

>> 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.

SLOT END MILLS, SHORT SERIES, TWO FLUTES, CENTRE CUTTING, DIN 327 D

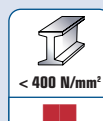
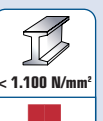
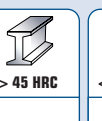
Range of application:

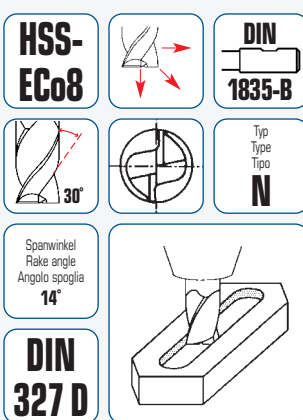
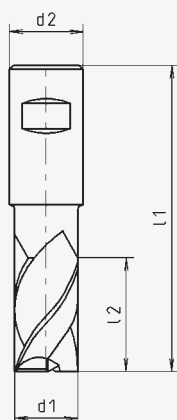
Recommended for milling in materials with medium and high tensile strength up to 1.200 N/mm². Vertical cutting to full depth and horizontal cutting with exact tolerances.

FRESE A DUE TAGLIENTI PER CAVE, SERIE CORTA, TAGLIANTE 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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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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	12,76	0 1027002001 00	23,24
2,5	6	49	5	2	0 1026002501 00	13,43	0 1027002501 00	23,24
3	6	49	5	2	0 1026003001 00	12,76	0 1027003001 00	20,75
3,5	6	50	6	2	0 1026003501 00	13,43	0 1027003501 00	23,84
4	6	51	7	2	0 1026004001 00	10,64	0 1027004001 00	18,93
4,5	6	51	7	2	0 1026004501 00	13,43	0 1027004501 00	23,84
5	6	52	8	2	0 1026005001 00	12,76	0 1027005001 00	20,75
5,5	6	52	8	2	0 1026005501 00	13,43	0 1027005501 00	23,84
6	6	52	8	2	0 1026006001 00	10,64	0 1027006001 00	18,93
6,5	10	60	10	2	0 1026006501 00	15,21	0 1027006501 00	27,08
7	10	60	10	2	0 1026007001 00	15,51	0 1027007001 00	22,24
7,5	10	60	10	2	0 1026007501 00	17,02	0 1027007501 00	30,37
8	10	61	11	2	0 1026008001 00	12,94	0 1027008001 00	24,83
8,5	10	61	11	2	0 1026008501 00	18,88	0 1027008501 00	33,58
9	10	61	11	2	0 1026009001 00	18,88	0 1027009001 00	33,91
9,5	10	61	11	2	0 1026009501 00	20,83	0 1027009501 00	36,14
10	10	63	13	2	0 1026010001 00	15,74	0 1027010001 00	28,01
10,5	12	70	13	2	0 1026010501 00	23,52		
11	12	70	13	2	0 1026011001 00	23,73	0 1027011001 00	41,32
11,5	12	70	13	2	0 1026011501 00	25,82		
12	12	73	16	2	0 1026012001 00	19,79	0 1027012001 00	33,39
13	12	73	16	2	0 1026013001 00	30,56	0 1027013001 00	50,56
14	12	73	16	2	0 1026014001 00	28,98	0 1027014001 00	45,61
15	12	73	16	2	0 1026015001 00	35,26		
16	16	79	19	2	0 1026016001 00	29,40	0 1027016001 00	50,81

Fortsetzung auf Seite IX/13 | Continued on page IX/13 | Segue a pagina IX/13



>> LANGLOCHFRÄSER, KURZ, ZWEISCHNEIDER, ZENTRUMSCHNEIDEND, DIN 327 D

SLOT END MILLS, SHORT SERIES, TWO FLUTES, CENTRE CUTTING, DIN 327 D

FRESE A DUE TAGLIENTI PER CAVE, SERIE CORTA, TAGLIENTE AL CENTRO, DIN 327 D

Fortsetzung von Seite IX/12 | Continued from page IX/12 |
Segue da pagina IX/12

					blank bright lucida		ALUNIT®	
d1 _{e8} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1026 Art.-Nr.	€	Code 1027 Art.-Nr.	€
17	16	79	19	2	□ 1026017001 00	42,46		
18	16	79	19	2	□ 1026018001 00	42,46	□ 1027018001 00	67,51
19	16	79	19	2	□ 1026019001 00	52,19		
20	20	88	22	2	□ 1026020001 00	49,68	□ 1027020001 00	79,28
21	20	88	22	2	□ 1026021001 00	67,15		
22	20	88	22	2	□ 1026022001 00	67,15	□ 1027022001 00	101,80
23	20	88	22	2	□ 1026023001 00	85,74		
24	25	102	26	2	□ 1026024001 00	85,74		
25	25	102	26	2	□ 1026025001 00	85,74	□ 1027025001 00	130,30
26	25	102	26	2	□ 1026026001 00	108,50		
28	25	102	26	2	□ 1026028001 00	108,50		
30	25	102	26	2	□ 1026030001 00	124,00		
32	32	112	32	2	□ 1026032001 00	139,80		
34	32	112	32	2	□ 1026034001 00	181,10		
35	32	112	32	2	□ 1026035001 00	181,10		
36	32	112	32	2	□ 1026036001 00	181,10		
38	32*	118*	38	2	□ 1026038001 00	228,20		
40	32*	118*	38	2	□ 1026040001 00	228,20		

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



>> HPT-LANGLOCHFRÄSER, KURZ, ZWEISCHNEIDER, ZENTRUMSCHNEIDEND, DIN 327 D

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.

HPT SLOT END MILLS, SHORT SERIES, TWO FLUTES, CENTRE CUTTING, DIN 327 D

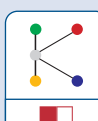
Range of application:

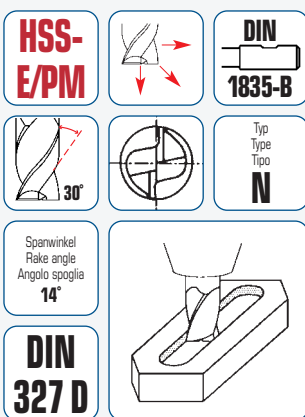
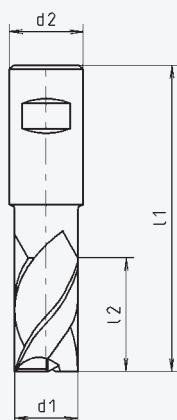
Recommended for milling in materials with medium and high tensile strength up to 1.300 N/mm². Vertical cutting to full depth and horizontal cutting with exact tolerances.

HPT FRESE A DUE TAGLIENTI PER CAVE, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 327 D

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNIT®

d1 _ø mm	d2 _ø mm	l1 mm	l2 mm	Z	Code 1127 Art.-Nr.	€
4	6	51	7	2	0 1127004001 00	23,66
6	6	52	8	2	0 1127006001 00	23,66
8	10	61	11	2	0 1127008001 00	31,03
10	10	63	13	2	0 1127010001 00	35,00
12	12	73	16	2	0 1127012001 00	41,74
14	12	73	16	2	0 1127014001 00	57,02
16	16	79	19	2	0 1127016001 00	63,53
20	20	88	22	2	0 1127020001 00	99,10
25	25	102	26	2	0 1127025001 00	162,70



>> LANGLOCHFRÄSER, LANG, ZWEISCHNEIDER, ZENTRUMSCHNEIDEND

SLOT END MILLS, LONG SERIES, TWO FLUTES, CENTRE CUTTING

FRESE A DUE TAGLIENTI PER CAVE, SERIE LUNGA, TAGLIANTE AL CENTRO

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.

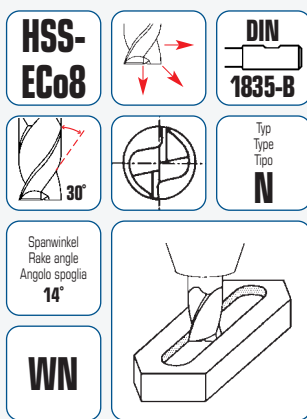
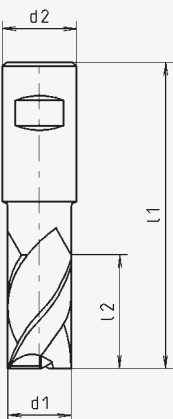
Range of application:

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.

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
											



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d1 _{e8} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1086 Art.-Nr.	€
4	6	63	11	2	0 1086004001 00	18,79
5	6	68	13	2	0 1086005001 00	18,79
6	6	68	13	2	0 1086006001 00	18,79
7	10	80	16	2	0 1086007001 00	23,03
8	10	88	19	2	0 1086008001 00	23,03
9	10	88	19	2	0 1086009001 00	28,10
10	10	95	22	2	0 1086010001 00	28,10
11	12	102	22	2	0 1086011001 00	34,30
12	12	110	26	2	0 1086012001 00	34,30
13	12	110	26	2	0 1086013001 00	41,94
14	12	110	26	2	0 1086014001 00	41,94
15	12	110	26	2	0 1086015001 00	50,80
16	16	123	32	2	0 1086016001 00	50,80
18	16	123	32	2	0 1086018001 00	60,92
20	20	141	38	2	0 1086020001 00	71,49
22	20	141	38	2	0 1086022001 00	87,44
24	25	166	45	2	0 1086024001 00	111,70
25	25	166	45	2	0 1086025001 00	111,70
26	25	166	45	2	0 1086026001 00	141,10
28	25	166	45	2	0 1086028001 00	141,10
30	25	166	45	2	0 1086030001 00	161,10
32	32	186	53	2	0 1086032001 00	181,80



>> LANGLOCHFRÄSER, KURZ, DREISCHNEIDER, ZENTRUMSCHNEIDEND

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.

SLOT END MILLS, SHORT SERIES, THREE FLUTES, CENTRE CUTTING

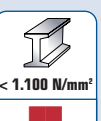
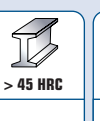
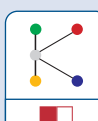
Range of application:

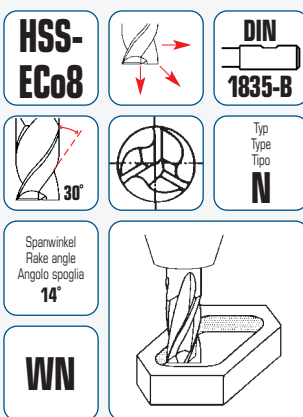
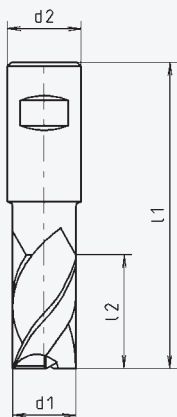
Recommended for milling in materials with medial and high tensile strength up to 1.300 N/mm². Vertical cutting to full depth and horizontal cutting with exact tolerances.

FRESE A TRE TAGLIENTI PER CAVE, SERIE CORTA, TAGLIANTE AL CENTRO

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNIT®



d1 _{g8} 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	13,64	0 1157003001 00	21,35
4	6	51	7	3	0 1156004001 00	13,64	0 1157004001 00	21,35
5	6	52	8	3	0 1156005001 00	13,64	0 1157005001 00	21,35
6	6	52	8	3	0 1156006001 00	13,64	0 1157006001 00	21,35
7	10	60	10	3	0 1156007001 00	16,02		
8	10	61	11	3	0 1156008001 00	16,02	0 1157008001 00	26,40
10	10	63	13	3	0 1156010001 00	20,24	0 1157010001 00	30,36
12	12	73	16	3	0 1156012001 00	25,21	0 1157012001 00	36,55
14	12	73	16	3	0 1156014001 00	30,56	0 1157014001 00	41,27
16	16	79	19	3	0 1156016001 00	36,83	0 1157016001 00	53,40
18	16	79	19	3	0 1156018001 00	43,53	0 1157018001 00	71,13
20	20	88	22	3	0 1156020001 00	51,64	0 1157020001 00	74,87
22	20	88	22	3	0 1156022001 00	61,89		
24	25	102	26	3	0 1156024001 00	76,56		
25	25	102	26	3	0 1156025001 00	76,56	0 1157025001 00	113,70



>> HPT-LANGLOCHFRÄSER, KURZ, DREISCHNEIDER, ZENTRUMSCHNEIDEND

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.

HPT SLOT END MILLS, SHORT SERIES, THREE FLUTES, CENTRE CUTTING

Range of application:

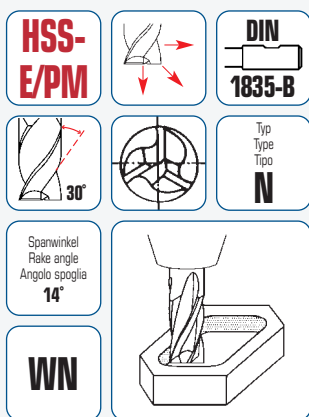
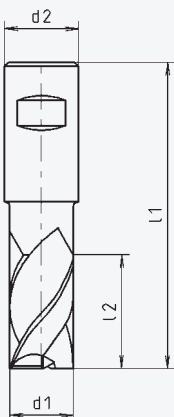
Recommended for milling in materials with medial and high tensile strength up to 1.300 N/mm². Vertical cutting to full depth and horizontal cutting with exact tolerances.

HPT FRESE A TRE TAGLIENTI PER CAVE, SERIE CORTA, TAGLIANTE AL CENTRO

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNIT®

d1 _{e8} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1257 Art.-Nr.	€
4	6	51	7	3	0 1257004001 00	26,70
6	6	52	8	3	0 1257006001 00	26,70
8	10	61	11	3	0 1257008001 00	33,00
10	10	63	13	3	0 1257010001 00	37,95
12	12	73	16	3	0 1257012001 00	45,70
14	12	73	16	3	0 1257014001 00	51,58
16	16	79	19	3	0 1257016001 00	66,75
20	20	88	22	3	0 1257020001 00	93,58
25	25	102	26	3	0 1257025001 00	142,10



>> LANGLOCHFRÄSER, LANG, DREISCHNEIDER, ZENTRUMSCHNEIDEND, DIN 844 B

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.

SLOT END MILLS, LONG SERIES, THREE FLUTES, CENTRE CUTTING, DIN 844 B

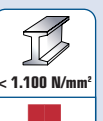
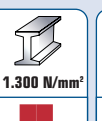
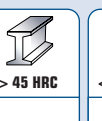
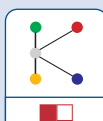
Range of application:

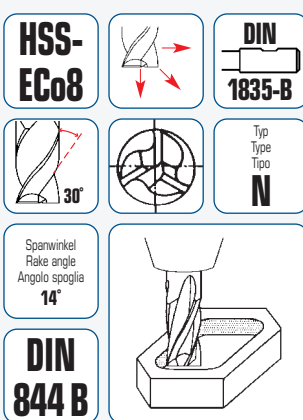
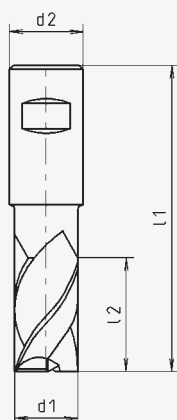
Recommended for milling in materials with medium/high tensile strength up to 1.300 N/mm². For producing slots with large depth and accurate fits. High efficiency in chip-ping and a smooth run result in an excellent quality surface.

FRESE CILINDRICHE FRONTALI A TRE TAGLIENTI, SERIE LUNGA, TAGLIANTE AL CENTRO, DIN 844 B

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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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	15,21	0 1187002001 00	25,11
2,5	6	52	8	3	0 1186002501 00	15,21	0 1187002501 00	26,32
3	6	52	8	3	0 1186003001 00	15,21	0 1187003001 00	25,11
3,5	6	54	10	3	0 1186003501 00	15,21	0 1187003501 00	26,32
4	6	55	11	3	0 1186004001 00	13,43	0 1187004001 00	22,19
4,5	6	55	11	3	0 1186004501 00	15,21	0 1187004501 00	26,32
5	6	57	13	3	0 1186005001 00	15,21	0 1187005001 00	25,11
5,5	6	57	13	3	0 1186005501 00	15,21	0 1187005501 00	26,32
6	6	57	13	3	0 1186006001 00	13,43	0 1187006001 00	22,19
6,5	10	66	16	3	0 1186006501 00	17,79	0 1187006501 00	27,58
7	10	66	16	3	0 1186007001 00	17,79	0 1187007001 00	29,36
8	10	69	19	3	0 1186008001 00	15,71	0 1187008001 00	25,93
8,5	10	69	19	3	0 1186008501 00	22,53	0 1187008501 00	37,20
9	10	69	19	3	0 1186009001 00	22,53	0 1187009001 00	37,20
10	10	72	22	3	0 1186010001 00	19,89	0 1187010001 00	32,86
11	12	79	22	3	0 1186011001 00	28,03	0 1187011001 00	46,18
12	12	83	26	3	0 1186012001 00	24,76	0 1187012001 00	40,80
13	12	83	26	3	0 1186013001 00	34,05	0 1187013001 00	56,06
14	12	83	26	3	0 1186014001 00	34,05	0 1187014001 00	56,06
15	12	83	26	3	0 1186015001 00	40,93	0 1187015001 00	67,45
16	16	92	32	3	0 1186016001 00	36,17	0 1187016001 00	59,58
18	16	92	32	3	0 1186018001 00	48,35	0 1187018001 00	79,79
20	20	104	38	3	0 1186020001 00	57,39	0 1187020001 00	94,59
22	20	104	38	3	0 1186022001 00	68,71		
24	25	121	45	3	0 1186024001 00	85,04		
25	25	121	45	3	0 1186025001 00	85,04		

>> 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.

SLOT END MILLS WITH RADIUS, SHORT SERIES, TWO FLUTES, CENTRE CUTTING

Range of application:

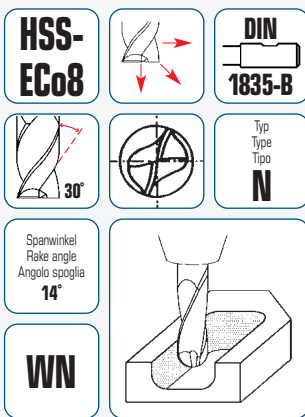
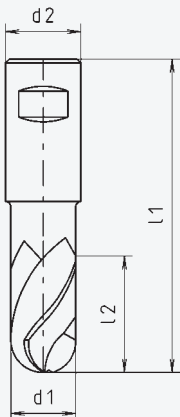
Recommended for milling in materials with medium/high tensile strength up to 1.100 N/mm². For horizontal milling, especially suited for copy milling.

FRESE A DUE TAGLIENTI CON PUNTA SEMISFERICA, SERIE CORTA, TAGLIANTE 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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
											



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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	22,14		
3	6	49	5	2	0 1056003001 00	22,14	0 1057003001 00	36,55
4	6	51	7	2	0 1056004001 00	22,14	0 1057004001 00	36,55
5	6	52	8	2	0 1056005001 00	22,14	0 1057005001 00	36,55
6	6	52	8	2	0 1056006001 00	22,14	0 1057006001 00	36,55
7	10	60	10	2	0 1056007001 00	26,88		
8	10	61	11	2	0 1056008001 00	26,88	0 1057008001 00	44,35
9	10	61	11	2	0 1056009001 00	31,26		
10	10	63	13	2	0 1056010001 00	31,26	0 1057010001 00	51,57
11	12	70	13	2	0 1056011001 00	38,09		
12	12	73	16	2	0 1056012001 00	36,19	0 1057012001 00	59,72
13	12	73	16	2	0 1056013001 00	43,40		
14	12	73	16	2	0 1056014001 00	43,40		
15	12	73	16	2	0 1056015001 00	54,85		
16	16	79	19	2	0 1056016001 00	52,19	0 1057016001 00	86,12
18	16	79	19	2	0 1056018001 00	62,58		
20	20	88	22	2	0 1056020001 00	75,24	0 1057020001 00	120,40
22	20	88	22	2	0 1056022001 00	90,35		
24	25	102	26	2	0 1056024001 00	116,20		
25	25	102	26	2	0 1056025001 00	116,20		
26	25	102	26	2	0 1056026001 00	142,70		
28	25	102	26	2	0 1056028001 00	150,00		
30	25	102	26	2	0 1056030001 00	161,10		



>> LANGLOCHFRÄSER MIT RADIUS, LANG, ZWEISCHNEIDER, ZENTRUMSCHNEIDEND

Einsatzbereich:

Empfohlen zum Fräsen von Werkstoffen mit mittlerer bis hoher Festigkeit bis ca. 1.200 N/mm². Zum Längsfräsen und besonders zum Kopierfräsen geeignet.

