Eco-cut

Universal end mills for milling of steels, stainless steels and hardened steels up to 50 HRc

Universal-Schaftfräser für Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

77 - 96

								
Tool code		**E 235**	**E 435**	**E 345**	**ELS 435**	**E 335 RC**	**E 435 RC**	**B 235**
Number of teeth		Z=2	Z=4	Z=3	Z=4	Z=3	Z=4	Z=2
Page		81	81	82	83	84	84	85
		VHM K20-K40	VHM K20-K40	VHM K20-K40	VHM K20-K40	VHM K20-K40	VHM K20-K40	VHM K20-K40
		AlTiN Coating	AlTiN Coating	AlTiN Coating	AlTiN Coating	AlTiN Coating	AlTiN Coating	AlTiN Coating
		HRc 50	HRc 50	HRc 50	HRc 50	HRc 50	HRc 50	HRc 50
		35°	35°	45°	35°	35°	35°	35°
		90°	90°	90°	90°	90°	90°	
		GM	GM	GM	GM	GM	GM	GM
P	HRc < 24	○	○	○	○	○	○	○
P	HRc 24 - 35	◎	◎	◎	◎	◎	◎	◎
P	HRc > 35	◎	◎	◎	◎	◎	◎	◎
H	HRc 45 - 55	○	○	○	○	○	○	○
H	HRc 56 - 60							
H	HRc > 60							
M	Stainless steel	◎	◎	◎	◎	◎	◎	◎
K	Cast iron	○	○	○	○	○	○	○
N	Copper alloy							
S	Titanium alloy	○	○	○	○	○	○	○
S	High-temperature alloy							

								
Tool code		B 435	BLS 235	BLS 435	R 230	R 430	RLS 430	TE 235
Number of teeth		Z=4	Z=2	Z=4	Z=2	Z=4	Z=4	Z=2
Page		85	86	86	87	87	88	89
		VHM K20-K40	VHM K20-K40	VHM K20-K40	VHM K20-K40	VHM K20-K40	VHM K20-K40	VHM K20-K40
		AlTiN Coating	AlTiN Coating	AlTiN Coating	AlTiN Coating	AlTiN Coating	AlTiN Coating	AlTiN Coating
		HRc 50	HRc 50	HRc 50	HRc 50	HRc 50	HRc 50	HRc 50
		35°	35°	35°	30°	30°	30°	35°
					R	R	R	
		GM	GM	GM	GM	GM	GM	GM
P	HRc < 24	○	○	○	○	○	○	○
P	HRc 24 - 35	◎	◎	◎	◎	◎	◎	◎
P	HRc > 35	◎	◎	◎	◎	◎	◎	◎
H	HRc 45 - 55	○	○	○	○	○	○	○
H	HRc 56 - 60							
H	HRc > 60							
M	Stainless steel	◎	◎	◎	◎	◎	◎	◎
K	Cast iron	○	○	○	○	○	○	○
N	Copper alloy							
S	Titanium alloy	○	○	○	○	○	○	○
S	High-temperature alloy							

								
Tool code		**NSD 2090**	**NSD 2120**					
Number of teeth		Z=2	Z=2					
Page		91	92					
		VHM K20-K40	VHM K20-K40					
		AlTiN Coating	AlTiN Coating					
		HRc 50	HRc 50					
		20°	20°					
		90°	120°					
		GM	GM					
P	HRc < 24	○	○					
P	HRc 24 - 35	◎	◎					
P	HRc > 35	◎	◎					
H	HRc 45 - 55	○	○					
H	HRc 56 - 60							
H	HRc > 60							
M	Stainless steel	◎	◎					
K	Cast iron	○	○					
N	Copper alloy							
S	Titanium alloy	○	○					
S	High-temperature alloy							

VHM K20-K40	35°	GM
AlTiN Coating	90°	
HRc 50		

Universal end mills

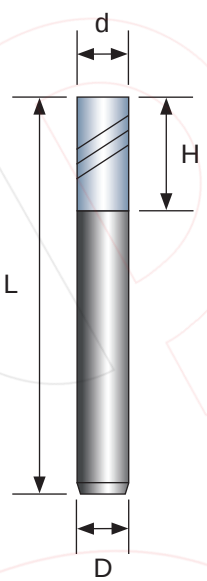
For general application milling of steels, stainless steels and hardened steels up to 50 HRc

Universal Schaftfräser

Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

P	HRc < 24	○
	HRc 24 - 35	◎
	HRc > 35	◎
H	HRc 45 - 55	○
	HRc 56 - 60	
	HRc > 60	
M	Stainless steel	◎
K	Cast iron	○
N	Copper alloy	
S	Titanium alloy	○
	High-temperature alloy	

Cutting data, P93 - P94



Tolerance / Toleranz

Range	Diameter
1 ≤ d < 8	0 / -0.02
8 ≤ d < 18	0 / -0.03
18 ≤ d	0 / -0.04

Example: Order code E 235 010-03004

d-Code	d x H x D	L	E 235 Z=2	E 435 Z=4
010-03004	1.0 x 3.0 x C 4	50	●	◇
015-04004	1.5 x 4.0 x C 4	50	●	◇
020-06004	2.0 x 6.0 x C 4	50	●	●
025-07004	2.5 x 7.0 x C 4	50	●	◇
030-08003	3.0 x 8.0 x C 3	50	◇	◇
030-08004	3.0 x 8.0 x C 4	50	●	●
030-08006	3.0 x 8.0 x C 6	50	◇	◇
035-10004	3.5 x 10.0 x C 4	50	◇	◇
040-11004	4.0 x 11.0 x C 4	50	●	●
040-11006	4.0 x 11.0 x C 6	50	◇	◇
050-13006	5.0 x 13.0 x C 6	50	●	●
060-15006	6.0 x 15.0 x C 6	50	●	●
080-20008	8.0 x 20.0 x C 8	60	●	●
100-25010	10.0 x 25.0 x C10	75	●	●
120-30012	12.0 x 30.0 x C12	75	●	●
140-35016	14.0 x 35.0 x C16	100	◇	◇
160-40016	16.0 x 40.0 x C16	100	◇	●
200-40020	20.0 x 40.0 x C20	100	◇	●

