



UNSERE PRÄZISION IST IHR ERFOLG



Gewindefrästechnik
Thread milling technology
Technique de filet fraisé
Tecnologia della fresatura

Nr. 1309

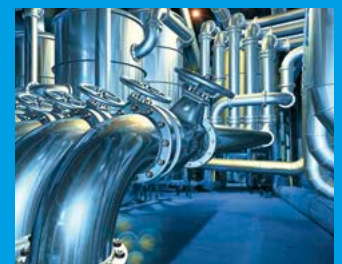




UNSERE PRÄZISION IST IHR ERFOLG



REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS



Die immer weiter steigenden Anforderungen der Industrie in der Gewindeherstellung sind nur mit Qualitätsprodukten zu lösen. NORIS Gewindewerkzeuge von REIME garantieren Präzision und Prozesssicherheit in der Fertigung. Weltweite Präsenz, Kundennähe und unsere Gewinde-Spezialisten sind dabei die Garanten zur Herstellung von hochgenauen Gewinden mit NORIS Werkzeugen.

The still further increasing demands by the industry on threading tools only can be met by high quality products. NORIS threading tools from REIME guarantee precision and a safe manufacturing process. In this context a worldwide presence, customer proximity and our threading specialists guarantee the manufacture of high-precision threads by NORIS tools.



Seuls des produits de qualité peuvent répondre aux exigences toujours croissantes de l'industrie dans le domaine de la fabrication de filets. Les outils à fileter NORIS de REIME garantissent précision et fiabilité de processus lors de la fabrication. Notre présence à l'échelle mondiale, notre assistance clients et nos spécialistes en filets sont les garants d'une fabrication de haute précision grâce aux outils NORIS.

Le richieste dell'industria alla produzione di filettature sono in crescente aumento e possono soltanto essere soddisfatte con prodotti di alta qualità. Gli utensili per filettare NORIS, prodotti da REIME, garantiscono precisione e sicurezza nel processo di produzione.

La presenza internazionale e la vicinanza al cliente dei nostri specialisti nella filettatura garantiscono un'altissima precisione dei filetti realizzati con gli utensili NORIS.



REIME NORIS REIME NORIS REIME NORIS

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Service Kontakt: solutions@noris-reime.de

Das REIME Team steht Ihnen bei der Lösung Ihrer Zerspanungsaufgabe gerne zur Seite.
The REIME team will be happy to solve your threading problems.
L'équipe de REIME se tient à votre disposition pour résoudre vos problèmes de filetage.
Il team REIME sarà lieto di risolvere i vostri problemi di filettatura.



Auswahlübersicht
Summary of assortment
Tableau de préconisation
Scelta degli utensili

Ausklappseite
Fold-out page
Page-dépliant
Pieghevole

Auswahlübersicht nach Werkstoffgruppen

Die in den jeweiligen Feldern angegebenen Schnittgeschwindigkeiten (v_c in m/min) sind Richtwerte. Die Werte müssen den jeweiligen Einsatzbedingungen angepasst werden.

Die Eignung ist folgendermaßen gekennzeichnet:

- Gewindefräser ist sehr gut geeignet
- Gewindefräser ist gut geeignet

Summary of Assortment as per material groups

The listed cutting speeds (v_c in m/min) are standard values. This values have to be adjusted to individual work conditions.

The suitability is marked as follows:

- Thread milling cutter is very suitable
- Thread milling cutter is suitable

Tableau de préconisation en fonction des matières à usiner

Les valeurs de vitesse de coupe (v_c en m/min) indiquées dans les colonnes respectives ne sont qu'indicatives et doivent être adaptées individuellement aux conditions d'usage.

Indication de l'aptitude de l'outil:

- Fraises à fileter très approprié
- Fraises à fileter approprié

Scelta degli utensili secondo i gruppi di materiali

I valori di velocità di taglio (v_c in m/min) qui elencati sono puramente indicativi e devono essere adattati alle condizioni d'impiego.


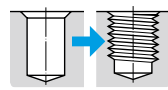
L'idoneità dell'utensile è descritta come segue:


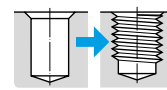
- Frese a filettare molto adatto
- Frese a filettare adatto




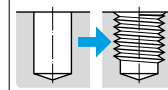
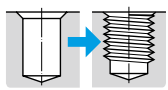
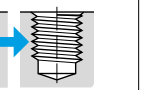


		Ausführung / Design / Version / Versione		R30 UNI		NORIS ZTF HT		L30 AERO				
Oberfläche / Surface / Surface / Superficie		OSM		OSM		OSM		OSM				
Werkzeugfunktionen / Tool features / Fonctions de l'outil / Caratteristiche utensili												
Bestell-Nr. / Cat. no. / No. de cat. / Cat. Nr.		F151		F154		F164						
M		16		24		30						
MF		17		—		—						
EG-M (STI)		—		—		—						
UNC		18		25		—						
UN		—		—		—						
UNF		19		26		—						
G, BSW, BSF, W		20		—		—						
Rc (BSPT)		—		—		—						
NPT		—		—		—						
NPTF		—		—		—						
Pg		—		—		—						
Gewindetiefe / Thread depth / Profondeur du filet / Altezza di filettatura		2 x D		3 x D		2 x D		2 x D				
		v_c [m/min]		f_z [mm]		v_c [m/min]		f_z [mm]				
A	Stahlwerkstoffe	Steel materials	Aciers	Acciai	A							
1.1	Kaltfließpressstähle	Cold-extrusion steels	Aciers pour déformation à froid	Acciai estrusi freddo	≤ 400 N/mm ²	1.1	200 - 250	150 - 200	0,040 x P	200 - 250	0,040 x P	
1.2	Automatenstähle, Baustähle	Free-machining steels, Construction steels	Aciers de décolletage, Aciers de construction	Acciai alta velocità, Acciai da costruzione	≤ 600 N/mm ²	1.2	200 - 250	150 - 200	0,040 x P	200 - 250	0,040 x P	
1.3	Baustähle, Legierte Stähle	Construction steels, Alloyed steels	Aciers de construction, Aciers alliés	Acciai da costruzione, Acciai legati	≤ 850 N/mm ²	1.3	200 - 250	100 - 150	0,040 x P	200 - 250	0,040 x P	
1.4	Einsatz-, Vergütungs-, Kaltarbeitsstähle	Heat-treatable steels, Cold working steels	Aciers pour traitements thermiques, Aciers d'outillage à froid	Acciai da bonifica, Acciai per lavorazioni a freddo	≤ 1100 N/mm ²	1.4	150 - 200		0,030 x P	150 - 200	0,030 x P	
1.5	Vergütungs-, Nitrier-, Warmarbeitsstähle	Heat-treatable steels, Hot working steels	Aciers pour traitements thermiques, Aciers d'outillage à chaud	Acciai da bonifica, Acciai per lavorazioni a caldo	≤ 1400 N/mm ²	1.5	100 - 150		0,025 x P	100 - 150	0,025 x P	
R	Nichtrostender Stahl	Corrosion and acid proof steels	Aciers inox / résist. acides	Acciai inossidabili	R							
1.1	Rost- / Säurebeständige Stähle	Corrosion and acid proof steels	Aciers inox / résist. acides	Acciai inossidabili, resistenti a acidi	≤ 850 N/mm ²	1.1	150 - 200	100 - 150	0,025 x P	150 - 200	0,025 x P	
1.2	Rost- / Säurebeständige Stähle	Corrosion and acid proof steels	Aciers inox / résist. acides	Acciai inossidabili, resistenti a acidi	≤ 1100 N/mm ²	1.2	100 - 150		0,020 x P	100 - 150	0,020 x P	
1.3	Rost- / Säurebeständige Stähle	Corrosion and acid proof steels	Aciers inox / résist. acides	Acciai inossidabili, resistenti a acidi	≤ 1400 N/mm ²	1.3	60 - 100		0,020 x P	60 - 100	0,020 x P	
F	Gusswerkstoffe	Cast materials	Fontes	Ghise	F							
1.1	Gusseisen	Cast iron	Fontes grises	Ghise	100 N/mm ² - 400 N/mm ²	1.1	200 - 300	160 - 240	0,050 x P	200 - 300	0,050 x P	
1.2	Gusseisen mit Kugelgraphit	Cast iron with nodular graphite	Fontes graphite sphéroidal	Ghise con grafite nodulare	400 N/mm ² - 1000 N/mm ²	1.2	180 - 250	150 - 220	0,030 x P	180 - 250	0,030 x P	
1.3	Gusseisen mit Vermikulargraphit	Cast iron with vermicular graphite	Fontes vermiculaires	Ghise con grafite vermicolare	300 N/mm ² - 500 N/mm ²	1.3	150 - 220	120 - 160	0,040 x P	150 - 220	0,040 x P	
2.1	Temperguss	Malleable cast iron	Fontes malléables	Ghise malleabili	280 N/mm ² - 800 N/mm ²	2.1	150 - 220	120 - 160	0,040 x P	150 - 220	0,040 x P	
3.1	Hartguss bis 400 HB	Hard castings up to 400 HB	Fontes trempées jusqu'à 400 HB	Ghise in conchiglia fino a 400 HB	< 1400 N/mm ²	3.1	100 - 140		0,025 x P	100 - 140	0,025 x P	
N	NE-Metalle	Non ferrous materials	Matériaux non ferreux	Materiali non ferrosi	N							
1.1	Alu-Knetlegierungen	Aluminium wrought alloys	Alliages d'aluminium corroyés	Leghe malleabili di alluminio	< 350 N/mm ²	1.1	350 - 450	300 - 400	0,055 x P	350 - 450	0,055 x P	
1.2	Alu-Knetlegierungen	Aluminium wrought alloys	Alliages d'aluminium corroyés	Leghe malleabili di alluminio	< 600 N/mm ²	1.2	300 - 350	250 - 300	0,050 x P	300 - 350	0,050 x P	
1.3	Alu-Guss-Legierungen	Aluminium cast alloys	Fontes d'alu	Leghe fuse di alluminio con	< 5% Si	1.3	250 - 300	200 - 250	0,050 x P	250 - 300	0,050 x P	
1.4	Alu-Guss-Legierungen langsp.	Aluminium cast alloys (long-chipping)	Fontes d'alu (cop. longs)	Leghe fuse di alluminio con (truciolo lungo)	5% Si - 12% Si	1.4	200 - 250	150 - 200	0,050 x P	200 - 250	0,050 x P	
1.5	Alu-Guss-Legierungen kurzsp.	Aluminium cast alloys (short-chipping)	Fontes d'alu (cop. courts)	Leghe fuse di alluminio con (truciolo corto)	> 12% Si	1.5	200 - 250	150 - 200	0,050 x P	200 - 250	0,050 x P	
2.1	Reinkupfer	Pure copper	Cuivre pur	Rame puro	< 500 N/mm ²	2.1	300 - 350	250 - 300	0,045 x P	300 - 350	0,045 x P	
2.2	Kupfer-Zink-Leg. (Messing) langsp.	Copper-zinc alloys (brass) (long-chipping)	Alliages cuivre-zinc (laitons) (cop. longs)	Leghe rame-zinco (ottone) (truciolo lungo)	< 600 N/mm ²	2.2	250 - 300	200 - 250	0,055 x P	250 - 300	0,055 x P	
2.3	Kupfer-Zink-Leg. (Messing) kurzsp.	Copper-zinc alloys (brass) (short-chipping)	Alliages cuivre-zinc (laitons) (cop. courts)	Leghe rame-zinco (ottone) (truciolo corto)	< 600 N/mm ²	2.3	250 - 300	200 - 250	0,055 x P	250 - 300	0,055 x P	
2.4	Kupfer-Alu/Kupfer-Nickel-Leg. langsp.	Copper-alum./Copper-nickel-alloys (long-chip.)	Cuivre-aluminium/-nickel (cop. longs)	Rame-alluminio/-nickel (truciolo lungo)	< 880 N/mm ²	2.4	200 - 250	150 - 200	0,025 x P	200 - 250	0,025 x P	
2.5	Kupfer-Alu/Kupfer-Nickel-Leg. kurzsp.	Copper-alum./Copper-nickel-alloys (short-chip.)	Cuivre-aluminium/-nickel (cop. courts)	Rame-alluminio/-nickel (truciolo corto)	< 880 N/mm ²	2.5	200 - 250	150 - 200	0,025 x P	200 - 250	0,025 x P	
2.6	Kupfer-Zinn-Leg. (Bronze) langsp.	Copper-tin alloys (bronze) (long-chipping)	Alliages cuivre-étain (bronze) (cop. longs)	Leghe rame-stagno (bronzo) (truciolo lungo)	< 800 N/mm ²	2.6	300 - 350	250 - 300	0,055 x P	300 - 350	0,055 x P	
2.7	Kupfer-Zinn-Leg. (Bronze) kurzsp.	Copper-tin alloys (bronze) (short-chipping)	Alliages cuivre-etu. (bronze) (cop. courts)	Leghe rame-allum. (bronzo) (truciolo corto)	< 500 N/mm ²	2.7	300 - 350	250 - 300	0,055 x P	250 - 300	0,055 x P	
3.1	Magnesium-Legierungen	Magnesium wrought alloys	Alliages de magnésium corroyés	Leghe malleabili di magnesio	< 600 N/mm ²	3.1	250 - 300	200 - 250	0,055 x P	300 - 350	0,055 x P	
3.2	Zink-Legierungen	Zinc alloys	Cuivre-zinc	Rame-zinco		3.2	250 - 300	200 - 250	0,055 x P	250 - 300	0,055 x P	
4.1	Duroplaste	Thermoplastics	Thermoplastiques (cop. courts)	Mat. Plastiche termoidurenti (truc. corto)		4.1	350 - 450	300 - 400	0,065 x P	350 - 450	0,065 x P	
4.2	Thermoplaste	Thermoplastics	Thermoplastiques (cop. longs)	Resine termoplastiche (truciolo lungo)		4.2	400 - 500	350 - 450	0,065 x P	400 - 500	0,065 x P	
4.3	Faserverstärkte Kunststoffe	Fibre-reinforced synthetics	Plastiques chargés en fibres	Resine epossidiche		4.3	200 - 250	150 - 200	0,050 x P	200 - 250	0,050 x P	
S	Schwer zerspanbare Werkstoffe	Difficult machinable materials	Matériaux difficile à usiner	Materiali con elevata resistenza	S							
1.1	Nickel- /Kobalt- /Eisen-Leg.	Nickel- /Cobalt- /Iron - alloys	Alliages nickel / cobalt / fer	Leghe nichel / cobalto / ferro	< 850 N/mm ²	1.1				80 - 120	0,020 x P	
1.2	Nickel- /Kobalt- /Eisen-Leg.	Nickel- /Cobalt- /Iron - alloys	Alliages nickel / cobalt / fer	Leghe nichel / cobalto / ferro	< 1100 N/mm ²	1.2			60 - 100	0,015 x P	60 - 100	0,015 x P
1.3	Nickel- /Kobalt- /Eisen-Leg.	Nickel- /Cobalt- /Iron - alloys	Alliages nickel / cobalt / fer	Leghe nichel / cobalto / ferro	< 1600 N/mm ²	1.3			40 - 80	0,015 x P	40 - 80	0,015 x P
2.1	Reintitan	Pure titanium	Titane pur	Titanio puro	< 900 N/mm ²	2.1					80 - 100	0,020 x P
2.2	Titanlegierungen	Titanium alloys	Alliages de titane	Leghe di titanio	< 1400 N/mm ²	2.2			40 - 80	0,015 x P	40 - 80	0,015 x P
H	Gehärtete Stähle	Hardened materials	Aciers traités	Acciai temprati	H							
1.1	Gehärtete Stähle	Hardened steels	Aciers traités	Acciai temprati	44 HRC - 55 HRC	1.1	80 - 120		0,025 x P	80 - 120	0,025 x P	
1.2	Gehärtete Stähle	Hardened steels	Aciers traités	Acciai temprati	> 55 HRC - 60 HRC	1.2	60 - 100		0,020 x P	60 - 100	0,020 x P	
1.3	Gehärtete Stähle	Hardened steels	Aciers traités	Acciai temprati	> 60 HRC - 63 HRC	1.3	40 - 80		0,015 x P	40 - 80	0,015 x P	
1.4	Gehärtete Stähle	Hardened steels	Aciers traités	Acciai temprati	> 63 HRC - 66 HRC	1.4				30 - 50	0,015 x P	

		R30 Z2			NORIS BGF R30 Z3			R20 Z4			
		TiCN			TiCN			TiCN / TiAlN			
		•			•			•			
		F191	F193	F195	F190	F192	F194	F196	F197	F198	
		36	36	36	42	42	42	43 - 44	43 - 44	43 - 44	M
		37	37	—	—	—	—	—	45 - 46	—	MF
		41	41	—	—	—	—	—	—	—	EG-M (STI)
		38	38	38	—	—	—	—	—	—	UNC
		—	—	—	—	—	—	—	—	—	UN
		39	39	—	—	—	—	—	—	—	UNF
		40	40	—	—	—	—	—	—	—	G...
		—	—	—	—	—	—	—	—	—	Rc (BSPT)
		—	—	—	—	—	—	—	—	—	NPT
		—	—	—	—	—	—	—	—	—	NPTF
		—	—	—	—	—	—	—	—	—	Pg
v_c [m/min]	f_b [mm]	f_z [mm]			f_z [mm]			f_z [mm]			
		1,5xD	2xD	2,5xD	1,5xD	2xD	2,5xD	1,5xD	2xD	2,5xD	
											A
											1.1
											1.2
											1.3
											1.4
											1.5
											R
											1.1
											1.2
											1.3
											F
150 - 200	0,022 x d_3	0,060 x P	0,060 x P	0,055 x P	0,060 x P	0,055 x P	0,050 x P	0,060 x P	0,055 x P	0,050 x P	1.1
											1.2
150 - 200	0,022 x d_3	0,060 x P	0,060 x P	0,055 x P							1.3
											2.1
											3.1
											N
200 - 400	0,028 x d_3	0,070 x P	0,070 x P	0,070 x P							1.1
200 - 400	0,028 x d_3	0,070 x P	0,070 x P	0,065 x P							1.2
200 - 400	0,028 x d_3	0,070 x P	0,070 x P	0,070 x P							1.3
150 - 200	0,028 x d_3	0,070 x P	0,070 x P	0,065 x P	0,070 x P	0,070 x P	0,065 x P	0,070 x P	0,070 x P	0,065 x P	1.4
100 - 150	0,028 x d_3	0,070 x P	0,070 x P	0,065 x P	0,070 x P	0,070 x P	0,065 x P	0,070 x P	0,070 x P	0,065 x P	1.5
											2.1
200 - 400	0,025 x d_3	0,070 x P	0,070 x P								2.2
180 - 350	0,025 x d_3	0,070 x P	0,065 x P	0,060 x P	0,070 x P	0,065 x P	0,060 x P	0,070 x P	0,065 x P	0,060 x P	2.3
											2.4
											2.5
											2.6
180 - 350	0,025 x d_3	0,070 x P	0,070 x P	0,065 x P							2.7
200 - 400	0,028 x d_3	0,060 x P	0,060 x P	0,055 x P							3.1
180 - 350	0,025 x d_3	0,060 x P	0,060 x P	0,055 x P							3.2
150 - 200	0,028 x d_3	0,100 x P	0,100 x P	0,090 x P							4.1
											4.2
											4.3
											S
											1.1
											1.2
											1.3
											2.1
											2.2
											H
											1.1
											1.2
											1.3
											1.4

Ausführung / Design / Version / Versione	NORIS SF R10		
	TiCN		
Oberfläche / Surface / Surface / Superficie	• •		
Werkzeugfunktionen Tool features Fonctions de l'outil Caratteristiche utensili			
Bestell-Nr. / Cat. no. / No. de Cat. / Cat. Nr.	F305		
M	50		
MF	—		
EG-M (STI)	—		
UNC	—		
UN	—		
UNF	—		
G, BSW, BSF, W	—		
Rc (BSPT)	—		
NPT	—		
NPTF	—		
Pg	—		
	v_c [m/min]	f_z [mm]	
Gewindetiefe / Thread depth Profondeur du filet / Altezza di filettatura		1,5 x D	
	A		
≤ 400 N/mm ²	1.1		
≤ 600 N/mm ²	1.2		
≤ 850 N/mm ²	1.3		
≤ 1100 N/mm ²	1.4		
≤ 1400 N/mm ²	1.5		
	R		
≤ 850 N/mm ²	1.1		
≤ 1100 N/mm ²	1.2		
≤ 1400 N/mm ²	1.3		
	F		
100 N/mm ² - 400 N/mm ²	1.1		
400 N/mm ² - 1000 N/mm ²	1.2		
300 N/mm ² - 500 N/mm ²	1.3		
280 N/mm ² - 800 N/mm ²	2.1		
< 1400 N/mm ²	3.1	60 - 80	0,030 x P
	N		
< 350 N/mm ²	1.1		
< 600 N/mm ²	1.2		
< 5% Si	1.3		
5% Si - 12% Si	1.4		
> 12% Si	1.5		
< 500 N/mm ²	2.1		
< 600 N/mm ²	2.2		
< 600 N/mm ²	2.3		
< 880 N/mm ²	2.4	40 - 60	0,030 x P
	2.5	40 - 60	0,030 x P
< 800 N/mm ²	2.6		
< 500 N/mm ²	2.7		
< 600 N/mm ²	3.1		
	3.2		
	4.1		
	4.2		
	4.3		
	S		
< 850 N/mm ²	1.1		
< 1100 N/mm ²	1.2	30 - 60	0,015 x P
< 1600 N/mm ²	1.3	30 - 60	0,010 x P
< 900 N/mm ²	2.1		
< 1400 N/mm ²	2.2	20 - 40	0,015 x P
	H		
44 HRC - 55 HRC	1.1		
> 55 HRC - 60 HRC	1.2	30 - 60	0,007 x P
> 60 HRC - 63 HRC	1.3	20 - 40	0,007 x P
> 63 HRC - 66 HRC	1.4	20 - 40	0,007 x P

NORIS SFK			
	TiCN		
Oberfläche / Surface / Surface / Superficie	• •		
Werkzeugfunktionen Tool features Fonctions de l'outil Caratteristiche utensili			
Bestell-Nr. / Cat. no. / No. de Cat. / Cat. Nr.	F360		
M	—		
MF	—		
EG-M (STI)	—		
UNC	—		
UN	—		
UNF	—		
G, BSW, BSF, W	—		
Rc (BSPT)	51		
NPT	—		
NPTF	—		
Pg	—		
	v_c [m/min]	f_z [mm]	
Gewindetiefe / Thread depth Profondeur du filet / Altezza di filettatura			
100 - 180		0,060 x P	
80 - 150		0,050 x P	
80 - 150		0,040 x P	
60 - 100		0,030 x P	
60 - 100		0,030 x P	
60 - 100		0,040 x P	
60 - 100		0,040 x P	
40 - 80		0,030 x P	
100 - 180		0,050 x P	
100 - 180		0,050 x P	
80 - 150		0,040 x P	
80 - 150		0,040 x P	
60 - 120		0,040 x P	
120 - 200		0,080 x P	
120 - 200		0,080 x P	
120 - 200		0,080 x P	
100 - 180		0,080 x P	
80 - 150		0,080 x P	
120 - 200		0,070 x P	
120 - 200		0,070 x P	
100 - 180		0,070 x P	
40 - 80		0,035 x P	
40 - 80		0,035 x P	
80 - 150		0,070 x P	
80 - 150		0,070 x P	
120 - 200		0,080 x P	
80 - 150		0,070 x P	
150 - 250		0,090 x P	
200 - 300		0,100 x P	
80 - 150		0,100 x P	
40 - 80		0,030 x P	
30 - 60		0,030 x P	
30 - 60		0,025 x P	
40 - 80		0,030 x P	
30 - 60		0,025 x P	
40 - 80		0,025 x P	
30 - 60		0,020 x P	

NORIS SFSE R15				NORIS SF R15		NORIS SFK R15-L		
	TiAlN			TiAlN			TiCN	
Oberfläche / Surface / Surface / Superficie	• •		• •		• •		• •	
Werkzeugfunktionen Tool features Fonctions de l'outil Caratteristiche utensili								
Bestell-Nr. / Cat. no. / No. de Cat. / Cat. Nr.	F211		F311		F333			
M	54		60		—			
MF	55		61		—			
EG-M (STI)	—		—		—			
UNC	56		—		—			
UN	—		—		—			
UNF	57		—		—			
G, BSW, BSF, W	58		62		—			
Rc (BSPT)	—		—		—			
NPT	59		—		64			
NPTF	—		—		66			
Pg	—		—		—			
	v_c [m/min]		f_z [mm]					
Gewindetiefe / Thread depth Profondeur du filet / Altezza di filettatura			2 x D		2 x D			
120 - 200		0,050 x P	0,050 x P		0,060 x P			
100 - 180		0,050 x P	0,050 x P		0,050 x P			
100 - 180		0,040 x P	0,040 x P		0,040 x P			
60 - 100		0,030 x P	0,030 x P		0,030 x P			
60 - 100		0,020 x P	0,020 x P		0,030 x P			
60 - 100		0,040 x P	0,040 x P		0,040 x P			
60 - 100		0,030 x P	0,030 x P		0,040 x P			
40 - 80		0,030 x P			0,030 x P			
100 - 180		0,050 x P	0,050 x P		0,050 x P			
100 - 180		0,050 x P	0,050 x P		0,050 x P			
80 - 150		0,040 x P	0,040 x P		0,040 x P			
80 - 150		0,040 x P	0,040 x P		0,040 x P			
60 - 120		0,030 x P	0,030 x P		0,040 x P			
150 - 300		0,060 x P	0,060 x P		0,080 x P			
150 - 300		0,060 x P	0,060 x P		0,080 x P			
150 - 300		0,060 x P	0,060 x P		0,080 x P			
100 - 200		0,060 x P	0,060 x P		0,080 x P			
80 - 150		0,060 x P	0,060 x P		0,080 x P			
150 - 300		0,060 x P	0,060 x P		0,070 x P			
150 - 300		0,060 x P	0,060 x P		0,070 x P			
120 - 250		0,060 x P	0,060 x P		0,070 x P			
40 - 80		0,030 x P	0,030 x P		0,035 x P			
40 - 80		0,030 x P	0,030 x P		0,035 x P			
100 - 180		0,060 x P	0,060 x P		0,070 x P			
100 - 200		0,060 x P	0,060 x P		0,070 x P			
150 - 300		0,060 x P	0,060 x P		0,080 x P			
100 - 200		0,060 x P	0,060 x P		0,070 x P			
200 - 400		0,070 x P	0,070 x P		0,090 x P			
250 - 450		0,080 x P	0,080 x P		0,100 x P			
100 - 200		0,080 x P	0,080 x P		0,100 x P			
40 - 80		0,025 x P	0,025 x P		0,030 x P			
30 - 60					0,030 x P			
30 - 60					0,025 x P			
40 - 80		0,025 x P	0,025 x P		0,030 x P			
30 - 60					0,025 x P			
40 - 80					0,025 x P			
30 - 60					0,020 x P			

NORIS SFX	
R15VZ	R15Z
TiCN	TiCN
•	•
•	•
F341	F342
68	69
68	69
—	—
—	—
—	—
—	—
—	—
—	—
—	—
—	—
—	—
v_c [m/min]	f_z [mm]
120 - 200	0,060 x P 0,060 x P
100 - 180	0,050 x P 0,050 x P
100 - 180	0,040 x P 0,040 x P
60 - 100	0,030 x P 0,030 x P
60 - 100	0,030 x P 0,030 x P
60 - 100	0,040 x P 0,040 x P
60 - 100	0,040 x P 0,040 x P
40 - 80	0,030 x P 0,030 x P
100 - 180	0,050 x P 0,050 x P
100 - 180	0,050 x P 0,050 x P
80 - 150	0,040 x P 0,040 x P
80 - 150	0,040 x P 0,040 x P
60 - 120	0,040 x P 0,040 x P
150 - 300	0,080 x P 0,080 x P
150 - 300	0,080 x P 0,080 x P
150 - 300	0,080 x P 0,080 x P
100 - 200	0,080 x P 0,080 x P
80 - 150	0,080 x P 0,080 x P
150 - 300	0,070 x P 0,070 x P
150 - 300	0,070 x P 0,070 x P
120 - 250	0,070 x P 0,070 x P
40 - 80	0,035 x P 0,035 x P
40 - 80	0,035 x P 0,035 x P
100 - 180	0,070 x P 0,070 x P
100 - 200	0,070 x P 0,070 x P
150 - 300	0,080 x P 0,080 x P
100 - 200	0,070 x P 0,070 x P
200 - 400	0,090 x P 0,090 x P
250 - 450	0,100 x P 0,100 x P
100 - 200	0,100 x P 0,100 x P
40 - 80	0,030 x P 0,030 x P
30 - 60	0,030 x P 0,030 x P
30 - 60	0,025 x P 0,025 x P
40 - 80	0,030 x P 0,030 x P
30 - 60	0,025 x P 0,025 x P
40 - 80	0,025 x P 0,025 x P
30 - 60	0,020 x P 0,020 x P

NORIS SFSE		
R30		
TiCN		
•		
•		
F221	F222	F223
72	72	72
73	73	—
—	—	—
74	74	74
—	—	—
75	75	—
76	76	—
—	—	—
—	—	—
—	—	—
—	—	—
v_c [m/min]	f_z [mm]	
	1,5xD	2xD
150 - 250	0,060 x P	0,055 x P 0,050 x P
150 - 250	0,050 x P	0,045 x P 0,040 x P
120 - 200	0,040 x P	0,035 x P 0,030 x P
80 - 120	0,030 x P	0,025 x P
80 - 120	0,040 x P	0,035 x P 0,030 x P
60 - 100	0,030 x P	0,025 x P
140 - 200	0,060 x P	0,055 x P 0,050 x P
140 - 200	0,050 x P	0,050 x P 0,045 x P
100 - 180	0,060 x P	0,055 x P 0,050 x P
100 - 180	0,050 x P	0,045 x P 0,040 x P
80 - 150	0,030 x P	0,025 x P
200 - 400	0,080 x P	0,080 x P 0,080 x P
200 - 400	0,080 x P	0,080 x P 0,080 x P
200 - 400	0,080 x P	0,080 x P 0,080 x P
150 - 300	0,080 x P	0,075 x P 0,070 x P
100 - 200	0,080 x P	0,075 x P 0,070 x P
200 - 400	0,070 x P	0,065 x P 0,060 x P
200 - 400	0,070 x P	0,065 x P 0,060 x P
150 - 300	0,070 x P	0,065 x P 0,060 x P
40 - 80	0,035 x P	0,030 x P
40 - 80	0,035 x P	0,030 x P
150 - 250	0,065 x P	0,060 x P 0,055 x P
150 - 250	0,065 x P	0,060 x P 0,055 x P
200 - 300	0,080 x P	0,080 x P 0,080 x P
150 - 250	0,065 x P	0,060 x P 0,055 x P
200 - 350	0,080 x P	0,080 x P 0,080 x P
200 - 400	0,100 x P	0,100 x P 0,100 x P
80 - 150	0,100 x P	0,100 x P
40 - 80	0,030 x P	0,025 x P
40 - 80	0,030 x P	0,025 x P

NORIS SF-X			
R30	R30-L	R30	
TiCN	TiCN	TiCN	
•	•	•	
•	•	•	
F330	F331	F340	
77	78	—	M
—	—	—	MF
—	—	—	EG-M (STI)
—	—	—	UNC
—	79	—	UN
—	—	—	UNF
—	—	80	G...
—	—	—	Rc
—	—	—	NPT
—	—	—	NPTF
—	—	81	Pg
v_c [m/min]	f_z [mm]		
150 - 250	0,060 x P		A
150 - 250	0,050 x P	0,050 x P	1.1
120 - 200	0,040 x P		1.2
80 - 120	0,030 x P		1.3
			1.4
			1.5
80 - 120	0,040 x P		R
60 - 100	0,030 x P		1.1
			1.2
			1.3
140 - 200	0,060 x P		F
140 - 200	0,050 x P		1.1
140 - 200	0,050 x P		1.2
100 - 180	0,060 x P		1.3
100 - 180	0,050 x P		2.1
80 - 150	0,030 x P		3.1
200 - 400	0,080 x P		N
200 - 400	0,080 x P		1.1
200 - 400	0,080 x P		1.2
200 - 400	0,080 x P		1.3
150 - 300	0,080 x P		1.4
100 - 200	0,080 x P		1.5
200 - 400	0,070 x P		2.1
200 - 400	0,070 x P		2.2
150 - 300	0,070 x P		2.3
40 - 80	0,050 x P		2.4
40 - 80	0,050 x P		2.5
150 - 250	0,065 x P		2.6
150 - 250	0,065 x P		2.7
200 - 300	0,080 x P		3.1
150 - 250	0,065 x P		3.1
200 - 350	0,080 x P		4.1
200 - 400	0,100 x P		4.2
80 - 150	0,100 x P		4.3
40 - 80	0,030 x P		S
			1.1
			1.2
			1.3
40 - 80	0,030 x P		2.1
			2.2
			H
			1.1
			1.2
			1.3
			1.4

Ausführung / Design / Version / Versione		NORIS MWN				
		RH	RH	LH	LH	
Oberfläche / Surface / Surface / Superficie		—	TiAlN	—	TiAlN	
		•	•	•	•	
Werkzeugfunktionen Tool features Fonctions de l'outil Caratteristiche utensili						
Bestell-Nr. / Cat. no. / No. de Cat. / Cat. Nr.		1190	1190	1190	1190	
M		85/87/89/92	85/87/89/92	—	—	
MF		—	—	—	—	
EG-M (STI)		—	—	—	—	
UNC		—	—	—	—	
UN		85/89/92	85/89/92	—	—	
UNF		—	—	—	—	
G, BSW, BSF, W		85/90/93	85/90/93	—	—	
Rc (BSPT)		—	—	—	—	
NPT		95	95	95	95	
NPTF		—	—	—	—	
Pg		87/90	87/90	—	—	
Gewindetiefe / Thread depth Profondeur du filet / Altezza di filettatura		v_c [m/min]				f_z [mm]
	A					
≤ 400 N/mm ²	1.1		100 - 200		100 - 200	0,050 x P
≤ 600 N/mm ²	1.2		100 - 200		100 - 200	0,050 x P
≤ 850 N/mm ²	1.3		100 - 200		100 - 200	0,040 x P
≤ 1100 N/mm ²	1.4		80 - 140		80 - 140	0,030 x P
≤ 1400 N/mm ²	1.5					
	R					
≤ 850 N/mm ²	1.1		100 - 200		100 - 200	0,020 x P
≤ 1100 N/mm ²	1.2		100 - 200		100 - 200	0,020 x P
≤ 1400 N/mm ²	1.3					
	F					
100 N/mm ² - 400 N/mm ²	1.1		100 - 180		100 - 180	0,050 x P
400 N/mm ² - 1000 N/mm ²	1.2		100 - 180		100 - 180	0,050 x P
300 N/mm ² - 500 N/mm ²	1.3		80 - 150		80 - 150	0,050 x P
280 N/mm ² - 800 N/mm ²	2.1		80 - 150		80 - 150	0,040 x P
< 1400 N/mm ²	3.1		80 - 150		80 - 150	0,030 x P
	N					
< 350 N/mm ²	1.1	100 - 200		100 - 200		0,050 x P
< 600 N/mm ²	1.2	100 - 200		100 - 200		0,050 x P
< 5% Si	1.3	100 - 200		100 - 200		0,050 x P
5% Si - 12% Si	1.4	100 - 200		100 - 200		0,050 x P
> 12% Si	1.5	100 - 200	150 - 200	100 - 200	150 - 200	0,030 x P
< 500 N/mm ²	2.1	100 - 200	200 - 250	100 - 200	200 - 250	0,040 x P
< 600 N/mm ²	2.2	100 - 200	150 - 200	100 - 200	150 - 200	0,030 x P
< 600 N/mm ²	2.3	70 - 110	100 - 150	70 - 110	100 - 150	0,020 x P
< 880 N/mm ²	2.4	20 - 40	40 - 80	20 - 40	40 - 80	0,020 x P
	2.5	20 - 40	40 - 80	20 - 40	40 - 80	0,020 x P
< 800 N/mm ²	2.6	100 - 200	200 - 250	100 - 200	200 - 250	0,040 x P
< 500 N/mm ²	2.7	100 - 200	200 - 250	100 - 200	200 - 250	0,040 x P
< 600 N/mm ²	3.1	100 - 200	200 - 250	100 - 200	200 - 250	0,040 x P
	3.2	100 - 200	200 - 250	100 - 200	200 - 250	0,040 x P
	4.1	100 - 200	200 - 250	100 - 200	200 - 250	0,040 x P
	4.2	100 - 200	250 - 300	100 - 200	250 - 300	0,050 x P
	4.3		100 - 150		100 - 150	0,050 x P
	S					
< 850 N/mm ²	1.1	20 - 40	40 - 80	20 - 40	40 - 80	0,010 x P
< 1100 N/mm ²	1.2	10 - 15	20 - 40	10 - 15	20 - 40	0,010 x P
< 1600 N/mm ²	1.3					
< 900 N/mm ²	2.1	40 - 80	80 - 120	40 - 80	80 - 120	0,010 x P
< 1400 N/mm ²	2.2	20 - 40	30 - 50	20 - 40	30 - 50	0,010 x P
	H					
44 HRC - 55 HRC	1.1					
> 55 HRC - 60 HRC	1.2					
> 60 HRC - 63 HRC	1.3					
> 63 HRC - 66 HRC	1.4					

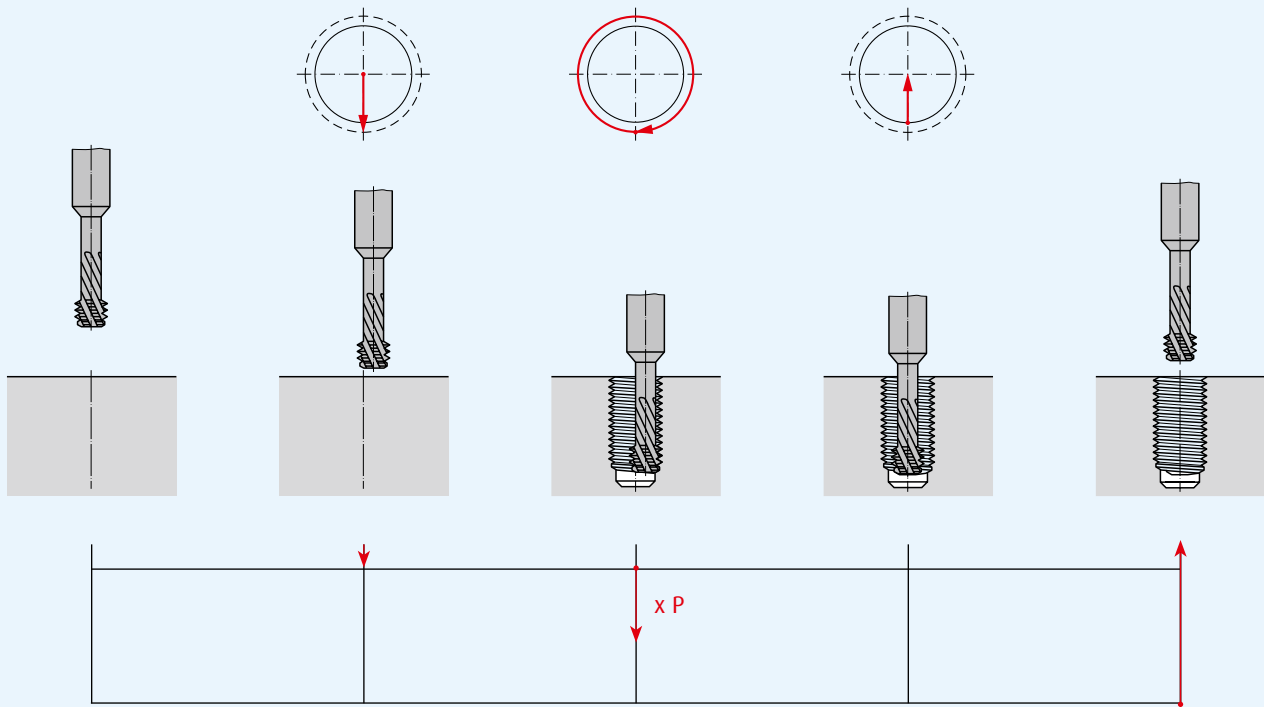
NORIS EIR		
HR	R30	
OSM	OSM	
•	•	
—	•	
F500	F503	
106	107	
—	—	
—	—	
—	—	
—	—	
—	—	
—	—	
—	—	
—	—	
—	—	
—	—	
v_c [m/min]		f_z [mm]
	200 - 250	0,045 x P
	200 - 250	0,040 x P
	200 - 250	0,040 x P
150 - 200	150 - 200	0,035 x P
100 - 150	100 - 150	0,030 x P
80 - 120	80 - 120	0,035 x P
60 - 100	60 - 100	0,030 x P
40 - 80	40 - 80	0,020 x P
	200 - 300	0,060 x P
	180 - 250	0,050 x P
	150 - 220	0,050 x P
	150 - 220	0,050 x P
120 - 180	100 - 140	0,035 x P
	350 - 450	0,060 x P
	300 - 400	0,055 x P
	250 - 300	0,055 x P
	200 - 250	0,055 x P
	200 - 250	0,055 x P
	250 - 300	0,050 x P
	250 - 300	0,055 x P
	200 - 250	0,055 x P
60 - 100		0,030 x P
60 - 100		0,030 x P
	200 - 300	0,055 x P
	200 - 300	0,055 x P
	250 - 350	0,055 x P
	200 - 300	0,055 x P
	200 - 350	0,065 x P
	250 - 400	0,065 x P
250 - 350		0,070 x P
80 - 120	80 - 120	0,030 x P
60 - 100	60 - 100	0,025 x P
40 - 80		0,020 x P
80 - 120	80 - 100	0,030 x P
40 - 80	40 - 80	0,025 x P
80 - 120	80 - 120	0,025 x P
60 - 100		0,020 x P
40 - 80		0,015 x P

NORIS NES			Modular		NORIS NES-TS		Modular		
TiN / TiAlN	TiN / TiAlN	TiN / TiAlN	TiN / TiAlN	TiN / TiAlN	TiN / TiAlN	TiAlN			
—	SK/BT	HSK	•	—	SK	•			
•			—	•		—			
F501	F505	F508	F50K	F701	F705	F70K			
112 - 113	114 - 117	118 - 119	120 - 121	122 - 123	124 - 125	126 - 127			
112 - 113	114 - 117	118 - 119	120 - 121	122 - 123	124 - 125	126 - 127			
—	—	—	—	—	—	—			
—	—	—	—	—	—	—			
112 - 113	114 - 117	118 - 119	120 - 121	122 - 123	124 - 125	126 - 127			
—	—	—	—	—	—	—			
112 - 113	114 - 117	118 - 119	120 - 121	—	—	—			
—	—	—	—	—	—	—			
—	—	—	—	—	—	—			
—	—	—	—	—	—	—			
—	—	—	—	—	—	—			
v_c [m/min]							f_z [mm]		
TiN			TiAlN						
300 - 350			350 - 400				0,150 - 0,250 x P		
250 - 300			300 - 350				0,150 - 0,250 x P		
200 - 250			250 - 300				0,100 - 0,200 x P		
150 - 200			200 - 250				0,100 - 0,200 x P		
100 - 150			150 - 200				0,060 - 0,120 x P		
80 - 120			120 - 140				0,080 - 0,120 x P		
60 - 100			80 - 120				0,060 - 0,100 x P		
50 - 80			60 - 100				0,040 - 0,080 x P		
300 - 350			350 - 400				0,150 - 0,250 x P		
200 - 250			250 - 300				0,100 - 0,200 x P		
200 - 250			250 - 300				0,100 - 0,200 x P		
250 - 300			300 - 350				0,150 - 0,250 x P		
100 - 150			150 - 200				0,060 - 0,120 x P		
300 - 350			350 - 400				0,150 - 0,250 x P		
300 - 350			300 - 350				0,150 - 0,250 x P		
300 - 350			350 - 400				0,150 - 0,250 x P		
250 - 300			300 - 350				0,150 - 0,250 x P		
200 - 250			250 - 300				0,100 - 0,200 x P		
300 - 350			300 - 350				0,150 - 0,250 x P		
300 - 350			300 - 350				0,150 - 0,250 x P		
250 - 300			300 - 350				0,150 - 0,250 x P		
150 - 200			300 - 350				0,150 - 0,250 x P		
150 - 200			300 - 350				0,150 - 0,250 x P		
250 - 300			300 - 350				0,150 - 0,250 x P		
250 - 300			300 - 350				0,150 - 0,250 x P		
300 - 350			300 - 350				0,150 - 0,250 x P		
250 - 300			300 - 350				0,150 - 0,250 x P		
300 - 350			300 - 350				0,150 - 0,250 x P		
300 - 350			300 - 350				0,150 - 0,250 x P		
150 - 200			200 - 250				0,100 - 0,200 x P		
80 - 120			80 - 120				0,060 - 0,100 x P		
60 - 100			60 - 100				0,040 - 0,080 x P		
50 - 80			50 - 80				0,040 - 0,080 x P		
80 - 120			80 - 120				0,060 - 0,100 x P		
50 - 80			50 - 80				0,040 - 0,080 x P		
40 - 60			40 - 60				0,020 - 0,040 x P		



NORIS ZTF UNI	14 - 21
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Gewindefräszklus · Thread milling cycle · Cycle de fraisage de filets · Ciclo di fresatura di filetti



NORIS ZTF UNI



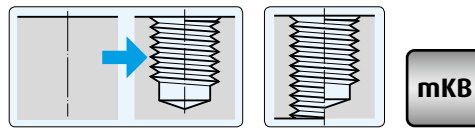
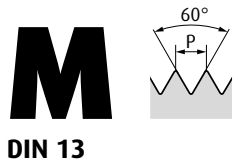
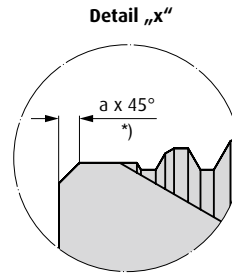
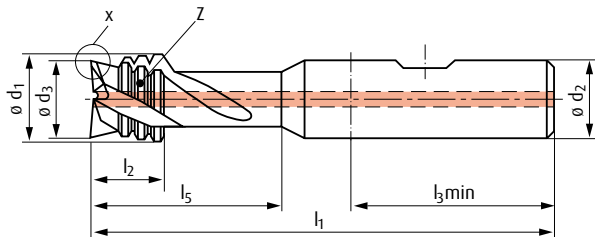
NORIS ZTF UNI

NORIS ZTF R30 UNI K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB



OSM



OSM

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo												F151	
	$\varnothing D \text{ min}$ mm	$\varnothing D \text{ max}$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_3$ mm	a x 45° °)	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	6	7,5	1	4,51	8	3,41	0,3	60	4,1	36	16	3	F151HAF0001	F151HBF0001
	8	10	1,25	6,23	10	4,91	0,4	71	5,1	40	21	4	F151HAF0003	F151HBF0003
	10	13	1,5	7,75	10	6,11	0,5	76	6	40	26	4	F151HAF0005	F151HBF0005
	12	15	1,75	9,16	12	7,21	0,6	86	7	45	32	4	F151HAF0008	F151HBF0008
	14	18	2	11,08	16	8,91	0,6	98	8,1	48	41	4	F151HAF0009	F151HBF0009
	18	25	2,5	14,38	20	11,71	0,7	111	10	50	51	5	F151HAF0011	F151HBF0011

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 4.3
S	
H	1.1 - 1.3

3 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo												F151	
	$\varnothing D \text{ min}$ mm	$\varnothing D \text{ max}$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_3$ mm	a x 45° °)	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	6	7,5	1	4,51	8	3,41	0,3	65	4,1	36	23	3	F151HAF0050	F151HBF0050
	8	10	1,25	6,23	10	4,91	0,4	80	5,1	40	30	4	F151HAF0052	F151HBF0052
	10	13	1,5	7,75	10	6,11	0,5	85	6	40	37	4	F151HAF0054	F151HBF0054
	12	15	1,75	9,16	12	7,21	0,6	100	7	45	43	4	F151HAF0056	F151HBF0056
	14	18	2	11,08	16	8,91	0,6	113	8,1	48	57	4	F151HAF0057	F151HBF0057
	18	25	2,5	14,38	20	11,71	0,7	129	10	50	71	5	F151HAF0059	F151HBF0059

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.3
R	1.1
F	1.1 - 2.1
N	1.1 - 4.3
S	
H	

*) Zur Anbringung einer Schutzsenkung, Plansenkung oder zum Planflächenfräsen
To produce a face chamfer, plane milling or for circular face milling
Pour chanfreinage de protection, chanfreinage sur surface plane, ou pour fraisage
Per eseguire uno smusso, fresatura o fresatura circolare

$v_c/f_z = 6$

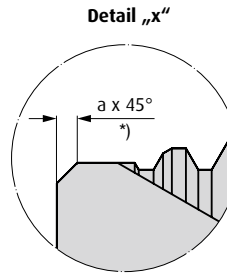
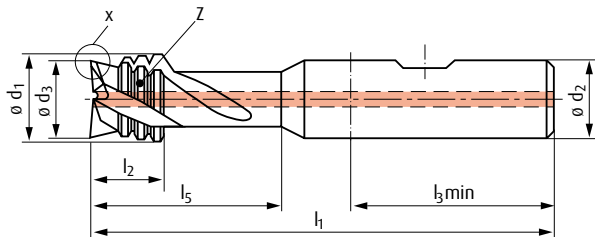
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NORIS ZTF R30 UNI K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB

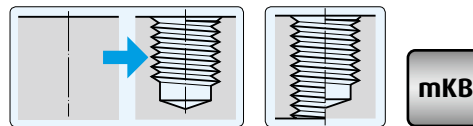


OSM

OSM



DIN 13



mKB

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo												F151	
	$\varnothing D \text{ min}$ mm	$\varnothing D \text{ max}$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_3$ mm	a x 45° *)	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	8	11	1	6,23	10	5,13	0,3	71	4,1	40	22	4	F151HAF0014	F151HBF0014
	12	17	1	9,15	12	8,06	0,3	86	4,1	45	29	4	F151HAF0017	F151HBF0017
	14	19,5	1,5	10,83	16	9,15	0,5	98	6	48	37	4	F151HAF0019	F151HBF0019
	18	27,5	1,5	14,83	16	13,15	0,5	98	6	48	47	4	F151HAF0021	F151HBF0021
	22	34,5	1,5	18,23	20	16,55	0,5	111	6	50	56	5	F151HAF0023	F151HBF0023

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 4.3
S	
H	1.1 - 1.3

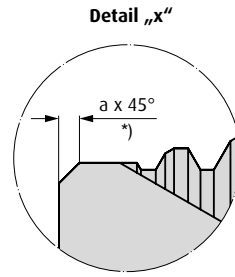
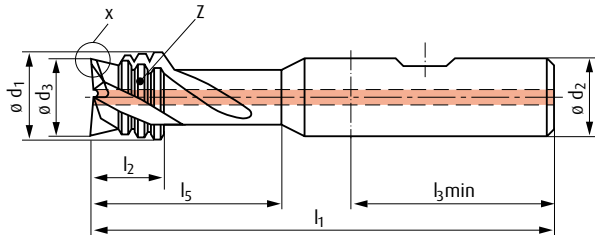
*) Zur Anbringung einer Schutzsenkung, Plansenkung oder zum Planflächenfräsen
To produce a face chamfer, plane milling or for circular face milling
Pour chanfreinage de protection, chanfreinage sur surface plane, ou pour fraisurage
Per eseguire uno smusso, fresatura o fresatura circolare

$v_c/f_z =$ 6

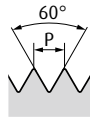
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NORIS ZTF R30 UNI K20

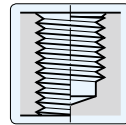
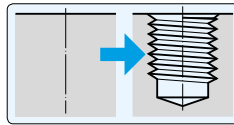
Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



UNC



ASME B1.1



mKB

DIN 6535 HA

DIN 6535 HB



OSM

OSM

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo												F151	
	$\varnothing D$ min inch	$\varnothing D$ max inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_3$ mm	a x 45° ")	l_1 mm	l_2 mm	l_3 min mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	1/4	5/16	20	4,64	8	3,34	0,4	60	5,1	36	17	3	F151HAF0026	F151HBF0026
5/16	3/8	18	5,64	10	4,12	0,5	76	5,7	40	22	4	F151HAF0027	F151HBF0027	
3/8	7/16	16	7,16	10	5,42	0,5	76	6,4	40	26	4	F151HAF0028	F151HBF0028	
7/16	1/2	14	8,47	12	6,49	0,6	86	7,2	45	31	4	F151HAF0029	F151HBF0029	
1/2	5/8	13	10,08	12	7,95	0,6	86	7,9	45	33	4	F151HAF0030	F151HBF0030	
9/16	3/4	12	11,28	16	8,98	0,6	98	8,5	48	41	4	F151HAF0031	F151HBF0031	
5/8	7/8	11	12,89	16	10,4	0,7	98	9,3	48	42	4	F151HAF0032	F151HBF0032	
3/4	1	10	15,5	20	12,77	0,7	111	10,1	50	51	5	F151HAF0033	F151HBF0033	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 4.3
S	
H	1.1 - 1.3

*) Zur Anbringung einer Schutzsenkung, Plansenkung oder zum Planflächenfräsen

To produce a face chamfer, plane milling or for circular face milling
Pour chanfreinage de protection, chanfreinage sur surface plane, ou pour fraisage
Per eseguire uno smusso, fresatura o fresatura circolare

$v_c/f_z =$ 6

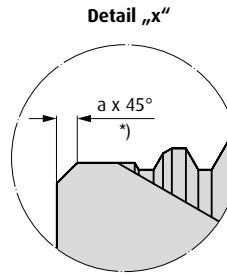
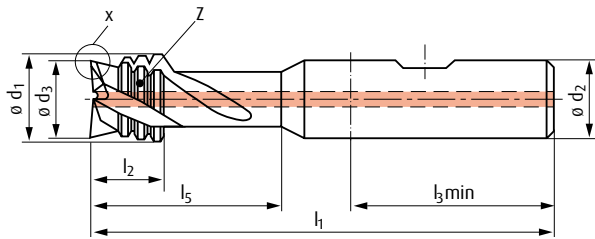
$i =$ 140

NORIS ZTF R30 UNI K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB

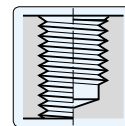
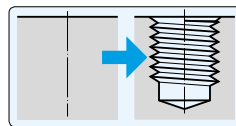
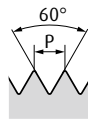


OSM

OSM

UNF

ASME B1.1



2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo												F151	
	$\varnothing D$ min inch	$\varnothing D$ max inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_3$ mm	$a \times 45^\circ$ *)	l_1 mm	l_2 mm	l_3 min mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	1/4	5/16	28	4,66	8	3,62	0,3	60	3,7	36	17	3	F151HAF0035	F151HBF0035
	5/16	3/8	24	5,64	10	4,48	0,3	76	4,25	40	22	4	F151HAF0036	F151HBF0036
	3/8	1/2	24	7,14	10	6	0,3	76	4,25	40	26	4	F151HAF0037	F151HBF0037
	7/16	9/16	20	8,45	12	7,06	0,4	86	5,15	45	33	4	F151HAF0038	F151HBF0038
	9/16	3/4	18	11,27	16	9,72	0,5	98	5,75	48	41	4	F151HAF0040	F151HBF0040
	5/8	7/8	18	12,38	16	10,83	0,5	98	5,75	48	42	4	F151HAF0041	F151HBF0041
	3/4	1	16	15,38	20	13,65	0,5	111	6,3	50	51	5	F151HAF0042	F151HBF0042

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 4.3
S	
H	1.1 - 1.3

*) Zur Anbringung einer Schutzsenkung, Plansenkung oder zum Planflächenfräsen
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Pour chanfreinage de protection, chanfreinage sur surface plane, ou pour fraisurage
Per eseguire uno smusso, fresatura o fresatura circolare

$v_c/f_z = 6$

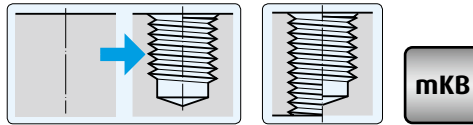
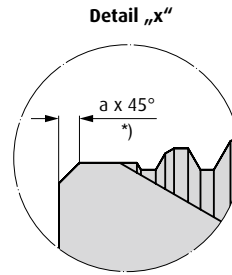
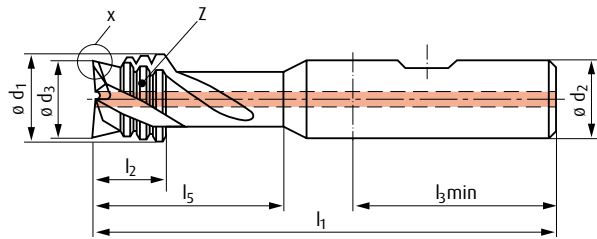
$i = 140$

NORIS ZTF R30 UNI K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB



2 X D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F151	
	Nenngröße Nom. size Taille nom. Grand. nom. $\varnothing D_{\text{min.}}^{1)}$ inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_3$ mm	$a \times 45^\circ$ °)	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	1/4	19	10,3	12	8,82	0,4	86	5,4	45	32	4	F151HAF0044	F151HBF0044
3/8	19	13,35	16	11,82	0,4	98	5,4	48	39	4	F151HAF0045	F151HBF0045	
1/2	14	17,05	20	14,94	0,5	111	7,35	50	50	5	F151HAF0046	F151HBF0046	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 4.3
S	
H	1.1 - 1.3

¹⁾ Zur Anbringung einer Schutzsenkung, Plansenkung oder zum Planflächenfräsen
To produce a face chamfer, plane milling or for circular face milling
Pour chanfreinage de protection, chanfreinage sur surface plane, ou pour fraisurage
Per eseguire uno smusso, fresatura o fresatura circolare

$v_c/f_z =$ 6

= 140

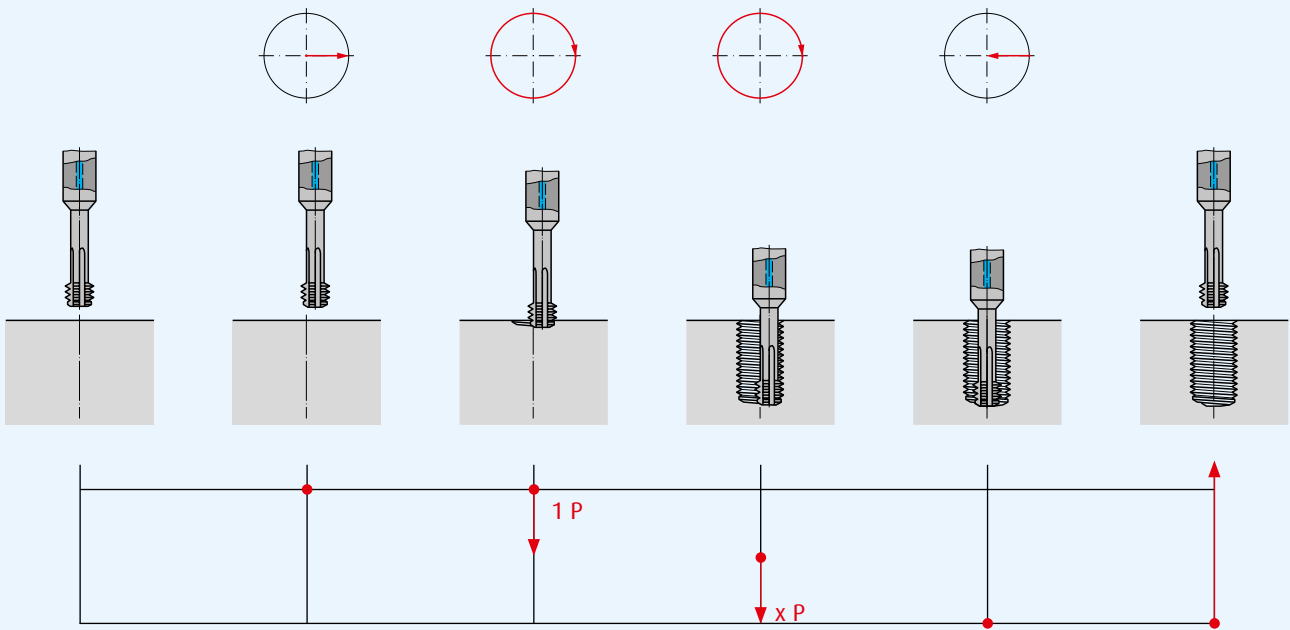
¹⁾ Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde
Diameter related to internal pipe thread resp. external pipe thread
Diamètre relié au filetage intérieur ou extérieur du tube
Diametro riferito alla filettatura gas interna o esterna



Service Kontakt: solutions@noris-reime.de

Das REIME Team steht Ihnen bei der Lösung Ihrer Zerspanungsaufgabe gerne zur Seite.
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L'équipe de REIME se tient à votre disposition pour résoudre vos problèmes de filetage.
Il team REIME sarà lieto di risolvere i vostri problemi di filettatura.

Gewindefräszzyklus · Thread milling cycle · Cycle de fraisage de filets · Ciclo di fresatura di filetti



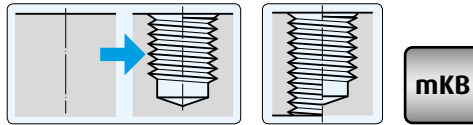
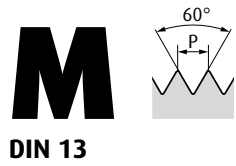
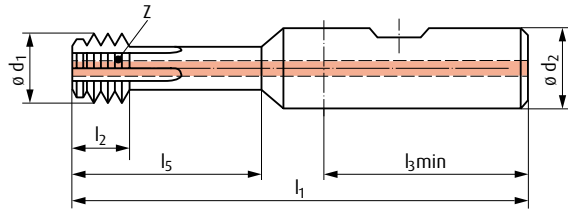
NORIS ZTF HT



NORIS ZTF HT

NORIS ZTF HT K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



DIN 6535 HA

DIN 6535 HB



TiAlN

TiAlN

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F154	
	$\varnothing D$ min mm	$\varnothing D$ max mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	l_3 min mm	l_5 mm	z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	8	10	1,25	6,2	10	71	5	40	19	4	F154HAF00806	F154HBF00806
	10	12	1,5	7,75	10	76	6	40	25	4	F154HAF01006	F154HBF01006
	12	14	1,75	9,2	12	86	7	45	31	4	F154HAF01126	F154HBF01126
	14	16	2	11,1	16	98	8	48	36	4	F154HAF01146	F154HBF01146

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	
R	
F	3.1
N	
S	1.2 - 1.3 / 2.2
H	1.1 - 1.4

$v_c/f_z =$ 6

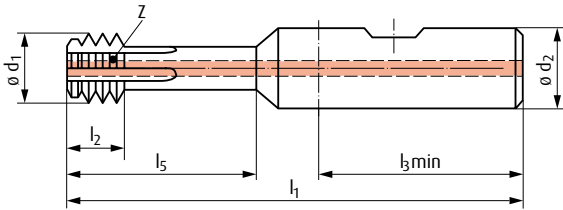
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NORIS ZTF HT K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

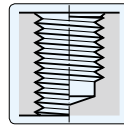
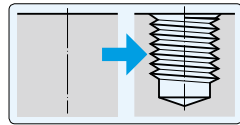
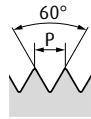
DIN 6535 HA

DIN 6535 HB



UNC

ASME B1.1



TiAlN

TiAlN

F154

Kat.-Nr. / Cat. No. / N° cat. / Tipo

2 x D

$\varnothing D$ min inch	$\varnothing D$ max inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	l_3 min mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
5/16	3/8	18	5,64	10	76	5,6	40	22	4	F154HAF50106	F154HBF50106
3/8	7/16	16	7,16	10	76	6,4	40	27	4	F154HAF50116	F154HBF50116
7/16	1/2	14	8,47	12	86	7,3	45	31	4	F154HAF50126	F154HBF50126
1/2	5/8	13	10,08	12	86	7,8	45	33	4	F154HAF50136	F154HBF50136
5/8	3/4	11	12,89	16	98	9,2	48	42	4	F154HAF50156	F154HBF50156
3/4	7/8	10	15,5	20	111	10,2	50	51	5	F154HAF50166	F154HBF50166

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

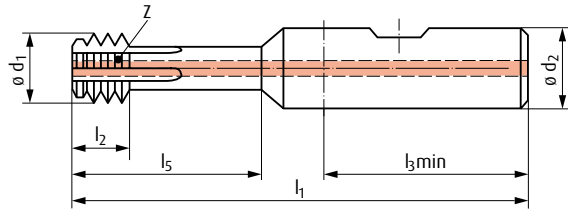
A	
R	
F	3.1
N	
S	1.2 - 1.3 / 2.2
H	1.1 - 1.4

$v_c/f_z =$ 6

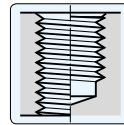
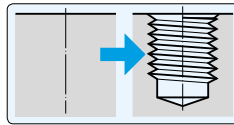
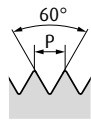
$i =$ 140

NORIS ZTF HT K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



UNF
ASME B1.1



mKB

DIN 6535 HA

DIN 6535 HB



2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F154	
	$\varnothing D$ min inch	$\varnothing D$ max inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	l_3 min mm	l_5 mm	z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	5/16	3/8	24	5,64	10	76	4,2	40	22	4	F154HAF50446	F154HBF50446
	3/8	7/16	24	7,14	10	76	4,2	40	27	4	F154HAF50456	F154HBF50456
	7/16	1/2	20	8,45	12	86	5,1	45	33	4	F154HAF50466	F154HBF50466
	9/16	5/8	18	11,27	16	98	5,6	48	41	4	F154HAF50486	F154HBF50486
	3/4	7/8	16	15,38	20	111	6,4	50	51	5	F154HAF50506	F154HBF50506

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	
R	
F	3.1
N	
S	1.2 - 1.3 / 2.2
H	1.1 - 1.4

$v_c/f_z =$ 6

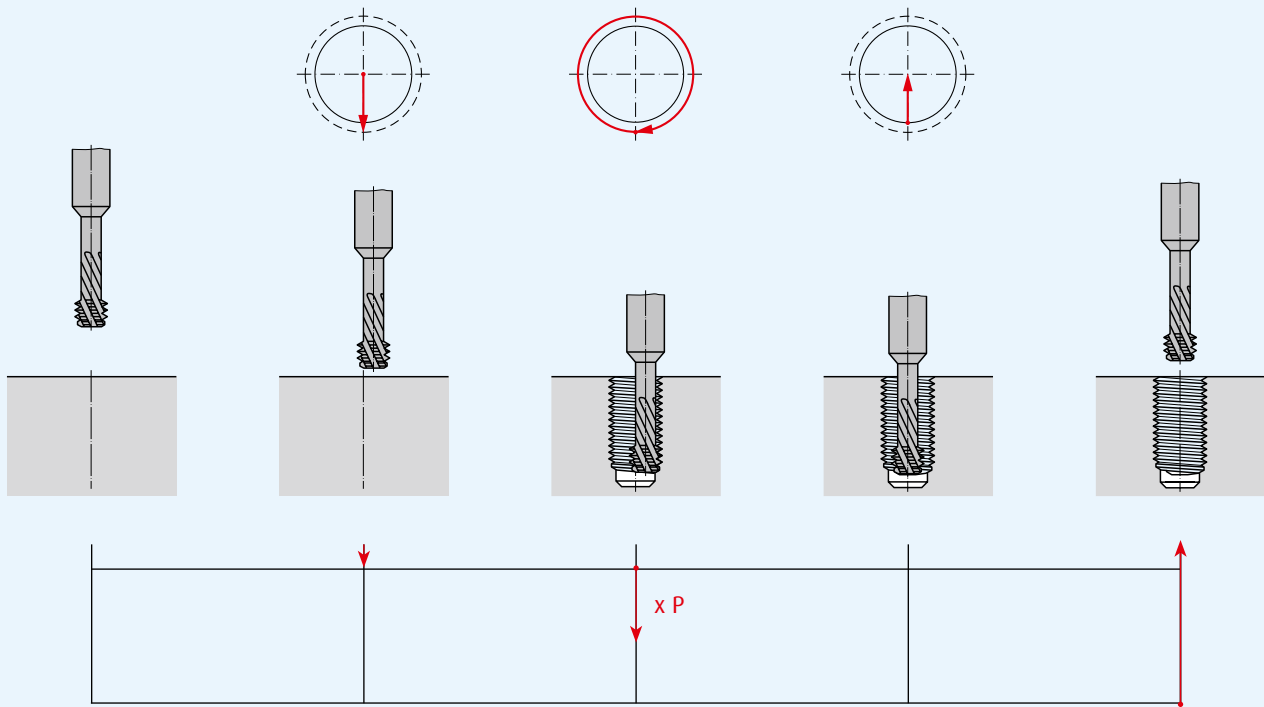
i = 140



Service Kontakt: solutions@noris-reime.de

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Il team REIME sarà lieto di risolvere i vostri problemi di filettatura.

Gewindefräszklus · Thread milling cycle · Cycle de fraisage de filets · Ciclo di fresatura di filetti



NORIS ZTF AERO

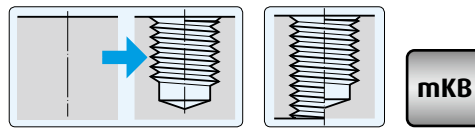
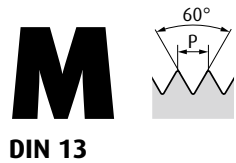
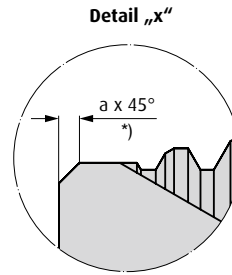
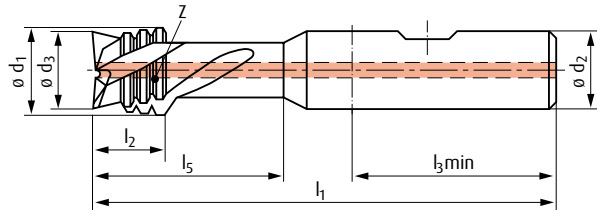


REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS

NORIS ZTF AERO

NORIS ZTF L30 AERO K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



DIN 6535 HA

DIN 6535 HB



OSM

OSM

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo												F164	
	$\varnothing D \text{ min}$ mm	$\varnothing D \text{ max}$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_3$ mm	$a \times 45^\circ$ °)	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
6	7,5	1	4,51	8	3,41	0,3	60	4,1	36	16	3	F164HAF00607	F164HBF00607	
8	10	1,25	6,23	10	4,91	0,4	71	5,1	40	21	4	F164HAF00807	F164HBF00807	
10	13	1,5	7,75	10	6,11	0,5	76	6	40	26	4	F164HAF01007	F164HBF01007	
12	15	1,75	9,16	12	7,21	0,6	86	7	45	32	4	F164HAF01127	F164HBF01127	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 - 2.2
H	1.1 - 1.3

*) Zur Anbringung einer Schutzsenkung, Plansenkung oder zum Planflächenfräsen
To produce a face chamfer, plane milling or for circular face milling
Pour chanfreinage de protection, chanfreinage sur surface plane, ou pour fraisurage
Per eseguire uno smusso, fresatura o fresatura circolare

$v_c/f_z =$ 6

$i =$ 140



Service Kontakt: solutions@noris-reime.de

Das REIME Team steht Ihnen bei der Lösung Ihrer Zerspanungsaufgabe gerne zur Seite.
The REIME team will be happy to solve your threading problems.
L'équipe de REIME se tient à votre disposition pour résoudre vos problèmes de filetage.
Il team REIME sarà lieto di risolvere i vostri problemi di filettatura.

