ARNO®
WERKZEUGE

Solid carbide- / PM-HSS Tools:
High performance tools for milling and drilling

SOLID CARBIDE TOOLS

Overview solid carbide milling cutter

Overview solid carbide milling cutter / deburring cutter / solid carbide drills and powder metal drills

Overview solid carbide thread milling cutter

Design AFT

Overview deburring cutter

Design AE

Overview solid carbide drills and powder metal drills

Design SP

SOLID CARBIDE END-MILLS

Design

AF - for steel and cast materials

AFA - for aluminium and non-ferrous machining

AFD - for graphite and non-ferrous materials

AFE - for high speed machining of exotic materials (Titanium, Inconel) and stainless steels.

AFG - for steel and hardened steel up to 50 HRC

AFH - for hardened steel up to 70 HRC and high speed milling

AFJ - for stainless steel and exotic materials

AFR - for steel, tool steel, cast iron and pre-hardened steel to 40 HRC

AFV - with unequal pitch (35°–38°)

AFX - for pre-hardened steels up to 55 HRC, steel and cast iron

Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AF - for steel and cast materials						
AF50526-...	2	**End-mill**	mini	30°		**20**
AF52021-...	2	**Ball-nose end-mill**	mini	30°		**22**
AF60125-...	2	**End-mill**	**short**	30°		**24**
AF50120-...R...	2	**End-mill**	**short, with corner radius**	30°		**25**
AF50121-... / AF60121-...	2	**End-mill**	**long**	30°		**27**
AF50121-...R...	2	**End-mill**	**long, with corner radius**	30°		**29**
AF50122-...	2	**End-mill**	**extra long**	30°		**30**
AF60320-...	2	**Ball-nose end-mill**	**short**	30°		**31**
AF50321-...	2	**Ball-nose end-mill**	**long**	30°		**32**
AF60321-...	2	**Ball-nose end-mill**	**long**	30°		**33**
AF50322-...	2	**Ball-nose end-mill**	**extra long**	30°		**34**

Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AF50135-... / AF60135-...	3	End-mill	extra short	30°		35
AF61330-...	3	End-mill	short	30°		37
AF60131-...	3	End-mill	long	30°		38
AF60231-...	3	End-mill	long	45°		39
AF50140-...	4	End-mill	short	30°		40
AF50140-...R...	4	End-mill	short, with corner radius	30°		41
AF60140-...X...	4	End-mill	short	30°		43
AF50141-... / AF60141-...	4	End-mill	long	30°		44
AF50141-...R...	4	End-mill	long, with corner radius	30°		46
AF50142-...X... / AF60142-...X...	4	End-mill	extra long	30°		47
AF50340-...	4	Ball-nose end-mill	short	30°		49

Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AF502.0-...	4 - 6	**End-mill**	**short**	45°		**50**
AF50261-...	6	**End-mill**	**long**	45°		**51**
AF614.1-...	3 - 5	**Roughing end-mill**	**long**	30°		**52**
AFA - for aluminium and non-ferrous machining						
AFA50116-...	1	**End-mill**	**mid-length**	30°		**62**
AFA50220-...	2	**End-mill**	**short**	45°		**63**
AFA51820-...	2	**Ball-nose end-mill**	**short**	50°		**64**
AFA51521-...	2	**End-mill**	**long**	45°		**65**
AFA50720-...R...	2	**End-mill**	**long, with corner radius**	30°		**66**
AFA51522-...	2	**End-mill**	**extra long**	45°		**67**
AFA50222-...	2	**End-mill**	**extra long**	45°		**68**

Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AFA51836-...	3	**End-mill**	**mid-length**	45°		**70**
AFA52336-...	3	**End-mill**	**mid-length, with neck mi-longue**	45°		**71**
AFA51531-...	3	**End-mill**	**long**	45°		**72**
AFA50231-...R...	3	**End-mill**	**long, with corner radius**	45°		**73**
AFA51532-...	3	**End-mill**	**extra long**	45°		**74**
AFA50232-...	3	**End-mill**	**extra long**	45°		**76**
AFA51831-...	3	**Ball-nose end-mill**	**short**	40°		**79**
AFA61431-...	3	**Roughing end-mill**	**long**	30°		**80**
AFA51431-...	3	**Roughing end-mill**	**long**	30°		**81**
AFA52131-...	3	**Roughing end-mill**	**long**	42°		**82**

