HSS-Fräser

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D Die Schnittwerte für alle Werkzeuge entnehmen Sie bitte unserem separaten Zerspanungshandbuch.

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	Langlochfräser / Slot end mills / Frese per cave				
					
Norm / Standard	DIN 327 D		WN		
Typ / Type / Tipo	N	N	N	N	N
Länge / Length / Lunghezza	kurz / short	kurz / short	lang / long	kurz / short	kurz / short
Schneidenanzahl / No. of flutes / Nr. denti	2	2	2	3	3
Drallwinkel / Spiral angle / Anglo elica	30°	30°	30°	30°	30°
Schaftform / Shank type / Forma codolo	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B
Schneidstoff / Cutting material / Acciaio frese	HSS-Co8	HSS-Co8	HSS-Co8	HSS-Co8	HSS-Co8
Beschichtung / Coating / Rivestimento		ALUNIT®			ALUNIT®
Ø mm	2-40	2-20	4-30	3-20	3-20
Code / Codice	1026	1027	1086	1156	1157
Seite / Page / Pagina	400	400	401	402	402
Geeignet für / Suitable for / Adatte per					
Stähle < 400 N/mm² / Steels < 400 N/mm² / Acciai < 400 N/mm²	▬	▬	▬	▬	▬
Stähle < 850 N/mm² / Steels < 850 N/mm² / Acciai < 850 N/mm²	▬	▬	▬	▬	▬
Stähle < 1.100 N/mm² / Steels < 1.100 N/mm² / Acciai < 1.100 N/mm²	▬	▬	▬	▬	▬
Stähle < 1.300 N/mm² / Steels < 1.300 N/mm² / Acciai < 1.300 N/mm²	▭	▭	▭	▬	▬
Stähle > 45 HRC / Steels > 45 HRC / Acciai > 45 HRC					
Rostfreie Stähle < 850 N/mm² / Stainless steels < 850 N/mm² / Acciai inossidabili < 850 N/mm²	▬	▬	▬	▬	▬
Rostfreie Stähle > 850 N/mm² / Stainless steels > 850 N/mm² / Acciai inossidabili > 850 N/mm²	▭	▭	▭	▭	▭
Grauguss, Temperguss / Cast iron, malleable cast iron / Ghisa grigia, ghisa malleabile	▭	▭	▭	▭	▭
Titan- und Titanlegierung / Titanium and titanium alloys / Titanio e leghe di Titanio	▭	▭	▭	▭	▭
Kupfer, Messing / Copper, brass / Rame, ottone	▬	▬	▬	▭	▭
Aluminium / Aluminium / Alluminio	▭	▭	▭		
Kunststoffe / Plastics / Materie plastiche	▭	▭	▭	▭	▭

▬ Ideal / Ideal / Ideale | ▭ Geeignet / Suitable / Adatte

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Langlochfräser / Slot end mills / Frese per cave				Minifräser / Mini end mills / Mini frese		Schaftfräser / End mills / Frese cilindriche
						
DIN 844 L		WN				DIN 844 K
N	N	N	N	N	N	N
lang / long	lang / long	kurz / short	kurz / short	kurz / short	lang / long	kurz / short
3	3	2	2	3	3	4-6
30°	30°	30°	30°	30°	30°	40°
DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B*	DIN 1835-B*	DIN 1835-B
HSS-Co8	HSS-Co8	HSS-Co8	HSS-Co8	HSS-Co8	HSS-Co8	HSS-Co8
	ALUNIT®		ALUNIT®			
2-20	2-20	2-20	3-12	1,5-6	2-6	4-30
1186	1187	1056	1057	1246	1256	1616
403	403	404	404	405	405	406
■	■	■	■	■	■	■
■	■	■	■	■	■	■
■	■	■	■	■	■	■
■	■	▭	▭	■	■	■
■	■	■	■	▭	▭	■
▭	▭	▭	▭	▭	▭	▭
▭	▭	▭	▭	▭	▭	▭
▭	▭	▭	▭	▭	▭	▭
▭	▭	■	■	▭	▭	▭
		▭	▭			
▭	▭	▭	▭	▭	▭	▭

*Schaft nach DIN 1835 B, gekürzt / Shank according to DIN 1835 B, shorten / Codolo secondo DIN 1835 B, ridotto

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I Per i parametri di lavorazione per tutti gli utensili richiedete il nostro manuale tecnico. Impiego frese, funzione colore anello pagina 450.

	Schaftfräser / End mills / Frese cilindriche						
							
Norm / Standard	DIN 844 K		DIN 327 D	DIN 844 B	DIN 844 K		
Typ / Type / Tipo	N	N	N	N	N	N	N
Länge / Length / Lunghezza	kurz / short	kurz / short	kurz / short	kurz / short	kurz / short	kurz / short	kurz / short
Schneidenanzahl / No. of flutes / Nr. denti	3-6	3-6	4	4	4-6	4-6	3
Drallwinkel / Spiral angle / Anglo elica	30°	30°	30°	30°	40°	40°	40°
Schaftform / Shank type / Forma codolo	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B
Schneidstoff / Cutting material / Acciaio frese	HSS-Co8	HSS-Co8	HSS-SPM	HSS-SPM	HSS-Co8	HSS-Co8	HSS-Co8
Beschichtung / Coating / Rivestimento		ALUNIT®	ALUNIT®	ALUNIT®		ALUNIT®	
Ø mm	2-32	2-25	6-22	3-25	3-32	3-32	4-25
Code / Codice	1816	1817	1877	1867	1786	1787	1666
Seite / Page / Pagina	407	407	408	408	409	409	410
Geeignet für / Suitable for / Adatte per							
Stähle < 400 N/mm² / Steels < 400 N/mm² / Acciai < 400 N/mm²	▬	▬	▬	▬	▬	▬	▬
Stähle < 850 N/mm² / Steels < 850 N/mm² / Acciai < 850 N/mm²	▬	▬	▬	▬	▬	▬	▬
Stähle < 1.100 N/mm² / Steels < 1.100 N/mm² / Acciai < 1.100 N/mm²	▬	▬	▬	▬	▬	▬	▬
Stähle < 1.300 N/mm² / Steels < 1.300 N/mm² / Acciai < 1.300 N/mm²	▬	▬	▬	▬	▱	▱	▬
Stähle > 45 HRC / Steels > 45 HRC / Acciai > 45 HRC							
Rostfreie Stähle < 850 N/mm² / Stainless steels < 850 N/mm² / Acciai inossidabili < 850 N/mm²	▱	▱	▬	▬	▬	▬	▱
Rostfreie Stähle > 850 N/mm² / Stainless steels > 850 N/mm² / Acciai inossidabili > 850 N/mm²	▱	▱	▬	▬	▱	▱	▱
Grauguss, Temperguss / Cast iron, malleable cast iron / Ghisa grigia, ghisa malleabile	▬	▬	▱	▱	▱	▱	▱
Titan- und Titanlegierung / Titanium and titanium alloys / Titanio e leghe di Titanio	▱	▱			▱	▱	▱
Kupfer, Messing / Copper, brass / Rame, ottone	▱	▱	▱	▱	▱	▱	▱
Aluminium / Aluminium / Alluminio			▬	▬			▱
Kunststoffe / Plastics / Materie plastiche	▱	▱			▱	▱	▱

▬ Ideal / Ideal / Ideale | ▱ Geeignet / Suitable / Adatte

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Schaftfräser / End mills / Frese cilindriche

	 HPT						
DIN 844 L	DIN 844 K		DIN 844 L	DIN 844 K			DIN 844 L
N	N	W	W	NR	NR	NR	NR
lang / long	kurz / short	kurz / short	lang / long	kurz / short	kurz / short	kurz / short	lang / long
4-6	4	2-3	2-3	3-5	3-5	3-5	4-5
30°	50°	40°	40°	30°	30°	30°	30°
DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B
HSS-Co8	HSS-E/PM	HSS-Co5	HSS-Co5	HSS-Co8	HSS-Co8	HSS-Co8	HSS-Co8
	ALUNIT®					ALUNIT®	
3-32	6-20	5-30	5-30	5-30	6-25	6-25	10-30
1836	1537	1644	1754	2026	2286	2287	2076
411	412	413	414	414	415	415	416
■	■	▱	▱	■	■	■	■
■	■			■	■	■	■
■	■			■	■	■	■
■	■			■	■	■	■
▱	■			■	■	■	■
▱	■			▱	▱	▱	▱
■	■			▱	▱	▱	▱
▱	■	▱	▱	▱	▱	▱	▱
▱		■	■	▱	▱	▱	▱
		■	■				
▱		■	■	▱	▱	▱	▱

■ Ideal / Ideal / Ideale | ▱ Geeignet / Suitable / Adatte

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I Per i parametri di lavorazione per tutti gli utensili richiedete il nostro manuale tecnico. Impiego frese, funzione colore anello pagina 450.

	Schaftfräser / End mills / Frese cilindriche						
					HPT 	HPT 	HPT 
Norm / Standard	WN		DIN 844 K				DIN 327 D
Typ / Type / Tipo	HR	HR	HR	HR	HR	HR	HF
Länge / Length / Lunghezza	extra kurz	extra kurz	kurz / short	kurz / short	kurz / short	kurz / short	kurz / short
Schneidenanzahl / No. of flutes / Nr. denti	4	3-4	3-6	3-6	3-6	3-5	3-6
Drallwinkel / Spiral angle / Anglo elica	30°	30°	30°	30°	30°	45°	30°
Schaftform / Shank type / Forma codolo	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B
Schneidstoff / Cutting material / Acciaio frese	HSS-Co8	HSS-Co8	HSS-Co8	HSS-Co8	HSS-E/PM	HSS-SPM	HSS-SPM
Beschichtung / Coating / Rivestimento	ALUNIT®	ALUNIT®		ALUNIT®	ALUNIT®	ALUNIT®	ALUNIT®
Ø mm	6-20	6-20	10-32	6-32	6-25	6-20	6-32
Code / Codice	2007	2057	2036	2047	2017	2147	2137
Seite / Page / Pagina	416	417	418	419	420	421	422
Geeignet für / Suitable for / Adatte per							
< 400 N/mm² — Stähle < 400 N/mm² / Steels < 400 N/mm² / Acciai < 400 N/mm²	▬	▬	▬	▬	▬	▬	▬
< 850 N/mm² — Stähle < 850 N/mm² / Steels < 850 N/mm² / Acciai < 850 N/mm²	▬	▬	▬	▬	▬	▬	▬
< 1100 N/mm² — Stähle < 1.100 N/mm² / Steels < 1.100 N/mm² / Acciai < 1.100 N/mm²	▬	▬	▬	▬	▬	▬	▱
< 1300 N/mm² — Stähle < 1.300 N/mm² / Steels < 1.300 N/mm² / Acciai < 1.300 N/mm²	▬	▬	▬	▬	▬	▱	
> 45 HRC — Stähle > 45 HRC / Steels > 45 HRC / Acciai > 45 HRC							
INOX < 850 N/mm² — Rostfreie Stähle < 850 N/mm² / Stainless steels < 850 N/mm² / Acciai inossidabili < 850 N/mm²	▱	▱	▱	▱	▱	▱	▬
INOX > 850 N/mm² — Rostfreie Stähle > 850 N/mm² / Stainless steels > 850 N/mm² / Acciai inossidabili > 850 N/mm²	▱	▱	▱	▱	▱	▬	▬
GRAUGUSS CAST IRON GHISA GRIGIA — Grauguss, Temperguss / Cast iron, malleable cast iron / Ghisa grigia, ghisa malleabile	▬	▬	▬	▬	▬		
Ti — Titan- und Titanlegierung / Titanium and titanium alloys / Titanio e leghe di Titanio	▱	▱	▱	▱	▱	▱	
Cu, Ms — Kupfer, Messing / Copper, brass / Rame, ottone							
Al — Aluminium / Aluminium / Alluminio							▱
Kunststoffe / Plastics / Materie plastiche							

▬ Ideal / Ideal / Ideale | ▱ Geeignet / Suitable / Adatte

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Schaftfräser / End mills / Frese cilindriche						
						
DIN 844 K	DIN 844 L	DIN 844 K	WN	DIN 844 K	DIN 845 B (C)	
HF	HR	WR	WR	NF	N	N
kurz / short	lang / long	kurz / short	lang / long	kurz / short	kurz / short	lang / long
3-6	4-5	3	3	3-5	4-6	4-6
30°	30°	35°	35°	30°	40°	40°
DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 228 A	DIN 228 A[1]
HSS-SPM	HSS-Co8	HSS-Co5	HSS-PM	HSS-Co8	HSS-Co5	HSS-Co5
ALUNIT®	ALUNIT®					
6-32	10-25	6-25	10-25	5-30	12-45	16-40
2117	2087	2094	2172	2156	2664	2684
423	424	425	426	426	427	428
▬	▬	▬	▬	▬	▬	▬
▬	▬	▬	▬	▬	▬	▬
▬	▬			▬	▬	▬
	▬			▬	▬	▬
▬	▬	▬	▬	▬	▭	▭
▬	▬			▬	▭	▭
	▬			▬	▭	▭
	▬			▬	▭	▭
		▬	▬	▬	▭	▭
▭		▬	▬			
		▭	▭	▭	▭	▭

[1] ≤ 28 mm DIN 228 A, ≥ 30 mm DIN 2207

▬ Ideal / Ideal / Ideale | ▭ Geeignet / Suitable / Adatte

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	Schaftfräser	Formfräser / Form cutters / Frese di forma				
						
Norm / Standard	DIN 845 B/C	DIN 1833 C	DIN 1833 D	DIN 6518 B	DIN 851 AB	
Typ / Type / Tipo	NR	N	N	N	N	NF
Länge / Length / Lunghezza	kurz / short					
Schneidenanzahl / No. of flutes / Nr. denti	4-6	10-12	8-12	4-6	6-10	6-10
Drallwinkel / Spiral angle / Anglo elica	30°				10-12°	15°
Schaftform / Shank type / Forma codolo	DIN 228 A[2]	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B	DIN 1835-B
Schneidstoff / Cutting material / Acciaio frese	HSS-Co8	HSS-Co5	HSS-Co5	HSS-Co5	HSS-Co5	HSS-Co5
Beschichtung / Coating / Rivestimento						
Ø mm	12-45	16-32	16-32	8-56	12,5-40	12,5-45
Code / Codice	2756	1394	1424	1464	1484	1504
Seite / Page / Pagina	429	430	430	431	432	432
Geeignet für / Suitable for / Adatte per						
Stähle < 400 N/mm² / Steels < 400 N/mm² / Acciai < 400 N/mm²	▬	▬	▬	▬	▬	▬
Stähle < 850 N/mm² / Steels < 850 N/mm² / Acciai < 850 N/mm²	▬	▬	▬	▬	▬	▬
Stähle < 1.100 N/mm² / Steels < 1.100 N/mm² / Acciai < 1.100 N/mm²	▬	▬	▬	▬	▬	▬
Stähle < 1.300 N/mm² / Steels < 1.300 N/mm² / Acciai < 1.300 N/mm²	▬	▭	▭	▭	▭	▬
Stähle > 45 HRC / Steels > 45 HRC / Acciai > 45 HRC						
Rostfreie Stähle < 850 N/mm² / Stainless steels < 850 N/mm² / Acciai inossidabili < 850 N/mm²	▬	▭	▭	▭	▭	▭
Rostfreie Stähle > 850 N/mm² / Stainless steels > 850 N/mm² / Acciai inossidabili > 850 N/mm²	▭	▭	▭	▭	▭	▭
Grauguss, Temperguss / Cast iron, malleable cast iron / Ghisa grigia, ghisa malleabile	▭	▭	▭	▭	▭	▭
Titan- und Titanlegierung / Titanium and titanium alloys / Titanio e leghe di Titanio	▭	▭	▭	▭	▭	▭
Kupfer, Messing / Copper, brass / Rame, ottone	▭	▭	▭	▭	▭	▭
Aluminium / Aluminium / Alluminio						
Kunststoffe / Plastics / Materie plastiche	▭	▭	▭	▭	▭	▭

▬ Ideal / Ideal / Ideale | ▭ Geeignet / Suitable / Adatte

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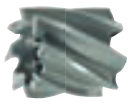
Formfräser / Form cutters / Frese di forma			Walzenstirnfräser / Shell end mills / Frese frontali				
							
DIN 850 D	WN		DIN 841		DIN 1880		DIN 841
N	N	NR	N	H	N	N	NR
	kurz / short	kurz / short					
6-14	6	5-6	6-12	10-18	6-12	6-12	5-12
8-12°	30°	30°	30°	20°	30°	30°	30°
DIN 1835-B	DIN 1835-B	DIN 1835-B					
HSS-Co5	HSS-Co5	HSS-Co8	HSS-Co5	HSS-Co5	HSS-Co5	HSS-Co5	HSS-Co5
						ALUNIT®	
4,5-45,5	30-50	30-50	30-90	30-90	40-100	40-80	35-60
1524	1374	1356	3044	3054	3074	3077	3106
433	434	434	435	436	436	436	437
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■
▱	■	■	■	■	■	■	■
▱	■	■	■	▱	■	■	■
▱	▱	▱	▱	■	▱	▱	▱
▱	▱	▱	▱	■	▱	▱	▱
▱	▱	▱	▱	▱	▱	▱	▱
▱	▱	▱	▱		▱	▱	▱
	▱						
▱	▱	▱	▱		▱	▱	▱

[1] ≤ 28 mm DIN 228 A, ≥ 30 mm DIN 2207 / [2] ≤ 30 mm DIN 228 A, ≥ 32 mm DIN 2207

■ Ideal / Ideal / Ideale | ▱ Geeignet / Suitable / Adatte

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	Walzenstirnfräser / Shell end mills / Frese frontali						
							
Norm / Standard	DIN 841	DIN 1880					
Typ / Type / Tipo	NF	NR	NR	HR	HR	NF	NF
Länge / Length / Lunghezza							
Schneidenanzahl / No. of flutes / Nr. denti	5-12	6-10	6-10	8-12	8-12	6-10	6-10
Drallwinkel / Spiral angle / Anglo elica	30°	30°	30°	30°	30°	30°	30°
Schaftform / Shank type / Forma codolo							
Schneidstoff / Cutting material / Acciaio frese	HSS-Co5	HSS-Co5	HSS-Co5	HSS-Co5	HSS-Co5	HSS-Co5	HSS-Co5
Beschichtung / Coating / Rivestimento			TiN		ALUNIT®		TiN
Ø mm	35-90	40-100	40-100	40-80	40-100	40-100	40-63
Code / Codice	3116	3126	3128	3146	3147	3136	3138
Seite / Page / Pagina	437	438	438	438	438	439	439
Geeignet für / Suitable for / Adatte per							
Stähle < 400 N/mm² / Steels < 400 N/mm² / Acciai < 400 N/mm²	▬	▬	▬	▰	▰	▬	▬
Stähle < 850 N/mm² / Steels < 850 N/mm² / Acciai < 850 N/mm²	▬	▬	▬	▰	▰	▬	▬
Stähle < 1.100 N/mm² / Steels < 1.100 N/mm² / Acciai < 1.100 N/mm²	▬	▬	▬	▬	▬	▬	▬
Stähle < 1.300 N/mm² / Steels < 1.300 N/mm² / Acciai < 1.300 N/mm²	▬	▬	▬	▬	▬	▬	▬
Stähle > 45 HRC / Steels > 45 HRC / Acciai > 45 HRC							
Rostfreie Stähle < 850 N/mm² / Stainless steels < 850 N/mm² / Acciai inossidabili < 850 N/mm²	▰	▰	▰	▰	▰	▰	▰
Rostfreie Stähle > 850 N/mm² / Stainless steels > 850 N/mm² / Acciai inossidabili > 850 N/mm²	▰	▰	▰	▰	▰	▰	▰
Grauguss, Temperguss / Cast iron, malleable cast iron / Ghisa grigia, ghisa malleabile	▬	▰	▰	▬	▬	▬	▬
Titan- und Titanlegierung / Titanium and titanium alloys / Titanio e leghe di Titanio	▰	▰	▰	▰	▰	▰	▰
Kupfer, Messing / Copper, brass / Rame, ottone	▰	▰	▰			▰	▰
Aluminium / Aluminium / Alluminio							
Kunststoffe / Plastics / Materie plastiche	▰	▰	▰			▰	▰