SLOT END MILLS WITH RADIUS, LONG SERIES, TWO FLUTES, CENTRE CUTTING

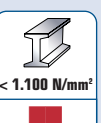
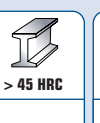
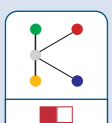
Range of application:

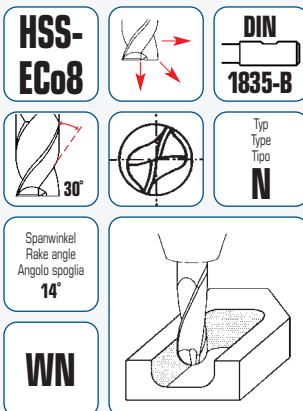
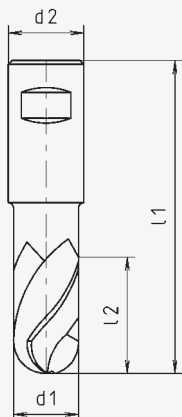
Recommended for milling in materials with medium/high tensile strength up to 1.200 N/mm². For horizontal milling, especially suited for copy milling.

FRESE A DUE TAGLIENTI CON PUNTA SEMISFERICA, SERIE LUNGA, TAGLIENTE AL CENTRO

Impiego:

Adatte per lavorazione di acciai di media ed alta resistenza fino a R = 1.200 N/mm². Particolarmente adatte per fresatura in orizzontale ed a copiare.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{e8} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1096 Art.-Nr.	€
4	6	63	11	2	0 1096004001 00	26,58
5	6	68	13	2	0 1096005001 00	26,58
6	6	68	13	2	0 1096006001 00	26,58
7	10	80	16	2	0 1096007001 00	32,33
8	10	88	19	2	0 1096008001 00	32,33
9	10	88	19	2	0 1096009001 00	39,55
10	10	95	22	2	0 1096010001 00	39,55
11	12	102	22	2	0 1096011001 00	48,15
12	12	110	26	2	0 1096012001 00	48,15
13	12	110	26	2	0 1096013001 00	57,84
14	12	110	26	2	0 1096014001 00	57,84
15	12	110	26	2	0 1096015001 00	69,52
16	16	123	32	2	0 1096016001 00	69,52
18	16	123	32	2	0 1096018001 00	83,33
20	20	141	38	2	0 1096020001 00	100,40



>> MINIFRÄSER, DREISCHNEIDER, ZENTRUMSCHNEIDEND

MINI END MILLS, THREE FLUTES, CENTRE CUTTING

MINIFRESE A TRE TAGLIENTI, TAGLIENTE AL CENTRO

Einsatzbereich:

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

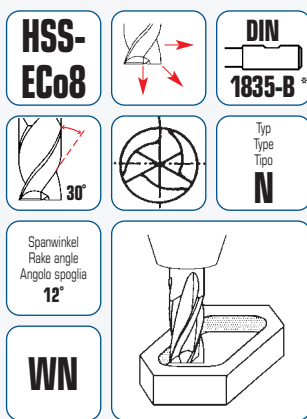
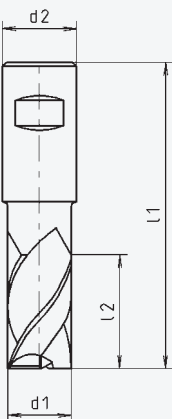
Range of application:

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{k12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1246 Art.-Nr.	€
1,5	6	34	3	3	0 1246001501 00	8,70
2	6	35	4	3	0 1246002001 00	8,29
2,5	6	36	5	3	0 1246002501 00	8,70
3	6	36	5	3	0 1246003001 00	8,29
3,5	6	37	6	3	0 1246003501 00	8,70
4	6	38	7	3	0 1246004001 00	8,29
4,5	6	38	7	3	0 1246004501 00	8,70
5	6	39	8	3	0 1246005001 00	8,29
5,5	6	39	8	3	0 1246005501 00	8,70
6	6	39	8	3	0 1246006001 00	8,29

▲ Kurze Ausführung | Short series | Esecuzione corta

▼ Lange Ausführung | Long series | Esecuzione lunga

d1 _{k12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1256 Art.-Nr.	€
2	6	38	7	3	0 1256002001 00	9,38
2,5	6	39	8	3	0 1256002501 00	9,88
3	6	39	8	3	0 1256003001 00	9,38
3,5	6	41	10	3	0 1256003501 00	9,88
4	6	42	11	3	0 1256004001 00	9,38
4,5	6	42	11	3	0 1256004501 00	9,88
5	6	44	13	3	0 1256005001 00	9,38
5,5	6	44	13	3	0 1256005501 00	9,88
6	6	44	13	3	0 1256006001 00	9,38

Ø 1,5–3,0 ohne Zentrumschnitt
Ø 1,5–3,0 without centre cut
Ø 1,5–3,0 senza tagliante al centro

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



>> SCHAFTFRÄSER, EXTRA KURZ, VIER SCHNEIDER, ZENTRUMSCHNEIDEND

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 Gleichlaufräsen.

STUB END MILLS, EXTRA SHORT SERIES, FOUR FLUTES, CENTRE CUTTING

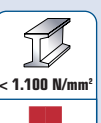
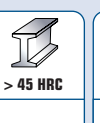
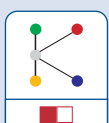
Range of application:

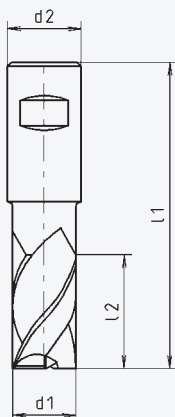
Finishing with high cutting performance and excellent surface quality by steels with medium to high tensile strength up to 1.300 N/mm² (for example structural, case-hardening, heat-treatable steels); non-ferrous metals, stainless and acid resistant steels. Climb milling preferred.

FRESE CILINDRICHE FRONTALI, 4 TAGLIENTI, SERIE EXTRA CORTA, TAGLIANTE AL CENTRO

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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**HSS-
ECr8**

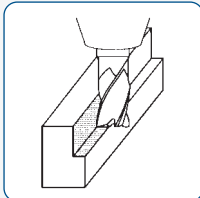


**DIN
1835-B**



Typ
Type
Tipo
N

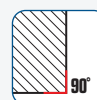
Spanwinkel
Rake angle
Angolo spoglia
14°



WN



ALUNIT®



d1 _{h10} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1797 Art.-Nr.	€
6	6	52	8	4	0 1797006001 00	28,22
8	10	61	11	4	0 1797008001 00	34,43
10	10	63	13	4	0 1797010001 00	41,94
12	12	73	16	4	0 1797012001 00	51,13
14	12	73	16	4	0 1797014001 00	61,49
16	16	79	19	4	0 1797016001 00	73,85
18	16	79	19	4	0 1797018001 00	88,96
20	20	88	22	4	0 1797020001 00	106,70



>> SCHAFTFRÄSER, KURZ, DIN 844 B

END MILLS, SHORT SERIES, DIN 844 B

FRESE CILINDRICHE FRONTALI, SERIE CORTA, DIN 844 B

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 Gleichlaufräsen.

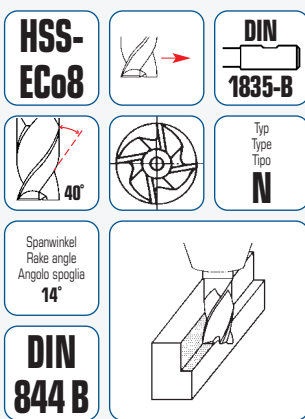
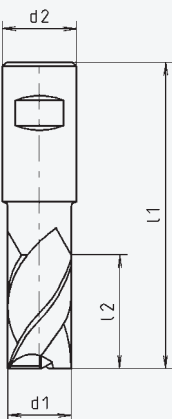
Range of application:

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 $R = 1.300 \text{ N/mm}^2$, (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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{k10} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1616 Art.-Nr.	€
4	6	55	11	4	0 1616004001 00	16,20
5	6	57	13	4	0 1616005001 00	16,20
6	6	57	13	4	0 1616006001 00	16,20
7	10	66	16	4	0 1616007001 00	19,78
8	10	69	19	4	0 1616008001 00	19,78
9	10	69	19	4	0 1616009001 00	24,11
10	10	72	22	4	0 1616010001 00	24,11
11	12	79	22	4	0 1616011001 00	29,36
12	12	83	26	4	0 1616012001 00	29,36
13	12	83	26	4	0 1616013001 00	35,31
14	12	83	26	4	0 1616014001 00	35,31
15	12	83	26	4	0 1616015001 00	42,46
16	16	92	32	4	0 1616016001 00	42,46
18	16	92	32	4	0 1616018001 00	51,13
20	20	104	38	4	0 1616020001 00	61,37
22	20	104	38	6	0 1616022001 00	72,01
24	25	121	45	6	0 1616024001 00	89,33
25	25	121	45	6	0 1616025001 00	89,33
28	25	121	45	6	0 1616028001 00	106,90
30	25	121	45	6	0 1616030001 00	121,80
32	32	133	53	6	0 1616032001 00	137,60
36	32	133	53	6	0 1616036001 00	177,80
40	32*	143*	63	6	0 1616040001 00	222,30

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



>> SCHAFTFRÄSER, KURZ, ZENTRUMSCHNEIDEND, DIN 844 B

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.

END MILLS, SHORT SERIES, CENTRE CUTTING, DIN 844 B

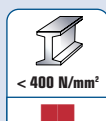
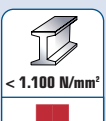
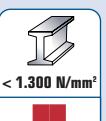
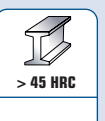
Range of application:

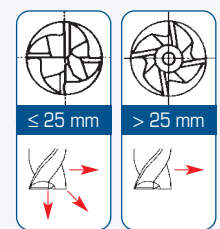
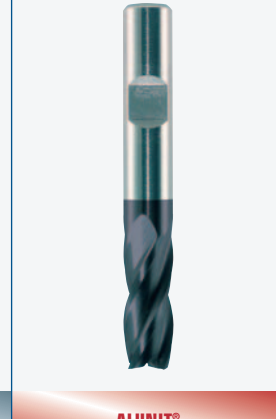
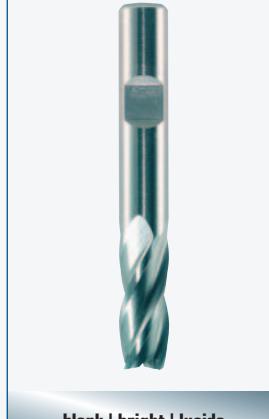
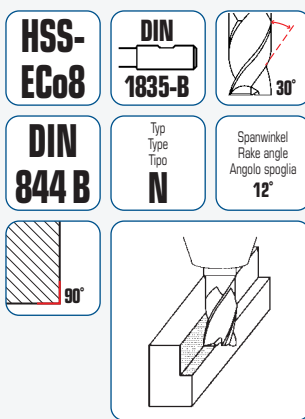
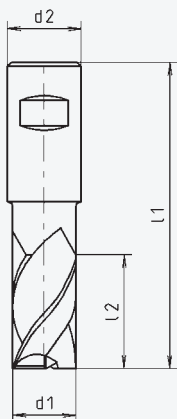
Wide range of applications on materials with low strength up to materials difficult to machine, having a high toughness, for example structural steels or alloyed tool steels. Also including non-ferrous metals, cobalt- and nickel-alloys, as well as titanium and titanium-alloyed materials.

FRESE CILINDRICHE FRONTALI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{h10} 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	18,07	0 1817002001 00	28,91
2,5	6	52	8	3	0 1816002501 00	18,99	0 1817002501 00	30,25
3	6	52	8	4	0 1816003001 00	18,07	0 1817003001 00	27,52
3,5	6	54	10	4	0 1816003501 00	18,99	0 1817003501 00	30,25
4	6	55	11	4	0 1816004001 00	18,07	0 1817004001 00	25,12
4,5	6	55	11	4	0 1816004501 00	18,99	0 1817004501 00	30,25
5	6	57	13	4	0 1816005001 00	18,07	0 1817005001 00	27,52
5,5	6	57	13	4	0 1816005501 00	18,99	0 1817005501 00	30,25
6	6	57	13	4	0 1816006001 00	18,07	0 1817006001 00	25,12
6,5	10	66	16	4	0 1816006501 00	21,66	0 1817006501 00	34,61
7	10	66	16	4	0 1816007001 00	21,93	0 1817007001 00	36,83
7,5	10	66	16	4	0 1816007501 00	24,22	0 1817007501 00	38,84
8	10	69	19	4	0 1816008001 00	21,93	0 1817008001 00	30,48
8,5	10	69	19	4	0 1816008501 00	26,46	0 1817008501 00	42,20
9	10	69	19	4	0 1816009001 00	26,88	0 1817009001 00	44,78
9,5	10	69	19	4	0 1816009501 00	29,54	0 1817009501 00	47,39
10	10	72	22	4	0 1816010001 00	26,88	0 1817010001 00	37,01
11	12	79	22	4	0 1816011001 00	32,84	0 1817011001 00	44,61
12	12	83	26	4	0 1816012001 00	32,84	0 1817012001 00	44,41
13	12	83	26	4	0 1816013001 00	39,36	0 1817013001 00	53,40
14	12	83	26	4	0 1816014001 00	39,36	0 1817014001 00	58,02
15	12	83	26	4	0 1816015001 00	47,27	0 1817015001 00	75,54
16	16	92	32	4	0 1816016001 00	47,27	0 1817016001 00	63,18
18	16	92	32	4	0 1816018001 00	59,92	0 1817018001 00	87,83
20	20	104	38	4	0 1816020001 00	71,88	0 1817020001 00	105,90

Fortsetzung auf Seite IX/25 | Continued on page IX/25 | Segue a pagina IX/25



>> **SCHAFTFRÄSER, KURZ,
ZENTRUMSCHNEIDEND,
DIN 844 B**

**END MILLS, SHORT SERIES,
CENTRE CUTTING,
DIN 844 B**

**FRESE CILINDRICHE
FRONTALI, SERIE CORTA,
TAGLIANTE AL CENTRO,
DIN 844 B**

Fortsetzung von Seite IX/24 | Continued from page IX/24 |
Segue da pagina IX/24

					blank bright lucida		ALUNIT®	
d1 _{k10} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1816 Art.-Nr.	€	Code 1817 Art.-Nr.	€
22	20	104	38	6	□ 1816022001 00	84,34	□ 1817022001 00	124,10
24	25	121	45	6	□ 1816024001 00	104,80	□ 1817024001 00	139,30
25	25	121	45	6	□ 1816025001 00	104,80	□ 1817025001 00	154,30
28	25	121	45	6	□ 1816028001 00	104,30		
30	25	121	45	6	□ 1816030001 00	118,90		
32	32	133	53	6	□ 1816032001 00	134,40		



>> 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.

HPT END MILLS, SHORT SERIES, CENTRE CUTTING, DIN 327 D

Range of application:

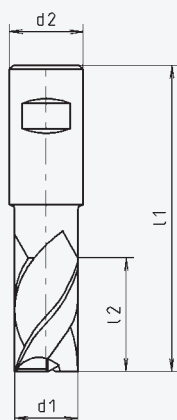
Universal multi-flute end mill, made from new substrate SPM with extreme high content of cobalt. It combines the hardness of solid carbide and the toughness of powder-metallurgical steel. Due to its universal geometry this end mill is suitable for various materials.

HPT FRESE CILINDRICHE FRONTALI, SERIE CORTA, TAGLIANTE 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 resistenza dell'acciaio da polveri. La fresa, grazie alla sua particolare geometria, può essere impiegata per i più diversi materiali.

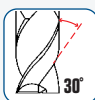
 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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HSS-SPM

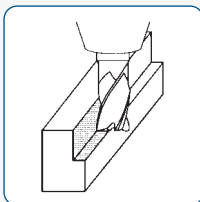


DIN 1835-B



Typ
Type
Tipo
N

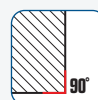
Spanwinkel
Rake angle
Angolo spoglia
13°



DIN 327 D



ALUNIT®



d1 _{h10} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1877 Art.-Nr.	€
10	10	63	13	4	0 1877010001 00	52,77
12	12	73	16	4	0 1877012001 00	60,03
14	12	73	16	4	0 1877014001 00	71,15
16	16	79	19	4	0 1877016001 00	81,93
18	16	79	19	4	0 1877018001 00	101,30
20	20	88	22	4	0 1877020001 00	120,80
22	20	88	22	4	0 1877022001 00	148,90
25	25	102	26	4	0 1877025001 00	195,80
32	32	112	32	6	0 1877032001 00	286,30



>> HPT-SCHAFTFRÄSER, KURZ, ZENTRUMSCHNEIDEND, DIN 844 B

Einsatzbereich:

Gefertigt aus pulvermetallurgischem Material zur Verwendung bei extremen Zerspanungsbedingungen oder großen Standwegen.

HPT END MILLS, SHORT SERIES, CENTRE CUTTING, DIN 844 B

Range of application:

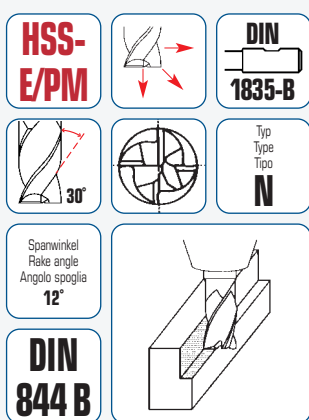
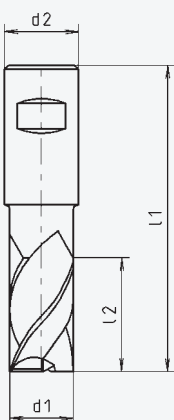
Made from powder-metallurgical steel for using at extreme cutting conditions for long continuous utilisation.

HPT FRESE CILINDRICHE FRONTALI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

Impiego:

Frese in acciai speciali da polveri particolarmente adatte per lavorazioni di acciai in condizioni estreme ovvero in passate di fresatura molto lunghe.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
											



d1 _{k10} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1857 Art.-Nr.	€
4	6	55	11	4	0 1857004001 00	32,29
6	6	57	13	4	0 1857006001 00	32,65
8	10	69	19	4	0 1857008001 00	42,00
10	10	72	22	4	0 1857010001 00	43,78
12	12	83	26	4	0 1857012001 00	53,91
16	16	92	32	4	0 1857016001 00	81,55
20	20	104	38	4	0 1857020001 00	117,50
22	20	104	38	6	0 1857022001 00	141,60
25	25	121	45	6	0 1857025001 00	168,90



>> SCHAFTFRÄSER, KURZ, ZENTRUMSCHNEIDEND, DIN 844 B

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 Gleichlaufräsen.