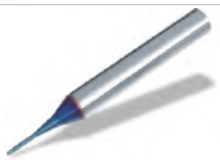
Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AFA51931-...	3	**Roughing end-mill**	**long**	45°		**83**
AFA52331-...	3	**Roughing end-mill**	**long, with neck mi-longue**	45°		**84**
AFD - for graphite and non-ferrous materials						
AFD50724-...R...	2	**End-mill**	**mini, with corner radius**	30°		**94**
AFD50121-...	2	**End-mill**	**long**	30°		**96**
AFD51824-...	2	**Ball-nose end-mill**	**mini**	30°		**97**
AFD54030-...R...	2	**End-mill**	**mini**	30°		**99**
AFE - for exotic materials (Titanium, Inconel) and stainless steels						
AFE51840-...R...	4	**End-mill**	**with corner radius**	Multi		**110**
AFE51850-...	5	**End-mill**	**short**	Multi		**112**
AFE51850-...R...	5	**End-mill**	**with corner radius**	Multi		**113**
AFE51851-...	5	**End-mill**	**long**	Multi		**114**

Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AFE51851-...R...	5	**End-mill**	**with corner radius**	Multi		**115**
AFE52451-...R...	5	**Roughing end-mill**	**with corner radius**	40°		**117**
AFG - for steel and hardened steel up to 50 HRC						
AFG50120-...	2	**End-mill**	**short**	30°		**126**
AFG50121-...	2	**End-mill**	**long**	30°		**127**
AFG50321-...	2	**Ball-nose end-mill**	**long**	30°		**128**
AFG50140-...	4	**End-mill**	**short**	30°		**129**
AFG60140-...	4	**End-mill**	**short**	30°		**130**
AFG50141-...	4	**End-mill**	**long**	30°		**131**
AFG502.0-...	4 - 8	**End-mill**	**long**	45°		**132**
AFG50262-...	6	**End-mill**	**extra long**	45°		**133**

Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AFG60262-...	6	End-mill	extra long	45°		134
AFG606.1-...	3 - 5	Roughing end-mill	long	20°		135
AFH - for hardened steel up to 70 HRC and high speed milling						
AFH50120-...R...	2	End-mill	mini	30°		146
AFH50526-...	2	End-mill	mini (slotting)	30°		147
AFH50920-...R...	2	End-mill	mini (slotting)	30°		149
AFH50320-...	2	Ball-nose end-mill	mini	30°		150
AFH52020-...	2	Ball-nose end-mill	mini (slotting)	30°		151
AFH52021-...	2	Ball-nose end-mill	mini (slotting)	30°		152
AFH50125-...	2	End-mill		30°		154
AFH50725-...R...	2	End-mill	with corner radius	30°		156

Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AFH50926-...R...	2	**End-mill**	**with corner radius**	30°		**158**
AFH51625-...	2	**Ball-nose end-mill**		30°		**161**
AFH51626-...	2	**Ball-nose end-mill**		30°		**163**
AFH51635-...	3	**Ball-nose end-mill**		30°		**165**
AFH50140-...	4	**End-mill**		30°		**166**
AFH50142-...R...	4	**End-mill**	**with corner radius**	30°		**167**
AFH50146-...R...	4	**End-mill**	**with corner radius**	30°		**168**
AFH50745-...R...	4	**End-mill**	**with corner radius**	30°		**170**
AFH50341-...	4	**Ball-nose end-mill**		30°		**172**
AFH50865-...R...	6	**End-mill**	**with corner radius**	45°		**173**
AFH508.1-...	6 - 8	**End-mill**	**long**	45°		**174**

Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AFH508.2-...	6 - 8	**End-mill**	**extra long**	45°		**175**
AFH50746-...R...	4	**High-feed end-mill**	**short, with corner radius**	90°		**176**
AFH50741-...R...	4	**High-feed end-mill**	**long, with corner radius**	90°		**177**
AFJ - for stainless steel and exotic materials						
AFJ612.1-...	3 - 4	**End-mill**	**long**	50°		**190**
AFJ602.0-...	4 - 8	**End-mill**	**short**	45°		**191**
AFJ619.1-...	3 - 6	**Roughing end-mill**	**long**	45°		**192**
AFR - for steel, tool steel, cast iron and pre-hardened steel						
AFR619.0-...	4 - 5	**Roughing end-mill**	**short**	43 - 46°		**200**
AFR619.1-...	4 - 5	**Roughing end-mill**	**extra long**	43 - 46°		**201**
AFR619.2-...	4 - 5	**Roughing end-mill**	**long**	43 - 46°		**202**

Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AFV - with unequal pitch (26°- 30° / 35°- 38°)						
AFV61840-... (TiAlN)	4	End-mill	short	35° - 38°		208
AFV61840-... (S100)	4	End-mill	short	35° - 38°		209
AFV61840-...R... (S100)	4	End-mill	short, with corner radius	35° - 38°		210
AFV62342-... (S100)	4	End-mill	short	35 - 38°		211
AFV62342-...R... (S100)	4	End-mill	short	35 - 38°		213
AFV61841-... (S100)	4	End-mill	long	35° - 38°		215
AFV61841-... (TiAlN)	4	End-mill	long	35 - 38°		216
AFV61841-...R... (S100)	4	End-mill	long, with corner radius	35 - 38°		217
AFV61841-...R... (TiAlN)	4	End-mill	long, with corner radius	35° - 38°		218
AFV60341-... (TiAlN)	4	Ball-nose end-mill	long	35° - 38°		219

Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AFV61646-... (S100)	4	End-mill	long	35° - 38°		220
AFV61851-... (TiAlN)	5	End-mill	long	35° - 38°		221
AFV60266-... (S100)	5	End-mill	long	45°		222
AFV60262-... (S100)	6	End-mill	extra long	45°		223
AFV60861-...R... (S100)	6	End-mill	long, with corner radius	45°		224
AFV60862-...R... (S100)	6	End-mill	long, with corner radius	45°		225
AFX - for pre-hardened steels up to 55 HRC, steel and cast iron						
AFX50124-...R...	2	End-mill	mini, with corner radius	30°		234
AFX50120-...	2	End-mill	short	30°		238
AFX50121-...	2	End-mill	long	30°		240
AFX50121-...R...	2	End-mill	long, with corner radius	30°		242

Overview Solid carbide milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AFX50122-...	2	**End-mill**	**extra long**	30°		**244**
AFX50321-...	2	**Ball-nose end-mill**	**long**	30°		**247**
AFX52021-...	2	**Ball-nose end-mill**	**long, slotting**	30°		**249**
AFX50140-...	4	**End-mill**	**short**	26 - 30°		**251**
AFX50041-...R...	4	**End-mill**	**long, with corner radius**	30 - 38°		**252**
AFX50741-...R...	4	**End-mill**	**long, with corner radius**	30°		**255**
AFX50042-...	4	**End-mill**	**extra long**	35 - 38°		**257**
AFX50141-...	4	**End-mill**	**long**	30°		**258**
AFX50142-...	4	**End-mill**	**extra long**	30°		**260**
AFX50260-...	6	**End-mill**	**short**	45°		**262**

ARNO WERKZEUGE

For more information see www.arno.de

Other highlights from our milling range.

ARNO® milling-system DUO-MILL

Square shoulder and high feed (HFC) milling with just one tool.

ARNO® milling-system FTA

Face milling tool for cost reduction.

ARNO® milling-system FOA

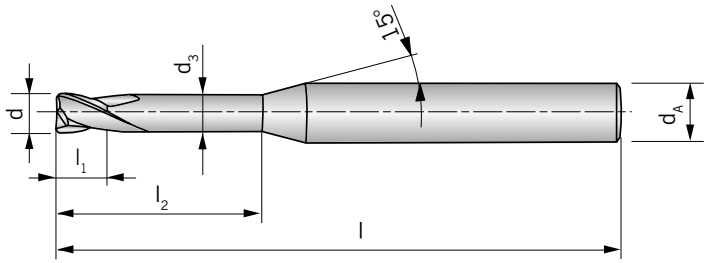
The positive face-milling-cutter, in which both a round and an octogonal insert can be used.

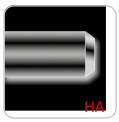
GREAT PERFORMANCE.

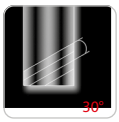
For general milling of steel, stainless steel and cast materials.

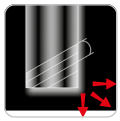
AF50526-...