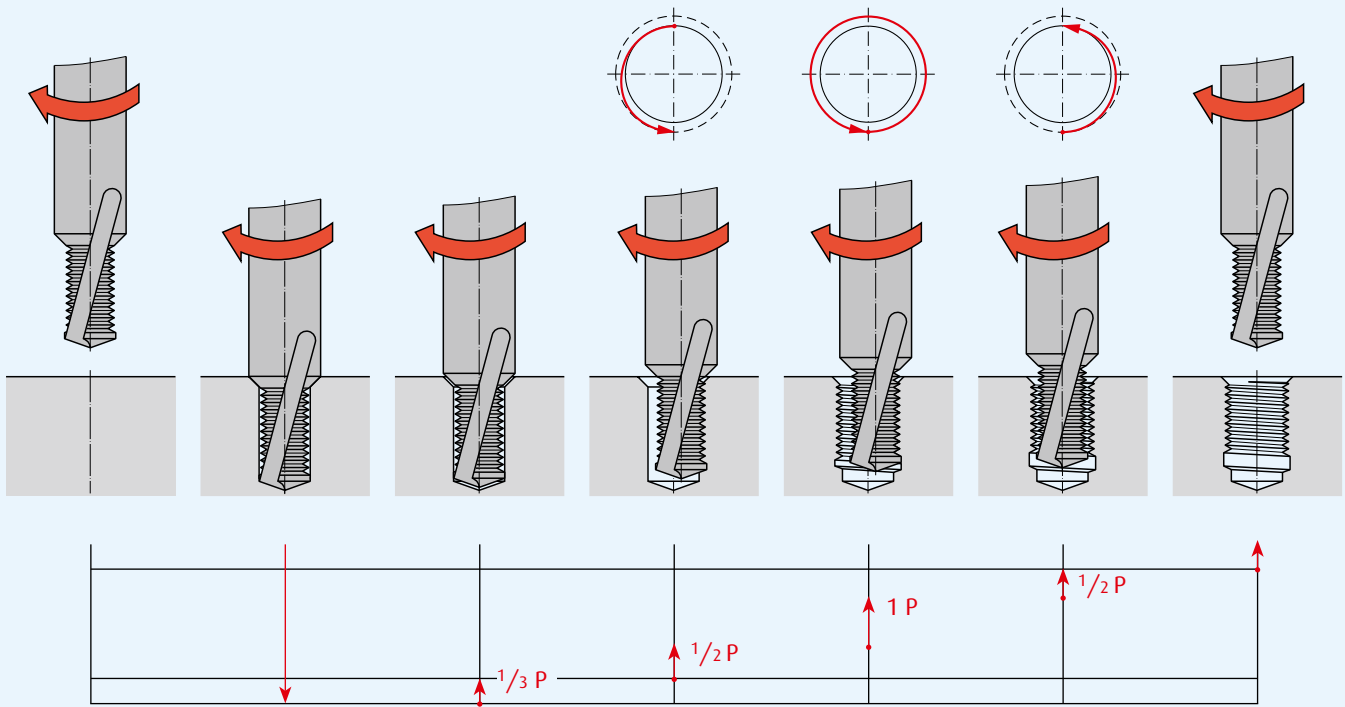
Welche Gewinde können mit NORIS ZTF erzeugt werden
Which kind of threads can be produced with a NORIS ZTF tool
Quels types de filet peuvent être usinés avec les outils NORIS ZTF
Quali tipi di filetto possono essere eseguiti con gli utensili NORIS ZTF

M	EG-M (STI)	G 55°	UN	EG-UN (STI)	ø D mm	P mm	📄	ZTF UNI F151 max. 2 x D		📄	ZTF UNI F151 max. 3 x D	
M6					6	1	16	F151HAF0001	F151HBF0001	16	F151HAF0050	F151HBF0050
			1/4-28 UNF		6,35	0,907	19	F151HAF0035	F151HBF0035			
			1/4-20 UNC		6,35	1,27	18	F151HAF0026	F151HBF0026			
	EG-M6				7,3	1	16	F151HAF0001	F151HBF0001	16	F151HAF0050	F151HBF0050
				EG- 1/4-28 UNF	7,528	0,907	19	F151HAF0035	F151HBF0035			
			5/16-24 UNF		7,93	1,058	19	F151HAF0036	F151HBF0036			
			5/16-18 UNC		7,93	1,411	18	F151HAF0027	F151HBF0027			
M8x1					8	1	17	F151HAF0014	F151HBF0014			
M8					8	1,25	16	F151HAF0003	F151HBF0003	16	F151HAF0052	F151HBF0052
				EG- 1/4-20 UNC	8,002	1,27	18	F151HAF0026	F151HBF0026			
	EG-M8x1				9,3	1	17	F151HAF0014	F151HBF0014			
				EG- 5/16-24 UNF	9,312	1,058	19	F151HAF0036	F151HBF0036			
			3/8-24 UNF		9,52	1,058	19	F151HAF0037	F151HBF0037			
			3/8-16 UNC		9,52	1,587	18	F151HAF0028	F151HBF0028			
	EG-M8				9,624	1,25	16	F151HAF0003	F151HBF0003	16	F151HAF0052	F151HBF0052
				EG- 5/16-18 UNC	9,771	1,411	18	F151HAF0027	F151HBF0027			
M10x1					10	1	17	F151HAF0014	F151HBF0014			
M10x1,25					10	1,25	16	F151HAF0003	F151HBF0003			
M10					10	1,5	16	F151HAF0005	F151HBF0005	16	F151HAF0054	F151HBF0054
				EG- 3/8-24 UNF	10,899	1,058	19	F151HAF0037	F151HBF0037			
			7/16-20 UNF		11,11	1,27	19	F151HAF0038	F151HBF0038			
			7/16-14 UNC		11,11	1,814	18	F151HAF0029	F151HBF0029			
				EG- 3/8-16 UNC	11,587	1,587	18	F151HAF0028	F151HBF0028			
	EG-M10				11,948	1,5	16	F151HAF0005	F151HBF0005	16	F151HAF0054	F151HBF0054
					12	1	17	F151HAF0017	F151HBF0017			
M12x1					12	1,5	16	F151HAF0005	F151HBF0005	16	F151HAF0054	F151HBF0054
M12x1,5					12	1,75	16	F151HAF0008	F151HBF0008	16	F151HAF0056	F151HBF0056
M12			1/2-20 UNF		12,7	1,27	19	F151HAF0038	F151HBF0038			
			1/2-13 UNC		12,7	1,953	18	F151HAF0030	F151HBF0030			
				EG- 7/16-20 UNF	12,763	1,27	19	F151HAF0038	F151HBF0038			
		G 1/4			13,16	1,336	20	F151HAF0044	F151HBF0044			
	EG-M12x1				13,3	1	17	F151HAF0017	F151HBF0017			
				EG- 7/16-14 UNC	13,469	1,814	18	F151HAF0029	F151HBF0029			
					13,948	1,5	17	F151HAF0019	F151HBF0019			
M14x1					14	1	17	F151HAF0017	F151HBF0017			
M14x1,5					14	1,5	17	F151HAF0019	F151HBF0019			
M14					14	2	16	F151HAF0009	F151HBF0009	16	F151HAF0057	F151HBF0057
	EG-M12				14,274	1,75	16	F151HAF0008	F151HBF0008	16	F151HAF0056	F151HBF0056
			9/16-18 UNF		14,28	1,411	19	F151HAF0040	F151HBF0040			
			9/16-12 UNC		14,28	2,116	18	F151HAF0031	F151HBF0031			
				EG- 1/2-20 UNF	14,352	1,27	19	F151HAF0038	F151HBF0038			
				EG- 1/2-13 UNC	15,237	1,953	18	F151HAF0030	F151HBF0030			
			5/8-18 UNF		15,87	1,411	19	F151HAF0041	F151HBF0041			
			5/8-11 UNC		15,87	2,309	18	F151HAF0032	F151HBF0032			
	EG-M14x1,5				15,948	1,5	17	F151HAF0019	F151HBF0019			
M16x1,5					16	1,5	17	F151HAF0019	F151HBF0019			
M16					16	2	16	F151HAF0009	F151HBF0009	16	F151HAF0057	F151HBF0057
				EG- 9/16-18 UNF	16,121	1,411	19	F151HAF0040	F151HBF0040			
	EG-M14				16,598	2	16	F151HAF0009	F151HBF0009	16	F151HAF0057	F151HBF0057
		G 3/8			16,66	1,336	20	F151HAF0045	F151HBF0045			
				EG- 9/16-12 UNC	17,039	2,116	18	F151HAF0031	F151HBF0031			
				EG- 5/8-18 UNF	17,709	1,411	19	F151HAF0041	F151HBF0041			
M18x1,5					18	1,5	17	F151HAF0021	F151HBF0021			
M18					18	2,5	16	F151HAF0011	F151HBF0011	16	F151HAF0059	F151HBF0059
				EG- 5/8-11 UNC	18,875	2,309	18	F151HAF0032	F151HBF0032			
			3/4-16 UNF		19,05	1,587	19	F151HAF0042	F151HBF0042			
			3/4-10 UNC		19,05	2,54	18	F151HAF0033	F151HBF0033			
M20x1,5					20	1,5	17	F151HAF0021	F151HBF0021			
M20					20	2,5	16	F151HAF0011	F151HBF0011	16	F151HAF0059	F151HBF0059
		G 1/2			20,96	1,814	20	F151HAF0046	F151HBF0046			
				EG- 3/4-16 UNF	21,112	1,587	16	F151HAF0011	F151HBF0011	16	F151HAF0059	F151HBF0059
M22x1,5					22	1,5	17	F151HAF0023	F151HBF0023			
				EG- 3/4-10 UNC	22,349	2,54	18	F151HAF0033	F151HBF0033			
M24x1,5					24	1,5	17	F151HAF0023	F151HBF0023			

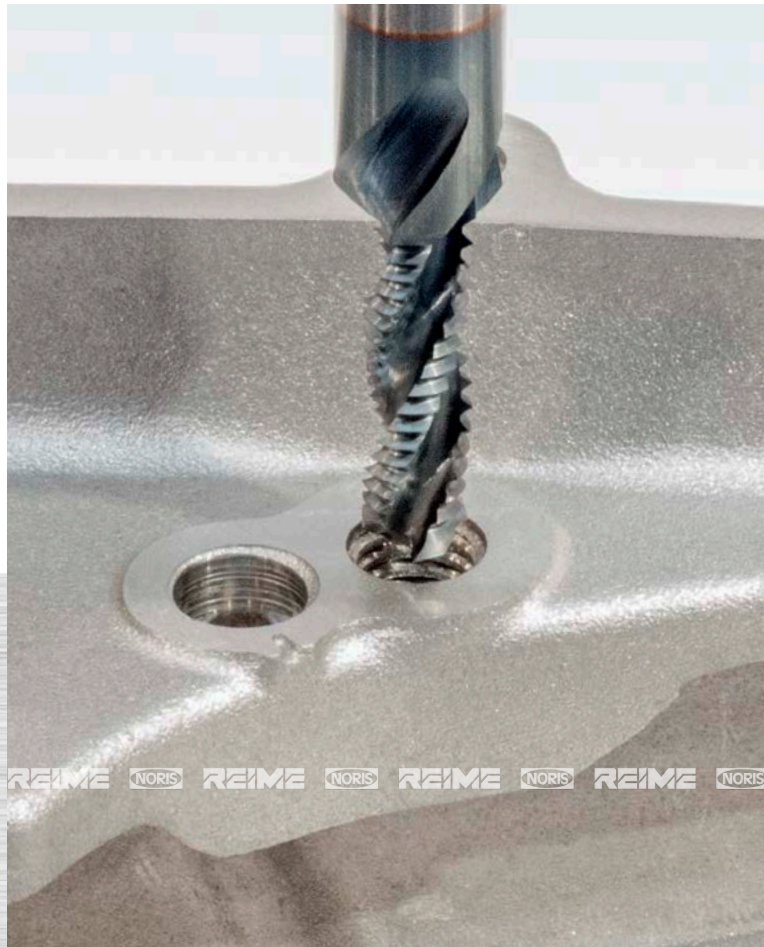
Welche Gewinde können mit NORIS ZTF erzeugt werden
Which kind of threads can be produced with a NORIS ZTF tool
Quels types de filet peuvent être usinés avec les outils NORIS ZTF
Quali tipi di filetto possono essere eseguiti con gli utensili NORIS ZTF

M	EG-M (STI)	G 55°	UN	EG-UN (STI)	ø D mm	P mm		ZTF AERO F164 max. 2 x D		ZTF HT F154 max. 2 x D
M6					6	1	30	F164HAF00607	F164HBF00607	
			1/4-28 UNF		6,35	0,907				
			1/4-20 UNC		6,35	1,27				
	EG-M6				7,3	1	30	F164HAF00607	F164HBF00607	
				EG-1/4-28 UNF	7,528	0,907				
			5/16-24 UNF		7,93	1,058				26 F154HAF50446 F154HBF50446
			5/16-18 UNC		7,93	1,411				25 F154HAF50106 F154HBF50106
M8x1					8	1				
M8					8	1,25	30	F164HAF00807	F164HBF00807	24 F154HAF00806 F154HBF00806
				EG-1/4-20 UNC	8,002	1,27				
	EG-M8x1				9,3	1				
				EG-5/16-24 UNF	9,312	1,058				26 F154HAF50446 F154HBF50446
			3/8-24 UNF		9,52	1,058				26 F154HAF50456 F154HBF50456
			3/8-16 UNC		9,52	1,587				25 F154HAF50116 F154HBF50116
	EG-M8				9,624	1,25	30	F164HAF00807	F164HBF00807	24 F154HAF00806 F154HBF00806
				EG-5/16-18 UNC	9,771	1,411				
M10x1					10	1				
M10x1,25					10	1,25				24 F154HAF00806 F154HBF00806
M10					10	1,5	30	F164HAF01007	F164HBF01007	24 F154HAF01006 F154HBF01006
				EG-3/8-24 UNF	10,899	1,058				26 F154HAF50456 F154HBF50456
			7/16-20 UNF		11,11	1,27				26 F154HAF50466 F154HBF50466
			7/16-14 UNC		11,11	1,814				25 F154HAF50126 F154HBF50126
				EG-3/8-16 UNC	11,587	1,587				
	EG-M10				11,948	1,5	30	F164HAF01007	F164HBF01007	24 F154HAF01006 F154HBF01006
M12x1					12	1				
M12x1,5					12	1,5	30	F164HAF01007	F164HBF01007	24 F154HAF01006 F154HBF01006
M12					12	1,75	30	F164HAF01127	F164HBF01127	24 F154HAF01126 F154HBF01126
			1/2-20 UNF		12,7	1,27				26 F154HAF50466 F154HBF50466
			1/2-13 UNC		12,7	1,953				25 F154HAF50136 F154HBF50136
				EG-7/16-20 UNF	12,763	1,27				
		G1/4			13,16	1,336				
	EG-M12x1				13,3	1				
				EG-7/16-14 UNC	13,469	1,814				
	EG-M12x1,5				13,948	1,5				
M14x1					14	1				
M14x1,5					14	1,5				
M14					14	2				24 F154HAF01146 F154HBF01146
	EG-M12				14,274	1,75	30	F164HAF01127	F164HBF01127	
			9/16-18 UNF		14,28	1,411				26 F154HAF50486 F154HBF50486
			9/16-12 UNC		14,28	2,116				
				EG-1/2-20 UNF	14,352	1,27				
				EG-1/2-13 UNC	15,237	1,953				25 F154HAF50136 F154HBF50136
			5/8-18 UNF		15,87	1,411				26 F154HAF50486 F154HBF50486
			5/8-11 UNC		15,87	2,309				25 F154HAF50156 F154HBF50156
	EG-M14x1,5				15,948	1,5				
M16x1,5					16	1,5				
M16					16	2				24 F154HAF01146 F154HBF01146
				EG-9/16-18 UNF	16,121	1,411				
	EG-M14				16,598	2				
		G3/8			16,66	1,336				
				EG-9/16-12 UNC	17,039	2,116				
				EG-5/8-18 UNF	17,709	1,411				
M18x1,5					18	1,5				
M18					18	2,5				
				EG-5/8-11 UNC	18,875	2,309				25 F154HAF50156 F154HBF50156
			3/4-16 UNF		19,05	1,587				26 F154HAF50506 F154HBF50506
			3/4-10 UNC		19,05	2,54				25 F154HAF50166 F154HBF50166
M20x1,5					20	1,5				
M20					20	2,5				
		G1/2			20,96	1,814				
				EG-3/4-16 UNF	21,112	1,587				26 F154HAF50506 F154HBF50506
M22x1,5					22	1,5				
				EG-3/4-10 UNC	22,349	2,54				
M24x1,5					24	1,5				

Gewindefräszyklus · Thread milling cycle · Cycle de fraisage de filets · Ciclo di fresatura di filetti



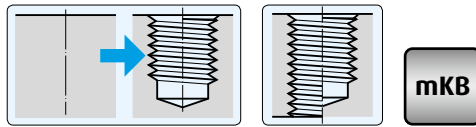
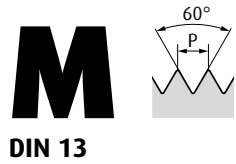
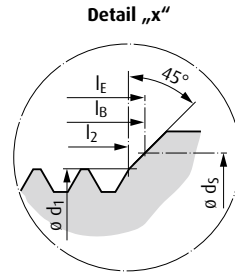
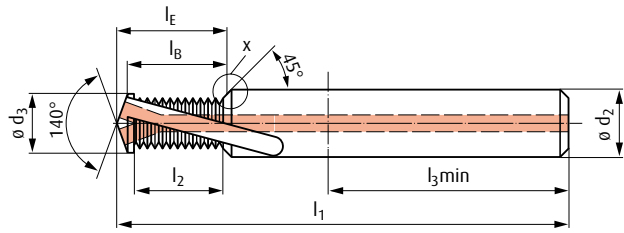
NORIS BGF



NORIS BGF

NORIS BGF R30 K20 Z2

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



DIN 6535 HA

DIN 6535 HB



1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F191	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articulo nr.	Art.-Nr. Article no. Code article Articulo nr.
4	0,7	3,16	6	3,3	4,3	49	5,55	36	6,8	7,4	F191HAF00405	F191HBF00405	
5	0,8	4,04	6	4,2	5,3	55	7,15	36	8,6	9,4	F191HAF00505	F191HBF00505	
6	1	4,8	8	5	6,3	62	9,05	36	10,6	11,6	F191HAF00605	F191HBF00605	
8	1,25	6,5	10	6,75	8,3	74	11,32	40	13,3	14,6	F191HAF00805	F191HBF00805	
10	1,5	8,2	12	8,5	10,3	79	15,08	45	17,5	19,1	F191HAF01005	F191HBF01005	
12	1,75	9,9	14	10,25	12,3	89	17,6	45	20,3	22,3	F191HAF01125	F191HBF01125	
14	2	11,6	16	12	14,3	102	20,11	48	23,2	25,5	F191HAF01145	F191HBF01145	
16	2	13,6	18	14	16,3	102	24,11	48	27,2	29,9	F191HAF01165	F191HBF01165	

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F193	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articulo nr.	Art.-Nr. Article no. Code article Articulo nr.
4	0,7	3,16	6	3,3	4,3	49	7,65	36	8,9	9,5	F193HAF00405	F193HBF00405	
5	0,8	4,04	6	4,2	5,3	55	9,55	36	11	11,8	F193HAF00505	F193HBF00505	
6	1	4,8	8	5	6,3	62	12,05	36	13,6	14,6	F193HAF00605	F193HBF00605	
8	1,25	6,5	10	6,75	8,3	74	15,07	40	17	18,3	F193HAF00805	F193HBF00805	
10	1,5	8,2	12	8,5	10,3	79	19,58	45	22	23,6	F193HAF01005	F193HBF01005	
12	1,75	9,9	14	10,25	12,3	89	22,85	45	25,5	27,5	F193HAF01125	F193HBF01125	
14	2	11,6	16	12	14,3	102	28,11	48	31,2	33,5	F193HAF01145	F193HBF01145	
16	2	13,6	18	14	16,3	102	32,11	48	35,2	37,9	F193HAF01165	F193HBF01165	

2,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F195	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articulo nr.	Art.-Nr. Article no. Code article Articulo nr.
6	1	4,8	8	5	6,3	62	14,9	36	16,6	17,6	F195HAF00605	F195HBF00605	
8	1,25	6,5	10	6,75	8,3	74	19,9	40	22,1	23,4	F195HAF00805	F195HBF00805	
10	1,5	8,2	12	8,5	10,3	79	23,9	45	26,5	28,1	F195HAF01005	F195HBF01005	
12	1,75	9,9	14	10,25	12,3	89	29,6	45	32,6	34,6	F195HAF01125	F195HBF01125	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

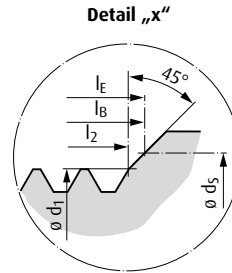
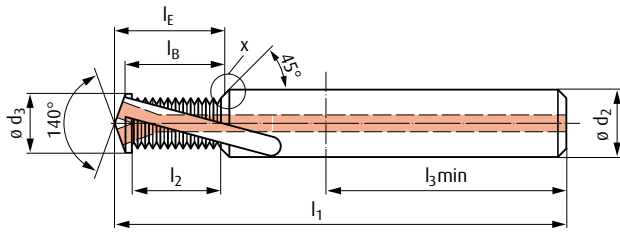
A	
R	
F	1.1 / 1.3
N	1.1 - 1.5 / 2.2 - 2.3 / 2.7 - 4.1
S	
H	

NORIS BGF R30 K20 Z2

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB

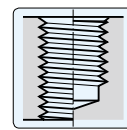
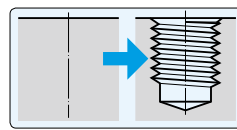


TiCN

TiCN



DIN 13



1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F191	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	10	1	8,7	12	9	10,3	79	15,1	45	16,7	18,4	F191HAF02765	F191HBF02765
	10	1,25	8,4	12	8,75	10,3	79	15,1	45	17,2	18,9	F191HAF02775	F191HBF02775
	12	1,25	10,4	14	10,75	12,3	89	18,9	45	20,9	23	F191HAF03025	F191HBF03025
	12	1,5	10,15	14	10,5	12,3	89	18,1	45	20,5	22,5	F191HAF03035	F191HBF03035
	14	1,5	12,1	16	12,5	14,3	102	21,12	48	23,5	25,9	F191HAF03315	F191HBF03315
	16	1,5	14,1	18	14,5	16,3	102	24,15	48	26,5	29,3	F191HAF03595	F191HBF03595

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F193	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	6	0,75	5,05	8	5,25	6,3	62	11,95	36	13,3	14,3	F193HAF02295	F193HBF02295
	8	1	6,75	10	7	8,3	74	15,9	40	17,8	19,1	F193HAF02515	F193HBF02515
	10	1	8,7	12	9	10,3	79	20,1	45	21,7	23,4	F193HAF02765	F193HBF02765
	10	1,25	8,4	12	8,75	10,3	79	20,1	45	22,2	23,9	F193HAF02775	F193HBF02775
	12	1,25	10,4	14	10,75	12,3	89	23,9	45	25,9	28	F193HAF03025	F193HBF03025
	12	1,5	10,15	14	10,5	12,3	89	24,1	45	26,5	28,5	F193HAF03035	F193HBF03035
	14	1,5	12,1	16	12,5	14,3	102	27,12	48	29,5	31,9	F193HAF03315	F193HBF03315
	16	1,5	14,1	18	14,5	16,3	102	31,65	48	34	36,8	F193HAF03595	F193HBF03595

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

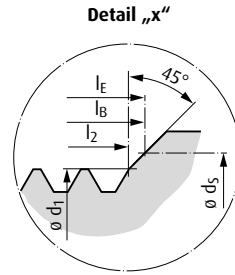
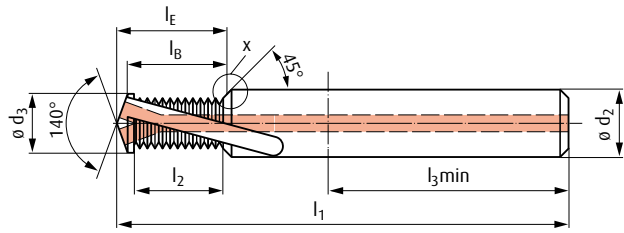
A	
R	
F	1.1 / 1.3
N	1.1 - 1.5 / 2.2 - 2.3 / 2.7 - 4.1
S	
H	

v_c/f_z = 7

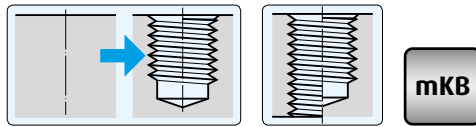
i = 141

NORIS BGF R30 K20 Z2

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



UNC
ASME B1.1



DIN 6535 HA

DIN 6535 HB



TiCN

TiCN

1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F191	
	ø D inch	P Gg/1"	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1/4	20	4,85	8	5,2	6,65	62	8,95	36	11	12	F191HAF50095	F191HBF50095	
5/16	18	6,25	10	6,6	8,25	74	11,35	40	13,6	14,9	F191HAF50105	F191HBF50105	
3/8	16	7,65	12	8	9,83	80	14,35	45	16,9	18,4	F191HAF50115	F191HBF50115	
7/16	14	9	12	9,4	11,43	80	16,4	45	19,2	21	F191HAF50125	F191HBF50125	
1/2	13	10,35	14	10,75	13	89	17,7	45	20,7	22,8	F191HAF50135	F191HBF50135	
9/16	12	11,8	16	12,25	14,61	102	21,3	48	24,5	26,9	F191HAF50145	F191HBF50145	
5/8	11	13,1	18	13,5	16,18	102	23,2	48	26,8	29,4	F191HAF50155	F191HBF50155	

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F193	
	ø D inch	P Gg/1"	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1/4	20	4,85	8	5,2	6,65	62	12,75	36	14,8	15,8	F193HAF50095	F193HBF50095	
5/16	18	6,25	10	6,6	8,25	74	15,6	40	17,8	19,1	F193HAF50105	F193HBF50105	
3/8	16	7,65	12	8	9,83	80	19,15	45	21,7	23,2	F193HAF50115	F193HBF50115	
7/16	14	9	12	9,4	11,43	80	21,85	45	24,7	26,5	F193HAF50125	F193HBF50125	
1/2	13	10,35	14	10,75	13	89	25,5	45	28,5	30,6	F193HAF50135	F193HBF50135	
9/16	12	11,8	16	12,25	14,61	102	27,65	48	30,9	33,3	F193HAF50145	F193HBF50145	
5/8	11	13,1	18	13,5	16,18	102	30,15	48	33,7	36,3	F193HAF50155	F193HBF50155	

2,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F195	
	ø D inch	P Gg/1"	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
3/8	16	7,65	12	8	9,83	85	23,9	45	26,4	27,9	F195HAF50115	F195HBF50115	
7/16	14	9	12	9,4	11,43	85	27,3	45	30,1	31,9	F195HAF50125	F195HBF50125	
1/2	13	10,35	14	10,75	13	95	31,35	45	34,4	36,5	F195HAF50135	F195HBF50135	
9/16	12	11,8	16	12,25	14,61	110	34	48	37,2	39,6	F195HAF50145	F195HBF50145	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

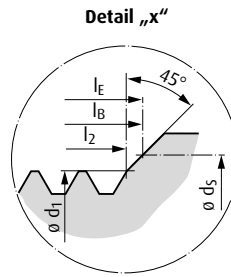
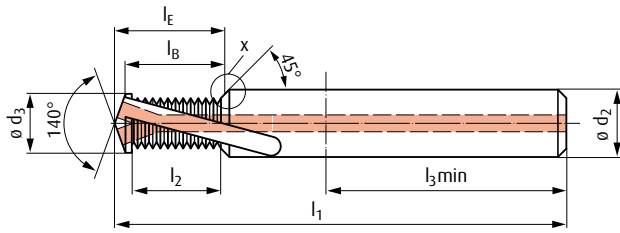
A	
R	
F	1.1 / 1.3
N	1.1 - 1.5 / 2.2 - 2.3 / 2.7 - 4.1
S	
H	

NORIS BGF R30 K20 Z2

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB

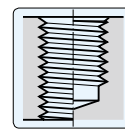
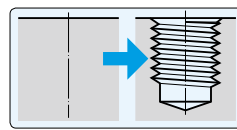
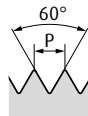


TiCN

TiCN

UNF

ASME B1.1



mKB

1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F191	
	ø D inch	P Gg/1"	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1/4	28	5,26	8	5,5	6,65	62	9,15	36	10,6	11,7	F191HAF50435	F191HBF50435	
5/16	24	6,6	10	6,9	8,25	74	11,75	40	13,5	14,8	F191HAF50445	F191HBF50445	
3/8	24	8,2	12	8,5	9,85	80	13,85	45	15,6	17,2	F191HAF50455	F191HBF50455	
7/16	20	9,55	12	9,9	11,4	80	17,9	45	19,9	21,8	F191HAF50465	F191HBF50465	
1/2	20	11,1	14	11,5	13	89	19,2	45	21,2	23,4	F191HAF50475	F191HBF50475	
9/16	18	12,5	16	12,9	14,6	102	21,3	48	23,5	26	F191HAF50485	F191HBF50485	
5/8	18	14,1	18	14,5	16,2	102	22,75	48	24,9	27,7	F191HAF50495	F191HBF50495	

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F193	
	ø D inch	P Gg/1"	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1/4	28	5,26	8	5,5	6,65	62	12,75	36	14,2	15,3	F193HAF50435	F193HBF50435	
5/16	24	6,6	10	6,9	8,25	74	15,95	40	17,7	19	F193HAF50445	F193HBF50445	
3/8	24	8,2	12	8,5	9,85	80	19,15	45	20,9	22,5	F193HAF50455	F193HBF50455	
7/16	20	9,55	12	9,9	11,4	80	21,7	45	23,7	25,6	F193HAF50465	F193HBF50465	
1/2	20	11,1	14	11,5	13	89	25,55	45	27,6	29,8	F193HAF50475	F193HBF50475	
9/16	18	12,5	16	12,9	14,6	102	28,35	48	30,6	33,1	F193HAF50485	F193HBF50485	
5/8	18	14,1	18	14,5	16,2	102	31,2	48	33,4	36,2	F193HAF50495	F193HBF50495	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

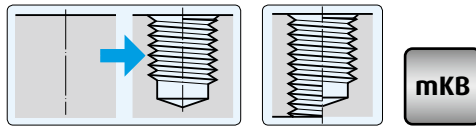
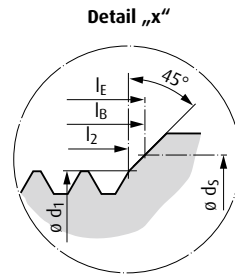
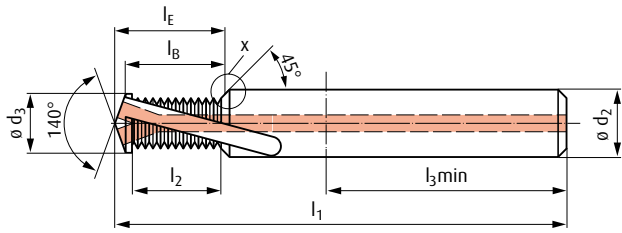
A	
R	
F	1.1 / 1.3
N	1.1 - 1.5 / 2.2 - 2.3 / 2.7 - 4.1
S	
H	

v_c/f_z = 7

i = 141

NORIS BGF R30 K20 Z2

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



DIN 6535 HA

DIN 6535 HB



TiCN

TiCN

1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F191	
	Nenngröße Nom. size Taille nom. Grand. nom. ø D 1) inch	P Gg/1"	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	1/8	28	8,5	12	8,8	10	79	14,44	45	16,1	17,8	F191HAF40355	F191HBF40355
1/4	19	11,4	16	11,8	13,5	102	18,61	48	21	23,3	F191HAF40365	F191HBF40365	
3/8	19	14,85	18	15,25	17	102	30,75	48	33,1	36	F191HAF40375	F191HBF40375	

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F193	
	Nenngröße Nom. size Taille nom. Grand. nom. ø D 1) inch	P Gg/1"	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	1/8	28	8,5	12	8,8	10	79	18,98	45	20,7	22,4	F193HAF40355	F193HBF40355
1/4	19	11,4	16	11,8	13,5	102	25,3	48	27	29,3	F193HAF40365	F193HBF40365	
3/8	19	14,85	18	15,25	17	102	37,4	48	39,8	42,7	F193HAF40375	F193HBF40375	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	
R	
F	1.1 / 1.3
N	1.1 - 1.5 / 2.2 - 2.3 / 2.7 - 4.1
S	
H	

1) Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde

Diameter related to internal pipe thread resp. external pipe thread

Diamètre relié au filetage intérieur ou extérieur du tube

Diametro riferito alla filettatura gas interna o esterna

v_c/f_z = 7

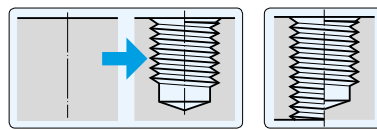
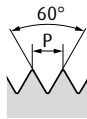
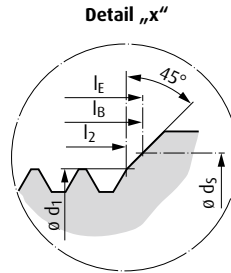
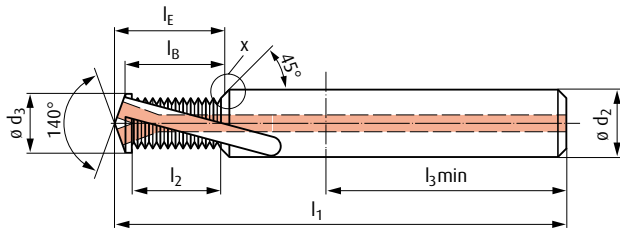
i = 141

NORIS BGF R30 K20 Z2

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB



TiCN

TiCN

EG M (STI)
DIN 8140-2

1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F191	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
6	1	6	10	6,3	7,6	74	10,25	40	11,8	13	F191HAF09715	F191HBF09715	
8	1,25	8,1	12	8,4	9,9	79	12,6	45	14,5	16,1	F191HAF09735	F191HBF09735	
10	1,5	10	14	10,4	12,25	89	16,85	45	19,1	21,1	F191HAF09755	F191HBF09755	
12	1,75	12,1	16	12,5	14,6	102	19,55	48	22,1	24,5	F191HAF09775	F191HBF09775	
14	2	14,1	18	14,5	16,9	102	22,4	48	25,3	28,1	F191HAF09785	F191HBF09785	
16	2	16	20	16,5	18,9	115	26,4	50	29,3	32,5	F191HAF09795	F191HBF09795	

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F193	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
6	1	6	10	6,3	7,6	74	13,25	40	14,8	16	F193HAF09715	F193HBF09715	
8	1,25	8,1	12	8,4	9,9	79	16,4	45	18,3	19,9	F193HAF09735	F193HBF09735	
10	1,5	10	14	10,4	12,25	89	21,35	45	23,6	25,6	F193HAF09755	F193HBF09755	
12	1,75	12,1	16	12,5	14,6	102	24,85	48	27,4	29,8	F193HAF09775	F193HBF09775	
14	2	14,1	18	14,5	16,9	102	30,4	48	33,3	36,1	F193HAF09785	F193HBF09785	
16	2	16	20	16,5	18,9	105	34,4	50	37,3	40,5	F193HAF09795	F193HBF09795	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

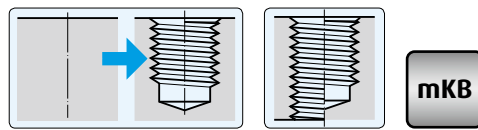
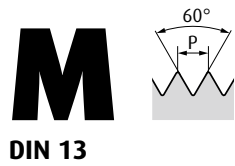
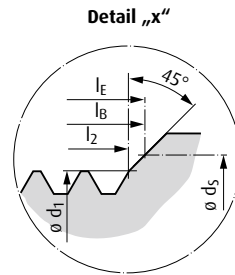
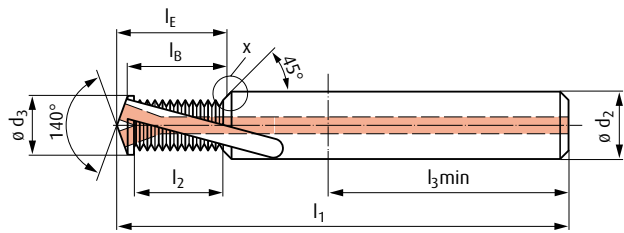
A	
R	
F	1.1 / 1.3
N	1.1 - 1.5 / 2.2 - 2.3 / 2.7 - 4.1
S	
H	

v_c/f_z = 7

i = 141

NORIS BGF R30 K20 Z3

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



DIN 6535 HA

DIN 6535 HB



1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F190	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
6	1	4,8	8	5	6,3	62	9,05	36	10,6	11,6	F190HAF00605	F190HBF00605	
8	1,25	6,5	10	6,75	8,3	74	11,32	40	13,3	14,6	F190HAF00805	F190HBF00805	
10	1,5	8,2	12	8,5	10,3	79	15,08	45	17,5	19,1	F190HAF01005	F190HBF01005	
12	1,75	9,9	14	10,25	12,3	89	17,6	45	20,3	22,3	F190HAF01125	F190HBF01125	
16	2	13,6	18	14	16,3	102	24,11	48	27,2	29,9	F190HAF01165	F190HBF01165	

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F192	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
6	1	4,8	8	5	6,3	62	12,05	36	13,6	14,6	F192HAF00605	F192HBF00605	
8	1,25	6,5	10	6,75	8,3	74	15,07	40	17	18,3	F192HAF00805	F192HBF00805	
10	1,5	8,2	12	8,5	10,3	79	19,58	45	22	23,6	F192HAF01005	F192HBF01005	
12	1,75	9,9	14	10,25	12,3	89	22,85	45	25,5	27,5	F192HAF01125	F192HBF01125	
16	2	13,6	18	14	16,3	102	32,11	48	35,2	37,9	F192HAF01165	F192HBF01165	

2,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F194	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
6	1	4,8	8	5	6,3	62	14,9	36	16,6	17,6	F194HAF00605	F194HBF00605	
8	1,25	6,5	10	6,75	8,3	74	19,9	40	22,1	23,4	F194HAF00805	F194HBF00805	
10	1,5	8,2	12	8,5	10,3	79	23,9	45	26,5	28,1	F194HAF01005	F194HBF01005	
12	1,75	9,9	14	10,25	12,3	89	29,6	45	32,6	34,6	F194HAF01125	F194HBF01125	
16	2	13,6	18	14	16,3	102	39,85	48	43,2	45,9	F194HAF01165	F194HBF01165	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	
R	
F	1.1
N	1.4 - 1.5 / 2.3
S	
H	

v_c/f_z = 7

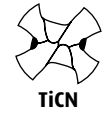
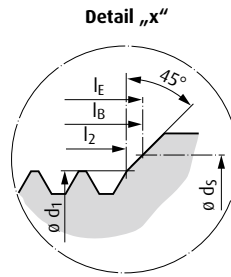
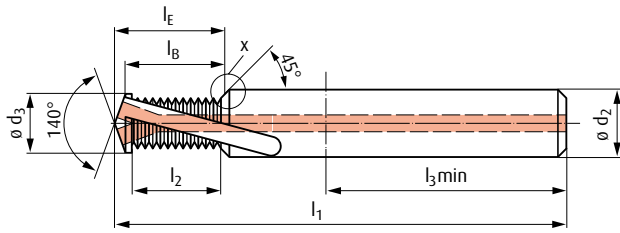
i = 141

NORIS BGF R20 K20 Z4

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

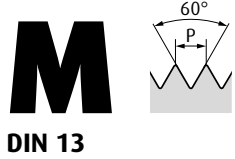
DIN 6535 HA

DIN 6535 HB

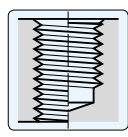
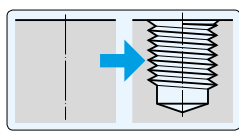


TiCN

TiCN



DIN 13



mKB

1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F196	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
6	1	4,8	8	5	6,3	62	9,06	36	10,7	11,6	F196HAF00605	F196HBF00605	
8	1,25	6,5	10	6,75	8,3	74	11,33	40	13,4	14,6	F196HAF00805	F196HBF00805	
10	1,5	8,2	12	8,5	10,3	79	15,09	45	17,5	19,1	F196HAF01005	F196HBF01005	
12	1,75	9,9	14	10,25	12,3	89	17,61	45	20,4	22,3	F196HAF01125	F196HBF01125	

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F197	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
6	1	4,8	8	5	6,3	62	12,06	36	13,7	14,6	F197HAF00605	F197HBF00605	
8	1,25	6,5	10	6,75	8,3	74	15,08	40	17,1	18,3	F197HAF00805	F197HBF00805	
10	1,5	8,2	12	8,5	10,3	79	15,59	45	22	23,6	F197HAF01005	F197HBF01005	
12	1,75	9,9	14	10,25	12,3	89	22,86	45	25,7	27,5	F197HAF01125	F197HBF01125	
16	2	13,6	18	14	16,3	102	32,13	48	35,3	37,9	F197HAF01165	F197HBF01165	

2,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F198	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
6	1	4,8	8	5	6,3	65	15,1	36	16,7	17,6	F198HAF00605	F198HBF00605	
8	1,25	6,5	10	6,75	8,3	80	20,08	40	22,1	23,3	F198HAF00805	F198HBF00805	
10	1,5	8,2	12	8,5	10,3	85	25,59	45	28	29,6	F198HAF01005	F198HBF01005	
12	1,75	9,9	14	10,25	12,3	95	29,86	45	32,7	34,5	F198HAF01125	F198HBF01125	
16	2	13,6	18	14	16,3	110	40,13	48	43,3	45,9	F198HAF01165	F198HBF01165	

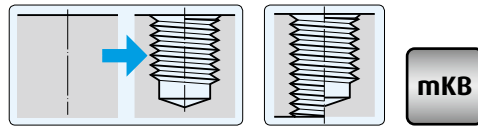
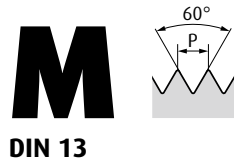
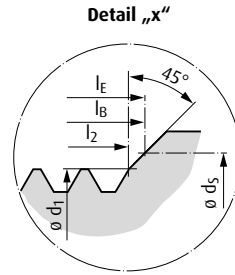
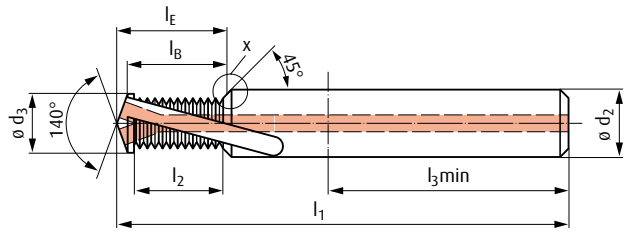
Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	
R	
F	1.1
N	1.4 - 1.5 / 2.3
S	
H	

v_c/f_z = 7
i = 141

NORIS BGF R20 K20 Z4

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



DIN 6535 HA

DIN 6535 HB



1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F196	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articulo nr.	Art.-Nr. Article no. Code article Articulo nr.
6	1	4,8	8	5	6,3	62	9,06	36	10,7	11,6	F196HAF00606	F196HBF00606	
8	1,25	6,5	10	6,75	8,3	74	11,33	40	13,4	14,6	F196HAF00806	F196HBF00806	
10	1,5	8,2	12	8,5	10,3	79	15,09	45	17,5	19,1	F196HAF01006	F196HBF01006	
12	1,75	9,9	14	10,25	12,3	89	17,61	45	20,4	22,3	F196HAF01126	F196HBF01126	

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F197	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articulo nr.	Art.-Nr. Article no. Code article Articulo nr.
6	1	4,8	8	5	6,3	62	12,06	36	13,7	14,6	F197HAF00606	F197HBF00606	
8	1,25	6,5	10	6,75	8,3	74	15,08	40	17,1	18,3	F197HAF00806	F197HBF00806	
10	1,5	8,2	12	8,5	10,3	79	15,59	45	22	23,6	F197HAF01006	F197HBF01006	
12	1,75	9,9	14	10,25	12,3	89	22,86	45	25,7	27,5	F197HAF01126	F197HBF01126	
16	2	13,6	18	14	16,3	102	32,13	48	35,3	37,9	F197HAF01166	F197HBF01166	

2,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F198	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articulo nr.	Art.-Nr. Article no. Code article Articulo nr.
6	1	4,8	8	5	6,3	65	15,1	36	16,7	17,6	F198HAF00606	F198HBF00606	
8	1,25	6,5	10	6,75	8,3	80	20,08	40	22,1	23,3	F198HAF00806	F198HBF00806	
10	1,5	8,2	12	8,5	10,3	85	25,59	45	28	29,6	F198HAF01006	F198HBF01006	
12	1,75	9,9	14	10,25	12,3	95	29,86	45	32,7	34,5	F198HAF01126	F198HBF01126	
16	2	13,6	18	14	16,3	110	40,13	48	43,3	45,9	F198HAF01166	F198HBF01166	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	
R	
F	1.1
N	1.4 - 1.5 / 2.3
S	
H	

v_c/f_z = 7

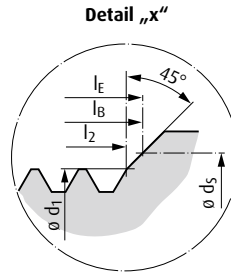
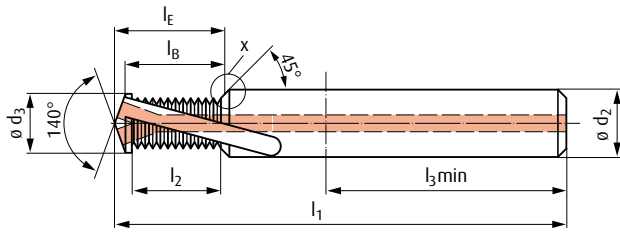
i = 141

NORIS BGF R20 K20 Z4

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB

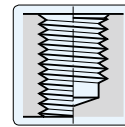
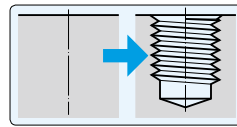


TiCN

TiCN



DIN 13



mKB

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F197	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
8	1	6,75	10	7	8,3	74	12,09	40	13,8	15	F197HAF02515	F197HBF02515	
10	1	8,7	12	9	10,3	79	15,11	45	16,8	18,4	F197HAF02765	F197HBF02765	
12	1,5	10,15	14	10,5	12,3	89	18,12	45	20,5	22,5	F197HAF03035	F197HBF03035	
16	1,5	14,1	18	14,5	16,3	102	24,15	48	26,6	29,2	F197HAF03595	F197HBF03595	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

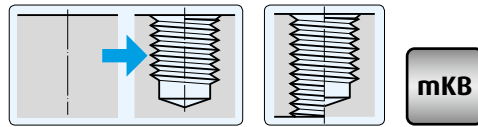
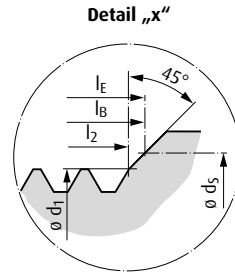
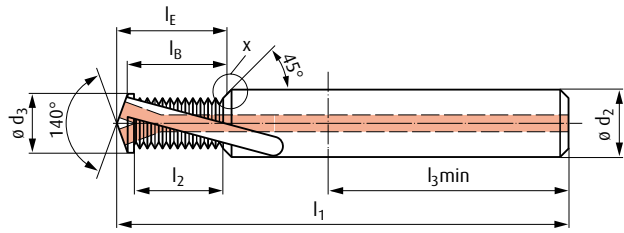
A	
R	
F	1.1
N	1.4 - 1.5 / 2.3
S	
H	

v_c/f_z = 7

i = 141

NORIS BGF R20 K20 Z4

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



DIN 6535 HA

DIN 6535 HB



2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo											F197	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	ø d ₅ mm	l ₁ mm	l ₂ mm	l ₃ min mm	l _B mm	l _E mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	8	1	6,75	10	7	8,3	74	12,09	40	13,8	15	F197HAF02516	F197HBF02516
	10	1	8,7	12	9	10,3	79	15,11	45	16,8	18,4	F197HAF02766	F197HBF02766
	12	1,5	10,15	14	10,5	12,3	89	18,12	45	20,5	22,5	F197HAF03036	F197HBF03036
16	1,5	14,1	18	14,5	16,3	102	24,15	48	26,6	29,2	F197HAF03596	F197HBF03596	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	
R	
F	1.1
N	1.4 - 1.5 / 2.3
S	
H	

v_c/f_z = 7

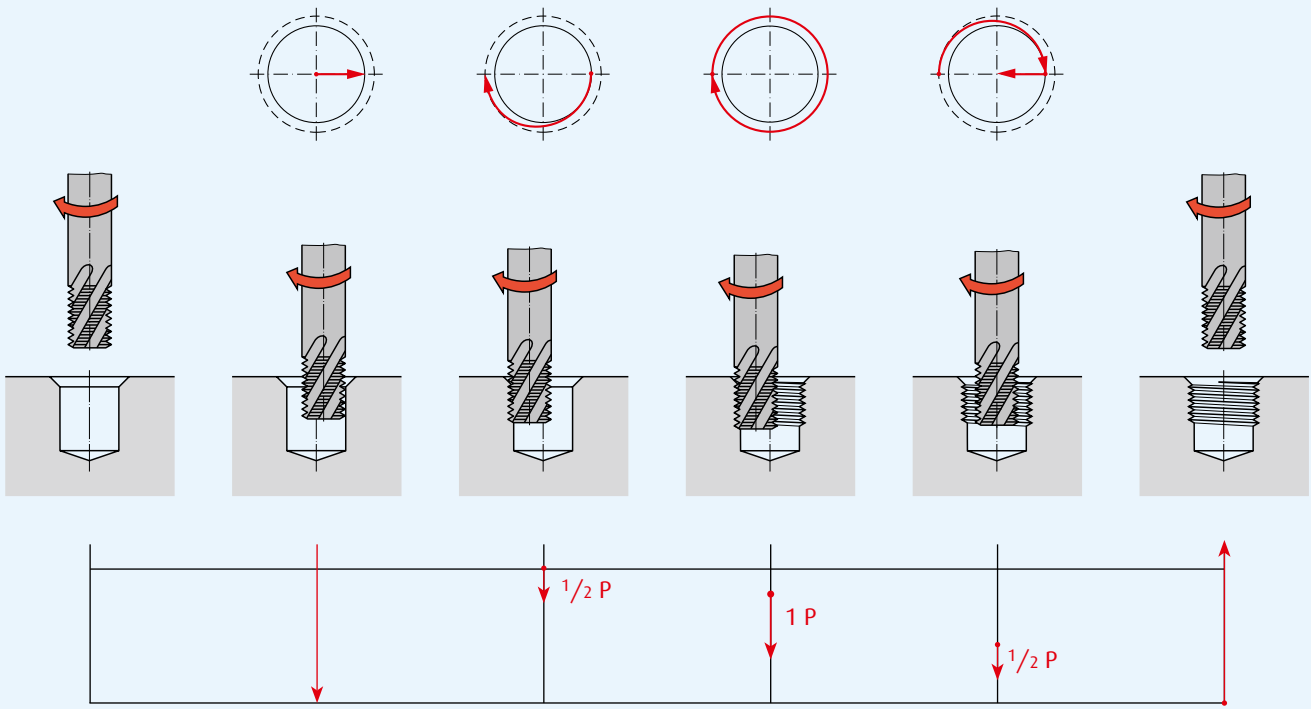
i = 141



Service Kontakt: solutions@noris-reime.de

Das REIME Team steht Ihnen bei der Lösung Ihrer Zerspanungsaufgabe gerne zur Seite.
The REIME team will be happy to solve your threading problems.
L'équipe de REIME se tient à votre disposition pour résoudre vos problèmes de filetage.
Il team REIME sarà lieto di risolvere i vostri problemi di filettatura.

Gewindefräszzyklus · Thread milling cycle · Cycle de fraisage de filets · Ciclo di fresatura di filetti



NORIS SF R10°/SFK



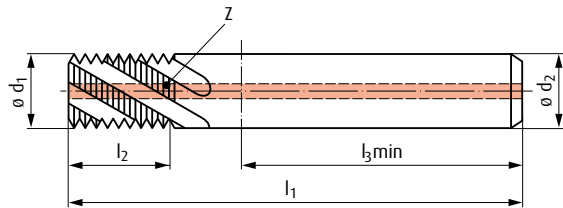
NORIS SF R10°/SFK

NORIS SF R10 K20

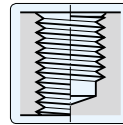
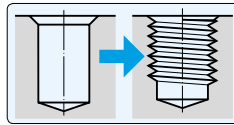
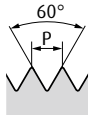
Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB



M
DIN 13



mKB



TiCN



TiCN

1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo								F305	
	$\varnothing D$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	6	1	4,6	6	55	9,45	36	4	F305HAF00605	F305HBF00605
	8	1,25	6,25	8	63	13,1	36	5	F305HAF00805	F305HBF00805
	10	1,5	7,9	8	63	15,7	36	5	F305HAF01005	F305HBF01005
	12	1,75	9,55	10	70	18,3	40	5	F305HAF01125	F305HBF01125
	16	2	13,2	14	90	24,95	45	5	F305HAF01165	F305HBF01165
20	2,5	15,9	16	100	33,75	48	5	F305HAF01205	F305HBF01205	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	
R	
F	3.1
N	2.4 - 2.5
S	1.2 - 1.3 / 2.2
H	1.2 - 1.4

Andere Steigungen auf Anfrage

Tools for different thread pitch upon request

Autres pas sur demande

Altri passi a richiesta

$v_c/f_z =$ 8

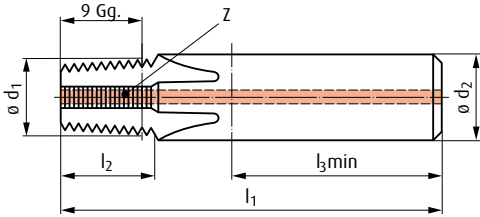
$i =$ 141

NORIS SFK K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB

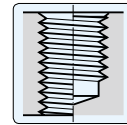
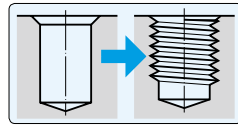
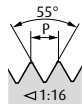


TiCN



TiCN

Rc (BSPT)
DIN EN 10226-1, ISO 7-1



F360

Kat.-Nr. / Cat. No. / N° cat. / Tipo

Nenngröße Nom. size Taille nom. Grand. nom. ø D inch	P Gg/1"	ø d ₁ mm	ø d ₂ mm	l ₁ mm	l ₂ mm	l ₃ min mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1/8	28	7,65	8	55	8,56	36	3	F360HAF41155	F360HBF41155
1/4	19	10,15	12	75	13,96	45	4	F360HAF41165	F360HBF41165
3/8	19	11,15	12	75	13,95	45	4	F360HAF41175	F360HBF41175
1/2 - 3/4	14	14,25	16	80	19,06	48	4	F360HAF95615	F360HBF95615
1" - 2"	11	19,6	20	90	24,26	50	5	F360HAF95625	F360HBF95625

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 - 2.2
H	1.1 - 1.2

v_c/f_z = 8 i = 142

Rc-Gewindefräser sind für die Lochformen **A** und **B** geeignet. Die Lochform **A** kann bei leichter Zerspanung angewendet werden und wenn keine Dichtprobleme zu befürchten sind.

Rc thread milling cutters are suited for the hole forms **A** and **B**. Hole type **A** can be used when there is no reason to worry about sealing problems.
Les fraises à fileter Rc conviennent aux trous de forme **A** et **B**. Le trou de type **A** peut être utilisé quand il n'y a aucune crainte de problèmes d'étanchéité.
Le frese a filettare Rc sono adatte sia con prefori cilindrici che prefori conici. Il tipo di preforo cilindrico può essere utilizzato quando non ci sono problemi di tenuta.

Zylindrisch vorbohren ohne Verwendung einer Reibahle

Drill cylindrically without using a reamer
Perçage cylindrique sans utilisation d'alesoir
Pforare cilindrico senza l'utilizzo di alesatore

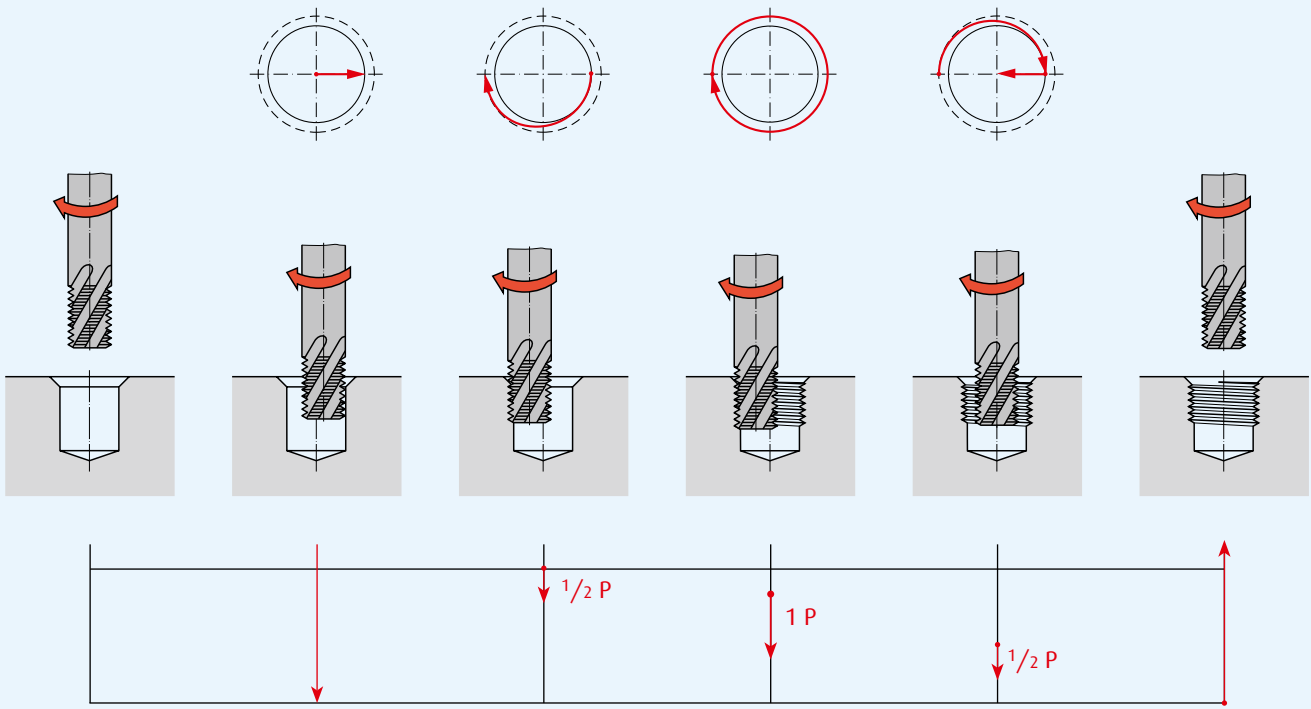
A	Nenngröße Nom. size Taille nom. Grand. nom.	P Gg/1"	ø D ₁ mm	t ₁ mm	t ₄ mm
	ø D inch				
	Rc 1/16	28	6,15	8,31	7,41
	1/8	28	8,15	8,31	7,41
	1/4	19	10,8	12,37	11,04
	3/8	19	14,3	12,77	11,44
	1/2	14	17,8	16,83	15,01
	3/4	14	23,2	18,13	16,31
	1"	11	29,2	21,42	19,11
	1 1/4	11	37,7	23,72	21,41
	1 1/2	11	43,6	23,72	21,41
	2"	11	55,1	28,02	25,71

Zylindrisch vorbohren und kegelig aufreiben

Drill cylindrically and prepare tapered hole with reamer
Perçage cylindrique et alésage conique
Pforare cilindrico ed alesare conico

B	Nenngröße Nom. size Taille nom. Grand. nom.	P Gg/1"	ø D ₂ mm	ø D ₃ mm +0,05	t ₁ mm	t ₄ mm
	ø D inch					
	Rc 1/16	28	6,04	6,56	8,31	7,41
	1/8	28	8,04	8,56	8,31	7,41
	1/4	19	10,67	11,44	12,37	11,04
	3/8	19	14,15	14,95	12,77	11,44
	1/2	14	17,58	18,63	16,83	15,01
	3/4	14	22,98	24,11	18,13	16,31
	1"	11	28,95	30,29	21,42	19,11
	1 1/4	11	37,47	38,95	23,72	21,41
	1 1/2	11	43,36	44,84	23,72	21,41
	2"	11	54,9	56,65	28,02	25,71

Gewindefräszzyklus · Thread milling cycle · Cycle de fraisage de filets · Ciclo di fresatura di filetti



NORIS SFSE/SF/SFK/SFX R15°

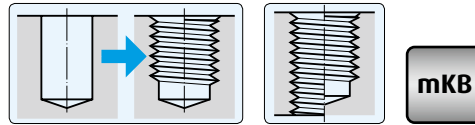
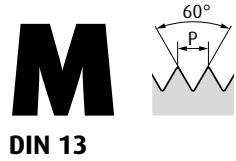
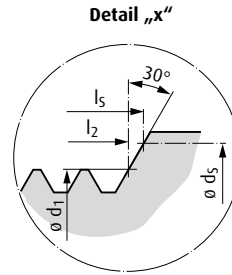
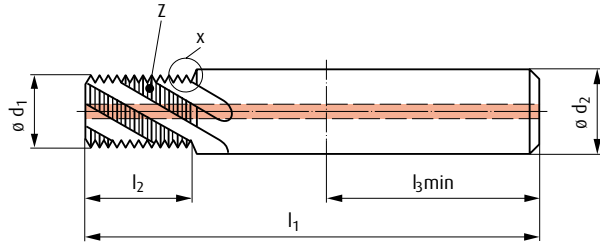


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NORIS SFSE/SF/SFK/SFX R15°

NORIS SFSE R15 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



DIN 6535 HA

DIN 6535 HB



TiAlN

TiAlN

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F211	
	$\varnothing D$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	5	0,8	4	6	5,3	55	11	36	11,16	3	F211HAF0049	F211HBF0049
6	1	4,7	8	6,3	62	13	36	13,93	3	F211HAF0050	F211HBF0050	
8	1,25	6,5	10	8,3	74	18	40	18,62	3	F211HAF0051	F211HBF0051	
10	1,5	8	10	— ¹⁾	74	22	40	— ¹⁾	3	F211HAF0052	F211HBF0052	
12	1,75	10	14	12,3	90	26	45	26,47	4	F211HAF0053	F211HBF0053	
16	2	12,5	16	— ²⁾	100	35	48	— ²⁾	4	F211HAF0055	F211HBF0055	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

- 1) Ohne Senkteil
Without countersinking step
Sans partie chanfreinée
Senza svasatura

$v_c/f_z = 8$

$i = 143$

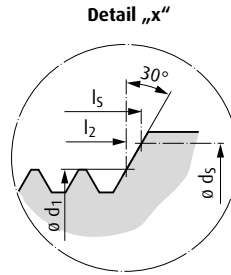
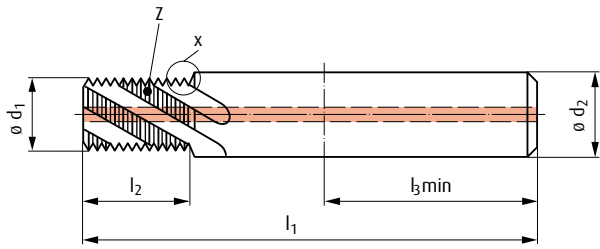
- 2) Senkteil stirnseitig
Countersink part before thread
Partie chanfreinée avant
Svasatore anteriore

NORIS SFSE R15 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

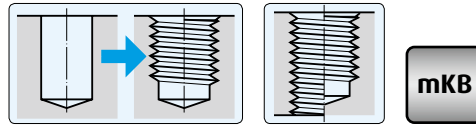
DIN 6535 HB



TiAlN

TiAlN

MF
DIN 13



2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F211	
	$\varnothing D$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	8	1	6,5	10	8,3	74	18	40	18	3	F211HAF0058	F211HBF0058
10	1	8	10	— 1)	74	22	40	— 1)	3	F211HAF0059	F211HBF0059	
10	1,25	8	10	— 1)	74	22	40	— 1)	3	F211HAF0060	F211HBF0060	
12	1,25	10	14	12,3	90	26	45	26,61	4	F211HAF0062	F211HBF0062	
12	1,5	10	14	12,3	90	26	45	27,3	4	F211HAF0063	F211HBF0063	
14	1	11	16	14,3	100	31	48	32,7	4	F211HAF0064	F211HBF0064	
14	1,5	11	16	14,3	100	31	48	32,08	4	F211HAF0065	F211HBF0065	
16	1,5	12,5	16	— 2)	100	35	48	— 2)	4	F211HAF0066	F211HBF0066	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

1) Ohne Senkteil

Without countersinking step
Sans partie chanfreinante
Senza svasatura

$v_c/f_z =$ 8

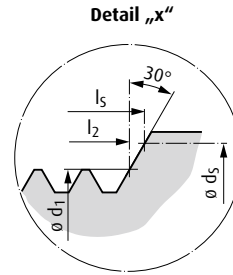
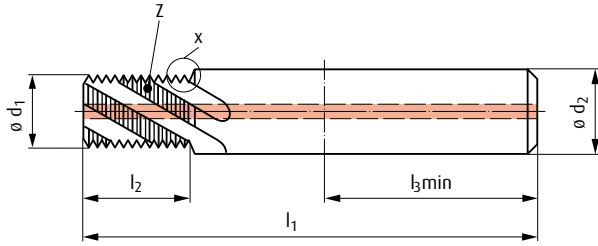
2) Senkteil stirnseitig

Countersink part before thread
Partie chanfreinante avant
Svasatore anteriore

$i =$ 143

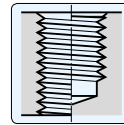
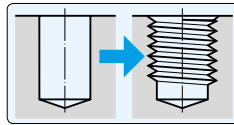
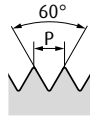
NORIS SFSE R15 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



UNC

ASME B1.1



DIN 6535 HA

DIN 6535 HB



TiAlN



TiAlN

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F211	
	$\varnothing D$ inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	1/4	20	4,7	8	6,65	62	14	36	15,14	3	F211HAF0075	F211HBF0075
5/16	18	6,1	10	8,25	74	17	40	18,23	3	F211HAF0076	F211HBF0076	
3/8	16	7,6	12	9,83	80	21	45	22,05	3	F211HAF0077	F211HBF0077	
7/16	14	8,8	14	11,43	90	24	45	25,21	3	F211HAF0078	F211HBF0078	
1/2	13	10,1	14	13	90	26	45	27,67	4	F211HAF0079	F211HBF0079	
9/16	12	11,4	16	14,61	100	31	48	32,15	4	F211HAF0080	F211HBF0080	
5/8	11	12,7	16	— 2)	100	34	48	— 2)	4	F211HAF0081	F211HBF0081	
3/4	10	15,2	20	19,35	110	42	50	43,74	5	F211HAF0082	F211HBF0082	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

2) Senkteil stirnseitig

Countersink part before thread
Partie chanfreinée avant
Svasatore anteriore

$v_c/f_z = 8$

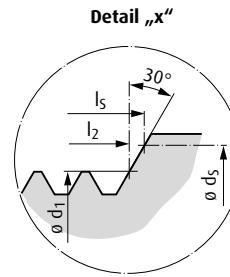
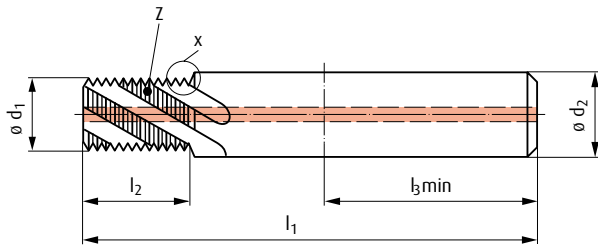
$i = 143$

NORIS SFSE R15 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB

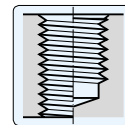
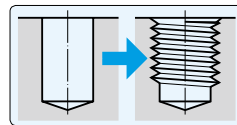
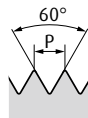


TiAlN

TiAlN

UNF

ASME B1.1



F211

Kat.-Nr. / Cat. No. / N° cat. / Tipo

2 x D

$\varnothing D$ inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1/4	28	4,7	8	6,65	62	14	36	15,59	3	F211HAF0083	F211HBF0083
5/16	24	6,1	10	8,25	74	17	40	18,05	3	F211HAF0084	F211HBF0084
3/8	24	7,6	12	9,83	80	21	45	22,3	3	F211HAF0085	F211HBF0085
7/16	20	8,8	14	11,43	90	24	45	25,49	3	F211HAF0086	F211HBF0086
1/2	20	10,1	14	13	90	26	45	28,46	4	F211HAF0087	F211HBF0087
9/16	18	11,4	16	14,61	100	31	48	33,03	4	F211HAF0088	F211HBF0088
5/8	18	12,7	16	- 2)	100	34	48	- 2)	4	F211HAF0089	F211HBF0089
3/4	16	15,2	20	19,35	110	42	50	43,69	5	F211HAF0090	F211HBF0090

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

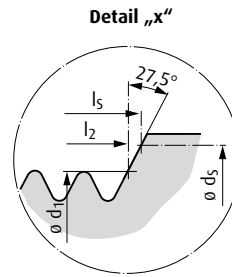
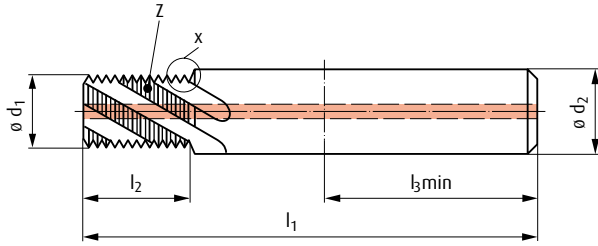
2) Senkteil stirnseitig
Countersink part before thread
Partie chanfreinée avant
Svasatore anteriore

$v_c/f_z =$ 8

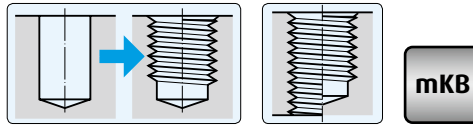
$i =$ 143

NORIS SFSE R15 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



G 
DIN EN ISO 228



DIN 6535 HA

DIN 6535 HB



TiAlN




TiAlN



2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F211	
	Nenngröße Nom. size Taille nom. Grand. nom. $\varnothing D$ 1) inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	l_3 min mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
$\geq 1/8$	28	7,6	12	10	80	20	45	20,97	3	F211HAF0070	F211HBF0070	
$\geq 1/4$	19	11	16	13,5	100	27	48	28,39	4	F211HAF0071	F211HBF0071	
$\geq 3/8$	19	13	16	— 2)	100	34	48	— 2)	4	F211HAF0072	F211HBF0072	
$\geq 1/2$	14	16	20	— 2)	110	44	50	— 2)	5	F211HAF0073	F211HBF0073	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

2) Senkteil stirnseitig
Countersink part before thread
Partie chanfreinée avant
Svasatore anteriore

$v_c/f_z =$  **8**

 =  **143**

1) Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde
Diameter related to internal pipe thread resp. external pipe thread
Diamètre relié au filetage intérieur ou extérieur du tube
Diametro riferito alla filettatura gas interna o esterna

NORIS SFSE R15 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

NPT

ANSI/ASME B 1.20.1

DIN 6535 HA	DIN 6535 HB
TiAlN	TiAlN

Kat.-Nr. / Cat. No. / N° cat. / Tipo								F211	
Nenngröße Nom. size Taille nom. Grand. nom. ø D inch	P Gg/1"	ø d ₁ mm	ø d ₂ mm	l ₁ mm	l ₂ mm	l ₃ min mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1/16	27	5,8	8	62	10	36	3	F211HAF0091	F211HBF0091
1/8	27	7,6	10	74	10	40	3	F211HAF0092	F211HBF0092
1/4	18	10,1	14	90	15	45	3	F211HAF0093	F211HBF0093
3/8	18	12,8	16	100	15	48	4	F211HAF0094	F211HBF0094
1/2	14	16	20	110	19	50	5	F211HAF0095	F211HBF0095

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego		1.1 - 1.5
A		1.1 - 1.5
R		1.1 - 1.2
F		1.1 - 3.1
N		1.1 - 4.3
S		1.1 / 2.1
H		

v_c/f_z = 8 i = 143

NPT-Gewindefräser sind für die Lochformen A und B geeignet. Die Lochform A kann bei leichter Zerspanung angewendet werden und wenn keine Dichtprobleme zu befürchten sind.
NPT thread milling cutters are suited for the hole forms A and B. Hole type A can be used when there is no reason to worry about sealing problems.
Les fraises à fileter NPT conviennent aux trous de forme A et B. Le trou de type A peut être utilisé quand il n'y a aucune crainte de problèmes d'étanchéité.
Le frese a filettare NPT sono adatte sia con prefori cilindrici che prefori conici. Il tipo di preforo cilindrico può essere utilizzato quando non ci sono problemi di tenuta.