Long cut length / Lange schneidkantenlänge

030-15004	3.0 x 15.0 x C 4	75	◇	◇
040-20004	4.0 x 20.0 x C 4	75	◇	◇
060-25006	6.0 x 25.0 x C 6	75	◇	◇
080-30008	8.0 x 30.0 x C 8	75	◇	◇
100-40010	10.0 x 40.0 x C10	100	◇	◇
120-45012	12.0 x 45.0 x C12	100	◇	◇

VHM K20-K40	45°	
AlTiN Coating	90°	
HRc 50		

Universal end mills

For general application milling of steels, stainless steels and hardened steels up to 50 HRc

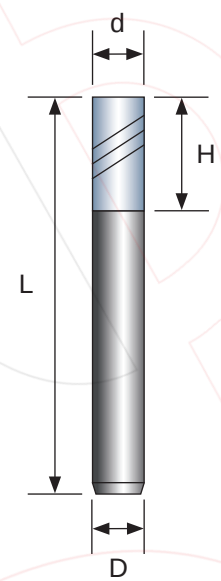
Universal Schaftfräser

Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

Example: Order code E 345 020-06004

				E 345	
		d-Code	d x H x D	L	Z=3
P	HRc < 24	020-06004	2.0 x 6.0 x C 4	50	◇	
P	HRc 24 - 35	030-08004	3.0 x 8.0 x C 4	50	●	
		030-08006	3.0 x 8.0 x C 6	50	◇	
P	HRc > 35	040-11004	4.0 x 11.0 x C 4	50	●	
		040-11006	4.0 x 11.0 x C 6	50	◇	
H	HRc 45 - 55	050-13006	5.0 x 13.0 x C 6	50	◇	
H	HRc 56 - 60	060-15006	6.0 x 15.0 x C 6	50	●	
H	HRc > 60	080-20008	8.0 x 20.0 x C 8	60	●	
M	Stainless steel	100-25010	10.0 x 25.0 x C10	75	●	
K	Cast iron	120-30012	12.0 x 30.0 x C12	75	●	
N	Copper alloy	160-40016	16.0 x 40.0 x C16	100	◇	
S	Titanium alloy	200-40020	20.0 x 40.0 x C20	100	◇	
S	High-temperature alloy					

Cutting data, P93 - P94



Tolerance / Toleranz

Range	Diameter
1 ≤ d < 8	0 / -0.02
8 ≤ d < 18	0 / -0.03
18 ≤ d	0 / -0.04

● Stock item, subject to confirmation ◇ On request

VHM K20-K40	35°	
AlTiN Coating	90°	
HRc 50		

Universal end mills, long shank

For general application milling of steels, stainless steels and hardened steels up to 50 HRc

Universal Schaftfräser, langer schaft

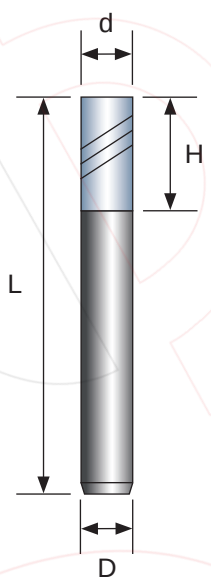
Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

P	HRc < 24	○
	HRc 24 - 35	◎
	HRc > 35	◎
H	HRc 45 - 55	○
	HRc 56 - 60	
	HRc > 60	
M	Stainless steel	◎
K	Cast iron	○
N	Copper alloy	
S	Titanium alloy	○
	High-temperature alloy	

Example: Order code ELS 435 040-11104

d-Code	d x L x D	H	ELS 435 Z=4	
040-11104	4.0 x L 75 x C 4	11.0	◇	
040-11306	4.0 x L100 x C 6	11.0	◇	
050-13106	5.0 x L 75 x C 6	13.0	◇	
050-13306	5.0 x L100 x C 6	13.0	◇	
060-15106	6.0 x L 75 x C 6	15.0	●	
060-15306	6.0 x L100 x C 6	15.0	●	
080-20108	8.0 x L 75 x C 8	20.0	●	
080-20308	8.0 x L100 x C 8	20.0	●	
080-20508	8.0 x L150 x C 8	20.0	◇	
100-25310	10.0 x L100 x C10	25.0	●	
100-25510	10.0 x L150 x C10	25.0	◇	
120-30312	12.0 x L100 x C12	30.0	●	
120-30512	12.0 x L150 x C12	30.0	◇	

Cutting data, P94



Tolerance / Toleranz

Range	Diameter
1 ≤ d < 8	0 / -0.02
8 ≤ d < 18	0 / -0.03

VHM K20-K40	35°	
AlTiN Coating	90°	
HRc 50		

Roughing end mills

For general application milling of steels, stainless steels and hardened steels up to 50 HRc