▬ Ideal / Ideal / Ideale | ▰ Geeignet / Suitable / Adatte

maykestag PERFORMANCE IN PRECISION

D Übersicht
HSS-Fräser

E Overview
HSS milling cutters

I Sommario
Frese HSS

Bohrungsfräser / Bore miling cutters / Frese a disco					Verzahnungswerkzeuge/ Gear generating tools / Frese a dentare	
						
DIN 885 A		DIN 842 A	DIN 847	DIN 856	DIN 855	BPII DIN 3972
N	H	H				
12-16	24-48	16-24	16-26	10-14	10-14	12-∞
14°	10-15°					
HSS-Co5	HSS-Co5	HSS	HSS	HSS	HSS	HSS
50-125	50-160	50-125	50-100	50-80	50-80	40-70
3174	3224	3293	3303	3313	3323	3353
440	440	441	442	442	443	444
▬	▬	▬	▬	▬	▬	▬
▬	▬	▬	▬	▬	▬	▬
▬	▬	▬	▬	▬	▬	▬
▱	▬	▱	▱	▱	▱	▱
▬	▱	▱	▱	▱	▱	▱
▱	▱	▱	▱	▱	▱	▱
▱	▱	▱	▱	▱	▱	▱
▱	▱	▱	▱			
▱	▱	▱	▱			
▱						
▱		▱	▱			

▬ Ideal / Ideal / Ideale | ▱ Geeignet / Suitable / Adatte

D Langlochfräser
kurz, Zweischneider, zentrumschneidend, DIN 327 D

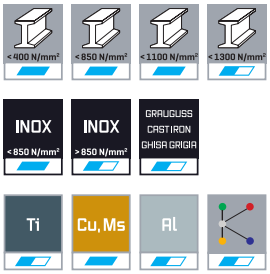
Einsatzbereich:
Empfohlen zum Fräsen von Werkstoffen mit mittleren und hohen Festigkeiten bis ca. 1.200 N/mm². Bohren auf volle Tiefe und Längsfräsen mit exakten Passungen.

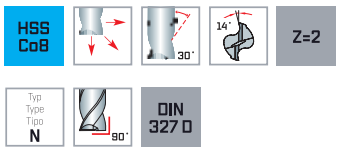
E Slot end mills
short series, two flutes, centre cutting, DIN 327 D

Range of application:
Recommended for milling in materials with medium and high tensile strength up to 1.200 N/mm². Vertical cutting to full depth and horizontal cutting with exact tolerances.

I Frese a due taglienti per cave
serie corta, taglienti al centro, DIN 327 D

Impiego:
Adatte per lavorazione di acciai di media ed alta resistenza fino a R = 1.200 N/mm². Foratura dal pieno, fresatura orizzontale con accoppiamenti perfetti.





ALUNIT®

d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1026 Art.-Nr.	Code 1027 Art.-Nr.
2	6	48	4	2	0 1026002001 00	0 1027002001 00
2,5	6	49	5	2	0 1026002501 00	0 1027002501 00
3	6	49	5	2	0 1026003001 00	0 1027003001 00
3,5	6	50	6	2	0 1026003501 00	0 1027003501 00
4	6	51	7	2	0 1026004001 00	0 1027004001 00
4,5	6	51	7	2	0 1026004501 00	0 1027004501 00
5	6	52	8	2	0 1026005001 00	0 1027005001 00
5,5	6	52	8	2	0 1026005501 00	0 1027005501 00
6	6	52	8	2	0 1026006001 00	0 1027006001 00
6,5	10	60	10	2	0 1026006501 00	0 1027006501 00
7	10	60	10	2	0 1026007001 00	0 1027007001 00
7,5	10	60	10	2	0 1026007501 00	
8	10	61	11	2	0 1026008001 00	0 1027008001 00
8,5	10	61	11	2	0 1026008501 00	
9	10	61	11	2	0 1026009001 00	0 1027009001 00
9,5	10	61	11	2	0 1026009501 00	
10	10	63	13	2	0 1026010001 00	0 1027010001 00
10,5	12	70	13	2	0 1026010501 00	
11	12	70	13	2	0 1026011001 00	0 1027011001 00
11,5	12	70	13	2	0 1026011501 00	
12	12	73	16	2	0 1026012001 00	0 1027012001 00
13	12	73	16	2	0 1026013001 00	0 1027013001 00
14	12	73	16	2	0 1026014001 00	0 1027014001 00
15	12	73	16	2	0 1026015001 00	
16	16	79	19	2	0 1026016001 00	0 1027016001 00
17	16	79	19	2	0 1026017001 00	
18	16	79	19	2	0 1026018001 00	0 1027018001 00
19	16	79	19	2	0 1026019001 00	
20	20	88	22	2	0 1026020001 00	0 1027020001 00
21	20	88	22	2	0 1026021001 00	
22	20	88	22	2	0 1026022001 00	
23	20	88	22	2	0 1026023001 00	
24	25	102	26	2	0 1026024001 00	
25	25	102	26	2	0 1026025001 00	

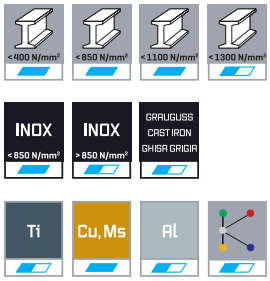
ALUNIT®

d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1026 Art.-Nr.	Code 1027 Art.-Nr.
26	25	102	26	2	0 1026026001 00	
28	25	102	26	2	0 1026028001 00	
30	25	102	26	2	0 1026030001 00	
32	32	112	32	2	0 1026032001 00	
34	32	112	32	2	0 1026034001 00	
36	32	112	32	2	0 1026036001 00	
40	32*	118*	38	2	0 1026040001 00	

*Entspricht nicht der DIN / Not corresponding to DIN / Non secondo DIN

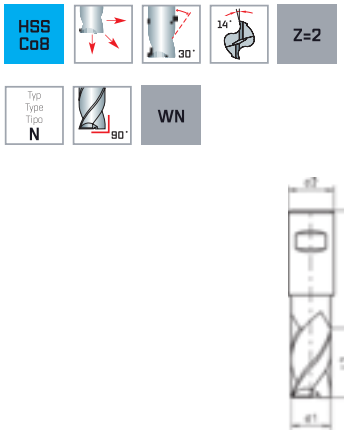
D Langlochfräser
lang, Zweischneider, zentrumschneidend

Einsatzbereich:
Empfohlen zum Fräsen von Werkstoffen mit mittleren und hohen Festigkeiten bis ca. 1.200 N/mm². Bohren auf volle Tiefe und Längsfräsen mit exakten Passungen.



E Slot end mills
long series, two flutes, centre cutting

Range of application:
Recommended for milling in materials with medial and high tensile strength up to 1.200 N/mm². Vertical cutting to full depth and horizontal cutting with exact tolerances.



I Frese a due taglienti per cave
serie lunga, taglienti al centro

Impiego:
Adatte per lavorazione di acciai di media ed alta resistenza fino a R = 1.200 N/mm². Foratura dal pieno, fresatura orizzontale con accoppiamenti perfetti.

d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1086 Art.-Nr.
4	6	63	11	2	0 1086004001 00
5	6	68	13	2	0 1086005001 00
6	6	68	13	2	0 1086006001 00
7	10	80	16	2	0 1086007001 00
8	10	88	19	2	0 1086008001 00
9	10	88	19	2	0 1086009001 00
10	10	95	22	2	0 1086010001 00
11	12	102	22	2	0 1086011001 00
12	12	110	26	2	0 1086012001 00
13	12	110	26	2	0 1086013001 00
14	12	110	26	2	0 1086014001 00

d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1086 Art.-Nr.
15	12	110	26	2	0 1086015001 00
16	16	123	32	2	0 1086016001 00
18	16	123	32	2	0 1086018001 00
20	20	141	38	2	0 1086020001 00
22	20	141	38	2	0 1086022001 00
24	25	166	45	2	0 1086024001 00
25	25	166	45	2	0 1086025001 00
26	25	166	45	2	0 1086026001 00
28	25	166	45	2	0 1086028001 00
30	25	166	45	2	0 1086030001 00

D Langlochfräser
kurz, Dreischneider, zentrumschneidend

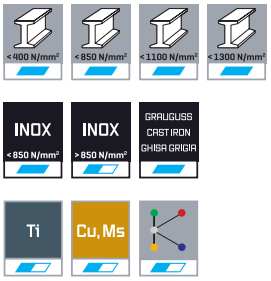
E Slot end mills
short series, three flutes, centre cutting

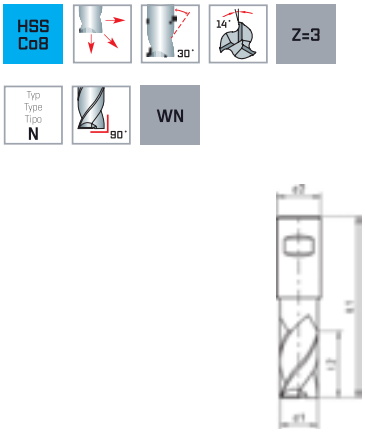
I Frese a tre taglienti per cave
serie corta, taglienti al centro

Einsatzbereich:
Empfohlen zum Fräsen von Werkstoffen mit mittleren und hohen Festigkeiten bis ca. 1.300 N/mm². Bohren auf volle Tiefe und Längsfräsen mit exakten Passungen.

Range of application:
Recommended for milling in materials with medial and high tensile strength up to 1.300 N/mm². Vertical cutting to full depth and horizontal cutting with exact tolerances.

Impiego:
Adatte per lavorazione di acciai di media ed alta resistenza fino a R = 1.300 N/mm². Foratura dal pieno, fresatura orizzontale con accoppiamenti perfetti.





ALUNIT®

d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1156 Art.-Nr.	Code 1157 Art.-Nr.
3	6	49	5	3	0 1156003001 00	0 1157003001 00
4	6	51	7	3	0 1156004001 00	0 1157004001 00
5	6	52	8	3	0 1156005001 00	0 1157005001 00
6	6	52	8	3	0 1156006001 00	0 1157006001 00
8	10	61	11	3	0 1156008001 00	0 1157008001 00
10	10	63	13	3	0 1156010001 00	0 1157010001 00
12	12	73	16	3	0 1156012001 00	0 1157012001 00
14	12	73	16	3	0 1156014001 00	0 1157014001 00
16	16	79	19	3	0 1156016001 00	0 1157016001 00
18	16	79	19	3	0 1156018001 00	0 1157018001 00
20	20	88	22	3	0 1156020001 00	0 1157020001 00

D Langlochfräser
lang, Dreischneider, zentrumschneidend, DIN 844 L

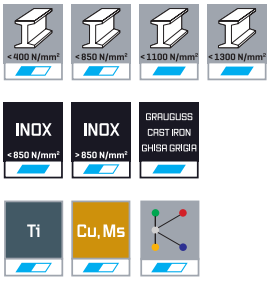
Einsatzbereich:
Empfohlen zum Fräsen von Werkstoffen mit mittlerer bis hoher Festigkeit, bis ca. 1.300 N/mm². Fräsen von Nuten mit größerer Bohrtiefe, exakten Passungen, ebenso zum Stirn- und Umfangfräsen geeignet. Hohe Zerspanungsleistung und große Laufruhe ergeben beste Oberflächengüte.

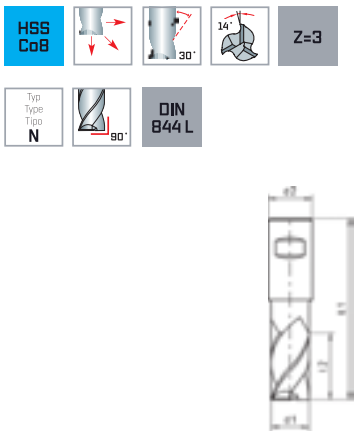
E Slot end mills
long series, three flutes, centre cutting, DIN 844 L

Range of application:
Recommended for milling in materials with medium/high tensile strength up to 1.300 N/mm². For producing slots with large depth and accurate fits. High efficiency in chipping and a smooth run result in an excellent quality surface.

I Frese cilindriche frontali a tre taglienti
serie lunga, taglienti al centro, DIN 844 L

Impiego:
Adatte per lavorazione di acciai di media ed alta resistenza fino a R = 1.300 N/mm². Fresatura di cave profonde, con accoppiamenti perfetti, adatte per lavorazioni sia di testa che di contornatura. Elevata potenza di fresatura, silenziosità di passata con una finitura della superficie ottimale.





ALUNIT®

d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1186 Art.-Nr.	Code 1187 Art.-Nr.
2	6	51	7	3	0 1186002001 00	0 1187002001 00
3	6	52	8	3	0 1186003001 00	0 1187003001 00
4	6	55	11	3	0 1186004001 00	0 1187004001 00
5	6	57	13	3	0 1186005001 00	0 1187005001 00
6	6	57	13	3	0 1186006001 00	0 1187006001 00
8	10	69	19	3	0 1186008001 00	0 1187008001 00
9	10	69	19	3	0 1186009001 00	0 1187009001 00
10	10	72	22	3	0 1186010001 00	0 1187010001 00
12	12	83	26	3	0 1186012001 00	0 1187012001 00
13	12	83	26	3	0 1186013001 00	0 1187013001 00
14	12	83	26	3	0 1186014001 00	0 1187014001 00
16	16	92	32	3	0 1186016001 00	0 1187016001 00
20	20	104	38	3	0 1186020001 00	0 1187020001 00

D Langlochfräser mit Radius
kurz, Zweischneider, zentrumschneidend

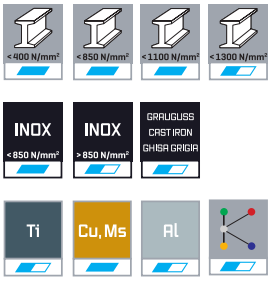
Einsatzbereich:
Empfohlen zum Fräsen von Werkstoffen mit mittlerer bis hoher Festigkeit bis ca. 1.100 N/mm². Zum Längsfräsen und besonders zum Kopierfräsen geeignet.

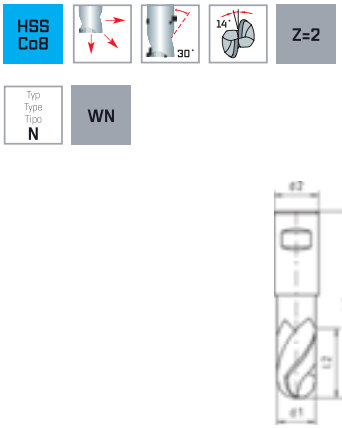
E Slot end mills with radius
short series, two flutes, centre cutting

Range of application:
Recommended for milling in materials with medium/high tensile strength up to 1.100 N/mm². For horizontal milling, especially suited for copy milling.

I Frese a due taglienti con punta semisferica
serie corta, taglienti al centro

Impiego:
Adatte per lavorazione di acciai di media ed alta resistenza fino a R = 1.100 N/mm². Particolarmente adatte per fresatura in orizzontale ed a copiare.





ALUNIT®

d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1056 Art.-Nr.	Code 1057 Art.-Nr.
2	6	48	4	2	0 1056002001 00	
3	6	49	5	2	0 1056003001 00	0 1057003001 00
4	6	51	7	2	0 1056004001 00	0 1057004001 00
5	6	52	8	2	0 1056005001 00	0 1057005001 00
6	6	52	8	2	0 1056006001 00	0 1057006001 00
7	10	60	10	2	0 1056007001 00	
8	10	61	11	2	0 1056008001 00	0 1057008001 00
9	10	61	11	2	0 1056009001 00	
10	10	63	13	2	0 1056010001 00	0 1057010001 00
12	12	73	16	2	0 1056012001 00	0 1057012001 00
14	12	73	16	2	0 1056014001 00	
16	16	79	19	2	0 1056016001 00	
20	20	88	22	2	0 1056020001 00	

D Minifräser
Dreischneider, zentrumschneidend

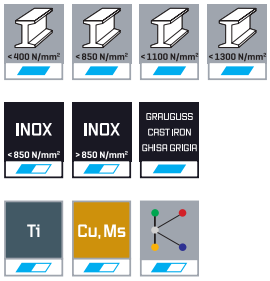
E Mini end mills
three flutes, centre cutting

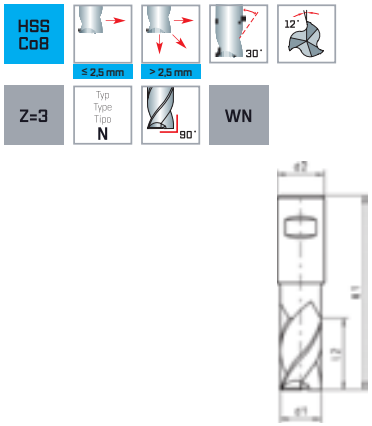
I Minifrese a tre taglienti
taglienti al centro

Einsatzbereich:
Tauchfräsen auf volle Nutentiefe oder allmähliche Tiefenzustellung, auch als Schaftfräser für konventionelles Stirn- und Umfangsfräsen.

Range of application:
Plunge milling to full depth or with gradual feed; also for conventional face and peripheral milling.

Impiego:
Adatte per foratura dal pieno e fresatura generale sia di testa che di contornatura.





