAW.20.FN.1300.3D	PAW.20.FT.1300.3D	PAW.20.FN.1300.3D_TR	PAW.20.FT.1300.3D_TR
13.01 **H7**	14.0	107	60	43	45	PAW.20.FN.1301.3D	PAW.20.FT.1301.3D	PAW.20.FN.1301.3D_TR	PAW.20.FT.1301.3D_TR
13.02	14.0	107	60	43	45	PAW.20.FN.1302.3D	PAW.20.FT.1302.3D	PAW.20.FN.1302.3D_TR	PAW.20.FT.1302.3D_TR
13.03/13,99	14.0	107	60	43	45	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D	PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
14.00	14.0	107	60	43	45	PAW.20.FN.1400.3D	PAW.20.FT.1400.3D	PAW.20.FN.1400.3D_TR	PAW.20.FT.1400.3D_TR
14.01 **H7**	14.0	107	60	43	45	PAW.20.FN.1401.3D	PAW.20.FT.1401.3D	PAW.20.FN.1401.3D_TR	PAW.20.FT.1401.3D_TR
14.02	14.0	107	60	43	45	PAW.20.FN.1402.3D	PAW.20.FT.1402.3D	PAW.20.FN.1402.3D_TR	PAW.20.FT.1402.3D_TR
14.03/14,99	16.0	115	65	45	48	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D	PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
15.00	16.0	115	65	45	48	PAW.20.FN.1500.3D	PAW.20.FT.1500.3D	PAW.20.FN.1500.3D_TR	PAW.20.FT.1500.3D_TR

IGUTENSILI

PAW20 3xD





VHM

3xD

Ø d1 ± 0,003

140°

	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

d1	d2	L1	L2	L3	L4		
15.01 **H7**	16.0	115	65	45	48	PAW.20.FN.1501.3D	PAW.20.FT.1501.3D
15.02	16.0	115	65	45	48	PAW.20.FN.1502.3D	PAW.20.FT.1502.3D
15.03/15,99	16.0	115	65	45	48	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
16.00	16.0	115	65	45	48	PAW.20.FN.1600.3D	PAW.20.FT.1600.3D
16.01 **H7**	16.0	115	65	45	48	PAW.20.FN.1601.3D	PAW.20.FT.1601.3D
16.02	16.0	115	65	45	48	PAW.20.FN.1602.3D	PAW.20.FT.1602.3D
16.03/16,99	18.0	123	73	51	48	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
17.00	18.0	123	73	51	48	PAW.20.FN.1700.3D	PAW.20.FT.1700.3D
17.01 **H7**	18.0	123	73	51	48	PAW.20.FN.1701.3D	PAW.20.FT.1701.3D
17.02	18.0	123	73	51	48	PAW.20.FN.1702.3D	PAW.20.FT.1702.3D
17.03/17,99	18.0	123	73	51	48	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
18.00	18.0	123	73	51	48	PAW.20.FN.1800.3D	PAW.20.FT.1800.3D
18.01 **H7**	18.0	123	73	51	48	PAW.20.FN.1801.3D	PAW.20.FT.1801.3D
18.02	18.0	123	73	51	48	PAW.20.FN.1802.3D	PAW.20.FT.1802.3D
18.03/18,99	20.0	131	79	55	50	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
19.00	20.0	131	79	55	50	PAW.20.FN.1900.3D	PAW.20.FT.1900.3D
19.01 **H7**	20.0	131	79	55	50	PAW.20.FN.1901.3D	PAW.20.FT.1901.3D
19.02	20.0	131	79	55	50	PAW.20.FN.1902.3D	PAW.20.FT.1902.3D
19.03/19,99	20.0	131	79	55	50	PAW.20.FN.XXXX.3D	PAW.20.FT.XXXX.3D
20.00	20.0	131	79	55	50	PAW.20.FN.2000.3D	PAW.20.FT.2000.3D
20.01 **H7**	20.0	131	79	55	50	PAW.20.FN.2001.3D	PAW.20.FT.2001.3D
20.02	20.0	131	79	55	50	PAW.20.FN.2002.3D	PAW.20.FT.2002.3D

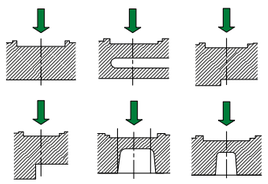
	R 30° - RR	R 30° - RR
	Coated DIP	Coated TNFS
	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

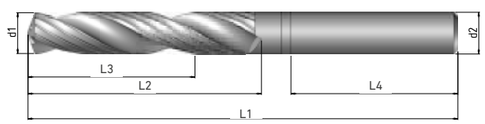
PAW.20.FN.1501.3D_TR	PAW.20.FT.1501.3D_TR
PAW.20.FN.1502.3D_TR	PAW.20.FT.1502.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.1600.3D_TR	PAW.20.FT.1600.3D_TR
PAW.20.FN.1601.3D_TR	PAW.20.FT.1601.3D_TR
PAW.20.FN.1602.3D_TR	PAW.20.FT.1602.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.1700.3D_TR	PAW.20.FT.1700.3D_TR
PAW.20.FN.1701.3D_TR	PAW.20.FT.1701.3D_TR
PAW.20.FN.1702.3D_TR	PAW.20.FT.1702.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.1800.3D_TR	PAW.20.FT.1800.3D_TR
PAW.20.FN.1801.3D_TR	PAW.20.FT.1801.3D_TR
PAW.20.FN.1802.3D_TR	PAW.20.FT.1802.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.1900.3D_TR	PAW.20.FT.1900.3D_TR
PAW.20.FN.1901.3D_TR	PAW.20.FT.1901.3D_TR
PAW.20.FN.1902.3D_TR	PAW.20.FT.1902.3D_TR
PAW.20.FN.XXXX.3D_TR	PAW.20.FT.XXXX.3D_TR
PAW.20.FN.2000.3D_TR	PAW.20.FT.2000.3D_TR
PAW.20.FN.2001.3D_TR	PAW.20.FT.2001.3D_TR
PAW.20.FN.2002.3D_TR	PAW.20.FT.2002.3D_TR

PAW

IGUTENSILI

PAW20 5xD





VHM | 5xD | Ø d1 ± 0,003 | 140°

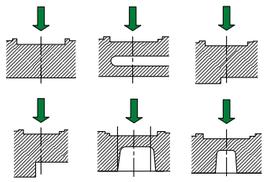
	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

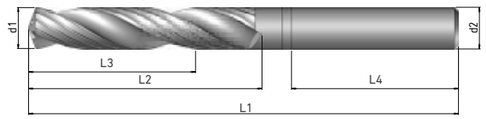
d1	d2	L1	L2	L3	L4		
2,61/2.99	6.0	66	28	22	36	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
3.00	6.0	66	28	22	36	PAW.20.FN.0300.5D	PAW.20.FT.0300.5D
3.01 **H7**	6.0	66	28	22	36	PAW.20.FN.0301.5D	PAW.20.FT.0301.5D
3.02	6.0	66	28	22	36	PAW.20.FN.0302.5D	PAW.20.FT.0302.5D
3.03/3,20	6.0	66	28	22	36	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
3,21/3.99	6.0	74	36	29	36	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
4.00	6.0	74	36	29	36	PAW.20.FN.0400.5D	PAW.20.FT.0400.5D
4.01 **H7**	6.0	74	36	29	36	PAW.20.FN.0401.5D	PAW.20.FT.0401.5D
4.02	6.0	74	36	29	36	PAW.20.FN.0402.5D	PAW.20.FT.0402.5D
4.03/4,20	6.0	74	36	29	36	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
4.21/4,99	6.0	82	44	35	36	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
5.00	6.0	82	44	35	36	PAW.20.FN.0500.5D	PAW.20.FT.0500.5D
5.01 **H7**	6.0	82	44	35	36	PAW.20.FN.0501.5D	PAW.20.FT.0501.5D
5.02	6.0	82	44	35	36	PAW.20.FN.0502.5D	PAW.20.FT.0502.5D
5.03/5,99	6.0	82	44	35	36	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
6.00	6.0	82	44	35	36	PAW.20.FN.0600.5D	PAW.20.FT.0600.5D
6.01 **H7**	6.0	82	44	35	36	PAW.20.FN.0601.5D	PAW.20.FT.0601.5D
6.02	6.0	82	44	35	36	PAW.20.FN.0602.5D	PAW.20.FT.0602.5D
6,03/6,99	8.0	91	53	43	36	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
7.00	8.0	91	53	43	36	PAW.20.FN.0700.5D	PAW.20.FT.0700.5D
7.01 **H7**	8.0	91	53	43	36	PAW.20.FN.0701.5D	PAW.20.FT.0701.5D
7.02	8.0	91	53	43	36	PAW.20.FN.0702.5D	PAW.20.FT.0702.5D
7.03/7,99	8.0	91	53	43	36	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
8.00	8.0	91	53	43	36	PAW.20.FN.0800.5D	PAW.20.FT.0800.5D
8.01 **H7**	8.0	91	53	43	36	PAW.20.FN.0801.5D	PAW.20.FT.0801.5D
8.02	8.0	91	53	43	36	PAW.20.FN.0802.5D	PAW.20.FT.0802.5D
8.03/8,99	10.0	103	61	49	40	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D

	R 30° - RR	R 30° - RR
	Coated DIP	Coated TNFS
	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.0300.5D_TR	PAW.20.FT.0300.5D_TR
PAW.20.FN.0301.5D_TR	PAW.20.FT.0301.5D_TR
PAW.20.FN.0302.5D_TR	PAW.20.FT.0302.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.0400.5D_TR	PAW.20.FT.0400.5D_TR
PAW.20.FN.0401.5D_TR	PAW.20.FT.0401.5D_TR
PAW.20.FN.0402.5D_TR	PAW.20.FT.0402.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.0500.5D_TR	PAW.20.FT.0500.5D_TR
PAW.20.FN.0501.5D_TR	PAW.20.FT.0501.5D_TR
PAW.20.FN.0502.5D_TR	PAW.20.FT.0502.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.0600.5D_TR	PAW.20.FT.0600.5D_TR
PAW.20.FN.0601.5D_TR	PAW.20.FT.0601.5D_TR
PAW.20.FN.0602.5D_TR	PAW.20.FT.0602.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.0700.5D_TR	PAW.20.FT.0700.5D_TR
PAW.20.FN.0701.5D_TR	PAW.20.FT.0701.5D_TR
PAW.20.FN.0702.5D_TR	PAW.20.FT.0702.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.0800.5D_TR	PAW.20.FT.0800.5D_TR
PAW.20.FN.0801.5D_TR	PAW.20.FT.0801.5D_TR
PAW.20.FN.0802.5D_TR	PAW.20.FT.0802.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR

PAW20 5xD





VHM

5xD

Ø d1 ± 0,003

140°

	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

d1	d2	L1	L2	L3	L4		
9.00	10.0	103	61	49	40	PAW.20.FN.0900.5D	PAW.20.FT.0900.5D
9.01 **H7**	10.0	103	61	49	40	PAW.20.FN.0901.5D	PAW.20.FT.0901.5D
9.02	10.0	103	61	49	40	PAW.20.FN.0902.5D	PAW.20.FT.0902.5D
9.03/9,99	10.0	103	61	49	40	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
10.00	10.0	103	61	49	40	PAW.20.FN.1000.5D	PAW.20.FT.1000.5D
10.01 **H7**	10.0	103	61	49	40	PAW.20.FN.1001.5D	PAW.20.FT.1001.5D
10.02	10.0	103	61	49	40	PAW.20.FN.1002.5D	PAW.20.FT.1002.5D
10.03/10,99	12.0	118	71	56	45	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
11.00	12.0	118	71	56	45	PAW.20.FN.1100.5D	PAW.20.FT.1100.5D
11.01 **H7**	12.0	118	71	56	45	PAW.20.FN.1101.5D	PAW.20.FT.1101.5D
11.02	12.0	118	71	56	45	PAW.20.FN.1102.5D	PAW.20.FT.1102.5D
11.03/11,99	12.0	118	71	56	45	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
12.00	12.0	118	71	56	45	PAW.20.FN.1200.5D	PAW.20.FT.1200.5D
12.01 **H7**	12.0	118	71	56	45	PAW.20.FN.1201.5D	PAW.20.FT.1201.5D
12.02	12.0	118	71	56	45	PAW.20.FN.1202.5D	PAW.20.FT.1202.5D
12.03/12,99	14.0	124	77	60	45	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
13.00	14.0	124	77	60	45	PAW.20.FN.1300.5D	PAW.20.FT.1300.5D
13.01 **H7**	14.0	124	77	60	45	PAW.20.FN.1301.5D	PAW.20.FT.1301.5D
13.02	14.0	124	77	60	45	PAW.20.FN.1302.5D	PAW.20.FT.1302.5D
13.03/13,99	14.0	124	77	60	45	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
14.00	14.0	124	77	60	45	PAW.20.FN.1400.5D	PAW.20.FT.1400.5D
14.01 **H7**	14.0	124	77	60	45	PAW.20.FN.1401.5D	PAW.20.FT.1401.5D
14.02	14.0	124	77	60	45	PAW.20.FN.1402.5D	PAW.20.FT.1402.5D
14.03/14,99	16.0	133	83	63	48	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D
15.00	16.0	133	83	63	48	PAW.20.FN.1500.5D	PAW.20.FT.1500.5D

IGUTENSILI

PAW

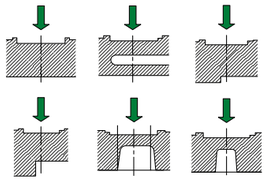
	R 30° - RR	R 30° - RR
	Coated DIP	Coated TNFS
	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

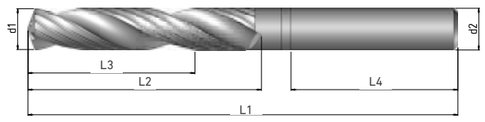
PAW.20.FN.0900.5D_TR	PAW.20.FT.0900.5D_TR
PAW.20.FN.0901.5D_TR	PAW.20.FT.0901.5D_TR
PAW.20.FN.0902.5D_TR	PAW.20.FT.0902.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.1000.5D_TR	PAW.20.FT.1000.5D_TR
PAW.20.FN.1001.5D_TR	PAW.20.FT.1001.5D_TR
PAW.20.FN.1002.5D_TR	PAW.20.FT.1002.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.1100.5D_TR	PAW.20.FT.1100.5D_TR
PAW.20.FN.1101.5D_TR	PAW.20.FT.1101.5D_TR
PAW.20.FN.1102.5D_TR	PAW.20.FT.1102.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.1200.5D_TR	PAW.20.FT.1200.5D_TR
PAW.20.FN.1201.5D_TR	PAW.20.FT.1201.5D_TR
PAW.20.FN.1202.5D_TR	PAW.20.FT.1202.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.1300.5D_TR	PAW.20.FT.1300.5D_TR
PAW.20.FN.1301.5D_TR	PAW.20.FT.1301.5D_TR
PAW.20.FN.1302.5D_TR	PAW.20.FT.1302.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.1400.5D_TR	PAW.20.FT.1400.5D_TR
PAW.20.FN.1401.5D_TR	PAW.20.FT.1401.5D_TR
PAW.20.FN.1402.5D_TR	PAW.20.FT.1402.5D_TR
PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
PAW.20.FN.1500.5D_TR	PAW.20.FT.1500.5D_TR

IGUTENSILI

PAW20 5xD

VHM | 5xD | Ø d1 ± 0,003 | 140°

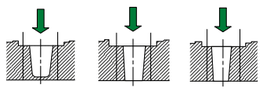




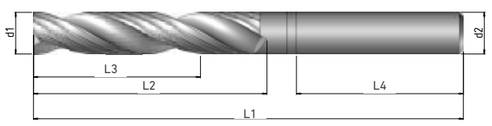
						R 30° - RR	R 30° - RR	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT						Coated DIP	Coated TNFS	Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3						N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6
d1	d2	L1	L2	L3	L4				
15.01 **H7**	16.0	133	83	63	48	PAW.20.FN.1501.5D	PAW.20.FT.1501.5D	PAW.20.FN.1501.5D_TR	PAW.20.FT.1501.5D_TR
15.02	16.0	133	83	63	48	PAW.20.FN.1502.5D	PAW.20.FT.1502.5D	PAW.20.FN.1502.5D_TR	PAW.20.FT.1502.5D_TR
15.03/15,99	16.0	133	83	63	48	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D	PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
16.00	16.0	133	83	63	48	PAW.20.FN.1600.5D	PAW.20.FT.1600.5D	PAW.20.FN.1600.5D_TR	PAW.20.FT.1600.5D_TR
16.01 **H7**	16.0	133	83	63	48	PAW.20.FN.1601.5D	PAW.20.FT.1601.5D	PAW.20.FN.1601.5D_TR	PAW.20.FT.1601.5D_TR
16.02	16.0	133	83	63	48	PAW.20.FN.1602.5D	PAW.20.FT.1602.5D	PAW.20.FN.1602.5D_TR	PAW.20.FT.1602.5D_TR
16.03/16,99	18.0	143	93	71	48	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D	PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
17.00	18.0	143	93	71	48	PAW.20.FN.1700.5D	PAW.20.FT.1700.5D	PAW.20.FN.1700.5D_TR	PAW.20.FT.1700.5D_TR
17.01 **H7**	18.0	143	93	71	48	PAW.20.FN.1701.5D	PAW.20.FT.1701.5D	PAW.20.FN.1701.5D_TR	PAW.20.FT.1701.5D_TR
17.02	18.0	143	93	71	48	PAW.20.FN.1702.5D	PAW.20.FT.1702.5D	PAW.20.FN.1702.5D_TR	PAW.20.FT.1702.5D_TR
17.03/17,99	18.0	143	93	71	48	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D	PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
18.00	18.0	143	93	71	48	PAW.20.FN.1800.5D	PAW.20.FT.1800.5D	PAW.20.FN.1800.5D_TR	PAW.20.FT.1800.5D_TR
18.01 **H7**	18.0	143	93	71	48	PAW.20.FN.1801.5D	PAW.20.FT.1801.5D	PAW.20.FN.1801.5D_TR	PAW.20.FT.1801.5D_TR
18.02	18.0	143	93	71	48	PAW.20.FN.1802.5D	PAW.20.FT.1802.5D	PAW.20.FN.1802.5D_TR	PAW.20.FT.1802.5D_TR
18.03/18,99	20.0	153	101	77	50	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D	PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
19.00	20.0	153	101	77	50	PAW.20.FN.1900.5D	PAW.20.FT.1900.5D	PAW.20.FN.1900.5D_TR	PAW.20.FT.1900.5D_TR
19.01 **H7**	20.0	153	101	77	50	PAW.20.FN.1901.5D	PAW.20.FT.1901.5D	PAW.20.FN.1901.5D_TR	PAW.20.FT.1901.5D_TR
19.02	20.0	153	101	77	50	PAW.20.FN.1902.5D	PAW.20.FT.1902.5D	PAW.20.FN.1902.5D_TR	PAW.20.FT.1902.5D_TR
19.03/19,99	20.0	153	101	77	50	PAW.20.FN.XXXX.5D	PAW.20.FT.XXXX.5D	PAW.20.FN.XXXX.5D_TR	PAW.20.FT.XXXX.5D_TR
20.00	20.0	153	101	77	50	PAW.20.FN.2000.5D	PAW.20.FT.2000.5D	PAW.20.FN.2000.5D_TR	PAW.20.FT.2000.5D_TR
20.01 **H7**	20.0	153	101	77	50	PAW.20.FN.2001.5D	PAW.20.FT.2001.5D	PAW.20.FN.2001.5D_TR	PAW.20.FT.2001.5D_TR
20.02	20.0	153	101	77	50	PAW.20.FN.2002.5D	PAW.20.FT.2002.5D	PAW.20.FN.2002.5D_TR	PAW.20.FT.2002.5D_TR

IGUTENSILI

PAW90 3xD



VHM | 3xD | Ø d1 ± 0,003 | 180°



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

d1	d2	L1	L2	L3	L4		
2,61/2.99	6.0	62	20	14	36	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
3.00	6.0	62	20	14	36	PAW.90.FN.0300.3D	PAW.90.FT.0300.3D
3.01 **H7**	6.0	62	20	14	36	PAW.90.FN.0301.3D	PAW.90.FT.0301.3D
3.02	6.0	62	20	14	36	PAW.90.FN.0302.3D	PAW.90.FT.0302.3D
3.03/3,20	6.0	62	20	14	36	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
3.21/3,99	6.0	66	24	17	36	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
4.00	6.0	66	24	17	36	PAW.90.FN.0400.3D	PAW.90.FT.0400.3D
4.01 **H7**	6.0	66	24	17	36	PAW.90.FN.0401.3D	PAW.90.FT.0401.3D
4.02	6.0	66	24	17	36	PAW.90.FN.0402.3D	PAW.90.FT.0402.3D
4.03/4,20	6.0	66	24	17	36	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
4.21/4,99	6.0	66	28	20	36	PAW.90.FN.XXXX.3D	PAW.90.FT.XXX.3D
5.00	6.0	66	28	20	36	PAW.90.FN.0500.3D	PAW.90.FT.0500.3D
5.01 **H7**	6.0	66	28	20	36	PAW.90.FN.0501.3D	PAW.90.FT.0501.3D
5.02	6.0	66	28	20	36	PAW.90.FN.0502.3D	PAW.90.FT.0502.3D
5.03/5,99	6.0	66	28	20	36	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
6.00	6.0	66	28	20	36	PAW.90.FN.0600.3D	PAW.90.FT.0600.3D
6.01 **H7**	6.0	66	28	20	36	PAW.90.FN.0601.3D	PAW.90.FT.0601.3D
6.02	6.0	66	28	20	36	PAW.90.FN.0602.3D	PAW.90.FT.0602.3D
6.03/6,99	8.0	79	34	24	36	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
7.00	8.0	79	34	24	36	PAW.90.FN.0700.3D	PAW.90.FT.0700.3D
7.01 **H7**	8.0	79	34	24	36	PAW.90.FN.0701.3D	PAW.90.FT.0701.3D
7.02	8.0	79	34	24	36	PAW.90.FN.0702.3D	PAW.90.FT.0702.3D
7.03/7,99	8.0	79	41	29	36	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
8.00	8.0	79	41	29	36	PAW.90.FN.0800.3D	PAW.90.FT.0800.3D
8.01 **H7**	8.0	79	41	29	36	PAW.90.FN.0801.3D	PAW.90.FT.0801.3D
8.02	8.0	79	41	29	36	PAW.90.FN.0802.3D	PAW.90.FT.0802.3D
8.03/8,99	10.0	89	47	35	40	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D

	R 30° - RR	R 30° - RR
	Coated DIP	Coated TNFS
	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
PAW.90.FN.0300.3D_TR	PAW.90.FT.0300.3D_TR
PAW.90.FN.0301.3D_TR	PAW.90.FT.0301.3D_TR
PAW.90.FN.0302.3D_TR	PAW.90.FT.0302.3D_TR
PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
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PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
PAW.90.FN.0500.3D_TR	PAW.90.FT.0500.3D_TR
PAW.90.FN.0501.3D_TR	PAW.90.FT.0501.3D_TR
PAW.90.FN.0502.3D_TR	PAW.90.FT.0502.3D_TR
PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
PAW.90.FN.0600.3D_TR	PAW.90.FT.0600.3D_TR
PAW.90.FN.0601.3D_TR	PAW.90.FT.0601.3D_TR
PAW.90.FN.0602.3D_TR	PAW.90.FT.0602.3D_TR
PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
PAW.90.FN.0700.3D_TR	PAW.90.FT.0700.3D_TR
PAW.90.FN.0701.3D_TR	PAW.90.FT.0701.3D_TR
PAW.90.FN.0702.3D_TR	PAW.90.FT.0702.3D_TR
PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
PAW.90.FN.0800.3D_TR	PAW.90.FT.0800.3D_TR
PAW.90.FN.0801.3D_TR	PAW.90.FT.0801.3D_TR
PAW.90.FN.0802.3D_TR	PAW.90.FT.0802.3D_TR
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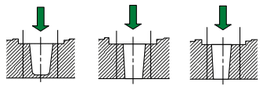
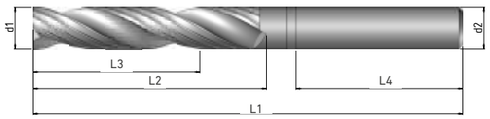
IGUTENSILI

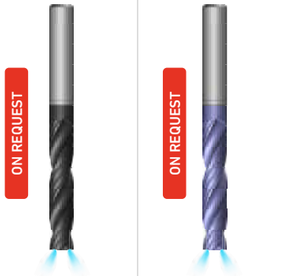
PAW

PAW90 3xD





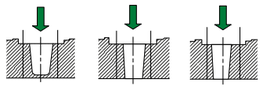
VHM | 3xD | Ø d1 ± 0,003 | 180°

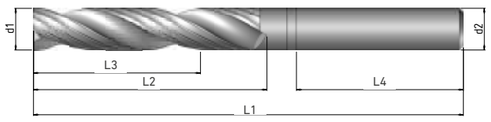


						R 30° - RR	R 30° - RR	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT						Coated DIP	Coated TNFS	Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3						N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6
d1	d2	L1	L2	L3	L4				
9.00	10.0	89	47	35	40	PAW.90.FN.0900.3D	PAW.90.FT.0900.3D	PAW.90.FN.0900.3D_TR	PAW.90.FT.0900.3D_TR
9.01 **H7**	10.0	89	47	35	40	PAW.90.FN.0901.3D	PAW.90.FT.0901.3D	PAW.90.FN.0901.3D_TR	PAW.90.FT.0901.3D_TR
9.02	10.0	89	47	35	40	PAW.90.FN.0902.3D	PAW.90.FT.0902.3D	PAW.90.FN.0902.3D_TR	PAW.90.FT.0902.3D_TR
9.03/9,99	10.0	89	47	35	40	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D	PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
10.00	10.0	89	47	35	40	PAW.90.FN.1000.3D	PAW.90.FT.1000.3D	PAW.90.FN.1000.3D_TR	PAW.90.FT.1000.3D_TR
10.01 **H7**	10.0	89	47	35	40	PAW.90.FN.1001.3D	PAW.90.FT.1001.3D	PAW.90.FN.1001.3D_TR	PAW.90.FT.1001.3D_TR
10.02	10.0	89	47	35	40	PAW.90.FN.1002.3D	PAW.90.FT.1002.3D	PAW.90.FN.1002.3D_TR	PAW.90.FT.1002.3D_TR
10.03/10,99	12.0	102	55	40	45	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D	PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
11.00	12.0	102	55	40	45	PAW.90.FN.1100.3D	PAW.90.FT.1100.3D	PAW.90.FN.1100.3D_TR	PAW.90.FT.1100.3D_TR
11.01 **H7**	12.0	102	55	40	45	PAW.90.FN.1101.3D	PAW.90.FT.1101.3D	PAW.90.FN.1101.3D_TR	PAW.90.FT.1101.3D_TR
11.02	12.0	102	55	40	45	PAW.90.FN.1102.3D	PAW.90.FT.1102.3D	PAW.90.FN.1102.3D_TR	PAW.90.FT.1102.3D_TR
11.03/11,99	12.0	102	55	40	45	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D	PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
12.00	12.0	102	55	40	45	PAW.90.FN.1200.3D	PAW.90.FT.1200.3D	PAW.90.FN.1200.3D_TR	PAW.90.FT.1200.3D_TR
12.01 **H7**	12.0	102	55	40	45	PAW.90.FN.1201.3D	PAW.90.FT.1201.3D	PAW.90.FN.1201.3D_TR	PAW.90.FT.1201.3D_TR
12.02	12.0	102	55	40	45	PAW.90.FN.1202.3D	PAW.90.FT.1202.3D	PAW.90.FN.1202.3D_TR	PAW.90.FT.1202.3D_TR
12.03/12,99	14.0	107	60	43	45	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D	PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
13.00	14.0	107	60	43	45	PAW.90.FN.1300.3D	PAW.90.FT.1300.3D	PAW.90.FN.1300.3D_TR	PAW.90.FT.1300.3D_TR
13.01 **H7**	14.0	107	60	43	45	PAW.90.FN.1301.3D	PAW.90.FT.1301.3D	PAW.90.FN.1301.3D_TR	PAW.90.FT.1301.3D_TR
13.02	14.0	107	60	43	45	PAW.90.FN.1302.3D	PAW.90.FT.1302.3D	PAW.90.FN.1302.3D_TR	PAW.90.FT.1302.3D_TR
13.03/13,99	14.0	107	60	43	45	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D	PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
14.00	14.0	107	60	43	45	PAW.90.FN.1400.3D	PAW.90.FT.1400.3D	PAW.90.FN.1400.3D_TR	PAW.90.FT.1400.3D_TR
14.01 **H7**	14.0	107	60	43	45	PAW.90.FN.1401.3D	PAW.90.FT.1401.3D	PAW.90.FN.1401.3D_TR	PAW.90.FT.1401.3D_TR
14.02	14.0	107	60	43	45	PAW.90.FN.1402.3D	PAW.90.FT.1402.3D	PAW.90.FN.1402.3D_TR	PAW.90.FT.1402.3D_TR
14.03/14,99	16.0	115	65	45	48	PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D	PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
15.00	16.0	115	65	45	48	PAW.90.FN.1500.3D	PAW.90.FT.1500.3D	PAW.90.FN.1500.3D_TR	PAW.90.FT.1500.3D_TR

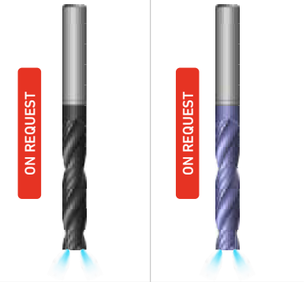
IGUTENSILI

PAW90 3xD





VHM | 3xD | Ø d1 ± 0,003 | 180°



							R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT							Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3							N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6
d1	d2	L1	L2	L3	L4			
15.01 **H7**	16.0	115	65	45	48		PAW.90.FN.1501.3D	PAW.90.FT.1501.3D
15.02	16.0	115	65	45	48		PAW.90.FN.1502.3D	PAW.90.FT.1502.3D
15.03/15,99	16.0	115	65	45	48		PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
16.00	16.0	115	65	45	48		PAW.90.FN.1600.3D	PAW.90.FT.1600.3D
16.01 **H7**	16.0	115	65	45	48		PAW.90.FN.1601.3D	PAW.90.FT.1601.3D
16.02	16.0	115	65	45	48		PAW.90.FN.1602.3D	PAW.90.FT.1602.3D
16.03/16,99	18.0	123	73	51	48		PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
17.00	18.0	123	73	51	48		PAW.90.FN.1700.3D	PAW.90.FT.1700.3D
17.01 **H7**	18.0	123	73	51	48		PAW.90.FN.1701.3D	PAW.90.FT.1701.3D
17.02	18.0	123	73	51	48		PAW.90.FN.1702.3D	PAW.90.FT.1702.3D
17.03/17,99	18.0	123	73	51	48		PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
18.00	18.0	123	73	51	48		PAW.90.FN.1800.3D	PAW.90.FT.1800.3D
18.01 **H7**	18.0	123	73	51	48		PAW.90.FN.1801.3D	PAW.90.FT.1801.3D
18.02	18.0	123	73	51	48		PAW.90.FN.1802.3D	PAW.90.FT.1802.3D
18.03/18,99	20.0	131	79	55	50		PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
19.00	20.0	131	79	55	50		PAW.90.FN.1900.3D	PAW.90.FT.1900.3D
19.01 **H7**	20.0	131	79	55	50		PAW.90.FN.1901.3D	PAW.90.FT.1901.3D
19.02	20.0	131	79	55	50		PAW.90.FN.1902.3D	PAW.90.FT.1902.3D
19.03/19,99	20.0	131	79	55	50		PAW.90.FN.XXXX.3D	PAW.90.FT.XXXX.3D
20.00	20.0	131	79	55	50		PAW.90.FN.2000.3D	PAW.90.FT.2000.3D
20.01 **H7**	20.0	131	79	55	50		PAW.90.FN.2001.3D	PAW.90.FT.2001.3D
20.02	20.0	131	79	55	50		PAW.90.FN.2002.3D	PAW.90.FT.2002.3D

R 30° - RR	R 30° - RR
Coated DIP	Coated TNFS
N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6
PAW.90.FN.1501.3D_TR	PAW.90.FT.1501.3D_TR
PAW.90.FN.1502.3D_TR	PAW.90.FT.1502.3D_TR
PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
PAW.90.FN.1600.3D_TR	PAW.90.FT.1600.3D_TR
PAW.90.FN.1601.3D_TR	PAW.90.FT.1601.3D_TR
PAW.90.FN.1602.3D_TR	PAW.90.FT.1602.3D_TR
PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
PAW.90.FN.1700.3D_TR	PAW.90.FT.1700.3D_TR
PAW.90.FN.1701.3D_TR	PAW.90.FT.1701.3D_TR
PAW.90.FN.1702.3D_TR	PAW.90.FT.1702.3D_TR
PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
PAW.90.FN.1800.3D_TR	PAW.90.FT.1800.3D_TR
PAW.90.FN.1801.3D_TR	PAW.90.FT.1801.3D_TR
PAW.90.FN.1802.3D_TR	PAW.90.FT.1802.3D_TR
PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
PAW.90.FN.1900.3D_TR	PAW.90.FT.1900.3D_TR
PAW.90.FN.1901.3D_TR	PAW.90.FT.1901.3D_TR
PAW.90.FN.1902.3D_TR	PAW.90.FT.1902.3D_TR
PAW.90.FN.XXXX.3D_TR	PAW.90.FT.XXXX.3D_TR
PAW.90.FN.2000.3D_TR	PAW.90.FT.2000.3D_TR
PAW.90.FN.2001.3D_TR	PAW.90.FT.2001.3D_TR
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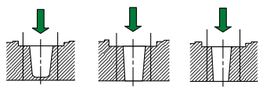
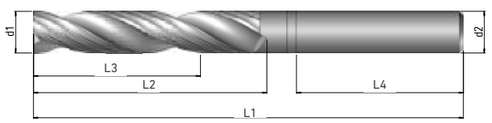
IGUTENSILI

PAW90 5xD

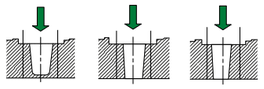


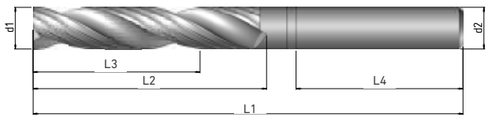


VHM | 5xD | Ø d1 ± 0,003 | 180°

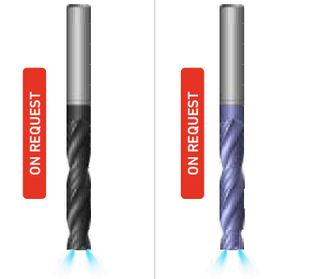
						R 30° - RR	R 30° - RR	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT						Coated DIP	Coated TNFS	Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3						N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6
d1	d2	L1	L2	L3	L4				
2,61/2.99	6.0	66	28	22	36	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D	PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
3.00	6.0	66	28	22	36	PAW.90.FN.0300.5D	PAW.90.FT.0300.5D	PAW.90.FN.0300.5D_TR	PAW.90.FT.0300.5D_TR
3.01 **H7**	6.0	66	28	22	36	PAW.90.FN.0301.5D	PAW.90.FT.0301.5D	PAW.90.FN.0301.5D_TR	PAW.90.FT.0301.5D_TR
3.02	6.0	66	28	22	36	PAW.90.FN.0302.5D	PAW.90.FT.0302.5D	PAW.90.FN.0302.5D_TR	PAW.90.FT.0302.5D_TR
3.03/3,20	6.0	66	28	22	36	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D	PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
3,21/3.99	6.0	74	36	29	36	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D	PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
4.00	6.0	74	36	29	36	PAW.90.FN.0400.5D	PAW.90.FT.0400.5D	PAW.90.FN.0400.5D_TR	PAW.90.FT.0400.5D_TR
4.01 **H7**	6.0	74	36	29	36	PAW.90.FN.0401.5D	PAW.90.FT.0401.5D	PAW.90.FN.0401.5D_TR	PAW.90.FT.0401.5D_TR
4.02	6.0	74	36	29	36	PAW.90.FN.0402.5D	PAW.90.FT.0402.5D	PAW.90.FN.0402.5D_TR	PAW.90.FT.0402.5D_TR
4,03/4,20	6.0	74	36	29	36	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D	PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
4.21/4,99	6.0	82	44	35	36	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D	PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
5.00	6.0	82	44	35	36	PAW.90.FN.0500.5D	PAW.90.FT.0500.5D	PAW.90.FN.0500.5D_TR	PAW.90.FT.0500.5D_TR
5.01 **H7**	6.0	82	44	35	36	PAW.90.FN.0501.5D	PAW.90.FT.0501.5D	PAW.90.FN.0501.5D_TR	PAW.90.FT.0501.5D_TR
5.02	6.0	82	44	35	36	PAW.90.FN.0502.5D	PAW.90.FT.0502.5D	PAW.90.FN.0502.5D_TR	PAW.90.FT.0502.5D_TR
5.03/5,99	6.0	82	44	35	36	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D	PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
6.00	6.0	82	44	35	36	PAW.90.FN.0600.5D	PAW.90.FT.0600.5D	PAW.90.FN.0600.5D_TR	PAW.90.FT.0600.5D_TR
6.01 **H7**	6.0	82	44	35	36	PAW.90.FN.0601.5D	PAW.90.FT.0601.5D	PAW.90.FN.0601.5D_TR	PAW.90.FT.0601.5D_TR
6.02	6.0	82	44	35	36	PAW.90.FN.0602.5D	PAW.90.FT.0602.5D	PAW.90.FN.0602.5D_TR	PAW.90.FT.0602.5D_TR
6,03/6,99	8.0	91	53	43	36	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D	PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
7.00	8.0	91	53	43	36	PAW.90.FN.0700.5D	PAW.90.FT.0700.5D	PAW.90.FN.0700.5D_TR	PAW.90.FT.0700.5D_TR
7.01 **H7**	8.0	91	53	43	36	PAW.90.FN.0701.5D	PAW.90.FT.0701.5D	PAW.90.FN.0701.5D_TR	PAW.90.FT.0701.5D_TR
7.02	8.0	91	53	43	36	PAW.90.FN.0702.5D	PAW.90.FT.0702.5D	PAW.90.FN.0702.5D_TR	PAW.90.FT.0702.5D_TR
7.03/7,99	8.0	91	53	43	36	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D	PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
8.00	8.0	91	53	43	36	PAW.90.FN.0800.5D	PAW.90.FT.0800.5D	PAW.90.FN.0800.5D_TR	PAW.90.FT.0800.5D_TR
8.01 **H7**	8.0	91	53	43	36	PAW.90.FN.0801.5D	PAW.90.FT.0801.5D	PAW.90.FN.0801.5D_TR	PAW.90.FT.0801.5D_TR
8.02	8.0	91	53	43	36	PAW.90.FN.0802.5D	PAW.90.FT.0802.5D	PAW.90.FN.0802.5D_TR	PAW.90.FT.0802.5D_TR
8.03/8,99	10.0	103	61	49	40	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D	PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR

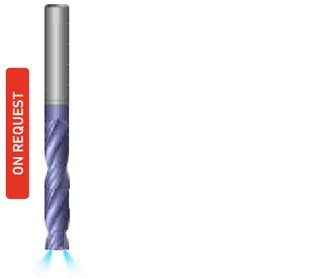
PAW90 5xD





VHM | 5xD | Ø d1 ± 0,003 | 180°





	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

d1	d2	L1	L2	L3	L4		
9.00	10.0	103	61	49	40	PAW.90.FN.0900.5D	PAW.90.FT.0900.5D
9.01 **H7**	10.0	103	61	49	40	PAW.90.FN.0901.5D	PAW.90.FT.0901.5D
9.02	10.0	103	61	49	40	PAW.90.FN.0902.5D	PAW.90.FT.0902.5D
9.03/9,99	10.0	103	61	49	40	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D
10.00	10.0	103	61	49	40	PAW.90.FN.1000.5D	PAW.90.FT.1000.5D
10.01 **H7**	10.0	103	61	49	40	PAW.90.FN.1001.5D	PAW.90.FT.1001.5D
10.02	10.0	103	61	49	40	PAW.90.FN.1002.5D	PAW.90.FT.1002.5D
10.03/10,99	12.0	118	71	56	45	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D
11.00	12.0	118	71	56	45	PAW.90.FN.1100.5D	PAW.90.FT.1100.5D
11.01 **H7**	12.0	118	71	56	45	PAW.90.FN.1101.5D	PAW.90.FT.1101.5D
11.02	12.0	118	71	56	45	PAW.90.FN.1102.5D	PAW.90.FT.1102.5D
11.03/11,99	12.0	118	71	56	45	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D
12.00	12.0	118	71	56	45	PAW.90.FN.1200.5D	PAW.90.FT.1200.5D
12.01 **H7**	12.0	118	71	56	45	PAW.90.FN.1201.5D	PAW.90.FT.1201.5D
12.02	12.0	118	71	56	45	PAW.90.FN.1202.5D	PAW.90.FT.1202.5D
12.03/12,99	14.0	124	77	60	45	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D
13.00	14.0	124	77	60	45	PAW.90.FN.1300.5D	PAW.90.FT.1300.5D
13.01 **H7**	14.0	124	77	60	45	PAW.90.FN.1301.5D	PAW.90.FT.1301.5D
13.02	14.0	124	77	60	45	PAW.90.FN.1302.5D	PAW.90.FT.1302.5D
13.03/13,99	14.0	124	77	60	45	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D
14.00	14.0	124	77	60	45	PAW.90.FN.1400.5D	PAW.90.FT.1400.5D
14.01 **H7**	14.0	124	77	60	45	PAW.90.FN.1401.5D	PAW.90.FT.1401.5D
14.02	14.0	124	77	60	45	PAW.90.FN.1402.5D	PAW.90.FT.1402.5D
14.03/14,99	16.0	133	83	63	48	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D
15.00	16.0	133	83	63	48	PAW.90.FN.1500.5D	PAW.90.FT.1500.5D

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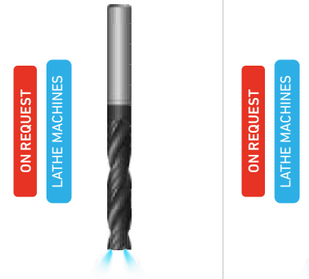

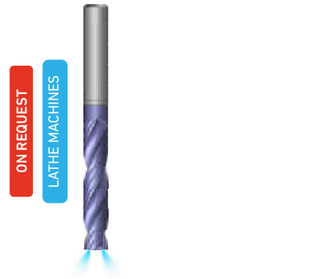

	R 30° - RR	R 30° - RR
	Coated DIP	Coated TNFS
	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

PAW.90.FN.0900.5D_TR	PAW.90.FT.0900.5D_TR
PAW.90.FN.0901.5D_TR	PAW.90.FT.0901.5D_TR
PAW.90.FN.0902.5D_TR	PAW.90.FT.0902.5D_TR
PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
PAW.90.FN.1000.5D_TR	PAW.90.FT.1000.5D_TR
PAW.90.FN.1001.5D_TR	PAW.90.FT.1001.5D_TR
PAW.90.FN.1002.5D_TR	PAW.90.FT.1002.5D_TR
PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
PAW.90.FN.1100.5D_TR	PAW.90.FT.1100.5D_TR
PAW.90.FN.1101.5D_TR	PAW.90.FT.1101.5D_TR
PAW.90.FN.1102.5D_TR	PAW.90.FT.1102.5D_TR
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PAW.90.FN.1201.5D_TR	PAW.90.FT.1201.5D_TR
PAW.90.FN.1202.5D_TR	PAW.90.FT.1202.5D_TR
PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
PAW.90.FN.1300.5D_TR	PAW.90.FT.1300.5D_TR
PAW.90.FN.1301.5D_TR	PAW.90.FT.1301.5D_TR
PAW.90.FN.1302.5D_TR	PAW.90.FT.1302.5D_TR
PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
PAW.90.FN.1400.5D_TR	PAW.90.FT.1400.5D_TR
PAW.90.FN.1401.5D_TR	PAW.90.FT.1401.5D_TR
PAW.90.FN.1402.5D_TR	PAW.90.FT.1402.5D_TR
PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
PAW.90.FN.1500.5D_TR	PAW.90.FT.1500.5D_TR

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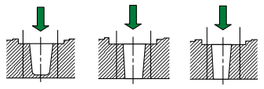
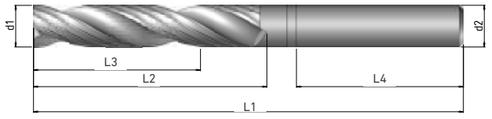
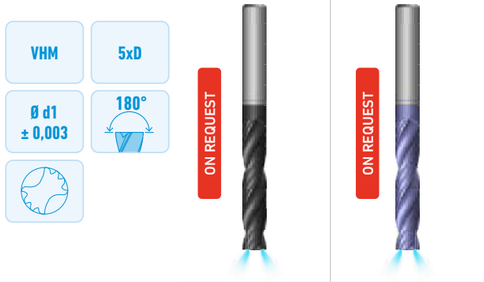
PAW90 5xD



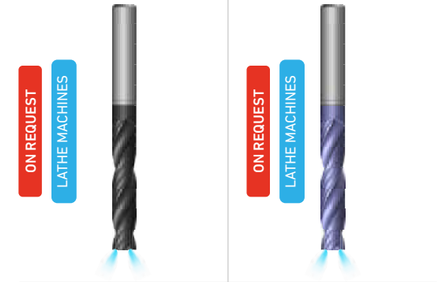


VHM | 5xD | Ø d1 ± 0,003 | 180°



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated DIP	Coated TNFS
MATERIALI LAVORABILI WORKING MATERIALS page 2B • 3	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

d1	d2	L1	L2	L3	L4		
15.01 **H7**	16.0	133	83	63	48	PAW.90.FN.1501.5D	PAW.90.FT.1501.5D
15.02	16.0	133	83	63	48	PAW.90.FN.1502.5D	PAW.90.FT.1502.5D
15.03/15,99	16.0	133	83	63	48	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D
16.00	16.0	133	83	63	48	PAW.90.FN.1600.5D	PAW.90.FT.1600.5D
16.01 **H7**	16.0	133	83	63	48	PAW.90.FN.1601.5D	PAW.90.FT.1601.5D
16.02	16.0	133	83	63	48	PAW.90.FN.1602.5D	PAW.90.FT.1602.5D
16.03/16,99	18.0	143	93	71	48	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D
17.00	18.0	143	93	71	48	PAW.90.FN.1700.5D	PAW.90.FT.1700.5D
17.01 **H7**	18.0	143	93	71	48	PAW.90.FN.1701.5D	PAW.90.FT.1701.5D
17.02	18.0	143	93	71	48	PAW.90.FN.1702.5D	PAW.90.FT.1702.5D
17.03/17,99	18.0	143	93	71	48	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D
18.00	18.0	143	93	71	48	PAW.90.FN.1800.5D	PAW.90.FT.1800.5D
18.01 **H7**	18.0	143	93	71	48	PAW.90.FN.1801.5D	PAW.90.FT.1801.5D
18.02	18.0	143	93	71	48	PAW.90.FN.1802.5D	PAW.90.FT.1802.5D
18.03/18,99	20.0	153	101	77	50	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D
19.00	20.0	153	101	77	50	PAW.90.FN.1900.5D	PAW.90.FT.1900.5D
19.01 **H7**	20.0	153	101	77	50	PAW.90.FN.1901.5D	PAW.90.FT.1901.5D
19.02	20.0	153	101	77	50	PAW.90.FN.1902.5D	PAW.90.FT.1902.5D
19.03/19,99	20.0	153	101	77	50	PAW.90.FN.XXXX.5D	PAW.90.FT.XXXX.5D
20.00	20.0	153	101	77	50	PAW.90.FN.2000.5D	PAW.90.FT.2000.5D
20.01 **H7**	20.0	153	101	77	50	PAW.90.FN.2001.5D	PAW.90.FT.2001.5D
20.02	20.0	153	101	77	50	PAW.90.FN.2002.5D	PAW.90.FT.2002.5D



	R 30° - RR	R 30° - RR
	Coated DIP	Coated TNFS
	N1.1- N1.6 N2.1- N2.8 N3.1 - N3.2 N4.1 - N4.4 N5.1 - N5.3	P1.1- P5.1 M1.1- M4.1 K1.1- K4.2 S1.1- S2.6

PAW.90.FN.1501.5D_TR	PAW.90.FT.1501.5D_TR
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PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
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PAW.90.FN.1701.5D_TR	PAW.90.FT.1701.5D_TR
PAW.90.FN.1702.5D_TR	PAW.90.FT.1702.5D_TR
PAW.90.FN.XXXX.5D_TR	PAW.90.FT.XXXX.5D_TR
PAW.90.FN.1800.5D_TR	PAW.90.FT.1800.5D_TR
PAW.90.FN.1801.5D_TR	PAW.90.FT.1801.5D_TR
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PAW.90.FN.2000.5D_TR	PAW.90.FT.2000.5D_TR
PAW.90.FN.2001.5D_TR	PAW.90.FT.2001.5D_TR
PAW.90.FN.2002.5D_TR	PAW.90.FT.2002.5D_TR

PAW

IGUTENSILI

PAW

REA

TECNOLOGIA DI ALESATURA AD ALTA VELOCITÀ
ALESATORI

HIGH SPEED REAMING TECHNOLOGY
REAMERS

Con gli alesatori ad alta velocità REA di IGUTENSILI le lavorazioni di foratura vengono eseguite rapidamente e in modo produttivo senza rinunciare alla qualità della lavorazione.
Questi utensili sono impiegabili su di una vastissima gamma di macchinari a controllo numerico e/o tradizionali come CENTRI di LAVORO, CENTRI di TORNITURA, TRANSFER ed anche su LINEE DI PRODUZIONE AVANZATA ove è possibile abbattere sia i tempi di lavorazione che di attrezzaggio, in alcuni casi è stato possibile eliminare intere stazioni di lavoro.

L'utensile REA-Alesatore è une conseguenza di questo impegno nel realizzare alesature in modo VELOCE e con la massima EFFICACIA.
Nel REA-Alesatore la specifica conformazione delle geometrie utensile permette di aggredire il materiale con avanzamenti impensabili per utensili di alesatura standard, REA è dotato di REFRIGERAZIONE forzata INTERNA RADIALE, garantendo in questo modo un'ottima lubrificazione nel punto di taglio ed una eccellente evacuazione del truciolo.

Le stesse geometrie appositamente studiate assicurano rugosità ridotte, massima precisione dimensionale e circolarità, riducendo al minimo la produzione di bave eliminando così successive operazioni di pulizia / sbavatura.

Gli utensili REA-Alesatori, sono rivestiti TNFS, nonostante la complessa tecnologia costruttiva, permettono le operazioni di affilatura e rivestimento, donando all'utensile stesso nuova vita con rendimenti eccellenti.
Da non sottovalutare la possibilità di produrre Alesatori REA con diametri speciali.

With REA high speed reamers by IGUTENSILI, drilling operations are carried out quickly and productively without sacrificing the quality of processing.
These tools can be used on a very wide range of CNC machines and/or traditional machinery such as WORK CENTRES, TURNING CENTRES, TRANSFER and even ADVANCED PRODUCTION LINES where it is possible to reduce both processing and tooling times, in some cases it was possible to eliminate entire workstations.

The REA-Reamer tool is a consequence of this commitment in achieving reaming bores QUICKLY and with the maximum EFFECTIVENESS.
In the REA-Reamer the specific conformation of the tool geometries makes possible to attack the material with unthinkable advances for standard reaming tools, REA is equipped with RADIAL INTERNAL forced COOLANT, thus ensuring excellent lubrication at the cutting point and an excellent evacuation of the chip.

The same specially designed geometries ensure reduced roughness, maximum dimensional accuracy and circularity, minimising the production of burrs thus eliminating subsequent cleaning/deburring operations.

The REA-Reaming tools, are TNFS coated, despite the complex manufacturing technology, allow the sharpening and coating operations, giving the tool a new life with excellent yields.
Not to underestimate the possibility of producing REA reamers with special diameters.

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

V = Velocità (m/min)
F = Avanzamento (mm)

V = Speed (m/min)
F = Feed (mm)

REA.30.TG

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

3C 7

	Vc Coated TNFS	F ø d1 ≤ 5 mm Sovrametallo 0,1 Oversize 0,1	F ø d5,1 ≤ 8 mm Sovrametallo 0,15 Oversize 0,15	F ø d8,1 ≤ 10 mm Sovrametallo 0,2 Oversize 0,2	F ø d10,1 ≤ 12 mm Sovrametallo 0,2 Oversize 0,2	
P						P
	120 - 250	0,3 - 0,5	0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	
	120 - 250	0,3 - 0,5	0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	2.1
	120 - 250	0,3 - 0,5	0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	3.1
	60 - 120	0,3 - 0,5	0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	4.1
	80 - 160	0,3 - 0,5	0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	5.1
M						M
						1.1
						2.1
						3.1
						4.1
	80 - 160		0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	1.1
	80 - 160		0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	1.2
	120 - 250		0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	2.1
	120 - 250		0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	2.2
	60 - 120		0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	3.1
	80 - 160		0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	3.2
	80 - 160		0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	4.1
	60 - 120		0,4 - 1,0	0,6 - 1,4	0,8 - 2,2	4.2
N						N
						1.1
						1.2
						1.3
						1.4
						1.5
						1.6
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
						2.7
						3.1
						3.2
						4.1
						4.2
						4.3
						4.4
						5.1
						5.2
						5.3
S						S
						1.1
						1.2
						1.3
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
H						H
						1.1
						1.2
						1.3
						1.4
						1.5

L'adduzione interna di refrigerante e la spaziatura fortemente disuguale dei taglienti sono caratteristiche che garantiscono tolleranze di foro molto strette e finiture superficiali di alta qualità.

VANTAGGI

Alta produttività grazie ad elevati parametri di taglio
Costanza e produttività che consentono di ridurre tempi e costi
Eccellente finitura superficiale del componente
Concentricità uniforme, per la precisione dimensionale ed una lunga durata del tagliente
Elevata stabilità grazie al corpo in metallo duro
Adduzione interna di refrigerante, per ottimizzare l'evacuazione del truciolo e ridurre l'usura

CARATTERISTICHE

Carburo a micrograna di durezza e tenacità elevate
L'adduzione interna di refrigerante consente di applicare il refrigerante direttamente sulla zona di taglio, favorendo una superiore durata del tagliente ed una buona evacuazione del truciolo
Stelo DIN 65535 HA con tolleranza H6 e per bloccaggio diretto in mandrini idraulici, a calettamento termico e ad alta precisione
Geometria delle scanalature con spaziatura fortemente disuguale

APPLICAZIONE

Per tutti i segmenti industriali (lavorazione generale, stampi e matrici, industria automobilistica, generazione di energia ed elettricità, ecc.)

VANTAGGI PER L'UTILIZZATORE

Per elevate prestazioni nell'alesatura di precisione su centri di lavoro
Elevati parametri di taglio significano elevata produttività e riduzione dei tempi e costi di produzione.
Eccellente finitura superficiale dei componenti realizzati.
Uniforme concentricità degli alesatori REA, lunga vita dello stesso dimensioni precise.
Per alesatura su una vasta gamma di materiali, anche con durezze sino a 63HRC. Gli alesatori REA sono specificatamente studiati per lavorazioni su Acciaio Inox.

COMPARAZIONE TRA ALESATORI A PASSO DIFFERENZIATO E ALESATORI REA

Le gole degli alesatori REA ogni tagliente non ha la stessa divisione.

The internal coolant supply and the largely unequal spacing of the cutting edges are features that ensure very narrow hole tolerances and highest quality surface finishes.

FEATURES

High productivity thanks to high cutting parameters
Consistency and productivity that allow reducing times and costs
Excellent surface finish of the component
Uniform concentricity for dimensional accuracy and cutting edge long life
High stability thanks to the hard metal body
Internal coolant supply for optimising the evacuation of shavings and reduce wear

ADVANTAGES

High hardness and toughness micro-grain carbide
The internal coolant supply allows to apply the coolant directly onto the cutting area, favouring a higher cutting edge life and a good evacuation of the shavings.
DIN 65535 HA stem with H6 tolerance and for direct clamping in hydraulic chucks, thermal joining and high precision.
Geometry of the grooves with highly unequal spacing

APPLICATION

Suitable for all industrial segments (general machining, moulds and dies, automotive, power generation and electricity, etc.)

ADVANTAGES FOR THE USER

For high performance in machining centres precision boring
High cutting parameters mean high productivity and reduction of production time and costs.
Excellent surface finish of the produced components
Uniform concentricity of REA reamers, long life to the latter with exact dimensions
For boring on a wide range of materials, even with hardness up to 63HRC.
The REA reamers are specifically designed for machining on stainless steel.

COMPARISON BETWEEN DIFFERENTIATED PITCH REAMERS AND THE REA REAMERS

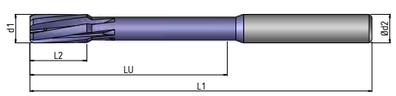
The REA reamer grooves of each cutting edge do not have the same division.

REA30TG

VHM | 3xD | Ø d1 +0,004 -0,000 | DIN 6535 HA

L 10° - RR

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Coated TNFS

MATERIALI LAVORABILI
WORKING MATERIALS
page 3C • 3
P1.1-P5.1
M1.1-M4.1
K1.1-K4.2

d1	d2	L1	L2	LU	Z	
3.7-4.00	6	75	12	32	4	REA.30.TG.XXXX
4.01 **H7**	6	75	12	32	4	REA.30.TG.0401
4.02-4.05	6	75	12	32	4	REA.30.TG.XXXX
4.06-5.00	6	75	12	39	4	REA.30.TG.XXXX
5.01 **H7**	6	75	12	39	4	REA.30.TG.0501
5.02-6.00	6	75	12	39	4	REA.30.TG.XXXX
6.01 **H7**	6	75	12	39	4	REA.30.TG.0601
6.02-6.05	6	75	12	39	4	REA.30.TG.XXXX
6.06-7.00	8	100	16	64	6	REA.30.TG.XXXX
7.01 **H7**	8	100	16	64	6	REA.30.TG.0701
7.02-8.00	8	100	16	64	6	REA.30.TG.XXXX
8.01 **H7**	8	100	16	64	6	REA.30.TG.0801
8.02-8.05	8	100	16	64	6	REA.30.TG.XXXX
8.06-9.00	10	120	16	68	6	REA.30.TG.XXXX
9.01 **H7**	10	120	16	68	6	REA 30.TG.0901
9.02-10.00	10	120	16	68	6	REA.30.TG.XXXX
10.01 **H7**	10	120	16	68	6	REA.30.TG.1001
10.02-10.05	10	120	16	68	6	REA.30.TG.XXXX
10.06-11.00	12	120	20	75	6	REA.30.TG.XXXX
11.01 **H7**	12	120	20	75	6	REA.30.TG.1101
11.02-12.00	12	120	20	75	6	REA.30.TG.XXXX
12.01 **H7**	12	120	20	75	6	REA.30.TG.1201
12.02-12.05	12	120	20	75	6	REA.30.TG.XXXX
12.06-13.00	14	130	20	85	6	REA.30.TG.XXXX
13.01 **H7**	14	130	20	85	6	REA.30.TG.1301
13.02-14.00	14	130	20	85	6	REA.30.TG.XXXX
14.01 **H7**	14	130	20	85	6	REA.30.TG.1401
14.02-14.05	14	130	20	85	6	REA.30.TG.XXXX
14.06-15.00	16	150	20	102	6	REA.30.TG.XXXX
15.01 **H7**	16	150	20	102	6	REA.30.TG.1501
15.02-16.00	16	150	20	102	6	REA.30.TG.XXXX
16.01 **H7**	16	150	20	102	6	REA.30.TG.1601
16.02-16.05	16	150	20	102	6	REA.30.TG.XXXX
16.06-17.00	18	150	20	102	6	REA.30.TG.XXXX
17.01 **H7**	18	150	20	102	6	REA.30.TG.1701
17.02-18.00	18	150	20	102	6	REA.30.TG.XXXX
18.01 **H7**	18	150	20	102	6	REA.30.TG.1801
18.02-18.05	18	150	20	102	6	REA.30.TG.XXXX
18.06-19.00	20	150	20	100	6	REA.30.TG.XXXX
19.01 **H7**	20	150	20	100	6	REA.30.TG.1901
19.02-20.00	20	150	20	100	6	REA 30.TG.XXXX
20.01 **H7**	20	150	20	100	6	REA.30.TG.2001
20.02-20.05	20	150	20	100	6	REA.30.TG.XXXX

IGUTENSILI

REA

FIL

TECNOLOGIA DI FILETTATURA
FRESE PER FILETTARE

THREADING TECHNOLOGY
THREADING MILLS

Con le frese per filettare FIL di IGUTENSILI le lavorazioni di filettatura vengono eseguite rapidamente e in modo produttivo senza rinunciare alla qualità della lavorazione. Questi utensili sono impiegabili su di una vastissima gamma di macchinari a controllo numerico come CENTRI di LAVORO, CENTRI di TORNITURA, TRANSFER ed anche su LINEE DI PRODUZIONE AVANZATA ove è possibile abbattere sia i tempi di lavorazione che di attrezzaggio, gli utensili FIL possono essere utilizzati su macchinari con almeno 3 assi in movimento. L'utensile FIL-Frese per filettare è une conseguenza di questo impegno nel realizzare filettature in modo VELOCE e con la massima EFFICACIA.

Con la sintesi di più strumenti e, di conseguenza, di più lavorazioni accorpate con unico utensile, si offrono ampi margini di risparmio, tempi macchina ridotti, gestione utensileria semplificata. Nel FIL sono presenti diverse tipologie di utensile dalla fresa per la sola filettatura fino ad utensile che FORA-SMUSSA-FILETTA in unica soluzione, anche su materiali con durezze pari a 65 HRC, la gamma di utensili FIL è dotata di REFRIGERAZIONE forzata INTERNA sia alla TESTA che RADIALE, garantendo in questo modo un'ottima lubrificazione nel punto di taglio ed una eccellente evacuazione del truciolo. Esse assicurano rugosità ridotte, massima precisione dimensionale, riducendo al minimo la produzione di bave eliminando così successive operazioni di pulizia / sbavatura.

Gli utensili FIL-Frese per FIlettare, sono rivestiti TNF o LTM in funzione del materiale da lavorare, raggiungono alti valori di taglio e lunga durata, garantendo sempre la massima stabilità del ciclo produttivo, inoltre i FIL, nonostante la complessa tecnologia costruttiva, permettono le operazioni di affilatura e rivestimento, donando all'utensile stesso nuova vita con rendimenti eccellenti.
Da non sottovalutare la possibilità di produrre Frese per Filettare FIL speciali a disegno, IGUTENSILI è in grado di sviluppare un'infinita gamma di filettature per le più svariate applicazioni, di seguito alcuni esempi, MJ DIN ISO 5855, NPSFR ANSI B1.20.3, W keg DIN 477, W zyl DIN 477, EG M DIN 8140-2, LK-M, Tr DIN 103, Tr-F DIN 103, Rd DIN 405...

With the FIL threading mills by IGUTENSILI the threading operations are performed quickly and productively without sacrificing the quality of the processing.
These tools can be used on a very wide range of CNC machines such as WORK CENTRES, TURNING CENTRES, TRANSFER and also on ADVANCED PRODUCTION LINES where it is possible to reduce both processing and tooling time; the FIL tools can be used on machines with at least 3 moving axes. The FIL-Threading mill is a consequence of this commitment in making threads in a FAST way and with the maximum EFFECTIVENESS.

The union of the two tools and, consequently, two machining processes merged into a single tool, offer significant savings, reduced machine times and simplified tool management. The FIL range includes different types of tools from the mill for threading only up to the tool that DRILL-TAPER-THREAD in a single solution, even on materials with hardness equal to 65 HRC, the FIL range of tools is equipped with INTERNAL HEAD and RADIAL forced COOLANT, guaranteeing in this way an excellent lubrication at the cutting point and an excellent chip evacuation.
These tools ensure reduced roughness, maximum dimensional accuracy, reducing burr production to a minimum, thus eliminating subsequent cleaning/deburring operations.

The FIL-Threading tools are TNF or LTM coated according to the material to be processed, reaching high cutting values and long life, always guaranteeing the maximum stability of the production cycle; also, FIL, despite the complex manufacturing technology, allow sharpening and coating operations, giving the tool a new lease of life with excellent yields.
Not to underestimate the possibility of producing special FIL Threading Mills with special designs, IGUTENSILI is able to develop an infinite range of threads for the most varied applications, below some examples, MJ DIN ISO 5855, NPSFR ANSI B1.20.3, W keg DIN 477, W zyl DIN 477, EG M DIN 8140-2, LK-M, Tr DIN 103, Tr-F DIN 103, Rd DIN 405...

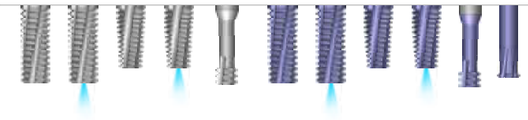
I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

	Materiale	Material		Material examples	Mat. numbers
P	Acciai	Steel materials			
1.1	Acciai estrusi a freddo	Cold-extrusion steel	≤ 600 N/mm2	Cq15	1.1132
1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
	Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
	Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
	Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
	Acciai da cementazione	Cementation steel		20MoCr3	1.7320
3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
	Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
	Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
	Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
	Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
	Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M	Acciai inossidabili	Stainless steel materials			
1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K	Ghise	Cast materials			
1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
3.2			400-500 N/mm2	GJV 450	
4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N	Materiali non ferrosi	Non ferrous materials			
	Leghe di alluminio	Aluminium alloys			
1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
	Leghe di rame	Copper alloys			
2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
2.8			≤ 1400 N/mm2	(AMPCO® 45)	
	Leghe di magnesio	Magnesium alloys			
3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
	Materie plastiche	Synthetics			
4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
	Materiali speciali	Special materials			
5.1	Grafite	Graphite		C 8000	
5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S	Materiali speciali	Special materials			
	Leghe di titanio	Titanium alloys			
1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
	Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
2.3			≤ 1600 N/mm2	Inconel 718	2.4668
2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
2.5			≤ 1600 N/mm2	Haynes 25	2.4964
2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H	Materiali duri	Hard materials			
1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
1.2			50 - 55 HRC	Hardox 550	
1.3			55 - 60 HRC	Armox 600T	
1.4			60 - 63 HRC	Ferro-Titanit	
1.5			63 - 66 HRC	HSSE	



M	4D 17, 4D 19, 4D 65, 4D 67	4D 17, 4D 19, 4D 65, 4D 67, 4D 73
MF	4D 17, 4D 19	4D 17, 4D 19
UNC	4D 21, 4D 23, 4D 69, 4D 71	4D 21, 4D 23, 4D 69, 4D 71
UNF	4D 21, 4D 23, 4D 69, 4D 71	4D 21, 4D 23, 4D 69, 4D 71
G, RP, W	4D 25, 4D 27	4D 25, 4D 27
BSW,BSF	4D 29	4D 29
NPT	4D 51, 4D 53	4D 51, 4D 53
NPTF	4D 55, 4D 57	4D 55, 4D 57
BSPT	4D 59, 4D 61	4D 59, 4D 61
MJ	4D 75, 4D 77, 4D 83, 4D 85	4D 75, 4D 77, 4D 83, 4D 85
UNJ	4D 79, 4D 81, 4D 87, 4D 89	4D 79, 4D 81, 4D 87, 4D 89
M-EXT, MJ-EXT	4D 91, 4D 93, 4D 95, 4D 97, 4D 99, 4D 101	4D 91, 4D 93, 4D 95, 4D 97, 4D 99, 4D 101
PG	4D 117	4D 117
EGM	4D 103, 4D 105	4D 103, 4D 105

Vc Uncoated	Vc Coated TNF	f z ø d1 ≤ 4 mm	f z ø d1 ≤ 8 mm	f z ø d1 > 8 mm		
						P
40 - 100	80 - 250	0,005 - 0,04	0,04 - 0,07	0,05 - 0,15		1.1
30 - 80	60 - 150	0,005 - 0,04	0,04 - 0,07	0,05 - 0,15		2.1
20 - 60	40 - 120	0,005 - 0,03	0,03 - 0,05	0,04 - 0,12		3.1
20 - 60	40 - 120	0,003 - 0,02	0,02 - 0,05	0,04 - 0,12		4.1
20 - 60	40 - 120	0,003 - 0,02	0,02 - 0,05	0,04 - ,12		5.1
						M
	40 - 120	0,003 - 0,03	0,03 - 0,05	0,04 - 0,12		1.1
	40 - 120	0,003 - 0,03	0,03 - 0,05	0,04 - 0,12		2.1
	30 - 80	0,003 - 0,02	0,02 - 0,05	0,04 - 0,10		3.1
	30 - 60	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		4.1
						K
80 - 140	100 - 200		0,04 - 0,07	0,05 - 0,15		1.1
80 - 140	100 - 200		0,04 - 0,07	0,05 - 0,15		1.2
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		2.1
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		2.2
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		3.1
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		3.2
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		4.1
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		4.2
						N
100 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.1
100 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.2
100 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.3
150 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.4
150 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.5
	100 - 200	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.6
100 - 250	150 - 400	0,008 - 0,05	0,05 - 0,08	0,07 - 0,20		2.1
100 - 250	150 - 400	0,008 - 0,05	0,05 - 0,08	0,07 - 0,20		2.2
100 - 250	150 - 400	0,008 - 0,05	0,05 - 0,08	0,07 - 0,20		2.3
60 - 150	100 - 250	0,008 - 0,04	0,04 - 0,07	0,05 - 0,15		2.4
60 -150	100 - 250	0,008 - 0,04	0,04 - 0,07	0,05 - 0,15		2.5
80 - 200	100 - 250	0,008 - 0,04	0,04 - 0,07	0,05 - 0,15		2.6
						2.7
	40 - 80	0,003 - 0,02	0,02 - 0,04	0,04 - 0,15		
150 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		3.1
150 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		3.2
60 - 150		0,01 - 0,05	0,05 - 0,10	0,08 - 0,25		4.1
60 - 150		0,01 - 0,05	0,05 - 0,10	0,08 - 0,25		4.2
	80 - 120	0,01 - 0,05	0,05 - 0,10	0,08 - 0,25		4.3
	80 - 120	0,01 - 0,05	0,05 - 0,10	0,08 - 0,25		4.4
	100 - 200		0,04 - 0,07	0,08 - 0,25		5.1
15 - 40	30 - 60		0,02 - 0,04	0,08 - 0,25		5.2
				0,08 - 0,25		5.3
						S
15 - 50	30 - 80	0,003 - 0,03	0,03 - 0,05	0,04 - 0,10		1.1
15 - 50	30 - 80	0,003 - 0,03	0,03 - 0,05	0,04 - 0,10		1.2
15 - 40	30 - 60	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		1.3
	30 - 60	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		2.1
	30 - 60	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		2.2
						2.3
	30 - 40	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		2.4
						2.5
	30 - 40	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		2.6
						H
	30 - 60		0,015 - 0,03	0,03 - 0,08		1.1
	30 - 60		0,015 - 0,03	0,03 - 0,08		1.2
						1.3
						1.4
						1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min) — Vc = Cutting speed (m/min)
Fz = Avanzamento per dente (mm) — Fz = Feed for tooth (mm)
Fb = Avanzamento di foratura (mm/giro) — Fb = Drilling feed (mm/U)

	Materiale	Material		Material examples	Mat. numbers
P	**Acciai**	**Steel materials**			
1.1	Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
	Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
2.1	Acciai da costruzione	Costruction steels	≤ 800 N/mm2	E360 (St70-2)	1.0070
	Acciai da cementazione	Cementation steel		16MnCr5	1.7131
	Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
3.1	Acciai da cementazione	Cementation steel	≤ 1000 N/mm2	20MoCr3	1.7320
	Acciai da bonifica	Heat-treatable steels		42CrMo4	1.7225
	Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
4.1	Acciai da bonifica	Heat-treatable steels	≤ 1200 N/mm2	50CrMo4	1.7228
	Acciai per lavorazioni a freddo	Cold work steels		X45NiCrMo4	1.2767
	Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
5.1	Acciai fortemente legati	High-alloyed steels	≤ 1400 N/mm2	X38CrMoV5-3	1.2367
	Acciai per lavorazioni a freddo	Cold work steels		X100CrMoV8-1-1	1.2990
	Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M	**Acciai inossidabili**	**Stainless steel materials**			
1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K	**Ghise**	**Cast materials**			
1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
3.2			400-500 N/mm2	GJV 450	
4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N	**Materiali non ferrosi**	**Non ferrous materials**			
	Leghe di alluminio	**Aluminium alloys**			
1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
	Leghe di rame	**Copper alloys**			
2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
2.8			≤ 1400 N/mm2	(AMPCO® 45)	
	Leghe di magnesio	**Magnesium alloys**			
3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
	Materie plastiche	**Synthetics**			
4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
	Materiali speciali	**Special materials**			
5.1	Grafite	Graphite		C 8000	
5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S	**Materiali speciali**	**Special materials**			
	Leghe di titanio	**Titanium alloys**			
1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
	Leghe di nichel, cobalto e ferro	**Nickel alloys, cobalt alloys and iron alloys**			
2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
2.3			≤ 1600 N/mm2	Inconel 718	2.4668
2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
2.5			≤ 1600 N/mm2	Haynes 25	2.4964
2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H	**Materiali duri**	**Hard materials**			
1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
1.2			50 - 55 HRC	Hardox 550	
1.3			55 - 60 HRC	Armox 600T	
1.4			60 - 63 HRC	Ferro-Titanit	
1.5			63 - 66 HRC	HSSE	

4D 31, 4D 33, 4D 35	4D 31, 4D 33, 4D 35, 4D 49	M
4D 31, 4D 33, 4D 35	4D 31, 4D 33, 4D 35, 4D 49	MF
4D 37, 4D 39, 4D 41	4D 37, 4D 39, 4D 41	UNC
4D 37, 4D 39, 4D 41	4D 37, 4D 39, 4D 41	UNF
4D 43, 4D 45, 4D 47	4D 43, 4D 45, 4D 47	G, RP, W
		BSW,BSF
		NPT
		NPTF
		BSPT
		MJ
		UNJ
		M-EXT, MJ-EXT
		PG
		EGM

Vc Uncoated	Vc Coated TNF	f b ø d1 ≤ 8 mm	f b ø d1 > 8 mm	f z ø d1 ≤ 8 mm	f z ø d1 > 8 mm	
						P
						1.1
						2.1
						3.1
						4.1
						5.1
						M
						1.1
						2.1
						3.1
						4.1
						K
80 - 140	80 - 160	0,10 - 0,25	0,20 - 0,40	0,04 - 0,07	0,05 - 0,12	1.1
80 - 140	80 - 160	0,10 - 0,25	0,20 - 0,40	0,04 - 0,07	0,05 - 0,12	1.2
80 - 140	80 - 160	0,10 - 0,25	0,15 - 0,25	0,04 - 0,07	0,05 - 0,12	2.1
80 - 140	80 - 160	0,10 - 0,25	0,15 - 0,25	0,04 - 0,07	0,05 - 0,12	2.2
80 - 140	80 - 160	0,10 - 0,25	0,20 - 0,40	0,04 - 0,07	0,05 - 0,12	3.1
80 - 140	80 - 160	0,10 - 0,25	0,20 - 0,40	0,04 - 0,07	0,05 - 0,12	3.2
						4.1
						4.2
						N
100 - 250	150 - 250	0,08 - 0,15	0,15 - 0,25	0,04 - 0,08	0,07 -0,15	1.1
100 - 250	150 - 250	0,08 - 0,15	0,15 - 0,25	0,04 - 0,08	0,07 -0,15	1.2
100 - 250	150 - 250	0,08 - 0,15	0,15 - 0,25	0,04 - 0,08	0,07 -0,15	1.3
150 - 250	150 - 400	0,15 - 0,25	0,20 - 0,40	0,04 - 0,08	0,07 -0,15	1.4
150 - 250	150 - 400	0,15 - 0,25	0,20 - 0,40	0,04 - 0,08	0,07 -0,15	1.5
	100 - 200	0,15 - 0,25	0,20 - 0,40	0,04 - 0,08	0,07 -0,15	1.6
						2.1
100 - 250	150 - 400	0,10 - 0,20	0,15 - 0,30	0,05 - 0,08	0,07 - 0,15	2.2
100 - 250	150 - 400	0,10 - 0,20	0,15 - 0,30	0,05 - 0,08	0,07 - 0,15	2.3
						2.4
						2.5
80 - 200	100 - 250	0,10 - 0,25	0,20 - 0,40	0,04 - 0,07	0,05 - 0,12	2.6
						2.7
100 - 250	150 - 400	0,10 - 0,20	0,15 - 0,30	0,04 - 0,08	0,07 - 0,15	3.1
100 - 250	150 - 400	0,15 - 0,30	0,20 - 0,40	0,4 - 0,08	0,07 - 0,15	3.2
60 - 150	100 - 400	0,15 - 0,30	0,20 - 0,40	0,05 - 0,10	0,08 - 0,20	4.1
						4.2
						4.3
						4.4
						5.1
						5.2
						5.3
						S
						1.1
						1.2
						1.3
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
						H
						1.1
						1.2
						1.3
						1.4
						1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

M
MF
UNC
UNF
G, RP, W
BSW,BSF
NPT
NPTF
BSPT
MJ
UNJ
M-EXT, MJ-EXT
PG
EGM

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

4D 17, 4D 19	4D 17, 4D 19					M
4D 17, 4D 19	4D 17, 4D 19					MF
4D 21, 4D 23	4D 21, 4D 23					UNC
4D 21, 4D 23	4D 21, 4D 23					UNF
4D 25, 4D 27	4D 25, 4D 27					G, RP, W
						BSW,BSF
						NPT
						NPTF
						BSPT
						MJ
						UNJ
						M-EXT, MJ-EXT
						PG
						EGM