END MILLS, SHORT SERIES, CENTRE CUTTING, DIN 844 B

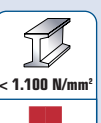
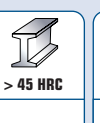
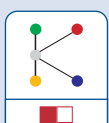
Range of application:

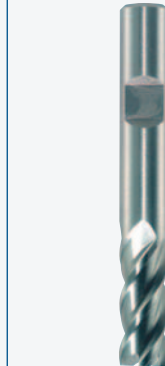
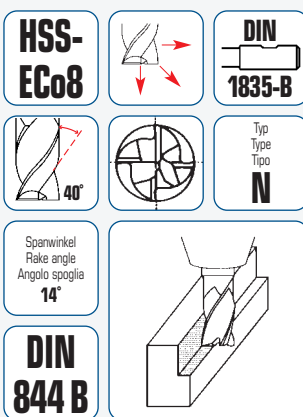
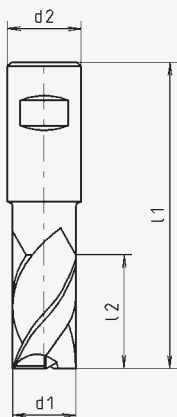
Finishing with high cutting performance and excellent surface quality by steels with medium to high tensile strength up to 1.200 N/mm² (for example structural, case-hardening, heat-treatable steels); non-ferrous metals, stainless and acid resistant steels. Climb milling preferred.

FRESE CILINDRICHE FRONTALI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

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.

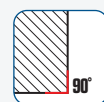
 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNITE®



d1 _{h10} 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	18,99	0 1787003001 00	28,43
4	6	55	11	4	0 1786004001 00	16,76	0 1787004001 00	28,43
5	6	57	13	4	0 1786005001 00	18,99	0 1787005001 00	28,43
6	6	57	13	4	0 1786006001 00	16,76	0 1787006001 00	28,43
8	10	69	19	4	0 1786008001 00	20,43	0 1787008001 00	34,05
10	10	72	22	4	0 1786010001 00	24,99	0 1787010001 00	41,65
12	12	83	26	4	0 1786012001 00	30,50	0 1787012001 00	50,80
14	12	83	26	4	0 1786014001 00	41,45	0 1787014001 00	61,01
16	16	92	32	4	0 1786016001 00	43,92	0 1787016001 00	73,15
18	16	92	32	4	0 1786018001 00	59,92	0 1787018001 00	88,20
20	20	104	38	4	0 1786020001 00	71,88	0 1787020001 00	105,90
22	20	104	38	6	0 1786022001 00	84,34	0 1787022001 00	124,10
25	25	121	45	6	0 1786025001 00	104,80	0 1787025001 00	154,20



>> SCHAFTFRÄSER, KURZ, DREISCHNEIDER, ZENTRUMSCHNEIDEND, DIN 844 B

Einsatzbereich:

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

END MILLS, SHORT SERIES, THREE FLUTES, CENTRE CUTTING, DIN 844 B

Range of application:

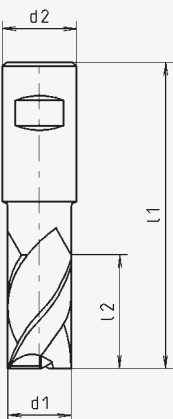
Plunge milling to full depth or with gradual feed; also for conventional face and peripheral milling.

FRESE CILINDRICHE FRONTALI, 3 TAGLIENTI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
											



**HSS-
ECO8**



**DIN
1835-B**



Typ
Type
Tipo
N

Spanwinkel
Rake angle
Angolo spoglia
12°



**DIN
844 B**



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ALUNIT®



d1 _{k10} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1666 Art.-Nr.	€	Code 1667 Art.-Nr.	€
4	6	55	11	3	0 1666004001 00	16,81	0 1667004001 00	24,37
5	6	57	13	3	0 1666005001 00	16,81		
6	6	57	13	3	0 1666006001 00	16,81	0 1667006001 00	24,37
7	10	66	16	3	0 1666007001 00	19,87		
8	10	69	19	3	0 1666008001 00	19,87	0 1667008001 00	28,82
9	10	69	19	3	0 1666009001 00	25,01		
10	10	72	22	3	0 1666010001 00	25,01	0 1667010001 00	36,27
11	12	79	22	3	0 1666011001 00	31,13		
12	12	83	26	3	0 1666012001 00	31,13	0 1667012001 00	45,15
13	12	83	26	3	0 1666013001 00	35,99		
14	12	83	26	3	0 1666014001 00	35,99		
15	12	83	26	3	0 1666015001 00	43,21		
16	16	92	32	3	0 1666016001 00	43,21	0 1667016001 00	62,66
18	16	92	32	3	0 1666018001 00	51,07		
20	20	104	38	3	0 1666020001 00	60,49	0 1667020001 00	87,72
22	20	104	38	3	0 1666022001 00	72,58		
25	25	121	45	3	0 1666025001 00	89,48	0 1667025001 00	129,80



>> SCHAFTFRÄSER, LANG, ZENTRUMSCHNEIDEND, DIN 844 B

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.

END MILLS, LONG SERIES, CENTRE CUTTING, DIN 844 B

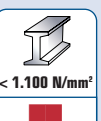
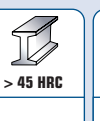
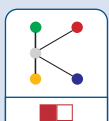
Range of application:

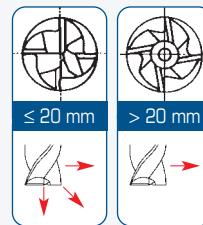
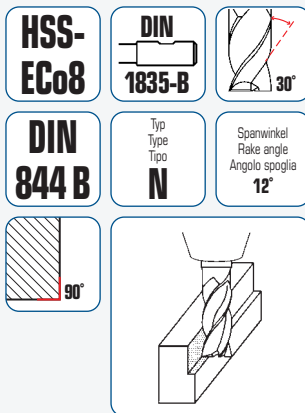
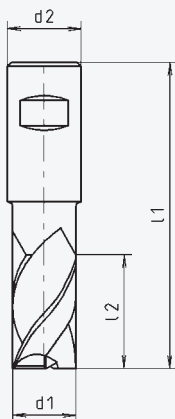
Wide range of applications on materials with low strength up to materials difficult to machine, having a high toughness, for example structural steels or alloyed tool steels. Also including non-ferrous metals, cobalt- and nickel-alloys, as well as titanium and titanium-alloyed materials.

FRESE CILINDRICHE FRONTALI, SERIE LUNGA, TAGLIANTE AL CENTRO, DIN 844 B

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{h10} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1836 Art.-Nr.	€
3	6	56	12	4	Ø 1836003001 00	20,56
4	6	63	19	4	Ø 1836004001 00	20,56
5	6	68	24	4	Ø 1836005001 00	20,56
6	6	68	24	4	Ø 1836006001 00	20,56
7	10	80	30	4	Ø 1836007001 00	25,11
8	10	88	38	4	Ø 1836008001 00	25,11
9	10	88	38	4	Ø 1836009001 00	30,56
10	10	95	45	4	Ø 1836010001 00	30,56
11	12	102	45	4	Ø 1836011001 00	37,27
12	12	110	53	4	Ø 1836012001 00	37,27
13	12	110	53	4	Ø 1836013001 00	44,93
14	12	110	53	4	Ø 1836014001 00	44,93
15	12	110	53	4	Ø 1836015001 00	53,78
16	16	123	63	4	Ø 1836016001 00	53,78
18	16	123	63	4	Ø 1836018001 00	64,85
20	20	141	75	4	Ø 1836020001 00	77,88
22	20	141	75	6	Ø 1836022001 00	91,24
25	25	166	90	6	Ø 1836025001 00	113,40
28	25	166	90	6	Ø 1836028001 00	135,60
30*	25	166	90	6	Ø 1836030001 00	154,40
32	32	186	106	6	Ø 1836032001 00	174,60

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



>> SCHAFTFRÄSER, LANG, DIN 844 B

END MILLS, LONG SERIES, DIN 844 B

FRESE CILINDRICHE FRONTALI, SERIE LUNGA, DIN 844 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 Gleichlaufräsen.

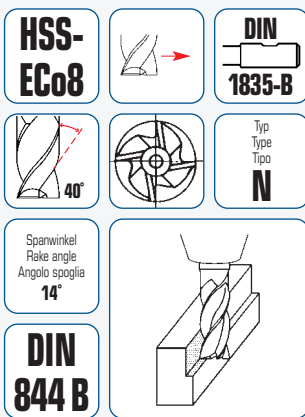
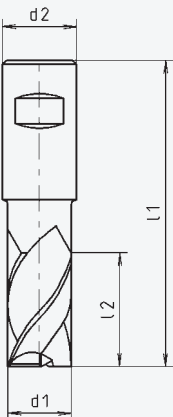
Range of application:

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 $R = 1.300 \text{ N/mm}^2$, (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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{k10} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1716 Art.-Nr.	€
4	6	63	19	4	0 1716004001 00	20,56
5	6	68	24	4	0 1716005001 00	20,56
6	6	68	24	4	0 1716006001 00	20,56
7	10	80	30	4	0 1716007001 00	25,11
8	10	88	38	4	0 1716008001 00	25,11
9	10	88	38	4	0 1716009001 00	30,56
10	10	95	45	4	0 1716010001 00	29,11
11	12	102	45	4	0 1716011001 00	37,27
12	12	110	53	4	0 1716012001 00	35,43
14	12	110	53	4	0 1716014001 00	42,66
15	12	110	53	4	0 1716015001 00	53,78
16	16	123	63	4	0 1716016001 00	51,13
18	16	123	63	4	0 1716018001 00	61,64
20	20	141	75	4	0 1716020001 00	73,98
22	20	141	75	6	0 1716022001 00	86,68
25	25	166	90	6	0 1716025001 00	107,80



>> **HPT SCHAFTFRÄSER, KURZ, VIERSCHNEIDER, ZENTRUMSCHNEIDEND, DIN 844 B**

Einsatzbereich:

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

HPT END MILLS, SHORT SERIES, FOUR FLUTES, CENTRE CUTTING, DIN 844 B

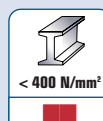
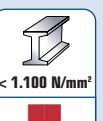
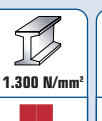
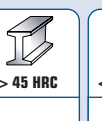
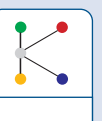
Range of application:

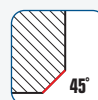
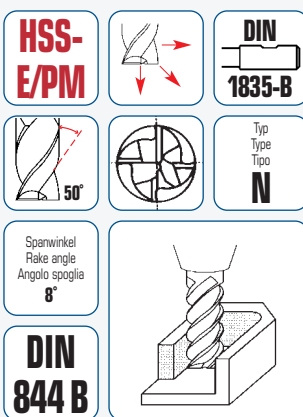
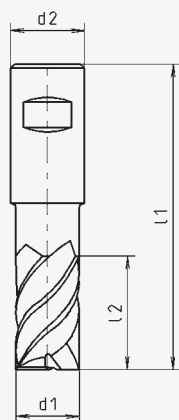
End mills, high helix angle, made from powder metallurgical steel for extreme cutting conditions for long continuous utilisation. High contour accuracy due to low deflection, smooth milling operation because of low vibration in tendency, excellent surface quality.

HPT FRESE CILINDRICHE FRONTALI, 4 TAGLIENTI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNIT®

d1 _{K10} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1537 Art.-Nr.	€
6	6	57	13	4	0 1537006001 00	35,83
8	10	69	19	4	0 1537008001 00	43,78
10	10	72	22	4	0 1537010001 00	53,40
12	12	83	26	4	0 1537012001 00	65,18
14	12	83	26	4	0 1537014001 00	78,20
16	16	92	32	4	0 1537016001 00	93,90
18	16	92	32	4	0 1537018001 00	113,20
20	20	104	38	4	0 1537020001 00	135,90
25	25	121	45	4	0 1537025001 00	198,10



>> SCHAFTFRÄSER, KURZ, ZENTRUMSCHNEIDEND, DIN 844 B

Einsatzbereich:

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

END MILLS, SHORT SERIES, CENTRE CUTTING, DIN 844 B

Range of application:

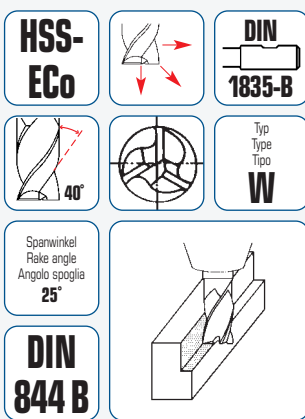
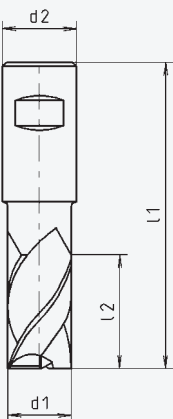
Recommended for milling in soft as well as in tough, long chipping materials such as Al- and Cu-alloys as well as in thermo plastics.

FRESE CILINDRICHE FRONTALI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
											



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d1 _{k10} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1644 Art.-Nr.	€
5	6	57	13	2	0 1644005001 00	16,91
6	6	57	13	2	0 1644006001 00	16,91
7	10	66	16	2	0 1644007001 00	20,67
8	10	69	19	2	0 1644008001 00	20,67
9	10	69	19	2	0 1644009001 00	25,21
10	10	72	22	2	0 1644010001 00	25,21
11	12	79	22	2	0 1644011001 00	30,75
12	12	83	26	3	0 1644012001 00	30,75
14	12	83	26	3	0 1644014001 00	37,01
16	16	92	32	3	0 1644016001 00	44,30
18	16	92	32	3	0 1644018001 00	53,40
20	20	104	38	3	0 1644020001 00	67,15
22	20	104	38	3	0 1644022001 00	75,24
25	25	121	45	3	0 1644025001 00	93,51
28	25	121	45	3	0 1644028001 00	111,90
30	25	121	45	3	0 1644030001 00	127,40
32	32	133	53	3	0 1644032001 00	143,90
36	32	133	53	3	0 1644036001 00	185,90
40	32*	143*	63	3	0 1644040001 00	232,40

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



>> SCHAFTFRÄSER, LANG, ZENTRUMSCHNEIDEND, DIN 844 B

Einsatzbereich:

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

END MILLS, LONG SERIES, CENTRE CUTTING, DIN 844 B

Range of application:

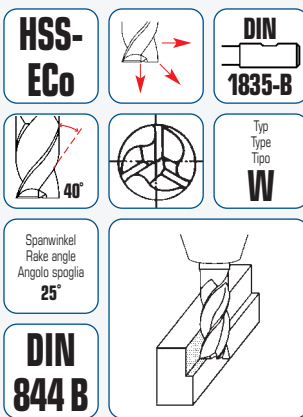
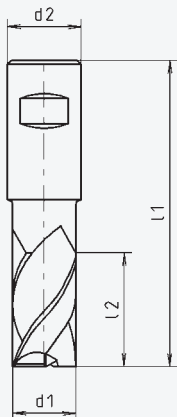
Recommended for milling in soft as well as in tough, long chipping materials such as Al- and Cu-alloys as well as in thermo plastics.

FRESE CILINDRICHE FRONTALI, SERIE LUNGA, TAGLIANTE AL CENTRO, DIN 844 B

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
											



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d1 _{h10} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1754 Art.-Nr.	€
5	6	68	24	2	0 1754005001 00	22,03
6	6	68	24	2	0 1754006001 00	22,03
7	10	80	30	2	0 1754007001 00	26,88
8	10	88	38	2	0 1754008001 00	26,88
9	10	88	38	2	0 1754009001 00	32,77
10	10	95	45	2	0 1754010001 00	32,77
11	12	102	45	2	0 1754011001 00	39,93
12	12	110	53	3	0 1754012001 00	39,93
14	12	110	53	3	0 1754014001 00	48,09
16	16	123	63	3	0 1754016001 00	57,64
18	16	123	63	3	0 1754018001 00	69,41
20	20	141	75	3	0 1754020001 00	83,33
22	20	141	75	3	0 1754022001 00	97,76
25	25	166	90	3	0 1754025001 00	121,50
28	25	166	90	3	0 1754028001 00	145,20
30	25	166	90	3	0 1754030001 00	165,30
32	32	186	106	3	0 1754032001 00	187,00
36	32	186	106	3	0 1754036001 00	241,60
40	32*	205*	125	3	0 1754040001 00	301,90

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



>> SCHAFTFRÄSER, KURZ, DIN 844 B

END MILLS, SHORT SERIES, DIN 844 B

FRESE CILINDRICHE FRONTALI, SERIE CORTA, DIN 844 B

Einsatzbereich:

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

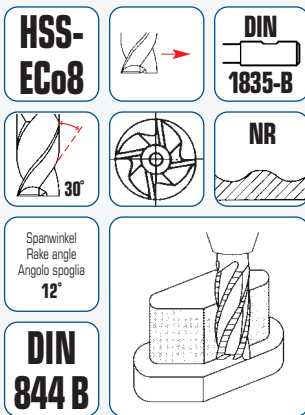
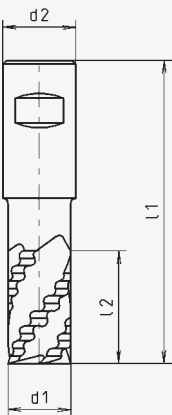
Range of application:

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.

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
											



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d1 _{k12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2026 Art.-Nr.	€
5	6	57	13	3	0 2026005001 00	25,43
6	6	57	13	3	0 2026006001 00	25,43
7	10	66	16	3	0 2026007001 00	28,10
8	10	69	19	4	0 2026008001 00	28,10
9	10	69	19	4	0 2026009001 00	31,84
10	10	72	22	4	0 2026010001 00	31,84
11	12	79	22	4	0 2026011001 00	37,46
12	12	83	26	4	0 2026012001 00	37,46
13	12	83	26	4	0 2026013001 00	44,61
14	12	83	26	4	0 2026014001 00	44,61
15	12	83	26	4	0 2026015001 00	53,02
16	16	92	32	4	0 2026016001 00	53,02
18	16	92	32	4	0 2026018001 00	63,40
20	20	104	38	4	0 2026020001 00	74,85
22	20	104	38	5	0 2026022001 00	87,20
24	25	121	45	5	0 2026024001 00	106,80
25	25	121	45	5	0 2026025001 00	106,80
28	25	121	45	5	0 2026028001 00	147,70
30	25	121	45	5	0 2026030001 00	166,30
32	32	133	53	5	0 2026032001 00	188,10



>> SCHAFTFRÄSER, KURZ, ZENTRUMSCHNEIDEND, DIN 844 B

Einsatzbereich:

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

END MILLS, SHORT SERIES, CENTRE CUTTING, DIN 844 B

Range of application:

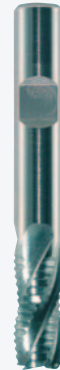
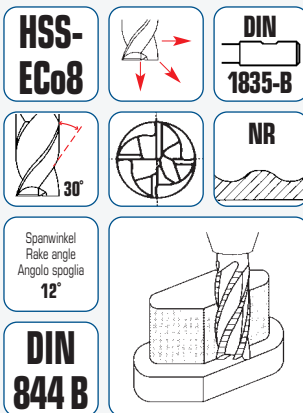
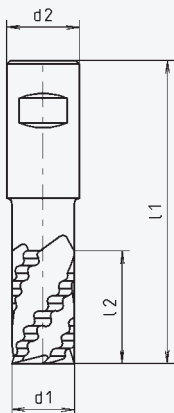
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.