Kurze Ausführung / Short series / Esecuzione corta

d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1246 Art.-Nr.
1,5	6	34	3	3	0 1246001501 00
2	6	35	4	3	0 1246002001 00
2,5	6	36	5	3	0 1246002501 00
3	6	36	5	3	0 1246003001 00
3,5	6	37	6	3	0 1246003501 00
4	6	38	7	3	0 1246004001 00
4,5	6	38	7	3	0 1246004501 00
5	6	39	8	3	0 1246005001 00
5,5	6	39	8	3	0 1246005501 00
6	6	39	8	3	0 1246006001 00

Lange Ausführung / Long series / Esecuzione lunga

d1 e8 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1256 Art.-Nr.
2	6	38	7	3	0 1256002001 00
2,5	6	39	8	3	0 1256002501 00
3	6	39	8	3	0 1256003001 00
3,5	6	41	10	3	0 1256003501 00
4	6	42	11	3	0 1256004001 00
4,5	6	42	11	3	0 1256004501 00
5	6	44	13	3	0 1256005001 00
5,5	6	44	13	3	0 1256005501 00
6	6	44	13	3	0 1256006001 00

*Schaft nach DIN 1835 B, gekürzt / Shank according to DIN 1835 B, shorten / Codolo secondo DIN 1835 B, ridotto

D Schaftfräser
kurz, DIN 844 K

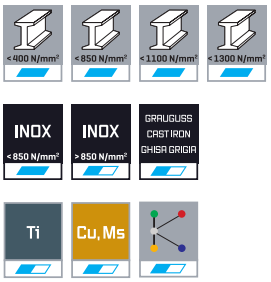
E End mills
short series, DIN 844 K

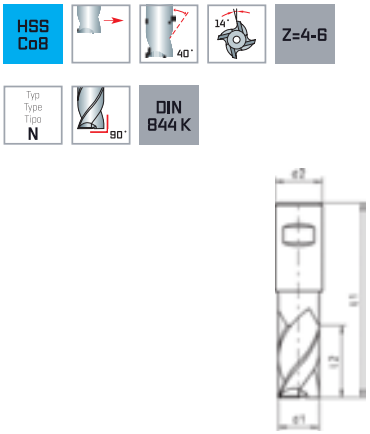
I Frese cilindriche frontali
serie corta, DIN 844 K

Einsatzbereich:
Zum Schlichten mit hoher Zerspanungsleistung bei gleichzeitig guter Oberfläche von Stählen mit mittlerer bis hoher Festigkeit bis 1.300 N/mm² (z.B. Bau-, Einsatz-, Vergütungsstähle); NE-Metalle, rost- und säurebeständige Stähle. Bevorzugt Gleichlauffräsen.

Range of application:
Finishing with high cutting performance and excellent surface quality by steels with medium to high tensile strength up to 1.300 N/mm² (for example structural, case-hardening, heat-treatable steels); non-ferrous metals, stainless and acid resistant steels. Climb milling preferred.

Impiego:
Adatte per lavorazione di acciai di media ed alta resistenza fino a R = 1.300 N/mm², (ad es. acciai da costruzione, acciai da cementazione, acciai bonificati); materiali non ferrosi, acciai inossidabili, acciai resistenti agli acidi, con elevata potenza di fresatura e con una finitura della superficie ottimale. Consigliata fresatura concorde.





d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 1616 Art.-Nr.
4	6	55	11	4	0 1616004001 00
5	6	57	13	4	0 1616005001 00
6	6	57	13	4	0 1616006001 00
7	10	66	16	4	0 1616007001 00
8	10	69	19	4	0 1616008001 00
9	10	69	19	4	0 1616009001 00
10	10	72	22	4	0 1616010001 00
11	12	79	22	4	0 1616011001 00
12	12	83	26	4	0 1616012001 00
14	12	83	26	4	0 1616014001 00
15	12	83	26	4	0 1616015001 00
16	16	92	32	4	0 1616016001 00
18	16	92	32	4	0 1616018001 00
20	20	104	38	4	0 1616020001 00
22	20	104	38	6	0 1616022001 00
24	25	121	45	6	0 1616024001 00
25	25	121	45	6	0 1616025001 00
30	25	121	45	6	0 1616030001 00

D Schaftfräser
kurz, zentrumschneidend,
DIN 844 K

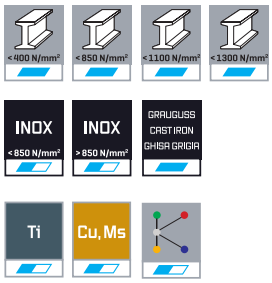
Einsatzbereich:
Ein breites Anwendungsspektrum bei Werkstoffen geringer Festigkeit, bis hin zu schwer zerspanbaren Werkstoffen auch mit hoher Zähigkeit, z. B. Baustählen bis hin zu legierten Werkzeugstählen. Aber auch NE-Metalle, Kobalt- und Nickellegierungen, sowie für Titan und Titanlegierungen.

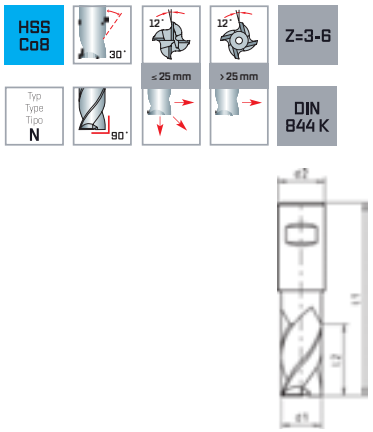
E End mills
short series, centre cutting,
DIN 844 K

Range of application:
Wide range of applications on materials with low strength up to materials difficult to machine, having a high toughness, for example structural steels or alloyed tool steels. Also including non-ferrous metals, cobalt- and nickel-alloys, as well as titanium and titanium-alloyed materials.

I Frese cilindriche frontali
serie corta, tagliente al centro,
DIN 844 K

Impiego:
Fresatura generale adatte per lavorazioni di acciai sia a bassa resistenza che di difficile lavorabilità e ad elevata tenacità come acciai da costruzione, acciai legati da utensili. Adatte anche per materiali non ferrosi leghe al Cobalto, leghe al Nickel, Titanio e leghe di Titanio.





ALUNIT®

d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1816 Art.-Nr.	Code 1817 Art.-Nr.
2	6	51	7	3	0 1816002001 00	0 1817002001 00
2,5	6	52	8	3	0 1816002501 00	0 1817002501 00
3	6	52	8	4	0 1816003001 00	0 1817003001 00
3,5	6	54	10	4	0 1816003501 00	0 1817003501 00
4	6	55	11	4	0 1816004001 00	0 1817004001 00
4,5	6	55	11	4	0 1816004501 00	0 1817004501 00
5	6	57	13	4	0 1816005001 00	0 1817005001 00
5,5	6	57	13	4	0 1816005501 00	0 1817005501 00
6	6	57	13	4	0 1816006001 00	0 1817006001 00
6,5	10	66	16	4	0 1816006501 00	0 1817006501 00
7	10	66	16	4	0 1816007001 00	0 1817007001 00
7,5	10	66	16	4	0 1816007501 00	0 1817007501 00
8	10	69	19	4	0 1816008001 00	0 1817008001 00
8,5	10	69	19	4	0 1816008501 00	0 1817008501 00
9	10	69	19	4	0 1816009001 00	0 1817009001 00
10	10	72	22	4	0 1816010001 00	0 1817010001 00
11	12	79	22	4	0 1816011001 00	0 1817011001 00
12	12	83	26	4	0 1816012001 00	0 1817012001 00
13	12	83	26	4	0 1816013001 00	0 1817013001 00
14	12	83	26	4	0 1816014001 00	0 1817014001 00
15	12	83	26	4	0 1816015001 00	0 1817015001 00
16	16	92	32	4	0 1816016001 00	0 1817016001 00
18	16	92	32	4	0 1816018001 00	0 1817018001 00
20	20	104	38	4	0 1816020001 00	0 1817020001 00
22	20	104	38	6	0 1816022001 00	0 1817022001 00
25	25	121	45	6	0 1816025001 00	0 1817025001 00
28	25	121	45	6	0 1816028001 00	
30	25	121	45	6	0 1816030001 00	
32	32	133	53	6	0 1816032001 00	

D HPT-Schaftfräser
kurz, zentrumschneidend, DIN 327 D

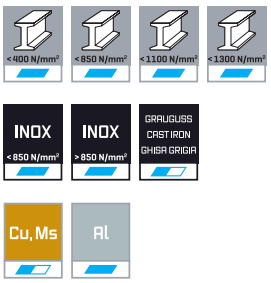
Einsatzbereich:
Mehrschneidiger Universal-Schaftfräser, gefertigt aus neuem Substrat SPM mit sehr hohem Kobalt-Anteil. Es verbindet die Härte von VHM und die Zähigkeit des PM-Stahles. Der Fräser kann durch seine universelle Geometrie für die verschiedensten Werkstoffe eingesetzt werden.

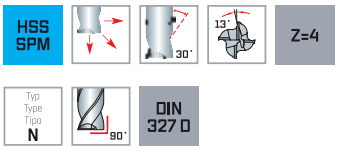
E HPT-End mills
short series, centre cutting, DIN 327 D

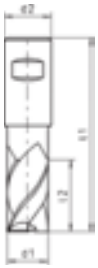
Range of application:
Universal multi-flute end mill, made from new substrate SPM with extreme high content of cobalt. It combines the hardness of solid carbide and the toughness of powder-metallurgical steel. Due to its universal geometry this end mill is suitable for various materials.

I HPT-Frese cilindriche frontali
serie corta, tagliente al centro, DIN 327 D

Impiego:
Frese a più taglienti adatte per lavorazione universale, fabbricate con un nuova tipologia di acciaio con substrato SPM ad elevato tenore di cobalto. Associa la durezza del M.D. alla resilienza dell' acciaio da polveri. La fresa, grazie alla sua particolare geometria, può essere impiegata per i più diversi materiali.







HPT

ALUNIT®

ALUNIT®

d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 1877 Art.-Nr.
6	6	52	8	4	0 1877006001 00
8	10	61	11	4	0 1877008001 00
10	10	63	13	4	0 1877010001 00
12	12	73	16	4	0 1877012001 00

d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 1877 Art.-Nr.
14	12	73	16	4	0 1877014001 00
16	16	79	19	4	0 1877016001 00
20	20	88	22	4	0 1877020001 00
22	20	88	22	4	0 1877022001 00

D HPT-Schaftfräser
kurz, zentrumschneidend, DIN 844 B

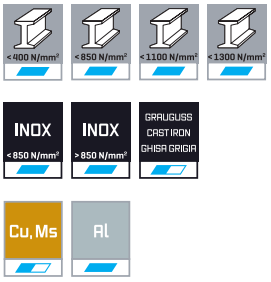
Einsatzbereich:
Mehrschneidiger, Universal-Schaftfräser. Einsetzbar als Schlicht-, Schruppschlicht- und Schruppfräser. Gefertigt aus pulvermetallurgischem Material zur Verwendung bei extremen Zerspanungsbedingungen oder großen Standwegen.

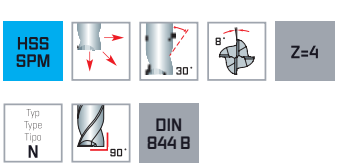
E HPT-End mills
short series, centre cutting, DIN 844 B

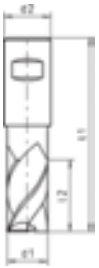
Range of application:
Universal multi-flute end mill. Useable for finishing, roughing finishing and roughing. Made from powder-metallurgical steel for using at extreme cutting conditions for long continuous utilisation.

I HPT-Frese cilindriche frontali
serie corta, tagliente al centro, DIN 844 B

Impiego:
Frese a più taglienti adatte per lavorazione universal. Adatto per finitura, sgrossatura finitura e sgrossatura. Made from powder-metallurgical steel for using at extreme cutting conditions for long continuous utilisation.







HPT

ALUNIT®

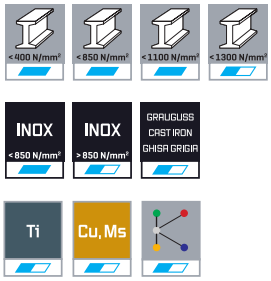
d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1867 Art.-Nr.
3	6	52	8	4	0 1867003001 00
3,5	6	54	10	4	0 1867003501 00
4	6	55	11	4	0 1867004001 00
4,5	6	55	11	4	0 1867004501 00
5	6	57	13	4	0 1867005001 00
6	6	57	13	4	0 1867006001 00
7	10	66	16	4	0 1867007001 00
8	10	69	19	4	0 1867008001 00

ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1867 Art.-Nr.
9	10	69	19	4	1867009001
10	10	72	22	4	1867010001
12	12	83	26	4	1867012001
14	12	83	27	4	1867014001
16	16	92	32	4	1867016001
18	16	92	32	4	1867018001
20	20	104	38	4	1867020001
25	25	121	45	4	1867025001

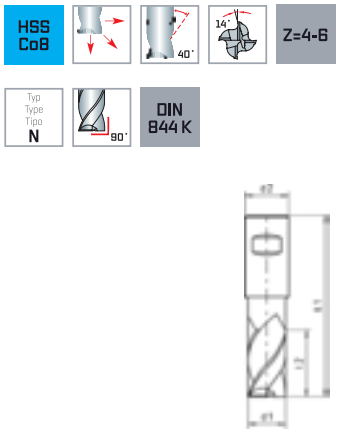
D Schaftfräser
kurz, zentrumschneidend, DIN 844 K

Einsatzbereich:
Zum Schlichten mit hoher Zerspanungsleistung bei gleichzeitig guter Oberfläche von Stählen mit mittlerer bis hoher Festigkeit bis 1.200 N/mm² (z.B. Bau-, Einsatz-, Vergütungsstähle); NE-Metalle, rost- und säurebeständige Stähle. Bevorzugt Gleichlauffräsen.



E End mills
short series, centre cutting, DIN 844 K

Range of application:
Finishing with high cutting performance and excellent surface quality by steels with medium to high tensile strength up to 1.200 N/mm² (for example structural, case-hardening, heat-treatable steels); non-ferrous metals, stainless and acid resistant steels. Climb milling preferred.



I Frese cilindriche frontali
serie corta, tagliente al centro, DIN 844 K

Impiego:
Adatte per lavorazione di acciai di media ed alta resistenza fino a R = 1.200 N/mm², (ad es. acciai da costruzione, acciai da cementazione, acciai bonificati); materiali non ferrosi, acciai inossidabili, acciai resistenti agli acidi, con elevata potenza di fresatura e con una finitura della superficie ottimale. Consigliata fresatura concorde.

ALUNIT®

d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1786 Art.-Nr.	Code 1787 Art.-Nr.
3	6	52	8	4	0 1786003001 00	0 1787003001 00
4	6	55	11	4	0 1786004001 00	0 1787004001 00
5	6	57	13	4	0 1786005001 00	0 1787005001 00
6	6	57	13	4	0 1786006001 00	0 1787006001 00
8	10	69	19	4	0 1786008001 00	0 1787008001 00
10	10	72	22	4	0 1786010001 00	0 1787010001 00
12	12	83	26	4	0 1786012001 00	0 1787012001 00
14	12	83	26	4	0 1786014001 00	0 1787014001 00
16	16	92	32	4	0 1786016001 00	0 1787016001 00
18	16	92	32	4	0 1786018001 00	0 1787018001 00
20	20	104	38	4	0 1786020001 00	0 1787020001 00
25	25	121	45	6	0 1786025001 00	0 1787025001 00
28	25	121	45	6	0 1786028001 00	0 1787028001 00
30	25	121	45	6	0 1786030001 00	0 1787030001 00
32	32	133	53	6	0 1786032001 00	0 1787032001 00

D Schaftfräser,
kurz, Dreischneider, zentrumschneidend, DIN 844 K

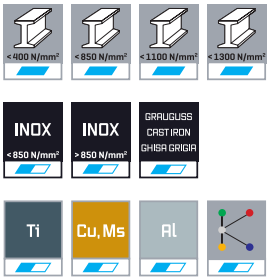
Einsatzbereich:
Tauchfräsen auf volle Nutentiefe oder allmähliche Tiefenzustellung, auch als Schaftfräser für konventionelles Stirn- und Umfangsfräsen.

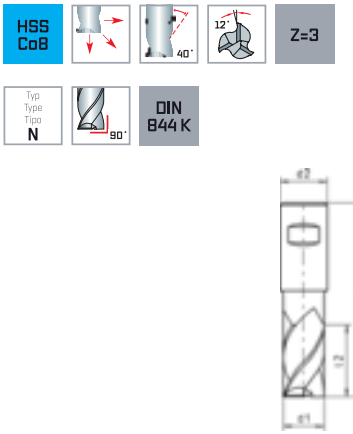
E End mills
short series, three flutes, centre cutting, DIN 844 K

Range of application:
Plunge milling to full depth or with gradual feed; also for conventional face and peripheral milling.

I Frese cilindriche frontali
3 taglienti, serie corta, taglienti al centro, DIN 844 K

Impiego:
Adatte per foratura dal pieno e fresatura generale sia di testa che di contornatura.





d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1666 Art.-Nr.
4	6	55	11	3	0 1666004001 00
5	6	57	13	3	0 1666005001 00
6	6	57	13	3	0 1666006001 00
7	10	66	16	3	0 1666007001 00
8	10	69	19	3	0 1666008001 00
9	10	69	19	3	0 1666009001 00
10	10	72	22	3	0 1666010001 00
11	12	79	22	3	0 1666011001 00

d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1666 Art.-Nr.
12	12	83	26	3	0 1666012001 00
13	12	83	26	3	0 1666013001 00
14	12	83	26	3	0 1666014001 00
15	12	83	26	3	0 1666015001 00
16	16	92	32	3	0 1666016001 00
18	16	92	32	3	0 1666018001 00
20	20	104	38	3	0 1666020001 00
25	25	121	45	3	0 1666025001 00

D Schaftfräser
lang, zentrumschneidend, DIN 844 L

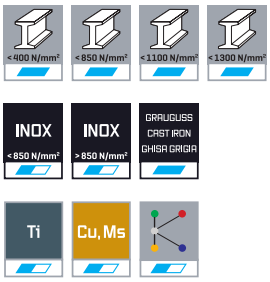
Einsatzbereich:
Ein breites Anwendungsspektrum bei Werkstoffen geringer Festigkeit, bis hin zu schwer zerspanbaren Werkstoffen auch mit hoher Zähigkeit, z. B. Baustählen bis hin zu legierten Werkzeugstählen. Aber auch NE-Metalle, Kobalt- und Nickellegierungen, sowie für Titan und Titanlegierungen.

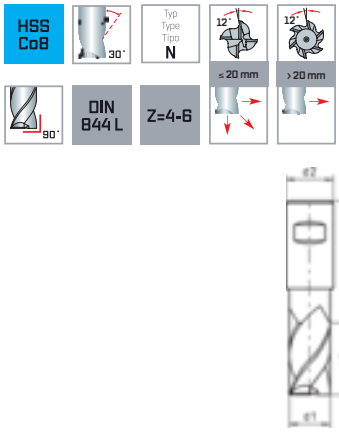
E End mills
long series, centre cutting, DIN 844 L

Range of application:
Wide range of applications on materials with low strength up to materials difficult to machine, having a high toughness, for example structural steels or alloyed tool steels. Also including non-ferrous metals, cobalt- and nickel-alloys, as well as titanium and titanium-alloyed materials.