Vc Uncoated	Vc Coated TNF	f z ø d1 ≤ 4 mm	f z ø d1 ≤ 8 mm	f z ø d1 > 8 mm		
						P
40 - 100	80 - 250	0,005 - 0,04	0,04 - 0,07	0,05 - 0,15		1.1
30 - 80	60 - 150	0,005 - 0,04	0,04 - 0,07	0,05 - 0,15		2.1
20 - 60	40 - 120	0,005 - 0,03	0,03 - 0,05	0,04 - 0,12		3.1
20 - 60	40 - 120	0,003 - 0,02	0,02 - 0,05	0,04 - 0,12		4.1
20 - 60	40 - 120	0,003 - 0,02	0,02 - 0,05	0,04 - ,12		5.1
						M
	40 - 120	0,003 - 0,03	0,03 - 0,05	0,04 - 0,12		1.1
	40 - 120	0,003 - 0,03	0,03 - 0,05	0,04 - 0,12		2.1
	30 - 80	0,003 - 0,02	0,02 - 0,05	0,04 - 0,10		3.1
	30 - 60	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		4.1
						K
80 - 140	100 - 200		0,04 - 0,07	0,05 - 0,15		1.1
80 - 140	100 - 200		0,04 - 0,07	0,05 - 0,15		1.2
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		2.1
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		2.2
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		3.1
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		3.2
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		4.1
60 - 120	80 - 200		0,04 - 0,07	0,05 - 0,15		4.2
						N
100 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.1
100 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.2
100 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.3
150 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.4
150 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.5
	100 - 200	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		1.6
100 - 250	150 - 400	0,008 - 0,05	0,05 - 0,08	0,07 - 0,20		2.1
100 - 250	150 - 400	0,008 - 0,05	0,05 - 0,08	0,07 - 0,20		2.2
100 - 250	150 - 400	0,008 - 0,05	0,05 - 0,08	0,07 - 0,20		2.3
60 - 150	100 - 250	0,008 - 0,04	0,04 - 0,07	0,05 - 0,15		2.4
60 -150	100 - 250	0,008 - 0,04	0,04 - 0,07	0,05 - 0,15		2.5
80 - 200	100 - 250	0,008 - 0,04	0,04 - 0,07	0,05 - 0,15		2.6
	40 - 80	0,003 - 0,02	0,02 - 0,04	0,04 - 0,15		2.7
						2.8
150 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		3.1
150 - 250	150 - 400	0,01 - 0,05	0,05 - 0,08	0,07 - 0,20		3.2
60 - 150		0,01 - 0,05	0,05 - 0,10	0,08 - 0,25		4.1
60 - 150		0,01 - 0,05	0,05 - 0,10	0,08 - 0,25		4.2
	80 - 120	0,01 - 0,05	0,05 - 0,10	0,08 - 0,25		4.3
	80 - 120	0,01 - 0,05	0,05 - 0,10	0,08 - 0,25		4.4
	100 - 200		0,04 - 0,07	0,08 - 0,25		5.1
15 - 40	30 - 60		0,02 - 0,04	0,08 - 0,25		5.2
				0,08 - 0,25		5.3
						S
15 - 50	30 - 80	0,003 - 0,03	0,03 - 0,05	0,04 - 0,10		1.1
15 - 50	30 - 80	0,003 - 0,03	0,03 - 0,05	0,04 - 0,10		1.2
15 - 40	30 - 60	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		1.3
	30 - 60	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		2.1
	30 - 60	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		2.2
						2.3
	30 - 40	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		2.4
						2.5
	30 - 40	0,003 - 0,02	0,02 - 0,04	0,03 - 0,08		2.6
						H
	30 - 60		0,015 - 0,03	0,03 - 0,08		1.1
	30 - 60		0,015 - 0,03	0,03 - 0,08		1.2
						1.3
						1.4
						1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

M
MF
UNC
UNF
G, RP, W
BSW,BSF
NPT
NPTF
BSPT
MJ
UNJ
M-EXT, MJ-EXT
PG
EGM

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
	1.1	Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
		Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
	2.1	Acciai da costruzione	Costruction steels	≤ 800 N/mm2	E360 (St70-2)	1.0070
		Acciai da cementazione	Cementation steel		16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
	3.1	Acciai da cementazione	Cementation steel	≤ 1000 N/mm2	20MoCr3	1.7320
		Acciai da bonifica	Heat-treatable steels		42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
	4.1	Acciai da bonifica	Heat-treatable steels	≤ 1200 N/mm2	50CrMo4	1.7228
		Acciai per lavorazioni a freddo	Cold work steels		X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
	5.1	Acciai fortemente legati	High-alloyed steels	≤ 1400 N/mm2	X38CrMoV5-3	1.2367
		Acciai per lavorazioni a freddo	Cold work steels		X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

4D 17, 4D 19, 4D 65, 4D 67		M
4D 17, 4D 19		MF
		UNC
		UNF
		G, RP, W
		BSW,BSF
		NPT
		NPTF
		BSPT
4D 83, 4D 85		MJ
4D 87, 4D 89		UNJ
		M-EXT, MJ-EXT
		PG
		EGM

Vc Uncoated	Vc Coated LTM	f z ø d1 ≤ 4 mm	f z ø d1 ≤ 8 mm	f z ø d1 > 8 mm		
						P
					1.1	
					2.1	
					3.1	
					4.1	
					5.1	
						M
					1.1	
					2.1	
					3.1	
					4.1	
						K
					1.1	
					1.2	
					2.1	
					2.2	
					3.1	
					3.2	
					4.1	
					4.2	
						N
					1.1	
					1.2	
					1.3	
					1.4	
					1.5	
					1.6	
					2.1	
					2.2	
					2.3	
					2.4	
					2.5	
					2.6	
					2.7	
40 - 60		0,006 - 0,03	0,006 - 0,03	0,006 - 0,03		
					3.1	
					3.2	
					4.1	
					4.2	
					4.3	
					4.4	
					5.1	
					5.2	
					5.3	
						S
					1.1	
					1.2	
					1.3	
					2.1	
					2.2	
					2.3	
					2.4	
					2.5	
					2.6	
						H
					1.1	
					1.2	
40 - 60		0,005 - 0,05	0,005 - 0,05	0,005 - 0,05	1.3	
					1.4	
					1.5	

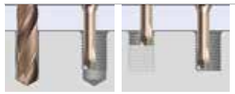
I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

	Materiale	Material		Material examples	Mat. numbers
P	**Acciai**	**Steel materials**			
1.1	Acciai estrusi a freddo	Cold-extrusion steel	≤ 600 N/mm2	Cq15	1.1132
1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
1.1	Acciai alta velocità	Free-cutting steel, etc.	≤ 600 N/mm2	10SPb20	1.0722
2.1	Acciai da costruzione	Costruction steels	≤ 800 N/mm2	E360 (St70-2)	1.0070
2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
2.1	Fusione d'acciaio, ecc.	Steel casting, etc.	≤ 800 N/mm2	GS-25CrMo4	1.7218
3.1	Acciai da cementazione	Cementation steel	≤ 1000 N/mm2	20MoCr3	1.7320
3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
3.1	Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.	≤ 1000 N/mm2	102Cr6	1.2067
4.1	Acciai da bonifica	Heat-treatable steels	≤ 1200 N/mm2	50CrMo4	1.7228
4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
4.1	Acciai da nitrurazione, ecc.	Nitriding steels, etc.	≤ 1200 N/mm2	31CrMo12	1.8515
5.1	Acciai fortemente legati	High-alloyed steels	≤ 1400 N/mm2	X38CrMoV5-3	1.2367
5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
5.1	Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.	≤ 1400 N/mm2	X40CrMoV5-1	1.2344
M	**Acciai inossidabili**	**Stainless steel materials**			
1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K	**Ghise**	**Cast materials**			
1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
3.2			400-500 N/mm2	GJV 450	
4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N	**Materiali non ferrosi**	**Non ferrous materials**			
	Leghe di alluminio	**Aluminium alloys**			
1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
	Leghe di rame	**Copper alloys**			
2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
2.8			≤ 1400 N/mm2	(AMPCO® 45)	
	Leghe di magnesio	**Magnesium alloys**			
3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
	Materie plastiche	**Synthetics**			
4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
	Materiali speciali	**Special materials**			
5.1	Grafite	Graphite		C 8000	
5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S	**Materiali speciali**	**Special materials**			
	Leghe di titanio	**Titanium alloys**			
1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
	Leghe di nichel, cobalto e ferro	**Nickel alloys, cobalt alloys and iron alloys**			
2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
2.3			≤ 1600 N/mm2	Inconel 718	2.4668
2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
2.5			≤ 1600 N/mm2	Haynes 25	2.4964
2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H	**Materiali duri**	**Hard materials**			
1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
1.2			50 - 55 HRC	Hardox 550	
1.3			55 - 60 HRC	Armox 600T	
1.4			60 - 63 HRC	Ferro-Titanit	
1.5			63 - 66 HRC	HSSE	



4D 85, 4D 113, 4D 115	M
4D 85, 4D 113, 4D 115	MF
4D 117, 4D 119, 4D 121	UNC
4D 117, 4D 119, 4D 121	UNF
4D 123	G, RP, W
	BSW,BSF
	NPT
	NPTF
	BSPT
4D 143, 4D 145, 4D 147	MJ
4D 137, 4D 139, 4D 141	UNJ
	M-EXT, MJ-EXT
4D 125, 4D 107, 4D 129	PG
	EGM

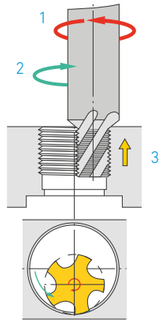
Vc Coated HDM		f z ø d1 ≤ 2,4 mm	f z ø d2,41 ≤ 3,1 mm	f z ø d3,2 ≤ 3,8 mm	f z ø d3,9 ≤ 4,6 mm	f z ø d4,7 ≤ 6,2 mm	f z ø d6,3 ≤ 7,5 mm	f z ø d7,6 ≤ 9 mm	f z ø d9,1 ≤ 11,5 mm	
85	65	0,011	0,015	0,018	0,0229	0,0309	0,0379	0,0449	0,0549	1.1
85	65	0,011	0,015	0,018	0,0229	0,0309	0,0379	0,0449	0,0549	2.1
85	65	0,011	0,015	0,018	0,0229	0,0309	0,0379	0,0449	0,0549	3.1
85	65	0,011	0,015	0,018	0,0229	0,0309	0,0379	0,0449	0,0549	4.1
85	65	0,011	0,015	0,018	0,0229	0,0309	0,0379	0,0449	0,0549	5.1
85	65	0,0092	0,0126	0,0151	0,0193	0,0260	0,0319	0,0378	0,0462	1.1
										2.1
										3.1
										4.1
85	65	0,0116	0,0158	0,0189	0,0242	0,0326	0,0399	*0,0473*	0,0578	1.1
										1.2
										2.1
										2.2
										3.1
										3.2
										4.1
										4.2
85	65	0,0116	0,0158	0,0189	0,0242	*0,0326*	0,0399	0,0473	0,0578	1.1
										1.2
										1.3
										1.4
										1.5
										1.6
85	65	0,0116	0,0158	0,0189	0,0242	0,0326	0,0399	0,0473	0,0578	2.1
										2.2
										2.3
										2.4
										2.5
										2.6
										2.7
85	65	0,0116	0,0158	0,0189	0,0242	0,0326	0,0399	0,0473	0,0578	3.1
										3.2
85	65	0,0116	0,0158	0,0189	0,0242	0,0326	0,0399	0,0473	0,0578	4.1
										4.2
										4.3
										4.4
85	65	0,0116	0,0158	0,0189	0,0242	0,0326	0,0399	0,0473	0,0578	5.1
										5.2
										5.3
85	65	0,0092	0,0126	0,0151	0,0193	0,0260	0,0319	0,0378	0,0462	1.1
										1.2
										1.3
										2.1
										2.2
										2.3
										2.4
										2.5
										2.6
85	65	0,0098	0,0134	0,0161	0,0205	0,0277	0,0339	0,0402	0,0491	1.1
										1.2
		0,0087	0,0118	0,0142	0,0181	0,0244	0,0299	0,0354	0,0433	1.3
										1.4
		0,0075	0,0102	0,0123	0,0157	0,0212	0,0259	0,0307	0,0375	1.5

METODI DI FRESATURA DEI FILETTI
MILLING PROCEDURES

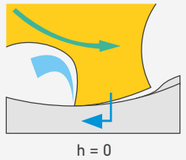
Fresatura in concordanza

Caratteristiche:
1. Rotazione dell'utensile in senso orario
2. Avanzamento utensile in senso anti-orario
3. Direzione di lavorazione: dal fondo verso l'esterno

Filetto destro



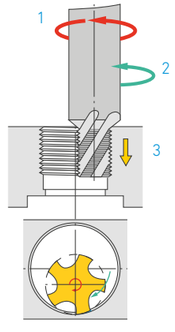
Nella fresatura in concordanza si ha lo spessore del truciolo 0 (h = 0) all'uscita del tagliente dal materiale



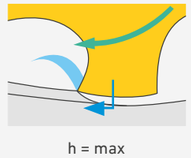
Fresatura in discordanza

Caratteristiche:
1. Rotazione dell'utensile in senso orario
2. Avanzamento utensile in senso orario
3. Direzione di lavorazione: dal fondo verso il fondo

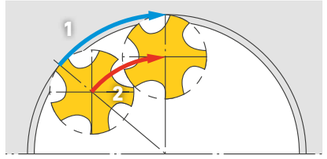
Filetto destro



Nella fresatura in discordanza lo spessore massimo del truciolo (h = max) si ha all'uscita del tagliente dal materiale



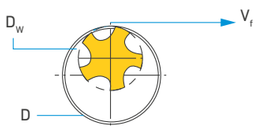
Calcolo dell' avanzamento



1. Avanzamento sul profilo (vf)
2. "Avanzamento della traiettoria del centro fresa vfm"

Avanzamento sul profilo fresa (vf)

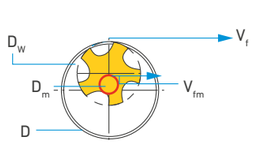
$$v_f = n \cdot f_z \cdot z \quad \text{mm/min}$$



Dw = diametro effettivo dell'utensile (mm)
N = numero di giri (min -1)
fz = avanzamento per dente (mm)

Avanzamento della traiettoria del centro fresa vfm

$$v_{fm} = \frac{V_f \cdot (D - D_w)}{D} \quad \text{mm/min}$$



z = numero dei taglienti
D = Diametro nominale del filetto = Diametro profilo esterno (mm)
Dm = Diametro della traiettoria del centro fresa (D – DW) in mm

Consigli per l'operatore

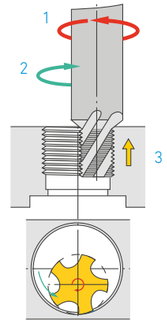
Nella fresatura di filetti, l'avanzamento dell'utensile può essere programmato in due modi:
O sul profilo utensile oppure al centro utensile, in funzione del tipo di controllo.
Per sapere con quale avanzamento lavora la macchina, è necessario:
1. Inserire il programma per la fresatura dei filetti.
2. Eseguire il ciclo "a vuoto".
3. Cronometrare il tempo di lavorazione.
4. Comparare il valore rilevato con il valore teorico.

Se il tempo rilevato è maggiore del tempo calcolato occorre lavorare con l'avanzamento al centro utensile.
Se il tempo di lavorazione rilevato è minore del tempo calcolato occorre lavorare con l'avanzamento sul profilo utensile.

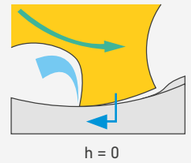
Climb milling

Characteristics:
1. Tool rotation direction "right"
2. Toolpath counter clockwise
3. Feed direction "outwards"

Right hand thread



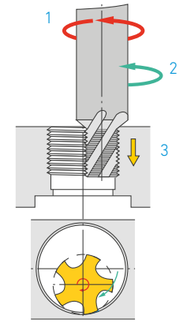
When climb milling, the chip thickness at the end of cut is always 0 (h=0)



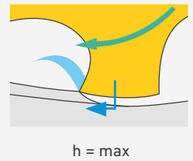
Conventional milling

Characteristics:
1. Tool rotation direction "right"
2. Toolpath clockwise
3. Feed direction "inwards"

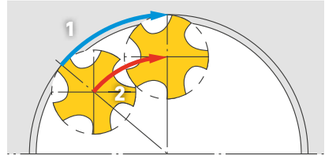
Right hand thread



When conventional milling, the chip thickness at the end of cut is always at maximum (h=max)



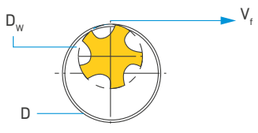
Feed rate calculation



1. Peripheral feedrate (vf)
2. Centerline feedrate vfm

Peripheral feedrate (vf)

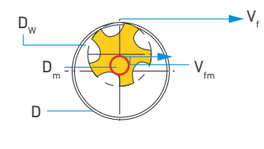
$$v_f = n \cdot f_z \cdot z \quad \text{mm/min}$$



Dw = Effective diameter in mm
N = RPM in min-1
fz = Feed per tooth in mm

Centerline feedrate vfm

$$v_{fm} = \frac{V_f \cdot (D - D_w)}{D} \quad \text{mm/min}$$



z = Number of cutting edges (radial)
D = Nominal thread diameter = external profile diameter in mm
Dm = Centre path diameter (D – DW) in mm

Tips for the User

With thread milling there are two different programme possibilities with the feed motion of the tool:
On the one hand the machine controls the feed at the diameter of the tool, on the other hand the feed control is the tool center line.
In order to ascertain which method the machine control uses, the following method should be employed:
1. Enter the thread milling routine into the control.
2. Enter a safety margin into the program, so that the tool runs in air.
3. Run the program through and check the operating time.
4. Compare the actual time with the calculated theoretical time.

If the time is longer than the calculated time the feed is controlling the tool center line.
If the time is shorter than the calculated time the feed is controlling the diameter of the tool.

CALCOLO NUMERICO DEI DATI DI TAGLIO PER LA FRESATURA DI FILETTI

NUMERIC CALCULATION OF CUTTING DATA FOR THREAD MILLING

$$n = \frac{v_c \cdot 1000}{d \cdot \pi} \qquad v_c = \frac{d \cdot \pi \cdot n}{1000} \qquad v_f = f_z \cdot z \cdot n \qquad n = \frac{v_f}{f_z \cdot z} \qquad f_z = \frac{v_f}{z \cdot n}$$

Fresatura – profilo esterno

$$v_{fm} = \frac{v_f \cdot (D + d)}{D} \qquad v_f = \frac{D \cdot v_{fm}}{(D + d)}$$

Fresatura – profilo interno

$$v_{fm} = \frac{v_f \cdot (D - d)}{D} \qquad v_f = \frac{D \cdot v_{fm}}{(D - d)}$$

Penetrazione diritta

$$U_{pen.} = 0{,}25 \cdot v_{fm}$$

Penetrazione sulla traiettoria circolare

$$U_{pen.} = v_{fm}$$

n = numero di giri del mandrino g./min
Vc = Velocità di taglio m/min
d = diametro fresa mm
D = Ø nominale del filetto mm
Vf = avanzamento sul diametro periferico mm/min

Vfm = avanzamento al centro mm/min
U pen. = avanzamento di penetrazione consigliato mm/min
Fz = Avanzamento per dente mm
Z = numero di taglienti per fresa Quantità

Valori di correzione per la filettatura interna

È possibile calcolare la dimensione media del tagliente della fresa, che viene digitata nel comando della macchina, come segue:
Diametro nominale della fresa meno (0,05 x passo P)

Esempio: M30x3
Ø fresa: 20 mm

$$Ø\frac{20}{2} - (0{,}05 \cdot 3) = \underline{9{,}85\ mm}$$

9,85 mm viene inserito come dimensione del tagliente nel comando della macchina!

IGUTENSILI

$$n = \frac{v_c \cdot 1000}{d \cdot \pi} \qquad v_c = \frac{d \cdot \pi \cdot n}{1000} \qquad v_f = f_z \cdot z \cdot n \qquad n = \frac{v_f}{f_z \cdot z} \qquad f_z = \frac{v_f}{z \cdot n}$$

Milling - external contour

$$v_{fm} = \frac{v_f \cdot (D + d)}{D} \qquad v_f = \frac{D \cdot v_{fm}}{(D + d)}$$

Milling - internal contour

$$v_{fm} = \frac{v_f \cdot (D - d)}{D} \qquad v_f = \frac{D \cdot v_{fm}}{(D - d)}$$

Helical plunging

$$U_{arc} = 0{,}25 \cdot v_{fm}$$

Ramping in the arc

$$U_{arc} = v_{fm}$$

n = rpm U/min
Vc = Cutting speed U/min
d = Tool diameter mm
D = Nominal thread-Ø
Vf = Feed rate at the diameter mm/min

Vfm = Feed rate at the centre mm/min
U arc = programmed ramping feed rate mm/min
Fz = Feed per tooth mm
Z = number of cutting edges of the cutter piece

Correction values for the internal thread milling

The cutting edge diameter of the thread milling cutter which is entered into the machine control, can be calculated as follows:
half the cutter Ø - 0.05 x pitch p

Example: M30x3
Cutter-Ø: 20 mm

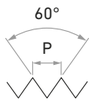
$$Ø\frac{20}{2} - (0{,}05 \cdot 3) = \underline{9{,}85\ mm}$$

9,85 mm is the cutting radius to be entered into the machine control

FIGMET 1,5xD

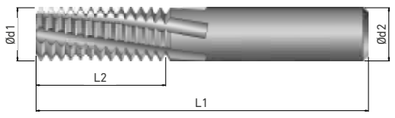
M, MF

DIN13



VHM | e8 | 1,5xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



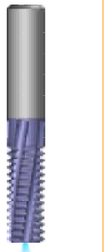
	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 S1.1-S2.6 N1.1-N5.2 M1.1-M4.1 H1.1-H1.2

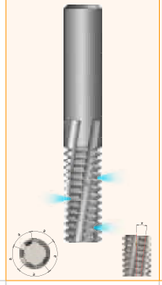
DATI TECNICI
TECHNICAL DATA

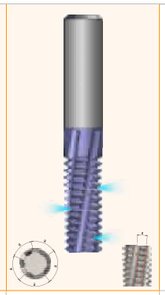
DIVISIONE IRREGOLARE
UNEQUAL INDEX

ELICA VARIABILE
VARIABLE HELIX

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z	Z type TX		
M 4	0.70	3.1	51	5	6.0	3		FIGMET50N	FIGMET50T
M 5	0.80	4.0	48	6	6.0	3	4	FIGMET52N	FIGMET52T
MF 6	0.50	4.5	49	7	6.0	3		FIGMET54N	FIGMET54T
MF 6	0.75	4.5	49	7	6.0	3	4	FIGMET56N	FIGMET56T
M 6 M 7	1.00	4.5	49	7	6.0	3	4	FIGMET58N	FIGMET58T
MF 8	0.50	6.0	51	9	6.0	3		FIGMET60N	FIGMET60T
MF 8	0.75	6.0	48	9	6.0	3	4	FIGMET62N	FIGMET62T
MF 8	1.00	6.0	48	9	6.0	3	4	FIGMET64N	FIGMET64T
M 8 M 9 MF 10	1.25	6.0	48	9	6.0	3	4	FIGMET66N	FIGMET66T
MF 10	0.50	8.0	57	12	8.0	3		FIGMET68N	FIGMET68T
MF 10 MF 12	0.75	8.0	57	12	8.0	3	4	FIGMET70N	FIGMET70T
MF 10 MF 12	1.00	8.0	57	12	8.0	3	4	FIGMET72N	FIGMET72T
MF 10 MF 12	1.25	8.0	57	12	8.0	3	4	FIGMET74N	FIGMET74T
M 10 M 11 MF 12	1.50	8.0	57	12	8.0	3	4	FIGMET76N	FIGMET76T
M 12	1.75	8.0	57	12	8.0	3	4	FIGMET78N	FIGMET78T
MF 12	0.50	10.0	70	15	10.0	4		FIGMET80N	FIGMET80T
M 12	1.00	10.0	70	15	10.0	4	5	FIGMET82N	FIGMET82T
MF 14	1.25	10.0	70	15	10.0	4	5	FIGMET84N	FIGMET84T
MF 14	1.50	10.0	70	15	10.0	4	5	FIGMET86N	FIGMET86T
M 14	2.00	10.0	70	15	10.0	4	5	FIGMET88N	FIGMET88T
MF 14	0.50	12.0	70	18	12.0	4		FIGMET90N	FIGMET90T
MF 14	1.00	12.0	70	18	12.0	4	5	FIGMET92N	FIGMET92T
MF 16	1.50	12.0	70	18	12.0	4	5	FIGMET94N	FIGMET94T
M 16	2.00	12.0	70	18	12.0	4	5	FIGMET96N	FIGMET96T
MF 16	1.00	14.0	86	21	14.0	4	5	FIGMET98N	FIGMET98T
MF 18	1.50	14.0	86	21	14.0	4	5	FIGMET100N	FIGMET100T
MF 18	2.00	14.0	86	21	14.0	4	5	FIGMET102N	FIGMET102T
M 18	2.50	14.0	86	21	14.0	4	5	FIGMET104N	FIGMET104T
MF 18 MF 20	1.00	16.0	84	24	16.0	5	6	FIGMET106N	FIGMET106T
MF 20 MF 22	1.50	16.0	84	24	16.0	5	6	FIGMET108N	FIGMET108T
MF 20 MF 22	2.00	16.0	84	24	16.0	5	6	FIGMET110N	FIGMET110T
M 20 M 22	2.50	16.0	84	24	16.0	5	6	FIGMET112N	FIGMET112T
MF 22>	1.00	20.0	100	30	20.0	5	6	FIGMET114N	FIGMET114T
MF 24>	1.50	20.0	100	30	20.0	5	6	FIGMET116N	FIGMET116T
MF 24>	2.00	20.0	100	30	20.0	5	6	FIGMET118N	FIGMET118T
MF 24>	3.00	20.0	100	30	20.0	5	6	FIGMET120N	FIGMET120T
M 30 M 33	3.50	25.0	135	58	25.0	5		FIGMET122N	FIGMET122T
M 36 ≥ M 42	4.00	25.0	135	58	25.0	5		FIGMET124N	FIGMET124T







R 10° - RR	R 10° - RR	R 9/11° - RR	R 9/11° - RR	R 10° - RR
Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc	Coated LTM ≥45Hrc ≤60Hrc
P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2	P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2	N2.7-N2.8 H1.3-H1.5

FIGMET52NF	FIGMET52F			FIGMET50TX
FIGMET54NF	FIGMET54F			
FIGMET56NF	FIGMET56F			FIGMET52TX
FIGMET58NF	FIGMET58F			FIGMET54TX
FIGMET60NF	FIGMET60F			
FIGMET62NF	FIGMET62F	FIGMET62NG	FIGMET62TG	FIGMET56TX
FIGMET64NF	FIGMET64F	FIGMET64NG	FIGMET64TG	FIGMET58TX
FIGMET66NF	FIGMET66F	FIGMET66NG	FIGMET66TG	FIGMET60TX
FIGMET68NF	FIGMET68F			
FIGMET70NF	FIGMET70F	FIGMET70NG	FIGMET70TG	FIGMET62TX
FIGMET72NF	FIGMET72F	FIGMET72NG	FIGMET72TG	FIGMET64TX
FIGMET74NF	FIGMET74F	FIGMET74NG	FIGMET74TG	FIGMET66TX
FIGMET76NF	FIGMET76F	FIGMET76NG	FIGMET76TG	FIGMET68TX
FIGMET78NF	FIGMET78F	FIGMET78NG	FIGMET78TG	FIGMET70TX
FIGMET80NF	FIGMET80F			
FIGMET82NF	FIGMET82F	FIGMET82NG	FIGMET82TG	FIGMET72TX
FIGMET84NF	FIGMET84F	FIGMET84NG	FIGMET84TG	FIGMET74TX
FIGMET86NF	FIGMET86F	FIGMET86NG	FIGMET86TG	FIGMET76TX
FIGMET88NF	FIGMET88F	FIGMET88NG	FIGMET88TG	FIGMET78TX
FIGMET90NF	FIGMET90F			
FIGMET92NF	FIGMET92F	FIGMET92NG	FIGMET92TG	FIGMET80TX
FIGMET94NF	FIGMET94F	FIGMET94NG	FIGMET94TG	FIGMET82TX
FIGMET96NF	FIGMET96F	FIGMET96NG	FIGMET96TG	FIGMET84TX
FIGMET98NF	FIGMET98F	FIGMET98NG	FIGMET98TG	FIGMET86TX
FIGMET100NF	FIGMET100F	FIGMET100NG	FIGMET100TG	FIGMET88TX
FIGMET102NF	FIGMET102F	FIGMET102NG	FIGMET102TG	FIGMET90TX
FIGMET104NF	FIGMET104F	FIGMET104NG	FIGMET104TG	FIGMET92TX
FIGMET106NF	FIGMET106F	FIGMET106NG	FIGMET106TG	FIGMET94TX
FIGMET108NF	FIGMET108F	FIGMET108NG	FIGMET108TG	FIGMET96TX
FIGMET110NF	FIGMET110F	FIGMET110NG	FIGMET110TG	FIGMET98TX
FIGMET112NF	FIGMET112F	FIGMET111NG	FIGMET111TG	FIGMET100TX
FIGMET114NF	FIGMET114F	FIGMET114NG	FIGMET114TG	FIGMET102TX
FIGMET116NF	FIGMET116F	FIGMET116NG	FIGMET116TG	FIGMET104TX
FIGMET118NF	FIGMET118F	FIGMET118NG	FIGMET118TG	FIGMET106TX
FIGMET120NF	FIGMET120F	FIGMET120NG	FIGMET120TG	FIGMET108TX
FIGMET122NF	FIGMET122F			
FIGMET124NF	FIGMET124F			

FIGMET 2xD

M, MF

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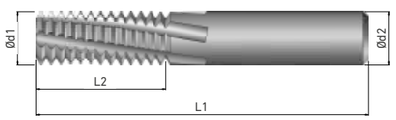

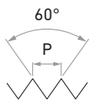

VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 S1.1-S2.6 N1.1-N5.2 M1.1-M4.1 H1.1-H1.2
DATI TECNICI TECHNICAL DATA	DIVISIONE IRREGOLARE UNEQUAL INDEX ELICA VARIABILE VARIABLE HELIX	

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z	Z type TX		
M 4	0.7	3.1	54	8	6.0	3		FIGMET03N	FIGMET03T
M 5	0.80	4.0	54	12	6.0	3	4	FIGMET00N	FIGMET00T
MF 6	0.50	4.5	54	12	6.0	3		FIGMET27N	FIGMET27T
MF 6	0.75	4.5	54	12	6.0	3	4	FIGMET01N	FIGMET01T
M 6 M7	1.00	4.5	54	12	6.0	3	4	FIGMET02N	FIGMET02T
MF 8	0.50	6.0	54	12	6.0	3		FIGMET07N	FIGMET07T
MF 8	0.75	6.0	54	15	6.0	3	4	FIGMET04N	FIGMET04T
MF 8	1.00	6.0	54	15	6.0	3	4	FIGMET05N	FIGMET05T
M8 M9 MF10	1.25	6.0	54	15	6.0	3	4	FIGMET06N	FIGMET06T
MF 10	0.50	8.0	65	20	8.0	3		FIGMET13N	FIGMET13T
MF 10 MF12	0.75	8.0	65	20	8.0	3	4	FIGMET08N	FIGMET08T
MF 10 MF 12	1.00	8.0	65	20	8.0	3	4	FIGMET09N	FIGMET09T
MF 10 MF 12	1.25	8.0	65	20	8.0	3	4	FIGMET10N	FIGMET10T
M 10 M11 MF 12	1.50	8.0	65	20	8.0	3	4	FIGMET11N	FIGMET11T
M 12	1.75	8.0	65	20	8.0	3	4	FIGMET12N	FIGMET12T
MF 12	0.50	10.0	80	25	10.0	4		FIGMET18N	FIGMET18T
M 12	1.00	10.0	80	25	10.0	4	5	FIGMET14N	FIGMET14T
MF 14	1.25	10.0	80	25	10.0	4	5	FIGMET15N	FIGMET15T
MF 14	1.50	10.0	80	25	10.0	4	5	FIGMET16N	FIGMET16T
M 14	2.00	10.0	80	25	10.0	4	5	FIGMET17N	FIGMET17T
MF 14	0.50	12.0	82	30	12.0	4		FIGMET22N	FIGMET22T
MF 14	1.00	12.0	82	30	12.0	4	5	FIGMET19N	FIGMET19T
MF 16	1.50	12.0	82	30	12.0	4	5	FIGMET20N	FIGMET20T
M 16	2.00	12.0	82	30	12.0	4	5	FIGMET21N	FIGMET21T
MF 16	1.00	14.0	100	35	14.0	4	5	FIGMET23N	FIGMET23T
MF 18	1.50	14.0	100	35	14.0	4	5	FIGMET24N	FIGMET24T
MF 18	2.00	14.0	100	35	14.0	4	5	FIGMET25N	FIGMET25T
M 18	2.50	14.0	100	35	14.0	4	5	FIGMET26N	FIGMET26T
MF 18 MF 20	1.00	16.0	100	40	16.0	5	6	FIGMET28N	FIGMET28T
MF 20 MF 22	1.50	16.0	100	40	16.0	5	6	FIGMET29N	FIGMET29T
MF 20 MF 22	2.00	16.0	100	40	16.0	5	6	FIGMET30N	FIGMET30T
M 20 M22	2.50	16.0	100	40	16.0	5	6	FIGMET31N	FIGMET31T
MF 22>	1.00	20.0	110	40	20.0	5	6	FIGMET33N	FIGMET33T
MF 24>	1.50	20.0	110	40	20.0	5	6	FIGMET34N	FIGMET34T
MF 24>	2.00	20.0	110	40	20.0	5	6	FIGMET35N	FIGMET35T
MF 24>	3.00	20.0	110	40	20.0	5	6	FIGMET36N	FIGMET36T
M 30 33	3.50	25.0	155	78	25.0	5		FIGMET40N	FIGMET40T
M 36 ≥ M 42	4.00	25.0	155	78	25.0	5		FIGMET38N	FIGMET38T

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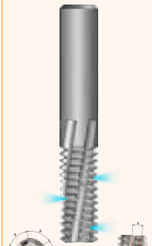

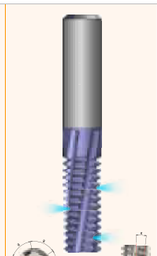

R 10° - RR	R 10° - RR	R 9/11° - RR	R 9/11° - RR	R 10° - RR
Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc	Coated LTM ≥45Hrc ≤60Hrc
P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2	P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2	N2.7-N2.8 H1.3-H1.5

FIGMET00NF	FIGMET00F			FIGMET00TX
FIGMET27NF	FIGMET27F			
FIGMET01NF	FIGMET01F			FIGMET01TX
FIGMET02NF	FIGMET02F			FIGMET02TX
FIGMET07NF	FIGMET07F			
FIGMET04NF	FIGMET04F	FIGMET04NG	FIGMET04TG	FIGMET04TX
FIGMET05NF	FIGMET05F	FIGMET05NG	FIGMET05TG	FIGMET05TX
FIGMET06NF	FIGMET06F	FIGMET06NG	FIGMET06TG	FIGMET06TX
FIGMET13NF	FIGMET13F			
FIGMET08NF	FIGMET08F	FIGMET08NG	FIGMET08TG	FIGMET08TX
FIGMET09NF	FIGMET09F	FIGMET09NG	FIGMET09TG	FIGMET09TX
FIGMET10NF	FIGMET10F	FIGMET10NG	FIGMET10TG	FIGMET10TX
FIGMET11NF	FIGMET11F	FIGMET11NG	FIGMET11TG	FIGMET11TX
FIGMET12NF	FIGMET12F	FIGMET12NG	FIGMET12TG	FIGMET12TX
FIGMET18NF	FIGMET18F			
FIGMET14NF	FIGMET14F	FIGMET14NG	FIGMET14TG	FIGMET14TX
FIGMET15NF	FIGMET15F	FIGMET15NG	FIGMET15TG	FIGMET15TX
FIGMET16NF	FIGMET16F	FIGMET16NG	FIGMET16TG	FIGMET16TX
FIGMET17NF	FIGMET17F	FIGMET17NG	FIGMET17TG	FIGMET17TX
FIGMET22NF	FIGMET22F			
FIGMET19NF	FIGMET19F	FIGMET19NG	FIGMET19TG	FIGMET19TX
FIGMET20NF	FIGMET20F	FIGMET20NG	FIGMET20TG	FIGMET20TX
FIGMET21NF	FIGMET21F	FIGMET21NG	FIGMET21TG	FIGMET21TX
FIGMET23NF	FIGMET23F	FIGMET23NG	FIGMET23TG	FIGMET23TX
FIGMET24NF	FIGMET24F	FIGMET24NG	FIGMET24TG	FIGMET24TX
FIGMET25NF	FIGMET25F	FIGMET25NG	FIGMET25TG	FIGMET25TX
FIGMET26NF	FIGMET26F	FIGMET26NG	FIGMET26TG	FIGMET26TX
FIGMET28NF	FIGMET28F	FIGMET28NG	FIGMET28TG	FIGMET28TX
FIGMET29NF	FIGMET29F	FIGMET29NG	FIGMET29TG	FIGMET29TX
FIGMET30NF	FIGMET30F	FIGMET30NG	FIGMET30TG	FIGMET30TX
FIGMET31NF	FIGMET31F	FIGMET31NG	FIGMET31TG	FIGMET31TX
FIGMET33NF	FIGMET33F	FIGMET33NG	FIGMET33TG	FIGMET33TX
FIGMET34NF	FIGMET34F	FIGMET34NG	FIGMET34TG	FIGMET34TX
FIGMET35NF	FIGMET35F	FIGMET35NG	FIGMET35TG	FIGMET35TX
FIGMET36NF	FIGMET36F	FIGMET36NG	FIGMET36TG	FIGMET36TX
FIGMET40NF	FIGMET40F			
FIGMET38NF	FIGMET38F			

FIGUNC 1,5xD

UNC, UNF

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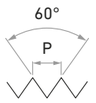
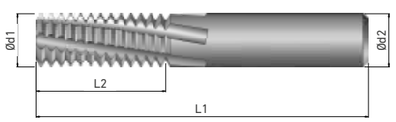


VHM | e8 | 1,5xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL



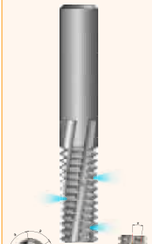
	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1	P1.1-P5.1
	K1.1-K4.2	S1.1-S2.6
	S1.1-S1.3	N1.1-N5.2
	N1.1-N1.5	M1.1-M4.1
	N2.1-N2.6	H1.1-H1.2
	N3.1-N4.2	

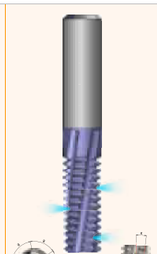
DATI TECNICI TECHNICAL DATA

DIVISIONE IRREGOLARE UNEQUAL INDEX

ELICA VARIABILE VARIABLE HELIX

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/4" UNC	20	4.5	49	7	6.0	3	FIGUNC50N	FIGUNC50T
1/4" UNF	28	4.5	49	7	6.0	3	FIGUNC52N	FIGUNC52T
5/16" UNC	18	5.5	48	9	6.0	3	FIGUNC54N	FIGUNC54T
5/16" UNF	24	5.5	48	9	6.0	3	FIGUNC56N	FIGUNC56T
3/8" UNC	16	7.5	57	12	8.0	3	FIGUNC58N	FIGUNC58T
7/16" UNC	14	8.0	57	12	8.0	3	FIGUNC60N	FIGUNC60T
7/16" UNF	20	8.0	57	12	8.0	3	FIGUNC62N	FIGUNC62T
3/8" UNF	24	8.0	57	12	8.0	3	FIGUNC64N	FIGUNC64T
9/16" UNC	12	10.0	70	15	10.0	4	FIGUNC66N	FIGUNC66T
1/2" UNC	13	10.0	70	15	10.0	4	FIGUNC68N	FIGUNC68T
5/8" UNF 9/16" UNF	18	10.0	70	15	10.0	4	FIGUNC70N	FIGUNC70T
1/2" UNF	20	10.0	70	15	10.0	4	FIGUNC72N	FIGUNC72T
5/8" UNF 9/16" UNF	18	12.0	70	18	12.0	4	FIGUNC74N	FIGUNC74T
5/8" UNC	11	12.0	70	18	12.0	4	FIGUNC76N	FIGUNC76T
3/4" UNF	16	15.5	84	24	16.0	5	FIGUNC78N	FIGUNC78T
3/4" UNC	10	15.5	84	24	16.0	5	FIGUNC80N	FIGUNC80T
7/8" UNF	14	15.5	84	24	16.0	5	FIGUNC82N	FIGUNC82T
7/8" UNC	9	18.0	97	27	18.0	5	FIGUNC84N	FIGUNC84T
7/8" UNF	14	18.0	97	27	18.0	5	FIGUNC86N	FIGUNC86T
1" UNC	8	20.0	100	30	20.0	5	FIGUNC88N	FIGUNC88T
1" UNF	12	20.0	100	30	20.0	5	FIGUNC90N	FIGUNC90T





R 10° - RR	R 10° - RR	R 9/11° - RR	R 9/11° - RR
Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
P1.1-P5.1	P1.1-P5.1	P1.1-P5.1	P1.1-P5.1
K1.1-K4.2	M1.1-M4.1	K1.1-K4.2	M1.1-M4.1
S1.1-S1.3	N1.1-N5.2	S1.1-S1.3	N1.1-N5.2
N1.1-N1.5	S1.1-S2.6	N1.1-N1.5	S1.1-S2.6
N2.1-N2.6	H1.1-H1.2	N2.1-N2.6	H1.1-H1.2
N3.1-N4.2		N3.1-N4.2	

FIGUNC50NF	FIGUNC50F		
FIGUNC52NF	FIGUNC52F		
FIGUNC54NF	FIGUNC54F	FIGUNC54NG	FIGUNC54TG
FIGUNC56NF	FIGUNC56F	FIGUNC56NG	FIGUNC56TG
FIGUNC58NF	FIGUNC58F	FIGUNC58NG	FIGUNC58TG
FIGUNC60NF	FIGUNC60F	FIGUNC60NG	FIGUNC60TG
FIGUNC62NF	FIGUNC62F	FIGUNC62NG	FIGUNC62TG
FIGUNC64NF	FIGUNC64F	FIGUNC64NG	FIGUNC64TG
FIGUNC66NF	FIGUNC66F	FIGUNC66NG	FIGUNC66TG
FIGUNC68NF	FIGUNC68F	FIGUNC68NG	FIGUNC68TG
FIGUNC70NF	FIGUNC70F	FIGUNC70NG	FIGUNC70TG
FIGUNC72NF	FIGUNC72F	FIGUNC72NG	FIGUNC72TG
FIGUNC74NF	FIGUNC74F	FIGUNC74NG	FIGUNC74TG
FIGUNC76NF	FIGUNC76F	FIGUNC76NG	FIGUNC76TG
FIGUNC78NF	FIGUNC78F	FIGUNC78NG	FIGUNC78TG
FIGUNC80NF	FIGUNC80F	FIGUNC80NG	FIGUNC80TG
FIGUNC82NF	FIGUNC82F	FIGUNC82NG	FIGUNC82TG
FIGUNC84NF	FIGUNC84F	FIGUNC84NG	FIGUNC84TG
FIGUNC86NF	FIGUNC86F	FIGUNC86NG	FIGUNC86TG
FIGUNC88NF	FIGUNC88F	FIGUNC88NG	FIGUNC88TG
FIGUNC90NF	FIGUNC90F	FIGUNC90NG	FIGUNC90TG

FIGUNC 2xD

UNC, UNF

ASME B1.1

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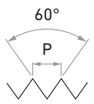
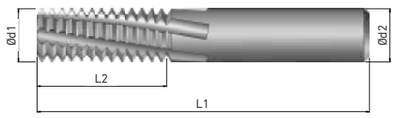
CUSTOMIZED DESIGN ON REQUEST



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 S1.1-S2.6 N1.1-N5.2 M1.1-M4.1 H1.1-H1.2

DATI TECNICI
TECHNICAL DATA

DIVISIONE IRREGOLARE
UNEQUAL INDEX

ELICA VARIABILE
VARIABLE HELIX

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/4" UNC	20	4.5	54	12	6.0	3	FIGUNC01N	FIGUNC01T
1/4" UNF	28	4.5	54	12	6.0	3	FIGUNC03N	FIGUNC03T
5/16" UNC	18	5.5	54	15	6.0	3	FIGUNC07N	FIGUNC07T
5/16" UNF	24	5.5	54	15	6.0	3	FIGUNC09N	FIGUNC09T
3/8" UNC	16	7.5	65	20	8.0	3	FIGUNC05N	FIGUNC05T
7/16" UNC	14	8.0	65	20	8.0	3	FIGUNC11N	FIGUNC11T
7/16" UNF	20	8.0	65	20	8.0	3	FIGUNC13N	FIGUNC13T
3/8" UNF	24	8.0	65	20	8.0	3	FIGUNC15N	FIGUNC15T
9/16" UNC	12	10.0	80	25	10.0	4	FIGUNC17N	FIGUNC17T
1/2" UNC	13	10.0	80	25	10.0	4	FIGUNC19N	FIGUNC19T
5/8" UNF 9/16" UNF	18	10.0	80	25	10.0	4	FIGUNC21N	FIGUNC21T
1/2" UNF	20	10.0	80	25	10.0	4	FIGUNC23N	FIGUNC23T
5/8" UNF 9/16" UNF	18	12.0	82	30	12.0	4	FIGUNC25N	FIGUNC25T
5/8" UNC	11	12.0	82	30	12.0	4	FIGUNC27N	FIGUNC27T
3/4" UNF	16	15.5	100	40	16.0	5	FIGUNC29N	FIGUNC29T
3/4" UNC	10	15.5	100	40	16.0	5	FIGUNC31N	FIGUNC31T
7/8" UNF	14	15.5	100	40	16.0	5	FIGUNC33N	FIGUNC33T
7/8" UNC	9	18.0	110	40	18.0	5	FIGUNC35N	FIGUNC35T
7/8" UNF	14	18.0	110	40	18.0	5	FIGUNC37N	FIGUNC37T
1" UNC	8	20.0	110	40	20.0	5	FIGUNC39N	FIGUNC39T
1" UNF	12	20.0	110	40	20.0	5	FIGUNC41N	FIGUNC41T

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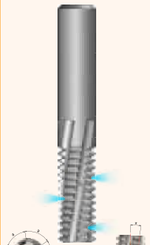

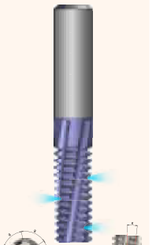

R 10° - RR	R 10° - RR	R 9/11° - RR	R 9/11° - RR
Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2	P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGUNC01NF	FIGUNC01F		
FIGUNC03NF	FIGUNC03F		
FIGUNC07NF	FIGUNC07F	FIGUNC07NG	FIGUNC07TG
FIGUNC09NF	FIGUNC09F	FIGUNC09NG	FIGUNC09TG
FIGUNC05NF	FIGUNC05F	FIGUNC05NG	FIGUNC05TG
FIGUNC11NF	FIGUNC11F	FIGUNC11NG	FIGUNC11TG
FIGUNC13NF	FIGUNC13F	FIGUNC13NG	FIGUNC13TG
FIGUNC15NF	FIGUNC15F	FIGUNC15NG	FIGUNC15TG
FIGUNC17NF	FIGUNC17F	FIGUNC17NG	FIGUNC17TG
FIGUNC19NF	FIGUNC19F	FIGUNC19NG	FIGUNC19TG
FIGUNC21NF	FIGUNC21F	FIGUNC21NG	FIGUNC21TG
FIGUNC23NF	FIGUNC23F	FIGUNC23NG	FIGUNC23TG
FIGUNC25NF	FIGUNC25F	FIGUNC25NG	FIGUNC25TG
FIGUNC27NF	FIGUNC27F	FIGUNC27NG	FIGUNC27TG
FIGUNC29NF	FIGUNC29F	FIGUNC29NG	FIGUNC29TG
FIGUNC31NF	FIGUNC31F	FIGUNC31NG	FIGUNC31TG
FIGUNC33NF	FIGUNC33F	FIGUNC33NG	FIGUNC33TG
FIGUNC35NF	FIGUNC35F	FIGUNC35NG	FIGUNC35TG
FIGUNC37NF	FIGUNC37F	FIGUNC37NG	FIGUNC37TG
FIGUNC39NF	FIGUNC39F	FIGUNC39NG	FIGUNC39TG
FIGUNC41NF	FIGUNC41F	FIGUNC41NG	FIGUNC41TG

FIGGAW 1,5xD

$G_{(BSP)}$, $RP_{(BSPP)}$, W

DIN EN ISO 228, DIN EN 10226-1, ISO 7/1, BS 84

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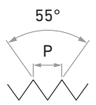
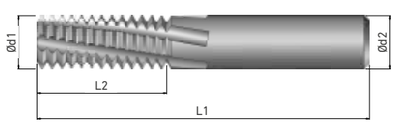
CUSTOMIZED DESIGN ON REQUEST

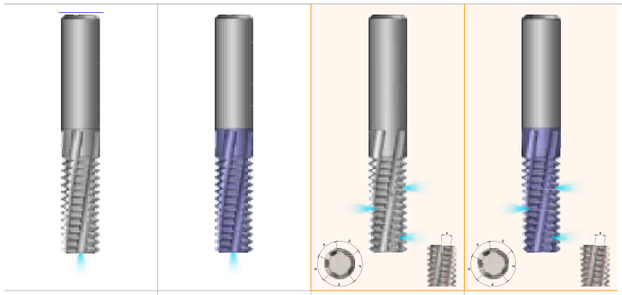


VHM | e8 | 1,5xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL | ESTERNO EXTERNAL



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 S1.1-S2.6 N1.1-N5.2 M1.1-M4.1 H1.1-H1.2
DATI TECNICI TECHNICAL DATA	DIVISIONE IRREGOLARE UNEQUAL INDEX; ELICA VARIABILE VARIABLE HELIX	

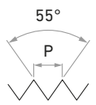
Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/8"BSP	28	8.0	57	12	8.0	3	FIGGAW15N	FIGGAW15T
1/4"BSP	19	10.0	70	15	10.0	4	FIGGAW17N	FIGGAW17T
3/8"BSP	19	14.0	86	21	14.0	4	FIGGAW19N	FIGGAW19T
1/2"BSP	14	16.0	84	24	16.0	5	FIGGAW21N	FIGGAW21T
5/8"BSP 3/4"BSP 7/8"BSP	14	20.0	100	30	20.0	5	FIGGAW23N	FIGGAW23T
1" >BSP	11	20.0	100	30	20.0	5	FIGGAW25N	FIGGAW25T



R 10° - RR	R 10° - RR	R 9/11° - RR	R 9/11° - RR
Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2	P1.1-P5.1 K1.1-K4.2 S1.1-S1.3 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGGAW15NF	FIGGAW15F	FIGGAW15NG	FIGGAW15TG
FIGGAW17NF	FIGGAW17F	FIGGAW17NG	FIGGAW17TG
FIGGAW19NF	FIGGAW19F	FIGGAW19NG	FIGGAW19TG
FIGGAW21NF	FIGGAW21F	FIGGAW21NG	FIGGAW21TG
FIGGAW23NF	FIGGAW23F	FIGGAW23NG	FIGGAW23TG
FIGGAW25NF	FIGGAW25F	FIGGAW25NG	FIGGAW25TG

FIGGAW 2xD

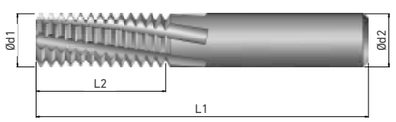


G(BSP), RP(BSPP), W

DIN EN ISO 228, DIN EN 10226-1, ISO 7/1, BS 84

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST

VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL | ESTERNO EXTERNAL



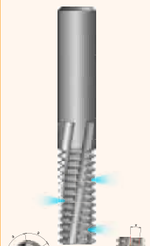
DATI TECNICI
TECHNICAL DATA

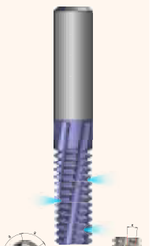
DIVISIONE IRREGOLARE
UNEQUAL INDEX

ELICA VARIABILE
VARIABLE HELIX

	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/8"BSP	28	8.0	65	20	8.0	3	FIGGAW01N	FIGGAW01T
1/4"BSP	19	10.0	80	25	10.0	4	FIGGAW03N	FIGGAW03T
3/8"BSP	19	14.0	100	35	14.0	4	FIGGAW05N	FIGGAW05T
1/2"BSP	14	16.0	100	40	16.0	5	FIGGAW07N	FIGGAW07T
5/8"BSP 3/4"BSP 7/8"BSP	14	20.0	110	40	20.0	5	FIGGAW09N	FIGGAW09T
1" >BSP	11	20.0	110	40	20.0	5	FIGGAW11N	FIGGAW11T





R 10° - RR	R 10° - RR	R 9/11° - RR	R 9/11° - RR
Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGGAW01NF	FIGGAW01F	FIGGAW01NG	FIGGAW01TG
FIGGAW03NF	FIGGAW03F	FIGGAW03NG	FIGGAW03TG
FIGGAW05NF	FIGGAW05F	FIGGAW05NG	FIGGAW05TG
FIGGAW07NF	FIGGAW07F	FIGGAW07NG	FIGGAW07TG
FIGGAW09NF	FIGGAW09F	FIGGAW09NG	FIGGAW09TG
FIGGAW11NF	FIGGAW11F	FIGGAW11NG	FIGGAW11TG

FIGBSW 2xD

BSW, BSF

B.S.84:1956, DIN 259, ISO228/1:1982

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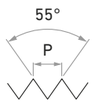
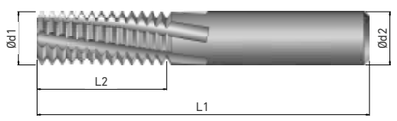
CUSTOMIZED DESIGN ON REQUEST



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL | ESTERNO EXTERNAL



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/4"BSF	26	5.00	57	12.7	6.0	3	FIGBSW01N	FIGBSW01T
5/16"BSF	22	6.35	61	16.2	8.0	3	FIGBSW03N	FIGBSW03T
1/4"BSW 3/8"BSF	20	4.45	57	12.7	6.0	3	FIGBSW05N	FIGBSW05T
3/8"BSF	20	7.65	61	19.0	8.0	3	FIGBSW07N	FIGBSW07T
5/16"BSW 7/16"BSF	18	5.85	57	15.5	6.0	3	FIGBSW09N	FIGBSW09T
7/16"BSF	18	9.20	73	22.6	10.0	3	FIGBSW11N	FIGBSW11T
3/8"BSW 1/2"BSF 9/16"BSF	16	7.20	61	19.0	8.0	3	FIGBSW13N	FIGBSW13T
1/2"BSF 9/16"BSF	16	10.50	80	25.4	12.0	4	FIGBSW15N	FIGBSW15T
9/16"BSF	16	12.15	92	28.6	14.0	4	FIGBSW17N	FIGBSW17T
7/16"BSW 5/8"BSF 11/16"BSF	14	8.50	73	21.8	10.0	3	FIGBSW19N	FIGBSW19T
5/8"BSF 11/16"BSF	14	13.40	92	30.8	14.0	4	FIGBSW21N	FIGBSW21T
11/16"BSF	14	15.00	92	34.5	16.0	4	FIGBSW23N	FIGBSW23T
1/2"BSW 3/4"BSF	12	9.65	73	25.4	10.0	3	FIGBSW25N	FIGBSW25T
9/16"BSW 3/4"BSF	12	11.25	80	27.5	12.0	4	FIGBSW27N	FIGBSW27T
3/4"BSF	12	16.20	102	38.1	18.0	4	FIGBSW29N	FIGBSW29T
5/8"BSW 7/8"BSF	11	12.60	92	32.3	14.0	4	FIGBSW31N	FIGBSW31T
11/16"BSW	11	14.20	92	34.6	16.0	4	FIGBSW33N	FIGBSW33T

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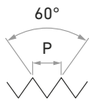
	R 10° - RR	R 10° - RR
	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGBSW01NF	FIGBSW01F
FIGBSW03NF	FIGBSW03F
FIGBSW05NF	FIGBSW05F
FIGBSW07NF	FIGBSW07F
FIGBSW09NF	FIGBSW09F
FIGBSW11NF	FIGBSW11F
FIGBSW13NF	FIGBSW13F
FIGBSW15NF	FIGBSW15F
FIGBSW17NF	FIGBSW17F
FIGBSW19NF	FIGBSW19F
FIGBSW21NF	FIGBSW21F
FIGBSW23NF	FIGBSW23F
FIGBSW25NF	FIGBSW25F
FIGBSW27NF	FIGBSW27F
FIGBSW29NF	FIGBSW29F
FIGBSW31NF	FIGBSW31F
FIGBSW33NF	FIGBSW33F

FIGMFF 1,5xD

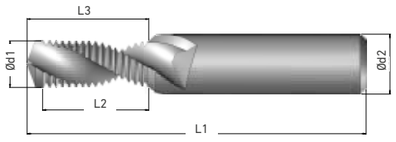
M, MF

DIN 13



VHM | e8 | 1,5xD | RH-LH | DIN 6535 HA | 140° | INTERNO INTERNAL

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30° RR	R 30° RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 4	P1.1-P5.1	P1.1-P5.1
	K1.1-K4.2	M1.1-M4.1
	N1.1-N1.5	N1.1-N5.2
	N2.1-N2.6	S1.1-S2.6
	N3.1-N4.2	H1.1-H1.2
	S1.1-S1.3	

Filetto - Thread	Pitch mm	d1	L1	L2	L3	d2	Z		
MF4	0.50	3.50	49	5.05	7.20	6.0	2	FIGMFF12N	FIGMFF12T
M4	0.70	3.30	49	5.64	6.90	6.0	2	FIGMFF14N	FIGMFF14T
MF5	0.50	4.50	55	7.56	8.90	6.0	2	FIGMFF16N	FIGMFF16T
M5	0.80	4.20	55	7.25	8.85	6.0	2	FIGMFF18N	FIGMFF18T
MF6	0.75	5.25	62	9.07	10.77	8.0	2	FIGMFF20N	FIGMFF20T
M6	1.00	5.00	62	9.06	10.95	8.0	2	FIGMFF22N	FIGMFF22T
MF8	1.00	7.00	74	12.09	14.45	10.0	2	FIGMFF24N	FIGMFF24T
M8	1.25	6.75	74	11.33	13.82	10.0	2	FIGMFF26N	FIGMFF26T
MF10	1.00	9.00	79	15.11	17.75	12.0	2	FIGMFF28N	FIGMFF28T
MF10	1.25	8.75	79	15.11	18.12	12.0	2	FIGMFF30N	FIGMFF30T
M10	1.50	8.50	79	15.03	18.20	12.0	2	FIGMFF32N	FIGMFF32T
MF12	1.00	11.00	89	17.14	20.15	14.0	2	FIGMFF34N	FIGMFF34T
MF12	1.25	10.75	89	18.88	22.22	14.0	2	FIGMFF36N	FIGMFF36T
MF12	1.50	10.50	89	18.12	21.60	14.0	2	FIGMFF38N	FIGMFF38T
M12	1.75	10.25	89	17.61	21.22	14.0	2	FIGMFF40N	FIGMFF40T
M14	2.00	12.00	102	20.12	24.35	16.0	2	FIGMFF42N	FIGMFF42T
MF14	1.50	12.50	102	21.14	24.90	16.0	2	FIGMFF44N	FIGMFF44T
MF16	1.50	14.50	102	24.15	28.40	18.0	2	FIGMFF46N	FIGMFF46T
M16	2.00	14.00	102	24.13	28.75	18.0	2	FIGMFF48N	FIGMFF48T

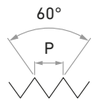
	R 30° RR	R 30° RR
	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
	P1.1-P5.1	P1.1-P5.1
	K1.1-K4.2	M1.1-M4.1
	N1.1-N1.5	N1.1-N5.2
	N2.1-N2.6	S1.1-S2.6
	N3.1-N4.2	H1.1-H1.2
	S1.1-S1.3	

FIGMFF12NF	FIGMFF12F
FIGMFF14NF	FIGMFF14F
FIGMFF16NF	FIGMFF16F
FIGMFF18NF	FIGMFF18F
FIGMFF20NF	FIGMFF20F
FIGMFF22NF	FIGMFF22F
FIGMFF24NF	FIGMFF24F
FIGMFF26NF	FIGMFF26F
FIGMFF28NF	FIGMFF28F
FIGMFF30NF	FIGMFF30F
FIGMFF32NF	FIGMFF32F
FIGMFF34NF	FIGMFF34F
FIGMFF36NF	FIGMFF36F
FIGMFF38NF	FIGMFF38F
FIGMFF40NF	FIGMFF40F
FIGMFF42NF	FIGMFF42F
FIGMFF44NF	FIGMFF44F
FIGMFF46NF	FIGMFF46F
FIGMFF48NF	FIGMFF48F

FIGMFF 2xD

M, MF

DIN 13



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | 140° | INTERNO INTERNAL

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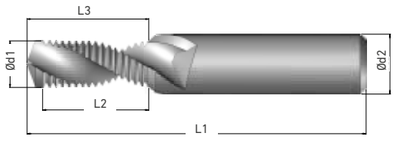
CUSTOMIZED DESIGN ON REQUEST



	R 30° RR	R 30° RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 4	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	Pitch mm	d1	L1	L2	L3	d2	Z		
MF 4	0.50	3.50	55	7.95	9.20	6.0	2	FIGMFF50N	FIGMFF50T
M 4	0.70	3.30	55	7.65	9.00	6.0	2	FIGMFF51N	FIGMFF51T
MF 5	0.50	4.50	55	9.95	11.40	6.0	2	FIGMFF52N	FIGMFF52T
M 5	0.80	4.20	55	9.55	11.25	6.0	2	FIGMFF53N	FIGMFF53T
MF 6	0.75	5.25	62	11.95	13.82	8.0	2	FIGMFF54N	FIGMFF54T
M 6	1.00	5.00	62	12.05	13.95	8.0	2	FIGMFF56N	FIGMFF56T
MF 8	1.00	7.00	74	15.90	18.45	10.0	2	FIGMFF58N	FIGMFF58T
M 8	1.25	6.75	74	15.07	17.52	10.0	2	FIGMFF60N	FIGMFF60T
MF 10	1.00	9.00	79	20.10	22.75	12.0	2	FIGMFF62N	FIGMFF62T
MF 10	1.25	8.75	79	20.10	23.12	12.0	2	FIGMFF64N	FIGMFF64T
M 10	1.50	8.50	79	19.53	22.70	12.0	2	FIGMFF66N	FIGMFF66T
MF 12	1.00	11.00	89	23.90	27.15	14.0	2	FIGMFF68N	FIGMFF68T
MF 12	1.25	10.75	89	23.90	27.22	14.0	2	FIGMFF70N	FIGMFF70T
MF 12	1.50	10.50	89	24.10	27.60	14.0	2	FIGMFF72N	FIGMFF72T
M 12	1.75	10.25	89	22.85	26.47	14.0	2	FIGMFF74N	FIGMFF74T
M 14	2.00	12.00	102	28.11	32.35	16.0	2	FIGMFF75N	FIGMFF75T
MF 14	1.50	12.50	102	27.12	31.00	16.0	2	FIGMFF76N	FIGMFF76T
MF 16	1.50	14.50	102	31.65	35.90	18.0	2	FIGMFF78N	FIGMFF78T
M 16	2.00	14.00	102	32.11	36.75	18.0	2	FIGMFF80N	FIGMFF80T

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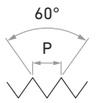
	R 30° RR	R 30° RR
	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGMFF50NF	FIGMFF50F
FIGMFF51NF	FIGMFF51F
FIGMFF52NF	FIGMFF52F
FIGMFF53NF	FIGMFF53F
FIGMFF54NF	FIGMFF54F
FIGMFF56NF	FIGMFF56F
FIGMFF58NF	FIGMFF58F
FIGMFF60NF	FIGMFF60F
FIGMFF62NF	FIGMFF62F
FIGMFF64NF	FIGMFF64F
FIGMFF66NF	FIGMFF66F
FIGMFF68NF	FIGMFF68F
FIGMFF70NF	FIGMFF70F
FIGMFF72NF	FIGMFF72F
FIGMFF74NF	FIGMFF74F
FIGMFF75NF	FIGMFF75F
FIGMFF76NF	FIGMFF76F
FIGMFF78NF	FIGMFF78F
FIGMFF80NF	FIGMFF80F

FIGMFF 2,5xD

M, MF

DIN 13



VHM | e8 | 2,5xD | RH-LH | DIN 6535 HA | 140° | INTERNO INTERNAL

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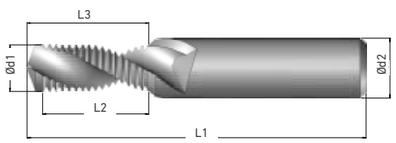
CUSTOMIZED DESIGN ON REQUEST



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 4	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	Pitch mm	d1	L1	L2	L3	d2	Z		
M 6	1.00	5.00	65	15.10	16.95	8.0	2	FIGMFF82N	FIGMFF82T
M 8	1.25	6.75	80	20.08	22.52	10.0	2	FIGMFF84N	FIGMFF84T
M 10	1.50	8.50	85	25.59	28.70	12.0	2	FIGMFF86N	FIGMFF86T
M 12	1.75	10.25	95	29.86	33.47	14.0	2	FIGMFF88N	FIGMFF88T
M 14	2.00	12.00	110	36.12	40.35	16.0	2	FIGMFF90N	FIGMFF90T
M 16	2.00	14.00	110	40.13	44.75	18.0	2	FIGMFF92N	FIGMFF92T

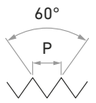
	R 30° - RR	R 30° - RR
	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGMFF82NF	FIGMFF82F
FIGMFF84NF	FIGMFF84F
FIGMFF86NF	FIGMFF86F
FIGMFF88NF	FIGMFF88F
FIGMFF90NF	FIGMFF90F
FIGMFF92NF	FIGMFF92F

FIGUFF 1,5xD

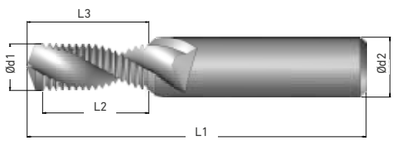
UNC, UNF

ASME B1.1



VHM | e8 | 1,5xD | RH-LH | DIN 6535 HA | 140° | INTERNO INTERNAL

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 30° - RR | R 30° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 4

P1.1-P5.1 | K1.1-K4.2 | N1.1-N1.5 | N2.1-N2.6 | N3.1-N4.2 | S1.1-S1.3

P1.1-P5.1 | M1.1-M4.1 | N1.1-N5.2 | S1.1-S2.6 | H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	L3	d2	Z		
No. 10 UNF	32	4.10	55	7.24	8.77	6.0	2	FIGUFF12N	FIGUFF12T
No. 12 UNF	28	4.65	62	8.27	10.02	8.0	2	FIGUFF16N	FIGUFF16T
1/4" UNC	20	5.20	62	8.99	11.27	8.0	2	FIGUFF18N	FIGUFF18T
1/4" UNF	28	5.50	62	9.16	11.02	8.0	2	FIGUFF20N	FIGUFF20T
5/16" UNC	18	6.60	74	11.39	14.07	10.0	2	FIGUFF22N	FIGUFF22T
5/16" UNF	24	6.90	74	11.74	14.02	10.0	2	FIGUFF24N	FIGUFF24T
3/8" UNC	16	8.00	79	14.40	17.48	12.0	2	FIGUFF26N	FIGUFF26T
3/8" UNF	24	8.50	79	13.87	16.52	12.0	2	FIGUFF28N	FIGUFF28T
7/16" UNC	14	9.40	79	16.45	19.98	12.0	2	FIGUFF30N	FIGUFF30T
7/16" UNF	20	9.90	79	17.91	20.95	12.0	2	FIGUFF32N	FIGUFF32T
1/2" UNC	13	10.75	89	17.71	21.67	14.0	2	FIGUFF34N	FIGUFF34T
1/2" UNF	20	11.50	89	19.20	22.55	14.0	2	FIGUFF36N	FIGUFF36T
9/16" UNC	12	12.25	102	21.31	25.72	16.0	2	FIGUFF38N	FIGUFF38T
9/16" UNF	18	12.90	102	21.32	25.05	16.0	2	FIGUFF40N	FIGUFF40T
5/8" UNC	11	13.50	102	23.21	27.96	18.0	2	FIGUFF42N	FIGUFF42T
5/8" UNF	18	14.50	102	22.74	26.75	18.0	2	FIGUFF44N	FIGUFF44T
3/4" UNC	10	16.50	115	28.10	33.67	20.0	2	FIGUFF46N	FIGUFF46T
3/4" UNF	16	17.50	115	28.78	33.55	20.0	2	FIGUFF48N	FIGUFF48T

IGUTENSILI

R 30° - RR | R 30° - RR

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

P1.1-P5.1 | K1.1-K4.2 | N1.1-N1.5 | N2.1-N2.6 | N3.1-N4.2 | S1.1-S1.3

P1.1-P5.1 | M1.1-M4.1 | N1.1-N5.2 | S1.1-S2.6 | H1.1-H1.2

FIGUFF12NF	FIGUFF12F
FIGUFF16NF	FIGUFF16F
FIGUFF18NF	FIGUFF18F
FIGUFF20NF	FIGUFF20F
FIGUFF22NF	FIGUFF22F
FIGUFF24NF	FIGUFF24F
FIGUFF26NF	FIGUFF26F
FIGUFF28NF	FIGUFF28F
FIGUFF30NF	FIGUFF30F
FIGUFF32NF	FIGUFF32F
FIGUFF34NF	FIGUFF34F
FIGUFF36NF	FIGUFF36F
FIGUFF38NF	FIGUFF38F
FIGUFF40NF	FIGUFF40F
FIGUFF42NF	FIGUFF42F
FIGUFF44NF	FIGUFF44F
FIGUFF46NF	FIGUFF46F
FIGUFF48NF	FIGUFF48F

FIGUFF 2xD

UNC, UNF

ASME B1.1

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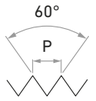
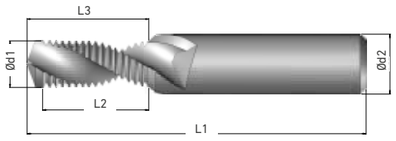
CUSTOMIZED DESIGN ON REQUEST



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | 140° | INTERNO INTERNAL



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D - 4	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	L3	d2	Z		
No. 10 UNF	32	4.10	55	9.60	11.17	6.0	2	FIGUFF50N	FIGUFF50T
No. 12 UNF	28	4.65	62	10.95	12.72	8.0	2	FIGUFF54N	FIGUFF54T
1/4" UNC	20	5.20	62	12.75	15.07	8.0	2	FIGUFF56N	FIGUFF56T
1/4" UNF	28	5.50	62	12.75	14.72	8.0	2	FIGUFF58N	FIGUFF58T
5/16" UNC	18	6.60	74	15.60	18.27	10.0	2	FIGUFF60N	FIGUFF60T
5/16" UNF	24	6.90	74	15.95	18.32	10.0	2	FIGUFF62N	FIGUFF62T
3/8" UNC	16	8.00	80	19.15	22.28	12.0	2	FIGUFF64N	FIGUFF64T
3/8" UNF	24	8.50	80	19.15	21.82	12.0	2	FIGUFF66N	FIGUFF66T
7/16" UNC	14	9.40	80	21.85	25.48	12.0	2	FIGUFF68N	FIGUFF68T
7/16" UNF	20	9.90	80	21.70	24.85	12.0	2	FIGUFF70N	FIGUFF70T
1/2" UNC	13	10.75	89	25.50	29.47	14.0	2	FIGUFF72N	FIGUFF72T
1/2" UNF	20	11.50	89	25.55	29.05	14.0	2	FIGUFF74N	FIGUFF74T
9/16" UNC	12	12.25	102	27.65	32.12	16.0	2	FIGUFF76N	FIGUFF76T
9/16" UNF	18	12.90	102	28.35	32.25	16.0	2	FIGUFF78N	FIGUFF78T
5/8" UNC	11	13.50	102	30.15	34.96	18.0	2	FIGUFF80N	FIGUFF80T
5/8" UNF	18	14.50	102	31.20	35.35	18.0	2	FIGUFF82N	FIGUFF82T
3/4" UNC	10	16.50	115	38.25	43.87	20.0	2	FIGUFF84N	FIGUFF84T
3/4" UNC	16	17.50	115	38.30	43.15	20.0	2	FIGUFF86N	FIGUFF86T

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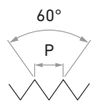
	R 30° - RR	R 30° - RR
	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGUFF50NF	FIGUFF50F
FIGUFF54NF	FIGUFF54F
FIGUFF56NF	FIGUFF56F
FIGUFF58NF	FIGUFF58F
FIGUFF60NF	FIGUFF60F
FIGUFF62NF	FIGUFF62F
FIGUFF64NF	FIGUFF64F
FIGUFF66NF	FIGUFF66F
FIGUFF68NF	FIGUFF68F
FIGUFF70NF	FIGUFF70F
FIGUFF72NF	FIGUFF72F
FIGUFF74NF	FIGUFF74F
FIGUFF76NF	FIGUFF76F
FIGUFF78NF	FIGUFF78F
FIGUFF80NF	FIGUFF80F
FIGUFF82NF	FIGUFF82F
FIGUFF84NF	FIGUFF84F
FIGUFF86NF	FIGUFF86F

FIGUFF 2,5xD

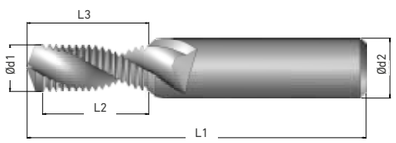
UNC

ASME B1.1



VHM | e8 | 2,5xD | RH-LH | DIN 6535 HA | 140° | INTERNO INTERNAL

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 4	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	L3	d2	Z		
3/8" UNC	16	8.00	85	23.93	26.98	12.0	2	FIGUFF90N	FIGUFF90T
7/16" UNC	14	9.40	85	27.33	30.88	12.0	2	FIGUFF92N	FIGUFF92T
1/2" UNC	13	10.75	95	31.39	35.37	14.0	2	FIGUFF94N	FIGUFF94T
9/16" UNC	12	12.25	110	34.01	38.42	16.0	2	FIGUFF96N	FIGUFF96T
5/8" UNC	11	13.50	110	39.38	44.16	18.0	2	FIGUFF98N	FIGUFF98T
3/4" UNC	10	16.50	125	45.88	51.47	20.0	2	FIGUFF100N	FIGUFF100T

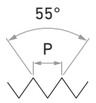
	R 30° - RR	R 30° - RR
	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGUFF90NF	FIGUFF90F
FIGUFF92NF	FIGUFF92F
FIGUFF94NF	FIGUFF94F
FIGUFF96NF	FIGUFF96F
FIGUFF98NF	FIGUFF98F
FIGUFF100NF	FIGUFF100F

FIGGFF 1,5xD

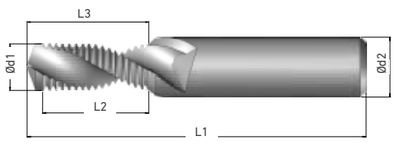
G

DIN EN ISO 228



VHM | e8 | 1,5xD | RH-LH | DIN 6535 HA | 140° | INTERNO INTERNAL

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 4	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	L3	d2	Z		
1/8"	28	8.80	79	14.56	17.10	12.0	2	FIGGFF20N	FIGGFF20T
1/4"	19	11.80	102	18.77	22.25	16.0	2	FIGGFF22N	FIGGFF22T
3/8"	19	15.25	102	25.46	29.62	18.0	2	FIGGFF24N	FIGGFF24T

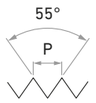
	R 30° - RR	R 30° - RR
	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGGFF20NF	FIGGFF20F
FIGGFF22NF	FIGGFF22F
FIGGFF24NF	FIGGFF24F

FIGGFF 2xD

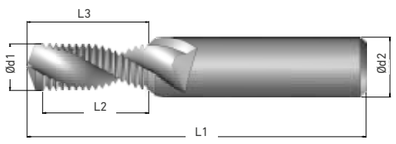
G

DIN EN ISO 228



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | 140° | INTERNO INTERNAL

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 4	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	L3	d2	Z		
1/8"	28	8.80	79	18.98	21.80	12.0	2	FIGGFF50N	FIGGFF50T
1/4"	19	11.80	102	25.30	28.45	16.0	2	FIGGFF52N	FIGGFF52T
3/8"	19	15.25	102	37.40	41.82	18.0	2	FIGGFF54N	FIGGFF54T

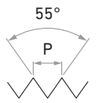
	R 30° - RR	R 30° - RR
	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGGFF50NF	FIGGFF50F
FIGGFF52NF	FIGGFF52F
FIGGFF54NF	FIGGFF54F

FIGGFF 2,5xD

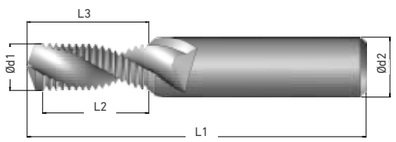
G

DIN EN ISO 228



VHM | e8 | 2,5xD | RH-LH | DIN 6535 HA | 140° | INTERNO INTERNAL

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30° - RR	R 30° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 4	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	L3	d2	Z		
1/8"	28	8.80	79	23.32	26.40	12.0	2	FIGGFF70N	FIGGFF70T
1/4"	19	11.80	102	31.27	35.40	16.0	2	FIGGFF72N	FIGGFF72T
3/8"	19	15.25	102	40.41	47.27	18.0	2	FIGGFF74N	FIGGFF74T

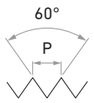
	R 30° - RR	R 30° - RR
	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGGFF70NF	FIGGFF70F
FIGGFF72NF	FIGGFF72F
FIGGFF74NF	FIGGFF74F

FIGMSF 2xD

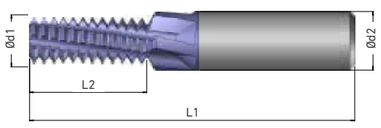
M, MF

DIN 13



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 10° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Coated TNF ≤45 Hrc

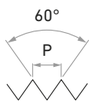
MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 4
P1.1-P5.1
M1.1-M4.1
N1.1-N5.2
S1.1-S2.6
H1.1-H1.2

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z	
M 5	0.80	4.0	55	10.75	6.0	3	**FIGMSF50T**
MF 6	0.75	5.0	62	12.30	8.0	3	**FIGMSF52T**
M 6	1.00	4.8	62	12.40	8.0	3	**FIGMSF54T**
MF 8	1.00	6.7	74	16.40	10.0	3	**FIGMSF56T**
M 8	1.25	6.5	74	16.80	10.0	3	**FIGMSF58T**
MF 10	1.00	8.7	80	20.40	12.0	3	**FIGMSF60T**
MF 10	1.25	8.4	80	20.80	12.0	3	**FIGMSF62T**
M 10	1.50	8.2	80	20.15	12.0	3	**FIGMSF64T**
MF 12	1.25	10.4	90	24.30	14.0	4	**FIGMSF68T**
MF 12	1.50	10.1	90	24.65	14.0	4	**FIGMSF70T**