2 flutes, mini design









Shank DIN 6535HA	d -0,03	d_A h6	d_3	l_1	l_2	l	HC TiAlN
AF50526-004A	0.4	4	0.37	0.70	2	50	◆
AF50526-004B	0.4	4	0.37	0.70	4	50	◆
AF50526-005A	0.5	4	0.45	0.75	2	50	◆
AF50526-005B	0.5	4	0.45	0.75	4	50	◆
AF50526-005C	0.5	4	0.45	0.75	6	50	◆
AF50526-006A	0.6	4	0.55	0.90	2	50	◆
AF50526-006B	0.6	4	0.55	0.90	4	50	◆
AF50526-006C	0.6	4	0.55	0.90	6	50	◆
AF50526-007A	0.7	4	0.65	1.10	4	50	◆
AF50526-007B	0.7	4	0.65	1.10	6	50	◆
AF50526-008A	0.8	4	0.75	1.20	4	50	◆
AF50526-008B	0.8	4	0.75	1.20	6	50	◆
AF50526-008C	0.8	4	0.75	1.20	8	50	◆
AF50526-009A	0.9	4	0.85	1.40	6	50	◆
AF50526-009B	0.9	4	0.85	1.40	8	50	◆
AF50526-009C	0.9	4	0.85	1.40	10	50	◆
AF50526-010A	1.0	4	0.95	1.50	6	50	◆
AF50526-010B	1.0	4	0.95	1.50	8	50	◆
AF50526-010C	1.0	4	0.95	1.50	10	50	◆
AF50526-010D	1.0	4	0.95	1.50	12	50	◆
AF50526-012A	1.2	4	1.15	1.80	6	50	◆
AF50526-012B	1.2	4	1.15	1.80	8	50	◆
AF50526-012C	1.2	4	1.15	1.80	10	50	◆
AF50526-012D	1.2	4	1.15	1.80	12	50	◆
AF50526-015A	1.5	4	1.45	2.30	6	50	◆
AF50526-015B	1.5	4	1.45	2.30	8	50	◆
AF50526-015C	1.5	4	1.45	2.30	10	50	◆
AF50526-015D	1.5	4	1.45	2.30	12	50	◆
AF50526-015E	1.5	4	1.45	2.30	14	50	◆
AF50526-015F	1.5	4	1.45	2.30	16	50	◆
AF50526-015G	1.5	4	1.45	2.30	18	50	◆
AF50526-015H	1.5	4	1.45	2.30	20	50	◆
AF50526-020A	2.0	4	1.95	3.00	6	50	◆
AF50526-020B	2.0	4	1.95	3.00	8	50	◆
AF50526-020C	2.0	4	1.95	3.00	10	50	◆
AF50526-020D	2.0	4	1.95	3.00	12	50	◆
AF50526-020E	2.0	4	1.95	3.00	14	50	◆

Dimensions in mm

Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	HC TiAlN
AF50526-020F	2.0	4	1.95	3.00	16	50	◆
AF50526-020G	2.0	4	1.95	3.00	18	50	◆
AF50526-020H	2.0	4	1.95	3.00	20	50	◆
AF50526-025A	2.5	4	2.40	3.70	8	50	◆
AF50526-025B	2.5	4	2.40	3.70	12	50	◆
AF50526-025C	2.5	4	2.40	3.70	16	50	◆
AF50526-025D	2.5	4	2.40	3.70	20	50	◆
AF50526-030A	3.0	6	2.85	4.50	8	50	◆
AF50526-030B	3.0	6	2.85	4.50	12	50	◆
AF50526-030C	3.0	6	2.85	4.50	16	60	◆
AF50526-030D	3.0	6	2.85	4.50	20	60	◆
AF50526-030E	3.0	6	2.85	4.50	25	75	◆
AF50526-040A	4.0	6	3.85	6.00	12	50	◆
AF50526-040B	4.0	6	3.85	6.00	16	60	◆
AF50526-040C	4.0	6	3.85	6.00	20	75	◆
AF50526-040D	4.0	6	3.85	6.00	25	75	◆
AF50526-040E	4.0	6	3.85	6.00	30	75	◆
AF50526-040F	4.0	6	3.85	6.00	35	75	◆

HC = Carbide coated

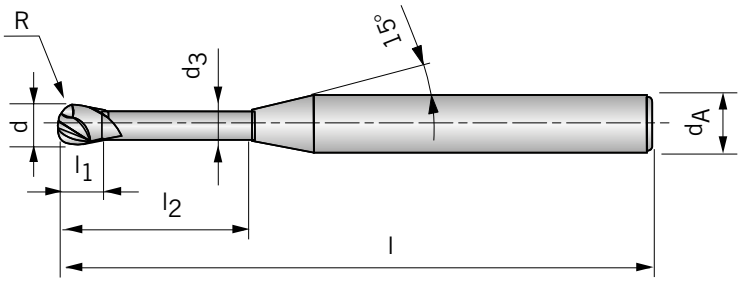
P	●
M	●
K	●
N	
S	
H	

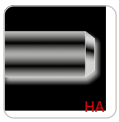
● Main application

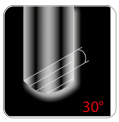
○ Secondary application

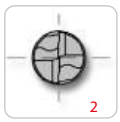
AF52021-...