I Frese cilindriche frontali
serie lunga, taglienti al centro, DIN 844 L

Impiego:
Fresatura generale adatte per lavorazioni di acciai sia a bassa resistenza che di difficile lavorabilità e ad elevata tenacità come acciai da costruzione, acciai legati da utensili. Adatte anche per materiali non ferrosi leghe al Cobalto, leghe al Nickel, Titanio e leghe di Titanio.





d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1836 Art.-Nr.
3	6	56	12	4	0 1836003001 00
4	6	63	19	4	0 1836004001 00
5	6	68	24	4	0 1836005001 00
6	6	68	24	4	0 1836006001 00
7	10	80	30	4	0 1836007001 00
8	10	88	38	4	0 1836008001 00
9	10	88	38	4	0 1836009001 00
10	10	95	45	4	0 1836010001 00
11	12	102	45	4	0 1836011001 00
12	12	110	53	4	0 1836012001 00
13	12	110	53	4	0 1836013001 00

d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1836 Art.-Nr.
14	12	110	53	4	0 1836014001 00
15	12	110	53	4	0 1836015001 00
16	16	123	63	4	0 1836016001 00
18	16	123	63	4	0 1836018001 00
20	20	141	75	4	0 1836020001 00
22	20	141	75	6	0 1836022001 00
25	25	166	90	6	0 1836025001 00
28	25	166	90	6	0 1836028001 00
30*	25	166	90	6	0 1836030001 00
32	32	186	106	6	0 1836032001 00

*Entspricht nicht der DIN / Not corresponding to DIN / Non secondo DIN

D HPT-Schaftfräser
kurz, vierschneider, zentrumschneidend, DIN 844 K

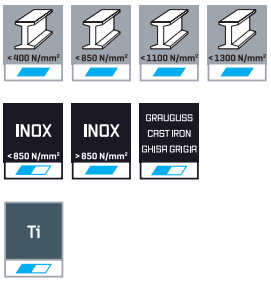
Einsatzbereich:
Schaftfräser hochgedrallt, gefertigt aus pulvermetallurgischem Material zur Verwendung bei extremen Zerspanungsbedingungen oder großen Standwegen. Hohe Konturgenauigkeit durch geringe Abdrängung, ruhiges Fräsverhalten durch geringe Vibrationsneigung, sehr gute Oberflächengüte.

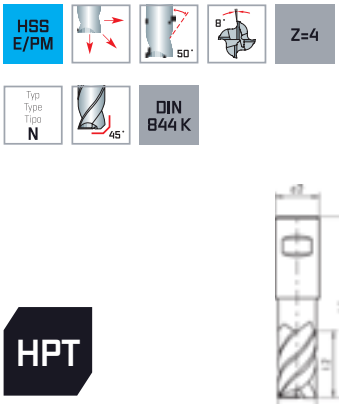
E HPT-End mills
short series, four flutes, centre cutting, DIN 844 K

Range of application:
End mills, high helix angle, made from powder-metallurgical steel for extreme cutting conditions for long continuous utilisation. High contour accuracy due to low deflection, smooth milling operation because of low vibration in tendency, excellent surface quality.

I HPT-Frese cilindriche frontali
serie corta, 4 taglienti, tagliente al centro, DIN 844 K

Impiego:
Frese a finire a forte torsione in acciai speciali da polveri particolarmente adatte per lavorazioni di acciai in condizioni estreme ovvero in passate di fresatura molto lunghe, e per lavorazioni di contornatura di elevata precisione che, grazie ad una minima deviazione, un comportamento dolce della fresa ed all'assenza di vibrazioni, permette una superfinitura della superficie.





ALUNIT®

d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	Z		Code 1537 Art.-Nr.
6	6	57	13	4	0,20	0 1537006001 00
8	10	69	19	4	0,30	0 1537008001 00
10	10	72	22	4	0,30	0 1537010001 00
12	12	83	26	4	0,30	0 1537012001 00
14	12	83	26	4	0,30	0 1537014001 00
16	16	92	32	4	0,30	0 1537016001 00
18	16	92	32	4	0,30	0 1537018001 00
20	20	104	38	4	0,30	0 1537020001 00

D Schaftfräser
kurz, zentrumschneidend,
DIN 844 K

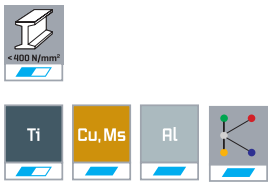
Einsatzbereich:
Empfohlen zum Fräsen von weichen bis zähen, langspanenden Werkstoffen wie Al- und Cu-Legierungen sowie Thermoplaste.

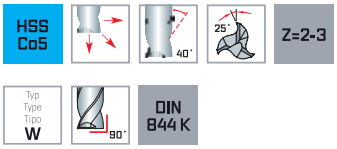
E End mills
short series, centre cutting,
DIN 844 K

Range of application:
Recommended for milling in soft as well as in tough, long chipping materials such as Al- and Cu-alloys as well as in thermo plastics.

I Frese cilindriche frontali
serie corta, tagliente al centro,
DIN 844 K

Impiego:
Adatte per lavorazioni di acciai teneri, tenaci, a truciolo lungo, leghe alluminio, leghe rame, materiali termoplastici.





d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1644 Art.-Nr.
5	6	57	13	2	0 1644005001 00
6	6	57	13	2	0 1644006001 00
8	10	69	19	2	0 1644008001 00
10	10	72	22	2	0 1644010001 00
12	12	83	26	3	0 1644012001 00
14	12	83	26	3	0 1644014001 00

d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1644 Art.-Nr.
16	16	92	32	3	0 1644016001 00
18	16	92	32	3	0 1644018001 00
20	20	104	38	3	0 1644020001 00
25	25	121	45	3	0 1644025001 00
30	25	121	45	3	0 1644030001 00

D Schaftfräser
lang, zentrumschneidend, DIN 844 L

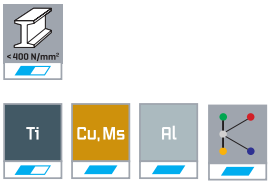
Einsatzbereich:
Empfohlen zum Fräsen von weichen bis zähen, langspanenden Werkstoffen wie Al- und Cu-Legierungen sowie Thermoplaste.

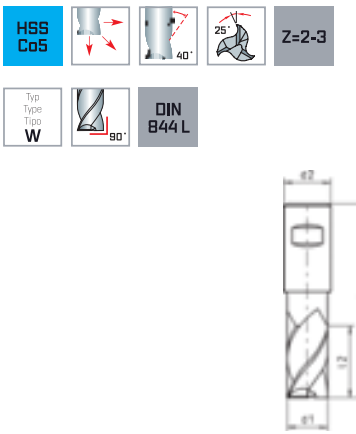
E End mills
long series, centre cutting, DIN 844 L

Range of application:
Recommended for milling in soft as well as in tough, long chipping materials such as Al- and Cu-alloys as well as in thermo plastics.

I Frese cilindriche frontali
serie lunga, tagliente al centro, DIN 844 L

Impiego:
Adatte per lavorazioni di acciai teneri, tenaci, a truciolo lungo, leghe alluminio, leghe rame, materiali termoplastici.





d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1754 Art.-Nr.
5	6	68	24	2	0 1754005001 00
6	6	68	24	2	0 1754006001 00
8	10	88	38	2	0 1754008001 00
10	10	95	45	2	0 1754010001 00
12	12	110	53	3	0 1754012001 00

d1 k10 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1754 Art.-Nr.
14	12	110	53	3	0 1754014001 00
16	16	123	63	3	0 1754016001 00
20	20	141	75	3	0 1754020001 00
25	25	166	90	3	0 1754025001 00
30	25	166	90	3	0 1754030001 00

D Schaftfräser
kurz, DIN 844 K

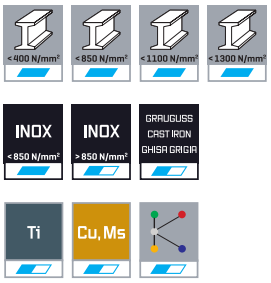
Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen mit hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.

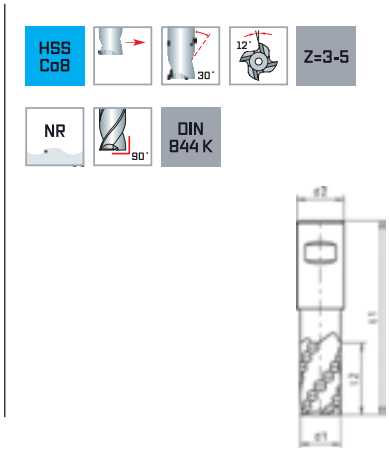
E End mills
short series, DIN 844 K

Range of application:
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.

I Frese cilindriche frontali
serie corta, DIN 844 K

Impiego:
Adatte per lavorazioni di acciai di difficile lavorabilità ad elevata resistenza fino a R = 1.300 N/mm², Titanio, leghe di Titanio.



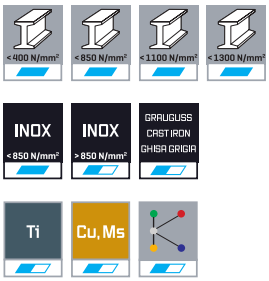


d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 2026 Art.-Nr.
5	6	57	13	3	0 2026005001 00
6	6	57	13	3	0 2026006001 00
7	10	66	16	3	0 2026007001 00
8	10	69	19	4	0 2026008001 00
9	10	69	19	4	0 2026009001 00
10	10	72	22	4	0 2026010001 00
11	12	79	22	4	0 2026011001 00
12	12	83	26	4	0 2026012001 00
14	12	83	26	4	0 2026014001 00
16	16	92	32	4	0 2026016001 00
18	16	92	32	4	0 2026018001 00
20	20	104	38	4	0 2026020001 00
25	25	121	45	5	0 2026025001 00
30	25	121	45	5	0 2026030001 00

D Schaftfräser

kurz, zentrumschneidend, DIN 844 K

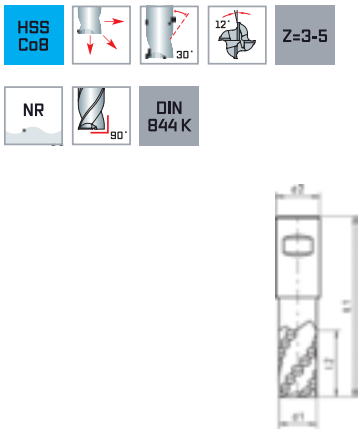
Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen mit hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.



E End mills

short series, centre cutting, DIN 844 K

Range of application:
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.



I Frese cilindriche frontali

serie corta, tagliente al centro, DIN 844 K

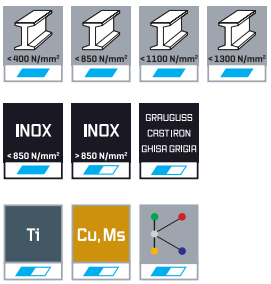
Impiego:
Adatte per lavorazioni di acciai di difficile lavorabilità ad elevata resistenza fino a R = 1.300 N/mm², Titanio, leghe di Titanio.

ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 2286 Art.-Nr.	Code 2287 Art.-Nr.
6	6	57	13	3	0 2286006001 00	0 2287006001 00
8	10	69	19	4	0 2286008001 00	0 2287008001 00
10	10	72	22	4	0 2286010001 00	0 2287010001 00
12	12	83	26	4	0 2286012001 00	0 2287012001 00
14	12	83	26	4	0 2286014001 00	0 2287014001 00
16	16	92	32	4	0 2286016001 00	0 2287016001 00
18	16	92	32	4	0 2286018001 00	0 2287018001 00
20	20	104	38	4	0 2286020001 00	0 2287020001 00
22	20	104	38	5	0 2286022001 00	0 2287022001 00
25	25	121	45	5	0 2286025001 00	0 2287025001 00

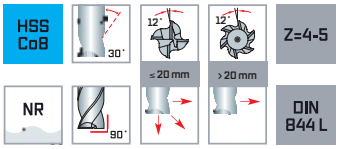
D Schaftfräser
lang, DIN 844 L

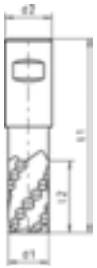
Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen mit hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.



E End mills
long series, DIN 844 L

Range of application:
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.





I Frese cilindriche frontali
serie lunga, DIN 844 L

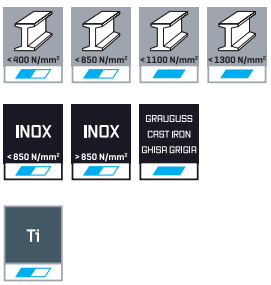
Impiego:
Adatte per lavorazioni di acciai di difficile lavorabilità ad elevata resistenza fino a R = 1.300 N/mm², Titanio, leghe di Titanio.

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 2076 Art.-Nr.
10	10	95	45	4	0 2076010001 00
12	12	110	53	4	0 2076012001 00
16	16	123	63	4	0 2076016001 00
18	16	123	63	4	0 2076018001 00
20	20	141	75	4	0 2076020001 00

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 2076 Art.-Nr.
22	20	141	75	5	0 2076022001 00
24	25	166	90	5	0 2076024001 00
25	25	166	90	5	0 2076025001 00
30	25	166	90	5	0 2076030001 00

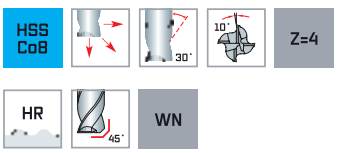
D Schaftfräser
extra kurz, zentrumschneidend

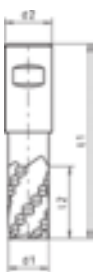
Einsatzbereich:
Großer Anwendungsbereich bei Werkstoffen mit mittlerer bis hoher Festigkeit (ca. 900–1.400 N/mm²), z.B. Einsatz-, Vergütungsstähle, Werkzeugstahl legiert, vergütet, NE-Metalle, hochwarmfeste Werkstoffe sowie Gusseisen und Gusslegierungen.



E Stub end mills
extra short series, centre cutting

Range of application:
Wide range of applications on materials of medium strength up to high tensile strength (~ 900–1.400 N/mm²), for example case-hardening, heat-treatable steels, alloyed tool steel; hardened and tempered non-ferrous metals, high temperature materials, also cast iron and alloyed cast iron.





I Frese cilindriche frontali
serie extra corta, tagliente al centro

Impiego:
Fresatura generale adatte per lavorazioni di acciai sia a media che ad elevata resistenza (ca. 900 – fino a 1400 N/mm²) ad es. acciai da cementazione, acciai da utensili legati bonificati, metalli non ferrosi, metalli resistenti al calore, ghisa, leghe di ghisa.

ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 2007 Art.-Nr.
6	6	52	8	4	0 2007006001 00
8	10	61	11	4	0 2007008001 00
10	10	63	13	4	0 2007010001 00

ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 2007 Art.-Nr.
12	12	66	16	4	0 2007012001 00
16	16	75	19	4	0 2007016001 00
20	20	89	22	4	0 2007020001 00

D Schaftfräser
extra kurz, zentrumschneidend

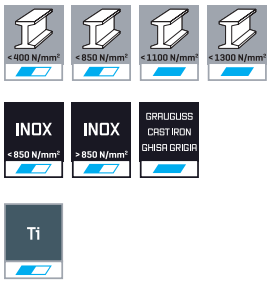
Einsatzbereich:
Großer Anwendungsbereich bei Werkstoffen mit mittlerer bis hoher Festigkeit (ca. 900–1.400 N/mm²), z.B. Einsatz-, Vergütungsstähle, Werkzeugstahl legiert, vergütet, NE-Metalle, hochwarmfeste Werkstoffe sowie Gusseisen und Gusslegierungen.

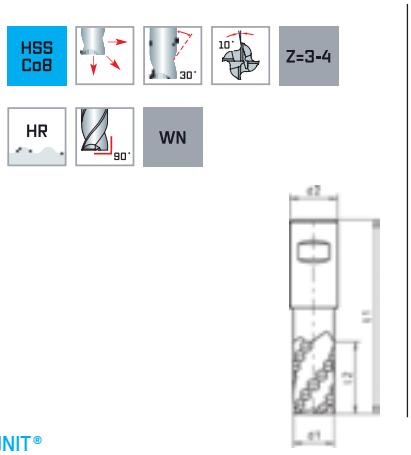
E Stub end mills
extra short series, centre cutting

Range of application:
Wide range of applications on materials of medium strength up to high tensile strength (~ 900–1.400 N/mm²), for example case-hardening, heat-treatable steels, alloyed tool steel; hardened and tempered non-ferrous metals, high temperature materials, also cast iron and alloyed cast iron.

I Frese cilindriche frontali
serie extra corta, tagliente al centro

Impiego:
Fresatura generale adatte per lavorazioni di acciai sia a media che ad elevata resistenza (ca. 900 – fino a 1400 N/mm²) ad es. acciai da cementazione, acciai da utensili legati bonificati, metalli non ferrosi, metalli resistenti al calore, ghisa, leghe di ghisa.





ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 2057 Art.-Nr.
6	6	52	8	3	0 2057006001 00
8	10	61	11	4	0 2057008001 00
10	10	63	13	4	0 2057010001 00
12	12	73	16	4	0 2057012001 00

ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 2057 Art.-Nr.
14	12	73	16	4	0 2057014001 00
16	16	79	19	4	0 2057016001 00
18	16	79	19	4	0 2057018001 00
20	20	88	22	4	0 2057020001 00

D Schaftfräser
kurz, DIN 844 K

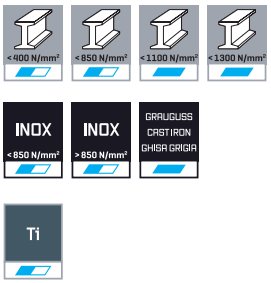
E End mills
short series, DIN 844 K

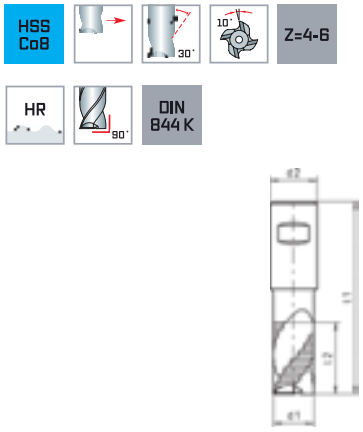
I Frese cilindriche frontaliserie serie corta, DIN 844 K

Einsatzbereich:
Großer Anwendungsbereich bei Werkstoffen mit mittlerer bis hoher Festigkeit (ca. 900–1.400 N/mm²), z.B. Einsatz-, Vergütungsstähle, Werkzeugstahl legiert, vergütet, NE-Metalle, hochwarmfeste Werkstoffe sowie Gusseisen und Gusslegierungen.

Range of application:
Wide range of applications on materials of medium strength up to high tensile strength (~ 900–1.400 N/mm²), for example case-hardening, heat-treatable steels, alloyed tool steel; hardened and tempered non-ferrous metals, high temperature materials, also cast iron and alloyed cast iron.