Zylindrisch vorbohren ohne Verwendung einer Reibahle

Drill cylindrically without using a reamer
Perçage cylindrique sans utilisation d'alésoir
Peforare cilindrico senza l'utilizzo di alesatore

A	Nenngröße Nom. size Taille nom. Grand. nom.				
	ø D inch	P Gg/1"	ø D ₁ mm	t ₁ mm	t ₄ mm
	1/16	27	6,15	8,27	7,33
	1/8	27	8,5	10,62	9,68
	1/4	18	11	14,18	12,77
	3/8	18	14,4	17,62	16,21
	1/2	14	17,8	21,95	20,13
	3/4	14	23,2	27,29	25,48
	1"	11 1/2	29,1	34,11	31,89
	1 1/4	11 1/2	37,8	42,87	40,66
	1 1/2	11 1/2	43,9	48,94	46,73
	2"	11 1/2	55,9	60,98	58,77

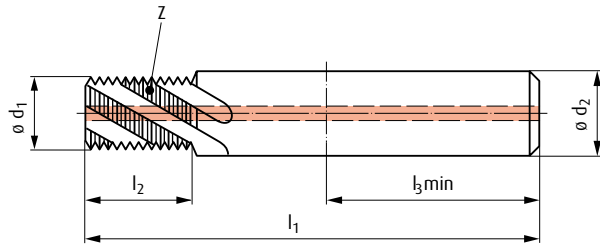
Zylindrisch vorbohren und kegelig aufreiben

Drill cylindrically and prepare tapered hole with reamer
Perçage cylindrique et alésage conique
Peforare cilindrico ed alesare conico

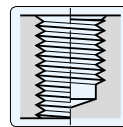
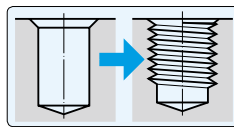
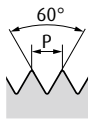
B	Nenngröße Nom. size Taille nom. Grand. nom.					
	ø D inch	P Gg/1"	ø D ₂ mm	ø D ₃ mm +0,05	t ₁ mm	t ₄ mm
	1/16	27	5,78	6,39	8,27	7,33
	1/8	27	8,13	8,74	10,62	9,68
	1/4	18	10,47	11,36	14,18	12,77
	3/8	18	13,89	14,8	17,62	16,21
	1/2	14	17,13	18,32	21,95	20,13
	3/4	14	22,45	23,67	27,29	25,48
	1"	11 1/2	28,23	29,69	34,11	31,89
	1 1/4	11 1/2	36,95	38,45	42,87	40,66
	1 1/2	11 1/2	43,02	44,52	48,94	46,73
	2"	11 1/2	55,04	56,56	60,98	58,77

NORIS SF R15 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



M
DIN 13



mKB

DIN 6535 HA

DIN 6535 HB



TiAlN



TiAlN

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo								F311	
	ø D mm	P mm	ø d1 mm	ø d2 mm	l1 mm	l2 mm	l3 min mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	3 ¹⁾	0,5	2,4	4	42	6	28	3	F311HAF0034	F311HBF0034
4	0,7	3,15	6	55	8	36	3	F311HAF0035	F311HBF0035	
5	0,8	4	6	55	10	36	3	F311HAF0036	F311HBF0036	
6	1	4,8	6	55	12	36	3	F311HAF0037	F311HBF0037	
8	1,25	6	6	63	16	36	3	F311HAF0038	F311HBF0038	
10	1,5	8	8	70	20	36	3	F311HAF0039	F311HBF0039	
12	1,75	9,9	10	80	24	40	4	F311HAF0040	F311HBF0040	
14	2	11,6	12	90	28	45	4	F311HAF0041	F311HBF0041	
16	2	12	12	90	32	45	4	F311HAF0042	F311HBF0042	
18	2,5	14	14	90	36	45	4	F311HAF0043	F311HBF0043	
20	2,5	14	14	90	40	45	4	F311HAF0044	F311HBF0044	
22	2,5	14	14	95	44	45	4	F311HAF0045	F311HBF0045	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

1) Ohne Kühlmittelbohrung
Without internal coolant supply
Sans canal de lubrification
Senza foro di lubrificazione

$v_c/f_z =$ 8

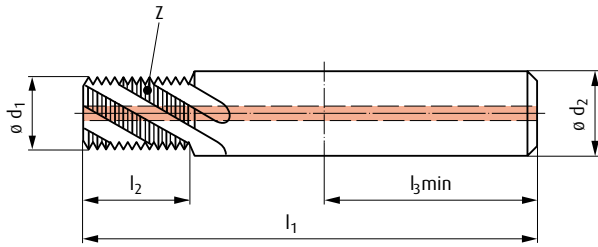
= 142

NORIS SF R15 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

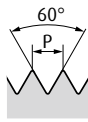
DIN 6535 HB



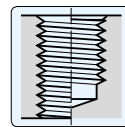
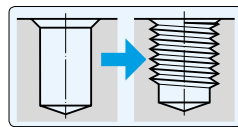
TiAlN

TiAlN

MF



DIN 13



2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo								F311	
	ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	l ₁ mm	l ₂ mm	l ₃ min mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	4	0,5	3,35	6	55	8	36	3	F311HAF0047	F311HBF0047
	5	0,5	4,3	6	55	10	36	3	F311HAF0048	F311HBF0048
	6	0,75	5	6	55	12	36	3	F311HAF0049	F311HBF0049
	8	0,75	6	6	63	16	36	3	F311HAF0050	F311HBF0050
	8	1	6	6	63	16	36	3	F311HAF0051	F311HBF0051
	10	1	8	8	70	20	36	3	F311HAF0052	F311HBF0052
	12	1	10	10	80	24	40	4	F311HAF0053	F311HBF0053
	12	1,5	10	10	80	24	40	4	F311HAF0054	F311HBF0054
	14	1,5	10	10	80	28	40	4	F311HAF0055	F311HBF0055
	16	1,5	12	12	90	32	45	4	F311HAF0056	F311HBF0056
	18	1,5	14	14	90	36	45	4	F311HAF0057	F311HBF0057
	20	1,5	14	14	90	40	45	4	F311HAF0058	F311HBF0058
	22	1,5	14	14	95	44	45	4	F311HAF0059	F311HBF0059
	24	1,5	16	16	90	36	48	5	F311HAF0060	F311HBF0060

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

v_c/f_z = 8

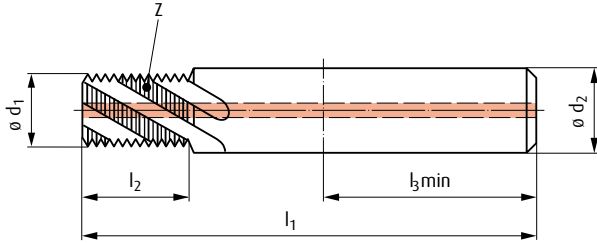
i = 142

NORIS SF R15 K20

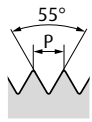
Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

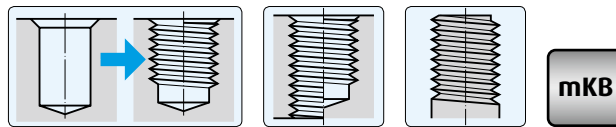
DIN 6535 HB



G



DIN EN ISO 228



TiAlN



TiAlN

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo								F311	
	Nenngröße Nom. size Taille nom. Grand. nom. $\varnothing D$ 1) inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
$\geq 1/8$	28	8	8	70	19,5	36	3	F311HAF0061	F311HBF0061	
$\geq 1/4$	19	11	12	90	26,5	45	4	F311HAF0062	F311HBF0062	
$\geq 3/8$	19	12	12	90	33	45	4	F311HAF0063	F311HBF0063	
$\geq 1/2$	14	14	14	95	42	45	4	F311HAF0064	F311HBF0064	
$\geq 5/8$	14	16	16	90	34	48	5	F311HAF0065	F311HBF0065	
$\geq 3/4$	14	16	16	90	34	48	5	F311HAF0066	F311HBF0066	
≥ 1	11	16	16	90	33	48	5	F311HAF0067	F311HBF0067	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

1) Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde

Diameter related to internal pipe thread resp. external pipe thread

Diamètre relié au filetage intérieur ou extérieur du tube

Diametro riferito alla filettatura gas interna o esterna

$v_c/f_z =$ 8

= 142



Service Kontakt: solutions@noris-reime.de

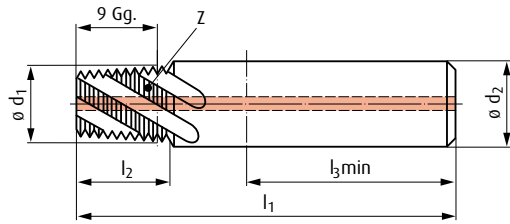
Das REIME Team steht Ihnen bei der Lösung Ihrer Zerspanungsaufgabe gerne zur Seite.
The REIME team will be happy to solve your threading problems.
L'équipe de REIME se tient à votre disposition pour résoudre vos problèmes de filetage.
Il team REIME sarà lieto di risolvere i vostri problemi di filettatura.

NORIS SFK R15-L K20

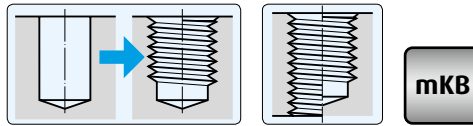
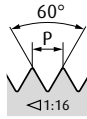
Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB



NPT
ANSI/ASME B 1.20.1



TiCN



TiCN

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F333

Nenngröße Nom. size Taille nom. Grand. nom. ø D inch	P Gg/1"	ø d ₁ mm	ø d ₂ mm	l ₁ mm	l ₂ mm	l ₃ min mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1/16	27	5,9	8	60	13,63	36	3	F333HAF57635	F333HBF57635
1/8	27	7,65	8	60	13,63	36	3	F333HAF57645	F333HBF57645
1/4	18	10,15	12	80	20,44	45	4	F333HAF57655	F333HBF57655
3/8	18	11,15	12	80	20,43	45	4	F333HAF57665	F333HBF57665
1/2 - 3/4	14	14,25	16	85	26,27	48	4	F333HAF96785	F333HBF96785
1" - 2"	11 1/2	19,6	20	95	31,98	50	5	F333HAF96795	F333HBF96795

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 4.1
S	1.1 - 2.2
H	1.1 - 1.2

Anwendungshinweis:

Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht

Application recommendation:

You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile

Attention:

Un programme CN avec l'interpolation hélicoïdale sur un cône doit être utilisé, sinon le filetage réalisé présentera un profil en escalier

Informazioni sull'impiego:

è necessario un programma CN per la fresatura di scanalature elicoidali, altrimenti si formerebbe un gradino nella filettatura fresata

$v_c/f_z =$ 8

$i =$ 142

NPT-Gewindefräser sind für die Lochformen A und B geeignet. Die Lochform A kann bei leichter Zerspanung angewendet werden und wenn keine Dichtprobleme zu befürchten sind.

NPT thread milling cutters are suited for the hole forms A and B. Hole type A can be used when there is no reason to worry about sealing problems. Les fraises à fileter NPT conviennent aux trous de forme A et B. Le trou de type A peut être utilisé quand il n'y a aucune crainte de problèmes d'étanchéité.

Le frese a filettare NPT sono adatte sia con prefori cilindrici che prefiori conici. Il tipo di preforo cilindrico può essere utilizzato quando non ci sono problemi di tenuta.

Zylindrisch vorbohren ohne Verwendung einer Reibahle						
<i>Drill cylindrically without using a reamer</i>						
<i>Perçage cylindrique sans utilisation d'alesoir</i>						
<i>Preforare cilindrico senza l'utilizzo di alesatore</i>						
	A	Nenngröße Nom. size Taille nom. Grand. nom.	P	ø D₁ mm	t₁ mm	t₄ mm
	1/16	27	6,15	8,27	7,33	
	1/8	27	8,5	10,62	9,68	
	1/4	18	11	14,18	12,77	
	3/8	18	14,4	17,62	16,21	
	1/2	14	17,8	21,95	20,13	
	3/4	14	23,2	27,29	25,48	
	1"	11 1/2	29,1	34,11	31,89	
	1 1/4	11 1/2	37,8	42,87	40,66	
	1 1/2	11 1/2	43,9	48,94	46,73	
	2"	11 1/2	55,9	60,98	58,77	

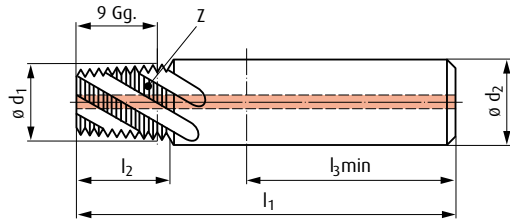
Zylindrisch vorbohren und kegelig aufreiben							
<i>Drill cylindrically and prepare tapered hole with reamer</i>							
<i>Perçage cylindrique et alésage conique</i>							
<i>Preforare cilindrico ed alesare conico</i>							
	B	Nenngröße Nom. size Taille nom. Grand. nom.	P	ø D₂ mm	ø D₃ mm +0,05	t₁ mm	t₄ mm
	1/16	27	5,78	6,39	8,27	7,33	
	1/8	27	8,13	8,74	10,62	9,68	
	1/4	18	10,47	11,36	14,18	12,77	
	3/8	18	13,89	14,8	17,62	16,21	
	1/2	14	17,13	18,32	21,95	20,13	
	3/4	14	22,45	23,67	27,29	25,48	
	1"	11 1/2	28,23	29,69	34,11	31,89	
	1 1/4	11 1/2	36,95	38,45	42,87	40,66	
	1 1/2	11 1/2	43,02	44,52	48,94	46,73	
	2"	11 1/2	55,04	56,56	60,98	58,77	

NORIS SFK R15-L K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

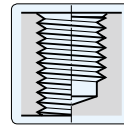
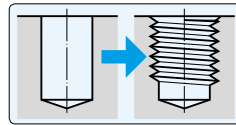
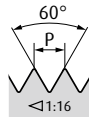
DIN 6535 HA

DIN 6535 HB



NPTF

ANSI B1.20.3



mKB



TiCN



TiCN

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F333

Nenngröße Nom. size Taille nom. Grand. nom. ø D inch	P Gg/1"	ø d ₁ mm	ø d ₂ mm	l ₁ mm	l ₂ mm	l ₃ min mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1/16	27	5,9	8	60	13,6	36	3	F333HAF57825	F333HBF57825
1/8	27	7,65	8	60	13,6	36	3	F333HAF57835	F333HBF57835
1/4	18	10,15	12	80	20,41	45	4	F333HAF57845	F333HBF57845
3/8	18	11,15	12	80	20,4	45	4	F333HAF57855	F333HBF57855
1/2	14	14,25	16	85	26,25	48	4	F333HAF57865	F333HBF57865
3/4	14	14,25	16	85	26,25	48	4	F333HAF57875	F333HBF57875
1" - 2"	11 1/2	19,6	20	95	31,96	50	5	F333HAF96845	F333HBF96845

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 4.1
S	1.1 - 2.2
H	1.1 - 1.2

Anwendungshinweis:

Es wird ein NC-Programm für schneckenförmiges Wendelnutfräsen benötigt, da sonst ein Absatz im gefrästen Gewinde entsteht

Application recommendation:

You must have an NC programme for spiral-worm keyway milling, otherwise the finished thread will have a stepped profile

Attention:

Un programme CN avec l'interpolation hélicoïdale sur un cône doit être utilisé, sinon le filetage réalisé présentera un profil en escalier

Informazioni sull'impiego:

è necessario un programma CN per la fresatura di scanalature elicoidali, altrimenti si formerebbe un gradino nella filettatura fresata

$v_c/f_z =$ 8

$i =$ 142

NPTF-Gewindefräser sind für die Lochformen A und B geeignet. Die Lochform A kann bei leichter Zerspanung angewendet werden und wenn keine Dichtprobleme zu befürchten sind.

NPTF thread milling cutters are suited for the hole forms A and B. Hole type A can be used when there is no reason to worry about sealing problems.

Les fraises à fileter NPTF conviennent aux trous de forme A et B. Le trou de type A peut être utilisé quand il n'y a aucune crainte de problèmes d'étanchéité.

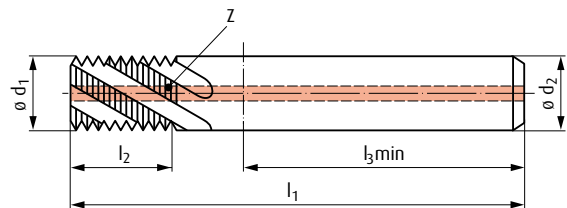
Le frese a filettare NPTF sono adatte sia con prefori cilindrici che prefori conici. Il tipo di preforo cilindrico può essere utilizzato quando non ci sono problemi di tenuta.

Zylindrisch vorbohren ohne Verwendung einer Reibahle					
<i>Drill cylindrically without using a reamer</i>					
<i>Perçage cylindrique sans utilisation d'alesoir</i>					
<i>Preforare cilindrico senza l'utilizzo di alesatore</i>					
A 	Nenngröße Nom. size Taille nom. Grand. nom.	P	$\varnothing D_1$ mm	t_1 mm	t_4 mm
	$\varnothing D$ inch	Gg/1"			
	1/16	27	6,15	8,27	7,33
	1/8	27	8,5	10,62	9,68
	1/4	18	11	14,18	12,77
	3/8	18	14,4	17,62	16,21
	1/2	14	17,8	21,95	20,13
	3/4	14	23,2	27,29	25,48
	1"	11 1/2	29,1	34,11	31,89
	1 1/4	11 1/2	37,8	42,87	40,66
1 1/2	11 1/2	43,9	48,94	46,73	
2"	11 1/2	55,9	60,98	58,77	

Zylindrisch vorbohren und kegelig aufreiben						
<i>Drill cylindrically and prepare tapered hole with reamer</i>						
<i>Perçage cylindrique et alésage conique</i>						
<i>Preforare cilindrico ed alesare conico</i>						
B 	Nenngröße Nom. size Taille nom. Grand. nom.	P	$\varnothing D_2$ mm	$\varnothing D_3$ mm +0,05	t_1 mm	t_4 mm
	$\varnothing D$ inch	Gg/1"				
	1/16	27	5,78	6,39	8,27	7,33
	1/8	27	8,13	8,74	10,62	9,68
	1/4	18	10,47	11,36	14,18	12,77
	3/8	18	13,89	14,8	17,62	16,21
	1/2	14	17,13	18,32	21,95	20,13
	3/4	14	22,45	23,67	27,29	25,48
	1"	11 1/2	28,23	29,69	34,11	31,89
	1 1/4	11 1/2	36,95	38,45	42,87	40,66
1 1/2	11 1/2	43,02	44,52	48,94	46,73	
2"	11 1/2	55,04	56,56	60,98	58,77	

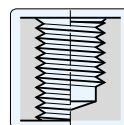
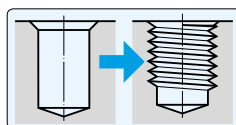
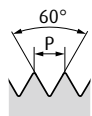
NORIS SFX R15VZ K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



M, MF

DIN 13



mKB

DIN 6535 HA

DIN 6535 HB



TiCN



TiCN

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F341

$\varnothing D$	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
$\geq M 6$	1	4,8	6	55	12,4	36	4	F341HAF00605	F341HBF00605
$\geq M 8$	1	6,7	8	63	16,4	36	4	F341HAF02515	F341HBF02515
$\geq M10$	1	8,7	10	70	20,4	40	5	F341HAF02765	F341HBF02765
$\geq M 8$	1,25	6,5	8	63	16,8	36	4	F341HAF00805	F341HBF00805
$\geq M10$	1,5	8,2	10	70	21,7	40	5	F341HAF01005	F341HBF01005
$\geq M16$	1,5	14,1	16	95	33,7	48	5	F341HAF03595	F341HBF03595
$\geq M12$	1,75	9,9	10	74	25,3	40	5	F341HAF01125	F341HBF01125
$\geq M14$	2	11,6	12	85	28,9	45	5	F341HAF01145	F341HBF01145
$\geq M18$	2,5	15	16	100	38,6	48	5	F341HAF01185	F341HBF01185
$\geq M24$	3	19,9	20	115	49,4	50	6	F341HAF01245	F341HBF01245

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 4.1
S	1.1 - 2.2
H	1.1 - 1.2

$v_c/f_z =$ 9

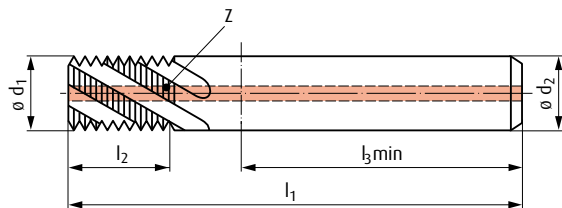
= 143

NORIS SFX R15Z K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

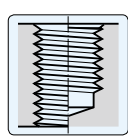
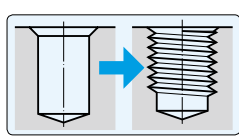
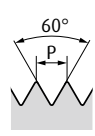
DIN 6535 HB



TiCN

TiCN

MF
DIN 13



mKB

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F342

ø D mm	P mm	ø d ₁ mm	ø d ₂ mm	l ₁ mm	l ₂ mm	l ₃ min mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
≥ 14	1	9,9	10	70	20,4	40	6	F342HAF95125	F342HBF95125
≥ 16	1,5	11,9	12	80	26,1	45	6	F342HAF95145	F342HBF95145
≥ 22	2	15,9	16	90	32,9	48	6	F342HAF95165	F342HBF95165
≥ 30	3	19,9	20	105	43,3	50	6	F342HAF95185	F342HBF95185

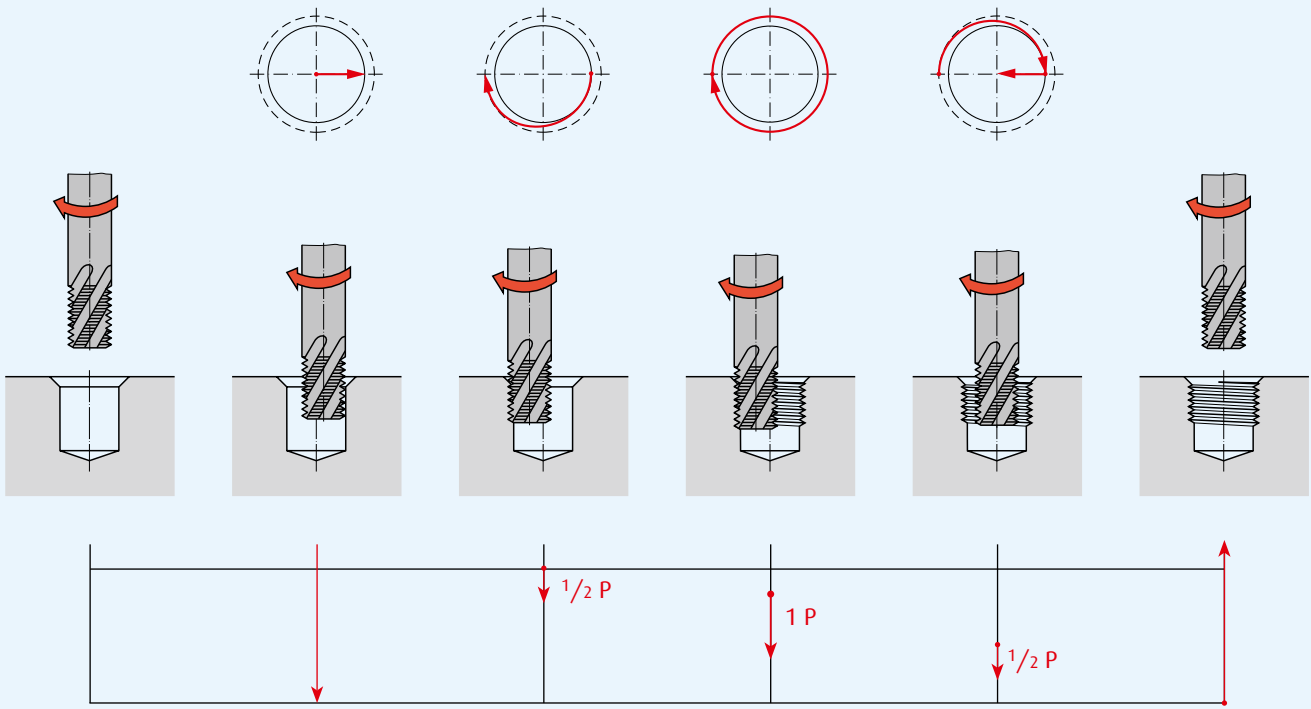
Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 4.1
S	1.1 - 2.2
H	1.1 - 1.2

$v_c/f_z = 9$

$i = 143$

Gewindefräszyklus · Thread milling cycle · Cycle de fraisage de filets · Ciclo di fresatura di filetti



NORIS SFSE/SF/SFX R30°



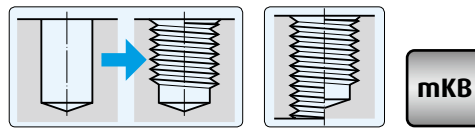
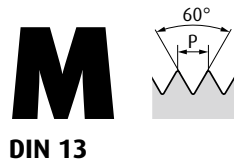
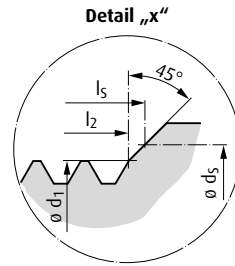
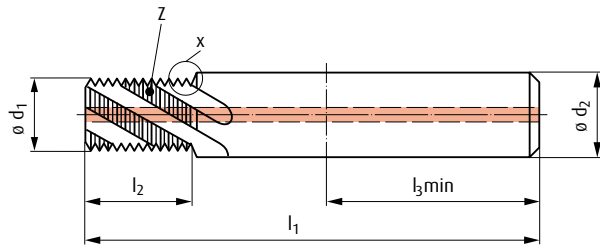
NORIS SFSE/SF/SFX R30°

NORIS SFSE R30 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB



TiCN



TiCN

1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F221	
	$\varnothing D$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	5	0,8	4	6	5,3	55	7,55	36	8,15	3	F221HAF00505	F221HBF00505
	6	1	4,8	8	6,3	62	9,4	36	10,15	3	F221HAF00605	F221HBF00605
	8	1,25	6,5	10	8,3	74	13,05	40	13,95	3	F221HAF00805	F221HBF00805
	10	1,5	8,2	12	10,3	80	15,65	45	16,7	3	F221HAF01005	F221HBF01005
	12	1,75	9,9	14	12,3	90	18,25	45	19,45	4	F221HAF01125	F221HBF01125
	14	2	11,6	16	14,3	100	22,85	48	24,2	4	F221HAF01145	F221HBF01145
	16	2	13,6	18	16,3	102	24,85	48	26,2	4	F221HAF01165	F221HBF01165

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F222	
	$\varnothing D$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	5	0,8	4	6	5,3	55	10,8	36	11,4	3	F222HAF00505	F222HBF00505
	6	1	4,8	8	6,3	62	12,5	36	13,2	3	F222HAF00605	F222HBF00605
	8	1,25	6,5	10	8,3	74	16,9	40	17,7	3	F222HAF00805	F222HBF00805
	10	1,5	8,2	12	10,3	80	20,3	45	21,2	3	F222HAF01005	F222HBF01005
	12	1,75	9,9	14	12,3	90	25,4	45	26,5	4	F222HAF01125	F222HBF01125
	14	2	11,6	16	14,3	100	29	48	30,2	4	F222HAF01145	F222HBF01145
	16	2	13,6	18	16,3	102	33	48	34,2	4	F222HAF01165	F222HBF01165

2,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F223	
	$\varnothing D$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	5	0,8	4	6	5,3	58	13,2	36	13,8	3	F223HAF00505	F223HBF00505
	6	1	4,8	8	6,3	65	15,5	36	16,2	3	F223HAF00605	F223HBF00605
	8	1,25	6,5	10	8,3	78	20,6	40	21,4	3	F223HAF00805	F223HBF00805
	10	1,5	8,2	12	10,3	85	26,3	45	27,2	3	F223HAF01005	F223HBF01005
	12	1,75	9,9	14	12,3	95	30,7	45	31,7	4	F223HAF01125	F223HBF01125
	16	2	13,6	18	16,3	110	41	48	42,2	4	F223HAF01165	F223HBF01165

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

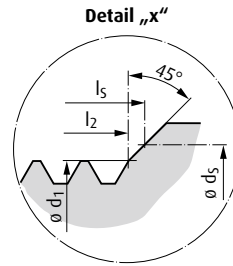
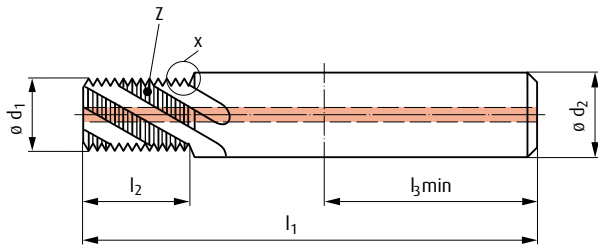
A	1.1 - 1.4
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

NORIS SFSE R30 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB



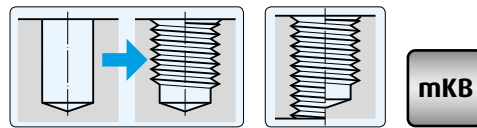
TiCN



TiCN



DIN 13



mKB

1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F221	
	$\varnothing D$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	6	0,75	5	8	6,3	62	9,4	36	10	3	F221HAF02295	F221HBF02295
	8	1	6,7	10	8,3	74	12,5	40	13,2	3	F221HAF02515	F221HBF02515
	10	1	8,7	12	10,3	80	15,5	45	16,2	3	F221HAF02765	F221HBF02765
	10	1,25	8,4	12	10,3	80	15,7	45	16,5	3	F221HAF02775	F221HBF02775
	12	1	10,6	14	12,3	90	18,5	45	19,3	4	F221HAF03015	F221HBF03015
	12	1,25	10,4	14	12,3	90	18,2	45	19	4	F221HAF03025	F221HBF03025
	12	1,5	10,1	14	12,3	90	18,8	45	19,7	4	F221HAF03035	F221HBF03035
	14	1,5	12,1	16	14,3	100	21,8	48	22,7	4	F221HAF03315	F221HBF03315
	16	1,5	14	18	16,3	102	24,8	48	25,8	4	F221HAF03595	F221HBF03595

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F222	
	$\varnothing D$ mm	P mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	6	0,75	5	8	6,3	62	12,4	36	13	3	F222HAF02295	F222HBF02295
	8	1	6,7	10	8,3	74	16,5	40	17,2	3	F222HAF02515	F222HBF02515
	10	1	8,7	12	10,3	80	20,5	45	21,2	3	F222HAF02765	F222HBF02765
	10	1,25	8,4	12	10,3	80	20,7	45	21,5	3	F222HAF02775	F222HBF02775
	12	1	10,6	14	12,3	90	24,5	45	25,3	4	F222HAF03015	F222HBF03015
	12	1,25	10,4	14	12,3	90	24,4	45	25,2	4	F222HAF03025	F222HBF03025
	12	1,5	10,1	14	12,3	90	24,8	45	25,7	4	F222HAF03035	F222HBF03035
	14	1,5	12,1	16	14,3	100	29,3	48	30,2	4	F222HAF03315	F222HBF03315
	16	1,5	14	18	16,3	102	32,3	48	33,3	4	F222HAF03595	F222HBF03595

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.4
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

$v_c/f_z = 9$

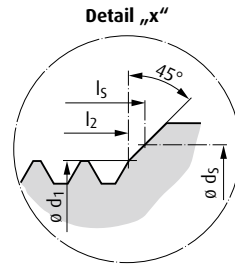
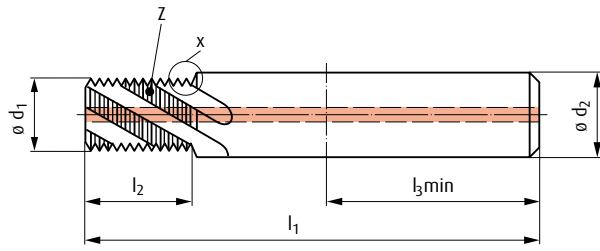
$i = 144$

NORIS SFSE R30 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

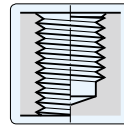
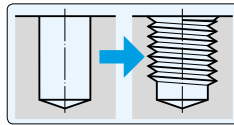
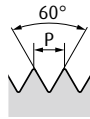
DIN 6535 HA

DIN 6535 HB



UNC

ASME B1.1



mKB



TiCN



TiCN

1,5 x D

Kat.-Nr. / Cat. No. / N° cat. / Tipo										F221	
$\varnothing D$ inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1/4	20	4,7	8	6,65	62	10,8	36	11,7	3	F221HAF50095	F221HBF50095
5/16	18	6,15	10	8,25	74	13,4	40	14,4	3	F221HAF50105	F221HBF50105
3/8	16	7,65	12	9,83	80	15,1	45	16,1	3	F221HAF50115	F221HBF50115
7/16	14	9	12	11,43	80	17,3	45	18,3	3	F221HAF50125	F221HBF50125
1/2	13	10,35	14	13	90	20,6	45	21,7	4	F221HAF50135	F221HBF50135
9/16	12	11,8	16	14,61	100	22,3	48	23,5	4	F221HAF50145	F221HBF50145
5/8	11	13,1	18	16,18	102	24,3	48	25,6	4	F221HAF50155	F221HBF50155
3/4	10	16	20	19,35	110	29,3	50	30,7	5	F221HAF50165	F221HBF50165

2 x D

Kat.-Nr. / Cat. No. / N° cat. / Tipo										F222	
$\varnothing D$ inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1/4	20	4,7	8	6,65	62	13,3	36	14,2	3	F222HAF50095	F222HBF50095
5/16	18	6,15	10	8,25	74	16,2	40	17,2	3	F222HAF50105	F222HBF50105
3/8	16	7,65	12	9,83	80	19,9	45	20,8	3	F222HAF50115	F222HBF50115
7/16	14	9	12	11,43	80	22,7	45	23,8	3	F222HAF50125	F222HBF50125
1/2	13	10,35	14	13	90	26,4	45	27,6	4	F222HAF50135	F222HBF50135
9/16	12	11,8	16	14,61	100	30,7	48	32	4	F222HAF50145	F222HBF50145
5/8	11	13,1	18	16,18	102	33,5	48	34,9	4	F222HAF50155	F222HBF50155
3/4	10	16	20	19,35	110	39,4	50	40,9	5	F222HAF50165	F222HBF50165

2,5 x D

Kat.-Nr. / Cat. No. / N° cat. / Tipo										F223	
$\varnothing D$ inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
3/8	16	7,65	12	9,83	85	24,6	45	25,6	3	F223HAF50115	F223HBF50115
7/16	14	9	12	11,43	85	28,2	45	29,2	3	F223HAF50125	F223HBF50125
1/2	13	10,35	14	13	96	32,3	45	33,4	4	F223HAF50135	F223HBF50135
9/16	12	11,8	16	14,61	107	37,1	48	38,3	4	F223HAF50145	F223HBF50145
5/8	11	13,1	18	16,18	110	40,5	48	41,8	4	F223HAF50155	F223HBF50155

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

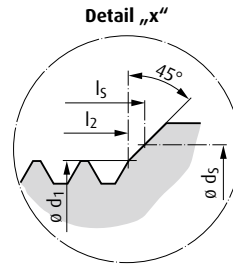
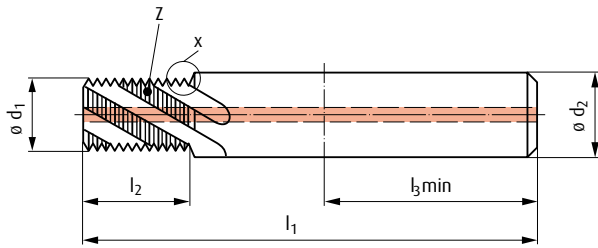
A	1.1 - 1.4
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

NORIS SFSE R30 K20

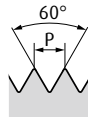
Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

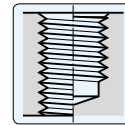
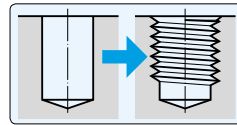
DIN 6535 HB



UNF



ASME B1.1



mKB



TiCN



TiCN

1,5 x D

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F221

$\varnothing D$ inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
Nr.10	32	3,8	6	5,13	55	7,6	36	8,1	3	F221HAF50415	F221HBF50415
1/4	28	5,15	8	6,65	62	10,5	36	11,1	3	F221HAF50435	F221HBF50435
5/16	24	6,6	10	8,25	74	12,2	40	12,9	3	F221HAF50445	F221HBF50445
3/8	24	8,2	12	9,83	80	14,3	45	15	3	F221HAF50455	F221HBF50455
7/16	20	9,55	12	11,43	80	17,2	45	18	3	F221HAF50465	F221HBF50465
1/2	20	11,1	14	13	90	19,7	45	20,5	4	F221HAF50475	F221HBF50475
9/16	18	12,5	16	14,61	100	21,9	48	22,8	4	F221HAF50485	F221HBF50485
5/8	18	14,1	18	16,18	102	24,8	48	25,6	4	F221HAF50495	F221HBF50495

2 x D

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F222

$\varnothing D$ inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
Nr.10	32	3,8	6	5,13	55	9,9	36	10,5	3	F222HAF50415	F222HBF50415
1/4	28	5,15	8	6,65	62	13,2	36	13,8	3	F222HAF50435	F222HBF50435
5/16	24	6,6	10	8,25	74	16,4	40	17,1	3	F222HAF50445	F222HBF50445
3/8	24	8,2	12	9,83	80	19,6	45	20,3	3	F222HAF50455	F222HBF50455
7/16	20	9,55	12	11,43	80	22,3	45	23,1	3	F222HAF50465	F222HBF50465
1/2	20	11,1	14	13	90	26,1	45	26,9	4	F222HAF50475	F222HBF50475
9/16	18	12,5	16	14,61	100	29	48	29,9	4	F222HAF50485	F222HBF50485
5/8	18	14,1	18	16,18	102	33,2	48	34,1	4	F222HAF50495	F222HBF50495
3/4	16	17	20	19,35	110	39	50	40	5	F222HAF50505	F222HBF50505

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.4
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

$v_c/f_z =$ 9

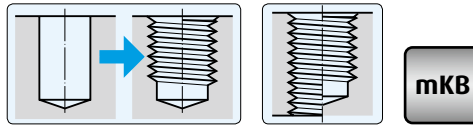
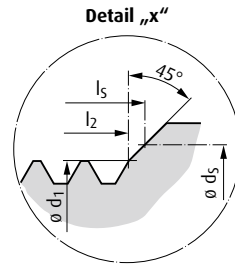
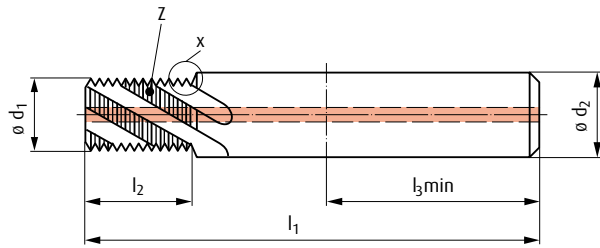
$i =$ 144

NORIS SFSE R30 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB



1,5 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F221	
	Nenngröße Nom. size Taille nom. Grand. nom. D ¹⁾ inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	1/8	28	8,2	12	10	80	15	45	15,7	3	F221HAF40355	F221HBF40355
1/4	19	11	16	13,5	100	20,7	48	21,8	4	F221HAF40365	F221HBF40365	
3/8	19	14,5	18	17	102	26,1	48	27,2	4	F221HAF40375	F221HBF40375	

2 x D	Kat.-Nr. / Cat. No. / N° cat. / Tipo										F222	
	Nenngröße Nom. size Taille nom. Grand. nom. D ¹⁾ inch	P Gg/1"	$\varnothing d_1$ mm	$\varnothing d_2$ mm	$\varnothing d_5$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	l_5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	1/8	28	8,2	12	10	80	20,4	45	21,2	3	F222HAF40355	F222HBF40355
1/4	19	11	16	13,5	100	27,4	48	28,5	4	F222HAF40365	F222HBF40365	
3/8	19	14,5	18	17	102	34,1	48	35,2	4	F222HAF40375	F222HBF40375	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.4
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

1) Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde
Diameter related to internal pipe thread resp. external pipe thread
Diamètre relié au filetage intérieur ou extérieur du tube
Diametro riferito alla filettatura gas interna o esterna

$v_c/f_z = 9$

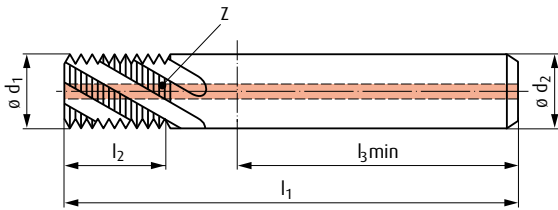
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NORIS SFX R30 K20

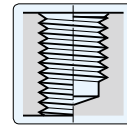
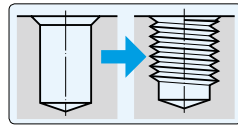
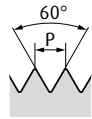
Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB



M, MF
DIN 13



TiCN



TiCN

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F330

P mm	$\varnothing D$ mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
0,5	≥ 10	7,9	8	63	12,2	36	3	F330HAF95065	F330HBF95065
0,75	≥ 11	7,9	8	63	12,3	36	3	F330HAF95095	F330HBF95095
1	≥ 14	9,9	10	70	16,4	40	4	F330HAF96125	F330HBF96125
1	≥ 16	11,9	12	80	20,4	45	4	F330HAF97125	F330HBF97125
1	≥ 22	15,9	16	90	25,4	48	5	F330HAF98125	F330HBF98125
1	≥ 27	19,9	20	105	32,4	50	5	F330HAF99125	F330HBF99125
1,5	≥ 14	9,9	10	70	17,1	40	4	F330HAF96145	F330HBF96145
1,5	≥ 16	11,9	12	80	21,6	45	4	F330HAF97145	F330HBF97145
1,5	≥ 22	15,9	16	90	26,1	48	5	F330HAF98145	F330HBF98145
1,5	≥ 27	19,9	20	105	33,6	50	5	F330HAF99145	F330HBF99145
2	≥ 18	11,9	12	80	20,9	45	4	F330HAF97165	F330HBF97165
2	≥ 22	15,9	16	90	26,9	48	5	F330HAF98165	F330HBF98165
2	≥ 27	19,9	20	105	32,9	50	5	F330HAF99165	F330HBF99165
3	≥ 24	15,9	16	90	28,3	48	5	F330HAF98185	F330HBF98185
3	≥ 30	19,9	20	105	34,9	50	5	F330HAF99185	F330HBF99185

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

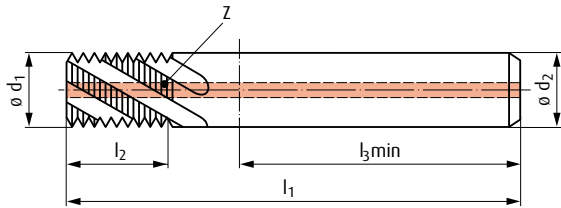
A	1.1 - 1.4
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

$v_c/f_z =$ 9

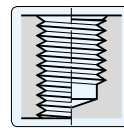
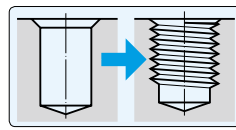
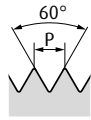
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NORIS SFX R30-L K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale



M, MF
DIN 13



DIN 6535 HA

DIN 6535 HB



TiCN

TiCN

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F331

P mm	$\varnothing D$ mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
1	≥ 14	9,9	10	80	20,4	40	4	F331HAF96125	F331HBF96125
1	≥ 16	11,9	12	90	25,4	45	4	F331HAF97125	F331HBF97125
1,5	≥ 14	9,9	10	80	21,6	40	4	F331HAF96145	F331HBF96145
1,5	≥ 16	11,9	12	90	26,1	45	4	F331HAF97145	F331HBF97145
1,5	≥ 22	15,9	16	100	33,6	48	5	F331HAF98145	F331HBF98145
1,5	≥ 27	19,9	20	115	41,1	50	5	F331HAF99145	F331HBF99145
2	≥ 18	11,9	12	90	26,9	45	4	F331HAF95165	F331HBF95165
3	≥ 24	15,9	16	100	34,3	48	5	F331HAF95185	F331HBF95185

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.4
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

$v_c/f_z =$ 9

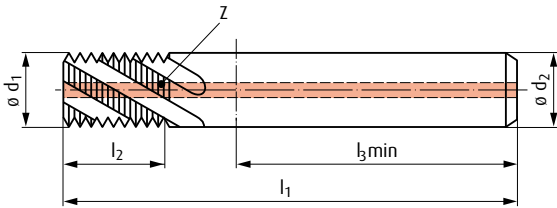
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NORIS SFX R30-L K20

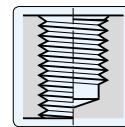
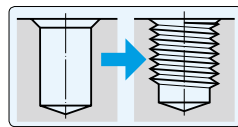
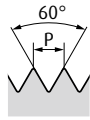
Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB



UN
ASME B1.1



mKB



TiCN



TiCN

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F331

P Gg/1"	$\varnothing D$ inch	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
24	$\cong 1/2$	9,9	10	80	20,6	40	4	F331HAF95795	F331HBF95795
20	$\cong 1/2$	9,9	10	80	20,9	40	4	F331HAF96805	F331HBF96805
20	$\cong 11/16$	11,9	12	90	26	45	4	F331HAF97805	F331HBF97805
20	$\cong 7/8$	15,9	16	100	32,3	48	5	F331HAF98805	F331HBF98805
20	$\cong 1"$	19,9	20	115	41,2	50	5	F331HAF99805	F331HBF99805
18	$\cong 1/2$	9,9	10	80	20,4	40	4	F331HAF95815	F331HBF95815
16	$\cong 1/2$	9,9	10	80	21,3	40	4	F331HAF96825	F331HBF96825
16	$\cong 11/16$	11,9	12	90	26,1	45	4	F331HAF97825	F331HBF97825
16	$\cong 7/8$	15,9	16	100	32,4	48	5	F331HAF98825	F331HBF98825
16	$\cong 1"$	19,9	20	115	40,4	50	5	F331HAF99825	F331HBF99825
14	$\cong 7/8$	15,9	16	100	33,4	48	5	F331HAF95835	F331HBF95835
12	$\cong 11/16$	11,9	12	90	26,3	45	4	F331HAF97855	F331HBF97855
12	$\cong 7/8$	15,9	16	100	32,7	48	5	F331HAF98855	F331HBF98855
12	$\cong 1"$	19,9	20	115	41,1	50	5	F331HAF99855	F331HBF99855
10	$\cong 11/16$	11,9	12	90	26,5	45	4	F331HAF95875	F331HBF95875
9	$\cong 11/16$	11,9	12	90	25,4	45	4	F331HAF95885	F331HBF95885
8	$\cong 7/8$	15,9	16	100	33,1	48	5	F331HAF98895	F331HBF98895
8	$\cong 1"$	19,9	20	115	42,7	50	5	F331HAF99895	F331HBF99895
6	$\cong 1"$	19,9	20	115	44,3	50	5	F331HAF95915	F331HBF95915

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.4
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

$v_c/f_z =$ 9

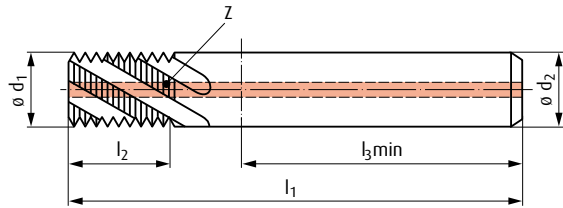
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NORIS SFX R30 K20

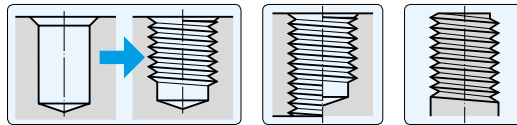
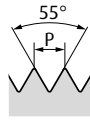
Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB



G BSW, BSF, W
DIN EN ISO 228



TiCN



TiCN

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F340

P Gg/1"	Nenngröße Nom. size Taille nom. Grand. nom. $\varnothing D$ 1) inch	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_2 mm	$l_3 \text{ min}$ mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
19	$\geq 1/4$	9,9	10	70	16,7	40	4	F340HAF95455	F340HBF95455
14	$\geq 1/2$	11,9	12	80	20,9	45	4	F340HAF97485	F340HBF97485
14	$\geq 1/2$	15,9	16	90	26,3	48	5	F340HAF98485	F340HBF98485
11	$\geq 1"$	15,9	16	90	26,5	48	5	F340HAF98505	F340HBF98505
11	$\geq 1"$	19,9	20	105	33,5	50	5	F340HAF99505	F340HBF99505

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.4
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

1) Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde

Diameter related to internal pipe thread resp. external pipe thread

Diamètre relié au filetage intérieur ou extérieur du tube

Diametro riferito alla filettatura gas interna o esterna

$v_c/f_z =$ 9

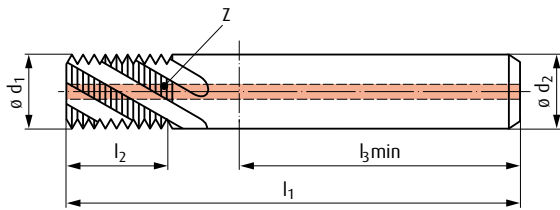
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NORIS SFX R30 K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB

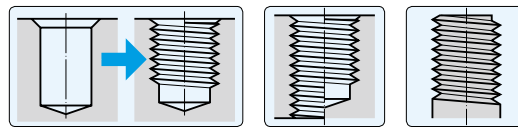
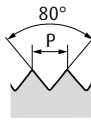


TiCN

TiCN



Pg
DIN 40430



Kat.-Nr. / Cat. No. / N° cat. / Tipo

F340

P Gg/1"	Nenngröße Nom. size Taille nom. Grand. nom. ø D 1)	ø d ₁ mm	ø d ₂ mm	l ₁ mm	l ₂ mm	l ₃ min mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
20	≥ 7	9,9	10	70	17,1	40	4	F340HAF96615	F340HBF96615
18	≥ 9	11,9	12	80	20,5	45	4	F340HAF96625	F340HBF96625
16	≥ 21	11,9	12	80	21,4	45	4	F340HAF96635	F340HBF96635

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.4
R	1.1 - 1.2
F	1.1 - 3.1
N	1.1 - 4.3
S	1.1 / 2.1
H	

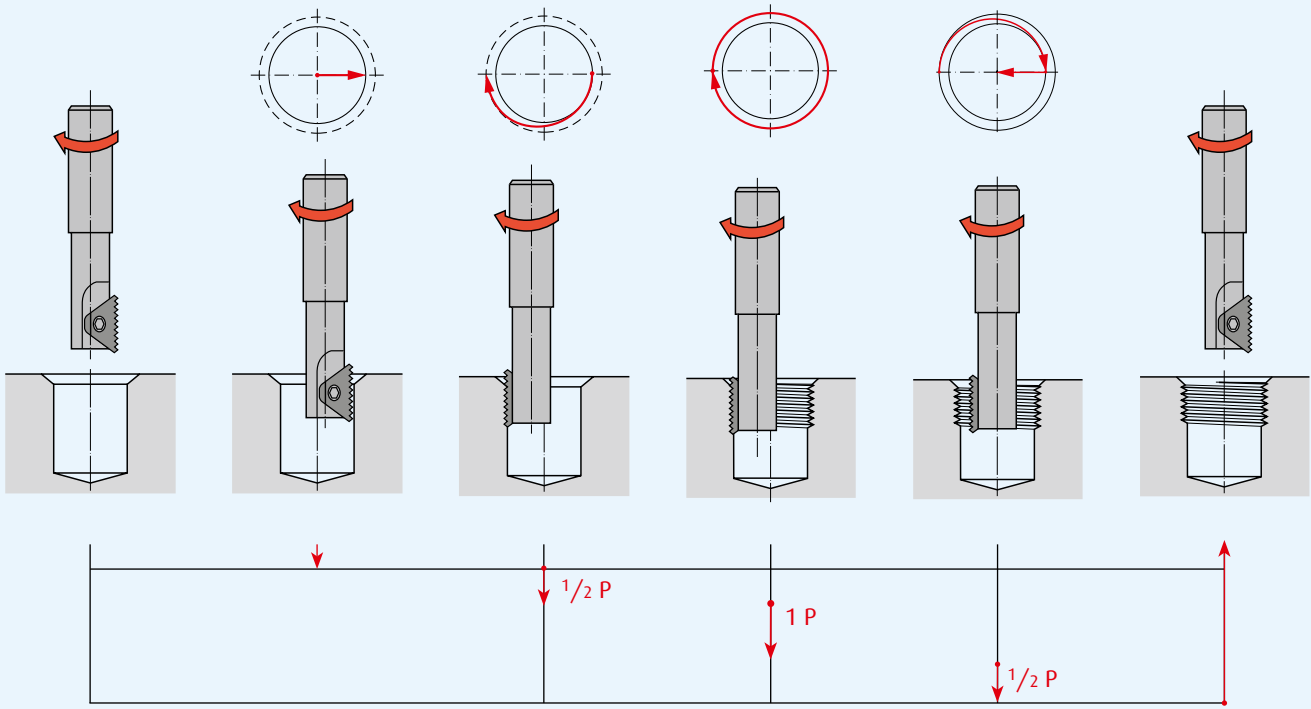
1) Durchmesser bezogen auf Rohr-Innengewinde bzw. Rohr-Außengewinde

Diameter related to internal pipe thread resp. external pipe thread
Diamètre relié au filetage intérieur ou extérieur du tube
Diametro riferito alla filettatura gas interna o esterna

v_c/f_z = 9

i = 142

Gewindefräszyklus · Thread milling cycle · Cycle de fraisage de filets · Ciclo di fresatura di filetti



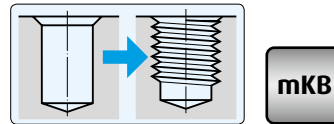
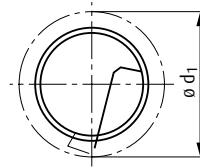
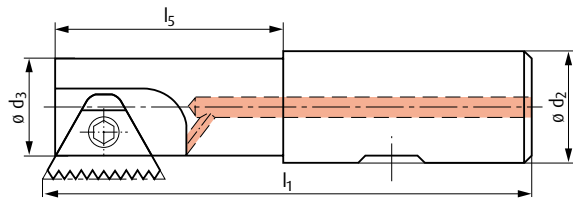
NORIS MWN



REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS

NORIS MWN

NORIS MWN



Kat.-Nr. / Cat. No. / N° cat. / Tipo

1190

Abmessung Dimension Dimension Dimensioni	Plattengröße Insert size Taille de plaquette Grandezza inserto	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	l ₁ mm	l ₅ mm	Art.-Nr. Article no. Code article Articolo nr.
H 10.4 - 12.12	10,4	9	12	6,8	69	12	1190AAPAA
H 10.4 - 17.20	10,4	9	20	6,8	84	17	1190AAQAA

Zubehör / Accessories / Accessoire / Accessori

Halteschrauben für Gewindefräs- bzw. Wechselplatten (MWN)

Fastening screws

Vis de fixation

Viti di fissaggio



Plattengröße Insert size Taille de plaquette Grandezza inserto	Art.-Nr. Article no. Code article Articolo nr.
10,4	1012AAAAA

Schraubendreher

Screw-driver

Tournevis

Cacciavite



Halteschraube Fastening screw Vis de fixation Viti di fissaggio	Art.-Nr. Article no. Code article Articolo nr.
1012	1022AAAAA

Schneidstoff / Cutting material / Substrat outil / Materiale utensile		K20	M25
Mehrzahnwendeplatte Multitooth insert Plaqueette multident Placchette reversibili			
M DIN 13			TiAlN
Plattengröße l₂ Insert size l ₂ Taille de plaquette l ₂ Grandezza inserto l ₂	P mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
10,4	0,5	1181AAAA	1181M0050
10,4	0,75	1181AAGAA	1181M0075
10,4	1	1181AABAA	1181M0100
10,4	1,25	1181AACAA	1181M0125
10,4	1,5	1181AADAA	1181M0150

UN ASME B1.1			
Plattengröße l₂ Insert size l ₂ Taille de plaquette l ₂ Grandezza inserto l ₂		Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
10,4	20	1181AAEAA	1081UN020
10,4	18	1181AAF AA	1081UN018

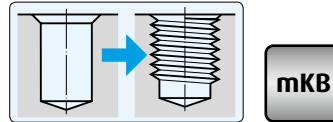
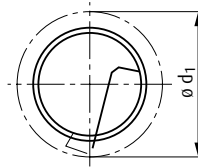
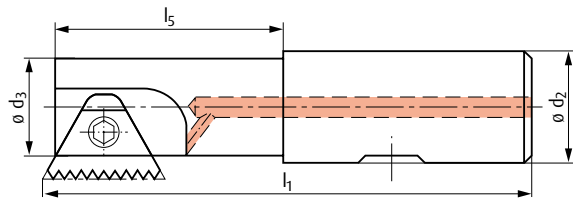
G DIN EN ISO 228			
Plattengröße l₂ Insert size l ₂ Taille de plaquette l ₂ Grandezza inserto l ₂		Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
10,4	19	1091AAAAA	1091G0019

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego	A	
		1.1 - 1.4
		1.1 - 1.2
		1.1 - 3.1
	1.1 - 4.2	1.5 - 4.3
	1.1 - 1.2 / 2.1 - 2.2	1.1 - 1.2 / 2.1 - 2.2
	H	

v_c/f_z = 10

i = 146

NORIS MWN



Kat.-Nr. / Cat. No. / N° cat. / Tipo

1190

Abmessung Dimension Dimension Dimensioni	Plattengröße Insert size Taille de plaquette Grandezza inserto	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	l ₁ mm	l ₅ mm	Art.-Nr. Article no. Code article Articolo nr.
H 11 - 12.12	11	11,5	12	8,9	70	12	1190AAAAA
H 11 - 20.20	11	11,5	20	8,9	85	20	1190ABAA

Zubehör / Accessories / Accessoires / Accessori

Halteschrauben für Gewindefräs- bzw. Wechselplatten (MWN)

Fastening screws

Vis de fixation

Viti di fissaggio



Plattengröße Insert size Taille de plaquette Grandezza inserto	Art.-Nr. Article no. Code article Articolo nr.
11	1013AAAAA

Schraubendreher

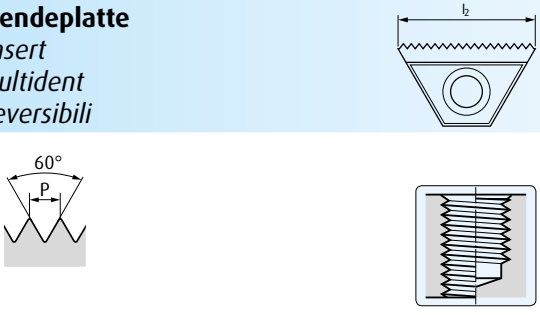


Screw-driver

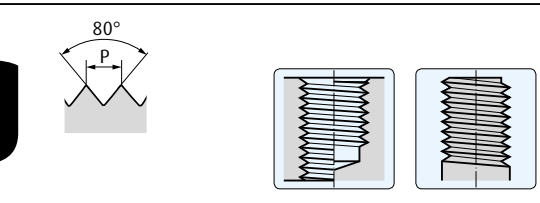


Tournevis

Cacciavite






Halteschraube Fastening screw Vis de fixation Viti di fissaggio	Art.-Nr. Article no. Code article Articolo nr.
1013	1023AAAAA

Schneidstoff / Cutting material / Substrat outil / Materiale utensile		K20	M25
Mehrzahnwendeplatte Multitooth insert Plaquette multident Placchette reversibili			
 M DIN 13			
Plattengröße l₂ Insert size l ₂ Taille de plaquette l ₂ Grandezza inserto l ₂		Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	P mm		
11	0,5	1101AAAA	1101M0050
11	0,75	1101AABAA	1101M0075
11	1	1101AACAA	1101M0100
11	1,25	1101AADAA	1101M0125
11	1,5	1101AAEAA	1101M0150

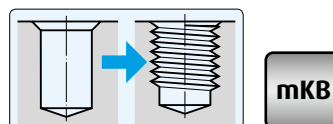
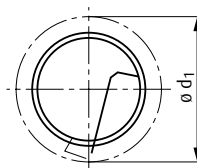
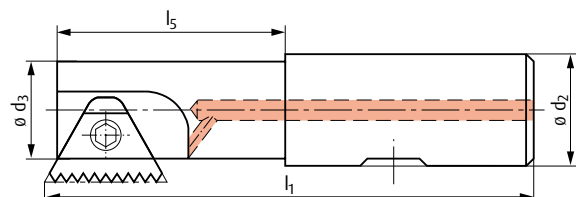
 Pg DIN 40430			
Plattengröße l₂ Insert size l ₂ Taille de plaquette l ₂ Grandezza inserto l ₂		Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
	P Gg/1"		
11	18	1121AAAA	1121PG018

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego	A		
	R		1.1 - 1.4
	F		1.1 - 1.2
	N	1.1 - 4.2	1.1 - 3.1
	S	1.1 - 1.2 / 2.1 - 2.2	1.5 - 4.3
	H		1.1 - 1.2 / 2.1 - 2.2

$v_c/f_z =$  10

 =  146

NORIS MWN



Kat.-Nr. / Cat. No. / N° cat. / Tipo

1190

Abmessung Dimension Dimension Dimensioni	Plattengröße Insert size Taille de plaquette Grandezza inserto	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	l ₁ mm	l ₅ mm	Art.-Nr. Article no. Code article Articolo nr.
H 16 - 22.16	16	17	16	13,6	90	22	1190ACAA
H 16 - 43.20	16	20	20	16,6	95	43	1190ADAA
H 16 - 25.25	16	22	25	18,6	125	25	1190AEAA

Zubehör / Accessories / Accessoires / Accessori

Halteschrauben für Gewindefrä- bzw. Wechselplatten (MWN)

Fastening screws

Vis de fixation

Viti di fissaggio



Plattengröße
Insert size
Taille de plaquette
Grandezza inserto

16

Art.-Nr.
Article no.
Code article
Articolo nr.

1014AAAAA

Schraubendreher

Screw-driver

Tournevis

Cacciavite



Halteschraube
Fastening screw
Vis de fixation
Viti di fissaggio

1014

Art.-Nr.
Article no.
Code article
Articolo nr.

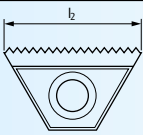
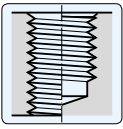


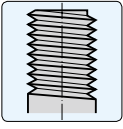
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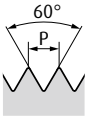
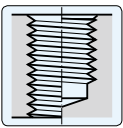


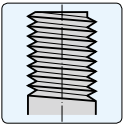
Gewindefräplatten, siehe Seite 89-90

Thread milling inserts see page 89-90

Plaquettes de filetage voir page 89-90

Inserti filettati vedi pagina 89-90

Schneidstoff / Cutting material / Substrat outil / Materiale utensile		K20	M25
Mehrzahnwendeplatte Multitooth insert Plaqueette multident Placchette reversibili			
   			
M DIN 13			TiAlN
Plattengröße l₂ Insert size l ₂ Taille de plaqueette l ₂ Grandezza inserto l ₂	P mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
16	0,5	1131AAAA	1131M0050
16	0,75	1131AABAA	1131M0075
16	1	1131AACAA	1131M0100
16	1,25	1131AADAA	1131M0125
16	1,5	1131AAEAA	1131M0150
16	1,75	1131AAF AA	1131M0175
16	2	1131AAGAA	1131M0200
			
Plattengröße l₂ Insert size l ₂ Taille de plaqueette l ₂ Grandezza inserto l ₂	P mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
16	1	1141AACAA	1141M0100
16	1,25	1141AADAA	1141M0125
16	1,5	1141AAEAA	1141M0150
16	1,75	1141AAF AA	1141M0175
16	2	1141AAGAA	1141M0200

UN ASME B1.1			
   			TiAlN
Plattengröße l₂ Insert size l ₂ Taille de plaqueette l ₂ Grandezza inserto l ₂	P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
16	16	1131AAJAA	1131UN016
16	12	1131AAHAA	1131UN012
			
Plattengröße l₂ Insert size l ₂ Taille de plaqueette l ₂ Grandezza inserto l ₂	P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
16	16	1141AAIAA	1141UN016
16	12	1141AAHAA	1141UN012

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A		1.1 - 1.4
R		1.1 - 1.2
F		1.1 - 3.1
N	1.1 - 4.2	1.5 - 4.3
S	1.1 - 1.2 / 2.1 - 2.2	1.1 - 1.2 / 2.1 - 2.2
H		

Schneidstoff / Cutting material / Substrat outil / Materiale utensile		K20	M25
Mehrzahnwendeplatte Multitooth insert Plaqueette multident Placchette reversibili			
G DIN EN ISO 228			TiAlN
Plattengröße l ₂ Insert size l ₂ Taille de plaqueette l ₂ Grandezza inserto l ₂	P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
16	14	1151AAAA	1151G0014
16	11	1151AABAA	1151G0011

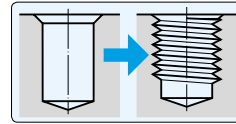
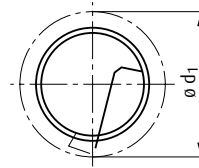
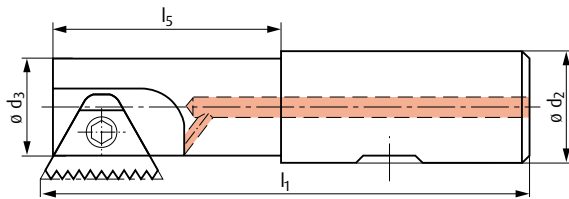
Pg DIN 40430			
 			TiAlN
Plattengröße l ₂ Insert size l ₂ Taille de plaqueette l ₂ Grandezza inserto l ₂	P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
16	18	1151AAEAA	1151PG018
16	16	1151AACAA	1151PG016

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego	A		
	R		1.1 - 1.4
	F		1.1 - 1.2
	N	1.1 - 4.2	1.1 - 3.1
	S	1.1 - 1.2 / 2.1 - 2.2	1.5 - 4.3
	H		1.1 - 1.2 / 2.1 - 2.2

v_c/f_z = 10

i = 146

NORIS MWN



Kat.-Nr. / Cat. No. / N° cat. / Tipo

1190

Abmessung Dimension Dimension Dimensioni	Plattengröße Insert size Taille de plaquette Grandezza inserto	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	l ₁ mm	l ₅ mm	Art.-Nr. Article no. Code article Articolo nr.
H 27 - 52.25	27	30	25	24	110	52	1190AAFAA
H 27 - 92.25	27	30	25	24	150	92	1190AAGAA
H 27 - 58.32	27	37	32	31	120	58	1190AAHAA
H 27 - 98.32	27	37	32	31	160	98	1190AAIAA

Zubehör / Accessories / Accessoires / Accessori

Halteschrauben für Gewindefrä- bzw. Wechsellplatten (MWN)

Fastening screws

Vis de fixation

Viti di fissaggio



Plattengröße Insert size Taille de plaquette Grandezza inserto	Art.-Nr. Article no. Code article Articolo nr.
27	1015AAAAA

Schraubendreher

Screw-driver

Tournevis

Cacciavite



Halteschraube Fastening screw Vis de fixation Viti di fissaggio	Art.-Nr. Article no. Code article Articolo nr.
1015	1025AAAAA

Gewindefräplatten, siehe Seite 92-93

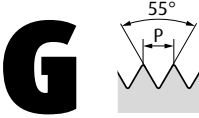
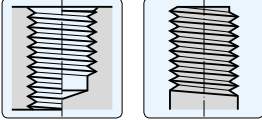


Thread milling inserts see page 92-93

Plaquettes de filetage voir page 92-93


Inserti filettati vedi pagina 92-93



Schneidstoff / Cutting material / Substrat outil / Materiale utensile		K20	M25
M DIN 13 Mehrzahnwendeplatte <i>Multitooth insert</i> <i>Plaquette multident</i> <i>Placchette reversibili</i>		 	
 		TiAlN	
Plattengröße l₂ <i>Insert size l₂</i> <i>Taille de plaquette l₂</i> <i>Grandezza inserto l₂</i>	p mm	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>
27	1	1161AAAA	1161M0100
27	1,25	1161AABAA	1161M0125
27	1,5	1161AACAA	1161M0150
27	1,75	1161AADAA	1161M0175
27	2	1161AAEAA	1161M0200
27	2,5	1161AAFAA	1161M0250
27	3	1161AAGAA	1161M0300
27	3,5	1161AAHAA	1161M0350
27	4	1161AAIAA	1161M0400
Plattengröße l₂ <i>Insert size l₂</i> <i>Taille de plaquette l₂</i> <i>Grandezza inserto l₂</i>	p mm	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>
27	1	1171AAAA	1171M0100
27	1,25	1171AABAA	1171M0125
27	1,5	1171AACAA	1171M0150
27	2	1171AADAA	1171M0200
27	2,5	1171AAEAA	1171M0250
27	3	1171AAFAA	1171M0300
27	3,5	1171AAGAA	1171M0350
27	4	1171AAHAA	1171M0400

UN ASME B1.1 		 		
Plattengröße l₂ <i>Insert size l₂</i> <i>Taille de plaquette l₂</i> <i>Grandezza inserto l₂</i>		p Gg/1"	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>
			TiAlN	
27	12	1161AAJAA	1161UN012	
27	8	1161AAKAA	1161UN008	
Plattengröße l₂ <i>Insert size l₂</i> <i>Taille de plaquette l₂</i> <i>Grandezza inserto l₂</i>	p Gg/1"	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	
27	12	1171AAIAA	1171UN012	
27	8	1171AAJAA	1171UN008	

Schneidstoff / Cutting material / Substrat outil / Materiale utensile		K20	M25
 <p>G DIN EN ISO 228</p> 			 <p>TiAlN</p>
Plattengröße I₂ Insert size I ₂ Taille de plaquette I ₂ Grandezza inserto I ₂	P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
27	11	1181AAAAA	1181G0011

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego	A	
	R	1.1 - 1.4
	F	1.1 - 1.2
	N	1.1 - 3.1
	S	1.1 - 4.2
	H	1.1 - 1.2 / 2.1 - 2.2
		1.5 - 4.3
		1.1 - 1.2 / 2.1 - 2.2

$v_c/f_z =$  **10**

 **=**  **146**

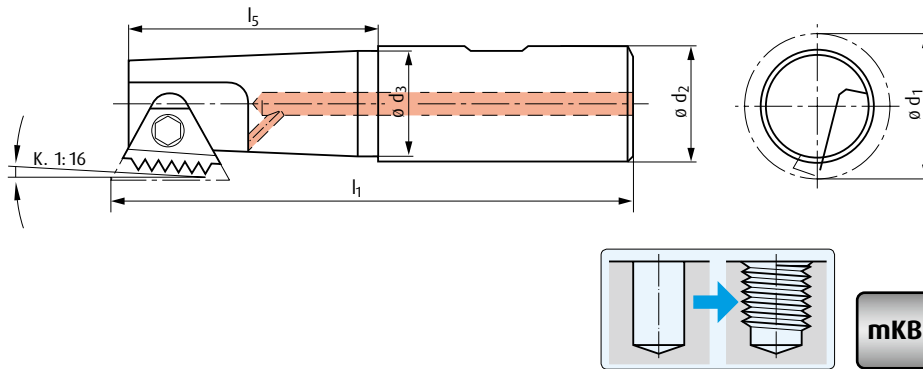
NORIS MWN

Rechtsausführung

Right-hand version
Version à droite
Esecuzione destra

Linksausführung

Left-hand version
Version à gauche
Esecuzione sinistra



Kat.-Nr. / Cat. No. / N° cat. / Tipo

1190

Abmessung Dimension Dimension Dimensioni	Plattengröße Insert size Taille de plaquette Grandezza inserto	Abmessungsbereich Size range Dimensions Dimensioni	ø d ₁ mm	ø d ₂ mm	ø d ₃ mm	l ₁ mm	l ₅ mm	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
H 16 - 22.16-R K116	16	1/2 NPT	15,5	16	12,5	90	22	1190AACAB	
H 16 - 23.20-R K116	16	3/4 NPT - 1 1/4 NPT	19	20	15	85	23	1190AAJAA	
H 27 - 52.25	27	1 1/2 NPT - 2 NPT	30	25	24	110	52	1190AAFAA	
H 27 - 58.32-R K116	27	>2 NPT	37	32	31	120	58	1190AAHAB	
H 16 - 22.16-L K116	16	1/2 NPT	15,5	16	12,5	90	22		1190AASAA
H 16 - 23.20-L K116	16	3/4 NPT - 1 1/4 NPT	19	20	15	85	23		1190AAKAA
H 27 - 52.25-L K116	27	1 1/2 NPT - 2 NPT	30	25	24	110	52		1190AALAA
H 27 - 58.32-L K116	27	>2 NPT	37	32	31	120	58		1190AAMAA

Zubehör / Accessories / Accessoires / Accessori

Halteschrauben für Gewindefräs- bzw. Wechselplatten (MWN)

Fastening screws

Vis de fixation

Viti di fissaggio



Plattengröße Insert size Taille de plaquette Grandezza inserto	Art.-Nr. Article no. Code article Articolo nr.
10,4	1012AAAAA
11	1013AAAAA
16	1014AAAAA
27	1015AAAAA

Schraubendreher

Screw-driver

Tournevis

Cacciavite



Halteschraube Fastening screw Vis de fixation Viti di fissaggio	Art.-Nr. Article no. Code article Articolo nr.
1012	1022AAAAA
1013	1023AAAAA
1014	1024AAAAA
1015	1025AAAAA

Schneidstoff / Cutting material / Substrat outil / Materiale utensile		K20	M25
Mehrzahnwendeplatte Multitooth insert Plaquette multident Placchette reversibili			
NPT ANSI/ASME B 1.20.1			
Plattengröße l ₂ Insert size l ₂ Taille de plaquette l ₂ Grandezza inserto l ₂	P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
16	11,5	1151AADAA	1151PT115
16	14	1151AAFAA	1151PT014
27	11,5	1181AABAA	1181PT115
27	8	1181AACAA	1181PT008

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego	A	R	F	N	S	H
						1.1 - 1.4
						1.1 - 1.2
						1.1 - 3.1
				1.1 - 4.2		1.5 - 4.3
				1.1 - 1.2 / 2.1 - 2.2		1.1 - 1.2 / 2.1 - 2.2

Sollen die beiden Seiten der Gewindefräswendeplatten für konische Gewinde eingesetzt werden, sind Fräserhalter in Rechts- und Linksausführung erforderlich.