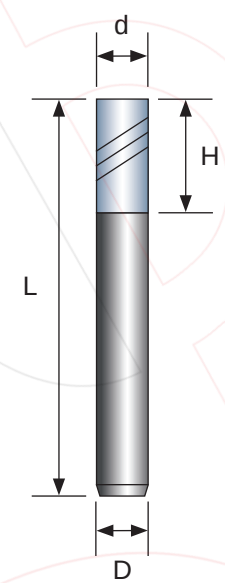
Schruppfräser

Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

P	HRc < 24	○
	HRc 24 - 35	◎
	HRc > 35	◎
H	HRc 45 - 55	○
	HRc 56 - 60	
	HRc > 60	
M	Stainless steel	◎
K	Cast iron	○
N	Copper alloy	
S	Titanium alloy	○
	High-temperature alloy	

Example: Order code E 335 RC 060-15006

d-Code	d x H x D	L	E 335 RC Z=3	E 435 RC Z=4
060-15006	6.0 x 15.0 x C 6	50	◇	●
080-20008	8.0 x 20.0 x C 8	60	◇	●
100-25010	10.0 x 25.0 x C10	75	◇	●
120-30012	12.0 x 30.0 x C12	75	◇	●
160-40016	16.0 x 40.0 x C16	100	◇	●
200-45020	20.0 x 45.0 x C20	100	◇	●



Tolerance / Toleranz

Range	Diameter
1 ≤ d < 8	0 / -0.02
8 ≤ d < 18	0 / -0.03
18 ≤ d	0 / -0.04

● Stock item, subject to confirmation ◇ On request

VHM K20-K40	35°	
AlTiN Coating		
HRc 50		

Ball nose end mills

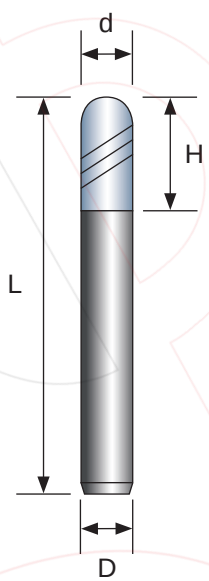
For general application milling of steels, stainless steels and hardened steels up to 50 HRc

Kugelkopffräser

Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

P	HRc < 24	○
	HRc 24 - 35	◎
	HRc > 35	◎
H	HRc 45 - 55	○
	HRc 56 - 60	
	HRc > 60	
M	Stainless steel	◎
K	Cast iron	○
N	Copper alloy	
S	Titanium alloy	○
	High-temperature alloy	

Cutting data, P95



Tolerance / Toleranz

Range	Diameter
1 ≤ d < 8	0 / -0.02
8 ≤ d < 18	0 / -0.03
18 ≤ d	0 / -0.04

Example: Order code B 235 010-02004

d-Code	d x H x D	L	B 235 Z=2	B 435 Z=4
010-02004	R0.5 x 2.0 x C 4	50	●	
015-03004	R0.75 x 3.0 x C 4	50	●	
020-04004	R1.0 x 4.0 x C 4	50	●	
030-06003	R1.5 x 6.0 x C 3	50	◇	
030-06004	R1.5 x 6.0 x C 4	50	●	◇
030-06006	R1.5 x 6.0 x C 6	50	◇	◇
040-08004	R2.0 x 8.0 x C 4	50	●	◇
040-08006	R2.0 x 8.0 x C 6	50	◇	◇
050-10006	R2.5 x 10.0 x C 6	50	●	◇
060-12006	R3.0 x 12.0 x C 6	50	●	◇
080-16008	R4.0 x 16.0 x C 8	60	●	◇
100-20010	R5.0 x 20.0 x C10	75	●	◇
120-24012	R6.0 x 24.0 x C12	75	●	◇
160-30016	R8.0 x 30.0 x C16	100	◇	◇
200-30020	R10.0 x 30.0 x C20	100	◇	◇

VHM K20-K40	35°	
AlTiN Coating		
HRc 50		

Ball nose end mills, long shank

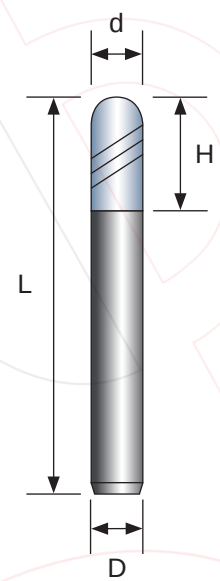
For general application milling of steels, stainless steels and hardened steels up to 50 HRc