Impiego:
Fresatura generale adatte per lavorazioni di acciai sia a media che ad elevata resistenza (ca. 900 – fino a 1400 N/mm²) ad es. acciai da cementazione, acciai da utensili legati bonificati, metalli non ferrosi, metalli resistenti al calore, ghisa, leghe di ghisa.





d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 2036 Art.-Nr.
10	10	72	22	4	0 2036010001 00
12	12	83	26	4	0 2036012001 00
16	16	92	32	4	0 2036016001 00
18	16	92	32	4	0 2036018001 00
20	20	104	38	4	0 2036020001 00
25	25	121	45	5	0 2036025001 00
30	25	121	45	5	0 2036030001 00
32	32	133	53	6	0 2036032001 00

D Schaftfräser
kurz, zentrumschneidend, DIN 844 K

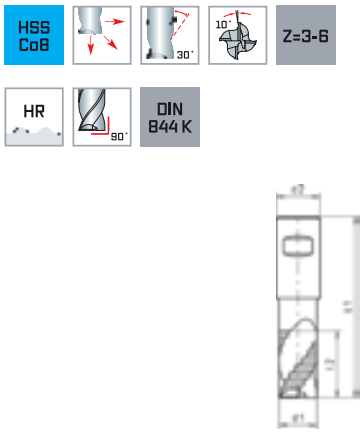
Einsatzbereich:
Großer Anwendungsbereich bei Werkstoffen mit mittlerer bis hoher Festigkeit (ca. 900–1.400 N/mm²), z.B. Einsatz-, Vergütungsstähle, Werkzeugstahl legiert, vergütet, NE-Metalle, hochwarmfeste Werkstoffe sowie Gusseisen und Gusslegierungen.

E End mills
short series, centre cutting, DIN 844 K

Range of application:
Wide range of applications on materials of medium strength up to high tensile strength (~ 900–1.400 N/mm²), for example case-hardening, heat-treatable steels, alloyed tool steel; hardened and tempered non-ferrous metals, high temperature materials, also cast iron and alloyed cast iron.

I Frese cilindriche frontali
serie corta, tagliente al centro, DIN 844 K

Impiego:
Fresatura generale adatte per lavorazioni di acciai sia a media che ad elevata resistenza (ca. 900 – fino a 1400 N/mm²) ad es. acciai da cementazione, acciai da utensili legati bonificati, metalli non ferrosi, metalli resistenti al calore, ghisa, leghe di ghisa.

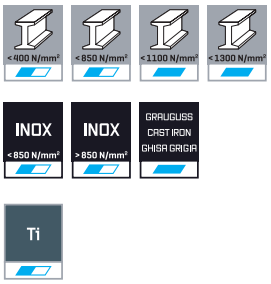


ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 2047 Art.-Nr.
6	6	57	13	3	0 2047006001 00
7	10	66	16	3	0 2047007001 00
8	10	69	19	4	0 2047008001 00
9	10	69	19	4	0 2047009001 00
10	10	72	22	4	0 2047010001 00
11	12	79	22	4	0 2047011001 00
12	12	83	26	4	0 2047012001 00
13	12	83	26	4	0 2047013001 00
14	12	83	26	4	0 2047014001 00
15	12	83	26	4	0 2047015001 00
16	16	92	32	4	0 2047016001 00
18	16	92	32	4	0 2047018001 00
20	20	104	38	4	0 2047020001 00
22	20	104	38	5	0 2047022001 00
25	25	121	45	5	0 2047025001 00
30	25	121	45	5	0 2047030001 00
32	32	133	53	6	0 2047032001 00

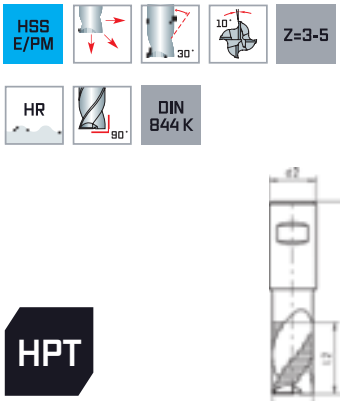
D HPT-Schaftfräser
kurz, zentrumschneidend, DIN 844 K

Einsatzbereich:
Gefertigt aus pulvermetallurgischem Material zur Verwendung bei extremen Zerspanungsbedingungen und/oder großen Standwegen. Großer Anwendungsbereich bei Werkstoffen mit mittlerer bis hoher Festigkeit (ca. 900–1.400 N/mm²), z.B. Einsatz-, Vergütungsstähle, Werkzeugstahl legiert, vergütet, NE-Metalle, hochwarmfeste Werkstoffe sowie Gusseisen und Gusslegierungen.



E HPT-End mills
short series, centre cutting, DIN 844 K

Range of application:
Made from powder-metallurgical steel for extreme cutting conditions for long continuous utilisation. Wide range of applications on materials of medium strength up to high tensile strength (~ 900– 1.400 N/mm²), for example case-hardening, heat-treatable steels, alloyed tool steel; hardened and tempered non-ferrous metals, high temperature materials, also cast iron and alloyed cast iron.



ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 2017 Art.-Nr.
6	6	57	13	3	0 2017006001 00
8	10	69	19	4	0 2017008001 00
10	10	72	22	4	0 2017010001 00
12	12	83	26	4	0 2017012001 00

I HPT-Frese cilindriche frontali
serie corta, tagliente al centro, DIN 844 K

Impiego:
Frese in acciai speciali da polveri particolarmente adatte per lavorazioni di acciai in condizioni estreme ovvero in passate di fresatura molto lunghe. Adatte per lavorazioni di acciai sia a media che ad elevata resistenza (ca. 900 – fino a 1400 N/mm²) ad es. acciai da cementazione, acciai da utensili legati bonificati, metalli non ferrosi, metalli resistenti al calore, ghisa, leghe di ghisa.

ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 2017 Art.-Nr.
16	16	92	32	4	0 2017016001 00
18	16	92	32	4	0 2017018001 00
20	20	104	38	4	0 2017020001 00
25	25	121	45	5	0 2017025001 00

D HPT-Schrupp-Schaftfräser
kurz, zentrumschneidend, DIN 844 K

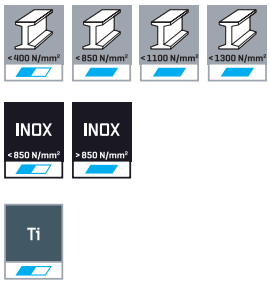
Einsatzbereich:
Universalfräser mit dynamischen Spezialkordelprofil zum Schruppen. Gefertigt aus neuem Substrat SPM mit sehr hohem Kobalt-Anteil. Es verbindet die Härte von VHM und die Zähigkeit des PM-Stahles. Dieser Fräser ist für höchste Ansprüche an Zerspanungsleistung und Steigerung des Zerspanungsvolumens ideal geeignet.

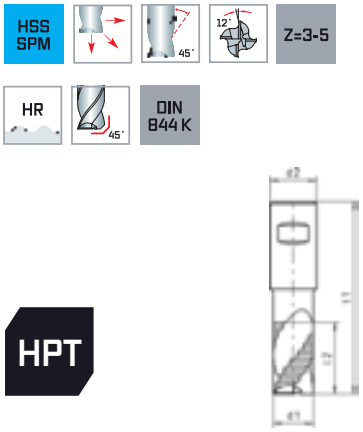
E HPT-Roughing end mills
short series, centre cutting, DIN 844 K

Range of application:
Universal milling cutter with dynamic special cord profile for roughing. Made from new substrate SPM with extreme high content of cobalt. It combines the hardness of solid carbide and the toughness of powder-metallurgical steel. This milling cutter is specially suitable for highest requirements in cutting performance and increase of cutting volume.

I HPT-Frese cilindriche frontali a sgrossare
serie corta, tagliente al centro, DIN 844 K

Impiego:
Frese universali con speciale profilo dinamico per sgrossatura. Prodotta con la nuova tipologia di acciaio con substrato SPM ad elevato tenore di cobalto. Associa la durezza del M.D. alla resilienza dell'acciaio da polveri. Questa fresa è particolarmente adatta per elevate esigenze di resa e di asportazione di grandi volumi nella lavorazione.





ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z		Code 2147 Art.-Nr.
6	6	57	13	3	0,20	0 2147006001 00
8	10	69	19	4	0,20	0 2147008001 00
10	10	72	22	4	0,20	0 2147010001 00
12	12	83	26	4	0,30	0 2147012001 00
14	12	83	26	4	0,30	0 2147014001 00
16	16	92	32	5	0,30	0 2147016001 00
18	16	92	32	5	0,30	0 2147018001 00
20	20	104	38	5	0,30	0 2147020001 00

D HPT-Schaftfräser
kurz, zentrumschneidend, DIN 327 D

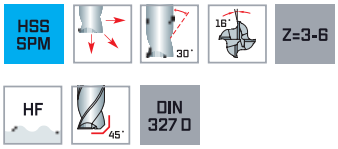
Einsatzbereich:
Gefertigt aus neuem Substrat SPM mit sehr hohem Kobalt-Anteil. Es verbindet die Härte von VHM und die Zähigkeit des PM-Stahles. Dieser Fräser ist für höchste Ansprüche an Zerspanungsleistung und Steigerung des Zerspanungsvolumens in rostfreien Stählen ideal geeignet.

E HPT-End mills
short series, centre cutting, DIN 327 D

Range of application:
Made from new substrate SPM with extreme high content of cobalt. It combines the hardness of solid carbide and the toughness of powder-metallurgical steel. This milling cutter is specially suitable for highest requirements in cutting performance and increase of cutting volume in stainless steels.

I HPT-Frese cilindriche frontali
serie corta, tagliente al centro, DIN 327 D

Impiego:
Prodotta con la nuova tipologia di acciaio con substrato SPM ad elevato tenore di cobalto. Associa la durezza del M.D alla resilienza dell'acciaio da pollveri. Questa fresa è particolarmente adatta per elevate esigenze di resa e di asportazionne di grandi volumi nella lavorazione degli acciai inossidabili.



Pulverstahl-PLUS
Powder steel-PLUS
Acciaio da polveri-PLUS

DIN 1835-B

ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z		Code 2137 Art.-Nr.
6	6	52	8	3	0,30	0 2137006001 00
8	10	61	11	4	0,30	0 2137008001 00
10	10	63	13	4	0,30	0 2137010001 00
12	12	73	16	4	0,30	0 2137012001 00
14	12	73	16	4	0,30	0 2137014001 00
16	16	79	19	5	0,30	0 2137016001 00
18	16	79	19	5	0,30	0 2137018001 00
20	20	88	22	5	0,30	0 2137020001 00
25	25	102	26	5	0,30	0 2137025001 00
32	32	112	32	6	0,30	0 2137032001 00

D HPT-Schaftfräser
kurz, zentrumschneidend, DIN 844 K

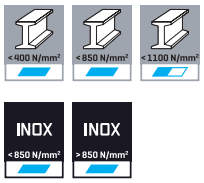
Einsatzbereich:
Gefertigt aus neuem Substrat SPM mit sehr hohem Kobalt-Anteil. Es verbindet die Härte von VHM und die Zähigkeit des PM-Stahles. Dieser Fräser ist für höchste Ansprüche an Zerspanungsleistung und Steigerung des Zerspanungsvolumens in rostfreien Stählen ideal geeignet.

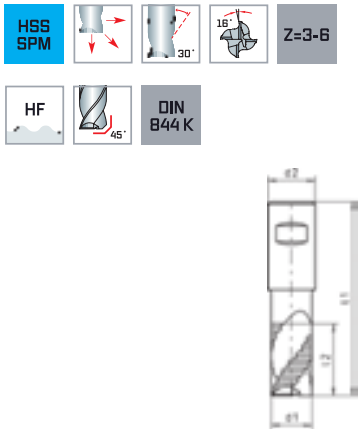
E HPT-End mills
short series, centre cutting, DIN 844 K

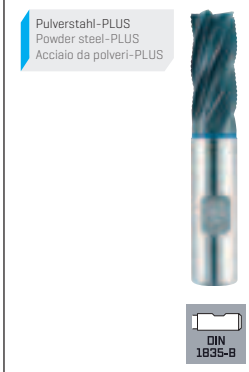
Range of application:
Made from new substrate SPM with extreme high content of cobalt. It combines the hardness of solid carbide and the toughness of powder-metallurgical steel. This milling cutter is specially suitable for highest requirements in cutting performance and increase of cutting volume in stainless steels.

I HPT-Frese cilindriche frontali
serie corta, tagliente al centro, DIN 844 K

Impiego:
Prodotta con la nuova tipologia di acciaio con substrato SPM ad elevato tenore di cobalto. Associa la durezza del M.D alla resilienza dell'acciaio da pollveri. Questa fresa è particolarmente adatta per elevate esigenze di resa e di asportazionne di grandi volumi nella lavorazione degli acciai inossidabili.





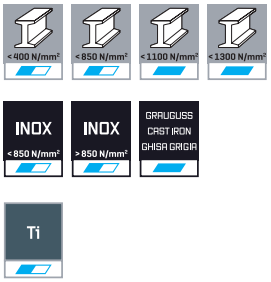


ALUNIT®

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	z		Code 2117 Art.-Nr.
6	6	57	13	3	0,30	0 2117006001 00
8	10	69	19	4	0,30	0 2117008001 00
10	10	72	22	4	0,30	0 2117010001 00
12	12	83	26	4	0,30	0 2117012001 00
14	12	83	26	4	0,30	0 2117014001 00
16	16	92	32	5	0,30	0 2117016001 00
18	16	92	32	5	0,30	0 2117018001 00
20	20	104	38	5	0,30	0 2117020001 00
25	25	121	45	5	0,30	0 2117025001 00
32	32	133	53	6	0,30	0 2117032001 00

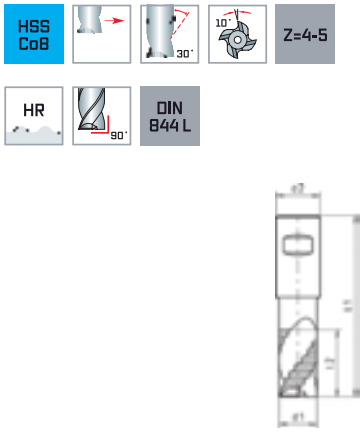
D Schaftfräser
lang, DIN 844 L

Einsatzbereich:
Großer Anwendungsbereich bei Werkstoffen mit mittlerer bis hoher Festigkeit (ca. 900–1.400 N/mm²), z.B. Einsatz-, Vergütungsstähle, Werkzeugstahl legiert, vergütet, NE-Metalle, hochwarmfeste Werkstoffe sowie Gusseisen und Gusslegierungen.



E End mills
long series, DIN 844 L

Range of application:
Wide range of applications on materials of medium strength up to high tensile strength (~ 900–1.400 N/mm²), for example case-hardening, heat-treatable steels, alloyed tool steel; hardened and tempered non-ferrous metals, high temperature materials, also cast iron and alloyed cast iron.



I Frese cilindriche frontali
serie lunga, DIN 844 L

Impiego:
Fresatura generale adatte per lavorazioni di acciai sia a media che ad elevata resistenza (ca. 900 – fino a 1400 N/mm²) ad es. acciai da cementazione, acciai da utensili legati bonificati, metalli non ferrosi, metalli resistenti al calore, ghisa, leghe di ghisa.

ALUNIT®

d1 $_{k12}$ mm	d2 $_{h6}$ mm	l1 mm	l2 mm	Z	Code 2087 Art.-Nr.
10	10	95	45	4	0 2087010001 00
12	12	110	53	4	0 2087012001 00
14	12	110	53	4	0 2087014001 00
16	16	123	63	4	0 2087016001 00
18	16	123	63	4	0 2087018001 00
20	20	141	75	4	0 2087020001 00
25	25	166	90	5	0 2087025001 00

D Schaftfräser
kurz, dreischneider, zentrumschneidend, DIN 844 K

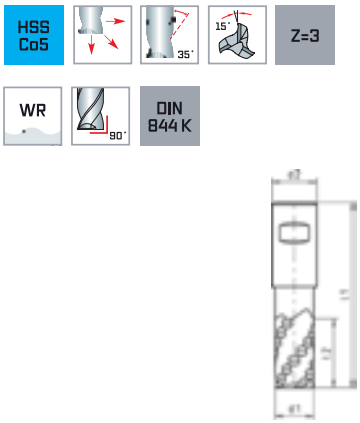
Einsatzbereich:
Empfohlen zum Fräsen von weichen bis zähen, langspanenden Werkstoffen wie Al- und Cu-Legierungen sowie Thermoplaste.

E End mills
short series, three flutes, centre cutting, DIN 844 K

Range of application:
Recommended for milling in soft as well as in tough, long chipping materials such as Al- and Cu-alloys as well as in thermo plastics.

I Frese cilindriche frontali
serie corta, 3 taglienti, tagliente al centro, DIN 844 K

Impiego:
Adatte per lavorazioni di acciai teneri, tenaci, a truciolo lungo, leghe alluminio, leghe rame, materiali termoplastici.



d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 2094 Art.-Nr.
6	6	57	13	3	0 2094006001 00
8	10	69	19	3	0 2094008001 00
10	10	72	22	3	0 2094010001 00
12	12	83	26	3	0 2094012001 00
14	12	83	26	3	0 2094014001 00

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 2094 Art.-Nr.
16	16	92	32	3	0 2094016001 00
18	16	92	32	3	0 2094018001 00
20	20	104	38	3	0 2094020001 00
25	25	121	45	3	0 2094025001 00

D Schaftfräser
lang, dreischneider, zentrumschneidend

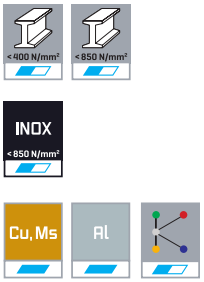
Einsatzbereich:
Empfohlen zum Fräsen von weichen bis zähen, langspanenden Werkstoffen wie Al- und Cu-Legierungen sowie Thermoplaste.

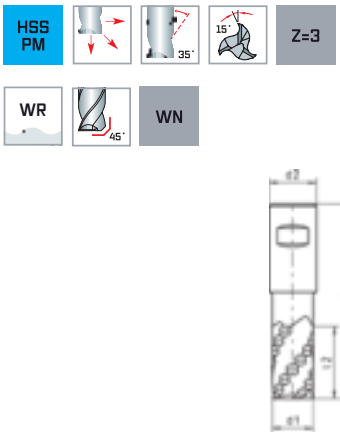
E End mills
long series, three flutes, centre cutting

Range of application:
Recommended for milling in soft as well as in tough, long chipping materials such as Al- and Cu-alloys as well as in thermo plastics.

I Frese cilindriche frontali
serie lunga, 3 taglienti, tagliente al centro

Impiego:
Adatte per lavorazioni di acciai teneri, tenaci, a truciolo lungo, leghe alluminio, leghe rame, materiali termoplastici.





d1 js14 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 2172 Art.-Nr.
10	10	95	45	3	0 2172010001 00
12	12	110	53	3	0 2172012001 00
14	12	110	53	3	0 2172014001 00
16	16	123	63	3	0 2172016001 00

d1 js14 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 2172 Art.-Nr.
18	16	123	63	3	0 2172018001 00
20	20	141	75	3	0 2172020001 00
25	25	166	90	3	0 2172025001 00

D Schaftfräser
kurz, DIN 844 K

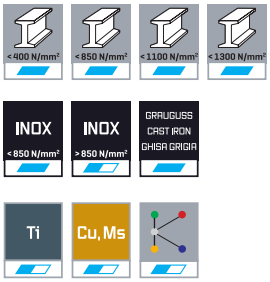
Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen mit hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.