2 flutes, mini design

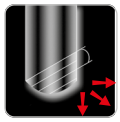








Ultra micro granulation ✓



Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	R *± 0,02*	HC TiAlN
AF52021-004A	0.4	4	0.37	0.70	2	50	0.20	◆
AF52021-005A	0.5	4	0.45	0.75	2	50	0.25	◆
AF52021-005B	0.5	4	0.45	0.75	4	50	0.25	◆
AF52021-005C	0.5	4	0.45	0.75	6	50	0.25	◆
AF52021-006A	0.6	4	0.55	0.90	2	50	0.30	◆
AF52021-006B	0.6	4	0.55	0.90	4	50	0.30	◆
AF52021-006C	0.6	4	0.55	0.90	6	50	0.30	◆
AF52021-008A	0.8	4	0.75	1.20	4	50	0.40	◆
AF52021-008B	0.8	4	0.75	1.20	6	50	0.40	◆
AF52021-008C	0.8	4	0.75	1.20	8	50	0.40	◆
AF52021-010A	1.0	4	0.95	1.50	6	50	0.50	◆
AF52021-010B	1.0	4	0.95	1.50	8	50	0.50	◆
AF52021-010C	1.0	4	0.95	1.50	10	50	0.50	◆
AF52021-010D	1.0	4	0.95	1.50	12	50	0.50	◆
AF52021-012A	1.2	4	1.15	1.80	8	50	0.60	◆
AF52021-012B	1.2	4	1.15	1.80	12	50	0.60	◆
AF52021-014A	1.4	4	1.35	2.10	16	50	0.70	◆
AF52021-015A	1.5	4	1.45	2.30	6	50	0.75	◆
AF52021-015B	1.5	4	1.45	2.30	8	50	0.75	◆
AF52021-015C	1.5	4	1.45	2.30	10	50	0.75	◆
AF52021-015D	1.5	4	1.45	2.30	12	50	0.75	◆
AF52021-015E	1.5	4	1.45	2.30	16	50	0.75	◆
AF52021-015F	1.5	4	1.45	2.30	20	50	0.75	◆
AF52021-016A	1.6	4	1.55	2.40	8	50	0.80	◆
AF52021-016B	1.6	4	1.55	2.40	12	50	0.80	◆
AF52021-016C	1.6	4	1.55	2.40	16	50	0.80	◆
AF52021-016D	1.6	4	1.55	2.40	20	50	0.80	◆
AF52021-020A	2.0	4	1.95	3.00	8	50	1.00	◆
AF52021-020B	2.0	4	1.95	3.00	10	50	1.00	◆
AF52021-020C	2.0	4	1.95	3.00	12	50	1.00	◆
AF52021-020D	2.0	4	1.95	3.00	14	50	1.00	◆
AF52021-020E	2.0	4	1.95	3.00	16	50	1.00	◆
AF52021-020F	2.0	4	1.95	3.00	20	50	1.00	◆
AF52021-030A	3.0	6	2.85	4.50	10	50	1.50	◆
AF52021-030B	3.0	6	2.85	4.50	12	50	1.50	◆
AF52021-030C	3.0	6	2.85	4.50	16	60	1.50	◆
AF52021-030D	3.0	6	2.85	4.50	20	60	1.50	◆

Dimensions in mm

Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	R *± 0,02*	HC TiAlN
AF52021-030E	3.0	6	2.85	4.50	25	75	1.50	◆
AF52021-040A	4.0	6	3.85	6.00	12	50	2.00	◆
AF52021-040B	4.0	6	3.85	6.00	16	60	2.00	◆
AF52021-040C	4.0	6	3.85	6.00	20	75	2.00	◆
AF52021-040D	4.0	6	3.85	6.00	25	75	2.00	◆
AF52021-040E	4.0	6	3.85	6.00	30	75	2.00	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