FIGNPT

NPT

ANSI B1.20.1



VHM

e8

RH-LH

DIN 6535 HA

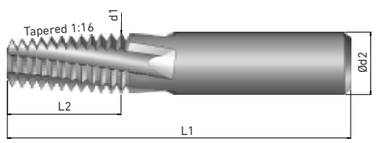
INTERNO INTERNAL

ESTERNO EXTERNAL

R 15° - RR

R 15° - RR

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc

Coated TNF ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 3

P1.1-P5.1
K1.1-K4.2
N1.1-N1.5
N2.1-N2.6
N3.1-N4.2
S1.1-S1.3

P1.1-P5.1
M1.1-M4.1
N1.1-N5.2
S1.1-S2.6
H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/16"	27	5.90	55	9.88	8.0	3	FIGNPT01N	FIGNPT01T
1/8"	27	7.65	55	9.88	8.0	3	FIGNPT03N	FIGNPT03T
1/4"	18	10.15	75	14.82	12.0	4	FIGNPT05N	FIGNPT05T
3/8"	18	11.15	75	14.82	12.0	4	FIGNPT07N	FIGNPT07T
1/2" 3/4"	14	14.25	80	19.05	16.0	4	FIGNPT09N	FIGNPT09T
1", 1" 3/4, 1" 1/2, 2"	11,5	19.60	90	23.19	20.0	5	FIGNPT11N	FIGNPT11T

R 15° - RR

R 15° - RR

Uncoated ≤45 Hrc

Coated TNF ≤45 Hrc

P1.1-P5.1
K1.1-K4.2
N1.1-N1.5
N2.1-N2.6
N3.1-N4.2
S1.1-S1.3

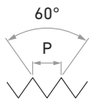
P1.1-P5.1
M1.1-M4.1
N1.1-N5.2
S1.1-S2.6
H1.1-H1.2

FIGNPT01NF	FIGNPT01F
FIGNPT03NF	FIGNPT03F
FIGNPT05NF	FIGNPT05F
FIGNPT07NF	FIGNPT07F
FIGNPT09NF	FIGNPT09F
FIGNPT11NF	FIGNPT11F

FIGNPT

NPT

ANSI B1.20.1



VHM | e8 | XL | RH-LH | DIN 6535 HA | INTERNO INTERNAL | ESTERNO EXTERNAL

R 15° - RR | R 15° - RR

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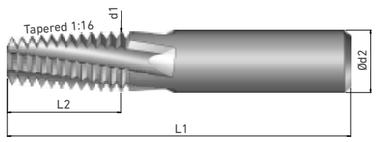
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
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P1.1-P5.1 | K1.1-K4.2 | N1.1-N1.5 | N2.1-N2.6 | N3.1-N4.2 | S1.1-S1.3

P1.1-P5.1 | M1.1-M4.1 | N1.1-N5.2 | S1.1-S2.6 | H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/16"	27	5.90	60	13.63	8.0	3	FIGNPT13N	FIGNPT13T
1/8"	27	7.65	60	13.63	8.0	3	FIGNPT15N	FIGNPT15T
1/4"	18	10.15	80	20.44	12.0	4	FIGNPT17N	FIGNPT17T
3/8"	18	11.15	80	20.44	12.0	4	FIGNPT19N	FIGNPT19T
1/2" 3/4"	14	14.25	88	26.27	16.0	4	FIGNPT21N	FIGNPT21T
1", 1" 1/4, 1" 1/2 , 2"	11,5	19.60	100	31.98	20.0	5	FIGNPT23N	FIGNPT23T
2" 1/2	8	19.88	110	36.51	20.0	4	FIGNPT25N	FIGNPT25T

R 15° - RR | R 15° - RR

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

P1.1-P5.1 | K1.1-K4.2 | N1.1-N1.5 | N2.1-N2.6 | N3.1-N4.2 | S1.1-S1.3

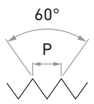
P1.1-P5.1 | M1.1-M4.1 | N1.1-N5.2 | S1.1-S2.6 | H1.1-H1.2

FIGNPT13NF	FIGNPT13F
FIGNPT15NF	FIGNPT15F
FIGNPT17NF	FIGNPT17F
FIGNPT19NF	FIGNPT19F
FIGNPT21NF	FIGNPT21F
FIGNPT23NF	FIGNPT23F
FIGNPT25NF	FIGNPT25F

FIGNPTF

NPTF

ANSI B1.20.3



VHM

e8

RH-LH

DIN 6535 HA

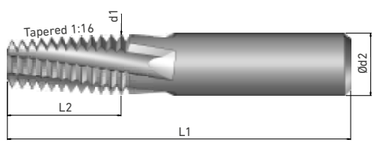
INTERNO INTERNAL

ESTERNO EXTERNAL

R 15° - RR

R 15° - RR

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc

Coated TNF ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 3

P1.1-P5.1
K1.1-K4.2
N1.1-N1.5
N2.1-N2.6
N3.1-N4.2
S1.1-S1.3

P1.1-P5.1
M1.1-M4.1
N1.1-N5.2
S1.1-S2.6
H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/16"	27	5.90	55	9.88	8.0	3	FIGNPTF01N	FIGNPTF01T
1/8"	27	7.65	55	9.88	8.0	3	FIGNPTF03N	FIGNPTF03T
1/4"	18	10.15	75	14.82	12.0	4	FIGNPTF05N	FIGNPTF05T
3/8"	18	11.15	75	14.82	12.0	4	FIGNPTF07N	FIGNPTF07T
1/2" 3/4"	14	14.25	80	19.05	16.0	4	FIGNPTF09N	FIGNPTF09T
1", 1" 1/4, 1" 1/2 , 2"	11,5	19.60	90	23.19	20.0	5	FIGNPTF11N	FIGNPTF11T

R 15° - RR

R 15° - RR

Uncoated ≤45 Hrc

Coated TNF ≤45 Hrc

P1.1-P5.1
K1.1-K4.2
N1.1-N1.5
N2.1-N2.6
N3.1-N4.2
S1.1-S1.3

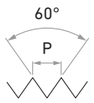
P1.1-P5.1
M1.1-M4.1
N1.1-N5.2
S1.1-S2.6
H1.1-H1.2

FIGNPTF01NF	FIGNPTF01F
FIGNPTF03NF	FIGNPTF03F
FIGNPTF05NF	FIGNPTF05F
FIGNPTF07NF	FIGNPTF07F
FIGNPTF09NF	FIGNPTF09F
FIGNPTF11NF	FIGNPTF11F

FIGNPTF

NPTF

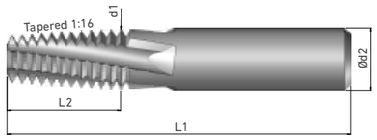
ANSI B1.20.3



VHM | e8 | XL | RH-LH | DIN 6535 HA | INTERNO INTERNAL | ESTERNO EXTERNAL

R 15° - RR | R 15° - RR

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
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P1.1-P5.1	P1.1-P5.1
K1.1-K4.2	M1.1-M4.1
N1.1-N1.5	N1.1-N5.2
N2.1-N2.6	S1.1-S2.6
N3.1-N4.2	H1.1-H1.2
S1.1-S1.3	

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/16"	27	5.90	60	13.63	8.0	3	FIGNPTF13N	FIGNPTF13T
1/8"	27	7.65	60	13.63	8.0	3	FIGNPTF15N	FIGNPTF15T
1/4"	18	10.15	80	20.44	12.0	4	FIGNPTF17N	FIGNPTF17T
3/8"	18	11.15	80	20.44	12.0	4	FIGNPTF19N	FIGNPTF19T
1/2" 3/4"	14	14.25	88	26.27	16.0	4	FIGNPTF21N	FIGNPTF21T
1", 1" 1/4, 1" 1/2, 2"	11,5	19.60	100	31.98	20.0	5	FIGNPTF23N	FIGNPTF23T
2" 1/2	8	19.88	110	36.51	20.0	4	FIGNPTF25N	FIGNPTF25T

R 15° - RR | R 15° - RR

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

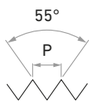
P1.1-P5.1	P1.1-P5.1
K1.1-K4.2	M1.1-M4.1
N1.1-N1.5	N1.1-N5.2
N2.1-N2.6	S1.1-S2.6
N3.1-N4.2	H1.1-H1.2
S1.1-S1.3	

FIGNPTF13NF	FIGNPTF13F
FIGNPTF15NF	FIGNPTF15F
FIGNPTF17NF	FIGNPTF17F
FIGNPTF19NF	FIGNPTF19F
FIGNPTF21NF	FIGNPTF21F
FIGNPTF23NF	FIGNPTF23F
FIGNPTF25NF	FIGNPTF25F

FIGBSPT

BSPT

DIN EN 10226-2 ISO 7-1



VHM

e8

RH-LH

DIN 6535 HA

INTERNO INTERNAL

ESTERNO EXTERNAL

R 15° - RR

R 15° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

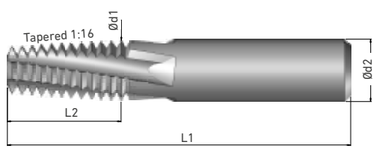
Uncoated ≤45 Hrc

Coated TNF ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 3

P1.1-P5.1
K1.1-K4.2
N1.1-N1.5
N2.1-N2.6
N3.1-N4.2
S1.1-S1.3

P1.1-P5.1
M1.1-M4.1
N1.1-N5.2
S1.1-S2.6
H1.1-H1.2



Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/16"	28	5.90	57	9.50	6.0	3	FIGBSPT03N	FIGBSPT03T
1/8"	28	7.65	61	9.50	8.0	3	FIGBSPT05N	FIGBSPT05T
1/4"	19	9.90	73	14.00	10.0	3	FIGBSPT07N	FIGBSPT07T
3/8"	19	11.15	73	14.00	16.0	4	FIGBSPT09N	FIGBSPT09T
1/2", 3/4"	14	14.25	92	20.83	16.0	4	FIGBSPT11N	FIGBSPT11T
1",1 1/2",2",2" 1/2	11	19.60	102	26.51	20.0	4	FIGBSPT13N	FIGBSPT13T

R 15° - RR

R 15° - RR

Uncoated ≤45 Hrc

Coated TNF ≤45 Hrc

P1.1-P5.1
K1.1-K4.2
N1.1-N1.5
N2.1-N2.6
N3.1-N4.2
S1.1-S1.3

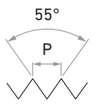
P1.1-P5.1
M1.1-M4.1
N1.1-N5.2
S1.1-S2.6
H1.1-H1.2

FIGBSPT03NF	FIGBSPT03F
FIGBSPT05NF	FIGBSPT05F
FIGBSPT07NF	FIGBSPT07F
FIGBSPT09NF	FIGBSPT09F
FIGBSPT11NF	FIGBSPT11F
FIGBSPT13NF	FIGBSPT13F

FIGBSPT

BSPT

DIN EN 10226-2 ISO 7-1



VHM | e8 | XL | RH-LH | DIN 6535 HA | INTERNO INTERNAL | ESTERNO EXTERNAL

R 15° - RR | R 15° - RR

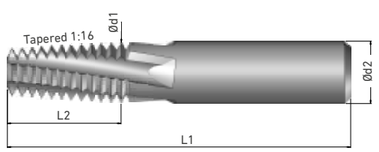
TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 3

P1.1-P5.1 | K1.1-K4.2 | N1.1-N1.5 | N2.1-N2.6 | N3.1-N4.2 | S1.1-S1.3

P1.1-P5.1 | M1.1-M4.1 | N1.1-N5.2 | S1.1-S2.6 | H1.1-H1.2



Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/16"	28	5.80	57	15.85	6.0	3	FIGBSPT20N	FIGBSPT20T
1/8"	28	7.70	63	19.48	8.0	3	FIGBSPT22N	FIGBSPT22T
1/4"	19	9.90	73	26.03	10.0	4	FIGBSPT24N	FIGBSPT24T
3/8"	19	13.40	92	32.72	16.0	4	FIGBSPT26N	FIGBSPT26T
1/2", 3/4"	14	15.70	92	42.60	16.0	5	FIGBSPT28N	FIGBSPT28T
1",1 1/2",2",2" 1/2	11	19.90	104	40.35	20.0	5	FIGBSPT30N	FIGBSPT30T

R 15° - RR | R 15° - RR

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

P1.1-P5.1 | K1.1-K4.2 | N1.1-N1.5 | N2.1-N2.6 | N3.1-N4.2 | S1.1-S1.3

P1.1-P5.1 | M1.1-M4.1 | N1.1-N5.2 | S1.1-S2.6 | H1.1-H1.2

FIGBSPT20NF	FIGBSPT20F
FIGBSPT22NF	FIGBSPT22F
FIGBSPT24NF	FIGBSPT24F
FIGBSPT26NF	FIGBSPT26F
FIGBSPT28NF	FIGBSPT28F
FIGBSPT30NF	FIGBSPT30F

FIGPRE
NPT, NPFT, BSPT

Fresa per preparazione filetto conico 1:16
Conical thread preparation cutter 1:16

VHM | e8

DIN 6535 HA

INTERNO INTERNAL | ESTERNO EXTERNAL

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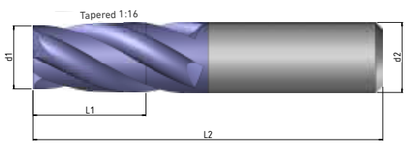
CUSTOMIZED DESIGN ON REQUEST



R 30° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated AOE ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 3

K
M1.1-M4.1
N1.1-N5.2
S1.1-S2.6
H1.1-H1.2

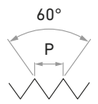
d1	L1	L2	d2	Z	
5.3	11.26	55	6.0	3	**FIGPRE01T**
7.3	11.26	55	8.0	3	**FIGPRE03T**
8.8	19.30	75	10.0	4	**FIGPRE05T**
10.8	19.30	75	12.0	4	**FIGPRE07T**
12.5	24.15	80	14.0	4	**FIGPRE09T**
18.0	32.20	90	20.0	4	**FIGPRE11T**

Filetto - Thread
1/16" NPT,1/16" NPTF,1/16" BSPT
1/8" NPT,1/8" NPTF,1/8" BSPT
1/4" NPT,1/4" NPTF,1/4" BSPT
3/8" NPT,3/8" NPTF,3/8" BSPT
1/2" NPT,1/2" NPTF,1/2" BSPT,3/4" NPT,3/4" NPTF,3/4" BSPT
1" NPT,1" NPTF,1" BSPT,1" 3/4 NPT,1" 3/4 NPTF,1" 1/2 NPT,1" 1/2 NPTF,1" 1/2 BSPT,2" NPT,2" NPTF2" BSPT,2" 1/2 BSPT

FIGMETMIC 2xD

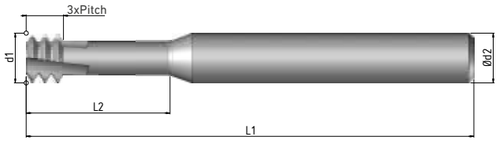
M

DIN 13



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



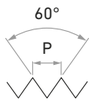
	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1	P1.1-P5.1
	K1.4 - K4.2	M1.1-M4.1
	N1.1-N1.5	N1.1-N5.2
	N2.1-N2.6	S1.1-S2.6
	N3.1-N4.2	H1.1-H1.2
	S1.1-S1.3	

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z	Z type TX		
M 1.6	0.35	1.20	39	4.5	3.0	3		FIGMETMIC04N	FIGMETMIC04T
M 2	0.40	1.55	39	4.5	3.0	3		FIGMETMIC03N	FIGMETMIC03T
M 2.2	0.45	1.65	54	5.0	6.0	3		FIGMETMIC05N	FIGMETMIC05T
M 2.5	0.45	1.95	54	5.5	6.0	3		FIGMETMIC07N	FIGMETMIC07T
M 3	0.50	2.35	54	6.5	6.0	3	4	FIGMETMIC09N	FIGMETMIC09T
M 3.5	0.60	2.75	54	7.5	6.0	3	4	FIGMETMIC11N	FIGMETMIC11T
M 4	0.70	3.10	54	9.0	6.0	3	4	FIGMETMIC13N	FIGMETMIC13T
M 4.5	0.75	3.40	54	10.5	6.0	3	4	FIGMETMIC14N	FIGMETMIC14T
M 5	0.80	3.80	54	12.5	6.0	3	4	FIGMETMIC15N	FIGMETMIC15T
M 6	1.00	4.65	54	14.0	6.0	3	4	FIGMETMIC17N	FIGMETMIC17T
M 8	1.25	5.95	54	18.0	6.0	3	4	FIGMETMIC19N	FIGMETMIC19T
M 10	1.50	7.80	64	23.0	8.0	3	4	FIGMETMIC21N	FIGMETMIC21T
M 12	1.75	9.00	73	26.0	10.0	3	4	FIGMETMIC23N	FIGMETMIC23T
M 16	2.00	11.80	80	35.0	12.0	4	5	FIGMETMIC25N	FIGMETMIC25T
M 20	2.50	15.00	100	43.0	16.0	5	6	FIGMETMIC27N	FIGMETMIC27T

	L 10° - LR
	Coated LTM ≥ 45 Hrc ≤60 Hrc
	N2.7-N2.8
	H1.3-H1.5

FIGMETMIC09TX-SX	
FIGMETMIC11TX-SX	
FIGMETMIC13TX-SX	
FIGMETMIC14TX-SX	
FIGMETMIC15TX-SX	
FIGMETMIC17TX-SX	
FIGMETMIC19TX-SX	
FIGMETMIC21TX-SX	
FIGMETMIC23TX-SX	
FIGMETMIC25TX-SX	
FIGMETMIC27TX-SX	

FIGMETMIC 3xD



VHM | e8 | 3xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

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DIN13

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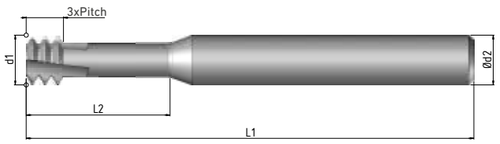
CUSTOMIZED DESIGN ON REQUEST



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

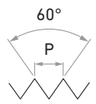
Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z	Z type TX		
M 1.6	0.35	1.20	39	5.0	3.0	3	4	FIGMETMIC31N	FIGMETMIC31T
M 2	0.40	1.55	39	6.0	3.0	3	4	FIGMETMIC33N	FIGMETMIC33T
M 2.2	0.45	1.65	54	6.0	6.0	3		FIGMETMIC34N	FIGMETMIC34T
M 2.5	0.45	1.95	54	7.5	6.0	3	4	FIGMETMIC35N	FIGMETMIC35T
M 3	0.50	2.35	54	9.5	6.0	3	4	FIGMETMIC37N	FIGMETMIC37T
M 3.5	0.60	2.75	54	10.0	6.0	3	4	FIGMETMIC38N	FIGMETMIC38T
M 4	0.70	3.10	54	12.5	6.0	3	4	FIGMETMIC39N	FIGMETMIC39T
M 4.5	0.75	3.40	54	14.0	6.0	3	4	FIGMETMIC40N	FIGMETMIC40T
M 5	0.80	3.80	54	16.0	6.0	3	4	FIGMETMIC41N	FIGMETMIC41T
M 6	1.00	4.65	54	20.0	6.0	3	4	FIGMETMIC43N	FIGMETMIC43T
M 8	1.25	5.95	54	24.0	6.0	3	4	FIGMETMIC45N	FIGMETMIC45T

L 10° - LR
Coated LTM ≥45 Hrc ≤60Hrc
N2.7-N2.8
H1.3-H1.5

FIGMETMIC31TX-SX	
FIGMETMIC33TX-SX	
FIGMETMIC35TX-SX	
FIGMETMIC37TX-SX	
FIGMETMIC38TX-SX	
FIGMETMIC39TX-SX	
FIGMETMIC41TX-SX	
FIGMETMIC43TX-SX	
FIGMETMIC45TX-SX	
FIGMETMIC47TX-SX	

FIGUNMIC 2xD

UNC, UNF
ASME B1.1



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

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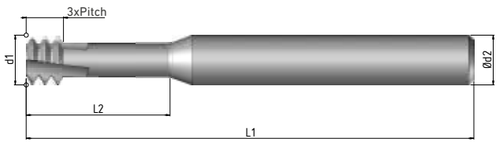
CUSTOMIZED DESIGN ON REQUEST



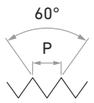
	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
Nr. 1 UNF	72	1.45	39	3.7	3.0	3	**FIGUNMIC01N**	**FIGUNMIC01T**
Nr. 1 UNC Nr. 2 UNF	64	1.40	39	3.8	3.0	3	**FIGUNMIC03N**	**FIGUNMIC03T**
Nr. 2 UNC Nr. 3 UNF	56	1.65	54	4.4	6.0	3	**FIGUNMIC05N**	**FIGUNMIC05T**
Nr. 3 UNC Nr. 3 UNF	48	1.90	54	5.2	6.0	3	**FIGUNMIC07N**	**FIGUNMIC07T**
Nr. 4 UNC	40	2.10	54	6.3	6.0	3	**FIGUNMIC09N**	**FIGUNMIC09T**
Nr. 5 UNC Nr. 6 UNF	40	2.45	54	7.0	6.0	3	**FIGUNMIC11N**	**FIGUNMIC11T**
Nr. 8 UNF	36	3.30	54	9.0	6.0	3	**FIGUNMIC13N**	**FIGUNMIC13T**
Nr. 6 UNC	32	2.55	54	7.1	6.0	3	**FIGUNMIC15N**	**FIGUNMIC15T**
Nr. 8 UNC	32	3.20	54	9.5	6.0	3	**FIGUNMIC17N**	**FIGUNMIC17T**
Nr. 10 UNF	32	3.70	54	10.5	6.0	3	**FIGUNMIC19N**	**FIGUNMIC19T**
Nr. 12 UNF	28	4.20	54	11.0	6.0	3	**FIGUNMIC21N**	**FIGUNMIC21T**
1/4" UNF	28	5.00	54	14.5	6.0	3	**FIGUNMIC23N**	**FIGUNMIC23T**
10" UNC 12" UNC	24	3.50	54	9.0	6.0	3	**FIGUNMIC25N**	**FIGUNMIC25T**
5/16" UNF 3/8" UNF	24	6.60	64	17.0	8.0	3	**FIGUNMIC27N**	**FIGUNMIC27T**
1/4" UNC	20	4.75	54	14.0	6.0	3	**FIGUNMIC29N**	**FIGUNMIC29T**
7/16" UNF	20	8.00	64	25.0	8.0	3	**FIGUNMIC31N**	**FIGUNMIC31T**
5/16" UNC	18	6.00	54	17.0	6.0	3	**FIGUNMIC33N**	**FIGUNMIC33T**
5/8" UNF	18	12.00	80	35.0	12.0	4	**FIGUNMIC35N**	**FIGUNMIC35T**
3/8" UNC	16	6.70	64	22.0	8.0	3	**FIGUNMIC37N**	**FIGUNMIC37T**
7/16" UNC	14	7.70	64	25.0	8.0	3	**FIGUNMIC39N**	**FIGUNMIC39T**
1/2" UNC	13	9.20	73	27.5	10.0	4	**FIGUNMIC41N**	**FIGUNMIC41T**
9/16" UNC	12	10.50	80	31.5	12.0	4	**FIGUNMIC43N**	**FIGUNMIC43T**
5/8" UNC	11	11.40	80	34.5	12.0	4	**FIGUNMIC45N**	**FIGUNMIC45T**
3/4" UNC	10	14.40	100	41.5	16.0	4	**FIGUNMIC47N**	**FIGUNMIC47T**

FIGUNMIC 3xD

UNC, UNF

ASME B1.1



VHM | e8 | 3xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

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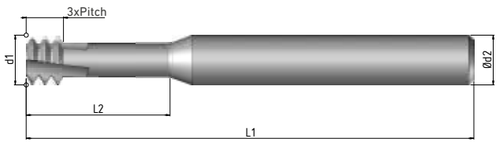
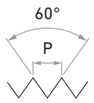
CUSTOMIZED DESIGN ON REQUEST



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
Nr. 1 UNF	72	1.45	39	6.0	3.0	3	FIGUNMIC51N	FIGUNMIC51T
Nr. 2 UNC Nr. 3 UNF	56	1.65	54	6.6	6.0	3	FIGUNMIC53N	FIGUNMIC53T
Nr. 4 UNC	40	2.10	54	8.0	6.0	3	FIGUNMIC55N	FIGUNMIC55T
Nr. 5 UNC Nr. 6 UNF	40	2.45	54	9.6	6.0	3	FIGUNMIC57N	FIGUNMIC57T
Nr. 6 UNC	32	2.55	54	10.5	6.0	3	FIGUNMIC59N	FIGUNMIC59T
Nr. 8 UNC	32	3.20	54	12.5	6.0	3	FIGUNMIC61N	FIGUNMIC61T
Nr. 10 UNC 12 UNC	24	3.50	54	12.5	6.0	3	FIGUNMIC62N	FIGUNMIC62T
Nr. 10 UNF	32	3.70	54	15.0	6.0	3	FIGUNMIC63N	FIGUNMIC63T
1/4" UNF	28	5.00	54	19.0	6.0	3	FIGUNMIC65N	FIGUNMIC65T
5/16" UNF 3/8" UNF	24	6.60	64	24.0	8.0	3	FIGUNMIC67N	FIGUNMIC67T
1/4" UNC	20	4.75	54	19.0	6.0	3	FIGUNMIC69N	FIGUNMIC69T
5/16" UNC	18	6.00	54	23.0	6.0	3	FIGUNMIC71N	FIGUNMIC71T

FIGMETMONO 3xD



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R262 DIN13

VHM | e8 | 3xD | RH LH | DIN 6535 HA | INTERNO INTERNAL

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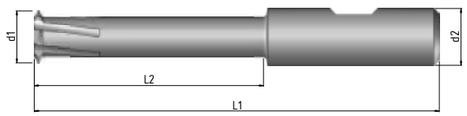
CUSTOMIZED DESIGN ON REQUEST



R 10° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Coated TNF ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 3

- P1.1-P5.1
- M1.1-M4.1
- N1.1-N5.2
- S1.1-S2.6
- H1.1-H1.2

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z	
M 6	1.00	4.1	63	19	8.0	3	**FIGMETMON003T**
M 8	1.25	5.8	73	26	10.0	3	**FIGMETMON005T**
M 10	1.50	7.7	73	32	10.0	3	**FIGMETMON007T**
M 12	1.50	9.4	83	38	12.0	4	**FIGMETMON009T**
M 12	1.75	8.7	83	38	12.0	4	**FIGMETMON011T**
M 14	2.00	10.2	92	44	16.0	4	**FIGMETMON013T**
M 16	2.00	12.2	100	50	16.0	4	**FIGMETMON015T**
M 18	2.50	12.9	108	57	16.0	5	**FIGMETMON017T**
M 20	2.50	14.8	114	63	16.0	5	**FIGMETMON019T**

IGUTENSILI

FIGMJ 1,5xD

MJ

DIN ISO 5855

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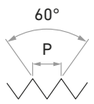
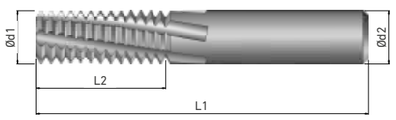
CUSTOMIZED DESIGN ON REQUEST



VHM | e8 | 1,5xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
MJ 4	0.70	3.1	52	5	6.0	3	FIGMJ40N	FIGMJ40T
MJ 5	0.80	4.0	49	6	6.0	3	FIGMJ42N	FIGMJ42T
MJ 6 MJ 7	1.00	4.5	50	7	6.0	3	FIGMJ44N	FIGMJ44T
MJ 8	1.00	6.0	49	9	6.0	3	FIGMJ46N	FIGMJ46T
MJ 10 MJ 12	1.25	8.0	57	12	8.0	3	FIGMJ48N	FIGMJ48T
MJ 14	1.50	10.0	70	15	10.0	4	FIGMJ50N	FIGMJ50T
MJ 16	1.50	12.0	70	18	12.0	4	FIGMJ52N	FIGMJ52T
MJ 18	1.50	14.0	86	21	14.0	4	FIGMJ54N	FIGMJ54T
MJ 20 MJ 22	1.50	16.0	84	24	16.0	5	FIGMJ56N	FIGMJ56T
MJ 24 >	2.00	20.0	100	30	20.0	5	FIGMJ58N	FIGMJ58T

IGUTENSILI

R 10° - RR	R 10° - RR
Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGMJ42NF	FIGMJ42F
FIGMJ44NF	FIGMJ44F
FIGMJ46NF	FIGMJ46F
FIGMJ48NF	FIGMJ48F
FIGMJ50NF	FIGMJ50F
FIGMJ52NF	FIGMJ52F
FIGMJ54NF	FIGMJ54F
FIGMJ56NF	FIGMJ56F
FIGMJ58NF	FIGMJ58F

FIGMJ 2xD

MJ

DIN ISO 5855

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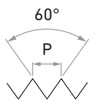
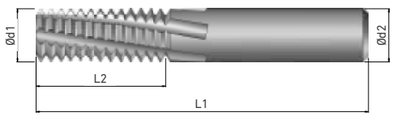
CUSTOMIZED DESIGN ON REQUEST



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
MJ 4	0.70	3.1	54	8	6.0	3	FIGMJ03N	FIGMJ03T
MJ 5	0.80	4.0	54	12	6.0	3	FIGMJ00N	FIGMJ00T
MJ 6 MJ 7	1.00	4.5	54	12	6.0	3	FIGMJ02N	FIGMJ02T
MJ 8	1.00	6.0	54	15	6.0	3	FIGMJ05N	FIGMJ05T
MJ 10 MJ 12	1.25	8.0	65	20	8.0	3	FIGMJ10N	FIGMJ10T
MJ 14	1.50	10.0	80	25	10.0	4	FIGMJ16N	FIGMJ16T
MJ 16	1.50	12.0	82	30	12.0	4	FIGMJ20N	FIGMJ20T
MJ 18	1.50	14.0	100	35	14.0	4	FIGMJ24N	FIGMJ24T
MJ 20 MJ 22	1.50	16.0	100	40	16.0	5	FIGMJ29N	FIGMJ29T
MJ 24 >	2.00	20.0	110	40	20.0	5	FIGMJ35N	FIGMJ35T

R 10° - RR	R 10° - RR
Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGMJ00NF	FIGMJ00F
FIGMJ02NF	FIGMJ02F
FIGMJ05NF	FIGMJ05F
FIGMJ10NF	FIGMJ10F
FIGMJ16NF	FIGMJ16F
FIGMJ20NF	FIGMJ20F
FIGMJ24NF	FIGMJ24F
FIGMJ29NF	FIGMJ29F
FIGMJ35NF	FIGMJ35F

FIGUNJ 1,5xD

UNJ,UNJF,UNJC UNJEF
ASME B1.15

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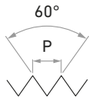
CUSTOMIZED DESIGN ON REQUEST



VHM | e8 | 1,5xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

R 10° - RR | R 10° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

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WORKING MATERIALS
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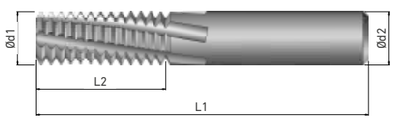
P1.1-P5.1 | P1.1-P5.1
K1.1-K4.2 | M1.1-M4.1
N1.1-N1.5 | N1.1-N5.2
N2.1-N2.6 | S1.1-S2.6
N3.1-N4.2 | H1.1-H1.2
S1.1-S1.3



Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
5/16" UNJF 3/8" UNJF	24	6.0	49	9	6.0	3	FIGUNJ58N	FIGUNJ58T
5/16" UNJC	18	6.0	49	9	6.0	3	FIGUNJ60N	FIGUNJ60T
3/8" UNJC 7/16" UNJ	16	6.0	49	9	6.0	3	FIGUNJ62N	FIGUNJ62T
7/16" UNJEF 1/2" UNJEF	28	8.0	58	12	8.0	3	FIGUNJ64N	FIGUNJ64T
7/16" UNJF 1/2" UNJF	20	8.0	58	12	8.0	3	FIGUNJ66N	FIGUNJ66T
1/2" UNJ 9/16" UNJ	16	8.0	58	12	8.0	3	FIGUNJ68N	FIGUNJ68T
7/16" UNJC	14	8.0	58	12	8.0	3	FIGUNJ70N	FIGUNJ70T
1/2" UNJC	13	8.0	58	12	8.0	3	FIGUNJ72N	FIGUNJ72T
9/16" UNJEF 11/16" UNJEF	24	10.0	70	15	10.0	4	FIGUNJ74N	FIGUNJ74T
9/16" UNJF 5/8" UNJF	18	10.0	70	15	10.0	4	FIGUNJ76N	FIGUNJ76T
9/16" UNJC	12	10.0	70	15	10.0	4	FIGUNJ78N	FIGUNJ78T
5/8" UNJ 13/16" UNJ	16	12.0	70	18	12.0	4	FIGUNJ80N	FIGUNJ80T
5/8" UNJ 13/16" UNJ	12	12.0	70	18	12.0	4	FIGUNJ82N	FIGUNJ82T
5/8" UNJC	11	12.0	70	18	12.0	4	FIGUNJ84N	FIGUNJ84T
3/4" UNJC	10	12.0	70	18	12.0	4	FIGUNJ86N	FIGUNJ86T
3/4" UNJEF 1" UNJEF	20	16.0	84	24	16.0	5	FIGUNJ88N	FIGUNJ88T
7/8" UNJ 1" UNJ	16	15.5	84	24	16.0	5	FIGUNJ90N	FIGUNJ90T
7/8" UNJF	14	15.5	84	24	16.0	5	FIGUNJ92N	FIGUNJ92T
7/8" UNJ 1" UNJF	12	16.0	84	24	16.0	5	FIGUNJ94N	FIGUNJ94T
1 11/16" UNJEF >	18	20.0	100	30	20.0	5	FIGUNJ96N	FIGUNJ96T
1 11/16" UNJ 2 1/2" UNJ >	16	20.0	100	30	20.0	5	FIGUNJ98N	FIGUNJ98T
1 11/16" UNJ 2 1/2" UNJ >	12	20.0	100	30	20.0	5	FIGUNJ100N	FIGUNJ100T

R 10° - RR | R 10° - RR

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

P1.1-P5.1 | P1.1-P5.1
K1.1-K4.2 | M1.1-M4.1
N1.1-N1.5 | N1.1-N5.2
N2.1-N2.6 | S1.1-S2.6
N3.1-N4.2 | H1.1-H1.2
S1.1-S1.3

FIGUNJ58NF	FIGUNJ58F
FIGUNJ60NF	FIGUNJ60F
FIGUNJ62NF	FIGUNJ62F
FIGUNJ64NF	FIGUNJ64F
FIGUNJ66NF	FIGUNJ66F
FIGUNJ68NF	FIGUNJ68F
FIGUNJ70NF	FIGUNJ70F
FIGUNJ72NF	FIGUNJ72F
FIGUNJ74NF	FIGUNJ74F
FIGUNJ76NF	FIGUNJ76F
FIGUNJ78NF	FIGUNJ78F
FIGUNJ80NF	FIGUNJ80F
FIGUNJ82NF	FIGUNJ82F
FIGUNJ84NF	FIGUNJ84F
FIGUNJ86NF	FIGUNJ86F
FIGUNJ88NF	FIGUNJ88F
FIGUNJ90NF	FIGUNJ90F
FIGUNJ92NF	FIGUNJ92F
FIGUNJ94NF	FIGUNJ94F
FIGUNJ96NF	FIGUNJ96F
FIGUNJ98NF	FIGUNJ98F
FIGUNJ100NF	FIGUNJ100F

FIGUNJ 2xD

UNJ,UNJF,UNJC UNJEF
ASME B1.15

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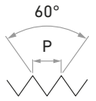
CUSTOMIZED DESIGN ON REQUEST



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

R 10° - RR | R 10° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

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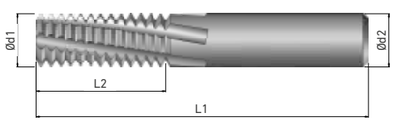
P1.1-P5.1 | P1.1-P5.1
K1.1-K4.2 | M1.1-M4.1
N1.1-N1.5 | N1.1-N5.2
N2.1-N2.6 | S1.1-S2.6
N3.1-N4.2 | H1.1-H1.2
S1.1-S1.3



Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
5/16" UNJF 3/8" UNJF	24	6.0	54	15	6.0	3	FIGUNJ04N	FIGUNJ04T
5/16" UNJC	18	6.0	54	15	6.0	3	FIGUNJ06N	FIGUNJ06T
3/8" UNJC 7/16" UNJ	16	6.0	54	15	6.0	3	FIGUNJ08N	FIGUNJ08T
7/16" UNJEF 1/2" UNJEF	28	8.0	65	20	8.0	3	FIGUNJ10N	FIGUNJ10T
7/16" UNJF 1/2" UNJF	20	8.0	65	20	8.0	3	FIGUNJ12N	FIGUNJ12T
1/2" UNJ 9/16" UNJ	16	8.0	65	20	8.0	3	FIGUNJ14N	FIGUNJ14T
7/16" UNJC	14	8.0	65	20	8.0	3	FIGUNJ16N	FIGUNJ16T
1/2" UNJC	13	8.0	65	20	8.0	3	FIGUNJ18N	FIGUNJ18T
9/16" UNJEF 11/16" UNJEF	24	10.0	80	25	10.0	4	FIGUNJ20N	FIGUNJ20T
9/16" UNJF 5/8" UNJF	18	10.0	80	25	10.0	4	FIGUNJ22N	FIGUNJ22T
9/16" UNJC	12	10.0	80	25	10.0	4	FIGUNJ24N	FIGUNJ24T
5/8" UNJ 13/16" UNJ	16	12.0	82	30	12.0	4	FIGUNJ26N	FIGUNJ26T
5/8" UNJ 13/16" UNJ	12	12.0	82	30	12.0	4	FIGUNJ28N	FIGUNJ28T
5/8" UNJC	11	12.0	82	30	12.0	4	FIGUNJ30N	FIGUNJ30T
3/4" UNJC	10	12.0	82	30	12.0	4	FIGUNJ32N	FIGUNJ32T
3/4" UNJEF 1" UNJEF	20	16.0	100	40	16.0	5	FIGUNJ34N	FIGUNJ34T
7/8" UNJ 1" UNJ	16	15.5	100	40	16.0	5	FIGUNJ36N	FIGUNJ36T
7/8" UNJF	14	15.5	100	40	16.0	5	FIGUNJ38N	FIGUNJ38T
7/8" UNJ 1" UNJF	12	16.0	100	40	16.0	5	FIGUNJ40N	FIGUNJ40T
1 11/16" UNJEF >	18	20.0	110	45	20.0	5	FIGUNJ42N	FIGUNJ42T
1 11/16" UNJ 2 1/2" UNJ >	16	20.0	110	45	20.0	5	FIGUNJ44N	FIGUNJ44T
1 11/16" UNJ 2 1/2" UNJ >	12	20.0	110	45	20.0	5	FIGUNJ46N	FIGUNJ46T

R 10° - RR | R 10° - RR

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

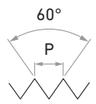
P1.1-P5.1 | P1.1-P5.1
K1.1-K4.2 | M1.1-M4.1
N1.1-N1.5 | N1.1-N5.2
N2.1-N2.6 | S1.1-S2.6
N3.1-N4.2 | H1.1-H1.2
S1.1-S1.3

FIGUNJ04NF	FIGUNJ04F
FIGUNJ06NF	FIGUNJ06F
FIGUNJ08NF	FIGUNJ08F
FIGUNJ10NF	FIGUNJ10F
FIGUNJ12NF	FIGUNJ12F
FIGUNJ14NF	FIGUNJ14F
FIGUNJ16NF	FIGUNJ16F
FIGUNJ18NF	FIGUNJ18F
FIGUNJ20NF	FIGUNJ20F
FIGUNJ22NF	FIGUNJ22F
FIGUNJ24NF	FIGUNJ24F
FIGUNJ26NF	FIGUNJ26F
FIGUNJ28NF	FIGUNJ28F
FIGUNJ30NF	FIGUNJ30F
FIGUNJ32NF	FIGUNJ32F
FIGUNJ34NF	FIGUNJ34F
FIGUNJ36NF	FIGUNJ36F
FIGUNJ38NF	FIGUNJ38F
FIGUNJ40NF	FIGUNJ40F
FIGUNJ42NF	FIGUNJ42F
FIGUNJ44NF	FIGUNJ44F
FIGUNJ46NF	FIGUNJ46F

FIGMJMIC 2xD

MJ

DIN ISO 5855



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

R 10° - RR | R 10° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc | Coated TNF ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
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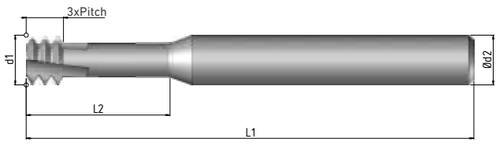
P1.1-P5.1	P1.1-P5.1
K1.1-K4.2	M1.1-M4.1
N1.1-N1.5	N1.1-N5.2
N2.1-N2.6	S1.1-S2.6
N3.1-N4.2	H1.1-H1.2
S1.1-S1.3	



Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z	Z type TX		
MJ 3	0.50	2.35	54	6.50	6.0	3	4	FIGMJMIC01N	FIGMJMIC01T
MJ 3.5	0.60	2.75	54	7.50	6.0	3	4	FIGMJMIC03N	FIGMJMIC03T
MJ 4	0.70	3.10	54	9.00	6.0	3	4	FIGMJMIC05N	FIGMJMIC05T
MJ 5	0.80	3.80	54	12.50	6.0	3	4	FIGMJMIC07N	FIGMJMIC07T
MJ 6	1.00	4.65	54	14.00	6.0	3	4	FIGMJMIC09N	FIGMJMIC09T
MJ 8	1.25	5.95	54	18.00	6.0	3	4	FIGMJMIC11N	FIGMJMIC11T
MJ 10	1.50	7.80	64	23.00	8.0	3	4	FIGMJMIC13N	FIGMJMIC13T
MJ 12	1.75	9.00	73	26.00	10.0	3	4	FIGMJMIC15N	FIGMJMIC15T
MJ 14	2.00	10.40	80	35.00	12.0	4		FIGMJMIC17N	FIGMJMIC17T
MJ 16	2.00	11.80	80	35.00	12.0		5	FIGMJMIC19N	FIGMJMIC19T
MJ 20	2.50	15.00	100	43.00	16.0	4	6		

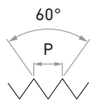
L 10° - LR

Coated LTM ≥45 Hrc ≤60Hrc

N2.7-N2.8
H1.3-H1.5

FIGMJMIC09TX-SX
FIGMJMIC11TX-SX
FIGMJMIC13TX-SX
FIGMJMIC15TX-SX
FIGMJMIC17TX-SX
FIGMJMIC19TX-SX
FIGMJMIC21TX-SX
FIGMJMIC23TX-SX
FIGMJMIC25TX-SX
FIGMJMIC27TX-SX

FIGMJMIC 3xD



MJ

DIN ISO 5855

VHM | e8 | 3xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

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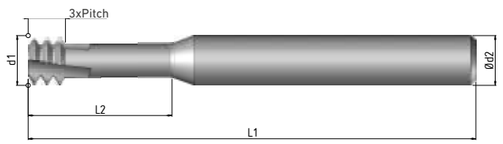
CUSTOMIZED DESIGN ON REQUEST



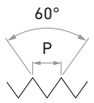
	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z	Z type TX		
MJ 3	0.50	2.35	54	9.50	6.0	3	4	FIGMJMIC30N	FIGMJMIC30T
MJ 3.5	0.60	2.75	54	10.00	6.0	3		FIGMJMIC32N	FIGMJMIC32T
MJ 4	0.70	3.10	54	12.50	6.0	3	4	FIGMJMIC34N	FIGMJMIC34T
MJ 5	0.80	3.80	54	16.00	6.0	3	4	FIGMJMIC36N	FIGMJMIC36T
MJ 6	1.00	4.65	54	20.00	6.0	3	4	FIGMJMIC38N	FIGMJMIC38T
MJ 8	1.25	5.95	54	24.00	6.0	3	4	FIGMJMIC40N	FIGMJMIC40T

	L 10° - LR
	Coated LTM ≥45 Hrc ≤60Hrc
	N2.7-N2.8
	H1.3-H1.5

FIGMJMIC37TX-SX	
FIGMJMIC39TX-SX	
FIGMJMIC41TX-SX	
FIGMJMIC43TX-SX	
FIGMJMIC45TX-SX	

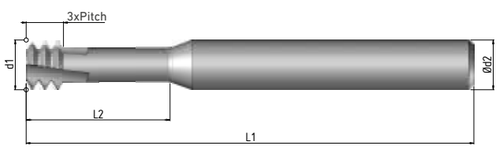
FIGUNJMIC 2xD



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

UNJ,UNJF,UNJC, UNJEF
ASME B1.15

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z	Z type TX		
Nr. 4 UNJC	40	2.10	54	6.3	6.0	3		FIGUNJMIC02N	FIGUNJMIC02T
Nr. 5 UNJF	44	2.10	54	6.3	6.0	3		FIGUNJMIC03N	FIGUNJMIC03T
Nr. 6 UNJF	40	2.45	54	7.0	6.0	3		FIGUNJMIC04N	FIGUNJMIC04T
Nr. 6 UNJC 1/4" UNJEF	32	2.55	54	7.0	6.0	3		FIGUNJMIC05N	FIGUNJMIC05T
Nr. 8 UNJF	36	3.30	54	9.0	6.0	3		FIGUNJMIC07N	FIGUNJMIC07T
Nr. 10 UNJC Nr. 12 UNJC	24	3.50	54	9.0	6.0	3		FIGUNJMIC09N	FIGUNJMIC09T
Nr. 8 UNJC Nr. 10 UNJF	32	3.30	54	9.0	6.0		4		
Nr. 12 UNJF	28	4.20	54	11.0	6.0	3		FIGUNJMIC11N	FIGUNJMIC11T
1/4" UNJC	20	4.75	54	14.5	6.0		4		
1/4" UNJC	20	4.75	54	14.5	6.0	3		FIGUNJMIC13N	FIGUNJMIC13T
1/4" UNJF	28	5.00	54	14.0	6.0		4		
5/16" UNJC 9/16" UNJF	18	6.00	64	23.0	8.0		4		
5/16" UNJC 9/16" UNJF	18	6.00	64	17.0	8.0	3		FIGUNJMIC15N	FIGUNJMIC15T
5/16" UJNF 3/8" UNJF	24	6.60	64	22.0	8.0	3	4	FIGUNJMIC17N	FIGUNJMIC17T
3/8" UNJC	16	6.70	64	23.0	8.0		4		
3/8" UNJC	16	6.70	64	25.0	8.0	3		FIGUNJMIC19N	FIGUNJMIC19T
7/16" UNJC	14	7.70	64	23.0	8.0		4		
7/16" UNJF	20	8.00	64	23.0	8.0		4		
7/16" UNJ	14	7.70	73	27.5	10.0	4		FIGUNJMIC21N	FIGUNJMIC21T
7/16" UNJF	20	8.00	73	27.5	10.0	4		FIGUNJMIC23N	FIGUNJMIC23T
1/2" UNJC	13	9.20	73	27.5	10.0	4		FIGUNJMIC25N	FIGUNJMIC25T
3/4" UNJF	16	12.00	80	35.0	12.0	4		FIGUNJMIC27N	FIGUNJMIC27T

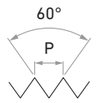
L 10° - LR
Coated LTM ≥45 Hrc ≤60Hrc
N2.7-N2.8
H1.3-H1.5

FIGUNJMIC03TX-SX	
FIGUNJMIC09TX-SX	
FIGUNJMIC05TX-SX	
FIGUNJMIC13TX-SX	
FIGUNJMIC07TX-SX	
FIGUNJMIC15TX-SX	
FIGUNJMIC17TX-SX	
FIGUNJMIC11TX-SX	

FIGUNJMIC 3xD

UNJ,UNJF,UNJC, UNJEF

ASME B1.15



VHM | e8 | 3xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

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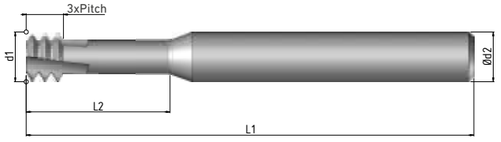


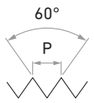
	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1	P1.1-P5.1
	K1.1-K4.2	M1.1-M4.1
	N1.1-N1.5	N1.1-N5.2
	N2.1-N2.6	S1.1-S2.6
	N3.1-N4.2	H1.1-H1.2
	S1.1-S1.3	

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z	Z type TX		
Nr. 4 UNJC	40	2.10	54	8.0	6.0	3		FIGUNJMIC50N	FIGUNJMIC50T
Nr. 5 UNJF	44	2.10	54	8.0	6.0	3		FIGUNJMIC51N	FIGUNJMIC51T
Nr. 6 UNJF	40	2.45	54	9.6	6.0	3		FIGUNJMIC52N	FIGUNJMIC52T
Nr. 6 UNJC 1/4" UNJEF	32	2.55	54	10.5	6.0	3		FIGUNJMIC53N	FIGUNJMIC53T
Nr. 8 UNJF	36	3.30	54	12.5	6.0	3		FIGUNJMIC55N	FIGUNJMIC55T
Nr. 10 UNJC Nr. 12 UNJC	24	3.50	54	12.5	6.0	3		FIGUNJMIC57N	FIGUNJMIC57T
Nr. 8 UNJC Nr. 10 UNJF	32	3.30	54	12.5	6.0		4		
Nr. 12 UNJF	28	4.20	54	15.0	6.0	3		FIGUNJMIC59N	FIGUNJMIC59T
1/4" UNJC	20	4.75	54	20.0	6.0		4		
1/4" UNJC	20	4.75	54	19.0	6.0	3		FIGUNJMIC61N	FIGUNJMIC61T
1/4" UNJF	28	5.00	54	19.0	6.0		4		
5/16" UNJC 9/16" UNJF	18	6.00	64	28.0	8.0		4		
5/16" UNJC 9/16" UNJF	18	6.00	64	24.0	8.0	3		FIGUNJMIC63N	FIGUNJMIC63T
5/16" UJNF 3/8" UNJF	24	6.60	64	24.0	8.0	3	4	FIGUNJMIC65N	FIGUNJMIC65T
3/8" UNJC	16	6.70	64	28.0	8.0		4		
3/8" UNJC	16	6.70	64	28.9	8.0	3		FIGUNJMIC67N	FIGUNJMIC67T
7/16" UNJC	14	7.70	64	28.0	8.0		4		
7/16" UNJF	20	8.00	64	28.0	8.0		4		
7/16" UNJ	14	7.70	73	34.5	10.0	4		FIGUNJMIC69N	FIGUNJMIC69T
7/16" UNJF	20	8.00	73	36.0	10.0	4		FIGUNJMIC71N	FIGUNJMIC71T
1/2" UNJC	13	9.20	73	37.0	10.0	4		FIGUNJMIC73N	FIGUNJMIC73T
3/4" UNJF									

	L 10° - LR
	Coated LTM ≤45 Hrc ≤60Hrc
	N2.7-N2.8
	H1.3-H1.5

FIGUNJMIC31TX-SX
FIGUNJMIC37TX-SX
FIGUNJMIC33TX-SX
FIGUNJMIC41TX-SX
FIGUNJMIC35TX-SX
FIGUNJMIC43TX-SX
FIGUNJMIC45TX-SX
FIGUNJMIC39TX-SX

FIGMET_EXT 2xD



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | ESTERNO EXTERNAL

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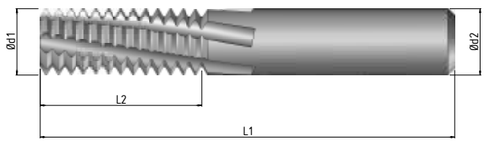

	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Pitch mm	d1	L1	L2	d2	Z		
1.00	8.0	65	20	8.0	3	FIGMET17N_EXT	FIGMET17T_EXT
1.25	10.0	80	25	10.0	4	FIGMET19N_EXT	FIGMET19T_EXT
1.50	12.0	82	30	12.0	4	FIGMET21N_EXT	FIGMET21T_EXT
1.75	14.0	100	35	14.0	4	FIGMET23N_EXT	FIGMET23T_EXT
2.00	16.0	100	40	16.0	5	FIGMET25N_EXT	FIGMET25T_EXT
2.50	18.0	110	40	18.0	5	FIGMET27N_EXT	FIGMET27T_EXT
3.00	20.0	110	40	20.0	5	FIGMET29N_EXT	FIGMET29T_EXT

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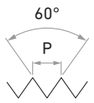
FIGMETMIC_EXT 2xD



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | ESTERNO EXTERNAL

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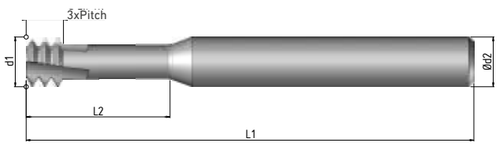
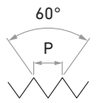
CUSTOMIZED DESIGN ON REQUEST



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Pitch mm	d1	L1	L2	d2	Z		
0.50	6.0	54	18	6	3	FIGMETMIC07N_EXT	FIGMETMIC07T_EXT
0.75	6.0	54	18	6	3	FIGMETMIC11N_EXT	FIGMETMIC11T_EXT

FIGMETMIC_EXT 3xD



VHM | e8 | 3xD | RH-LH | DIN 6535 HA | ESTERNO EXTERNAL

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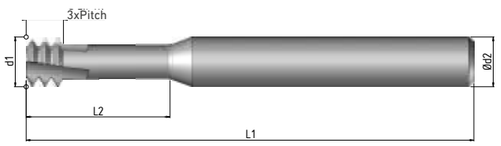
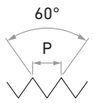
CUSTOMIZED DESIGN ON REQUEST



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Pitch mm	d1	L1	L2	d2	Z		
0.50	6.0	54	24	6.0	3	FIGMETMIC09N_EXT	FIGMETMIC09T_EXT
0.75	6.0	54	24	6.0	3	FIGMETMIC13N_EXT	FIGMETMIC13T_EXT

FIGMJ_EXT 2xD



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | ESTERNO EXTERNAL

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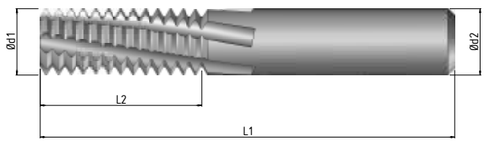
CUSTOMIZED DESIGN ON REQUEST



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Pitch mm	d1	L1	L2	d2	Z		
1.00	8.0	65	20	8.0	3	FIGMJ58N_EXT	FIGMJ58T_EXT
1.25	10.0	80	25	10.0	4	FIGMJ60N_EXT	FIGMJ60T_EXT
1.50	12.0	82	30	12.0	4	FIGMJ62N_EXT	FIGMJ62T_EXT
1.75	14.0	100	35	14.0	4	FIGMJ64N_EXT	FIGMJ64T_EXT
2.00	16.0	100	40	16.0	5	FIGMJ66N_EXT	FIGMJ66T_EXT
2.50	18.0	110	40	18.0	5	FIGMJ68N_EXT	FIGMJ68T_EXT
3.00	20.0	110	40	20.0	5	FIGMJ70N_EXT	FIGMJ70T_EXT

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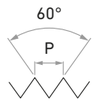
FIGMJMIC_EXT 2xD



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | ESTERNO EXTERNAL

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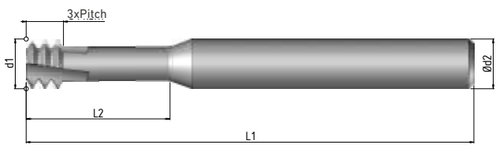
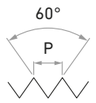
CUSTOMIZED DESIGN ON REQUEST



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Pitch mm	d1	L1	L2	d2	Z		
0.50	6.0	54	18	6.0	3	FIGMJMIC50N_EXT	FIGMJMIC50T_EXT
0.75	6.0	54	18	6.0	3	FIGMJMIC54N_EXT	FIGMJMIC54T_EXT

FIGMJMIC_EXT 3xD



VHM | e8 | 3xD | RH-LH | DIN 6535 HA | ESTERNO EXTERNAL

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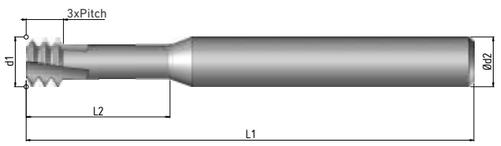
CUSTOMIZED DESIGN ON REQUEST



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Pitch mm	d1	L1	L2	d2	Z		
0.50	6.0	54	24	6.0	3	FIGMJMIC52N_EXT	FIGMJMIC52T_EXT
0.75	6.0	54	24	6.0	3	FIGMJMIC56N_EXT	FIGMJMIC56T_EXT

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FIGEGM 2xD

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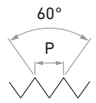

VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

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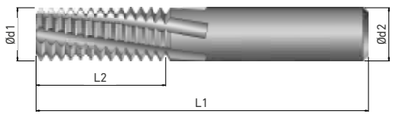
CUSTOMIZED DESIGN ON REQUEST



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
EG-M 4	0.70	3.1	54	8	6.0	3	FIGEGM03N	FIGEGM03T
EG-M 5	0.80	4.0	54	12	6.0	3	FIGEGM00N	FIGEGM00T
EG-M 6	1.00	4.5	54	12	6.0	3	FIGEGM02N	FIGEGM02T
EG-M 7	1.00	6.0	54	15	6.0	3	FIGEGM05N	FIGEGM05T
EG-M 8	1.25	6.0	54	15	6.0	3	FIGEGM06N	FIGEGM06T
EG-MF 8-9-10-11	1.00	8.0	65	20	8.0	3	FIGEGM09N	FIGEGM09T
EG-MF 10	1.25	8.0	65	20	8.0	3	FIGEGM10N	FIGEGM10T
EG-M 10	1.50	8.0	65	20	8.0	3	FIGEGM11N	FIGEGM11T
EG-M 12	1.75	8.0	65	20	8.0	3	FIGEGM12N	FIGEGM12T
EG-MF 12	1.00	10.0	80	25	10.0	4	FIGEGM14N	FIGEGM14T
EG-MF 12 EG-MF 14	1.25	10.0	80	25	10.0	4	FIGEGM15N	FIGEGM15T
EG-MF 12	1.50	10.0	80	25	10.0	4	FIGEGM16N	FIGEGM16T
EG-MF 14	1.00	12.0	82	30	12.0	4	FIGEGM19N	FIGEGM19T
EG-MF 14 EG-MF 15	1.50	12.0	82	30	12.0	4	FIGEGM20N	FIGEGM20T
EG-M 14	2.00	12.0	82	30	12.0	4	FIGEGM21N	FIGEGM21T
EG-MF 16	1.50	14.0	100	35	14.0	4	FIGEGM24N	FIGEGM24T
EG-M 16	2.00	14.0	100	35	14.0	4	FIGEGM25N	FIGEGM25T
EG-MF 18 EG-MF 20	1.50	16.0	100	40	16.0	5	FIGEGM29N	FIGEGM29T
EG-MF 18 EG-MF 20	2.00	16.0	100	40	16.0	5	FIGEGM30N	FIGEGM30T
EG-M 18-20-22	2.50	16.0	100	40	16.0	5	FIGEGM31N	FIGEGM31T
EG-MF 22-24-26-27-28	1.50	20.0	110	40	20.0	5	FIGEGM34N	FIGEGM34T
EG-M 22-24 MF 27-30-33-36-39-42-45-48	2.00	20.0	110	40	20.0	5	FIGEGM35N	FIGEGM35T
EG-M 22-24 MF 27-30-33-36-39-42-45-48	3.00	20.0	110	40	20.0	5	FIGEGM36N	FIGEGM36T
EG-MF 42 EG-MF 36 EG-MF 39	4.00	25.0	150	78	25.0	5	FIGEGM38N	FIGEGM38T
EG-MF 30 EG-MF 33	3.50	25.0	150	78	25.0	5	FIGEGM40N	FIGEGM40T

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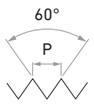
R 10° - RR	R 10° - RR
Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGEGM03NF	FIGEGM03F
FIGEGM00NF	FIGEGM00F
FIGEGM02NF	FIGEGM02F
FIGEGM05NF	FIGEGM05F
FIGEGM06NF	FIGEGM06F
FIGEGM09NF	FIGEGM09F
FIGEGM10NF	FIGEGM10F
FIGEGM11NF	FIGEGM11F
FIGEGM12NF	FIGEGM12F
FIGEGM14NF	FIGEGM14F
FIGEGM15NF	FIGEGM15F
FIGEGM16NF	FIGEGM16F
FIGEGM19NF	FIGEGM19F
FIGEGM20NF	FIGEGM20F
FIGEGM21NF	FIGEGM21F
FIGEGM24NF	FIGEGM24F
FIGEGM25NF	FIGEGM25F
FIGEGM29NF	FIGEGM29F
FIGEGM30NF	FIGEGM30F
FIGEGM31NF	FIGEGM31F
FIGEGM34NF	FIGEGM34F
FIGEGM35NF	FIGEGM35F
FIGEGM36NF	FIGEGM36F
FIGEGM38NF	FIGEGM38F
FIGEGM40NF	FIGEGM40F

FIGEGMMIC 2xD

Eg-M

DIN 8140-2



VHM | e8 | 2xD | RH-LH | DIN 6535 HA | INTERNO INTERNAL

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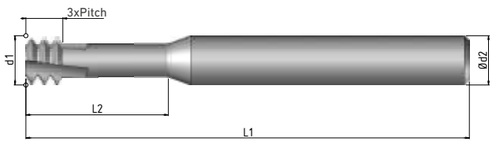
CUSTOMIZED DESIGN ON REQUEST



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Cncoated ≤45Hrc	Coated TNF ≤45Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
EG-M 2	0.40	1.55	39	04:50	3.0	3	FIGEGMMIC03N	FIGEGMMIC03T
EG-M 2.5	0.45	1.95	54	05:50	6.0	3	FIGEGMMIC07N	FIGEGMMIC07T
EG-M 3	0.50	2.35	54	06:50	6.0	3	FIGEGMMIC09N	FIGEGMMIC09T
EG-M 3.5	0.60	2.75	54	07:50	6.0	3	FIGEGMMIC11N	FIGEGMMIC11T

IGUTENSILI

FIGMETMICFOR 2xD

M, MF

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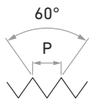
CUSTOMIZED DESIGN ON REQUEST



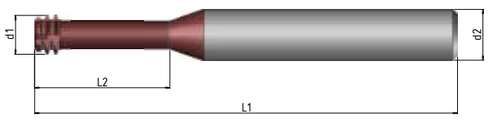
VHM

2xD

RH-LH

DIN 6535 HA

INTERNO INTERNAL



	L 0° - LR	L 0° - LR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated XFS ≥45 Hrc ≤66Hrc	Coated XFS ≥45 Hrc ≤66Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 11	P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5	P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
M 4	0.70	3.1	50	7.0	6.0	4	FIGMETMICFOR01T	
M 5	0.80	3.8	50	8.5	6.0	4	FIGMETMICFOR03T	
M 6	1.00	4.6	50	10.0	6.0	4	FIGMETMICFOR05T	
MF 8	1.00	6.2	70	15.0	8.0	4	FIGMETMICFOR07T	FIGMETMICFOR07F
M 8	1.25	6.2	70	15.0	8.0	4	FIGMETMICFOR09T	FIGMETMICFOR09F
MF 10	1.00	7.5	70	20.0	8.0	4	FIGMETMICFOR11T	FIGMETMICFOR11F
MF 10	1.25	7.5	70	20.0	8.0	4	FIGMETMICFOR13T	FIGMETMICFOR13F
M 10	1.50	7.5	70	20.0	8.0	4	FIGMETMICFOR15T	FIGMETMICFOR15F
MF 12	1.00	9.0	80	25.0	10.0	4	FIGMETMICFOR17T	FIGMETMICFOR17F
MF 12	1.25	9.0	80	25.0	10.0	4	FIGMETMICFOR19T	FIGMETMICFOR19F
MF 12	1.50	9.0	80	25.0	10.0	4	FIGMETMICFOR21T	FIGMETMICFOR21F
M 12	1.75	9.0	80	25.0	10.0	4	FIGMETMICFOR23T	FIGMETMICFOR23F
MF 16	1.50	11.5	100	30.0	12.0	4	FIGMETMICFOR25T	FIGMETMICFOR25F
M 16	2.00	11.5	100	30.0	12.0	4	FIGMETMICFOR27T	FIGMETMICFOR27F
MF 18	1.50	14.0	135	40.0	14.0	4	FIGMETMICFOR29T	FIGMETMICFOR29F
M 18	2.50	14.0	135	40.0	14.0	4	FIGMETMICFOR31T	FIGMETMICFOR31F
MF 20	1.50	15.0	135	45.0	16.0	4	FIGMETMICFOR33T	FIGMETMICFOR33F
M 20	2.50	15.0	135	45.0	16.0	4	FIGMETMICFOR35T	FIGMETMICFOR35F

FIGMETMICFOR 2.5xD

M, MF

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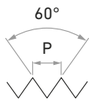


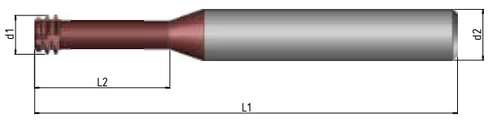
VHM

2.5xD

RH-LH

DIN 6535 HA

INTERNO INTERNAL



	L 0° - LR	L 0° - LR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated XFS ≥45 Hrc ≤66Hrc	Coated XFS ≥45 Hrc ≤66Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 11	P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5	P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
M 4	0.70	3.1	50	10.0	6.0	4	FIGMETMICFOR50T	
M 5	0.80	3.8	50	12.5	6.0	4	FIGMETMICFOR52T	
M 6	1.00	4.6	50	15.0	6.0	4	FIGMETMICFOR54T	
MF 8	1.00	6.2	70	20.0	8.0	4	FIGMETMICFOR56T	FIGMETMICFOR56F
M 8	1.25	6.2	70	20.0	8.0	4	FIGMETMICFOR58T	FIGMETMICFOR58F
MF 10	1.00	7.5	70	25.0	8.0	4	FIGMETMICFOR60T	FIGMETMICFOR60F
MF 10	1.25	7.5	70	25.0	8.0	4	FIGMETMICFOR62T	FIGMETMICFOR62F
M 10	1.50	7.5	70	25.0	8.0	4	FIGMETMICFOR64T	FIGMETMICFOR64F
MF 12	1.00	9.0	80	30.0	10.0	4	FIGMETMICFOR66T	FIGMETMICFOR66F
MF 12	1.25	9.0	80	30.0	10.0	4	FIGMETMICFOR68T	FIGMETMICFOR68F
MF 12	1.50	9.0	80	30.0	10.0	4	FIGMETMICFOR70T	FIGMETMICFOR70F
M 12	1.75	9.0	80	30.0	10.0	4	FIGMETMICFOR72T	FIGMETMICFOR72F
MF 16	1.50	11.5	100	40.0	12.0	4	FIGMETMICFOR74T	FIGMETMICFOR74F
M 16	2.00	11.5	100	40.0	12.0	4	FIGMETMICFOR76T	FIGMETMICFOR76F
MF 18	1.50	14.0	135	45.0	14.0	4	FIGMETMICFOR78T	FIGMETMICFOR78F
M 18	2.50	14.0	135	45.0	14.0	4	FIGMETMICFOR80T	FIGMETMICFOR80F
MF 20	1.50	15.0	135	50.0	16.0	4	FIGMETMICFOR82T	FIGMETMICFOR82F
M 20	2.50	15.0	135	50.0	16.0	4	FIGMETMICFOR84T	FIGMETMICFOR84F

FIGMETMICFOR 3xD

M, MF

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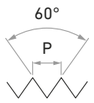
CUSTOMIZED DESIGN ON REQUEST



VHM

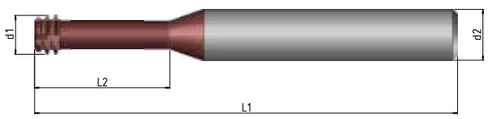
3xD

RH-LH

DIN 6535 HA

INTERNO INTERNAL

	L 0° - LR	L 0° - LR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated XFS ≥45 Hrc ≤66Hrc	Coated XFS ≥45 Hrc ≤66Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 11	P1.1-P5.1	P1.1-P5.1
	M1.1-M2.1	M1.1-M2.1
	K1.1-K4.2	K1.1-K4.2
	N1.1-N5.3	N1.1-N5.3
	S1.1-S1.3	S1.1-S1.3
	H1.1-H1.5	H1.1-H1.5



Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
M 4	0.70	3.1	50	12.2	6.0	4	FIGMETMICFOR100T	
M 5	0.80	3.8	50	15.25	6.0	4	FIGMETMICFOR102T	
M 6	1.00	4.6	50	18.3	6.0	4	FIGMETMICFOR104T	
MF 8	1.00	6.2	70	24.4	8.0	4	FIGMETMICFOR106T	FIGMETMICFOR106F
M 8	1.25	6.2	70	24.4	8.0	4	FIGMETMICFOR108T	FIGMETMICFOR108F
MF 10	1.00	7.5	70	30.5	8.0	4	FIGMETMICFOR110T	FIGMETMICFOR110F
MF 10	1.25	7.5	70	30.5	8.0	4	FIGMETMICFOR112T	FIGMETMICFOR112F
M 10	1.50	7.5	70	30.5	8.0	4	FIGMETMICFOR114T	FIGMETMICFOR114F
MF 12	1.00	9.0	80	36.6	10.0	4	FIGMETMICFOR116T	FIGMETMICFOR116F
MF 12	1.25	9.0	80	36.6	10.0	4	FIGMETMICFOR118T	FIGMETMICFOR118F
MF 12	1.50	9.0	80	36.6	10.0	4	FIGMETMICFOR120T	FIGMETMICFOR120F
M 12	1.75	9.0	80	36.6	10.0	4	FIGMETMICFOR122T	FIGMETMICFOR122F
MF 16	1.50	11.5	100	48.8	12.0	4	FIGMETMICFOR124T	FIGMETMICFOR124F
M 16	2.00	11.5	100	48.8	12.0	4	FIGMETMICFOR126T	FIGMETMICFOR126F
MF 18	1.50	14.0	135	54.9	14.0	4	FIGMETMICFOR128T	FIGMETMICFOR128F
M 18	2.50	14.0	135	54.9	14.0	4	FIGMETMICFOR130T	FIGMETMICFOR130F
MF 20	1.50	15.0	135	61	16.0	4	FIGMETMICFOR132T	FIGMETMICFOR132F
M 20	2.50	15.0	135	61	16.0	4	FIGMETMICFOR134T	FIGMETMICFOR134F

FIGUNMICFOR 2xD

UNC, UNF

ASME B1.1

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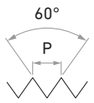


VHM

2xD

RH-LH

DIN 6535 HA

INTERNO INTERNAL

L 0° - LR

L 0° - LR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

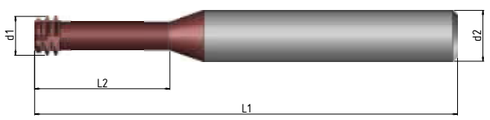
Coated XFS ≥45 Hrc ≤66Hrc

Coated XFS ≥45 Hrc ≤66Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 11

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

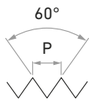


Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
Nr. 4" UNC	40	2.1	50	5.8	6.0	4	**FIGUNMICFOR01T**	
Nr. 6" UNC	32	2.55	50	7.2	6.0	4	**FIGUNMICFOR03T**	
Nr. 8" UNC	32	3.2	50	8.55	6.0	4	**FIGUNMICFOR05T**	
Nr. 8" UNF	36	3.3	50	8.3	6.0	4	**FIGUNMICFOR07T**	
Nr. 10" UNC	24	3.5	70	9.7	6.0	4	**FIGUNMICFOR09T**	
Nr. 10" UNF	32	3.7	70	9.9	6.0	4	**FIGUNMICFOR11T**	
Nr. 12" UNF	28	4.2	70	11.25	6.0	4	**FIGUNMICFOR13T**	
1/4" UNC	20	4.8	70	12.7	6.0	4	**FIGUNMICFOR15T**	
1/4" UNF	28	5.0	70	12.7	6.0	4	**FIGUNMICFOR17T**	
5/16" UNC	18	6.0	80	15.9	6.0	4	**FIGUNMICFOR19T**	
5/16" UNF	24	6.0	80	15.9	6.0	4	**FIGUNMICFOR21T**	
3/8" UNC	16	6.7	80	19.1	8.0	4	**FIGUNMICFOR23T**	**FIGUNMICFOR23F**
7/16" UNC	14	7.7	80	22.2	8.0	4	**FIGUNMICFOR25T**	**FIGUNMICFOR25F**
1/2" UNC	13	9.2	80	25.4	10.0	4	**FIGUNMICFOR27T**	**FIGUNMICFOR27F**
9/16" UNC	12	10.5	100	28.6	12.0	4	**FIGUNMICFOR29T**	**FIGUNMICFOR29F**
5/8" UNC	11	11.4	100	31.8	12.0	4	**FIGUNMICFOR31T**	**FIGUNMICFOR31F**
3/4" UNF	16	12.0	100	39.05	12.0	4	**FIGUNMICFOR33T**	**FIGUNMICFOR33F**

FIGUNMICFOR 2,5xD

UNC, UNF

ASME B1.1



VHM

2.5xD

RH-LH

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INTERNO INTERNAL

L 0° - LR

L 0° - LR

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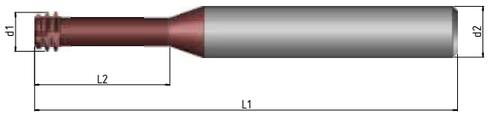


TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated XFS ≥45 Hrc ≤66Hrc

Coated XFS ≥45 Hrc ≤66Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 11

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

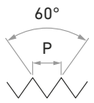
P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
Nr. 4" UNC	40	2.1	50	7.25	6.0	4	**FIGUNMICFOR51T**	
Nr. 6" UNC	32	2.55	50	8.95	6.0	4	**FIGUNMICFOR53T**	
Nr. 8" UNC	32	3.2	50	10.63	6.0	4	**FIGUNMICFOR55T**	
Nr. 8" UNF	36	3.3	50	10.4	6.0	4	**FIGUNMICFOR57T**	
Nr. 10" UNC	24	3.5	70	12.1	6.0	4	**FIGUNMICFOR59T**	
Nr. 10" UNF	32	3.7	70	12.3	6.0	4	**FIGUNMICFOR61T**	
Nr. 12" UNF	28	4.2	70	14	6.0	4	**FIGUNMICFOR63T**	
1/4" UNC	20	4.8	70	15.9	6.0	4	**FIGUNMICFOR65T**	
1/4" UNF	28	5.0	70	15.9	6.0	4	**FIGUNMICFOR67T**	
5/16" UNC	18	6.0	80	19.8	6.0	4	**FIGUNMICFOR69T**	
5/16" UNF	24	6.0	80	19.8	6.0	4	**FIGUNMICFOR71T**	
3/8" UNC	16	6.7	80	23.8	8.0	4	**FIGUNMICFOR73T**	**FIGUNMICFOR73F**
7/16" UNC	14	7.7	80	27.8	8.0	4	**FIGUNMICFOR75T**	**FIGUNMICFOR75F**
1/2" UNC	13	9.2	80	31.8	10.0	4	**FIGUNMICFOR77T**	**FIGUNMICFOR77F**
9/16" UNC	12	10.5	100	35.7	12.0	4	**FIGUNMICFOR79T**	**FIGUNMICFOR79F**
5/8" UNC	11	11.4	100	39.7	12.0	4	**FIGUNMICFOR81T**	**FIGUNMICFOR81F**
3/4" UNF	16	12.0	100	48.6	12.0	4	**FIGUNMICFOR83T**	**FIGUNMICFOR83F**

FIGUNMICFOR 3xD

UNC, UNF

ASME B1.1



VHM

3xD

RH-LH

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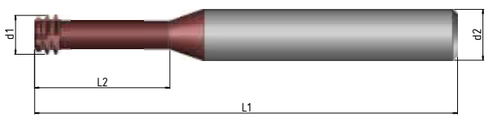
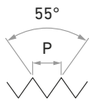
CUSTOMIZED DESIGN ON REQUEST



	L 0° - LR	L 0° - LR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated XFS ≥45 Hrc ≤66Hrc	Coated XFS ≥45 Hrc ≤66Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 11	P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5	P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
Nr. 4" UNC	40	2.1	50	8.7	6.0	4	**FIGUNMICFOR100T**	
Nr. 6" UNC	32	2.55	50	10.7	6.0	4	**FIGUNMICFOR102T**	
Nr. 8" UNC	32	3.2	50	12.7	6.0	4	**FIGUNMICFOR104T**	
Nr. 8" UNF	36	3.3	50	12.7	6.0	4	**FIGUNMICFOR106T**	
Nr. 10" UNC	24	3.5	70	14.7	6.0	4	**FIGUNMICFOR108T**	
Nr. 10" UNF	32	3.7	70	14.7	6.0	4	**FIGUNMICFOR110T**	
Nr. 12" UNF	28	4.2	70	16.75	6.0	4	**FIGUNMICFOR112T**	
1/4" UNC	20	4.8	70	19.4	6.0	4	**FIGUNMICFOR114T**	
1/4" UNF	28	5.0	70	19.4	6.0	4	**FIGUNMICFOR116T**	
5/16" UNC	18	6.0	80	24.2	6.0	4	**FIGUNMICFOR118T**	
5/16" UNF	24	6.0	80	24.2	6.0	4	**FIGUNMICFOR120T**	
3/8" UNC	16	6.7	80	29.05	8.0	4	**FIGUNMICFOR122T**	**FIGUNMICFOR122F**
7/16" UNC	14	7.7	80	33.9	8.0	4	**FIGUNMICFOR124T**	**FIGUNMICFOR124F**
1/2" UNC	13	9.2	80	38.75	10.0	4	**FIGUNMICFOR126T**	**FIGUNMICFOR126F**
9/16" UNC	12	10.5	100	43.6	12.0	4	**FIGUNMICFOR128T**	**FIGUNMICFOR128F**
5/8" UNC	11	11.4	100	48.45	12.0	4	**FIGUNMICFOR130T**	**FIGUNMICFOR130F**
3/4" UNF	16	12.0	100	58.1	12.0	4	**FIGUNMICFOR132T**	**FIGUNMICFOR132F**

FIGGAWMICFOR 2xD



VHM

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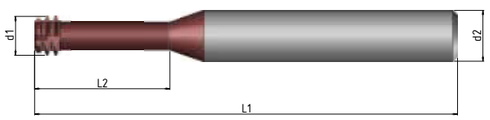
CUSTOMIZED DESIGN ON REQUEST