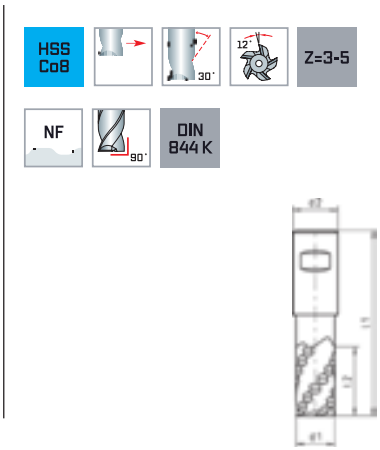
E End mills
short series, DIN 844 K

Range of application:
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.

I Frese cilindriche frontali
serie corta, DIN 844 K

Impiego:
Adatte per lavorazioni di acciai di difficile lavorabilità ad elevata resistenza fino a R = 1.300 N/mm², Titanio, leghe di Titanio.





d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	Z	Code 2156 Art.-Nr.
5	6	57	13	3	0 2156005001 00
6	6	57	13	3	0 2156006001 00

d1 k12 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 2156 Art.-Nr.
8	10	69	19	4	0 2156008001 00
9	10	69	19	4	0 2156009001 00
10	10	72	22	4	0 2156010001 00
11	12	79	22	4	0 2156011001 00
12	12	83	26	4	0 2156012001 00
14	12	83	26	4	0 2156014001 00
15	12	83	26	4	0 2156015001 00
16	16	92	32	4	0 2156016001 00
18	16	92	32	4	0 2156018001 00
20	20	104	38	4	0 2156020001 00
25	25	121	45	5	0 2156025001 00
30	25	121	45	5	0 2156030001 00

D Schaftfräser
kurz, Morsekegelschaft, DIN 845 B

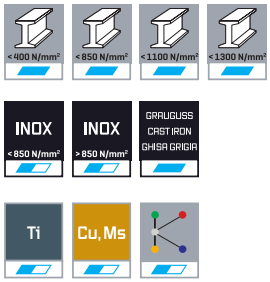
Einsatzbereich:
Zum Schlichten mit hoher Zerspanungsleistung bei gleichzeitig exzellenter Oberfläche von Stählen mit mittlerer bis hoher Festigkeit bis 1.300 N/mm² (z.B. Bau-, Einsatz-, Vergütungsstähle); NE-Metalle, rost- und säurebeständige Stähle. Bevorzugt Gleichlauffräsen.

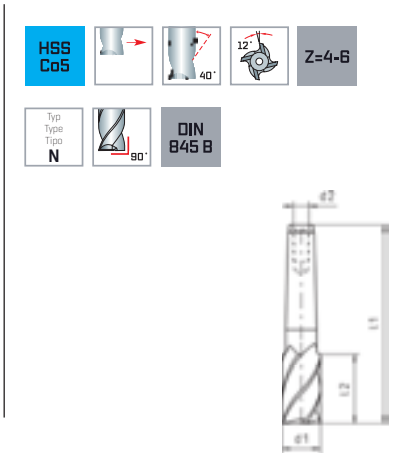
E End mills
short series, morse taper shank, DIN 845 B

Range of application:
Finishing with high cutting performance and excellent surface on steels with medium to high tensile strength up to 1.300 N/mm² (for example for structural, case-hardening, heat-treatable steels); non-ferrous metals, stainless and acid resistant steels. Climb milling preferred.

I Frese frontali
serie corta, cono morse, DIN 845 B

Impiego:
Adatte per lavorazione di acciai di media ed alta resistenza fino a R = 1.300 N/mm², (ad es. acciai da costruzione, acciai da cementazione, acciai bonificati); materiali non ferrosi, acciai inossidabili, acciai resistenti agli acidi, con elevata potenza di fresatura e con una finitura della superficie ottimale. Consigliata fresatura concorde.





d1 k10 mm		d2 mm	l1 mm	l2 mm	z	Code 2664 Art.-Nr.
12	2	M 6	111	26	4	0 2664012001 00
14	2	M10	111	26	4	0 2664014001 00
16	2	M10	117	32	4	0 2664016001 00
18	2	M10	117	32	4	0 2664018001 00
20	2	M10	123	38	4	0 2664020001 00
22	2	M10	123	38	5	0 2664022001 00
25	3	M12	147	45	5	0 2664025001 00
26	3	M12	147	45	5	0 2664026001 00
28	3	M12	147	45	5	0 2664028001 00
30	3	M12	147	45	6	0 2664030001 00
32	4	M16	178	53	6	0 2664032001 00
36	4	M16	178	53	6	0 2664036001 00
40	4	M16	188	63	6	0 2664040001 00
45	4	M16	188	63	6	0 2664045001 00

D Schaftfräser
lang, Morsekegelschaft, DIN 845 B

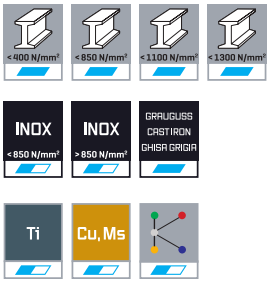
Einsatzbereich:
Zum Schlichten mit hoher Zerspanungsleistung bei gleichzeitig exzellenter Oberfläche von Stählen mit mittlerer bis hoher Festigkeit bis 1.300 N/mm² (z.B. Bau-, Einsatz-, Vergütungsstähle); NE-Metalle, rost- und säurebeständige Stähle. Bevorzugt Gleichlauffräsen.

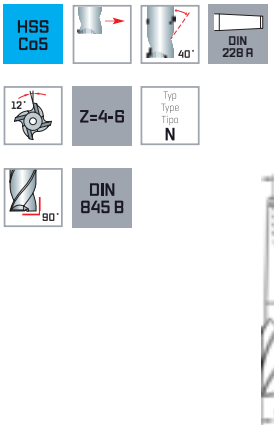
E End mills
long series, morse taper shank, DIN 845 B

Range of application:
Finishing with high cutting performance and excellent surface on steels with medium to high tensile strength up to 1.300 N/mm² (for example for structural, case-hardening, heat-treatable steels); non-ferrous metals, stainless and acid resistant steels. Climb milling preferred.

I Frese frontali
serie lunga, cono morse, DIN 845 B

Impiego:
Adatte per lavorazione di acciai di media ed alta resistenza fino a R = 1.300 N/mm², (ad es. acciai da costruzione, acciai da cementazione, acciai bonificati); materiali non ferrosi, acciai inossidabili, acciai resistenti agli acidi, con elevata potenza di fresatura e con una finitura della superficie ottimale. Consigliata fresatura concorde.





d1 k10 mm		d2 mm	l1 mm	l2 mm	Z	Code 2684 Art.-Nr.
16	2	M10	148	63	4	0 2684016001 00
20	2	M10	160	75	4	0 2684020001 00
22	2	M12	160	75	5	0 2684022001 00
25	3	M12	192	90	5	0 2684025001 00
28	3	M12	192	90	5	0 2684028001 00
30	3	M12	192	90	6	0 2684030001 00
36	4	M16	231	106	6	0 2684036001 00
40	4	M16	250	125	6	0 2684040001 00

D Schaftfräser
kurz, Morsekegelschaft, DIN 845 B (C)

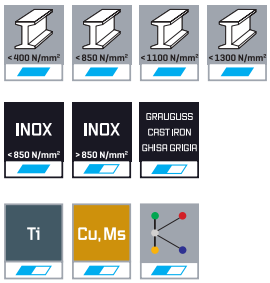
Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen mit hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.

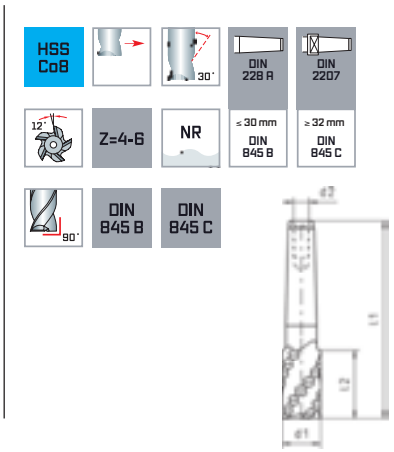
E End mills
short series, morse taper shank, DIN 845 B (C)

Range of application:
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.

I Frese frontali
serie corta, cono morse, DIN 845 B (C)

Impiego:
Adatte per lavorazioni di acciai di difficile lavorabilità ed elevata resistenza fino a R = 1.300 N/mm², Titanio, leghe di Titanio.

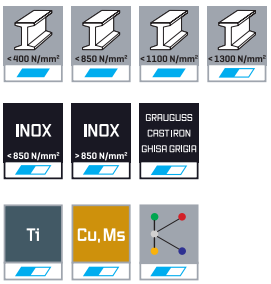




d1 k12 mm		d2 mm	l1 mm	l2 mm	z	Code 2756 Art.-Nr.
12	1	M 6	96	26	4	0 2756012001 00
14	2	M10	111	26	4	0 2756014001 00
16	2	M10	117	32	4	0 2756016001 00
20	2	M10	123	38	4	0 2756020001 00
24	3	M12	147	45	5	0 2756024001 00
25	3	M12	147	45	5	0 2756025001 00
30	3	M12	147	45	5	0 2756030001 00
32	4	M16	201	53	6	0 2756032001 00
40	4	M16	211	63	6	0 2756040001 00
45	4	M16	211	63	6	0 2756045001 00

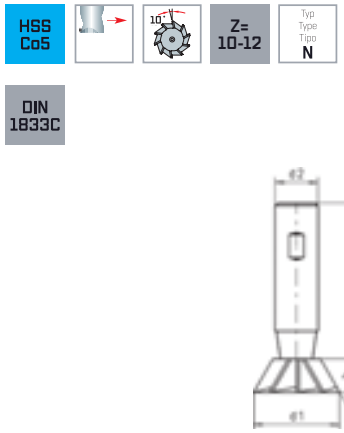
D Winkelfräser
DIN 1833 C

Einsatzbereich:
Empfohlen zum Fräsen von Bau-, Einsatz- und Vergütungsstählen mit normaler Festigkeit bis 1.100 N/mm² sowie für kurzspanende NE-Metalle



E Dovetail cutters
DIN 1833 C

Range of application:
Recommended for milling in construction steels, tempered steels and cementation steels with standard tensile strength up to 1.100 N/mm² and short-chipping of non-ferrous metals.



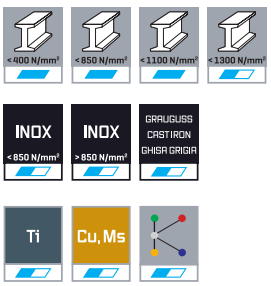
I Frese ad angolo divergente
DIN 1833 C

Impiego:
Fresatura di acciai da costruzione, acciai da cementazione, acciai bonificati con R fino a 1.100 N/mm² e di materiali non ferrosi a truciolo corto.

σ	d1 js16 mm	b mm	d2 h6 mm	l mm	Z	Code 1394 Art.-Nr.
45°	16	4,0	12	60	10	0 1394016401 00
45°	20	5,0	12	63	10	0 1394020401 00
45°	25	6,3	12	67	10	0 1394025401 00
45°	32	8,0	16	71	12	0 1394032401 00
60°	16	6,3	12	60	10	0 1394016601 00
60°	20	8,0	12	63	10	0 1394020601 00
60°	25	10,0	12	67	10	0 1394025601 00
60°	32	12,5	16	71	12	0 1394032601 00

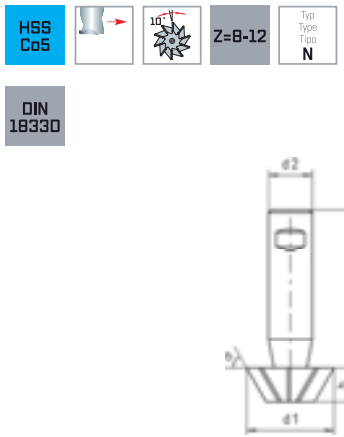
D Winkelfräser
DIN 1833 D

Einsatzbereich:
Empfohlen zum Fräsen von Bau-, Einsatz- und Vergütungsstählen mit normaler Festigkeit bis 1.100 N/mm² sowie für kurzspanende NE-Metalle.



E Dovetail cutters
DIN 1833 D

Range of application:
Recommended for milling in construction steels, tempered steels and cementation steels with standard tensile strength up to 1.100 N/mm² and short-chipping of non-ferrous metals.



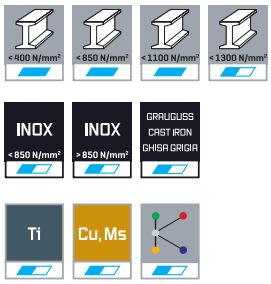
I Frese ad angolo convergente
DIN 1833 D

Impiego:
Fresatura di acciai da costruzione, acciai da cementazione, acciai bonificati con R fino a 1.100 N/mm² e di materiali non ferrosi a truciolo corto.

σ	d1 js16 mm	b mm	d2 h6 mm	l mm	z	Code 1424 Art.-Nr.
45°	16	4,0	12	60	8	0 1424016401 00
45°	20	5,0	12	63	8	0 1424020401 00
45°	25	6,3	12	67	10	0 1424025401 00
45°	32	8,0	16	71	12	0 1424032401 00
60°	16	6,3	12	60	8	0 1424016601 00
60°	20	8,0	12	63	8	0 1424020601 00
60°	25	10,0	12	67	10	0 1424025601 00
60°	32	12,5	16	71	12	0 1424032601 00

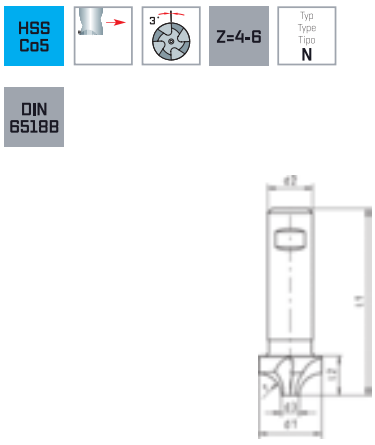
D Viertelrund-Profilfräser
DIN 6518 B

Einsatzbereich:
Empfohlen zum Fräsen von Bau-, Einsatz- und Vergütungsstählen mit normaler Festigkeit bis 1.100 N/mm² sowie für kurzspanende NE-Metalle.



E Quarter circle cutters
DIN 6518 B

Range of application:
Recommended for milling in construction steels, tempered steels and cementation steels with standard tensile strength up to 1.100 N/mm² and short-chipping of non-ferrous metals.



I Frese a quarto di cerchio
DIN 6518 B

Impiego:
Adatte per lavorazioni di acciai da costruzione, acciai da cementazione, acciai bonificati con R fino a 1.100 N/mm² e di materiali non ferrosi a truciolo corto.

r H11 mm	d1 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	z	Code 1464 Art.-Nr.
1,00	8	10	6	60	10	4	0 1464001001 00
1,25	8,5	10	6	60	10	4	0 1464001201 00
Δ 1,50	9	10	6	60	10	4	0 1464001501 00
1,60	9,2	10	6	60	10	4	0 1464001601 00
2,00	10	10	6	60	15	4	0 1464002001 00
2,50	11	10	6	60	15	4	0 1464002501 00
3,00	12	12	6	60	11	4	0 1464003001 00
Δ 3,50	13	12	6	60	11	4	0 1464003501 00
4,00	14	12	6	60	11	4	0 1464004001 00
Δ 4,50	15	12	6	60	11	4	0 1464004501 00
5,00	16	12	6	60	11	4	0 1464005001 00
Δ 5,50	19	16	8	67	14	4	0 1464005501 00
6,00	20	16	8	67	14	4	0 1464006001 00
6,30	20,6	16	8	71	18	4	0 1464006301 00
Δ 6,50	21	16	8	71	18	4	0 1464006501 00
Δ 7,00	22	16	8	71	18	4	0 1464007001 00
Δ 7,50	23	16	8	71	18	4	0 1464007501 00
8,00	24	16	8	71	18	4	0 1464008001 00
10,00	28	25	8	85	22	4	0 1464010001 00
12,00	34	25	10	90	27	4	0 1464012001 00
12,50	41	25	16	100	32	6	0 1464012501 00
Δ 15,00	46	25	16	100	32	6	0 1464015001 00
16,00	48	25	16	100	32	6	0 1464016001 00
20,00	56	32	16	112	40	6	0 1464020001 00

Δ Zwischenradien / Intermediate radii / raggi intermedi

D T-Nutenfräser
DIN 851 AB

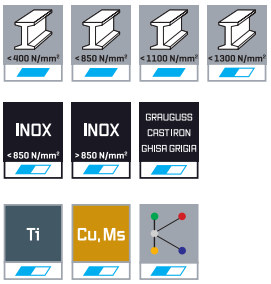
Einsatzbereich:
Schaftfräser für T-Nuten nach DIN 650, kreuzverzahnt. Empfohlen zum Fräsen von Bau-, Einsatz- und Vergütungsstählen mit normaler Festigkeit bis 1.100 N/mm² sowie für kurzspanende NE-Metalle.

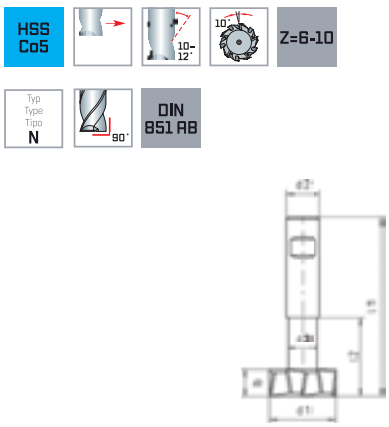
E T-Slot milling cutters
DIN 851 AB

Range of application:
Milling cutters for T-slots according to DIN 650, staggered teeth. Recommended for milling in construction steels, tempered steels and cemen-tation steels with standard tensile strength up to 1.100 N/mm² and short-chipping of non-ferrous metals.