For using both sides of the reversible carbide tips for tapered threads, a left-hand and right-hand version of the holder is required.

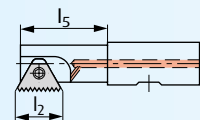
Pour l'utilisation des plaquettes réversibles dans le filetage conique il est nécessaire d'employer un porte plaquette à droite ou à gauche.

Nel caso in cui si vogliono impiegare entrambi i lati della placchetta reversibile per la produzione di una filettatura conica, sarà necessario impiegare i corpi in esecuzione destra e sinistra.

$v_c/f_z =$ 10

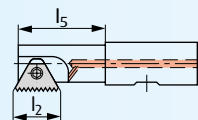
= 146

Welche Gewinde können mit NORIS MWN erzeugt werden
Which kind of threads can be produced with a NORIS MWN tool
Quels types de filet peuvent être usinés avec les outils NORIS MWN
Quali tipi di filetto possono essere eseguiti con gli utensili NORIS MWN



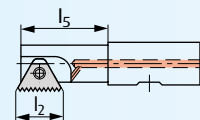
								l ₁ [mm]	12	17	12	20
								l ₂ [mm]	10,4	10,4	11	11
M	EG-M (STI)	G 55°	UN	EG-UN (STI)	Pg	ø D mm	P mm	84	84	86	86	
M10x0,5						10	0,5	1190AAPAA	1190AAQAA			
M10x0,75						10	0,75	1190AAPAA	1190AAQAA			
M12x1						12	1	1190AAPAA	1190AAQAA			
M12x1,25						12	1,25	1190AAPAA	1190AAQAA			
	EG-M11x1					12,3	1	1190AAPAA	1190AAQAA			
			1/2 - 20 UNF			12,7	1,27	1190AAPAA	1190AAQAA			
				7/16 - 20 UNF		12,763	1,27	1190AAPAA	1190AAQAA			
		G 1/4				13,16	1,336	1190AAPAA	1190AAQAA			
	EG-M12 x 1					13,3	1	1190AAPAA	1190AAQAA			
	EG-M12x1,25					13,624	1,25	1190AAPAA	1190AAQAA			
	EG-M12x1,5					13,948	1,5	1190AAPAA	1190AAQAA			
M14x1						14	1	1190AAPAA	1190AAQAA			
M14x1,25						14	1,25	1190AAPAA	1190AAQAA			
M14x1						14	1	1190AAPAA	1190AAQAA			
M14x1,5						14	1,5	1190AAPAA	1190AAQAA			
			9/16 - 18 UNF			14,28	1,411	1190AAPAA	1190AAQAA			
				1/2 - 20 UNF		14,352	1,27	1190AAPAA	1190AAQAA			
M15x1						15	1	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M15x1,5						15	1,5	1190AAPAA	1190AAQAA			
					Pg9	15,2	1,411			1190AAAAA	1190AABAA	
	EG-M14x1					15,3	1	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
	EG-M14x1,25					15,624	1,25	1190AAPAA	1190AAQAA			
			5/8 - 18 UNF			15,87	1,411	1190AAPAA	1190AAQAA			
	EG-M14x1,5					15,948	1,5	1190AAPAA	1190AAQAA			
M16x1						16	1	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M16x1,5						16	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
				9/16 - 18 UNF		16,121	1,411	1190AAPAA	1190AAQAA			
		G 3/8				16,66	1,336	1190AAPAA	1190AAQAA			
	EG-M15x1,5					16,984	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
				5/8 - 18 UNF		17,709	1,411	1190AAPAA	1190AAQAA			
	EG-M16x1,5					17,948	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M18x1						18	1	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M18x1,5						18	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
					Pg11	18,6	1,411			1190AAAAA	1190AABAA	
	EG-M18x1,5					19,948	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M20x1						20	1	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M20x1,5						20	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
					Pg13,5	20,4	1,411			1190AAAAA	1190AABAA	
	EG-M20x1,5					21,948	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M22x1						22	1	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M22x1,5						22	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	

Welche Gewinde können mit NORIS MWN erzeugt werden
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Quali tipi di filetto possono essere eseguiti con gli utensili NORIS MWN



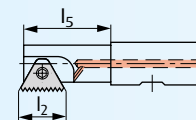
								l ₁ [mm]	12	17	12	20
								l ₂ [mm]	10,4	10,4	11	11
M	EG-M (STI)	G 55°	UN	EG-UN (STI)	Pg	ø D mm	P mm	84	84	86	86	
			7/8 - 20 UNEF			22,225	1,27	1190AAPAA	1190AAQAA			
					Pg16	22,5	1,411			1190AAAAA	1190AABAA	
	EG-M22x1,5					23,948	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M24x1						24	1	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M24x1,5						24	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M25x1,5						25	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
			1 - 20 UNEF			25,4	1,27	1190AAPAA	1190AAQAA			
	EG-M24x1,5					25,948	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M26x1,5						26	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
			1 1/16 - 18 UNEF			26,988	1,411	1190AAPAA	1190AAQAA			
M27x1,5						27	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
	EG-M26x1,5					27,948	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M28x1,5						28	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
			1 1/8 - 18 UNEF			28,575	1,411	1190AAPAA	1190AAQAA			
	EG-M27x1,5					28,946	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
	EG-M28x1,5					29,948	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M30x1						30	1	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M30x1,5						30	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
			1 3/16 - 18 UNEF			30,162	1,411	1190AAPAA	1190AAQAA			
			1 1/4 - 18 UNEF			31,75	1,411	1190AAPAA	1190AAQAA			
	EG-M30x1,5					31,948	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M32x1,5						32	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M33x1,5						33	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
			1 5/16 - 18 UNEF			33,338	1,411	1190AAPAA	1190AAQAA			
M34x1,5						34	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
			1 3/8 - 18 UNEF			34,925	1,411	1190AAPAA	1190AAQAA			
M35x1,5						35	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M36x1,5						36	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
			1 7/16 - 18 UNEF			36,512	1,411	1190AAPAA	1190AAQAA			
M38x1,5						38	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
			1 1/2 - 18 UNEF			38,1	1,411	1190AAPAA	1190AAQAA			
			1 9/16 - 18 UNEF			39,688	1,411	1190AAPAA	1190AAQAA			
M40x1,5						40	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
			1 5/8 - 18 UNEF			41,275	1,411	1190AAPAA	1190AAQAA			
M42x1,5						42	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
			1 11/16 - 18 UNEF			42,862	1,411	1190AAPAA	1190AAQAA			
M45x1,5						45	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M48x1,5						48	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M50x1,5						50	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	
M52x1,5						52	1,5	1190AAPAA	1190AAQAA	1190AAAAA	1190AABAA	

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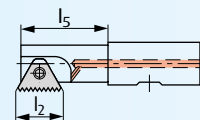
								l ₁ [mm]	22	43	25
								l ₂ [mm]	16	16	16
M	EG-M (STI)	G 55°	UN	EG-UN (STI)	Pg	ø D mm	P mm	88	88	88	
M20x1						20	1	1190AACAA			
					Pg13,5	20,4	1,411	1190AACAA			
M22x1						22	1	1190AACAA			
M22x1,5						22	1,5	1190AACAA			
					Pg16	22,5	1,411	1190AACAA	1190AADAA		
		G 5/8				22,911	1,814	1190AACAA			
			15/16 - 12 UN			23,812	2,117	1190AACAA			
	EG-M22x1,5					23,948	1,5	1190AACAA			
M24x1						24	1	1190AACAA	1190AADAA		
M24x1,5						24	1,5	1190AACAA			
M24x2						24	2	1190AACAA			
	EG-M22x2					24,598	2	1190AACAA			
M25x1,5						25	1,5	1190AACAA	1190AADAA		
			1 - 12 UNF			25,4	2,117	1190AACAA			
	EG-M24x1,5					25,948	1,5	1190AACAA	1190AADAA		
M26x1,5						26	1,5	1190AACAA	1190AADAA		
		G 3/4				26,441	1,814	1190AACAA	1190AADAA		
	EG-M24x2					26,598	2	1190AACAA			
			1 1/16 - 12 UN			26,988	2,117	1190AACAA	1190AADAA		
M27x1,5						27	1,5	1190AACAA	1190AADAA	1190AAEAA	
M27x2						27	2	1190AACAA	1190AADAA		
	EG-M26x1,5					27,948	1,5	1190AACAA	1190AADAA	1190AAEAA	
M28x1,5						28	1,5	1190AACAA	1190AADAA	1190AAEAA	
				1 - 12 UNF		28,151	2,117	1190AACAA	1190AADAA		
					Pg21	28,3	1,587	1190AACAA	1190AADAA	1190AAEAA	
			1 1/8 - 12 UNF			28,575	2,117	1190AACAA	1190AADAA	1190AAEAA	
	EG-M27x1,5					28,946	1,5	1190AACAA	1190AADAA	1190AAEAA	
	EG-M27x2					29,598	2	1190AACAA	1190AADAA	1190AAEAA	
	EG-M28x1,5					29,948	1,5	1190AACAA	1190AADAA	1190AAEAA	
M30x1						30	1	1190AACAA	1190AADAA	1190AAEAA	
M30x1,5						30	1,5	1190AACAA	1190AADAA	1190AAEAA	
M30x2						30	2	1190AACAA	1190AADAA	1190AAEAA	
			1 3/16 - 12 UN			30,162	2,117	1190AACAA	1190AADAA	1190AAEAA	
		G 7/8				30,201	1,814	1190AACAA	1190AADAA	1190AAEAA	
			1 1/4 - 12 UNF			31,75	2,117	1190AACAA	1190AADAA	1190AAEAA	
	EG-M30x1,5					31,948	1,5	1190AACAA	1190AADAA	1190AAEAA	
M32x1,5						32	1,5	1190AACAA	1190AADAA	1190AAEAA	
	EG-M30x2					32,598	2	1190AACAA	1190AADAA	1190AAEAA	
M33x1,5						33	1,5	1190AACAA	1190AADAA	1190AAEAA	
M33x2						33	2	1190AACAA	1190AADAA	1190AAEAA	
		G 1"				33,249	2,309	1190AACAA	1190AADAA	1190AAEAA	
			1 5/16 - 12 UN			33,338	2,117	1190AACAA	1190AADAA	1190AAEAA	
M34x1,5						34	1,5	1190AACAA	1190AADAA	1190AAEAA	
			1 3/8 - 12 UNF			34,925	2,117	1190AACAA	1190AADAA	1190AAEAA	
M35x1,5						35	1,5	1190AACAA	1190AADAA	1190AAEAA	
	EG-M33x2					35,598	2	1190AACAA	1190AADAA	1190AAEAA	
M36x1,5						36	1,5	1190AACAA	1190AADAA	1190AAEAA	

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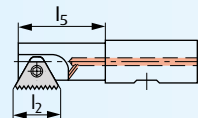
								l_1 [mm]	22	43	25
								l_2 [mm]	16	16	16
M	EG-M (STI)	G 55°	UN	EG-UN (STI)	Pg	$\varnothing D$ mm	P mm	88	88	88	
M36x2						36	2	1190AACAA	1190AADAA	1190AAEAA	
			1 7/16 - 12 UN			36,512	2,117	1190AACAA	1190AADAA	1190AAEAA	
					Pg29	37	1,587	1190AACAA	1190AADAA	1190AAEAA	
		G 1 1/8				37,897	2,309	1190AACAA	1190AADAA	1190AAEAA	
M38x1,5						38	1,5	1190AACAA	1190AADAA	1190AAEAA	
			1 1/2 - 12 UNF			38,1	2,117	1190AACAA	1190AADAA	1190AAEAA	
	EG-M36x2					38,598	2	1190AACAA	1190AADAA	1190AAEAA	
M39x2						39	2	1190AACAA	1190AADAA	1190AAEAA	
			1 9/16 - 12 UN			39,688	2,117	1190AACAA	1190AADAA	1190AAEAA	
M40x1,5						40	1,5	1190AACAA	1190AADAA	1190AAEAA	
M40x2						40	2	1190AACAA	1190AADAA	1190AAEAA	
			1 5/8 - 12 UN			41,275	2,117	1190AACAA	1190AADAA	1190AAEAA	
	EG-M39x2					41,598	2	1190AACAA	1190AADAA	1190AAEAA	
		G 1 1/4				41,91	2,309	1190AACAA	1190AADAA	1190AAEAA	
M42x1,5						42	1,5	1190AACAA	1190AADAA	1190AAEAA	
M42x2						42	2	1190AACAA	1190AADAA	1190AAEAA	
			1 11/16 - 12 UN			42,862	2,117	1190AACAA	1190AADAA	1190AAEAA	
			1 3/4 - 12 UN			44,45	2,117	1190AACAA	1190AADAA	1190AAEAA	
	EG-M42x2					44,598	2	1190AACAA	1190AADAA	1190AAEAA	
M45x1,5						45	1,5	1190AACAA	1190AADAA	1190AAEAA	
M45x2						45	2	1190AACAA	1190AADAA	1190AAEAA	
			1 13/16 - 12 UN			46,04	2,117	1190AACAA	1190AADAA	1190AAEAA	
					Pg36	47	1,587	1190AACAA	1190AADAA	1190AAEAA	
	EG-M45x2					47,598	2	1190AACAA	1190AADAA	1190AAEAA	
			1 7/8 - 12 UN			47,625	2,117	1190AACAA	1190AADAA	1190AAEAA	
		G 1 1/2				47,803	2,309	1190AACAA	1190AADAA	1190AAEAA	
M48x1,5						48	1,5	1190AACAA	1190AADAA	1190AAEAA	
M48x2						48	2	1190AACAA	1190AADAA	1190AAEAA	
			1 15/16 - 12 UN			49,212	2,117	1190AACAA	1190AADAA	1190AAEAA	
M50x1,5						50	1,5	1190AACAA	1190AADAA	1190AAEAA	
M50x2						50	2	1190AACAA	1190AADAA	1190AAEAA	
	EG-M48x2					50,598	2	1190AACAA	1190AADAA	1190AAEAA	
			2 - 12 UN			50,8	2,117	1190AACAA	1190AADAA	1190AAEAA	
			1 3/8 - 12 UNF			34,925	2,117	1190AACAA	1190AADAA	1190AAEAA	
M35x1,5						35	1,5	1190AACAA	1190AADAA	1190AAEAA	
	EG-M33x2					35,598	2	1190AACAA	1190AADAA	1190AAEAA	
M36x1,5						36	1,5	1190AACAA	1190AADAA	1190AAEAA	
M36x2						36	2	1190AACAA	1190AADAA	1190AAEAA	
			1 7/16 - 12 UN			36,512	2,117	1190AACAA	1190AADAA	1190AAEAA	
					Pg29	37	1,587	1190AACAA	1190AADAA	1190AAEAA	
		G 1 1/8				37,897	2,309	1190AACAA	1190AADAA	1190AAEAA	
M38x1,5						38	1,5	1190AACAA	1190AADAA	1190AAEAA	
			1 1/2 - 12 UNF			38,1	2,117	1190AACAA	1190AADAA	1190AAEAA	
	EG-M36x2					38,598	2	1190AACAA	1190AADAA	1190AAEAA	
M39x2						39	2	1190AACAA	1190AADAA	1190AAEAA	
			1 9/16 - 12 UN			39,688	2,117	1190AACAA	1190AADAA	1190AAEAA	
M40x1,5						40	1,5	1190AACAA	1190AADAA	1190AAEAA	

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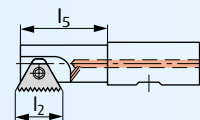
								l ₁ [mm]	22	43	25
								l ₂ [mm]	16	16	16
M	EG-M (STI)	G 55°	UN	EG-UN (STI)	Pg	ø D mm	P mm	88	88	88	
M40x2						40	2	1190AACAA	1190AADAA	1190AAEAA	
			1 5/8 - 12 UN				41,275	2,117	1190AACAA	1190AADAA	1190AAEAA
	EG-M39x2					41,598	2	1190AACAA	1190AADAA	1190AAEAA	
						41,91	2,309	1190AACAA	1190AADAA	1190AAEAA	
		G 1 1/4				42	1,5	1190AACAA	1190AADAA	1190AAEAA	
M42x1,5						42	2	1190AACAA	1190AADAA	1190AAEAA	
M42x2						42,862	2,117	1190AACAA	1190AADAA	1190AAEAA	
			1 11/16 - 12 UN				44,45	2,117	1190AACAA	1190AADAA	1190AAEAA
	EG-M42x2					44,598	2	1190AACAA	1190AADAA	1190AAEAA	
M45x1,5						45	1,5	1190AACAA	1190AADAA	1190AAEAA	
M45x2						45	2	1190AACAA	1190AADAA	1190AAEAA	
						1 13/16 - 12 UN				46,04	2,117
	EG-M45x2				Pg36	47	1,587	1190AACAA	1190AADAA	1190AAEAA	
						47,598	2	1190AACAA	1190AADAA	1190AAEAA	
						47,625	2,117	1190AACAA	1190AADAA	1190AAEAA	
		G 1 1/2				47,803	2,309	1190AACAA	1190AADAA	1190AAEAA	
M48x1,5						48	1,5	1190AACAA	1190AADAA	1190AAEAA	
M48x2						48	2	1190AACAA	1190AADAA	1190AAEAA	
						1 15/16 - 12 UN				49,212	2,117
M50x1,5						50	1,5	1190AACAA	1190AADAA	1190AAEAA	
M50x2						50	2	1190AACAA	1190AADAA	1190AAEAA	
						EG-M48x2				50,598	2
						50,8	2,117	1190AACAA	1190AADAA	1190AAEAA	
M52x1,5						52	1,5	1190AACAA	1190AADAA	1190AAEAA	
M52x2						52	2	1190AACAA	1190AADAA	1190AAEAA	
						G 1 3/4				53,746	2,309
						53,975	2,117	1190AACAA	1190AADAA	1190AAEAA	
					Pg42	54	1,587	1190AACAA	1190AADAA	1190AAEAA	
M56x2						56	2	1190AACAA	1190AADAA	1190AAEAA	
						2 1/4 - 12 UN				57,15	2,117
					Pg48	59,3	1,587	1190AACAA	1190AADAA	1190AAEAA	
		G 2"				59,614	2,309	1190AACAA	1190AADAA	1190AAEAA	
						60,325	2,117	1190AACAA	1190AADAA	1190AAEAA	
						63,5	2,117	1190AACAA	1190AADAA	1190AAEAA	
						66,675	2,117	1190AACAA	1190AADAA	1190AAEAA	
						69,85	2,117	1190AACAA	1190AADAA	1190AAEAA	
						73,025	2,117	1190AACAA	1190AADAA	1190AAEAA	
						76,2	2,117	1190AACAA	1190AADAA	1190AAEAA	
						79,375	2,117	1190AACAA	1190AADAA	1190AAEAA	
M80x2						80	2	1190AACAA	1190AADAA	1190AAEAA	
						3 1/4 - 12 UN				82,55	2,117
						85,725	2,117	1190AACAA	1190AADAA	1190AAEAA	
						88,9	2,117	1190AACAA	1190AADAA	1190AAEAA	
						92,075	2,117	1190AACAA	1190AADAA	1190AAEAA	
						95,25	2,117	1190AACAA	1190AADAA	1190AAEAA	
						98,425	2,117	1190AACAA	1190AADAA	1190AAEAA	
						101,6	2,117	1190AACAA	1190AADAA	1190AAEAA	

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								l ₁ [mm]	52	92	58	98
								l ₂ [mm]	27	27	27	27
M	EG-M (STI)	G 55°	UN	EG-UN (STI)	Pg	ø D mm	P mm	91	91	91	91	
M35x1,5						35	1,5	1190AAFAA	1190AAGAA			
M36x1,5						36	1,5	1190AAFAA	1190AAGAA			
		G 1 1/8				37,897	2,309	1190AAFAA	1190AAGAA			
M38x1,5						38	1,5	1190AAFAA	1190AAGAA			
			1 1/2 - 12 UNF			38,1	2,117	1190AAFAA	1190AAGAA			
	EG-M36x2					38,598	2	1190AAFAA	1190AAGAA			
M39x2						39	2	1190AAFAA	1190AAGAA			
			1 9/16 - 12 UN			39,688	2,117	1190AAFAA	1190AAGAA			
M40x1,5						40	1,5	1190AAFAA	1190AAGAA			
M40x2						40	2	1190AAFAA	1190AAGAA			
			1 5/8 - 12 UN			41,275	2,117	1190AAFAA	1190AAGAA			
	EG-M39x2					41,598	2	1190AAFAA	1190AAGAA			
		G 1 1/4				41,91	2,309	1190AAFAA	1190AAGAA			
M42x1,5						42	1,5	1190AAFAA	1190AAGAA			
M42x2						42	2	1190AAFAA	1190AAGAA			
M42x3						42	3	1190AAFAA	1190AAGAA			
			1 11/16 - 12 UN			42,862	2,117	1190AAFAA	1190AAGAA			
			1 11/16 - 8 UN			42,862	3,175	1190AAFAA	1190AAGAA			
	EG-M39x3					42,897	3	1190AAFAA	1190AAGAA			
			1 3/4 - 12 UN			44,45	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			1 3/4 - 8 UN			44,45	3,175	1190AAFAA	1190AAGAA			
	EG-M42x2					44,598	2	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M45x1,5						45	1,5	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M45x2						45	2	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M45x3						45	3	1190AAFAA	1190AAGAA			
	EG-M42x3					45,897	3	1190AAFAA	1190AAGAA			
			1 13/16 - 12 UN			46,04	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			1 13/16 - 8 UN			46,037	3,175	1190AAFAA	1190AAGAA			
	EG-M45x2					47,598	2	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			1 7/8 - 12 UN			47,625	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			1 7/8 - 8 UN			47,625	3,175	1190AAFAA	1190AAGAA			
		G 1 1/2				47,803	2,309	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M48x1,5						48	1,5	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M48x2						48	2	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M48x3						48	3	1190AAFAA	1190AAGAA			
	EG-M45x3					48,897	3	1190AAFAA	1190AAGAA			
			1 15/16 - 12 UN			49,212	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			1 15/16 - 8 UN			49,212	3,175	1190AAFAA	1190AAGAA			
M50x1,5						50	1,5	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M50x2						50	2	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M50x3						50	3	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
	EG-M48x2					50,598	2	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			2 - 12 UN			50,8	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			2 - 8 UN			50,8	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
	EG-M48x3					51,897	3	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M52x1,5						52	1,5	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M52x2						52	2	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M52x3						52	3	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
		G 1 3/4				53,746	2,309	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	

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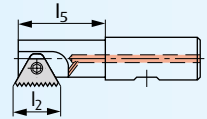
								l ₁ [mm]	52	92	58	98
								l ₂ [mm]	27	27	27	27
M	EG-M (STI)	G 55°	UN	EG-UN (STI)	Pg	Ø D mm	P mm	📄 91	📄 91	📄 91	📄 91	
M56x2			2 1/8 - 12 UN			53,975	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			2 1/8 - 8 UN			53,975	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						56	2	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						56	3	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M56x3						56	3	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						56	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M56x4						56	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						56	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M60x4		G 2"	2 1/4 - 12 UN			57,15	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			2 1/4 - 8 UN			57,15	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						59,614	2,309	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						60	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						60,325	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						60,325	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						63,5	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						63,5	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						64	3	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						64	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						66,675	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						66,675	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M64x3			2 3/8 - 12 UN			63,5	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			2 3/8 - 8 UN			63,5	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			2 1/2 - 12 UN			63,5	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			2 1/2 - 8 UN			63,5	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M64x4						64	3	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						64	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M68x4			2 5/8 - 12 UN			66,675	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			2 5/8 - 8 UN			66,675	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						68	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						68	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M72x3			2 3/4 - 12 UN			69,85	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			2 3/4 - 8 UN			69,85	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						72	3	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						72	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M72x4						72	3	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						72	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						73,025	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						73,025	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M76x3			2 7/8 - 12 UN			76	3	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			2 7/8 - 8 UN			76	3	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M76x4						76	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						76	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M80x2			3 - 12 UN			76,2	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			3 - 8 UN			76,2	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			3 1/8 - 12 UN			79,375	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			3 1/8 - 8 UN			79,375	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						80	2	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						80	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						82,55	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						82,55	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M80x4			3 1/4 - 12 UN			85	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			3 1/4 - 8 UN			85	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						85,725	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						85,725	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M85x4			3 3/8 - 12 UN			88,9	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			3 3/8 - 8 UN			88,9	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						88,9	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						88,9	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						90	4	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						92,075	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						92,075	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						95,25	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
M90x4			3 3/4 - 12 UN			95,25	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
			3 3/4 - 8 UN			95,25	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						98,425	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						98,425	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						98,425	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						98,425	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						101,6	2,117	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	
						101,6	3,175	1190AAFAA	1190AAGAA	1190AAHAA	1190AAIAA	

Welche Gewinde können mit NORIS MWN erzeugt werden

Which kind of threads can be produced with a NORIS MWN tool

Quels types de filet peuvent être usinés avec les outils NORIS MWN

Quali tipi di filetto possono essere eseguiti con gli utensili NORIS MWN



				l ₁ [mm]		22		23		52		58	
				l ₂ [mm]		16		16		27		27	
				94		94		94		94			
NPT	P Gg/1"	ø D mm	P mm	RH	LH	RH	LH	RH	LH	RH	LH	RH	LH
1/2	14	21,223	1,814	1190AACAB	1190AASAA								
3/4	14	26,568	1,814			1190AAJAA	1190AAKAA						
1"	11 1/2	33,228	2,209			1190AAJAA	1190AAKAA						
1 1/4	11 1/2	41,985	2,209			1190AAJAA	1190AAKAA						
1 1/2	11 1/2	48,054	2,209					1190AAFAA	1190AALAA				
2"	11 1/2	60,092	2,209					1190AAFAA	1190AALAA				
3"	8	88,605	3,175							1190AAHAB	1190AAMAA		

NPT-Gewindefräser sind für die Lochformen A und B geeignet. Die Lochform A kann bei leichter Zerspanung angewendet werden und wenn keine Dichtprobleme zu befürchten sind.

NPT thread milling cutters are suited for the hole forms A and B. Hole type A can be used when there is no reason to worry about sealing problems. Les fraises à fileter NPT conviennent aux trous de forme A et B. Le trou de type A peut être utilisé quand il n'y a aucune crainte de problèmes d'étanchéité.

Le frese a filettare NPT sono adatte sia con prefori cilindrici che prefori conici. Il tipo di preforo cilindrico può essere utilizzato quando non ci sono problemi di tenuta.

Zylindrisch vorbohren ohne Verwendung einer Reibahle

Drill cylindrically without using a reamer

Perçage cylindrique sans utilisation d'alésoir

Preforare cilindrico senza l'utilizzo di alesatore

A	Nenngröße Nom. size Taille nom. Grand. nom.	ø D inch	P Gg/1"	ø D ₁ mm	t ₁ mm	t ₄ mm
		1/16	27	6,15	8,27	7,33
	1/8	27	8,5	10,62	9,68	
	1/4	18	11	14,18	12,77	
	3/8	18	14,4	17,62	16,21	
	1/2	14	17,8	21,95	20,13	
	3/4	14	23,2	27,29	25,48	
	1"	11 1/2	29,1	34,11	31,89	
	1 1/4	11 1/2	37,8	42,87	40,66	
	1 1/2	11 1/2	43,9	48,94	46,73	
	2"	11 1/2	55,9	60,98	58,77	
	2 1/2	8	66,8	73,97	70,79	
	3"	8	82,6	89,88	86,71	

Zylindrisch vorbohren und kegelig aufreiben

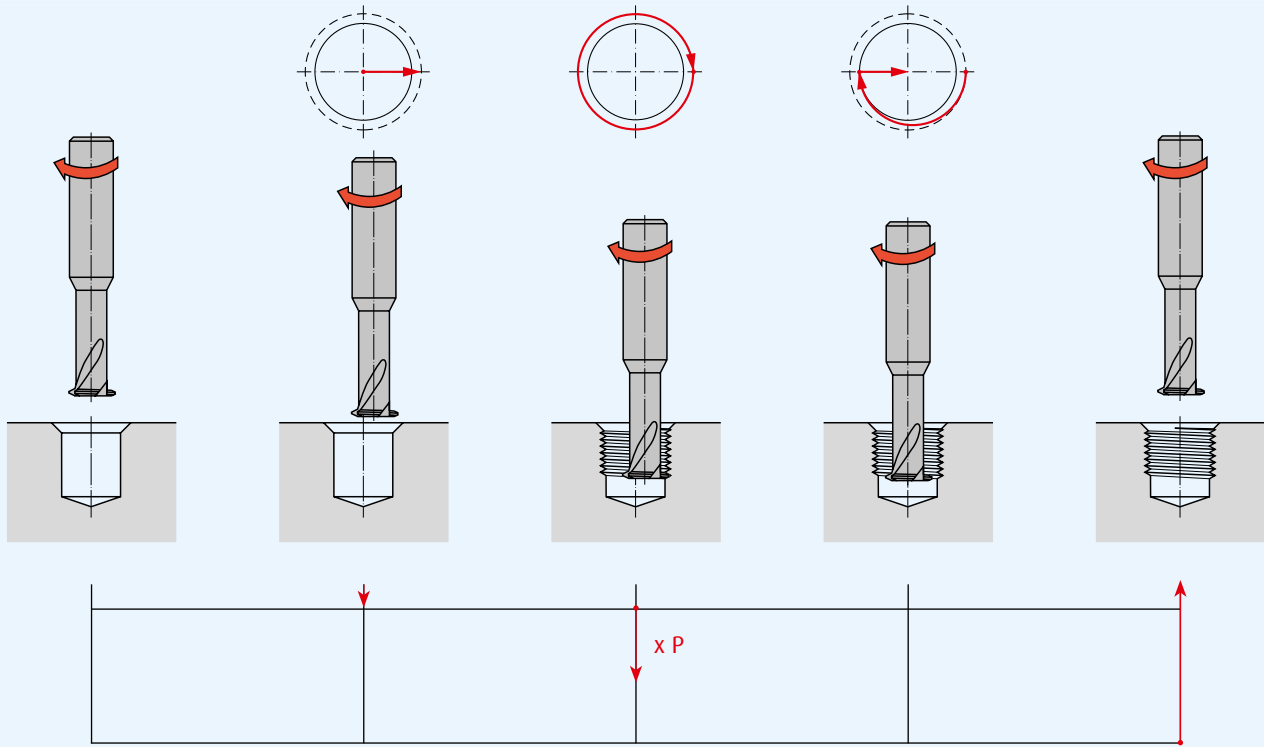
Drill cylindrically and prepare tapered hole with reamer

Perçage cylindrique et alésage conique

Preforare cilindrico ed alesare conico

B	Nenngröße Nom. size Taille nom. Grand. nom.	ø D inch	P Gg/1"	ø D ₂ mm	ø D ₃ mm +0,05	t ₁ mm	t ₄ mm
		1/16	27	5,78	6,39	8,27	7,33
	1/8	27	8,13	8,74	10,62	9,68	
	1/4	18	10,47	11,36	14,18	12,77	
	3/8	18	13,89	14,8	17,62	16,21	
	1/2	14	17,13	18,32	21,95	20,13	
	3/4	14	22,45	23,67	27,29	25,48	
	1"	11 1/2	28,23	29,69	34,11	31,89	
	1 1/4	11 1/2	36,95	38,45	42,87	40,66	
	1 1/2	11 1/2	43,02	44,52	48,94	46,73	
	2"	11 1/2	55,04	56,56	60,98	58,77	
	2 1/2	8	65,55	67,62	73,97	70,79	
	3"	8	81,32	83,53	89,88	86,71	

Gewindefräszyklus · Thread milling cycle · Cycle de fraisage de filets · Ciclo di fresatura di filetti



NORIS EIR



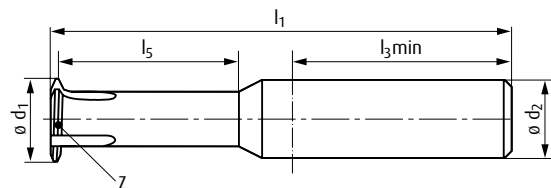
REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS REIME NORIS

NORIS EIR

NORIS EIR HR K30

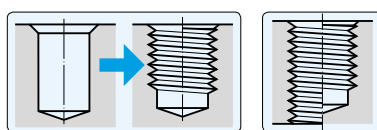
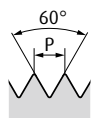
Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA



M, MF

DIN 13



OSM

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F500

mm	P mm		ø d1 mm	ø d2 mm	l1 mm	l3 min mm	l5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.
	min	max							
≥ 0,75	0,2	0,25	0,74	3	32	28	3	4	F500HAF00109
≥ 0,95	0,2	0,3	0,9	3	32	28	3,5	4	F500HAF00129
≥ 1,1	0,25	0,35	1	3	32	28	3,5	4	F500HAF00149
≥ 1,25	0,35	0,4	1,2	3	32	28	4	4	F500HAF00169
≥ 1,45	0,35	0,45	1,35	3	32	28	4	4	F500HAF00189
≥ 1,6	0,35	0,45	1,5	3	32	28	4	4	F500HAF00209
≥ 2,05	0,4	0,5	1,9	3	32	28	6	5	F500HAF00259
≥ 2,5	0,5	0,6	2,4	3	32	28	6	5	F500HAF00309
≥ 2,9	0,5	0,7	2,8	3	32	28	6	6	F500HAF00359
≥ 3,3	0,6	0,8	3,2	5	40	28	8	6	F500HAF00409
≥ 4,2	0,7	0,8	4,1	5	40	28	9	6	F500HAF00509
≥ 5	0,8	1	4,9	5	40	28	9	6	F500HAF00609

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.4 - 1.5
R	1.1 - 1.3
F	3.1
N	2.4 - 2.5 / 4.3
S	1.1 - 2.2
H	1.1 - 1.3

$v_c/f_z = 10$

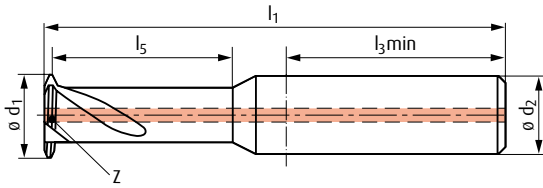
$i = 144$

NORIS EIR R30 HR K20

Vollhartmetall / Solid carbide
Carbure monobloc / Metallo duro integrale

DIN 6535 HA

DIN 6535 HB

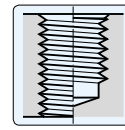
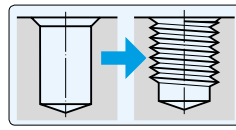
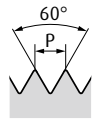


OSM

OSM

M, MF


DIN 13



mKB

Kat.-Nr. / Cat. No. / N° cat. / Tipo

F503

 mm	P mm	ø d1 mm	ø d2 mm	l1 mm	l3 min mm	l5 mm	Z	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
≥ 3,3	0,7	3,15	6	55	36	9	3	F503HAF0001	F503HBF0001
≥ 4,2	0,8	4	6	55	36	11	3	F503HAF0002	F503HBF0002
≥ 5	1	4,8	8	60	36	16	3	F503HAF0003	F503HBF0003
≥ 6,75	1,25	6,4	10	71	40	22	4	F503HAF0005	F503HBF0005
≥ 8,5	1,5	8	10	76	40	26	4	F503HAF0007	F503HBF0007
≥ 10,25	1,75	9,6	12	86	45	27	4	F503HAF0010	F503HBF0010
≥ 14	2	11,2	16	98	48	35	4	F503HAF0012	F503HBF0012
≥ 17,5	2,5	14,4	20	111	50	44	5	F503HAF0014	F503HBF0014

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.1 - 2.3 / 2.6 - 4.2
S	1.1 - 1.2 / 2.1 - 2.2
H	1.1

Kühlmittelbohrungsaustritt in den Nuten (mKBR) auf Anfrage!

Coolant outlets in the flutes on request!

Sortie des trous de lubrification dans les goujures sur demande!

Uscita refrigerante sulle scanalature a richiesta!

$v_c / f_z =$ 10

= 145

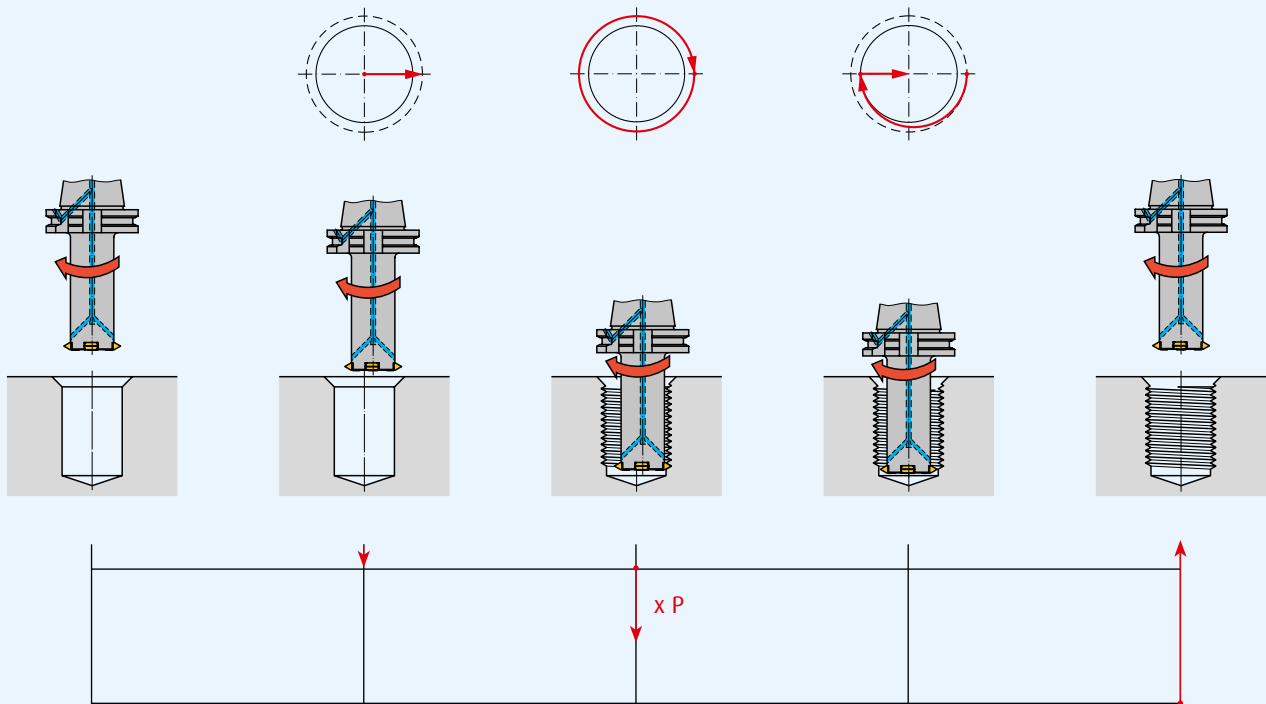
Welche Gewinde können mit NORIS EIR erzeugt werden
Which kind of threads can be produced with a NORIS EIR tool
Quels types de filet peuvent être usinés avec les outils NORIS EIR
Quali tipi di filetto possono essere eseguiti con gli utensili NORIS EIR

M	EG-M (STI)	UN	EG-UN (STI)	ø D mm	P mm		F500		F503 max. 2 x D	
M1				1	0,25	↑	F500HAF00109			
M1,1				1,1	0,25		F500HAF00109			
M1,2				1,2	0,25		F500HAF00129			
M1,4				1,4	0,3		F500HAF00149			
M1,6				1,6	0,35		F500HAF00169			
M1,8				1,8	0,35		F500HAF00189			
		Nr.1-64 UNC		1,854	0,397		F500HAF00189			
		Nr.1-72 UNF		1,854	0,353		F500HAF00189			
M2				2	0,4		F500HAF00209			
		Nr.2-64 UNF		2,184	0,397		F500HAF00209			
M2,2				2,2	0,45		F500HAF00209			
M2,5				2,5	0,45		F500HAF00259			
M2,5x0,35				2,5	0,35		F500HAF00209			
		Nr.3-56 UNF		2,515	0,454		F500HAF00259			
	EG-M2			2,52	0,4		F500HAF00259			
M3				3	0,5		F500HAF00309			
M3x0,35				3	0,35		F500HAF00209			
	EG-M2,5			3,084	0,45		F500HAF00259			
		Nr.5-44 UNF		3,175	0,577		F500HAF00309			
M3,5				3,5	0,6		F500HAF00359			
M3,5x0,35				3,5	0,35		F500HAF00209			
			EG-Nr.4-48 UNF	3,533	0,529		F500HAF00359			
	EG-M3			3,65	0,5		F500HAF00359			
			EG-Nr.4-40 UNC	3,671	0,635		F500HAF00359			
M4				4	0,7		F500HAF00409	107	F503HAF0001	F503HBF0001
M4x0,35				4	0,35		F500HAF00209			
M4x0,5				4	0,5		F500HAF00359			
			EG-Nr.5-40 UNC	4	0,635	106	F500HAF00409			
		Nr.8-32 UNC		4,166	0,794		F500HAF00409			
		Nr.8-36 UNF		4,166	0,706		F500HAF00409			
	EG-M3,5			4,28	0,6		F500HAF00409			
			EG-Nr.6-40 UNF	4,33	0,635		F500HAF00409			
M4,5				4,5	0,75		F500HAF00409			
M4,5x0,5				4,5	0,5		F500HAF00359			
			EG-Nr.6-32 UNC	4,536	0,794		F500HAF00409			
		Nr.10-32 UNF		4,826	0,794		F500HAF00409			
	EG-M4			4,91	0,7		F500HAF00509	107	F503HAF0001	F503HBF0001
M5				5	0,8		F500HAF00509	107	F503HAF0002	F503HBF0002
M5x0,5				5	0,5		F500HAF00359			
			EG-Nr.8-36 UNF	5,083	0,706		F500HAF00509			
			EG-Nr.8-32 UNC	5,197	0,794		F500HAF00509			
		Nr.12-32 UNEF		5,486	0,794		F500HAF00509			
			EG-Nr.10-32 UNF	5,858	0,794		F500HAF00509			
M6				6	1		F500HAF00609	107	F503HAF0003	F503HBF0003
M6x0,5				6	0,5		F500HAF00359			
M6x0,75				6	0,75		F500HAF00509			
	EG-M5			6,04	0,8		F500HAF00609	107	F503HAF0002	F503HBF0002
		1/4-28 UNF		6,35	0,907		F500HAF00609			
		1/4-32 UNEF		6,35	0,794		F500HAF00509			
M7				7	1		F500HAF00609	107	F503HAF0003	F503HBF0003
M7x0,75				7	0,75		F500HAF00509			
	EG-M6			7,3	1		F500HAF00609	107	F503HAF0003	F503HBF0003
			EG-1/4-28 UNF	7,528	0,907		F500HAF00609			
		5/16-32 UNEF		7,938	0,794	↓	F500HAF00509			
M8				8	1,25		F500HAF00609	107	F503HAF0005	F503HBF0005
M8x0,5				8	0,5	106	F500HAF00359			
M8x0,75				8	0,75	106	F500HAF00509			
M8x1				8	1	106	F500HAF00609	107	F503HAF0003	F503HBF0003
	EG-M7			8,3	1	106	F500HAF00609	107	F503HAF0003	F503HBF0003
M9				9	1,25		F500HAF00609	107	F503HAF0005	F503HBF0005
M9x1				9	1	106	F500HAF00609	107	F503HAF0003	F503HBF0003
	EG-M8x1			9,3	1	106	F500HAF00609	107	F503HAF0003	F503HBF0003
		3/8-32 UNEF		9,525	0,794	106	F500HAF00509			
	EG-M8			9,624	1,25		F500HAF00609	107	F503HAF0005	F503HBF0005

Welche Gewinde können mit NORIS EIR erzeugt werden
Which kind of threads can be produced with a NORIS EIR tool
Quels types de filet peuvent être usinés avec les outils NORIS EIR
Quali tipi di filetto possono essere eseguiti con gli utensili NORIS EIR

M	EG-M (STI)	UN	EG-UN (STI)	ø D mm	P mm		F500		F503 max. 2 x D	
M10				10	1,5			107	F503HAF0007	F503HBF0007
M10x0,75				10	0,75	106	F500HAF00509			
M10x1				10	1	106	F500HAF00609	↑	F503HAF0003	F503HBF0003
M10x1,25				10	1,25				F503HAF0005	F503HBF0005
	EG-M9x1			10,3	1	106	F500HAF00609	107	F503HAF0003	F503HBF0003
M11				11	1,5				F503HAF0007	F503HBF0007
M11x1				11	1	106	F500HAF00609	↓	F503HAF0003	F503HBF0003
		7/16-28 UNEF		11,112	0,907	106	F500HAF00609			
	EG-M10x1			11,3	1	106	F500HAF00609	↑	F503HAF0003	F503HBF0003
	EG-M10x1,25			11,624	1,25				F503HAF0005	F503HBF0005
	EG-M10			11,948	1,5				F503HAF0007	F503HBF0007
M12				12	1,75				F503HAF0010	F503HBF0010
M12x1				12	1	106	F500HAF00609	107	F503HAF0003	F503HBF0003
M12x1,25				12	1,25				F503HAF0005	F503HBF0005
M12x1,5				12	1,5				F503HAF0007	F503HBF0007
	EG-M11x1			12,3	1	106	F500HAF00609	↓	F503HAF0003	F503HBF0003
		1/2-28 UNEF		12,7	0,907	106	F500HAF00609			
M13x1				13	1	106	F500HAF00609	↑	F503HAF0003	F503HBF0003
	EG-M12x1			13,3	1	106	F500HAF00609		F503HAF0003	F503HBF0003
	EG-M12x1,25			13,624	1,25				F503HAF0005	F503HBF0005
	EG-M12x1,5			13,948	1,5				F503HAF0007	F503HBF0007
M14x1				14	1	106	F500HAF00609		F503HAF0003	F503HBF0003
M14x1,25				14	1,25				F503HAF0005	F503HBF0005
M14x1,5				14	1,5				F503HAF0007	F503HBF0007
	EG-M12			14,274	1,75				F503HAF0010	F503HBF0010
M15x1				15	1	106	F500HAF00609		F503HAF0003	F503HBF0003
M15x1,5				15	1,5				F503HAF0007	F503HBF0007
	EG-M14x1			15,3	1	106	F500HAF00609		F503HAF0003	F503HBF0003
	EG-M14x1,25			15,624	1,25				F503HAF0005	F503HBF0005
	EG-M14x1,5			15,948	1,5				F503HAF0007	F503HBF0007
M16				16	2				F503HAF0012	F503HBF0012
M16x1				16	1	106	F500HAF00609		F503HAF0003	F503HBF0003
M16x1,5				16	1,5				F503HAF0007	F503HBF0007
	EG-M16			16,433	2				F503HAF0012	F503HBF0012
	EG-M14			16,598	2				F503HAF0012	F503HBF0012
	EG-M15x1,5			16,948	1,5				F503HAF0007	F503HBF0007
	EG-M16x1,5			17,948	1,5				F503HAF0007	F503HBF0007
M18				18	2,5				F503HAF0014	F503HBF0014
M18x1				18	1	106	F500HAF00609		F503HAF0003	F503HBF0003
M18x1,5				18	1,5				F503HAF0007	F503HBF0007
M18x2				18	2			107	F503HAF0012	F503HBF0012
	EG-M18x1,5			19,948	1,5				F503HAF0007	F503HBF0007
M20				20	2,5				F503HAF0014	F503HBF0014
M20x1				20	1	106	F500HAF00609		F503HAF0003	F503HBF0003
M20x1,5				20	1,5				F503HAF0007	F503HBF0007
M20x2				20	2				F503HAF0012	F503HBF0012
	EG-M18x2			20,598	2				F503HAF0012	F503HBF0012
	EG-M20x1,5			21,948	1,5				F503HAF0007	F503HBF0007
M22				22	2,5				F503HAF0014	F503HBF0014
M22x1				22	1	106	F500HAF00609		F503HAF0003	F503HBF0003
M22x1,5				22	1,5				F503HAF0007	F503HBF0007
M22x2				22	2				F503HAF0012	F503HBF0012
	EG-M20x2			22,598	2				F503HAF0012	F503HBF0012
	EG-M22x1,5			23,948	1,5				F503HAF0007	F503HBF0007
M24x1				24	1	106	F500HAF00609		F503HAF0003	F503HBF0003
M24x1,5				24	1,5				F503HAF0007	F503HBF0007
M24x2				24	2				F503HAF0012	F503HBF0012
	EG-M22x2			24,598	2				F503HAF0012	F503HBF0012
M25x1,5				25	1,5				F503HAF0007	F503HBF0007
	EG-M24x1,5			25,948	1,5				F503HAF0007	F503HBF0007
M26x1,5				26	1,5				F503HAF0007	F503HBF0007
	EG-M24x2			26,598	2				F503HAF0012	F503HBF0012
M27x1,5				27	1,5				F503HAF0007	F503HBF0007
M27x2				27	2			↓	F503HAF0012	F503HBF0012

Gewindefräszzyklus · Thread milling cycle · Cycle de fraisage de filets · Ciclo di fresatura di filetti



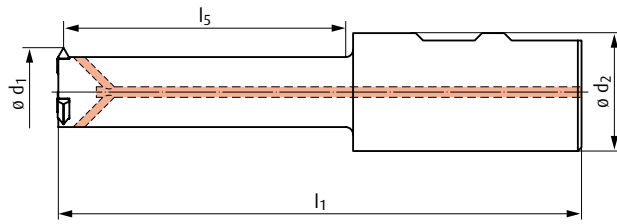
NORIS NES/NES-TS NORIS NES/NES-TS Modular



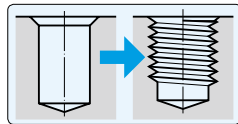
NORIS NES/NES-TS
NORIS NES/NES-TS Modular

NORIS NES

Montagebeispiel
 Mounting example
 Exemple de montage
 Esempio di montaggio



mit Zylinderschaft DIN 1835 B
 with straight shank acc. DIN 1835 B
 avec queue cylindrique selon DIN 1835 B
 con gambo cilindrico secondo DIN 1835 B



mKB



mm	Bezeichnung Description Désignation Designazione	ø d ₁ mm	ø d ₂ mm	l ₁ mm	l ₅ mm	Z _P	Plattentyp Tip type Plaque type Placcetta tipo	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	55° P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.
≥ 17,50	16,5/18-45.20	16,5	20	100	45	2	F521	1,5 - 3	16 - 10	14 - 11,5	14	F501F0003
≥ 17,50	16,5/18-60.20	16,5	20	114	60	2	F521	1,5 - 3	16 - 10	14 - 11,5	14	F501F0005
≥ 19,00	16,5/18-45.20	18	20	100	45	2	F522	2,5 - 3,5	10 - 7	-	-	F501F0003
≥ 19,00	16,5/18-60.20	18	20	114	60	2	F522	2,5 - 3,5	10 - 7	-	-	F501F0005
≥ 21,00	20,5/22-50.16	20,5	16	100	50	3	F521	1,5 - 3	16 - 10	14 - 11,5	14	F501F0019
≥ 23,50	20,5/22-50.16	22	16	100	50	3	F522	2,5 - 3,5	10 - 7	-	-	F501F0019
≥ 25,50	24-60.32	23,85	32	124	60	3	F510	1,0 - 4,0	24 - 6	14 - 11,5	11	F501AANAA
≥ 25,50	24-80.25	23,85	25	140	80	3	F510	1,0 - 4,0	24 - 6	14 - 11,5	11	F501F0011
≥ 25,50	24-80.32	23,85	32	144	80	3	F510	1,0 - 4,0	24 - 6	14 - 11,5	11	F501AARAA
≥ 25,50	24-90.32	23,85	32	154	90	3	F510	1,0 - 4,0	24 - 6	14 - 11,5	11	F501AA8AA
≥ 31,50	29,5-95.32	29,27	32	159	95	3	F510	1,0 - 4,0	24 - 6	14 - 11,5	11	F501E0841
≥ 35,00	33-95.25	32,85	25	155	95	3	F511	1,5 - 5,5	4,5	14 - 11,5	11	F501F0012
≥ 35,00	33-95.32	32,85	32	159	95	3	F511	1,5 - 5,5	4,5	14 - 11,5	11	F501AAPAA
≥ 35,00	33-115.32	32,85	32	179	115	3	F511	1,5 - 5,5	4,5	14 - 11,5	11	F501F0007
≥ 43,00	40,5-110.32	40,25	32	173	110	4	F512	1,5 - 6	16 - 4	8	11	F501F0013
≥ 43,00	40,5-145.32	40,25	32	208	145	4	F512	1,5 - 6	16 - 4	8	11	F501F0010

Lieferumfang: Werkzeughalter, Befestigungsschraube, Schraubendreher

Scope of delivery: Tool holder, mounting screw, screw driver
 Contenu de la livraison: Porte d'outil, vis de fixation, tournevis
 Volume di consegna: portautensili, vite di fissaggio, cacciavite

v_c/f_z = 11

i = 146

Bitte Wendeplatten separat bestellen

Please order inserts separately
 Commandez la plaquette séparément
 Ordina gli inserti separatamente

Andere Gewindegewinde auf Anfrage, z.B.:
 Other thread standards upon request, e.g.:
 Autres standards de filetage sur demande, p.ex.:
 Altri sistemi di filettatura su richiesta, p. es.:

Tr **Trapez-Gewinde, ACME-Gewinde**
 Trapezoidal thread, ACME thread
 Filetage trapézoïdal, filetage ACME
 Filettatura trapezoidale, fil. ACME

S **Sägengewinde**
 Buttress thread
 Filetage pas d'artillerie
 Filettatura a dente di sega

Rd **Rundgewinde**
 Round thread
 Filetage rond
 Filettatura tonda

Sonderkonturen auf Anfrage / Special contours upon request / Profils spéciaux sur demande / Profili speciali su richiesta

Gewindefräsplatte, 2 Zähne, auswechselbar <i>Thread milling insert, 2 tooth, indexable</i> <i>Plaquettes de filetage, à 2 dents, interchangeables</i> <i>Inserti filettati, con 2 denti, intercambiabili</i>									
M, MF, UN, NPT									
DIN 13, ANSI B1.1									
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	h mm	l mm			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>
F521	1,5 - 3	16 - 10	14 - 11,5	5	7	F550F0001	1033F0001	F521F0002	F521F0004
F522	2,5 - 3,5	10 - 7	-	5	7,8	F550F0001	1033F0001	F522F0001	F522F0002

G BSW, BSF, W									
DIN EN ISO 228, BS 84									
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	55° P Gg/1"			h mm	l mm			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>
F521	14			5	7	F550F0001	1033F0001	F521F0005	F521F0008

Gewindefräsplatte, 4 Zähne, auswechselbar <i>Thread milling insert, 4 tooth, indexable</i> <i>Plaquettes de filetage, à 4 dents, interchangeables</i> <i>Inserti filettati, con 4 denti, intercambiabili</i>									
M, MF, UN, NPT									
DIN 13, ANSI B1.1									
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	h mm	l mm			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>
F510	1,0 - 2,5	24 - 10	14 - 11,5	6,35	9,52	F550F0001	1033F0001	-	F510F0012
F510	1,5 - 2,5	16 - 10	14 - 11,5	6,35	9,52	F550F0001	1033F0001	F510AAAAA	F510F0003
F510	2,5 - 4,0	10 - 6	-	6,35	9,52	F550F0001	1033F0001	F510ABAAA	F510F0004
F511	1,5 - 2,5	16 - 10	14 - 11,5	8,5	13,5	F550F0002	1033F0002	F511AAAAA	F511F0001
F511	2,5 - 5,5	10 - 4,5	-	8,5	13,5	F550F0002	1033F0002	F511AABAA	F511F0002
F512	1,5 - 3,0	16 - 9	8	9,5	15,5	F550F0003	1033F0003	F512AAAAA	F512F0001
F512	3,0 - 6,0	9 - 4	-	9,5	15,5	F550F0003	1033F0003	F512AABAA	F512F0002

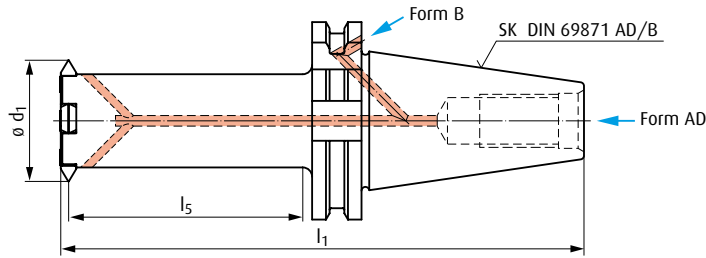
G BSW, BSF, W									
DIN EN ISO 228, BS 84									
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	55° P Gg/1"			h mm	l mm			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>
F510	11			6,35	9,52	F550F0001	1033F0001	F510AACAA	F510F0005
F511	11			8,5	13,5	F550F0002	1033F0002	F511AACAA	F511F0003
F512	11			9,5	15,5	F550F0003	1033F0003	F512AACAA	F512F0003

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

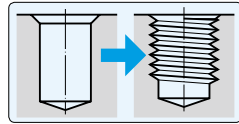
A	1.1 - 1.5	1.1 - 1.5
R	1.1 - 1.3	1.1 - 1.3
F	1.1 - 3.1	1.1 - 3.1
N	1.1 - 4.3	1.3 - 1.5 / 2.3 / 2.6 / 4.3
S		1.1 - 2.2
H		1.1

NORIS NES

Montagebeispiel
 Mounting example
 Exemple de montage
 Esempio di montaggio



mit Steilkegel DIN 69871 AD/B
 with ISO taper acc. DIN 69871 AD/B
 avec queue cône SA selon DIN 69871 AD/B
 con gambo conico ISO secondo DIN 69871 AD/B



mKB



mm	Bezeichnung Description Désignation Designazione	ø d ₁ mm	ø d ₂ mm	l ₁ mm	l ₅ mm	Z _P	Plattentyp Tip type Plaquette type Placcetta tipo	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	55° P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.
≥ 43,00	40,5-110.SK40	40,25	SK40	212	110	4	F512	1,5 - 6	16 - 4	8	11	F505AADAA
≥ 43,00	40,5-145.SK40	40,25	SK40	247	145	4	F512	1,5 - 6	16 - 4	8	11	F505AAWAA
≥ 43,00	40,5-110.SK50	40,25	SK50	245	110	4	F512	1,5 - 6	16 - 4	8	11	F505AADAC
≥ 43,00	40,5-145.SK50	40,25	SK50	280	145	4	F512	1,5 - 6	16 - 4	8	11	F505AAWAB
≥ 56,00	53-150.SK50	52,55	SK40	286	150	4	F513	1,5 - 6	16 - 4	8	11	F505AAEAB
≥ 56,00	53-195.SK50	52,55	SK50	331	195	4	F513	1,5 - 6	16 - 4	8	11	F505F0007
≥ 70,50	67-170.SK50	66,55	SK40	308	170	7	F513	1,5 - 6	16 - 4	8	11	F505AACAA
≥ 70,50	67-260.SK50	66,55	SK50	398	260	7	F513	1,5 - 6	16 - 4	8	11	F505E5553
≥ 100,00	92-204.SK50	92	SK50	341	204	7	F514	6 - 8	4	-	-	F505AA2AA
≥ 100,00	92-360.SK50	92	SK50	497	360	7	F514	6 - 8	4	-	-	F505F0008

Lieferumfang: Werkzeughalter, Befestigungsschraube, Schraubendreher

Scope of delivery: Tool holder, mounting screw, screw driver
 Contenu de la livraison: Porte d'outil, vis de fixation, tournevis
 Volume di consegna: portautensili, vite di fissaggio, cacciavite

v_c/f_z = 11

i = 146

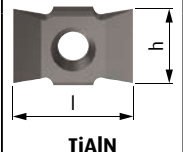
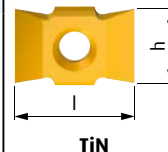
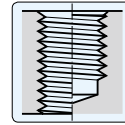
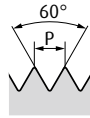
Bitte Wendeplatten separat bestellen

Please order inserts separately
 Commandez la plaquette séparément
 Ordina gli inserti separatamente

Gewindefräsplatte, 4 Zähne, auswechselbar
 Thread milling insert, 4 tooth, indexable
 Plaquettes de filetage, à 4 dents, interchangeables
 Inserti filettati, con 4 denti, intercambiabili

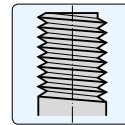
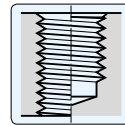
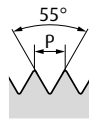
M, MF, UN, NPT

DIN 13, ANSI B1.1



Plattentyp Tip type Plaquette type Placchetta tipo	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	h mm	l mm			Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
F512	1,5 - 3,0	16 - 9	8	9,5	15,5	F550F0003	1033F0003	F512AAAA	F512F0001
F512	3,0 - 6,0	9 - 4	-	9,5	15,5	F550F0003	1033F0003	F512ABAA	F512F0002
F513	1,5 - 3,0	16 - 9	8	12,5	19	F550F0004	1033F0004	F513AAAA	F513F0001
F513	3,0 - 6,0	9 - 4	-	12,5	19	F550F0004	1033F0004	F513ABAA	F513F0002
F514	6,0 - 8,0	4	-	14,3	28,58	F550F0004	1033F0004	F514AAAA	F514F0005

G BSW, BSF, W
 DIN EN ISO 228, BS 84



Plattentyp Tip type Plaquette type Placchetta tipo	55° P Gg/1"	h mm	l mm			Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
F512	11	9,5	15,5	F550F0003	1033F0003	F512AACAA	F512F0003
F513	11	12,5	19	F550F0004	1033F0004	F513AACAA	F513F0003

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5	1.1 - 1.5
R	1.1 - 1.3	1.1 - 1.3
F	1.1 - 3.1	1.1 - 3.1
N	1.1 - 4.3	1.3 - 1.5 / 2.3 / 2.6 / 4.3
S		1.1 - 2.2
H		1.1

Andere Gewindesysteme auf Anfrage, z.B.:
 Other thread standards upon request, e.g.:
 Autres standards de filetage sur demande, p.ex.:
 Altri sistemi di filettatura su richiesta, p. es.:

Tr **Trapez-Gewinde, ACME-Gewinde**
 Trapezoidal thread, ACME thread
 Filetage trapézoïdal, filetage ACME
 Filettatura trapezoidale, fil. ACME

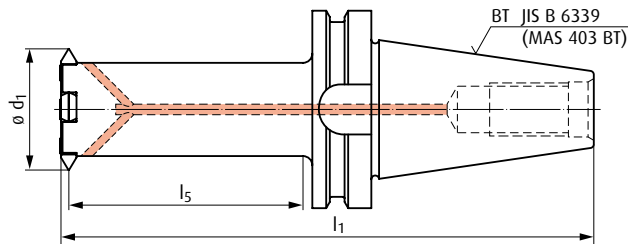
S **Sägengewinde**
 Buttress thread
 Filetage pas d'artillerie
 Filettatura a dente di sega

Rd **Rundgewinde**
 Round thread
 Filetage rond
 Filettatura tonda

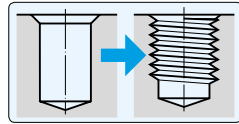
Sonderkonturen auf Anfrage / Special contours upon request / Profils spéciaux sur demande / Profili speciali su richiesta

NORIS NES

Montagebeispiel
 Mounting example
 Exemple de montage
 Esempio di montaggio



mit Steilkegel JIS B 6339 (MAS 403 BT)
 with ISO taper acc. JIS B 6339 (MAS 403 BT)
 avec queue cône SA selon JIS B 6339 (MAS 403 BT)
 con gambo conico ISO secondo JIS B 6339 (MAS 403 BT)



mm	Bezeichnung Description Désignation Designazione	ø d ₁ mm	ø d ₂ mm	l ₁ mm	l ₅ mm	Z _p	Plattentyp Tip type Plaquette type Placcetta tipo	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	55° P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.
≥ 43,00	40,5-110.BT40	40,25	BT40	217	110	4	F512	1,5 - 6	16 - 4	8	11	F505F0029
≥ 43,00	40,5-145.BT40	40,25	BT40	252	145	4	F512	1,5 - 6	16 - 4	8	11	F505F0028
≥ 43,00	40,5-110.BT50	40,25	BT50	264	110	4	F512	1,5 - 6	16 - 4	8	11	F505AADAF
≥ 43,00	40,5-145.BT50	40,25	BT50	299	145	4	F512	1,5 - 6	16 - 4	8	11	F505F0025
≥ 56,00	53-150.BT40	52,55	BT40	258	150	4	F513	1,5 - 6	16 - 4	8	11	F505F0041
≥ 56,00	53-195.BT40	52,55	BT40	303	195	4	F513	1,5 - 6	16 - 4	8	11	F505F0032
≥ 56,00	53-150.BT50	52,55	BT50	305	150	4	F513	1,5 - 6	16 - 4	8	11	F505F0031
≥ 56,00	53-195.BT50	52,55	BT50	350	195	4	F513	1,5 - 6	16 - 4	8	11	F505F0026
≥ 70,50	67-170.BT50	66,55	BT50	327	170	7	F513	1,5 - 6	16 - 4	8	11	F505F0042
≥ 70,50	67-260.BT50	66,55	BT50	417	260	7	F513	1,5 - 6	16 - 4	8	11	F505F0034