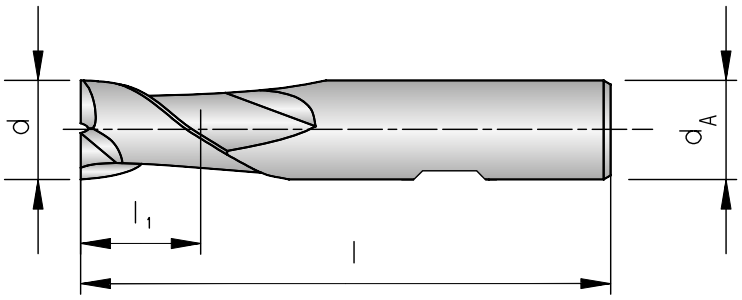
● Main application

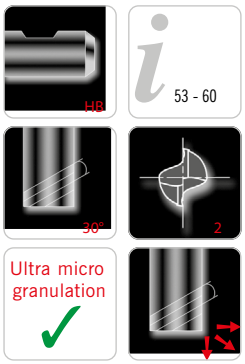
○ Secondary application

Dimensions in mm

AF60125-...

2 flutes, short design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF60125-020	2.0	6	3	50	◆
AF60125-030	3.0	6	4	50	◆
AF60125-035	3.5	6	4	50	◆
AF60125-040	4.0	6	5	54	◆
AF60125-045	4.5	6	5	54	◆
AF60125-050	5.0	6	6	54	◆
AF60125-060	6.0	6	7	54	◆
AF60125-070	7.0	8	8	58	◆
AF60125-080	8.0	8	9	58	◆
AF60125-090	9.0	10	10	66	◆
AF60125-100	10.0	10	11	66	◆
AF60125-120	12.0	12	12	73	◆
AF60125-140	14.0	14	14	75	◆
AF60125-160	16.0	16	16	82	◆
AF60125-180	18.0	18	18	84	◆
AF60125-200	20.0	20	20	92	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

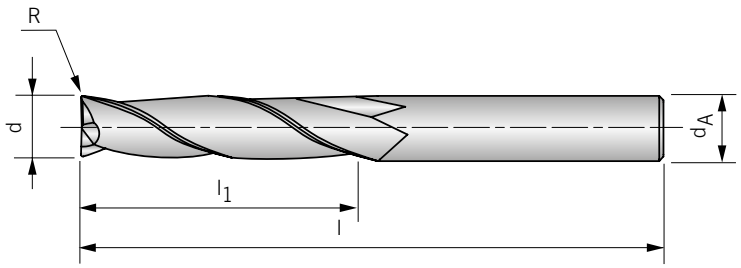
● **Main application**

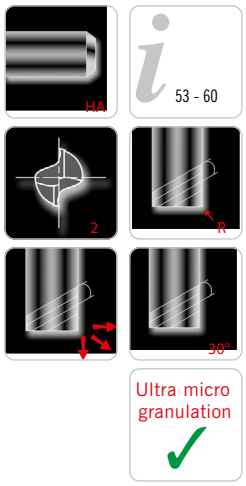
○ **Secondary application**

Dimensions in mm

AF50120-...R...

2 flutes, short design with corner radius





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R *± 0,03*	HC TiAlN
AF50120-020R0,2	2.0	4	4	50	0.2	◆
AF50120-020R0,3	2.0	4	4	50	0.3	◆
AF50120-020R0,5	2.0	4	4	50	0.5	◆
AF50120-025R0,2	2.5	4	5	50	0.2	◆
AF50120-025R0,3	2.5	4	5	50	0.3	◆
AF50120-025R0,5	2.5	4	5	50	0.5	◆
AF50120-030R0,2	3.0	4	6	50	0.2	◆
AF50120-030R0,3	3.0	4	6	50	0.3	◆
AF50120-030R0,5	3.0	4	6	50	0.5	◆
AF50120-030R1,0	3.0	4	6	50	1.0	◆
AF50120-040R0,2	4.0	4	8	50	0.2	◆
AF50120-040R0,3	4.0	4	8	50	0.3	◆
AF50120-040R0,5	4.0	4	8	50	0.5	◆
AF50120-040R1,0	4.0	4	8	50	1.0	◆
AF50120-050R0,2	5.0	6	10	50	0.2	◆
AF50120-050R0,3	5.0	6	10	50	0.3	◆
AF50120-050R0,5	5.0	6	10	50	0.5	◆
AF50120-050R1,0	5.0	6	10	50	1.0	◆
AF50120-060R0,2	6.0	6	12	50	0.2	◆
AF50120-060R0,3	6.0	6	12	50	0.3	◆
AF50120-060R0,5	6.0	6	12	50	0.5	◆
AF50120-060R1,0	6.0	6	12	50	1.0	◆
AF50120-080R0,5	8.0	8	16	60	0.5	◆
AF50120-080R1,0	8.0	8	16	60	1.0	◆
AF50120-080R1,5	8.0	8	16	60	1.5	◆
AF50120-080R2,0	8.0	8	16	60	2.0	◆
AF50120-080R2,5	8.0	8	16	60	2.5	◆
AF50120-100R0,5	10.0	10	20	75	0.5	◆
AF50120-100R1,0	10.0	10	20	75	1.0	◆
AF50120-100R1,5	10.0	10	20	75	1.5	◆
AF50120-100R2,0	10.0	10	20	75	2.0	◆
AF50120-100R2,5	10.0	10	20	75	2.5	◆
AF50120-120R0,5	12.0	12	24	75	0.5	◆

Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R *± 0,03*	HC TiAlN
AF50120-120R1,0	12.0	12	24	75	1.0	◆
AF50120-120R1,5	12.0	12	24	75	1.5	◆
AF50120-120R2,0	12.0	12	24	75	2.0	◆
AF50120-120R2,5	12.0	12	24	75	2.5	◆

HC = Carbide coated

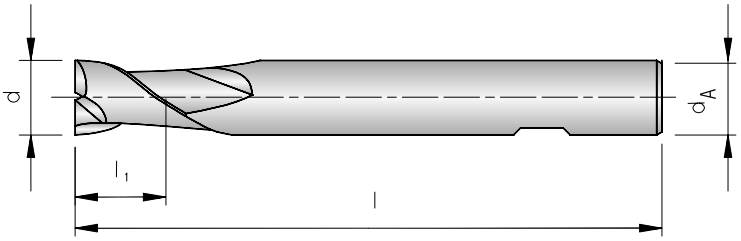
P	●
M	●
K	●
N	
S	
H	

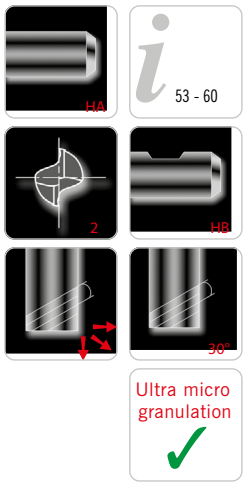
● Main application

○ Secondary application

AF50121-... / AF60121-...

2 flutes, long design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF50121-020	2	3	6	38	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

● Main application
○ Secondary application

Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF60121-028	2.80	6	7	57	◆
AF60121-030	3.00	6	7	57	◆
AF60121-035	3.50	6	7	57	◆
AF60121-038	3.80	6	8	57	◆
AF60121-040	4.00	6	8	57	◆
AF60121-045	4.50	6	8	57	◆
AF60121-048	4.80	6	10	57	◆
AF60121-050	5.00	6	10	57	◆
AF60121-055	5.50	6	10	57	◆
AF60121-057	5.75	6	10	57	◆
AF60121-060	6.00	6	10	57	◆
AF60121-065	6.50	8	13	63	◆
AF60121-067	6.75	8	13	63	◆
AF60121-070	7.00	8	13	63	◆
AF60121-075	7.50	8	16	63	◆
AF60121-077	7.75	8	16	63	◆
AF60121-080	8.00	8	16	63	◆
AF60121-087	8.70	10	16	72	◆
AF60121-090	9.00	10	16	72	◆

Dimensions in mm

Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF60121-095	9.50	10	19	72	◆
AF60121-097	9.70	10	19	72	◆
AF60121-100	10.00	10	19	72	◆
AF60121-105	10.50	12	22	83	◆
AF60121-110	11.00	12	22	83	◆
AF60121-117	11.70	12	22	83	◆
AF60121-120	12.00	12	22	83	◆
AF60121-137	13.70	14	22	83	◆
AF60121-140	14.00	14	22	83	◆
AF60121-150	15.00	16	26	92	◆
AF60121-157	15.70	16	26	92	◆
AF60121-160	16.00	16	26	92	◆
AF60121-177	17.70	18	26	92	◆
AF60121-180	18.00	18	26	92	◆
AF60121-197	19.70	20	32	104	◆
AF60121-200	20.00	20	32	104	◆