I Frese per scanalature A "T",
DIN 851 AB

Impiego:
Frese a finire per scanalatura a T secondo DIN 650, denti alternati. Adatte per lavorazioni di acciai da costruzione, acciai da cementazione, acciai bonificati con R fino a 1.100 N/mm² e di materiali non ferrosi a truciolo corto.





a*	d1 d11 mm	b d11 mm	d2 h6 mm	d3 mm	l1 mm	l2 mm	Z	Code 1484 Art.-Nr.
6	12,5	6	10	5	57	17	6	0 1484 012501 00
8	16	8	10	7	62	21	6	0 1484 016001 00
10	18	8	12	8	70	25	6	0 1484 018001 00
12	21	9	12	10	74	29	6	0 1484 021001 00
14	25	11	16	12	82	34	8	0 1484 025001 00
16	28	12	16	13	85	37	8	0 1484 028001 00
18	32	14	16	15	90	41	8	0 1484 032001 00
20	36	16	25	17	103	47	8	0 1484 036001 00
22	40	18	25	19	108	52	10	0 1484 040001 00

* Für T-Nuten nach DIN 650 / For T-slots according to DIN 650 / Per scanalature a "T" secondo DIN 650

D T-Nutenfräser
DIN 851 AB

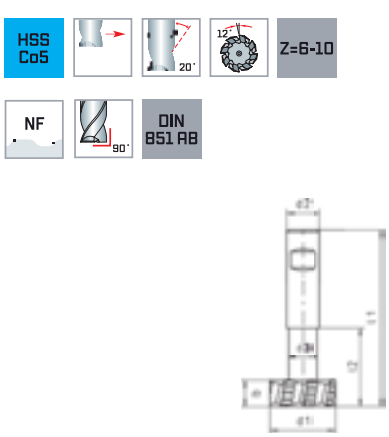
Einsatzbereich:
Schaftfräser für T-Nuten nach DIN 650 mit Schrupp-Schlichtverzahnung. Empfohlen zum Fräsen von Bau-, Einsatz- und Vergütungsstählen mit normaler Festigkeit bis 1.300 N/mm² sowie für kurzspanende NE-Metalle.

E T-Slot milling cutters
DIN 851 AB

Range of application:
Schaftfräser für T-Nuten nach DIN 650 mit Schrupp-Schlichtverzahnung. Empfohlen zum Fräsen von Bau-, Einsatz- und Vergütungsstählen mit normaler Festigkeit bis 1.300 N/mm² sowie für kurzspanende NE-Metalle.

I Frese per scanalature A "T",
DIN 851 AB

Impiego:
Frese a sgrossare per scanalatura a T secondo DIN 650. Adatte per lavorazioni di acciai da costruzione, acciai da cementazione, acciai bonificati con R fino a 1.300 N/mm² e di materiali non ferrosi a truciolo corto.



a*	d1 $_{d11}$ mm	b $_{d11}$ mm	d2 $_{h6}$ mm	d3 mm	l1 mm	l2 mm	z	Code 1504 Art.-Nr.
6	12,5	6	10	5	57	17	6	0 1504012501 00
8	16	8	10	7	62	21	6	0 1504016001 00
10	18	8	12	8	70	25	6	0 1504018001 00
12	21	9	12	10	74	29	8	0 1504021001 00
14	25	11	16	12	82	34	8	0 1504025001 00
16	28	12	16	13	85	37	8	0 1504028001 00
18	32	14	16	15	90	41	8	0 1504032001 00
20	36	16	25	17	103	47	10	0 1504036001 00
22	40	18	25	19	108	52	10	0 1504040001 00
24	45	20	25	21	113	57	10	0 1504045001 00

* Für T-Nuten nach DIN 650 / For T-slots according to DIN 650 / Per scanalature a "T" secondo DIN 650

D Schlitzfräser
DIN 850 D

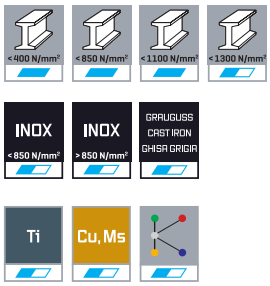
Einsatzbereich:
Empfohlen zum Fräsen von Bau-, Einsatz- und Vergütungsstählen mit normaler Festigkeit bis 1.100 N/mm² sowie für kurzspanende NE-Metalle.

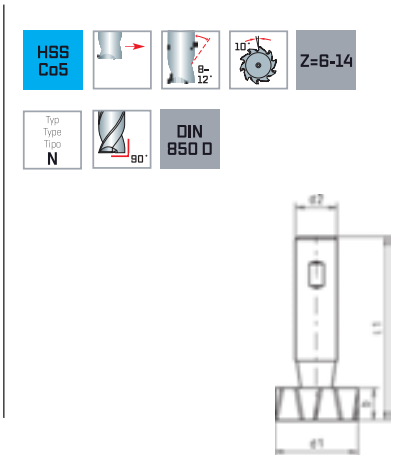
E Woodruff keyseat cutters
DIN 850 D

Range of application:
Recommended for milling in construction steels, tempered steels and cementation steels with standard tensile strength up to 1.100 N/mm² and short-chipping of non-ferrous metals.

I Frese per sede di chiavetta
DIN 850 D

Impiego:
Fresatura di acciai da costruzione, acciai da cementazione, acciai bonificati con R fino a 1.100 N/mm² e di materiali non ferrosi a truciolo corto.





x* mm	d1 $_{h11}$ mm	b $_{e8}$ mm	d2 $_{h6}$ mm	l1 mm	z	Code 1524 Art.-Nr.
1,0x 1,4	4,5	1	6	50	6	0 1524004501 00
1,5x 2,6	7,5	1,5	6	50	6	0 1524007101 00
2,0x 2,6	7,5	2	6	50	6	0 1524007201 00
2,0x 3,7	10,5	2	6	50	8	0 1524010001 00
2,5x 3,7	10,5	2,5	6	50	8	0 1524010101 00
3,0x 3,7	10,5	3	6	50	8	0 1524010201 00
3,0x 5,0	13,5	3	10	56	8	0 1524013301 00
4,0x 5,0	13,5	4	10	56	8	0 1524013401 00
3,0x 6,5	16,5	3	10	56	8	0 1524016301 00
4,0x 6,5	16,5	4	10	56	8	0 1524016401 00
5,0x 6,5	16,5	5	10	56	8	0 1524016501 00
4,0x 7,5	19,5	4	10	63	10	0 1524019401 00
5,0x 7,5	19,5	5	10	63	10	0 1524019501 00
6,0x 7,5	19,5	6	10	63	10	0 1524019601 00
5,0x 9,0	22,5	5	10	63	10	0 1524022501 00
6,0x 9,0	22,5	6	10	63	10	0 1524022601 00
8,0x 9,0	22,5	8	10	63	10	0 1524022801 00
6,0x10,0	25,5	6	10	63	10	0 1524025501 00
6,0x11,0	28,5	6	10	63	12	0 1524028101 00
8,0x11,0	28,5	8	10	63	12	0 1524028201 00

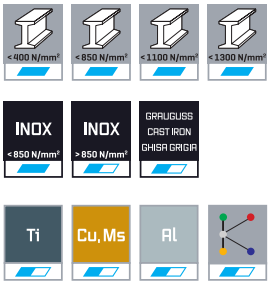
Fortsetzung / Continuation / Continuazione ▶

x* mm	d1 h11 mm	b e8 mm	d2 h6 mm	l1 mm	z	Code 1524 Art.-Nr.
10,0x11,0	28,5	10	12	71	12	0 1524028301 00
8,0x13,0	32,5	8	12	71	12	0 1524032101 00
10,0x13,0	32,5	10	12	71	12	0 1524032201 00
10,0x16,0	45,5	10	12	71	14	0 1524045501 00

* Nuten für Scheibenfedern nach DIN 6888 / Woodruff keyseats according to DIN 6888 / Per scanalature secondo DIN 6888

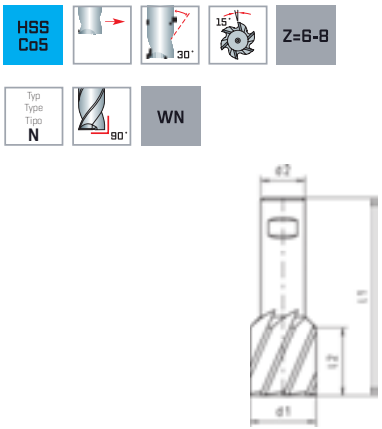
D Kurzschaftfräser

Einsatzbereich:
Empfohlen zum Fräsen von Werkstoffen mit mittlerer bis hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.



E Short shank cutters

Range of application:
Recommended for milling in materials with medium/high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.



I Frese frontali
serie corta

Impiego:
Fresatura generale di acciai di media ed alta resistenza fino a R = 1.300 N/mm², Titanio, leghe di Titanio.

d1 js16 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1374 Art.-Nr.
30	20	90	30	6	0 1374003001 00
35	20	90	30	6	0 1374003501 00

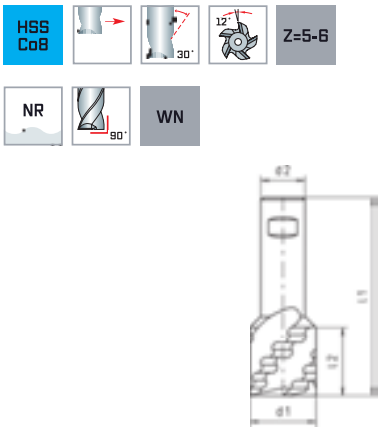
d1 js16 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1374 Art.-Nr.
40	25	95	32	6	0 1374004001 00
50	32	100	36	8	0 1374005001 00

D Kurzschaftfräser

Einsatzbereich:
Empfohlen zum Fräsen von Werkstoffen mit mittlerer bis hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.

E Short shank cutters

Range of application:
Recommended for milling in materials with medium/high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.



I Frese frontali
serie corta

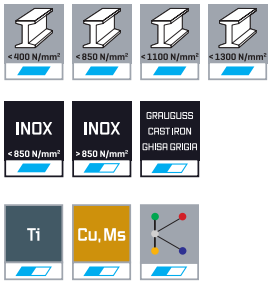
Impiego:
Fresatura generale di acciai di media ed alta resistenza fino a R = 1.300 N/mm², Titanio, leghe di Titanio.

d1 js16 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1356 Art.-Nr.
30	20	90	30	5	0 1356003001 00
35	20	90	30	6	0 1356003501 00

d1 js16 mm	d2 h6 mm	l1 mm	l2 mm	z	Code 1356 Art.-Nr.
40	25	95	32	6	0 1356004001 00
50	32	100	36	6	0 1356005001 00

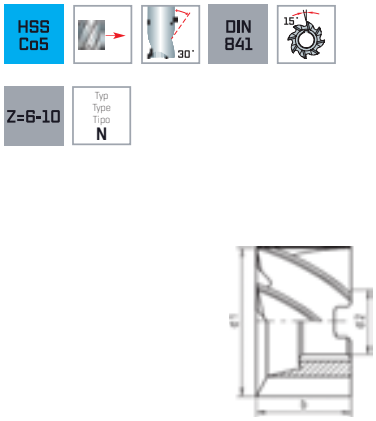
D Walzenstirnfräser
DIN 841

Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen bis 1.300 N/mm² Festigkeit sowie von rost- und säurebeständigen Stählen, Titanlegierungen u. ä.



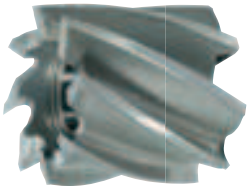
E Shell end mills
DIN 841

Range of application:
Recommended for milling in heavy duty materials up to a tensile strength of 1.300 N/mm² as well as in rust- and acid-resistant steels, titanium-alloyed materials etc.



I Frese frontali
DIN 841

Impiego:
Fresatura generale di acciai di difficile lavorabilità con R fino a 1.300 N/mm², acciai inossidabili, acciai resistenti agli acidi, leghe di Titanio.



d1 js16 mm	b k16 mm	d2 H7 mm	z	Code 3044 Art.-Nr.
30	30	13	6	0 3044003001 00
35	35	16	6	0 3044003501 00
40	20	16	6	0 3044004201 00
40	40	16	6	0 3044004401 00
50	25	22	8	0 3044005201 00

d1 js16 mm	b k16 mm	d2 H7 mm	z	Code 3044 Art.-Nr.
50	50	22	8	0 3044005501 00
60	30	27	8	0 3044006301 00
60	60	27	8	0 3044006601 00
75	35	27	10	0 3044007301 00
90	35	27	10	0 3044009001 00

D Walzenstirnfräser
DIN 841

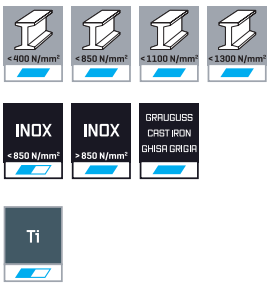
Einsatzbereich:
Für harte, kurzspanende Werkstoffe wie Grauguss, Messing, Bronze, legierte Werkzeugstähle.

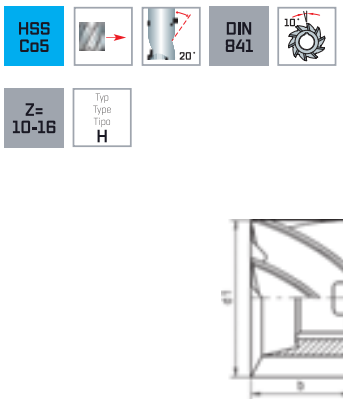
E Shell end mills
DIN 841

Range of application:
For hard, short chipping materials such as cast iron, brass, bronze, alloyed tool steels.

I Frese frontali
DIN 841

Impiego:
Fresatura generale di acciai duri a truciolo corto, ghisa grigia, ottone, bronzo, acciai legati da utensili.





d1 js16 mm	b k16 mm	d2 H7 mm	Z	Code 3054 Art.-Nr.
30	30	13	10	0 3054003001 00
35	35	16	10	0 3054003501 00
40	20	16	10	0 3054004201 00
40	40	16	10	0 3054004401 00
50	25	22	12	0 3054005201 00

d1 js16 mm	b k16 mm	d2 H7 mm	Z	Code 3054 Art.-Nr.
50	50	22	12	0 3054005501 00
60	30	27	12	0 3054006301 00
60	60	27	12	0 3054006601 00
90	35	27	16	0 3054009001 00

D Walzenstirnfräser
DIN 1880

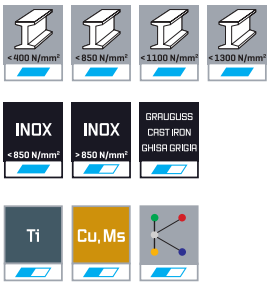
Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen bis 1.300 N/mm² Festigkeit sowie von rost- und säurebeständigen Stählen, Titanlegierungen u. ä.

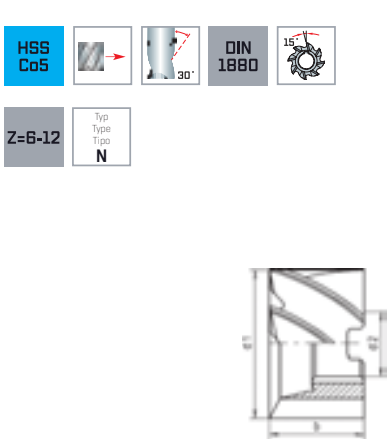
E Shell end mills
DIN 1880

Range of application:
Recommended for milling in heavy duty materials up to a tensile strength of 1.300 N/mm² as well as in rust- and acid-resistant steels, titanium-alloyed materials and similars.

I Frese frontali
DIN 1880

Impiego:
Fresatura generale di acciai di difficile lavorabilità con R fino a 1.300 N/mm², acciai inossidabili, acciai resistenti agli acidi, leghe di Titanio.



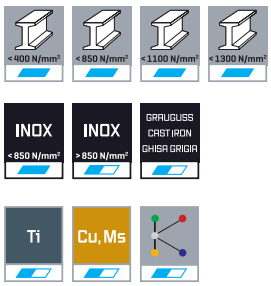


ALUNIT®

d1 js16 mm	b k16 mm	d2 H7 mm	Z	Code 3074 Art.-Nr.	Code 3077 Art.-Nr.
40	32	16	6	0 3074004001 00	0 3077004001 00
50	36	22	8	0 3074005001 00	0 3077005001 00
63	40	27	8	0 3074006301 00	0 3077006301 00
80	45	27	10	0 3074008001 00	0 3077008001 00
100	50	32	12	0 3074010001 00	

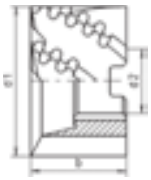
D Walzenstirnfräser
DIN 841

Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen mit hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.



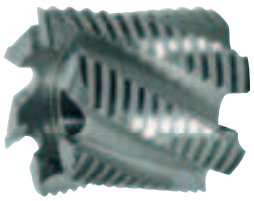
E Shell end mills
DIN 841

Range of application:
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.



I Frese frontali
DIN 841

Impiego:
Fresatura generale di acciai di difficile lavorabilità con R fino a 1.300 N/mm², Titanio, leghe di Titanio.

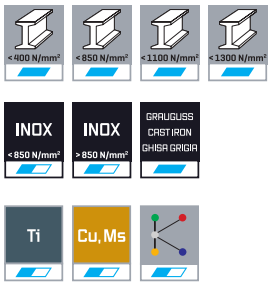


d1 js16 mm	b k16 mm	d2 H7 mm	Z	Code 3106 Art.-Nr.
35	35	16	6	0 3106003501 00
40	40	16	6	0 3106004401 00

d1 js16 mm	b k16 mm	d2 H7 mm	Z	Code 3106 Art.-Nr.
50	50	22	6	0 3106005501 00
60	30	27	8	0 3106006301 00

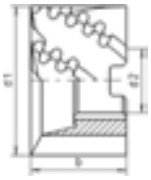
D Walzenstirnfräser
DIN 841

Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen mit hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.



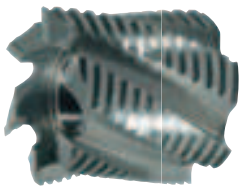
E Shell end mills
DIN 841

Range of application:
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.



I Frese frontali
DIN 841

Impiego:
Fresatura generale di acciai di difficile lavorabilità con R fino a 1.300 N/mm², Titanio, leghe di Titanio.

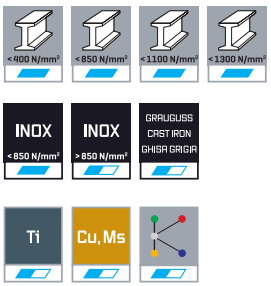


d1 js16 mm	b k16 mm	d2 H7 mm	Z	Code 3116 Art.-Nr.
35	35	16	6	0 3116003501 00
40	20	16	6	0 3116004201 00
50	50	22	6	0 3116005501 00

d1 js16 mm	b k16 mm	d2 H7 mm	Z	Code 3116 Art.-Nr.
60	60	27	8	0 3116006601 00
75	75	27	8	0 3116007701 00
90	35	27	10	0 3116009001 00

D Walzenstirnfräser
DIN 1880

Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen mit hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.

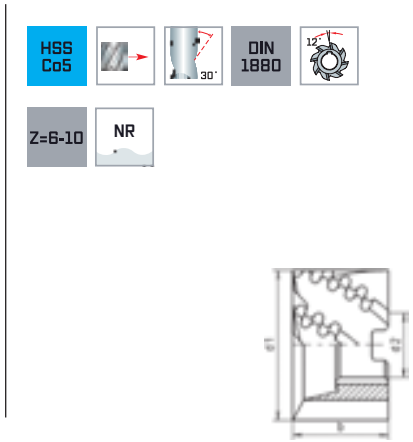


E Shell end mills
DIN 1880

Range of application:
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.