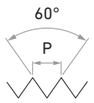
	L 0° - LR	L 0° - LR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated XFS ≥45 Hrc ≤66Hrc	Coated XFS ≥45 Hrc ≤66Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 11	P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5	P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
1/8"	28	8.0	70	16.0	8.0	4	FIGGAWMICFOR01T	FIGGAWMICFOR01F
1/4"	19	10.0	80	20.0	10.0	4	FIGGAWMICFOR03T	FIGGAWMICFOR03F
3/8"	19	14.0	135	28.0	14.0	4	FIGGAWMICFOR05T	FIGGAWMICFOR05F
1/2"	14	16.0	135	32.0	16.0	4	FIGGAWMICFOR07T	FIGGAWMICFOR07F
5/8"	14	18.0	135	36.0	18.0	4	FIGGAWMICFOR09T	FIGGAWMICFOR09F
3/4"	14	20.0	135	40.0	20.0	4	FIGGAWMICFOR11T	FIGGAWMICFOR11F
7/8"	14	23.0	150	50.0	25.0	4	FIGGAWMICFOR13T	FIGGAWMICFOR13F
1"	11	25.0	150	50.0	25.0	4	FIGGAWMICFOR15T	FIGGAWMICFOR15F

FIGEGUMICFOR 2xD

EG-UNC, EG-UNF

DIN 8140-2



VHM

2xD

RH-LH

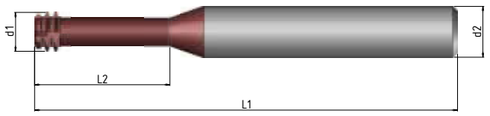
DIN 6535 HA

INTERNO INTERNAL

L 0° - LR

L 0° - LR

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated XFS ≥45 Hrc ≤66Hrc

Coated XFS ≥45 Hrc ≤66Hrc

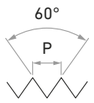
MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 11

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
Nr. 4 EG-UNC	40	2.1	50	5.8	6.0	4	**FIGEGUMICFOR01T**	
Nr. 6 EG-UNC	32	2.55	50	7.2	6.0	4	**FIGEGUMICFOR03T**	
Nr. 8 EG-UNC	32	3.2	50	8.65	6.0	4	**FIGEGUMICFOR05T**	
Nr. 10 EG-UNC	24	3.50	70	9.7	6.0	4	**FIGEGUMICFOR09T**	
Nr. 10 EG-UNF	32	3.7	70	9.9	6.0	4	**FIGEGUMICFOR11T**	
1/4" EG-UNC	20	4.8	70	12.7	6.0	4	**FIGEGUMICFOR15T**	
1/4" EG-UNF	28	5.0	70	12.7	6.0	4	**FIGEGUMICFOR17T**	
5/16" EG-UNC	18	6.0	80	15.9	6.0	4	**FIGEGUMICFOR19T**	
5/16" EG-UNF	24	6.0	80	15.9	6.0	4	**FIGEGUMICFOR21T**	
3/8" EG-UNF	24	6.6	80	19.5	8.0	4	**FIGEGUMICFOR22T**	**FIGEGUMICFOR22F**
7/16" EG-UNC	14	7.70	80	22.2	8.0	4	**FIGEGUMICFOR25T**	**FIGEGUMICFOR25F**

FIGEGUMICFOR 3xD



EG-UNC, EG-UNF

VHM

3xD

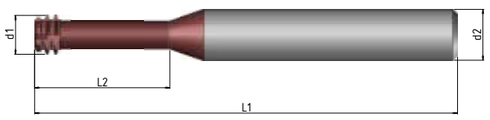
RH-LH

DIN 6535 HA

INTERNO INTERNAL

DIN 8140-2

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



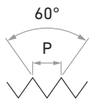
							L 0° - LR	L 0° - LR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT							Coated XFS ≥45 Hrc ≤66Hrc	Coated XFS ≥45 Hrc ≤66Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 11							P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5	P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5
Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
Nr. 4 EG-UNC	40	2.1	50	8.7	6.0	4	**FIGEGUMICFOR100T**	
Nr. 6 EG-UNC	32	2.55	50	10.5	6.0	4	**FIGEGUMICFOR102T**	
Nr. 8 EG-UNC	32	3.2	50	12.6	6.0	4	**FIGEGUMICFOR104T**	
Nr. 10 EG-UNC	24	3.50	70	15	6.0	4	**FIGEGUMICFOR108T**	
Nr. 10 EG-UNF	32	3.7	70	14.7	6.0	4	**FIGEGUMICFOR110T**	
1/4" EG-UNC	20	4.8	70	19	6.0	4	**FIGEGUMICFOR114T**	
1/4" EG-UNF	28	5.0	70	15	6.0	4	**FIGEGUMICFOR116T**	
5/16" EG-UNC	18	6.0	80	24	6.0	4	**FIGEGUMICFOR118T**	
5/16" EG-UNF	24	6.0	80	24	6.0	4	**FIGEGUMICFOR120T**	
3/8" EG-UNF	24	6.6	80	29.05	8.0	4	**FIGEGUMICFOR122T**	**FIGEGUMICFOR122F**
7/16" EG-UNC	14	7.70	80	33.5	8.0	4	**FIGEGUMICFOR124T**	**FIGEGUMICFOR124F**

FIGEGMMICFOR 2XD

EG-M

DIN 40435

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



VHM

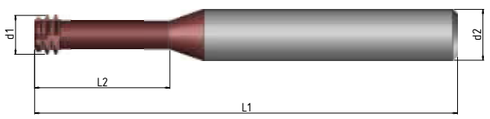
2xD

RH-LH

DIN 6535 HA

INTERNO INTERNAL

	L 0° - LR	L 0° - LR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated XFS ≥45 Hrc ≤66Hrc	Coated XFS ≥45 Hrc ≤66Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • <?>	P1.1-P5.1	P1.1-P5.1
	M1.1-M2.1	M1.1-M2.1
	K1.1-K4.2	K1.1-K4.2
	N1.1-N5.3	N1.1-N5.3
	S1.1-S1.3	S1.1-S1.3
	H1.1-H1.5	H1.1-H1.5



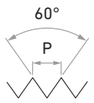
Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
EG-M 4	0.7	3.1	50	7.0	6.0	4	FIGEGMMICFOR01T	
EG-M 5	0.8	3.8	50	8.5	6.0	4	FIGEGMMICFOR03T	
EG-M 6	1.00	4.6	50	10.0	6.0	4	FIGEGMMICFOR05T	
EG-M 8	1.25	6.2	70	15.0	8.0	4	FIGEGMMICFOR09T	FIGEGMMICFOR09F
EG-M 10	1.50	7.5	70	20.0	8.0	4	FIGEGMMICFOR15T	FIGEGMMICFOR15F
EG-M 12	1.75	9.0	80	25.0	10.0	4	FIGEGMMICFOR23T	FIGEGMMICFOR23F
EG-M 16	2.00	11.5	100	30.0	12.0	4	FIGEGMMICFOR27T	FIGEGMMICFOR27F
EG-M 18	2.50	14.0	135	40.0	14.0	4	FIGEGMMICFOR31T	FIGEGMMICFOR31F
EG-M 20	2.50	15.0	135	45.0	16.0	4	FIGEGMMICFOR35T	FIGEGMMICFOR35F

FIGEGMMICFOR 2.5xD

EG-M

DIN 40435

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



VHM

2.5xD

RH-LH

DIN 6535 HA

INTERNO INTERNAL

L 0° - LR

L 0° - LR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

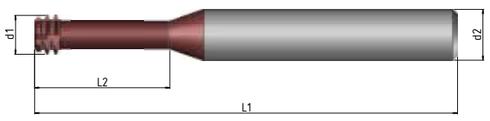
Coated XFS ≥45 Hrc ≤66Hrc

Coated XFS ≥45 Hrc ≤66Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • <?>

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

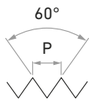


Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
EG-M 4	0.7	3.1	50	10.0	6.0	4	**FIGEGMMICFOR50T**	
EG-M 5	0.8	3.8	50	12.5	6.0	4	**FIGEGMMICFOR52T**	
EG-M 6	1.00	4.6	50	15.0	6.0	4	**FIGEGMMICFOR54T**	
EG-M 8	1.25	6.2	70	20.0	8.0	4	**FIGEGMMICFOR58T**	**FIGEGMMICFOR58F**
EG-M 10	1.50	7.5	70	25.0	8.0	4	**FIGEGMMICFOR64T**	**FIGEGMMICFOR64F**
EG-M 12	1.75	9.0	80	30.0	10.0	4	**FIGEGMMICFOR72T**	**FIGEGMMICFOR72F**
EG-M 16	2.00	11.5	100	40.0	12.0	4	**FIGEGMMICFOR76T**	**FIGEGMMICFOR76F**
EG-M 18	2.50	14.0	135	45.0	14.0	4	**FIGEGMMICFOR80T**	**FIGEGMMICFOR80F**
EG-M 20	2.50	15.0	135	50.0	16.0	4	**FIGEGMMICFOR84T**	**FIGEGMMICFOR84F**

FIGEGMMICFOR 3xD

EG-M

DIN 40435



VHM

3xD

RH-LH

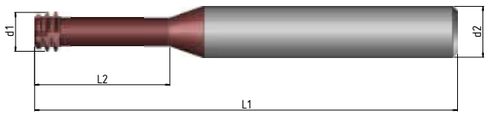
DIN 6535 HA

INTERNO INTERNAL

L 0° - LR

L 0° - LR

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated XFS ≥45 Hrc ≤66Hrc

Coated XFS ≥45 Hrc ≤66Hrc

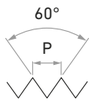
MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • <?>

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
EG-M 4	0.7	3.1	50	12.2	6.0	4	FIGEGMMICFOR100T	
EG-M 5	0.8	3.8	50	15.25	6.0	4	FIGEGMMICFOR102T	
EG-M 6	1.00	4.6	50	18.3	6.0	4	FIGEGMMICFOR104T	
EG-M 8	1.25	6.2	70	24.4	8.0	4	FIGEGMMICFOR108T	FIGEGMMICFOR108F
EG-M 10	1.50	7.5	70	30.5	8.0	4	FIGEGMMICFOR114T	FIGEGMMICFOR114F
EG-M 12	1.75	9.0	80	36.6	10.0	4	FIGEGMMICFOR122T	FIGEGMMICFOR122F
EG-M 16	2.00	11.5	100	48.8	12.0	4	FIGEGMMICFOR126T	FIGEGMMICFOR126F
EG-M 18	2.50	14.0	135	54,9	14.0	4	FIGEGMMICFOR130T	FIGEGMMICFOR130F
EG-M 20	2.50	15.0	135	61.0	16.0	4	FIGEGMMICFOR134T	FIGEGMMICFOR134F

FIGUNJMICFOR 2xD



UNJC, UNJF

ASME B1.15

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST

VHM

2xD

RH-LH

DIN 6535 HA

INTERNO INTERNAL

L 0° - LR

L 0° - LR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

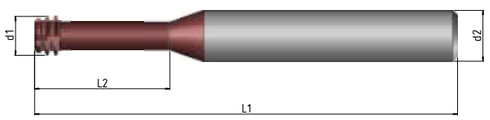
Coated XFS ≥45 Hrc ≤66Hrc

Coated XFS ≥45 Hrc ≤66Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 11

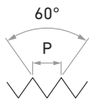
P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5



Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
Nr. 4 UNJC	40	2.10	50	5.8	6.0	4	FIGUNJMICFOR01T	
Nr. 6 UNJC	32	2.55	50	7.2	6.0	4	FIGUNJMICFOR03T	
Nr. 8 UNJC	32	3.2	50	8.55	6.0	4	FIGUNJMICFOR05T	
Nr. 8 UNJF	36	3.3	50	8.3	6.0	4	FIGUNJMICFOR07T	
Nr. 10 UNJC	24	3.5	70	9.7	6.0	4	FIGUNJMICFOR09T	
Nr. 10 UNJF	32	3.7	70	9.9	6.0	4	FIGUNJMICFOR11T	
Nr. 12 UNJF	28	4.2	70	11.25	6.0	4	FIGUNJMICFOR13T	
1/4" UNJC	20	4.8	70	12.7	6.0	4	FIGUNJMICFOR15T	
1/4" UNJF	28	5.0	70	12.7	6.0	4	FIGUNJMICFOR17T	
5/16" UNJC	18	6.0	80	15.9	6.0	4	FIGUNJMICFOR19T	
5/16" UNJF	24	6.0	80	15.9	6.0	4	FIGUNJMICFOR21T	
3/8" UNJC	16	6.7	80	19.1	8.0	4	FIGUNJMICFOR23T	FIGUNJMICFOR23F
7/16" UNJC	14	7.7	80	22.2	8.0	4	FIGUNJMICFOR25T	FIGUNJMICFOR25F
1/2" UNJC	13	9.2	80	25.4	10.0	4	FIGUNJMICFOR27T	FIGUNJMICFOR27F
9/16" UNJC	12	10.5	100	28.6	12.0	4	FIGUNJMICFOR29T	FIGUNJMICFOR29F
5/8" UNJC	11	11.4	100	31.8	12.0	4	FIGUNJMICFOR31T	FIGUNJMICFOR31F
3/4" UNJF	16	12.0	100	39.05	12.0	4	FIGUNJMICFOR33T	FIGUNJMICFOR33F

FIGUNJMICFOR 2,5xD



UNJC, UNJF

ASME B1.15

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST

VHM

2.5xD

RH-LH

DIN 6535 HA

INTERNO INTERNAL

L 0° - LR

L 0° - LR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

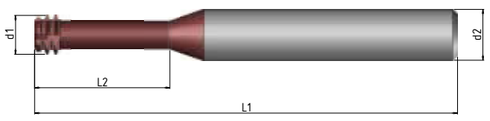
Coated XFS ≥45 Hrc ≤66Hrc

Coated XFS ≥45 Hrc ≤66Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 11

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

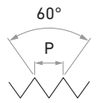


Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
Nr. 4 UNJC	40	2.10	50	7.25	6.0	4	FIGUNJMICFOR51T	
Nr. 6 UNJC	32	2.55	50	8.95	6.0	4	FIGUNJMICFOR53T	
Nr. 8 UNJC	32	3.2	50	10.63	6.0	4	FIGUNJMICFOR55T	
Nr. 8 UNJF	36	3.3	50	10.4	6.0	4	FIGUNJMICFOR57T	
Nr. 10 UNJC	24	3.5	70	12.1	6.0	4	FIGUNJMICFOR59T	
Nr. 10 UNJF	32	3.7	70	12.3	6.0	4	FIGUNJMICFOR61T	
Nr. 12 UNJF	28	4.2	70	14	6.0	4	FIGUNJMICFOR63T	
1/4" UNJC	20	4.8	70	15.9	6.0	4	FIGUNJMICFOR65T	
1/4" UNJF	28	5.0	70	15.9	6.0	4	FIGUNJMICFOR67T	
5/16" UNJC	18	6.0	80	19.8	6.0	4	FIGUNJMICFOR69T	
5/16" UNJF	24	6.0	80	19.8	6.0	4	FIGUNJMICFOR71T	
3/8" UNJC	16	6.7	80	23.8	8.0	4	FIGUNJMICFOR73T	FIGUNJMICFOR73F
7/16" UNJC	14	7.7	80	27.8	8.0	4	FIGUNJMICFOR75T	FIGUNJMICFOR75F
1/2" UNJC	13	9.2	80	31.8	10.0	4	FIGUNJMICFOR77T	FIGUNJMICFOR77F
9/16" UNJC	12	10.5	100	35.7	12.0	4	FIGUNJMICFOR79T	FIGUNJMICFOR79F
5/8" UNJC	11	11.4	100	39.7	12.0	4	FIGUNJMICFOR81T	FIGUNJMICFOR81F
3/4" UNJF	16	12.0	100	48.6	12.0	4	FIGUNJMICFOR83T	FIGUNJMICFOR83F

FIGUNJMICFOR 3xD

UNJC, UNJF

ASME B1.15



VHM

3xD

RH-LH

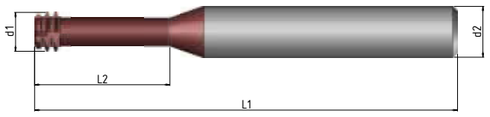
DIN 6535 HA

INTERNO INTERNAL

L 0° - LR

L 0° - LR

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated XFS ≥45 Hrc ≤66Hrc

Coated XFS ≥45 Hrc ≤66Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 11

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
Nr. 4 UNJC	40	2.10	50	8.7	6.0	4	**FIGUNJMICFOR100T**	
Nr. 6 UNJC	32	2.55	50	10.7	6.0	4	**FIGUNJMICFOR102T**	
Nr. 8 UNJC	32	3.2	50	12.7	6.0	4	**FIGUNJMICFOR104T**	
Nr. 8 UNJF	36	3.3	50	12.7	6.0	4	**FIGUNJMICFOR106T**	
Nr. 10 UNJC	24	3.5	70	14.7	6.0	4	**FIGUNJMICFOR108T**	
Nr. 10 UNJF	32	3.7	70	14.7	6.0	4	**FIGUNJMICFOR110T**	
Nr. 12 UNJF	28	4.2	70	16.75	6.0	4	**FIGUNJMICFOR112T**	
1/4" UNJC	20	4.8	70	19.4	6.0	4	**FIGUNJMICFOR114T**	
1/4" UNJF	28	5.0	70	19.4	6.0	4	**FIGUNJMICFOR116T**	
5/16" UNJC	18	6.0	80	24.2	6.0	4	**FIGUNJMICFOR118T**	
5/16" UNJF	24	6.0	80	24.2	6.0	4	**FIGUNJMICFOR120T**	
3/8" UNJC	16	6.7	80	29.05	8.0	4	**FIGUNJMICFOR122T**	**FIGUNJMICFOR122F**
7/16" UNJC	14	7.7	80	33.9	8.0	4	**FIGUNJMICFOR124T**	**FIGUNJMICFOR124F**
1/2" UNJC	13	9.2	80	38.75	10.0	4	**FIGUNJMICFOR126T**	**FIGUNJMICFOR126F**
9/16" UNJC	12	10.5	100	43.6	12.0	4	**FIGUNJMICFOR128T**	**FIGUNJMICFOR128F**
5/8" UNJC	11	11.4	100	48.45	12.0	4	**FIGUNJMICFOR130T**	**FIGUNJMICFOR130F**
3/4" UNJF	16	12.0	100	58.1	12.0	4	**FIGUNJMICFOR132T**	**FIGUNJMICFOR132F**

FIGMJMICFOR 2xD

MJ

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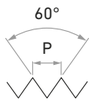
CUSTOMIZED DESIGN ON REQUEST



VHM

2xD

RH-LH

DIN 6535 HA

INTERNO INTERNAL

L 0° - LR

L 0° - LR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

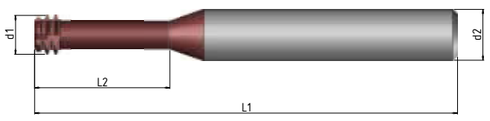
Coated XFS ≥45 Hrc ≤66Hrc

Coated XFS ≥45 Hrc ≤66Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 4D • 11

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5



Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
MJ 4	0.70	3.1	50	7.0	6.0	4	FIGMJMICFOR01T	
MJ 5	0.80	3.8	50	8.5	6.0	4	FIGMJMICFOR03T	
MJ 6	1.00	4.6	50	10.0	6.0	4	FIGMJMICFOR05T	
MJ 8	1.00	6.2	70	15.0	8.0	4	FIGMJMICFOR07T	FIGMJMICFOR07F
MJ 8	1.25	6.2	70	15.0	8.0	4	FIGMJMICFOR09T	FIGMJMICFOR09F
MJ 10	1.00	7.5	70	20.0	8.0	4	FIGMJMICFOR11T	FIGMJMICFOR11F
MJ 10	1.25	7.5	70	20.0	8.0	4	FIGMJMICFOR13T	FIGMJMICFOR13F
MJ 10	1.50	7.5	70	20.0	8.0	4	FIGMJMICFOR15T	FIGMJMICFOR15F
MJ 12	1.00	9.0	80	25.0	10.0	4	FIGMJMICFOR17T	FIGMJMICFOR17F
MJ 12	1.25	9.0	80	25.0	10.0	4	FIGMJMICFOR19T	FIGMJMICFOR19F
MJ 12	1.50	9.0	80	25.0	10.0	4	FIGMJMICFOR21T	FIGMJMICFOR21F
MJ 12	1.75	9.0	80	25.0	10.0	4	FIGMJMICFOR23T	FIGMJMICFOR23F
MJ 16	1.50	11.5	100	30.0	12.0	4	FIGMJMICFOR25T	FIGMJMICFOR25F
MJ 16	2.00	11.5	100	30.0	12.0	4	FIGMJMICFOR27T	FIGMJMICFOR27F
MJ 18	1.50	14.0	135	40.0	14.0	4	FIGMJMICFOR29T	FIGMJMICFOR29F
MJ 18	2.50	14.0	135	40.0	14.0	4	FIGMJMICFOR31T	FIGMJMICFOR31F
MJ 20	1.50	15.0	135	45.0	16.0	4	FIGMJMICFOR33T	FIGMJMICFOR33F
MJ 20	2.50	15.0	135	45.0	16.0	4	FIGMJMICFOR35T	FIGMJMICFOR35F

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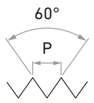
FIGMJMICFOR 2.5xD



VHM

2.5xD

RH-LH

DIN 6535 HA

INTERNO INTERNAL

MJ

DIN ISO 5855

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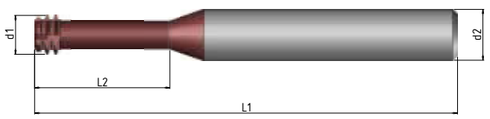
CUSTOMIZED DESIGN ON REQUEST



	L 0° - LR	L 0° - LR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated XFS ≥45 Hrc ≤66Hrc	Coated XFS ≥45 Hrc ≤66Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 11	P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5	P1.1-P5.1 M1.1-M2.1 K1.1-K4.2 N1.1-N5.3 S1.1-S1.3 H1.1-H1.5

Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
MJ 4	0.70	3.1	50	10.0	6.0	4	FIGMJMICFOR50T	
MJ 5	0.80	3.8	50	12.5	6.0	4	FIGMJMICFOR52T	
MJ 6	1.00	4.6	50	15.0	6.0	4	FIGMJMICFOR54T	
MJ 8	1.00	6.2	70	20.0	8.0	4	FIGMJMICFOR56T	FIGMJMICFOR56F
MJ 8	1.25	6.2	70	20.0	8.0	4	FIGMJMICFOR58T	FIGMJMICFOR58F
MJ 10	1.00	7.5	70	25.0	8.0	4	FIGMJMICFOR60T	FIGMJMICFOR60F
MJ 10	1.25	7.5	70	25.0	8.0	4	FIGMJMICFOR62T	FIGMJMICFOR62F
MJ 10	1.50	7.5	70	25.0	8.0	4	FIGMJMICFOR64T	FIGMJMICFOR64F
MJ 12	1.00	9.0	80	30.0	10.0	4	FIGMJMICFOR66T	FIGMJMICFOR66F
MJ 12	1.25	9.0	80	30.0	10.0	4	FIGMJMICFOR68T	FIGMJMICFOR68F
MJ 12	1.50	9.0	80	30.0	10.0	4	FIGMJMICFOR70T	FIGMJMICFOR70F
MJ 12	1.75	9.0	80	30.0	10.0	4	FIGMJMICFOR72T	FIGMJMICFOR72F
MJ 16	1.50	11.5	100	40.0	12.0	4	FIGMJMICFOR74T	FIGMJMICFOR74F
MJ 16	2.00	11.5	100	40.0	12.0	4	FIGMJMICFOR76T	FIGMJMICFOR76F
MJ 18	1.50	14.0	135	45.0	14.0	4	FIGMJMICFOR78T	FIGMJMICFOR78F
MJ 18	2.50	14.0	135	45.0	14.0	4	FIGMJMICFOR80T	FIGMJMICFOR80F
MJ 20	1.50	15.0	135	50.0	16.0	4	FIGMJMICFOR82T	FIGMJMICFOR82F
MJ 20	2.50	15.0	135	50.0	16.0	4	FIGMJMICFOR84T	FIGMJMICFOR84F

FIGMJMICFOR 3xD

MJ

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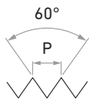
CUSTOMIZED DESIGN ON REQUEST



VHM

3xD

RH-LH

DIN 6535 HA

INTERNO INTERNAL

L 0° - LR

L 0° - LR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated XFS ≥45 Hrc ≤66Hrc

Coated XFS ≥45 Hrc ≤66Hrc

MATERIALI LAVORABILI
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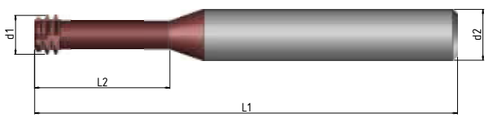
P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5

P1.1-P5.1
M1.1-M2.1
K1.1-K4.2
N1.1-N5.3
S1.1-S1.3
H1.1-H1.5



Filetto - Thread	Pitch mm	d1	L1	L2	d2	Z		
MJ 4	0.70	3.1	50	12.2	6.0	4	FIGMJMICFOR100T	
MJ 5	0.80	3.8	50	15.25	6.0	4	FIGMJMICFOR102T	
MJ 6	1.00	4.6	50	18.3	6.0	4	FIGMJMICFOR104T	
MJ 8	1.00	6.2	70	24.4	8.0	4	FIGMJMICFOR106T	FIGMJMICFOR106F
MJ 8	1.25	6.2	70	24.4	8.0	4	FIGMJMICFOR108T	FIGMJMICFOR108F
MJ 10	1.00	7.5	70	30.5	8.0	4	FIGMJMICFOR110T	FIGMJMICFOR110F
MJ 10	1.25	7.5	70	30.5	8.0	4	FIGMJMICFOR112T	FIGMJMICFOR112F
MJ 10	1.50	7.5	70	30.5	8.0	4	FIGMJMICFOR114T	FIGMJMICFOR114F
MJ 12	1.00	9.0	80	36.6	10.0	4	FIGMJMICFOR116T	FIGMJMICFOR116F
MJ 12	1.25	9.0	80	36.6	10.0	4	FIGMJMICFOR118T	FIGMJMICFOR118F
MJ 12	1.50	9.0	80	36.6	10.0	4	FIGMJMICFOR120T	FIGMJMICFOR120F
MJ 12	1.75	9.0	80	36.6	10.0	4	FIGMJMICFOR122T	FIGMJMICFOR122F
MJ 16	1.50	11.5	100	48.8	12.0	4	FIGMJMICFOR124T	FIGMJMICFOR124F
MJ 16	2.00	11.5	100	48.8	12.0	4	FIGMJMICFOR126T	FIGMJMICFOR126F
MJ 18	1.50	14.0	135	54.9	14.0	4	FIGMJMICFOR128T	FIGMJMICFOR128F
MJ 18	2.50	14.0	135	54.9	14.0	4	FIGMJMICFOR130T	FIGMJMICFOR130F
MJ 20	1.50	15.0	135	61	16.0	4	FIGMJMICFOR132T	FIGMJMICFOR132F
MJ 20	2.50	15.0	135	61	16.0	4	FIGMJMICFOR134T	FIGMJMICFOR134F

FIGPG 2xD

Pg

DIN 4030

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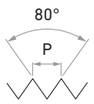
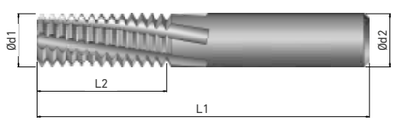
CUSTOMIZED DESIGN ON REQUEST



VHM | e8 | 2xD | LH | DIN 6535 HA | INTERNO INTERNAL | ESTERNO EXTERNAL



	R 10° - RR	R 10° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
MATERIALI LAVORABILI WORKING MATERIALS page 4D • 3	P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

Filetto - Thread	(TPI)	d1	L1	L2	d2	Z		
PG 7	20	8.0	65	20	8.0	3	FIGPG01N	FIGPG01T
PG 9-11-13.5-16	18	10.0	80	25	10.0	4	FIGPG03N	FIGPG03T
PG 21-29-36-42-48	16	12.0	82	30	12.0	4	FIGPG05N	FIGPG05T

R 10° - RR	R 10° - RR
Uncoated ≤45 Hrc	Coated TNF ≤45 Hrc
P1.1-P5.1 K1.1-K4.2 N1.1-N1.5 N2.1-N2.6 N3.1-N4.2 S1.1-S1.3	P1.1-P5.1 M1.1-M4.1 N1.1-N5.2 S1.1-S2.6 H1.1-H1.2

FIGPG01NF	FIGPG01F
FIGPG03NF	FIGPG03F
FIGPG05NF	FIGPG05F

PREFORI
PRE-HOLES

M

Filettatura metrica ISO a passo grosso
Coarse metric ISO thread

d1	Pitch	Preforo
M1	0,25	0,75
M1,1	0,25	0,85
M1,2	0,25	0,95
M1,4	0,3	1,1
M1,6	0,35	1,25
M(1,7)	0,35	1,3
M1,8	0,35	1,45
M2	0,4	1,9
M2,2	0,45	1,75
M(2,3)	0,4	1,9
M2,5	0,45	2,05
M(2,6)	0,45	2,1
M3	0,5	2,5
M3,5	0,6	2,9
M4	0,7	3,3
M4,5	0,75	3,7
M5	0,8	4,2
M6	1	5
M7	1	6
M8	1,25	6,8
M9	1,25	7,8
M10	1,5	8,5
M11	1,5	9,5
M12	1,75	10,2
M14	2	12
M16	2	14
M18	2,5	15,5
M20	2,5	17,5
M22	2,5	19,5
M24	3	21
M27	3	24
M30	3,5	26,5

MF

Filettatura metrica ISO a passo fine
Fine metric ISO thread

d1	Pitch	Preforo
M3	0,35	2,65
M3,5	0,35	3,15
M4	0,35	3,65
M4	0,5	3,5
M5	0,5	4,5
M6	0,5	5,5
M6	0,75	5,2
M7	0,75	6,2
M8	0,5	7,5
M8	1	7
M9	1	8
M10	0,5	9,5
M10	0,75	9,2
M10	1	9
M10	1,25	8,8
M11	1	10
M12	0,75	11,2
M12	1	11
M12	1,25	10,8
M12	1,5	10,5
M13	1	12
M13	1,5	11,5
M14	1	13
M14	1,25	12,8
M14	1,5	12,5
M15	1	14
M15	1,5	13,5
M16	1	15
M16	1,5	14,5
M18	1	17
M18	1,5	16,5
M18	2	16
M20	1	19
M20	1,5	18,5
M20	2	18

UNC

Filettatura americana a passo grosso
Coarse american thread

d1	Pitch	Preforo
Nr. 1	64"	1,5
Nr. 2	56"	1,8
Nr. 3	48"	2,1
Nr. 4	40"	2,25
Nr. 5	40"	2,6
Nr. 6	32"	2,75
Nr. 8	32"	3,5
Nr. 10	24"	3,9
Nr. 12	24"	4,5
1/4	20"	5,1
5/16	18"	6,6
3/8	16"	8
7/16	14"	9,4
1/2	13"	10,75
9/16	12"	12,2
5/8	11"	13,5
3/4	10"	16,5
7/8	9"	19,5
1	8"	22,25
1 1/8	7"	25
1 1/4	7"	28
1 3/8	6"	30,75
1 1/2	6"	34

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FIL

UNF

Filettatura americana a passo fine
Fine american thread

d1	Pitch	Preforo
Nr. 0	80"	1,25
Nr. 1	72"	1,55
Nr. 2	64"	1,85
Nr. 3	56"	2,15
Nr. 4	48"	2,35
Nr. 5	44"	2,7
Nr. 6	40"	2,95
Nr. 8	36"	3,5
Nr. 10	32"	4,1
Nr. 12	28"	4,6
1/4	28"	5,5
5/16	24"	6,9
3/8	24"	8,5
7/16	20"	9,9
1/2	20"	11,5
9/16	18"	12,9
5/8	18"	14,5
3/4	16"	17,5
7/8	14"	20,4
1	12"	23,25
1 1/8	12"	26,5
1 1/4	12"	29,5
1 3/8	12"	32,75

UNEF

Filettatura americana a passo extra fine
Extra fine american thread

d1	Pitch	Preforo
1/4	32"	5,55
5/16	32"	7,15
3/8	32"	8,7
7/16	28"	10,2
1/2	28"	11,8
9/16	24"	13,2
5/8	24"	14,8
11/16	24"	16,4
3/4	20"	17,8
7/8	20"	20,95
1	20"	24,2

G (BSP)

Filettatura per tubazione
British standard pipe

d1	Pitch	Preforo
G 1/16	28"	6,8
G 1/8	28"	8,8
G 1/4	19"	11,8
G 3/8	19"	15,25
G 1/2	14"	19
G 5/8	14"	21
G 3/4	14"	24,5
G 7/8	14"	28,25
G 1	11"	30,75

PREFORI
PRE-HOLES

W (BSW)

Filettatura whitworth BSW
BSW whitworth thread

d1	Pitch	Preforo
W 3/32	48"	1,8
W 1/8	40"	2,55
W 5/32	32"	3,1
W 3/16	24"	3,6
W 7/32	24"	4,4
W 1/4	20"	5,1
W 5/16	18"	6,5
W 3/8	16"	7,9
W 7/16	14"	9,25
W 1/2	12"	10,5
W 9/16	12"	12
W 5/8	11"	13,5
W 3/4	10"	16,5
W 7/8	9"	19,25
W 1	8"	21,75
W 1 1/8	7"	24,75
W 1 1/4	7"	27,75
W 1 3/8	6"	30,5

NTP

Filettatura gas conica americana
American conical gas thread

d1	Pitch	Preforo
1/16	27"	6,3
1/8	27"	8,5
1/4	18"	11
3/8	18"	14,5
1/2	14"	18
3/4	14"	23
1	11,5"	29
1 1/4	11,5"	38
1 1/2	11,5"	44
2	11,5"	56
2 1/2	8"	67
3	8"	83

EGM

Filettatura filetti riportati
Threading heli-coil thread

d1	Pitch	Preforo
EGM 2,5	0,45	2,6
EGM 3	0,5	3,2
EGM 3,5	0,6	3,7
EGM 4	0,7	4,2
EGM 5	0,8	5,2
EGM 6	1	6,3
EGM 8	1,25	8,4
EGM 10	1,5	10,5
EGM 12	1,75	12,5
EGM 14	2	14,5
EGM 16	2	16,5
EGM 18	2,5	18,75
EGM 20	2,5	20,75
EGM 22	2,5	22,75
EGM 24	3	24,75

PG

Filettatura per tubi corazzati
Threading for armored pipes

d1	Pitch	Preforo
7	20"	11,45-11,4
9	18"	14,01-14
11	18"	17,41-17,25
13,5	18"	19,21-19
16	18"	21,31-21,25
21	16"	27,03-26,75
29	16"	35,73-33,5
36	16"	45,73-45,5
42	16"	52,73-52,5
48	16"	58,03-57,8

IGUTENSILI

FIL

IGUTENSILI

FIL

HMIG

TECNOLOGIA DI FILETTATURA MASCHI

THREADING TECHNOLOGY TAPS

Con i maschi HMIG di IGUTENSILI le lavorazioni di filettatura vengono eseguite rapidamente e in modo produttivo senza rinunciare alla qualità della lavorazione.

Questi utensili sono impiegabili su di una vastissima gamma di macchinari a controllo numerico e/o tradizionali come CENTRI di LAVORO, CENTRI di TORNITURA, TRANSFER 0°ed anche su LINEE DI PRODUZIONE AVANZATA ove è indispensabile abbattere i tempi di lavorazione. L'utensile HMIG-Maschi è une conseguenza di questo impegno nel realizzare filettature in modo VELOCE e con la massima EFFICACIA, HMIG utilizza valori di taglio fino ad 80 m/min. parametro improponibili peR 0°maschi tradizionali. Nella gamma HMIG sono presenti diverse tipologie di utensile, proponiamo maschi a TAGLIARE e RULLARE peR 0°utilizzi su materiali docili o con durezze pari a 65 HRC, la gamma di utensili HMIG è dotata di REFRIGERAZIONE forzata INTERNA alla TESTA, garantendo in questo modo un'ottima lubrificazione nel punto di taglio ed una eccellente evacuazione del truciolo.

Gli utensili HMIG-Maschi, sono rivestiti TNF o LTM in funzione del materiale da lavorare, raggiungono alti valori di taglio e lunga durata, garantendo sempre la massima stabilità del ciclo produttivo, inoltre gli HMIG, nonostante la complessa tecnologia costruttiva, permettono le operazioni di affilatura e rivestimento, donando all'utensile stesso nuova vita con rendimenti eccellenti.

Da non sottovalutare la possibilità di produrre Maschi HMIG speciali a disegno, IGUTENSILI è in grado di sviluppare un'infinita gamma di filettature peR 0°le più svariate applicazioni, di seguito alcuni esempi, MJ DIN ISO 5855, NPSFR 0°ANSI B1.20.3, W keg DIN 477, W zyl DIN 477, EG M DIN 8140-2, LK-M, TR 0°DIN 103, Tr-F DIN 103, Rd DIN 405 ...

With the HMIG taps by IGUTENSILI the threading operations are performed quickly and productively without sacrificing the quality of the processing.

These tools can be used on a very wide range of CNC machines and/oR 0°traditional machinery such as WORK CENTRES, TURNING CENTRES, TRANSFER 0°and even ADVANCED PRODUCTION LINES where it is essential to reduce processing times. The HMIG-Taps tool is a consequence of this commitment in making threads FAST and with maximum EFFICACY, HMIG uses cutting values up to 80 m/min. impossible parameters foR 0°traditional taps. The HMIG range includes different types of tools, we offeR 0°CUT and ROLL taps foR 0°uses on soft materials oR 0°with hardness equal to 65 HRC, the range of HMIG tools is equipped with INTERNAL HEAD forced COOLANT, thus guaranteeing an excellent lubrication at the cutting point and excellent chip evacuation.

The HMIG-Taps tools are TNF oR 0°LTM coated according to the material to be processed, reaching high cutting values and long life, always guaranteeing the maximum stability of the production cycle; also, HMIG, despite the complex manufacturing technology, allow sharpening and coating operations, giving the tool a new lease of life with excellent yields.

Not to underestimate the possibility of producing special HMIG Taps with special designs, IGUTENSILI is able to develop an infinite range of threads foR 0°the most varied applications, below some examples, MJ DIN ISO 5855, NPSFR 0°ANSI B1.20.3, W keg DIN 477, W zyl DIN 477, EG M DIN 8140-2, LK-M, TR 0°DIN 103, Tr-F DIN 103, Rd DIN 405...

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min) Vc = Cutting speed (m/min)

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UNF
G, RP, W
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BSPT
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UNJ
M-EXT, MJ-EXT
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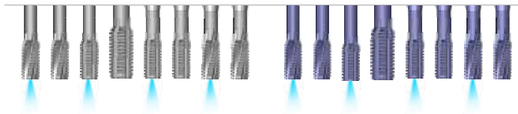
EGM

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR 0°(St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai peR 0°lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai peR 0°lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai peR 0°lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai peR 0°lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (SupeR 0°Duplex)	Austenitic-ferritic heat-resistant (SupeR 0°Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellaR 0°graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodulaR 0°graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicularR 0°graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	CoppeR 0°alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special coppeR 0°alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe peR 0°getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-coppeR 0°alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	



5E 15, 5E 17, 5E 49, 5E 51	5E 15,5E 17					
5E 19,5E 21,5E 25	5E 19,5E 21,5E 25					
5E 27,5E 29	5E 27,5E 29					
5E 31,5E 33,5E 35	5E 31,5E 33,5E 35					
5E 25,5E 53	5E 25					
	5E 45,5E 47					

Vc Uncoated	Vc Coated NFS	F = 3 to 5 mm	F =5 to 8 mm	F =8 to 12 mm	F =12 to 16 mm		
							P
						1.1	
						2.1	
	15 - 35					3.1	
	10 - 20					4.1	
	4 - 10					5.1	
							M
						1.1	
						2.1	
						3.1	
						4.1	
							K
						1.1	
	30 - 70					2.1	
	20 - 40					3.1	
	20 - 40					3.2	
	30 - 70					4.1	
	30 - 70					4.2	
							N
30 - 90						1.1	
30 - 90						1.2	
30 - 90						1.3	
30 - 70						1.4	
30 - 70	30 - 70					1.5	
30 - 70	30 - 60					1.6	
						2.1	
						2.2	
						2.3	
						2.4	
						2.5	
	20 - 40					2.6	
	12 - 25					2.7	
	50 - 70					3.1	
						3.2	
						4.1	
	5 - 25					4.3	
	5 - 25					4.4	
						5.1	
						5.2	
						5.3	
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						1.1	
						1.2	
						1.3	
						2.1	
						2.2	
						2.3	
	4 - 8					2.4	
						2.5	
						2.6	
							H
	2 - 4					1.1	
	2 - 4					1.2	
						1.3	
						1.4	
						1.5	

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		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
	1.1	Acciai estrusi a freddo	Cold-extrusion steel	≤ 600 N/mm2	Cq15	1.1132
		Acciai da costruzione	Costruction steels		S235JR 0°(St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
	2.1	Acciai da costruzione	Costruction steels	≤ 800 N/mm2	E360 (St70-2)	1.0070
		Acciai da cementazione	Cementation steel		16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
	3.1	Acciai da cementazione	Cementation steel	≤ 1000 N/mm2	20MoCr3	1.7320
		Acciai da bonifica	Heat-treatable steels		42CrMo4	1.7225
		Acciai peR 0°lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
	4.1	Acciai da bonifica	Heat-treatable steels	≤ 1200 N/mm2	50CrMo4	1.7228
		Acciai peR 0°lavorazioni a freddo	Cold work steels		X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
	5.1	Acciai fortemente legati	High-alloyed steels	≤ 1400 N/mm2	X38CrMoV5-3	1.2367
		Acciai peR 0°lavorazioni a freddo	Cold work steels		X100CrMoV8-1-1	1.2990
		Acciai peR 0°lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (SupeR 0°Duplex)	Austenitic-ferritic heat-resistant (SupeR 0°Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
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	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodulaR 0°graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermiculaR 0°graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	CoppeR 0°alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
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	2.7	Leghe di rame speciali	Special coppeR 0°alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
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	3.2	Leghe peR 0°getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
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		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-coppeR 0°alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
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	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

	5E 15, 5E 17, 5E 23
	5E 23

		Vc Coated LTM	F = 3 to 5 mm	F =5 to 8 mm	F =8 to 12 mm	F =12 to 16 mm		
P								P
	1.1						1.1	
	2.1						2.1	
	3.1						3.1	
	4.1						4.1	
	5.1						5.1	
M								M
	1.1						1.1	
	2.1						2.1	
	3.1						3.1	
	4.1						4.1	
K								K
	1.1						1.1	
	1.2						1.2	
	2.1						2.1	
	2.2						2.2	
	3.1						3.1	
	3.2						3.2	
	4.1						4.1	
	4.2						4.2	
N								N
	1.1						1.1	
	1.2						1.2	
	1.3						1.3	
	1.4						1.4	
	1.5						1.5	
	1.6						1.6	
	2.1						2.1	
	2.2						2.2	
	2.3						2.3	
	2.4						2.4	
	2.5						2.5	
	2.6						2.6	
	2.7						2.7	
	3.1						3.1	
	3.2						3.2	
	4.1						4.1	
	4.2						4.2	
	4.3						4.3	
	4.4						4.4	
	5.1						5.1	
	5.2						5.2	
	5.3						5.3	
S								S
	1.1						1.1	
	1.2						1.2	
	1.3						1.3	
	2.1						2.1	
	2.2						2.2	
	2.3						2.3	
	2.4		4 - 8				2.4	
	2.5						2.5	
	2.6						2.6	
H								H
	1.1		2 - 4				1.1	
	1.2		2 - 4				1.2	
	1.3						1.3	
	1.4						1.4	
	1.5						1.5	

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)

Vc = Cutting speed (m/min)

M
MF
UNC
UNF
G, RP, W
BSW, BSF
NPT
NPTF
BSPT
MJ
UNJ
M-EXT, MJ-EXT
PG
EGM

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
	1.1	Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
		Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR 0°(St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
	2.1	Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
		Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai peR 0°lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai peR 0°lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai peR 0°lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai peR 0°lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (SupeR 0°Duplex)	Austenitic-ferritic heat-resistant (SupeR 0°Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellaR 0°graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodulaR 0°graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermiculaR 0°graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	CoppeR 0°alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special coppeR 0°alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe peR 0°getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-coppeR 0°alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

5E 37,5E 39	5E 37,5E 39
5E 41,5E 43	5E 41,5E 43

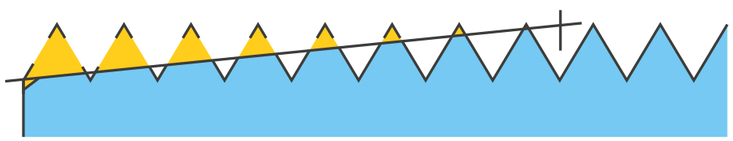
Vc Uncoated	Vc Coated NFS	F = 3 to 5 mm	F =5 to 8 mm	F =8 to 12 mm	F =12 to 16 mm	
						P
	30 - 40					1.1
	20 - 60					2.1
	20 - 50					3.1
	15 - 35					4.1
						5.1
						M
	10 - 25					1.1
	10 - 25					2.1
	10 - 25					3.1
						4.1
						K
						1.1
						1.2
						2.1
						2.2
						3.1
						3.2
						4.1
						4.2
						N
30 - 90	25 - 80					1.1
30 - 90						1.2
30 - 90						1.3
30 - 70						1.4
30 - 70	30 - 80					1.5
30 - 70	30 - 80					1.6
	25 - 50					2.1
	25 - 60					2.2
						2.3
						2.4
						2.5
						2.6
						2.7
						3.1
						3.2
						4.1
						4.2
						4.3
						4.4
						5.1
						5.2
						5.3
						S
	12 - 35					1.1
						1.2
						1.3
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
						H
						1.1
						1.2
						1.3
						1.4
						1.5

FORME D'IMBOCCO
CHAMFER 0°FORMS

Forme e lunghezza d'imbocco peR 0°maschi a tagliare secondo DIN 2197
ChamfeR 0°forms and chamfeR 0°lengths foR 0°taps acc. DIN 2197

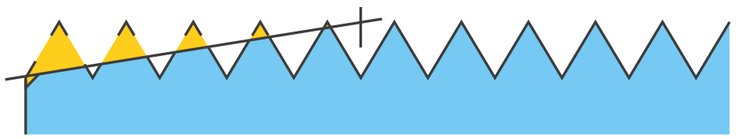
Forma A
Form A

Lunghezza d'imbocco 6 - 8 filetti
PeR 0°scanalature diritte
FoR 0°straight flutes
ChamfeR 0°length 6-8 threads



Forma B
Form B

Lunghezza d'imbocco di 3,5-5,5 filetti
PeR 0°scanalature diritte con imbocco corretto
ChamfeR 0°length 3.5-5.5 threads
FoR 0°straight flutes with spiral point

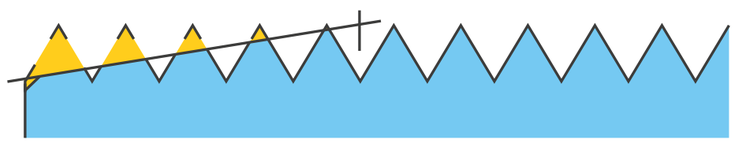


Forma C
Form C

Lunghezza d'imbocco di 2-3 filetti
PeR 0°scanalature diritte o elicoidali
ChamfeR 0°length 2-3 threads
FoR 0°straight oR 0°spiral fl utes

Forma D
Form D

Lunghezza d'imbocco di 3,5-5 filetti
PeR 0°scanalature diritte o elicoidali
ChamfeR 0°length 3.5-5 threads
FoR 0°straight oR 0°spiral flutes



Forma E
Form E

Lunghezza d'imbocco di 1,5-2 filetti
PeR 0°scanalature diritte o elicoidali
ChamfeR 0°length 1.5-2 threads
FoR 0°straight oR 0°spiral flutes

Forma F
Form F

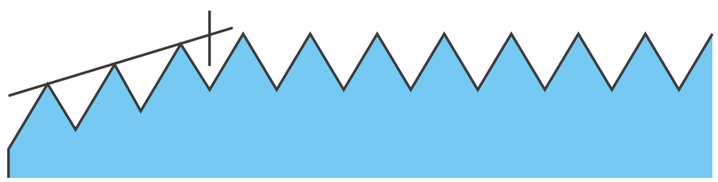
Lunghezza d'imbocco di 1-1,5 filetti
PeR 0°scanalature diritte o elicoidali
ChamfeR 0°length 1-1,5 threads
FoR 0°straight oR 0°spiral flutes

FORME D'IMBOCCO
LEAD TAPER 0°FORMS

Forme e lunghezza d'imbocco peR 0°maschi a rullare secondo DIN 2175
Lead tapeR 0°forms and lead tapeR 0°lengths foR 0°cold-forming taps acc. DIN 2175

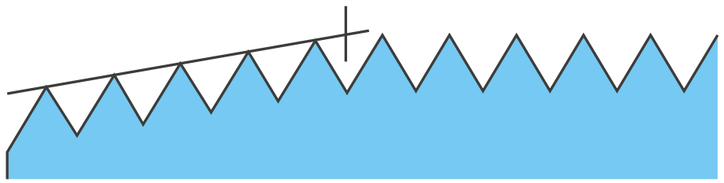
Forma C
Form C

Lunghezza d'imbocco di 2-3 filetti
ChamfeR 0°length 2-3 threads



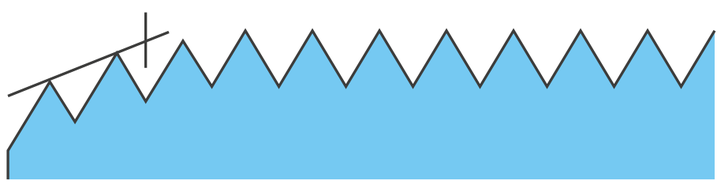
Forma D
Form D

Lunghezza d'imbocco di 3,5-5 filetti
ChamfeR 0°length 3.5-5 threads



Forma E
Form E

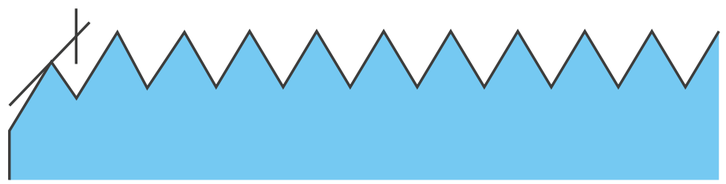
Lunghezza d'imbocco di 1,5-2 filetti
ChamfeR 0°length 1.5-2 threads



IGUTENSILI

Forma F
Form F

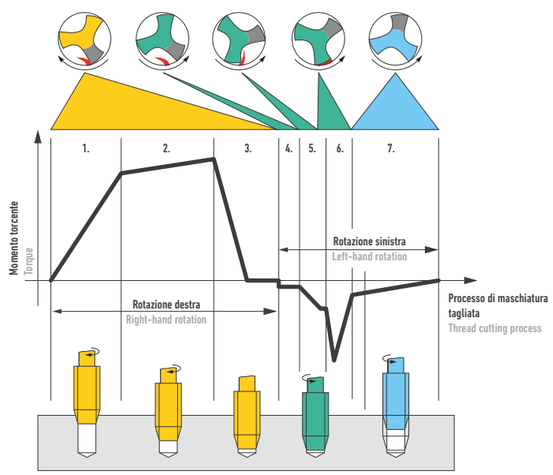
Lunghezza d'imbocco di 1-1,5 filetti
ChamfeR 0°length 1-1,5 threads



HMIG

MASCHI A TAGLIARE
CUTTING TAPS

Diagramma schematico del momento torcente nella maschiatura tagliata
Schematic of torque curve during a thread cutting process



1) Primo taglio del maschio fino al contatto completo di tutti i denti d'imbocco

2) Taglio del maschio con tutti i denti d'imbocco

3) Decelerazione del mandrino macchina fino all'arresto

4) Inizio del movimento di ritorno del mandrino fino al contatto del dorso del dente con il truciolo residuo

5) Rottura del truciolo

6) Evaquazione del truciolo residuo (la sua dimensione dipende dall'angolo di spoglia dell'imbocco e dall'angolo di taglio dorsale del maschio)

7) Attrito radente fra maschio e pezzo

1) Beginning of cut to full contact of all chamfeR 0°teeth

2) Cutting torque of the tap which is now cutting with all its chamfeR 0°teeth

3) Braking the machine spindle to a stop

4) Beginning reversal of the spindle to contact of the tooth back with the chip root left standing by the next cutting tap tooth

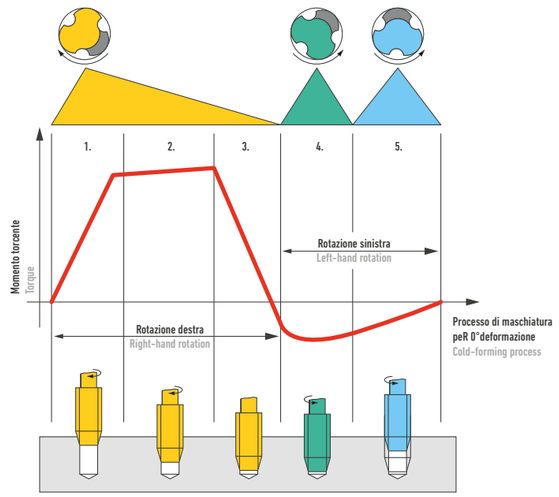
5) Shearing off the chip root

6) Squashing back the chip root remains left afteR 0°the shearing off of the chip root (size depending on the chamfeR 0°relief angle of the tap and on the reaR 0°cutting angle of the tap tooth)

7) Sliding friction between tap and workpiece

MASCHI A RULLARE
FORMING TAPS

Diagramma schematico del momento torcente nella maschiatura rullata
Schematic of torque curve in the cold forming of threads



1) Prima deformazione del maschio a rullare fino al completo contatto di tutti i lobi in imbocco

2) Massimo sforzo dell'imbocco completamente inserito nel materiale

3) Decelerazione del mandrino macchina fino all'arresto

4) Inizio del movimento di ritorno del mandrino con attrito radente

5) Attrito radente fra maschio a rullare e pezzo

1) Beginning of forming process until all lead tapeR 0°teeth are in contact.

2) Forming work of the lead tapeR 0°which is now in full contact

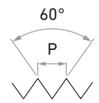
3) Braking the machine spindle to a stop

4) Beginning reversal of the spindle with sliding friction

5) Sliding friction between cold-forming tap and workpiece

M

DIN13

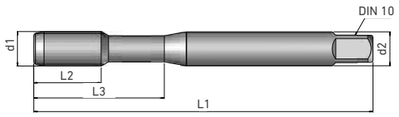


DIN 371

VHM 6HX

R 0° - RR | R 0° - RR

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

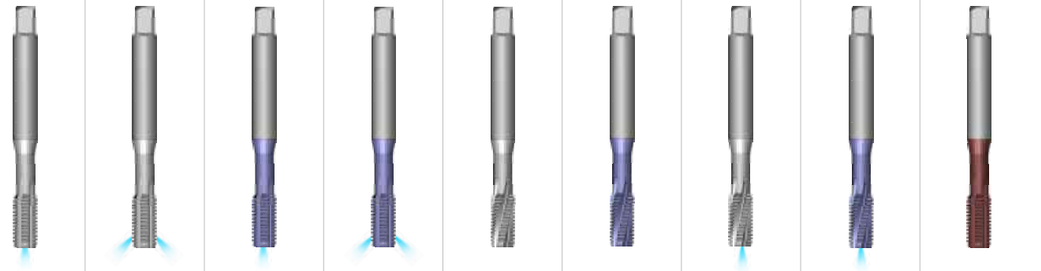
Uncoated | Coated NFS

MATERIALI LAVORABILI
WORKING MATERIALS
page 5E • 3

N1.1-N5.2 | P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

DATI TECNICI
TECHNICAL DATA
page 5E • 13

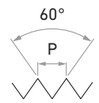
Filetto - Thread	Pitch mm	d1	d2	L1	L2	L3	Z	Z type TX	Preforo		
M3X0.5	0.50	3.0	3.5	56	11	18	3	4	2.5	HMIG110.M3X0.5.N	HMIG110.M3X0.5.T
M3.5X0.6	0.60	3.5	4.0	56	12	20	3		2.9	HMIG110.M3.5X0.6.N	HMIG110.M3.5X0.6.T
M4X0.7	0.70	4.0	4.5	63	13	21	3	4	3.3	HMIG110.M4X0.7.N	HMIG110.M4X0.7.T
M4.5X0.75	0.75	4.5	6.0	70	16	25	3		3.75	HMIG110.M4.5X0.75.N	HMIG110.M4.5X0.75.T
M5X0.8	0.80	5.0	6.0	70	16	25	4	4	4.2	HMIG110.M5X0.8.N	HMIG110.M5X0.8.T
M6X1	1.00	6.0	6.0	80	19	30	4	5	5.0	HMIG110.M6X1.N	HMIG110.M6X1.T
M8X1,25	1.25	8.0	8.0	90	22	35	4	5	6.8	HMIG110.M8X1.25.N	HMIG110.M8X1.25.T
M9X1,25	1.25	9.0	9.0	90	22	35	4		7.8	HMIG110.M9X1.25.N	HMIG110.M9X1.25.T
M10X1,5	1.50	10.0	10.0	100	24	39	4	5	8.5	HMIG110.M10X1.50.N	HMIG110.M10X1.50.T



R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR	R 15° - RR	R 15° - RR	R 15° - RR	R 15° - RR	R 0°- RR
Uncoated	Uncoated	Coated NFS	Coated NFS	Uncoated	Coated NFS	Uncoated	Coated NFS	Coated LTM
N1.1-N5.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2	H1.1-H1.4
				HMIG310.M3X0.5.N	HMIG310.M3X0.5.T			HMIG550.M3X0.5.TX
				HMIG310.M3.5X0.6.N	HMIG310.M3.5X0.6.T			
				HMIG310.M4X0.7.N	HMIG310.M4X0.7.T			HMIG550.M4X0.7.TX
				HMIG310.M4.5X0.75.N	HMIG310.M4.5X0.75.T			
				HMIG310.M5X0.8.N	HMIG310.M5X0.8.T			HMIG550.M5X0.8.TX
HMIG110.M6X1.NF	HMIG110.M6X1.NG	HMIG110.M6X1.F	HMIG110.M6X1.TG	HMIG310.M6X1.N	HMIG310.M6X1.T	HMIG310.M6X1.NF	HMIG310.M6X1.F	HMIG550.M6X1.TX
HMIG110.M8X1.25.NF	HMIG110.M8X1.25.NG	HMIG110.M8X1.25.F	HMIG110.M8X1.25.TG	HMIG310.M8X1.25.N	HMIG310.M8X1.25.T	HMIG310.M8X1.25.NF	HMIG310.M8X1.25.F	HMIG550.M8X1.25.TX
HMIG110.M9X1.25.NF	HMIG110.M9X1.25.NG	HMIG110.M9X1.25.F	HMIG110.M9X1.25.TG	HMIG310.M9X1.25.N	HMIG310.M9X1.25.T	HMIG310.M9X1.25.NF	HMIG310.M9X1.25.F	
HMIG110.M10X1.50.NF	HMIG110.M10X1.50.NG	HMIG110.M10X1.50.F	HMIG110.M10X1.50.TG	HMIG310.M10X1.50.N	HMIG310.M10X1.50.T	HMIG310.M10X1.50.NF	HMIG310.M10X1.50.F	HMIG550.M10X1.50.TX

M

DIN13



DIN 376

VHM 6HX

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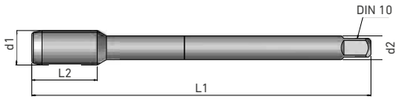

	R 0° - RR	R 0° - RR
		
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3
DATI TECNICI TECHNICAL DATA page 5E • 13		

Filetto - Thread	Pitch mm	d1	d2	L1	L2	Z	Z type TX	Preforo		
M4X0.7	0.70	4.0	2.8	63	13	3		3.3	HMIG120.M4X0.7.N	HMIG120.M4X0.7.T
M5X0.8	0.80	5.0	3.5	70	16	4		4.2	HMIG120.M5X0.8.N	HMIG120.M5X0.8.T
M6X1	1.00	6.0	4.5	80	19	4		5.0	HMIG120.M6X1.N	HMIG120.M6X1.T
M8X1.25	1.25	8.0	6.0	90	22	4		6.75	HMIG120.M8X1.25.N	HMIG120.M8X1.25.T
M10X1.5	1.50	10.0	7.0	100	24	4		8.5	HMIG120.M10X1.5.N	HMIG120.M10X1.5.T
M11X1.5	1.50	11.0	8.0	100	24	4		9.5	HMIG120.M11X1.5.N	HMIG120.M11X1.5.T
M12X1.75	1.75	12.0	9.0	110	28	5	5	10.25	HMIG120.M12X1.75.N	HMIG120.M12X1.75.T
M14X2	2.00	14.0	11.0	110	30	5	6	12.0	HMIG120.M14X2.N	HMIG120.M14X2.T
M16X2	2.00	16.0	12.0	110	32	5	6	14.0	HMIG120.M16X2.N	HMIG120.M16X2.T
M18X2.5	2.50	18.0	14.0	125	34	5	6	15.5	HMIG120.M18X2.5.N	HMIG120.M18X2.5.T
M20X2.5	2.50	20.0	16.0	140	34	5	6	17.5	HMIG120.M20X2.5.N	HMIG120.M20X2.5.T

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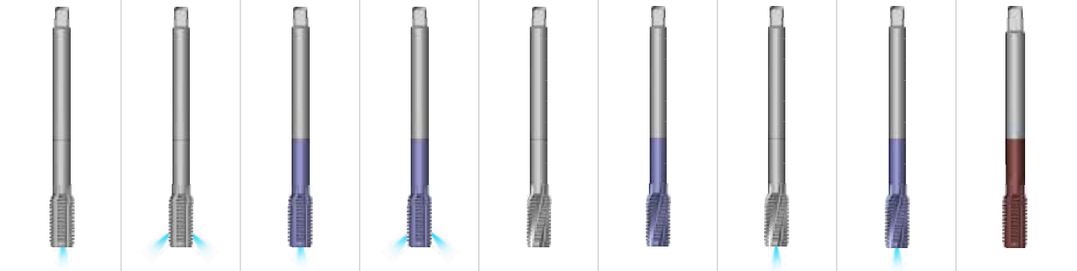

R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR	R 15° - RR	R 15° - RR	R 15° - RR	R 15° - RR	R 0° - RR
Uncoated	Uncoated	Coated NFS	Coated NFS	Uncoated	Coated NFS	Uncoated	Coated NFS	Coated LTM
N1.1-N5.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2	H1.1-H1.4

				HMIG320.M4X0.7.N	HMIG320.M4X0.7.T			
				HMIG320.M5X0.8.N	HMIG320.M5X0.8.T			
HMIG120.M6X1.NF	HMIG120.M6X1.NG	HMIG120.M6X1.F	HMIG120.M6X1.TG	HMIG320.M6X1.N	HMIG320.M6X1.T	HMIG320.M6X1.NF	HMIG320.M6X1.F	
HMIG120.M8X1.25.NF	HMIG120.M8X1.25.NG	HMIG120.M8X1.25.F	HMIG120.M8X1.25.TG	HMIG320.M8X1.25.N	HMIG320.M8X1.25.T	HMIG320.M8X1.25.NF	HMIG320.M8X1.25.F	
HMIG120.M10X1.5.NF	HMIG120.M10X1.5.NG	HMIG120.M10X1.5.F	HMIG120.M10X1.5.TG	HMIG320.M10X1.5.N	HMIG320.M10X1.5.T	HMIG320.M10X1.5.NF	HMIG320.M10X1.5.F	
HMIG120.M11X1.5.NF	HMIG120.M11X1.5.NG	HMIG120.M11X1.5.F	HMIG120M11X1.5.TG	HMIG320.M11X1.5.N	HMIG320.M11X1.5.T	HMIG320.M11X1.5.NF	HMIG320.M11X1.5.F	
HMIG120.M12X1.75.NF	HMIG120.M12X1.75.NG	HMIG120.M12X1.75.F	HMIG120M12X1.75.TG	HMIG320.M12X1.75.N	HMIG320.M12X1.75.T	HMIG320.M12X1.75.NF	HMIG320.M12X1.75.F	HMIG560.M12X1.75.TX
HMIG120.M14X2.NF	HMIG120.M14X2.NG	HMIG120.M14X2.F	HMIG120.M14X2.TG	HMIG320.M14X2.N	HMIG320.M14X2.T	HMIG320.M14X2.NF	HMIG320.M14X2.F	HMIG560.M14X2.TX
HMIG120.M16X2.NF	HMIG120.M16X2.NG	HMIG120.M16X2.F	HMIG120.M16X2.TG	HMIG320.M16X2.N	HMIG320.M16X2.T	HMIG320.M16X2.NF	HMIG320.M16X2.F	HMIG560.M16X2.TX
HMIG120.M18X2.5.NF	HMIG120.M18X2.5.NG	HMIG120.M18X2.5.F	HMIG120.M18X2.5.TG	HMIG320.M18X2.5.N	HMIG320.M18X2.5.T	HMIG320.M18X2.5.NF	HMIG320.M18X2.5.F	HMIG560.M18X2.5.TX
HMIG120.M20X2.5.NF	HMIG120.M20X2.5.NG	HMIG120.M20X2.5.F	HMIG120.M20X2.5.TG	HMIG320.M20X2.5.N	HMIG320.M20X2.5.T	HMIG320.M20X2.5.NF	HMIG320.M20X2.5.F	HMIG560.M20X2.5.TX

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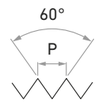
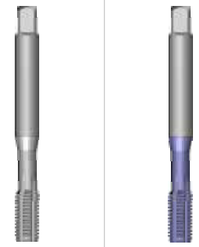
DIN13



DIN 371

VHM 6HX



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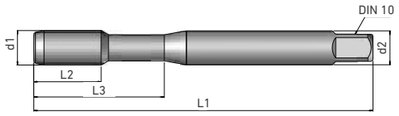
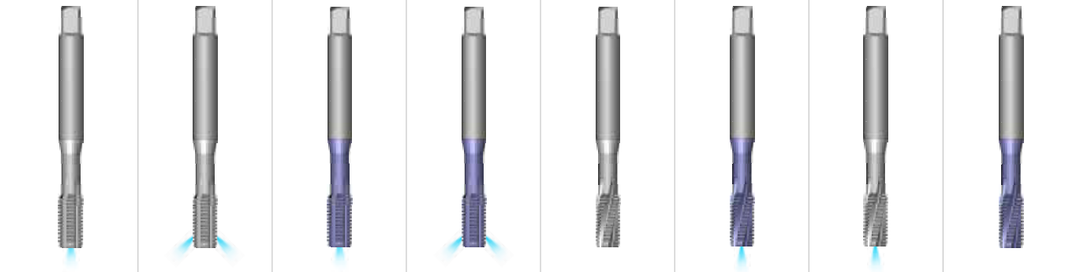


DATI TECNICI
TECHNICAL DATA
page 5E • 133

	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

Filetto - Thread	Pitch mm	d1	d2	L1	L2	L3	Z	Preforo		
MF4X0.5	0.50	4.0	4.5	63	10	21	3	3.5	HMIG210.MF4X0.5.N	HMIG210.MF4X0.5.T
MF5X0.5	0.50	5.0	6.0	70	12	25	4	4.5	HMIG210.MF5X0.5.N	HMIG210.MF5X0.5.T
MF6X0.5	0.50	6.0	6.0	80	14	30	4	5.5	HMIG210.MF6X0.5.N	HMIG210.MF6X0.5.T
MF6X0.75	0.75	6.0	6.0	80	14	30	4	5.2	HMIG210.MF6X0.75.N	HMIG210.MF6X0.75.T
MF7X0.75	0.75	7.0	7.0	80	14	30	4	6.2	HMIG210.MF7X0.75.N	HMIG210.MF7X0.75.T
MF8X0.5	0.50	8.0	8.0	80	18	30	4	7.5	HMIG210.MF8X0.5.N	HMIG210.MF8X0.5.T
MF8X0.75	0.75	8.0	8.0	80	18	30	4	7.2	HMIG210.MF8X0.75.N	HMIG210.MF8X0.75.T
MF8X1	1.00	8.0	8.0	90	22	35	4	7.0	HMIG210.MF8X1.N	HMIG210.MF8X1.T
MF9X0.5	0.50	9.0	9.0	90	18	35	4	8.5	HMIG210.MF9X0.5.N	HMIG210.MF9X0.5.T
MF9X0.75	0.75	9.0	9.0	90	18	35	4	8.2	HMIG210.MF9X0.75.N	HMIG210.MF9X0.75.T
MF9X1	1.00	9.0	9.0	90	22	35	4	8.0	HMIG210.MF9X1.N	HMIG210.MF9X1.T
MF10X0.5	0.50	10.0	10.0	90	20	35	4	9.5	HMIG210.MF10X0.5.N	HMIG210.MF10X0.5.T
MF10X0.75	0.75	10.0	10.0	90	20	35	4	9.2	HMIG210.MF10X0.75.N	HMIG210.MF10X0.75.T
MF10X1	1.00	10.0	10.0	90	20	35	4	9.0	HMIG210.MF10X1.N	HMIG210.MF10X1.T
MF10X1.25	1.25	10.0	10.0	100	24	39	4	8.8	HMIG210.MF10X1.25.N	HMIG210.MF10X1.25.T

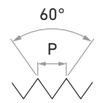


R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR	R 15° - RR	R 15° - RR	R 15° - RR	R 15° - RR
Uncoated	Uncoated	Coated NFS	Coated NFS	Uncoated	Coated NFS	Uncoated	Coated NFS
N1.1-N5.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2

				HMIG410.MF4X0.5.N	HMIG410.MF4X0.5.T		
				HMIG410.MF5X0.5.N	HMIG410.MF5X0.5.T		
HMIG210.MF6X0.5.NF	HMIG210.MF6X0.5.NG	HMIG210.MF6X0.5.F	HMIG210.MF6X0.5.TG	HMIG410.MF6X0.5.N	HMIG410.MF6X0.5.T	HMIG410.MF6X0.5.NF	HMIG410.MF6X0.5.F
HMIG210.MF6X0.75.NF	HMIG210.MF6X0.75.NG	HMIG210.MF6X0.75.F	HMIG210.MF6X0.75.TG	HMIG410.MF6X0.75.N	HMIG410.MF6X0.75.T	HMIG410.MF6X0.75.NF	HMIG410.MF6X0.75.F
HMIG210.MF7X0.75.NF	HMIG210.MF7X0.75.NG	HMIG210.MF7X0.75.F	HMIG210.MF7X0.75.TG	HMIG410.MF7X0.75.N	HMIG410.MF7X0.75.T	HMIG410.MF7X0.75.NF	HMIG410.MF7X0.75.F
HMIG210.MF8X0.5.NF	HMIG210.MF8X0.5.NG	HMIG210.MF8X0.5.F	HMIG210.MF8X0.5.TG	HMIG410.MF8X0.5.N	HMIG410.MF8X0.5.T	HMIG410.MF8X0.5.NF	HMIG410.MF8X0.5.F
HMIG210.MF8X0.75.NF	HMIG210.MF8X0.75.NG	HMIG210.MF8X0.75.F	HMIG210.MF8X0.75.TG	HMIG410.MF8X0.75.N	HMIG410.MF8X0.75.T	HMIG410.MF8X0.75.NF	HMIG410.MF8X0.75.F
HMIG210.MF8X1.NF	HMIG210.MF8X1.NG	HMIG210.MF8X1.F	HMIG210.MF8X1.TG	HMIG410.MF8X1.N	HMIG410.MF8X1.T	HMIG410.MF8X1.NF	HMIG410.MF8X1.F
HMIG210.MF9X0.5.NF	HMIG210.MF9X0.5.NG	HMIG210.MF9X0.5.F	HMIG210.MF9X0.5.TG	HMIG410.MF9X0.5.N	HMIG410.MF9X0.5.T	HMIG410.MF9X0.5.NF	HMIG410.MF9X0.5.F
HMIG210.MF9X0.75.NF	HMIG210.MF9X0.75.NG	HMIG210.MF9X0.75.F	HMIG210.MF9X0.75.TG	HMIG410.MF9X0.75.N	HMIG410.MF9X0.75.T	HMIG410.MF9X0.75.NF	HMIG410.MF9X0.75.F
HMIG210.MF9X1.NF	HMIG210.MF9X1.NG	HMIG210.MF9X1.F	HMIG210.MF9X1.TG	HMIG410.MF9X1.N	HMIG410.MF9X1.T	HMIG410.MF9X1.NF	HMIG410.MF9X1.F
HMIG210.MF10X0.5.NF	HMIG210.MF10X0.5.NG	HMIG210.MF10X0.5.F	HMIG210.MF10X0.5.TG	HMIG410.MF10X0.5.N	HMIG410.MF10X0.5.T	HMIG410.MF10X0.5.NF	HMIG410.MF10X0.5.F
HMIG210.MF10X0.75.NF	HMIG210.MF10X0.75.NG	HMIG210.MF10X0.75.F	HMIG210.MF10X0.75.TG	HMIG410.MF10X0.75.N	HMIG410.MF10X0.75.T	HMIG410.MF10X0.75.NF	HMIG410.MF10X0.75.F
HMIG210.MF10X1.NF	HMIG210.MF10X1.NG	HMIG210.MF10X1.F	HMIG210.MF10X1.TG	HMIG410.MF10X1.N	HMIG410.MF10X1.T	HMIG410.MF10X1.NF	HMIG410.MF10X1.F
HMIG210.MF10X1.25.NF	HMIG210.MF10X1.25.NG	HMIG210.MF10X1.25.F	HMIG210.MF10X1.25.TG	HMIG410.MF10X1.25.N	HMIG410.MF10X1.25.T	HMIG410.MF10X1.25.NF	HMIG410.MF10X1.25.F

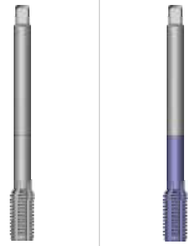
MF

DIN13



DIN 374

VHM 6HX



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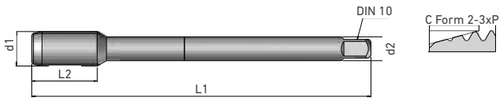
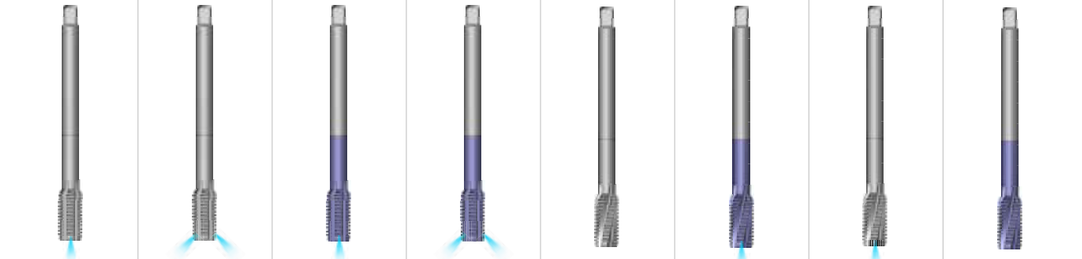


	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

DATI TECNICI
TECHNICAL DATA
page 5E • 13

Filetto - Thread	Pitch mm	d1	d2	L1	L2	Z	Preforo		
MF5X0.5	0.50	5.0	3.5	70	12	4	4.5	HMIG220.MF5X0.5.N	HMIG220.MF5X0.5.T
MF6X0.5	0.50	6.0	4.5	80	14	4	5.5	HMIG220.MF6X0.5.N	HMIG220.MF6X0.5.T
MF6X0.75	0.75	6.0	4.5	80	14	4	5.25	HMIG220.MF6X0.75.N	HMIG220.MF6X0.75.T
MF6.5X0.75	0.75	6.5	5.5	80	14	4	5.75	HMIG220.MF6.5X0.75.N	HMIG220.MF6.5X0.75.T
MF7X0.75	0.75	7.0	5.5	80	14	4	6.25	HMIG220.MF7X0.75.N	HMIG220.MF7X0.75.T
MF8X0.5	0.50	8.0	6.0	80	18	4	7.5	HMIG220.MF8X0.5.N	HMIG220.MF8X0.5.T
MF8X0.75	0.75	8.0	6.0	80	18	4	7.25	HMIG220.MF8X0.75.N	HMIG220.MF8X0.75.T
MF8X1	1.00	8.0	6.0	90	22	4	7.0	HMIG220.MF8X1.N	HMIG220.MF8X1.T
MF9X1	1.00	9.0	7.0	90	22	4	8.0	HMIG220.MF9X1.N	HMIG220.MF9X1.T
MF10X0.5	0.50	10.0	7.0	90	20	4	9.5	HMIG220.MF10X0.5.N	HMIG220.MF10X0.5.T
MF10X0.75	0.75	10.0	7.0	90	20	4	9.25	HMIG220.MF10X0.75.N	HMIG220.MF10X0.75.T
MF10X1	1.00	10.0	7.0	90	20	4	9.0	HMIG220.MF10X1.N	HMIG220.MF10X1.T
MF10X1.25	1.25	10.0	7.0	100	24	4	8.75	HMIG220.MF10X1.25.N	HMIG220.MF10X1.25.T
MF11X0.75	0.75	11.0	8.0	90	20	4	10.25	HMIG220.MF11X0.75.N	HMIG220.MF11X0.75.T
MF11X1	1.00	11.0	8.0	90	20	4	10.0	HMIG220.MF11X1.N	HMIG220.MF11X1.T
MF12X0.5	0.50	12.0	9.0	100	22	5	11.5	HMIG220.MF12X0.5.N	HMIG220.MF12X0.5.T
MF12X0.75	0.75	12.0	9.0	100	22	5	11.25	HMIG220.MF12X0.75.N	HMIG220.MF12X0.75.T
MF12X1	1.00	12.0	9.0	100	22	5	11.0	HMIG220.MF12X1.N	HMIG220.MF12X1.T
MF12X1.25	1.25	12.0	9.0	100	22	5	10.75	HMIG220.MF12X1.25.N	HMIG220.MF12X1.25.T
MF12X1.5	1.50	12.0	9.0	100	22	5	10.5	HMIG220.MF12X1.5.N	HMIG220.MF12X1.5.T
MF13X1	1.00	13.0	11.0	100	22	5	12.0	HMIG220.MF13X1.N	HMIG220.MF13X1.T
MF13X1.25	1.25	13.0	11.0	100	22	5	11.75	HMIG220.MF13X1.25.N	HMIG220.MF13X1.25.T
MF13X1.5	1.50	13.0	11.0	100	22	5	11.5	HMIG220.MF13X1.5.N	HMIG220.MF13X1.5.T
MF14X1	1.00	14.0	11.0	100	22	5	13.0	HMIG220.MF14X1.N	HMIG220.MF14X1.T
MF14X1.25	1.25	14.0	11.0	100	22	5	12.75	HMIG220.MF14X1.25.N	HMIG220.MF14X1.25.T
MF14X1.5	1.50	14.0	11.0	100	22	5	12.5	HMIG220.MF14X1.5.N	HMIG220.MF14X1.5.T
MF15X1	1.00	15.0	12.0	100	22	5	14.0	HMIG220.MF15X1.N	HMIG220.MF15X1.T
MF15X1.25	1.25	15.0	12.0	100	22	5	13.75	HMIG220.MF15X1.25.N	HMIG220.MF15X1.25.T
MF15X1.5	1.50	15.0	12.0	100	22	5	13.5	HMIG220.MF15X1.5.N	HMIG220.MF15X1.5.T
MF16X1	1.00	16.0	12.0	100	22	5	15.0	HMIG220.MF16X1.N	HMIG220.MF16X1.T
MF16X1.25	1.25	16.0	12.0	100	22	5	14.75	HMIG220.MF16X1.25.N	HMIG220.MF16X1.25.T
MF16X1.5	1.50	16.0	12.0	100	22	5	14.5	HMIG220.MF16X1.5.N	HMIG220.MF16X1.5.T
MF17X1	1.00	17.0	12.0	100	22	5	16.0	HMIG220.MF17X1.N	HMIG220.MF17X1.T
MF17X1.5	1.50	17.0	12.0	100	22	5	15.5	HMIG220.MF17X1.5.N	HMIG220.MF17X1.5.T
MF18X1	1.00	18.0	14.0	110	25	5	17.0	HMIG220.MF18X1.N	HMIG220.MF18X1.T
MF18X1.5	1.50	18.0	14.0	110	25	5	16.5	HMIG220.MF18X1.5.N	HMIG220.MF18X1.5.T
MF18X2	2.00	18.0	14.0	125	34	5	16.0	HMIG220.MF18X2.N	HMIG220.MF18X2.T
MF19X1	1.00	19.0	14.0	110	25	5	18.0	HMIG220.MF19X1.N	HMIG220.MF19X1.T
MF19X1.5	1.50	19.0	14.0	110	25	5	17.5	HMIG220.MF19X1.5.N	HMIG220.MF19X1.5.T
MF20X1	1.00	20.0	16.0	125	25	5	19.0	HMIG220.MF20X1.N	HMIG220.MF20X1.T
MF20X1.5	1.50	20.0	16.0	125	25	5	18.5	HMIG220.MF20X1.5.N	HMIG220.MF20X1.5.T
MF20X2	2.00	20.0	16.0	140	34	5	18.0	HMIG220.MF20X2.N	HMIG220.MF20X2.T