Kugelkopffräser, langer schaft

Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

Example: Order code BLS 235 010-02104

			d-Code	d x L x D	H	BLS 235 Z=2	BLS 435 Z=4
P	HRc < 24	○	010-02104	R0.5 x L 75 x C 4	2.0	◇	
	HRc 24 - 35	◎	015-03104	R0.75 x L 75 x C 4	3.0	◇	
	HRc > 35	◎	020-04104	R1.0 x L 75 x C 4	4.0	●	
H	HRc 45 - 55	○	020-04106	R1.0 x L 75 x C 6	4.0	◇	
	HRc 56 - 60		020-04306	R1.0 x L100 x C 6	4.0	●	
	HRc > 60		030-06104	R1.5 x L 75 x C 4	6.0	●	
M	Stainless steel	◎	030-06106	R1.5 x L 75 x C 6	6.0	◇	
K	Cast iron	○	030-06306	R1.5 x L100 x C 6	6.0	●	
N	Copper alloy		040-08104	R2.0 x L 75 x C 4	8.0	●	
S	Titanium alloy	○	040-08106	R2.0 x L 75 x C 6	8.0	◇	
	High-temperature alloy		040-08306	R2.0 x L100 x C 6	8.0	●	
			050-10106	R2.5 x L 75 x C 6	10.0	◇	
			050-10306	R2.5 x L100 x C 6	10.0	●	
			060-12106	R3.0 x L 75 x C 6	12.0	●	◇
			060-12306	R3.0 x L100 x C 6	12.0	●	◇
			060-12506	R3.0 x L150 x C 6	12.0	◇	◇
			080-16108	R4.0 x L 75 x C 8	16.0	◇	◇
			080-16308	R4.0 x L100 x C 8	16.0	●	◇
			080-16508	R4.0 x L150 x C 8	16.0	◇	◇
			100-20310	R5.0 x L100 x C10	20.0	●	◇
			100-20510	R5.0 x L150 x C10	20.0	◇	◇
			120-24312	R6.0 x L100 x C12	24.0	●	◇
			120-24512	R6.0 x L150 x C12	24.0	◇	◇
			160-30516	R8.0 x L150 x C16	30.0	◇	◇



Tolerance / Toleranz

Range	Diameter
1 ≤ d < 8	0 / -0.02
8 ≤ d < 18	0 / -0.03
18 ≤ d	0 / -0.04

● Stock item, subject to confirmation ◇ On request

VHM K20-K40	30°	
AlTiN Coating	R	
HRc 50		

Corner radius end mills

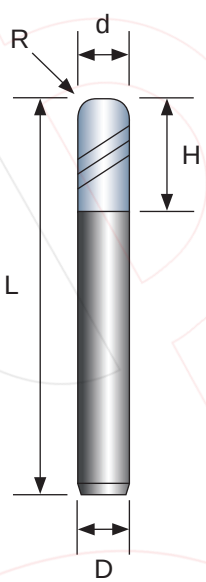
For general application milling of steels, stainless steels and hardened steels up to 50 HRc

Eckradiusfräser

Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

P	HRc < 24	○
	HRc 24 - 35	◎
	HRc > 35	◎
H	HRc 45 - 55	○
	HRc 56 - 60	
	HRc > 60	
M	Stainless steel	◎
K	Cast iron	○
N	Copper alloy	
S	Titanium alloy	○
	High-temperature alloy	

Cutting data, P95



Tolerance / Toleranz

Range	Diameter
1 ≤ d < 8	0 / -0.02
8 ≤ d < 18	0 / -0.03

Example: Order code R 230 040-05004

d-Code	d x R x H x D	L	R 230 Z=2	R 430 Z=4
040-05004	4.0 x R0.5 x 8.0 x C 4	50	●	●
040-10004	4.0 x R1.0 x 8.0 x C 4	50	●	●
050-05006	5.0 x R0.5 x 10.0 x C 6	50	◇	◇
050-10006	5.0 x R1.0 x 10.0 x C 6	50	◇	◇
060-02006	6.0 x R0.2 x 12.0 x C 6	50	◇	◇
060-05006	6.0 x R0.5 x 12.0 x C 6	50	●	●
060-10006	6.0 x R1.0 x 12.0 x C 6	50	●	●
060-15006	6.0 x R1.5 x 12.0 x C 6	50	◇	◇
060-20006	6.0 x R2.0 x 12.0 x C 6	50	◇	◇
080-05008	8.0 x R0.5 x 16.0 x C 8	60	●	●
080-10008	8.0 x R1.0 x 16.0 x C 8	60	●	●
080-15008	8.0 x R1.5 x 16.0 x C 8	60	◇	◇
080-20008	8.0 x R2.0 x 16.0 x C 8	60	◇	◇
100-05010	10.0 x R0.5 x 20.0 x C10	75	◇	◇
100-10010	10.0 x R1.0 x 20.0 x C10	75	●	●
100-15010	10.0 x R1.5 x 20.0 x C10	75	◇	◇
100-20010	10.0 x R2.0 x 20.0 x C10	75	◇	◇
120-05012	12.0 x R0.5 x 24.0 x C12	75	◇	◇
120-10012	12.0 x R1.0 x 24.0 x C12	75	●	●
120-20012	12.0 x R2.0 x 24.0 x C12	75	◇	◇
120-30012	12.0 x R3.0 x 24.0 x C12	75	◇	◇

VHM K20-K40	30°	
AlTiN Coating	R	
HRc 50		

Corner radius end mills, long shank

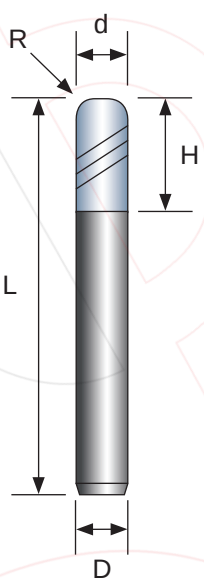
For general application milling of steels, stainless steels and hardened steels up to 50 HRc

Eckradiusfräser, langer schaft

Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

P	HRc < 24	○
	HRc 24 - 35	◎
	HRc > 35	◎
H	HRc 45 - 55	○
	HRc 56 - 60	
	HRc > 60	
M	Stainless steel	◎
K	Cast iron	○
N	Copper alloy	
S	Titanium alloy	○
	High-temperature alloy	