FRESE CILINDRICHE FRONTALI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

Impiego:

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

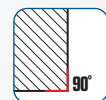
 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNIT®



d1 _{h12} 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	32,53	0 2287006001 00	44,99
8	10	69	19	4	0 2286008001 00	35,88	0 2287008001 00	49,73
10	10	72	22	4	0 2286010001 00	40,75	0 2287010001 00	56,18
12	12	83	26	4	0 2286012001 00	47,83	0 2287012001 00	66,11
14	12	83	26	4	0 2286014001 00	56,96	0 2287014001 00	78,52
16	16	92	32	4	0 2286016001 00	67,64	0 2287016001 00	93,45
18	16	92	32	4	0 2286018001 00	80,86	0 2287018001 00	111,70
20	20	104	38	4	0 2286020001 00	95,60	0 2287020001 00	131,80
22	20	104	38	5	0 2286022001 00	111,50	0 2287022001 00	153,80
25	25	121	45	5	0 2286025001 00	136,50	0 2287025001 00	188,30



>> SCHAFTFRÄSER, LANG, DIN 844 B

END MILLS, LONG SERIES, DIN 844 B

FRESE CILINDRICHE FRONTALI, SERIE LUNGA, DIN 844 B

Einsatzbereich:

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

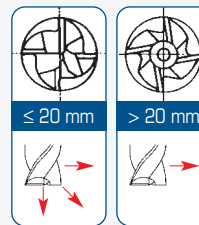
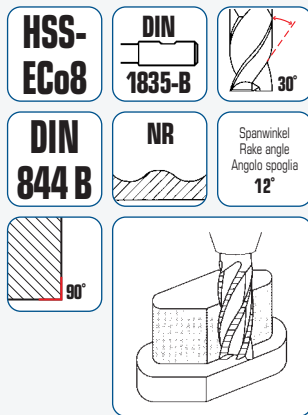
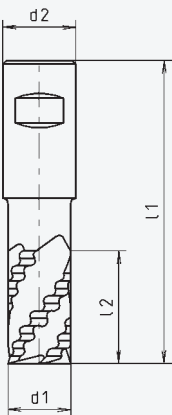
Range of application:

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.

Impiego:

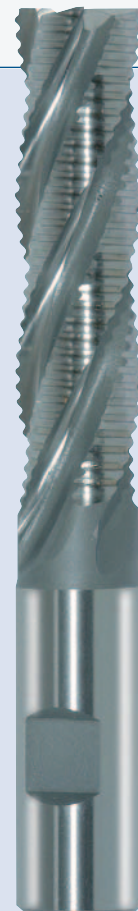
Adatte per lavorazioni di acciai di difficile lavorabilità ad elevata resistenza fino a R = 1.300 N/mm², Titanio, leghe di Titanio.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{k12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2076 Art.-Nr.	€
10	10	95	45	4	0 2076010001 00	48,09
12	12	110	53	4	0 2076012001 00	56,56
14	12	110	53	4	0 2076014001 00	67,26
16	16	123	63	4	0 2076016001 00	79,92
18	16	123	63	4	0 2076018001 00	95,60
20	20	141	75	4	0 2076020001 00	112,90
22	20	141	75	5	0 2076022001 00	131,50
24	25	166	90	5	0 2076024001 00	161,10
25	25	166	90	5	0 2076025001 00	161,10
26	25	166	90	5	0 2076026001 00	192,00
28	25	166	90	5	0 2076028001 00	192,00
30	25	166	90	5	0 2076030001 00	216,20
32	32	186	106	5	0 2076032001 00	244,30



>> 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.

STUB END MILLS, EXTRA SHORT SERIES, CENTRE CUTTING

Range of application:

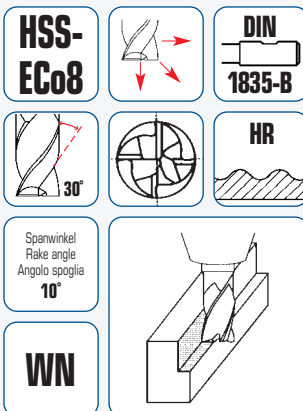
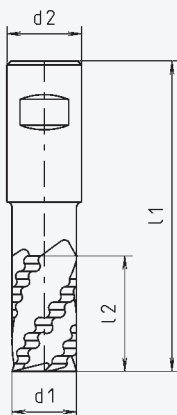
Wide range of applications on materials of medium strength up to high tensile strength (~ 900–1.400 N/mm²), for example case-hardening, heat-treatable steels, alloyed tool steel; hardened and tempered non-ferrous metals, high temperature materials, also cast iron and alloyed cast iron.

FRESE CILINDRICHE FRONTALI, SERIE EXTRA CORTA, TAGLIANTE 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.

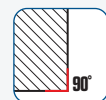
 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNIT®



d1 _{h12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2056 Art.-Nr.	€	Code 2057 Art.-Nr.	€
6	6	52	8	3	0 2056006001 00	27,78	0 2057006001 00	35,43
8	10	61	11	4	0 2056008001 00	30,56	0 2057008001 00	38,99
10	10	63	13	4	0 2056010001 00	34,74	0 2057010001 00	44,30
12	12	73	16	4	0 2056012001 00	40,88	0 2057012001 00	52,13
14	12	73	16	4	0 2056014001 00	48,65	0 2057014001 00	62,01
16	16	79	19	4	0 2056016001 00	57,77	0 2057016001 00	73,66
18	16	79	19	4	0 2056018001 00	69,09	0 2057018001 00	88,20
20	20	88	22	4	0 2056020001 00	81,69	0 2057020001 00	104,10



>> SCHAFTFRÄSER, KURZ, DIN 844 B

END MILLS, SHORT SERIES, DIN 844 B

FRESE CILINDRICHE FRONTALI, SERIE CORTA, DIN 844 B

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.

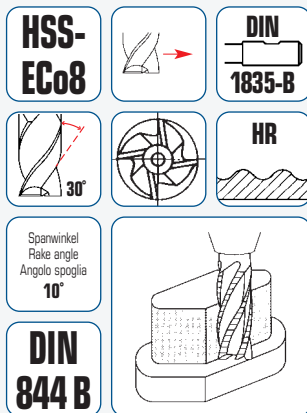
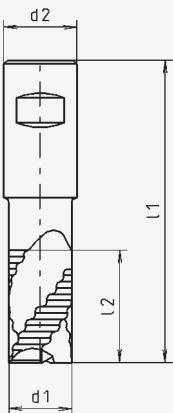
Range of application:

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{k12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2036 Art.-Nr.	€
6	6	57	13	3	0 2036006001 00	31,08
8	10	69	19	4	0 2036008001 00	34,22
10	10	72	22	4	0 2036010001 00	38,84
12	12	83	26	4	0 2036012001 00	45,68
14	12	83	26	4	0 2036014001 00	54,42
16	16	92	32	4	0 2036016001 00	64,59
18	16	92	32	4	0 2036018001 00	77,31
20	20	104	38	4	0 2036020001 00	91,24
22	20	104	38	5	0 2036022001 00	106,40
25	25	121	45	5	0 2036025001 00	130,30
28	25	121	45	5	0 2036028001 00	155,30
30	25	121	45	5	0 2036030001 00	174,80
32	32	133	53	6	0 2036032001 00	197,50



>> SCHAFTFRÄSER, KURZ, ZENTRUMSCHNEIDEND, DIN 844 B

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.

END MILLS, SHORT SERIES, CENTRE CUTTING, DIN 844 B

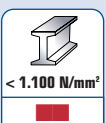
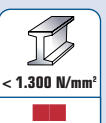
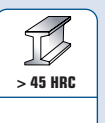
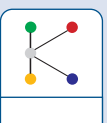
Range of application:

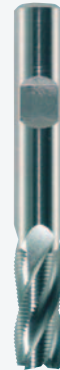
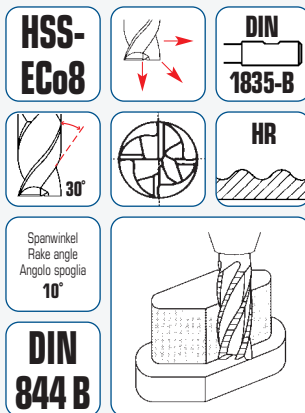
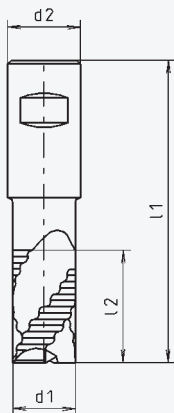
Wide range of applications on materials of medium strength up to high tensile strength (~ 900–1.400 N/mm²), for example case-hardening, heat-treatable steels, alloyed tool steel; hardened and tempered non-ferrous metals, high temperature materials, also cast iron and alloyed cast iron.

FRESE CILINDRICHE FRONTALI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

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.

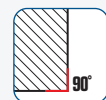
 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNIT®



d1 _{h12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2046 Art.-Nr.	€	Code 2047 Art.-Nr.	€
6	6	57	13	3	0 2046006001 00	34,10	0 2047006001 00	44,99
7	10	66	16	3	0 2046007001 00	41,32	0 2047007001 00	54,74
8	10	69	19	4	0 2046008001 00	37,58	0 2047008001 00	49,73
9	10	69	19	4	0 2046009001 00	47,02	0 2047009001 00	62,01
10	10	72	22	4	0 2046010001 00	42,71	0 2047010001 00	56,39
11	12	79	22	4	0 2046011001 00	55,23	0 2047011001 00	72,97
12	12	83	26	4	0 2046012001 00	50,23	0 2047012001 00	66,38
13	12	83	26	4	0 2046013001 00	65,80	0 2047013001 00	86,82
14	12	83	26	4	0 2046014001 00	59,85	0 2047014001 00	78,89
15	12	83	26	4	0 2046015001 00	78,08	0 2047015001 00	103,20
16	16	92	32	4	0 2046016001 00	71,00	0 2047016001 00	93,84
18	16	92	32	4	0 2046018001 00	84,91	0 2047018001 00	112,20
20	20	104	38	4	0 2046020001 00	100,40	0 2047020001 00	132,90
22	20	104	38	5	0 2046022001 00	111,10	0 2047022001 00	154,40
25	25	121	45	5	0 2046025001 00	135,90	0 2047025001 00	189,20
30	25	121	45	5	0 2046030001 00	182,70	0 2047030001 00	288,30
32	32	133	53	6	0 2046032001 00	217,20	0 2047032001 00	325,80



>> HPT SCHAFTFRÄSER, KURZ, ZENTRUMSCHNEIDEND, DIN 844 B

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.

HPT END MILLS, SHORT SERIES, CENTRE CUTTING, DIN 844 B

Range of application:

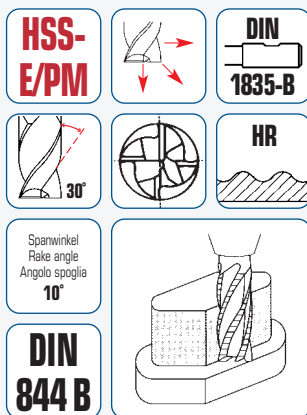
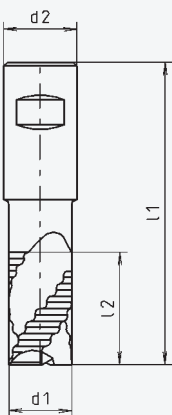
Made from powder-metallurgical steel for extreme cutting conditions for long continuous utilisation. Wide range of applications on materials of medium strength up to high tensile strength (~ 900–1.400 N/mm²), for example case-hardening, heat-treatable steels, alloyed tool steel; hardened and tempered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

HPT FRESE CILINDRICHE FRONTALI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNIT®

d1 _{k12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2017 Art.-Nr.	€
6	6	57	13	3	0 2017006001 00	55,30
8	10	69	19	4	0 2017008001 00	61,01
10	10	72	22	4	0 2017010001 00	69,28
12	12	83	26	4	0 2017012001 00	81,55
14	12	83	26	4	0 2017014001 00	96,87
16	16	92	32	4	0 2017016001 00	115,20
18	16	92	32	4	0 2017018001 00	137,90
20	20	104	38	4	0 2017020001 00	162,80
22	20	104	38	5	0 2017022001 00	189,70
25	25	121	45	5	0 2017025001 00	231,30
32	32	133	53	6	0 2017032001 00	382,20



>> HPT SCHRUPP-SCHAFT-FRÄSER, KURZ, ZENTRUM-SCHNEIDEND, DIN 844 B

Einsatzbereich:

Universalfräser mit dynamischen Spezialkordelprofil zum Schruppern. 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.

HPT ROUGHING END MILLS, SHORT SERIES, CENTRE CUTTING, DIN 844 B

Range of application:

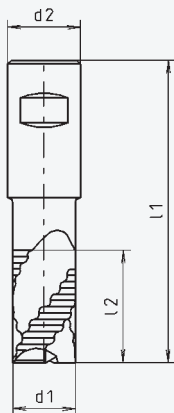
Universal milling cutter with dynamic special cord profile for roughing. Made from new substrate SPM with extreme high content of cobalt. It combines the hardness of solid carbide and the toughness of powder-metallurgical steel. This milling cutter is specially suitable for highest requirements in cutting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

HPT FRESE CILINDRICHE FRONTALI A SGROSSARE, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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HSS-SPM



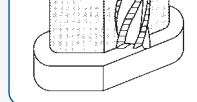
DIN 1835-B



Spanwinkel
Rake angle
Angolo spoglia
12°



DIN 844 B



NEU | NEW | NUOVO



ALUNIT®

d1 _{h12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2147 Art.-Nr.	€
10	10	72	22	4	0 2147010001 00	79,80
12	12	83	26	4	0 2147012001 00	88,70
14	12	83	26	4	0 2147014001 00	96,90
16	16	92	32	5	0 2147016001 00	139,60
18	16	92	32	5	0 2147018001 00	167,90
20	20	104	38	5	0 2147020001 00	197,40



>> 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.

HPT END MILLS, SHORT SERIES, CENTRE CUTTING, DIN 327 D

Range of application:

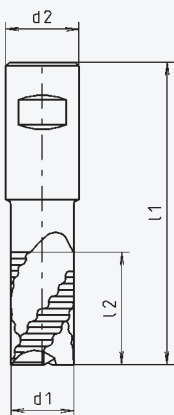
Made from new substrate SPM with extreme high content of cobalt. It combines the hardness of solid carbide and the toughness of powder-metallurgical steel. This milling cutter is specially suitable for highest requirements in cutting performance and increase of cutting volume in stainless steels.

HPT FRESE CILINDRICHE FRONTALI, SERIE CORTA, TAGLIANTE 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 polveri. Questa fresa è particolarmente adatta per elevate esigenze di resa e di asportazione di grandi volumi nella lavorazione degli acciai inossidabili.

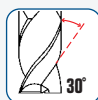
 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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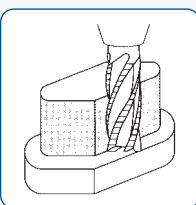
HSS-SPM



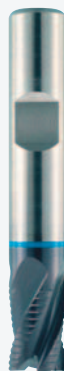
DIN 1835-B



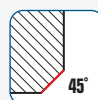
Spanwinkel
Rake angle
Angolo spoglia
16°



DIN 327 D



ALUNIT®



d1 _{k12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2137 Art.-Nr.	€
10	10	63	13	4	0 2137010001 00	64,22
12	12	73	16	4	0 2137012001 00	72,41
14	12	73	16	4	0 2137014001 00	81,38
16	16	79	19	5	0 2137016001 00	104,30
18	16	79	19	5	0 2137018001 00	113,70
20	20	88	22	5	0 2137020001 00	128,90
32	32	112	32	6	0 2137032001 00	283,60



IX/43

>> HPT SCHAFTFRÄSER, KURZ, ZENTRUMSCHNEIDEND, DIN 844 B

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.

HPT END MILLS, SHORT SERIES, CENTRE CUTTING, DIN 844 B

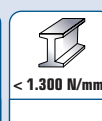
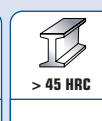
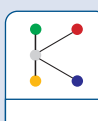
Range of application:

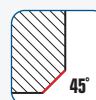
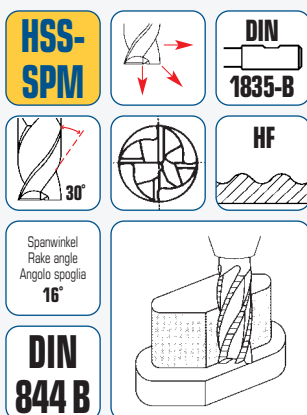
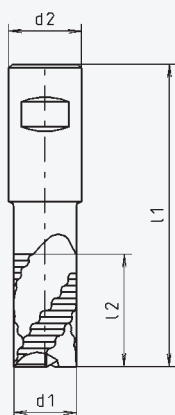
Made from new substrate SPM with extreme high content of cobalt. It combines the hardness of solid carbide and the toughness of powder-metallurgical steel. This milling cutter is specially suitable for highest requirements in cutting performance and increase of cutting volume in stainless steels.

HPT FRESE CILINDRICHE FRONTALI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

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 polveri. Questa fresa è particolarmente adatta per elevate esigenze di resa e di asportazione di grandi volumi nella lavorazione degli acciai inossidabili.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNIT®

d1 _{h12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2117 Art.-Nr.	€
10	10	72	22	4	0 2117010001 00	72,41
12	12	83	26	4	0 2117012001 00	80,79
14	12	83	26	4	0 2117014001 00	86,59
16	16	92	32	5	0 2117016001 00	123,60
18	16	92	32	5	0 2117018001 00	149,20
20	20	104	38	5	0 2117020001 00	175,40
32	32	133	53	6	0 2117032001 00	339,20



>> SCHAFTFRÄSER, LANG, DIN 844 B

END MILLS, LONG SERIES, DIN 844 B

FRESE CILINDRICHE FRONTALI, SERIE LUNGA, DIN 844 B

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.

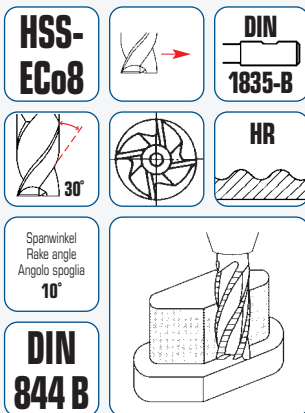
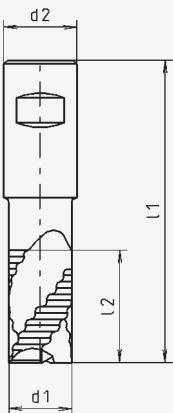
Range of application:

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.

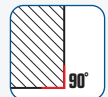
 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNIT®



d1 _{k12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2086 Art.-Nr.	€	Code 2087 Art.-Nr.	€
10	10	95	45	4	0 2086010001 00	50,44	0 2087010001 00	65,68
12	12	110	53	4	0 2086012001 00	59,35	0 2087012001 00	75,62
14	12	110	53	4	0 2086014001 00	70,62	0 2087014001 00	94,34
16	16	123	63	4	0 2086016001 00	83,97	0 2087016001 00	106,90
18	16	123	63	4	0 2086018001 00	100,40	0 2087018001 00	127,90
20	20	141	75	4	0 2086020001 00	118,60	0 2087020001 00	151,00
22	20	141	75	5	0 2086022001 00	138,20	0 2087022001 00	176,20
25	25	166	90	5	0 2086025001 00	169,20	0 2087025001 00	215,60
28	25	166	90	5	0 2086028001 00	201,60		
30	25	166	90	5	0 2086030001 00	227,00		
32	32	186	106	6	0 2086032001 00	256,60		



>> SCHAFTFRÄSER, KURZ, DREISCHNEIDER, ZENTRUMSCHNEIDEND, DIN 844 B

Einsatzbereich:

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

END MILLS, SHORT SERIES, THREE FLUTES, CENTRE CUTTING, DIN 844 B

Range of application:

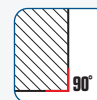
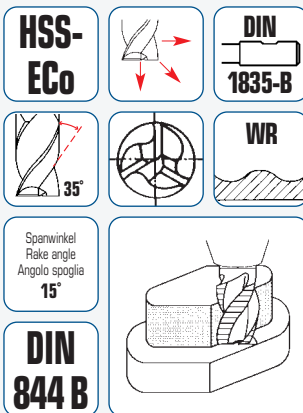
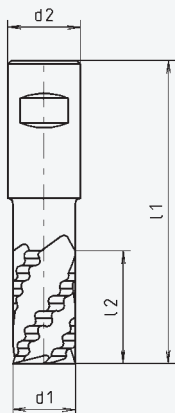
Recommended for milling in soft as well as in tough, long chipping materials such as Al- and Cu-alloys as well as in thermo plastics.