I Frese frontali
DIN 1880

Impiego:
Fresatura generale di acciai di difficile lavorabilità con R fino a 1.300 N/mm², Titanio, leghe di Titanio



TiN

d1 js16 mm	b k16 mm	d2 H7 mm	Z	Code 3126 Art.-Nr.	Code 3128 Art.-Nr.
40	32	16	6	0 3126004001 00	0 3128004001 00
50	36	22	6	0 3126005001 00	0 3128005001 00
63	40	27	8	0 3126006301 00	0 3128006301 00
80	45	27	8	0 3126008001 00	0 3128008001 00
100	50	32	10	0 3126010001 00	0 3128010001 00

D Walzenstirnfräser
DIN 1880

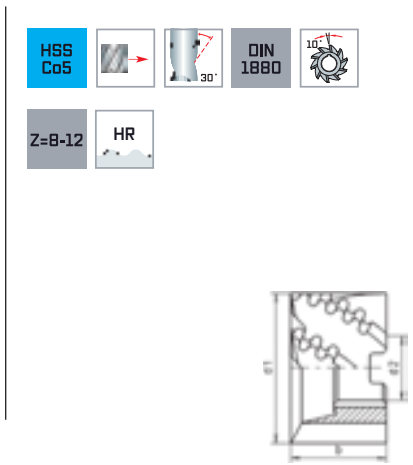
Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen mit hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.

E Shell end mills
DIN 1880

Range of application:
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.

I Frese frontali
DIN 1880

Impiego:
Fresatura generale di acciai di difficile lavorabilità con R fino a 1.300 N/mm², Titanio, leghe di Titanio.



ALUNIT®

d1 js16 mm	b k16 mm	d2 H7 mm	Z	Code 3146 Art.-Nr.	Code 3147 Art.-Nr.
40	32	16	8	0 3146004001 00	0 3147004001 00
50	36	22	8	0 3146005001 00	0 3147005001 00
63	40	27	10	0 3146006301 00	0 3147006301 00
80	45	27	10	0 3146008001 00	0 3147008001 00
100	50	32	12		0 3147010001 00

D Walzenstirnfräser
DIN 1880

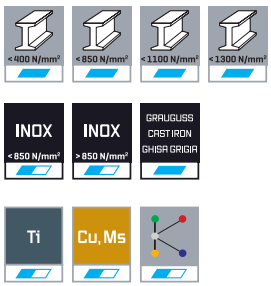
Einsatzbereich:
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen mit hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.

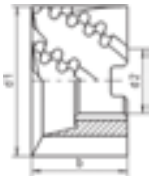
E Shell end mills
DIN 1880

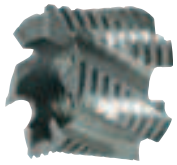
Range of application:
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.

I Frese frontali
DIN 1880

Impiego:
Fresatura generale di acciai di difficile lavorabilità con R fino a 1.300 N/mm², Titanio, leghe di Titanio.





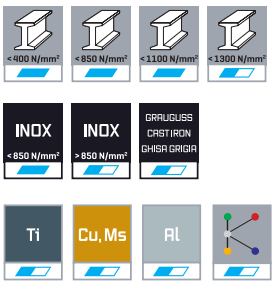


TiN

d1 js16 mm	b k16 mm	d2 H7 mm	Z	Code 3136 Art.-Nr.	Code 3138 Art.-Nr.
40	32	16	6	0 3136004001 00	0 3138004001 00
50	36	22	6	0 3136005001 00	0 3138005001 00
63	40	27	8	0 3136006301 00	0 3138006301 00
80	45	27	8	0 3136008001 00	
100	50	32	10	0 3136010001 00	

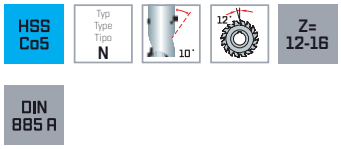
D Scheibenfräser
kreuzverzahnt, DIN 885 A

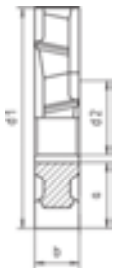
Einsatzbereich:
Empfohlen zum Fräsen von Bau-, Einsatz- und Vergütungsstählen bis 1.100 N/mm² Festigkeit sowie für kurzspanende NE-Metalle.



E Side milling cutters
staggered teeth, DIN 885 A

Range of application:
Recommended for milling in construction steels, tempered steels and cementation steels up to a tensile strength of 1.100 N/mm² as well as in short-chipping non-ferrous metals.





I Frese a disco a tre
tagli denti alternati, DIN 885 A

Impiego:
Fresatura generale di incasso: adatte per tutti i tipi di acciaio con R = 1.100 N/mm², acciai da costruzione, acciai bonificati, acciai da cementazione, materiali non ferrosi a truciolo corto.

d1 js16 mm	b k11 mm	a mm	d2 H7 mm	Z	Code 3174 Art.-Nr.
50	4	11,5	16	12	0 3174004901 00
50	5	11,5	16	12	0 3174005001 00
50	6	11,5	16	12	0 3174005101 00
50	8	11,5	16	12	0 3174005201 00
63	4	14,5	22	12	0 3174005901 00
63	6	14,5	22	12	0 3174006101 00
63	8	14,5	22	12	0 3174006201 00
63	10	14,5	22	12	0 3174006301 00
63	12	14,5	22	12	0 3174006401 00
80	4	19,5	27	14	0 3174007901 00
80	5	19,5	27	14	0 3174008001 00
80	6	19,5	27	14	0 3174008101 00

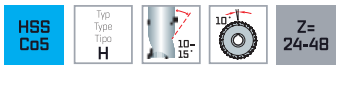
d1 js16 mm	b k11 mm	a mm	d2 H7 mm	Z	Code 3174 Art.-Nr.
80	8	19,5	27	14	0 3174008201 00
80	10	19,5	27	14	0 3174008301 00
80	12	19,5	27	14	0 3174008401 00
100	5	26	32	14	0 3174010001 00
100	6	26	32	14	0 3174010101 00
100	8	26	32	14	0 3174010201 00
100	10	26	32	14	0 3174010301 00
125	6	38,5	32	16	0 3174011901 00
125	8	38,5	32	16	0 3174012001 00
125	10	38,5	32	16	0 3174012101 00
125	12	38,5	32	16	0 3174012201 00

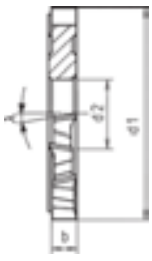
D Metallkreisfräser
kreuzverzahnt

Einsatzbereich:
Empfohlen zum Fräsen von harten, kurzspanenden Werkstoffen wie Grauguss, Messing, Bronze und legierten Werkzeugstählen.

E Metal slitting cutters
staggered teeth

Range of application:
Recommended for milling in hard, short-chipping materials such as grey cast iron, brass, bronze and alloyed tool steels.





I Seghe circolari a denti alternati

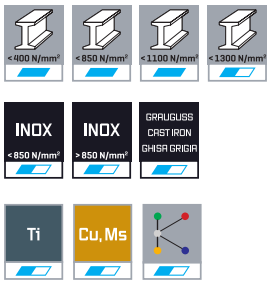
Impiego:
Fresatura generale di acciai duri a truciolo corto, ghisa grigia, ottone, bronzo, acciai legati da utensili.

d1 js16 mm	b k9 mm	d2 H7 mm	Z	Code 3224 Art.-Nr.
50	1,6	16	24	0 3224005001 00
50	2,0	16	24	0 3224005101 00
50	2,5	16	24	0 3224005201 00
63	1,6	22	28	0 3224006001 00
63	2,0	22	28	0 3224006101 00
63	2,5	22	28	0 3224006201 00
63	3,0	22	28	0 3224006301 00
80	1,6	27	32	0 3224008001 00
80	2,0	27	32	0 3224008101 00
80	2,5	27	32	0 3224008201 00
80	3,0	27	32	0 3224008301 00
80	4,0	27	32	0 3224008501 00
100	1,6	32	36	0 3224010001 00
100	2,0	32	36	0 3224010101 00

d1 js16 mm	b k9 mm	d2 H7 mm	Z	Code 3224 Art.-Nr.
100	2,5	32	36	0 3224010201 00
100	3,0	32	36	0 3224010301 00
100	4,0	32	36	0 3224010501 00
100	5,0	32	36	0 3224010601 00
125	2,0	32	40	0 3224012001 00
125	2,5	32	40	0 3224012101 00
125	3,0	32	40	0 3224012201 00
125	4,0	32	40	0 3224012401 00
125	5,0	32	40	0 3224012501 00
160	2,0	40	48	0 3224016001 00
160	3,0	40	48	0 3224016201 00
160	4,0	40	48	0 3224016401 00
160	5,0	40	48	0 3224016501 00

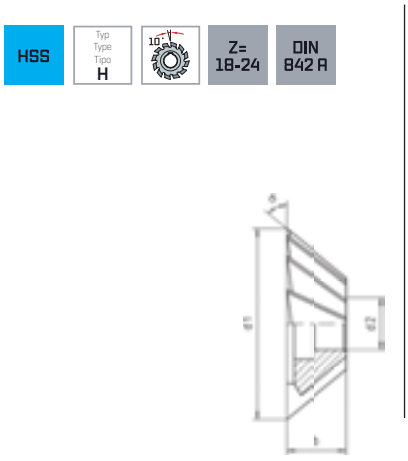
D Winkelstirnfräser
DIN 842 A

Einsatzbereich:
Empfohlen zum Fräsen von geraden Nuten und Führungen in Bau-, Einsatz- und Vergütungsstählen bis 1.100 N/mm² Festigkeit.



E Single angle cutters
DIN 842 A

Range of application:
Recommended for milling straight slots and guidances in construction-, cementation- and tempered steels up to a tensile strength of 1.100 N/mm².



I Frese frontali ad angolo
DIN 842 A

Impiego:
Fresatura generale di scanalature diritte e di guide in acciai da costruzione, acciai da cementazione, acciai bonificati, con R fino a 1.100 N/mm².

σ	d1 js16 mm	b js14 mm	d2 H7 mm	Z	Code 3293 Art.-Nr.
45°	**63**	18	16	18	0 3293006401 00
45°	**80**	22	22	20	0 3293008401 00
45°	**100**	28	27	22	0 3293010401 00
50°	**50**	16	13	16	0 3293005501 00
50°	**63**	20	16	18	0 3293006501 00
50°	**80**	25	22	20	0 3293008501 00
50°	**100**	32	27	22	0 3293010501 00

σ	d1 js16 mm	b js14 mm	d2 H7 mm	Z	Code 3293 Art.-Nr.
60°	**50**	16	13	16	0 3293005601 00
60°	**63**	20	16	18	0 3293006601 00
60°	**80**	25	22	20	0 3293008601 00
60°	**100**	32	27	22	0 3293010601 00
60°	**125**	40	32	24	0 3293012601 00

D Prismenfräser
DIN 847

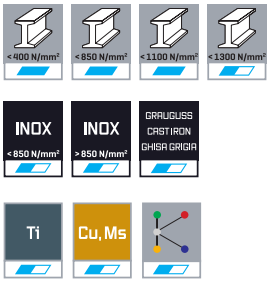
Einsatzbereich:
Empfohlen zum Fräsen von prismatischen Nuten und Führungen in Bau-, Einsatz- und Vergütungsstählen bis 1.100 N/mm² Festigkeit.

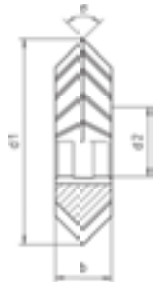
E Double angle cutters
DIN 847

Range of application:
Recommended for milling of prismatical slots and guidances in construction-, cementation- and tempered steels up to a tensile strength of 1.100 N/mm².

I Frese prismatiche
DIN 847

Impiego:
Fresatura generale di scanalature prismatiche e di guide in acciai da costruzione, acciai da cementazione, acciai bonificati, con R fino a 1.100 N/mm².





σ	d1 js16 mm	b js16 mm	d2 H7 mm	Z	Code 3303 Art.-Nr.
45°	50	8	16	20	0 3303005401 00
45°	63	10	22	22	0 3303006401 00
45°	80	12	27	26	0 3303008401 00
45°	100	18	32	26	0 3303010401 00
60°	50	10	16	18	0 3303005601 00
60°	63	14	22	20	0 3303006601 00
60°	80	18	27	22	0 3303008601 00
60°	100	25	32	24	0 3303010601 00

σ	d1 js16 mm	b js16 mm	d2 H7 mm	Z	Code 3303 Art.-Nr.
90°	50	14	16	16	0 3303005901 00
90°	63	20	22	18	0 3303006901 00
90°	80	22	27	20	0 3303008901 00
90°	100	32	32	22	0 3303010901 00

D Halbrund-Profilfräser
hinterdreht, DIN 856

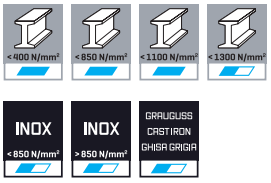
Einsatzbereich:
Halbrundfräser nach außen gewölbt (konvex). Empfohlen zum Fräsen von halbrunden Nuten in Bau-, Einsatz- und Vergütungsstahl bis 1.100 N/mm² Festigkeit.

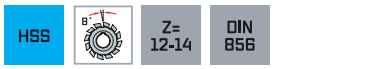
E Half circle form cutters
relieved, DIN 856

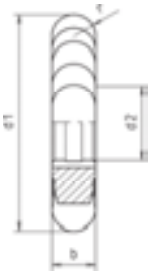
Range of application:
Convex cutters, relieved. Recommended for milling semicircular slots in construction-, cementation- and tempered steels up to a tensile strength of 1.100 N/mm².

I Frese semicircolari
convesse, DIN 856

Impiego:
Fresatura generale di scanalature semicircolari convesse in acciai da costruzione, acciai da cementazione, acciai bonificati con R fino a 1.100 N/mm².







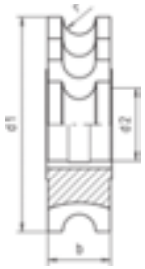
r h11 mm	d1 js16 mm	b mm	d2 H7 mm	Z	Code 3313 Art.-Nr.
1	50	2	16	14	0 3313001001 00
1,6	50	3,2	16	14	0 3313001601 00
2	50	4	16	14	0 3313002001 00
2,5	63	5	22	12	0 3313002501 00
3	63	6	22	12	0 3313003001 00
4	63	8	22	12	0 3313004001 00
5	63	10	22	12	0 3313005001 00
6	80	12	27	12	0 3313006001 00
8	80	16	27	12	0 3313008001 00

D Halbrund-Profilfräser
hinterdreht, DIN 855

Einsatzbereich:
Halbrundfräser nach innen gewölbt (konkav). Empfohlen zum Fräsen von halbrunden Profilen in Bau-, Einsatz- und Vergütungsstahl bis 1.100 N/mm² Festigkeit.

E Half circle form cutters
relieved, DIN 855

Range of application:
Concave cutters, relieved. Recommended for milling semicircular profiles in construction-, cementation-and tempered steels up to a tensile strength of 1.100 N/mm².



I Frese semicircolari
concave, DIN 855

Impiego:
Fresatura generale di scanalature semicircolari concave in acciai da costruzione, acciai da cementazione, acciai bonificati con R fino a 1.100 N/mm².

r H11 mm	d1 js16 mm	b mm	d2 H7 mm	Z	Code 3323 Art.-Nr.
2	50	9	16	14	0 3323002001 00
2,5	63	10	22	12	0 3323002501 00
3	63	12	22	12	0 3323003001 00
4	63	16	22	12	0 3323004001 00
5	63	20	22	12	0 3323005001 00
6	80	24	27	12	0 3323006001 00
8	80	32	27	12	0 3323008001 00

D Zahnformfräser
hinterdreht,
Eingriffswinkel 20°

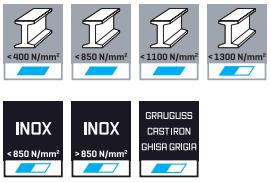
Einsatzbereich:
Zum Fräsen von Stirnräder nach Modul.

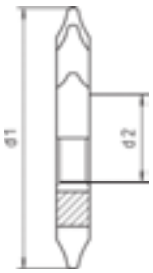
E Involute gear cutters
relieved, pressure angle 20°

Range of application:
For milling spur gears by module.

I Frese a modulo
per taglio ingranaggi per catene a rulli, angolo di pressione 20°

Impiego:
Fresatura di ingranaggi per catene a rulli in funzione del modulo.





Modul	d1 js16 mm	d2 H7 mm	Z	NR. 1: 12-13 ZÄHNE / TEETH / DENTI Code 3353 Art.-Nr.	NR. 2: 14-16 ZÄHNE / TEETH / DENTI Code 3353 Art.-Nr.
0,5	40	16	12	0 3353001101 00	0 3353001201 00
1	50	16	12	0 3353003101 00	0 3353003201 00
1,5	63	22	12	0 3353005101 00	0 3353005201 00
2	63	22	12	0 3353007101 00	0 3353007201 00
2,5	63	22	12	0 3353009101 00	0 3353009201 00
3	70	27	12	0 3353011101 00	0 3353011201 00

Modul	d1 js16 mm	d2 H7 mm	Z	NR. 3: 17-20 ZÄHNE / TEETH / DENTI Code 3353 Art.-Nr.	NR. 4: 21-25 ZÄHNE / TEETH / DENTI Code 3353 Art.-Nr.
0,5	40	16	12	0 3353001301 00	0 3353001401 00
1	50	16	12	0 3353003301 00	0 3353003401 00
1,5	63	22	12	0 3353005301 00	0 3353005401 00
2	63	22	12	0 3353007301 00	0 3353007401 00
2,5	63	22	12	0 3353009301 00	0 3353009401 00
3	70	27	12	0 3353011301 00	0 3353011401 00

Modul	d1 js16 mm	d2 H7 mm	Z	NR. 5: 26-34 ZÄHNE / TEETH / DENTI Code 3353 Art.-Nr.	NR. 6: 35-54 ZÄHNE / TEETH / DENTI Code 3353 Art.-Nr.
0,5	40	16	12	0 3353001501 00	0 3353001601 00
1	50	16	12	0 3353003501 00	0 3353003601 00
1,5	63	22	12	0 3353005501 00	0 3353005601 00
2	63	22	12	0 3353007501 00	0 3353007601 00
2,5	63	22	12	0 3353009501 00	0 3353009601 00
3	70	27	12	0 3353011501 00	0 3353011601 00

				NR. 7: 55-134 ZÄHNE / TEETH / DENTI	NR. 8: 135-∞ ZÄHNE / TEETH / DENTI
Modul	**d1** $_{js16}$ **mm**	**d2** $_{H7}$ **mm**	**Z**	**Code 3353 Art.-Nr.**	**Code 3353 Art.-Nr.** **€ %Gr.12**
0,5	**40**	16	12	0 3353001701 00	0 3353001801 00
1	**50**	16	12	0 3353003701 00	0 3353003801 00
1,5	**63**	22	12	0 3353005701 00	0 3353005801 00
2	**63**	22	12	0 3353007701 00	0 3353007801 00
2,5	**63**	22	12	0 3353009701 00	0 3353009801 00
3	**70**	27	12	0 3353011701 00	0 3353011801 00