Cutting data, P95



Tolerance / Toleranz

Range	Diameter
1 ≤ d < 8	0 / -0.02
8 ≤ d < 18	0 / -0.03

Example: Order code RLS 430 040-02104

d-Code	d x R x L x D	H	RLS 430 Z=4	
040-02104	4.0 x R0.2 x L 75 x C 4	8.0	◇	
040-05104	4.0 x R0.5 x L 75 x C 4	8.0	◇	
040-10104	4.0 x R1.0 x L 75 x C 4	8.0	◇	
060-05106	6.0 x R0.5 x L 75 x C 6	12.0	●	
060-05306	6.0 x R0.5 x L100 x C 6	12.0	●	
060-10106	6.0 x R1.0 x L 75 x C 6	12.0	●	
060-10306	6.0 x R1.0 x L100 x C 6	12.0	●	
080-05108	8.0 x R0.5 x L 75 x C 8	16.0	◇	
080-05308	8.0 x R0.5 x L100 x C 8	16.0	●	
080-10108	8.0 x R1.0 x L 75 x C 8	16.0	◇	
080-10308	8.0 x R1.0 x L100 x C 8	16.0	●	
100-05310	10.0 x R0.5 x L100 x C10	20.0	◇	
100-10310	10.0 x R1.0 x L100 x C10	20.0	●	
100-15310	10.0 x R1.5 x L100 x C10	20.0	◇	
100-20310	10.0 x R2.0 x L100 x C10	20.0	◇	
120-05312	12.0 x R0.5 x L100 x C12	24.0	◇	
120-10312	12.0 x R1.0 x L100 x C12	24.0	●	
120-20312	12.0 x R2.0 x L100 x C12	24.0	◇	
120-30312	12.0 x R3.0 x L100 x C12	24.0	◇	

● Stock item, subject to confirmation ◇ On request

VHM K20-K40	35°	
AlTiN Coating		
HRc 50		

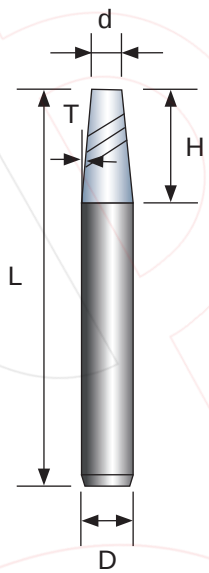
Tapered end mills

For general application milling of steels, stainless steels and hardened steels up to 50 HRc

Konisfräser

Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

P	HRc < 24	○
	HRc 24 - 35	◎
	HRc > 35	◎
H	HRc 45 - 55	○
	HRc 56 - 60	
	HRc > 60	
M	Stainless steel	◎
K	Cast iron	○
N	Copper alloy	
S	Titanium alloy	○
	High-temperature alloy	



Tolerance / Toleranz

Range	Diameter
1 ≤ d < 8	0 / -0.02

Example: Order code TE 235 010-00504

d-Code	d x T x D	H L	TE 235 Z=2	
010-00504	1.0 x T 0.5 x C 4	4.0 50	◇	
010-01004	1.0 x T 1.0 x C 4	4.0 50	◇	
010-01504	1.0 x T 1.5 x C 4	4.0 50	◇	
010-02004	1.0 x T 2.0 x C 4	4.0 50	◇	
010-02504	1.0 x T 2.5 x C 4	4.0 50	◇	
010-03004	1.0 x T 3.0 x C 4	4.0 50	◇	
010-05004	1.0 x T 5.0 x C 4	4.0 50	◇	
010-07004	1.0 x T 7.0 x C 4	4.0 50	◇	
010-10004	1.0 x T 10.0 x C 4	4.0 50	◇	
015-00504	1.5 x T 0.5 x C 4	5.0 50	◇	
015-01004	1.5 x T 1.0 x C 4	5.0 50	◇	
015-01504	1.5 x T 1.5 x C 4	5.0 50	◇	
015-02004	1.5 x T 2.0 x C 4	5.0 50	◇	
015-02504	1.5 x T 2.5 x C 4	5.0 50	◇	
015-03004	1.5 x T 3.0 x C 4	5.0 50	◇	
015-05004	1.5 x T 5.0 x C 4	5.0 50	◇	
015-07004	1.5 x T 7.0 x C 4	5.0 50	◇	
015-10004	1.5 x T 10.0 x C 4	5.0 50	◇	
020-00504	2.0 x T 0.5 x C 4	6.0 50	◇	
020-01004	2.0 x T 1.0 x C 4	6.0 50	◇	
020-01504	2.0 x T 1.5 x C 4	6.0 50	◇	
020-02004	2.0 x T 2.0 x C 4	6.0 50	◇	
020-02504	2.0 x T 2.5 x C 4	6.0 50	◇	
020-03004	2.0 x T 3.0 x C 4	6.0 50	◇	
020-05004	2.0 x T 5.0 x C 4	6.0 50	◇	
020-07004	2.0 x T 7.0 x C 4	6.0 50	◇	
020-10006	2.0 x T 10.0 x C 6	6.0 50	◇	
025-00504	2.5 x T 0.5 x C 4	8.0 50	◇	
025-01004	2.5 x T 1.0 x C 4	8.0 50	◇	
025-01504	2.5 x T 1.5 x C 4	8.0 50	◇	
025-02004	2.5 x T 2.0 x C 4	8.0 50	◇	
025-02504	2.5 x T 2.5 x C 4	8.0 50	◇	
025-03004	2.5 x T 3.0 x C 4	8.0 50	◇	
025-05004	2.5 x T 5.0 x C 4	8.0 50	◇	
025-07006	2.5 x T 7.0 x C 6	8.0 50	◇	
025-10006	2.5 x T 10.0 x C 6	8.0 50	◇	