FRESE CILINDRICHE FRONTALI, 3 TAGLIENTI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{k12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2094 Art.-Nr.	€
6	6	57	13	3	0 2094006001 00	34,54
8	10	69	19	3	0 2094008001 00	37,46
10	10	72	22	3	0 2094010001 00	43,40
12	12	83	26	3	0 2094012001 00	50,56
14	12	83	26	3	0 2094014001 00	59,74
16	16	92	32	3	0 2094016001 00	70,80
18	16	92	32	3	0 2094018001 00	82,76
20	20	104	38	3	0 2094020001 00	97,07
25	25	121	45	3	0 2094025001 00	139,80
30	25	121	45	3	0 2094030001 00	187,70
32	32	133	53	3	0 2094032001 00	208,10



>> SCHAFTFRÄSER, LANG, DREISCHNEIDER, ZENTRUMSCHNEIDEND,

Einsatzbereich:

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

END MILLS, LONG SERIES, THREE FLUTES, CENTRE CUTTING

Range of application:

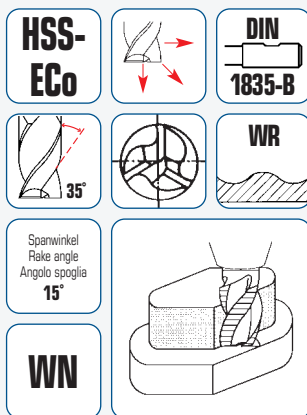
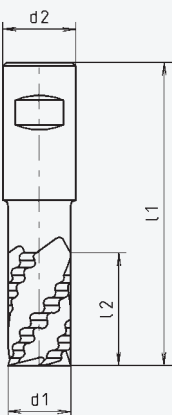
Recommended for milling in soft as well as in tough, long chipping materials such as Al- and Cu-alloys as well as in thermo plastics.

FRESE CILINDRICHE FRONTALI, 3 TAGLIENTI, TAGLIANTE AL CENTRO, SERIE LUNGA

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{k12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2104 Art.-Nr.	€
10	10	85	35	3	0 2104010001 00	56,39
12	12	100	42	3	0 2104012001 00	65,55
14	12	100	42	3	0 2104014001 00	77,44
16	16	112	52	3	0 2104016001 00	91,74
18	16	112	52	3	0 2104018001 00	107,30
20	20	126	60	3	0 2104020001 00	125,90
25	25	148	72	3	0 2104025001 00	181,10
30	25	148	72	3	0 2104030001 00	243,00
32	32	165	85	3	0 2104032001 00	269,70



>> SCHAFTFRÄSER, KURZ, DIN 844 B

END MILLS, SHORT SERIES, DIN 844 B

FRESE CILINDRICHE FRONTALI, SERIE CORTA, DIN 844 B

Einsatzbereich:

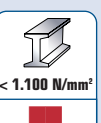
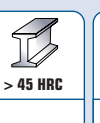
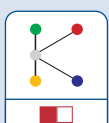
Empfohlen zum Fräsen von schwer zerspanbaren Werkstoffen mit hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.

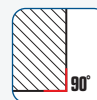
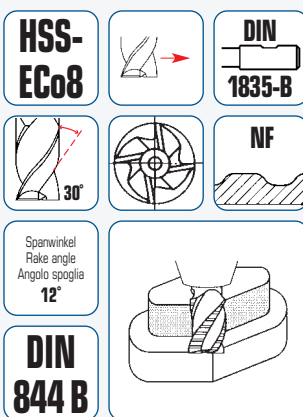
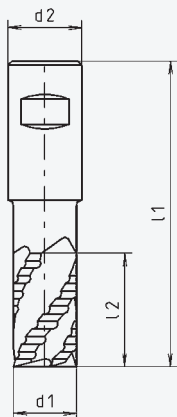
Range of application:

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.

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{h12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2156 Art.-Nr.	€
5	6	57	13	3	0 2156005001 00	29,54
6	6	57	13	3	0 2156006001 00	29,54
7	10	66	16	3	0 2156007001 00	32,53
8	10	69	19	4	0 2156008001 00	32,53
9	10	69	19	4	0 2156009001 00	37,01
10	10	72	22	4	0 2156010001 00	37,01
11	12	79	22	4	0 2156011001 00	43,53
12	12	83	26	4	0 2156012001 00	43,53
13	12	83	26	4	0 2156013001 00	51,82
14	12	83	26	4	0 2156014001 00	51,82
15	12	83	26	4	0 2156015001 00	61,49
16	16	92	32	4	0 2156016001 00	61,49
18	16	92	32	4	0 2156018001 00	73,58
20	20	104	38	4	0 2156020001 00	86,94
22	20	104	38	5	0 2156022001 00	101,30
24	25	121	45	5	0 2156024001 00	124,00
25	25	121	45	5	0 2156025001 00	124,00
26	25	121	45	5	0 2156026001 00	147,70
28	25	121	45	5	0 2156028001 00	147,70
30	25	121	45	5	0 2156030001 00	166,30



>> SCHAFTFRÄSER, KURZ, DREISCHNEIDER, ZENTRUMSCHNEIDEND, DIN 844 B

Einsatzbereich:

Empfohlen zum Schrappfräsen von Werkstoffen mit mittlerer bis hoher Festigkeit bis 1.300 N/mm². Geeignet zum Stirn- und Umfangfräsen, bei großer Laufruhe hohe Zerspanungsleistung.

END MILLS, SHORT SERIES, THREE FLUTES, CENTRE CUTTING, DIN 844 B

Range of application:

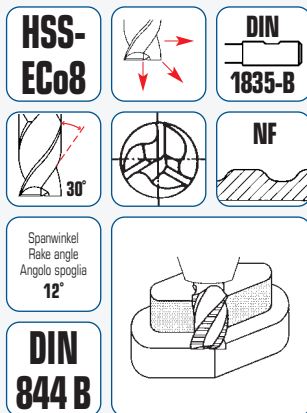
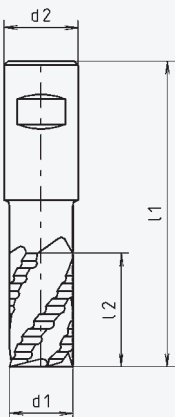
Recommended for rough-milling in materials with medium/high tensile strength up to 1.300 N/mm². Suitable for face and peripheral milling, smooth run guarantees high cutting performance.

FRESE CILINDRICHE FRONTALI, 3 TAGLIENTI, SERIE CORTA, TAGLIANTE AL CENTRO, DIN 844 B

Impiego:

Fresatura generale di sgrossatura di acciai di media ed elevata resistenza fino a R = 1.300 N/mm². Adatte per lavorazioni sia di tesata che di contornatura; l'elevata silenziosità garantisce un notevole rendimento.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{k12} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 2216 Art.-Nr.	€
6	6	57	13	3	0 2216006001 00	30,75
7	10	66	16	3	0 2216007001 00	33,53
8	10	69	19	3	0 2216008001 00	33,53
9	10	69	19	3	0 2216009001 00	38,78
10	10	72	22	3	0 2216010001 00	38,78
11	12	79	22	3	0 2216011001 00	45,12
12	12	83	26	3	0 2216012001 00	45,12
13	12	83	26	3	0 2216013001 00	53,34
14	12	83	26	3	0 2216014001 00	53,34
15	12	83	26	3	0 2216015001 00	63,27
16	16	92	32	3	0 2216016001 00	60,12
18	16	92	32	3	0 2216018001 00	70,30
20	20	104	38	3	0 2216020001 00	82,39
22	20	104	38	3	0 2216022001 00	97,07
25	25	121	45	3	0 2216025001 00	118,40
28	25	121	45	3	0 2216028001 00	142,90
30	25	121	45	3	0 2216030001 00	159,20



>> 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 Gleichlaufräsen.

END MILLS, SHORT SERIES, MORSE TAPER SHANK, DIN 845 B

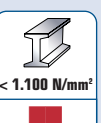
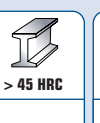
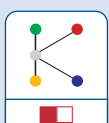
Range of application:

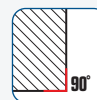
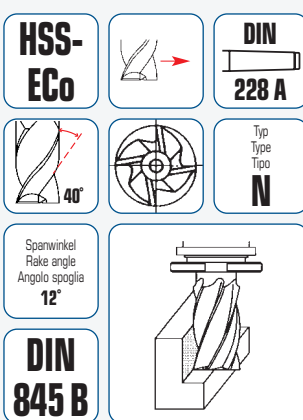
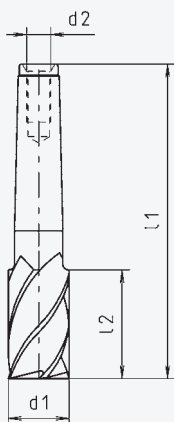
Finishing with high cutting performance and excellent surface on steels with medium to high tensile strength up to 1.300 N/mm² (for example for structural, case-hardening, heat-treatable steels); non-ferrous metals, stainless and acid resistant steels. Climb milling preferred.

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{K10} mm		d2 mm	l1 mm	l2 mm	Z	Code 2664 Art.-Nr.	€
10	1	M 6	92	22	4	0 2664010001 00	39,29
12	1	M 6	96	26	4	0 2664012001 00	41,56
14	2	M10	111	26	4	0 2664014001 00	52,90
15	2	M10	111	26	4	0 2664015001 00	56,96
16	2	M10	117	32	4	0 2664016001 00	60,92
18	2	M10	117	32	4	0 2664018001 00	68,84
20	2	M10	123	38	4	0 2664020001 00	76,68
22	2	M10	123	38	6	0 2664022001 00	84,71
24	3	M12	147	45	6	0 2664024001 00	98,19
25	3	M12	147	45	6	0 2664025001 00	103,50
26	3	M12	147	45	6	0 2664026001 00	108,80
28	3	M12	147	45	6	0 2664028001 00	119,60
30	3	M12	147	45	6	0 2664030001 00	130,30
32	4	M16	178	53	6	0 2664032001 00	151,80
36	4	M16	178	53	6	0 2664036001 00	192,50
40	4	M16	188	63	6	0 2664040001 00	233,30
45	4	M16	188	63	8	0 2664045001 00	284,20
50	5	M20	233	75	8	0 2664050001 00	346,40



>> SCHAFTFRÄSER, LANG, MORSEKEGELSCHAFT, DIN 845 B (C)

END MILLS, LONG SERIES, MORSE TAPER SHANK, DIN 845 B (C)

FRESE FRONTALI, SERIE LUNGA, CONO MORSE, DIN 845 B (C)

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.

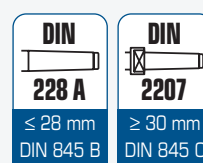
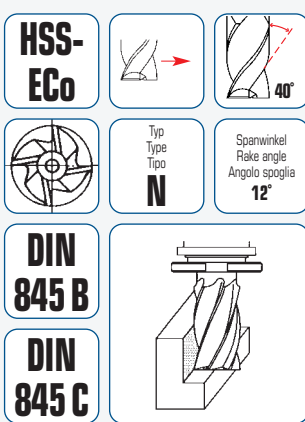
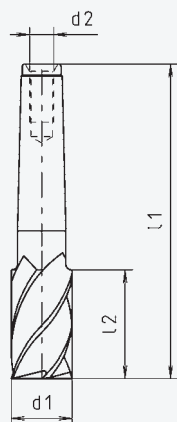
Range of application:

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.

Impiego:

Adatte per lavorazione di acciai di media ed alta resistenza fino a $R = 1.300 \text{ N/mm}^2$, (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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{k10} mm		d2 mm	l1 mm	l2 mm	Z	Code 2684 Art.-Nr.	€
16	2	M10	148	63	4	0 2684016001 00	73,09
18	2	M10	148	63	4	0 2684018001 00	80,67
20	2	M10	160	75	4	0 2684020001 00	88,28
22	3*	M12	177*	75	6	0 2684022001 00	110,60
25	3	M12	192	90	6	0 2684025001 00	137,00
28	3	M12	192	90	6	0 2684028001 00	162,90
30	4*	M16	238*	90	6	0 2684030001 00	181,00
32	4	M16	254	106	6	0 2684032001 00	203,50
36	4	M16	254	106	6	0 2684036001 00	248,60
40	4	M16	273	125	6	0 2684040001 00	293,80
45	5*	M20	311*	125	8	0 2684045001 00	381,00
50	5	M20	336	150	8	0 2684050001 00	516,10

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



>> 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.

END MILLS, SHORT SERIES, MORSE TAPER SHANK, DIN 845 B (C)

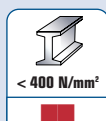
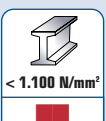
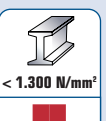
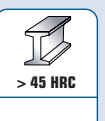
Range of application:

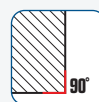
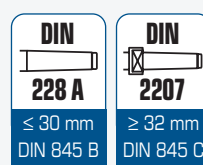
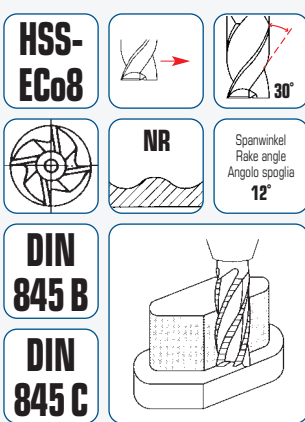
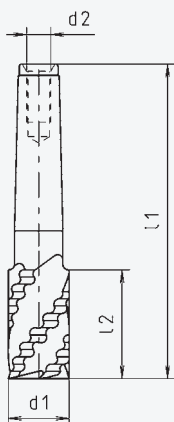
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 ₁₁₂ mm		d2 mm	l1 mm	l2 mm	Z	Code 2756 Art.-Nr.	€
10	1	M 6	92	22	4	0 2756010001 00	47,20
12	1	M 6	96	26	4	0 2756012001 00	49,85
14	2	M10	111	26	4	0 2756014001 00	63,46
15	2	M10	111	26	4	0 2756015001 00	68,35
16	2	M10	117	32	4	0 2756016001 00	73,09
18	2	M10	117	32	4	0 2756018001 00	82,58
20	2	M10	123	38	4	0 2756020001 00	92,12
22	2	M10	123	38	5	0 2756022001 00	101,70
24	3	M12	147	45	5	0 2756024001 00	117,80
25	3	M12	147	45	5	0 2756025001 00	124,10
26	3	M12	147	45	5	0 2756026001 00	130,60
28	3	M12	147	45	5	0 2756028001 00	143,40
30	3	M12	147	45	5	0 2756030001 00	156,30
32	4	M16	201	53	5	0 2756032001 00	189,70
36	4	M16	201	53	6	0 2756036001 00	240,70
38	4	M16	211	63	6	0 2756038001 00	266,00
40	4	M16	211	63	6	0 2756040001 00	291,50
45	4	M16	211	63	6	0 2756045001 00	355,30



>> SCHAFTFRÄSER, LANG, MORSEKEGELSCHAFT, DIN 845 B (C)

END MILLS, LONG SERIES, MORSE TAPER SHANK, DIN 845 B (C)

FRESE FRONTALI, SERIE LUNGA, CONO MORSE, 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.

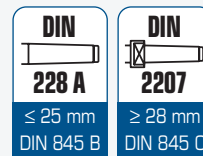
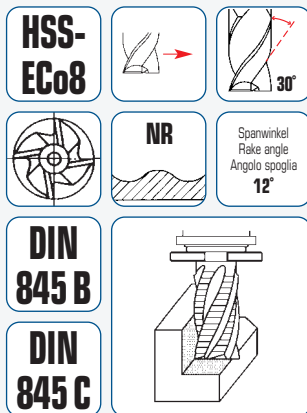
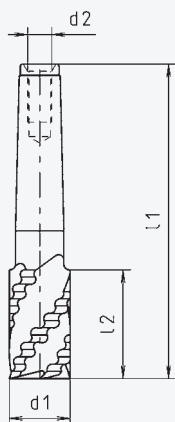
Range of application:

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.

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{k12} mm		d2 mm	l1 mm	l2 mm	Z	Code 2776 Art.-Nr.	€
20	3*	M12	177*	75	4	0 2776020001 00	119,20
22	3*	M12	177*	75	5	0 2776022001 00	144,10
25	3	M12	192	90	5	0 2776025001 00	177,80
28	4*	M16	238*	90	5	0 2776028001 00	219,90
30	4*	M16	238*	90	5	0 2776030001 00	235,20
32	4	M16	254	106	5	0 2776032001 00	264,50
36	4	M16	254	106	6	0 2776036001 00	323,20
40	5*	M20	311*	125	6	0 2776040201 00	396,50
40	5*	M20	336*	150	6	0 2776040501 00	475,90
45	5*	M20	311*	125	6	0 2776045201 00	514,30
45	5*	M20	336*	150	6	0 2776045501 00	514,30
50	5	M20	311	125	6	0 2776050201 00	559,10
50	5	M20	336	150	6	0 2776050501 00	617,20

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



>> HPT GESENKFRÄSER, KEGELIG, VIERSCHNEIDER

HPT DIE END MILLS, CONICAL SERIES, FOUR FLUTES

HPT FRESE CONICHE PER STAMPI, 4 TAGLIENTI

Einsatzbereich:

Schlichtfräser für Anwendungsgruppe H und N.

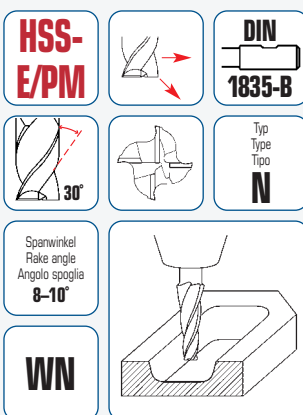
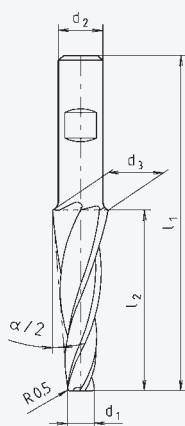
Range of application:

Finishing cutter for application groups H and N.