R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR	R 15° - RR	R 15° - RR	R 15° - RR	R 15° - RR
Uncoated	Uncoated	Coated NFS	Coated NFS	Uncoated	Coated NFS	Uncoated	Coated NFS
N1.1-N5.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2
				HMIG420.MF5X0.5.N	HMIG420.MF5X0.5.T		
HMIG220.MF6X0.5.NF	HMIG220.MF6X0.5.NG	HMIG220.MF6X0.5.F	HMIG220.MF6X0.5.TG	HMIG420.MF6X0.5.N	HMIG420.MF6X0.5.T	HMIG420.MF6X0.5.NF	HMIG420.MF6X0.5.F
HMIG220.MF6X0.75.NF	HMIG220.MF6X0.75.NG	HMIG220.MF6X0.75.F	HMIG220.MF6X0.75.TG	HMIG420.MF6X0.75.N	HMIG420.MF6X0.75.T	HMIG420.MF6X0.75.NF	HMIG420.MF6X0.75.F
HMIG220.MF6.5X0.75NF	HMIG220.MF6.5X0.75NG	HMIG220.MF6.5X0.75.F	HMIG220.MF6.5X0.75TG	HMIG420.MF6.5X0.75.N	HMIG420.MF6.5X0.75.T	HMIG420.MF6.5X0.75NF	HMIG420.MF6.5X0.75.F
HMIG220.MF7X0.75.NF	HMIG220.MF7X0.75.NG	HMIG220.MF7X0.75.F	HMIG220.MF7X0.75.TG	HMIG420.MF7X0.75.N	HMIG420.MF7X0.75.T	HMIG420.MF7X0.75.NF	HMIG420.MF7X0.75.F
HMIG220.MF8X0.5.NF	HMIG220.MF8X0.5.NG	HMIG220.MF8X0.5.F	HMIG220.MF8X0.5.TG	HMIG420.MF8X0.5.N	HMIG420.MF8X0.5.T	HMIG420.MF8X0.5.NF	HMIG420.MF8X0.5.F
HMIG220.MF8X0.75.NF	HMIG220.MF8X0.75.NG	HMIG220.MF8X0.75.F	HMIG220.MF8X0.75.TG	HMIG420.MF8X0.75.N	HMIG420.MF8X0.75.T	HMIG420.MF8X0.75.NF	HMIG420.MF8X0.75.F
HMIG220.MF8X1.NF	HMIG220.MF8X1.NG	HMIG220.MF8X1.F	HMIG220.MF8X1.TG	HMIG420.MF8X1.N	HMIG420.MF8X1.T	HMIG420.MF8X1.NF	HMIG420.MF8X1.F
HMIG220.MF9X1.NF	HMIG220.MF9X1.NG	HMIG220.MF9X1.F	HMIG220.MF9X1.TG	HMIG420.MF9X1.N	HMIG420.MF9X1.T	HMIG420.MF9X1.NF	HMIG420.MF9X1.F
HMIG220.MF10X0.5.NF	HMIG220.MF10X0.5.NG	HMIG220.MF10X0.5.F	HMIG220.MF10X0.5.TG	HMIG420.MF10X0.5.N	HMIG420.MF10X0.5.T	HMIG420.MF10X0.5.NF	HMIG420.MF10X0.5.F
HMIG220.MF10X0.75.NF	HMIG220.MF10X0.75.NG	HMIG220.MF10X0.75.F	HMIG220.MF10X0.75.TG	HMIG420.MF10X0.75.N	HMIG420.MF10X0.75.T	HMIG420.MF10X0.75.NF	HMIG420.MF10X0.75.F
HMIG220.MF10X1.NF	HMIG220.MF10X1.NG	HMIG220.MF10X1.F	HMIG220.MF10X1.TG	HMIG420.MF10X1.N	HMIG420.MF10X1.T	HMIG420.MF10X1.NF	HMIG420.MF10X1.F
HMIG220.MF10X1.25.NF	HMIG220.MF10X1.25.NG	HMIG220.MF10X1.25.F	HMIG220.MF10X1.25.TG	HMIG420.MF10X1.25.N	HMIG420.MF10X1.25.T	HMIG420.MF10X1.25.NF	HMIG420.MF10X1.25.F
HMIG220.MF11X0.75.NF	HMIG220.MF11X0.75.NG	HMIG220.MF11X0.75.F	HMIG220.MF11X0.75.TG	HMIG420.MF11X0.75.N	HMIG420.MF11X0.75.T	HMIG420.MF11X0.75.NF	HMIG420.MF11X0.75.F
HMIG220.MF11X1.NF	HMIG220.MF11X1.NG	HMIG220.MF11X1.F	HMIG220.MF11X1.TG	HMIG420.MF11X1.N	HMIG420.MF11X1.T	HMIG420.MF11X1.NF	HMIG420.MF11X1.F
HMIG220.MF12X0.5.NF	HMIG220.MF12X0.5.NG	HMIG220.MF12X0.5.F	HMIG220.MF12X0.5.TG	HMIG420.MF12X0.5.N	HMIG420.MF12X0.5.T	HMIG420.MF12X0.5.NF	HMIG420.MF12X0.5.F
HMIG220.MF12X0.75.NF	HMIG220.MF12X0.75.NG	HMIG220.MF12X0.75.F	HMIG220.MF12X0.75.TG	HMIG420.MF12X0.75.N	HMIG420.MF12X0.75.T	HMIG420.MF12X0.75.NF	HMIG420.MF12X0.75.F
HMIG220.MF12X1.NF	HMIG220.MF12X1.NG	HMIG220.MF12X1.F	HMIG220.MF12X1.TG	HMIG420.MF12X1.N	HMIG420.MF12X1.T	HMIG420.MF12X1.NF	HMIG420.MF12X1.F
HMIG220.MF12X1.25.NF	HMIG220.MF12X1.25.NG	HMIG220.MF12X1.25.F	HMIG220.MF12X1.25.TG	HMIG420.MF12X1.25.N	HMIG420.MF12X1.25.T	HMIG420.MF12X1.25.NF	HMIG420.MF12X1.25.F
HMIG220.MF12X1.5.NF	HMIG220.MF12X1.5.NG	HMIG220.MF12X1.5.F	HMIG220.MF12X1.5.TG	HMIG420.MF12X1.5.N	HMIG420.MF12X1.5.T	HMIG420.MF12X1.5.NF	HMIG420.MF12X1.5.F
HMIG220.MF13X1.NF	HMIG220.MF13X1.NG	HMIG220.MF13X1.F	HMIG220.MF13X1.TG	HMIG420.MF13X1.N	HMIG420.MF13X1.T	HMIG420.MF13X1.NF	HMIG420.MF13X1.F
HMIG220.MF13X1.25.NF	HMIG220.MF13X1.25.NG	HMIG220.MF13X1.25.F	HMIG220.MF13X1.25.TG	HMIG420.MF13X1.25.N	HMIG420.MF13X1.25.T	HMIG420.MF13X1.25.NF	HMIG420.MF13X1.25.F
HMIG220.MF13X1.5.NF	HMIG220.MF13X1.5.NG	HMIG220.MF13X1.5.F	HMIG220.MF13X1.5.TG	HMIG420.MF13X1.5.N	HMIG420.MF13X1.5.T	HMIG420.MF13X1.5.NF	HMIG420.MF13X1.5.F
HMIG220.MF14X1.NF	HMIG220.MF14X1.NG	HMIG220.MF14X1.F	HMIG220.MF14X1.TG	HMIG420.MF14X1.N	HMIG420.MF14X1.T	HMIG420.MF14X1.NF	HMIG420.MF14X1.F
HMIG220.MF14X1.25.NF	HMIG220.MF14X1.25.NG	HMIG220.MF14X1.25.F	HMIG220.MF14X1.25.TG	HMIG420.MF14X1.25.N	HMIG420.MF14X1.25.T	HMIG420.MF14X1.25.NF	HMIG420.MF14X1.25.F
HMIG220.MF14X1.5.NF	HMIG220.MF14X1.5.NG	HMIG220.MF14X1.5.F	HMIG220.MF14X1.5.TG	HMIG420.MF14X1.5.N	HMIG420.MF14X1.5.T	HMIG420.MF14X1.5.NF	HMIG420.MF14X1.5.F
HMIG220.MF15X1.NF	HMIG220.MF15X1.NG	HMIG220.MF15X1.F	HMIG220.MF15X1.TG	HMIG420.MF15X1.N	HMIG420.MF15X1.T	HMIG420.MF15X1.NF	HMIG420.MF15X1.F
HMIG220.MF15X1.25.NF	HMIG220.MF15X1.25.NG	HMIG220.MF15X1.25.F	HMIG220.MF15X1.25.TG	HMIG420.MF15X1.25.N	HMIG420.MF15X1.25.T	HMIG420.MF15X1.25.NF	HMIG420.MF15X1.25.F
HMIG220.MF15X1.5.NF	HMIG220.MF15X1.5.NG	HMIG220.MF15X1.5.F	HMIG220.MF15X1.5.TG	HMIG420.MF15X1.5.N	HMIG420.MF15X1.5.T	HMIG420.MF15X1.5.NF	HMIG420.MF15X1.5.F
HMIG220.MF16X1.NF	HMIG220.MF16X1.NG	HMIG220.MF16X1.F	HMIG220.MF16X1.TG	HMIG420.MF16X1.N	HMIG420.MF16X1.T	HMIG420.MF16X1.NF	HMIG420.MF16X1.F
HMIG220.MF16X1.25.NF	HMIG220.MF16X1.25.NG	HMIG220.MF16X1.25.F	HMIG220.MF16X1.25.TG	HMIG420.MF16X1.25.N	HMIG420.MF16X1.25.T	HMIG420.MF16X1.25.NF	HMIG420.MF16X1.25.F
HMIG220.MF16X1.5.NF	HMIG220.MF16X1.5.NG	HMIG220.MF16X1.5.F	HMIG220.MF16X1.5.TG	HMIG420.MF16X1.5.N	HMIG420.MF16X1.5.T	HMIG420.MF16X1.5.NF	HMIG420.MF16X1.5.F
HMIG220.MF17X1.NF	HMIG220.MF17X1.NG	HMIG220.MF17X1.F	HMIG220.MF17X1.TG	HMIG420.MF17X1.N	HMIG420.MF17X1.T	HMIG420.MF17X1.NF	HMIG420.MF17X1.F
HMIG220.MF17X1.5.NF	HMIG220.MF17X1.5.NG	HMIG220.MF17X1.5.F	HMIG220.MF17X1.5.TG	HMIG420.MF17X1.5.N	HMIG420.MF17X1.5.T	HMIG420.MF17X1.5.NF	HMIG420.MF17X1.5.F
HMIG220.MF18X1.NF	HMIG220.MF18X1.NG	HMIG220.MF18X1.F	HMIG220.MF18X1.TG	HMIG420.MF18X1.N	HMIG420.MF18X1.T	HMIG420.MF18X1.NF	HMIG420.MF18X1.F
HMIG220.MF18X1.5.NF	HMIG220.MF18X1.5.NG	HMIG220.MF18X1.5.F	HMIG220.MF18X1.5.TG	HMIG420.MF18X1.5.N	HMIG420.MF18X1.5.T	HMIG420.MF18X1.5.NF	HMIG420.MF18X1.5.F
HMIG220.MF18X2.NF	HMIG220.MF18X2.NG	HMIG220.MF18X2.F	HMIG220.MF18X2.TG	HMIG420.MF18X2.N	HMIG420.MF18X2.T	HMIG420.MF18X2.NF	HMIG420.MF18X2.F
HMIG220.MF19X1.NF	HMIG220.MF19X1.NG	HMIG220.MF19X1.F	HMIG220.MF19X1.TG	HMIG420.MF19X1.N	HMIG420.MF19X1.T	HMIG420.MF19X1.NF	HMIG420.MF19X1.F
HMIG220.MF19X1.5.NF	HMIG220.MF19X1.5.NG	HMIG220.MF19X1.5.F	HMIG220.MF19X1.5.TG	HMIG420.MF19X1.5.N	HMIG420.MF19X1.5.T	HMIG420.MF19X1.5.NF	HMIG420.MF19X1.5.F
HMIG220.MF20X1.NF	HMIG220.MF20X1.NG	HMIG220.MF20X1.F	HMIG220.MF20X1.TG	HMIG420.MF20X1.N	HMIG420.MF20X1.T	HMIG420.MF20X1.NF	HMIG420.MF20X1.F
HMIG220.MF20X1.5.NF	HMIG220.MF20X1.5.NG	HMIG220.MF20X1.5.F	HMIG220.MF20X1.5.TG	HMIG420.MF20X1.5.N	HMIG420.MF20X1.5.T	HMIG420.MF20X1.5.NF	HMIG420.MF20X1.5.F
HMIG220.MF20X2.NF	HMIG220.MF20X2.NG	HMIG220.MF20X2.F	HMIG220.MF20X2.TG	HMIG420.MF20X2.N	HMIG420.MF20X2.T	HMIG420.MF20X2.NF	HMIG420.MF20X2.F

M, MF

DIN13

60°

P

NORMA IG

VHM 6HX

R 0° - RR

R 0° - RR

Maschi a mano
Hand taps

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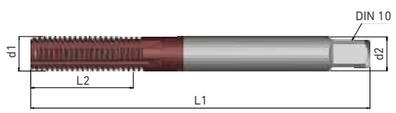
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated LTM

Coated LTM

MATERIALI LAVORABILI
WORKING MATERIALS
page 5E • 5

H1.1-H1.4

H1.1-H1.4

DATI TECNICI
TECHNICAL DATA
page 5E • 13

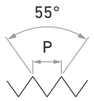
HMIG

Filetto - Thread	Pitch mm	d1	d2	L1	L2	Z	Preforo		
M3X0.5	0.50	3.0	3.5	56	10	4	2.5		HMIG510.M3X0.5.TX
MF4X0.5	0.50	4.0	4.5	63	13	4	3.5	HMIG520.MF4X0.5.TX	
M4X0.7	0.70	4.0	4.5	63	13	4	3.3		HMIG510.M4X0.7.TX
MF5X0.5	0.50	5.0	6.0	70	13	5	4.5	HMIG520.MF5X0.5.TX	
M5X0.8	0.80	5.0	6.0	70	13	5	4.2		HMIG510.M5X0.8.TX
MF6X0.5	0.50	6.0	6.0	80	16	5	5.5	HMIG520.MF6X0.5.TX	
MF6X0.75	0.75	6.0	6.0	80	16	5	5.25	HMIG520.MF6X0.75.TX	
M6X1	1.00	6.0	6.0	80	18	5	5.0		HMIG510.M6X1.TX
MF8X0.5	0.50	8.0	8.0	90	18	5	7.5	HMIG520.MF8X0.5.TX	
MF8X0.75	0.75	8.0	8.0	90	18	5	7.25	HMIG520.MF8X0.75.TX	
MF8X1	1.00	8.0	8.0	90	18	5	7.0	HMIG520.MF8X1.TX	
M8X1.25	1.25	8.0	8.0	90	25	5	6.75		HMIG510.M8X1.25.TX
MF10X1	1.00	10.0	10.0	100	30	5	9.0	HMIG520.MF10X1.TX	
M10X1.5	1.50	10.0	10.0	100	30	5	8.5		HMIG510.M10X1.5.TX
MF12X1.5	1.50	12.0	12.0	110	30	6	10.5	HMIG520.MF12X1.5.TX	
M12X1.75	1.75	12.0	12.0	110	30	6	10.25		HMIG510.M12X1.75.TX
MF14X1.5	1.50	14.0	14.0	110	35	6	12.5	HMIG520.MF14X1.5.TX	
M14X2	2.00	14.0	14.0	110	35	6	12.0		HMIG510.M14X2.TX
MF16X1.5	1.50	16.0	16.0	110	40	6	14.5	HMIG520.MF16X1.5.TX	
M16X2	2.00	16.0	16.0	110	40	6	14.0		HMIG510.M16X2.TX
M18X2.5	2.50	18.0	18.0	125	45	6	15.5		HMIG510.M18X2.5.TX
M20X2.5	2.50	20.0	20.0	140	50	6	17.5		HMIG510.M20X2.5.TX

IGUTENSILI

HMIG

G



DIN 5156

DIN EN ISO 228

VHM

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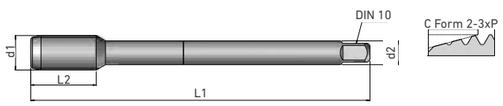
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE SURFACE TREATMENT								Uncoated	Coated NFS	
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3								N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	
DATI TECNICI TECHNICAL DATA page 5E • 13										
Filetto - Thread	(TPI)	d1	d2	L1	L2	Z	Preforo			
1/8"	28	9.728	7.0	90	20	4	8.8	HMIG710.G1/8.N	HMIG710.G1/8.T	
1/4"	19	13.157	11.0	100	22	5	11.8	HMIG710.G1/4.N	HMIG710.G1/4.T	
3/8"	19	16.662	12.0	100	22	5	15.25	HMIG710.G3/8.N	HMIG710.G3/8.T	

R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR							
Uncoated	Uncoated	Coated NFS	Coated NFS							
N1.1-N5.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3							
HMIG710.G1/8.NF	HMIG710.G1/8.NG	HMIG710.G1/8.F	HMIG710.G1/8.TG							
HMIG710.G1/4.NF	HMIG710.G1/4.NG	HMIG710.G1/4.F	HMIG710.G1/4.TG							
HMIG710.G3/8.NF	HMIG710.G3/8.NG	HMIG710.G3/8.F	HMIG710.G3/8.TG							

UNC

60° P

DIN 371

ASME B1.1

VHM 2B

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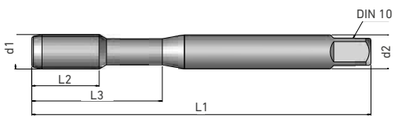
CUSTOMIZED DESIGN ON REQUEST



DATI TECNICI
TECHNICAL DATA
page 5E • 13

	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

HMIG

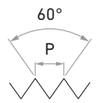
Filetto - Thread	(TPI)	d1 inch	d2	L1	L2	L3	Z	Preforo		
Nr.4	40	0.1120	3.5	56	11	18	3	2.35	HMIG240.UNC.NR4.N	HMIG240.UNC.NR4.T
Nr.5	40	0.1250	3.5	56	11	18	3	2.65	HMIG240.UNC.NR5.N	HMIG240.UNC.NR5.T
Nr.6	32	0.1380	4.0	56	12	20	3	2.85	HMIG240.UNC.NR6.N	HMIG240.UNC.NR6.T
Nr.8	32	0.1640	4.5	63	13	21	3	3.5	HMIG240.UNC.NR8.N	HMIG240.UNC.NR8.T
Nr.10	24	0.1900	6.0	70	15	25	4	3.9	HMIG240.UNC.NR10.N	HMIG240.UNC.NR10.T
Nr.12	24	0.2160	6.0	80	16	30	4	4.5	HMIG240.UNC.NR12.N	HMIG240.UNC.NR12.T
1/4" UNC	20	0.2500	7.0	80	17	30	4	5.1	HMIG240.UNC.1/4.N	HMIG240.UNC.1/4.T
5/16" UNC	18	0.3125	8.0	90	20	35	4	6.6	HMIG240.UNC.5/16.N	HMIG240.UNC.5/16.T
3/8" UNC	16	0.3750	10.0	100	22	39	4	8.0	HMIG240.UNC.3/8.N	HMIG240.UNC.3/8.T

R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR
Uncoated	Uncoated	Coated NFS	Coated NFS
N1.1-N5.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

HMIG

HMIG240.UNC.1/4.NF	HMIG240.UNC.1/4.NG	HMIG240.UNC.1/4.F	HMIG240.UNC.1/4.TG
HMIG240.UNC.5/16.NF	HMIG240.UNC.5/16.NG	HMIG240.UNC.5/16.F	HMIG240.UNC.5/16.TG
HMIG240.UNC.3/8.NF	HMIG240.UNC.3/8.NG	HMIG240.UNC.3/8.F	HMIG240.UNC.3/8.TG

UNC



DIN 376

ASME B1.1

VHM | 2B

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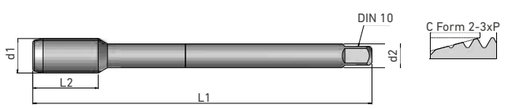
CUSTOMIZED DESIGN ON REQUEST



DATI TECNICI
TECHNICAL DATA
page 5E • 13

	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

Filetto - Thread	(TPI)	d1 inch	d2	L1	L2	Z	Preforo		
7/16" UNC	14	0.4375	8.0	100	22	4	9.4	HMIG250.UNC.7/16.N	HMIG250.UNC.7/16.T
1/2" UNC	13	0.5000	9.0	110	25	5	10.8	HMIG250.UNC.1/2.N	HMIG250.UNC.1/2.T
9/16" UNC	12	0.5625	11.0	110	26	5	12.2	HMIG250.UNC.9/16.N	HMIG250.UNC.9/16.T
5/8" UNC	11	0.6250	12.0	110	27	5	13.5	HMIG250.UNC.5/8.N	HMIG250.UNC.5/8.T
3/4" UNC	10	0.7500	14.0	125	30	5	16.5	HMIG250.UNC.3/4.N	HMIG250.UNC.3/4.T
7/8" UNC	9	0.8750	18.0	140	32	5	19.5	HMIG250.UNC.7/8.N	HMIG250.UNC.7/8.T

R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR
Uncoated	Uncoated	Coated NFS	Coated NFS
N1.1-N5.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

HMIG250.UNC.7/16.NF	HMIG250.UNC.7/16.NG	HMIG250.UNC.7/16.F	HMIG250.UNC.7/16.TG
HMIG250.UNC.1/2.NF	HMIG250.UNC.1/2.NG	HMIG250.UNC.1/2.F	HMIG250.UNC.1/2.TG
HMIG250.UNC.9/16.NF	HMIG250.UNC.9/16.NG	HMIG250.UNC.9/16.F	HMIG250.UNC.9/16.TG
HMIG250.UNC.5/8.NF	HMIG250.UNC.5/8.NG	HMIG250.UNC.5/8.F	HMIG250.UNC.5/8.TG
HMIG250.UNC.3/4.NF	HMIG250.UNC.3/4.NG	HMIG250.UNC.3/4.F	HMIG250.UNC.3/4.TG
HMIG250.UNC.7/8.NF	HMIG250.UNC.7/8.NG	HMIG250.UNC.7/8.F	HMIG250.UNC.7/8.TG

UNF

60° P

DIN 371

ASME B1.1

VHM 2B


R 0° - RR | R 0° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated | Coated NFS

MATERIALI LAVORABILI
WORKING MATERIALS
page 5E • 3

N1.1-N5.2 | P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

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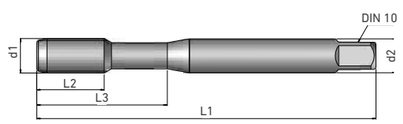
CUSTOMIZED DESIGN ON REQUEST



DATI TECNICI
TECHNICAL DATA
page 5E • 13

HMIG

Filetto - Thread	(TPI)	d1 inch	d2	L1	L2	L3	Z	Preforo		
Nr.4	48	0.1120	3.5	56	11	18	3	2.4	HMIG260.UNF.NR4.N	HMIG260.UNF.NR4.T
Nr.5	44	0.1250	3.5	56	11	18	3	2.7	HMIG260.UNF.NR5.N	HMIG260.UNF.NR5.T
Nr.6	40	0.1380	4.0	56	12	20	3	2.95	HMIG260.UNF.NR6.N	HMIG260.UNF.NR6.T
Nr.8	36	0.1640	4.5	63	13	21	3	3.5	HMIG260.UNF.NR8.N	HMIG260.UNF.NR8.T
Nr.10	32	0.1900	6.0	70	15	25	4	4.1	HMIG260.UNF.NR10.N	HMIG260.UNF.NR10.T
Nr.12	28	0.2160	6.0	80	16	30	4	4.6	HMIG260.UNF.NR12.N	HMIG260.UNF.NR12.T
1/4" UNF	28	0.2500	7.0	80	17	30	4	5.5	HMIG260.UNF.1/4.N	HMIG260.UNF.1/4.T
5/16" UNF	24	0.3125	8.0	90	17	35	4	6.9	HMIG260.UNF.5/16.N	HMIG260.UNF.5/16.T
3/8" UNF	24	0.3750	10.0	90	18	35	4	8.5	HMIG260.UNF.3/8.N	HMIG260.UNF.3/8.T




R 0° - RR | R 0° - RR | R 0° - RR | R 0° - RR

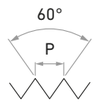
Uncoated | Uncoated | Coated NFS | Coated NFS

N1.1-N5.2 | N1.1-N5.2 | P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3 | P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

HMIG

HMIG260.UNF.1/4.NF	HMIG260.UNF.1/4.NG	HMIG260.UNF.1/4.F	HMIG260.UNF.1/4.TG
HMIG260.UNF.5/16.NF	HMIG260.UNF.5/16.NG	HMIG260.UNF.5/16.F	HMIG260.UNF.5/16.TG
HMIG260.UNF.3/8.NF	HMIG260.UNF.3/8.NG	HMIG260.UNF.3/8.F	HMIG260.UNF.3/8.TG

UNF



DIN 374

ASME B1.1

VHM | 2B

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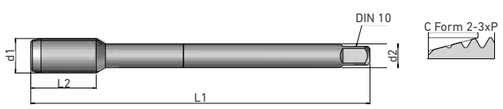
CUSTOMIZED DESIGN ON REQUEST



DATI TECNICI
TECHNICAL DATA
page 5E • 13

	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

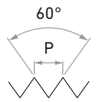
Filetto - Thread	(TPI)	d1 inch	d2	L1	L2	Z	Preforo		
7/16" UNF	20	0.4375	8.0	100	22	4	9.9	HMIG270.UNF.7/16.N	HMIG270.UNF.7/16.NF
1/2" UNF	20	0.5000	9.0	100	22	5	11.5	HMIG270.UNF.1/2.N	HMIG270.UNF.1/2.NF
9/16" UNF	18	0.5625	11.0	100	22	5	12.9	HMIG270.UNF.9/16.N	HMIG270.UNF.9/16.NF
5/8" UNF	18	0.6250	12.0	100	22	5	14.5	HMIG270.UNF.5/8.N	HMIG270.UNF.5/8.NF
3/4" UNF	16	0.7500	14.0	110	25	5	17.5	HMIG270.UNF.3/4.N	HMIG270.UNF.3/4.NF
7/8" UNF	14	0.8750	18.0	125	25	5	20.4	HMIG270.UNF.7/8.N	HMIG270.UNF.7/8.NF

R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR
Uncoated	Uncoated	Coated NFS	Coated NFS
N1.1-N5.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

HMIG270.UNF.7/16.T	HMIG270.UNF.7/16.NG	HMIG270.UNF.7/16.F	HMIG270.UNF.7/16.TG
HMIG270.UNF.1/2.T	HMIG270.UNF.1/2.NG	HMIG270.UNF.1/2.F	HMIG270.UNF.1/2.TG
HMIG270.UNF.9/16.T	HMIG270.UNF.9/16.NG	HMIG270.UNF.9/16.F	HMIG270.UNF.9/16.TG
HMIG270.UNF.5/8.T	HMIG270.UNF.5/8.NG	HMIG270.UNF.5/8.F	HMIG270.UNF.5/8.TG
HMIG270.UNF.3/4.T	HMIG270.UNF.3/4.NG	HMIG270.UNF.3/4.F	HMIG270.UNF.3/4.TG
HMIG270.UNF.7/8.T	HMIG270.UNF.7/8.NG	HMIG270.UNF.7/8.F	HMIG270.UNF.7/8.TG

UNEF

ASME B1.1



DIN 374

VHM | 2B

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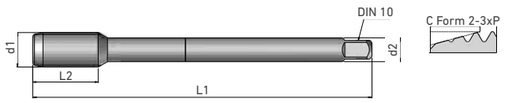
CUSTOMIZED DESIGN ON REQUEST



DATI TECNICI
TECHNICAL DATA
page 5E • 13

	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

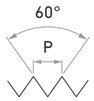
Filetto - Thread	(TPI)	d1 inch	d2	L1	L2	Z	Preforo		
1/4" UNEF	32	0.2500	4.5	80	14	4	5.55	HMIG280.UNEF.1/4.N	HMIG280.UNEF.1/4.T
5/16" UNEF	32	0.3125	6.0	80	14	4	7.15	HMIG280.UNEF.5/16.N	HMIG280.UNEF.5/16.T
3/8" UNEF	32	0.3750	7.0	90	18	4	8.7	HMIG280.UNEF.3/8.N	HMIG280.UNEF.3/8.T
7/16" UNEF	28	0.4375	8.0	90	18	4	10.2	HMIG280.UNEF.7/16.N	HMIG280.UNEF.7/16.T
1/2" UNEF	28	0.5000	9.0	100	18	5	11.8	HMIG280.UNEF.1/2.N	HMIG280.UNEF.1/2.T
9/16" UNEF	24	0.5625	11.0	100	18	5	13.2	HMIG280.UNEF.9/16.N	HMIG280.UNEF.9/16.T
5/8" UNEF	24	0.6250	12.0	100	18	5	14.8	HMIG280.UNEF.5/8.N	HMIG280.UNEF.5/8.T
3/4" UNEF	20	0.7500	14.0	110	25	5	17.8	HMIG280.UNEF.3/4.N	HMIG280.UNEF.3/4.T
7/8" UNEF	20	0.8750	18.0	125	25	5	20.95	HMIG280.UNEF.7/8.N	HMIG280.UNEF.7/8.T

R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR
Uncoated	Uncoated	Coated NFS	Coated NFS
N1.1-N5.2	N1.1-N5.2	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	P1.1-P5.2 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

HMIG280.UNEF.1/4.NF	HMIG280.UNEF.1/4.NG	HMIG280.UNEF.1/4.F	HMIG280.UNEF.1/4.TG
HMIG280.UNEF.5/16.NF	HMIG280.UNEF.5/16.NG	HMIG280.UNEF.5/16.F	HMIG280.UNEF.5/16.TG
HMIG280.UNEF.3/8.NF	HMIG280.UNEF.3/8.NG	HMIG280.UNEF.3/8.F	HMIG280.UNEF.3/8.TG
HMIG280.UNEF.7/16.NF	HMIG280.UNEF.7/16.NG	HMIG280.UNEF.7/16.F	HMIG280.UNEF.7/16.TG
HMIG280.UNEF.1/2.NF	HMIG280.UNEF.1/2.NG	HMIG280.UNEF.1/2.F	HMIG280.UNEF.1/2.TG
HMIG280.UNEF.9/16.NF	HMIG280.UNEF.9/16.NG	HMIG280.UNEF.9/16.F	HMIG280.UNEF.9/16.TG
HMIG280.UNEF.5/8.NF	HMIG280.UNEF.5/8.NG	HMIG280.UNEF.5/8.F	HMIG280.UNEF.5/8.TG
HMIG280.UNEF.3/4.NF	HMIG280.UNEF.3/4.NG	HMIG280.UNEF.3/4.F	HMIG280.UNEF.3/4.TG
HMIG280.UNEF.7/8.NF	HMIG280.UNEF.7/8.NG	HMIG280.UNEF.7/8.F	HMIG280.UNEF.7/8.TG

M

DIN13



DIN 2174

VHM 6HX

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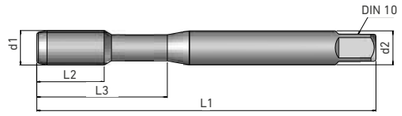
CUSTOMIZED DESIGN ON REQUEST



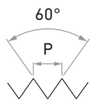
DATI TECNICI
TECHNICAL DATA
page 5E • 13

									R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT									Uncoated	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 7									N1.1-N2.8	P1.1-P5.1 M1.1-M3.1 K2.1 N2.1 S1.1-S2.2
Filetto - Thread	Pitch mm	d1	d2	L1	L2	L3	Z	Preforo		
M4X0.7	0.70	4.0	4.5	63	13	21	4	3.7	HMIG610.M4X0.7.N	HMIG610.M4X0.7.T
M5X0.8	0.80	5.0	6.0	70	16	25	4	6.65	HMIG610.M5X0.8.N	HMIG610.M5X0.8.T
M6X1	1.00	6.0	6.0	80	19	30	4	5.55	HMIG610.M6X1.N	HMIG610.M6X1.T
M7X1	1.00	7.0	7.0	80	19	30	4	6.55	HMIG610.M7X1.N	HMIG610.M7X1.T
M8X1.25	1.25	8.0	8.0	90	22	35	4	7.4	HMIG610.M8X1.25.N	HMIG610.M8X1.25.T
M9X1.25	1.25	9.0	9.0	90	22	35	5	8.4	HMIG610.M9X1.25.N	HMIG610.M9X1.25.T
M10X1.5	1.50	10.0	10.0	100	24	39	5	9.3	HMIG610.M10X1.5.N	HMIG610.M10X1.5.T

R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR
Uncoated	Uncoated	Coated NFS	Coated NFS
N1.1-N2.8	N1.1-N2.8	P1.1-P5.1 M1.1-M3.1 K2.1 N2.1 S1.1-S2.2	P1.1-P5.1 M1.1-M3.1 K2.1 N2.1 S1.1-S2.2
HMIG610.M6X1.NF	HMIG610.M6X1.NG	HMIG610.M6X1.F	HMIG610.M6X1.TG
HMIG610.M7X1.NF	HMIG610.M7X1.NG	HMIG610.M7X1.F	HMIG610.M7X1.TG
HMIG610.M8X1.25.NF	HMIG610.M8X1.25.NG	HMIG610.M8X1.25.F	HMIG610.M8X1.25.TG
HMIG610.M9X1.25.NF	HMIG610.M9X1.25.NG	HMIG610.M9X1.25.F	HMIG610.M9X1.25.TG
HMIG610.M10X1.5.NF	HMIG610.M10X1.5.NG	HMIG610.M10X1.5.F	HMIG610.M10X1.5.TG

M

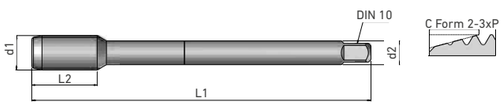
DIN13



DIN 2174

VHM 6HX

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



DATI TECNICI
TECHNICAL DATA
page 5E • 13

								R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT								Uncoated	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 7								N1.1-N2.8	P1.1-P5.1 M1.1-M3.1 K2.1 N2.1 S1.1-S2.2
Filetto - Thread	Pitch mm	d1	d2	L1	L2	Z	Preforo		
M11X1.5	1.50	11.0	8.0	100	24	5	10.3	HMIG615.M11X1.5.N	HMIG615.M11X1.5.T
M12X1.75	1.75	12.0	9.0	110	28	5	11.2	HMIG615.M12X1.75.N	HMIG615.M12X1.75.T
M14X2	2.00	14.0	11.0	110	30	6	13.1	HMIG615.M14X2.N	HMIG615.M14X2.T
M16X2	2.00	16.0	12.0	110	32	6	15.1	HMIG615.M16X2.N	HMIG615.M16X2.T
M18X2.5	2.50	18.0	14.0	125	34	6	16.8	HMIG615.M18X2.5.N	HMIG615.M18X2.5.T
M20X2.5	2.50	20.0	16.0	140	34	6	18.8	HMIG615.M20X2.5.N	HMIG615.M20X2.5.T

R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR
Uncoated	Uncoated	Coated NFS	Coated NFS
N1.1-N2.8	N1.1-N2.8	P1.1-P5.1 M1.1-M3.1 K2.1 N2.1 S1.1-S2.2	P1.1-P5.1 M1.1-M3.1 K2.1 N2.1 S1.1-S2.2
HMIG615.M11X1.5.NF	HMIG615.M11X1.5.NG	HMIG615.M11X1.5.F	HMIG615.M11X1.5.TG
HMIG615.M12X1.75.NF	HMIG615.M12X1.75.NG	HMIG615.M12X1.75.F	HMIG615.M12X1.75.TG
HMIG615.M14X2.NF	HMIG615.M14X2.NG	HMIG615.M14X2.F	HMIG615.M14X2.TG
HMIG615.M16X2.NF	HMIG615.M16X2.NG	HMIG615.M16X2.F	HMIG615.M16X2.TG
HMIG615.M18X2.5.NF	HMIG615.M18X2.5.NG	HMIG615.M18X2.5.F	HMIG615.M18X2.5.TG
HMIG615.M20X2.5.NF	HMIG615.M20X2.5.NG	HMIG615.M20X2.5.F	HMIG615.M20X2.5.TG

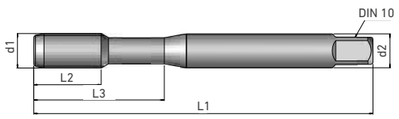
MF

DIN13

60° P **DIN 2174**

VHM 6HX

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



DATI TECNICI
TECHNICAL DATA
page 5E • 13

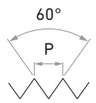
	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 7	N1.1-N2.8	P1.1-P5.1 M1.1-M3.1 K2.1 N2.1 S1.1-S2.2

Filetto - Thread	Pitch mm	d1	d2	L1	L2	L3	Z	Preforo		
MF6X0.75	0.75	6.0	6.0	80	14	30	4	5.65	HMIG620.MF6X0.75.N	HMIG620.MF6X0.75.T
MF7X0.75	0.75	7.0	7.0	80	14	30	4	6.65	HMIG620.MF7X0.75.N	HMIG620.MF7X0.75.T
MF8X0.75	0.75	8.0	8.0	80	18	30	4	7.65	HMIG620.MF8X0.75.N	HMIG620.MF8X0.75.T
MF8X1	1.00	8.0	8.0	90	22	35	4	7.55	HMIG620.MF8X1.N	HMIG620.MF8X1.T
MF9X0.75	0.75	9.0	9.0	90	18	35	5	8.65	HMIG620.MF9X0.75.N	HMIG620.MF9X0.75.T
MF9X1	1.00	9.0	9.0	90	22	35	5	8.55	HMIG620.MF9X1.N	HMIG620.MF9X1.T
MF10X0.75	0.75	10.0	10.0	90	20	35	5	9.65	HMIG620.MF10X0.75.N	HMIG620.MF10X0.75.T
MF10X1	1.00	10.0	10.0	90	20	35	5	9.55	HMIG620.MF10X1.N	HMIG620.MF10X1.T
MF10X1.25	1.25	10.0	10.0	100	24	39	5	9.4	HMIG620.MF10X1.25.N	HMIG620.MF10X1.25.T

	R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR
	Uncoated	Uncoated	Coated NFS	Coated NFS
	N1.1-N2.8	N1.1-N2.8	P1.1-P5.1 M1.1-M3.1 K2.1 N2.1 S1.1-S2.2	P1.1-P5.1 M1.1-M3.1 K2.1 N2.1 S1.1-S2.2

HMIG620.MF6X0.75.NF	HMIG620.MF6X0.75.NG	HMIG620.MF6X0.75.F	HMIG620.MF6X0.75.TG
HMIG620.MF7X0.75.NF	HMIG620.MF7X0.75.NG	HMIG620.MF7X0.75.F	HMIG620.MF7X0.75.TG
HMIG620.MF8X0.75.NF	HMIG620.MF8X0.75.NG	HMIG620.MF8X0.75.F	HMIG620.MF8X0.75.TG
HMIG620.MF8X1.NF	HMIG620.MF8X1.NG	HMIG620.MF8X1.F	HMIG620.MF8X1.TG
HMIG620.MF9X0.75.NF	HMIG620.MF9X0.75.NG	HMIG620.MF9X0.75.F	HMIG620.MF9X0.75.TG
HMIG620.MF9X1.NF	HMIG620.MF9X1.NG	HMIG620.MF9X1.F	HMIG620.MF9X1.TG
HMIG620.MF10X0.75.NF	HMIG620.MF10X0.75.NG	HMIG620.MF10X0.75.F	HMIG620.MF10X0.75.TG
HMIG620.MF10X1.NF	HMIG620.MF10X1.NG	HMIG620.MF10X1.F	HMIG620.MF10X1.TG
HMIG620.MF10X1.25.NF	HMIG620.MF10X1.25.NG	HMIG620.MF10X1.25.F	HMIG620.MF10X1.25.TG

MF
DIN13

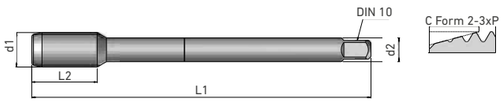


DIN 2174

VHM 6HX

R 0° - RR | R 0° - RR

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated | Coated NFS

MATERIALI LAVORABILI
WORKING MATERIALS
page 5E • 7

N1.1-N2.8 | P1.1-P5.1, M1.1-M3.1, K2.1, N2.1, S1.1-S2.2

DATI TECNICI
TECHNICAL DATA
page 5E • 13

Filetto - Thread	Pitch mm	d1	d2	L1	L2	Z	Preforo		
MF11X0.75	0.75	11.0	8.0	90	20	5	10.7	HMIG625.MF11X0.75.N	HMIG625.MF11X0.75.T
MF11X1	1.00	11.0	8.0	90	20	5	10.5	HMIG625.MF11X1.N	HMIG625.MF11X1.T
MF12X0.75	0.75	12.0	9.0	100	22	5	11.7	HMIG625.MF12X0.75.N	HMIG625.MF12X0.75.T
MF12X1	1.00	12.0	9.0	100	22	5	11.5	HMIG625.MF12X1.N	HMIG625.MF12X1.T
MF12X1.25	1.25	12.0	9.0	100	22	5	11.4	HMIG625.MF12X1.25.N	HMIG625.MF12X1.25.T
MF12X1.5	1.50	12.0	9.0	100	22	5	11.3	HMIG625.MF12X1.5.N	HMIG625.MF12X1.5.T
MF14X1	1.00	14.0	11.0	100	22	6	13.5	HMIG625.MF14X1.N	HMIG625.MF14X1.T
MF14X1.25	1.25	14.0	11.0	100	22	6	13.4	HMIG625.MF14X1.25.N	HMIG625.MF14X1.25.T
MF14X1.5	1.50	14.0	11.0	100	22	6	13.3	HMIG625.MF14X1.5.N	HMIG625.MF14X1.5.T
MF15X1	1.00	15.0	12.0	100	22	6	14.5	HMIG625.MF15X1.N	HMIG625.MF15X1.T
MF15X1.5	1.50	15.0	12.0	100	22	6	14.3	HMIG625.MF15X1.5.N	HMIG625.MF15X1.5.T
MF16X1	1.00	16.0	12.0	100	22	6	15.5	HMIG625.MF16X1.N	HMIG625.MF16X1.T
MF16X1.5	1.50	16.0	12.0	100	22	6	15.3	HMIG625.MF16X1.5.N	HMIG625.MF16X1.5.T
MF18X1	1.00	18.0	14.0	110	25	6	17.5	HMIG625.MF18X1.N	HMIG625.MF18X1.T
MF18X1.5	1.50	18.0	14.0	110	25	6	17.3	HMIG625.MF18X1.5.N	HMIG625.MF18X1.5.T
MF18X2	2.00	18.0	14.0	125	34	6	17.0	HMIG625.MF18X2.N	HMIG625.MF18X2.T
MF20X1	1.00	20.0	16.0	125	25	6	19.5	HMIG625.MF20X1.N	HMIG625.MF20X1.T
MF20X1.5	1.50	20.0	16.0	125	25	6	19.3	HMIG625.MF20X1.5.N	HMIG625.MF20X1.5.T
MF20X2	2.00	20.0	16.0	140	34	6	19.0	HMIG625.MF20X2.N	HMIG625.MF20X2.T

R 0° - RR | R 0° - RR | R 0° - RR | R 0° - RR

Uncoated | Uncoated | Coated NFS | Coated NFS

N1.1-N2.8 | N1.1-N2.8 | P1.1-P5.1, M1.1-M3.1, K2.1, N2.1, S1.1-S2.2 | P1.1-P5.1, M1.1-M3.1, K2.1, N2.1, S1.1-S2.2

HMIG625.MF11X0.75.NF	HMIG625.MF11X0.75.NG	HMIG625.MF11X0.75.F	HMIG625.MF11X0.75.TG
HMIG625.MF11X1.NF	HMIG625.MF11X1.NG	HMIG625.MF11X1.F	HMIG625.MF11X1.TG
HMIG625.MF12X0.75.NF	HMIG625.MF12X0.75.NG	HMIG625.MF12X0.75.F	HMIG625.MF12X0.75.TG
HMIG625.MF12X1.NF	HMIG625.MF12X1.NG	HMIG625.MF12X1.F	HMIG625.MF12X1.TG
HMIG625.MF12X1.25.NF	HMIG625.MF12X1.25.NG	HMIG625.MF12X1.25.F	HMIG625.MF12X1.25.TG
HMIG625.MF12X1.5.NF	HMIG625.MF12X1.5.NG	HMIG625.MF12X1.5.F	HMIG625.MF12X1.5.TG
HMIG625.MF14X1.NF	HMIG625.MF14X1.NG	HMIG625.MF14X1.F	HMIG625.MF14X1.TG
HMIG625.MF14X1.25.NF	HMIG625.MF14X1.25.NG	HMIG625.MF14X1.25.F	HMIG625.MF14X1.25.TG
HMIG625.MF14X1.5.NF	HMIG625.MF14X1.5.NG	HMIG625.MF14X1.5.F	HMIG625.MF14X1.5.TG
HMIG625.MF15X1.NF	HMIG625.MF15X1.NG	HMIG625.MF15X1.F	HMIG625.MF15X1.TG
HMIG625.MF15X1.5.NF	HMIG625.MF15X1.5.NG	HMIG625.MF15X1.5.F	HMIG625.MF15X1.5.TG
HMIG625.MF16X1.NF	HMIG625.MF16X1.NG	HMIG625.MF16X1.F	HMIG625.MF16X1.TG
HMIG625.MF16X1.5.NF	HMIG625.MF16X1.5.NG	HMIG625.MF16X1.5.F	HMIG625.MF16X1.5.TG
HMIG625.MF18X1.NF	HMIG625.MF18X1.NG	HMIG625.MF18X1.F	HMIG625.MF18X1.TG
HMIG625.MF18X1.5.NF	HMIG625.MF18X1.5.NG	HMIG625.MF18X1.5.F	HMIG625.MF18X1.5.TG
HMIG625.MF18X2.NF	HMIG625.MF18X2.NG	HMIG625.MF18X2.F	HMIG625.MF18X2.TG
HMIG625.MF20X1.NF	HMIG625.MF20X1.NG	HMIG625.MF20X1.F	HMIG625.MF20X1.TG
HMIG625.MF20X1.5.NF	HMIG625.MF20X1.5.NG	HMIG625.MF20X1.5.F	HMIG625.MF20X1.5.TG
HMIG625.MF20X2.NF	HMIG625.MF20X2.NG	HMIG625.MF20X2.F	HMIG625.MF20X2.TG

EG M

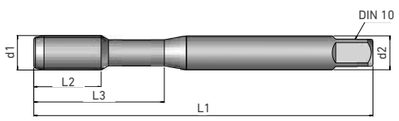
DIN 8140-2

60° P

DIN 40435

VHM 5H

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated NFS	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	P1.1-P1.5 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	P1.1-P1.5 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

DATI TECNICI
TECHNICAL DATA
page 5E • 13

HMIG

Filetto - Thread	Pitch mm	d1	d2	L1	L2	L3	Preforo		
M3X0.5	0.50	3.65	4.5	63	10	21	3.15	HMIG750.M3X0.5.T	
M4X0.7	0.70	4.91	6.0	70	12	25	4.2	HMIG750.M4X0.7.T	
M5X0.8	0.80	6.04	6.0	80	13	30	5.25	HMIG750.M5X0.8.T	
M6X1	1.00	7.30	8.0	90	17	35	6.3	HMIG750.M6X1.T	HMIG750.M6X1.F
M8X1.25	1.25	9.624	10.0	100	18	39	8.4	HMIG750.M8X1.25.T	HMIG750.M8X1.25.F

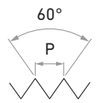
R 0° - RR
Coated NFS
P1.1-P1.5
M1.1-M3.1
K1.1-K3.2
S1.2-S1.3

HMIG

HMIG750.M6X1.TG	
HMIG750.M8X1.25.TG	

EG M

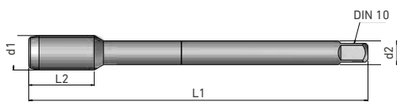
DIN 8140-2



DIN 40435

VHM | 5H

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



DATI TECNICI
TECHNICAL DATA
page 5E • 13

	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Coated NFS	Coated NFS
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	P1.1-P1.5 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3	P1.1-P1.5 M1.1-M3.1 K1.1-K3.2 S1.2-S1.3

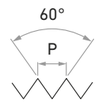
HMIG

Filetto - Thread	Pitch mm	d1	d2	L1	L2	Preforo		
M10X1.5	1.50	11.948	9.0	100	22	10.5	HMIG760.M10X1.5.F	HMIG760.M10X1.5.TG
M12X1.75	1.75	14.274	11.0	110	30	12.5	HMIG760.M12X1.75.F	HMIG760.M12X1.75.TG
M14X2	2.00	16.598	12.0	110	32	14.5	HMIG760.M14X2.F	HMIG760.M14X2.TG
M16X2	2.00	18.598	14.0	125	34	16.5	HMIG760.M16X2.F	HMIG760.M16X2.TG
M18X2.5	2.50	21.248	18.0	140	34	18.75	HMIG760.M18X2.5.F	HMIG760.M18X2.5.TG
M20X2.5	2.50	23.248	18.0	160	38	20.75	HMIG760.M20X2.5.F	HMIG760.M20X2.5.TG

HMIG

M

DIN13

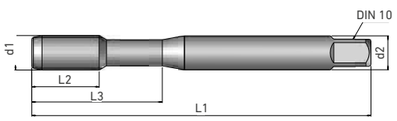


DIN 352

VHM 6HX

Set maschi a mano
Set of hand taps

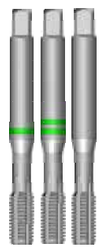
ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST

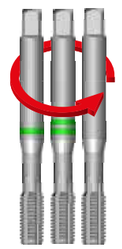


DATI TECNICI
TECHNICAL DATA
page 5E • 13

	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	P1.1-P5.2	P1.1-P5.2

Filetto - Thread	Pitch mm	d1	d2	L1	L2	L3	Z	Preforo		
M3X0.5	0.50	3.0	3.5	40	11	18	3	2.5	HMIG130.M3X0.5.N1	HMIG130.M3X0.5.N2
M4X0.7	0.70	4.0	4.5	45	13	21	3	3.3	HMIG130.M4X0.7.N1	HMIG130.M4X0.7.N2
M5X0.8	0.80	5.0	6.0	50	16	24	4	4.2	HMIG130.M5X0.8.N1	HMIG130.M5X0.8.N2
M6X1	1.00	6.0	6.0	56	19	27	4	5.0	HMIG130.M6X1.N1	HMIG130.M6X1.N2





	R 0° - RR	R 0° - RR	L 0° - LR	L 0° - LR	L 0° - LR	L 0° - LR
	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated
	P1.1-P5.2	P1.1-P5.2	P1.1-P5.2	P1.1-P5.2	P1.1-P5.2	P1.1-P5.2

HMIG130.M3X0.5.N3	HMIG130.M3X0.5.SET	HMIG150.M3X0.5.N1	HMIG150.M3X0.5.N2	HMIG150.M3X0.5.N3	HMIG150.M3X0.5.SET
HMIG130.M4X0.7.N3	HMIG130.M4X0.7.SET	HMIG150.M4X0.7.N1	HMIG150.M4X0.7.N2	HMIG150.M4X0.7.N3	HMIG150.M4X0.7.SET
HMIG130.M5X0.8.N3	HMIG130.M5X0.8.SET	HMIG150.M5X0.8.N1	HMIG150.M5X0.8.N2	HMIG150.M5X0.8.N3	HMIG150.M5X0.8.SET
HMIG130.M6X1.N3	HMIG130.M6X1.SET	HMIG150.M6X1.N1	HMIG150.M6X1.N2	HMIG150.M6X1.N3	HMIG150.M6X1.SET

M

DIN13

60°

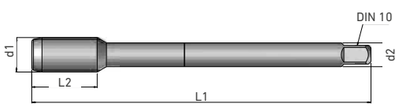
P

DIN 352

VHM 6HX

Set maschi a mano
Set of hand taps

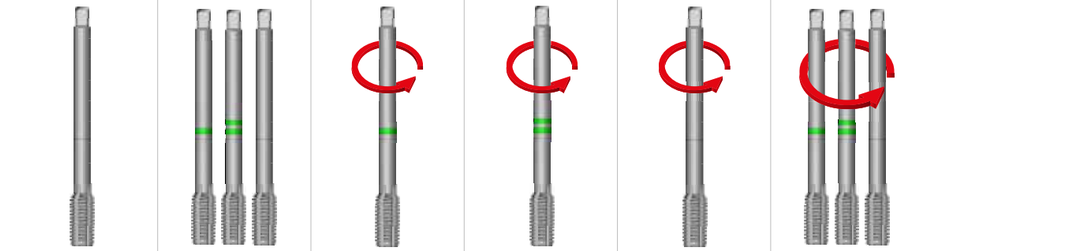
ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



DATI TECNICI
TECHNICAL DATA
page 5E • 13

	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	N1.1-N5.2	N1.1-N5.2

Filetto - Thread	Pitch mm	d1	d2	L1	L2	Z	Preforo		
M8X1.25	1.25	8.0	6.0	63	22	4	6.75	HMIG140.M8X1.25.N1	HMIG140.M8X1.25.N2
M10X1.5	1.50	10.0	7.0	70	24	4	8.5	HMIG140.M10X1.5.N1	HMIG140.M10X1.5.N2
M12X1.75	1.75	12.0	9.0	75	28	5	10.25	HMIG140.M12X1.75.N1	HMIG140.M12X1.75.N2
M14X2	2.00	14.0	11.0	80	30	5	12.0	HMIG140.M14X2.N1	HMIG140.M14X2.N2
M16X2	2.00	16.0	12.0	80	32	5	14.0	HMIG140.M16X2.N1	HMIG140.M16X2.N2
M20X2.5	2.50	20.0	16.0	95	34	5	18.5	HMIG140.M20X2.5.N1	HMIG140.M20X2.5.N2

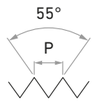


R 0° - RR	R 0° - RR	L 0° - LR	L 0° - LR	L 0° - LR	L 0° - LR
Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated
N1.1-N5.2	N1.1-N5.2	N1.1-N5.2	N1.1-N5.2	N1.1-N5.2	N1.1-N5.2

HMIG140.M8X1.25.N3	HMIG140.M8X1.25.SET	HMIG160.M8X1.25.N1	HMIG160.M8X1.25.N2	HMIG160.M8X1.25.N3	HMIG160.M8X1.25.SET
HMIG140.M10X1.5.N3	HMIG140.M10X1.5.SET	HMIG160.M10X1.5.N1	HMIG160.M10X1.5.N2	HMIG160.M10X1.5.N3	HMIG160.M10X1.5.SET
HMIG140.M12X1.75.N3	HMIG140.M12X1.75.SET	HMIG160.M12X1.75.N1	HMIG160.M12X1.75.N2	HMIG160.M12X1.75.N3	HMIG160.M12X1.75.SET
HMIG140.M14X2.N3	HMIG140.M14X2.SET	HMIG160.M14X2.N1	HMIG160.M14X2.N2	HMIG160.M14X2.N3	HMIG160.M14X2.SET
HMIG140.M16X2.N3	HMIG140.M16X2.SET	HMIG160.M16X2.N1	HMIG160.M16X2.N2	HMIG160.M16X2.N3	HMIG160.M16X2.SET
HMIG140.M20X2.5.N3	HMIG140.M20X2.5.SET	HMIG160.M20X2.5.N1	HMIG160.M20X2.5.N2	HMIG160.M20X2.5.N3	HMIG160.M20X2.5.SET

G (BSP)

DIN EN ISO 228

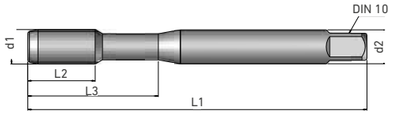


DIN 5157

VHM

Set maschi a mano
Set of hand taps

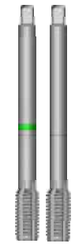
ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 5E • 3	N1.1-N5.2	N1.1-N5.2

DATI TECNICI
TECHNICAL DATA
page 5E • 13

Filetto - Thread	(TPI)	d1	d2	L1	L2	Z	Preforo		
1/8"	28	9.73	7.0	63	18	4	8.8	HMIG730.G1/8.N1	HMIG730.G1/8.N2
1/4"	19	13.16	11.0	70	20	5	11.8	HMIG730.G1/4.N1	HMIG730.G1/4.N2
3/8"	19	16.66	12.0	70	20	5	15.25	HMIG730.G3/8.N1	HMIG730.G3/8.N2
1/2"	14	20.96	16.0	80	22	5	19	HMIG730.G1/2.N1	HMIG730.G1/2.N2
5/8"	14	22.91	18.0	80	22	5	21	HMIG730.G5/8.N1	HMIG730.G5/8.N2
3/4"	14	26.44	20.0	90	22	5	24.5	HMIG730.G3/4.N1	HMIG730.G3/4.N2
7/8"	14	30.20	22.0	90	22	5	28.25	HMIG730.G7/8.N1	HMIG730.G7/8.N2
1"	11	33.25	25.0	100	25	5	30.75	HMIG730.G1.N1	HMIG730.G1.N2
1" 1/8	11	37.90	28.0	125	30	5	35.5	HMIG730.G1-1/8.N1	HMIG730.G1-1/8.N2
1" 1/4	11	41.91	32.0	125	30	5	39.5	HMIG730.G1-1/4.N1	HMIG730.G1-1/4.N2
1" 3/8	11	44.32	36.0	125	30	5	41.75	HMIG730.G1-3/8.N1	HMIG730.G1-3/8.N2
1" 1/2	11	47.80	36.0	140	30	5	45.25	HMIG730.G1-1/2.N1	HMIG730.G1-1/2.N2
1" 3/4	11	53.75	40.0	140	32	5	51	HMIG730.G1-3/4.N1	HMIG730.G1-3/4.N2
2"	11	59.61	45.0	160	36	5	57	HMIG730.G2.N1	HMIG730.G2.N2



R 0° - RR
Uncoated
N1.1-N5.2

HMIG730.G1/8.SET
HMIG730.G1/4.SET
HMIG730.G3/8.SET
HMIG730.G1/2.SET
HMIG730.G5/8.SET
HMIG730.G3/4.SET
HMIG730.G7/8.SET
HMIG730.G1.SET
HMIG730.G1-1/8.SET
HMIG730.G1-1/4.SET
HMIG730.G1-3/8.SET
HMIG730.G1-1/2.SET
HMIG730.G1-3/4.SET
HMIG730.G2.SET

PREFORI
PRE-HOLES

M

Filettatura metrica ISO a passo grosso
Coarse metric ISO thread

d1	Pitch	Preforo
M1	0,25	0,75
M1,1	0,25	0,85
M1,2	0,25	0,95
M1,4	0,3	1,1
M1,6	0,35	1,25
M(1,7)	0,35	1,3
M1,8	0,35	1,45
M2	0,4	1,9
M2,2	0,45	1,75
M(2,3)	0,4	1,9
M2,5	0,45	2,05
M(2,6)	0,45	2,1
M3	0,5	2,5
M3,5	0,6	2,9
M4	0,7	3,3
M4,5	0,75	3,7
M5	0,8	4,2
M6	1	5
M7	1	6
M8	1,25	6,8
M9	1,25	7,8
M10	1,5	8,5
M11	1,5	9,5
M12	1,75	10,2
M14	2	12
M16	2	14
M18	2,5	15,5
M20	2,5	17,5
M22	2,5	19,5
M24	3	21
M27	3	24
M30	3,5	26,5

MF

Filettatura metrica ISO a passo fine
Fine metric ISO thread

d1	Pitch	Preforo
M3	0,35	2,65
M3,5	0,35	3,15
M4	0,35	3,65
M4	0,5	3,5
M5	0,5	4,5
M6	0,5	5,5
M6	0,75	5,2
M7	0,75	6,2
M8	0,5	7,5
M8	1	7
M9	1	8
M10	0,5	9,5
M10	0,75	9,2
M10	1	9
M10	1,25	8,8
M11	1	10
M12	0,75	11,2
M12	1	11
M12	1,25	10,8
M12	1,5	10,5
M13	1	12
M13	1,5	11,5
M14	1	13
M14	1,25	12,8
M14	1,5	12,5
M15	1	14
M15	1,5	13,5
M16	1	15
M16	1,5	14,5
M18	1	17
M18	1,5	16,5
M18	2	16
M20	1	19
M20	1,5	18,5
M20	2	18

UNC

Filettatura americana a passo grosso
Coarse american thread

d1	Pitch	Preforo
No. 1	64"	1,5
No. 2	56"	1,8
No. 3	48"	2,1
No. 4	40"	2,25
No. 5	40"	2,6
No. 6	32"	2,75
No. 8	32"	3,5
No. 10	24"	3,9
No. 12	24"	4,5
1/4	20"	5,1
5/16	18"	6,6
3/8	16"	8
7/16	14"	9,4
1/2	13"	10,75
9/16	12"	12,2
5/8	11"	13,5
3/4	10"	16,5
7/8	9"	19,5
1	8"	22,25
1 1/8	7"	25
1 1/4	7"	28
1 3/8	6"	30,75
1 1/2	6"	34

UNF

Filettatura americana a passo fine
Fine american thread

d1	Pitch	Preforo
No. 0	80"	1,25
No. 1	72"	1,55
No. 2	64"	1,85
No. 3	56"	2,15
No. 4	48"	2,35
No. 5	44"	2,7
No. 6	40"	2,95
No. 8	36"	3,5
No. 10	32"	4,1
No. 12	28"	4,6
1/4	28"	5,5
5/16	24"	6,9
3/8	24"	8,5
7/16	20"	9,9
1/2	20"	11,5
9/16	18"	12,9
5/8	18"	14,5
3/4	16"	17,5
7/8	14"	20,4
1	12"	23,25
1 1/8	12"	26,5
1 1/4	12"	29,5
1 3/8	12"	32,75

UNEF

Filettatura americana a passo extra fine
Extra fine american thread

d1	Pitch	Preforo
1/4	32"	5,55
5/16	32"	7,15
3/8	32"	8,7
7/16	28"	10,2
1/2	28"	11,8
9/16	24"	13,2
5/8	24"	14,8
11/16	24"	16,4
3/4	20"	17,8
7/8	20"	20,95
1	20"	24,2

G (BSP)

Filettatura peR 0° - RR tubazione
British standard pipe

d1	Pitch	Preforo
G 1/16	28"	6,8
G 1/8	28"	8,8
G 1/4	19"	11,8
G 3/8	19"	15,25
G 1/2	14"	19
G 5/8	14"	21
G 3/4	14"	24,5
G 7/8	14"	28,25
G 1	11"	30,75

IGUTENSILI

HMIG

PREFORI
PRE-HOLES

W (BSW)

Filettatura whitworth BSW
BSW whitworth thread

d1	Pitch	Preforo
W 3/32	48"	1,8
W 1/8	40"	2,55
W 5/32	32"	3,1
W 3/16	24"	3,6
W 7/32	24"	4,4
W 1/4	202	5,1
W 5/16	182	6,5
W 3/8	16"	7,9
W 7/16	14"	9,25
W 1/2	12"	10,5
W 9/16	12"	12
W 5/8	11"	13,5
W 3/4	10"	16,5
W 7/8	9"	19,25
W 1	8"	21,75
W 1 1/8	7"	24,75
W 1 1/4	7"	27,75
W 1 3/8	6"	30,5

NTP

Filettatura gas conica americana
American conical gas thread

d1	Pitch	Preforo
1/16	27"	6,3
1/8	27"	8,5
1/4	18"	11
3/8	18"	14,5
1/2	14"	18
3/4	14"	23
1	11,5"	29
1 1/4	11,5"	38
1 1/2	11,5"	44
2	11,5"	56
2 1/2	8"	67
3	8"	83

EGM

Filettatura filetti riportati
Threading heli-coil thread

d1	Pitch	Preforo
EGM 2,5	0,45	2,6
EGM 3	0,5	3,2
EGM 3,5	0,6	3,7
EGM 4	0,7	4,2
EGM 5	0,8	5,2
EGM 6	1	6,3
EGM 8	1,25	8,4
EGM 10	1,5	10,5
EGM 12	1,75	12,5
EGM 14	2	14,5
EGM 16	2	16,5
EGM 18	2,5	18,75
EGM 20	2,5	20,75
EGM 22	2,5	22,75
EGM 24	3	24,75

IGUTENSILI

PG

Filettatura peR 0°tubi corazzati
Threading foR 0°armored pipes

d1	Pitch	Preforo
7	20"	11,45-11,4
9	18"	14,01-14
11	18"	17,41-17,25
13,5	18"	19,21-19
16	18"	21,31-21,25
21	16"	27,03-26,75
29	16"	35,73-33,5
36	16"	45,73-45,5
42	16"	52,73-52,5
48	16"	58,03-57,8

M RULLARE
M FORMING

Filettatura metrica ISO a passo grosso
Coarse metric ISO thread

M d1	Pitch	Preforo
M 1,8	0,35	1,67-1,63
M 2	0,4	1,82-1,78
M 2,2	0,45	2,02-1,98
M (2,3)	0,4	2,12-2,08
M 2,5	0,45	2,32-2,28
M (2,6)	0,45	2,42-2,38
M 3	0,5	2,83-2,77
M 3,5	0,6	3,28-3,22
M 4	0,7	3,73-3,67
M 4,5	0,75	4,18-4,12
M 5	0,8	4,68-4,62
M 6	1	5,6-5,5
M 7	1	6,6-6,5
M 8	1,25	7,45-7,35
M 9	1,25	8,45-8,35
M 10	1,5	9,32-9,25
M 11	1,5	10,35-10,25
M 12	1,75	11,25-11,15
M 14	2	13,15-13,05
M 16	2	15,15-15,05
M 18	2,5	16,95-16,85
M 20	2,5	18,95-18,85
M 22	2,5	20,95-20,85
M 24	3	22,7-22,6

MF RULLARE
MF FORMING

Filettatura metrica ISO a passo grosso
Fine metric ISO thread

M d1	Pitch	Preforo
M 3	0,35	2,87-2,83
M 4	0,5	3,78-3,72
M 5	0,5	4,78-4,72
M 6	0,5	5,78-5,72
M 6	0,75	5,68-5,62
M 7	0,75	6,68-6,62
M 8	0,5	7,78-7,72
M 8	0,75	7,68-7,62
M 8	1	7,6-7,5
M 9	1	8,6-8,5
M 10	0,75	9,68-9,62
M 10	1	9,6-9,5
M 10	1,25	9,45-9,35
M 11	1	10,6-10,5
M 12	0,75	11,68-11,62
M 12	1	11,6-11,5
M 12	1,25	11,45-11,35
M 12	1,5	11,35-11,25
M 14	1	13,6-13,5
M 14	1,5	13,35-13,25
M 16	1	15,6-15,5
M 16	1,5	15,35-15,25

IGUTENSILI

HMIG

FIG

TECNOLOGIA DI FRESATURA
FRESE

MILLING TECHNOLOGY
MILLS

Con le frese FIG di IGUTENSILI le lavorazioni di fresatura vengono eseguite rapidamente e in modo produttivo senza rinunciare alla qualità della lavorazione.

Questi utensili sono impiegabili su di una vastissima gamma di macchinari a controllo numerico e/o tradizionali come CENTRI di LAVORO, CENTRI di TORNITURA, TRANSFER ed anche su LINEE DI PRODUZIONE AVANZATA ove è indispensabile abbattere i tempi di lavorazione.
L'utensile FIG è une conseguenza di questo impegno nel realizzare fresature in modo VELOCE e con la massima EFFICACIA.

Nella gamma FIG per il momento è presente un solo modello di utensile in grado di eseguire operazione di sgrossatura / finitura in unica soluzione, l'utensile è in grado di operare su di una vastissima gamma di materiali unificando, eliminando un utensile dal ciclo produttivo.
Gli utensili FIG, sono rivestiti AOE, raggiungono alti valori di taglio e lunga durata, garantendo sempre la massima stabilità del ciclo produttivo, inoltre FIG, nonostante la complessa tecnologia costruttiva, permette le operazioni di affilatura e rivestimento, donando all'utensile stesso nuova vita con rendimenti eccellenti.

Da non sottovalutare la possibilità di produrre FIG speciali a disegno per dimensioni fuori catalogo.

With the FIG mills by IGUTENSILI the milling operations are performed quickly and productively without sacrificing the quality of the processing.

These tools can be used on a very wide range of CNC machines and/or traditional machinery such as WORK CENTRES, TURNING CENTRES, TRANSFER and even ADVANCED PRODUCTION LINES where it is essential to reduce processing times.
Th FIG tool is a consequence of this commitment in making millings in a FAST way and with the maximum EFFECTIVENESS.

In the FIG range for the moment there is only one tool model able to perform a roughing / finishing operation in a single solution, the tool is able to operate on a very wide range of materials unifying, eliminating a tool from the production cycle.
The FIG tools are AOE coated, reaching high cutting values and long life, always guaranteeing the maximum stability of the production cycle; also, FIG, despite the complex construction technology, allows the operations of sharpening and coating, giving the tool new life with excellent returns.

Not to underestimate the possibility of producing special customised FIG mills, for diameters not included in the catalogue.

UNA NUOVA GEOMETRIA PER UNA MAGGIORE PRODUTTIVITÀ

A NEW GEOMETRY FOR HIGHER PRODUCTIVITY

Caratteristiche:

- Nelle lavorazioni di fresatura il tagliente entra ed esce dal materiale lavorato creando un ritmo naturale che diventa un dannoso ritmo armonico.
- Il ritmo armonico genera delle frequenze di risonanza che attraverso completamente l'utensile causando una delle maggiori forma di usura del tagliente nota come la scheggiatura da vibrazioni.
- Questa nuova geometria offre una notevole riduzione delle vibrazioni garantendo più stabilità e silenziosità nella lavorazione di fresatura

Una migliore geometria sullo spigolo tagliente con una ristretta tolleranza sul raggio di raccordo, dove è presente, per garantire una lavorazione più accurata e precisa riducendo lo sforzo di taglio e le pressioni esercitate sul tagliente.

Il vano tagliente a sezione variabile aiuta a controllare le vibrazioni ritmiche create dall'angolo di taglio delle frese standard riducendo così la formazione di vibrazioni armoniche.

La geometria dell'elica a forma asimmetrica, modificando l'angolo con cui ogni tagliente entra ed esce dal materiale durante la lavorazione, favorisce l'eliminazione delle vibrazioni armoniche che si formano con le frese tradizionali.

L'angolo di taglio è il fattore principale che determina la forma e lo spessore del truciolo, le forze e la temperatura nella zona di taglio. Grazie alla geometria con angolo di taglio variabile, modificano e controllano le dinamiche nelle lavorazioni di fresatura riducendo le vibrazioni ed offrendo un nuovo livello di produttività.

Characteristics:

- During standard milling operations, vibrations can be triggered by the geometry of the cutting edge (sound of harmonic rhythm).
- This harmonic rhythm creates some frequencies of resonance that pass through the tool, generating one of the major causes of wear of the cutting edge. This phenomenon is known as chipping by vibrations.
- This new geometry offers a significant reduction in vibrations, guaranteeing more stability and silence during the milling process.

A more functional geometry on the cutting edge, with a narrow tolerance on the connection radius, ensures a more accurate and precise process by reducing the cutting effort and the pressures on the cutting edge.

The cutting section with variable section helps to control the rhythmic vibrations created by the cutting angle of standard mills, while reducing the formation of harmonic vibrations.

The asymmetric shape of the helix, modifies the entry angle of the cutting edge, that enters and exits the material during processing, in favour of the elimination of the harmonic vibrations that happen with traditional drills.

The cutting angle is the main factor that determines the shape and thickness of the chip, the forces and the temperature in the cutting area. Thanks to the geometry with variable cutting angle, it modifies and controls the process within milling operations, reducing vibrations and offering a new level of productivity.