VHM K20-K40	35°	
AlTiN Coating		
HRc 50		

Tapered end mills

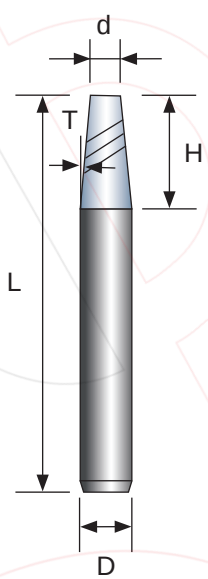
For general application milling of steels, stainless steels and hardened steels up to 50 HRc

Konisfräser

Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

Example: Order code TE 235 030-00504

P	HRc < 24	○	
	HRc 24 - 35	◎	
	HRc > 35	◎	
H	HRc 45 - 55	○	
	HRc 56 - 60		
	HRc > 60		
M	Stainless steel	◎	
K	Cast iron	○	
N	Copper alloy		
S	Titanium alloy	○	
	High-temperature alloy		



Tolerance / Toleranz

Range	Diameter
1 ≤ d < 8	0 / -0.02

d-Code	d x T x D	H	L	TE 235 Z=2	
030-00504	3.0 x T 0.5 x C 4	10.0	50	◇	
030-01004	3.0 x T 1.0 x C 4	10.0	50	◇	
030-01504	3.0 x T 1.5 x C 4	10.0	50	◇	
030-02004	3.0 x T 2.0 x C 4	10.0	50	◇	
030-02504	3.0 x T 2.5 x C 4	10.0	50	◇	
030-03006	3.0 x T 3.0 x C 6	10.0	50	◇	
030-05006	3.0 x T 5.0 x C 6	10.0	50	◇	
030-07006	3.0 x T 7.0 x C 6	10.0	50	◇	
030-10008	3.0 x T 10.0 x C 8	10.0	60	◇	
040-00506	4.0 x T 0.5 x C 6	15.0	50	◇	
040-01006	4.0 x T 1.0 x C 6	15.0	50	◇	
040-01506	4.0 x T 1.5 x C 6	15.0	50	◇	
040-02006	4.0 x T 2.0 x C 6	15.0	50	◇	
040-02506	4.0 x T 2.5 x C 6	15.0	50	◇	
040-03006	4.0 x T 3.0 x C 6	15.0	50	◇	
040-05008	4.0 x T 5.0 x C 8	15.0	60	◇	
040-07008	4.0 x T 7.0 x C 8	15.0	60	◇	
040-10010	4.0 x T 10.0 x C10	15.0	75	◇	
050-00506	5.0 x T 0.5 x C 6	20.0	50	◇	
050-01006	5.0 x T 1.0 x C 6	20.0	50	◇	
050-01506	5.0 x T 1.5 x C 6	20.0	50	◇	
050-02008	5.0 x T 2.0 x C 8	20.0	60	◇	
050-02508	5.0 x T 2.5 x C 8	20.0	60	◇	
050-03008	5.0 x T 3.0 x C 8	20.0	60	◇	
050-05010	5.0 x T 5.0 x C10	20.0	75	◇	
050-07010	5.0 x T 7.0 x C10	20.0	75	◇	
050-10012	5.0 x T 10.0 x C12	20.0	75	◇	
060-00508	6.0 x T 0.5 x C 8	20.0	60	◇	
060-01008	6.0 x T 1.0 x C 8	20.0	60	◇	
060-01508	6.0 x T 1.5 x C 8	20.0	60	◇	
060-02008	6.0 x T 2.0 x C 8	20.0	60	◇	
060-02508	6.0 x T 2.5 x C 8	20.0	60	◇	
060-03008	6.0 x T 3.0 x C 8	20.0	60	◇	
060-05010	6.0 x T 5.0 x C10	20.0	75	◇	

● Stock item, subject to confirmation ◇ On request

VHM K20-K40	20°	
AlTiN Coating	90°	
HRc 50		

Carbide NC spot drills / 90°

For general application milling of steels, stainless steels and hardened steels up to 50 HRc

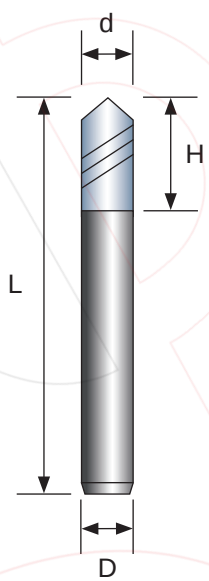
NC Anbohrer, 90°

Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

P	HRc < 24	○
	HRc 24 - 35	◎
	HRc > 35	◎
H	HRc 45 - 55	○
	HRc 56 - 60	
	HRc > 60	
M	Stainless steel	◎
K	Cast iron	○
N	Copper alloy	
S	Titanium alloy	○
	High-temperature alloy	

Example: Order code NSD 2090 020-04002

d-Code	d x H x D	L	NSD 2090 Z=2	
020-04002	2.0 x 4.0 x C 2	50	◇	
030-06003	3.0 x 6.0 x C 3	50	◇	
040-08004	4.0 x 8.0 x C 4	50	◇	
050-10005	5.0 x 10.0 x C 5	50	◇	
060-12006	6.0 x 12.0 x C 6	50	●	
080-16008	8.0 x 16.0 x C 8	60	●	
100-20010	10.0 x 20.0 x C10	75	●	
120-20012	12.0 x 20.0 x C12	75	●	
160-25016	16.0 x 25.0 x C16	100	◇	
200-25020	20.0 x 25.0 x C20	100	◇	