Impiego:

Frese a finire per i gruppi H ed N.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	



ALUNIT®

$\frac{\alpha}{2}$	d1 _{k10} mm	d2 _{h6} mm	d3 mm	l1 mm	l2 mm	Z	Code 2567 Art.-Nr.	€
0,5°	4	6	4,52	75	30,0	4	0 2567005041 00	54,66
	6	8	6,52	80	30,0	4	0 2567005061 00	65,68
	8	10	8,61	90	35,0	4	0 2567005081 00	68,84
	10	12	10,70	100	40,0	4	0 2567005101 00	89,33
	12	12	12,70	100	40,0	4	0 2567005121 00	101,90
1,0°	4	6	5,05	75	30,0	4	0 2567010041 00	55,50
	6	8	7,05	80	30,0	4	0 2567010061 00	69,52
	8	10	9,22	90	35,0	4	0 2567010081 00	71,25
	10	12	11,40	100	40,0	4	0 2567010101 00	93,27
	12	12	13,40	100	40,0	4	0 2567010121 00	105,70
1,5°	4	6	5,57	75	30,0	4	0 2567015041 00	56,18
	6	8	7,57	80	30,0	4	0 2567015061 00	73,41
	8	10	10,00	90	38,2	4	0 2567015081 00	76,87
	10	12	12,00	100	38,2	4	0 2567015101 00	98,00
	12	12	14,09	100	40,0	4	0 2567015121 00	114,00
2,0°	4	6	6,10	75	30,0	4	0 2567020041 00	61,64
	6	8	8,10	80	30,0	4	0 2567020061 00	74,36
	8	10	10,44	90	35,0	4	0 2567020081 00	85,81
	10	12	12,79	100	40,0	4	0 2567020101 00	106,90
	12	12	14,79	100	40,0	4	0 2567020121 00	122,70

Fortsetzung auf Seite IX/55 | Continued on page IX/55 | Segue a pagina IX/55



>> HPT GESENKFRÄSER, KEGELIG, VIERSCHNEIDER

HPT DIE END MILLS, CONICAL SERIES, FOUR FLUTES

HPT FRESE CONICHE PER STAMPI, 4 TAGLIENTI

Fortsetzung von Seite IX/54 | Continued from page IX/54 |
Segue da pagina IX/54

							ALUNIT®	
$\frac{\infty}{2}$	d1 _{k10} mm	d2 _{h6} mm	d3 mm	l1 mm	l2 mm	Z	Code 2567 Art.-Nr.	€
2,5°	4	6	6,62	75	30,0	4	0 2567025041 00	63,79
	6	8	8,62	80	30,0	4	0 2567025061 00	75,42
	8	10	11,06	90	35,0	4	0 2567025081 00	87,83
	10	12	13,49	100	40,0	4	0 2567025101 00	110,70
	12	16	15,49	110	40,0	4	0 2567025121 00	129,30
3,0°	4	8	7,14	80	30,0	4	0 2567030041 00	70,62
	6	10	9,14	85	30,0	4	0 2567030061 00	77,44
	8	12	12,00	95	38,2	4	0 2567030081 00	92,70
	10	12	14,19	100	40,0	4	0 2567030101 00	118,20
	12	16	16,00	110	38,2	4	0 2567030121 00	146,80
3,5°	4	8	8,00	80	32,7	4	0 2567035041 00	73,09
	6	10	10,00	85	32,7	4	0 2567035061 00	79,86
	8	12	12,28	95	35,0	4	0 2567035081 00	97,25
	10	12	14,89	100	40,0	4	0 2567035101 00	127,20
	12	16	16,89	110	40,0	4	0 2567035121 00	150,80
4,0°	4	8	8,20	80	30,0	4	0 2567040041 00	76,87
	6	10	10,20	85	30,0	4	0 2567040061 00	90,67
	8	12	12,89	95	35,0	4	0 2567040081 00	105,70
	10	16	15,59	110	40,0	4	0 2567040101 00	132,90
	12	16	17,59	110	40,0	4	0 2567040121 00	154,80
4,5°	4	8	8,72	80	30,0	4	0 2567045041 00	78,20
	6	10	10,72	85	30,0	4	0 2567045061 00	92,82
	8	12	13,51	95	35,0	4	0 2567045081 00	109,70
	10	16	16,30	110	40,0	4	0 2567045101 00	148,50
	12	16	18,30	110	40,0	4	0 2567045121 00	164,40
5,0°	4	8	9,25	80	30,0	4	0 2567050041 00	79,28
	6	10	11,25	85	30,0	4	0 2567050061 00	95,68
	8	12	14,12	95	35,0	4	0 2567050081 00	118,80
	10	16	17,00	110	40,0	4	0 2567050101 00	152,70
	12	16	19,00	110	40,0	4	0 2567050121 00	178,20
6,0°	4	10	10,31	85	30,0	4	0 2567060041 00	92,89
	6	12	12,31	90	30,0	4	0 2567060061 00	109,90
	8	16	15,36	100	35,0	4	0 2567060081 00	136,10
	10	16	18,41	110	40,0	4	0 2567060101 00	170,10
	12	20	20,41	115	40,0	4	0 2567060121 00	208,90
7,0°	4	10	11,37	85	30,0	4	0 2567070041 00	99,16
	6	12	13,37	90	30,0	4	0 2567070061 00	122,50
	8	16	16,59	100	35,0	4	0 2567070081 00	155,40
	10	16	19,82	110	40,0	4	0 2567070101 00	177,60
	12	20	21,82	115	40,0	4	0 2567070121 00	213,70
8,0°	4	12	12,43	90	30,0	4	0 2567080041 00	115,90
	6	12	14,43	90	30,0	4	0 2567080061 00	131,70
	8	16	17,84	100	35,0	4	0 2567080081 00	159,50
	10	20	21,24	110	40,0	4	0 2567080101 00	208,70
	12	20	23,24	115	40,0	4	0 2567080121 00	263,90

Fortsetzung auf Seite IX/56 | Continued on page IX/56 | Segue a pagina IX/56



>> **HPT** GESENKFRÄSER,
KEGELIG, VIERSCHNEIDER

HPT DIE END MILLS,
CONICAL SERIES, FOUR
FLUTES

HPT FRESE CONICHE PER
STAMPI, 4 TAGLIENTI

Fortsetzung von Seite IX/55 | Continued from page IX/55 |
Segue da pagina IX/55

							ALUNIT®	
$\frac{\alpha}{2}$	d1 _{k10} mm	d2 _{h6} mm	d3 mm	l1 mm	l2 mm	Z	Code 2567 Art.-Nr.	€
10,0°	4	12	14,58	90	30,0	4	0 2567099041 00	137,50
	6	16	16,58	95	30,0	4	0 2567099061 00	157,70
	8	20	20,34	105	35,0	4	0 2567099081 00	208,70
	10	20	24,11	110	40,0	4	0 2567099101 00	269,10
	12	20	26,11	115	40,0	4	0 2567099121 00	316,20



>> WINKELFRÄSER, DIN 1833 C

DOVETAIL CUTTERS, DIN 1833 C

FRESE AD ANGOLO DIVERGENTE, 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.

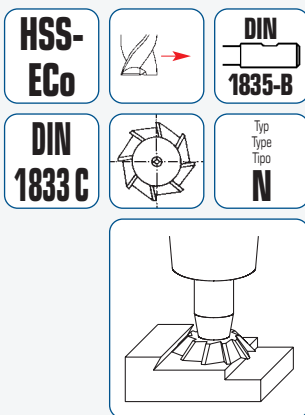
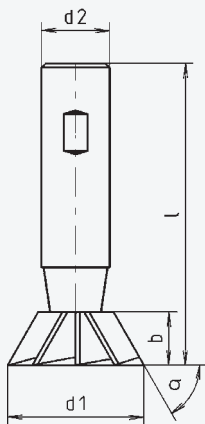
Range of application:

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.

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
											



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σ	d _{1s16} mm	b mm	d _{2h6} mm	l mm	Z	Code 1394 Art.-Nr.	€
45°	16	4,0	12	60	8	0 1394016401 00	54,17
45°	20	5,0	12	63	8	0 1394020401 00	67,83
45°	25	6,3	12	67	10	0 1394025401 00	83,97
45°	32	8,0	16	71	12	0 1394032401 00	107,90
60°	16	6,3	12	60	8	0 1394016601 00	54,17
60°	20	8,0	12	63	8	0 1394020601 00	67,83
60°	25	10,0	12	67	10	0 1394025601 00	83,97
60°	32	12,5	16	71	12	0 1394032601 00	107,90

Gegen Mehrpreis mit Kombi-Schaft lieferbar.

Available with srewed shank against surcharge.

Con sovrapprezzo codolo combinato (Weldon/Filettato).



>> WINKELFRÄSER, DIN 1833 D

DOVETAIL CUTTERS, DIN 1833 D

FRESE AD ANGOLO CONVERGENTE, 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.

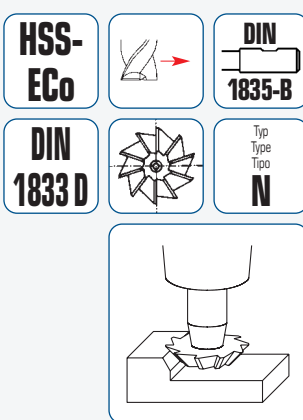
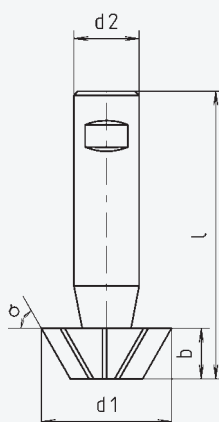
Range of application:

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.

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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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	54,17
45°	20	5,0	12	63	8	0 1424020401 00	67,83
45°	25	6,3	12	67	10	0 1424025401 00	83,97
45°	32	8,0	16	71	12	0 1424032401 00	107,90
60°	16	6,3	12	60	8	0 1424016601 00	54,17
60°	20	8,0	12	63	8	0 1424020601 00	67,83
60°	25	10,0	12	67	10	0 1424025601 00	83,97
60°	32	12,5	16	71	12	0 1424032601 00	107,90

Gegen Mehrpreis mit Kombi-Schaft lieferbar.

Available with srewed shank against surcharge.

Con sovrapprezzo codolo combinato (Weldon/Filettato).



>> VIERTELROUND-PROFIL-FRÄSER, DIN 6518 B

QUARTER CIRCLE CUTTERS, DIN 6518 B

FRESE A QUARTO DI CERCHIO, 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.

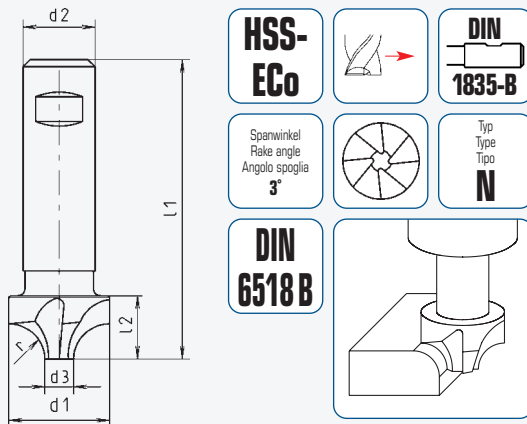
Range of application:

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.

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.

					INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
< 400 N/mm ²	< 850 N/mm ²	< 1.100 N/mm ²	< 1.300 N/mm ²	> 45 HRC	< 850 N/mm ²	> 850 N/mm ²	GHISA GRIGIA	Ti	Cu, Ms	Al	< 400 N/mm ²



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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	□ 1464001001 00	49,68
1,25	8,5	10	6	60	10	4	□ 1464001201 00	50,44
Δ 1,50	9	10	6	60	10	4	□ 1464001501 00	51,07
1,60	9,2	10	6	60	10	4	□ 1464001601 00	51,50
2,00	10	10	6	60	15	4	□ 1464002001 00	52,82
2,50	11	10	6	60	15	4	□ 1464002501 00	54,61
3,00	12	12	6	60	11	4	□ 1464003001 00	56,56
Δ 3,50	13	12	6	60	11	4	□ 1464003501 00	58,47
4,00	14	12	6	60	11	4	□ 1464004001 00	60,49
Δ 4,50	15	12	6	60	11	4	□ 1464004501 00	62,53
5,00	16	12	6	60	11	4	□ 1464005001 00	64,47
Δ 5,50	19	16	8	67	14	4	□ 1464005501 00	61,13
6,00	20	16	8	67	14	4	□ 1464006001 00	74,36
6,30	20,6	16	8	71	18	4	□ 1464006301 00	76,31
Δ 6,50	21	16	8	71	18	4	□ 1464006501 00	77,44
Δ 7,00	22	16	8	71	18	4	□ 1464007001 00	80,81
Δ 7,50	23	16	8	71	18	4	□ 1464007501 00	85,35
8,00	24	16	8	71	18	4	□ 1464008001 00	91,24
10,00	28	25	8	85	22	4	□ 1464010001 00	114,10
12,00	34	25	10	90	27	4	□ 1464012001 00	158,70
12,50	41	25	16	100	32	6	□ 1464012501 00	223,20
Δ 15,00	46	25	16	100	32	6	□ 1464015001 00	285,70
16,00	48	25	16	100	32	6	□ 1464016001 00	317,40
20,00	56	32	16	112	40	6	□ 1464020001 00	476,00

Gegen Mehrpreis mit Kombi-Schaft lieferbar. | Available with srewed shank against surcharge.

Con sovrapprezzo codolo combinato (Weldon/Filettato).

Δ Zwischenradien
Intermediate radii
Raggi intermedi



>> T-NUTENFRÄSER, DIN 851 AB

T-SLOT MILLING CUTTERS, DIN 851 AB

FRESE PER SCANALATURE A "T", DIN 851 AB

Einsatzbereich:

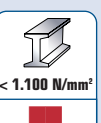
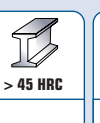
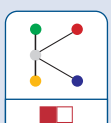
Schaftfräser für T-Nuten nach DIN 650, kreuz-
verzahnt. Empfohlen zum Fräsen von Bau-,
Einsatz- und Vergütungsstählen mit normaler
Festigkeit bis 1.100 N/mm² sowie für kurz-
spanende NE-Metalle.

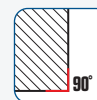
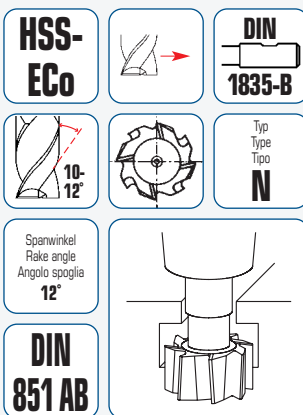
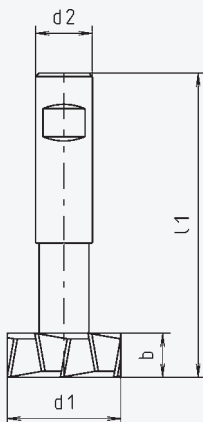
Range of application:

Milling cutters for T-slots according to
DIN 650, staggered teeth. Recommended for
milling in construction steels, tempered steels
and cementation steels with standard tensile
strength up to 1.100 N/mm² and short-chip-
ping of non-ferrous metals.

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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a*	d1 _{d11} mm	b _{d11} mm	d2 _{h6} mm	d3 mm	l1 mm	Z	Code 1484 Art.-Nr.	€
6	12,5	6	10	5	57	6	0 1484012501 00	67,45
8	16	8	10	7	62	6	0 1484016001 00	75,92
10	18	8	12	8	70	8	0 1484018001 00	82,70
12	21	9	12	10	74	8	0 1484021001 00	95,05
14	25	11	16	12	82	8	0 1484025001 00	113,80
16	28	12	16	13	85	8	0 1484028001 00	129,30
18	32	14	16	15	90	8	0 1484032001 00	155,10
20	36	16	25	17	103	8	0 1484036001 00	200,10
22	40	18	25	19	108	10	0 1484040001 00	254,30

Gegen Mehrpreis mit Kombi-Schaft lieferbar.

Available with srewed shank against surcharge.

Con sovrapprezzo codolo combinato (Weldon/Filettato).

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



>> T-NUTENFRÄSER, DIN 851 AB

T-SLOT MILLING CUTTERS, DIN 851 AB

FRESE PER SCANALATURE A "T", 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.

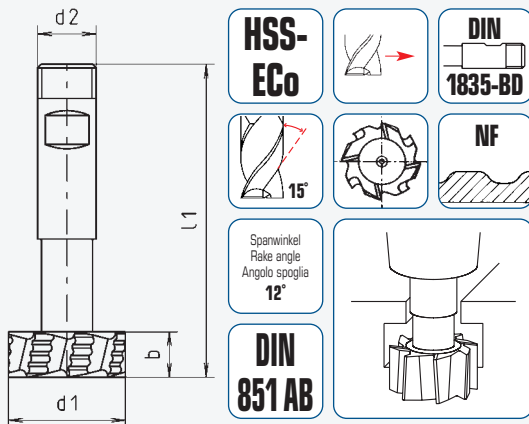
Range of application:

Milling cutters for T-slots according to DIN 650 with roughing-finishing tooth system. Recommended for milling in construction steels, tempered steels and cementation steels with standard tensile strength up to 1.300 N/mm² and short-chipping of non-ferrous metals.

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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a*	d1 _{d11} mm	b _{d11} mm	d2 _{h6} mm	d3 mm	L1 mm	Z	Code 1504 Art.-Nr.	€
6	12,5	6	10	5	57	6	0 1504012501 00	89,28
8	16	8	10	7	62	6	0 1504016001 00	96,11
10	18	8	12	8	70	8	0 1504018001 00	102,40
12	21	9	12	10	74	8	0 1504021001 00	116,90
14	25	11	16	12	82	8	0 1504025001 00	140,50
16	28	12	16	13	85	8	0 1504028001 00	160,30
18	32	14	16	15	90	8	0 1504032001 00	191,10
20	36	16	25	17	103	8	0 1504036001 00	227,30
22	40	18	25	19	108	10	0 1504040001 00	271,90
24	45	20	25	21	113	10	0 1504045001 00	328,30

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



>> SCHLITZFRÄSER, DIN 850 D

WOODRUFF KEYSEAT CUTTERS, DIN 850 D

FRESE PER SEDE DI CHIAVETTA, 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.

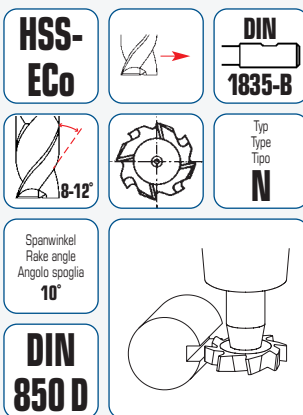
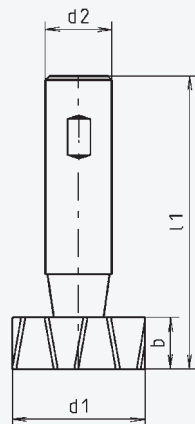
Range of application:

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.

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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x*	d1 _{h11}	b _{e8}	d2 _{h6}	l1	Z	Code 1524	€
mm	mm	mm	mm	mm		Art.-Nr.	
1,0x 1,4	4,5	1	6	50	6	0 1524004501 00	48,60
1,5x 2,6	7,5	1,5	6	50	6	0 1524007101 00	49,68
2,0x 2,6	7,5	2	6	50	6	0 1524007201 00	49,68
2,0x 3,7	10,5	2	6	50	8	0 1524010001 00	51,13
2,5x 3,7	10,5	2,5	6	50	8	0 1524010101 00	51,13
3,0x 3,7	10,5	3	6	50	8	0 1524010201 00	51,13
3,0x 5,0	13,5	3	10	56	8	0 1524013301 00	53,73
4,0x 5,0	13,5	4	10	56	8	0 1524013401 00	53,73
3,0x 6,5	16,5	3	10	56	8	0 1524016301 00	58,35
4,0x 6,5	16,5	4	10	56	8	0 1524016401 00	58,35
5,0x 6,5	16,5	5	10	56	8	0 1524016501 00	58,35
4,0x 7,5	19,5	4	10	63	10	0 1524019401 00	67,83
5,0x 7,5	19,5	5	10	63	10	0 1524019501 00	67,83
6,0x 7,5	19,5	6	10	63	10	0 1524019601 00	67,83
5,0x 9,0	22,5	5	10	63	10	0 1524022501 00	78,77
6,0x 9,0	22,5	6	10	63	10	0 1524022601 00	78,77
8,0x 9,0	22,5	8	10	63	10	0 1524022801 00	78,77
6,0x10,0	25,5	6	10	63	10	0 1524025501 00	91,94
6,0x11,0	28,5	6	10	63	12	0 1524028101 00	105,50
8,0x11,0	28,5	8	10	63	12	0 1524028201 00	105,50
10,0x11,0	28,5	10	12	71	12	0 1524028301 00	105,50
8,0x13,0	32,5	8	12	71	12	0 1524032101 00	126,10
10,0x13,0	32,5	10	12	71	12	0 1524032201 00	126,10
10,0x16,0	45,5	10	12	71	14	0 1524045501 00	206,70

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



>> KURZSCHAFTFRÄSER

SHORT SHANK CUTTERS

FRESE FRONTALI, SERIE CORTA

Einsatzbereich:

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

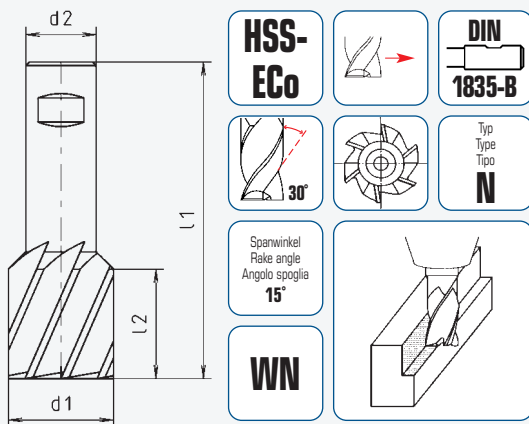
Range of application:

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.