Lieferumfang: Werkzeughalter, Befestigungsschraube, Schraubendreher

Scope of delivery: Tool holder, mounting screw, screw driver
 Contenu de la livraison: Porte d'outil, vis de fixation, tournevis
 Volume di consegna: portautensili, vite di fissaggio, cacciavite

v_c/f_z = 11

i = 146

Bitte Wendeplatten separat bestellen

Please order inserts separately
 Commandez la plaquette séparément
 Ordina gli inserti separatamente

Gewindefräsplatte, 4 Zähne, auswechselbar <i>Thread milling insert, 4 tooth, indexable</i> <i>Plaquettes de filetage, à 4 dents, interchangeables</i> <i>Inserti filettati, con 4 denti, intercambiabili</i>									
M, MF, UN, NPT DIN 13, ANSI B1.1									
Plattentyp Tip type Plaquette type Placcetta tipo	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	h mm	l mm			Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
F512	1,5 - 3,0	16 - 9	8	9,5	15,5	F550F0003	1033F0003	F512AAAA	F512F0001
F512	3,0 - 6,0	9 - 4	-	9,5	15,5	F550F0003	1033F0003	F512AABAA	F512F0002
F513	1,5 - 3,0	16 - 9	8	12,5	19	F550F0004	1033F0004	F513AAAA	F513F0001
F513	3,0 - 6,0	9 - 4	-	12,5	19	F550F0004	1033F0004	F513AABAA	F513F0002

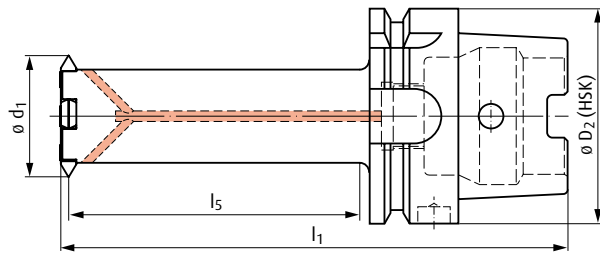
G BSW, BSF, W DIN EN ISO 228, BS 84									
Plattentyp Tip type Plaquette type Placcetta tipo	55° P Gg/1"		h mm	l mm			Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.	
F512	11		9,5	15,5	F550F0003	1033F0003	F512AACAA	F512F0003	
F513	11		12,5	19	F550F0004	1033F0004	F513AACAA	F513F0003	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego	A	R	F	N	S	H
	1.1 - 1.5	1.1 - 1.3	1.1 - 3.1	1.1 - 4.3	1.1 - 2.2	1.1
	1.1 - 1.5	1.1 - 1.3	1.1 - 3.1	1.3 - 1.5 / 2.3 / 2.6 / 4.3	1.1 - 2.2	1.1

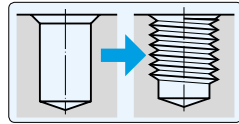
Andere Gewindesysteme auf Anfrage, z.B.: <i>Other thread standards upon request, e.g.:</i> <i>Autres standards de filetage sur demande, p.ex.:</i> <i>Altri sistemi di filettatura su richiesta, p. es.:</i>		
Tr Trapez-Gewinde, ACME-Gewinde <i>Trapezoidal thread, ACME thread</i> <i>Filetage trapézoïdal, filetage ACME</i> <i>Filettatura trapezoidale, fil. ACME</i>	S Sägengewinde <i>Buttress thread</i> <i>Filetage pas d'artillerie</i> <i>Filettatura a dente di sega</i>	Rd Rundgewinde <i>Round thread</i> <i>Filetage rond</i> <i>Filettatura tonda</i>
Sonderkonturen auf Anfrage / Special contours upon request / Profils spéciaux sur demande / Profili speciali su richiesta		

NORIS NES

Montagebeispiel
Mounting example
Exemple de montage
Esempio di montaggio




mit Kegel-Hohlschaft DIN 69893 HSK
with hollow taper shank according to DIN 69893 HSK
avec attachement HSK selon DIN 69893 HSK
con gambo cono-cavo DIN 69893 HSK



mKB



 mm	Bezeichnung <i>Description</i> <i>Désignation</i> <i>Designazione</i>	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_5 mm	Z_p	Plattentyp <i>Tip type</i> <i>Plaquelette type</i> <i>Placcetta tipo</i>	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	55° P Gg/1"	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>
$\geq 43,00$	40,5-145.HSK63 A	40,25	HSK 63A	209	145	4	F512	1,5 - 6	16 - 4	14 - 8	11	F508F0007
$\geq 56,00$	53-195.HSK63 A	52,55	HSK 63A	261	195	4	F513	1,5 - 6	16 - 4	14 - 8	11	F508F0008
$\geq 70,50$	67-260.HSK100 A	66,55	HSK 100A	347	260	7	F513	1,5 - 6	16 - 4	14 - 8	11	F508F0009
$\geq 100,00$	92-360.HSK100 A	92	HSK 100A	448	360	7	F514	6 - 8	4	-	-	F508F0010

Lieferumfang: Werkzeughalter, Befestigungsschraube, Schraubendreher

Scope of delivery: Tool holder, mounting screw, screw driver
Contenu de la livraison: Porte d'outil, vis de fixation, tournevis
Volume di consegna: portautensili, vite di fissaggio, cacciavite

$v_c/f_z = 11$

$i = 146$

Bitte Wendepplatten separat bestellen

Please order inserts separately
Commandez la plaquelette séparément
Ordina gli inserti separatamente

Gewindefräsplatte, 4 Zähne, auswechselbar <i>Thread milling insert, 4 tooth, indexable</i> <i>Plaquettes de filetage, à 4 dents, interchangeables</i> <i>Inserti filettati, con 4 denti, intercambiabili</i>									
M, MF, UN, NPT DIN 13, ANSI B1.1									
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	h mm	l mm			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>
F512	1,5 - 3,0	16 - 9	8	9,5	15,5	F550F0003	1033F0003	F512AAAA	F512F0001
F512	3,0 - 6,0	9 - 4	-	9,5	15,5	F550F0003	1033F0003	F512AABAA	F512F0002
F513	1,5 - 3,0	16 - 9	8	12,5	19	F550F0004	1033F0004	F513AAAA	F513F0001
F513	3,0 - 6,0	9 - 4	-	12,5	19	F550F0004	1033F0004	F513AABAA	F513F0002
F514	6,0 - 8,0	4	-	14,3	28,58	F550F0004	1033F0004	F514AAAA	F514F0005

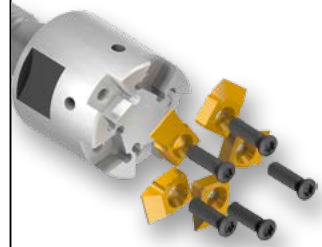
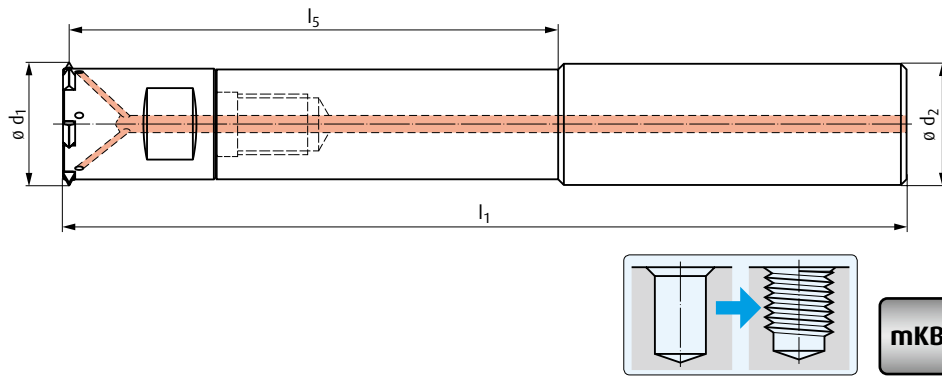
G BSW, BSF, W DIN EN ISO 228, BS 84									
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	55° P Gg/1"		h mm	l mm			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	
F512	11		9,5	15,5	F550F0003	1033F0003	F512AACAA	F512F0003	
F513	11		12,5	19	F550F0004	1033F0004	F513AACAA	F513F0003	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego	A	1.1 - 1.5	1.1 - 1.5
	R	1.1 - 1.3	1.1 - 1.3
	F	1.1 - 3.1	1.1 - 3.1
	N	1.1 - 4.3	1.3 - 1.5 / 2.3 / 2.6 / 4.3
	S		1.1 - 2.2
	H		1.1

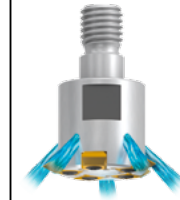
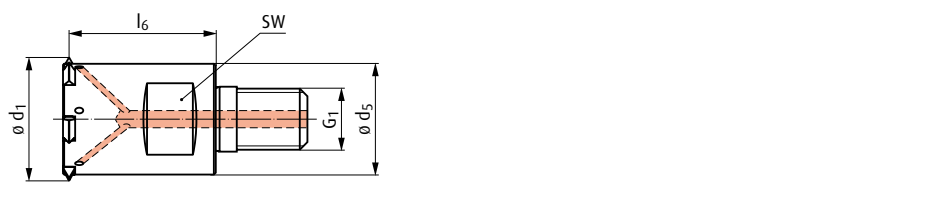
Andere Gewindesysteme auf Anfrage, z.B.: <i>Other thread standards upon request, e.g.:</i> <i>Autres standards de filetage sur demande, p.ex.:</i> <i>Altri sistemi di filettatura su richiesta, p. es.:</i>		
Tr Trapez-Gewinde, ACME-Gewinde <i>Trapezoidal thread, ACME thread</i> <i>Filetage trapézoïdal, filetage ACME</i> <i>Filettatura trapezoidale, fil. ACME</i>	S Sägengewinde <i>Buttress thread</i> <i>Filetage pas d'artillerie</i> <i>Filettatura a dente di sega</i>	Rd Rundgewinde <i>Round thread</i> <i>Filetage rond</i> <i>Filettatura tonda</i>
Sonderkonturen auf Anfrage / Special contours upon request / Profils spéciaux sur demande / Profili speciali su richiesta		

NORIS NES Modular

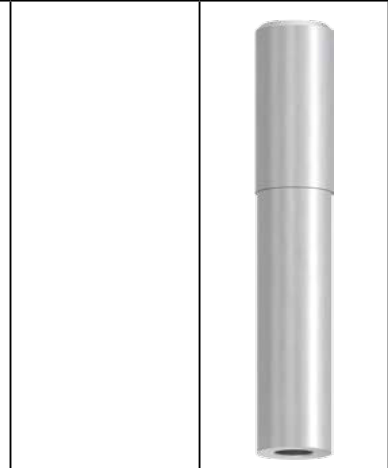
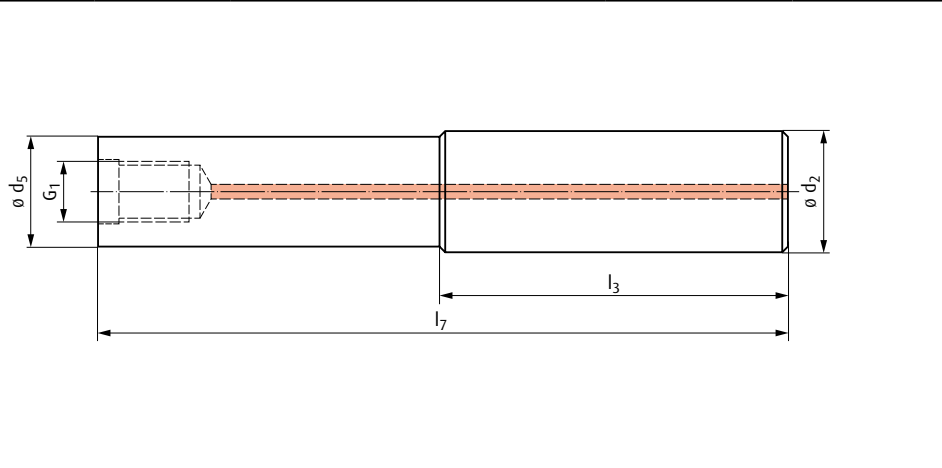
Montagebeispiel
Mounting example
Exemple de montage
Esempio di montaggio



mm	ø d ₁ mm	ø d ₂ mm	l ₁ mm	l ₅ mm	Z _p	Plattentyp Tip type Plaquette type Placcetta tipo	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	55° P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
≥ 21	20,5	20	133	80	3	F521	1,5 - 3	16 - 10	18 - 11,5	14	F50KF0001	FM0HF0001
≥ 23,5	22	20	133	80	3	F522	2,5 - 3,5	10 - 7			F50KF0001	FM0HF0001
≥ 25,5	23,85	20	152	100	4	F510	1 - 4	24 - 6	27 - 11,5	11	F50KF0010	FM0HF0009



mm	Bezeichnung Description Désignation Designazione	G ₁	SW	ø d ₅ mm	l ₆ mm	Art.-Nr. Article no. Code article Articolo nr.
≥ 21	20,5-20.M10	M10	14	15,9	20	F50KF0001
≥ 25,5	20,5-20.M10	M10	14	19	20	F50KF0010



Bezeichnung Description Désignation Designazione	G ₁	ø d ₅ mm	ø d ₂ mm	l ₇ mm	l ₃ mm	DIN	Art.-Nr. Article no. Code article Articolo nr.
16-60.M10	M10	15,9	20	110	50	DIN 6535 HA	FM0HF0001
19-80.M10	M10	18,5	20	130	50	DIN 6535 HA	FM0HF0009

Andere Gewindesysteme auf Anfrage, z.B.:
Other thread standards upon request, e.g.:
Autres standards de filetage sur demande, p.ex.:
Altri sistemi di filettatura su richiesta, p. es.:

Tr	Trapez-Gewinde, ACME-Gewinde Trapezoidal thread, ACME thread Filetage trapézoïdal, filetage ACME Filettatura trapezoidale, fil. ACME	S	Sägewinde Buttress thread Filetage pas d'artillerie Filettatura a dente di sega	Rd	Rundgewinde Round thread Filetage rond Filettatura tonda
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Sonderkonturen auf Anfrage / Special contours upon request / Profils spéciaux sur demande / Profili speciali su richiesta

Gewindefräsplatte, 2 Zähne, auswechselbar <i>Thread milling insert, 2 tooth, indexable</i> <i>Plaquettes de filetage, à 2 dents, interchangeables</i> <i>Inserti filettati, con 2 denti, intercambiabili</i>											
M, MF, UN, NPT DIN 13, ANSI B1.1											
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	h mm	l mm			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>		
F521	1,5 - 3	16 - 10	18 - 11,5	5	7	F550F0001	1033F0001	F521F0002	F521F0004		
F522	2,5 - 3,5	10 - 7	-	5	7,8	F550F0001	1033F0001	F522F0001	F522F0002		

G BSW, BSF, W DIN EN ISO 228, BS 84										
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	55° P Gg/1"			h mm	l mm			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	
F521	14			5	7	F550F0001	1033F0001	F521F0005	F521F0008	

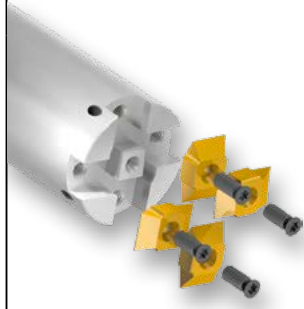
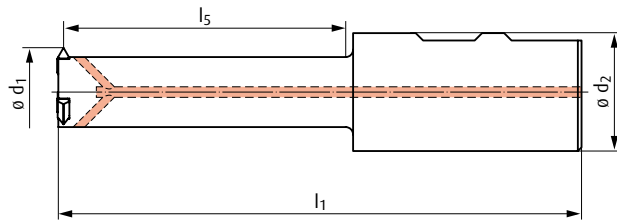
Gewindefräsplatte, 4 Zähne, auswechselbar <i>Thread milling insert, 4 tooth, indexable</i> <i>Plaquettes de filetage, à 4 dents, interchangeables</i> <i>Inserti filettati, con 4 denti, intercambiabili</i>											
M, MF, UN, NPT DIN 13, ANSI B1.1											
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	h mm	l mm			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>		
F510	1,0 - 2,5	24 - 10	27 - 11,5	6,35	9,52	F550F0001	1033F0001	-	F510F0012		
F510	1,5 - 2,5	16 - 10	27 - 11,5	6,35	9,52	F550F0001	1033F0001	F510AAAAA	F510F0003		
F510	2,5 - 4,0	10 - 6	27 - 11,5	6,35	9,52	F550F0001	1033F0001	F510AABAA	F510F0004		

G BSW, BSF, W DIN EN ISO 228, BS 84										
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	55° P Gg/1"			h mm	l mm			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	
F510	11			6,35	9,52	F550F0001	1033F0001	F510AACAA	F510F0005	

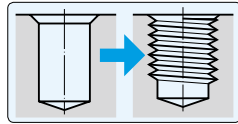
Einsatzgebiete / Range of application / Utilisations / Campo d'impiego	A	1.1 - 1.5	1.1 - 1.5
	R	1.1 - 1.3	1.1 - 1.3
	F	1.1 - 3.1	1.1 - 3.1
	N	1.1 - 4.3	1.3 - 1.5 / 2.3 / 2.6 / 4.3
	S		1.1 - 2.2
	H		1.1

NORIS NES-TS

Montagebeispiel
 Mounting example
 Exemple de montage
 Esempio di montaggio



mit Zylinderschaft DIN 1835 B
 with straight shank acc. DIN 1835 B
 avec queue cylindrique selon DIN 1835 B
 con gambo cilindrico secondo DIN 1835 B



mm	Bezeichnung Description Désignation Designazione	ø d₁ mm	ø d ₂ mm	l ₁ mm	l₅ mm	Z _P	Plattentyp Tip type Plaquette type Placcetta tipo	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	55° P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.
≥ 21,00	20,5/22-50.16	20,5	16	100	50	4	F521	1,5 - 3,0	16 - 10	14 - 11,5	14	F701F0016
≥ 23,50	20,5/22-50.16	22	16	100	50	4	F522	2,5 - 3,5	10 - 7		-	F701F0016
≥ 25,50	24-60.32	23,85	32	123	60	5	F710	2,5 - 4,5	10 - 6		-	F701F0015
≥ 29,00	27-90.32	27	32	153	90	5	F750	2,5 - 4,5	10 - 6		-	F701F0003
≥ 35,00	33-115.32	32,85	32	153	115	5	F711	2,5 - 5,5	10 - 4,5		-	F701F0001

Lieferumfang: Werkzeughalter, Befestigungsschraube, Schraubendreher

Scope of delivery: Tool holder, mounting screw, screw driver
 Contenu de la livraison: Porte d'outil, vis de fixation, tournevis
 Volume di consegna: portautensili, vite di fissaggio, cacciavite

v_c/f_z = 11

i = 147

Bitte Wendeplatten separat bestellen

Please order inserts separately
 Commandez la plaquette séparément
 Ordina gli inserti separatamente

Gewindefräsplatte, 2 Zähne, auswechselbar <i>Thread milling insert, 2 tooth, indexable</i> <i>Plaquettes de filetage, à 2 dents, interchangeables</i> <i>Inserti filettati, con 2 denti, intercambiabili</i>									
M, MF, UN, NPT 									
DIN 13, ANSI B1.1								TiN	TiAlN
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	60° P <i>mm</i>	60° P <i>Gg/1"</i>	60° NPT <i>P</i> <i>Gg/1"</i>	h <i>mm</i>	l <i>mm</i>			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>
F521	1,5 - 3,0	16 - 10	14 - 11,5	5	7	F550F0001	1033F0001	F521F0002	F521F0004
F522	2,5 - 3,5	10 - 7	-	5	7,8	F550F0001	1033F0001	F522F0001	F522F0002
F710	2,5 - 4,5	10 - 6	-	5	7,5	F550F0001	1033F0001	-	F710F0001
F711	2,5 - 5,5	10 - 4,5	-	7	10	F550F0001	1033F0001	-	F711F0001

Gewindefräsplatte, 4 Zähne, auswechselbar <i>Thread milling insert, 4 tooth, indexable</i> <i>Plaquettes de filetage, à 4 dents, interchangeables</i> <i>Inserti filettati, con 4 denti, intercambiabili</i>									
M, MF, UN 									
DIN 13, ANSI B1.1								TiN	TiAlN
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i>	60° P <i>mm</i>	60° P <i>Gg/1"</i>	60° NPT <i>P</i> <i>Gg/1"</i>	h <i>mm</i>	l <i>mm</i>			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>
F750	2,5 - 4,5	10 - 6	-	5	9,5	F550F0001	1033F0001	-	F750F0002

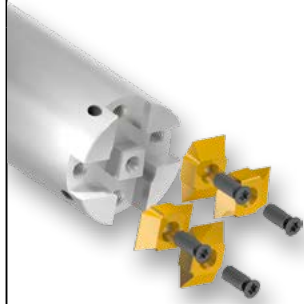
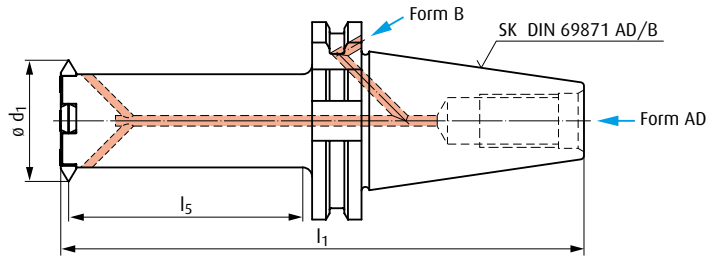
Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5	1.1 - 1.5
R	1.1 - 1.3	1.1 - 1.3
F	1.1 - 3.1	1.1 - 3.1
N	1.1 - 4.3	1.3 - 1.5 / 2.3 / 2.6 / 4.3
S		1.1 - 2.2
H		1.1

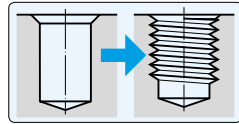
Andere Gewindegewinde auf Anfrage, z.B.: <i>Other thread standards upon request, e.g.:</i> <i>Autres standards de filetage sur demande, p.ex.:</i> <i>Altri sistemi di filettatura su richiesta, p. es.:</i>		
Tr	Trapez-Gewinde, ACME-Gewinde <i>Trapezoidal thread, ACME thread</i> <i>Filetage trapézoïdal, filetage ACME</i> <i>Filettatura trapezoidale, fil. ACME</i>	S
	Sägengewinde <i>Buttress thread</i> <i>Filetage pas d'artillerie</i> <i>Filettatura a dente di sega</i>	Rd
	Rundgewinde <i>Round thread</i> <i>Filetage rond</i> <i>Filettatura tonda</i>	
Sonderkonturen auf Anfrage / Special contours upon request / Profils spéciaux sur demande / Profili speciali su richiesta		

NORIS NES-TS

Montagebeispiel
 Mounting example
 Exemple de montage
 Esempio di montaggio



mit Steilkegel DIN 69871 AD/B
 with ISO taper acc. DIN 69871 AD/B
 avec queue cône SA selon DIN 69871 AD/B
 con gambo conico ISO secondo DIN 69871 AD/B



mKB

mm	Bezeichnung Description Désignation Designazione	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_5 mm	Z_p	Plattentyp Tip type Plaquette type Placcetta tipo	60° P mm	60° P Gg/1"	60° NPT P Gg/1"	55° P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.
≥ 56,00	53-195 SK50	52,55	SK50	330	195	7	F512	1,5 - 6,0	16 - 4	8	11	F705F0009
≥ 70,50	67-260 SK50	66,55	SK50	397	260	10	F512	1,5 - 6,0	16 - 4	8	11	F705F0010
≥ 100,00	92-360 SK50	92	SK50	493	360	15	F512	1,5 - 6,0	16 - 4	8	11	F705F0011

Lieferumfang: Werkzeughalter, Befestigungsschraube, Schraubendreher

Scope of delivery: Tool holder, mounting screw, screw driver
 Contenu de la livraison: Porte d'outil, vis de fixation, tournevis
 Volume di consegna: portautensili, vite di fissaggio, cacciavite

v_c/f_z = 11

i = 147

Bitte Wendepplatten separat bestellen

Please order inserts separately
 Commandez la plaquette séparément
 Ordina gli inserti separatamente

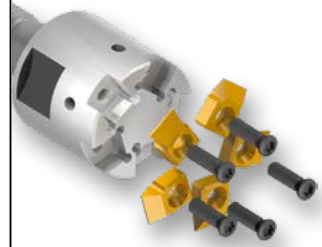
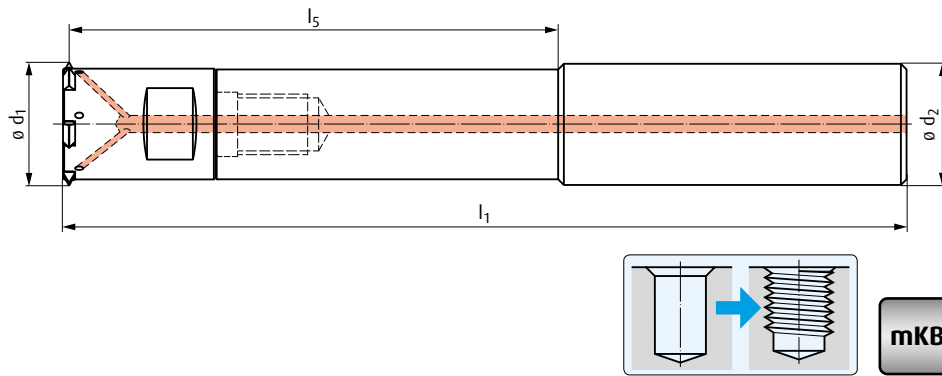
Gewindefräsplatte, 4 Zähne, auswechselbar <i>Thread milling insert, 4 tooth, indexable</i> <i>Plaquettes de filetage, à 4 dents, interchangeables</i> <i>Inserti filettati, con 4 denti, intercambiabili</i>							 TiN		 TiAlN	
M, MF, UN, NPT DIN 13, ANSI B1.1										
Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placchetta tipo</i>	60° P <i>mm</i>	60° P <i>Gg/1"</i>	60° NPT <i>P</i> <i>Gg/1"</i>	h <i>mm</i>	l <i>mm</i>			Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i>	
F512	1,5 - 3,0	16 - 9	8	9,5	15,5	F550F0003	1033F0003	F512AAAA	F512F0001	
F512	3,0 - 6,0	9 - 4	-	9,5	15,5	F550F0003	1033F0003	F512ABAA	F512F0002	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego	A	1.1 - 1.5	1.1 - 1.5
	R	1.1 - 1.3	1.1 - 1.3
	F	1.1 - 3.1	1.1 - 3.1
	N	1.1 - 4.3	1.3 - 1.5 / 2.3 / 2.6 / 4.3
	S		1.1 - 2.2
	H		1.1

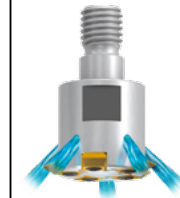
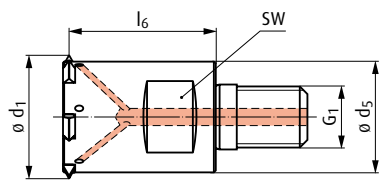
Andere Gewindesysteme auf Anfrage, z.B.: <i>Other thread standards upon request, e.g.:</i> <i>Autres standards de filetage sur demande, p.ex.:</i> <i>Altri sistemi di filettatura su richiesta, p. es.:</i>		
Tr Trapez-Gewinde, ACME-Gewinde <i>Trapezoidal thread, ACME thread</i> <i>Filetage trapézoïdal, filetage ACME</i> <i>Filettatura trapezoidale, fil. ACME</i>	S Sägengewinde <i>Buttress thread</i> <i>Filetage pas d'artillerie</i> <i>Filettatura a dente di sega</i>	Rd Rundgewinde <i>Round thread</i> <i>Filetage rond</i> <i>Filettatura tonda</i>
Sonderkonturen auf Anfrage / Special contours upon request / Profils spéciaux sur demande / Profili speciali su richiesta		

NORIS NES-TS Modular

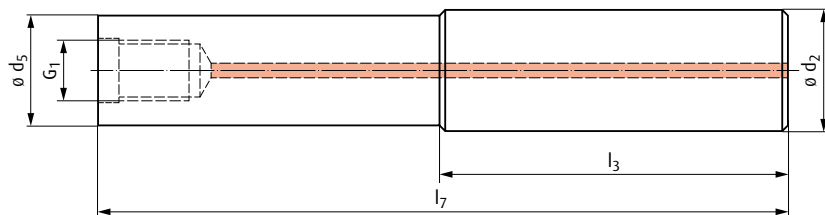
Montagebeispiel
 Mounting example
 Exemple de montage
 Esempio di montaggio



mm	$\varnothing d_1$ mm	$\varnothing d_2$ mm	l_1 mm	l_5 mm	Z_p	Plattentyp Tip type Plaquette type Placcetta tipo	60° P mm	60° P Gg/1"	Art.-Nr. Article no. Code article Articolo nr.	Art.-Nr. Article no. Code article Articolo nr.
≥ 29	27	25	178	120	5	F750	2,5 - 4,5	10 - 6	F70KF0001	FM0HF0008
≥ 35	32,85	25	200	145	5	F711	2,5 - 5,5	10 - 4,5	F70KF0005	FM0HF0010



mm	Bezeichnung Description Désignation Designazione	G_1	SW	$\varnothing d_5$ mm	l_6 mm	Art.-Nr. Article no. Code article Articolo nr.
≥ 29	27-20.M12	M12	19	21,75	20	F70KF0001
≥ 35	33-25.M12	M12	22	24,5	25	F70KF0005



Bezeichnung Description Désignation Designazione	G_1	$\varnothing d_5$ mm	$\varnothing d_2$ mm	l_7 mm	l_3 mm	DIN	Art.-Nr. Article no. Code article Articolo nr.
22-100.M12	M12	21,75	25	156	56	DIN 6535 HA	FM0HF0008
25-120.M12	M12	24,5	25	176	56	DIN 6535 HA	FM0HF0010

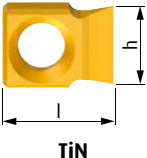
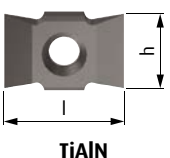
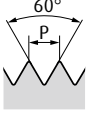
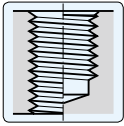


Andere Gewindesysteme auf Anfrage, z.B.:
 Other thread standards upon request, e.g.:
 Autres standards de filetage sur demande, p.ex.:
 Altri sistemi di filettatura su richiesta, p. es.:

Tr **Trapez-Gewinde, ACME-Gewinde**
 Trapezoidal thread, ACME thread
 Filetage trapézoïdal, filetage ACME
 Filettatura trapezoidale, fil. ACME

S **Sägewinde**
 Buttress thread
 Filetage pas d'artillerie
 Filettatura a dente di sega

Rd **Rundgewinde**
 Round thread
 Filetage rond
 Filettatura tonda

Sonderkonturen auf Anfrage / Special contours upon request / Profils spéciaux sur demande / Profili speciali su richiesta

<p>Gewindefräsplatte, 4 Zähne, auswechselbar <i>Thread milling insert, 4 tooth, indexable</i> <i>Plaquettes de filetage, à 4 dents, interchangeables</i> <i>Inserti filettati, con 4 denti, intercambiabili</i></p>						 <p>TiN</p>		 <p>TiAlN</p>	
<p>M, MF, UN DIN 13, ANSI B1.1</p>									
<p>Plattentyp <i>Tip type</i> <i>Plaquette type</i> <i>Placcetta tipo</i></p>	<p>60° P mm</p>	<p>60° P Gg/1"</p>	<p>h mm</p>	<p>l mm</p>			<p>Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i></p>	<p>Art.-Nr. <i>Article no.</i> <i>Code article</i> <i>Articolo nr.</i></p>	
F750	2,5 - 4,5	10 - 6	5	9,52	F550F0001	1033F0001	-	F750F0002	
F711	2,5 - 5,5	10 - 4,5	7	10	F550F0002	1033F0002	F711F0001	-	

Einsatzgebiete / Range of application / Utilisations / Campo d'impiego

A	1.1 - 1.5
R	1.1 - 1.3
F	1.1 - 3.1
N	1.3 - 1.5 / 2.3 / 2.6 / 4.3
S	1.1 - 2.2
H	1.1



Vergleich der Bearbeitungszeit zwischen NES und NES-TS System

Comparison of processing time between NES and NES-TS system

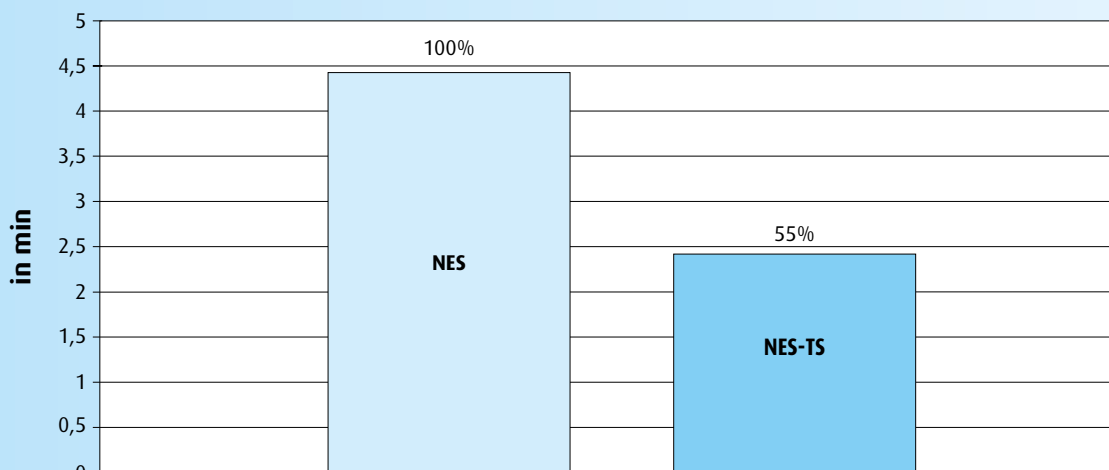
Rapport entre la durée de la NES et NES-TS système

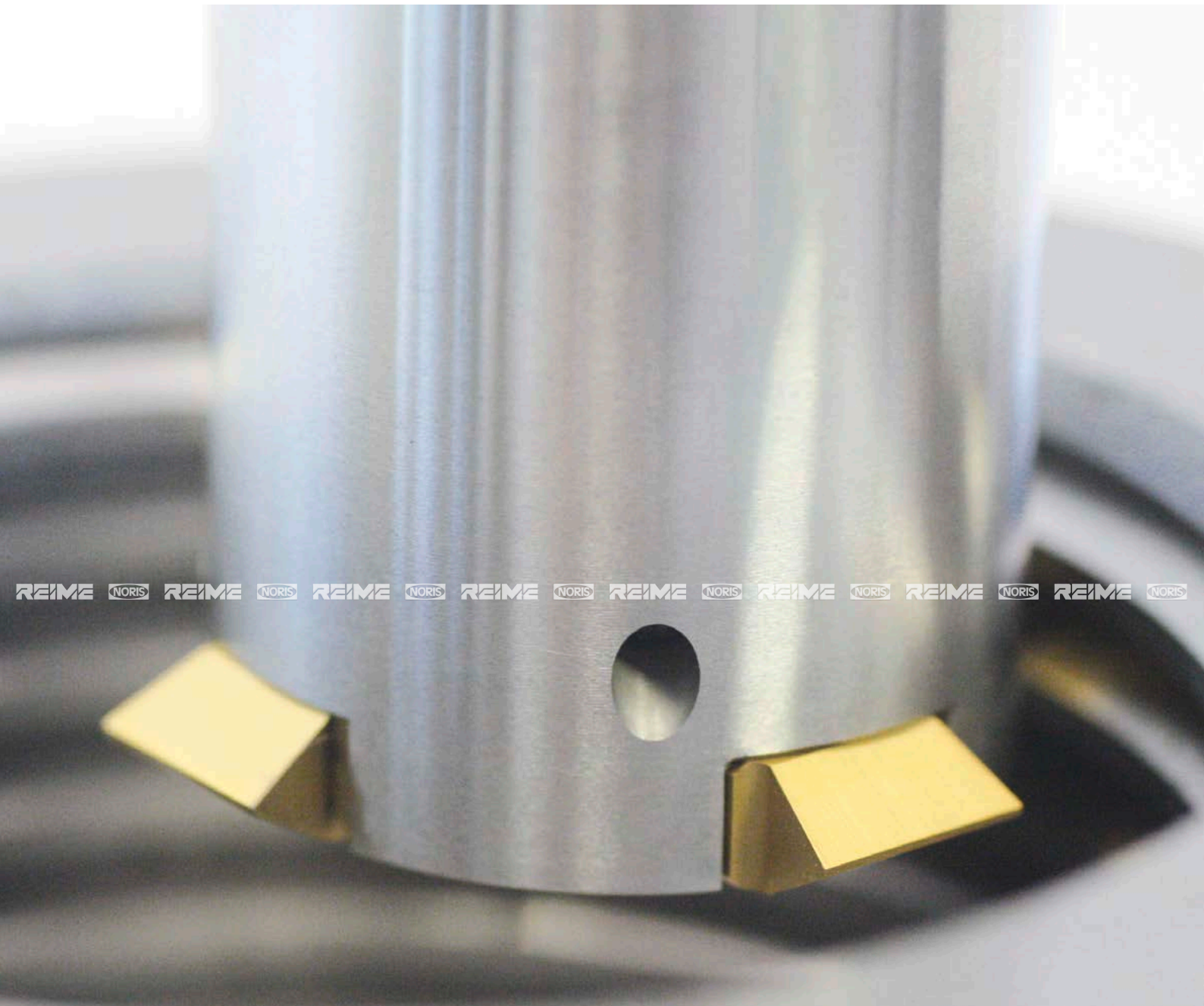
Confronto di tempo di trattamento tra NES e NES sistema-TS

Maschine / Machine / Machine / Macchina	Oerlikon „Sirius HM4 - MCP“
Arbeitsebene / Working level / Niveau de travail / Livello di lavoro	horizontal / horizontal / horizontal / orizzontale
Aufnahme / Tool fixture / Emmanchement / Attacco utensile	Spannzange / Collet / Pince / Pinza
Schmierung / Lubrication / Lubrification / Lubrificazione	mit Luft / compressed air / air comprimé / aria compressa
Material / Material / Matériau / Materiale	1.1730 = C45
Gewindeart / Type of thread / Type de filetage / Tipo di filetto	Sackloch / Blind hole / Trou borgne / Foro cieco
Abmessung / Size / Dimensions / Dimensioni	M 36 x 3
Gewindetiefe / Depth of thread / Profondeur filetée / Altezza di filettatura	60 mm
Schnittgeschwindigkeit / Cutting speed / Vitesse de coupe / Velocità di taglio	$v_c = 250 \text{ m/min}$
Vorschub pro Zahn / Feed per tooth / Avance à la dent / Avanzamento per dente	$f_z = 0,12 \text{ mm}$

	NES	NES-TS
		
Bezeichnung Halter / Description / Désignation / Designazione	29,5-95.32	27-90.32
Art.-Nr. Halter / Article no. tool holder / Code article porte d'outil / Articolo nr. portautensili	F501E0841	F701F0003
Art.-Nr. Gewindefräsplatte / Article no. milling insert / Code article plaquette / Articolo nr. placchetta	F510AABAA	F750F0002
Anzahl Platten Z_p / Number of milling inserts / Nombre de plaquettes / Numero di inserti	3	5
Bearbeitungszeit / Processing time / Temps de traitement / Tempo di lavorazione	2,46 min	1,36 min

Bearbeitungszeit / Processing time / Temps de traitement / Tempo di lavorazione



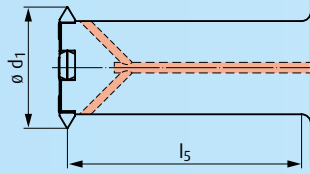


Welche Gewinde können mit NORIS NES/NES-TS erzeugt werden

Which kind of threads can be produced with a NORIS NES/NES-TS tool

Quels types de filet peuvent être usinés avec les outils NORIS NES/NES-TS

Quali tipi di filetto possono essere eseguiti con gli utensili NORIS NES/NES-TS



d_1 [mm]	FK 16,5/18	FK 20,5/22		
Typ	NES	NES	TS	Mod
	F521/F522	F521/F522	F521/F522	F521/F522
l_5 [mm] max.	60	50	50	80
M [mm]	1,5 - 3,5	1,5 - 3,5	1,5 - 3,5	1,5 - 3,5
UN [Gg/1"]	16 - 7	16 - 7	16 - 7	16 - 7
NPT [Gg/1"]	18 - 11,5	18 - 11,5	18 - 11,5	18 - 11,5
G [Gg/1"]	14	14	14	14

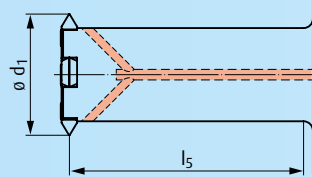
M	MF	UNC	UNF	NPT	G	$\varnothing D$ mm	P mm					
M 20	M 20x1,5					20,000	1,500	*				
	M 20x2					20,000	2,000	*				
						20,000	2,500	*				
						20,955	1,814	*				
M 22				1/2 - 14	G 1/2 - 14	21,336	1,814	*				
	M 22x1,5					22,000	1,500	*				
	M 22x2					22,000	2,000	*				
			7/8 - 9				22,000	2,500	*			
				7/8 - 14			22,225	2,822	*			
							22,225	1,814	*			
M 24	M 24x1,5				G 5/8 - 14	22,911	1,814	●	●	*	●	
	M 24x2					24,000	1,500	●	●	*	●	
						24,000	2,000	●	●	*	●	
	M 25x1,5					24,000	3,000	●	●	*	●	
			1" - 8				25,000	1,500	●	●	*	●
				1" - 12			25,400	3,175	●	●	*	●
M 27	M 26x1,5					25,400	2,117	●	●	*	●	
						26,000	1,500	○	●	*	●	
						26,441	1,814	○	●	*	●	
					3/4 - 14	G 3/4 - 14	26,670	1,814	○	●	*	●
	M 27x1,5					27,000	1,500	○	●	*	●	
	M 27x2					27,000	2,000	○	●	*	●	
M 30						27,000	3,000	○	●	*	●	
	M 28x1,5					28,000	1,500	○	●	*	●	
			1 1/8 - 7				28,575	3,629	○	●	*	●
				1 1/8 - 12			28,575	2,117	○	●	*	●
	M 30x1					30,000	1,000					
	M 30x1,5					30,000	1,500	○	●	*	●	
M 33	M 30x2					30,000	2,000	○	●	*	●	
						30,000	3,500	○	●	●	●	
						30,000	3,500	○	●	●	●	
			1 1/4 - 7				30,201	1,814	○	●	*	●
				1 1/4 - 12			31,750	3,629	○	●	●	●
							31,750	2,117	○	●	*	●
M 36	M 32x1,5					32,000	1,500	○	●	*	●	
	M 33x1,5					33,000	1,500	○	●	*	●	
	M 33x2					33,000	2,000	○	●	*	●	
						33,000	3,500	○	●	●	●	
						33,249	2,309					
					1" - 11,5	G 1" - 11	33,401	2,209	○	●	*	●
M 39	M 34x1,5					34,000	1,500	○	●	*	●	
			1 3/8 - 6				34,925	4,233				
				1 3/8 - 12			34,925	2,117	○	●	*	●
	M 35x1,5					35,000	1,500	○	●	*	●	
	M 36x1,5					36,000	1,500	○	●	*	●	
	M 36x2					36,000	2,000	○	●	*	●	
M 36	M 36x3					36,000	3,000	○	●	●	●	
						36,000	4,000					
						36,000	4,000					
						37,897	2,309					
M 36	M 38x1,5					38,000	1,500	○	○	○	○	
			1 1/2 - 6				38,100	4,233				
				1 1/2 - 12			38,100	2,117	○	○	○	○
	M 39x2					39,000	2,000	○	○	○	○	

Welche Gewinde können mit NORIS NES/NES-TS erzeugt werden

Which kind of threads can be produced with a NORIS NES/NES-TS tool

Quels types de filets peuvent être usinés avec les outils NORIS NES/NES-TS

Quali tipi di filetto possono essere eseguiti con gli utensili NORIS NES/NES-TS



d ₁ [mm]	FK 16,5/18	FK 20,5/22		
Typ	NES	NES	TS	Mod
	F521/F522	F521/F522	F521/F522	F521/F522
l ₅ [mm] max.	60	50	50	80
M [mm]	1,5 - 3,5	1,5 - 3,5	1,5 - 3,5	1,5 - 3,5
UN [Gg/1"]	16 - 7	16 - 7	16 - 7	16 - 7
NPT [Gg/1"]	18 - 11,5	18 - 11,5	18 - 11,5	18 - 11,5
G [Gg/1"]	14	14	14	14

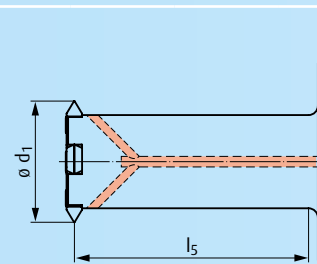
M	MF	UNC	UNF	NPT	G	ø D mm	P mm					
M 39	M 39x3					39,000	3,000	○	○	○	○	
	M 40x1,5					39,000	4,000	○	○	○	○	
	M 40x2					40,000	1,500	○	○	○	○	
	M 40x3					40,000	2,000	○	○	○	○	
M 42	M 42x1,5				G 1 1/4 - 11	40,000	3,000	○	○	○	○	
	M 42x2					40,000	4,500	○	○	○	○	
	M 42x3					42,000	1,500	○	○	○	○	
	M 45x1,5			1 1/4 - 11,5		42,000	2,000	○	○	○	○	
	M 45x2					42,164	3,000	○	○	○	○	
	M 45x3					45,000	1,500	○	○	○	○	
M 45	M 48x1,5				G 1 1/2 - 11	45,000	2,000	○	○	○	○	
	M 48x2					45,000	3,000	○	○	○	○	
	M 48x3					47,803	1,500	○	○	○	○	
	M 50x1,5			1 1/2 - 11,5		48,000	2,000	○	○	○	○	
	M 50x2					48,000	3,000	○	○	○	○	
	M 50x3					48,260	1,500	○	○	○	○	
	M 52x1,5					48,000	2,209	○	○	○	○	
	M 52x2					50,000	1,500	○	○	○	○	
	M 52x3					50,000	2,000	○	○	○	○	
	M 56x2					52,000	3,000	○	○	○	○	
	M 56x3					G 1 3/4 - 11	53,746	2,309	○	○	○	○
	M 56x4						56,000	2,000	○	○	○	○
M 60x4	M 60x4				G 2" - 11	56,000	3,000	○	○	○	○	
	M 64x3			2" - 11,5		56,000	4,000	○	○	○	○	
	M 64x4					59,614	2,309	○	○	○	○	
	M 68x4					60,000	4,000	○	○	○	○	
	M 72x3					60,325	2,209	○	○	○	○	
	M 72x4					64,000	3,000	○	○	○	○	
	M 76x3					64,000	4,000	○	○	○	○	
	M 76x4					G 2 1/4 - 11	65,710	2,309	○	○	○	○
	M 80x2					68,000	4,000	○	○	○	○	
	M 80x4					72,000	3,000	○	○	○	○	
M 85x4	M 85x4					72,000	4,000	○	○	○	○	
	M 90x4					G 2 1/2 - 11	75,184	2,309	○	○	○	○
	M 95x4					76,000	3,000	○	○	○	○	
	M 100x4					76,000	4,000	○	○	○	○	
	M 80x2					80,000	2,000	○	○	○	○	
	M 85x4					80,000	4,000	○	○	○	○	
	M 90x4					G 2 3/4 - 11	81,534	2,309	○	○	○	○
	M 95x4					85,000	4,000	○	○	○	○	
M 100x4	M 100x4					G 3" - 11	87,884	2,309	○	○	○	○
	M 100x4					90,000	4,000	○	○	○	○	
	M 100x4					95,000	4,000	○	○	○	○	
						100,000	4,000	○	○	○	○	
						G 3 1/2 - 11	100,330	2,309	○	○	○	
						G 4" - 11	113,030	2,309	○	○	○	


Welche Gewinde können mit NORIS NES/NES-TS erzeugt werden

Which kind of threads can be produced with a NORIS NES/NES-TS tool

Quels types de filets peuvent être usinés avec les outils NORIS NES/NES-TS

Quali tipi di filetto possono essere eseguiti con gli utensili NORIS NES/NES-TS



d ₁ [mm]	FK 33		
	NES	TS	TS Mod
Typ	F511	F711	F711
	F511	F711	F711
l ₅ [mm] max.	115	115	145
M [mm]	1,5 - 5,5	2,5 - 5,5	2,5 - 5,5
UN [Gg/1"]	16 - 4,5	10 - 4,5	10 - 4,5
NPT [Gg/1"]	18 - 11,5		
G [Gg/1"]	11		

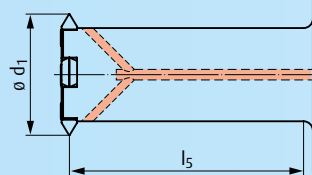
M	MF	UNC	UNF	NPT	G	ø D mm	P mm			
					G 1 1/8 - 11	37,897	2,309	○		
	M 38x1,5					38,000	1,500	○		
			1 1/2 - 12			38,100	2,117	●		
	M 39x2					39,000	2,000	●		
	M 39x3					39,000	3,000	●	●	●
M 39						39,000	4,000	●	●	●
	M 40x1,5					40,000	1,500	●		
	M 40x2					40,000	2,000	●		
	M 40x3					40,000	3,000	●	●	●
					G 1 1/4 - 11	41,910	2,309	●		
	M 42x1,5					42,000	1,500	●		
	M 42x2					42,000	2,000	●		
	M 42x3					42,000	3,000	●	●	●
M 42						42,000	4,500	●	*	*
		1 3/4 - 5				44,450	5,080	●	*	*
	M 45x1,5					45,000	1,500	●		
	M 45x2					45,000	2,000	●		
	M 45x3					45,000	3,000	●	●	●
M 45						45,000	4,500	●	*	*
					G 1 1/2 - 11	47,803	2,309	●		
	M 48x1,5					48,000	1,500	●		
	M 48x2					48,000	2,000	●		
	M 48x3					48,000	3,000	●	●	●
M 48						48,000	5,000	●	*	*
	M 50x1,5					50,000	1,500	●		
	M 50x2					50,000	2,000	●		
	M 50x3					50,000	3,000	●	●	●
		2" - 4,5				50,800	5,645	●	*	*
	M 52x1,5					52,000	1,500	●		
	M 52x2					52,000	2,000	●		
	M 52x3					52,000	3,000	●	●	●
M 52						52,000	5,000	●	*	*
					G 1 3/4 - 11	53,746	2,309	●		
	M 56x2					56,000	2,000	●		
	M 56x3					56,000	3,000	●	*	*
	M 56x4					56,000	4,000	●	*	*
M 56						56,000	5,500	●	*	*
		2 1/4 - 4,5				57,150	5,645	●	*	*
					G 2" - 11	59,614	2,309	●		
	M 60x4					60,000	4,000	●	*	*
M 60						60,000	5,500	●	*	*

Welche Gewinde können mit NORIS NES/NES-TS erzeugt werden

Which kind of threads can be produced with a NORIS NES/NES-TS tool

Quels types de filet peuvent être usinés avec les outils NORIS NES/NES-TS

Quali tipi di filetto possono essere eseguiti con gli utensili NORIS NES/NES-TS



d ₁ [mm]	FK 33		
	NES	TS	TS Mod
Typ	F511	F711	F711
l ₅ [mm] max.	115	115	145
M [mm]	1,5 - 5,5	2,5 - 5,5	2,5 - 5,5
UN [Gg/1"]	16 - 4,5	10 - 4,5	10 - 4,5
NPT [Gg/1"]	18 - 11,5		
G [Gg/1"]	11		

M	MF	UNC	UNF	NPT	G	ø D mm	P mm			
		2 1/2 - 4		2" - 11,5		60,325	2,209	●		
						63,500	6,350			
	M 64x3					64,000	3,000	●	*	*
	M 64x4					64,000	4,000	●	*	*
M 64						64,000	6,000			
					G 2 1/4 - 11	65,710	2,309	●		
	M 68x4					68,000	4,000	●	*	*
M 68						68,000	6,000			
		2 3/4 - 4				69,850	6,350			
	M 72x3					72,000	3,000		*	*
	M 72x4					72,000	4,000		*	*
	M 72x6					72,000	6,000			
				2 1/2 - 8		73,025	3,175			
					G 2 1/2 - 11	75,184	2,309	●		
	M 76x3					76,000	3,000	●	*	*
	M 76x4					76,000	4,000	●	*	*
	M 76x6					76,000	6,000			
		3" - 4				76,200	6,350			
	M 80x2					80,000	2,000	○		
	M 80x4					80,000	4,000	○	○	○
	M 80x6					80,000	6,000			
					G 2 3/4 - 11	81,534	2,309	○		
		3 1/4 - 4				82,550	6,350			
	M 85x4					85,000	4,000	○	○	○
	M 85x6					85,000	6,000			
					G 3" - 11	87,884	2,309	○		
				3" - 8		88,900	3,175			
		3 1/2 - 4				88,900	6,350			
	M 90x4					90,000	4,000	○	○	○
	M 90x6					90,000	6,000			
	M 95x4					95,000	4,000	○	○	○
	M 95x6					95,000	6,000			
		3 3/4 - 4				95,250	6,350			
	M 100x4					100,000	4,000	○	○	○
	M 100x6					100,000	6,000			
					G 3 1/2 - 11	100,330	2,309	○		
				3 1/2 - 8		101,600	3,175			
		4" - 4				101,600	6,350			
	M 110x6					110,000	6,000			
					G 4" - 11	113,030	2,309	○		

	FK 40,5	FK 53		FK 67		FK 92	
	NES	NES	TS	NES	TS	NES	NES
	F512	F513	F512	F513	F512	F514	F512
	145	195	195	260	260	360	360
	1,5 - 6,0	1,5 - 6,0	1,5 - 6,0	1,5 - 6,0	1,5 - 6,0	6,0 - 8,0	1,5 - 6,0
	16 - 4	16 - 4	16 - 4	16 - 4	16 - 4	4	16 - 4
	14 - 8	14 - 8	14 - 8	14 - 8	14 - 8		14 - 8
	11	11	11	11	11		11
	*						
	•	•	*				
	•	•	•				
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	•	•	•	•	*		
	○	•	•	•	*		
	•	•	•	•	*		
	○	•	•	•	*		
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	○	•	•	•	*		
	•	•	•	•	*		
	•	•	•	•	*		
	○	•	•	•	*		
	•	•	•	•	*		
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	○	•	•	•	*		
	○	•	•	•	*		
	○	•	•	•	*		
	○	•	•	•	*		
	○	•	•	•	*	•	*
	○	•	•	•	*		



Service Kontakt: solutions@noris-reime.de

Das REIME Team steht Ihnen bei der Lösung Ihrer Zerspanungsaufgabe gerne zur Seite.

The REIME team will be happy to solve your threading problems.

L'équipe de REIME se tient à votre disposition pour résoudre vos problèmes de filetage.

Il team REIME sarà lieto di risolvere i vostri problemi di filettatura.



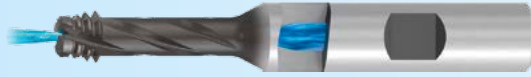
NORIS Info

REIME NORIS Gewindefräser Typenbeschreibung

REIME NORIS thread mill description

REIME NORIS Description du filetage

Descrizione della fresa a filettare REIME NORIS

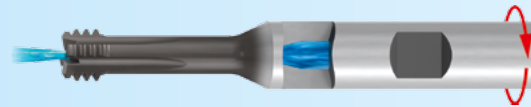
NORIS ZTF R30 UNI

Zirkular-Tauchgewindefräser für verschiedenste Werkstoffe. Diese Gewindefräser ermöglichen die Herstellung von Gewinden und Fase ohne vorbohren des Kernlochs. Durch 30° spiralisierte Nuten erfahren diese Werkzeuge geringen radialen Schnittdruck und die Werkzeugschneiden greifen sanft in das zu bearbeitende Material ein.

Circular diving thread milling cutters for various materials. This thread mills enable the production of threads and chamfer without pre-drilling the core hole. Due to 30° spiraled flutes, there is only a small radial cutting force and the cutting tool gently cuts into the material to be machined.

Fraises à percer-fileter circulaires pour divers matériaux. Ces fraises permettent un filetage et un chanfreinage sans percer d'avant-trou. Grâce aux goujures spiralées à 30° l'outil exerce un faible effort de coupe latéral, les arêtes coupantes interviennent avec souplesse dans la matière à usiner.

Circolare immersioni frese a filettare per i vari materiali. Questo thread mulini consentono la produzione di fili e smusso senza pre-forare il foro centrale. Scanalature passanti 30° spiralate, questi strumenti trovano piccola forza di taglio radiale e l'utensile da taglio afferrare dolcemente nel materiale da lavorare.

NORIS ZTF HT

Zirkular-Tauchgewindefräser für schwer zerspanbare und harte Werkstoffe von 44 HRC bis 66 HRC. Diese **linksrotierenden** Gewindefräser ermöglichen die Herstellung von Gewinden ohne vorbohren des Kernlochs.

Circular diving thread milling cutters for hard to cut and hard materials of HRC 44 to 66 HRC. This **left rotating** thread mills enable the production of threads without pre-drilling the core hole.

Fraises à percer-fileter circulaires pour les matériaux durs et difficiles à usiner de type HRC 44 jusqu'à 66 HRC. Ces fraises à **rotation à gauche** permettent la production de filets sans percer d'avant trou.

Fresatura e foratura di filetti in rampa per interpolazione circolare di materiali con durezza 44-66 HRC. Questa tipologia consente di eseguire fori filettati senza l'ausilio del preforo.

NORIS ZTF L30 AERO

Zirkular-Tauchgewindefräser für aeronautische Werkstoffe. Diese **linksrotierenden** Gewindefräser ermöglichen die Herstellung von Gewinden und Fase ohne vorbohren des Kernlochs. Durch 30°-spiralisierte Nuten erfahren diese Werkzeuge geringen radialen Schnittdruck und die Werkzeugschneiden greifen sanft in das zu bearbeitende Material ein.

Circular diving thread milling cutter for aeronautical materials. This **left rotating** thread mills enable the production of threads and chamfer without pre-drilling the core hole. Due to 30° spiraled flutes, there is only a small radial cutting force and the cutting tool gently cuts into the material to be machined.

Fraises à percer-fileter circulaires pour l'aéronautique. Ces fraises à **rotation à gauche** permettent un filetage et un chanfreinage sans percer d'avant-trou. Grâce aux hélices spiralées à 30° l'outil exerce un faible effort de coupe latéral, les arêtes coupantes interviennent avec souplesse dans la matière à usiner.

Fresatura e foratura di filetti in rampa per interpolazione circolare per leghe aeronautiche. Questa tipologia consente di eseguire fori filettati senza l'ausilio del preforo. Le particolari scanalature a 30° garantiscono un approccio dolce del taglio e spinte radiali molto ridotte.

REIME NORIS Gewindefräser Typenbeschreibung*REIME NORIS thread mill description**REIME NORIS Description du filetage**Descrizione della fresa a filettare REIME NORIS***NORIS BGF R30**

Bohrgewindefräser zur Herstellung von Gewinden mit Senkfase ohne vorbohren des Kernlochs in einem Arbeitsgang. Ausschließlich für die Bearbeitung von kurzspanenden Aluminiumgusslegierungen und weichen Gusseisen einzusetzen.

Drill thread mill for the production of threads and chamfer in one operation without pre-drilling the core hole. Exclusively use for the processing of short-chipping aluminum alloys, soft cast iron.

Fraises à fileter pour la production de filet avec fraisage d'un chanfrein et sans perçage d'un avant-trou, en une seule opération. A utiliser exclusivement pour l'usinage d'alliages d'aluminium à copeaux courts et de fontes grises.

Foratura, fresatura e svasatura di fori filettati per leghe di alluminio e ghise dolci a trucilo corto.

NORIS BGF R20

Bohrgewindefräser zur Herstellung von Gewinden mit Senkfase ohne vorbohren des Kernlochs in einem Arbeitsgang. Ausschließlich für die Bearbeitung von kurzspanenden Aluminiumgusslegierungen und weichen Gusseisen einzusetzen. Diese 4-nutigen, 20°-spiralisierten Werkzeuge erreichen durch höhere effektive Vorschübe, kürzere Bearbeitungszeiten.

Drill thread mill for the production of threads and chamfer in one operation without pre-drilling the core hole. Exclusively use for the processing of short-chipping aluminum alloys, soft cast iron. This 4-slot, 20-degree spiraled tools have shorter processing times due to a higher effective feed.

Fraises à fileter pour la production de filetages avec fraisage d'un chanfrein et sans perçage d'un avant-trou en une seule opération. A utiliser exclusivement pour l'usinage d'alliages d'aluminium à copeaux courts et de fontes grises. Avec ses 4 goujures spiralées à 20° cet outil permet de réduire le temps d'usinage grâce à une meilleure avance de coupe.

Foratura, fresatura e svasatura di fori filettati per leghe di alluminio e ghise dolci a trucilo corto. Quattro taglienti a 20° gradi di inclinazione delle eliche garantiscono alti avanzamenti con una riduzione significativa dei tempi di lavorazione.

NORIS SF R10

Schaftgewindefräser für harte Werkstoffe bis 66 HRC. Diese mehrreihigen Gewindefräser garantieren kurze Bearbeitungszeiten und lange Standwege in gehärteten Werkstoffe bis zu 1,5 x D Gewindetiefe. Voraussetzung ist ein vorgearbeitetes Kernloch, evtl. mit Senkfase.

Thread milling cutters for hard materials up to 66 HRC. This multi-tooth thread mill guarantee fast processing times and long tool life in hardened materials up to 1.5 x D thread depth. A ready prepared thread hole is necessary, including chamfer if needed.

Fraises à fileter pour les matériaux durs jusqu'à 66 HRC. Cette fraise à fileter coupe sur toute sa hauteur, et permet ainsi de réduire le temps d'usinage et de prolonger la durée de vie de l'outil dans des matières dures jusqu'à 1,5 x D de profondeur. Le perçage d'un avant trou est pré-requis, éventuellement avec un chanfrein.

Fresa a filettare per materiali di durezza fino a 66 HRC. La macrogeometria multitagliente è garanzia di esecuzione rapida e lunga vita utensile in materiali temprati fino a 1,5 x D. Richiesti preforo e smusso correttamente eseguiti.

REIME NORIS Gewindefräser Typenbeschreibung*REIME NORIS thread mill description**REIME NORIS Description du filetage**Descrizione della fresa a filettare REIME NORIS***NORIS SF R15**

Schaftgewindefräser für verschiedenste Werkstoffe. Diese mehrreihigen Gewindefräser garantieren kurze Bearbeitungszeiten und lange Standwege. Voraussetzung ist ein vorgearbeitetes Kernloch, evtl. mit Senkfase.

Fraises à fileter pour divers matériaux. Cette fraise à fileter coupe sur toute sa hauteur, et permet ainsi de réduire le temps d'usinage et de prolonger la durée de vie de l'outil. Le perçage d'un avant trou est pré-requis, éventuellement avec un chanfrein.

Thread milling cutters for various materials. This multi-tooth thread mill guarantee fast processing times and long tool life. A ready prepared thread hole is necessary, including chamfer if needed.

Fresa a filettare per utilizzo universale. La macrogeometria multitagliente è garanzia di esecuzione rapida con una lunga vita utensile. Richiesti preforo e smusso correttamente eseguiti.

NORIS SFK / NORIS SFK R15

Schaftgewindefräser für verschiedenste Werkstoffe. Diese mehrreihigen Gewindefräser ermöglichen eine prozesssichere und wirtschaftliche Herstellung von konischen Gewinden. Voraussetzung ist ein entsprechend vorgearbeitetes Kernloch.

Fraises à fileter pour divers matériaux. Cette fraise coupe sur toute sa hauteur, elle garantit ainsi un processus de filetage conique efficace, sûr, et économique. Le perçage d'un avant trou est pré-requis.

Thread milling cutters for various materials. This multi-tooth thread mills enable a process-safe and economical production of tapered threads. A ready prepared thread hole is necessary.

Fresa a filettare per utilizzo universale. La macrogeometria multitagliente consente una produzione economica e sicura dei filetti conici. Richiesti preforo e smusso correttamente eseguiti.

NORIS SFX R30

Schaftgewindefräser mit steigungsgebundenem Gewindeprofil für verschiedenste Werkstoffe. Diese mehrreihigen Gewindefräser können bei gleicher Steigung für verschiedene Gewindedurchmesser eingesetzt werden. Voraussetzung ist ein vorgearbeitetes Kernloch, evtl. mit Senkfase.

Fraises à fileter pour divers matériaux et pour des profils de filet avec pente. Cet outil coupe sur toute sa hauteur et peut être utilisé avec la même inclinaison pour des diamètres de filet différents. Le perçage d'un avant-trou est pré-requis, éventuellement avec un chanfrein.

Thread milling cutters for various materials but for one pitch only thread profile. This multi-tooth thread milling cutters can be used for different thread diameter with the same pitch. A ready prepared thread hole is necessary, including chamfer if needed.

Fresa a filettare per utilizzo universale a passo fisso e fitto. Consente l'esecuzione di filetti di diversi diametri con lo stesso passo. Richiesti preforo e smusso correttamente eseguiti.

REIME NORIS Gewindefräser Typenbeschreibung*REIME NORIS thread mill description**REIME NORIS Description du filetage**Descrizione della fresa a filettare REIME NORIS***NORIS SFX R15Z**

Schaftgewindefräser mit steigungsgebundenem Gewindeprofil für verschiedenste Werkstoffe. Diese mehrreihigen Gewindefräser für große Feingewinde können bei gleicher Steigung für verschiedene Gewindedurchmesser eingesetzt werden. Voraussetzung ist ein vorgearbeitetes Kernloch, evtl. mit Senkfase.

Thread milling cutters for various materials but for one pitch only thread profile. This multi-tooth thread milling cutters for large fine threads can be used for different thread diameter with the same pitch. A ready prepared thread hole is necessary, including chamfer if needed.

Fraises à fileter pour divers matériaux et des profils de filet avec pente. Cet outil, conçu pour les filets fins et profonds, coupe sur toute sa hauteur et peut être utilisé avec la même inclinaison pour des diamètres de filetage différents. Le perçage d'un avant-trou est pré-requis, éventuellement avec un chanfrein.

Fresa a filettare per utilizzo universale a passo fisso e fitto. Consente l'esecuzione di filetti di diversi diametri con lo stesso passo. Richiesti preforo e smusso correttamente eseguiti.

NORIS SFX R15VZ

Schaftgewindefräser mit steigungsgebundenem Gewindeprofil für verschiedenste Werkstoffe. Diese mehrreihigen Gewindefräser für Regel- und Feingewinde können bei gleicher Steigung für verschiedene Gewindedurchmesser eingesetzt werden. Voraussetzung ist ein vorgearbeitetes Kernloch, evtl. mit Senkfase.

Thread milling cutters for various materials but for one pitch only thread profile. This multi-tooth thread milling cutters for standard and fine threads can be used for different thread diameter with the same pitch. A ready prepared thread hole is necessary, including chamfer if needed.

Les fraises à fileter pour divers matériaux et profils de filet avec pente. Cet outil, conçu pour des filets normaux et fins, coupe sur toute sa hauteur et peut être utilisé pour différents diamètres avec la même inclinaison. Le perçage d'un avant-trou est pré-requis, éventuellement avec un chanfrein.

Fresa a filettare per utilizzo universale a passo fisso. Consente l'esecuzione di filetti con passi grossi e passi fini di diversi diametri. Richiesti preforo e smusso correttamente eseguiti.

NORIS SFSE R15

Schaftgewindefräser zur Herstellung von Gewinden mit Senkfase für verschiedenste Werkstoffe. Diese mehrreihigen Gewindefräser garantieren kurze Bearbeitungszeiten und lange Standwege bei der Herstellung von Gewinden mit bis zu 2 x D Gewindetiefe. Voraussetzung ist ein vorgearbeitetes Kernloch.

Thread milling cutters for various materials to produce threads with countersink. This multi-tooth thread mill guarantee fast processing times and long tool life producing threads with up to 2 x D thread depth. A ready prepared thread hole is necessary.

Fraises à fileter pour divers matériaux destinés au filetage avec chanfrein. Cette fraise à fileter coupe sur toute sa hauteur, et permet ainsi de réduire le temps d'usinage et de prolonger la durée de vie de l'outil, pour filetage profond jusqu'à 2 x D. Le perçage d'un avant trou est pré-requis, éventuellement avec un chanfrein.

Fresa filetto smusso per utilizzo universale. La macrogeometria multitagliente è garanzia di esecuzione rapida e lunga vita utensile fino a 2 x D. Richiesto preforo eseguito correttamente.

REIME NORIS Gewindefräser Typenbeschreibung*REIME NORIS thread mill description**REIME NORIS Description du filetage**Descrizione della fresa a filettare REIME NORIS***NORIS SFSE R30**

Schaftgewindefräser zur Herstellung von Gewinden mit Senkfase für verschiedenste Werkstoffe. Diese mehrreihigen Gewindefräser garantieren kurze Bearbeitungszeiten und lange Standwege bei der Herstellung von Gewinden mit bis zu 2,5 x D Gewindetiefe. Durch 30°-spiralisierte Nuten erfahren diese Werkzeuge geringen radialen Schnittdruck und die Werkzeugschneiden greifen sanft in das zu bearbeitende Material ein. Voraussetzung ist ein vorgearbeitetes Kernloch.

Fraises à fileter pour divers matériaux destinés au filetage avec chanfrein. Cette fraise à fileter coupe sur toute sa hauteur, et permet ainsi de réduire le temps d'usinage et de prolonger la durée de vie de l'outil, pour filetage profond jusqu'à 2,5 x D. Grâce aux goujures spiralées à 30° l'outil exerce un faible effort de coupe latéral, les arêtes coupantes interviennent avec souplesse dans la matière à usiner. Le perçage d'un avant trou est pré-requis.

Thread milling cutters for various materials to produce threads with countersink. This multi-tooth thread mill guarantee fast processing times and long tool life producing threads with up to 2.5 x D thread depth. Due to 30° spiraled flutes, there is only a small radial cutting force and the cutting tool gently cuts into the material to be machined. A ready prepared thread hole is necessary.

Fresa filetto smusso per utilizzo universale. La macrogeometria multitagliente e i 30° di elica sono garanzia di esecuzione rapida e lunga vita utensile fino a 2,5 x D. Richiesto preforo eseguito correttamente.

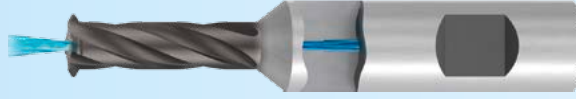
NORIS EIR HR

Schaftgewindefräser mit korrigiertem Gewindepfil für verschiedenste Werkstoffe. Diese einreihigen Gewindefräser können in spezifischen Steigungsbereichen für verschiedene Gewindedurchmesser eingesetzt werden. Voraussetzung ist ein vorgearbeitetes Kernloch, evtl. mit Senkfase.

Fraises à fileter pour divers matériaux et profil de filet corrigé. Cette fraise à fileter coupe sur toute sa hauteur, elle peut être utilisée dans les cas d'inclinaison spécifiques pour des différents diamètres de filet. Le perçage d'un avant trou est pré-requis, éventuellement avec un chanfrein.