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

FIG400

6F

Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Vc Coated LTM	Vc Coated AOE	Fz Ø 1-6	Fz Ø 8-10	Fz Ø 12-14	Fz Ø 16-20	
												P
							250 - 280	0,05 - 0,12	0,06 - 0,18	0,07 - 0,22	0,1 - 0,3	1.1
							150 - 200	0,05 - 0,12	0,06 - 0,18	0,07 - 0,22	0,1 - 0,3	2.1
							140 - 160	0,05 - 0,12	0,06 - 0,18	0,07 - 0,22	0,1 - 0,3	3.1
												4.1
												5.1
												M
							70 - 120	0,05 - 0,12	0,06 - 0,18	0,07 - 0,22	0,1 - 0,3	1.1
												2.1
												3.1
												4.1
												K
							130 - 280	0,05 - 0,12	0,06 - 0,18	0,07 - 0,22	0,1 - 0,3	1.1
												1.2
							80 - 260	0,05 - 0,12	0,06 - 0,18	0,07 - 0,22	0,1 - 0,3	2.1
												2.2
												3.1
												3.2
							150 - 280	0,05 - 0,12	0,06 - 0,18	0,07 - 0,22	0,1 - 0,3	4.1
												4.2
												N
												1.1
												1.2
												1.3
												1.4
												1.5
												1.6
							260 - 320	0,05 - 0,12	0,06 - 0,18	0,07 - 0,22	0,1 - 0,3	2.1
												2.2
												2.3
												2.4
												2.5
												2.6
												2.7
												3.1
												3.2
												4.1
												4.2
												4.3
												4.4
												5.1
												5.2
												5.3
												S
							30 - 70	0,05 - 0,12	0,06 - 0,18	0,07 - 0,22	0,1 - 0,3	1.1
							30 - 70	0,05 - 0,12	0,06 - 0,18	0,07 - 0,22	0,1 - 0,3	1.2
												1.3
												2.1
												2.2
												2.3
												2.4
												2.5
												2.6
												H
												1.1
												1.2
												1.3
												1.4
												1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

FIG230RP FIG235RT

6F

Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Vc Coated LTM	Vc Coated AOE	Fz Ø 3-4	Fz Ø 5-6	Fz Ø 8	Fz Ø 10	Fz Ø 12	
P													P
													1.1
													2.1
													3.1
													4.1
													5.1
M													M
													1.1
													2.1
													3.1
													4.1
K													K
													1.1
													1.2
													2.1
													2.2
													3.1
													3.2
													4.1
													4.2
N													N
		400 - 1700						0,02 - 0,04	0,03 - 0,07	0,05 - 0,10	0,06 - 0,14	0,07 - 0,16	1.1
		400 - 1700						0,02 - 0,04	0,03 - 0,07	0,05 - 0,10	0,06 - 0,14	0,07 - 0,16	1.2
		400 - 1700						0,02 - 0,04	0,03 - 0,07	0,05 - 0,10	0,06 - 0,14	0,07 - 0,16	1.3
		250 - 900						0,02 - 0,04	0,03 - 0,07	0,05 - 0,10	0,06 - 0,14	0,07 - 0,16	1.4
		150 - 550						0,01 - 0,03	0,02 - 0,05	0,03 - 0,07	0,04 - 0,08	0,05 - 0,10	1.5
													1.6
		150 - 550						0,01 - 0,03	0,02 - 0,05	0,03 - 0,07	0,04 - 0,08	0,05 - 0,10	2.1
		90 - 500						0,008 - 0,03	0,01 - 0,05	0,02 - 0,06	0,05 - 0,08	0,05 - 0,12	2.2
		91 - 500						0,008 - 0,04	0,01 - 0,06	0,02 - 0,07	0,05 - 0,08	0,05 - 0,12	2.3
													2.4
													2.5
													2.6
													2.7
													3.1
													3.2
		91 - 500						0,005 - 0,03	0,01 - 0,04	0,02 - 0,06	0,03 - 0,08	0,05 - 0,10	4.1
													4.2
													4.3
													4.4
													5.1
													5.2
													5.3
S													S
													1.1
													1.2
													1.3
													2.1
													2.2
													2.3
													2.4
													2.5
													2.6
													1.1
													1.2
													1.3
													1.4
													1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

FIG430RT

6F

FIG430RT

6F

FIG430RT

6F

Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Vc Coated LTM	Vc Coated AOE	Fz Ø 2-4	Fz Ø 5-8	Fz Ø 9-12	Fz Ø 13-17	Fz Ø 18-20	
													P
110 - 160			110 - 160		110 - 160			0,04	0,05	0,06	0,08	0,09	1.1
90 - 130			90 - 130		90 - 130			0,04	0,05	0,06	0,07	0,08	2.1
70 - 90			70 - 90		70 - 90			0,02	0,03	0,04	0,05	0,06	3.1
40 - 70			40 - 70		40 - 70			0,01	0,02	0,03	0,04	0,06	4.1
													5.1
													M
													1.1
40 - 60			40 - 60		40 - 60			0,01	0,02	0,03	0,04	0,06	2.1
													3.1
													4.1
													K
70 - 110			70 - 110		70 - 110			0,04	0,07	0,09	0,10	0,12	1.1
													1.2
													2.1
													2.2
													3.1
													3.2
													4.1
													4.2
													N
													1.1
													1.2
													1.3
													1.4
300 - 450			300 - 450		300 - 450			0,03	0,06	0,09	0,15	0,20	1.5
130 - 300			130 - 300		130 - 300			0,02	0,05	0,07	0,12	0,14	1.6
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.1
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.2
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.3
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.4
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.5
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.6
													2.7
													3.1
													3.2
100 - 150			100 - 150		100 - 150			0,04	0,06	0,08	0,10	0,12	4.1
120 - 200			120 - 200		120 - 200			0,04	0,06	0,08	0,10	0,12	4.2
120 - 200			120 - 200		120 - 200			0,04	0,06	0,08	0,10	0,12	4.3
120 - 200			120 - 200		120 - 200			0,04	0,06	0,08	0,10	0,12	4.4
													5.1
													5.2
													5.3
													S
30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.1
30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.2
30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.3
													2.1
													2.2
													2.3
													2.4
													2.5
													2.6
													H
													1.1
													1.2
													1.3
													1.4
													1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
	1.1	Acciai estrusi a freddo	Cold-extrusion steel	≤ 600 N/mm2	Cq15	1.1132
		Acciai da costruzione	Costruction steels		S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
	2.1	Acciai da costruzione	Costruction steels	≤ 800 N/mm2	E360 (St70-2)	1.0070
		Acciai da cementazione	Cementation steel		16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
	3.1	Acciai da cementazione	Cementation steel	≤ 1000 N/mm2	20MoCr3	1.7320
		Acciai da bonifica	Heat-treatable steels		42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
	4.1	Acciai da bonifica	Heat-treatable steels	≤ 1200 N/mm2	50CrMo4	1.7228
		Acciai per lavorazioni a freddo	Cold work steels		X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
	5.1	Acciai fortemente legati	High-alloyed steels	≤ 1400 N/mm2	X38CrMoV5-3	1.2367
		Acciai per lavorazioni a freddo	Cold work steels		X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

FIG245W 6F

FIG245W 6F

FIG245W 6F

	Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Vc Coated LTM	Vc Coated AOE	Fz Ø 2-4	Fz Ø 5-8	Fz Ø 9-12	Fz Ø 13-17	Fz Ø 18-20	
P														P
	110 - 160			110 - 160		110 - 160			0,04	0,05	\	0,08	0,09	1.1
	90 - 130			90 - 130		90 - 130			0,04	0,05	0,06	0,07	0,08	2.1
	70 - 90			70 - 90		70 - 90			0,02	0,03	0,04	0,05	0,06	3.1
	40 - 70			40 - 70		40 - 70			0,01	0,02	0,03	0,04	0,06	4.1
														5.1
M														M
														1.1
	40 - 60			40 - 60		40 - 60			0,01	0,02	0,03	0,04	0,06	2.1
														3.1
														4.1
K														K
	70 - 110			70 - 110		70 - 110			0,04	0,07	0,09	0,10	0,12	1.1
														1.2
														2.1
														2.2
														3.1
														3.2
														4.1
														4.2
N														N
														1.1
														1.2
														1.3
														1.4
														1.5
														1.6
														2.1
														2.2
														2.3
														2.4
														2.5
														2.6
														2.7
														3.1
														3.2
														4.1
														4.2
														4.3
														4.4
														5.1
														5.2
														5.3
S														S
	30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.1
	30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.2
	30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.3
														2.1
														2.2
														2.3
														2.4
														2.5
														2.6
H														H
														1.1
														1.2
														1.3
														1.4
														1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
	1.1	Acciai estrusi a freddo	Cold-extrusion steel	≤ 600 N/mm2	Cq15	1.1132
		Acciai da costruzione	Costruction steels		S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
	2.1	Acciai da costruzione	Costruction steels	≤ 800 N/mm2	E360 (St70-2)	1.0070
		Acciai da cementazione	Cementation steel		16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
	3.1	Acciai da cementazione	Cementation steel	≤ 1000 N/mm2	20MoCr3	1.7320
		Acciai da bonifica	Heat-treatable steels		42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
	4.1	Acciai da bonifica	Heat-treatable steels	≤ 1200 N/mm2	50CrMo4	1.7228
		Acciai per lavorazioni a freddo	Cold work steels		X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
	5.1	Acciai fortemente legati	High-alloyed steels	≤ 1400 N/mm2	X38CrMoV5-3	1.2367
		Acciai per lavorazioni a freddo	Cold work steels		X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

FIG345 | FIG345 | FIG345



6F | 6F | 6F

Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Vc Coated LTM	Vc Coated AOE	Fz Ø 2-4	Fz Ø 5-8	Fz Ø 9-12	Fz Ø 13-17	Fz Ø 18-20	
													P
110 - 160			110 - 160		110 - 160			0,04	0,05	0,06	0,08	0,09	1.1
90 - 130			90 - 130		90 - 130			0,04	0,05	0,06	0,07	0,08	2.1
70 - 90			70 - 90		70 - 90			0,02	0,03	0,04	0,05	0,06	3.1
40 - 70			40 - 70		40 - 70			0,01	0,02	0,03	0,04	0,06	4.1
													5.1
													M
													1.1
40 - 60			40 - 60		40 - 60			0,01	0,02	0,03	0,04	0,06	2.1
													3.1
													4.1
													K
70 - 110			70 - 110		70 - 110			0,04	0,07	0,09	0,10	0,12	1.1
													1.2
													2.1
													2.2
													3.1
													3.2
													4.1
													4.2
													N
													1.1
													1.2
													1.3
													1.4
300 - 450			300 - 450		300 - 450			0,03	0,06	0,09	0,15	0,20	1.5
130 - 300			130 - 300		130 - 300			0,02	0,05	0,07	0,12	0,14	1.6
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.1
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.2
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.3
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.4
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.5
80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.6
													2.7
													3.1
													3.2
100 - 150			100 - 150		100 - 150			0,04	0,06	0,08	0,10	0,12	4.1
120 - 200			120 - 200		120 - 200			0,04	0,06	0,08	0,10	0,12	4.2
120 - 200			120 - 200		120 - 200			0,04	0,06	0,08	0,10	0,12	4.3
120 - 200			120 - 200		120 - 200			0,04	0,06	0,08	0,10	0,12	4.4
													5.1
													5.2
													5.3
													S
30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.1
30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.2
30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.3
													2.1
													2.2
													2.3
													2.4
													2.5
													2.6
													H
													1.1
													1.2
													1.3
													1.4
													1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
	1.1	Acciai estrusi a freddo	Cold-extrusion steel	≤ 600 N/mm2	Cq15	1.1132
		Acciai da costruzione	Costruction steels		S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
	2.1	Acciai da costruzione	Costruction steels	≤ 800 N/mm2	E360 (St70-2)	1.0070
		Acciai da cementazione	Cementation steel		16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
	3.1	Acciai da cementazione	Cementation steel	≤ 1000 N/mm2	20MoCr3	1.7320
		Acciai da bonifica	Heat-treatable steels		42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
	4.1	Acciai da bonifica	Heat-treatable steels	≤ 1200 N/mm2	50CrMo4	1.7228
		Acciai per lavorazioni a freddo	Cold work steels		X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
	5.1	Acciai fortemente legati	High-alloyed steels	≤ 1400 N/mm2	X38CrMoV5-3	1.2367
		Acciai per lavorazioni a freddo	Cold work steels		X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

6F			6F	6F	6F								
Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Vc Coated LTM	Vc Coated AOE	Fz Ø 2-4	Fz Ø 5-8	Fz Ø 9-12	Fz Ø 13-17	Fz Ø 18-20	
													P
110 - 160			110 - 160	110 - 160	110 - 160			0,04	0,05	0,06	0,08	0,09	1.1
90 - 130			90 - 130	90 - 130	90 - 130			0,04	0,05	0,06	0,07	0,08	2.1
70 - 90			70 - 90	70 - 90	70 - 90			0,02	0,03	0,04	0,05	0,06	3.1
40 - 70			40 - 70	40 - 70	40 - 70			0,01	0,02	0,03	0,04	0,06	4.1
													5.1
													M
													1.1
40 - 60			40 - 60	40 - 60	40 - 60			0,01	0,02	0,03	0,04	0,06	2.1
													3.1
													4.1
													K
70 - 110			70 - 110	70 - 110	70 - 110			0,04	0,07	0,09	0,10	0,12	1.1
													1.2
													2.1
													2.2
													3.1
													3.2
													4.1
													4.2
													N
													1.1
													1.2
													1.3
													1.4
300 - 450			300 - 450	300 - 450	300 - 450			0,03	0,06	0,09	0,15	0,20	1.5
130 - 300			130 - 300	130 - 300	130 - 300			0,02	0,05	0,07	0,12	0,14	1.6
80 - 120			80 - 120	80 - 120	80 - 120			0,03	0,05	0,07	0,09	0,12	2.1
80 - 120			80 - 120	80 - 120	80 - 120			0,03	0,05	0,07	0,09	0,12	2.2
80 - 120			80 - 120	80 - 120	80 - 120			0,03	0,05	0,07	0,09	0,12	2.3
80 - 120			80 - 120	80 - 120	80 - 120			0,03	0,05	0,07	0,09	0,12	2.4
80 - 120			80 - 120	80 - 120	80 - 120			0,03	0,05	0,07	0,09	0,12	2.5
80 - 120			80 - 120	80 - 120	80 - 120			0,03	0,05	0,07	0,09	0,12	2.6
													2.7
													3.1
													3.2
100 - 150			100 - 150	100 - 150	100 - 150			0,04	0,06	0,08	0,10	0,12	4.1
120 - 200			120 - 200	120 - 200	120 - 200			0,04	0,06	0,08	0,10	0,12	4.2
120 - 200			120 - 200	120 - 200	120 - 200			0,04	0,06	0,08	0,10	0,12	4.3
120 - 200			120 - 200	120 - 200	120 - 200			0,04	0,06	0,08	0,10	0,12	4.4
													5.1
													5.2
													5.3
													S
30 - 70			30 - 70	30 - 70	30 - 70			0,02	0,03	0,04	0,06	0,08	1.1
30 - 70			30 - 70	30 - 70	30 - 70			0,02	0,03	0,04	0,06	0,08	1.2
30 - 70			30 - 70	30 - 70	30 - 70			0,02	0,03	0,04	0,06	0,08	1.3
													2.1
													2.2
													2.3
													2.4
													2.5
													2.6
													H
													1.1
													1.2
													1.3
													1.4
													1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
	1.1	Acciai estrusi a freddo	Cold-extrusion steel	≤ 600 N/mm2	Cq15	1.1132
		Acciai da costruzione	Costruction steels		S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
	2.1	Acciai da costruzione	Costruction steels	≤ 800 N/mm2	E360 (St70-2)	1.0070
		Acciai da cementazione	Cementation steel		16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
	3.1	Acciai da cementazione	Cementation steel	≤ 1000 N/mm2	20MoCr3	1.7320
		Acciai da bonifica	Heat-treatable steels		42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
	4.1	Acciai da bonifica	Heat-treatable steels	≤ 1200 N/mm2	50CrMo4	1.7228
		Acciai per lavorazioni a freddo	Cold work steels		X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
	5.1	Acciai fortemente legati	High-alloyed steels	≤ 1400 N/mm2	X38CrMoV5-3	1.2367
		Acciai per lavorazioni a freddo	Cold work steels		X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

FIG545H

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Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Vc Coated LTM	Vc Coated AOE	Fz Ø 2-4	Fz Ø 5-8	Fz Ø 9-12	Fz Ø 13-17	Fz Ø 18-20	
													P
						190 - 230		0,03	0,05	0,07	0,09	0,09	1.1
						140 - 160		0,03	0,05	0,06	0,08	0,09	2.1
													3.1
						80 - 100		0,03	0,05	0,06	0,08	0,09	4.1
													5.1
													M
													1.1
													2.1
													3.1
													4.1
													K
						120 - 200		0,03	0,04	0,05	0,06	0,07	1.1
													1.2
													2.1
													2.2
													3.1
													3.2
													4.1
													4.2
													N
						250 - 450		0,03	0,05	0,07	0,09	0,10	1.1
						250 - 450		0,03	0,05	0,07	0,09	0,10	1.2
						250 - 450		0,03	0,05	0,07	0,09	0,10	1.3
													1.4
													1.5
													1.6
													2.1
													2.2
													2.3
													2.4
													2.5
													2.6
													2.7
													3.1
													3.2
													4.1
													4.2
													4.3
													4.4
													5.1
													5.2
													5.3
													S
													1.1
													1.2
													1.3
													2.1
													2.2
						60 - 80		0,02	0,02	0,03	0,04	0,04	
													2.4
													2.5
													2.6
													H
						60 - 80		0,01	0,020	0,025	0,03	0,03	1.1
													1.2
													1.3
													1.4
													1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

Lavorazione di sgrossatura - Roughing

FIG3538RP/RT/SM

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Lavorazione di finitura - Finishing up

FIG3538RP/RT/SM

							Lavorazione di sgrossatura - Roughing				Lavorazione di finitura - Finishing up			
		Materiale	Material		Material examples	Mat. numbers	Vc Coated LTM	Fz Ø 3-6	Fz Ø 6-8	Fz Ø 10-12	Vc Coated LTM	Fz Ø 3-6	Fz Ø 6-8	Fz Ø 10-12
P		Acciai	Steel materials											
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132								
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037	220	0,045	0,06	0,1	250	0,04	0,05	0,08
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722								
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070								
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131	180	0,045	0,06	0,1	220	0,035	0,045	0,08
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218								
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320								
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225	180	0,04	0,05	0,08	190	0,03	0,04	0,07
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067								
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228								
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767	180	0,04	0,05	0,08	190	0,03	0,04	0,07
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515								
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367								
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990								
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344								
M		Acciai inossidabili	Stainless steel materials											
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512								
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571								
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462								
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410								
K		Ghise	Cast materials											
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030								
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050								
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030								
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070								
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300									
	3.2			400-500 N/mm2	GJV 450									
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010								
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140								
N		Materiali non ferrosi	Non ferrous materials											
		Leghe di alluminio	Aluminium alloys											
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103	150	0,05	0,065	0,10	180	0,045	0,06	0,09
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060								
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022								
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300	350	0,04	0,055	0,085	400	0,05	0,07	0,10
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500	350	0,04	0,055	0,085	400	0,05	0,07	0,10
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg		250	0,04	0,055	0,085	280	0,05	0,07	0,10
		Leghe di rame	Copper alloys											
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A								
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L								
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N								
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G								
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K								
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090								
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)									
	2.8			≤ 1400 N/mm2	(AMPCO® 45)									
		Leghe di magnesio	Magnesium alloys											
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612								
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120								
		Materie plastiche	Synthetics											
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax									
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC									
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK									
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK									
		Materiali speciali	Special materials											
	5.1	Grafite	Graphite		C 8000									
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20									
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond									
S		Materiali speciali	Special materials											
		Leghe di titanio	Titanium alloys											
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025								
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165	50	0,025	0,03	0,035	55	0,028	0,033	0,04
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185	50	0,025	0,03	0,035	55	0,028	0,033	0,04
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys											
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060								
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360								
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668								
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605									
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964								
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958								
H		Materiali duri	Hard materials											
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100						55	0,028	0,033	0,04
	1.2			50 - 55 HRC	Hardox 550						55	0,028	0,033	0,04
	1.3			55 - 60 HRC	Armox 600T						55	0,028	0,033	0,04
	1.4			60 - 63 HRC	Ferro-Titanit									
	1.5			63 - 66 HRC	HSSE									

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

Lavorazione di sgrossatura - Roughing

IG434547RP/SM

6F

Vc Coated ALU	Fz Ø 6	Fz Ø 8	Fz Ø 10	Fz Ø 12	Fz Ø 16-20	
						P
						1.1
						2.1
						3.1
						4.1
						5.1
						M
						1.1
						2.1
						3.1
						4.1
						K
						1.1
						1.2
						2.1
						2.2
						3.1
						3.2
						4.1
						4.2
						N
480	0,050	0,065	0,075	0,085	0,120	1.1
480	0,050	0,065	0,075	0,085	0,120	1.2
470	0,050	0,065	0,075	0,085	0,120	1.3
240	0,045	0,068	0,097	0,110	0,160	1.4
						1.5
						1.6
						2.1
130	0,040	0,058	0,070	0,085	0,120	2.2
240	0,040	0,058	0,070	0,085	0,120	2.3
240	0,040	0,058	0,070	0,085	0,120	2.4
125	0,040	0,058	0,070	0,085	0,120	2.5
125	0,040	0,058	0,070	0,085	0,120	2.6
						2.7
						3.1
						3.2
						4.1
						4.2
						4.3
						4.4
						5.1
						5.2
						5.3
						S
						1.1
						1.2
						1.3
						2.1
						2.2
						2.4
						2.5
						2.6
						H
						1.1
						1.2
						1.3
						1.4
						1.5

Lavorazione di finitura - Finishing up

FIG434547RP/SM

Vc Coated ALU	Fz Ø 6	Fz Ø 8	Fz Ø 10	Fz Ø 12	Fz Ø 16-20	
						P
						1.1
						2.1
						3.1
						4.1
						5.1
						M
						1.1
						2.1
						3.1
						4.1
						K
						1.1
						1.2
						2.1
						2.2
						3.1
						3.2
						4.1
						4.2
						N
530	0,063	0,080	0,093	0,104	0,145	1.1
530	0,063	0,080	0,093	0,104	0,145	1.2
500	0,063	0,080	0,093	0,104	0,145	1.3
270	0,050	0,080	0,110	0,140	0,195	1.4
						1.5
						1.6
						2.1
105	0,045	0,070	0,085	0,105	0,146	2.2
280	0,045	0,070	0,085	0,105	0,146	2.3
280	0,045	0,070	0,085	0,105	0,146	2.4
145	0,045	0,070	0,085	0,105	0,146	2.5
145	0,045	0,070	0,085	0,105	0,146	2.6
						2.7
						3.1
						3.2
						4.1
						4.2
						4.3
						4.4
						5.1
						5.2
						5.3
						S
						1.1
						1.2
						1.3
						2.1
						2.2
						2.4
						2.5
						2.6
						H
						1.1
						1.2
						1.3
						1.4
						1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

FIG330SGF/SGG

6F

FIG330SGF/SGG

6F

FIG330SGF/SGG

6F

	Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Vc Coated LTM	Vc Coated AOE	Fz Ø 2-4	Fz Ø 5-8	Fz Ø 9-12	Fz Ø 13-17	Fz Ø 18-20	
P														P
	110 - 160			110 - 160		110 - 160			0,04	0,05	0,06	0,08	0,09	1.1
	110 - 160			110 - 160		110 - 160			0,04	0,05	0,06	0,07	0,08	2.1
	70 - 90			70 - 90		70 - 90			0,02	0,03	0,04	0,05	0,06	3.1
	40 - 70			40 - 70		40 - 70			0,01	0,02	0,03	0,04	0,06	4.1
														5.1
M														M
														1.1
	40 - 60			40 - 60		40 - 60			0,01	0,02	0,03	0,04	0,06	2.1
														3.1
														4.1
K														K
	70 - 110			70 - 110		70 - 110			0,04	0,07	0,09	0,10	0,12	1.1
														1.2
														2.1
														2.2
														3.1
														3.2
														4.1
														4.2
N														N
														1.1
														1.2
														1.3
														1.4
	300 - 450			300 - 450		300 - 450			0,03	0,06	0,09	0,15	0,20	1.5
	300 - 450			300 - 450		300 - 450			0,03	0,06	0,09	0,15	0,20	1.6
	80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.1
	80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.2
	80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.3
	80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.4
	80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.5
	80 - 120			80 - 120		80 - 120			0,03	0,05	0,07	0,09	0,12	2.6
														2.7
														3.1
														3.2
	120 - 200			120 - 200		120 - 200			0,04	0,06	0,08	0,10	0,12	4.1
	120 - 200			120 - 200		120 - 200			0,04	0,06	0,08	0,10	0,12	4.2
	120 - 200			120 - 200		120 - 200			0,04	0,06	0,08	0,10	0,12	4.3
	120 - 200			120 - 200		120 - 200			0,04	0,06	0,08	0,10	0,12	4.4
														5.1
														5.2
														5.3
S														S
	30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.1
	30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.2
	30 - 70			30 - 70		30 - 70			0,02	0,03	0,04	0,06	0,08	1.3
														2.1
														2.2
														2.3
														2.4
														2.5
														2.6
H														H
														1.1
														1.2
														1.3
														1.4
														1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

N		Materiale / Material			Material examples	Mat. numbers
		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	

FIG

Lavorazione di sgrossatura - Roughing

FIG430GF/GFRT

6F

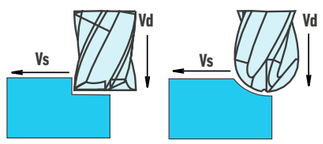
Diametro Ø Diameter Ø d (mm)	Velocità di taglio Cutting speed Vc (m/min)	Avanzamento Feed for tooth Fz (mm)
1		0,007÷0,009
1,5	250÷1.150	0,011÷0,016
2		0,017÷0,019
2,5		0,021÷0,024
3		0,026÷0,033
4		0,038÷0,045
5		0,046÷0,053
6		0,058÷0,068
8		0,073÷0,088
10		0,088÷0,110
12		0,120÷0,140

Lavorazione di finitura - Finishing up

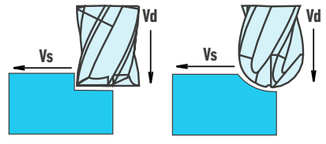
FIG430GF/GFRT

6F

Diametro Ø Diameter Ø d (mm)	Velocità di taglio Cutting speed Vc (m/min)	Avanzamento Feed for tooth Fz (mm)	N
			1.1
			1.2
			1.3
			1.4
			1.5
			1.6
			2.1
			2.2
			2.3
			2.4
			2.5
			2.6
			2.7
			3.1
			3.2
			4.1
			4.2
			4.3
			4.4
1		0,010÷0,012	5.1
1,5	250÷1.150	0,013÷0,015	
2		0,018÷0,020	
2,5		0,022÷0,025	
3		0,025÷0,030	
4		0,043÷0,052	
5		0,058÷0,066	
6		0,073÷0,078	
8		0,098÷0,105	
10		0,120÷0,130	
12		0,120÷0,150	
			5.2
			5.3



Vd = 0,2÷0,3 x d
Vs = 0,2÷0,3 x d



Vd = 0,10÷0,20 x d
Vs = d

FIG

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

FIGMC100-102 FIGMC103

6F

Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Fz Ø 3	Fz Ø 4	Fz Ø 5	Fz Ø 6	Fz Ø 8	Fz Ø 10	Fz Ø 12	
													P
													1.1
													2.1
													3.1
													4.1
													5.1
													M
													1.1
													2.1
													3.1
													4.1
													K
													1.1
													1.2
													2.1
													2.2
													3.1
													3.2
													4.1
													N
													1.1
													1.2
													1.3
													1.4
													1.5
													1.6
													2.1
													2.2
													2.3
													2.4
													2.5
													2.6
													2.7
													3.1
													3.2
150 - 250						0,18	0,20	0,25	0,38	0,5	0,65	0,8	4.1
200 - 350						0,18	0,20	0,25	0,38	0,5	0,65	0,8	4.2
100 - 150						0,15	0,20	0,25	0,30	0,45	0,6	0,7	4.3
100 - 150						0,15	0,20	0,25	0,30	0,45	0,6	0,7	4.4
													5.1
													5.2
													5.3
													S
													1.1
													1.2
													1.3
													2.1
													2.2
													2.4
													2.5
													2.6
													H
													1.1
													1.2
													1.3
													1.4
													1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

FIGMC200SG

6F

Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Fz Ø 4	Fz Ø 5	Fz Ø 6	Fz Ø 8	Fz Ø 10	Fz Ø 12	
												P
												1.1
												2.1
												3.1
												4.1
												5.1
												M
												1.1
												2.1
												3.1
												4.1
												K
												1.1
												1.2
												2.1
												2.2
												3.1
												3.2
												4.1
												4.2
												N
												1.1
												1.2
												1.3
												1.4
												1.5
												1.6
												2.1
												2.2
												2.3
												2.4
												2.5
												2.6
												2.7
												3.1
												3.2
					180 - 280	0,25	0,30	0,40	0,53	0,66	0,8	4.1
					250 - 400	0,25	0,30	0,40	0,53	0,66	0,8	4.2
					130 - 200	0,25	0,30	0,40	0,53	0,66	0,8	4.3
					130 - 200	0,25	0,30	0,40	0,53	0,66	0,8	4.4
												5.1
												5.2
												5.3
												S
												1.1
												1.2
												1.3
												2.1
												2.2
												2.4
												2.5
												2.6
												H
												1.1
												1.2
												1.3
												1.4
												1.5

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

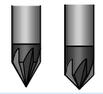
The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

SVA 60 SVA 90



6F

	Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Fz Ø 1-4	Fz Ø 4-6	Fz Ø 6-8	Fz Ø 8-10	Fz Ø 10-12		
P													P
				180			0,03	0,05	0,07	0,08	0,10	1.1	
				150			0,03	0,05	0,07	0,08	0,10	2.1	
				140			0,03	0,05	0,07	0,08	0,10	3.1	
				70			0,01	0,03	0,04	0,05	0,07	4.1	
				70			0,01	0,03	0,04	0,05	0,07	5.1	
M													M
												1.1	
												2.1	
												3.1	
												4.1	
K													K
				90			0,02	0,04	0,06	0,07	0,09	1.1	
				90			0,02	0,04	0,06	0,07	0,09	1.2	
												2.1	
												2.2	
												3.1	
												3.2	
												4.1	
												4.2	
N													N
												1.1	
												1.2	
												1.3	
				600			0,02	0,05	0,08	0,10	0,12	1.4	
				40			0,02	0,05	0,08	0,10	0,12	1.5	
												1.6	
				280			0,02	0,05	0,08	0,10	0,12	2.1	
				280			0,02	0,05	0,08	0,10	0,12	2.2	
				280			0,02	0,05	0,08	0,10	0,12	2.3	
				280			0,02	0,05	0,08	0,10	0,12	2.4	
				280			0,02	0,05	0,08	0,10	0,12	2.5	
				280			0,02	0,05	0,08	0,10	0,12	2.6	
												2.7	
												3.1	
												3.2	
												4.1	
												4.2	
												4.3	
												4.4	
												5.1	
												5.2	
												5.3	
S													S
				55			0,015	0,03	0,05	0,06	0,08	1.1	
				55			0,015	0,03	0,05	0,06	0,08	1.2	
				55			0,015	0,03	0,05	0,06	0,08	1.3	
												2.1	
												2.2	
												2.4	
												2.5	
												2.6	
H													H
												1.1	
												1.2	
												1.3	
												1.4	
												1.5	

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

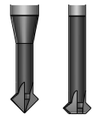
The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min)
Fz = Avanzamento per dente (mm)

Vc = Cutting speed (m/min)
Fz = Feed for tooth (mm)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

SVA 490



6F

Vc Uncoated	Vc Coated DIP	Vc Coated ALU	Vc Coated ATN	Vc Coated ZNR	Vc Coated ALX	Fz Ø 1-4	Fz Ø 4-6	Fz Ø 6-8	Fz Ø 8-10	Fz Ø 10-12	
											P
			60 - 80			0,004 - 0,007	0,007 - 0,014	0,014 - 0,018	0,018 - 0,022	0,025 - 0,030	1.1
			60 - 80			0,002 - 0,006	0,006 - 0,014	0,014 - 0,018	0,018 - 0,022	0,022 - 0,030	2.1
			60 - 80			0,002 - 0,006	0,006 - 0,014	0,014 - 0,018	0,018 - 0,022	0,022 - 0,030	3.1
			50 - 70			0,002 - 0,006	0,006 - 0,014	0,014 - 0,018	0,018 - 0,022	0,022 - 0,030	4.1
			30 - 50			0,002 - 0,006	0,006 - 0,010	0,010 - 0,012	0,012 - 0,014	0,014 - 0,021	5.1
											M
											2.1
											3.1
											4.1
											K
			30 - 50			0,004 - 0,007	0,007 - 0,014	0,014 - 0,018	0,018 - 0,022	0,022 - 0,030	1.1
			30 - 50			0,004 - 0,007	0,007 - 0,014	0,014 - 0,018	0,018 - 0,022	0,022 - 0,030	1.2
											2.1
											2.2
											3.1
											3.2
											4.1
											4.2
											N
											1.1
											1.2
											1.3
			220 - 250			0,006 - 0,009	0,009 - 0,015	0,015 - 0,020	0,020 - 0,025	0,025 - 0,035	1.4
			110 - 130			0,006 - 0,009	0,009 - 0,015	0,015 - 0,020	0,020 - 0,025	0,025 - 0,035	1.5
			70 - 100			0,006 - 0,009	0,009 - 0,015	0,015 - 0,020	0,020 - 0,025	0,025 - 0,035	1.6
											2.1
											2.2
											2.3
											2.4
											2.5
											2.6
											2.7
											3.1
											3.2
											4.1
											4.2
											4.3
											4.4
											5.1
											5.2
											5.3
											S
											1.1
											1.2
											1.3
											2.1
											2.2
											2.4
											2.5
											2.6
											H
											1.1
											1.2
											1.3
											1.4
											1.5

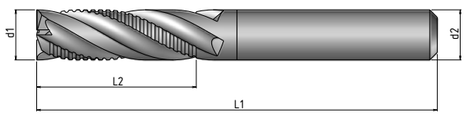
FIG400

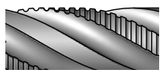
Fresa sgrosso\finitura

Frese in metallo duro integrale con 4 taglienti, elica a 45 °, con una combinazione di sgrossatura e finitura in un unico strumento.
Solid carbide endmills with 4 flute, medium length and 45° helix, featuring a combination of roughing and finishing in a single tool.

VHM | NORMA IG | DIN 6535 HB

R 45° - RR





TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated AOE

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

P1.1÷P3.1
M1.1
K1.1÷K2.1
K4.1
N2.1
S1.1÷S1.2

d1	d2	L1	L2	SM	Z	
5,0	5,0	57	14	0,2	4	**FIG400.050**
6,0	6,0	57	14	0,2	4	**FIG400.060**
8,0	8,0	63	18	0,3	4	**FIG400.080**
10,0	10,0	72	22	0,3	4	**FIG400.100**
12,0	12,0	83	26	0,3	4	**FIG400.120**
14,0	14,0	83	30	0,3	4	**FIG400.140**
16,0	16,0	92	34	0,4	4	**FIG400.160**
18,0	18,0	100	38	0,4	4	**FIG400.180**
20,0	20,0	104	42	0,4	4	**FIG400.200**
25,0	25,0	121	52	0,4	4	**FIG400.250**

IGUTENSILI

FIG230RP

Frese toriche alta velocità per alluminio
Torodial end mill suitable for aluminum

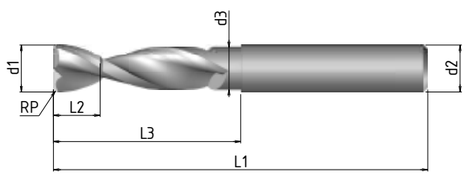
Applicazioni: Lavorazioni alta velocità di alluminio con <12% Si, magnesio e rame.
Applications: High speed cutting in aluminum with <12% Si, magnesium, copper.

VHM

NORMA IG

DIN 6535 HA

R 30° - RR



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated ALU ≤12% Silicon

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

N1.1÷N1.5
N2.1÷N2.3
N4.1

d1	d2	d3	L1	L2	L3	RP	Z	
3.0	4.0	2.7	60	5	20	0.3	2	**FIG230RP.030**
4.0	4.0	3.7	60	5	20	0.4	2	**FIG230RP.040**
5.0	5.0	4.6	60	6	20	0.5	2	**FIG230RP.050**
6.0	6.0	5.5	65	7	25	0.3	2	**FIG230RP.060**
6.0	6.0	5.5	65	7	25	1	2	**FIG230RP.060.1**
8.0	8.0	7.4	70	9	30	0.3	2	**FIG230RP.080**
8.0	8.0	7.4	70	9	30	1	2	**FIG230RP.080.1**
10.0	10.0	9.2	85	11	40	0.3	2	**FIG230RP.100**
10.0	10.0	9.2	85	11	40	1.5	2	**FIG230RP.100.1**
12.0	12.0	11	93	12	45	1.5	2	**FIG230RP.120**

IGUTENSILI

FIG235RT

Frese semisferiche alta velocita' per alluminio
Ball nose end mill suitable for aluminum

Applicazioni: Lavorazioni alta velocità di alluminio con <12% silicio, magnesio e rame.
Applications: High speed cutting in aluminum with <12% Si, magnesium, copper.silicon, magnesium and copper.

VHM

NORMA IG

DIN 6535 HA

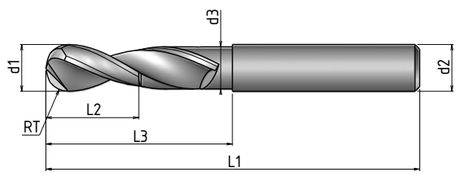
R 35° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated ALU ≤12% Silicon

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

N1.1÷N1.5
N2.1÷N2.3
N4.1



d1	d2	d3	L1	L2	L3	RT	Z	
3.0	6.0	2.8	70	6	25	1.5	2	**FIG235RT.030**
4.0	6.0	3.7	70	8	25	2	2	**FIG235RT.040**
5.0	6.0	4.6	70	10	25	2.5	2	**FIG235RT.050**
6.0	6.0	5.5	80	12	35	3	2	**FIG235RT.060**
8.0	8.0	7.4	80	16	35	4	2	**FIG235RT.080**
10.0	10.0	9.2	90	20	45	5	2	**FIG235RT.100**
12.0	12.0	11	100	24	50	6	2	**FIG235RT.120**

IGUTENSILI

FIG430RT

Frese semisferiche 4 taglienti, tagliente al centro
Ball nose twist end mill 4 flutes center cutting

Applicazioni: Fresatura universale, specifica per Alluminio e materiali non ferrosi.

Applications: for general porpose milling for most material, steel, Aluminum and non-ferrous materials.

VHM

NORMA IG

DIN 6535 HA

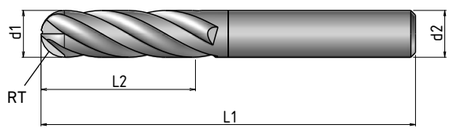
R 30° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

P1.1÷P4.1
M2.1
K1.1
N1.5÷N2.6
N4.1÷N4.4
S1.1÷S1.3



d1	d2	L1	L2	RT	Z	
2.00	2.0	38	8	1	4	FIG430RT.020
2.50	2.5	38	8	1.25	4	FIG430RT.025
3.00	3.0	38	12	1.50	4	FIG430RT.030
3.50	3.5	40	12	1.75	4	FIG430RT.035
4.00	4.0	40	12	2	4	FIG430RT.040
4.50	4.5	50	14	2.25	4	FIG430RT.045
5.00	5.5	50	16	2.75	4	FIG430RT.055
6.00	6.0	50	16	3	4	FIG430RT.060
7.00	7.0	60	20	3.50	4	FIG430RT.070
8.00	8.0	60	20	4	4	FIG430RT.080
8.50	8.5	60	20	4.25	4	FIG430RT.085
10.00	10.0	70	22	5	4	FIG430RT.100
12.00	12.0	70	22	6	4	FIG430RT.120
14.00	14.0	75	25	7	4	FIG430RT.140
16.00	16.0	75	25	8	4	FIG430RT.160

R 30° - RR

Coated ATN ≤45 Hrc

P1.1÷P4.1
M2.1
K1.1
N1.5÷N2.6
N4.1÷N4.4
S1.1÷S1.3

R 30° - RR

Coated ALX ≤45 Hrc

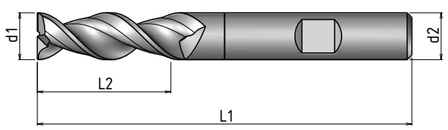
P1.1÷P4.1
M2.1
K1.1
N1.5÷N2.6
N4.1÷N4.4
S1.1÷S1.3

FIG430RT.020_ATN	FIG430RT.020_ALX
FIG430RT.025_ATN	FIG430RT.025_ALX
FIG430RT.030_ATN	FIG430RT.030_ALX
FIG430RT.035_ATN	FIG430RT.035_ALX
FIG430RT.040_ATN	FIG430RT.040_ALX
FIG430RT.045_ATN	FIG430RT.045_ALX
FIG430RT.050_ATN	FIG430RT.050_ALX
FIG430RT.055_ATN	FIG430RT.055_ALX
FIG430RT.060_ATN	FIG430RT.060_ALX
FIG430RT.070_ATN	FIG430RT.070_ALX
FIG430RT.080_ATN	FIG430RT.080_ALX
FIG430RT.085_ATN	FIG430RT.085_ALX
FIG430RT.100_ATN	FIG430RT.100_ALX
FIG430RT.120_ATN	FIG430RT.120_ALX
FIG430RT.140_ATN	FIG430RT.140_ALX
FIG430RT.160_ATN	FIG430RT.160_ALX

FIG245W

Frese testa piana a 2 taglienti, taglio al centro con Weldon
Twist end mill 2 flutes center cutting for high speed

Applicazioni: Universale, consigliata per acciai temperati, alluminio e materiali non ferrosi.
Applications: suitable for general porpose milling of most materials, herdened steels, aluminum, non-ferrous materials.



VHM | DIN6257L

DIN 6535 HB

R 45° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

N1.1÷N4.1
M2.1
K1.1
S1.1÷S1.3

d1	d2	L1	L2	Z	
4.00	6.0	57	8	2	FIG245W.040
6.00	6.0	57	10	2	FIG245W.060
8.00	8.0	63	16	2	FIG245W.080
10.0	10.0	72	19	2	FIG245W.100
12.0	12.0	82	22	2	FIG245W.120
16.0	16.0	92	25	2	FIG245W.160

R 45° - RR

Coated ATN ≤45 Hrc

N1.1÷N4.1
M2.1
K1.1
S1.1÷S1.3

R 45° - RR

Coated ALX ≤45 Hrc

N1.1÷N4.1
M2.1
K1.1
S1.1÷S1.3

FIG245W.040_ATN	FIG245W.040_ALX
FIG245W.060_ATN	FIG245W.060_ALX
FIG245W.080_ATN	FIG245W.080_ALX
FIG245W.100_ATN	FIG245W.100_ALX
FIG245W.120_ATN	FIG245W.120_ALX
FIG245W.160_ATN	FIG245W.160_ALX

FIG345

Frese testa piana, 3 taglienti, tagliente al centro
Twist end mill 3 fluters center cutting

Applicazioni: Acciai, acciai legati, leghe al Co Ni, alluminio e materiali non ferrosi, l'azione raschiante della torsione produce un truciolo corto diminuendo la pressione specifica di taglio, buona finitura.

Applications: Steels, steels-alloy, Co Ni-alloys, aluminum, ferrous materials. The deep flute geometry allows a good chip load and an exellent surface can be achieved.

VHM

NORMA IG

DIN 6535 HA

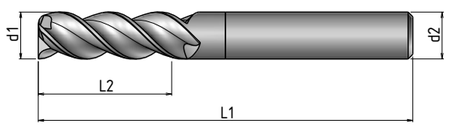
R 45° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

P1.1÷P4.1
M2.1
K1.1
N1.5÷N2.6
N4.1÷N4.4
S1.1÷S1.3



d1	d2	L1	L2	Z	
4.00	6.0	50	12	3	FIG345.040
5.00	6.0	50	14	3	FIG345.050
6.00	6.0	50	16	3	FIG345.060
8.00	8.0	60	20	3	FIG345.080
10.0	10.0	70	22	3	FIG345.100
12.0	12.0	70	22	3	FIG345.120
14.0	14.0	75	25	3	FIG345.140
16.0	16.0	75	25	3	FIG345.160
18.0	18.0	100	30	3	FIG345.180
20.0	20.0	100	30	3	FIG345.200

R 45° - RR

Coated ATN ≤45 Hrc

P1.1÷P4.1
M2.1
K1.1
N1.5÷N2.6
N4.1÷N4.4
S1.1÷S1.3

R 45° - RR

Coated ALX ≤45 Hrc

P1.1÷P4.1
M2.1
K1.1
N1.5÷N2.6
N4.1÷N4.4
S1.1÷S1.3

FIG345.040_ATN	FIG345.040_ALX
FIG345.050_ATN	FIG345.050_ALX
FIG345.060_ATN	FIG345.060_ALX
FIG345.080_ATN	FIG345.080_ALX
FIG345.100_ATN	FIG345.100_ALX
FIG345.120_ATN	FIG345.120_ALX
FIG345.140_ATN	FIG345.140_ALX
FIG345.160_ATN	FIG345.160_ALX
FIG345.180_ATN	FIG345.180_ALX
FIG345.200_ATN	FIG345.200_ALX

FIG445

Frese testa piana, 45° 4 taglienti al centro
Twist end mill 4 flutes, 45° helix angle 4 teeth cutting to center

Applicazioni: Fresatura Universale, specifica per Alluminio e materiali non ferrosi.

Applications: for general porpose milling for most material, especially suitable for aluminum, non-ferrous materials.

VHM

DIN 6527

DIN 6535 HA

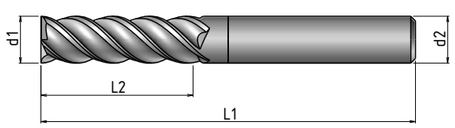
R 45° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

P1.1÷P4.1
M2.1
K1.1
N1.5÷N2.6
N4.1÷N4.4
S1.1÷S1.3



d1	d2	L1	L2	Z	
6.00	6.0	57	16	4	FIG445.060
8.00	8.0	63	19	4	FIG445.080
10.0	10.0	75	25	4	FIG445.100
12.0	12.0	83	28	4	FIG445.120
14.0	14.0	83	30	4	FIG445.140
16.0	16.0	92	35	4	FIG445.160
18.0	18.0	92	35	4	FIG445.180
20.0	20.0	104	40	4	FIG445.200

R 45° - RR

Coated ATN ≤45 Hrc

P1.1÷P4.1
M2.1
K1.1
N1.5÷N2.6
N4.1÷N4.4
S1.1÷S1.3

FIG445.060_ATN
FIG445.080_ATN
FIG445.100_ATN
FIG445.120_ATN
FIG445.140_ATN
FIG445.160_ATN
FIG445.180_ATN
FIG445.200_ATN

R 45° - RR

Coated ALX ≤45 Hrc

P1.1÷P4.1
M2.1
K1.1
N1.5÷N2.6
N4.1÷N4.4
S1.1÷S1.3

FIG445.060_ALX
FIG445.080_ALX
FIG445.100_ALX
FIG445.120_ALX
FIG445.140_ALX
FIG445.160_ALX
FIG445.180_ALX
FIG445.200_ALX

R 45° - RR

Coated ZNR ≤45 Hrc

P1.1÷P4.1
M2.1
K1.1
N1.5÷N2.6
N4.1÷N4.4
S1.1÷S1.3

FIG445.060_ZNR
FIG445.080_ZNR
FIG445.100_ZNR
FIG445.120_ZNR
FIG445.140_ZNR
FIG445.160_ZNR
FIG445.180_ZNR
FIG445.200_ZNR

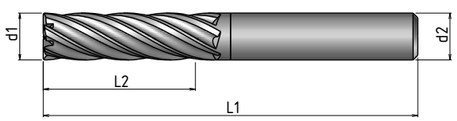
FIG545H

Frese testa piana multidenti positiva per finiture ad alta velocità

High speed cutting end mill for finishing milling multi-cut, positive front rake angle

Applicazioni: Fresature universali per acciaio, acciaio temperato, ghisa e metalli ferrosi. Idonea per fresature a secco.

Applications: for dry milling of most materials, steel, hardened steel, non-ferrous metals, cast iron.



VHM

DIN6527L

DIN 6535 HA

R 45° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated LTM ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
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P1.1÷P4.1
K1.1
N1.1÷N1.3
S2.2
H1.1

d1	d2	L1	L2	Z	
6.00	6.0	57	13	6	FIG545H.060_LTM
8.00	8.0	63	19	6	FIG545H.080_LTM
10.0	10.0	72	22	6	FIG545H.100_LTM
12.0	12.0	83	26	6	FIG545H.120_LTM
14.0	14.0	83	26	6	FIG545H.140_LTM
16.0	16.0	92	32	8	FIG545H.160_LTM
20.0	20.0	104	38	8	FIG545H.200_LTM

IGUTENSILI

FIG3538RP

Frese toriche ad elevata prestazione 35°/38°
fino a 65HRC.
HPC high performance cutting torodial end mills
for steel up to 65HRC

VHM

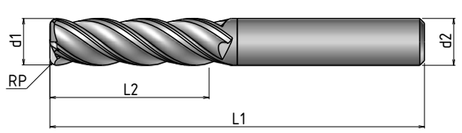
DIN6527L

DIN 6535 HA

R 35/38° - RR

Applicazioni: metalli fino a 65 HRC. Acciai altamente temprati, ghisa e metalli non ferrosi. Assenza di vibrazione. Raggio d'angolo. Divisione irregolare

Applications: materials up to 65 HRC. High tempered steel, cast iron and non-ferrous metals. Absence of vibration. Corner radius. Irregular division.

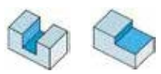


TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated LTM
≤65 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

P1.1÷P4.1
N1.1
N1.4÷N1.6
S1.2÷S1.3
H1.1÷H1.3



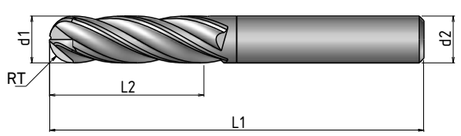
d1	d2	L1	L2	RP	Z	
4.00	6.0	57	11	0.5	4	**FIG3538RP040_0.5_LTM**
4.00	6.0	57	11	1	4	**FIG3538RP040_1.0_LTM**
5.00	6.0	57	13	0.5	4	**FIG3538RP050_0.5_LTM**
5.00	6.0	57	13	1	4	**FIG3538RP050_1.0_LTM**
6.00	6.0	57	13	0.5	4	**FIG3538RP060_0.5_LTM**
6.00	6.0	57	13	1	4	**FIG3538RP060_1.0_LTM**
8.00	8.0	63	19	0.5	4	**FIG3538RP080_0.5_LTM**
8.00	8.0	63	19	1	4	**FIG3538RP080_1.0_LTM**
10.00	10.0	72	22	0.5	4	**FIG3538RP100_0.5_LTM**
10.00	10.0	72	22	1	4	**FIG3538RP100_1.0_LTM**
12.00	12.0	83	26	0.5	4	**FIG3538RP120_0.5_LTM**
12.00	12.0	83	26	1	4	**FIG3538RP120_1.0_LTM**
16.00	16.0	92	32	1	4	**FIG3538RP160_1.0_LTM**
16.00	16.0	92	32	2	4	**FIG3538RP160_2.0_LTM**
20.00	20.0	104	38	1	4	**FIG3538RP200_1.0_LTM**
20.00	20.0	104	38	2	4	**FIG3538RP200_2.0_LTM**

IGUTENSILI

FIG3538RT

Frese semisferiche ad elevata prestazione
35°/38° fino a 65HRC
HPC high performance cutting ball nose end mills
for steel up to 65HRC

Applicazioni: metalli fino a 65 HRC. Acciai altamente temprati, ghisa e metalli non ferrosi.
Applications: materials up to 65 HRC. High tempered steel, cast iron and non-ferrous metals.



VHM

NORMA IG

DIN 6535 HA

R 35/38° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated LTM
≤65 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

P1.1÷P4.1
N1.1
N1.4÷N1.6
S1.2÷S1.3
H1.1÷H1.3

d1	d2	L1	L2	RT	Z	
3.0	6.0	57	8	1.5	4	**FIG3538RT.030_LTM**
4.0	6.0	57	10	2	4	**FIG3538RT.040_LTM**
5.0	6.0	57	13	2.5	4	**FIG3538RT.050_LTM**
6.0	6.0	57	13	3	4	**FIG3538RT.060_LTM**
8.0	8.0	63	16	4	4	**FIG3538RT.080_LTM**
10.0	10.0	72	22	5	4	**FIG3538RT.100_LTM**
12.0	12.0	83	26	6	4	**FIG3538RT.120_LTM**
16.0	16.0	92	32	8	4	**FIG3538RT.160_LTM**
20.0	20.0	104	32	10	4	**FIG3538RT.200_LTM**

IGUTENSILI

FIG3538SM

Fresa ad elevata prestazione 35°/38° fino a 65HRC
High performance solid carbide end mills 35°/38° for steel up to 65HRC

VHM

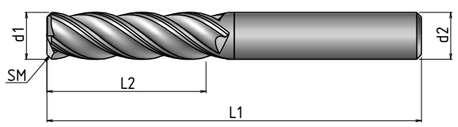
NORMA IG

DIN 6535 HA

R 35/38° - RR

Applicazioni: metalli fino a 65 HRC. Acciai altamente temprati, ghisa e metalli non ferrosi.

Applications: materials up to 65 HRC. High tempered steel, cast iron and non-ferrous metals.



TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated LTM ≤65 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

P1.1÷P4.1
N1.1
N1.4÷N1.6
S1.2÷S1.3
H1.1÷H1.3

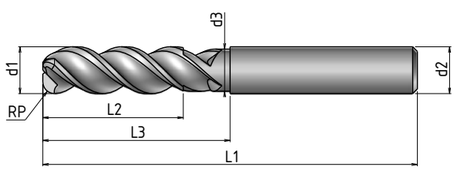
d1	d2	L1	L2	SM	Z	
3.00	6.0	57	8	0.1	4	**FIG3538SM.030_LTM**
4.00	6.0	57	11	0.1	4	**FIG3538SM.040_LTM**
5.00	6.0	57	13	0.2	4	**FIG3538SM.050_LTM**
6.00	6.0	57	13	0.2	4	**FIG3538SM.060_LTM**
8.00	8.0	63	19	0.2	4	**FIG3538SM.080_LTM**
10.00	10.0	72	22	0.25	4	**FIG3538SM.100_LTM**
12.00	12.0	83	26	0.3	4	**FIG3538SM.120_LTM**
16.00	16.0	92	32	0.4	4	**FIG3538SM.160_LTM**
20.00	20.0	104	38	0.5	4	**FIG3538SM.200_LTM**

FIG434547RP

Frese toriche per alluminio
HPC high performance cutting torodial end mills suitable for cutting aluminum

Applicazioni: alluminio, alluminio presso fuso, alluminio aeronautico, materiali non ferrosi, materie plastiche 3 taglienti con divisione irregolare, geometria elica differenziata, speciale esecuzione del codolo, h5 super lappato.

Applications: aluminum, dei-cast aluminum, aircraft aluminum, non-ferrous metal, plastics. 3 cutting adges, irregular division, special shank execution, h5 super finished.



VHM | NORMA IG | DIN 6535 HA

R 43/45/47° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Coated ALU ≤12% Silicon

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7
N1.1÷N1.4
N2.1÷N2.5

d1	d2	d3	L1	L2	L3	RP	Z	
6.0	6.0	5.5	57	13	21	0.5	3	**FIG434547RP.060.1**
6.0	6.0	5.5	57	13	21	1	3	**FIG434547RP.060.2**
6.0	6.0	5.5	57	13	21	1.5	3	**FIG434547RP.060.3**
8.0	8.0	7.4	63	19	26	1.5	3	**FIG434547RP.080.1**
8.0	8.0	7.4	63	19	26	2	3	**FIG434547RP.080.2**
8.0	8.0	7.4	63	19	26	2.5	3	**FIG434547RP.080.3**
8.0	8.0	7.4	63	19	26	3	3	**FIG434547RP.080.4**
10.0	10.0	9.2	72	22	30	2	3	**FIG434547RP.100.1**
10.0	10.0	9.2	72	22	30	2.5	3	**FIG434547RP.100.2**
10.0	10.0	9.2	72	22	30	3	3	**FIG434547RP.100.3**
10.0	10.0	9.2	72	22	30	4	3	**FIG434547RP.100.4**
12.0	10.0	11	83	26	37	2	3	**FIG434547RP.120.1**
12.0	10.0	11	83	26	37	2.5	3	**FIG434547RP.120.2**
12.0	10.0	11	83	26	37	3	3	**FIG434547RP.120.3**
12.0	10.0	11	83	26	37	4	3	**FIG434547RP.120.4**
16.0	16.0	15	92	32	42	2	3	**FIG434547RP.160.1**
16.0	16.0	15	92	32	42	2.5	3	**FIG434547RP.160.2**
16.0	16.0	15	92	32	42	3	3	**FIG434547RP.160.3**
16.0	16.0	15	92	32	42	4	3	**FIG434547RP.160.4**
16.0	16.0	15	92	32	42	5	3	**FIG434547RP.160.5**
20.0	20.0	19	104	38	50	2.5	3	**FIG434547RP.200.1**
20.0	20.0	19	104	38	50	3	3	**FIG434547RP.200.2**
20.0	20.0	19	104	38	50	4	3	**FIG434547RP.200.3**
20.0	20.0	19	104	38	50	5	3	**FIG434547RP.200.4**

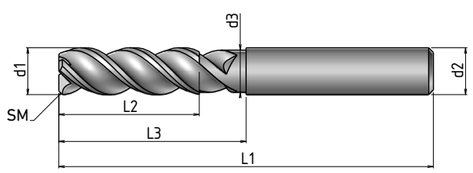
IGUTENSILI

FIG434547SM

Frese per lavorazione alluminio
High performance cutting end milling cutters suitable for cutting Aluminum

Applicazioni: alluminio, alluminio presso fuso, alluminio aeronautico, materiali non ferrosi, materie plastiche 3 taglienti con divisione irregolare, geometria elica differenziata, speciale esecuzione del codolo, h5 super lappato.

Applications: aluminum, dei-cast aluminum, aircraft aluminum, non-ferrous metal, plastics. 3 cutting adges, irregular division, special shank execution, h5 super finished.



VHM

NORMA IG

DIN 6535 HA

R 43/45/47° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Coated ALU ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7
N1.1÷N1.4
N2.1÷N2.5

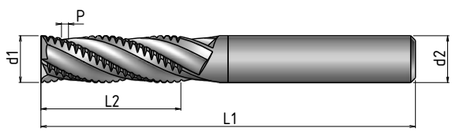
d1	d2	d3	L1	L2	L3	SM	Z	
6.0	6.0	5.5	57	13	21	0.2	3	FIG434547SM.060
8.0	8.0	7.4	63	19	26	0.2	3	FIG434547SM.080
10.0	10.0	9.2	72	22	30	0.25	3	FIG434547SM.100
12.0	12.0	11	83	26	37	0.3	3	FIG434547SM.120
16.0	16.0	15	92	32	42	0.4	3	FIG434547SM.160
20.0	20.0	19	104	38	50	0.45	3	FIG434547SM.200

IGUTENSILI

FIG330SGF

Frese testa piana con rompitrucciolo dentatura fine
Roughing end mill fine profile

Applicazioni: Alta asportazione di truciolo. Acciai, acciai legati e materiali non ferrosi
Applications: for finishing milling of steel, steel-alloy steel, non-ferrous materials.



VHM | NORMA IG | DIN 6535 HA

R 30° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

- P1.1÷P4.1
- M2.1
- K1.1
- N1.5÷N2.6
- N4.1÷N4.4
- S1.1÷S1.3

d1	d2	L1	L2	P	Z	
6.00	6.0	50	14	1.5	3	FIG330SGF.060
8.00	8.0	60	19	2.0	3	FIG330SGF.080
10.00	10.0	70	22	2.5	4	FIG330SGF.100
12.00	12.0	74	26	2.5	4	FIG330SGF.120
14.00	14.0	76	28	3.0	4	FIG330SGF.140
16.00	16.0	83	32	3.0	4	FIG330SGF.160
18.00	18.0	85	32	3.0	4	FIG330SGF.180
20.00	20.0	93	35	3.0	4	FIG330SGF.200

R 30° - RR

Coated ATN ≤45 Hrc

- P1.1÷P4.1
- M2.1
- K1.1
- N1.5÷N2.6
- N4.1÷N4.4
- S1.1÷S1.3

R 30° - RR

Coated ALX ≤45 Hrc

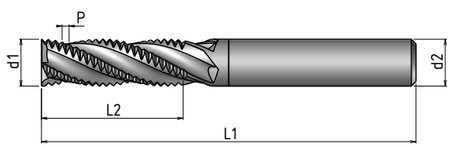
- P1.1÷P4.1
- M2.1
- K1.1
- N1.5÷N2.6
- N4.1÷N4.4
- S1.1÷S1.3

FIG330SGF.060_ATN	FIG330SGF.060_ALX
FIG330SGF.080_ATN	FIG330SGF.080_ALX
FIG330SGF.100_ATN	FIG330SGF.100_ALX
FIG330SGF.120_ATN	FIG330SGF.120_ALX
FIG330SGF.140_ATN	FIG330SGF.140_ALX
FIG330SGF.160_ATN	FIG330SGF.160_ALX
FIG330SGF.180_ATN	FIG330SGF.180_ALX
FIG330SGF.200_ATN	FIG330SGF.200_ALX

FIG330SGG

Frese testa piana con rompitrucciolo dentatura grossa
Roughing end mill coarse profile

Applicazioni: Alta asportazione di truciolo. Acciai, acciai legati e materiali non ferrosi
Applications: milling of most materials, steel, steel-alloys, non-ferrous materials.



VHM | NORMA IG | DIN 6535 HA

R 30° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

N2.7÷N2.8
H1.1÷H1.5

d1	d2	L1	L2	P	Z	
6.00	6.0	50	14	1.0	3	FIG330SGG.060
8.00	8.0	60	19	1.5	3	FIG330SGG.080
10.00	10.0	70	22	1.5	4	FIG330SGG.100
12.00	12.0	74	26	2.0	4	FIG330SGG.120
14.00	14.0	76	28	2.0	4	FIG330SGG.140
16.00	16.0	83	32	2.5	4	FIG330SGG.160
18.00	18.0	85	32	2.5	4	FIG330SGG.180
20.00	20.0	93	35	2.5	4	FIG330SGG.200

R 30° - RR

Coated ATN ≤45 Hrc

N2.7÷N2.8
H1.1÷H1.5

R 30° - RR

Coated ALX ≤45 Hrc

N2.7÷N2.8
H1.1÷H1.5

FIG330SGG.060_ATN	FIG330SGG.060_ALX
FIG330SGG.080_ATN	FIG330SGG.080_ALX
FIG330SGG.100_ATN	FIG330SGG.100_ALX
FIG330SGG.120_ATN	FIG330SGG.120_ALX
FIG330SGG.140_ATN	FIG330SGG.140_ALX
FIG330SGG.160_ATN	FIG330SGG.160_ALX
FIG330SGG.180_ATN	FIG330SGG.180_ALX
FIG330SGG.200_ATN	FIG330SGG.200_ALX

FIG430GF

Frese testa piana per grafite
Twist end mill to machine graphite

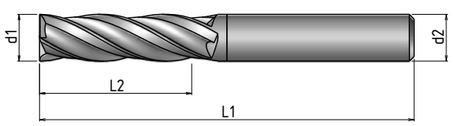
Applicazioni: grafite.
Applications: graphite.

VHM | NORMA IG | DIN 6535 HA

R 30° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Coated DIP

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7
N5.1



d1	d2	L1	L2	Z	
1.0	1.0	38	3	2	**FIG430GF.010_DIP**
1.5	1.5	38	4	2	**FIG430GF.015_DIP**
2.0	2.0	40	7	2	**FIG430GF.020_DIP**
3.0	3.0	40	10	3	**FIG430GF.030_DIP**
4.0	4.0	40	11	3	**FIG430GF.040_DIP**
5.0	5.0	50	13	3	**FIG430GF.050_DIP**
6.0	6.0	50	16	3	**FIG430GF.060_DIP**
8.0	8.0	63	20	3	**FIG430GF.080_DIP**
10.0	10.0	72	22	4	**FIG430GF.100_DIP**
12.0	12.0	83	26	4	**FIG430GF.120_DIP**

IGUTENSILI

FIG430GFRT

Frese semisferiche per grafite
Ball nose end mill to machine graphite

Applicazioni: grafite.
Applications: graphite.

VHM

NORMA IG

DIN 6535 HA

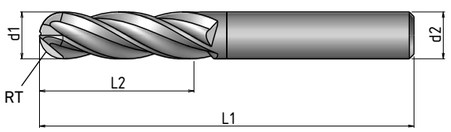
R 30° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated DIP

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

N5.1



d1	d2	L1	L2	RT	Z	
1.0	1.0	38	3	0.5	2	FIG430GFRT.010_DIP
1.5	1.5	38	4	0.75	2	FIG430GFRT.015_DIP
2.0	2.0	40	7	1	2	FIG430GFRT.020_DIP
3.0	3.0	40	10	1.5	3	FIG430GFRT.030_DIP
4.0	4.0	40	11	2	3	FIG430GFRT.040_DIP
5.0	5.0	50	13	2.5	3	FIG430GFRT.050_DIP
6.0	6.0	50	16	3	3	FIG430GFRT.060_DIP
8.0	8.0	63	20	4	3	FIG430GFRT.080_DIP
10.0	10.0	72	22	5	4	FIG430GFRT.100_DIP
12.0	12.0	83	26	6	4	FIG430GFRT.120_DIP

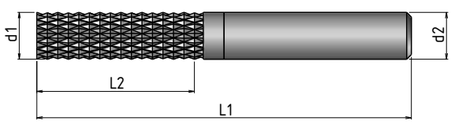
IGUTENSILI

FIGMC100

Frese per contornatura senza affilatura di testa multitagliente (materiali compositi)
Countouring mill without front cut (composite materials)

Applicazioni: Frese per contornatura senza affilatura di testa per lavorazioni di materiali compositi, fibre di carbonio CFRP, materiali non ferrosi, Plexiglas, Policarbonato.

Applications: countouring cutters for machining composite (CFRP) materials, non ferrous, plexiglas and polycarbonate materials. Available with or without and cut.



VHM | NORMA IG | DIN 6535 HA

R 25° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Uncoated ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7
N4.1÷N4.4

d1	d2	L1	L2	
3.0	3.0	40	10	FIGMC100.030
4.0	4.0	40	15	FIGMC100.040
5.0	5.0	50	16	FIGMC100.050
6.0	6.0	50	18	FIGMC100.060
8.0	8.0	63	25	FIGMC100.080
10.0	10.0	72	30	FIGMC100.100
12.0	12.0	83	32	FIGMC100.120

IGUTENSILI

FIG

FIGMC102

Frese per contornatura con affilatura di testa multitagliente (materiali compositi)
Countouring mill without front cut (composite materials)

Applicazioni: Frese per contornatura con affilatura di testa per lavorazioni di materiali compositi, fibre di carbonio CFRP, materiali non ferrosi, Plexiglas, Policarbonato..

Applications: countouring cutters for mchining composite (CFRP) materials, non ferrous, plexiglas and polycarbonate materials. Available with or without and cut.

VHM

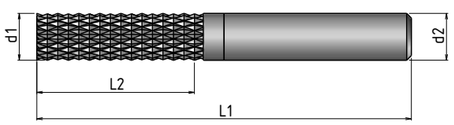
NORMA IG

DIN 6535 HA

R 25° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Uncoated ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7
N4.1÷N4.4



d1	d2	L1	L2	
3.0	3.0	40	10	FIGMC102.030
4.0	4.0	40	15	FIGMC102.040
5.0	5.0	50	16	FIGMC102.050
6.0	6.0	50	18	FIGMC102.060
8.0	8.0	63	25	FIGMC102.080
10.0	10.0	72	30	FIGMC102.100
12.0	12.0	83	32	FIGMC102.120

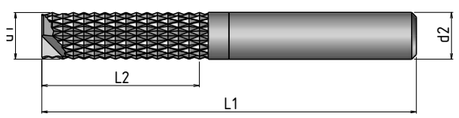
IGUTENSILI

FIGMC103

Frese per contornatura con affilatura frontale
(materiali compositi)
Countouring mill with front cut (composite materials)

Frese per contornatura con affilatura ditesta per lavorazioni di materiali compositi, fibre di carbonio CFRP, materiali non ferrosi, Plexiglas, Policarbonato.

Applications: countouring cutters for machining composite (CFRP) materials, non ferrous, plexiglas and polycarbonate materials. Available with or without and cut.

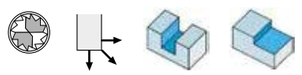


VHM | NORMA IG | DIN 6535 HA

R 25° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Uncoated ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7
N4.1÷N4.4



d1	d2	L1	L2	
3.0	3.0	40	10	FIGMC103.030
4.0	4.0	40	15	FIGMC103.040
5.0	5.0	50	16	FIGMC103.050
6.0	6.0	50	18	FIGMC103.060
8.0	8.0	63	25	FIGMC103.080
10.0	10.0	72	30	FIGMC103.100
12.0	12.0	83	32	FIGMC103.120

IGUTENSILI

FIGMC200SG

Frese per contornatura (materiali compositi)

Countouring mill (composite materials)

VHM

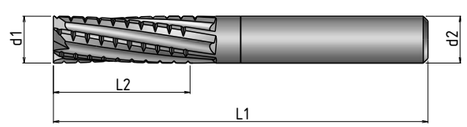
NORMA IG

DIN 6535 HA

R 10° - RR

Applicazioni: Frese per contornatura, elica 10°, Z=6 con rompitruciolo, tipologia dentatura grossa, per lavorazione di materiali compositi, fibra di carbonio CFRP.

Applications: Countering cutters, helix 10°, Z=6, large chipbreaker for machining composite (CFRP) materials..

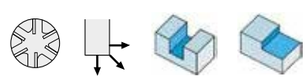


TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated LTM ≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

N4.1÷N4.4



d1	d2	L1	L2	Z	
4.0	4.0	40	15	6	FIGMC200SG.040_LTM
5.0	5.0	50	16	6	FIGMC200SG.050_LTM
6.0	6.0	50	18	6	FIGMC200SG.060_LTM
8.0	8.0	63	20	6	FIGMC200SG.080_LTM
10.0	10.0	72	25	6	FIGMC200SG.100_LTM
12.0	12.0	83	30	6	FIGMC200SG.120_LTM

IGUTENSILI

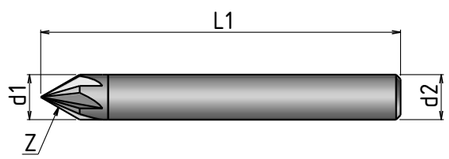
SVA60

60°

Fresa a sbavare 60°
Countersinking mill 60°

Applicazioni: acciai legati, inox, acciai temprati, ghisa e materiali non ferrosi, titanio.

Applications: steel-alloy, tempered steel, stainless steel, non-ferrous materials, cast iron, titanium.



VHM

NORMA IG

DIN 6535 HA

R 0° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated ATN
≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

P1.1÷P5.1
K1.1÷K1.2
N1.4÷N1.5
N2.1÷N2.6
S1.1÷S1.3

d1	d2	L1	Z	
4.0	4.0	54	4	SVA60.040_ATN
6.0	6.0	60	4	SVA60.060_ATN
8.0	8.0	63	5	SVA60.080_ATN
10.0	10.0	72	6	SVA60.100_ATN
12.0	12.0	83	6	SVA60.120_ATN

FIG

IGUTENSILI

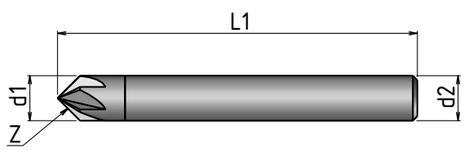
FIG

SVA90

Fresa a sbavare 90°
Countersinking mill 90°

Applicazioni: acciai legati, inox, acciai temprati, ghisa e materiali non ferrosi, titanio.

Applications: steel-alloy, tempered steel, stainless steel, non-ferrous materials, cast iron, titanium.



VHM

NORMA IG

DIN 6535 HA

R 0° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated ATN
≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

P1.1÷P5.1
K1.1÷K1.2
N1.4÷N1.5
N2.1÷N2.6
S1.1÷S1.3

d1	d2	L1	Z	
4.0	4.0	54	4	SVA90.040_ATN
6.0	6.0	60	4	SVA90.060_ATN
8.0	8.0	53	5	SVA90.080_ATN
10.0	10.0	72	6	SVA90.100_ATN
12.0	12.0	83	6	SVA90.120_ATN

FIG

IGUTENSILI

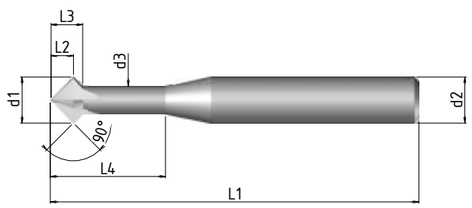
FIG

SVA490

Fresa a sbavare per applicazioni interne 90°
Countersinking mill for internal application 90°

Applicazioni: acciai, acciai legati, ghisa, alluminio e materiali non ferrosi.

Application: steel alloys, tempered steels, cast iron, titan alloys, graphit, non ferrous metals, copper, bronze.



VHM

NORMA IG

DIN 6535 HA

R 0° - RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Coated ATN
≤45 Hrc

MATERIALI LAVORABILI
WORKING MATERIALS
page 6F • 7

P1.1÷P5.1

K1.1÷K1.2

N1.4÷N1.6

d1	d2	d3	L1	L4	L2	L3	Z	
1.8	6.0	1.2	100	9	0.9	1.2	3	SVA490.018_ATN
2.8	6.0	2.0	100	10	1.4	1.8	3	SVA490.028_ATN
4.0	6.0	2.0	100	13	2	3	4	SVA490.040_ATN
6.0	6.0	4.0	100	19	3	4	4	SVA490.060_ATN
8.0	6.0	-	100	-	2.1	3	4	SVA490.080_ATN
10.0	6.0	-	100	-	2.25	4	4	SVA490.100_ATN
12.0	6.0	-	100	-	3	6	4	SVA490.120_ATN
16.0	10.0	-	100	-	5	8	4	SVA490.160_ATN

FIG

IGUTENSILI

R 0° - RR

Coated ATN
≤45 Hrc

P1.1÷P5.1

K1.1÷K1.2

N1.4÷N1.6

FIG

IGUTENSILI

FIG

DIA

TECNOLOGIA DI FRESATURA E FORATURA PCD-CBN-CVD-MCD

MILLING AND DRILLING TECHNOLOGY PCD-CBN-CVD-MCD

Con la gamma di utensili DIA di IGUTENSILI le lavorazioni di fresatura e foratura vengono eseguite rapidamente e in modo produttivo senza rinunciare alla qualità della lavorazione.

Questi utensili sono impiegabili su di una vastissima gamma di macchinari a controllo numerico come CENTRI di LAVORO, CENTRI di TORNITURA, TRANSFER ed anche su LINEE DI PRODUZIONE AVANZATA ove è necessario abbattere sia i tempi di lavorazione che di attrezzaggio, in alcuni casi è stato possibile eliminare intere stazioni di lavoro.

L'utensile DIA-Frese e Punte è une conseguenza di questo impegno nel realizzare lavorazioni di asportazione truciolo in modo VELOCE e con la massima EFFICACIA.
DIA è dotato di REFRIGERAZIONE forzata INTERNA alla TESTA e RADIALE, garantendo in questo modo un'ottima lubrificazione nel punto di taglio ed una eccellente evacuazione del truciolo, DIA è in grado di lavorare grazie all'elevata durezza materiali strutturati leggeri come alluminio, magnesio e plastica rinforzata con fibre, garantendo finiture superficiali di altissima qualità ed una vita utensile inarrivabile con utensili standard in HM o HSS.
DIA assicurano rugosità ridotte (Ra 0,3), massima precisione dimensionale.

Gli utensili DIA-Frese e Punte, raggiungono alti valori di taglio e lunga durata, garantendo sempre la massima stabilità del ciclo produttivo, inoltre DIA nonostante la complessa tecnologia costruttiva, permette le operazioni di affilatura, donando all'utensile stesso nuova vita con rendimenti eccellenti.

Da non sottovalutare la possibilità di produrre DIA speciali a disegno, con lo stesso utensile potremo eseguire foratura di cavità a gradini, non solo si potranno eliminare gli alesatori ma anche altri utensili di preforatura in sagoma.

With the range of DIA tools by IGUTENSILI, milling and drilling operations are performed quickly and productively without sacrificing the quality of the work.

These tools can be used on a very wide range of CNC machines such as WORK CENTRES, TURNING CENTRES, TRANSFER and even ADVANCED PRODUCTION LINES where it is possible to reduce both processing and tooling times, in some cases it was possible to eliminate entire workstations.

The DIA-Cutters and Drills tool is a consequence of this commitment in carrying out machining operations where the chip is evacuated QUICKLY and with the maximum EFFECTIVENESS.
DIA is equipped with INTERNAL HEAD AND RADIAL forced COOLANT, thus ensuring excellent lubrication at the cutting point and excellent chip evacuation, DIA is able to work thanks to its high hardness, light structured materials such as aluminium, magnesium and fiber-reinforced plastic, ensuring very high quality surface finishes and an unattainable tool life with standard HM or HSS tools.
DIA ensure reduced roughness (Ra 0.3), maximum dimensional accuracy.

The DIA-Cutters and Drills, reach high cutting values and long life, always guaranteeing the maximum stability of the production cycle, moreover DIA despite the complex construction technology, allows the sharpening operations, giving the tool itself new life with excellent yields.

Not to underestimate the possibility of producing special customised DIA tools, with the same tool we will be able to drill stepped holes, not only can reamers be eliminated but also other pre-drilling shaping tools.