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
											



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d1 _{js16} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1374 Art.-Nr.	€
30	20	90	30	6	□ 1374003001 00	123,10
35	20	90	30	6	□ 1374003501 00	133,90
40	25	95	32	6	□ 1374004001 00	165,30



>> KURZSCHAFTFRÄSER

SHORT SHANK CUTTERS

FRESE FRONTALI, SERIE CORTA

Einsatzbereich:

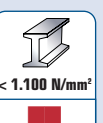
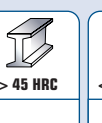
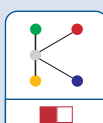
Empfohlen zum Fräsen von Werkstoffen mit mittlerer bis hoher Festigkeit bis 1.300 N/mm² sowie für Titan und Titanlegierungen.

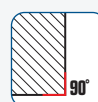
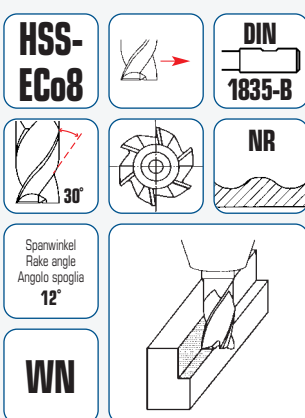
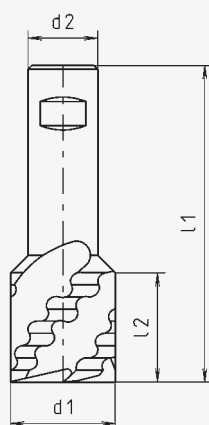
Range of application:

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.

Impiego:

Fresatura generale di acciai di media ed alta resistenza fino a $R = 1.300 \text{ N/mm}^2$, Titanio, leghe di Titanio.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{js16} mm	d2 _{h6} mm	l1 mm	l2 mm	Z	Code 1356 Art.-Nr.	€
30	20	90	30	5	0 1356003001 00	128,20
35	20	90	30	6	0 1356003501 00	167,50
40	25	95	32	6	0 1356004001 00	206,70



>> WALZENSTIRNFRÄSER, DIN 841

SHELL END MILLS, DIN 841

FRESE FRONTALI, 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.

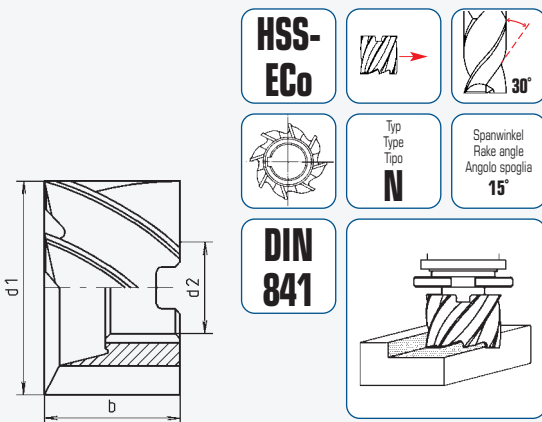
Range of application:

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.

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{js16} mm	b _{k16} mm	d2 _{H7} mm	Z	Code 3044 Art.-Nr.	€
30	30	13	6	0 3044003001 00	87,83
35	35	16	6	0 3044003501 00	104,10
40	20	16	6	0 3044004201 00	91,88
40	40	16	6	0 3044004401 00	127,00
50	25	22	8	0 3044005201 00	123,10
50	50	22	8	0 3044005501 00	186,10
60	30	27	8	0 3044006301 00	165,70
60	60	27	8	0 3044006601 00	262,90
75	35	27	10	0 3044007301 00	238,60
75	75	27	10	0 3044007701 00	420,30
90	35	27	10	0 3044009001 00	319,20
110	35	32	12	0 3044011001 00	442,60



>> WALZENSTIRNFRÄSER, DIN 841

SHELL END MILLS, DIN 841

FRESE FRONTALI, DIN 841

Einsatzbereich:

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

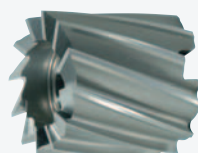
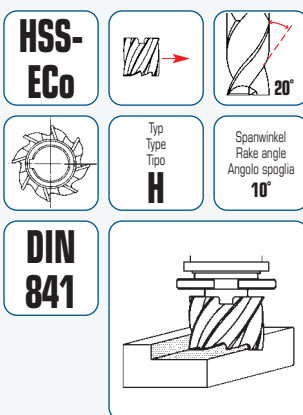
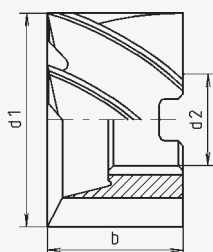
Range of application:

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

Impiego:

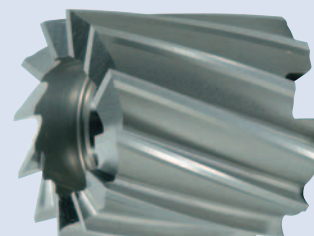
Fresatura generale di acciai duri a truciolo corto, ghisa grigia, ottone, bronzo, acciai legati da utensili.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{js16} mm	b _{k16} mm	d2 _{H7} mm	Z	Code 3054 Art.-Nr.	€
30	30	13	10	0 3054003001 00	92,27
35	35	16	10	0 3054003501 00	109,30
40	20	16	10	0 3054004201 00	96,44
40	40	16	10	0 3054004401 00	133,30
50	25	22	12	0 3054005201 00	129,30
50	50	22	12	0 3054005501 00	195,40
60	30	27	12	0 3054006301 00	173,90
60	60	27	12	0 3054006601 00	275,90
75	35	27	14	0 3054007301 00	250,50
75	75	27	14	0 3054007701 00	441,20
90	35	27	16	0 3054009001 00	335,00
110	35	32	18	0 3054011001 00	464,60



>> WALZENSTIRNFRÄSER, DIN 1880

SHELL END MILLS, DIN 1880

FRESE FRONTALI, 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.

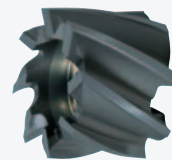
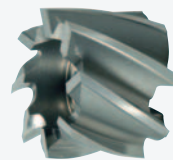
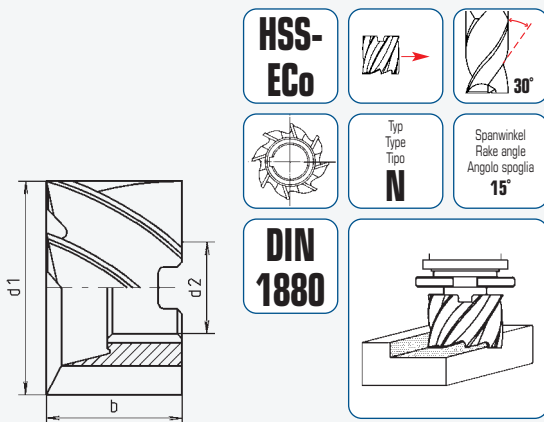
Range of application:

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.

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.

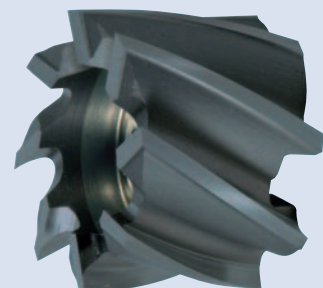
 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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ALUNIT®

d1 _{js16} mm	b _{h16} mm	d2 _{H7} mm	Z	Code 3074 Art.-Nr.	€	Code 3077 Art.-Nr.	€
40	32	16	6	0 3074004001 00	113,10	0 3077004001 00	152,60
50	36	22	8	0 3074005001 00	153,00	0 3077005001 00	206,60
63	40	27	8	0 3074006301 00	214,00	0 3077006301 00	288,90
80	45	27	10	0 3074008001 00	320,30	0 3077008001 00	432,40
100	50	32	12	0 3074010001 00	485,00	0 3077010001 00	654,70



>> WALZENSTIRNFRÄSER, DIN 1880

Einsatzbereich:

Empfohlen zum Fräsen von langspanenden Werkstoffen, z.B. Al- und Cu-Legierungen, weiche Stähle, Thermoplaste u. ä.

SHELL END MILLS, DIN 1880

Range of application:

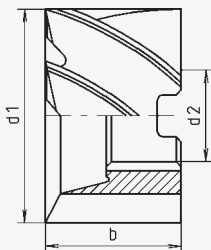
Recommended for milling in long chipping materials, for example in Al- and Cu-alloys, soft steels, thermo plastics and similars.

FRESE FRONTALI, DIN 1880

Impiego:

Adatte per lavorazioni di acciai a truciolo lungo, leghe alluminio, leghe rame, acciai dolci, materiali termoplastici.

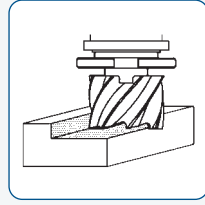
 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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**HSS-
ECo**



**DIN
1880**



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d1 _{js16} mm	b _{k16} mm	d2 _{H7} mm	Z	Code 3094 Art.-Nr.	€
40	32	16	3	0 3094004001 00	118,80
50	36	22	3	0 3094005001 00	160,60
63	40	27	4	0 3094006301 00	224,90
80	45	27	4	0 3094008001 00	336,30
100	50	32	4	0 3094010001 00	509,30



>> WALZENSTIRNFRÄSER, DIN 841

SHELL END MILLS, DIN 841

FRESE FRONTALI, DIN 841

Einsatzbereich:

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

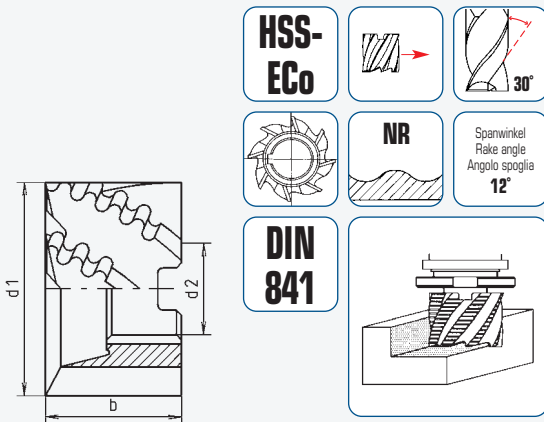
Range of application:

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.

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{js16} mm	b _{k16} mm	d2 _{H7} mm	Z	Code 3106 Art.-Nr.	€
30	30	13	5	0 3106003001 00	127,50
35	35	16	6	0 3106003501 00	145,70
40	20	16	6	0 3106004201 00	128,70
40	40	16	6	0 3106004401 00	171,50
50	25	22	6	0 3106005201 00	166,10
50	50	22	6	0 3106005501 00	241,90
60	30	27	8	0 3106006301 00	215,40
60	60	27	8	0 3106006601 00	328,60
75	35	27	8	0 3106007301 00	286,30
75	75	27	8	0 3106007701 00	504,50
90	35	27	10	0 3106009001 00	376,70
110	35	32	12	0 3106011001 00	517,60



>> WALZENSTIRNFRÄSER, DIN 841

Einsatzbereich:

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

SHELL END MILLS, DIN 841

Range of application:

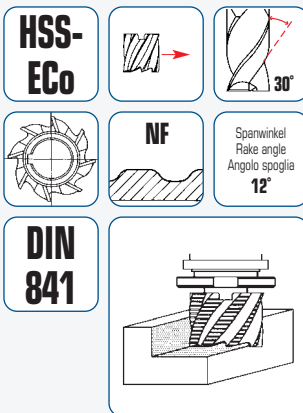
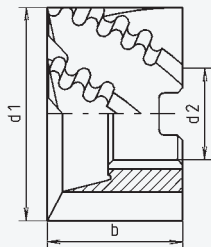
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.

FRESE FRONTALI, DIN 841

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d1 _{js16} mm	b _{k16} mm	d2 _{H7} mm	Z	Code 3116 Art.-Nr.	€
30	30	13	5	0 3116003001 00	127,50
35	35	16	6	0 3116003501 00	145,70
40	20	16	6	0 3116004201 00	128,70
40	40	16	6	0 3116004401 00	171,50
50	25	22	6	0 3116005201 00	166,10
50	50	22	6	0 3116005501 00	241,90
60	30	27	8	0 3116006301 00	215,40
60	60	27	8	0 3116006601 00	328,60
75	35	27	8	0 3116007301 00	286,30
75	75	27	8	0 3116007701 00	504,50
90	35	27	10	0 3116009001 00	376,70
110	35	32	12	0 3116011001 00	517,60



>> WALZENSTIRNFRÄSER, DIN 1880

SHELL END MILLS, DIN 1880

FRESE FRONTALI, DIN 1880

Einsatzbereich:

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

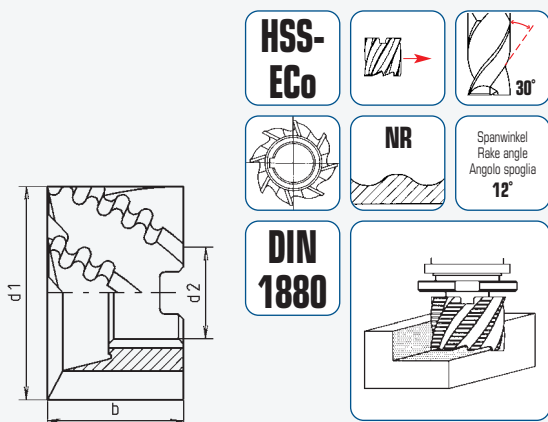
Range of application:

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.

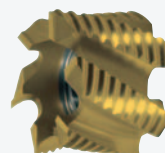
Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
											

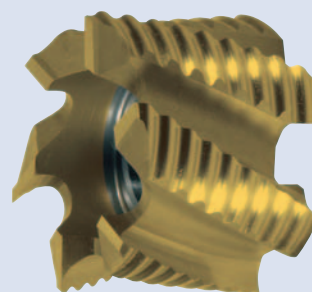


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TiN

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	149,20	0 3128004001 00	201,50
50	36	22	6	0 3126005001 00	189,70	0 3128005001 00	256,10
63	40	27	8	0 3126006301 00	256,90	0 3128006301 00	346,90
80	45	27	8	0 3126008001 00	374,80	0 3128008001 00	505,90
100	50	32	10	0 3126010001 00	557,60	0 3128010001 00	694,80



>> WALZENSTIRNFRÄSER, DIN 1880

Einsatzbereich:

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

SHELL END MILLS, DIN 1880

Range of application:

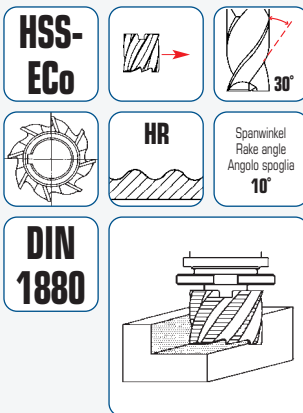
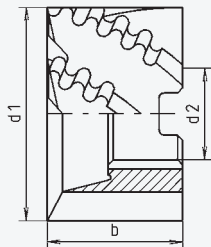
Recommended for milling in heavy duty materials with high tensile strength up to 1.300 N/mm² as well as in titanium and titanium-alloyed materials.

FRESE FRONTALI, DIN 1880

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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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	156,70	0 3147004001 00	219,50
50	36	22	8	0 3146005001 00	199,20	0 3147005001 00	278,80
63	40	27	10	0 3146006301 00	269,70	0 3147006301 00	377,50
80	45	27	10	0 3146008001 00	393,40	0 3147008001 00	550,90
100	50	32	12	0 3146010001 00	585,60	0 3147010001 00	820,10



>> WALZENSTIRNFRÄSER, DIN 1880

SHELL END MILLS, DIN 1880

FRESE FRONTALI, DIN 1880

Einsatzbereich:

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

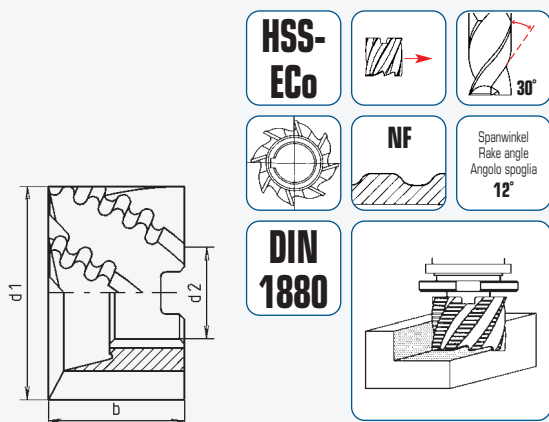
Range of application:

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.

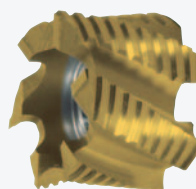
Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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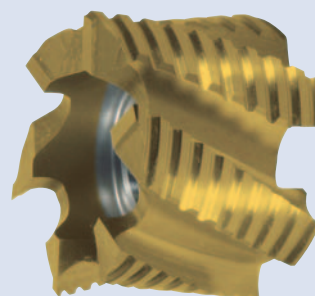


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TiN

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	149,20	0 3138004001 00	201,20
50	36	22	6	0 3136005001 00	189,70	0 3138005001 00	256,10
63	40	27	8	0 3136006301 00	256,90	0 3138006301 00	346,80
80	45	27	8	0 3136008001 00	374,80	0 3138008001 00	505,50
100	50	32	10	0 3136010001 00	557,60	0 3138010001 00	752,60



>> 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.

SIDE MILLING CUTTERS, STAGGERED TEETH, DIN 885 A

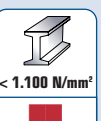
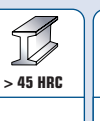
Range of application:

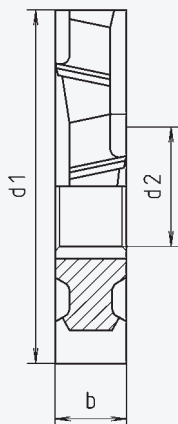
Recommended for milling in construction steels, tempered steels and cementation steels up to a tensile strength of 1.100 N/mm² as well as in short-chipping non-ferrous metals.