Thread milling cutters for various materials and corrected thread profile. These single-tooth thread mill can be used in specific pitch areas for different thread diameter. A ready prepared thread hole is necessary, including chamfer if needed.

Fresa a filettare a passo fisso per utilizzo universale. Macrogeometria multitagliente disposta in testa utilizzabile per filetti di diverso diametro con lo stesso passo. Richiesta l'esecuzione corretta di preforo e smusso.

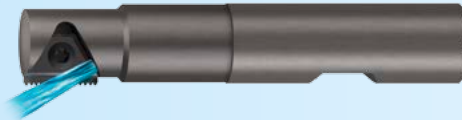
REIME NORIS Gewindefräser Typenbeschreibung*REIME NORIS thread mill description**REIME NORIS Description du filetage**Descrizione della fresa a filettare REIME NORIS***NORIS EIR R30 HR**

Schaftgewindefräser mit steigungsgebundenem Gewindeprofil für verschiedenste Werkstoffe. Diese einreihigen Gewindefräser können bei gleicher Steigung für verschiedene Gewindedurchmesser eingesetzt werden. Durch 30°-spiralisierte Nuten erfahren diese Werkzeuge geringen radialen Schnittdruck und die Werkzeugschneiden greifen sanft in das zu bearbeitende Material ein. Voraussetzung ist ein vorgearbeitetes Kernloch, evtl. mit Senkfase.

Fraises à fileter selon le profil d'inclinaison du filet et pour divers matériaux. Cet outil coupe sur toute sa hauteur, il peut être utilisé pour une même inclinaison avec différents diamètres. Grâce aux goujures spiralées à 30° l'outil exerce un faible effort de coupe latéral, les arêtes coupantes interviennent avec souplesse dans la matière à usiner. Le perçage d'un avant-trou est pré-requis, éventuellement avec un chanfrein.

Thread milling cutters for various materials but for one pitch only thread profile. These single-tooth thread milling cutters can be used for different thread diameter with the same pitch. Due to 30° spiraled flutes, there is only a small radial cutting force and the cutting tool gently cuts into the material to be machined. A ready prepared thread hole is necessary, including chamfer if needed.

Fresa a filettare per utilizzo universale. La macrogeometria multitagliente disposta in una unica fila in testa con 30° di elica è garanzia di esecuzione rapida e lunga vita utensile nonché ridotte spinte radiali per il suo taglio dolce. Richiesti preforo e smusso eseguiti correttamente.

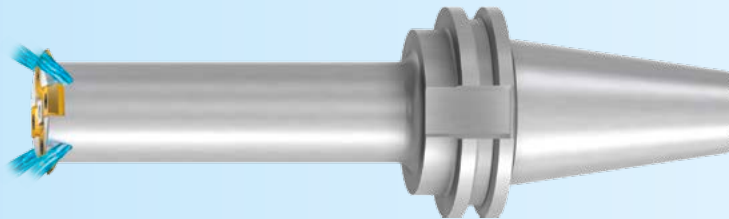
REIME NORIS Gewindefräser Typenbeschreibung*REIME NORIS thread mill description**REIME NORIS Description du filetage**Descrizione della fresa a filettare REIME NORIS***NORIS MWN**

Zirkular-Gewindefrässystem mit Hartmetall-Wendeschneidplatte. Mit einer einzelnen mehrprofiligen Gewindefrässplatte zur wirtschaftlichen Herstellung von kurzen Feingewinden in verschiedensten Werkstoffe. Voraussetzung ist ein vorgearbeitetes Kernloch, evtl. mit Senkfase.

Circular thread milling system with carbide insert. With a single multi-tooth insert for the economical production of short fine threads in various materials. A ready prepared thread hole is necessary, including chamfer if needed.

Système de filetage cylindrique avec plaquettes amovibles en carbure. Une unique plaquette de filetage multi-profils pour une production économique de filets fins courts dans divers matériaux. Le perçage d'un avant-trou est pré-requis, éventuellement avec un chanfrein.

Fresa a filettare con inserti in metallo duro a pettine. Utilizzo universale per l'esecuzione di filetti di passo non grosso. Richiesti preforo e smusso correttamente eseguiti.

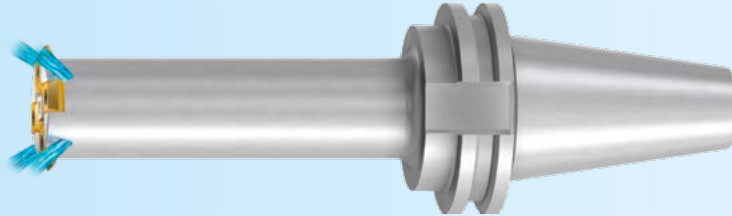
NORIS NES

Zirkular-Gewindefrässystem mit Hartmetall-Wendeschneidplatten. Einreihiges Gewindefrässystem mit bis zu 7 mehrschneidigen Teilprofil-Gewindefrässplatten zur wirtschaftlichen Herstellung von großen Gewinden ab \varnothing 20 mm in verschiedensten Werkstoffen. Voraussetzung ist ein vorgearbeitetes Kernloch, evtl. mit Senkfase.

Circular thread milling system with carbide inserts. Single-tooth thread milling system with up to seven 4-tooth indexable inserts for economical production of large threads from \varnothing 20 mm in various materials. A ready prepared thread hole is necessary, including chamfer if needed.

Système de filetage cylindrique avec plaquettes amovibles en carbure. Fraise à fileter une dent, avec plaquettes amovibles jusqu'à 7 profils d'arête de coupe différents pour une production économique de gros filets à partir de \varnothing 20 mm, dans divers matériaux. Le perçage d'un avant-trou est pré-requis, éventuellement avec un chanfrein.

Fresa a filettare con inserti in metallo duro disposti su un'unica fila. Possibile esecuzione di filetti di diametri a partire da 20 mm. Eseguibili filetti 60°/55° a partire da un passo 1 sino all'esecuzione di un passo 8. Garantita la massima ripetibilità, economicità e sicurezza del processo produttivo. Sono richiesti preforo e smusso correttamente eseguiti.

REIME NORIS Gewindefräser Typenbeschreibung*REIME NORIS thread mill description**REIME NORIS Description du filetage**Descrizione della fresa a filettare REIME NORIS***NORIS NES-TS**

Zirkular-Gewindefrässystem mit Hartmetall-Wendeschneidplatten. Einreihiges Gewindefrässystem mit bis zu 15 mehrschneidigen Teilprofil-Gewindefräsplatten zur wirtschaftlichen Herstellung von großen Gewinden ab \varnothing 24 mm in verschiedensten Werkstoffe. Durch die erhöhte Anzahl an Schneiden werden durch höhere effektive Vorschübe, kürzere Bearbeitungszeiten erreicht. Voraussetzung ist ein vorgearbeitetes Kernloch, evtl. mit Senkfase.

Circular thread milling system with carbide inserts. Single-tooth thread milling system with up to fifteen 4-tooth indexable inserts for economical production of large threads from \varnothing 24 mm in various materials. Due to the increased number of inserts the tools have shorter processing times due to a higher effective feed. A ready prepared thread hole is necessary, including chamfer if needed.

Système de filetage cylindrique avec plaquettes amovibles en carbure. Fraise à fileter une dent, avec plaquettes amovibles jusqu'à 15 profils d'arête de coupe différents pour une production économique de gros filets à partir de \varnothing 24 mm, dans divers matériaux. Le nombre de dents permet d'obtenir une avance de coupe plus rapide, il réduit ainsi le temps d'usinage. Le perçage d'un avant-trou est pré-requis, éventuellement avec un chanfrein.

Fresa a filettare con inserti in metallo duro a passo fitto disposti su un'unica fila per un massimo di 15. Possibile esecuzione di filetti di diametri a partire da 24 mm. Eseguibili filetti 60°/55°. Garantita la massima ripetibilità, economicità e sicurezza del processo produttivo in alta velocità. Geometria e mescola si adattano ad un utilizzo universale in alte prestazioni. Sono richiesti preforo e smusso correttamente eseguiti.

NORIS NES/NES-TS Modular

Zirkular-Gewindefrässystem mit Hartmetall-Wendeschneidplatten und Hartmetall-Schaft. Einreihiges Gewindefrässystem mit bis zu 5 mehrschneidigen Teilprofil-Gewindefräsplatten zur wirtschaftlichen Herstellung von großen Gewinden ab \varnothing 24 mm in verschiedensten Werkstoffe. Durch die erhöhte Stabilität aufgrund des Hartmetall-Schaftes resultieren größere Nutzlängen, wodurch sehr tiefe und tiefliegende Gewinde erreicht werden können. Voraussetzung ist ein vorgearbeitetes Kernloch, evtl. mit Senkfase.

Circular thread milling system with carbide inserts and carbide shank. Single-tooth thread milling system with up to five 4-tooth indexable inserts for economical production of large threads from \varnothing 24 mm in various materials. Due to the carbide shank the system has a increased stability therefore larger effective lengths are possible. A ready prepared thread hole is necessary, including chamfer if needed.

Système de filetage cylindrique avec plaquettes amovibles et corps d'outil en carbure. Fraise à fileter une dent, avec plaquettes amovibles jusqu'à 5 profils d'arête de coupe différents pour une production économique de gros filets à partir de \varnothing 24 mm, dans divers matériaux. Le corps d'outil en carbure présente une meilleure stabilité et offre ainsi une longueur utile plus grande qui permet d'obtenir des filets très profonds. Le perçage d'un avant-trou est pré-requis, éventuellement avec un chanfrein.

Fresa a filettare con inserti in metallo duro a passo fitto disposti su un'unica fila fino a 5. Possibile esecuzione di filetti di diametri a partire da 24 mm. Eseguibili filetti 60°/55°. Garantita la massima ripetibilità e sicurezza del processo produttivo in alta velocità. Grazie all'elevata stabilità del corpo in metallo duro si possono raggiungere profondità di filetto elevate (>3 x D). Geometria e mescola si adattano ad un utilizzo universale in alte prestazioni. Sono richiesti preforo e smusso correttamente eseguiti.

REIME NORIS Oberflächenbehandlungen und -Beschichtungen

Our REIME NORIS surface treatments and coatings
 Traitements de surface et revêtements REIME NORIS
 Trattamenti superficiali e rivestimenti REIME NORIS

TiN**Titan-Nitrid (goldgelb)**

Das Titannitridbeschichten erfolgt im PVD-Verfahren. Dies ist ein reaktives, ionenunterstütztes Aufdampfen von Titannitrid bei ca. 500 °C. Die Schichtdicke beträgt ca. 3 µm, die Härte mehr als 2.400 HV. Durch die verminderte Oberflächenrauigkeit und die hohe Härte werden sehr gute Gleiteigenschaften und eine hohe Verschleißfestigkeit erreicht. Enorme Vorteile liegen eindeutig im universalen Einsatz dieser Schicht.

Nitride de titane (or)

Ce revêtement est obtenu par le procédé PVD (Physical Vapour Deposition). Il s'agit d'un bain de vapeur de nitrure de titane, réactif, enrichi en ions, d'environ 500 °C. Son épaisseur est d'environ 3 µm et sa dureté est supérieure à 2.400 HV. La rugosité de l'état de surface est diminuée et la dureté améliorée: on obtient de très bonnes qualités de glissement et une résistance à l'usure importante. D'énormes avantages sont indiscutablement liés à l'utilisation universelle de ce revêtement.

Titanium-nitride (gold-yellow)

Titanium nitride coating is applied by the PVD process, a reactive ionization of vaporized "target" titanium at about 500 °C. The layer thickness is about 3 µm, its hardness more than 2.400 HV. Due to the reduced surface roughness and the extreme hardness, very good "slip" properties and a high wear resistance are achieved.

Nitruro di titanio (giallo oro)

Il rivestimento al nitruro di titanio avviene grazie ad un procedimento PVD, cioè all'evaporazione ionizzata del nitruro di titanio a 500 °C. Lo spessore di detto rivestimento è di ca. 3 micron mentre la durezza supera i 2.400 HV. Grazie alla minore rugosità della superficie ed all'elevata durezza è possibile raggiungere sia un migliore scorrimento sia una più elevata resistenza all'usura. Questo rivestimento è di impiego universale.

TiCN**Titan-Carbonitrid (blau)**

Titancarbonitrid ist härter als Titannitrid und hat einen niedrigeren Reibungskoeffizienten. Die Schichtdicke beträgt bei ca. 3 µm, die Härte mehr als 3.000 HV. Die Kombination von hoher Härte und Zähigkeit mit hoher Verschleißfestigkeit hat deutliche Vorzüge bei abrasiven Werkstoffen.

Carbonitrure de titane (bleu)

Le carbonitrure de titane est plus dur que le nitrure de titane et a un coefficient de frottement plus faible. Son épaisseur sur le taraud est d'environ 3 µm et sa dureté supérieure à 3.000 HV. La combinaison entre une dureté importante et une grande résistance à l'usure présente des avantages évidents pour l'usinage des matières abrasives.

Titanium carbonitride (blue)

TiCN is harder than TiN and has a lower friction coefficient. The layer thickness on taps is about 3 µm, its hardness more than 3.000 HV. The combination of high hardness and toughness with a high wear resistance has clear advantages at abrasive materials.

Carbonitruro di titanio (blu)

Lo spessore è di ca. 3 µm; la durezza è superiore a 3.000 HV. La combinazione di elevata durezza e plasticità con elevata resistenza all'usura comporta notevoli vantaggi nel caso di materiali abrasivi.

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TiAlN



Titan-Aluminiumnitrid (schwarz-grau)

Titan-Aluminiumnitrid-Beschichtung mit bis zu 3600 HV, hervorragender Oxidationsbeständigkeit und geringer Wärmeleitung zeigt besonders positive Eigenschaften bei hohen Schnittgeschwindigkeiten. Beim Gewindefräsen wird TiAlN hauptsächlich zur Bearbeitung von Stahl und Gusseisen eingesetzt.

Titanium aluminum nitride coating (black-grey)

Titanium aluminum nitride coating of up to 3600 HV, excellent oxidation resistance and low thermal conductivity is especially positive properties at high cutting speeds. Thread milling TiAlN is mainly used for machining steel and cast iron.

Revêtement de nitrure de titane aluminium (gris foncé)

Revêtement de nitrure de titane aluminium allant jusqu'à 3600 HV, une excellente résistance à l'oxydation et une faible conductivité thermique est particulièrement propriétés positives à des vitesses de coupe élevées. Fileter TiAlN est principalement utilisé pour usinage de l'acier et de la fonte.

Alluminio rivestimento di nitruro di titanio (grigio scuro)

Alluminio rivestimento di nitruro di titanio fino a 3600 HV, eccellente resistenza all'ossidazione e bassa conducibilità termica è proprietà particolarmente positive elevate velocità di taglio. Discussione fresatura TiAlN è utilizzato principalmente per la lavorazione di acciaio e ghisa.

OSM



Hartstoffschicht + metallhaltige Kohlenstoffdeckschicht Me-CH

Speziell für NORIS-Werkzeuge optimierte Beschichtungen für den Einsatz in hochfesten Stahlgüten.

Hard material layer + with metallized carbone cover layer Me-CH

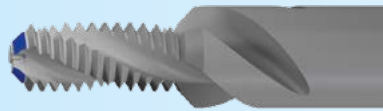
Coatings specially optimized for NORIS tools for the use with high-resistance steel qualities.

Couche de matériau dur.+ couche supérieure de carbone à teneur métallique Me-CH

Revêtements optimisés spécialement pour les outils NORIS pour des qualités d'acier à haute résistance.

Metallo duro + rivestimento al Carbonio

Speciale rivestimento ottimizzato per gli utensili NORIS per la lavorazione di materiali ad alta resistenza.

Mögliche Modifikationen an Gewindefräsern*Possible modifications on thread milling cutters**Modifications possibles des fraises à fileter**Possibili modifiche delle frese a filettare***Stirrfase (ohne oder mit Stirnschnitt)****geeignet für:**

- alle Typen SF und SFSE
- alle Typen BGF (Stirrfase am Bohrteil)

Bemerkung:

- Stirrfase für zirkulares Anfasen des Kernloches
- zusätzlicher Stirnschnitt für zirkuläres Planfräsen

Face chamfer (with or without cutting face)**suitable for:**

- all types SF and SFSE
- all types BGF (face chamfer on the drilling part)

Note:

- face chamfer for circular chamfering of the thread hole
- additional cutting face for circular face milling

Chanfrein frontal (avec/sans coupe frontale)*Appropriée pour:*

- tous les types SF et SFSE
- tous les types BGF (partie perçante avec chanfrein frontal)

Remarques:

- chanfrein frontal pour un chanfreinage circulaire de l'avant-trou
- coupe frontale additionnelle pour un fraisage plan circulaire

Svasatura frontale (con o senza tagliente frontale)*Adatta per:*

- tutti i tipi SF e SFSE
- tutti i tipi BGF (svasatura frontale sulla parte forante)

Nota:

- svasatura frontale per la svasatura ad interpolazione circolare del preforo
- tagliente frontale addizionale per la fresatura piana circolare (lamatura)

**Halsfreischliff****geeignet für:**

- alle Typen SF und SFSE (Senkfase entfällt)

Bemerkung:

- für größere Gewindetiefen (gesamte Gewindetiefe setzt sich aus zwei Fräsdurchläufen zusammen)
- für einen konstanten Schnittdruck wird die Frästeillänge und die Halslänge im Verhältnis 1:1 aufgeteilt!
- die Frästeillänge und der Versatz für einen zweiten Fräsdurchlauf sind immer ein ganzzahliges Vielfaches der Profilteilung

Recessed neck**suitable for:**

- all types SF and SFSE (no countersinking step)

Note:

- for larger thread depths (total thread depth is achieved by a double milling process)
- for constant cutting pressure, the thread part length and the neck length are arranged in a ratio of 1:1!
- the thread part length and the offset for a second milling process are always a whole-number multiple of the thread pitch

Dégagement arrière*Appropriée pour:*

- tous les types SF et SFSE (sans chanfrein)

Remarques:

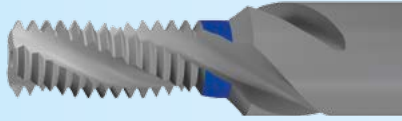
- pour des profondeurs filetées supérieures (fraisage de la profondeur filetée complète en deux opérations)
- lors du fraisage, pour assurer une pression de coupe constante, diviser en 2 parties égales la profondeur à fileter!
- la longueur de la partie fraisage et le déport pour une deuxième opération de fraisage sont toujours un multiple entier du pas

Rettifica del collo*Adatta per:*

- tutti i tipi SF e SFSE (senza svasatura)

Nota:

- per profondità filettate superiori alla lunghezza del tagliente. La fresatura della profondità filettata viene completata in due operazioni.
- rapporto fra la lunghezza della parte fresante e la lunghezza del collo 1:1 per assicurare una pressione di taglio costante!
- la lunghezza della parte fresante e lo spostamento per una seconda operazione di fresatura sono sempre un multiplo intero del passo

Mögliche Modifikationen an Gewindefräsern*Possible modifications on thread milling cutters**Modifications possibles des fraises à fileter**Possibili modifiche delle frese a filettare***Unvollständigen Gang entfernen****geeignet für:**

- alle Typen SF, SFSE und BGF

Bemerkung:

- am schaftseitigen Ende des Frästeils wird eine Stufe mit einer Länge von min. $1 \times P$ hinterschleifen
- bei entsprechender Eintauchtiefe wird beim Gewindefräsen der unvollständige, gratbehaftete Gewindefluss abgefräst (entfernt)

Suppression du filet incomplet**Appropriée pour:**

- tous les types SF, SFSE et BGF

Remarques:

- côté attachement, affûtage du diamètre sur une longueur de $1 \times P$ min.
- avec une profondeur de plongée correspondante, la fraise à fileter élimine le filet incomplet et supprime la bavure de sortie

Removal of incomplete thread**suitable for:**

- all types SF, SFSE and BGF

Note:

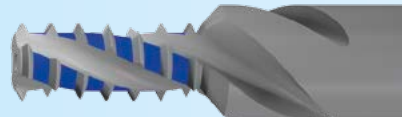
- at the rear end of the thread part, a step with a length of min. $1 \times P$ is relief-ground
- if the tool plunges to a correct depth during the thread milling process, the incomplete thread run-out with its burr is milled off (removed)

Eliminazione del filetto incompleto**Adatta per:**

- tutti i tipi SF, SFSE e BGF

Nota:

- rettifica a spoglia di un gradino ($1 \times P$ min.) al termine della parte filettata, in corrispondenza del gambo dell'utensile
- Inserendo la fresa a filettare all'esatta profondità, si elimina il filetto incompleto e la bava all'uscita del filetto stesso

AZR**Radial ausgesetzte Zahnreihen****geeignet für:**

- alle Typen SF, SFSE und BGF

Bemerkung:

- durch **AZR** werden die Seitenkräfte beim Gewindefräsen reduziert; die zyklisch fehlenden Gewindelücken werden durch zusätzliche zirkuläre Fräsumläufe gefräst

Eine nicht gezeigte Variante wäre auch **AZ**

(abwechselnd ausgesetzte Zähne)

Vorteil:

- zusätzliche zirkuläre Fräsumläufe entfallen; dadurch ergibt sich eine normale Einstichbreite am Bohrungsgrund bei BGF

Filets supprimés sur toutes les dents un pas sur deux**Appropriée pour:**

- tous les types SF, SFSE et BGF

Remarques:

- la modification **AZR** permet de réduire les forces latérales lors du fraisage du filet; les filets alternativement manquants sont fraisés par des tours additionnels de fraisage circulaires
- Une autre variante possible est **AZ** (filets alternés)

Avantage:

- des tours additionnels de fraisage circulaire ne sont plus nécessaires; cela garde la largeur d'attaque normale sur le fond du perçage des BGF

Radially alternating tooth rows**suitable for:**

- all types SF, SFSE and BGF

Note:

- **AZR** helps to reduce lateral forces in thread milling; the alternating missing gaps in the thread are produced by additional circular milling orbits

There is another variant, not shown here, called **AZ**

(alternating teeth in a staggered sequence)

Advantage:

- no additional circular orbits are necessary; due to this, there is a perfectly normal recess depth at the hole bottom, if BGF type tools are used

Filetti alternati radiali**Adatta per:**

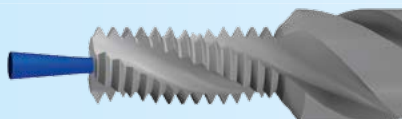
- tutti i tipi SF, SFSE e BGF

Nota:

- la modifica **AZR** permette di ridurre le forze laterali durante la fresatura di filetti; i filetti alternativemente mancanti vengono fresati con cicli di interpolazione circolare aggiuntivi
- Un'altra variante possibile è **AZ** (filetti alternati)

Vantaggio:

- Non sono più necessari cicli di interpolazione circolare aggiuntivi. Perciò, nel caso si utilizzino frese BGF, la gola sul fondo del filetto rimane inalterata.

Mögliche Modifikationen an Gewindefräsern*Possible modifications on thread milling cutters**Modifications possibles des fraises à fileter**Possibili modifiche delle frese a filettare***mKB****Kühlmittelbohrung****geeignet für:**

- alle Typen

Bemerkung:

- Werkzeuge mit durchgehender Kühlmittelbohrung zur Sicherstellung der Kühlschmierstoffzufuhr und zur Unterstützung der Spanabfuhr/Werkzeuge mit Kühlmittelbohrung und radialem Austritt in den Nuten werden mit mKBR bezeichnet

Lubrification par le centre**Appropriée pour:**

- tous les types

Remarques:

- Outils avec trou d'arrosage continu pour garantir l'arrosage et le dégagement de copeaux/les outils avec trou d'arrosage et sortie radiale dans les goujures sont désignés par mKBR

Internal coolant supply**suitable for:**

- all types

Note:

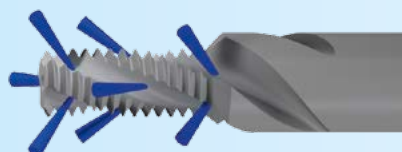
- Tools with internal coolant bore to assure the coolant supply and to support the chip discharge/tools with coolant bore and radial outlet in the grooves are named mKBR

Passaggio interno del lubrorefrigerante**Adatta per:**

- tutti i tipi

Nota:

- Utensili con passaggio di lubrorefrigerante interno a uscita frontale e sui taglienti per garantire una continua evacuazione del truciolo e mantenere le temperature basse. Gli utensili con passaggio di lubrorefrigerante sono chiamati KBR

mKBR**Kühlmittelbohrung mit Austritt in den Nuten****geeignet für:**

- alle Typen SF und SFSE

Bemerkung:

- stirnseitig verschlossene Axialbohrung für die Bearbeitung von Durchgangslöchern
- für maximale Stabilität des Frästeils sind die seitlichen Austrittsbohrungen axial versetzt angeordnet

Lubrification par le centre avec sortie dans les goujures**Appropriée pour:**

- tous les types SF et SFSE

Remarques:

- trou axial fermé en bout pour l'usinage de trous débouchant
- les trous de sortie latéraux sont situés à axes décalés pour assurer une rigidité maximale de la partie fraiseuse

Internal coolant supply exiting in the flutes**suitable for:**

- all types SF and SFSE

Note:

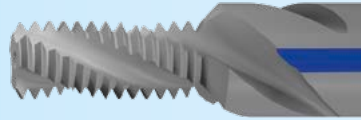
- axial coolant bore closed up at the tool face for the production of through hole threads
- for maximum stability of the cutting part, the lateral coolant holes are axially staggered

Passaggio interno del lubrorefrigerante assiale con fuoriuscita radiale nelle scanalature**Adatta per:**

- tutti i tipi SF e SFSE

Nota:

- il foro assiale viene chiuso frontalmente per la lavorazione di fori passanti
- i fori laterali di uscita sono spostati assialmente per assicurare la massima rigidità della parte fresante

Mögliche Modifikationen an Gewindefräsern*Possible modifications on thread milling cutters**Modifications possibles des fraises à fileter**Possibili modifiche delle frese a filettare***Schaftkühlnuten****geeignet für:**

- alle Typen SF, SFSE und BGF

Bemerkung:

- für die Bearbeitung von Durchgangslöchern
- zusätzlich oder ersatzweise zu mKB oder mKBR
- ggf. unterstützend zur Kühlung der Senkfase bei SFSE und BGF

Rainures de lubrification le long de la queue**Appropriée pour:**

- tous les types SF, SFSE et BGF

Remarques:

- pour l'usinage de trous débouchant
- en supplément ou remplacement de mKB ou mKBR
- pour un refroidissement additionnel du chanfrein des fraises SFSE et BGFs

Coolant grooves along the shank**suitable for:**

- all types SF, SFSE and BGF

Note:

- for the production of through hole threads
- in addition or as an alternative to mKB or mKBR
- possible support in the cooling of the countersinking step of SFSE and BGF type tools

Scanalature di lubrificazione lungo il gambo**Adatta per:**

- tutti i tipi SF, SFSE e BGF

Nota:

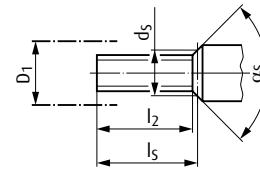
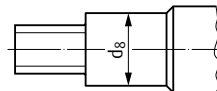
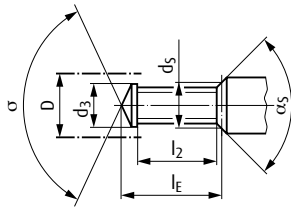
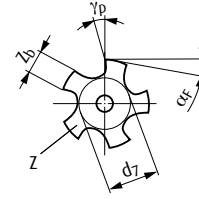
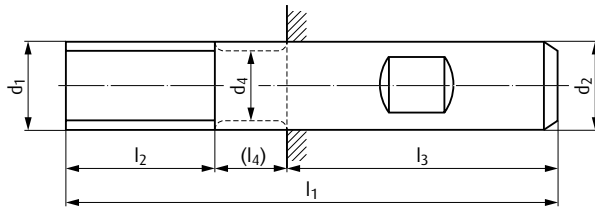
- per la lavorazione di fori passanti
- in aggiunta o in alternativa a mKB o mKBR
- per un maggior raffreddamento in fase di svasatura, delle frese SFSE e BGF

Benennungen und Definitionen am Gewindefräser

Thread milling cutter measurements

Caractéristiques et définitions des fraises à fileter

Caratteristiche e definizioni del frese a filettare



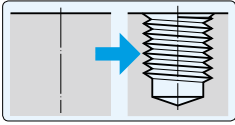
d ₁	Frästeildurchmesser	Diameter of milling part	Diamètre du filetage	Diametro della parte di fresatura
d ₂	Schaftdurchmesser	Shank diameter	Diamètre de queue	Gambo
d ₃	Bohrteildurchmesser	Diameter of drilling part	Diamètre du perçage	Diametro della parte di foratura
d ₄	Halsdurchmesser	Neck diameter	Diamètre d'étalonnage	Rastrematura del gambo
d ₇	Seelendurchmesser	Web diameter	Diamètre de l'âme	Diametro dell'anima
d ₈	Durchmesser Senk- oder Frässtufe	Diameter of countersinking part or plan milling part	Diamètre de chanfrein ou de partie à fraiser	Diametro della parte di svasatura o del piano di fresatura
d ₅	Senkdurchmesser	Diameter of countersinking part	Diamètre de chanfein	Diametro della svasatura
D	zu bearbeitender Gewindedurchmesser	Nominal thread diameter	Diamètre nominal du filet	Diametro nominale del filetto
l ₁	Gesamtlänge	Overall length	Longueur totale	Lunghezza totale
l ₂	Frästeillänge	Length of threading part	Longueur du filetage	Lunghezza del filetto
l ₃	Einspannlänge	Clamping length	Longueur de serrage	Lunghezza di serraggio
l ₄	Halslänge	Neck length	Longueur d'étalonnage	Lunghezza scarico
l _E	Bohrtiefe bis Erreichen von d ₅	Drilling depth	Profondeur de perçage	Profondità di foratura
l ₅	Tiefe bis Erreichen von d ₅	Countersinking depth	Profondeur de chanfrein	Profondità della svasatura
σ	Spitzenwinkel	Point angle	Angle de pointe	Angolo in punta
γ _p	Spanwinkel	Rake angle	Angle de coupe	Angolo di taglio
α _f	Freiwinkel	Clearance angle	Angle de dévissage	Angolo di spoglia
α _s	Ansenkwinkel	Countersink angle	Angle de chanfrein	Angolo della svasatura
Z _b	Zahnbreite	Width of land	Largeur de dent	Larghezza del dente
Z	Zähnezahl	Number of teeth	Nombre de dents	Numero di denti

Symbolbeschreibung

Description of the symbols

Description des symboles

Descrizione dei simboli

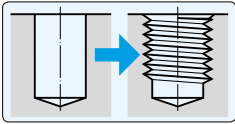


Nur ein Werkzeug für Kernloch, Senkung und Gewinde

Just one tool for core hole, countersink and thread

Seulement un outil pour le perçage, le taraudage et le chanfreinage

Un unico utensile per forare, svasare e filettare

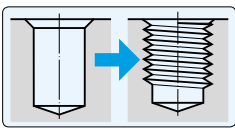


Nur ein Werkzeug für Senkung und Gewinde

Just one tool for countersink and thread

Seulement un outil pour le taraudage et le chanfreinage

Un unico utensile per svasare e filettare



Werkzeug fertigt ausschließlich das Gewinde

The tool only produces the thread

L'outil réalise uniquement le filet

L'utensile realizza solo la filettatura

v_c/f_z

v_c = Schnittgeschwindigkeit [m/min] / f_z = Vorschub pro Zahn [mm]

v_c = Cutting speed / f_z = Feed per tooth

v_c = Vitesse de coupe / f_z = Avance à la dent

v_c = Velocità di taglio / f_z = Avanzamento per dente

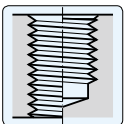


mit Kühlmittelbohrung

Internal coolant supply

Lubrification par le centre

Passaggio interno del lubrorefrigerante

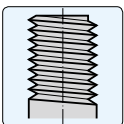


für Innengewinde

for internal threads

pour filetage intérieur

per filettature interne



für Außengewinde

for external threads

pour filetage extérieur

per filettature esterne

Fräsverfahren

Gleichlaufräsen

Eigenschaften:

- Werkzeugdrehrichtung „rechts“
- Werkzeugverfahrweg gegen den Uhrzeigersinn
- Steigung „aufwärts“

Rechtsgewinde

A

Beim Gleichlaufräsen ist die Spandicke beim Austritt aus dem Werkstück immer 0 ($h = 0$)

Gegenlaufräsen

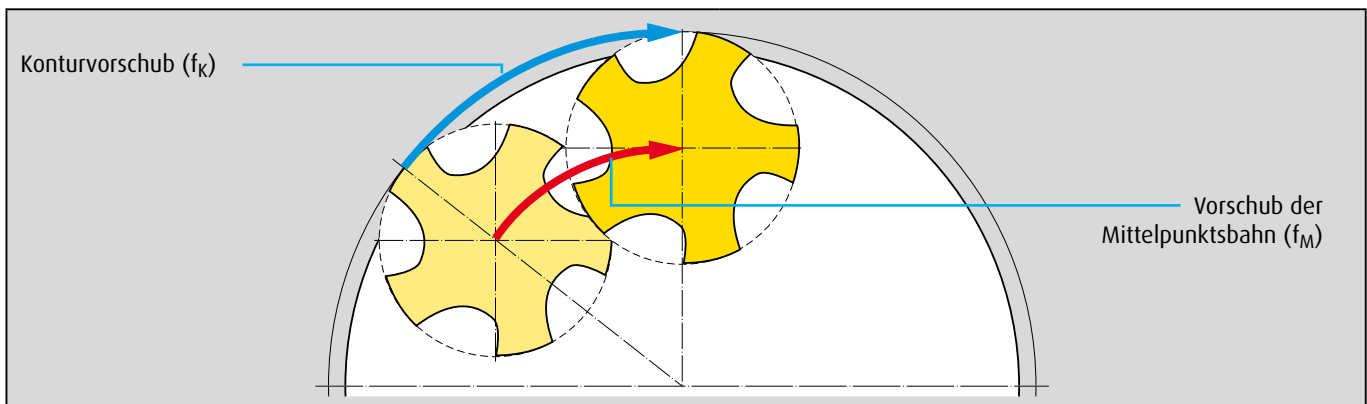
Eigenschaften:

- Werkzeugdrehrichtung „rechts“
- Werkzeugverfahrweg im Uhrzeigersinn
- Steigung „abwärts“

Rechtsgewinde

B

Beim Gegenlaufräsen ist die Spandicke beim Austritt aus dem Werkstück immer maximal ($h = \max$)



Konturvorschub f_K

$$f_K = n \cdot f_z \cdot Z \text{ [mm/min]}$$

D_w

D

f_K

Vorschub der Mittelpunktsbahn f_M

$$f_M = \frac{f_K \cdot (D - D_w)}{D} \text{ [mm/min]}$$

D_w

D_m

D

f_M

f_K

- D_w = Wirkdurchmesser [mm]
- n = Drehzahl [min^{-1}]
- f_z = Vorschub pro Zahn [mm]
- Z = Zähnezahl am Werkzeug (radial)
- D = Nenndurchmesser Gewinde = Durchmesser Außenkontur [mm]
- D_m = Durchmesser Mittelpunktsbahn ($D - D_w$) [mm]

Milling methods

Climb milling

Properties:

- Tool rotation direction "clockwise"
- Tool moves counter-clockwise
- Pitch "upwards"

Right-hand thread

A

Climb milling is always when the cutting edge goes out of the material with a chip thickness $h = 0$

Conventional milling

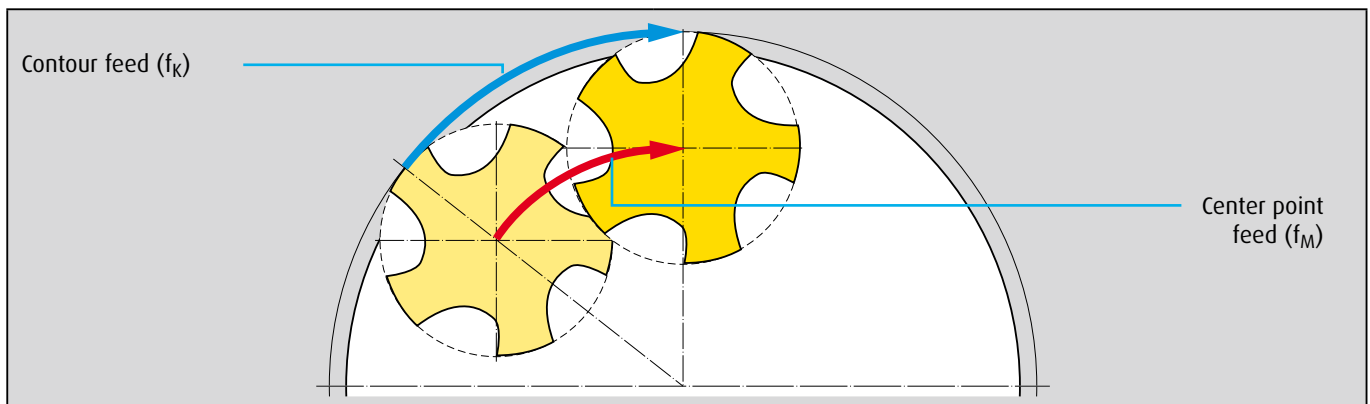
Properties:

- Tool rotation direction "clockwise"
- Tool moves clockwise
- Pitch "downwards"

Right-hand thread

B

Conventional milling is always when the cutting edge goes out of the material with a chip thickness $h = \max$



Contour feed f_K

$$f_K = n \cdot f_z \cdot Z \quad [\text{mm/min}]$$

D_w

D

f_K

Center point feed f_M

$$f_M = \frac{f_K \cdot (D - D_w)}{D} \quad [\text{mm/min}]$$

D_w

D_m

D

f_K

f_M

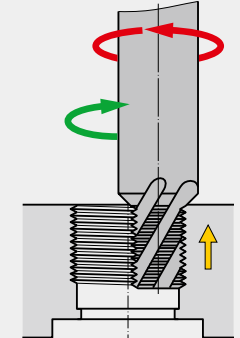
- D_w = Tool diameter [mm]
- n = RPM [min^{-1}]
- f_z = Feed per tooth [mm]
- Z = Number of teeth on tool (radial)
- D = Nominal diameter of thread = Diameter of external contour [mm]
- D_m = Diameter of the center point ($D - D_w$) [mm]

Procédés de fraisage

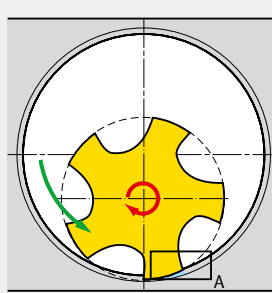
Fraisage en avalant

Propriétés:

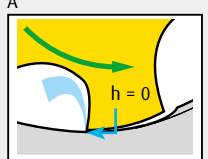
- Sens de rotation de l'outil «à droite»
- Course de l'outil sens anti-horaire pas vers le haut
- Filetage en remontant



Filetage droite



A

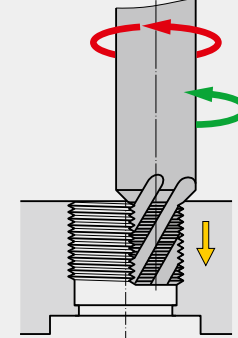


Lors du fraisage dans le sens de l'avance l'épaisseur du copeau à la sortie de la pièce est toujours ($h = 0$)

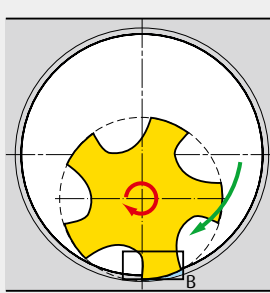
Fraisage en opposition

Propriétés:

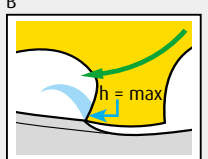
- Sens de rotation de l'outil «à droite»
- Course de l'outil sens horaire pas vers le bas
- Filetage en descendant



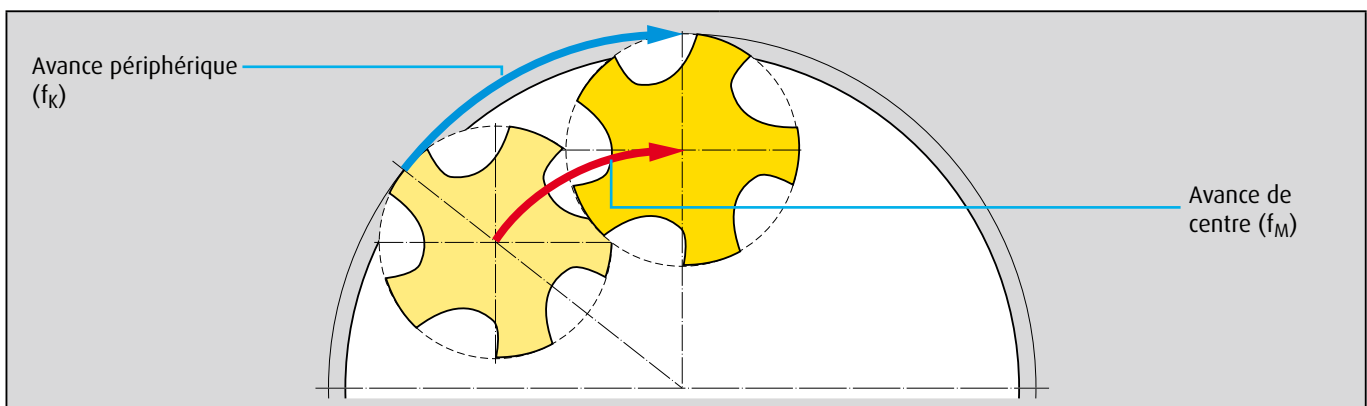
Filetage droite



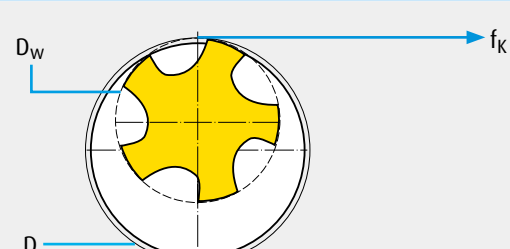
B



Lors du fraisage en sens contraire l'épaisseur du copeau à la sortie de la pièce est toujours maximale ($h = \max$)



Avance périphérique f_k

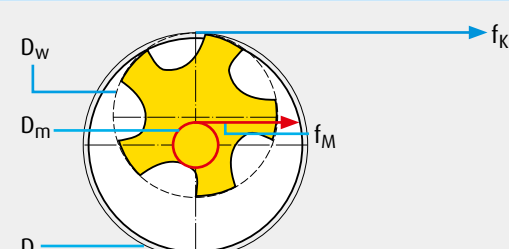
$$f_k = n \cdot f_z \cdot Z \text{ [mm/min]}$$


D_w

D

f_k

Avance de centre f_M

$$f_M = \frac{f_k \cdot (D - D_w)}{D} \text{ [mm/min]}$$


D_w

D_m

D

f_k

f_M

- D_w = diamètre actif [mm]
- n = vitesse de rotation [min^{-1}]
- f_z = avance par dent [mm]
- Z = nombre de dents de l'outil (radial)
- D = diamètre nominal du filet = diamètre du périphérique extérieur [mm]
- D_m = diamètre centre ($D - D_w$) [mm]

Procedimenti di fresatura

Fresatura concorde

Proprietà:

- Senso di rotazione dell'utensile "a destra"
- Corsa dell'utensile senso antiorario
- passo verso l'alto

Filettatura destra

Nella fresatura concorde lo spessore del truciolo sull'uscita del pezzo è sempre 0 ($h = 0$)

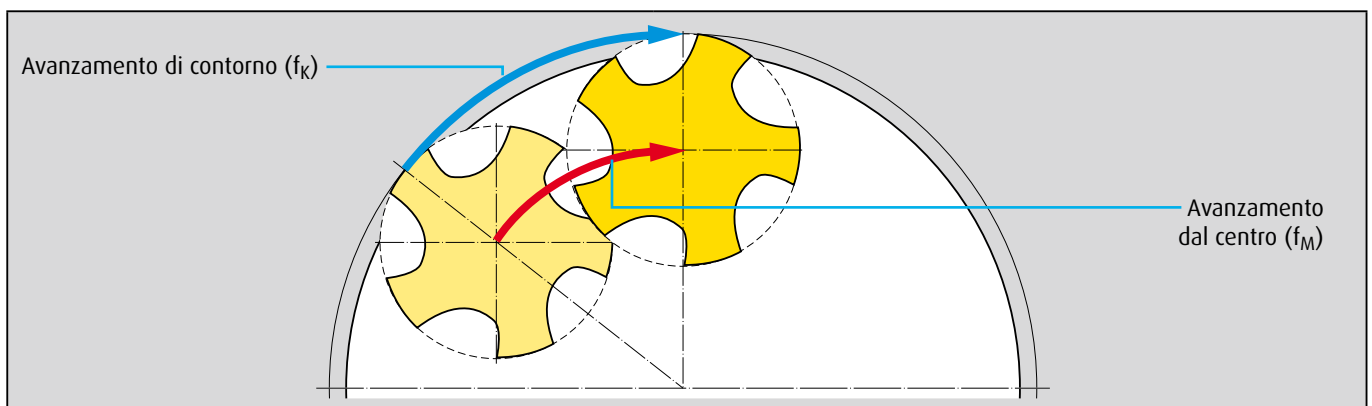
Fresatura discorde

Proprietà:

- Senso di rotazione dell'utensile "a destra"
- Corsa dell'utensile senso orario
- passo verso il basso

Filettatura destra

Nella fresatura discorde lo spessore del truciolo sull'uscita del pezzo è sempre massimo ($h = \max$)



Avanzamento di contorno f_k

$$f_k = n \cdot f_z \cdot Z \text{ [mm/min]}$$

D_w

D

f_k

Avanzamento dal centro f_m

$$f_m = \frac{f_k \cdot (D - D_w)}{D} \text{ [mm/min]}$$

D_w

D_m

D

f_k

f_m

- D_w = diametro attivo [mm]
- n = velocità di rotazione [min^{-1}]
- f_z = avanzamento per dente [mm]
- Z = numero di denti dell'utensile (radiale)
- D = diametro nominale della filettatura = diametro del contorno esterno [mm]
- D_m = diametro centro ($D - D_w$) [mm]



Metrisches ISO-Gewinde (Regelgewinde)

Grenzmaße – Innengewinde
 DIN 13-20 (Auszug)
 Toleranzfeld 4H, 5H, 6H, 7H

Filetage Métrique ISO (filetage à pas normaux)

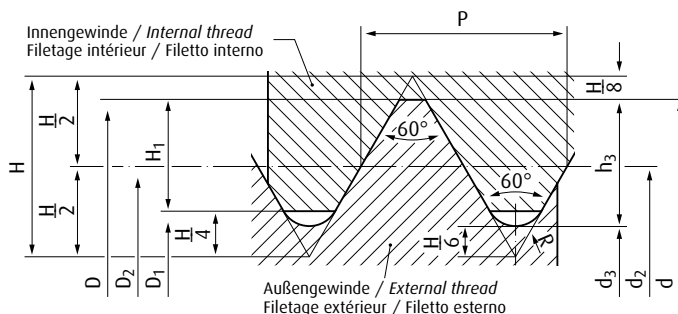
Dimensions limitées – Filetage intérieur
 DIN 13-20 (Extrait)
 Champ de tolérance 4H, 5H, 6H, 7H

ISO Metric threads (coarse threads)

Limit dimensions – Internal thread
 DIN 13-20 (Excerpt)
 Tolerance zone 4H, 5H, 6H, 7H

Filettatura ISO Metrica (filettatura grossa)

Dimensione, limite – Filettatura interna
 DIN 13-20 (Estratto)
 Campo di tolleranza 4H, 5H, 6H, 7H



Gewinde- Nenndurchm. <i>Nominal thread diameter</i> <i>Diamètre nominal du filet</i> <i>Dia. nominale del filetto</i>	Steigung <i>Pitch</i> <i>Pas</i> <i>Passo</i>	Außen- durchmesser <i>Major diameter</i> <i>Diamètre extérieur</i> <i>Diametro esterno</i>	Flankendurchmesser <i>Pitch diameter</i> <i>Diamètre sur flanc</i> <i>Diametro medio</i>					Kerndurchmesser <i>Minor diameter</i> <i>Diamètre de noyau</i> <i>Diametro del nocciolo</i>							
			D	P	D min.	D ₂ min.	D ₂ max.				D ₁ min.	D ₁ max.			
							4H	5H	6H	7H		4H	5H	6H	7H
M 1	0,25	1,000	0,838	0,883	0,894	-	-	0,729	0,774	0,785	-	-			
M 1,1	0,25	1,100	0,938	0,983	0,994	-	-	0,829	0,874	0,885	-	-			
M 1,2	0,25	1,200	1,038	1,083	1,094	-	-	0,929	0,974	0,985	-	-			
M 1,4	0,3	1,400	1,205	1,253	1,265	1,280	-	1,075	1,128	1,142	1,160	-			
M 1,6	0,35	1,600	1,373	1,426	1,440	1,458	-	1,221	1,284	1,301	1,321	-			
M 1,8	0,35	1,800	1,573	1,626	1,640	1,658	-	1,421	1,484	1,501	1,521	-			
M 2	0,4	2,000	1,740	1,796	1,811	1,830	-	1,567	1,638	1,657	1,679	-			
M 2,2	0,45	2,200	1,908	1,968	1,983	2,003	-	1,713	1,793	1,813	1,838	-			
M 2,5	0,45	2,500	2,208	2,268	2,283	2,303	-	2,013	2,093	2,113	2,138	-			
M 3	0,5	3,000	2,675	2,738	2,755	2,775	2,800	2,459	2,549	2,571	2,599	2,639			
M 3,5	0,6	3,500	3,110	3,181	3,200	3,222	3,250	2,850	2,950	2,975	3,010	3,050			
M 4	0,7	4,000	3,545	3,620	3,640	3,663	3,695	3,242	3,354	3,382	3,422	3,466			
M 4,5	0,75	4,500	4,013	4,088	4,108	4,131	4,163	3,688	3,806	3,838	3,878	3,924			
M 5	0,8	5,000	4,480	4,560	4,580	4,605	4,640	4,134	4,259	4,294	4,334	4,384			
M 6	1	6,000	5,350	5,445	5,468	5,500	5,540	4,917	5,067	5,107	5,153	5,217			
M 7	1	7,000	6,350	6,445	6,468	6,500	6,540	5,917	6,067	6,107	6,153	6,217			
M 8	1,25	8,000	7,188	7,288	7,313	7,348	7,388	6,647	6,817	6,859	6,912	6,982			
M 9	1,25	9,000	8,188	8,288	8,313	8,348	8,388	7,647	7,817	7,859	7,912	7,982			
M 10	1,5	10,000	9,026	9,138	9,166	9,206	9,250	8,376	8,566	8,612	8,676	8,751			
M 11	1,5	11,000	10,026	10,138	10,166	10,206	10,250	9,376	9,566	9,612	9,676	9,751			
M 12	1,75	12,000	10,863	10,988	11,023	11,063	11,113	10,106	10,318	10,371	10,441	10,531			
M 14	2	14,000	12,701	12,833	12,871	12,913	12,966	11,835	12,071	12,135	12,210	12,310			
M 16	2	16,000	14,701	14,833	14,871	14,913	14,966	13,835	14,071	14,135	14,210	14,310			
M 18	2,5	18,000	16,376	16,516	16,556	16,600	16,656	15,294	15,574	15,649	15,744	15,854			
M 20	2,5	20,000	18,376	18,516	18,556	18,600	18,656	17,294	17,574	17,649	17,744	17,854			
M 22	2,5	22,000	20,376	20,516	20,556	20,600	20,656	19,294	19,574	19,649	19,744	19,854			
M 24	3	24,000	22,051	22,221	22,263	22,316	22,386	20,752	21,067	21,152	21,252	21,382			
M 27	3	27,000	25,051	25,221	25,263	25,316	25,386	23,752	24,067	24,152	24,252	24,382			
M 30	3,5	30,000	27,727	27,907	27,951	28,007	28,082	26,211	26,566	26,661	26,771	26,921			
M 33	3,5	33,000	30,727	30,907	30,951	31,007	31,082	29,211	29,566	29,661	29,771	29,921			
M 36	4	36,000	33,402	33,592	33,638	33,702	33,777	31,670	32,045	32,145	32,270	32,420			
M 39	4	39,000	36,402	36,592	36,638	36,702	36,777	34,670	35,045	35,145	35,270	35,420			
M 42	4,5	42,000	39,077	39,277	39,327	39,392	39,477	37,129	37,554	37,659	37,799	37,979			
M 45	4,5	45,000	42,077	42,277	42,327	42,392	42,477	40,129	40,554	40,659	40,799	40,979			
M 48	5	48,000	44,752	44,964	45,017	45,087	45,177	42,587	43,037	43,147	43,297	43,487			
M 52	5	52,000	48,752	48,964	49,017	49,087	49,177	46,587	47,037	47,147	47,297	47,487			
M 56	5,5	56,000	52,428	52,652	52,708	52,783	52,878	50,046	50,521	50,646	50,796	50,996			
M 60	5,5	60,000	56,428	56,652	56,708	56,783	56,878	54,046	54,521	54,646	54,796	54,996			

Maße in mm / Dimensions in mm / Dimensions en mm / Dimensioni in mm

Metrisches ISO-Feingewinde

Grenzmaße – Innengewinde
DIN 13-21, 13-22, 13-23 (Auszug)
Toleranzfeld 4H, 5H, 6H, 7H

Filetage Métrique ISO à pas fin

Dimensions limitées – Filetage intérieur
DIN 13-21, 13-22, 13-23 (Extrait)
Champ de tolérance 4H, 5H, 6H, 7H

ISO Metric fine threads

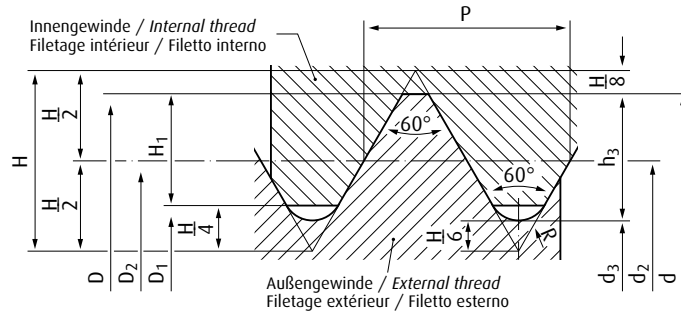
Limit dimensions – Internal thread
DIN 13-21, 13-22, 13-23 (Excerpt)
Tolerance zone 4H, 5H, 6H, 7H

Filettatura ISO Metrica a passo fine

Dimensione, limite – Filettatura interna
DIN 13-21, 13-22, 13-23 (Estratto)
Campo di tolleranza 4H, 5H, 6H, 7H

Gewinde- Nenndurchm. <i>Nominal thread diameter</i> <i>Diamètre nominal du filet</i> <i>Dia. nominale del filetto</i>	Steigung <i>Pitch</i> <i>Pas</i> <i>Passo</i>	Außen- durchmesser <i>Major diameter</i> <i>Diamètre extérieur</i> <i>Diametro esterno</i>	Flankendurchmesser <i>Pitch diameter</i> <i>Diamètre sur flanc</i> <i>Diametro medio</i>					Kerndurchmesser <i>Minor diameter</i> <i>Diamètre de noyau</i> <i>Diametro del nocciolo</i>							
			D	P	D min.	D ₂ min.	D ₂ max.				D ₁ min.	D ₁ max.			
							4H	5H	6H	7H		4H	5H	6H	7H
M 2,5 x 0,35	0,35	2,500	2,273	2,326	2,340	2,358	-	2,121	2,184	2,201	2,221	-			
M 3 x 0,35	0,35	3,000	2,773	2,829	2,844	2,863	-	2,621	2,684	2,701	2,721	-			
M 3,5 x 0,35	0,35	3,500	3,273	3,329	3,344	3,363	-	3,121	3,184	3,201	3,221	-			
M 4 x 0,35	0,35	4,000	3,773	3,829	3,844	3,863	-	3,621	3,684	3,701	3,721	-			
M 4 x 0,5	0,5	4,000	3,675	3,738	3,755	3,775	3,800	3,459	3,549	3,571	3,599	3,639			
M 4,5 x 0,5	0,5	4,500	4,175	4,238	4,255	4,275	4,300	3,959	4,049	4,071	4,099	4,139			
M 5 x 0,5	0,5	5,000	4,675	4,738	4,755	4,775	4,800	4,459	4,549	4,571	4,599	4,639			
M 6 x 0,5	0,5	6,000	5,675	5,746	5,765	5,787	-	5,459	5,549	5,571	5,599	5,639			
M 6 x 0,75	0,75	6,000	5,513	5,598	5,619	5,645	5,683	5,188	5,306	5,338	5,378	5,424			
M 7 x 0,75	0,75	7,000	6,513	6,598	6,619	6,645	6,683	6,188	6,306	6,338	6,378	6,424			
M 8 x 0,5	0,5	8,000	7,675	7,746	7,765	7,787	-	7,459	7,549	7,571	7,599	7,639			
M 8 x 0,75	0,75	8,000	7,513	7,598	7,619	7,645	7,683	7,188	7,306	7,338	7,378	7,424			
M 8 x 1	1	8,000	7,350	7,445	7,468	7,500	7,540	6,917	7,067	7,107	7,153	7,217			
M 9 x 1	1	9,000	8,350	8,445	8,468	8,500	8,540	7,917	8,067	8,107	8,153	8,217			
M 10 x 0,75	0,75	10,000	9,513	9,598	9,619	9,645	9,683	9,188	9,306	9,338	9,378	9,424			
M 10 x 1	1	10,000	9,350	9,445	9,468	9,500	9,540	8,917	9,067	9,107	9,153	9,217			
M 10 x 1,25	1,25	10,000	9,188	9,288	9,313	9,348	9,388	8,647	8,817	8,859	8,912	8,982			
M 11 x 1	1	11,000	10,350	10,445	10,468	10,500	10,540	9,917	10,067	10,107	10,153	10,217			
M 12 x 1	1	12,000	11,350	11,450	11,475	11,510	11,550	10,917	11,067	11,107	11,153	11,217			
M 12 x 1,25	1,25	12,000	11,188	11,300	11,328	11,368	11,412	10,647	10,817	10,859	10,912	10,982			
M 12 x 1,5	1,5	12,000	11,026	11,144	11,176	11,216	11,262	10,376	10,566	10,612	10,676	10,751			
M 13 x 1	1	13,000	12,350	12,450	12,475	12,510	12,550	11,917	12,067	12,107	12,153	12,217			
M 14 x 1	1	14,000	13,350	13,450	13,475	13,510	13,550	12,917	13,067	13,107	13,153	13,217			
M 14 x 1,25	1,25	14,000	13,188	13,300	13,328	13,368	13,412	12,647	12,817	12,859	12,912	12,982			
M 14 x 1,5	1,5	14,000	13,026	13,144	13,176	13,216	13,262	12,376	12,566	12,612	12,676	12,751			
M 15 x 1	1	15,000	14,350	14,450	14,475	14,510	14,550	13,917	14,067	14,107	14,153	14,217			
M 15 x 1,5	1,5	15,000	14,026	14,144	14,176	14,216	14,262	13,376	13,566	13,612	13,676	13,751			
M 16 x 1	1	16,000	15,350	15,450	15,475	15,510	15,550	14,917	15,067	15,107	15,153	15,217			
M 16 x 1,5	1,5	16,000	15,026	15,144	15,176	15,216	15,262	14,376	14,566	14,612	14,676	14,751			
M 18 x 1	1	18,000	17,350	17,450	17,475	17,510	17,550	16,917	17,067	17,107	17,153	17,217			
M 18 x 1,5	1,5	18,000	17,026	17,144	17,176	17,216	17,262	16,376	16,566	16,612	16,676	16,751			
M 18 x 2	2	18,000	16,701	16,833	16,871	16,913	16,966	15,835	16,071	16,135	16,210	16,310			
M 20 x 1	1	20,000	19,350	19,450	19,475	19,510	19,550	18,917	19,067	19,107	19,153	19,217			
M 20 x 1,5	1,5	20,000	19,026	19,144	19,176	19,216	19,262	18,376	18,566	18,612	18,676	18,751			
M 20 x 2	2	20,000	18,701	18,833	18,871	18,913	18,966	17,835	18,071	18,135	18,210	18,310			
M 22 x 1	1	22,000	21,350	21,450	21,475	21,510	21,550	20,917	21,067	21,107	21,153	21,217			
M 22 x 1,5	1,5	22,000	21,026	21,144	21,176	21,216	21,262	20,376	20,566	20,612	20,676	20,751			
M 22 x 2	2	22,000	20,701	20,833	20,871	20,913	20,966	19,835	20,071	20,135	20,210	20,310			
M 24 x 1	1	24,000	23,350	23,456	23,482	23,520	23,562	22,918	23,068	23,108	23,154	23,218			
M 24 x 1,5	1,5	24,000	23,026	23,151	23,186	23,226	23,276	22,376	22,566	22,612	22,676	22,751			
M 24 x 2	2	24,000	22,701	22,841	22,881	22,925	22,981	21,835	22,071	22,135	22,210	22,310			
M 25 x 1,5	1,5	25,000	24,026	24,151	24,186	24,226	24,276	23,376	23,566	23,612	23,676	23,751			
M 26 x 1,5	1,5	26,000	25,026	25,151	25,186	25,226	25,276	24,376	24,566	24,612	24,676	24,751			
M 27 x 1,5	1,5	27,000	26,026	26,151	26,186	26,226	26,276	25,376	25,566	25,612	25,676	25,751			
M 27 x 2	2	27,000	25,701	25,841	25,881	25,925	25,981	24,835	25,071	25,135	25,210	25,310			
M 28 x 1,5	1,5	28,000	27,026	27,151	27,186	27,226	27,276	26,376	26,566	26,612	26,676	26,751			
M 30 x 1	1	30,000	29,350	29,456	29,482	29,520	29,562	28,918	29,068	29,108	29,154	29,218			
M 30 x 1,5	1,5	30,000	29,026	29,151	29,186	29,226	29,276	28,376	28,566	28,612	28,676	28,751			
M 30 x 2	2	30,000	28,701	28,841	28,881	28,925	28,981	27,835	28,071	28,135	28,210	28,310			

Maße in mm / Dimensions in mm / Dimensiones en mm / Dimensioni in mm



Gewinde- Nenndurchm. <i>Nominal thread diameter</i> <i>Diamètre nominal du filet</i> <i>Dia. nominale del filetto</i>	Steigung <i>Pitch</i> <i>Pas</i> <i>Passo</i>	Außen- durchmesser <i>Major diameter</i> <i>Diamètre extérieur</i> <i>Diametro esterno</i>	Flankendurchmesser <i>Pitch diameter</i> <i>Diamètre sur flanc</i> <i>Diametro medio</i>					Kerndurchmesser <i>Minor diameter</i> <i>Diamètre de noyau</i> <i>Diametro del nocciolo</i>						
			D	P	D min.	D ₂ max.				D ₁ min.	D ₁ max.			
						4H	5H	6H	7H		4H	5H	6H	7H
M 32 x 1,5	1,5	32,000	31,026	31,151	31,186	31,226	31,276	30,376	30,566	30,612	30,676	30,751		
M 33 x 1,5	1,5	33,000	32,026	32,151	32,186	32,226	32,276	31,376	31,566	31,612	31,676	31,751		
M 33 x 2	2	33,000	31,701	31,841	31,881	31,925	31,981	30,835	31,071	31,135	31,210	31,310		
M 34 x 1,5	1,5	34,000	33,026	33,151	33,186	33,226	33,276	32,376	32,566	32,612	32,676	32,751		
M 35 x 1,5	1,5	35,000	34,026	34,151	34,186	34,226	34,276	33,376	33,566	33,612	33,676	33,751		
M 36 x 1,5	1,5	36,000	35,026	35,151	35,186	35,226	35,276	34,376	34,566	34,612	34,676	34,751		
M 36 x 2	2	36,000	34,701	34,841	34,881	34,925	34,981	33,835	34,071	34,135	34,210	34,310		
M 36 x 3	3	36,000	34,051	34,221	34,263	34,316	34,386	32,753	33,068	33,153	33,253	33,383		
M 38 x 1,5	1,5	38,000	37,026	37,151	37,186	37,226	37,276	36,376	36,566	36,612	36,676	36,751		
M 39 x 2	2	39,000	37,701	37,841	37,881	37,925	37,981	36,835	37,071	37,135	37,210	37,310		
M 39 x 3	3	39,000	37,051	37,221	37,263	37,316	37,386	35,753	36,068	36,153	36,253	36,383		
M 40 x 1,5	1,5	40,000	39,026	39,151	39,186	39,226	39,276	38,376	38,566	38,612	38,676	38,751		
M 40 x 2	2	40,000	38,701	38,841	38,881	38,925	38,981	37,835	38,071	38,135	38,210	38,310		
M 40 x 3	3	40,000	38,051	38,221	38,263	38,316	38,386	36,753	37,068	37,153	37,253	37,383		
M 42 x 1,5	1,5	42,000	41,026	41,151	41,186	41,226	41,276	40,376	40,566	40,612	40,676	40,751		
M 42 x 2	2	42,000	40,701	40,841	40,881	40,925	40,981	39,835	40,071	40,135	40,210	40,310		
M 42 x 3	3	42,000	40,051	40,221	40,263	40,316	40,386	38,753	39,068	39,153	39,253	39,383		
M 45 x 1,5	1,5	45,000	44,026	44,158	44,196	44,238	44,238	43,376	43,566	43,612	43,676	43,751		
M 45 x 2	2	45,000	43,701	43,851	43,891	43,937	43,937	42,835	43,071	43,135	43,210	43,310		
M 45 x 3	3	45,000	43,051	43,231	43,275	43,331	43,331	41,753	42,068	42,153	42,253	42,383		
M 48 x 1,5	1,5	48,000	47,026	47,158	47,196	47,238	47,238	46,376	46,566	46,612	46,676	46,751		
M 48 x 2	2	48,000	46,701	46,851	46,891	46,937	46,937	45,835	46,071	46,135	46,210	46,310		
M 48 x 3	3	48,000	46,051	46,231	46,275	46,331	46,331	44,753	45,068	45,153	45,253	45,383		
M 50 x 1,5	1,5	50,000	49,026	49,158	49,196	49,238	49,238	48,376	48,566	48,612	48,676	48,751		
M 50 x 2	2	50,000	48,701	48,851	48,891	48,937	48,937	47,835	48,071	48,135	48,210	48,310		
M 50 x 3	3	50,000	48,051	48,231	48,275	48,331	48,331	46,753	47,068	47,153	47,253	47,383		
M 52 x 1,5	1,5	52,000	51,026	51,158	51,196	51,238	51,238	50,376	50,566	50,612	50,676	50,751		
M 52 x 2	2	52,000	50,701	50,851	50,891	50,937	50,937	49,835	50,071	50,135	50,210	50,310		
M 52 x 3	3	52,000	50,051	50,231	50,275	50,331	50,331	48,753	49,068	49,153	49,253	49,383		
M 56 x 2	2	56,000	54,701	54,851	54,891	54,937	54,937	53,835	54,071	54,135	54,210	54,310		
M 56 x 3	3	56,000	54,051	54,231	54,275	54,331	54,331	52,753	53,068	53,153	53,253	53,383		
M 56 x 4	4	56,000	53,402	53,602	53,652	53,717	53,717	51,670	52,045	52,145	52,270	52,420		
M 60 x 4	4	60,000	57,402	57,602	57,652	57,717	57,717	55,670	56,045	56,145	56,270	56,420		
M 64 x 3	3	64,000	62,051	62,231	62,275	62,331	62,331	60,753	61,068	61,153	61,253	61,383		
M 64 x 4	4	64,000	61,402	61,602	61,652	61,717	61,717	59,670	60,045	60,145	60,270	60,420		
M 68 x 4	4	68,000	65,402	65,602	65,652	65,717	65,717	63,670	64,045	64,145	64,270	64,420		
M 72 x 3	3	72,000	70,051	70,231	70,275	70,331	70,331	68,753	69,068	69,153	69,253	69,383		
M 72 x 4	4	72,000	69,402	69,602	69,652	69,717	69,717	67,670	68,045	68,145	68,270	68,420		
M 72 x 6	6	72,000	68,103	68,339	68,403	68,478	68,478	65,505	66,005	66,135	66,305	66,505		
M 76 x 3	3	76,000	74,051	74,231	74,275	74,331	74,331	72,753	73,068	73,153	73,253	73,383		
M 76 x 4	4	76,000	73,402	73,602	73,652	73,717	73,717	71,670	72,045	72,145	72,270	72,420		
M 76 x 6	6	76,000	72,103	72,339	72,403	72,478	72,478	69,505	70,005	70,135	70,305	70,505		
M 80 x 2	2	80,000	78,701	78,851	78,891	78,937	78,937	77,835	78,071	78,135	78,210	78,310		
M 80 x 4	4	80,000	77,402	77,602	77,652	77,717	77,717	75,670	76,045	76,145	76,270	76,420		
M 80 x 6	6	80,000	76,103	76,339	76,403	76,478	76,478	73,505	74,005	74,135	74,305	74,505		
M 85 x 4	4	85,000	82,402	82,602	82,652	82,717	82,717	80,670	81,045	81,145	81,270	81,420		
M 85 x 6	6	85,000	81,103	81,339	81,403	81,478	81,478	78,505	79,005	79,135	79,305	79,505		
M 90 x 4	4	90,000	87,402	87,602	87,652	87,717	87,717	85,670	86,045	86,145	86,270	86,420		
M 90 x 6	6	90,000	86,103	86,339	86,403	86,478	86,478	83,505	84,005	84,135	84,305	84,505		

Maße in mm / Dimensions in mm / Dimensions en mm / Dimensioni in mm

Unified Grobgewinde UNC

Grenzmaße - Innengewinde
ASME-B1.1 (Auszug)
Toleranzfeld 1B, 2B, 3B

Filetage américain Unified UNC

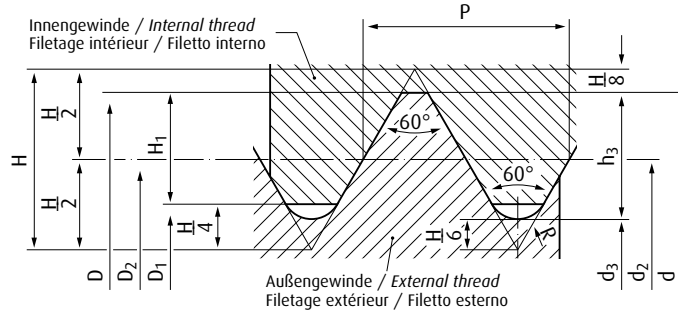
Dimensions limitées - Filetage intérieur
ASME-B1.1 (Extrait)
Champ de tolérance 1B, 2B, 3B

Unified coarse threads UNC

Limit dimensions - Internal thread
ASME-B1.1 (Excerpt)
Tolerance zone 1B, 2B, 3B

Filettatura Unified a passo grosso UNC

Dimensione, limite - Filettatura interna
ASME-B1.1 (Estratto)
Campo di tolleranza 1B, 2B, 3B