I valori di velocità di taglio / periferica (vc in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego (materiale, lubrorefrigerazione, macchina utensile ecc.). Confronto internazionale dei materiali, vedere pagina Z • 21

The cutting speeds (vc in m/min) listed in the respective columns are standard values which have to be adjusted to individual work conditions (material, lubrication, machine etc.). International comparison of materials, see page Z • 21

Vc = Velocità di taglio (m/min) Vc = Cutting speed (m/min)

		Materiale	Material		Material examples	Mat. numbers
P		Acciai	Steel materials			
		Acciai estrusi a freddo	Cold-extrusion steel		Cq15	1.1132
	1.1	Acciai da costruzione	Costruction steels	≤ 600 N/mm2	S235JR (St37-2)	1.0037
		Acciai alta velocità	Free-cutting steel, etc.		10SPb20	1.0722
		Acciai da costruzione	Costruction steels		E360 (St70-2)	1.0070
	2.1	Acciai da cementazione	Cementation steel	≤ 800 N/mm2	16MnCr5	1.7131
		Fusione d'acciaio, ecc.	Steel casting, etc.		GS-25CrMo4	1.7218
		Acciai da cementazione	Cementation steel		20MoCr3	1.7320
	3.1	Acciai da bonifica	Heat-treatable steels	≤ 1000 N/mm2	42CrMo4	1.7225
		Acciai per lavorazioni a freddo, ecc.	Cold work steels, etc.		102Cr6	1.2067
		Acciai da bonifica	Heat-treatable steels		50CrMo4	1.7228
	4.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1200 N/mm2	X45NiCrMo4	1.2767
		Acciai da nitrurazione, ecc.	Nitriding steels, etc.		31CrMo12	1.8515
		Acciai fortemente legati	High-alloyed steels		X38CrMoV5-3	1.2367
	5.1	Acciai per lavorazioni a freddo	Cold work steels	≤ 1400 N/mm2	X100CrMoV8-1-1	1.2990
		Acciai per lavorazioni a caldo, ecc.	Hot work steels, etc.		X40CrMoV5-1	1.2344
M		Acciai inossidabili	Stainless steel materials			
	1.1	Ferritici, martensitici	Ferritic, martensitic	≤ 950 N/mm2	X2CrTi12	1.4512
	2.1	Austenitici	Austenitic	≤ 950 N/mm2	X6CrNiMoTi17-12-2	1.4571
	3.1	Austenitici-ferritici (Duplex)	Austenitic-ferritic (Duplex)	≤ 1100 N/mm2	X2CrNiMoN22-5-3	1.4462
	4.1	Austenitici-ferritici resistenti al calore (Super Duplex)	Austenitic-ferritic heat-resistant (Super Duplex)	≤ 1250 N/mm2	X2CrNiMoN25-7-4	1.4410
K		Ghise	Cast materials			
	1.1	Ghise con grafite lamellare (GJL)	Cast iron with lamellar graphite (GJL)	100-250 N/mm2	EN-GJL-200 (GG20)	EN-JL-1030
	1.2			250-450 N/mm2	EN-GJL-300 (GG30)	EN-JL-1050
	2.1	Ghise con grafite nodulare (GJS)	Cast iron with nodular graphite (GJS)	350-500 N/mm2	EN-GJS-400-15 (GGG40)	EN-JS-1030
	2.2			500-900 N/mm2	EN-GJS-700-2 (GGG70)	EN-JS-1070
	3.1	Ghise con grafite vermicolare (GJV)	Cast iron with vermicular graphite (GJV)	300-400 N/mm2	GJV 300	
	3.2			400-500 N/mm2	GJV 450	
	4.1	Ghise malleabili (GTMW, GTMB)	Malleable cast iron (GTMW, GTMB)	250-500 N/mm2	EN-GJMW-350-4 (GTW-35)	EN-JM-1010
	4.2			500-800 N/mm2	EN-GJMB-450-6 (GTS-45)	EN-JM-1140
N		Materiali non ferrosi	Non ferrous materials			
		Leghe di alluminio	Aluminium alloys			
	1.1	Leghe di alluminio malleabili	Aluminium wrought alloys	≤ 200 N/mm2	EN AW-AlMn1	EN AW-3103
	1.2			≤ 350 N/mm2	EN AW-AlMgSi	EN AW-6060
	1.3			≤ 550 N/mm2	EN AW-AlZn5Mg3Cu	EN AW-7022
	1.4	Leghe fuse di alluminio	Aluminium cast alloys	Si ≤ 7%	EN AC-AlMg5	EN AC-51300
	1.5			7% < Si ≤ 12%	EN AC-AlSi9Cu3	EN AC-46500
	1.6			12% < Si ≤ 17%	GD-AlSi17Cu4FeMg	
		Leghe di rame	Copper alloys			
	2.1	Rame puro, Rame poco legato	Pure copper, low-alloyed copper	≤ 400 N/mm2	E-Cu 57	EN CW 004 A
	2.2	Leghe rame-zinco (ottone, truciolo lungo)	Copper-zinc alloys (brass, long-chipping)	≤ 550 N/mm2	CuZn37 (Ms63)	EN CW 508 L
	2.3	Leghe rame-zinco (ottone, truciolo corto)	Copper-zinc alloys (brass, short-chipping)	≤ 550 N/mm2	CuZn36Pb3 (Ms58)	EN CW 603 N
	2.4	Leghe rame-alluminio (alubronzo, truciolo lungo)	Copper-aluminium alloys (alu bronze, long-chipping)	≤ 800 N/mm2	CuAl10Ni5Fe4	EN CW 307 G
	2.5	Leghe rame-stagno (bronzo, truciolo lungo)	Copper-tin alloys (tin bronze, long-chipping)	≤ 700 N/mm2	CuSn8P	EN CW 459 K
	2.6	Leghe rame-stagno (bronzo, truciolo corto)	Copper-tin alloys (tin bronze, short-chipping)	≤ 400 N/mm2	CuSn7 ZnPb (Rg7)	2.1090
	2.7	Leghe di rame speciali	Special copper alloys	≤ 600 N/mm2	(AMPCO® 8)	
	2.8			≤ 1400 N/mm2	(AMPCO® 45)	
		Leghe di magnesio	Magnesium alloys			
	3.1	Leghe di magnesio malleabili	Magnesium wrought alloys	≤ 500 N/mm2	MgAl6Zn	3.5612
	3.2	Leghe per getti di magnesio	Magnesium cast alloys	≤ 500 N/mm2	EN-MCMgAl9Zn1	EN-MC21120
		Materie plastiche	Synthetics			
	4.1	Materie plastiche termoindurenti (truciolo corto)	Duroplastics (short-chipping)		Bakelit, Pertinax	
	4.2	Resine termoplastiche (truciolo lungo)	Thermoplastics (long-chipping)		PMMA, POM, PVC	
	4.3	Resine epossidiche (percentuale di fibre ≤ 30%)	Fibre-reinforced synthetics (fibre content ≤ 30%)		GFK, CFK, AFK	
	4.4	Resine epossidiche (percentuale di fibre > 30%)	Fibre-reinforced synthetics (fibre content > 30%)		GFK, CFK, AFK	
		Materiali speciali	Special materials			
	5.1	Grafite	Graphite		C 8000	
	5.2	Leghe tungsteno-rame	Tungsten-copper alloys		W-Cu 80/20	
	5.3	Materiali compositi	Composite materials		Hylite, Alucobond	
S		Materiali speciali	Special materials			
		Leghe di titanio	Titanium alloys			
	1.1	Titanio puro	Pure titanium	≤ 450 N/mm2	Ti1	3.7025
	1.2	Leghe di titanio	Titanium alloys	≤ 900 N/mm2	TiAl6V4	3.7165
	1.3			≤ 1250 N/mm2	TiAl4Mo4Sn2	3.7185
		Leghe di nichel, cobalto e ferro	Nickel alloys, cobalt alloys and iron alloys			
	2.1	Nichel puro	Pure nickel	≤ 600 N/mm2	Ni 99,6	2.4060
	2.2	Leghe base nichel	Nickel-base alloys	≤ 1000 N/mm2	Monel 400	2.4360
	2.3			≤ 1600 N/mm2	Inconel 718	2.4668
	2.4	Leghe base cobalto	Cobalt-base alloys	≤ 1000 N/mm2	Udimet 605	
	2.5			≤ 1600 N/mm2	Haynes 25	2.4964
	2.6	Leghe base ferro	Iron-base alloys	≤ 1500 N/mm2	Incoloy 800	1.4958
H		Materiali duri	Hard materials			
	1.1	"Acciai ad alta resistenza, Acciai temprati, Ghise in conchiglia	High strength steels, hardened steels, hard castings"	44 - 50 HRC	Weldox 1100	
	1.2			50 - 55 HRC	Hardox 550	
	1.3			55 - 60 HRC	Armox 600T	
	1.4			60 - 63 HRC	Ferro-Titanit	
	1.5			63 - 66 HRC	HSSE	

DIA

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Vc Uncoated	Vc Coated NFS	F = 3 to 5 mm	F =5 to 8 mm	F =8 to 12 mm	F =12 to 16 mm	
						P
						1.1
						2.1
						3.1
						4.1
						5.1
						M
						1.1
						2.1
						3.1
						4.1
						K
						1.1
						1.2
						2.1
						2.2
						3.1
						3.2
						4.1
						4.2
						N
						1.1
						1.2
						1.3
						1.4
						1.5
						1.6
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
						2.7
						3.1
						3.2
						4.1
						4.2
						4.3
						4.4
						5.1
						5.2
						5.3
						S
						1.1
						1.2
						1.3
						2.1
						2.2
						2.3
						2.4
						2.5
						2.6
						H
						1.1
						1.2
						1.3
						1.4
						1.5

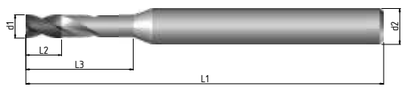
DIA

IGUTENSILI

A01-A02-A03

PCD

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30°- RR	R 30°- RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2
	PCD	PCD

d1	L1	L2	L3	d2	Z		
1,0	60	2,5	3÷16	4/6	2÷4	A01_0100_xx_x_x	A02_0100_xx_x_xxx_x
1,1	60	2,5	3÷16	4/6	2÷4	A01_0110_xx_x_x	A02_0110_xx_x_xxx_x
1,2	60	2,5	3÷16	4/6	2÷4	A01_0120_xx_x_x	A02_0120_xx_x_xxx_x
1,3	60	2,5	3÷16	4/6	2÷4	A01_0130_xx_x_x	A02_0130_xx_x_xxx_x
1,4	60	2,5	3÷16	4/6	2÷4	A01_0140_xx_x_x	A02_0140_xx_x_xxx_x
1,5	60	2,5	3÷16	4/6	2÷4	A01_0150_xx_x_x	A02_0150_xx_x_xxx_x
1,6	60	2,5	3÷16	4/6	2÷4	A01_0160_xx_x_x	A02_0160_xx_x_xxx_x
1,7	60	2,5	3÷16	4/6	2÷4	A01_0170_xx_x_x	A02_0170_xx_x_xxx_x
1,8	60	2,5	3÷16	4/6	2÷4	A01_0180_xx_x_x	A02_0180_xx_x_xxx_x
1,9	60	2,5	3÷16	4/6	2÷4	A01_0190_xx_x_x	A02_0190_xx_x_xxx_x
2,0	60	2,5	3÷16	4/6	2÷4	A01_0200_xx_x_x	A02_0200_xx_x_xxx_x
2,1	60	2,5	3÷16	4/6	2÷4	A01_0210_xx_x_x	A02_0210_xx_x_xxx_x
2,2	60	2,5	3÷16	4/6	2÷4	A01_0220_xx_x_x	A02_0220_xx_x_xxx_x
2,3	60	2,5	3÷16	4/6	2÷4	A01_0230_xx_x_x	A02_0230_xx_x_xxx_x
2,4	60	2,5	3÷16	4/6	2÷4	A01_0240_xx_x_x	A02_0240_xx_x_xxx_x
2,5	60	2,5	3÷16	4/6	2÷4	A01_0250_xx_x_x	A02_0250_xx_x_xxx_x

R 30°- RR
Uncoated
N1.1-N1.6 N4.1-N4.2
PCD

A03_0100_xx_x_x
A03_0110_xx_x_x
A03_0120_xx_x_x
A03_0130_xx_x_x
A03_0140_xx_x_x
A03_0150_xx_x_x
A03_0160_xx_x_x
A03_0170_xx_x_x
A03_0180_xx_x_x
A03_0190_xx_x_x
A03_0200_xx_x_x
A03_0210_xx_x_x
A03_0220_xx_x_x
A03_0230_xx_x_x
A03_0240_xx_x_x
A03_0250_xx_x_x

Esempio ordine
Order example

art. d1 L3 d2 Z
A01_0200_10_4_4

Esempio ordine
Order example

art. d1 L3 d2 R Z
A02_0200_10_4_0.5_4

DIA

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B01 - B02

PCD CVD M CBN

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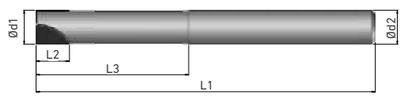


	R 0°- RR	R 0°- RR	R 0°- RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3	K1.1-K4.2 H1.1-H1.5
	PCD	CVD	CBN

d1	L1	L2	L3	d2	Z	PCD	CVD	CBN
2,0	60	5	10	6,0	1	B01_0200_10_060_PCD	B01_0200_10_060_CVD	B01_0200_10_060_CBN
3,0	60	5	15	6,0	2	B01_0300_15_060_PCD	B01_0300_15_060_CVD	B01_0300_15_060_CBN
4,0	75	5,5	20	6,0	2	B01_0400_20_075_PCD	B01_0400_20_075_CVD	B01_0400_20_075_CBN
6,0	100	6	30	6,0	2	B01_0600_30_100_PCD	B01_0600_30_100_CVD	B01_0600_30_100_CBN
8,0	100	8	30	8,0	2	B01_0800_30_100_PCD	B01_0800_30_100_CVD	B01_0800_30_100_CBN
10,0	100	10	45	10,0	2	B01_1000_45_100_PCD	B01_1000_45_100_CVD	B01_1000_45_100_CBN
12,0	100	12	45	12,0	2	B01_1200_45_100_PCD	B01_1200_45_100_CVD	B01_1200_45_100_CBN
16,0	100	14	45	16,0	2	B01_1600_45_100_PCD	B01_1600_45_100_CVD	B01_1600_45_100_CBN
20,0	100	16	45	20,0	2	B01_2000_45_100_PCD	B01_2000_45_100_CVD	B01_2000_45_100_CBN
20,0	120	16	45	20,0	4	B02_2000_45_120_PCD	B02_2000_45_120_CVD	B02_2000_45_120_CBN
25,0	120	18	45	25,0	4	B02_2500_45_120_PCD	B02_2500_45_120_CVD	B02_2500_45_120_CBN

Esempio ordine
Order example

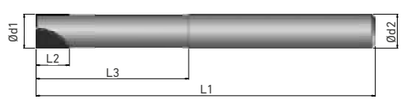
art. d1 L3 L1
B01_0800_30_100_PCD

DIA

B11 - B12

PCD CVD XL CBN

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 0°- RR	R 0°- RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3
	PCD	CVD

d1	L1	L2	L3	d2	Z		
2,0	100	5	20	6,0	1	B11_0200_20_100_PCD	B11_0200_20_100_CVD
3,0	100	5	30	6,0	2	B11_0300_30_100_PCD	B11_0300_30_100_CVD
4,0	100	5,5	40	6,0	2	B11_0400_40_100_PCD	B11_0400_40_100_CVD
6,0	120	6	45	6,0	2	B11_0600_45_120_PCD	B11_0600_45_120_CVD
8,0	120	8	45	8,0	2	B11_0800_45_120_PCD	B11_0800_45_120_CVD
10,0	150	10	55	10,0	2	B11_1000_55_150_PCD	B11_1000_55_150_CVD
12,0	150	12	55	12,0	2	B11_1200_55_150_PCD	B11_1200_55_150_CVD
16,0	150	14	55	16,0	2	B11_1600_55_150_PCD	B11_1600_55_150_CVD
20,0	150	16	55	20,0	2	B11_2000_55_150_PCD	B11_2000_55_150_CVD
20,0	150	16	55	20,0	4	B12_2000_55_150_PCD	B12_2000_55_150_CVD
25,0	150	18	55	25,0	4	B12_2500_55_150_PCD	B12_2500_55_150_CVD

Esempio ordine
Order example

art. d1 L2 L1
B11_0800_45_120_PCD

	R 0°- RR
	Uncoated
	K1.1-K4.2 H1.1-H1.5
	CBN

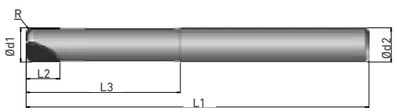
B11_0200_20_100_CBN	
B11_0300_30_100_CBN	
B11_0400_40_100_CBN	
B11_0600_45_120_CBN	
B11_0800_45_120_CBN	
B11_1000_55_150_CBN	
B11_1200_55_150_CBN	
B11_1600_55_150_CBN	
B11_2000_55_150_CBN	
B12_2000_55_150_CBN	
B12_2500_55_150_CBN	

IGUTENSILI

B21 - B22

PCD CVD M CBN

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 0°- RR	R 0°- RR	R 0°- RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3	K1.1-K4.2 H1.1-H1.5
	PCD	CVD	CBN

d1	L1	L2	L3	d2	R	Z		
2,0	60	5	10	6,0	**	1	B21_0200_10_Rxxx_PCD	B21_0200_10_Rxxx_CVD
3,0	60	5	15	6,0	**	2	B21_0300_15_Rxxx_PCD	B21_0300_15_Rxxx_CVD
4,0	75	5,5	20	6,0	**	2	B21_0400_20_Rxxx_PCD	B21_0400_20_Rxxx_CVD
6,0	100	6	30	6,0	**	2	B21_0600_30_Rxxx_PCD	B21_0600_30_Rxxx_CVD
8,0	100	8	30	8,0	**	2	B21_0800_30_Rxxx_PCD	B21_0800_30_Rxxx_CVD
10,0	100	10	45	10,0	**	2	B21_1000_45_Rxxx_PCD	B21_1000_45_Rxxx_CVD
12,0	100	12	45	12,0	**	2	B21_1200_45_Rxxx_PCD	B21_1200_45_Rxxx_CVD
16,0	100	14	45	16,0	**	2	B21_1600_45_Rxxx_PCD	B21_1600_45_Rxxx_CVD
20,0	100	16	45	20,0	**	2	B21_2000_45_Rxxx_PCD	B21_2000_45_Rxxx_CVD
20,0	120	16	45	20,0	**	4	B22_2000_45_Rxxx_PCD	B22_2000_45_Rxxx_CVD
25,0	120	18	45	25,0	**	4	B22_2500_45_Rxxx_PCD	B22_2500_45_Rxxx_CVD

B21_0200_10_Rxxx_CBN
B21_0300_15_Rxxx_CBN
B21_0400_20_Rxxx_CBN
B21_0600_30_Rxxx_CBN
B21_0800_30_Rxxx_CBN
B21_1000_45_Rxxx_CBN
B21_1200_45_Rxxx_CBN
B21_1600_45_Rxxx_CBN
B21_2000_45_Rxxx_CBN
B22_2000_45_Rxxx_CBN
B22_2500_45_Rxxx_CBN

Esempio ordine
Order example

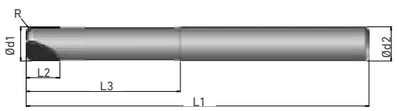
art. d1 L3 R
B21_0200_10_R0.5_PCD

DIA

B31 - B32

PCD CVD XL CBN

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 0°- RR	R 0°- RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3
	PCD	CVD

d1	L1	L2	L3	d2	R	Z		
2,0	100	5	20	6,0	**	1	B31_0200_20_Rxxx_PCD	B31_0200_20_Rxxx_CVD
3,0	100	5	30	6,0	**	2	B31_0300_30_Rxxx_PCD	B31_0300_30_Rxxx_CVD
4,0	100	5,5	40	6,0	**	2	B31_0400_40_Rxxx_PCD	B31_0400_40_Rxxx_CVD
6,0	120	6	45	6,0	**	2	B31_0600_45_Rxxx_PCD	B31_0600_45_Rxxx_CVD
8,0	120	8	45	8,0	**	2	B31_0800_45_Rxxx_PCD	B31_0800_45_Rxxx_CVD
10,0	150	10	55	10,0	**	2	B31_1000_55_Rxxx_PCD	B31_1000_55_Rxxx_CVD
12,0	150	12	55	12,0	**	2	B31_1200_55_Rxxx_PCD	B31_1200_55_Rxxx_CVD
16,0	150	14	55	16,0	**	2	B31_1600_55_Rxxx_PCD	B31_1600_55_Rxxx_CVD
20,0	150	16	55	20,0	**	2	B31_2000_55_Rxxx_PCD	B31_2000_55_Rxxx_CVD
20,0	150	16	55	20,0	**	4	B32_2000_55_Rxxx_PCD	B32_2000_55_Rxxx_CVD
25,0	150	18	55	25,0	**	4	B32_2500_55_Rxxx_PCD	B32_2500_55_Rxxx_CVD

Esempio ordine
Order example

art. d1 L3 R
B31_0600_45_R0.5_PCD

	R 0°- RR
	Uncoated
	K1.1-K4.2 H1.1-H1.5
	CBN

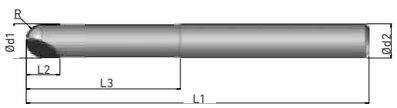
B31_0200_20_Rxxx_CBN	
B31_0300_30_Rxxx_CBN	
B31_0400_40_Rxxx_CBN	
B31_0600_45_Rxxx_CBN	
B31_0800_45_Rxxx_CBN	
B31_1000_55_Rxxx_CBN	
B31_1200_55_Rxxx_CBN	
B31_1600_55_Rxxx_CBN	
B31_2000_55_Rxxx_CBN	
B32_2000_55_Rxxx_CBN	
B32_2500_55_Rxxx_CBN	

IGUTENSILI

B41

PCD CVD M CBN

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 0°- RR	R 0°- RR	R 0°- RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3	K1.1-K4.2 H1.1-H1.5
	PCD	CVD	CBN

d1	L1	L2	L3	d2	Z	PCD	CVD	CBN
2,0	60	5	10	6,0	1	B41_0200_10_060_PCD	B41_0200_10_060_CVD	B41_0200_10_060_CBN
3,0	60	5	15	6,0	2	B41_0300_15_060_PCD	B41_0300_15_060_CVD	B41_0300_15_060_CBN
4,0	75	5,5	20	6,0	2	B41_0400_20_075_PCD	B41_0400_20_075_CVD	B41_0400_20_075_CBN
6,0	100	6	30	6,0	2	B41_0600_30_100_PCD	B41_0600_30_100_CVD	B41_0600_30_100_CBN
8,0	100	8	30	8,0	2	B41_0800_30_100_PCD	B41_0800_30_100_CVD	B41_0800_30_100_CBN
10,0	100	10	45	10,0	2	B41_1000_45_100_PCD	B41_1000_45_100_CVD	B41_1000_45_100_CBN
12,0	100	12	45	12,0	2	B41_1200_45_100_PCD	B41_1200_45_100_CVD	B41_1200_45_100_CBN
16,0	100	14	45	16,0	2	B41_1600_45_100_PCD	B41_1600_45_100_CVD	B41_1600_45_100_CBN
20,0	100	16	45	20,0	2	B41_2000_45_100_PCD	B41_2000_45_100_CVD	B41_2000_45_100_CBN

DIA

Esempio ordine
Order example

art. d1 L3 L1
B41_0800_30_100_PCD

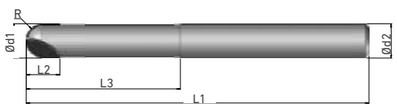
DIA

IGUTENSILI

B51

PCD CVD XL CBN

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 0°- RR	R 0°- RR	R 0°- RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3	K1.1-K4.2 H1.1-H1.5
	PCD	CVD	CBN

d1	L1	L2	L3	d2	Z			
2,0	100	5	20	6,0	1	B51_0200_20_100_PCD	B51_0200_20_100_CVD	B51_0200_20_100_CBN
3,0	100	5	30	6,0	2	B51_0300_30_100_PCD	B51_0300_30_100_CVD	B51_0300_30_100_CBN
4,0	100	5,5	40	6,0	2	B51_0400_40_100_PCD	B51_0400_40_100_CVD	B51_0400_40_100_CBN
6,0	120	6	45	6,0	2	B51_0600_45_100_PCD	B51_0600_45_100_CVD	B51_0600_45_100_CBN
8,0	120	8	45	8,0	2	B51_0800_45_120_PCD	B51_0800_45_120_CVD	B51_0800_45_120_CBN
10,0	150	10	55	10,0	2	B51_1000_55_150_PCD	B51_1000_55_150_CVD	B51_1000_55_150_CBN
12,0	150	12	55	12,0	2	B51_1200_55_150_PCD	B51_1200_55_150_CVD	B51_1200_55_150_CBN
16,0	150	14	55	16,0	2	B51_1600_55_150_PCD	B51_1600_55_150_CVD	B51_1600_55_150_CBN
20,0	150	16	55	20,0	2	B51_2000_55_150_PCD	B51_2000_55_150_CVD	B51_2000_55_150_CBN

Esempio ordine
Order example

art. d1 L3 L1
B51_0800_45_120_PCD

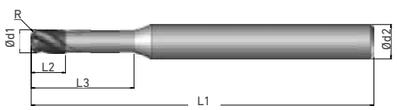
DIA

IGUTENSILI

C01 - C2

PCD

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30°- RR	R 30°- RR
		
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2
	 PCD	 PCD

d1	L1	L2	L3	d2	R	Z		
1,0	**	**	**	**	**	2÷6	C01_1_xx_x_xx_x_x	C2_1_xx_x_xx_x_xxx_x
2,0	**	**	**	**	**	2÷6	C01_2_xx_x_xx_x_x	C2_2_xx_x_xx_x_xxx_x
3,0	**	**	**	**	**	2÷6	C01_3_xx_x_xx_x_x	C2_3_xx_x_xx_x_xxx_x
4,0	**	**	**	**	**	2÷6	C01_4_xx_x_xx_x_x	C2_4_xx_x_xx_x_xxx_x
6,0	**	**	**	**	**	2÷6	C01_6_xx_x_xx_x_x	C2_6_xx_x_xx_x_xxx_x
8,0	**	**	**	**	**	2÷6	C01_8_xx_x_xx_x_x	C2_8_xx_x_xx_x_xxx_x

DIA

SU RICHIESTA
ON REQUEST

Esempio ordine
Order example

art.	d1	L1	L2	L3	d2	Z
C01	6	60	5	30	6	2

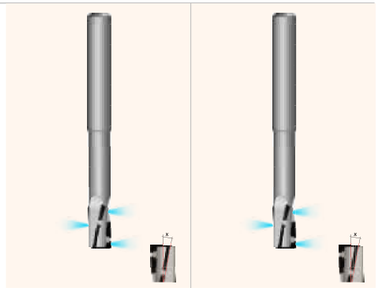
Esempio ordine
Order example

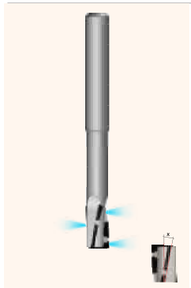
art.	d1	L1	L2	L3	d2	R	Z
C2	6	60	5	30	6	0.5	2

IGUTENSILI

D1 - D2 - D3

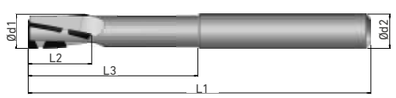
PCD CVD CBN





R 30°- RR | R 30°- RR | R 30°- RR

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3

ELICA VARIABILE
VARIABLE HELIX

PCD

CVD

Uncoated

K1.1-K4.2
H1.1-H1.5

CBN

d1	L1	L2	L3	d2	Z			
10,0	**	**	**	**	2	D1_1000_xxx_xx_xx_xx	D2_1000_xxx_xx_xx_xx	D3_1000_xxx_xx_xx_xx
12,0	**	**	**	**	3	D1_1200_xxx_xx_xx_xx	D2_1200_xxx_xx_xx_xx	D3_1200_xxx_xx_xx_xx
14,0	**	**	**	**	3	D1_1400_xxx_xx_xx_xx	D2_1400_xxx_xx_xx_xx	D3_1400_xxx_xx_xx_xx
16,0	**	**	**	**	3	D1_1600_xxx_xx_xx_xx	D2_1600_xxx_xx_xx_xx	D3_1600_xxx_xx_xx_xx
18,0	**	**	**	**	3	D1_1800_xxx_xx_xx_xx	D2_1800_xxx_xx_xx_xx	D3_1800_xxx_xx_xx_xx
20,0	**	**	**	**	3	D1_2000_xxx_xx_xx_xx	D2_2000_xxx_xx_xx_xx	D3_2000_xxx_xx_xx_xx

DIA

SU RICHIESTA
ON REQUEST

Esempio ordine
Order example

art.	d1	L1	L2	L3	d2
D1_	1000_	100_	10_	50_	10

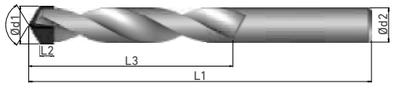
IGUTENSILI

E01

PCD | M

DIN 1897 | 140°

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 30°- RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated

MATERIALI LAVORABILI
WORKING MATERIALS
page 7G • 3

N1.1-N1.6

N4.1-N4.2

PCD

d1	L1	L2	L3	d2	Z	
1,50	32	1	9	1,50	2	**E01_0150_032_009_PCD**
1,99	32	1	9	1,50	2	**E01_0199_032_009_PCD**
2,00	38	1	12	2,00	2	**E01_0200_038_012_PCD**
2,49	38	1	12	2,00	2	**E01_0249_038_012_PCD**
2,50	43	1	14	2,50	2	**E01_0250_043_014_PCD**
2,99	43	1	14	2,50	2	**E01_0299_043_014_PCD**
3,00	46	1,6	16	3,00	2	**E01_0300_046_013_PCD**
3,49	46	1,6	16	3,00	2	**E01_0349_046_013_PCD**
3,50	52	1,6	20	3,50	2	**E01_0350_052_020_PCD**
3,99	52	1,6	20	3,50	2	**E01_0399_052_020_PCD**
4,00	55	2	22	4,00	2	**E01_0400_055_022_PCD**
4,49	55	2	22	4,00	2	**E01_0449_055_022_PCD**
4,50	58	2	24	4,50	2	**E01_0450_058_024_PCD**
4,99	58	2	24	4,50	2	**E01_0499_058_024_PCD**
5,00	62	2	26	5,00	2	**E01_0500_062_026_PCD**
5,49	62	2	26	5,00	2	**E01_0549_062_026_PCD**
5,50	66	2	28	5,50	2	**E01_0550_066_028_PCD**
5,99	66	2	28	5,50	2	**E01_0599_066_028_PCD**
6,00	66	2,7	28	6,00	2	**E01_0600_066_028_PCD**
6,49	66	2,7	28	6,00	2	**E01_0649_066_028_PCD**
6,50	70	2,7	31	6,50	2	**E01_0650_070_031_PCD**
6,99	70	2,7	31	6,50	2	**E01_0699_070_031_PCD**
7,00	74	2,7	34	7,00	2	**E01_0700_074_034_PCD**
7,49	74	2,7	34	7,00	2	**E01_0749_074_034_PCD**
7,50	74	2,7	34	7,50	2	**E01_0750_074_034_PCD**
7,99	74	2,7	34	7,50	2	**E01_0799_074_034_PCD**
8,00	79	2,7	37	8,00	2	**E01_0800_079_037_PCD**
8,49	79	2,7	37	8,00	2	**E01_0849_079_037_PCD**
8,50	79	2,7	37	8,50	2	**E01_0850_079_037_PCD**
8,99	79	2,7	37	8,50	2	**E01_0899_079_037_PCD**
9,00	84	2,7	40	9,00	2	**E01_0900_084_040_PCD**
9,49	84	2,7	40	9,00	2	**E01_0949_084_040_PCD**
9,50	84	2,7	40	9,50	2	**E01_0950_084_040_PCD**
9,99	84	2,7	40	9,50	2	**E01_0999_084_040_PCD**
10,00	89	2,7	43	10,00	2	**E01_1000_089_043_PCD**
10,49	89	2,7	43	10,00	2	**E01_1049_089_043_PCD**
10,50	89	2,7	43	10,50	2	**E01_1050_089_043_PCD**
10,99	89	2,7	43	10,50	2	**E01_1099_089_043_PCD**
11,00	95	2,7	47	11,00	2	**E01_1100_095_047_PCD**
11,49	95	2,7	47	11,00	2	**E01_1149_095_047_PCD**

DIA

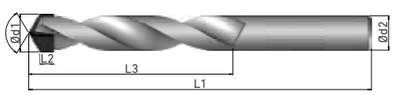
IGUTENSILI

E01

PCD | M

DIN 1897 | 140°

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 30°- RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated

MATERIALI LAVORABILI
WORKING MATERIALS
page 7G • 3

N1.1-N1.6

N4.1-N4.2

PCD

d1	L1	L2	L3	d2	Z	
11,50	95	2,7	47	11,50	2	**E01_1150_095_047_PCD**
11,99	95	2,7	47	11,50	2	**E01_1199_095_047_PCD**
12,00	102	2,7	51	12,00	2	**E01_1200_102_051_PCD**
12,49	102	2,7	51	12,00	2	**E01_1249_102_051_PCD**
14,00	107	3	54	14,00	2	**E01_1400_107_054_PCD**
14,50	107	3	54	14,00	2	**E01_1450_107_054_PCD**
16,00	115	3	58	16,00	2	**E01_1600_115_058_PCD**
16,50	115	3	58	16,00	2	**E01_1650_115_058_PCD**

Esempio ordine
Order example

art. d1 L1 L3
E01_1450_107_054_PCD

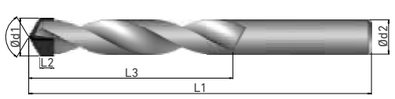
DIA

IGUTENSILI

E11

PCD | XL | DIN 338 | 140°

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 30°- RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT
Uncoated

MATERIALI LAVORABILI
WORKING MATERIALS
page 7G • 3
N1.1-N1.6
N4.1-N4.2

PCD

DIA

d1	L1	L2	L3	d2	Z	
1,50	40	1	18	1,50	2	**E11_0150_040_018_PCD**
1,99	40	1	18	1,50	2	**E11_0199_040_018_PCD**
2,00	49	1	24	2,00	2	**E11_0200_049_024_PCD**
2,49	49	1	24	2,00	2	**E11_0249_049_024_PCD**
2,50	57	1	30	2,50	2	**E11_0250_057_030_PCD**
2,99	57	1	30	2,50	2	**E11_0299_057_030_PCD**
3,00	61	1,6	33	3,00	2	**E11_0300_061_033_PCD**
3,49	61	1,6	33	3,00	2	**E11_0349_061_033_PCD**
3,50	70	1,6	39	3,50	2	**E11_0350_070_039_PCD**
3,99	70	1,6	39	3,50	2	**E11_0399_070_039_PCD**
4,00	75	2	43	4,00	2	**E11_0400_075_043_PCD**
4,49	75	2	43	4,00	2	**E11_0449_075_043_PCD**
4,50	80	2	47	4,50	2	**E11_0450_080_047_PCD**
4,99	80	2	47	4,50	2	**E11_0499_080_047_PCD**
5,00	86	2	52	5,00	2	**E11_0500_086_052_PCD**
5,49	86	2	52	5,00	2	**E11_0549_086_052_PCD**
5,50	93	2	57	5,50	2	**E11_0550_093_057_PCD**
5,99	93	2	57	5,50	2	**E11_0599_093_057_PCD**
6,00	93	2,7	57	6,00	2	**E11_0600_093_057_PCD**
6,49	93	2,7	57	6,00	2	**E11_0649_093_057_PCD**
6,50	101	2,7	63	6,50	2	**E11_0650_101_063_PCD**
6,99	101	2,7	63	6,50	2	**E11_0699_101_063_PCD**
7,00	109	2,7	69	7,00	2	**E11_0700_109_069_PCD**
7,49	109	2,7	69	7,00	2	**E11_0749_109_069_PCD**
7,50	109	2,7	69	7,50	2	**E11_0750_109_069_PCD**
7,99	109	2,7	69	7,50	2	**E11_0799_109_069_PCD**
8,00	117	2,7	75	8,00	2	**E11_0800_117_075_PCD**
8,49	117	2,7	75	8,00	2	**E11_0849_117_075_PCD**
8,50	117	2,7	75	8,50	2	**E11_0850_117_075_PCD**
8,99	117	2,7	75	8,50	2	**E11_0899_117_075_PCD**
9,00	125	2,7	81	9,00	2	**E11_0900_125_081_PCD**
9,49	125	2,7	81	9,00	2	**E11_0949_125_081_PCD**
9,50	125	2,7	81	9,50	2	**E11_0950_125_081_PCD**
9,99	125	2,7	81	9,50	2	**E11_0999_125_081_PCD**
10,00	133	2,7	87	10,00	2	**E11_1000_133_087_PCD**
10,49	133	2,7	87	10,00	2	**E11_1049_133_087_PCD**
10,50	133	2,7	87	10,50	2	**E11_1050_133_087_PCD**
10,99	133	2,7	87	10,50	2	**E11_1099_133_087_PCD**
11,00	142	2,7	94	11,00	2	**E11_1100_142_094_PCD**
11,49	142	2,7	94	11,00	2	**E11_1149_142_094_PCD**

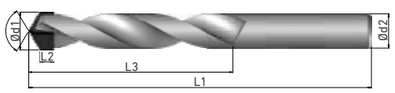
DIA

IGUTENSILI

E11

PCD | XL | DIN 338 | 140°

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 30°- RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT: Uncoated

MATERIALI LAVORABILI
WORKING MATERIALS
page 7G • 3
N1.1-N1.6
N4.1-N4.2


PCD

d1	L1	L2	L3	d2	Z	
11,50	142	2,7	94	11,50	2	**E11_1150_142_094_PCD**
11,99	142	2,7	94	11,50	2	**E11_1199_142_094_PCD**
12,00	151	2,7	101	12,00	2	**E11_1200_115_101_PCD**
12,49	151	2,7	101	12,00	2	**E11_1249_151_101_PCD**
14,00	160	3	108	14,00	2	**E11_1400_160_108_PCD**
14,50	160	3	108	14,00	2	**E11_1450_160_108_PCD**
16,00	178	3	120	16,00	2	**E11_1600_178_120_PCD**
16,50	178	3	120	16,00	2	**E11_1650_178_120_PCD**

DIA

Esempio ordine
Order example

art. d1 L1 L3
E11_1450_160_108_PCD

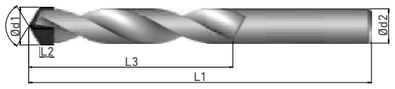
E21

PCD

XXL

140°

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 30°- RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated

MATERIALI LAVORABILI
WORKING MATERIALS
page 7G • 3

N1.1-N1.6

N4.1-N4.2

PCD

d1	L1	L2	L3	d2	Z	
1,50	75	1	30	1,50	2	**E21_0150_075_030_PCD**
1,99	75	1	30	1,50	2	**E21_0199_075_030_PCD**
2,00	75	1	30	2,00	2	**E21_0200_075_030_PCD**
2,49	75	1	30	2,00	2	**E21_0249_075_030_PCD**
2,50	100	1	35	2,50	2	**E21_0250_100_035_PCD**
2,99	100	1	35	2,50	2	**E21_0299_100_035_PCD**
3,00	100	1,6	50	3,00	2	**E21_0300_100_050_PCD**
3,49	100	1,6	50	3,00	2	**E21_0349_100_050_PCD**
3,50	100	1,6	50	3,50	2	**E21_0350_100_050_PCD**
3,99	100	1,6	50	3,50	2	**E21_0399_100_050_PCD**
4,00	100	2	50	4,00	2	**E21_0400_100_050_PCD**
4,49	100	2	50	4,00	2	**E21_0449_100_050_PCD**
4,50	100	2	50	4,50	2	**E21_0450_100_050_PCD**
4,99	100	2	50	4,50	2	**E21_0499_100_047_PCD**
5,00	150	2	75	5,00	2	**E21_0500_086_052_PCD**
5,49	150	2	75	5,00	2	**E21_0549_086_052_PCD**
5,50	150	2	75	5,50	2	**E21_0550_093_057_PCD**
5,99	150	2	75	5,50	2	**E21_0599_093_057_PCD**
6,00	150	2,7	75	6,00	2	**E21_0600_093_057_PCD**
6,49	150	2,7	75	6,00	2	**E21_0649_093_057_PCD**
6,50	150	2,7	75	6,50	2	**E21_0650_101_063_PCD**
6,99	150	2,7	75	6,50	2	**E21_0699_101_063_PCD**
7,00	150	2,7	75	7,00	2	**E21_0700_109_069_PCD**
7,49	150	2,7	75	7,00	2	**E21_0749_109_069_PCD**
7,50	150	2,7	75	7,50	2	**E21_0750_109_069_PCD**
7,99	150	2,7	75	7,50	2	**E21_0799_109_069_PCD**
8,00	150	2,7	75	8,00	2	**E21_0800_117_075_PCD**
8,49	150	2,7	75	8,00	2	**E21_0849_117_075_PCD**
8,50	150	2,7	75	8,50	2	**E21_0850_117_075_PCD**
8,99	150	2,7	75	8,50	2	**E21_0899_117_075_PCD**
9,00	150	2,7	75	9,00	2	**E21_0900_125_081_PCD**
9,49	150	2,7	75	9,00	2	**E21_0949_125_081_PCD**
9,50	150	2,7	75	9,50	2	**E21_0950_125_081_PCD**
9,99	150	2,7	75	9,50	2	**E21_0999_125_081_PCD**
10,00	150	2,7	75	10,00	2	**E21_1000_133_087_PCD**
10,49	150	2,7	75	10,00	2	**E21_1049_133_087_PCD**
10,50	200	2,7	90	10,50	2	**E21_1050_133_087_PCD**
10,99	200	2,7	90	10,50	2	**E21_1099_133_087_PCD**
11,00	200	2,7	90	11,00	2	**E21_1100_142_094_PCD**
11,49	200	2,7	90	11,00	2	**E21_1149_142_094_PCD**

IGUTENSILI

IGUTENSILI

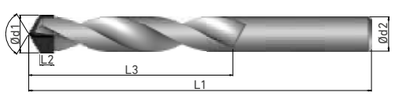
E21

PCD

XXL

140°

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30°- RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2

PCD

d1	L1	L2	L3	d2	Z	
11,50	200	2,7	90	11,50	2	**E21_1150_200_090_PCD**
11,99	200	2,7	90	11,50	2	**E21_1199_200_090_PCD**
12,00	200	2,7	90	12,00	2	**E21_1200_200_090_PCD**
12,49	200	2,7	90	12,00	2	**E21_1249_200_090_PCD**
12,50	200	2,7	90	12,50	2	**E21_1250_200_090_PCD**
12,99	200	2,7	90	12,50	2	**E21_1299_200_090_PCD**
13,00	200	2,7	90	13,00	2	**E21_1300_200_090_PCD**
13,50	200	2,7	90	13,00	2	**E21_1350_200_090_PCD**

DIA

Esempio ordine
Order example

art. d1 L1 L3
E21_1350_200_090_PCD

IGUTENSILI

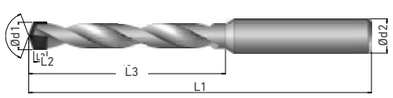
E31

PCD

3xD

140°

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



	R 30°- RR
TRATTAMENTO SUPERFICIALE SURFACE TREATMENT	Uncoated
MATERIALI LAVORABILI WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2

PCD

DIA

d1	L1	L2	L3	d2	Z	
2,50	62	1	20	6,0	2	**E31_0250_062_020_PCD**
3,79	62	1	20	6,0	2	**E31_0379_062_020_PCD**
3,80	66	1,6	24	6,0	2	**E31_0380_066_024_PCD**
4,79	66	1,6	24	6,0	2	**E31_0479_066_024_PCD**
4,80	66	2	28	6,0	2	**E31_0480_066_024_PCD**
6,29	66	2	28	6,0	2	**E31_0629_066_024_PCD**
6,30	79	2	34	8,0	2	**E31_0630_079_034_PCD**
8,49	79	2	34	8,0	2	**E31_0849_079_034_PCD**
8,50	89	2	47	10,0	2	**E31_0850_089_047_PCD**
10,19	89	2	47	10,0	2	**E31_1019_089_047_PCD**
10,20	102	2,7	55	12,0	2	**E31_1020_102_055_PCD**
12,49	102	2,7	55	12,0	2	**E31_1249_102_055_PCD**
12,50	107	2,7	60	14,0	2	**E31_1250_107_060_PCD**
14,00	107	2,7	60	14,0	2	**E31_1400_107_060_PCD**
14,50	115	3	65	16,0	2	**E31_1450_115_065_PCD**
16,50	115	3	65	16,0	2	**E31_1650_115_065_PCD**
18,00	123	3	73	18,0	2	**E31_1800_123_073_PCD**
18,50	123	3	73	18,0	2	**E31_1850_123_073_PCD**
20,00	131	3	79	20,0	2	**E31_2000_131_079_PCD**
20,50	131	3	79	20,0	2	**E31_2050_131_079_PCD**

DIA

Esempio ordine
Order example

art. d1 L1 L3
E31_1450-115_065_PCD

IGUTENSILI

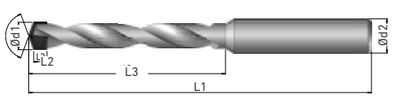
E41

PCD

5xD

140°

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 30°- RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated

MATERIALI LAVORABILI
WORKING MATERIALS
page 7G • 3

N1.1-N1.6

N4.1-N4.2

PCD

DIA

d1	L1	L2	L3	d2	Z	
5,80	66	2	28	6,0	2	**E41_0580_066_028_PCD**
6,29	66	2	28	6,0	2	**E41_0629_066_028_PCD**
6,30	79	2	34	8,0	2	**E41_0630_079_034_PCD**
8,49	79	2	34	8,0	2	**E41_0849_079_034_PCD**
8,50	89	2	47	10,0	2	**E41_0850_089_047_PCD**
10,19	89	2	47	10,0	2	**E41_1019_089_047_PCD**
10,20	102	2,7	55	12,0	2	**E41_1020_102_055_PCD**
12,49	102	2,7	55	12,0	2	**E41_1249_102_055_PCD**
12,50	107	2,7	60	14,0	2	**E41_1250_107_060_PCD**
14,00	107	2,7	60	14,0	2	**E41_1400_107_060_PCD**
14,50	115	3	65	16,0	2	**E41_1450_115_065_PCD**
16,50	115	3	65	16,0	2	**E41_1650_115_065_PCD**
18,00	123	3	73	18,0	2	**E41_1800_123_073_PCD**
18,50	123	3	73	18,0	2	**E41_1850_123_073_PCD**
20,00	131	3	79	20,0	2	**E41_2000_131_079_PCD**
20,50	131	3	79	20,0	2	**E41_2050_131_079_PCD**

Esempio ordine
Order example

art. d1 L1 L3
E41_2000_131_079_PCD

IGUTENSILI

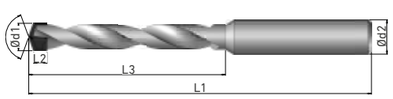
E51

PCD

8xD

140°

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 30°- RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated

MATERIALI LAVORABILI
WORKING MATERIALS
page 7G • 3

N1.1-N1.6

N4.1-N4.2

PCD

d1	L1	L2	L3	d2	Z	
5,80	95	2	57	6,0	2	**E51_0580_095_057_PCD**
6,29	95	2	57	6,0	2	**E51_0629_095_057_PCD**
6,30	114	2	76	8,0	2	**E51_0630_114_076_PCD**
8,49	114	2	76	8,0	2	**E51_0849_114_076_PCD**
8,50	142	2	95	10,0	2	**E51_0850_142_095_PCD**
10,19	142	2	95	10,0	2	**E51_1019_142_095_PCD**
10,20	162	2,7	114	12,0	2	**E51_1020_162_114_PCD**
12,49	162	2,7	114	12,0	2	**E51_1249_162_114_PCD**
12,50	178	2,7	133	14,0	2	**E51_1250_178_133_PCD**
14,00	178	2,7	133	14,0	2	**E51_1400_178_133_PCD**
14,50	203	3	152	16,0	2	**E51_1450_203_152_PCD**
16,50	203	3	152	16,0	2	**E51_1650_203_152_PCD**

DIA

Esempio ordine
Order example

art. d1 L1 L3
E51_0850_142_095_PCD

DIA

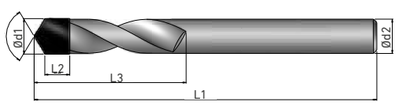
IGUTENSILI

F01

PCD

140°

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 30°- RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated

MATERIALI LAVORABILI
WORKING MATERIALS
page 7G • 3

N1.1-N1.6
N4.1-N4.2

PCD

d1	L1	L2	L3	d2	Z	
0,8 ÷ 1,8	**	1	**	d1=d2	2	F01_xxx_xx_xx_PCD

DIA

DIA

SU RICHIESTA
ON REQUEST

Esempio ordine
Order example

art. d1 L1 L3
F01_0.8_50_20_PCD

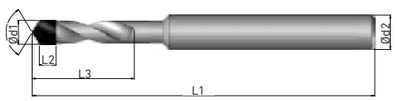
IGUTENSILI

F11

PCD

140°

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



R 30°- RR

TRATTAMENTO SUPERFICIALE
SURFACE TREATMENT

Uncoated

MATERIALI LAVORABILI
WORKING MATERIALS
page 7G • 3

N1.1-N1.6

N4.1-N4.2

PCD

d1	L1	L2	L3	d2	Z	
0,8 ÷ 1,8	**	1	**	3/4/6	2	F11_xxx_xx_xx_x_PCD

DIA

SU RICHIESTA
ON REQUEST

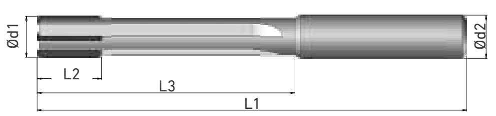
Esempio ordine
Order example

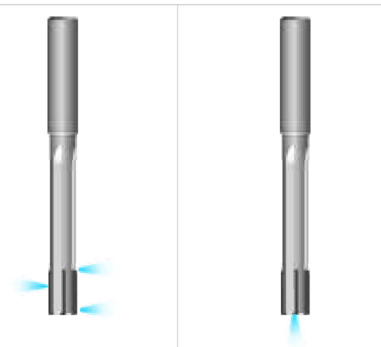
art. d1 L1 L3 d2
F11_0.9_50_15_4_PCD

G01 - G02 - G03
G04 - G05 - G06
G07 - G08 - G09

PCD CVD CBN

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST





	G01	G02	G03	G04	G05	G06	G07	G08	G09
	R 0°- RR	R 0°- RR	R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE / SURFACE TREATMENT	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated
MATERIALI LAVORABILI / WORKING MATERIALS page 7G • 3	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3	K1.1-K4.2 H1.1-H1.5	K1.1-K4.2 H1.1-H1.5	K1.1-K4.2 H1.1-H1.5
	PCD	PCD	PCD	CVD	CVD	CVD	CBN	CBN	CBN

d1	L1	L2	L3	d2	Z									
4,00 ÷ 6,50	**	5	**	**	2	G01_xxxx_xxx_xx_xx	G02_xxxx_xxx_xx_xx	G03_xxxx_xxx_xx_xx	G04_xxxx_xxx_xx_xx	G05_xxxx_xxx_xx_xx	G06_xxxx_xxx_xx_xx	G07_xxxx_xxx_xx_xx	G08_xxxx_xxx_xx_xx	G09_xxxx_xxx_xx_xx
6,51 ÷ 8,50	**	6	**	**	4	G01_xxxx_xxx_xx_xx	G02_xxxx_xxx_xx_xx	G03_xxxx_xxx_xx_xx	G04_xxxx_xxx_xx_xx	G05_xxxx_xxx_xx_xx	G06_xxxx_xxx_xx_xx	G07_xxxx_xxx_xx_xx	G08_xxxx_xxx_xx_xx	G09_xxxx_xxx_xx_xx
8,51 ÷ 10,50	**	6	**	**	4	G01_xxxx_xxx_xx_xx	G02_xxxx_xxx_xx_xx	G03_xxxx_xxx_xx_xx	G04_xxxx_xxx_xx_xx	G05_xxxx_xxx_xx_xx	G06_xxxx_xxx_xx_xx	G07_xxxx_xxx_xx_xx	G08_xxxx_xxx_xx_xx	G09_xxxx_xxx_xx_xx
10,51 ÷ 13,00	**	8	**	**	4	G01_xxxx_xxx_xx_xx	G02_xxxx_xxx_xx_xx	G03_xxxx_xxx_xx_xx	G04_xxxx_xxx_xx_xx	G05_xxxx_xxx_xx_xx	G06_xxxx_xxx_xx_xx	G07_xxxx_xxx_xx_xx	G08_xxxx_xxx_xx_xx	G09_xxxx_xxx_xx_xx
13,01 ÷ 15,00	**	8	**	**	4	G01_xxxx_xxx_xx_xx	G02_xxxx_xxx_xx_xx	G03_xxxx_xxx_xx_xx	G04_xxxx_xxx_xx_xx	G05_xxxx_xxx_xx_xx	G06_xxxx_xxx_xx_xx	G07_xxxx_xxx_xx_xx	G08_xxxx_xxx_xx_xx	G09_xxxx_xxx_xx_xx
15,01 ÷ 17,00	**	8	**	**	4	G01_xxxx_xxx_xx_xx	G02_xxxx_xxx_xx_xx	G03_xxxx_xxx_xx_xx	G04_xxxx_xxx_xx_xx	G05_xxxx_xxx_xx_xx	G06_xxxx_xxx_xx_xx	G07_xxxx_xxx_xx_xx	G08_xxxx_xxx_xx_xx	G09_xxxx_xxx_xx_xx
17,01 ÷ 19,00	**	8	**	**	4	G01_xxxx_xxx_xx_xx	G02_xxxx_xxx_xx_xx	G03_xxxx_xxx_xx_xx	G04_xxxx_xxx_xx_xx	G05_xxxx_xxx_xx_xx	G06_xxxx_xxx_xx_xx	G07_xxxx_xxx_xx_xx	G08_xxxx_xxx_xx_xx	G09_xxxx_xxx_xx_xx
19,01 ÷ 23,00	**	10	**	**	4	G01_xxxx_xxx_xx_xx	G02_xxxx_xxx_xx_xx	G03_xxxx_xxx_xx_xx	G04_xxxx_xxx_xx_xx	G05_xxxx_xxx_xx_xx	G06_xxxx_xxx_xx_xx	G07_xxxx_xxx_xx_xx	G08_xxxx_xxx_xx_xx	G09_xxxx_xxx_xx_xx
23,01 ÷ 26,00	**	10	**	**	6	G01_xxxx_xxx_xx_xx	G02_xxxx_xxx_xx_xx	G03_xxxx_xxx_xx_xx	G04_xxxx_xxx_xx_xx	G05_xxxx_xxx_xx_xx	G06_xxxx_xxx_xx_xx	G07_xxxx_xxx_xx_xx	G08_xxxx_xxx_xx_xx	G09_xxxx_xxx_xx_xx

DIA

Esempio ordine
Order example

art. d1 L1 L3 d2
G01_0901_100_50_10

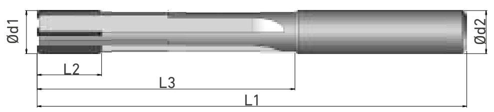
IGUTENSILI

DIA

G11 - G12 - G13
G14 - G15 - G16
G17 - G18 - G19

PCD   CVD   CBN

ESECUZIONI SPECIALI A DISEGNO
CUSTOMIZED DESIGN ON REQUEST



						G11	G12	G13	G14	G15	G16	G17	G18	G19
						R 0°- RR	R 0°- RR	R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR	R 0° - RR
TRATTAMENTO SUPERFICIALE / SURFACE TREATMENT						Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated	Uncoated
MATERIALI LAVORABILI / WORKING MATERIALS page 7G • 3						N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3	N1.1-N1.6 N4.1-N4.2 S1.2-S1.3	K1.1-K4.2 H1.1-H1.5	K1.1-K4.2 H1.1-H1.5	K1.1-K4.2 H1.1-H1.5
						PCD	PCD	PCD	CVD	CVD	CVD	CBN	CBN	CBN
d1	L1	L2	L3	d2	Z									
4,00 ÷ 6,50	**	5	**	**	2	G11_xxxx_xxx_xx_xx	G12_xxxx_xxx_xx_xx	G13_xxxx_xxx_xx_xx	G14_xxxx_xxx_xx_xx	G15_xxxx_xxx_xx_xx	G16_xxxx_xxx_xx_xx	G17_xxxx_xxx_xx_xx	G18_xxxx_xxx_xx_xx	G19_xxxx_xxx_xx_xx
6,51 ÷ 8,50	**	6	**	**	4	G11_xxxx_xxx_xx_xx	G12_xxxx_xxx_xx_xx	G13_xxxx_xxx_xx_xx	G14_xxxx_xxx_xx_xx	G15_xxxx_xxx_xx_xx	G16_xxxx_xxx_xx_xx	G17_xxxx_xxx_xx_xx	G18_xxxx_xxx_xx_xx	G19_xxxx_xxx_xx_xx
8,51 ÷ 10,50	**	6	**	**	4	G11_xxxx_xxx_xx_xx	G12_xxxx_xxx_xx_xx	G13_xxxx_xxx_xx_xx	G14_xxxx_xxx_xx_xx	G15_xxxx_xxx_xx_xx	G16_xxxx_xxx_xx_xx	G17_xxxx_xxx_xx_xx	G18_xxxx_xxx_xx_xx	G19_xxxx_xxx_xx_xx
10,51 ÷ 13,00	**	8	**	**	4	G11_xxxx_xxx_xx_xx	G12_xxxx_xxx_xx_xx	G13_xxxx_xxx_xx_xx	G14_xxxx_xxx_xx_xx	G15_xxxx_xxx_xx_xx	G16_xxxx_xxx_xx_xx	G17_xxxx_xxx_xx_xx	G18_xxxx_xxx_xx_xx	G19_xxxx_xxx_xx_xx
13,01 ÷ 15,00	**	8	**	**	4	G11_xxxx_xxx_xx_xx	G12_xxxx_xxx_xx_xx	G13_xxxx_xxx_xx_xx	G14_xxxx_xxx_xx_xx	G15_xxxx_xxx_xx_xx	G16_xxxx_xxx_xx_xx	G17_xxxx_xxx_xx_xx	G18_xxxx_xxx_xx_xx	G19_xxxx_xxx_xx_xx
15,01 ÷ 17,00	**	8	**	**	4	G11_xxxx_xxx_xx_xx	G12_xxxx_xxx_xx_xx	G13_xxxx_xxx_xx_xx	G14_xxxx_xxx_xx_xx	G15_xxxx_xxx_xx_xx	G16_xxxx_xxx_xx_xx	G17_xxxx_xxx_xx_xx	G18_xxxx_xxx_xx_xx	G19_xxxx_xxx_xx_xx
17,01 ÷ 19,00	**	8	**	**	4	G11_xxxx_xxx_xx_xx	G12_xxxx_xxx_xx_xx	G13_xxxx_xxx_xx_xx	G14_xxxx_xxx_xx_xx	G15_xxxx_xxx_xx_xx	G16_xxxx_xxx_xx_xx	G17_xxxx_xxx_xx_xx	G18_xxxx_xxx_xx_xx	G19_xxxx_xxx_xx_xx
19,01 ÷ 23,00	**	10	**	**	4	G11_xxxx_xxx_xx_xx	G12_xxxx_xxx_xx_xx	G13_xxxx_xxx_xx_xx	G14_xxxx_xxx_xx_xx	G15_xxxx_xxx_xx_xx	G16_xxxx_xxx_xx_xx	G17_xxxx_xxx_xx_xx	G18_xxxx_xxx_xx_xx	G19_xxxx_xxx_xx_xx
23,01 ÷ 26,00	**	10	**	**	6	G11_xxxx_xxx_xx_xx	G12_xxxx_xxx_xx_xx	G13_xxxx_xxx_xx_xx	G14_xxxx_xxx_xx_xx	G15_xxxx_xxx_xx_xx	G16_xxxx_xxx_xx_xx	G17_xxxx_xxx_xx_xx	G18_xxxx_xxx_xx_xx	G19_xxxx_xxx_xx_xx

DIA

Esempio ordine
Order example

art. d1 L1 L3 d2
G01_0901_100_50_10

IGUTENSILI

DIA

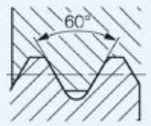
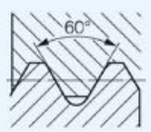
SEZIONE TECNICA

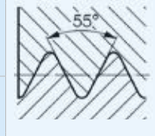
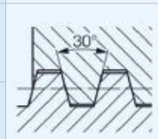
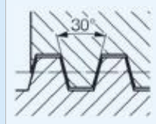
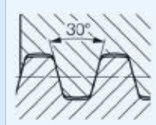
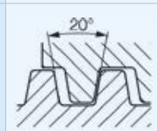
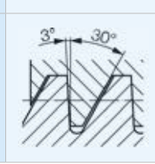
TECHNICAL SECTION

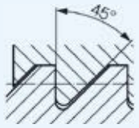
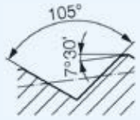
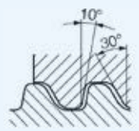
TABELLE FILETTATURE

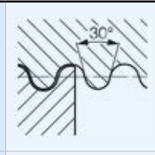
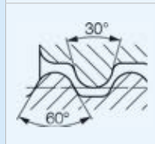
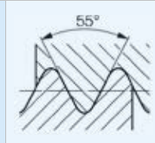
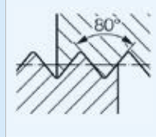
Panoramica della filettatura secondo le norme DIN o le norme ISO (estratto dalla norma DIN 202).

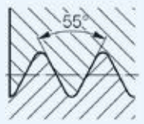
In generale, l'abbreviazione della filettatura include la lettera di identificazione del filetto e il diametro nominale del filetto o la dimensione del filetto. Eventualmente è possibile aggiungere ulteriori informazioni relative all'inclinazione o al numero di giri ogni 25,4 mm, alla tolleranza, mobilità multipla, conicità e mobilità sinistra. Per molte delle filettature secondo gli standard DIN, il numero principale DIN viene indicato nell'abbreviazione per distinguere i filetti metrici ISO. Agli standard specificati nelle tabelle si applica esclusivamente l'ultima edizione della relativa norma.

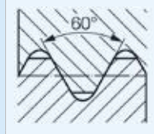
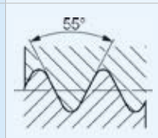
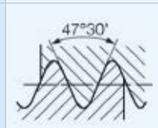
Denominazione	Profilo	Identificazione	Esempio	Dimensione nominale	Normativa	Applicazione	
Filettatura metrica ISO (singola e multipla)		**M**	M0,8	Da 0,3 mm a 0,9 mm	DIN 14-1 BIS	Per orologeria e meccanica di precisione	
					DIN 14-4		
			M8	Da 1 mm a 68 mm	DIN 13-1	Generale (filettatura standard)	
			M24x4 P 2		DIN 13-52		
			M6x0,75	Da 1 mm a 1000 mm	DIN 13-2 BIS	Generale (filettatura sottile)	
			M8x1 LH		DIN 13-11		
			M24x4 P 2		DIN 13-52		
			M30x2 -4H 5H	Da 1,4 mm a 355 mm	LN 9163	Per l'ingegneria aerospaziale	
			M63x1,5	6 mm e 75 mm	DIN EN 60423 o DIN EN 50262	Tubi per installazioni elettriche	
Filettatura metrica ISO con campo tolleranza di transizione (filettatura precedente per il serraggio)			M10 sn 4	Da 3 mm a 150 mm	DIN 13-51	Per estremità avvitate ai perni filettati	Non sigillante
			M10 sk 6				
			M10 Sn 4 stretto	Da 3 mm a 150 mm			Sigillante
Filettatura metrica con grande gioco			M36	Da 12 mm a 180 mm	DIN 2510-2	Per collegamenti a vite con albero di espansione	
Filettatura metrica ISO, filettatura ricevente per inserti filettati		**EG M**	EG M 20	Da 2 mm a 52 mm	DIN 8140-2	Filettatura di montaggio (filettatura standard e sottile) per inserti filettati in filo	
Filettatura metrica ISO per il serraggio		**MFS**	MFS12x1,5	Da 5 mm a 16 mm	DIN 8141-1	Per il serraggio delle leghe colate in alluminio (filettatura standard e sottile)	
Filettatura esterna conica metrica		**M**	M 30 x 2 conico	Da 6 mm a 60 mm	DIN 158-1	Per tappi a vite e ingrassatori	
			M 30 x 2 conico corto				
Filettatura MJ (raggio nucleo allargato o nucleo-0 opposto alla filettatura M)		**MJ**	MJ6x1 -4h 6h	Da 1,6 mm a 39 mm	DIN ISO 5855-1 e DIN ISO 5855-2	Ingegneria aerospaziale	
			MJ6x1 -4H 5H				

Denominazione	Profilo	Identificazione	Esempio	Dimensione nominale	Normativa	Applicazione
Filettatura cilindrica per collegamenti in cui il sigillo non si trova nella filettatura		**G = PF (BSP, BSPF)**	G 1 ½ A G 1 ½ B	da 1/16 a 6	DIN EN ISO 228-1	Filettatura esterna per tubi, raccordi e accessori
			G 1 ½			Filettatura interna per tubi, raccordi e accessori
Filettatura cilindrica per collegamenti in cui il sigillo non si trova nella filettatura		**Rp = PS (BSPP)**	Rp ½	da 1/16 a 6	DIN EN 10226-1	Filettatura interna per tubi filettati e raccordi
			Rp ⅛	da ⅛ a 1 ½	DIN 3858	Filettatura interna per raccordi
Filettatura conica per collegamenti in cui il sigillo si trova nella filettatura		**R**	R ½	da 1/16 a 6	DIN EN 10226-1	Filettatura esterna per tubi filettati e raccordi
			R ⅛ - 1	da ⅛ a 1 ½	DIN 3858	Filettatura esterna per raccordi
		**Rc = PT (BSPT)**	Rc ½	da 1/16 a 6	DIN EN 10226-2	Filettatura interna per tubi filettati e raccordi
Filettatura trapezoidale metrica ISO (singola e multipla)		**Tr**	Tr 40 x 7	da 8 mm a 300 mm	da DIN 103-1 fino a DIN 103-8	Generale
			Tr 40 x 14 P 7			
Filettatura trapezoidale piatta metrica (singola e multipla)			Tr 40 x 7		DIN 380-1 e DIN 380-2	
			Tr 40 x 14 P 7			
Filettatura trapezoidale (singola e multipla) con gioco			Tr 48 x 12	48 mm	DIN 263-1 e DIN 263-2	Per veicoli ferroviari
			Tr 40 x 16 P 8	40 mm		
			Tr 32 x 1,5	da 12 mm a 32 mm	DIN 6341-2	Per pinze (ferroviarie)
Filettatura trapezoidale arrotondata			Tr 40 x 5	da 26 mm a 80 mm	DIN 30295-1 e DIN 30295-2	Per veicoli ferroviari
Filettatura trapezoidale		**KT**	KT 22	da 10 mm a 50 mm	DIN 6063-2	Per contenitori di plastica nell'industria dell'imballaggio
Filettatura trapezoidale piatta metrica (singola e multipla)		**S**	S 48 x 8 S 40 x 17 P 7	da 10 mm a 640 mm	da DIN 513-1 fino a DIN 513-3	Generale

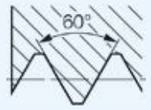
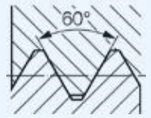
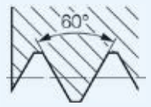
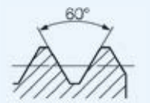
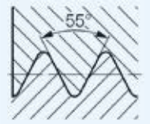
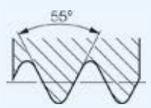
Denominazione	Profilo	Identificazione	Esempio	Dimensione nominale	Normativa	Applicazione
Filetto seghettato a 45°			S 630 x 20	Da 100 mm a 1250 mm	DIN 2781	Per presse idrauliche
Filettatura esterna conica autoformante		**S**	S 8 x 1	Da 6 mm a 10 mm	DIN 71412	Per ingrassatore
Filetto seghettato			S 25 x 1,5	Da 6 mm a 40 mm	DIN 20401	Nel settore minerario
		**S**	S 22 (filetto femmina)	Da 10 mm a 50 mm	DIN 55525	Per contenitori in plastica e vetro nell'industria dell'imballaggio
		gS	GS 22 (filettatura a bullone per contenitori di vetro)			
		KS	KS 22 (filettatura a bullone per contenitori di plastica)			
		**KS**	KS 22	Da 10 mm a 60 mm	DIN 6063-1	Per contenitori di plastica nell'industria dell'imballaggio
Filettatura cilindrica rotonda (singola e multipla)		**Rd**	Rd 40 x 1/6 Rd 40 x ⅓ P 1/6	Da 8 mm a 200 mm	DIN 405-1 DIN 405-2	Generale
Filettatura cilindrica rotonda			Rd 40 x 5	Da 10 mm a 300 mm	DIN 20400	Con grande profondità di carico nel settore minerario
			Rd 80 x 10	Da 50 mm a 320 mm	DIN 15403	Per ganci di carico
		**Rd**	Rd 70	Da 20 mm a 100 mm	DIN 7273-1	Per componenti in lamiera e relative tubolature saldate
Filetto cilindrico rotondo con gioco e flangia graduata. con inclinazione 7mm		**Rd**	Rd 59 x 7	Da 34 mm a 79 mm	DIN 262-1 e DIN 262-2	Per veicoli ferroviari
			Rd 59 x 7 Sinistro			

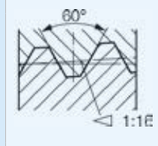
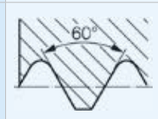
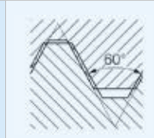
Denominazione	Profilo	Identificazione	Esempio	Dimensione nominale	Normativa	Applicazione
Filetto cilindrico rotondo con gioco e flangia piatta. con inclinazione 7mm		**Rd**	Rd 50 x 7	50 mm	DIN 262-1 e DIN 262-2	Per veicoli ferroviari
			Rd 50 x 7 Sinistro			
Filettatura cilindrica rotonda		**Rd**	Rd 110 x ⅓	110 mm	DIN 3182-1	Per equipaggiamento di protezione respiratoria e attrezzatura subacquea
			Rd 40 x 1⁄7	40 mm	DIN EN 148-1	Per equipaggiamento di protezione respiratoria
		**GL**	GL 25 x 3	8 mm a 125 mm	DIN 168-1	Per contenitori di vetro
Filettatura elettrica		**E**	E 27	Da 14 mm a 33 mm	DIN 40400	Per fusibili D; supporti e portalampade
			E 5	Da 5 mm a 40 mm	DIN EN 60061-1	Per supporti e portalampade
		-	28 x 2	Da 20,8 mm a 45 mm	DIN EN 60399	Filettatura tonda per portalampade e ghiere portalampada
Filettatura cilindrica Whitworth		**W**	W 3⁄16	3⁄16	DIN 49301	Per fusibili-D
Filettatura per guaina in acciaio		**PG**	Pg 21	Da 7 mm a 48 mm	DIN 40430	Nell' ingegneria elettrica
Filettatura per viti metalliche		**ST**	ST 3,5	Da 1,5 mm a 9,5 mm	DIN EN ISO 1478	Per viti autofilettanti
Filettatura per legno		**-**	4	Da 1,6 mm a 20 mm	DIN 7998	Per viti da legno
Filettatura per biciclette		**FG**	FG 9,5	Da 2 mm a 34,8 mm	DIN 79012	Per biciclette e ciclomotori
		-	1,375 – 24 6H/6g	1,375	DIN ISO 6698	Pignoni di ruote libere e mozzi di biciclette
Filettatura della valvola		**VG**	Vg 12	Da 5 mm a 12 mm	DIN 7756	Valvole per pneumatici di veicoli
		V	8V1	Da 5,2 mm a 20,5 mm	ISO 4570	

Denominazione	Profilo	Identificazione	Esempio	Dimensione nominale	Normativa	Applicazione
Filettatura conica Whitworth		**E17 17E**	E 17 con 17E (precedentemente: W19,8x 1/14 conica)	19,8 mm	DIN EN 144-1 DIN EN ISO 11116-1	Gambo di collegamento delle bombole del gas
		25E	25E (precedentemente: W28,8x 1/14 conica)	28,8 mm	DIN EN 629-1 ISO 10920	
		W	W31,3 1/14 conica	31,3 mm	DIN 477-1	
Filettatura cilindrica Whitworth		**W**	W 21,8 x 1/14 cil.	21,8 mm 24,32 mm 25,4 mm	DIN 477-1	Supporti laterali delle valvole delle bombole del gas
			W 80 x 1/11	80 mm	DIN EN 962	Per cappucci protettivi delle bombole del gas
Filetto RMS		**RMS**	W 0,8 x 1/36	20,32 mm	DIN 58888	Per lenti per microscopio
Filetto conico per trapano		**Gg**	Gg 4 ½	3 1/2 4 1/2 5 1/2 6 5/8	DIN 20314	Nel settore minerario

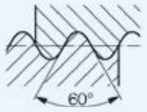
Denominazione	Profilo	Identificazione	Esempio	Normativa	Paese
Filettatura unificata con viti di piccole dimensioni		**UNM**	0.80 UNM	ASA B1.10	USA
Filettatura unificata		**UN** **UNC** **UNF** **UNEF** **UNS**	¼ - 20 UNC - 2A o 0.250 - 20 UNC - 2A Nr. 6 (0.138)-32 UNC-2A [2]	ASME B1.1 BS 1580	USA REGNO UNITO
		UNR **UNRC** **UNRF** **UNREF** **UNRS** [1]	7/16 - 20 UNRF-2A o 0.4375 - 20 UNRF-2A	ASME B1.1	USA
		UNJ **UNJC** **UNJF** **UNJEF**	0.250 - 28 UNJF-3A	ASME B1.15 BS 4084	USA REGNO UNITO
Filettatura americana (obsoleta)		**NC** **NF** **NEF** **NS** **N**	Nr. 12-32 NEF-2	ASA B1.1 (obsoleta)	USA
Filettatura Whitworth		**BSW** **BSF**	¼ in. - 20 BSW	BS 84	REGNO UNITO
Filettatura B.A.		**B.A.**	11 B.A.	BS 93	

[1] Filettatura esterna con filettatura arrotondata.
[2] Per diametro della filettatura inferiore a ¼ di pollice.

Tubo filettato cilindrico		**NPSC**	⅛ - 27 NPSC	ANSI/ASME B1.20.1	USA
		**NPSM** **NPSL**			
		NPSH **NH** **NHR**	½ - 14 NPSH ¾ - 11.5 NH	ASME B1.20.7	
		**NPSF** **NPSI**	⅛ - 28 NPSF	ASME B1.20.3	
		**NGO**	0.903-14 NGO-RH-EXT	CGA V-1	
Tubo filettato cilindrico		**G = PF** **(BSPF, BSP)**	G 1 ¼	BS 2779	REGNO UNITO
		**Rp = PS** **(BSPP)**	Rp ¼	BS 21 ISO 7/1	

Filettatura conica		**NPT** **NPTR**	⅜ - 18 NPT	ANSI/ASME B1.20.1	USA
		NPTF **PTF-SAE-SHORT** **PTF-SPL-SHORT** **PTF-SPL-EXTRA** **SHORT** **SPL-PTF**	1/8 - 27 NPTF-1 [1]	ANSI B1.20.3	
		NGT	⅛ - 27 NGT	CGA V-1	
		**R**	R ½	BS 21 ISO 7/1	REGNO UNITO
		**Rc = PT** **(BSPT)**	Rc ½		
Inserti filettati		**UNC-STI** **UNF-STI**	¼ - 20 UNC-2B-STI o 0.125 - 20 UNC-2B-STI	ASME B18.29.1	USA
Filettatura di serraggio		**NC-5 IF** **NC-5 HF** **u.a.**	½ - 13 NC-5-IF o 0.500 - 13 NC-5-IF	ASME/ANSI B1.12	
Filetto microscopio		**AMO**	0.800 - 36 AMO	ASA B1.11	
Filettatura trapezoidale		**ACME**	1 ¾ - 4 ACME-2G	ASME B1.5	
				BS 1104	REGNO UNITO
		**STUB-Acme**	0.500 - 20 STUB ACME	ANSI B1.8	USA

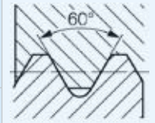
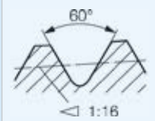
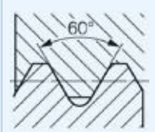
[1] -1 o -2 è la classe di filettatura NPTF; -1 è un sistema di serraggio senza controllo dell' appiattimento della base e delle punte;
-2 è la classe di filettatura NPTF; -1 è un sistema di serraggio con controllo dell'appiattimento della base e delle punte {= nuovo sistema di serraggio secondo ANSI B1.20.5).;

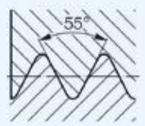
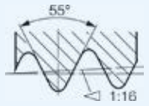
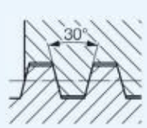
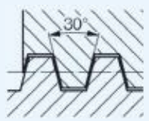
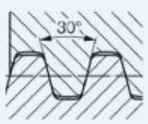
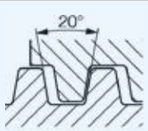
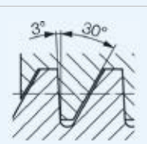
Filetto seghettato		**BUTT**	2.5 - 8 BUTT-2A	ANSI B1.9	USA
		Buttress	2.0 BS Filetto buttress 8 tpi classe media	BS 1657	REGNO UNITO
		**ART**	ART 120 x 8 Gg.	NF E 03-611	FRANCIA
Filettatura per biciclette		**BSC**	¼ - 26 BSC-Med.	BS 811	REGNO UNITO
Filetto API (filettatura dell'American Petroleum Institute per l'industria petrolifera)		**CSG, LCSG, BCSG, XCSG, LP, TBG, UP TBG**	4 ½ API TBG	API Std 5 B	USA
		NC ROTARY REG LH FH IF	API 4 IF THD	API Spec 7	
		Aste di pompaggio	API-SR ¾ 1 1⁄16 - 10 Box-2B	API Spec 11 B	

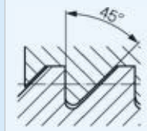
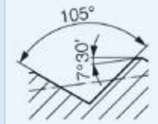
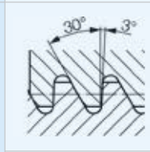
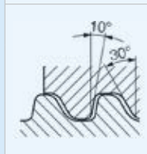
THREAD TABLES

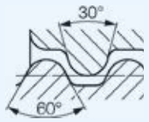
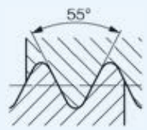
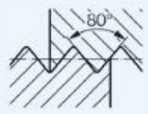
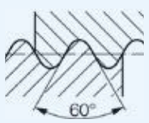
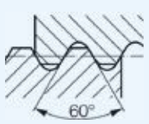
Thread overview according to DIN standards or ISO standards (excerpt from DIN 202)

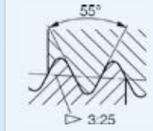
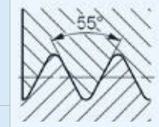
In general, the thread abbreviation includes the thread code and the nominal thread diameter or thread size. Additional information for pitch or number of turns per 25.4 mm, tolerance, multi-thread, tapering, and left-hand mobility may be added. For many threads according to DIN standards, the main DIN number is given in the abbreviation to distinguish them from metric ISO threads. Only the latest edition of the relevant standard applies to the standards specified in the tables.