Tolerance / Toleranz

Range	Diameter
8 ≤ d < 18	0 / -0.03
18 ≤ d	0 / -0.04

Eco-cut

VHM K20-K40	20°	
AlTiN Coating	120°	
HRc 50		

Carbide NC spot drills / 120°

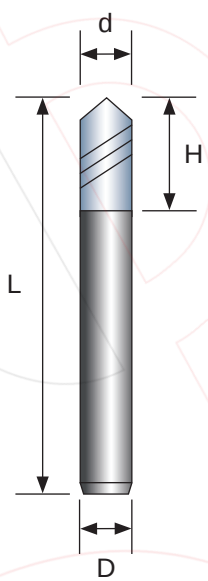
For general application milling of steels, stainless steels and hardened steels up to 50 HRc

NC Anbohrer, 120°

Für allgemeine Bearbeitung von Stählen, rostfreie Stählen und gehärteten Stählen bis 50 HRc

Example: Order code NSD 2120 020-04002

			d-Code	d x H x D	L	NSD 2120 Z=2	
P	HRc < 24	○	020-04002	2.0 x 4.0 x C 2	50	◇	
	HRc 24 - 35	◎	030-06003	3.0 x 6.0 x C 3	50	◇	
	HRc > 35	◎	040-08004	4.0 x 8.0 x C 4	50	◇	
H	HRc 45 - 55	○	050-10005	5.0 x 10.0 x C 5	50	◇	
	HRc 56 - 60		060-12006	6.0 x 12.0 x C 6	50	●	
	HRc > 60		080-16008	8.0 x 16.0 x C 8	60	●	
M	Stainless steel	◎	100-20010	10.0 x 20.0 x C10	75	●	
K	Cast iron	○	120-20012	12.0 x 20.0 x C12	75	●	
N	Copper alloy		160-25016	16.0 x 25.0 x C16	100	◇	
S	Titanium alloy	○	200-25020	20.0 x 25.0 x C20	100	◇	
	High-temperature alloy						



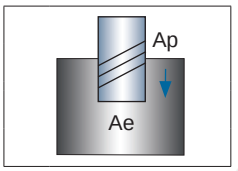
Tolerance / Toleranz

Range	Diameter
8 ≤ d < 18	0 / -0.03
18 ≤ d	0 / -0.04

Eco-cut

● Stock item, subject to confirmation ◇ On request

Eco-cut — Slotting / Roughing

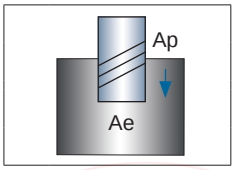


Ap = 0.2 x d [mm]
Ae = 1 x d [mm]

E 235, E 345

		Vc [m / min]	fz feed [mm / tooth] by diameter								
			2	3	4	5	6	8	10	12	16
P	HRc < 24	90 - 120	0.007	0.009	0.013	0.016	0.021	0.024	0.032	0.038	0.046
P	HRc 24 - 35	75 - 100	0.006	0.008	0.012	0.015	0.019	0.022	0.030	0.035	0.042
P	HRc > 35	60 - 75	0.006	0.008	0.011	0.014	0.017	0.021	0.027	0.032	0.038
H	HRc < 52	40 - 50	0.005	0.007	0.010	0.012	0.016	0.019	0.025	0.030	0.036
M	Stainless steels	45 - 65	0.005	0.007	0.010	0.012	0.016	0.019	0.025	0.030	0.036
K	Cast iron	90 - 120	0.007	0.009	0.013	0.016	0.021	0.024	0.032	0.038	0.046
S	Titanium alloy	30 - 50	0.005	0.007	0.010	0.012	0.016	0.019	0.025	0.030	0.036

Eco-cut — Slotting / Pre-finishing

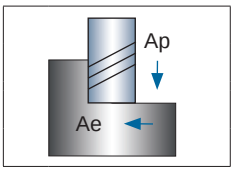


Ap = 0.1 x d [mm]
Ae = 1 x d [mm]

E 235, E 345

		Vc [m / min]	fz feed [mm / tooth] by diameter								
			2	3	4	5	6	8	10	12	16
P	HRc < 24	110 - 140	0.008	0.011	0.016	0.021	0.025	0.030	0.040	0.047	0.056
P	HRc 24 - 35	95 - 125	0.007	0.010	0.014	0.019	0.024	0.028	0.036	0.043	0.052
P	HRc > 35	70 - 95	0.006	0.009	0.013	0.017	0.021	0.025	0.033	0.039	0.047
H	HRc < 52	50 - 65	0.005	0.008	0.011	0.015	0.018	0.022	0.029	0.035	0.042
M	Stainless steels	45 - 65	0.006	0.009	0.013	0.017	0.020	0.024	0.031	0.037	0.045
K	Cast iron	100 - 135	0.008	0.011	0.016	0.021	0.025	0.030	0.040	0.047	0.056
S	Titanium alloy	30 - 50	0.006	0.009	0.013	0.017	0.020	0.024	0.031	0.037	0.045