Gewinde-Nenndurchm. <i>Nominal thread diameter</i> <i>Diamètre nominal du filet</i> <i>Dia. nominale del filetto</i>	Steigung <i>Pitch</i> <i>Pas</i> <i>Passo</i>	Außen-durchmesser <i>Major diameter</i> <i>Diamètre extérieur</i> <i>Diametro esterno</i>	Flankendurchmesser <i>Pitch diameter</i> <i>Diamètre sur flanc</i> <i>Diametro medio</i>				Kerndurchmesser <i>Minor diameter</i> <i>Diamètre de noyau</i> <i>Diametro del nocciolo</i>					
			D - P/1"	P (mm)	D min.	D ₂ min.	D ₂ max.			D ₁ min.	D ₁ max.	
							3B	2B	1B		3B	2B, 1B
Nr. 1 - 64	0,397	1,854	1,598	1,646	1,664	-	1,425	1,582	1,582			
Nr. 2 - 56	0,454	2,184	1,890	1,943	1,961	-	1,694	1,872	1,872			
Nr. 3 - 48	0,529	2,515	2,172	2,228	2,248	-	1,941	2,146	2,146			
Nr. 4 - 40	0,635	2,845	2,433	2,494	2,517	-	2,156	2,385	2,385			
Nr. 5 - 40	0,635	3,175	2,764	2,827	2,847	-	2,487	2,697	2,697			
Nr. 6 - 32	0,794	3,505	2,990	3,058	3,084	-	2,647	2,896	2,896			
Nr. 8 - 32	0,794	4,166	3,650	3,721	3,746	-	3,307	3,528	3,531			
Nr. 10 - 24	1,058	4,826	4,138	4,219	4,247	-	3,680	3,950	3,962			
Nr. 12 - 24	1,058	5,486	4,798	4,882	4,910	-	4,341	4,590	4,597			
1/4 - 20	1,27	6,350	5,524	5,616	5,648	5,710	4,976	5,250	5,258			
5/16 - 18	1,411	7,938	7,021	7,120	7,155	7,221	6,411	6,680	6,731			
3/8 - 16	1,588	9,525	8,494	8,603	8,639	8,710	7,805	8,082	8,153			
7/16 - 14	1,814	11,112	9,934	10,051	10,089	10,168	9,149	9,441	9,550			
1/2 - 13	1,954	12,700	11,430	11,552	11,595	11,676	10,584	10,881	11,024			
9/16 - 12	2,117	14,288	12,913	13,043	13,086	13,172	11,996	12,301	12,446			
5/8 - 11	2,309	15,875	14,376	14,514	14,559	14,648	13,376	13,693	13,868			
3/4 - 10	2,54	19,050	17,399	17,544	17,595	17,691	16,299	16,624	16,840			
7/8 - 9	2,822	22,225	20,391	20,546	20,599	20,703	19,169	19,520	19,761			
1 - 8	3,175	25,400	23,338	23,505	23,561	23,673	21,963	22,344	22,606			
1 1/8 - 7	3,629	28,575	26,218	26,398	26,457	26,576	24,648	25,082	25,349			
1 1/4 - 7	3,629	31,750	29,393	29,576	29,637	29,759	27,823	28,258	28,524			
1 3/8 - 6	4,233	34,925	32,174	32,372	32,438	32,568	30,343	30,851	31,115			
1 1/2 - 6	4,233	38,100	35,349	35,550	35,616	35,750	33,518	34,026	34,290			
1 3/4 - 5	5,08	44,450	41,151	41,372	41,445	41,592	38,951	39,560	39,827			
2 - 4,5	5,645	50,800	47,135	47,371	47,450	47,607	44,689	45,367	45,593			

Maße in mm / Dimensions in mm / Dimensioni in mm / Dimensioni in mm

Unified Feingewinde UNF

Grenzmaße – Innengewinde
ASME-B1.1 (Auszug)
Toleranzfeld 1B, 2B, 3B

Filetage américain à pas fin Unified UNF

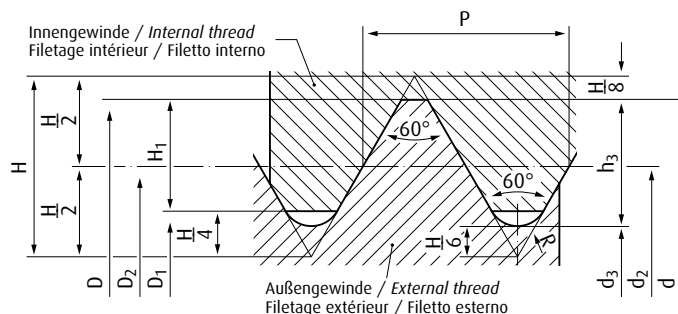
Dimensions limitee – Filetage intérieur
ASME-B1.1 (Extrait)
Champ de tolérance 1B, 2B, 3B

Unified fine threads UNF

Limit dimensions – Internal thread
ASME-B1.1 (Excerpt)
Tolerance zone 1B, 2B, 3B

Filettatura Unified a passo fine UNF

Dimensione, limite – Filettatura interna
ASME-B1.1 (Estratto)
Campo di tolleranza 1B, 2B, 3B



Gewinde-Nennndurchm. <i>Nominal thread diameter</i> <i>Diamètre nominal du filet</i> <i>Dia. nominale del filetto</i>	Steigung <i>Pitch</i> <i>Pas</i> <i>Passo</i>	Außen-durchmesser <i>Major diameter</i> <i>Diamètre extérieur</i> <i>Diametro esterno</i>	Flankendurchmesser <i>Pitch diameter</i> <i>Diamètre sur flanc</i> <i>Diametro medio</i>				Kerndurchmesser <i>Minor diameter</i> <i>Diamètre de noyau</i> <i>Diametro del nocciolo</i>		
			D - P/1"	P (mm)	D min.	D ₂ min.	D ₂ max. 3B 2B 1B	D ₁ min.	D ₁ max. 3B 2B, 1B
Nr. 1 - 72	0,353	1,854	1,626	1,674	1,689	-	1,473	1,613	1,613
Nr. 2 - 64	0,397	2,184	1,928	1,979	1,996	-	1,755	1,913	1,913
Nr. 3 - 56	0,454	2,515	2,220	2,273	2,291	-	2,024	2,197	2,197
Nr. 4 - 48	0,529	2,845	2,502	2,560	2,581	-	2,271	2,459	2,459
Nr. 5 - 44	0,577	3,175	2,799	2,860	2,880	-	2,550	2,741	2,741
Nr. 6 - 40	0,635	3,505	3,094	3,157	3,180	-	2,817	3,012	3,023
Nr. 8 - 36	0,706	4,166	3,708	3,777	3,800	-	3,401	3,597	3,607
Nr. 10 - 32	0,794	4,826	4,310	4,384	4,409	-	3,967	4,168	4,168
Nr. 12 - 28	0,907	5,486	4,897	4,976	5,004	-	4,503	4,717	4,724
1/4 - 28	0,907	6,350	5,761	5,842	5,870	5,926	5,367	5,563	5,588
5/16 - 24	1,058	7,938	7,249	7,341	7,371	7,430	6,792	6,995	7,036
3/8 - 24	1,058	9,525	8,837	8,931	8,961	9,025	8,379	8,565	8,636
7/16 - 20	1,27	11,112	10,287	10,391	10,424	10,493	9,738	9,947	10,033
1/2 - 20	1,27	12,700	11,874	11,981	12,017	12,088	11,326	11,524	11,608
9/16 - 18	1,411	14,288	13,371	13,482	13,520	13,597	12,761	12,969	13,081
5/8 - 18	1,411	15,875	14,958	15,072	15,110	15,189	14,348	14,554	14,681
3/4 - 16	1,588	19,050	18,019	18,143	18,184	18,268	17,330	17,546	17,678
7/8 - 14	1,814	22,225	21,046	21,181	21,224	21,316	20,262	20,493	20,676
1 - 12	2,117	25,400	24,026	24,171	24,219	24,315	23,109	23,363	23,571
1 1/8 - 12	2,117	28,575	27,201	27,351	27,399	27,498	26,284	26,538	26,746
1 1/4 - 12	2,117	31,750	30,376	30,528	30,579	30,681	29,459	29,713	29,921
1 3/8 - 12	2,117	34,925	33,551	33,706	33,759	33,863	32,634	32,888	33,096
1 1/2 - 12	2,117	38,100	36,726	36,886	36,937	37,043	35,809	36,063	36,271

Maße in mm / Dimensions in mm / Dimensions en mm / Dimensioni in mm

Unified Extra Feingewinde UNEF

Grenzmaße - Innengewinde
ASME-B1.1 (Auszug)
Toleranzfeld 2B, 3B

Filetage américain à pas extra-fin Unified UNEF

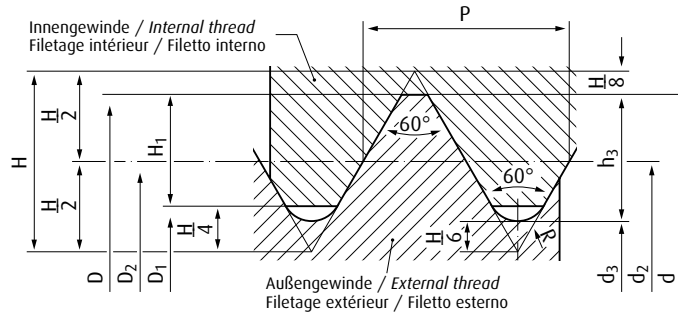
Dimensions limitées - Filetage intérieur
ASME-B1.1 (Extrait)
Champ de tolérance 2B, 3B

Unified extra fine thread UNEF

Limit dimensions - Internal thread
ASME-B1.1 (Excerpt)
Tolerance zone 2B, 3B

Filettatura Unified a passo extra fine UNEF

Dimensione, limite - Filettatura interna
ASME-B1.1 (Estratto)
Campo di tolleranza 2B, 3B



Gewinde-Nenndurchm. <i>Nominal thread diameter</i> <i>Diamètre nominal du filet</i> <i>Dia. nominale del filetto</i>	Steigung <i>Pitch</i> <i>Pas</i> <i>Passo</i>	Außen-durchmesser <i>Major diameter</i> <i>Diamètre extérieur</i> <i>Diametro esterno</i>	Flankendurchmesser			Kerndurchmesser		
			<i>Pitch diameter</i>			<i>Minor diameter</i>		
			<i>Diamètre sur flanc</i>			<i>Diamètre de noyau</i>		
			<i>Diametro medio</i>			<i>Diametro del nocciolo</i>		
D - P/1"	P (mm)	D min.	D ₂ min.	D ₂ max.		D ₁ min.	D ₁ max.	
				3B	2B		3B	2B
Nr. 12 - 32	0,794	5,486	4,971	5,050	5,075	4,628	4,813	4,826
1/4 - 32	0,794	6,350	5,834	5,913	5,941	5,491	5,662	5,690
5/16 - 32	0,794	7,938	7,422	7,501	7,529	7,079	7,231	7,264
3/8 - 32	0,794	9,525	9,009	9,093	9,121	8,666	8,811	8,865
7/16 - 28	0,907	11,112	10,523	10,612	10,640	10,130	10,290	10,338
1/2 - 28	0,907	12,700	12,111	12,202	12,233	11,717	11,877	11,938
9/16 - 24	1,058	14,288	13,599	13,696	13,729	13,142	13,320	13,386
5/8 - 24	1,058	15,875	15,187	15,286	15,319	14,729	14,907	14,986
3/4 - 20	1,27	19,050	18,224	18,334	18,369	17,676	17,874	17,958
7/8 - 20	1,27	22,225	21,400	21,509	21,544	20,851	21,049	21,133
1 - 20	1,27	25,400	24,574	24,686	24,724	24,026	24,224	24,308

Maße in mm / Dimensions in mm / Dimensioni in mm

Vergleichstabelle inch - mm

Steigung in Gang pro 1 inch

Comparison inch - mm

Pitch in threads per inch

Tableau comparatif inch - mm

Graduation en pas par inch

Tabella comparativa inch - mm

Passo nella spira per ogni 1 inch

Nennmaß <i>Nominal size</i> <i>Dimension nominale</i> <i>Dimensione nominale</i> inch / Nr.	Nenn-durchm <i>Nominal diameter</i> <i>Diamètre nominal</i> <i>Diametro nominale</i> ≈ [mm]	UNC	UNF	UNEF	UN-4	UN-6	UN-8	UN-12	UN-16	UN-20	UN-28	UN-32	W (BSW)	BSF	G Rp	Nenn-durchm <i>Nominal diameter</i> <i>Diamètre nominal</i> <i>Diametro nominale</i> [mm]	
Nr. 0	1,52		80														
1/16	1,59												60		28	7,72	
Nr. 1	1,85	64	72														
Nr. 2	2,18	56	64														
3/32	2,38												48				
Nr. 3	2,51	48	56														
Nr. 4	2,84	40	48														
Nr. 5	3,17	40	44														
1/8	3,17												40		28	9,72	
Nr. 6	3,50	32	40														
5/32	3,96												32				
Nr. 8	4,16	32	36														
3/16	4,76												24	32			
Nr. 10	4,82	24	32														
Nr. 12	5,48	24	28	32													
7/32	5,55												24	28			
1/4	6,35	20	28	32									20	26	19	13,15	
9/32	7,14													26			
5/16	7,93	18	24	32						20	28						
3/8	9,52	16	24	32						20	28		16	20	19	16,66	
7/16	11,11	14	20	28					16			32	14	18			
1/2	12,70	13	20	28					16			32	12	16	14	20,95	
9/16	14,28	12	18	24					16	20	28	32	12	16			
5/8	15,87	11	18	24				12	16	20	28	32	11	14	14	22,91	
11/16	17,46			24				12	16	20	28	32		14			
3/4	19,05	10	16	20				12				28	10	12	14	26,44	
13/16	20,64			20				12	16			28	32	12			
7/8	22,22	9	14	20				12	16			28	32	9	11	14	30,20
15/16	23,81			20				12	16			28	32				
1	25,40	8	12	20					16			28	32	8	10	11	33,24
1 1/16	26,99			18			8	12	16	20	28						
1 1/8	28,57	7	12	18			8		16	20	28		7	9	11	37,89	
1 3/16	30,16			18			8	12	16	20	28						
1 1/4	31,75	7	12	18			8		16	20	28		7	9	11	41,91	
1 5/16	33,34			18			8	12	16	20	28						
1 3/8	34,92	6	12	18			8		16	20	28		6	8	11	44,32	
1 7/16	36,51			18	6	8	8	12	16	20	28						
1 1/2	38,10	6	12	18			8		16	20	28		6	8	11	47,80	
1 9/16	39,69			18		6	8	12	16	20							
1 5/8	41,28			18		6	8	12	16	20			5	8			
1 11/16	42,86			18		6	8	12	16	20							
1 3/4	44,45	5				6	8	12	16	20			5	7	11	53,74	
1 13/16	46,04					6	8	12	16	20							
1 7/8	47,63					6	8	12	16	20			4 1/2				
1 15/16	49,21					6	8	12	16	20							
2	50,80	4 1/2				6	8	12	16	20			4 1/2	7	11	59,61	
2 1/8	53,97					6	8	12	16	20							
2 1/4	57,15	4 1/2				6	8	12	16	20			4	6	11	65,71	
2 3/8	60,32					6	8	12	16	20							
2 1/2	63,50	4				6	8	12	16	20			4	6	11	75,18	
2 5/8	66,67				4	6	8	12	16	20							
2 3/4	69,85	4				6	8	12	16	20			3 1/2	6	11	81,53	
2 7/8	73,02			4		6	8	12	16	20							
3	76,20	4				6	8	12	16	20			3 1/2	5	11	87,88	
3 1/8	79,37				4	6	8	12	16								
3 1/4	82,55	4				6	8	12	16				3 1/4	5	11	93,98	
3 3/8	85,72				4	6	8	12	16								
3 1/2	88,90	4				6	8	12	16				3 1/4	4 1/2	11	100,33	
3 5/8	92,07				4	6	8	12	16								
3 3/4	95,25	4				6	8	12	16				3	4 1/2	11	106,68	
3 7/8	98,42				4	6	8	12	16								
4	101,60	4				6	8	12	16				3	4 1/2	11	113,03	

Whitworth-Gewinde BSW

Grenzmaße - Innengewinde
BS 84 (Auszug)
Toleranzfeld med. class

Filetage Whitworth BSW

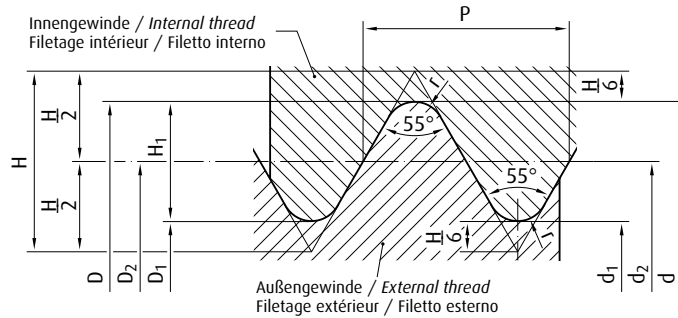
Dimensions limitees - Filetage intérieur
BS 84 (Extrait)
Champ de tolérance med. class

Whitworth thread BSW

Limit dimensions - Internal thread
BS 84 (Excerpt)
Tolerance zone med. class

Filettatura Whitworth a passo grosso BSW

Dimensione, limite - Filettatura interna
BS 84 (Estratto)
Campo di tolleranza med. class



Gewinde-Nenndurchm. <i>Nominal thread diameter</i> <i>Diamètre nominal du filet</i> <i>Dia. nominale del filetto</i>	Steigung <i>Pitch</i> <i>Pas</i> <i>Passo</i>	Außen-durchmesser <i>Major diameter</i> <i>Diamètre extérieur</i> <i>Diametro esterno</i>	Flankendurchmesser <i>Pitch diameter</i> <i>Diamètre sur flanc</i> <i>Diametro medio</i>		Kerndurchmesser <i>Minor diameter</i> <i>Diamètre de noyau</i> <i>Diametro del nocciolo</i>	
D - P/1"	P (mm)	D min.	D ₂ min.	D ₂ max. med. class	D ₁ min.	D ₁ max. med. class
1/16 - 60	0,423	1,588	1,316	1,372	1,045	1,230
3/32 - 48	0,529	2,381	2,042	2,106	1,704	1,912
1/8 - 40	0,635	3,175	2,768	2,842	2,362	2,591
5/32 - 32	0,794	3,969	3,460	3,539	2,952	3,214
3/16 - 24	1,058	4,763	4,085	4,174	3,407	3,745
7/32 - 24	1,058	5,556	4,879	4,970	4,201	4,539
1/4 - 20	1,27	6,350	5,537	5,636	4,724	5,156
5/16 - 18	1,411	7,938	7,034	7,141	6,130	6,590
3/8 - 16	1,588	9,525	8,508	8,622	7,492	7,987
7/16 - 14	1,814	11,113	9,951	10,073	8,789	9,330
1/2 - 12	2,117	12,700	11,345	11,477	9,989	10,591
9/16 - 12	2,117	14,288	12,932	13,067	11,577	12,179
5/8 - 11	2,309	15,875	14,396	14,538	12,918	13,558
3/4 - 10	2,54	19,050	17,424	17,576	15,797	16,483
7/8 - 9	2,822	22,225	20,418	20,581	18,611	19,353
1 - 8	3,175	25,400	23,367	23,540	21,334	22,147
1 1/8 - 7	3,629	28,575	26,252	26,435	23,928	24,832
1 1/4 - 7	3,629	31,750	29,427	29,615	27,103	28,007
1 3/8 - 6	4,233	34,925	32,214	32,412	29,504	30,528
1 1/2 - 6	4,233	38,100	35,389	35,592	32,679	33,703
1 5/8 - 5	5,08	41,275	38,022	38,235	34,769	35,963
1 3/4 - 5	5,08	44,450	41,197	41,415	37,944	39,138
1 7/8 - 4,5	5,644	47,625	44,011	44,237	40,396	41,702
2 - 4,5	5,644	50,800	47,186	47,417	43,571	44,877

Maße in mm / Dimensions in mm / Dimensions en mm / Dimensioni in mm

Whitworth-Rohrgewinde G

Grenzmaße – Innengewinde
DIN EN ISO 228 (Auszug)

Whitworth pipe thread G

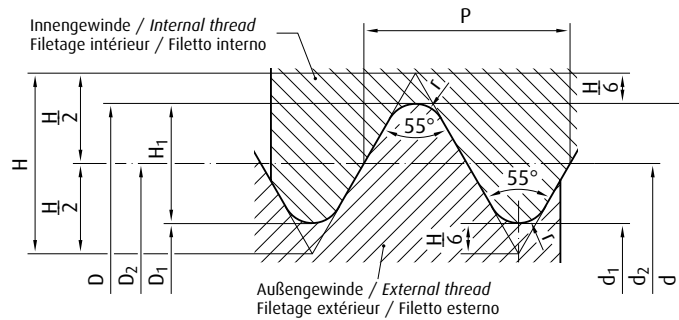
Limit dimensions – Internal thread
DIN EN ISO 228 (Excerpt)

Filetage pas du gaz Whitworth G

Dimensions limitee – Filetage intérieur
DIN EN ISO 228 (Extrait)



Filettatura gas cilindrica Whitworth G

Dimensione, limite – Filettatura interna
DIN EN ISO 228 (Estratto)



Gewinde-Nenndurchm. <i>Nominal thread diameter</i> <i>Diamètre nominal du filet</i> <i>Dia. nominale del filetto</i>	Steigung <i>Pitch</i> <i>Pas</i> <i>Passo</i>	Außen-durchmesser <i>Major diameter</i> <i>Diamètre extérieur</i> <i>Diametro esterno</i>	Flankendurchmesser <i>Pitch diameter</i> <i>Diamètre sur flanc</i> <i>Diametro medio</i>		Kerndurchmesser <i>Minor diameter</i> <i>Diamètre de noyau</i> <i>Diametro del nocciolo</i>	
			D_2 min.	D_2 max.	D_1 min.	D_1 max.
G 1/16 - 28	0,907	7,723	7,142	7,249	6,561	6,843
G 1/8 - 28	0,907	9,728	9,147	9,254	8,566	8,848
G 1/4 - 19	1,337	13,157	12,301	12,426	11,445	11,89
G 3/8 - 19	1,337	16,662	15,806	15,931	14,950	15,395
G 1/2 - 14	1,814	20,955	19,793	19,935	18,631	19,172
G 5/8 - 14	1,814	22,911	21,749	21,891	20,587	21,128
G 3/4 - 14	1,814	26,441	25,279	25,421	24,117	24,658
G 7/8 - 14	1,814	30,201	29,039	29,181	27,877	28,418
G 1" - 11	2,309	33,249	31,770	31,95	30,291	30,931
G 1 1/8 - 11	2,309	37,897	36,418	36,598	34,939	35,579
G 1 1/4 - 11	2,309	41,910	40,431	40,611	38,952	39,592
G 1 1/2 - 11	2,309	47,803	46,324	46,504	44,845	45,485
G 1 3/4 - 11	2,309	53,746	52,267	52,447	50,788	51,428
G 2" - 11	2,309	59,614	58,135	58,315	56,656	57,296

Maße in mm / Dimensions in mm / Dimensions en mm / Dimensioni in mm

	R _m [N/mm ²]	A ₅ [%]	Rockwell HRC	EN	ISO	Brand name	Mat.-Nr.	 DIN	 AFNOR
A Automatenstähle / Free-machining steels / Aciers de décolletage / Acciai alta velocità									
1.2	> 500	9		-	-	-	1.0711	9 S 20	-
1.2	380 - 570	8		-	-	-	1.0715	9 SMn 28	S 250
1.2	380 - 570	8		-	-	-	1.0718	9 SMnPb 28	S 250 Pb
1.2	360 - 530	9		-	-	-	1.0721	10 S 20	10 F 1
1.2	360 - 530	9		-	-	-	1.0722	10 SPb 20	10 PbF 2
1.2	380 - 570	8		-	-	-	1.0723	15 S 20	-
1.2	390 - 590	7		-	-	-	1.0736	9 SMn 36	S 300
1.2	390 - 580	7		-	-	-	1.0737	9 SMnPb 36	S 300 Pb
1.3	580 - 730	8		-	-	-	1.0726	35 S 20	35 MF 4
1.3	660 - 800	7		-	-	-	1.0727	45 S 20	45 MF 4
1.3	740 - 880	7		-	-	-	1.0728	60 S 20	60 MF 4
A Baustahl legiert / Alloyed structural steels / Aciers de construction alliés / Acciai da costruzione									
1.2	440 - 590	24		-	-	-	1.5415	15 Mo 3	15 D 3
1.2	450 - 590	21		-	-	-	1.5423	16 Mo 5	-
1.2	490 - 640	20		-	-	-	1.5622	14 Ni 6	16 N 6
1.3	530 - 710	20		-	-	-	1.5680	12 Ni 19	Z 18 N 5
1.2	450 - 660	20		-	-	-	1.7335	13 CrMo 4 4	15 CD 3.5
1.3	540 - 690	20		-	-	-	1.7337	16 CrMo 4 4	15 CD 4.5
1.2	480 - 630	18		-	-	-	1.7380	10 CrMo 9 10	10 CD 9.10
1.3	700 - 850	16		-	-	-	1.7709	21 CrMoV 5 7	-
1.2	490 - 640	20		-	-	-	1.7715	14 MoV 6 3	14 Mo 6
A Baustahl unlegiert / Construction steels / Aciers de construction non-alliés / Acciai da costruzione non legati									
1.2	> 500	25		-	-	-	1.0037	St 37-2	-
1.2	410 - 560	21		-	-	-	1.0044	St 44-2	E 28-2
1.2	340 - 470	25		-	-	-	1.0116	St 37-3	E 24-3; E 24-4
1.2	410 - 560	21		-	-	-	1.0144	St 44-3	E 28-3; E 28-4
1.2	470 - 610	19		-	-	-	1.0050	St 50-2	A 50-2
1.2	490 - 630	21		-	-	-	1.0570	St 52-3	E 36-3; E 36-4
1.3	570 - 710	15		-	-	-	1.0060	St 60-2	A 60-2
1.1	340 - 470	25		-	-	-	1.0038	RSt37-2	E24-2 Ne
A Stahlguss / Steel castings / Fonte d'aciers / Ghisa d'acciaio									
1.3	> 380	25		-	-	-	1.0420	GS-38	-
1.3	700 - 800			-	-	-	1.1118	GS-24 Mn 6	-
1.3	480 - 620	20		-	-	-	1.1120	GS-20 Mn 5	-
1.3	> 500	22		-	-	-	1.5419	GS-22 Mo 4	-
1.3	> 500			-	-	-	1.5633	GS-24 Ni 8	-
1.3	> 500			-	-	-	1.5681	GS-10 Ni 19	-
1.3	> 500			-	-	-	1.6309	GS-20 Mn MoNi 5 5	-
1.3	< 850	10		-	-	-	1.6582	GS-34 CrNiMo 6	-
1.3	> 800	11		-	-	-	1.6748	GS-40 NiCrMo 6 5 6	-
1.3	> 800			-	-	-	1.6750	GS-20 NiCrMo 3 7	-
1.3	> 800			-	-	-	1.6760	GS-22 NiMoCr 5 6	-
1.3	490 - 640	20		-	-	-	1.7357	GS-17 CrMo 5 5	-
1.3	> 500	18		-	-	-	1.7379	GS-18 CrMo 9 10	-
A Einsatzstahl / Case hardening steels / Aciers de cémentation / Acciai da cementazione									
1.4	< 500	15		-	-	-	1.0301	C 10	AF 34 C 10; XC 10
1.4	< 500	13		-	-	-	1.0401	C 15	AF 34 C 12; XC 18
1.4	< 500	14		-	-	-	1.1121	CK 10	XC 10
1.4	< 500	13		-	-	-	1.1141	CK 15	XC 15; XC 18
1.4	< 500	15		-	-	-	1.7012	13 Cr 2	-
1.4	500 - 700	10		-	-	-	1.7015	15 Cr 3	12 C 3
1.4	500 - 700	11		-	-	-	1.5732	14 NiCr 10	14 NC 11
1.4	700 - 850	10	< 24	-	-	-	1.5752	14 NiCr 14	12 NC 15
1.4	700 - 850	7	< 24	-	-	-	1.5860	14 NiCr 18	-
1.4	700 - 850	9	< 24	-	-	-	1.5919	15 CrNi 6	16 NC 6
1.4	700 - 850	7	< 24	-	-	-	1.5920	18 NiCr 8	20 NC 6
1.4	700 - 850	10	< 24	-	-	-	1.6523	21 NiCrMo 2	20 NCD 2
1.4	700 - 850	8	< 24	-	-	-	1.6587	17 CrNiMo 6	18 NCD 6
1.4	700 - 850	10	< 24	-	-	-	1.7131	16 MnCr 5	16 MC 5
1.4	700 - 850	10	< 24	-	-	-	1.7139	16 MnCrS 5	-
1.4	700 - 850	8	< 24	-	-	-	1.7147	20 MnCr 5	20 MC 5
1.4	700 - 850	8	< 24	-	-	-	1.7149	20 MnCrS 5	-
1.4	700 - 850	10	< 24	-	-	-	1.7262	15 CrMo 5	12 CD 4
1.4	700 - 850	8	< 24	-	-	-	1.7264	20 CrMo 5	18 CD 4
1.4	700 - 850	8	< 24	-	-	-	1.7271	23 CrMoB 3 3	-







Internationaler Werkstoffvergleich

International comparison of materials

Comparatif matieres

Confronto internazionale dei materiali



	 BS	EN	 UNI	 UNE	 JIS	 SIS	 AISI/SAE/ASTM
220 M 07	-	-	CF 9 S 22	-	SUM 21	-	1212
230 M 07	-	-	CF 9 SMn 28	11SMn28	SUM 22	1912	1213
-	-	-	CF 9 SMnPb 2	11SMnPb28	SUM 22 L	1914	12 L 13
210 M 15	-	-	CF 10 S 20	10S20	-	-	1108
-	-	-	CF 10 SPb 20	10SPb20	-	-	11 L 08
210 A 15	-	-	-	F.210.F	SUM 32	1922	-
240 M 07	1B	-	CF 9 SMn 36	12SMn36	-	-	1215
-	-	-	CF 9 SMnPb 36	12SMNPb36	-	1926	12 L 14
212 M 36	8M	-	-	F210G	-	1957	1140
212 M 44	-	-	-	-	-	1973	1146
-	-	-	-	-	-	-	-
1501-240	-	-	16 Mo 3	16Mo3	-	2912	A 204 Gr. A
1503-245-420	-	-	16 Mo 5	16Mo5	-	-	4520
-	-	-	14 Ni 6	15Ni6	-	-	A 350-LF 5
-	-	-	-	-	-	-	2515
1501-620 Gr. 27	-	-	14 CrMo 4 5	14CrMo45	-	2216	A 182-F11; F12
1501-620 Gr. 27	-	-	15 CrMo 4 5	-	-	2216	A 387 Gr. 12 C
1501-622 Gr. 31; 45	-	-	12 CrMo 9 10	-	-	2218	A 182-F22
-	-	-	-	-	-	-	-
1503-660-440	-	-	-	13MoCrV6	-	-	-
-	-	-	-	-	STKM 12 C	-	-
4360-43 B	-	-	Fe 430 B FN	-	SM 41 B	1412	A 570 Gr. 40
4360-40 C	-	-	Fe 360 D FF	-	-	1312; 1313	A 573 Gr. 58
4360-43 C	-	-	Fe 430 D FF	-	SM 41 C	1412; 1414	A 573 Gr. 70
4360-50 B	-	-	Fe 490	-	SS 50	2172	A 570 Gr. 50
4360-50 B	-	-	Fe 510 B; C; D	-	SM 50 YA	2132	-
4360-SSE; SS	-	-	Fe 590; Fe 600	-	SM 58	-	-
4360 40C	1A	-	-	-	STKM 12A;C	1311	A570.36
AM 1	-	-	-	-	-	-	A 27
-	-	-	-	-	-	-	-
-	-	-	-	F.8310	-	-	-
245	-	-	-	-	SCPH 11	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	A 757
-	-	-	-	-	-	-	-
-	24	-	-	-	SNCM 9	2541	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
621	-	-	-	F-8383	SCPH 21	-	A 217
622	-	-	-	-	SCPH 32	-	-
045 M 10	-	-	C 10	-	S 10 C	-	1010
080 M 15	-	-	C 15; C 16	F.111	-	1350	1015
045 M 10	-	-	C 10	F.1510	S 10 C; S 9 CK	1265	1010
080 M 15	32C	-	C 15; C 16	F.111	S 15 C; S 15 CK	1370	1015
-	-	-	-	-	-	-	-
523 M 15	-	-	-	-	SCR 415 (H)	-	5015
-	-	-	16 NiCr 11	15NiCr11	SNC 415 (H)	-	3415
655 M 13	36A	-	-	-	SNC 815 (H)	-	3310; 9314
-	-	-	-	-	-	-	-
S 107	-	-	16 CrNi 4	-	-	-	-
-	-	-	-	-	-	-	-
805 M 20	362	-	20 NiCrMo 2	20NiCrMo2	SNCM 220 (H)	2506	8620
820 A 16	-	-	18 NiCrMo 7	14NiCrMo13	-	-	-
527 M 17	-	-	16 MnCr 5	16MnCr5	SCR 415	2511	5115
-	-	-	-	-	-	-	-
-	-	-	20 MnCr 5	-	SMnC 420 (H)	-	5120
-	-	-	-	-	-	-	-
-	-	-	12 CrMo 4	F.155	SCM 415 (H)	-	-
-	-	-	-	-	SCM 421	-	-
-	-	-	-	-	-	-	-

	R _m [N/mm ²]	A ₅ [%]	Rockwell HRc	EN	ISO	Brand name	Mat.-Nr.		
								DIN	AFNOR
1.4	500 - 700	10	< 24	-	-	-	1.7311	20 CrMo 2	-
1.4	700 - 850	10	< 24	-	-	-	1.7321	20 MoCr 4	-
1.4	700 - 850	10	< 24	-	-	-	1.7323	20 MoCrS 4	-
1.4	700 - 850	8	< 24	-	-	-	1.7325	25 MoCr 4	-
1.4	700 - 850	8	< 24	-	-	-	1.7326	25 MoCrS 4	-
1.4	< 500	13		-	-	-	1.0402	C22	CC20
A Federstahl / Spring steels / Aciers à ressorts / Acciai per molle									
1.4	< 850	6	< 24	-	-	-	1.0904	55 Si 7	55 S 7
1.4	< 850	6	< 24	-	-	-	1.0961	60 SiCr 7	60 SC 7
1.4	< 850	6	< 24	-	-	-	1.1231	CK 67	XC 68
1.4	< 850	6	< 24	-	-	-	1.1248	CK 75	XC 75
1.4	< 850	6	< 24	-	-	-	1.1274	CK 101	XC 100
1.4	< 850	5	< 24	-	-	-	1.7103	67 SiCr 5	-
1.4	< 850	6	< 24	-	-	-	1.7176	55 Cr 3	55 C 3
1.4	< 850	10	< 24	-	-	-	1.8159	50 CrV 4	50 CV 4
1.4	< 850	6	< 24	-	-	-	1.5026	55 Si 7	55 S 7
A Vergütungsstahl legiert / Alloyed heat-treatable steels / Aciers d'amélioration alliés / Acciai da bonifica legati									
1.4	< 800	22	< 21	-	-	-	1.1133	20 Mn 5	20 M 5
1.4	< 800	11	< 21	-	-	-	1.7735	14 CrMoV 6 9	15 CDV 6
1.4	< 800		< 21	-	-	-	1.3505	100 Cr 6	100 C 6
1.4	< 800	12	< 21	-	-	-	1.5120	38 MnSi 4	-
1.4	< 800	12	< 21	-	-	-	1.5121	46 MnSi 4	-
1.4	< 800	12	< 21	-	-	-	1.5141	53 MnSi 4	-
1.4	< 800	13	< 21	-	-	-	1.5710	36 NiCr 6	35 NC 6
1.4	< 800		< 21	-	-	-	1.6546	40 NiCrMo 2 2	40 NCD 2
1.4	< 800		< 21	-	-	-	1.6565	40 NiCrMo 6	-
1.4	< 800	14	< 21	-	-	-	1.7003	38 Cr 2	38 C 2
1.4	< 800	12	< 21	-	-	-	1.7006	46 Cr 2	42 C 2
1.4	< 800	15	< 21	-	-	-	1.7020	32 Cr 2	-
1.4	< 800	14	< 21	-	-	-	1.7030	28 Cr 4	-
1.4	< 800	14	< 21	-	-	-	1.7033	34 Cr 4	32 C 4
1.4	< 800	14	< 21	-	-	-	1.7218	25 CrMo 4	25 CD 4 S
1.4	< 800	12	< 21	-	-	-	1.7220	34 CrMo 4	35 CD 4
1.4	< 800	10	< 21	-	-	-	1.7223	41 CrMo 4	42 CD 4 TS
1.4	< 800	10	< 21	-	-	-	1.7225	42 CrMo 4	42 CD 4 TS
1.4	< 800	9	< 21	-	-	-	1.7228	50 CrMo 4	-
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.1157	40 Mn 4	35 M 5
1.4	> 800 - 1000	14	> 21 - 30	-	-	-	1.1165	30 Mn 5	35 M 5
1.4	> 800 - 1000	10	> 21 - 30	-	-	-	1.1167	36 Mn 5	40 M 5
1.4	> 800 - 1000	13	> 21 - 30	-	-	-	1.1170	28 Mn 5	20 M 5
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.3561	44 Cr 2	-
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.3563	43 CrMo 4	-
1.4	> 800 - 1000	11	> 21 - 30	-	-	-	1.3565	48 CrMo 4	-
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.5120	38 MnSi 4	-
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.5121	46 MnSi 4	-
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.5122	37 MnSi 4	-
1.4	> 800 - 1000	11	> 21 - 30	-	-	-	1.5131	50 MnSi4	-
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.5141	53 MnSi 4	-
1.4	> 800 - 1000	11	> 21 - 30	-	-	-	1.5223	42 MnV 7	-
1.4	> 800 - 1000	13	> 21 - 30	-	-	-	1.5710	36 NiCr 6	35 NC 6
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.5736	36 NiCr 10	30 NC 11
1.4	> 800 - 1000	11	> 21 - 30	-	-	-	1.5755	31 NiCr 14	18 NC 13
1.4	> 800 - 1000	11	> 21 - 30	-	-	-	1.6511	36 CrNiMo 4	40 NCD 3
1.4	> 800 - 1000	13	> 21 - 30	-	-	-	1.6513	28 NiCrMo 4	-
1.4	> 800 - 1000	14	> 21 - 30	-	-	-	1.7003	38 Cr 2	38 C 2
1.4	> 800 - 1000	13	> 21 - 30	-	-	-	1.7006	46 Cr 2	42 C 2
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.7030	28 Cr 4	-
1.4	> 800 - 1000	14	> 21 - 30	-	-	-	1.7033	34 Cr 4	32 C 4
1.4	> 800 - 1000	13	> 21 - 30	-	-	-	1.7034	37 Cr 4	38 C 4
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.7035	41 Cr 4	42 C 4
1.4	> 800 - 1000	14	> 21 - 30	-	-	-	1.7218	25 CrMo 4	25 CD 4 S
1.4	> 800 - 1000	14	> 21 - 30	-	-	-	1.7220	34 CrMo 4	35 CD 4
1.4	> 800 - 1000		> 21 - 30	-	-	-	1.7223	41 CrMo 4	42 CD 4 TS
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.7225	42 CrMo 4	42 CD 4 TS
1.4	> 800 - 1000	13	> 21 - 30	-	-	-	1.7228	50 CrMo 4	-
1.4	> 800 - 1000	13	> 21 - 30	-	-	-	1.7561	42 CrV 6	-







Internationaler Werkstoffvergleich

International comparison of materials

Comparatif matieres

Confronto internazionale dei materiali



	 BS	EN	 UNI	 UNE	 JIS	 SIS	 AISI/SAE/ASTM
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
050 A 20	2C	C20; C21		F.112	-	1450	1020
250 A 53	45	55 Si 8	-	-	-	2085; 2090	9255
-	-	60 SiCr 8	-	-	SUP 7	-	9262
060 A 67	-	C 70	-	-	-	1770	1070
060 A 78	-	C 75	-	-	-	1774; 1778	1078; 1080
060 A 96	-	-	-	-	SUP 4	1870	1095
-	-	-	-	-	-	-	-
527 A 60	48	55 Cr 3	-	-	SUP 9 (A)	2253	5155
735 A 50	47	51 CrV 4	-	51CrV4	SUP 10	2230	6150
250 A 53	-	55 Si 8	-	-	-	2085; 2090	9255
120 M 19	-	G 22 Mn 3	-	-	-	-	1022; 1518
-	-	-	-	-	-	-	-
534 A 99	31	100 Cr 6	-	-	SUJ 2	2258	52100
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
640 A 35	111A	-	-	-	SNC 236	-	3135
311-Type7	-	40 NiCrMo 2 (KB)	-	40NiCrMo2	SNCM 240	-	8740
311-Type6	-	-	-	-	SNCM 439	-	4340
-	-	38 Cr 2	-	-	-	-	-
-	-	45 Cr 2	-	-	-	-	5045
-	-	-	-	-	-	-	-
530 A 30	-	-	-	-	-	-	5130
530 A 32	18B	34 Cr 4 (KB)	-	35Cr4	SCr 430 (H)	-	5132
1717 CDS 110	-	25 CrMo 4 (KB)	-	55Cr3	SCM 420; SCM 430	2225	4130
708 A 37	19B	35 CrMo4	-	34CrMo4	SCM 432; SCCrM 3	2234	4135; 4137
708 M 40	19A	41 CrMo 4	-	42CrMo4	SCM 440	2244	4142; 4140
708 M 40	19A	42 CrMo 4	-	F-1252	SCM 440	2244	4140
708 A 47	-	-	-	-	SCM 445 (H)	-	4150
150 M 36	15	-	-	-	-	-	1039
120 M 36	-	-	-	-	SMn 433 H; SCMn 2	-	1330
150 M 36	-	-	-	36Mn5	SMn 438 H; SCMn 3	2120	1335
150 M 28	14A	C 28 Mn	-	-	SCMn 1	-	1330
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
817 M 40	-	-	-	-	SNC 836	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
640 A 35	111A	-	-	-	SNC 236	-	3135
-	-	35 NiCr 9	-	-	SNC 631 (H)	-	3435
653 M 31	-	-	-	-	SNC 836	-	-
816 M 40	110	38 NiCrMo 4 (KB)	-	33NiCrMo4	SNC 836	-	9840
-	-	-	-	-	-	-	-
-	-	38 Cr 2	-	-	-	-	-
-	-	45 Cr 2	-	-	-	-	5045
530 A 30	-	-	-	-	-	-	5130
530 A 32	18B	34 Cr 4 (KB)	-	35Cr4	SCr 430 (H)	-	5132
530 A 36	-	38 Cr 4	-	-	SCr 435 (H)	-	5135
530 M 40	18	41 Cr 4	-	42Cr4	SCr 440 (H)	-	5140
1717 CDS 110	-	25 CrMo 4 (KB)	-	55Cr3	SCM 420; SCM 430	2225	4130
708 A 37	19B	35 CrMo4	-	34CrMo4	SCM 432; SCCrM 3	2234	4135; 4137
708 M 40	19A	41 CrMo 4	-	42CrMo4	SCM 440	2244	4142; 4140
708 M 40	19A	41 CrMo 4	-	F-1252	SCM 440	2244	4142; 4140
708 A 47	-	-	-	-	SCM 445 (H)	-	4150
-	-	-	-	-	-	-	-

	R _m [N/mm ²]	A ₅ [%]	Rockwell HRC	EN	ISO	Brand name	Mat.-Nr.		
								DIN	AFNOR
1.4	> 800 - 1000	11	> 21 - 30	-	-	-	1.7735	14 CrMoV 6 9	15 CDV 6
1.4	> 800 - 1000	10	> 24 - 30	-	-	-	1.8159	50 CrV 4	50 CV 4
1.5	> 1000 - 1200	12	> 30 - 38	-	-	RAMAX	-	-	-
1.5	> 1000 - 1300	10	> 30 - 40	-	-	-	1.3563	43 CrMo 4	-
1.5	> 1000 - 1300	9	> 30 - 40	-	-	-	1.3565	48 CrMo 4	-
1.5	> 1000 - 1300	11	> 30 - 40	-	-	-	1.5120	38 MnSi 4	-
1.5	> 1000 - 1300	11	> 30 - 40	-	-	-	1.5121	46 MnSi 4	-
1.5	> 1000 - 1300	11	> 30 - 40	-	-	-	1.5122	37 MnSi 4	-
1.5	> 1000 - 1300	10	> 30 - 40	-	-	-	1.5223	42 MnV 7	-
1.5	> 1000 - 1300	11	> 30 - 40	-	-	-	1.5710	36 NiCr 6	35 NC 6
1.5	> 1000 - 1300		> 30 - 40	-	-	-	1.5736	36 NiCr 10	30 NC 11
1.5	> 1000 - 1300	7	> 30 - 40	-	-	-	1.5864	35 NiCr 18	-
1.5	> 1000 - 1300	10	> 30 - 40	-	-	-	1.6511	36 CrNiMo 4	40 NCD 3
1.5	> 1000 - 1300	9	> 30 - 40	-	-	-	1.6580	30 CrNiMo 8	30 CND 8
1.5	> 1000 - 1300	9	> 30 - 40	-	-	-	1.6582	34 CrNiMo 6	35 NCD 6
1.5	> 1000 - 1300	12	> 30 - 40	-	-	-	1.7033	34 Cr 4	32 C 4
1.5	> 1000 - 1300	11	> 30 - 40	-	-	-	1.7034	37 Cr 4	38 C 4
1.5	> 1000 - 1300	11	> 30 - 40	-	-	-	1.7035	41 Cr 4	42 C 4
1.5	> 1000 - 1300		> 30 - 40	-	-	-	1.7045	42 Cr 4	42 C 4 TS
1.5	> 1000 - 1300	12	> 30 - 40	-	-	-	1.7218	25 CrMo 4	25 CD 4 S
1.5	> 1000 - 1300	11	> 30 - 40	-	-	-	1.7220	34 CrMo 4	35 CD 4
1.5	> 1000 - 1300	11	> 30 - 40	-	-	-	1.7223	41 CrMo 4	42 CD 4 TS
1.5	> 1000 - 1300	10	> 30 - 40	-	-	-	1.7225	42 CrMo 4	42 CD 4 TS
1.5	> 1000 - 1300	9	> 30 - 40	-	-	-	1.7228	50 CrMo 4	-
1.5	> 1000 - 1300	9	> 30 - 40	-	-	-	1.7361	32 CrMo 12	30 CD 12
1.5	> 1000 - 1300	10	> 30 - 40	-	-	-	1.7561	42 CrV 6	-
1.5	> 1000 - 1300	9	> 30 - 40	-	-	-	1.7707	30 CrMoV 9	-
1.5	> 1000 - 1300	10	> 30 - 40	-	-	-	1.7735	14 CrMoV 6 9	15 CDV 6
1.5	> 1000 - 1300	9	> 30 - 40	-	-	-	1.8159	50 CrV 4	50 CV 4
1.5	> 1000 - 1300	8	> 30 - 40	-	-	-	1.8161	58 CrV 4	-
A Vergütungsstahl unlegiert / Unalloyed heat-treatable steels / Aciers d'amélioration non-alliés / Acciai da bonifica non legati									
1.4	< 800	20	< 21	-	-	-	1.0402	C 22	AF 42 C 20
1.4	< 800	19	< 21	-	-	-	1.0406	C 25	AF 50 C 30
1.4	< 800	17	< 21	-	-	-	1.0501	C 35	AF 55 C 35
1.4	< 800	14	< 21	-	-	-	1.0503	C 45	AF 65 C 45
1.4	< 800	16	< 21	-	-	-	1.0511	C 40	AF 60 C 40
1.4	< 800	18	< 21	-	-	-	1.0528	C 30	-
1.4	< 800	20	< 21	-	-	-	1.1151	Ck 22	XC 25; XC 18
1.4	< 800	19	< 21	-	-	-	1.1158	Ck 25	XC 25
1.4	< 800	18	< 21	-	-	-	1.1178	Ck 30	-
1.4	< 800	17	< 21	-	-	-	1.1181	Ck 35	XC 38 H1; XC 32
1.4	< 800	16	< 21	-	-	-	1.1186	Ck 40	XC 42 H1
1.4	< 800	14	< 21	-	-	-	1.1191	Ck 45	XC 42
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.0535	C 55	-
1.4	> 800 - 1000	13	> 21 - 30	-	-	-	1.0540	C 50	-
1.4	> 800 - 1000	11	> 21 - 30	-	-	-	1.0601	C 60	CC 55
1.4	> 800 - 1000	12	> 21 - 30	-	-	-	1.1203	Ck 55	XC 55
1.4	> 800 - 1000	13	> 21 - 30	-	-	-	1.1206	Ck 50	XC 48 H1
1.4	> 800 - 1000	11	> 21 - 30	-	-	-	1.1221	Ck 60	XC 60
A Werkzeugstahl für Kaltarbeit / Cold work tool steels / Aciers à outils pour travail à froid / Acciai da lavorazione a freddo									
1.4	760		19	-	-	-	1.2067	100 Cr 6	Y 100 C 6
1.4	750		99	-	-	-	1.2101	62 SiMnCr 4	-
1.4	760		19	-	-	-	1.2103	58 SiCr 8	-
1.4	760		19	-	-	-	1.2108	90 CrSi 5	-
1.4	720			-	-	-	1.2162	21 MnCr 5	20 NC 5
1.4	730			-	-	-	1.2210	115 CRV 3	100 C 3
1.4	730			-	-	-	1.2330	35 CrMo 4	34 CD 4
1.4	750			-	-	-	1.2332	47 CrMo 4	42 CD 4
1.4	760		19	-	-	-	1.2419	105 WCr 6	105 WC 13
1.4	720			-	-	-	1.2510	100 MnCrW 4	90 MWCV 5
1.4	730			-	-	-	1.2516	120 W 4	110 WC 20
1.4	750			-	-	-	1.2542	45 WCrV 7	-
1.4	750			-	-	-	1.2550	60 WCrV 7	55 WC 20
1.4	830		23	-	-	-	1.2721	50 NiCr 13	-
1.4	670			-	-	-	1.2735	15 NiCr 14	10 NC 12
1.4	710			-	-	-	1.2762	75 CrMoNiW 6 7	-







Internationaler Werkstoffvergleich

International comparison of materials







Comparatif matieres

Confronto internazionale dei materiali









	 BS	EN	 UNI	 UNE	 JIS	 SIS	 AISI/SAE/ASTM
-	-	-	-	-	-	-	-
735 A 50	47	51 CrV 4	51CrV4	SUP 10	2230	6150	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
817 M 40	-	-	-	SNC 836	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
640 A 35	111A	-	-	SNC 236	-	3135	
-	-	35 NiCr 9	-	SNC 631 (H)	-	3435	
-	-	-	-	-	-	-	
816 M 40	110	38 NiCrMo 4 (KB)	33NiCrMo4	SNC 836	-	9840	
823 M 30	-	30 NiCrMo 8	-	SNCM 431	-	-	
817 M 40	24	35 NiCrMo 6 (KW)	-	SNCM 447	2541	4340	
530 A 32	18B	34 Cr 4 (KB)	35Cr4	SCr 430 (H)	-	5132	
530 A 36	-	38 Cr 4	-	SCr 435 (H)	-	5135	
530 M 40	18	41 Cr 4	42Cr4	SCr 440 (H)	-	5140	
530 A 40	-	41 Cr 4	42Cr4	SCr 440	2245	5140	
1717 CDS 110	-	25 CrMo 4 (KB)	55Cr3	SCM 420; SCM 430	2225	4130	
708 A 37	19B	35 CrMo4	34CrMo4	SCM 432; SCCrM 3	2234	4135; 4137	
708 M 40	19A	41 CrMo 4	42CrMo4	SCM 440	2244	4142; 4140	
708 M 40	19A	41 CrMo 4	F-1252	SCM 440	2244	4142; 4140	
708 A 47	-	-	-	SCM 445 (H)	-	4150	
722 M 24	40B	31 CrMo 12	F.124.A	-	2240	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
735 A 50	47	51 CrV 4	51CrV4	SUP 10	2230	6150	
-	-	-	-	-	-	-	
050 A 20	2D	C 20; C 21	F.112	-	1450	1020	
070 M 26	-	C 25	-	-	-	1025	
060 A 35	-	C 35	F.113	-	1550	1035	
080 M 46	-	C 45	F.114	-	1650	1045	
-	-	C 40	-	-	-	1040	
-	-	-	-	-	-	-	
050 A 20	-	C 20	-	S 20 C; S 20 CK	-	1023	
070 M 26	-	C 25	-	S 25 C	-	1025	
-	-	-	-	-	-	-	
080 M 36	-	C 35	-	S 35 C	1572	1035	
080 M 40	-	C 40	-	S 40 C	-	1040	
080 M 46	-	C 45	C45K	S 45 C	1672	1045	
070 M 55	-	C 55	-	-	1655	1055	
-	-	-	-	-	-	-	
080 A 62	43D	C 60	-	-	-	1060	
070 M 55	-	C 50	C55K	S 55 C	-	1055	
080 M 50	-	-	-	-	-	1050	
080 A 62	43D	C 60	-	S 58 C	1665; 1678	1060	
BL 3	-	-	100Cr6	-	-	L 3	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	SCR 420 H	-	-	
-	-	107 CrV 3 KU	-	-	-	L 2	
708 A 37	-	35 CrMo4	-	-	2234	4135	
709 M 40	-	40 CrMo 4	-	-	2244	4142	
-	-	107 WvR 5 KU	105WCr5	SKS 31	-	-	
BO 1	-	95 MnWCr 5 KU	-	SKS 3	2140	O 1	
BF 1	-	110 W 4 KU	-	-	-	-	
BS 1	-	45 WCrV 8 KU	45WCrSi8	-	2710	S 1	
-	-	55 WCrV 8 KU	-	-	-	-	
-	-	-	-	-	-	-	
-	-	-	-	SNC 22	-	-	
-	-	-	-	-	-	-	

	R _m	A ₅	Rockwell	EN	ISO	Brand name	Mat.-Nr.		
	[N/mm ²]	[%]	HRC					DIN	AFNOR
1.4	750			-	-	-	1.2826	60 MnSiCr 4	-
1.4	760		19	-	-	-	1.2833	100 V 1	Y1 105 V
1.4	730			-	-	-	1.2842	90 MnCrV 8	90 MV 8
1.4	830		23	-	-	-	1.2080	X 210 Cr 12	Z 200 C 12
1.4	380			-	-	-	1.2341	X 6 CrMo 4	-
1.4	760		19	-	-	-	1.2363	X 100 CrMoV 5 1	Z 100 CDV 5
1.4	640 - 840	18		-	-	-	1.5662	X8 Ni9	9 Ni
1.4	760		19	-	-	-	1.2379	X 155 CrVMo12 1	Z 160 CDV 12
1.4	760		19	-	-	-	1.2436	X 210 CrW 12	-
1.4	760		19	-	-	-	1.2601	X 165 CrMoV 12	-
A	Werkzeugstahl unlegiert / Unalloyed tool steels / Aciers à outils non-alliés / Acciai lavorazine non legato								
1.4	640			-	-	-	1.1520	C 70 W1	-
1.4	640			-	-	-	1.1525	C 80 W1	Y1 90; Y1 80
1.4	640			-	-	-	1.1545	C 105 W1	Y1 105
1.4	640			-	-	-	1.1620	C 70 W2	-
1.4	640			-	-	-	1.1625	C 80 W2	Y1 80
1.4	640			-	-	-	1.1645	C105 W2	Y1 105
1.4	660			-	-	-	1.1654	C 110 W	-
1.4	710			-	-	-	1.1663	C 125 W	Y2 120
1.4	760		19	-	-	-	1.1673	C 135 W	Y2 140
1.4	640			-	-	-	1.1730	C 45 W	Y3 42
1.4	760		19	-	-	-	1.1740	C 60 W	Y3 55
1.4	730			-	-	-	1.1744	C 67 W	-
1.4	730			-	-	-	1.1750	C 75 W	-
1.4	570			-	-	-	1.1820	C 55 W	-
1.4	750			-	-	-	1.1830	C 85 W	Y3 90
A	Werkzeugstahl für Warmarbeit / Hot work tool steels / Aciers à outils pour travail à chaud / Acciai da lavorazione a caldo								
1.5	< 770			-	-	-	1.2711	54 NiCrMoV 6	55 NCDV 6
1.5	< 800			-	-	-	1.2713	55 NiCrMoV 6	55 NCDV 7
1.5	> 800			-	-	-	1.2738	40 CrMnNiMo 8	-
1.5	< 840			-	-	-	1.2744	57 NiCrMoV 77	-
1.5	> 860			-	-	-	1.2764	X 19 NiCrMo 4	-
1.5	< 870			-	-	-	1.2767	X 45 NiCrMo 4	Y 35 NCD 16
1.5	< 770			-	-	-	1.2083	X 42 Cr 13	Z 40 C 14
1.5	< 800			-	-	-	1.2343	X 38 CrMoV 5 1	Z 38 CDV 5
1.5	< 800			-	-	-	1.2344	X 40 CrMoV 5 1	Z 40 CDV 5
1.5	< 800			-	-	-	1.2365	X 32 CrMoV 3 3	Z 32 CDV 28
1.5	< 800			-	-	-	1.2567	X 30 WCrV 5 3	Z 32 WCV 5
1.5	< 800			-	-	-	1.2581	X 30 WCrV 9 3	Z 30 WCV 9
1.5	< 770			-	-	-	1.2885	X 32 CrMoV 3 3 3	-
1.5	< 840			-	-	-	1.2316	X 36 CrMo 17	-
1.5	> 900			-	-	-	1.2311	40 CrMnMo 7	-
1.5	> 900			-	-	-	1.2312	40 CrMnMoS 8 6	-
1.1	950	14		-	-	Weldox 700	-	-	-
1.5	1080	16	> 29	-	-	Toolox 33	-	-	-
1.5	1250	10	43	-	-	Hardox 400	-	-	-
A	Nitrierstahl / Nitriding steels / Aciers nitrurés / Acciai da nitrurazione								
1.5	< 1000	14	< 30	-	-	-	1.8504	34 CrAl 6	-
1.5	< 1000	12	< 30	-	-	-	1.8506	34 CrAlS 5	-
1.5	< 1000	14	< 30	-	-	-	1.8507	34 CrAlMo 5	30 CAD 6.12
1.5	< 1000	12	< 30	-	-	-	1.8509	41 CrAlMo 7	40 CAD 6.12
1.5	> 1000	10	> 30	-	-	-	1.8515	31 CrMo 12	30 CD 12
1.5	> 1000	9	> 30	-	-	-	1.8519	31 CrMoV 9	-
1.5	> 1000	10	> 30	-	-	-	1.8521	15 CrMoV 5 9	-
1.5	> 1000	8	> 30	-	-	-	1.8523	39 CrMoV 13 9	-
1.5	> 1000	12	> 30	-	-	-	1.8550	34 CrAlNi 7	-
R	Rost- / Säurebeständige Stähle ferritisch / Ferritic corrosion and acid proof steels / Aciers inox et résist. acides ferritiques / Acciai inossidabili,								
1.1	400 - 600	17		-	-	-	1.4002	X 6 CrAl 13	Z 6 CA 13
1.1	380 - 560	25		-	-	-	1.4512	X 5 CrTi 12	Z 6 CT 12
1.1	400 - 600	19		-	-	-	1.4000	X 6 Cr 13	Z 6 C 13
1.1	450 - 600	18		-	-	-	1.4016	X 6 Cr 17	Z 8 C 17
1.1	500 - 700	12		-	-	-	1.4742	X 10 CrAlSi 18	Z 10 CAS 18
1.1	450 - 630	18		-	-	-	1.4113	X 6 CrMo 17	Z 8 CD 17.01
1.1	420 - 600	23		-	-	-	1.4510	X 3 CrTi 17	Z 8 CT 17
1.1	400 - 600	20		-	-	-	1.4521	X 2 CrMoTi 18-2	Z 3 CDT 18-02
1.1	450 - 650	15		-	-	-	1.4724	X 10 CrAlSi 13	Z 13 C 13

	 BS	EN	 UNI	 UNE	 JIS	 SIS	 AISI/SAE/ASTM
-	-	-	-	-	-	-	-
BW 2	-	-	102 V 2 KU	-	SKS 43	-	W 210
BO 2	-	-	90 MnVCr 8 KU	-	-	-	O 2
BD 3	-	-	X 210 Cr 13 KU	X210Cr12	SKD 1	-	D 3
-	-	-	-	-	-	-	-
BA 2	-	-	X 100 CrMoV 5 1 KU	-	SKD 12	2260	A 2
1501.509	-	-	X 10Ni9	XBNi09	STBL 690	-	A353
BD 2	-	-	X 155 CrVMo 12 1 KU	-	SKD 11	-	D 2
-	-	-	X 215 CrW 12 1 KU	X210CrW12	SKD 2	2312	-
-	-	-	X 165 CrMoV 12 KU	X160crMoV12	-	2310	-
-	-	-	-	-	-	-	-
-	-	-	C 80 KU	-	-	-	W 108
-	-	-	C 100 KU	-	-	-	W 110
-	-	-	-	-	-	-	-
BW 1B	-	-	C 80 KU	-	SKC 3; SK 5; SK 6	-	W 1
-	-	-	C 100 KU	-	SK 3	-	-
-	-	-	-	-	-	-	-
-	-	-	C 120 KU	-	SK 2	-	W 112
-	-	-	C 140 KU	-	SK 1	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	SK 7	-	-
-	-	-	-	-	-	-	-
BW 1A	-	-	-	-	-	-	W 1
-	-	-	-	-	-	-	-
-	-	-	-	-	SK 5	-	-
-	-	-	-	-	-	-	-
Bh 224	-	-	-	F.520.5	SKT 4	-	L 6
-	-	-	-	-	-	-	P20
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	42 NiCrMo 15 7	-	-	-	-
-	-	-	X 41 Cr 13 KU	F-5263	SUS 420 J 2	-	-
BH 11	-	-	X 37 CrMoV 5 1 KU	F-5317	SKD 6	-	H 11
BH 13	-	-	X 40 CrMoV 5 1 1 KU	F-5318	SKD 61	-	H 13
BH 10	-	-	X 30 CrMoV 12 27 KU	F-5313	SKD 7	-	H 10
-	-	-	X 30 WCrV 5 3 KU	-	SKD 4	-	-
BH 21	-	-	X 30 WCrV 9 3 KU	X30WCrV9	SKD 5	-	H 21
BH 10 A	-	-	-	F-5314	-	-	-
-	-	-	X 38 CrMo 16 1 KU	F-5267	-	-	-
-	-	-	35 CrMo8	-	-	-	-
-	-	-	40 CrMnMo 7	F-5302	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	Toolox 33
-	-	-	-	-	-	-	Hardox 400
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
905 M 31	-	-	34 CrAlMo 7	-	-	-	A 355 Cl. D
905 M 39	41B	-	41 CrAlMo 7	41CrAlMo7	SACM 645	2940	A 355 Cl. A
722 M 24	-	-	31 CrMo 12	-	-	2240	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
897 M 39	40C	-	39 CrMoV 13 9	-	-	-	-
-	-	-	-	-	-	-	-
<i>resistenti a acidi ferritici</i>							
405 S 17	-	-	X 6 CrAl 13	-	SUS 405	2302	405
409 S 19	-	-	X 6 CrTi 12	-	SUH 409	-	409
403 S 17	-	-	X 6 Cr 13	F.3110	SUS 403	2301	403
430 S 15	960	-	X 8 Cr 17	F.3113	SUS 430	2320	430
430 S 15	60	-	X 8 Cr 17	F-3153	SUS 430; SUH 21	-	430
434 S 17	-	-	X 8 CrMo 17	F.3116	SUS 434	2325	434
-	-	-	X 6 CrTi 17	-	SUS 430 LX	-	XM 8; 430 Ti
-	-	-	-	F-3123	SUS 444	2326	444
-	-	-	-	F-3152	-	-	-

	R _m [N/mm ²]	A ₅ [%]	Rockwell HRC	EN	ISO	Brand name	Mat.-Nr.	DIN	AFNOR
1.1	520 - 720	15		-	-	-	1.4762	X 10 CrAl 24	Z 10 CAS 24
R	Rost-/Säurebeständige Stähle austenitisch / Corrosion and acid proof steels austenitic / Aciers inox/resist. Acides - austénitique / Acciai inox e								
1.2	750 - 950	40		-	-	-	1.4372	X 12 CrMnNiN 17-7-5	Z 12 CMN 17-07 Az
1.1	680 - 880	35		-	-	-	1.4373	X 12 CrMnNiN 18-9-5	-
1.2	600 - 950	40		-	-	-	1.4310	X 10 CrNi 18-8; X 12 CrNi 17 7	Z 11 CN 17-08
1.1	630 - 850	35		-	-	-	1.4318	X 2 CrNiN 18-7	Z 3 CN 18-07 Az
1.1	500 - 700	35		-	-	-	1.4305	X 10 CrNiS 18 9	Z 10 CNF 18.09
1.2	600 - 951	36		-	-	-	1.4350	X 5 CrNi18 9	Z 6 CN 18.09
1.1	520 - 720	45		-	-	-	1.4301	X 5 CrNi 18 9	Z 6 CN 18.09
1.1	460 - 680	45		-	-	-	1.4306	X 2 CrNi 19 11	Z 2 CN 18.10
1.1	550 - 750	40		-	-	-	1.4311	X 2 CrNiN 18 10	Z 2 CN 18.10
1.1	510 - 710	45		-	-	-	1.4948	X 6 CrNi 18-11	-
1.1	520 - 700	45		-	-	-	1.4307	X 2 CrNi 18-9	Z 2 CN 19-09
1.1	500 - 750	40		-	-	-	1.4315	X 5 CrNiN 19-9	-
1.1	500 - 650	45		-	-	-	1.4303	X 5 CrNi 18 12	Z 8 CN 18.12
1.1	500 - 700	33		-	-	-	1.4833	X 12 CrNi 23-13	Z 15 CN 23-13
1.1	500 - 700	33		-	-	-	1.4845	X 8 CrNi 25-21	Z 8 CN 25-20
1.1	550 - 750	30		-	-	-	1.4841	X 15 CrNiSi 25-21	Z 15 CNS 25-20
1.1	520 - 680	40		-	-	-	1.4401	X 5 CrNiMo 18 10	Z 6 CND 17.11
1.1	530 - 730	40		-	-	-	1.4436	X 5 CrNiMo 17 13 3	Z 6 CND 17.12
1.1	520 - 680	40		-	-	-	1.4404	X 2 CrNiMo 17 13 2	Z 2 CND 17.12
1.1	520 - 700	40		-	-	-	1.4435	X 2 CrNiMo 18 14 3	Z 2 CND 17.13
1.1	520 - 700	40		-	-	-	1.4432	X 2 CrNiMo 17-12-3	Z 3 CND 17-02-03
1.1	580 - 780	40		-	-	-	1.4406	X 2 CrNiMoN 17 12 2	Z 2 CND 17.12 AZ
1.1	580 - 780	35		-	-	-	1.4429	X 2 CrNiMoN 17 13 3	Z 2 CND 17.13 AZ
1.1	490 - 740	40		-	-	-	1.4573	X 10 CrNiMoTi 18 12	-
1.1	520 - 690	40		-	-	-	1.4571	X 6 CrNiMoTi 17 12 2	Z 6 CNT 17.12
1.1	520 - 720	40		-	-	-	1.4580	X 6 CrNiMoNb 17 12 2	Z 6 CNDNb 17.12
1.1	550 - 700	35		-	-	-	1.4438	X 2 CrNiMo 18 16 4	Z 2 CND 19.15
1.1	580 - 780	35		-	-	-	1.4439	X 2 CrNiMoN 17-13-5	Z 3 CND 18-14-05 Az
1.1	490 - 740	40		-	-	-	1.4583	X 10 CrNiMoNb 18 12	-
1.1	500 - 720	40		-	-	-	1.4541	X 6 CrNiTi 18 10	Z 6 CNT 18.10
1.1	500 - 720	40		-	-	-	1.4878	X 8 CrNiTi 18-10	Z 6 CNT 18-10
1.1	500 - 720	40		-	-	-	1.4550	X 6 CrNiNb 18 10	Z 6 CNNb 18.10
1.1	500 - 700	40		-	-	-	1.4563	X 1 NiCrMoCu 31-27-4	Z 2 NCDU 31-27
1.1	520 - 730	35		-	-	-	1.4539	X 1 NiCrMoCu 25-20-5	Z 2 NCDU 25-20
1.1	550 - 750	30		-	-	-	1.4864	X12NiCrSi35-16	Z 20 NCS 33-16
1.1	620 - 880	20		-	-	-	1.4460	X 8 CrNiMo 27 5	Z 5 CND 27-05
1.1	500 - 740	30		-	-	-	1.4546	X 5 CrNiNb 18 10	Z 6 CNNb 18.10
1.2	< 600	40		-	-	Incoloy	-	-	-
R	Rost-/Säurebeständige Stähle Duplex / Corrosion and acid proof steels DUPLEX / Aciers inox/resist. Acides - DUPLEX / Acciai inox e resistenti								
1.3	340 - 950	20		-	-	-	1.4462	X 2 CrNiMoN 22-5-3	Z 3 CND 22-05 Az
1.2	630 - 850	20		-	-	-	1.4362	X 2 CrNiN 23-4	Z 3 CN 23-04 Az
1.3	730 - 1000	15		-	-	-	1.4410	X 2 CrNiMoN 25-7-4	Z 3 CND 25-06
1.3	730 - 1000	17		-	-	-	1.4507	X 2 CrNiMoCuN 25-6-3	Z 3 CNDU 25-06
R	Rost-/Säurebeständige Stähle martensitisch / Corrosion and acid proof steels - martensitic / Aciers inox/resist. Acides - martensitique / Acciai inox e								
1.1	> 600	20		-	-	-	1.4006	X 10 Cr 13	Z 12 C 13
1.1	650 - 850	12		-	-	-	1.4005	X 12 CrS 13	Z 12 CF 13
1.1	> 700	15		-	-	-	1.4021	X 20 Cr 13	Z 20 C 13
1.2	> 740	15		-	-	-	1.4028	X 30 Cr 13	Z 30 C 13
1.2	> 760	12		-	-	-	1.4031	X 38 Cr 13	Z 40 C 14
1.2	> 780	12		-	-	-	1.4034	X 46 Cr 13	Z 40 CM
1.2	> 850	12		-	-	-	1.4116	X 50 CrMoV 15	Z 50 CD 15
1.2	> 900	12		-	-	-	1.4122	X 39 CrMo 17-1	Z 38 CD 16-01
1.2	780 - 1100	11		-	-	-	1.4313	X 5 CrNi 13 4	Z 5 CN 13.4
1.2	840 - 1100	14		-	-	-	1.4418	X 4 CrNiMo 6-5-1	Z 6 CND 16-05-01
1.1	> 650	14		-	-	-	1.4024	X15Cr13	Z 12 C 13 M
1.1	640 - 840	11		-	-	-	1.4104	X 14 CrMoS 17	Z 13 CF 17
1.2	750 - 950	14		-	-	-	1.4057	X 17 CrNi 16 2	Z 15 CN 16.02
1.2				-	-	-	1.4747	X 80 CrNiSi 20	Z 80 CSN 20.02
1.2	< 900			-	-	-	1.4125	X 105 CrMo 17	Z 100 CD 17
R	Rost-/Säurebeständige Stähle ausscheidungshärtend / Corrosion and acid proof steels precipitation-hardened /								
1.2	> 1000	> 10		-	-	13-8 PH	1.4534	-	-
1.2	> 1000	> 10		-	-	15-5 PH	1.4545	X4CrNiCuNb16.4	-
1.3	> 1275	5		-	-	17-4 PH	1.4542	X5CrNiCuNb16-4	Z 7 CNU 15-05
1.3	> 1030	19		-	-	-	1.4568	X7CrNiAl17-7	Z 9 CNA 17-07