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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d ₁ _{js16} mm	b _{k11} mm	d ₂ _{H7} mm	Z	Code 3174 Art.-Nr.	€
50	4	16	12	0 3174004901 00	79,79
50	5	16	12	0 3174005001 00	82,88
50	6	16	12	0 3174005101 00	85,92
50	8	16	12	0 3174005201 00	92,12
50	10	16	12	0 3174005301 00	98,39
63	4	22	12	0 3174005901 00	103,20
63	5	22	12	0 3174006001 00	107,20
63	6	22	12	0 3174006101 00	111,10
63	8	22	12	0 3174006201 00	119,10
63	10	22	12	0 3174006301 00	127,00
63	12	22	12	0 3174006401 00	135,10
63	14	22	12	0 3174006501 00	143,10
63	16	22	12	0 3174006601 00	151,00
63	18	22	12	0 3174006701 00	159,00
80	4	27	14	0 3174007901 00	133,80
80	5	27	14	0 3174008001 00	138,60
80	6	27	14	0 3174008101 00	143,30
80	8	27	14	0 3174008201 00	152,90
80	10	27	14	0 3174008301 00	162,40
80	12	27	14	0 3174008401 00	171,90
80	14	27	14	0 3174008501 00	181,30
80	16	27	14	0 3174008601 00	190,70
80	18	27	14	0 3174008701 00	200,30
80	20	27	14	0 3174008801 00	209,70
100	4	32	16	0 3174009901 00	169,90

Fortsetzung auf Seite IX/75 | Continued on page IX/75 | Segue a pagina IX/75



>> SCHEIBENFRÄSER, KREUZVERZAHNT, DIN 885 A

SIDE MILLING CUTTERS, STAGGERED TEETH, DIN 885 A

FRESE A DISCO A TRE TAGLI DENTI ALTERNATI, DIN 885 A

Fortsetzung von Seite IX/74 | Continued from
page IX/74 | Segue da pagina IX/74

				blank bright lucida	
d1 _{js16} mm	b _{k11} mm	d2 _{H7} mm	Z	Code 3174 Art.-Nr.	€
100	5	32	16	□ 3174010001 00	177,80
100	6	32	16	□ 3174010101 00	185,90
100	8	32	16	□ 3174010201 00	202,00
100	10	32	16	□ 3174010301 00	218,20
100	12	32	16	□ 3174010401 00	234,40
100	14	32	16	□ 3174010501 00	250,50
100	16	32	16	□ 3174010601 00	266,60
100	18	32	16	□ 3174010701 00	282,80
100	20	32	16	□ 3174010801 00	299,00
100	22	32	16	□ 3174010901 00	315,00
100	25	32	16	□ 3174011001 00	339,20
125	6	32	16	□ 3174011901 00	248,10
125	8	32	16	□ 3174012001 00	268,70
125	10	32	16	□ 3174012101 00	289,30
125	12	32	16	□ 3174012201 00	309,80
125	14	32	16	□ 3174012301 00	330,60
125	16	32	16	□ 3174012401 00	351,10
125	18	32	16	□ 3174012501 00	371,70
125	20	32	16	□ 3174012601 00	392,30
125	22	32	16	□ 3174012701 00	413,00
125	25	32	16	□ 3174012801 00	443,80
160	6	40	20	□ 3174015901 00	335,00
160	8	40	20	□ 3174016001 00	370,90
160	10	40	20	□ 3174016101 00	406,60
160	12	40	20	□ 3174016201 00	442,60
160	14	40	20	□ 3174016301 00	478,10
160	16	40	20	□ 3174016401 00	514,10
160	18	40	20	□ 3174016501 00	550,00
160	20	40	20	□ 3174016601 00	585,70
160	22	40	20	□ 3174016701 00	621,50
160	25	40	18	□ 3174016801 00	675,80



>> METALLKREISFRÄSER, KREUZVERZAHNT

Einsatzbereich:

Empfohlen zum Fräsen von harten, kurzspannenden Werkstoffen wie Grauguss, Messing, Bronze und legierten Werkzeugstählen.

METAL SLITTING CUTTERS, STAGGERED TEETH

Range of application:

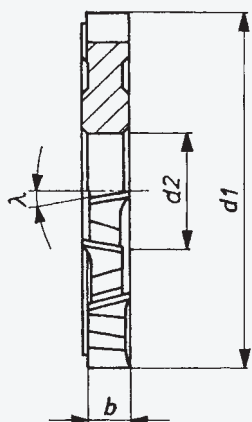
Recommended for milling in hard, short-chipping materials such as grey cast iron, brass, bronze and alloyed tool steels.

SEGHE CIRCOLARI A DENTI ALTERNATI

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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**HSS-
ECo**

Typ
Type
Tipo
H

Spanwinkel
Rake angle
Angolo spoglia
15°

Spanwinkel
Rake angle
Angolo spoglia
15°



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d1 _{js16} mm	b _{k9} mm	d2 _{H7} mm	Z	Code 3224 Art.-Nr.	€
50	1,6	16	24	0 3224005001 00	85,04
50	2,0	16	24	0 3224005101 00	85,04
50	2,5	16	24	0 3224005201 00	85,54
63	1,6	22	28	0 3224006001 00	95,79
63	2,0	22	28	0 3224006101 00	91,94
63	2,5	22	28	0 3224006201 00	92,76
63	3,0	22	28	0 3224006301 00	95,99
80	1,6	27	32	0 3224008001 00	115,70
80	2,0	27	32	0 3224008101 00	108,70
80	2,5	27	32	0 3224008201 00	112,40
80	3,0	27	32	0 3224008301 00	118,20
80	4,0	27	32	0 3224008501 00	127,60
100	1,6	32	36	0 3224010001 00	146,80
100	2,0	32	36	0 3224010101 00	141,10
100	2,5	32	36	0 3224010201 00	147,90
100	3,0	32	36	0 3224010301 00	154,30
100	4,0	32	36	0 3224010501 00	166,10
100	5,0	32	36	0 3224010601 00	180,00
125	2,0	32	40	0 3224012001 00	189,20
125	2,5	32	40	0 3224012101 00	201,90
125	3,0	32	40	0 3224012201 00	209,10
125	4,0	32	40	0 3224012401 00	226,70
125	5,0	32	40	0 3224012501 00	246,00
160	2,0	40	48	0 3224016001 00	294,90
160	2,5	40	48	0 3224016101 00	306,80

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>> METALLKREISFRÄSER, KREUZVERZAHNT

METAL SLITTING CUTTERS, STAGGERED TEETH

SEGHE CIRCOLARI A DENTI ALTERNATI

Fortsetzung von Seite IX/76 | Continued from
page IX/76 | Segue da pagina IX/76

				blank bright lucida	
d1 _{js16} mm	b _{k11} mm	d2 _{H7} mm	Z	Code 3224 Art.-Nr.	€
160	3,0	40	48	□ 3224016201 □□	325,70
160	4,0	40	48	□ 3224016401 □□	361,00
160	5,0	40	48	□ 3224016501 □□	392,30



>> WINKELSTIRNFRÄSER, DIN 842 A

Einsatzbereich:

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

SINGLE ANGLE CUTTERS, DIN 842 A

Range of application:

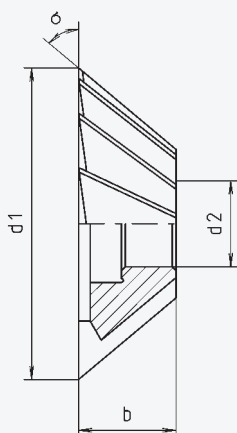
Recommended for milling straight slots and guidances in construction-, cementation- and tempered steels up to a tensile strength of 1.100 N/mm².

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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HSS

Typ
Type
Tipo
H

**DIN
842 A**



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σ	d1 _{js16} mm	b _{js14} mm	d2 _{H7} mm	Z	Code 3293 Art.-Nr.	€
45°	50	13	13	16	0 3293005401 00	145,60
45°	63	18	16	18	0 3293006401 00	179,20
45°	80	22	22	20	0 3293008401 00	246,90
45°	100	28	27	22	0 3293010401 00	379,30
45°	125	36	32	24	0 3293012401 00	656,00
50°	50	16	13	16	0 3293005501 00	145,60
50°	63	20	16	18	0 3293006501 00	179,20
50°	80	25	22	20	0 3293008501 00	246,90
50°	100	32	27	22	0 3293010501 00	379,30
50°	125	40	32	24	0 3293012501 00	656,00
60°	50	16	13	16	0 3293005601 00	145,60
60°	63	20	16	18	0 3293006601 00	179,20
60°	80	25	22	20	0 3293008601 00	246,90
60°	100	32	27	22	0 3293010601 00	379,30
60°	125	40	32	24	0 3293012601 00	656,00



>> PRISMENFRÄSER, DIN 847

DOUBLE ANGLE CUTTERS, DIN 847

FRESE PRISMATICHE, DIN 847

Einsatzbereich:

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

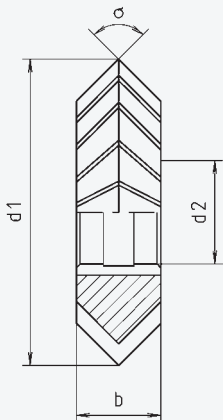
Range of application:

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

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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HSS

**DIN
847**



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σ	d1 _{js16} mm	b _{js16} mm	d2 _{H7} mm	Z	Code 3303 Art.-Nr.	€
45°	50	8	16	20	□ 3303005401 00	121,00
45°	63	10	22	22	□ 3303006401 00	165,30
45°	80	12	27	24	□ 3303008401 00	223,50
45°	100	18	32	26	□ 3303010401 00	291,90
60°	50	10	16	18	□ 3303005601 00	127,60
60°	63	14	22	20	□ 3303006601 00	178,70
60°	80	18	27	22	□ 3303008601 00	245,60
60°	100	25	32	24	□ 3303010601 00	324,30
90°	50	14	16	16	□ 3303005901 00	140,90
90°	63	20	22	18	□ 3303006901 00	197,00
90°	80	22	27	20	□ 3303008901 00	270,40
90°	100	32	32	22	□ 3303010901 00	356,60



>> 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.

HALF CIRCLE FORM CUTTERS, RELIEVED, DIN 856

Range of application:

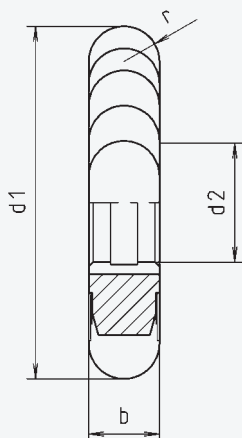
Convex cutters, relieved. Recommended for
milling semicircular slots in construction-,
cementation- and tempered steels up to a
tensile strength of 1.100 N/mm².

FRESE SEMICIRCOLARI CONVESSE, DIN 856

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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HSS

Sperrwinkel
Rake angle
Angolo spoglia
8°

**DIN
856**



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r_{h11} mm	$d1_{js16}$ mm	b mm	$d2_{H7}$ mm	Z	Code 3313 Art.-Nr.	€
1	50	2	16	14	0 3313001001 00	116,60
1,25	50	2,5	16	14	0 3313001201 00	117,50
1,6	50	3,2	16	14	0 3313001601 00	118,80
2	50	4	16	14	0 3313002001 00	120,10
2,5	63	5	22	12	0 3313002501 00	129,60
3	63	6	22	12	0 3313003001 00	143,80
3,15	63	6,3	22	12	0 3313003101 00	148,00
4	63	8	22	12	0 3313004001 00	171,90
5	63	10	22	12	0 3313005001 00	200,00
6	80	12	27	12	0 3313006001 00	211,90
6,3	80	12,6	27	12	0 3313006301 00	223,50
8	80	16	27	12	0 3313008001 00	289,30
10	100	20	32	10	0 3313010001 00	402,20
12	100	24	32	10	0 3313012001 00	477,30
12,5	100	25	32	10	0 3313012501 00	495,90
16	125	32	32	10	0 3313016001 00	712,50
20	125	40	32	10	0 3313020001 00	953,00



>> HALBRUND-PROFILFRÄSER, HINTERDREHT, DIN 855

HALF CIRCLE FORM CUTTERS, RELIEVED, DIN 855

FRESE SEMICIRCOLARI CONCAVE, 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.

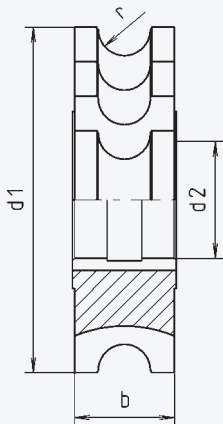
Range of application:

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

Impiego:

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

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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HSS

Spanwinkel
Rake angle
Angolo spoglia
8°

**DIN
855**



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r _{H11} mm	d ₁ _{js16} mm	b mm	d ₂ _{H7} mm	Z	Code 3323 Art.-Nr.	€
1	50	6	16	14	0 3323001001 00	155,80
1,25	50	6	16	14	0 3323001201 00	155,80
1,6	50	8	16	14	0 3323001601 00	159,00
2	50	9	16	14	0 3323002001 00	160,60
2,5	63	10	22	12	0 3323002501 00	172,50
3	63	12	22	12	0 3323003001 00	182,90
4	63	16	22	12	0 3323004001 00	203,40
5	63	20	22	12	0 3323005001 00	223,80
6	80	24	27	12	0 3323006001 00	278,40
6,3	80	24	27	12	0 3323006301 00	278,40
8	80	32	27	12	0 3323008001 00	361,70
10	100	36	32	12	0 3323010001 00	465,00
12	100	40	32	12	0 3323012001 00	537,20
12,5	100	40	32	12	0 3323012501 00	537,20
16	125	50	32	10	0 3323016001 00	823,90
20	125	60	32	10	0 3323020001 00	1.066,00



>> ZAHNFORMFRÄSER, HINTERDREHT, EINGRIFFSWINKEL 20°

Einsatzbereich:

Zum Fräsen von Stirnräder nach Modul.

INVOLUTE GEAR CUTTERS, RELIEVED, PRESSURE ANGLE 20°

Range of application:

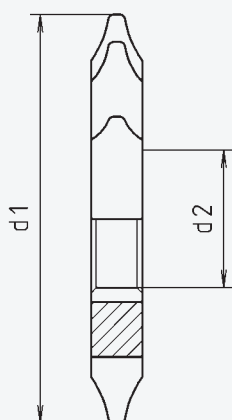
For milling spur gears by module.

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.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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HSS

BPII
DIN 3972

Spanwinkel
Rake angle
Angolo spoglia
10°



			Nr. 1: 12-13 Zähne teeth denti		Nr. 2: 14-16 Zähne teeth denti	
Modul	d1 _{js16} mm	d2 _{H7} mm	Code 3353 Art.-Nr.	€	Code 3353 Art.-Nr.	€
0,5	40	16	0 3353001101 00	85,65	0 3353001201 00	85,65
1	50	16	0 3353003101 00	98,89	0 3353003201 00	98,89
1,5	63	22	0 3353005101 00	118,70	0 3353005201 00	118,70
2	63	22	0 3353007101 00	138,40	0 3353007201 00	138,40
2,5	63	22	0 3353009101 00	158,20	0 3353009201 00	158,20
3	70	27	0 3353011101 00	184,60	0 3353011201 00	184,60
3,5	80	27	0 3353013101 00	204,40	0 3353013201 00	204,40
4	80	27	0 3353015101 00	237,40	0 3353015201 00	237,40
4,5	90	32	0 3353017101 00	257,10	0 3353017201 00	257,10
5	90	32	0 3353019101 00	296,60	0 3353019201 00	296,60

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>> ZAHNFORMFRÄSER, HINTERDREHT, EINGRIFFSWINKEL 20°

INVOLUTE GEAR CUTTERS, RELIEVED, PRESSURE ANGLE 20°

FRESE A MODULO, PER TAGLIO INGRANAGGI PER CATENE A RULLI, ANGOLO DI PRESSIONE 20°

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			Nr. 3: 17–20 Zähne teeth denti		Nr. 4: 21–25 Zähne teeth denti	
Modul	d ₁ _{js16} mm	d ₂ _{H7} mm	Code 3353 Art.-Nr.	€	Code 3353 Art.-Nr.	€
0,5	40	16	□ 3353001301 00	85,65	□ 3353001401 00	85,65
1	50	16	□ 3353003301 00	98,89	□ 3353003401 00	98,89
1,5	63	22	□ 3353005301 00	118,70	□ 3353005401 00	118,70
2	63	22	□ 3353007301 00	138,40	□ 3353007401 00	138,40
2,5	63	22	□ 3353009301 00	158,20	□ 3353009401 00	158,20
3	70	27	□ 3353011301 00	184,60	□ 3353011401 00	184,60
3,5	80	27	□ 3353013301 00	204,40	□ 3353013401 00	204,40
4	80	27	□ 3353015301 00	237,40	□ 3353015401 00	237,40
4,5	90	32	□ 3353017301 00	257,10	□ 3353017401 00	257,10
5	90	32	□ 3353019301 00	296,60	□ 3353019401 00	296,60

			Nr. 5: 26–34 Zähne teeth denti		Nr. 6: 35–54 Zähne teeth denti	
Modul	d ₁ _{js16} mm	d ₂ _{H7} mm	Code 3353 Art.-Nr.	€	Code 3353 Art.-Nr.	€
0,5	40	16	□ 3353001501 00	85,65	□ 3353001601 00	85,65
1	50	16	□ 3353003501 00	98,89	□ 3353003601 00	98,89
1,5	63	22	□ 3353005501 00	118,70	□ 3353005601 00	118,70
2	63	22	□ 3353007501 00	138,40	□ 3353007601 00	138,40
2,5	63	22	□ 3353009501 00	158,20	□ 3353009601 00	158,20
3	70	27	□ 3353011501 00	184,60	□ 3353011601 00	184,60
3,5	80	27	□ 3353013501 00	204,40	□ 3353013601 00	204,40
4	80	27	□ 3353015501 00	237,40	□ 3353015601 00	237,40
4,5	90	32	□ 3353017501 00	257,10	□ 3353017601 00	257,10
5	90	32	□ 3353019501 00	296,60	□ 3353019601 00	296,60

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>> **ZAHNFORMFRÄSER,
HINTERDREHT,
EINGRIFFSWINKEL 20°**

**INVOLUTE GEAR CUTTERS,
RELIEVED,
PRESSURE ANGLE 20°**

**FRESE A MODULO, PER
TAGLIO INGRANAGGI PER
CATENE A RULLI, ANGOLO
DI PRESSIONE 20°**

Fortsetzung von Seite IX/83 | Continued from
page IX/83 | Segue da pagina IX/83

			Nr. 7: 55–134 Zähne teeth denti		Nr. 8: 135–∞ Zähne teeth denti	
Modul	d1 _{f516} mm	d2 _{H7} mm	Code 3353 Art.-Nr.	€	Code 3353 Art.-Nr.	€
0,5	40	16	0 3353001701 00	85,65	0 3353001801 00	85,65
1	50	16	0 3353003701 00	98,89	0 3353003801 00	98,89
1,5	63	22	0 3353005701 00	118,70	0 3353005801 00	118,70
2	63	22	0 3353007701 00	138,40	0 3353007801 00	138,40
2,5	63	22	0 3353009701 00	158,20	0 3353009801 00	158,20
3	70	27	0 3353011701 00	184,60	0 3353011801 00	184,60
3,5	80	27	0 3353013701 00	204,40	0 3353013801 00	204,40
4	80	27	0 3353015701 00	237,40	0 3353015801 00	237,40
4,5	90	32	0 3353017701 00	257,10	0 3353017801 00	257,10
5	90	32	0 3353019701 00	296,60	0 3353019801 00	296,60



>> FORMFRÄSER FÜR KEILWELLENPROFILE, HINTERDREHT, DIN 9611, FORM 1

Einsatzbereich:

Zum Fräsen von Zapfwellen für den Geräteantrieb am Schlepperheck, Zapfwellen mit geraden Flanken.

SPLINE CUTTERS, RELIEVED, DIN 9611, FORM 1

Range of application:

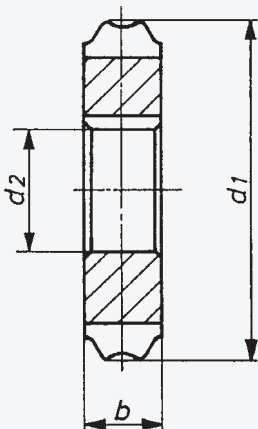
Suitable for milling special agricultural devices.

FRESE A DISCO PER ALBERI SCANALATI, SPOGLIATE, DIN 9611, FORMA 1

Impiego:

Fresatura generale. Adatte per lavorazione di perni per propulsori di trattori; perni a fianchi dritti.

 < 400 N/mm ²	 < 850 N/mm ²	 < 1.100 N/mm ²	 < 1.300 N/mm ²	 > 45 HRC	INOX < 850 N/mm ²	INOX > 850 N/mm ²	GRAUGUSS CAST IRON GHISA GRIGIA	Ti	Cu, Ms	Al	
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**HSS-
ECO**

Spanwinkel
Rake angle
Angolo spoglia
10°

**DIN
9611**



blank | bright | lucida

d1 _{js16} mm	d2 _{H7} mm	b mm	Code 3414	€
63	22	14	Art.-Nr.	
			□ 3414006301 □	231,60