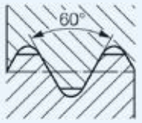
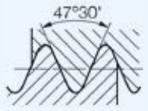
Designation	Profile	Code letters	Examples	Nominal size	Normative	Application	
Metric ISO thread (single or multi-threaded)		**M**	M0,8	0,3 mm to 0,9 mm	DIN 14-1 BIS	For watches and precision engineering	
					DIN 14-4		
			M8	1 mm to 68 mm	DIN 13-1	General (coarse)	
			M24x4 P 2		DIN 13-52		
			M6x0,75	1 mm to 1000 mm	DIN 13-2 BIS	General (fine thread)	
			M8x1 LH		DIN 13-11		
			M24x4 P 2		DIN 13-52		
			M30x2 -4H 5H	1,4 mm to 355 mm	LN 9163	For aeronautics and space	
			M63x1,5	6 mm and 75 mm	DIN EN 60423 or DIN EN 50262	Electrical installation pipes	
Metric ISO thread with transition fit (former thread for force fit)			M10 sn 4	3 mm to 150 mm	DIN 13-51	For screwed ends at stud bolts filettati	Not sealing
			M10 Sn 4				Sealing
Large-clearance metric thread			M36	12 mm to 180 mm	DIN 2510-2	For screw connections with expansion shaft	
Metric ISO thread, mounting thread for threaded inserts		**EG M**	EG M 20	2 mm to 52 mm	DIN 8140-2	Mounting thread (stanFromrd and fine thread) for threaded inserts made of wire	
Metric ISO thread for tight fit		**MFS**	MFS12x1,5	5 mm to 16 mm	DIN 8141-1	For tight fit in aluminium casting alloys (regular and fine thread)	
Metric tapered external thread		**M**	M 30 x 2	6 mm to 60 mm	DIN 158-1	For locking screws and grease	
			M 30 x 2				
MJ-thread (enlarged core radius or core-0 compared with the M-thread)		**MJ**	MJ6x1 -4h 6h	1,6 mm to 39 mm	DIN ISO 5855-1 and DIN ISO 5855-2	Air and space	
			MJ6x1 -4H 5H				

Designation	Profile	Code letters	Examples	Nominal size	Normative	Application
Cylindrical pipe thread for connections that do not seal in the thread		**G = PF (BSP, BSPF)**	G 1 ½ A G 1 ½ B	1/16 to 6	DIN EN ISO 228-1	External thread for pipes, pipe connections and fittings
			G 1 ½			Female thread for pipes, pipe connections and fittings
Cylindrical pipe thread for connections that seal in the thread		**Rp = PS (BSPP)**	Rp ½	1/16 to 6	DIN EN 10226-1	Female thread for threaded pipes and fittings
			Rp ⅛	⅛ to 1 ½	DIN 3858	Female thread for pipe fittings
Tapered pipe thread for connections that seal in the thread		**R**	R ½	1/16 to 6	DIN EN 10226-1	Male thread for threaded pipes and fittings
			R ⅛ - 1	⅛ to 1 ½	DIN 3858	Male thread for pipe fittings
		**Rc = PT (BSPT)**	Rc ½	1/16 to 6	DIN EN 10226-2	Female thread for threaded pipes and fittings
Metric ISO trapezoidal thread (single or multi-threaded)		**Tr**	Tr 40 x 7	8 mm to 300 mm	DIN 103-1 to DIN 103-8	General
			Tr 40 x 14 P 7			
Flat metric ISO trapezoidal thread (single or multi-threaded)			Tr 40 x 7		DIN 380-1 and DIN 380-2	
			Tr 40 x 14 P 7			
Trapezoidal thread (single or dual threaded) with clearance			Tr 48 x 12	48 mm	DIN 263-1 and DIN 263-2	For rail vehicles
			Tr 40 x 16 P 8	40 mm		
			Tr 32 x 1,5	12 mm to 32 mm	DIN 6341-2	For (pull) clamping jaws
Rounded trapezoidal thread			Tr 40 x 5	26 mm to 80 mm	DIN 30295-1 and DIN 30295-2	For rail vehicles
Trapezoidal thread		**KT**	KT 22	10 mm to 50 mm	DIN 6063-2	For plastic containers in the packaging industry
Metric saw thread (single or multi-threaded)		**S**	S 48 x 8 S 40 x 17 P 7	10 mm to 640 mm	DIN 513-1 to DIN 513-3	General

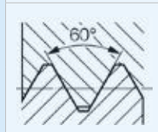
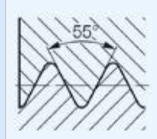
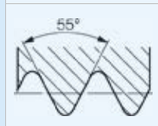
Designation	Profile	Code letters	Examples	Nominal size	Normative	Application
Buttress thread 45°		**S**	S 630 x 20	100 mm to 1250 mm	DIN 2781	For hydraulic presses
Self-tapping tapered male thread			S 8 x 1	6 mm to 10 mm	DIN 71412	For conical grease nipple
Buttress thread			S 25 x 1,5	6 mm to 40 mm	DIN 20401	In mining
		**S**	S 22 (nut thread)	10 mm to 50 mm	DIN 55525	For plastic and glass containers in the packaging industry
		gS	GS 22 (bolt thread for glass containers)			
		KS	KS 22 (bolt thread for plastic containers)			
		**KS**	KS 22	10 mm to 60 mm	DIN 6063-1	For plastic containers in the packaging industry
Cylindrical round thread (single or multi-threaded)		**Rd**	Rd 40 x 1/6 Rd 40 x ⅓ P 1/6	8 mm to 200 mm	DIN 405-1 and DIN 405-2	General
Cylindrical round thread			Rd 40 x 5	10 mm to 300 mm	DIN 20400	With large load-bearing depth
			Rd 80 x 10	50 mm to 320 mm	DIN 15403	For load hooks
		**Rd**	Rd 70	20 mm to 100 mm	DIN 7273-1	For sheet metal parts and associated fittings
Cylindrical round thread with clearance and steep flank, with 7mm pitch		**Rd**	Rd 59 x 7	34 mm to 79 mm	DIN 262-1 and DIN 262-2	For rail vehicles
			Rd 59 x 7 left			
Cylindrical round thread with clearance and flat flank, with 7mm pitch		**Rd**	Rd 50 x 7	50 mm	DIN 262-1 and DIN 262-2	For rail vehicles
			Rd 50 x 7 left			

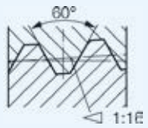
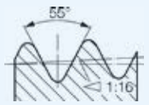
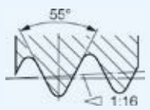
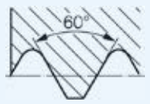
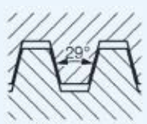
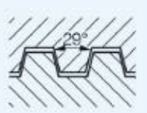
Designation	Profile	Code letters	Examples	Nominal size	Normative	Application
Cylindrical round thread		**Rd**	Rd 50 x 7	110 mm	DIN 3182-1	For respiratory protective equipment and diving equipment
			Rd 50 x 7 left	40 mm	DIN EN 148-1	For respiratory protective equipment
		**GL**	GL 25 x 3	8 mm to 125 mm	DIN 168-1	For glass containers
Electric thread		**E**	E 27	14 mm to 33 mm	DIN 40400	For D fuses; lamp sockets and lamp holders
			E 5	5 mm to 40 mm	DIN EN 60061-1	For lamp sockets and lamp holders
		-	28 x 2	20,8 mm to 45 mm	DIN EN 60399	Barrel thread for lamp holders and faceplate rings
Cylindrical Whitworth thread		**W**	W 3⁄16	3⁄16	DIN 49301	For D fuses
Steel conduit thread		**PG**	Pg 21	7 mm to 48 mm	DIN 40430	In electrical engineering
Sheet-metal screw thread		**ST**	ST 3,5	1,5 mm to 9,5 mm	DIN EN ISO 1478	For sheet metal screws
Wood screw thread		-	4	1,6 mm to 20 mm	DIN 7998	For wood screws
Bicycle thread		**FG**	FG 9,5	2 mm to 34,8 mm	DIN 79012	For bicycles and mopeds
		-	1,375 - 24 6H/6g	1,375	DIN ISO 6698	Free-wheel sprockets and hubs of bicycles
Valve thread		**VG**	Vg 12	5 mm to 12 mm	DIN 7756	Valves for vehicle tires
		V	8V1	5,2 mm to 20,5 mm	ISO 4570	

Designation	Profile	Code letters	Examples	Nominal size	Normative	Application
Tapered Whitworth thread		**E17 17E**	E 17 con 17E (precedentemente: W19,8x1/14 conica)	19,8 mm	DIN EN 144-1 DIN EN ISO 11116-1	Fitting of gas cylinders
		25E	E 17 con 17E (former: W19.8x1/14 con.)	28,8 mm	DIN EN 629-1 ISO 10920	
		W	25E (former: W28.8x1/14 con.)	31,3 mm	DIN 477-1	
Cylindrical Whitworth thread		**W**	W 21.8 x V14 cyl.	21,8 mm 24,32 mm 25,4 mm	DIN 477-1	Lateral connection of gas cylinder valves
			W 80 x 1/11	80 mm	DIN EN 962	For protective caps of gas cylinders
RMS thread		**RMS**	W 0,8 x 1/36	20,32 mm	DIN 58888	For microscope lenses
Tapered rod pipe thread		**Gg**	Gg 4 ½	3 ½ 4 ½ 5 ½ 6 ⅝	DIN 20314	In mining

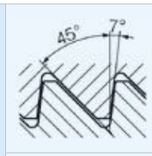
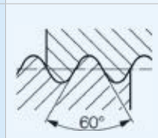
Designation	Profile	Code letters	Examples	Normative	Country
Unified small screw thread		**UNM**	0.80 UNM	ASA B1.10	USA
Unified screw thread		**UN** **UNC** **UNF** **UNEF** **UNS**	¼ - 20 UNC - 2A or 0.250 - 20 UNC - 2A Nr. 6 (0.138)-32 UNC-2A [2]	ASME B1.1 BS 1580	USA UNITED KINGDOM
		UNR **UNRC** **UNRF** [1] **UNREF** **UNRS**	7/16 - 20 UNRF-2A or 0.4375 - 20 UNRF-2A	ASME B1.1	USA
		UNJ **UNJC** **UNJF** **UNJEF**	0.250 - 28 UNJF-3A	ASME B1.15 BS 4084	US UNITED KINGDOM
American screw thread (obsolete)		**NC** **NF** **NEF** **NS** **N**	Nr. 12-32 NEF-2	ASA B1.1 (obsolete)	USA
Whitworth thread		**BSW** **BSF**	¼ in. - 20 BSW	BS 84	UNITED KINGDOM
B.A. thread		**B.A.**	11 B.A.	BS 93	

[1] Male thread with a rounded thread base
[2] For thread diameter of less than ¼ inch.

Cylindrical pipe thread		**NPSC**	⅛ - 27 NPSC	ANSI/ASME B1.20.1	USA
		**NPSM** **NPSL**			
		NPSH **NH** **NHR**	½ - 14 NPSH ¾ - 11.5 NH	ASME B1.20.7	
		**NPSF** **NPSI**	⅛ - 28 NPSF	ASME B1.20.3	
		**NGO**	0.903-14 NGO-RH-EXT	CGA V-1	
Cylindrical pipe thread		**G = PF** **(BSPF, BSP)**	G 1 ¼	BS 2779	UNITED KINGDOM
		**Rp = PS** **(BSPP)**	Rp ¼	BS 21 ISO 7/1	

Tapered pipe thread		**NPT** **NPTR**	⅜ - 18 NPT	ANSI/ASME B1.20.1	USA
		NPTF **PTF-SAE-SHORT** **PTF-SPL-SHORT** **PTF-SPL-EXTRA** **SHORT** **SPL-PTF**	⅛ - 27 NPTF-1 [1]	ANSI B1.20.3	
		NGT	⅛ - 27 NGT	CGA V-1	
		**R**	R ½	BS 21 ISO 7/1	UNITED KINGDOM
		**Rc = PT** **(BSPT)**	Rc ½		
Threaded wire insert thread		**UNC-STI** **UNF-STI**	¼ - 20 UNC-2B-STI or 0.125 - 20 UNC-2B-STI	ASME B18.29.1	
Interference fit thread		**NC-5 IF** **NC-5 HF** **u.a.**	½ - 13 NC-5-IF or 0.500 - 13 NC-5-IF	ASME/ANSI B1.12	USA
Microscope thread		**AMO**	0.800 - 36 AMO	ASA B1.11	
Trapezoidal thread		**ACME**	1 ¾ - 4 ACME-2G	ASME B1.5	
				BS 1104	UNITED KINGDOM
		**STUB-Acme**	0.500 - 20 STUB ACME	ANSI B1.8	USA

[1] -1 or -2 is NPTF thread class; -1 is a teaching system without checking the ground and top flattening;
-2 is a teaching system with checking the ground and top flattening {= new teaching system according to ANSI B1.20.5) secondo ANSI B1.20.5).;

Buttress thread		**BUTT**	2.5 - 8 BUTT-2A	ANSI B1.9	USA
		Buttress	2.0 BS Buttress thread 8 tpi medium class	BS 1657	UNITED KINGDOM
		**ART**	ART 120 x 8 Gg.	NF E 03-611	FRANCE
Bicycle thread		**BSC**	¼ - 26 BSC-Med.	BS 811	UNITED KINGDOM
API thread (thread of the American Petroleum Institute for the petroleum industry)		**CSG,** **LCSG,** **BCSG,** **XCSG,** **LP,** **TBG,** **UP** **TBG**	4 ½ API TBG	API Std 5 B	USA
		NC **ROTARY** **REG** **LH** **FH** **IF**	API 4 IF THD	API Spec 7	
		Sucker rods	API-SR ¾ 1 1/16 - 10 Box-2B	API Spec 11 B	

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Comparazione internazionale dei materiali

International comparison of materials

	Rm [N/mm2]	Rockwell [HRC]	Mat.-Nr.	DIN	AFNOR	BS	EN		UNI	UNE	JIS	SIS	AISI/SAE/ASTM	
P	Acciai alta velocità - Free-cutting steel, etc.													P
1.1	> 500		1.0711	9s20	-	220 M 07	-		CF 9 S 22	-	SUM 21	-	1212	1.1
1.1	380 - 570		1.0715	9SMn28	S 250	230 M 07	-		CF 9 SMn 28	11SMn28	SUM 22	1912	1213	1.1
1.1	380 - 570		1.0718	9SMnPb28	S 250 Pb	-	-		CF 9 SMnPb 2	11SMnPb28	SUM 22 L	1914	12 L 13	1.1
1.1	360 - 530		1.0721	10S20	10 F 1	210 M 15	-		CF 10 S 20	10S20	-	-	1108	1.1
1.1	360 - 530		1.0722	10SPb20	10 PbF 2	-	-		CF 10 SPb 20	10SPb20	-	-	11 L 08	1.1
1.1	380 - 570		1.0723	15S20	-	210 A 15	-		-	F.210.F	SUM 32	1922	-	1.1
1.1	390 - 590		1.0736	9SMn36	S 300	240 M 07	1B		CF 9 SMn 36	12SMn36		-	1215	1.1
1.1	390 - 580		1.0737	9SMnPb36	S 300 Pb	-	-		CF 9 SMnPb 36	12SMnPb36	-	1926	12 L 14	1.1
1.2	580 - 730		1.0726	35S20	35 MF 4	212 M 36	8M		-	F210G	-	1957	1140	1.2
1.2	660 - 800		1.0727	45S20	45 MF 4	212 M 44	-		-	-	-	1973	1146	1.2
1.2	740 - 880		1.0728	60S20	60 MF 4	-	-		-	-	-	-	-	1.2
P	Acciai da costruzione - Costruction steels													
1.1	440 - 590		1.5415	15Mo3	15 D 3	1501-240	-		16 Mo 3	16Mo3	-	2912	A 204; Gr. A	1.1
1.1	450 - 590		1.5423	16Mo5	-	1503-245-420	-		16 Mo 5	16Mo5	-	-	4520	1.1
2.1	490 - 640		1.5622	14Ni6	16 N 6	-	-		14 Ni 6	15Ni6	-	-	A 350-LF 5	2.1
2.1	530 - 710		1.5680	12Ni19	Z 18 N 5	-	-		-	-	-	-	2515	2.1
2.1	450 - 660		1.7335	13CrMo4-4	15 CD 3.5	1501-620 Gr. 27	-		14 CrMo 4 5	14CrMo45	-	2216	A 182-F11; F12	2.1
2.1	540 - 690		1.7337	16CrMo4-4	15 CD 4.5	1501-620 Gr. 27	-		15 CrMo 4 5	-	-	2216	A 387; Gr. 12 C	2.1
2.1	480 - 630		1.7380	10CrMo9-10	10 CD 9.10	1501-622 Gr. 31; 45	-		12 CrMo 9 10	-	-	2218	A 182-F22	2.1
3.1	700 - 850		1.7709	21CrMoV5-7	-	-	-		-	-	-	-		3.1
2.1	490 - 640		1.7715	14MoV6-3	14 Mo 6	1503-660-440	-		-	13MoCrV6	-	-		2.1
P	Acciai strutturali non legati - Unalloyed construction steels													
1.1	> 500		1.0037	St37-2	-	-	-		-	-	STKM 12 C	-	-	1.1
1.1	410 - 560		1.0044	St44-2	E 28-2	4360-43 B	-		Fe 430 B FN	-	SM 41 B	1412	A 570; Gr. 40	1.1
1.1	340 - 470		1.0116	St37-3	E 24-3; E 24-4	4360-40 C	-		Fe 360 D FF	-	-	1312; 1313	A 573; Gr. 58	1.1
1.1	410 - 560		1.0144	St44-3	E 28-3; E 28-4	4360-43 C	-		Fe 430 D FF	-	SM 41 C	1412; 1414	A 573; Gr. 70	1.1
2.1	470 - 610		1.0050	St50-2	A 50-2	4360-50 B	-		Fe 490	-	SS 50	2172	A 570; Gr. 50	2.1
2.1	490 - 630		1.0570	St52-3	E 36-3; E 36-4	4360-50 B	-		Fe 510 B; C; D	-	SM 50 YA	2132	-	2.1
2.1	570 - 710		1.0060	St60-2	A 60-2	4360-SSE; SS	-		Fe 590; Fe 600	-	SM 58	-	-	2.1
1.1	340 - 470		1.0038	RSt37-2	E24-2 Ne	4360 40C	1A		-	-	STKM 12A;C	1311	A570.36	1.1
P	Fusione d'acciaio - Steel castings													
2.1	> 380		1.0420	GS-38	-	AM 1	-		-	-	-	-	A 27	2.1
2.1	700 - 800		1.1118	GS-24Mn6	-	-	-		-	-	-	-	-	2.1
2.1	480 - 620		1.1120	GS-20Mn5	-	-	-		-	F.8310	-	-	-	2.1
2.1	> 500		1.5419	GS-22Mo4	-	245	-		-	-	SCPH 11	-	-	2.1
2.1	> 500		1.5633	GS-24Ni8	-	-	-		-	-	-	-	-	2.1
2.1	> 500		1.5681	GS-10Ni19	-	-	-		-	-	-	-	A 757	2.1
2.1	> 500		1.6309	GS-20MnMoNi5-5	-	-	-		-	-	-	-	-	2.1
3.1	< 850		1.6582	GS-34CrNiMo6	-	-	24		-	-	SNCM 9	2541	-	3.1
3.1	> 800		1.6748	GS-40NiCrMo6-5-6	-	-	-		-	-	-	-	-	3.1
3.1	> 800		1.6750	GS-20NiCrMo3-7	-	-	-		-	-	-	-	-	3.1
3.1	> 800		1.6760	GS-22NiMoCr5-6	-	-	-		-	-	-	-	-	3.1
2.1	490 - 640		1.7357	GS-17CrMo5-5	-	621	-		-	F-8383	SCPH 21	-	A 217	2.1
2.1	> 500		1.7379	GS-18CrMo9-10	-	622	-		-	-	SCPH 32	-	-	2.1
P	Acciai da cementazione - Case-hardend steels													
1.1	< 500		1.0301	C10	AF 34 C 10; XC 10	045 M 10	-		C 10	-	S 10 C	-	1010	1.1
1.1	< 500		1.0401	C15	AF 34 C 12; XC 18	080 M 15	-		C 15; C 16	F.111	-	1350	1015	1.1
1.1	< 500		1.0402	C22	CC20	050 A 20	2C		C20;C21	F.112	-	1450	1020	1.1
1.1	< 500		1.1121	CK10	XC 10	045 M 10	-		C 10	-	S 10 C; S 9 CK	1265	1010	1.1
1.1	< 500		1.1141	CK15	XC 15; XC 18	080 M 15	32C		C 15; C 16	C15K	S 15 C; S 15 CK	1370	1015	1.1
1.1	< 500		1.7012	13Cr2	-	-	-		-	-	-	-	-	1.1
2.1	500 - 700		1.7015	15Cr3	12 C 3	523 M 15	-		-	-	SCR 415 (H)	-	5015	2.1
2.1	500 - 700		1.5732	14NiCr10	14 NC 11	-	-		16 NiCr 11	15NiCr11	SNC 415 (H)	-	3415	2.1
3.1	700 - 850	< 24	1.5752	14NiCr14	12 NC 15	655 M 13	36A		-	-	SNC 815 (H)	-	3310; 9314	3.1
3.1	700 - 850	< 24	1.5860	14NiCr18	-	-	-		-	-	-	-	-	3.1
3.1	700 - 850	< 24	1.5919	15CrNi6	16 NC 6	S 107	-		16 CrNi 4	-	-	-	-	3.1
3.1	700 - 850	< 24	1.5920	18NiCr8	20 NC 6	-	-		-	-	-	-	-	3.1
3.1	700 - 850	< 24	1.6523	21NiCrMo2	20 NCD 2	805 M 20	362		20 NiCrMo 2	20NiCrMo2	SNCM 220 (H)	2506	8620	3.1
3.1	700 - 850	< 24	1.6587	17CrNiMo6	18 NCD 6	820 A 16	-		18 NiCrMo 7	14NiCrMo13	-	-	-	3.1
3.1	700 - 850	< 24	1.7131	16MnCr5	16 MC 5	527 M 17	-		16 MnCr 5	16MnCr5	SCR 415	2511	5115	3.1
3.1	700 - 850	< 24	1.7139	16MnCrS5	-	-	-		-	-	-	-	-	3.1

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Comparazione internazionale dei materiali

International comparison of materials

	Rm [N/mm2]	Rockwell [HRC]	Mat.-Nr.	DIN	AFNOR	BS	EN		UNI	UNE	JIS	SIS	AISI/SAE/ASTM	
3.1	700 - 850	< 24	1.7147	20MnCr5	20 MC 5	-	-		20 MnCr 5	-	SMnC 420 (H)	-	5120	3.1
3.1	700 - 850	< 24	1.7149	20MnCrS5	-	-	-		-	-	-	-	-	3.1
3.1	700 - 850	< 24	1.7262	15CrMo5	12 CD 4	-	-		12 CrMo 4	F.155	SCM 415 (H)	-	-	3.1
3.1	700 - 850	< 24	1.7264	20CrMo5	18 CD 4	-	-		-	-	SCM 421	-	-	3.1
3.1	700 - 850	< 24	1.7271	23CrMoB3-3	-	-	-		-	-	-	-	-	3.1
2.1	500 - 700	< 24	1.7311	20CrMo2	-	-	-		-	-	-	-	-	2.1
3.1	700 - 850	< 24	1.7321	20MoCr4	-	-	-		-	-	-	-	-	3.1
3.1	700 - 850	< 24	1.7323	20MoCrS4	-	-	-		-	-	-	-	-	3.1
3.1	700 - 850	< 24	1.7325	25MoCr4	-	-	-		-	-	-	-	-	3.1
3.1	< 850	< 24	1.0904	55Si7	55 S 7	250 A 53	45		55 Si 8	-	-	2085; 2090	9255	3.1
3.1	< 850	< 24	1.0961	60SiCr7	60 SC 7		-		60 SiCr 8	-	SUP 7	-	9262	3.1
3.1	< 850	< 24	1.1231	CK67	XC 68	060 A 67	-		C 70	-	-	1770	1070	3.1
3.1	< 850	< 24	1.1248	CK75	XC 75	060 A 78	-		C 75	-	-	1774; 1778	1078; 1080	3.1
3.1	< 850	< 24	1.1274	CK101	XC 100	060 A 96	-		-	-	SUP 4	1870	1095	3.1
3.1	< 850	< 24	1.7103	67SiCr5	-	-	-		-	-	-	-	-	3.1
3.1	< 850	< 24	1.7176	55Cr3	55 C 3	527 A 60	48		55 Cr 3	-	SUP 9 (A)	2253	5155	3.1
3.1	< 850	< 24	1.8159	50CrV4	50 CV 4	735 A 50	47		51 CrV 4	51CrV4	SUP 10	2230	6150	3.1
3.1	< 850	< 24	1.5026	55 Si 7	55 S 7	250 A 53	-		55 Si 8	-	-	2085; 2090	9255	3.1
P	Acciai per molle - Spring steels													P
2.1	< 800	< 21	1.1133	20Mn5	20 M 5	120 M 19	-		G 22 Mn 3	-	-	-	1022; 1518	2.1
2.1	< 800	< 21	1.7735	14CrMoV6-9	15 CDV 6	-	-		-	-	-	-	-	2.1
2.1	< 800	< 21	1.3505	100Cr6	100 C 6	534 A 99	31		100 Cr 6	-	SUJ 2	2258	52100	2.1
2.1	< 800	< 21	1.5120	38MnSi4	-	-	-		-	-	-	-	-	2.1
2.1	< 800	< 21	1.5121	46MnSi4	-	-	-		-	-	-	-	-	2.1
2.1	< 800	< 21	1.5141	53MnSi4	-	-	-		-	-	-	-	-	2.1
2.1	< 800	< 21	1.5710	36NiCr6	35 NC 6	640 A 35	111A		-	-	SNC 236	-	3135	2.1
2.1	< 800	< 21	1.6546	40NiCrMo2-2	40 NCD 2	311-Type7	-		40 NiCrMo 2 (KB)	40NiCrMo2	SNCM 240	-	8740	2.1
2.1	< 800	< 21	1.6565	40NiCrMo6	-	311-Type6	-		-	-	SNCM 439	-	4340	2.1
2.1	< 800	< 21	1.7003	38Cr2	38 C 2	-	-		38 Cr 2	-	-	-	-	2.1
2.1	< 800	< 21	1.7006	46Cr2	42 C 2	-	-		45 Cr 2	-	-	-	5045	2.1
2.1	< 800	< 21	1.7020	32Cr2	-	-	-		-	-	-	-	-	2.1
2.1	< 800	< 21	1.7030	28Cr4	-	530 A 30	-		-	-	-	-	5130	2.1
2.1	< 800	< 21	1.7033	34Cr4	32 C 4	530 A 32	18B		34 Cr 4 (KB)	35Cr4	SCr 430 (H)	-	5132	2.1
2.1	< 800	< 21	1.7218	25CrMo4	25 CD 4 S	1717 CDS 110	-		25 CrMo 4 (KB)	55Cr3	SCM 420; SCM 430	2225	4130	2.1
2.1	< 800	< 21	1.7220	34CrMo4	35 CD 4	708 A 37	19B		35 CrMo4	34CrMo4	SCM 432; SCCrM 3	2234	4135; 4137	2.1
2.1	< 800	< 21	1.7223	41CrMo4	42 CD 4 TS	708 M 40	19B		41 CrMo 4	42CrMo4	SCM 440	2234	4142; 4140	2.1
2.1	< 800	< 21	1.7225	42CrMo4	42 CD 4 TS	708 M 40	19B		41 CrMo 4	F-1252	SCM 440	2234	4142; 4140	2.1
2.1	< 800	< 21	1.7228	50CrMo4	-	708 A 47	-		-	-	SCM 445 (H)	-	4150	2.1
3.1	> 800 - 1000	> 21 - 30	1.7182	27MnCrB5-2	-	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.5532	38MnB5	-	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.1157	40Mn4	35 M 5	150 M 36	15		-	-	-	-	1039	3.1
3.1	> 800 - 1000	> 21 - 30	1.1165	30Mn5	35 M 5	120 M 36	-		-	-	SMn 433 H; SCMn 2	-	1330	3.1
3.1	> 800 - 1000	> 21 - 30	1.1167	36Mn5	40 M 5	150 M 36	-		-	-	SMn 438 H; SCMn 3	2120	1335	3.1
3.1	> 800 - 1000	> 21 - 30	1.1170	28Mn5	20 M 5	150 M 28	14A		C 28 Mn	-	SCMn 1	-	1330	3.1
3.1	> 800 - 1000	> 21 - 30	1.3561	44Cr2			-			-		-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.3563	43CrMo4	-		-			-		-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.3565	48CrMo4	-	817 M 40	-		-	-	SNC 836	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.5120	38MnSi4	-	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.5121	46MnSi4	-	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.5122	37MnSi4	-	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.5131	50MnSi4	-	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.5141	53MnSi4	-	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.5223	42MnV7	-	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.5710	36NiCr6	35 NC 6	640 A 35	111A		-	-	SNC 236	-	3135	3.1
3.1	> 800 - 1000	> 21 - 30	1.5736	36NiCr10	30 NC 11	-	-		35 NiCr 9	-	SNC 631 (H)	-	3435	3.1
3.1	> 800 - 1000	> 21 - 30	1.5755	31NiCr14	18 NC 13	653 M 31	-		-	-	SNC 836	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.6511	36CrNiMo4	40 NCD 3	816 M 40	110		38 NiCrMo 4 (KB)	33NiCrMo4	SNC 836	-	9840	3.1
3.1	> 800 - 1000	> 21 - 30	1.6513	28NiCrMo4	-	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.7003	38Cr2	38 C 2	-	-		38 Cr 2	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.7006	46Cr2	42 C 2	-	-		45 Cr 2	-	-	-	5045	3.1
3.1	> 800 - 1000	> 21 - 30	1.7030	28Cr4	-	530 A 30	-		-	-	-	-	5130	3.1
3.1	> 800 - 1000	> 21 - 30	1.7033	34Cr4	32 C 4	530 A 32	18B		34 Cr 4 (KB)	35Cr4	SCr 430 (H)	-	5132	3.1

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Comparazione internazionale dei materiali

International comparison of materials

	Rm [N/mm2]	Rockwell [HRC]	Mat.-Nr.	DIN	AFNOR	BS	EN		UNI	UNE	JIS	SIS	AISI/SAE/ASTM	
3.1	> 800 - 1000	> 21 - 30	1.7034	37Cr4	38 C 4	530 A 36	-		38 Cr 4	-	SCr 435 (H)	-	5135	3.1
3.1	> 800 - 1000	> 21 - 30	1.7035	41Cr4	42 C 4	530 M 40	18		41 Cr 4	42Cr4	SCr 440 (H)	-	5140	3.1
3.1	> 800 - 1000	> 21 - 30	1.7218	25CrMo4	25 CD 4 S	1717 CDS 110	-		25 CrMo 4 (KB)	55Cr3	SCM 420; SCM 430	2225	4130	3.1
3.1	> 800 - 1000	> 21 - 30	1.7220	34CrMo4	35 CD 4	708 A 37	19B		35 CrMo4	34CrMo4	SCM 432; SCCrM 3	2234	4135; 4137	3.1
3.1	> 800 - 1000	> 21 - 30	1.7223	41CrMo4	42 CD 4 TS	708 M 40	19A		41 CrMo 4	42CrMo4	SCM 440	2244	4142; 4140	3.1
3.1	> 800 - 1000	> 21 - 30	1.7225	42CrMo4	42 CD 4 TS	708 M 40	19A		41 CrMo 4	F-1252	SCM 440	2244	4142; 4140	3.1
3.1	> 800 - 1000	> 21 - 30	1.7228	50CrMo4	-	708 A 47	-		-	-	SCM 445 (H)	-	4150	3.1
3.1	> 800 - 1000	> 21 - 30	1.7561	42CrV6	-	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.7735	14CrMoV6-9	15 CDV 6	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.8159	50CrV4	50 CV 4	735 A 50	47		51 CrV 4	51CrV4	SUP 10	2230	6150	3.1
5.1	> 1000 - 1300	> 24 - 30	1.3563	43CrMo4	-	-	-		-	-	-	-	-	5.1
5.1	> 1000 - 1300	> 24 - 30	1.3565	48CrMo4	-	817 M 40	-		-	-	SNC 836	-	-	5.1
5.1	> 1000 - 1300	> 24 - 30	1.5120	38MnSi4	-	-	-		-	-	-	-	-	5.1
5.1	> 1000 - 1300	> 24 - 30	1.5121	46MnSi4	-	-	-		-	-	-	-	-	5.1
5.1	> 1000 - 1300	> 24 - 30	1.5122	37MnSi4	-	-	-		-	-	-	-	-	5.1
5.1	> 1000 - 1300	> 24 - 30	1.5223	42MnV7	-	-	-		-	-	-	-	-	5.1
5.1	> 1000 - 1300	> 24 - 30	1.5710	36NiCr6	35 NC 6	640 A 35	111A		-	-	SNC 236	-	3135	5.1
5.1	> 1000 - 1300	> 30 - 40	1.5736	36NiCr10	30 NC 11	-	-		35 NiCr 9	-	SNC 631 (H)	-	3435	5.1
5.1	> 1000 - 1300	> 30 - 40	1.5864	35NiCr18	-	-	-		-	-	-	-	-	5.1
5.1	> 1000 - 1300	> 30 - 40	1.6511	36CrNiMo4	40 NCD 3	816 M 40	110		38 NiCrMo 4 (KB)	33NiCrMo4	SNC 836	-	9840	5.1
5.1	> 1000 - 1300	> 30 - 40	1.6580	30CrNiMo8	30 CND 8	823 M 30	-		30 NiCrMo 8		SNCM 431	-	-	5.1
5.1	> 1000 - 1300	> 30 - 40	1.6582	34CrNiMo6	35 NCD 6	817 M 40	24		35 NiCrMo 6 (KW)		SNCM 447	2541	4340	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7033	34Cr4	32 C 4	530 A 32	18B		34 Cr 4 (KB)	35Cr4	SCr 430 (H)	-	5132	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7034	37Cr4	38 C 4	530 A 36	-		38 Cr 4	-	SCr 435 (H)	-	5135	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7035	41Cr4	42 C 4	530 M 40	18		41 Cr 4	42Cr4	SCr 440 (H)	-	5140	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7045	42Cr4	42 C 4 TS	530 A 40	-		41 Cr 4	42Cr4	SCr 440	2245	5140	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7218	25CrMo4	25 CD 4 S	1717 CDS 110	-		25 CrMo 4 (KB)	55Cr3	SCM 420; SCM 430	2225	4130	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7220	34CrMo4	35 CD 4	708 A 37	19B		35 CrMo4	34CrMo4	SCM 432; SCCrM 3	2234	4135; 4137	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7223	41CrMo4	42 CD 4 TS	708 M 40	19A		41 CrMo 4	42CrMo4	SCM 440	2244	4142; 4140	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7225	42CrMo4	42 CD 4 TS	708 M 40	19A		41 CrMo 4	F-1252	SCM 440	2244	4142; 4140	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7228	50CrMo4	-	708 A 47	-		-	-	SCM 445 (H)	-	4150	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7361	32CrMo12	30 CD 12	722 M 24	40B		31 CrMo 12	F.124.A	-	2240	-	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7561	42CrV6	-	-	-		-	-	-	-	-	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7707	30CrMoV9	-	-	-		-	-	-	-	-	5.1
5.1	> 1000 - 1300	> 30 - 40	1.7735	14CrMoV6-9	15 CDV 6	-	-		-	-	-	-	-	5.1
5.1	> 1000 - 1300	> 30 - 40	1.8159	50CrV4	50 CV 4	735 A 50	47		51 CrV 4	51CrV4	SUP 10	2230	6150	5.1
5.1	> 1000 - 1300	> 30 - 40	1.8161	58CrV4	-	-	-		-	-	-	-	-	5.1
P	Acciai temperati non legati - Unalloyed heat-treatable steels													P
2.1	< 800	< 21	1.0402	C22	AF 42 C 20	050 A 20	2D		C 20; C 21	F.112	-	1450	1020	2.1
2.1	< 800	< 21	1.0406	C25	AF 50 C 30	070 M 26	-		C 25	-	-		1025	2.1
2.1	< 800	< 21	1.0501	C35	AF 55 C 35	060 A 35	-		C 35	F.113	-	1550	1035	2.1
2.1	< 800	< 21	1.0503	C45	AF 65 C 45	080 M 46	-		C 45	F.114	-	1650	1045	2.1
2.1	< 800	< 21	1.0511	C40	AF 60 C 40	-	-		C 40	-	-	-	1040	2.1
2.1	< 800	< 21	1.0528	C30	-	-	-		-	-	-	-	-	2.1
2.1	< 800	< 21	1.1151	Ck22	XC 25; XC 18	050 A 20	-		C 20	-	S 20 C; S 20 CK	-	1023	2.1
2.1	< 800	< 21	1.1158	Ck25	XC 25	070 M 26	-		C 25	-	S 25 C	-	1025	2.1
2.1	< 800	< 21	1.1178	Ck30	-	-	-		-	-	-	-	-	2.1
2.1	< 800	< 21	1.1181	Ck35	XC 38 H1; XC 32	080 M 36	-		C 35	-	S 35 C	1572	1035	2.1
2.1	< 800	< 21	1.1186	Ck40	XC 42 H1	080 M 40	-		C 40	-	S 40 C	-	1040	2.1
2.1	< 800	< 21	1.1191	Ck45	XC 42	080 M 46	-		C 45	C45K	S 45 C	1672	1045	2.1
3.1	> 800 - 1000	> 21 - 30	1.0535	C55	-	070 M 55	-		C 55	-	-	1655	1055	3.1
3.1	> 800 - 1000	> 21 - 30	1.0540	C50	-	-	-		-	-	-	-	-	3.1
3.1	> 800 - 1000	> 21 - 30	1.0601	C60	CC 55	080 A 62	43D		C 60	-	-	-	1060	3.1
3.1	> 800 - 1000	> 21 - 30	1.1203	Ck55	XC 55	070 M 55	-		C 50	C55K	S 55 C	-	1055	3.1
3.1	> 800 - 1000	> 21 - 30	1.1206	Ck50	XC 48 H1	080 M 50	-		-	-	-	-	1050	3.1
3.1	> 800 - 1000	> 21 - 30	1.1221	Ck60	XC 60	080 A 62	43D		C 60	-	S 58 C	1665; 1678	1060	3.1
P	Acciai per lavorazioni a freddo - Cold work steels													P
3.1	760	19	1.2067	100Cr6	Y 100 C 6	BL 3	-		-	100Cr6	-	-	L 3	3.1
3.1	760	19	1.2103	58SiCr8	-	-	-		-	-	-	-	-	3.1
3.1	760	19	1.2108	90CrSi5	-	-	-		-	-	-	-	-	3.1
3.1	720		1.2162	21MnCr5	20 NC 5	-	-		-	-	SCR 420 H			3.1
3.1	730		1.2210	115CrV3	100 C 3	-	-		107 CrV 3 KU	-	-	-	L 2	3.1

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Comparazione internazionale dei materiali

International comparison of materials

	Rm [N/mm2]	Rockwell [HRC]	Mat.-Nr.	DIN	AFNOR	BS	EN		UNI	UNE	JIS	SIS	AISI/SAE/ASTM	
3.1	730		1.2330	35CrMo4	34 CD 4	708 A 37	-		35 CrMo4	-	-	2234	4135	3.1
3.1	750		1.2332	47CrMo4	42 CD 4	709 M 40	-		40 CrMo 4	-	-	2244	4132	3.1
3.1	760	19	1.2419	105WCr6	105 WC 13	-	-		107 WVr 5 KU	105WCr5	SKS 31	-	-	3.1
3.1	720		1.2510	100MnCrW4	90 MWCV 5	BO 1	-		95 MnWCr 5 KU	-	SKS 3	2140	O 1	3.1
3.1	730		1.2516	120W4	110 WC 20	BF 1	-		110 W 4 KU	-	-	-	-	3.1
3.1	750		1.2542	45WCrV7	-	BS 1	-		45 WCrV 8 KU	45WCrSi8	-	2710	S 1	3.1
3.1	750		1.2550	60WCrV7	55 WC 20	-	-		55 WCrV 8 KU	-	-	-	-	3.1
3.1	830	23	1.2721	50NiCr13	-	-	-		-	-	-	-	-	3.1
3.1	670		1.2735	15NiCr14	10 NC 12	-	-		-	-	SNC 22	-	-	3.1
3.1	710		1.2762	75CrMoNiW6-7	-	-	-		-	-	-	-	-	3.1
3.1	750		1.2826	60MnSiCr4	-	-	-		-	-	-	-	-	3.1
3.1	760	19	1.2833	100V1	Y1 105 V	BW 2	-		102 V 2 KU	-	SKS 43	-	W 210	3.1
3.1	730		1.2842	90MnCrV8	90 MV 8	BO 2	-		90 MnVCr 8 KU	-	-	-	O 2	3.1
3.1	830	23	1.2080	X210Cr12	Z 200 C 12	BD 3	-		X 210 Cr 13 KU	X210Cr12	SKD 1	-	D 3	3.1
3.1	380		1.2341	X6CrMo4	-	-	-		-	-	-	-	-	3.1
3.1	760	19	1.2363	X100CrMoV5-1	Z 100 CDV 5	BA 2	-		X 100 CrMoV 5 1KU	-	SKD 12	2260	A 2	3.1
3.1	640 - 840		1.5662	X8Ni9	9 Ni	1501.509	-		X 10Ni9	XBNi09	STBL 690	-	A353	3.1
3.1	760	19	1.2379	X155CrVMo12-1	Z 160 CDV 12	BD 2	-		X 155 CrVMo 12 1KU	-	SKD 11	-	D 2	3.1
3.1	760	19	1.2436	X210CrW12	-	-	-		X 215 CrW 12 1KU	X210CrW12	SKD 2	2312	-	3.1
3.1	760	19	1.2601	X165CrMoV12	-	-	-		X 165 CrMoV 12 KU	X160crMoV12	-	2310	-	3.1
P	Acciai per utensili non legati - Unalloyed tool steels													P
2.1	640		1.1520	C70W1	-	-	-		-	-	-	-	-	2.1
2.1	640		1.1525	C80W1	Y1 90; Y1 80	-	-		C 80 KU	-	-		W 108	2.1
2.1	640		1.1545	C105W1	Y1 105	-	-		C 100 KU	-	-		W 110	2.1
2.1	640		1.1620	C70W2	-	-	-		-	-	-	-	-	2.1
2.1	640		1.1625	C80W2	Y1 80	BW 1B	-		C 80 KU	-	SKC 3; SK 5; SK 6	-	W 1	2.1
2.1	640		1.1645	C105W2	Y1 105	-	-		C 100 KU	-	SK 3	-	-	2.1
2.1	660		1.1654	C110W	-	-	-		-	-	-	-	W 112	2.1
2.1	710		1.1663	C125W	Y2 120	-	-		C 120 KU	-	SK 2	-	-	2.1
2.1	760	19	1.1673	C135W	Y2 140	-	-		C 140 KU	-	SK 1	-	-	2.1
2.1	640		1.1730	C45W	Y3 42	-	-		-	-	-	-	-	2.1
2.1	760	19	1.1740	C60W	Y3 55	-	-		-	-	SK 7	-	-	2.1
2.1	730		1.1744	C67W	-	-	-		-	-	-	-	-	2.1
2.1	730		1.1750	C75W	-	BW 1A	-		-	-	-	-	W 1	2.1
2.1	570		1.1820	C55W	-	-	-		-	-	-	-	-	2.1
2.1	750		1.1830	C85W	Y3 90	-	-		-	-	SK 5	-		2.1
P	Acciai per lavorazioni a freddo - Cold work steels													P
2.1	< 770		1.2311	40CrMnMo7	-	-	-		35 CrMo8	-	-	-	-	2.1
2.1	< 770		1.2312	40CrMnMoS8-6	-	-	-		40 CrMnMo 7	F-5302	-	-	-	2.1
2.1	< 770		1.2711	54NiCrMoV6	55 NCDV 6	-	-		-	-	-	-	-	2.1
2.1	< 800		1.2713	55NiCrMoV6	55 NCDV 7	Bh 224	-		-	F.520.S	SKT 4	-	L 6	2.1
2.1	< 800		1.2738	40CrMnNiMo8	-	-	-		-	-	-	-	P20	2.1
2.1	< 840		1.2744	57NiCrMoV7-7	-	-	-		-	-	-	-	-	2.1
2.1	> 860		1.2764	X19NiCrMo4	-	-	-		-	-	-	-	-	2.1
2.1	< 870		1.2767	X45NiCrMo4	Y 35 NCD 16	-	-		42 NiCrMo 15 7	-	-	-	-	2.1
2.1	< 770		1.2083	X42Cr13	Z 40 C 14	-	-		X 41 Cr 13 KU	F-5263	SUS 420 J 2	-	-	2.1
2.1	< 800		1.2343	X38CrMoV5-1	Z 38 CDV 5	BH 11	-		X 37 CrMoV 5 1 KU	F-5317	SKD 6	-	H 11	2.1
2.1	< 800		1.2344	X40CrMoV5-1	Z 40 CDV 5	BH 13	-		X 40 CrMoV 5 1 1 KU	F-5318	SKD 61	-	H 13	2.1
2.1	< 800		1.2365	X32CrMoV3-3	Z 32 CDV 28	BH 10	-		X 30 CrMoV 12 27 KU	F-5313	SKD 7	-	H 10	2.1
2.1	< 800		1.2567	X30WCrV5-3	Z 32 WCV 5	-	-		X 30 WCrV 5 3 KU	-	SKD 4	-	-	2.1
2.1	< 800		1.2581	X30WCrV9-3	Z 30 WCV 9	BH 21	-		X 30 WCrV 9 3 KU	X30WCrV9	SKD 5	-	H 21	2.1
2.1	< 770		1.2885	X32CrMoV3-3-3	-	BH 10 A	-		-	F-5314	-	-	-	2.1
3.1	< 840		1.2316	X36CrMo17	-	-	-		X 38 CrMo 16 1 KU	F-5267	-	-	-	3.1
4.1	1080	> 29	Toolox 33	-	-	-	-		-	-	-	-	Toolox 33	4.1
4.1	1250	43	Hardox 400	-	-	-	-		-	-	-	-	Hardox 400	4.1
5.1	1450	45	Toolox 44	-	-	-	-		-	-	-	-	Toolox 44	5.1
P	Acciai da nitrurazione - Nitriding steels													P
3.1	< 1000	< 30	1.8504	34CrAl6	-	-	-		-	-	-	-	-	3.1
3.1	< 1000	< 30	1.8506	34CrAlS5	-	-	-		-	-	-	-	-	3.1
3.1	< 1000	< 30	1.8507	34CrAlMo5	30 CAD 6.12	905 M 31	-		34 CrAlMo 7	-	-	-	A 355 Cl. D	3.1
3.1	< 1000	< 30	1.8509	41CrAlMo7	40 CAD 6.12	905 M 39	41B		41 CrAlMo 7	41CrAlMo7	SACM 645	2940	A 355 Cl. A	3.1
3.1	< 1000	> 30	1.8515	31CrMo12	30 CD 12	722 M 24	-		31 CrMo 12	-	-	2240	-	3.1

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	Rm [N/mm2]	Rockwell [HRC]	Mat.-Nr.	DIN	AFNOR	BS	EN		UNI	UNE	JIS	SIS	AISI/SAE/ASTM	
3.1	< 1000	> 30	1.8519	31CrMoV9	-	-	-		-	-	-	-	-	3.1
3.1	< 1000	> 30	1.8521	15CrMoV5-9	-	-	-		-	-	-	-	-	3.1
3.1	< 1000	> 30	1.8523	39CrMoV13-9	-	897 M 39	40C		39 CrMoV 13 9	-	-	-	-	3.1
3.1	< 1000	> 30	1.8550	34CrAlNi7	-	-	-		-	-	-	-	-	3.1
M	Acciai resistenti alla ruggine e agli acidi - ferritici - Corrosion and acid proof steels – ferritic													M
1.1	400 - 600		1.4002	X6CrAl13	Z 6 CA 13	405 S 17	-		X 6 CrAl 13	-	SUS 405	2302	405	1.1
1.1	380 - 560		1.4512	X5CrTi12	Z 6 CT 12	409 S 19	-		X 6 CrTi 12	-	SUH 409	-	409	1.1
1.1	400 - 600		1.4000	X6Cr13	Z 6 C 13	403 S 17	-		X 6 Cr 13	F.3110	SUS 403	2301	403	1.1
1.1	450 - 600		1.4016	X6Cr17	Z 8 C 17	430 S 15	960		X 8 Cr 17	F.3113	SUS 430	2320	430	1.1
1.1	500 - 700		1.4742	X10CrAlSi18	Z 10 CAS 18	430 S 15	60		X 8 Cr 17	F-3153	SUS 430; SUH 21	-	430	1.1
1.1	450 - 630		1.4113	X6CrMo17	Z 8 CD 17.01	434 S 17	-		X 8 CrMo 17	F.3116	SUS 434	2325	434	1.1
1.1	420 - 600		1.4510	X3CrTi17	Z 8 CT 17	-	-		X 6 CrTi 17	-	SUS 430 LX	-	XM 8; 430 Ti	1.1
1.1	400 - 600		1.4521	X2CrMoTi18-2	Z 3 CDT 18-02	-	-		-	F-3123	SUS 444	2326	444	1.1
1.1	450 - 650		1.4724	X10CrAlSi13	Z 13 C 13	-	-		-	F-3152	-	-	-	1.1
1.1	520 - 720		1.4762	X10CrAl24	Z 10 CAS 24	-	-		X 16 Cr 26	F.3154	SUH 446	-	446	1.1
M	Acciai resistenti alla ruggine e agli acidi - austenitici - Corrosion and acid proof steels – austenitic													M
2.1	750 - 950		1.4372	X12CrMnNiN17-7-5	Z 12 CMN 17-07 Az	-	-		-	-	-	-	201	2.1
2.1	680 - 880		1.4373	X12CrMnNiN18-9-5	-	284 S 16	-		-	-	-	-	202	2.1
2.1	600 - 950		1.4310	X10CrNi18-8, X12CrNi17-7	Z 11 CN 17-08	301 S 21	-		X10CrNi18-8	F-3517	SUS 301	2331	301	2.1
2.1	630 - 850		1.4318	X2CrNiN18-7	Z 3 CN 18-07 Az	-	-		-	-	-	-	301LN	2.1
2.1	500 - 700		1.4305	X10CrNiS18-9	Z 10 CNF 18.09	303 S 21	58M		X 10 CrNi 18 9	F.3508	SUS 303	2346	303	2.1
2.1	600 - 951		1.4350	X5CrNi18-9	Z 6 CN 18.09	304 S 31	58E		X 5 CrNi 18 10	F.3551	SUS 302	-	304	2.1
2.1	520 - 720		1.4301	X5CrNi18-9	Z 6 CN 18.09	304 S 15	58E		X 5 CrNi 18 10	F.3551	SUS 304	2332; 2333	304; 304 H	2.1
2.1	460 - 680		1.4306	X2CrNi19-11	Z 2 CN 18.10	304 S 12	-		X 2 CrNi 18 11	F.3503	SCS 19	2352; 2333	304 L	2.1
2.1	550 - 750		1.4311	X2CrNiN18-10	Z 2 CN 18.10	304 S 62	-		X 2 CrNiN 18 11	-	SUS 304 LN	2371	304 LN	2.1
2.1	510 - 710		1.4948	X6CrNi18-11	-	304 S 50	-		-	-	-	-	304H	2.1
2.1	520 - 700		1.4307	X2CrNi18-9	Z 2 CN 19-09	-	-		-	-	-	-	304 L	2.1
2.1	500 - 750		1.4315	X5CrNiN19-9	-	-	-		-	-	-	-	304 N	2.1
2.1	500 - 650		1.4303	X5CrNi18-12	Z 8 CN 18.12	305 S 19	-		X 8 CrNi 19 10	-	SUS 305	-	308; 305	2.1
2.1	500 - 700		1.4833	X12CrNi23-13	Z 15 CN 23-13	309 S 24	-		X 6 CrNi 23 14	-	SUS 309S	-	309 S	2.1
2.1	500 - 700		1.4845	X8CrNi25-21	Z 8 CN 25-20	310 S 24	-		X 6 CrNi 25 20	F.331	SUS 310S	2361	310 S	2.1
2.1	550 - 750		1.4841	X15CrNiSi25-21	Z 15 CNS 25-20	314 S 25	-		-	F.3310	SUH 310	-	314	2.1
2.1	520 - 680		1.4401	X5CrNiMo18-10	Z 6 CND 17.11	316 S 16	58J		X 5 CrNiMo 17 12	F.3543	SUS 316	2347	316	2.1
2.1	530 - 730		1.4436	X5CrNiMo17-13-3	Z 6 CND 17.12	316 S 16	-		X 5 CrNiMo 17 13	F.3538	SUS 316	2343	316	2.1
2.1	520 - 680		1.4404	X2CrNiMo17-13-2	Z 2 CND 17.12	316 S 11	-		X 2 CrNiMo 17 12	F.3533	SUS 316 L	2348	316 L	2.1
2.1	520 - 700		1.4435	X2CrNiMo18-14-3	Z 2 CND 17.13	317 S 12	-		X 2 CrNiMo 17 13	-	SCS 16; SUS 316 L	2353	316 L	2.1
2.1	520 - 700		1.4432	X2CrNiMo17-12-3	Z 3 CND 17-02-03	316 S 13	-		X 2 CrNiMo 17-12-3	F-3537	-	-	316 L	2.1
2.1	580 - 780		1.4406	X2CrNiMoN17-12-2	Z 2 CND 17.12 AZ	316 S 61	58C		X 2 CrNiMoN 17 12	F-3542	SUS 316 LN	-	316 LN	2.1
2.1	580 - 780		1.4429	X2CrNiMoN17-13-3	Z 2 CND 17.13 AZ	316 S 62	-		X 2 CrNiMoN 17 13	F-3543	SUS 316 LN	2375	316 LN	2.1
2.1	490 - 740		1.4573	X10CrNiMoTi-18-12	-	320 S 33	-		X 6 CrNiMoTi 17 13	-	SUS 316 Ti	-	316 Ti	2.1
2.1	520 - 690		1.4571	X6CrNiMoTi17-12-2	Z 6 CNT 17.12	320 S 31	58J		X 6 CrNiMoTi 17 12	F.3535	SUS 316 Ti	2350	316 Ti	2.1
2.1	520 - 720		1.4580	X6CrNiMoNb17-12-2	Z 6 CNDNb 17.12	318 S 17	-		X 6 CrNiMoNb 17 12	F.3536	-	-	316 Cb	2.1
2.1	550 - 700		1.4438	X2CrNiMo18-16-4	Z 2 CND 19.15	317 S 12	-		X 2 CrNiMo 18 15	F-3539	SUS 317 L	2367	317 L	2.1
2.1	580 - 780		1.4439	X2CrNiMoN17-13-5	Z 3 CND 18-14-05 Az	-	-		-	F-3544	-	-	317 LMN	2.1
2.1	490 - 740		1.4583	X10CrNiMoNb18-12	-	-	-		X 6 CrNiMoNb 17 13	-	-	-	318	2.1
2.1	500 - 720		1.4541	X6CrNiTi18-10	Z 6 CNT 18.10	321 S 12	58B		X 6 CrNiTi 18 11	F.3553; F.3523	SUS 321	2337	321	2.1
2.1	500 - 720		1.4878	X8CrNiTi18-10	Z 6 CNT 18-10	321 S 31	-		-	-	SUS 321	-	321 H	2.1
2.1	500 - 720		1.4550	X6CrNiNb18-10	Z 6 CNNb 18.10	347 S 17	58F		X 6 CrNiNb 18 11	F.3552; F.3524	SUS 347	2338	347	2.1
2.1	500 - 700		1.4563	X1NiCrMoCu31-27-4	Z 2 NCDU 31-27	-	-		-	-	-	2584	B 668	2.1
2.1	520 - 730		1.4539	X1NiCrMoCu25-20-5	Z 2 NCDU 25-20	904 S 13	-		-	-	-	2562	904 L	2.1
2.1	550 - 750		1.4864	X12NiCrSi35-16	Z 20 NCS 33-16	NA 17	-		-	F.3313	SUH 330	-	330	2.1
2.1	620 - 880		1.4460	X8CrNiMo27-5	Z 5 CND 27-05	-	-		-	F-35552	SUS 329 J 1	2324	329	2.1
2.1	500 - 740		1.4546	X5CrNiNb18-10	Z 6 CNNb 18.10	347 S 18	58F		X 6 CrNiNb 18 11	F-3524	SUS 347	2338	348	2.1
M	Acciai resistenti alla ruggine e agli acidi - Duplex - Corrosion and acid proof steels – Duplex													M
3.1	340 - 950		1.4462	X2CrNiMoN22-5-3	Z 3 CND 22-05 Az	318 S 13	-		-	-	SUS 329J3L	2377	2205	3.1
3.1	630 - 850		1.4362	X2CrNiN23-4	Z 3 CN 23-04 Az	-	-		-	-	-	2327	2304	3.1
4.1	730 - 1250		1.4410	X2CrNiMoN25-7-4	Z 3 CND 25-06	-	-		-	-	SCS 14A	2328	2507	4.1
3.1	730 - 1000		1.4507	X2CrNiMoCuN25-6-3	Z 3 CNDU 25-06	-	-		-	-	-	-	255	3.1
3.1	730 - 1000		1.4507	X2CrNiMoCuN25-6-3	Z 3 CNDU 25-06	-	-		-	-	-	-	255	3.1
M	Acciai resistenti alla ruggine e agli acidi - martensitici - Corrosion and acid proof steels – martensitic													M
1.1	> 600		1.4006	X10Cr13	Z 12 C 13	410 S 21	56A		X 12 Cr 13	F.3401	SUS 410	2302	410; CA-15	1.1
1.1	650 - 850		1.4005	X12CrS13	Z 12 CF 13	416 S 21	-		X 12 CrS 13	-	SUS 416	2380	416	1.1

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Comparazione internazionale dei materiali

International comparison of materials

	Rm [N/mm2]	Rockwell [HRC]	Mat.-Nr.	DIN	AFNOR	BS	EN		UNI	UNE	JIS	SIS	AISI/SAE/ASTM	
1.1	> 700		1.4021	X20Cr13	Z 20 C 13	420 S 37	-		X 20 Cr 13	-	SUS 420 J 1	2303	420	1.1
1.1	> 740		1.4028	X30Cr13	Z 30 C 13	420 S 45	-		X 30 Cr 13	-	SUS 420 J 2	2304	420	1.1
1.1	> 760		1.4031	X38Cr13	Z 40 C 14		-		X 40 Cr 14	-	SUS 420 J 2	2304	420	1.1
1.1	> 780		1.4034	X46Cr13	Z 40 CM	420 S 45	56D		X 40 Cr 14	F.3405	SUS 420 J 2	2304	420	1.1
1.1	> 850		1.4116	X50CrMoV15	Z 50 CD 15	-	-		-	F-3422	-	-	-	1.1
1.1	> 900		1.4122	X39CrMo17-1	Z 38 CD 16-01	-	-		-	-	-	-	-	1.1
3.1	780 - 980		1.4313	X5CrNi134	Z 5 CN 13.4	425 C 11	-		X 6 CrNi 13 04	-	SCS 5	2385	CA 6-NM	3.1
3.1	840 - 1000		1.4418	X4CrNiMo6-5-1	Z 6 CND 16-05-01	-	-		-	-	-	2387	-	3.1
1.1	> 650		1.4024	X15Cr13	Z 12 C 13 M	420 S 29	56B		-	-	SUS 410J1	-	420	1.1
1.1	640 - 840		1.4104	X14CrMoS17	Z 13 CF 17	-	-		X 14 CrS 17	F-3431	SUS 430 F	2383	430 F	1.1
1.1	750 - 950		1.4057	X17CrNi162	Z 15 CN 16.02	431 S 29	57		X 16 CrNi 16	F-3427	SUS 431	2321	431	1.1
1.1			1.4747	X80CrNiSi20	Z 80 CSN 20.02	443 S 65	59		X 80 CrSiNi 20	F.320.B	SUH 4	-	HNV 6	1.1
1.1	< 900		1.4125	X105CrMo17	Z 100 CD 17	-	-		X 105 CrMo 17	-	SUS 440 C	-	440 C	1.1
M	Acciai resistenti alla ruggine e agli acidi - indurimento delle precipitazioni - Corrosion and acid proof steels – precipitation-hardened													M
4.1	> 1275		1.4542	X5CrNiCuNb16-4	Z 7 CNU 15-05	-	-		-	-	SCS 630	-	630	4.1
3.1	> 1030		1.4568	X7CrNiAl17-7	Z 9 CNA 17-07	301 S 81	-		-	-	SUS 631	2388	631	3.1
K	Ghise con grafite lamellare (GJL) - Cast iron with lamellar graphite (GJL)													K
1.1	100 - 200		0.6010	EN-GJL100 (GG10)	Ft 10 D	-	-		G 10	-	FC 10	01 10-00	A48-20 B	1.1
1.1	150 - 250		0.6015	EN-GJL150 (GG15)	Ft 15 D	Grade 150	-		G 15	FG 15	FC 15	01 15-00	A48-25 B	1.1
1.2	200 - 300		0.6020	EN-GJL200 (GG20)	Ft 20 D	Grade 220	-		G 20	FG 20	FC 20	01 200	A48-30 B	1.2
1.2	250 - 350		0.6025	EN-GJL250 (GG25)	Ft 25 D	Grade 260	-		G 25	FG 25	FC 25	01 250	A48-40 B	1.2
1.2	300 - 400		0.6030	EN-GJL300 (GG30)	Ft 30 D	Grade 300	-		G 30	FG 30	FC 30	1 300	A48-45 B	1.2
1.2	350 - 450		0.6035	EN-GJL350 (GG35)	Ft 35 D	Grade 350	-		G 35	FG 35	FC 35	1 350	A48-50 B	1.2
1.2	400 - 500		0.6040	EN-GJLZ (GG40)	Ft 40 D	Grade 400	-		-	-	-	1 400	A48-60 B	1.2
1.1	> 170		0.6655	GGL-NiCuCr15-6-2	L-NUC 15 6 2	L-NUC 15 6 2	-		-	-	-	-	A-436 Type 1	1.1
1.1	> 170		0.6660	GGL-NiCr20-2	L-NC 20 2	L-NC 20 2	-		-	-	-	-	A-436 Type 2	1.1
1.1	> 190		0.6676	GGL-NiCr30-3	L-NC 30 3	L-NC 30 3	-		-	-	-	-	A-436 Type 3	1.1
1.1	> 170		0.6680	GGL-NiSiCr30-5-5	L-NSC 30 5 5	L-NSC 30 5 5	-		-	-	-	-	A-436 Type 4	1.1
K														K
2.1	370 - 400		0.7040	EN-GJS-400-15 (GGG40)	FGS 400-12	SNG 420/12	-		GS 400-12	GGG 40	FCD 40	0717-02	60-40-18	2.1
2.1	420 - 500		0.7050	EN-GJS-500-7 (GGG50)	FGS 500-7	SNG 500/7	-		GS 500/7	GGG 50	FCD 50	0727-02	65-45-12	2.1
2.2	550 - 600		0.7060	EN-GJS-600-3 (GGG60)	FGS 600-3	SNG 600/3	-		GS 600/3		FCD 60	0732-03	80-55-06	2.2
2.2	660 - 700		0.7070	EN-GJS-700-2 (GGG70)	FGS 700-2	SNG 700/2	-		GS 700/2	GGG 70	FCD 70	0737-01	100-70-03	2.2
2.2	800		0.7080	EN-GJS-800-2 (GGG80)	FGS 800-2	SNG 800/2	-		GS 800/2	-	-	-	120-90-02	2.2
2.1	370 - 480		0.7660	GGG-NiCr20-2	S-NC 20 2	S-NiCr 20 2	-		-	F 43000	-	-	A 439 Type D-2	2.1
2.1	> 390		0.7661	GGG-NiCr20-3	S-NC 20 3	S-NiCr 20 3	-		-	F 43001	-	-	A 439 Type D-2B	2.1
2.1	370 - 450		0.7670	EN-GJSA-XNi22	S-N 22	S-Ni 22	-		-	F 43002	-	-	A 439 Type D-2C	2.1
2.1	440 - 480		0.7673	EN-GJSA-XNiMn23-4	S-NM 23 4	S-NiMn 23 4	-		-	F 43003	-	-	A 439 Type D-2M	2.1
2.1	370 - 480		0.7676	EN-GJSA-XNiCr30-3	S-NC 30 3	S-NiCr 30 3	-		-	-	-	-	A 439 Type D-3	2.1
2.1	> 370		0.7677	GGG-NiCr301	S-NC 30 1	S-NiCr 30 1	-		-	F 43004	-	-	A 439 Type D-3A	2.1
2.1	390 - 500		0.7680	EN-GJSA-XNiSiCr30-5-5	S-NSC 30 5 5	S-NiSiCr 30 5 5	-		-	F 43005	-	-	A 439 Type D-4	2.1
2.1	370 - 420		0.7683	EN-GJSA-XNi35	S-N 35	S-Ni 35	-		-	F 43006	-	-	A 439 Type D-5	2.1
2.1	370 - 450		0.7685	EN-GJSA-XNiCr35-3	S-NC 35 3	S-NiCr 35 3	-		-	-	-	-	A 439 Type D-5B	2.1
K	Ghisa con grafite vermicolare (GJV) - Cast iron with vermicular graphite (GJV)													K
3.1	300-375			EN-GJV300	-	-	-		-	-	-	-	-	3.1
3.2	350-425			EN-GJV350	-	-	-		-	-	-	-	-	3.2
3.2	400-475			EN-GJV400	-	-	-		-	-	-	-	-	3.2
3.2	450-525			EN-GJV450	-	-	-		-	-	-	-	-	3.2
3.2	500-575			EN-GJV500	-	-	-		-	-	-	-	-	3.2
K	Ghisa malleabile (GTMW, GTMB) - Malleable cast iron (GTMW, GTMB)													K
4.1	> 350		0.8135	EN-GJMB-350-10	MN35-10	B340/12	-		-	GTS 35	-	0810	32510	4.1
4.1	> 450		0.8145	EN-GJMB-450-6	-	P440/7	-		-	GTS 45	-	0852	40010	4.1
4.2	> 550		0.8155	EN-GJMB-550-4	MP50-5	P510/4	-		-	GTS 55	-	0854	50005	4.2
4.2	> 650		0.8165	EN-GJMB-650-2	MP60-3	P570/3	-		-	GTS 65	-	0856	70003	4.2
4.2	> 700		0.8170	EN-GJMB-700-2	M870-2	P690/2	-		-	GTS 70	-	0862; 0864	90001	4.2
4.1	270 - 360		0.8035	EN-GJMW-350-4	MB35-7	W340/3	-		-	GTW 35	FCMW 330	-	MB 350-4	4.1
4.1	300 - 420		0.8040	EN-GJMW-400-5	MB40-10	W410/4	-		GMB 40	GTW 40	FCMW 370	-	MB 400-5	4.1
4.1	330 - 480		0.8045	EN-GJMW-450-7	-	-	-		GMB 45	GTW 45	FCMWP 440	-	MB 450-7	4.1
4.2	490 - 570		0.8055	EN-GJMW-550-4	-	-	-		-	GTW 55	-	-	-	4.2
N	Alluminio non legato - Unalloyed aluminium													N
1.1	65 - 150		3.0225	Al99.5	A5	1B	-		4507	L-3051	A1x1	-	-	1.1
1.1	40 - 100		3.0305	Al99.9	A9	-	-		-	-	-	-	-	1.1

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Comparazione internazionale dei materiali

International comparison of materials

	Rm [N/mm2]	Rockwell [HRC]	Mat.-Nr.	DIN	AFNOR	BS	EN		UNI	UNE	JIS	SIS	AISI/SAE/ASTM	
N	Leghe di alluminio lavorate, non temprate - Wrought aluminium alloys, not hardened													N
1.1	100 - 125		3.0505	AlMn0.5Mg0.5	-	N31	-		-	-	-	-	3105	1.1
1.2	80 - 230		3.0515	AlMn1	-	N3	-		3568	L-3810	144054	-	-	1.2
1.2	115 - 290		3.0525	AlMn1Mg0.5	A-M1G0,5	-	-		-	-	-	-	-	1.2
1.1	100 - 205		3.3315	AlMg1	A-G0,6	N41	-		5764	L-3350	A2x8	144106	-	1.1
1.2	180 - 310		3.3535	AlMg3	A-G3M	N5	-		3575	L-3390	-	-	-	1.2
N	Leghe di alluminio lavorato, temprato - Wrought aluminium alloys, hardened													N
1.3	150 - 400		3.1325	AlCuMg1	A-U4G	H14	-		3579	L-3120	-	-	-	1.3
1.3	180 - 460		3.1355	AlCuMg2	A-U4G1	2L97	-		3579	L-3140	A3x4	-	-	1.3
1.3	130 - 360		3.2315	AlMgSi1	A-SGM0,7	H30	-		3571	L-3451	-	144212	-	1.3
1.2	130 - 270		3.3206	AlMgSi0.5	-	H9	-		3569	L-3441	A2x5	144103	-	1.2
1.2	120 - 300		3.3211	AlMg1SiCu	-	H20	-		-	-	-	-	-	1.2
1.3	410 - 490		3.4345	AlZnMgCu0.5	AZ 4 GU/9051	L86	-		811-04	-	-	-	7050	1.3
1.3	180 - 560		3.4365	AlZnMgCu1.5	AZ 4 GU/9050 C	L87	-		811-05	-	-	-	7175	1.3
N	Leghe di alluminio Si ≤ 7% - Aluminium cast alloys Si ≤ 7%													N
1.4	280 - 300		3.2134	G-AlSi5Cu1Mg	-	-	-		-	-	-	-	-	1.4
1.4	140 - 300		3.3241	G-AlMg3Si	-	-	-		-	-	-	-	-	1.4
1.4	200		3.3292	GD-AlMg9	A-G10S	-	-		5080	-	-	-	-	1.4
1.4	140 - 210		3.3541	GD-AlMg3	A-G3T	-	-		3059	-	ADC6	-	-	1.4
N	Leghe di alluminio 7% < Si ≤ 12% - Aluminium cast alloys 7% < Si ≤ 12%													N
1.5	160 - 200		3.2161	G-AlSi8Cu3	-	-	-		-	-	-	-	-	1.5
1.5	230 - 360		3.2373	G-AlSi9Mg	A-S9G	-	-		3051	-	AC4A	-	-	1.5
1.5	240 - 350		3.2163	G-AlSi9Cu3	A-S9U3	LM24	-		5075	-	-	-	-	1.5
1.5	150 - 340		3.2381	G-AlSi10Mg	A-S10G	LM9	-		3051	L-2560	-	4253	-	1.5
1.5	160		3.2383	G-AlSi10Mg(Cu)	A-S10GU	LM9	-		-	-	-	4253	A 360.2	1.5
1.5	150 - 170		3.2581	G-AlSi12	A-S13	LM6	-		3051	-	AC3	4261	A 413.2	1.5
1.5	150 - 290		3.2583	G-AlSi12(Cu)	A-S12U	LM 20	-		3048	-	-	4260	A 413.1	1.5
N	Leghe di alluminio Si > 12% - Aluminium cast alloys Si > 12%													N
1.6	165 - 370			G-AlSi17Cu4Mg	-	-	-		-	-	-	-	-	1.6
1.6	180 - 220			G-AlSi18CuNiMg	-	-	-		-	-	-	-	-	1.6
1.6	200 - 240			G-AlSi21CuNiMg	-	-	-		-	-	-	-	-	1.6
1.6	230 - 300			G-AlSi25CuNiMg	-	-	-		-	-	-	-	-	1.6
N	Rame puro, rame a bassa lega - Pure copper, low-alloyed copper													N
2.2	< 600		2.0240	CuZn15	CuZn15	CZ 102	-		-	-	C2300	-	C23000	2.2
2.2	< 800		2.0265	CuZn30	CuZn30	CZ 106	-		-	-	C2600	-	C26000	2.2
N	Leghe di rame e zinco (ottone, trucioli lunghi) - Copper-zinc alloys (brass, long-chipping)													N
2.2	< 800		2.0321	CuZn37	CuZn37	CZ 108	-		-	-	C 2700	-	C27200	2.2
2.2	< 800		2.0335	CuZn36	Ms63	CZ 108	-		P-CuZn35	-	C 2700	-	C27000	2.2
2.2	340 - 480		2.0360	CuZn40	Ms60	DCB1	-		-	-	-	-	C28000	2.2
N	Leghe di rame e zinco (ottone, trucioli corti) - Copper-zinc alloys (brass, short-chipping)													N
2.3	340 - 570		2.0401	CuZn39Pb3	Ms58	-	-		-	-	-	-	C38500	2.3
N	Leghe di rame e stagno (bronzo di stagno, trucioli lunghi) - Copper-tin alloys (tin bronze, long-chipping)													N
2.5	< 900		2.1016	CuSn4	-	-	-		-	-	C 5111	-	C51100	2.5
2.5	390 - 620		2.1030	CuSn8P	-	-	-		-	-	C5210	-	C52100	2.5
N	Leghe di rame e stagno (bronzo di stagno, trucioli corti) - Copper-tin alloys (tin bronze, short-chipping)													N
2.6	200 - 250		2.1097	G-CuSn5ZnPb	Rg5	-	-		-	-	H 5111	-	C83600	2.6
2.6	230 - 320		2.1090.01	G-CuSn7ZnPb	Rg7	-	-		-	-	-	-	C93200	2.6
2.6	280		2.1086.01	G-CuSn10Zn	Rg10	-	-		-	-	-	-	-	2.6
2.6	600 - 650		2.0975	G-CuAl10Ni	CuNiAl11	-	-		-	-	-	-	-	2.6
N	Leghe di rame-alluminio (Alubronze) - Copper-aluminium alloys (alu bronze)													N
2.7	> 550		AMPCO® 8	-	-	-	-		-	-	-	-	-	2.7
2.8	> 750		AMPCO® 21	-	-	-	-		-	-	-	-	-	2.8
2.7	> 500		AMPCO® 25	-	-	-	-		-	-	-	-	-	2.7
2.8	> 810		AMPCO® 45	-	-	-	-		-	-	-	-	-	2.8
2.8	> 1000		AMPCO® M-4	-	-	-	-		-	-	-	-	-	2.8
N	Leghe di magnesio lavorate - Magnesium wrought alloys													N
3.1	> 270		3.5612	MgAl6Zn	-	-	-		-	-	-	-	-	3.1
3.2	> 240		3.5912	G-MgAl9Zn1	-	-	-		-	-	-	-	-	3.2
N	Plastica - Synthetics													N
4.1			Bakelit	-	-	-	-		-	-	-	-	-	4.1
4.1			Pertinax	-	-	-	-		-	-	-	-	-	4.1
4.2			PMMA	-	-	-	-		-	-	-	-	-	4.2

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Comparazione internazionale dei materiali

International comparison of materials

	Rm [N/mm2]	Rockwell [HRC]	Mat.-Nr.	DIN	AFNOR	BS	EN		UNI	UNE	JIS	SIS	AISI/SAE/ASTM	
4.2			POM	-	-	-	-		-	-	-	-	-	4.2
4.2			PVC	-	-	-	-		-	-	-	-	-	4.2
N	Plastica rinforzata con fibre - Fibre-reinforced synthetics													N
4.3	155 - 365		GFK	-	-	-	-		-	-	-	-	-	4.3
4.3	190 - 210		CFK uni.	-	-	-	-		-	-	-	-	-	4.3
4.3	190 - 210		CFK milti.	-	-	-	-		-	-	-	-	-	4.3
4.3			AFK	-	-	-	-		-	-	-	-	-	4.3
S	Leghe di nichel, leghe di cobalto e leghe di ferro - Nickel alloys, cobalt alloys and iron alloys													S
2.6	900 - 1100		1.4718	X45CrSi9-3	Z 45 CS 9	401 S 45	-		X 45 CrSi 8	-	SUH 1	-	HNV 3	2.6
2.6	500 - 750		1.4828	X15CrNiSi20-12	Z 15 CNS 20.12	309 S 24	-		-	-	SUH 309	-	309	2.6
2.6	550 - 800		1.4841	X15CrNiSi25-20	Z 15 CNS 25.20	-	-		X 16 CrNiSi 25 20	-	SUH 310	-	314; 310	2.6
2.6	500 - 750		1.4845	X12CrNi25-21	Z 12 CN 25.20	310 S 24	-		X 6 CrNi 26 20	F.331	SUH 310; SUS 310 S	-	310 S	2.6
2.6	550 - 800		1.4864	X12NiCrSi36-16	Z 12 NCS 37.18	NA 17	-		-	-	SUH 330	-	330	2.6
2.6	950 - 1200		1.4871	X53CrMnNiN21-9	Z 52 CMN 21.09	349 S 54	-		X 53 CrMnNiN 21 9	-	SUH 35; SUH 36	-	EV 8	2.6
2.6	500 - 750		1.4876	X10NiCrAlTi33-20	Z 8 NC 32.21	NA 15 (H)	-		-	-	NCF 800	-	B 163	2.6
2.6	500 - 750		1.4878	X12CrNiTi18-9	Z 6 CNT 18.12 (B)	321 S 20	-		X 6 CrNiTi 18 11	-	SUS 321	2337	321	2.6
2.2	500 - 700		2.4360	NiCu30Fe	Nu 30	NA 13	-		-	-	-	-	Monel 400	2.2
2.2	620 - 850		2.4375	NiCu30Al	Nu 30 AT	NA 18	-		-	-	-	-	Monel K-500	2.2
2.2	> 690		2.4685	G-NiMo28	-	-	-		-	-	-	-	Hastelloy B	2.2
2.2	> 740		2.4610	NiMo16Cr16Ti	-	-	-		-	-	-	-	Hastelloy C-4	2.2
2.2	> 760		2.4617	G-NiMo30	-	-	-		-	-	-	-	Hastelloy B-2	2.2
2.2	700 - 800		2.4630, 2.4951	NiCr20Ti	NC 20 T	HR 5	-		-	-	-	-	Nimonic 75	2.2
2.2	800 - 1000		2.4631	NiCr20TiAl	-	HR 401; 601	-		-	-	NCF 80 A	-	Nimonic 80 A	2.2
2.3	1200		2.4632	NiCr20Co18Ti	-	-	-		-	-	-	-	Nimonic 90	2.3
2.3	1180		2.4634	NiCo20Cr15MoAlTi	-	-	-		-	-	-	-	Nimonic 105	2.3
2.2	< 770		2.4662	NiCr13Mo6Ti3	-	HR 53	-		-	-	-	-	Nimonic 901	2.2
2.3	900 - 1200		2.4670	-	-	-	-		-	-	-	-	Nimocast 713	2.3
2.3	900 - 1200		2.4674	-	-	-	-		-	-	-	-	Nimocast PK 24	2.3
2.3	1270		2.6554	-	-	-	-		-	-	-	-	Waspaloy	2.3
2.2	890		2.4856	NiCr22Mo9Nb	NC 22 FeDNb	NA 21	-		-	-	-	-	Inconel 625	2.2
2.3	< 1400		2.4668	NiCr19FeNbMo	NC 19Fe Nb		-		-	-	-	-	Inconel 718	2.3
S	Titanio puro, leghe di titanio - Pure titanium, titanium alloys													S
1.1	290 - 410		3.7025	Ti99.5 / Ti Gr.1	-	-	-		-	-	-	-	-	1.1
1.1	380 - 540		3.7035	Ti99.4 / Ti Gr.2	-	TA 1	-		-	-	-	-	-	1.1
1.2	460 - 590		3.7055	Ti99.3 / Ti Gr.3	-	TA 2	-		-	-	-	-	-	1.2
1.2	540 - 740		3.7065	Ti99.2 / Ti Gr.4	-	TA 3	-		-	-	-	-	-	1.2
1.1	390 - 540		3.7235	Ti2Pd / Ti Gr.2Pd	-	-	-		-	-	-	-	-	1.1
1.2	> 890		3.7165	TiAl6V4 / Ti Gr. 5	T-A6V	TA 28	-		-	-	-	-	R56400	1.2
1.3	> 1000		3.7185	TiAl4Mo4Sn2	-		-		-	-	-	-	-	1.3
H	Acciai temprati, ghisa raffreddata - Hardened steels, hard castings													H
1.1	1250 - 1550	< 50	Weldox 1100	-	-	-	-		-	-	-	-	Weldox 1100	1.1
1.2	1600 - 1800	< 55	Hardox 500	-	-	-	-		-	-	-	-	Hardox 500	1.2
1.2	1820 - 1900	< 55	Hardox 550	-	-	-	-		-	-	-	-	Hardox 550	1.2
1.2	~ 1860	< 55	1.2713	55NiCrMoV6	55 NCDV 7	-	-		-	F.520.S	SKT 4	-	L 6	1.2
1.3	1995 - 2300	< 60	Armox 600T	-	-	-	-		-	-	-	-	Armox 600T	1.3
1.3	~ 2100	< 60	1.2542	45WCrV7	-	BS 1	-		45 WCrV 8 KU	45WCrSi8	-	2710	S 1	1.3
1.4		< 63	Ferro-Titanit	-	-	-	-		-	-	-	-	Ferro-Titanit	1.4
1.4		< 63	1.2379	X155CrVMo12-1	Z 160 CDV 12	BD 2	-		X 155 CrVMo 12 1KU	-	SKD 11	-	D 2	1.4
1.5		< 66	HSSE	-	-	-	-		-	-	-	-	HSSE	1.5
1.5		< 66	1.2436	X210CrW12	-	-	-		X 215 CrW 12 1 KU	X210CrW12	SKD 2	2312	-	1.5

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