	 BS	EN	 UNI	 UNE	 JIS	 SIS	 AISI/SAE/ASTM
-	-	-	X 16 Cr 26	F.3154	SUH 446	-	446
<i>resistenti agli acidi - austenitico</i>							
-	-	-	-	-	-	-	201
284 S 16	-	-	-	-	-	-	202
301 S 21	-	-	X10CrNi18-8	F-3517	SUS 301	2331	301
-	-	-	-	-	-	-	301LN
303 S 21	58M	-	X 10 CrNi 18 9	F.3508	SUS 303	2346	303
304 S 31	58E	-	X 5 CrNi 18 10	F.3551	SUS 302	-	304
304 S 15	58E	-	X 5 CrNi 18 10	F.3551	SUS 304	2332; 2333	304; 304 H
304 S 12	-	-	X 2 CrNi 18 11	F.3503	SCS 19	2352; 2333	304 L
304 S 62	-	-	X 2 CrNi 18 11	-	SUS 304 LN	2371	304 LN
304 S 50	-	-	-	-	-	-	304H
-	-	-	-	-	-	-	304 L
-	-	-	-	-	-	-	304 N
305 S 19	-	-	X 8 CrNi 19 10	-	SUS 305	-	308; 305
309 S 24	-	-	X 6 CrNi 23 14	-	SUS 309S	-	309 S
310 S 24	-	-	X 6 CrNi 25 20	F.331	SUS 310S	2361	310 S
314 S 25	-	-	-	F.3310	SUH 310	-	314
316 S 16	58J	-	X 5 CrNiMo 17 12	F.3543	SUS 316	2347	316
316 S 16	-	-	X 5 CrNiMo 17 13	F.3538	SUS 316	2343	316
316 S 11	-	-	X 2 CrNiMo 17 12	F.3533	SUS 316 L	2348	316 L
317 S 12	-	-	X 2 CrNiMo 17 13	-	SCS 16; SUS 316 L	2353	316 L
316 S 13	-	-	X 2 CrNiMo 17-12-3	F-3537	-	-	316 L
316 S 61	58C	-	X 2 CrNiMoN 17 12	F-3542	SUS 316 LN	-	316 LN
316 S 62	-	-	X 2 CrNiMoN 17 13	F-3543	SUS 316 LN	2375	316 LN
320 S 33	-	-	X 6 CrNiMoTi 17 13	-	SUS 316 Ti	-	316 Ti
320 S 31	58J	-	X 6 CrNiMoTi 17 12	F.3535	SUS 316 Ti	2350	316 Ti
318 S 17	-	-	X 6 CrNiMoNb 17 12	F.3536	-	-	316 Cb
317 S 12	-	-	X 2 CrNiMo 18 15	F-3539	SUS 317 L	2367	317 L
-	-	-	-	F-3544	-	-	317 LMN
-	-	-	X 6 CrNiMoNb 17 13	-	-	-	318
321 S 12	58B	-	X 6 CrNiTi 18 11	F.3553; F.3523	SUS 321	2337	321
321 S 31	-	-	-	-	SUS 321	-	321 H
347 S 17	58F	-	X 6 CrNiNb 18 11	F.3552; F.3524	SUS 347	2338	347
-	-	-	-	-	-	2584	B 668
904 S 13	-	-	-	-	-	2562	904 L
NA 17	-	-	-	F.3313	SUH 330	-	330
-	-	-	-	F-35552	SUS 329 J 1	2324	329
347 S 18	58F	-	X 6 CrNiNb 18 11	F-3524	SUS 347	2338	348
-	-	-	-	-	-	-	A 240
<i>agli acidi - DUPLEX</i>							
318 S 13	-	-	-	-	SUS 329J3L	2377	2205
-	-	-	-	-	-	2327	2304
-	-	-	-	-	SCS 14A	2328	2507
-	-	-	-	-	-	-	255
<i>resistenti agli acidi - martensitica</i>							
410 S 21	56A	-	X 12 Cr 13	F.3401	SUS 410	2302	410; CA-15
416 S 21	-	-	X 12 CrS 13	-	SUS 416	2380	416
420 S 37	-	-	X 20 Cr 13	-	SUS 420 J 1	2303	420
420 S 45	-	-	X 30 Cr 13	-	SUS 420 J 2	2304	420
-	-	-	X 40 Cr 14	-	SUS 420 J 2	2304	420
420 S 45	56D	-	X 40 Cr 14	F.3405	SUS 420 J 2	2304	420
-	-	-	-	F-3422	-	-	-
-	-	-	-	-	-	-	-
425 C 11	-	-	X 6 CrNi 13 04	-	SCS 5	2385	CA 6-NM
-	-	-	-	-	-	2387	-
420 S 29	56B	-	-	-	SUS 410J1	-	420
-	-	-	X 14 CrS 17	F-3431	SUS 430 F	2383	430 F
431 S 29	57	-	X 16 CrNi 16	F-3427	SUS 431	2321	431
443 S 65	59	-	X 80 CrSiNi 20	F.320.B	SUH 4	-	HNV 6
-	-	-	X 105 CrMo 17	-	SUS 440 C	-	440 C
<i>Aciers inox/resist. Acides - durci par précipitation / Acciai inox e resistenti agli acidi - induriti per precipitazione</i>							
-	-	-	-	-	-	-	5629
-	-	-	-	-	-	-	5659
-	-	-	-	-	SCS 630	-	630
301 S 81	-	-	-	-	SUS 631	2388	631

	R _m	A ₅	Rockwell	EN	ISO	Brand name	Mat.-Nr.		
	[N/mm ²]	[%]	HRC					DIN	AFNOR
1.3	1500			-	-	Udimet B300	-	-	-
F	Gusseisen mit Lamellengraphit / Cast iron with lamellar graphite / Fontes graphite lamellaire / Ghise con grafite lamellare								
1.1	100 - 200			-	-	GG 10	0.6010	EN-JL 100	Ft 10 D
1.1	150 - 250			-	-	GG 15	0.6015	EN-JL 150	Ft 15 D
1.1	200 - 300			-	-	GG 20	0.6020	EN-JL 200	Ft 20 D
1.1	250 - 350			-	-	GG 25	0.6025	EN-JL 250	Ft 25 D
1.1	300 - 400			-	-	GG 30	0.6030	EN-JL 300	Ft 30 D
1.1	350 - 450			-	-	GG 35	0.6035	EN-JL 350	Ft 35 D
1.1	400 - 500			-	-	GG 40	0.6040	EN-JL Z	Ft 40 D
1.1	> 170			-	-	-	0.6655	GGL-NiCuCr 15 6 2	L-NUC 15 6 2
1.1	> 170	2		-	-	-	0.6660	GGL-NiCr 20-2	L-NC 20 2
1.1	> 190	1		-	-	-	0.6676	GGL-NiCr 30-3	L-NC 30 3
1.1	> 170			-	-	-	0.6680	GGL-NiSiCr 30-5-5	L-NSC 30 5 5
F	Gusseisen mit Kugelgraphit / Cast iron with nodular graphite / Fontes graphite sphéroïdal / Ghise con grafite nodulare								
1.2	370 - 400	14		-	-	GGG 40	0.7040	EN-GJS-400-15	FGS 400-12
1.2	420 - 500	7		-	-	GGG 50	0.7050	EN-GJS-500-7	FGS 500-7
1.2	550 - 600	3		-	-	GGG 60	0.7060	EN-GJS-600-3	FGS 600-3
1.2	660 - 700	2		-	-	GGG 70	0.7070	EN-GJS-700-2	FGS 700-2
1.2	800	2		-	-	GGG 80	0.7080	EN-GJS-800-2	FGS 800-2
1.2	370 - 480	7		-	-	-	0.7660	GGG-NiCr 20 2	S-NC 20 2
1.2	> 390	7		-	-	-	0.7661	GGG-NiCr 20 3	S-NC 20 3
1.2	370 - 450	20		-	-	-	0.7670	EN-GJSA-XNi22	S-N 22
1.2	440 - 480	25		-	-	-	0.7673	EN-GJSA-XNiMn23-4	S-NM 23 4
1.2	370 - 480	7		-	-	-	0.7676	EN-GJSA-XNiCr30-3	S-NC 30 3
1.2	> 370	13		-	-	-	0.7677	GGG-NiCr 30 1	S-NC 30 1
1.2	390 - 500	1		-	-	-	0.7680	EN-GJSA-XNiSiCr30-5-5	S-NSC 30 5 5
1.2	370 - 420	20		-	-	-	0.7683	EN-GJSA-XNi35	S-N 35
1.2	370 - 450	7		-	-	-	0.7685	EN-GJSA-XNiCr35-3	S-NC 35 3
F	Gusseisen mit Vermiculargraphit / Cast iron with vermicular graphite / Fontes vermiculaires / Ghise con grafite vermicolare								
1.3	300 - 375	1,5		-	-	GGV 300	-	EN-GJV 300	-
1.3	350 - 425	1,5		-	-	GGV 350	-	EN-GJV 350	-
1.3	400 - 475	1		-	-	GGV 400	-	EN-GJV 400	-
1.3	450 - 525	1		-	-	GGV 450	-	EN-GJV 450	-
1.3	500 - 575	0,5		-	-	GGV 500	-	EN-GJV 500	-
F	Temperguss / Malleable cast iron / Fontes malléables / Ghise malleabili								
2.1	> 350	10		-	-	-	0.8135	EN-GJMB 350-10	MN35-10
2.1	> 450	6		-	-	-	0.8145	EN-GJMB 450-6	-
2.1	> 550	4		-	-	-	0.8155	EN-GJMB 550-4	MP50-5
2.1	> 650	2		-	-	-	0.8165	EN-GJMB 650-2	MP60-3
2.1	> 700	2		-	-	-	0.8170	EN-GJMB 700-2	M870-2
2.1	270 - 360	3		-	-	-	0.8035	EN-GJMW-350-4	MB35-7
2.1	300 - 420	4		-	-	-	0.8040	EN-GJMW-400-5	MB40-10
2.1	330 - 480	4		-	-	-	0.8045	EN-GJMW-450-7	-
2.1	490 - 570	3		-	-	-	0.8055	EN-GJMW-550-4	-
F	Hartguss / Hard casting / Fontes trempées / Ghise in conchiglia								
3.1	< 1400		<45	-	-	-	0.9620	GJH-X 260 NiCr 4-2	-
3.1	< 1400		<45	-	-	-	0.9625	GJH-X 330 NiCr 4-2	-
3.1	< 1400		<45	-	-	-	0.9630	GJH-X 300 CrNiSi 9-5-2	-
3.1	< 1400		<45	-	-	-	0.9635	GJH-X 300 CrMo 15-3	-
3.1	1000	8		-	-	ADI 800		GJS-800-8	-
3.1	1000	5		-	-	ADI 1000		GJS-1000-5	-
3.1	1200	2		-	-	ADI 1200		GJS-1200-2	-
3.1	1400	1		-	-	ADI 1400		GJS-1400-1	-
N	Aluminium unlegiert / Aluminium unalloyed / Aluminium non allié / Alluminio non legato								
1.1	40 - 100	< 33		ENAW-1090	-	-	3.0305	Al99.9	A9
1.1	100	< 27		ENAW-1080A	-	-	3.0128	Al99.8	A8
1.1	100	< 27		ENAW-1070A	-	-	3.0275	Al99.7	A7
1.1	65 - 150	< 40		ENAW-1050A	-	-	3.0225	Al99.5	A5
1.1	> 75	18		ENAW-1200	-	-	3.0205	Al99	A4
N	Aluminium Knetlegierung nicht ausgehärtet / Aluminium wrought alloys - not hardened / Alliages d'aluminium corroyés - non trempé /								
1.1	100 - 125	> 1		ENAW-3105	-	-	3.0505	AlMn0.5Mg0.5	-
1.1	80 - 230	> 2		ENAW-3103	-	-	3.0515	AlMn1	-
1.1	115 - 290	4		ENAW-3005	-	-	3.0525	AlMn1Mg0.5	A-M1G0,5
1.1	< 320	8		ENAW-6082	-	-	3.2315	AlMgSi1	A-SGM0,7
1.1	100 - 205	> 4		ENAW-5005	-	-	3.3315	AlMg1	A-G0,6
1.1	150 - 300	> 3		ENAW-5052	-	-	3.3523	AlMg2,5	A-G2,5C







Internationaler Werkstoffvergleich



International comparison of materials

Comparatif matieres

Confronto internazionale dei materiali





	 BS	EN	 UNI	 UNE	 JIS	 SIS	 AISI/SAE/ASTM
-	-	-	-	-	-	-	-
-	-	-	G 10	-	FC 10	01 10-00	A48-20 B
Grade 150	-	-	G 15	FG 15	FC 15	01 15-00	A48-25 B
Grade 220	-	-	G 20	FG 20	FC 20	01 200	A48-30 B
Grade 260	-	-	G 25	FG 25	FC 25	01 250	A48-40 B
Grade 300	-	-	G 30	FG 30	FC 30	1 300	A48-45 B
Grade 350	-	-	G 35	FG 35	FC 35	1 350	A48-50 B
Grade 400	-	-	-	-	-	1 400	A48-60 B
L-NUC 15 6 2	-	-	-	-	-	-	A-436 Type 1
L-NC 20 2	-	-	-	-	-	-	A-436 Type 2
L-NC 30 3	-	-	-	-	-	-	A-436 Type 3
L-NSC 30 5 5	-	-	-	-	-	-	A-436 Type 4
SNG 420/12	-	-	GS 400-12	GGG 40	FCD 40	0717-02	60-40-18
SNG 500/7	-	-	GS 500/7	GGG 50	FCD 50	0727-02	65-45-12
SNG 600/3	-	-	GS 600/3	-	FCD 60	0732-03	80-55-06
SNG 700/2	-	-	GS 700/2	GGG 70	FCD 70	0737-01	100-70-03
SNG 800/2	-	-	GS 800/2	-	-	-	120-90-02
S-NiCr 20 2	-	-	-	F 43000	-	-	A 439 Type D-2
S-NiCr 20 3	-	-	-	F 43001	-	-	A 439 Type D-2B
S-Ni 22	-	-	-	F 43002	-	-	A 439 Type D-2C
S-NiMn 23 4	-	-	-	F 43003	-	-	A 439 Type D-2M
S-NiCr 30 3	-	-	-	-	-	-	A 439 Type D-3
S-NiCr 30 1	-	-	-	F 43004	-	-	A 439 Type D-3A
S-NiSiCr 30 5 5	-	-	-	F 43005	-	-	A 439 Type D-4
S-Ni 35	-	-	-	F 43006	-	-	A 439 Type D-5
S-NiCr 35 3	-	-	-	-	-	-	A 439 Type D-5B
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
B340/12	-	-	-	GTS 35	-	0810	32510
P440/7	-	-	-	GTS 45	-	0852	40010
P510/4	-	-	-	GTS 55	-	0854	50005
P570/3	-	-	-	GTS 65	-	0856	70003
P690/2	-	-	-	GTS 70	-	0862; 0864	90001
W340/3	-	-	-	GTW 35	FCMW 330	-	MB 350-4
W410/4	-	-	GMB 40	GTW 40	FCMW 370	-	MB 400-5
-	-	-	GMB 45	GTW 45	FCMWP 440	-	MB 450-7
-	-	-	-	GTW 55	-	-	-
Grade 2 A	-	-	-	-	-	0512-00	A532 I B
Grade 2 B	-	-	-	-	-	0513-00	A532 I A
Grade 2 C	-	-	-	-	-	-	A532 I D
Grade 3 A	-	-	-	-	-	-	A532 IIC 15%
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	4509	-	-	-	-
-	-	-	4508	-	-	-	-
1B	-	-	4507	L-3051	A1x1	-	-
1C	-	-	3567	-	-	-	-
<i>Leghe malleabili di alluminio - non indurita</i>							
N31	-	-	-	-	-	-	3105
N3	-	-	3568	L-3810	144054	-	-
-	-	-	-	-	-	-	-
H30	-	-	3571	-	-	-	-
N41	-	-	5764	L-3350	A2x8	144106	5005
2L56	-	-	4574	-	-	-	5052







	R _m [N/mm ²]	A ₅ [%]	Rockwell HRC	EN	ISO	Brand name	Mat.-Nr.	 DIN	 AFNOR
1.1	180 - 310	> 3		ENAW-5754	-	-	3.3535	AlMg3	A-G3M
1.1	> 250	13		ENAW-5019	-	-	3.3555	AlMg5	A-G5
1.1	> 310	8		ENAW-2011	-	-	3.1655	AlCuBiPb	A-U5PbBi
N Aluminium Knetlegierung ausgeh. / Aluminium wrought alloys - hardened / Alliages d'aluminium corroyés - trempé / Leghe malleabili di									
1.2	150 - 400	> 2		ENAW-2017A	-	-	3.1325	AlCuMg1	A-U4G
1.2	180 - 460	> 3		ENAW-2024	-	-	3.1355	AlCuMg2	A-U4G1
1.2	310	< 8		ENAW-2014 A	-	-	3.1255	AlCuSiMn	A-U45G
1.2	330	> 4		ENAW-3003	-	-	3.0517	AlMnCu	-
1.2	130 - 360	> 2		ENAW-6082	-	-	3.2315	AlMgSi1	A-SGM0,7
1.2	130 - 270	> 8		ENAW-6101A	-	-	3.3206	AlMgSi0.5	-
1.2	< 350	15		ENAW-5083	-	-	3.3547	AlSiMg4,5Mn	A-G4,5MC
1.2	120 - 300	> 2		ENAW-6061	-	-	3.3211	AlMg1SiCu	-
1.2	150 - 250	> 1		ENAW-3005	-	-	3.0525	AlMn1Mg0,5	A-M1G0,5
1.2	410 - 490	> 3		ENAW-7022	-	-	3.4345	AlZnMgCu0.5	AZ 4 GU/9051
1.2	180 - 560	> 1		ENAW-7075	-	-	3.4365	AlZnMgCu1.5	A-Z5GU
1.2	330 - 370	8		ENAW-2030	-	-	3.1645	AlCu4PbMg	AU4Pb
N Aluminium Guss Si < 5% / Aluminium cast alloys / Fontes d'alu / Leghe fuse di alluminio con									
1.3	280 - 300	< 1		ENAC-45300	-	-	3.2134	G-AlSi5Cu1Mg	-
1.3	> 320	< 5		ENAC-21000	-	-	3.1371	G-AlCu4MgTi	A-U5GT
1.3	140 - 300	> 2		-	-	-	3.3241	G-AlMg3Si	-
1.3	200	1		ENAC-51200	-	-	3.3292	GD-ALMg9	A-G10S
1.3	140 - 210	> 4		ENAC-51000	-	-	3.3541	GD-ALMg3	A-G3T
N Aluminium Guss Si 5 - 12% / Aluminium cast alloys / Fontes d'alu / Leghe fuse di alluminio con									
1.4	250	< 2,5		ENAC-42000	AlSi7Mg	-	3.2371	G-AlSi7Mg	A-S7G
1.4	160 - 200	1		ENAC-46200	-	-	3.2161	G-AlSi8Cu3	-
1.4	230 - 360	> 2		ENAC-43300	-	-	3.2373	G-AlSi9Mg	A-S9G
1.4	240 - 350	< 3		ENAC-46000	-	-	3.2163	G-AlSi9Cu3	A-S9U3
1.4	150 - 340	> 1		ENAC-43400	-	-	3.2381	G-AlSi10Mg	A-S10G
1.4	160	1		ENAC-43200	-	-	3.2383	G-AlSi10Mg(Cu)	A-S10GU
1.4	150 - 170	5		ENAC-44200	-	-	3.2581	G-AlSi12	A-S13
1.4	150 - 290	> 1		ENAB-47000	-	-	3.2583	G-AlSi12(Cu)	A-S12U
N Aluminium Guss Si > 12% / Aluminium cast alloys / Fontes d'alu / Leghe fuse di alluminio con									
1.5	280 - 380	< 5		ENAW-4032	-	-	-	AlSi12,5MgCuNi	A-S 12 UGN
1.5	165 - 370	< 1		ENAC-48100	-	-	-	G-AlSi17Cu4Mg	-
1.5	180 - 220	< 1		-	-	-	-	G-AlSi18CuNiMg	-
1.5	200 - 240	< 1		-	-	-	-	G-AlSi21CuNiMg	-
1.5	230 - 300	< 1,5		-	-	-	-	G-AlSi25CuNiMg	-
N Reinkupfer, niedriglegiertes Kupfer / Pure copper, low alloyed copper / Cuivre pur, Cuivre faiblement allié / Rame puro, Rame poco legato									
2.1	< 600	> 10		ENCW-502 L	-	-	2.0240	CuZn15 (MS85)	CuZn15
2.1	< 800	> 10		ENCW-505 L	-	-	2.0265	CuZn30 (MS70)	CuZn30
2.1	< 360	< 8		Cu-ETP	-	-	2.0065	E-Cu58	Cu-ETP
2.1	410 - 620	> 8		ENCW-102 C	-	-	2.1248	CuBe2Pb	CuBe1,9Pb
2.1	400 - 600	15		ENCW-101 C	-	AMCOLOY 83	2.1247	CuBe2	CuBe1,9Pb
2.1	480 - 650	> 8		ENCW-110 C	-	-	2.0850	CuNi2Be	-
2.1	> 410			ENCW-120 C	-	-	2.1580	CuZr	-
N Kupfer-Zink-Legierung (Messing) langspanend / Copper-zinc alloys (brass) (long-chipping) / Alliages cuivre-zinc (laitons) (cop. longs) /									
2.2	< 800	> 10		ENCW-508 L	-	-	2.0321	CuZn37	CuZn37
2.2	< 800	> 12		ENCW-600 N	-	-	2.0335	CuZn36Pb1,5 (Ms63)	CuZn35Pb2
2.2	340 - 480	25		ENCW-509 L	-	-	2.0360	CuZn40 (Ms60)	-
2.2	280	30		ENCW-602 N	-	-	-	CuZn36Pb2As	-
2.2	360 - 400	> 12		ENCW-603 N	-	-	2.0401	CuZn36Pb3	CuZn36Pb3
2.2	> 300	20		ENCW-604 N	-	-	2.0332	CuZn37Pb0,5 (Ms63)	-
N Kupfer-Zink-Legierung (Messing) kurzspanend / Copper-zinc alloys (brass) (short-chipping) / Alliages cuivre-zinc (laitons) (cop. courts) /									
2.3	340 - 570	> 11		ENCW-614 N	-	-	2.0401	CuZn39Pb3 (Ms58)	-
2.3	600	20		ENCW-724 R	-	-	-	CuZn21Si3P	-
2.3	360 - 560	> 12		ENCW-612 N	-	-	2.0380	CuZn39Pb2 (Ms58)	CuZn39Pb2
2.3	450	18		ENCW-720 R	-	-	2.0580	CuZn40Mn1Pb	-
2.3	370	12		ENCW-617 N	-	-	2.0402	CuZn40Pb2 (Ms58)	-
N Kupfer-Alu-Legierung langspanend / Copper-alum. alloys (long-chipping) / Alliages cuivre-alu. (cop. courts) /									
2.4	480	30		ENCW-303 G	-	-	2.0932	CuAl8Fe3	CuAl7Fe2
2.4	300 - 500	12		ENCW-352 H	-	-	2.0872	CuNi10Fe1Mn	-
N Kupfer-Alu-Legierung kurzspanend / Copper-alum. alloys (short-chipping) / Alliages cuivre-alu. (cop. longs) /									
2.5	> 550	40		-	-	Ampco 8	-	-	-
2.5	> 750	1		-	-	Ampco 21	-	-	-
2.5	> 500	0		-	-	Ampco 25	-	-	-
2.5	> 810	15		-	-	Ampco 45	-	-	-

	BS	EN	UNI	UNE	JIS	SIS	AISI/SAE/ASTM
N5	-	-	3575	L-3390	-	-	-
N6	-	-	3576	-	-	-	-
FC1	-	-	6362	-	-	-	-
<i>alluminio - indurita</i>							
H14	-	-	3579	L-3120	-	-	2017
2L97	-	-	3579	L-3140	A3x4	-	2024
H15	-	-	-	-	-	-	3581
							3568
H30	-	-	3571	L-3451	-	144212	-
H9	-	-	3569	L-3441	A2x5	144103	-
N8	-	-	7790	-	-	-	5083
H20	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
L86	-	-	811-04	-	-	-	7050
2L95	-	-	3735	-	-	-	7175
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	5080	-	-	-	-
-	-	-	3059	-	ADC6	-	-
LM25	-	-	G-AlSi7Mg	-	AC4C	-	-
-	-	-	-	-	-	-	-
-	-	-	3051	-	AC4A	-	-
LM24	-	-	5075	-	-	-	-
LM9	-	-	3051	L-2560	-	4253	-
LM 9	-	-	-	-	-	4253	A 360.2
LM 6	-	-	3051	-	AC3	4261	A 413.2
LM 20	-	-	3048	-	-	4260	A 413.1
-	-	-	-	-	-	-	4032
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
CZ 102	-	-	-	-	C2300	-	C23000
CZ 106	-	-	-	-	C2600	-	C26000
Cu-ETP-2	-	-	Cu-ETP	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	CuBe2	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	CuZr	-	-	-	-
<i>Leghe rame-zinco (ottone) (truciolo lungo)</i>							
CZ 108	-	-	-	-	C2700	-	C27200
CZ 108	-	-	P-CuZn35	-	C2700	-	C27000
DCB1	-	-	-	-	-	-	C28000
CZ 132	-	-	-	-	-	-	C35330
CZ 124	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
<i>Leghe rame-zinco (ottone) (truciolo corto)</i>							
CZ 121 Pb3	-	-	-	-	-	-	C38500
-	-	-	-	-	-	-	-
-	-	-	P-CuZn39Pb2 (P-OT59Pb)	-	-	-	-
CZ 136	-	-	-	-	-	-	-
CZ 122	-	-	CuZn40Pb2Sn (P-OT58Pb)	-	-	-	-
<i>Leghe rame-allum. (truciolo lungo)</i>							
CA 106	-	-	P-CuAl8Fe3	-	-	-	-
-	-	-	-	-	CNP1	-	C70600
<i>Leghe rame-allum. (truciolo corto)</i>							
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

	R _m	A ₅	Rockwell	EN	ISO	Brand name	Mat.-Nr.		
	[N/mm ²]	[%]	HRC					DIN	AFNOR
2.5	> 1000	8		-	-	Ampco M-4	-	-	-
2.5	> 600	13		ENCC-333 G	-	-	2.0975	CuAl10Fe5Ni5-C	CuAl10Fe5Ni5
2.5	> 700	12		ENCW-307 G	-	-	2.0966	CuAl10Ni5Fe4	CuAl9Ni5Fe3M1
2.5	> 400	10		ENCW-351 H	-	-	2.0875	CuNi9Sn2	-
N	Kupfer-Zinn-Legierung (Bronze) langspanend / Copper-tin alloys (bronze) (long-chipping) / Alliages cuivre-étain (bronze) (cop. longs) /								
2.6	< 900	50		ENCW-450 K	-	-	2.1016	CuSn4	-
2.6	390 - 620	> 15		ENCW-459 K	-	-	2.1030	CuSn8P	-
2.6	230	12		ENCC-492 K	-	-	2.1093	CuSn7Zn2Pb3	CuSn7Zn3Pb3
2.6	230 - 320	12		ENCC-493 K	-	-	2.1090.01	CuSn7Zn4Pb7 (Rg7)	CuSn7Pb6Zn4
2.6	280	18		ENCC-494 K	-	-	2.1086.01	G-CuSn10Zn (Rg10)	-
2.6	300 - 600	15		ENCW-450 K	-	-	2.1016	CuSn4	CuSn4P (U-E5 P)
2.6	400 - 700	13		ENCW-453 K	-	-	2.1030	CuSn8	CuSn8
N	Kupfer-Zinn-Legierung (Bronze) kurzspanend / Copper-aluminium alloys (bronze) (short-chip.) / Alliages cuivre-alu. (bronze) (cop. courts) /								
2.7	180 - 220	12		ENCC-490 K	-	-	2.1098	CuSn3Zn8Pb5	-
2.7	200 - 250	6		ENCC-491 K	-	-	2.1097	CuSn5Zn5Pb5 (Rg5)	CuSn5Pb5Zn5
2.7	250 - 280	10		ENCC-480 K	-	-	2.1050	CuSn10-C	-
2.7	280 - 300	8		ENCC-484 K	-	-	2.1060	CuSn12Ni2-C	-
N	Magnesium-Legierungen / Magnesium wrought alloys / Alliages de magnésium corroyés / Leghe malleabili di magnesio								
3.1	> 270	6		ENMG-P-63	-	-	3.5612	MgAl6Zn	-
3.1	> 240	2		ENMB-21120	-	-	3.5912	G-MgAl9Zn1	-
3.1	240 - 280			ENMG-P-62	-	-	3.5314	MgAl3Zn	G-A3 Z1
3.1	295			ENMG-P-63	-	-	3.5612	MgAl6Zn	G-A6 Z1
3.1	200 - 230	7		ENMG-P-43	-	-		MgZn3Zr	G-A7 Z1
3.1	330 - 350			-	-	-	3.5161	MgZn6Zr	-
N	Zink-Legierung / Zinc alloys / Cuivre-zinc / Leghe zinco								
3.2	300	6		-	-	ZAMAK		ZnAl4 (Z400)	Z-A4
3.2	330	4		-	-	ZAMAK		ZnAl4Cu1 (Z410)	Z-A4UI
3.2	400	6		-	-	ZAMAK		ZnAl4Cu3 (Z430)	Z-A4U3
N	Kunststoffe / Synthetics / Plastiques / Materie plastiche								
4.1				-	-	-	Bakelit	-	-
4.1				-	-	-	Pertinax	-	-
4.2				-	-	-	PMMA	-	-
4.2				-	-	-	POM	-	-
4.2				-	-	-	PVC	-	-
N	Faserverstärkte Kunststoffe / Fibre-reinforced synthetics / Plastiques chargées en fibres / Resine epossidiche								
4.3	155 - 365			-	-	-	GFK	-	-
4.3	190 - 210			-	-	-	CFK uni.	-	-
4.3	190 - 210			-	-	-	CFK milti.	-	-
4.3				-	-	-	AFK	-	-
S	Nickel- /Kobalt- /Eisen-Legierungen / Nickel- /Cobalt- /Iron - alloys / Alliages nickel/cobalt réfractaires / Leghe nichel/cobalto resistenti al colore								
1.2	900 - 1100	14		EN 15224	-	-	1.4718	X 45 CrSi 9 3	Z 45 CS 9
1.1	500 - 750	30		-	-	-	1.4828	X 15 CrNiSi 20 12	Z 15 CNS 20.12
1.1	550 - 800	30		-	-	-	1.4841	X 15 CrNiSi 25 20	Z 15 CNS 25.20
1.1	500 - 750	35		-	-	-	1.4845	X 12 CrNi 25 21	Z 12 CN 25.20
1.1	550 - 800	30		-	-	-	1.4864	X 12 NiCrSi 36 16	Z 12 NCS 37.18
1.3	950 - 1200	8		-	-	-	1.4871	X 53 CrMnNiN 21 9	Z 52 CMN 21.09
1.1	500 - 750	30		-	-	-	1.4876	X 10 NiCrAlTi 33 20	Z 8 NC 32.21
1.1	500 - 750	40		-	-	-	1.4878	X 12 CrNiTi 18 9	Z 6 CNT 18.12 (B)
1.1	500 - 700	35		-	-	Monel 400	2.4360	NiCu30Fe	Nu 30
1.1	620 - 850	17		-	-	Monel K-500	2.4375	NiCu30Al	Nu 30 AT
1.1	< 770	15		-	-	Nimonic 901	2.4662	NiCr13Mo6Ti3	-
1.1	700 - 800	26		-	-	Nimonic 75	2.4630, 2.4951	NiCr20Ti	NC 20 T
1.2	870			-	-	Nimonic C276	2.4819	NiMo16Cr15	-
1.2	> 690	40		-	-	Hastelloy B	2.4685	G-NiMo28	-
1.2	> 740	42		-	-	Hastelloy C-4	2.4610	NiMo16Cr16Ti	-
1.2	> 760	40		-	-	Hastelloy B-2	2.4617	G-NiMo30	-
1.2	890	50		-	-	Inconel 625	2.4856	NiCr22Mo9Nb	NC 22 FeDNb
1.2	800 - 1000	12		-	-	Nimonic 80 A	2.4631	NiCr20TiAl	-
1.2	1000	20		-	-	Haynes 188	-	-	-
1.3	< 1400	25		-	-	Inconel 718	2.4668	NiCr19FeNbMo	NC 19Fe Nb
1.3	1100	15		-	-	René 41	2.4973	NiCr19Co11MoTi	NC19KDT
1.3	1100	15		-	-	René 63	-	-	NK15C14D6AWT
1.3	1300	29		-	-	Udimet 718	2.4668	NiCr19FeNbMo	NC19FeNb
1.3	1200	20		-	-	Waspaloy	2.4654	NiCr20Co14MoTi	NC20K14
1.3	1200	17		-	-	Nimonic 90	2.4632	NiCr20Co18Ti	NC20ATV
1.3	1180	25		-	-	Nimonic 105	2.4634	NiCo20Cr15MoAlTi	NCKD20ATV

	BS	EN	UNI	UNE	JIS	SIS	AISI/SAE/ASTM
-	-	-	-	-	-	-	-
AB2	-	-	G-CuAl11Fe4Ni4	CuAl110Fe5Ni5, C-4220	AIBC3	Aluminiumbrons	C95800
CA 104	-	-	P-CuAl10Fe5Ni5	-	-	-	C6300
-	-	-	-	-	-	-	C72500
<i>Leghe rame-stagno (bronzo) (truciolo lungo)</i>							
-	-	-	-	-	C 5111	-	C51100
-	-	-	-	-	C5210	-	C52100
CuSn7Pb3Zn3	-	-	-	-	PBC2	-	C92410
-	-	-	CuSn7Zn4Pb6	-	-	-	C93200
-	-	-	-	-	-	-	-
PB 101	-	-	CuSn4	-	-	-	-
-	-	-	CuSn8	-	-	-	-
<i>Leghe rame-alluminio (bronzo) (truciolo corto)</i>							
LG1	-	-	-	-	-	-	C83810
LG2	-	-	CuSn5Zn5Pb5 (BS ZN 5)	-	H 5111	-	C83600
CuSn10P (PB4)	-	-	CuSn10 (10 G-B 10)	-	PBC2	5443	C90700
CuSn12Ni2 (CT2)	-	-	-	-	-	-	C91700
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
MAG-E-111	-	-	-	-	-	-	-
MAG-E-121	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
MAG-E-151	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
Alloy A	-	-	ZA4	-	-	-	AG40A
Alloy B	-	-	ZA4Cu1	-	-	-	AG41A
-	-	-	ZA4Cu3	-	-	-	AG43A
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
401 S 45	52	-	X 45 CrSi 8	-	SUH 1	-	HNV 3
309 S 24	-	-	-	-	SUH 309	-	309
-	-	-	X 16 CrNiSi 25 20	-	SUH 310	-	314; 310
310 S 24	-	-	X 6 CrNi 26 20	F.331	SUH 310; SUS 310 S	-	310 S
NA 17	-	-	-	-	SUH 330	-	330
349 S 54	-	-	X 53 CrMnNiN 21 9	-	SUH 35; SUH 36	-	EV 8
NA 15 (H)	-	-	-	-	NCF 800	-	B 163
321 S 20	-	-	X 6 CrNiTi 18 11	-	SUS 321	2337	321
NA 13	-	-	-	-	-	-	-
NA 18	-	-	-	-	-	-	-
HR 53	-	-	-	-	-	-	-
HR 5	-	-	-	-	-	-	-
-	-	-	-	-	-	-	SB575
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
NA 21	-	-	-	-	-	-	-
HR 401; 601	-	-	-	-	NCF 80 A	-	-
-	-	-	-	-	-	-	5608
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	5712
-	-	-	-	-	-	-	-
HR8	-	-	-	-	-	-	5383
-	-	-	-	-	-	-	5544
HR2	-	-	-	-	-	-	-
HR3	-	-	-	-	-	-	-

	R _m [N/mm ²]	A ₅ [%]	Rockwell HRC	EN	ISO	Brand name	Mat.-Nr.	 DIN	 AFNOR
1.3	900 - 1200			-	-	Nimocast 713	2.4670	-	-
1.3	900 - 1200			-	-	Nimocast PK 24	2.4674	-	-
S	Reintitan, Titanlegierungen / Pure titanium, Titanium alloys / Titane pur, Alliages de titane / Titanio puro, Leghe di titanio								
2.1	290 - 410	30		-	-	-	3.7025	Ti99.5 / Ti Gr.1	AIR:9182T60
2.1	380 - 540	20		-	-	-	3.7035	Ti99.4 / Ti Gr.2	-
2.1	460 - 590	18		-	-	-	3.7055	Ti99.3 / Ti Gr.3	-
2.1	540 - 740	16		-	-	-	3.7065	Ti99.2 / Ti Gr.4	-
2.1	390 - 540	20		-	-	-	3.7235	Ti 2 Pd / Ti Gr.2Pd	-
2.2	> 890	> 10		-	-	-	3.7165	TiAl6V4 / Ti Gr. 5	T-A6V
2.2	900	18		-	-	Tikrutan	3.7110	TiAl5Fe2.5	-
	< 1100	18		-	-	-	-	Ti8Al1Mo1V	-
2.2	1100	18		-	-	-	3.7115	TiAl5Sn2,5	T-A5E
2.2	1100	10		-	-	-	-	Ti-6Al-2Sn-4Zr-6Mo	-
2.2	1200	11		-	-	-	-	Ti-6Al-2Sn-2Zr-2Mo-2Cr-0.25Si	-
2.2	> 1000	9		-	-	-	3.7185	TiAl4Mo4Sn 2	-
H	Gehärtete Stähle, Hartguss / Hardened steels, hard castings / Aciers traités, Fontes trempées / Acciai temprati, Ghise in conchiglia								
1.1	1450	13	45	-	-	Toolox 44	-	-	-
1.1	1600 - 1800		< 55	-	-	Hardox 500	-	-	-
1.1	1820 - 1900		< 55	10029	-	Hardox 550	-	-	-
			< 55	-	-	K12	-	-	-
1.1	~1860		< 55	-	-	-	1.2713	55 NiCrMoV 6	55 NCDV 7
1.2	1995 - 2300		< 60	-	-	Armox 600T	-	-	-
1.2	~2100		< 60	-	-	-	1.2542	45 WCrV 7	-
1.3			< 63	-	-	Ferro-Titanit	-	-	-
1.3			< 63	EN ISO 4957	-	-	1.2379	X 155 CrVmo12 1	Z 160 CDV 12
1.4			< 64	-	-	K12 (HT)	-	-	-
1.4			< 66	EN ISO 4957 HS	-	HSSE	-	-	-
1.4			< 66	-	-	Mh97+Pb	1.1268	-	-
1.4			< 66	-	-	-	1.2436	X 210 CrW 12	-

	 BS	EN	 UNI	 UNE	 JIS	 SIS	 AISI/SAE/ASTM
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
TA 1	-	-	-	-	-	-	-
TA 2	-	-	-	-	-	-	-
TA 3	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
TA 28	-	-	-	-	-	-	R56400
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	R54810
TA 14, 17	-	-	-	-	-	-	B 265
-	-	-	-	-	-	-	4981
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	F.520.S	SKT 4	-	L 6
-	-	-	-	-	-	-	-
BS 1	-	-	45 WCrV 8 KU	45WCrSi8	-	2710	S 1
-	-	-	-	-	-	-	-
BD 2	-	-	X 155 CrVMo 12 1 KU	-	SKD 11	-	D 2
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1095
-	-	-	X 215 CrW 12 1 KU	X210CrW12	SKD 2	2312	-

I. Angebot

- Die zu dem Angebot gehörigen Unterlagen wie Abbildungen, Zeichnungen, Gewicht und Maßangaben, sind nur annähernd maßgebend, soweit sie nicht ausdrücklich als verbindlich bezeichnet sind. An Kostenanschlägen, Zeichnungen und anderen Unterlagen behält sich der Lieferer Eigentums- und Urheberrecht vor; sie dürfen Dritten nicht zugänglich gemacht werden. Der Lieferer ist verpflichtet, vom Besteller als vertraulich bezeichnete Pläne nur mit dessen Zustimmung Dritten zugänglich zu machen. Die Preise der Angebote gelten für Bestellungen innerhalb 14 Tagen ab Angebotsdatum. Bei späteren Bestellungen behält sich der Lieferer die Berechnung der am Tage der Lieferung gültigen Preise vor.
- Der Besteller übernimmt für die von ihm beizubringenden Unterlagen, wie Zeichnungen, Lehren, Muster oder dgl. die alleinige Verantwortung. Der Besteller hat dafür einzustehen, dass von ihm vorgelegte Ausführungszeichnungen in Schutzrechte Dritter nicht eingreifen. Der Lieferer ist dem Besteller gegenüber nicht zur Prüfung verpflichtet, ob durch Abgabe von Angeboten aufgrund von ihm eingesandter Ausführungszeichnungen im Falle der Ausführung irgendwelche Schutzrechte Dritter verletzt werden. Ergibt sich trotzdem eine Haftung des Lieferers, so hat der Besteller ihn schadlos zu halten.
- Muster werden nur gegen Berechnung geliefert.

II. Umfang der Lieferung

- Für den Umfang der Lieferung ist die schriftliche Bestellsannahme des Lieferers maßgebend, im Falle eines Angebots des Lieferers mit zeitlicher Bindung und fristgemäßer Annahme das Angebot, sofern keine rechtzeitige Bestellsannahme vorliegt. Nebenabreden und Änderungen bedürfen der schriftlichen Bestätigung des Lieferers.
- Werden Sonderwerkzeuge in Auftrag gegeben, so darf die Bestellmenge um ca. 10%, mindestens jedoch um 2 Stück über- oder unterschritten werden. Berechnet wird die Liefermenge.

III. Preise und Zahlung

- Die Preise gelten mangels besonderer Vereinbarung ab Werk einschließlich Verladung im Werk, jedoch ausschließlich Verpackung. Zu den Preisen kommt die Mehrwertsteuer in der jeweiligen gesetzlichen Höhe hinzu.
- Mangels besonderer Vereinbarung ist die Zahlung ohne jeden Abzug frei Zahlstelle des Lieferers innerhalb von 30 Tagen nach Rechnungsdatum (auch bei Teillieferungen) zu leisten.
- Geht die Zahlung innerhalb von 10 Tagen ab Rechnungsdatum ein, so wird ein Skonto von 2 % eingeräumt.
- Die Zurückhaltung von Zahlungen oder die Aufrechnung wegen etwaiger vom Lieferer bestrittener Gegenansprüche des Bestellers sind nicht statthaft.

IV. Lieferzeit

- Die Lieferfrist beginnt mit der Absendung der Bestellsannahme, jedoch nicht vor der Beibringung der vom Besteller zu beschaffenden Unterlagen, Genehmigungen, Freigaben sowie vor Eingang einer vereinbarten Anzahlung.
- Die Lieferfrist ist eingehalten, wenn bis zu ihrem Ablauf der Liefergegenstand das Werk verlassen hat oder die Versandbereitschaft mitgeteilt ist.
- Die Lieferfrist verlängert sich angemessen bei Maßnahmen im Rahmen von Arbeitskämpfen, insbesondere Streik und Aussperrung sowie beim Eintritt unvorhergesehener Hindernisse, die außerhalb des Willens des Lieferers liegen, soweit solche Hindernisse nachweislich auf die Fertigstellung oder Ablieferung des Liefergegenstandes von erheblichem Einfluß sind. Dies gilt auch, wenn die Umstände von Unterteilern eintreten. Die vorbezeichneten Umstände sind auch dann vom Lieferer nicht zu vertreten, wenn sie während eines bereits vorliegenden Verzuges entstehen. Beginn und Ende derartiger Hindernisse wird in wichtigen Fällen der Lieferer dem Besteller baldmöglichst mitteilen.
- Wird der Versand auf Wunsch des Bestellers verzögert, so ist der Lieferer berechtigt, nach Setzung und fruchtlosem Verlauf einer angemessenen Frist anderweitig über den Liefergegenstand zu verfügen und den Besteller mit angemessener verlängerter Frist zu beliefern.
- Die Einhaltung der Lieferfrist setzt die Erfüllung von Vertragspflichten des Bestellers voraus.

V. Gefahrübergang und Entgegennahme

- Die Gefahr geht spätestens mit der Absendung der Lieferteile auf den Besteller über, und zwar auch dann, wenn Teillieferungen erfolgen oder der Lieferer noch andere Leistungen, z.B. die Versandkosten oder Anfuhr und Aufstellung übernehmen hat. Um den Besteller vor eventuellen Transportschäden zu bewahren, werden vom Lieferer alle Sendungen auf Kosten des Bestellers durch eine General-Police versichert, soweit dem vom Besteller nicht ausdrücklich widersprochen wurde.
- Verzögert sich der Versand infolge von Umständen, die der Besteller zu vertreten hat, so geht die Gefahr vom Tage der Versandbereitschaft ab auf den Besteller über; jedoch ist der Lieferer verpflichtet, auf Wunsch und Kosten des Bestellers die Versicherungen zu bewirken, die dieser verlangt.
- Angelieferte Gegenstände sind, auch wenn sie unwesentliche Mängel aufweisen, vom Besteller unbeschadet der Rechte aus Abschnitt VII entgegenzunehmen.
- Teillieferungen sind zulässig.

VI. Eigentumsvorbehalt

- Der Lieferer behält sich das Eigentum an dem Liefergegenstand vor, bis sämtliche Forderungen des Lieferers gegen den Besteller aus der Geschäftsverbindung einschließlich der künftig entstehenden Forderungen auch aus gleichzeitig oder später abgeschlossenen Verträgen beglichen sind. Dies gilt auch dann, wenn einzelne oder sämtliche Forderungen des Lieferers in eine laufende Rechnung aufgenommen wurden und der Saldo gezogen und anerkannt ist. Bei vertragswidrigem Verhalten des Bestellers, insbesondere bei Zahlungsverzug, ist der Lieferer zur Rücknahme des Liefergegenstandes nach Mahnung berechtigt und der Besteller zur Herausgabe verpflichtet. In der Zurücknahme sowie in der Pfändung des Gegenstandes durch den Lieferer liegt, sofern nicht das Abzahlungsgesetz Anwendung findet, ein Rücktritt vom Vertrag nur dann, wenn dies der Lieferer ausdrücklich schriftlich erklärt hat. Bei Pfändungen oder sonstigen Eingriffen Dritter hat der Besteller den Lieferer unverzüglich schriftlich zu benachrichtigen.
- Der Besteller ist berechtigt, den Liefergegenstand im ordentlichen Geschäftsgang weiterzuverkaufen. Er tritt jedoch dem Lieferer bereits jetzt alle Forderungen mit sämtlichen Nebenrechten ab, die ihm aus der Weiterveräußerung gegen die Abnehmer oder gegen Dritte erwachsen. Zur Einziehung dieser Forderungen ist der Besteller auch nach der Abtretung ermächtigt. Die Befugnis des Lieferers, die Forderungen selbst einzuziehen, bleibt hiervon unberührt; jedoch verpflichtet sich der Lieferer, die Forderungen nicht einzuziehen, solange der Besteller seinen Zahlungsverpflichtungen ordnungsgemäß nachkommt. Der Lieferer kann verlangen, dass der Besteller ihm die abgetretenen Forderungen und deren Schuldner bekanntgibt, alle zum Einzug erforderlichen Angaben macht, die dazugehörigen Unterlagen aushändigt und den Schuldnern die Abtretung mitteilt. Wird der Liefergegenstand zusammen mit anderen Waren, die dem Lieferer nicht gehören, weiterverkauft, so gilt die Forderung des Bestellers gegen den Abnehmer in Höhe des zwischen Lieferer und Besteller vereinbarten Lieferpreises als abgetreten.
- Der Lieferer verpflichtet sich, die ihm zustehenden Sicherheiten insoweit freizugeben, als ihr Wert die zu sichernden Forderungen, soweit diese noch nicht beglichen sind, um mehr als 25 % übersteigt.
- Der Lieferer ist berechtigt, den Liefergegenstand auf Kosten des Bestellers gegen Diebstahl, Bruch-, Feuer-, Wasser- und sonstige Schäden zu versichern, sofern nicht der Besteller selbst die Versicherung nachweislich abgeschlossen hat.
- Der Besteller darf den Liefergegenstand weder verpfänden noch zur Sicherung übereignen. Bei Pfändungen sowie Beschlagnahme oder sonstigen Verfügungen durch dritte Hand hat er den Lieferer unverzüglich davon zu benachrichtigen.
- Der Eigentumsvorbehalt und die dem Lieferer zustehenden Sicherheiten gelten bis zur vollständigen Freistellung aus Eventualverbindlichkeiten, die der Lieferer im Interesse des Bestellers eingegangen ist.

VII. Haftung für Mängel der Lieferung

Für Mängel der Lieferung, zu denen auch das Fehlen ausdrücklich zugesicherter Eigenschaften gehört, haftet der Lieferer unter Ausschluss weiterer Ansprüche unbeschadet Abschnitt IX, 4 wie folgt:

- Alle diejenigen Teile sind unentgeltlich nach billigem Ermessen unterliegender Wahl des Lieferers nachzubessern, oder neu zu liefern, die sich innerhalb von 6 Monaten (bei Mehrschichtenbetrieb innerhalb von 3 Monaten) seit Lieferung infolge eines vor dem Gefahrübergang liegenden Umstandes – insbesondere wegen fehlerhafter Bauart, schlechter Baustoffe oder mangelhafter Ausführung – als unbrauchbar oder in ihrer Brauchbarkeit nicht unerheblich beeinträchtigt

herausstellen. Die Feststellung solcher Mängel ist dem Lieferer unverzüglich schriftlich zu melden. Ersetzte Teile werden Eigentum des Lieferers.

Für Mängel des vom Besteller angelieferten Materials haftet der Lieferer nur, wenn er bei Anwendung fachmännischer Sorgfalt die Mängel hätte erkennen müssen.

Verzögert sich der Versand ohne Verschulden des Lieferers, so erlischt die Haftung spätestens 12 Monate nach Gefahrübergang.

Für wesentliche Fremderzeugnisse beschränkt sich die Haftung des Lieferers auf die Abtretung der Haftungsansprüche, die ihm gegen den Lieferer des Fremderzeugnisses zustehen.

Bei Fertigung nach Zeichnung des Bestellers haftet der Lieferer nur für zeichnungsgemäße Ausführung.

2. Das Recht des Bestellers, Ansprüche aus Mängeln geltend zu machen, verjährt in allen Fällen vom Zeitpunkt der rechtzeitigen Rüge an in 6 Monaten, frühestens jedoch mit Ablauf der Gewährleistungsfrist.

3. Es wird keine Gewähr übernommen für Schäden, die aus nachfolgenden Gründen entstanden sind:

Ungeeignete oder unsachgemäße Verwendung, fehlerhafte Montage bzw. Inbetriebsetzung durch den Besteller oder Dritte, natürliche Abnutzung, fehlerhafte oder nachlässige Behandlung, ungeeignete Betriebsmittel, chemische, elektrochemische oder elektrische Einflüsse, sofern sie nicht auf ein Verschulden des Lieferers zurückzuführen sind.

4. Zur Vornahme aller dem Lieferer nach billigem Ermessen notwendig erscheinenden Nachbesserungen und Ersatzlieferungen hat der Besteller nach Verständigung mit dem Lieferer die erforderliche Zeit und Gelegenheit zu geben, sonst ist der Lieferer von der Mängelhaftung befreit. Nur in dringenden Fällen der Gefährdung der Betriebssicherheit und zur Abwehr unverhältnismäßig großer Schäden, wobei der Lieferer sofort zu verständigen ist, oder wenn der Lieferer mit der Beseitigung des Mangels im Verzug ist, hat der Besteller das Recht, den Mangel selbst oder durch Dritte beseitigen zu lassen und vom Lieferer Ersatz der notwendigen Kosten zu verlangen.

5. Von den durch die Nachbesserung bzw. Ersatzlieferung entstehenden unmittelbaren Kosten trägt der Lieferer – insoweit als sich die Beanstandung als berechtigt herausstellt – die Kosten des Ersatzstückes einschließlich des Versandes. Im übrigen trägt der Besteller die Kosten.

6. Für das Ersatzstück und die Nachbesserung beträgt die Gewährleistungsfrist 3 Monate, sie läuft mindestens aber bis zum Ablauf der ursprünglichen Gewährleistungsfrist für den Liefergegenstand.

7. Durch etwa seitens des Bestellers oder Dritter unsachgemäß ohne vorherige Genehmigung des Lieferers vorgenommene Änderungen oder Instandsetzungsarbeiten wird die Haftung für die daraus entstehenden Folgen aufgehoben.

8. Weitere Ansprüche des Bestellers, insbesondere ein Anspruch auf Ersatz von Schäden, die nicht an dem Liefergegenstand selbst entstanden sind, sind, soweit gesetzlich zulässig, ausgeschlossen.

VIII. Haftung für Nebenpflichten

Wann durch Verschulden des Lieferers der gelieferte Gegenstand vom Besteller infolge unterlassener oder fehlerhafter Ausführung von vor oder nach Vertragsschluss liegenden Vorschlägen und Beratungen sowie anderen vertraglichen Nebenverpflichtungen – insbesondere Anleitung für Bedienung und Wartung des Liefergegenstandes – nicht vertragsgemäß verwendet werden kann, so gelten unter Ausschluss weiterer Ansprüche des Bestellers die Regelungen der Abschnitte VII und IX entsprechend.

IX. Recht des Bestellers auf Rücktritt

1. Der Besteller kann vom Vertrag zurücktreten, wenn dem Lieferer die gesamte Leistung vor Gefahrübergang endgültig unmöglich wird. Dasselbe gilt bei Unvermögen des Lieferers. Der Besteller kann auch dann vom Vertrag zurücktreten, wenn bei einer Bestellung gleichartiger Gegenstände die Ausführung eines Teils der Lieferung der Anzahl nach unmöglich wird und er ein berechtigtes Interesse an der Ablehnung einer Teillieferung hat; ist dies nicht der Fall, so kann der Besteller die Gegenleistung entsprechend mindern.

2. Liegt Leistungsverzug im Sinne des Abschnittes IV der Lieferbedingungen vor, und gewährt der Besteller dem in Verzug befindlichen Lieferer eine angemessene Nachfrist, mit der ausdrücklichen Erklärung, dass er nach Ablauf dieser Frist die Annahme der Leistung ablehne, und wird die Nachfrist nicht eingehalten, so ist der Besteller zum Rücktritt berechtigt.

3. Tritt die Unmöglichkeit während des Annahmeverzuges oder durch Verschulden des Bestellers ein, so bleibt dieser zur Gegenleistung verpflichtet.

4. Der Besteller hat ferner ein Rücktrittsrecht, wenn der Lieferer eine ihm gestellte angemessene Nachfrist für die Nachbesserung oder Ersatzlieferung bezüglich eines von ihm zu vertretenden Mangels im Sinne der Lieferbedingungen durch sein Verschulden fruchtlos verstreichen läßt. Das Rücktrittsrecht des Bestellers besteht auch bei Unmöglichkeit oder Unvermögen der Nachbesserung oder Ersatzlieferung durch den Lieferer.

5. Ausgeschlossen sind, soweit gesetzlich zulässig, alle anderen weitergehenden Ansprüche des Bestellers, insbesondere auf Wandlung, Kündigung oder Minderung sowie auf Ersatz von Schäden irgendwelcher Art, und zwar auch von solchen Schäden, die nicht an dem Liefergegenstand selbst entstanden sind.

X. Recht des Lieferers auf Rücktritt

Für den Fall unvorhergesehener Ereignisse im Sinne des Abschnittes IV der Lieferbedingungen, sofern sie die wirtschaftliche Bedeutung oder den Inhalt der Leistung erheblich verändern oder auf den Betrieb des Lieferers erheblich einwirken, und für den Fall nachträglich sich herausstellender Unmöglichkeit der Ausführung wird der Vertrag angemessen angepaßt. Soweit dies wirtschaftlich nicht vertretbar ist, steht dem Lieferer das Recht zu, ganz oder teilweise vom Vertrag zurückzutreten. Schadensersatzansprüche des Bestellers wegen eines solchen Rücktritts bestehen nicht. Will der Lieferer vom Rücktrittsrecht Gebrauch machen, so hat er dies nach Erkenntnis der Tragweite des Ereignisses unverzüglich dem Besteller mitzuteilen, und zwar auch dann, wenn zunächst mit dem Besteller eine Verlängerung der Lieferfrist vereinbart war.

XI. Besondere Bedingungen für Bearbeitungsverträge (Fertigstellung, Aufarbeitung, Umarbeitung oder Wiederherstellung von Werkzeugen)

Ergänzend zu oder abweichend von den Lieferbedingungen gilt für derartige Bearbeitungsverträge

- Die Rechnungen sind sofort ohne Abzug zu bezahlen.
- Für das Verhalten des an den Bearbeiter eingesandten Materials übernimmt dieser keine Haftung. Sein Anspruch auf Vergütung bleibt unberührt. Wird das Material bei der Bearbeitung durch Verschulden des Bearbeiters unbrauchbar, entfallen der Vergütungsanspruch des Bearbeiters und ein etwaiger Schadensersatzanspruch des Bestellers.
- Mängelhaftung ist ausgeschlossen.

XII. Sonstige Haftung

Soweit eine Haftung des Lieferers, gleichgültig aus welchem Rechtsgrund, gegeben ist, beschränkt sich diese auf höchstens 5 % vom Wert der Lieferung.

XIII. Gerichtsstand

Bei allen sich aus dem Vertragsverhältnis ergebenden Streitigkeiten ist, wenn der Besteller Vollkaufmann, eine juristische Person des öffentlichen Rechts oder ein öffentlich-rechtliches Sondervermögen ist, die Klage bei dem Gericht zu erheben, das für den Hauptsitz oder die Lieferung ausführende Zweigniederlassung des Lieferers zuständig ist. Der Lieferer ist auch berechtigt, am Hauptsitz des Bestellers zu klagen.

XIV. Vertraulichkeit

Unsere Geschäftspartner verpflichten sich, die im Rahmen der Geschäftsverbindung anfallenden Daten nicht an unbefugte Dritte weiterzugeben, sowie diese vor Zugriff und Missbrauch durch nicht berechtigte Personen sicher zu schützen und zu verwahren.

Sitz der GmbH ist Feucht, Registergericht Nürnberg, HRB 18451

Geschäftsführer: Martin Bieber

Druckfehler von technischen Daten berechtigen nicht zu Ansprüchen. Dargestellte Abbildungen sind nicht verbindlich. Nachdruck von Text und Bildern, auch auszugsweise, bedürfen unserer ausdrücklichen Genehmigung. Preise siehe aktuell gültige Preisliste.

Stand: 30.12.2012

I. Quotation

- The documents relating to the quotation, i.e. illustrations, drawings, indications of weights, dimensions etc. shall prevail only approximately, as far as they are not expressly stated as binding. The supplier reserves the right of ownership and the copyright in quotations, drawings and other documents; they must not be made available to third parties. Drawings having been declared as confidential by the purchaser may only be made available to third parties by the supplier after written agreement of the purchaser. The prices of the quotations are valid for a period of 14 days, from the date of its issue. With later orders, the supplier reserves the right to invoice the prices valid at the day of despatch.
- The purchaser accepts full responsibility for all documents supplied by himself to the supplier, i.e. drawings, gauges samples etc. The purchaser is responsible for the construction drawings handed over to the supplier as far as the violation of the patent-rights of third parties is concerned. The supplier is not obliged to check on behalf of the purchaser whether patentrights of third parties will be infringed, when executing the purchaser's order in accordance with such construction drawings. The liability of the supplier resulting in spite of the aforesaid shall be passed to the purchaser.
- Samples are only supplied against payment.

II. Extent of the supply

- For the extent of the supply, the supplier's written acknowledgement of order shall be decisive; in case of the supplier's quotation with temporal validity and acceptance in due time, the quotation shall be decisive, if the acknowledgement of order has not been sent in due time. Collateral agreements and modifications shall require the supplier's written consent.
- When special tools are ordered, the ordered quantity may be exceeded or fallen short by about 10%, however, at least by 2 pieces. The actual supplied quantity will be invoiced.

III. Prices and payment

- Unless otherwise agreed, the prices shall be understood to be ex works, including loading in the works, but excluding packing.
- The payment of the supplies shall be effected against irrevocable Letter of Credit.

IV. Time of delivery

- The time of delivery will commence from the acknowledgement of order, however, not prior to the receipt of the documents, authorizations and releases, to be provided by the purchaser, and/or to the receipt of the irrevocable Letter of Credit.
- The time of delivery shall be considered as observed when the objects of the supply shall have left the works or when the readiness of the goods to be supplied shall be intimated.
- The time of delivery shall be extended suitably in case of measures within the scope of strikes and lock-outs as well as in case of Force Majeure, as far as the influence of such impediments to the manufacture and delivery of the objects of the supply shall be of an important significance. The same shall be valid when such circumstances shall arise with subcontractors. The aforesaid circumstances shall not be answered for by the supplier when they will arise during an already existing delay. In important cases, the beginning and the end of such impediments shall be communicated by the suppliers as soon as possible to the purchasers.
- When the despatch of the goods has been postponed at the request of the purchaser, the supplier shall be entitled, after fixing of a fair time limit and its fruitless expiration, to dispose of the objects of the supply elsewhere and to supply the goods after a reasonably extended period.
- A prerequisite for the observation of the time of delivery shall be the fulfillment of the contract obligations by the purchaser.

V. Transmission of risks and acceptance

- The risks shall be transmitted to the purchaser with the despatch of the objects of the supply, at the latest, viz. also in case of partial supplies or when the supplier undertook other sources, e.g. the costs of despatch or the carriage and erection. In order to safeguard the purchaser against possible damages on the way, the supplier shall insure all the consignments for the account of the purchaser, by a general policy, as far as the purchaser did not disagree expressly.
- When the despatch is delayed, by reasons traceable to the purchaser, the risks shall be transmitted to the purchaser at the day the goods are despatched; however, the supplier shall be obliged, at the request and costs of the purchaser, to effect all kinds of insurance he may require.
- The supplied objects shall be accepted by the purchaser, even if they should show any insignificant defects, notwithstanding the rights laid down in the chapter VII.
- Partial supplied shall be admitted.

VI. Property reservation

- The supplier reserved the property of the objects of supply until all the claims against the purchaser and resulting from the business relationship shall be paid, including claims which might arise from contracts to be signed at the same time or in the future. This is also valid when the claims of the supplier shall be invoiced partially or in toto, and balanced and recognized. With a behaviour of the purchaser being in contradiction to the contract, especially in case of non-payment, the supplier shall be entitled to require, upon reminder, the restitution of the objects of the supply to the purchaser, and the purchaser shall be obliged to restate them. The restitution as well as the distraint of the objects of the supply shall constitute a withdrawal from the contract only by written declaration of the supplier. The purchaser shall notify the supplier, in writing and without delay, of distraints and other legal steps sued for by third parties.
- The purchaser shall be entitled to sell the objects of the supply in an orderly manner of conduct of business. However, he shall cede to the supplier all his claims and secondary rights, in advance which might arise from the sale of the goods against consumers of third parties. The right of the supplier to collect his claims himself shall not be affected; however, the supplier shall be obliged to waive this right as long as the purchaser shall meet his engagements orderly. The purchaser shall be obliged to specify his ceded claims and their debtors to the supplier, the required data for their collection to had over the pertinent documents and to notify this cession to the debtors. When the objects of supply are sold together with goods not of the supplier's property, the purchaser's claims against his customer shall be considered as ceded in the amount of the supplied goods stipulated between the supplier and the purchaser.
- The supplier shall engage himself to release his securing titles inasmuch as their value exceeds the claims to be secured for not having been paid, by more than 25%.
- The supplier shall be entitled to insure the objects of the supply against theft, breakage, fire, water and other damages, at the costs of the purchaser, as far as the purchaser himself cannot evidence such an insurance.
- The objects of supply must not either be pawned nor be assigned as a surety by the purchaser. He shall notify the supplier without delay in case of distraints, seizure or other legal measures of third parties.
- The property reservation and the securing title of the supplier shall remain in force until the complete release of possible engagements contracted by the supplier in the interest of the purchaser.

VII. Liability for defective supplies

The supplier shall be liable for defects of the supply, to which shall pertain also the lack of expressly promised properties, under exclusions of any further claims, and notwithstanding the chapter IX, para 4, as follows:

- All those parts showing to be unserviceable or to be essentially restricted in their usability within a period of 6 months (3 months in multiple shift working) after delivery, by circumstances to be traceable prior to the transmission of risks – especially due to a wrong type of tool, bad quality of the raw material or faulty manufacture – shall be repaired or replaced, at the own discretion of the supplier, free-of-charge. Such defects shall be intimated immediately and in writing to the supplier. Replaced parts shall be transmitted as the property of the supplier. The supplier's liability for defects of materials furnished to him by the purchaser shall be restricted to such defects to be detected by the supplier under usual expert and careful examination. If the despatch should be delayed by a cause not traceable to the supplier, the liability will become void 12 months after the transmission of risks, at the latest. For products of other manufacturers of important quantity, the supplier's liability shall be restricted to the cession of the liability of the manufacture of such products. When manufacturing tools as per the purchaser's drawings, the supplier's liability shall be restricted to the adherence to the dimensions marked on such drawings.
- The limitation of the purchaser's right to claim for defects shall be 6 months in every and each case, after the date of the intimation of the defects in due time, however, at the expiration of the guarantee period, at the earliest.

- No liability shall be incurred for damages resulting from the following causes: Unsuitable and improper utilization, faulty mounting and/or starting by the purchaser or third parties, natural wear, faulty or careless handling, unsuitable equipment, chemical, electrochemical or electrical influences, unless they shall be traceable to fault of the supplier.
- The purchaser shall agree in writing to the supplier the required time and possibilities to effect, at the latter's discretion, the repair work and/or to replace the objects of supply; if not so, the supplier shall be exempted from any liability. The purchaser shall be entitled, against immediate intimation to the supplier, to effect the repair work of the faulty object or to have it effected by third parties and to claim the costs involved from the supplier, only in urgent cases when the security of the works is imperiled and to safeguard them against relatively great damage, or when the supplier shall be in delay with the repairing work.
- From the costs arising from the repairing work or the replacement of the objects of supply, the costs of the replaced objects including the forwarding charges shall be born by the supplier, provided that the complaint was justified.
- The guarantee period for the replaced or repaired objects shall be 3 months, but at least until the expiry of the original guarantee period of the supplied objects.
- The supplier's liability shall be nul and void for improperly modifications or repair work executed by the purchaser of third parties, without previous consentment of the supplier.
- Further claims of the purchaser, especially such of indemnification for damaged other goods shall be excluded, unless they are protected by law.

VIII. Liability for secondary obligation

When the supplied objects cannot be used by the purchaser, as stipulated in the contract, due to not considered proposals and consultations prior to or after the conclusion of the contract, therefrom resulting faulty execution of the objects, and due to other secondary obligations – like servicing and maintenance instructions of the objects of supply – the stipulation of the chapters VII and IX shall be valid accordingly, excluding any further claims of the purchaser.

IX. Purchaser's right to rescind the contract

- The purchaser shall be entitled to rescind the contract if the whole supply has not taken place before the transmission of risks. The same shall be valid in case of insolvency of the supplier. The purchaser shall be further entitled to rescind the contract when the execution of a part of the ordered objects of the same type will become impossible, in the presence of a justified interest of the purchaser to decline a partial supply; if not so, the purchaser shall be entitled to reduce the valuable consideration.
- In case of a delay of delivery as stipulated in the chapter IV, the purchaser shall be entitled, after having set a respite to the supplier, with the express declaration to refuse the supply after that respite, to rescind the contract when this respite will not be observed.
- When this impossibility will arise during the delay of acceptance or by a fault of the purchaser, this latter shall be obliged to the valuable consideration.
- The purchaser shall be further entitled to rescind the contract if the supplier will not observe a respite of the purchaser to repair or to replace objects being faulty according to these terms of delivery. The purchaser's right to rescind the contract shall remain in force in case of the supplier's impossibility or inability to repair or to replace such faulty objects.
- Further claims of the purchaser, especially those of transformation, cancellation, diminution as well as of restitution of damages of any kind, including damaged other goods shall be excluded, unless they are protected by law.

X. Supplier's right to rescind the contract

In case of Force Majeure as stipulated in the Chapter IV of these terms of delivery, the contract shall be adapted accordingly, as far as the economic importance or the contents of the supply will be affected essentially and in the case of a subsequently proved impossibility to execute the contract. As far as this cannot be attended to, for economical reasons, the supplier shall be entitled to rescind the contract partially of in toto.

Such a rescission of the contract by the supplier shall not constitute any claims for compensation of the purchaser. When the supplier intends to make use of his right of rescission, he shall be compelled to notify this intention to the purchaser in writing, as soon as the significance of the event will have fully come to his knowledge, i.e. also in such cases when an extension of the time of delivery was agreed formerly with the purchaser.

XI. Special terms for machining orders (finishing, redressing, redesigning and reconditioning of tools)

In addition to or in deviation from these terms of delivery, the following shall be valid for such machining orders:

- The invoices shall be due upon receipt and without any deduction.
- The executor of such machinery orders shall not be held responsible for the behaviour of the material sent to him, without detriment to his right for remuneration. When the material becomes unusable by a faulty machinery of the executor, the right for remuneration of the executor and any claims for compensation of the orderer shall be nul and void.
- The liability for defects shall be excluded.

XII. Other liability

As far as a liability shall be created, for any legal ground whatever, this liability shall be restricted to an aggregate amount of 5% of the value of the supplied objects.

XIII. Jurisdiction

For litigations resulting from the contract of business men, legal public corporations or public foundations shall be competent the court of the supplier's registered principal place of business or the court of his branch establishment executing the delivery. The supplier shall be entitled to institute legal proceedings against the purchaser at the court of the purchaser's principal place of business.

XIV. Confidentiality

Our business partner agree not to disclose any data resulting from the business relationship to any unauthorized third parties and protect the data against unauthorized access and misuse by unauthorized persons.

Legal seat of the limited company is Feucht, register court Nürnberg, HRB 18451
General Manager: Martin Bieber

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As of 30.12.2012



OUR PRECISION IS YOUR SUCCESS



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