Eco-cut — Side milling / Roughing

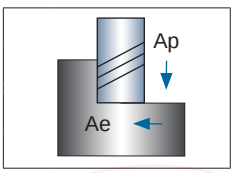


Ap = 1 x d [mm]
Ae = 0.2 x d [mm]

E 235, E 345, E435

		Vc [m / min]	fz feed [mm / tooth] by diameter								
			2	3	4	5	6	8	10	12	16
P	HRc < 24	105 - 135	0.008	0.011	0.015	0.020	0.024	0.029	0.038	0.046	0.055
P	HRc 24 - 35	90 - 115	0.007	0.010	0.014	0.018	0.023	0.027	0.035	0.042	0.050
P	HRc > 35	70 - 90	0.006	0.009	0.013	0.017	0.021	0.024	0.032	0.038	0.046
M	Stainless steels	50 - 70	0.005	0.008	0.012	0.016	0.020	0.023	0.030	0.036	0.043
K	Cast iron	115 - 150	0.008	0.011	0.015	0.020	0.024	0.029	0.038	0.046	0.055
N	Copper alloy	150 - 180	0.008	0.011	0.015	0.020	0.024	0.029	0.038	0.046	0.055
S	Titanium alloy	50 - 70	0.005	0.008	0.012	0.016	0.020	0.023	0.030	0.036	0.043

Eco-cut — Side milling / Pre-finishing



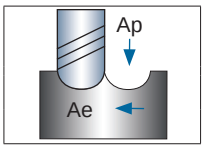
Ap = 1 x d [mm]
Ae = 0.1 x d [mm]

E 235, E 345, E 435, ELS 435 (#1)

		Vc [m / min]	fz feed [mm / tooth] by diameter								
			2	3	4	5	6	8	10	12	16
P	HRc < 24	120 - 160	0.011	0.014	0.019	0.025	0.030	0.036	0.047	0.056	0.068
P	HRc 24 - 35	105 - 135	0.010	0.012	0.017	0.023	0.028	0.033	0.043	0.052	0.062
P	HRc > 35	80 - 105	0.009	0.011	0.016	0.021	0.025	0.030	0.040	0.047	0.056
M	Stainless steels	60 - 80	0.008	0.011	0.015	0.020	0.024	0.029	0.037	0.045	0.054
K	Cast iron	135 - 170	0.010	0.014	0.019	0.025	0.030	0.036	0.047	0.056	0.068
N	Copper alloy	150 - 180	0.010	0.014	0.019	0.025	0.030	0.036	0.047	0.056	0.068
S	Titanium alloy	60 - 80	0.008	0.011	0.015	0.020	0.024	0.029	0.037	0.045	0.054

Notes	
	#1 For ELS 435, adjust feed [mm / tooth](fz) and cutting speed (Vc) 10% - 50% lower according to the ratio of overhang length / cutting diameter.

Eco-cut | **Contour line**

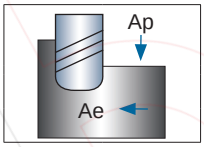


B 235

	P			H
	HRc < 24	HRc 24 - 35	HRc > 35	HRc < 52
Ap	0.06 x d	0.05 x d	0.05 x d	0.05 x d
Ae	0.18 x d	0.15 x d	0.15 x d	0.15 x d
Vc	65 - 135	55 - 110	50 - 90	40 - 65

R	P						H	
	HRc < 24		HRc 24 - 35		HRc > 35		HRc < 52	
[mm]	n [min^{-1}]	Vf [mm/min]	n [min^{-1}]	Vf [mm/min]	n [min^{-1}]	Vf [mm/min]	n [min^{-1}]	Vf [mm/min]
R0.5	21000	630	17800	510	14400	340	11500	240
R0.75	18000	940	15200	750	12200	500	9700	350
R1.0	15600	1060	13200	850	10600	560	8400	390
R1.5	12400	1280	10500	1030	8500	680	6700	470
R2.0	10700	1450	9000	1160	7200	770	5700	540
R2.5	8500	1400	7100	1100	5700	720	4500	500
R3.0	7100	1230	5900	970	4800	650	3800	450
R4.0	5300	930	4400	740	3600	500	2900	350
R5.0	4200	650	3500	520	2900	350	2300	240
R6.0	3500	560	2900	440	2400	310	1900	220

Eco-cut | **Contour line**



R 430, RLS 430 (#1)

	P			H
	HRc < 24	HRc 24 - 35	HRc > 35	HRc < 52
Ap [mm]	1 x d	1 x d	1 x d	1 x d
Ae [mm]	0.20 x d	0.20 x d	0.20 x d	0.10 x d
Vc [m / min]	105	90	70	50

d	R	P						H	
		HRc < 24		HRc 24 - 35		HRc > 35		HRc < 52	
[mm]	[mm]	n [min^{-1}]	Vf [mm/min]	n [min^{-1}]	Vf [mm/min]	n [min^{-1}]	Vf [mm/min]	n [min^{-1}]	Vf [mm/min]
4	0.2,0.5	8400	580	7200	460	5600	330	4000	200
5	0.5,1.0	6700	620	5700	470	4500	350	3200	210
6	0.5,1.0	5600	620	4800	510	3700	360	2700	210
8	0.5,1.0	4200	585	3600	450	2800	310	2000	185
10	0.5,1.0	3300	580	2900	440	2200	300	1600	180
12	0.5,1.0	2800	560	2400	430	1900	290	1300	170

Notes	
	#1 For RLS 430, adjust feed rate (Vf) and spindle speed (n) 10% - 50% lower according to the ratio of overhang length / cutting diameter.