HC = Carbide coated

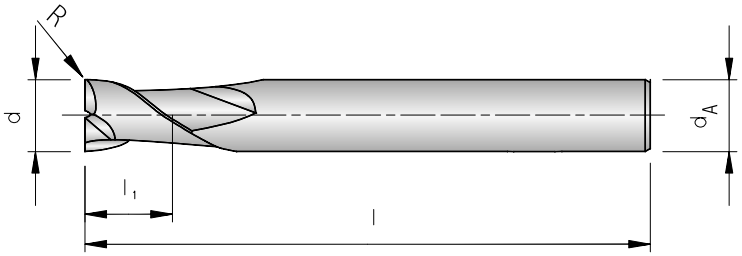
P	●
M	●
K	●
N	
S	
H	

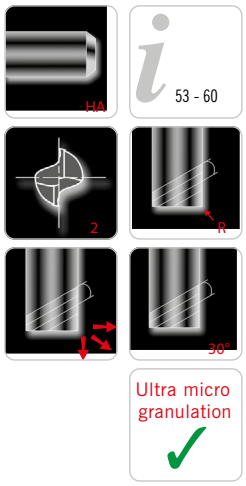
● Main application

○ Secondary application

AF50121-...R...

2 flutes, long design with corner radius





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R *± 0,03*	HC TiAlN
AF50121-030R0,5	3	4	6	75	0.5	◆
AF50121-030R1,0	3	4	6	75	1.0	◆
AF50121-040R0,5	4	4	8	75	0.5	◆
AF50121-040R1,0	4	4	8	75	1.0	◆
AF50121-050R0,5	5	6	10	75	0.5	◆
AF50121-050R1,0	5	6	10	75	1.0	◆
AF50121-060R0,5	6	6	12	75	0.5	◆
AF50121-060R1,0	6	6	12	75	1.0	◆
AF50121-080R0,5	8	8	16	100	0.5	◆
AF50121-080R1,0	8	8	16	100	1.0	◆
AF50121-080R1,5	8	8	16	100	1.5	◆
AF50121-080R2,0	8	8	16	100	2.0	◆
AF50121-080R2,5	8	8	16	100	2.5	◆
AF50121-100R0,5	10	10	20	100	0.5	◆
AF50121-100R1,0	10	10	20	100	1.0	◆
AF50121-100R1,5	10	10	20	100	1.5	◆
AF50121-100R2,0	10	10	20	100	2.0	◆
AF50121-100R2,5	10	10	20	100	2.5	◆
AF50121-120R0,5	12	12	24	100	0.5	◆
AF50121-120R1,0	12	12	24	100	1.0	◆
AF50121-120R1,5	12	12	24	100	1.5	◆
AF50121-120R2,0	12	12	24	100	2.0	◆
AF50121-120R2,5	12	12	24	100	2.5	◆

HC = Carbide coated

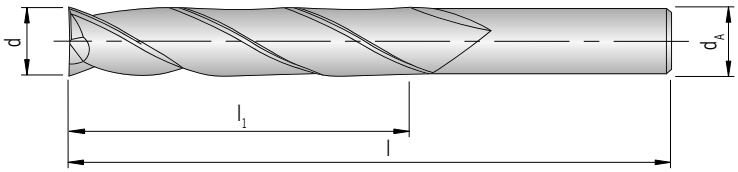
P	●
M	●
K	●
N	
S	
H	

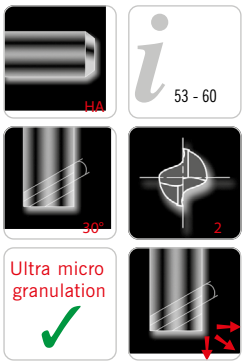
● Main application
○ Secondary application

Dimensions in mm

AF50122-...

2 flutes, extra long design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF50122-030	3	3	20	60	◆
AF50122-040	4	4	20	60	◆
AF50122-050	5	5	25	75	◆
AF50122-060	6	6	30	75	◆
AF50122-080	8	8	30	75	◆
AF50122-100	10	10	40	100	◆
AF50122-120	12	12	45	100	◆
AF50122-140	14	14	45	100	◆
AF50122-160	16	16	45	100	◆
AF50122-180	18	18	45	100	◆
AF50122-200	20	20	45	100	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

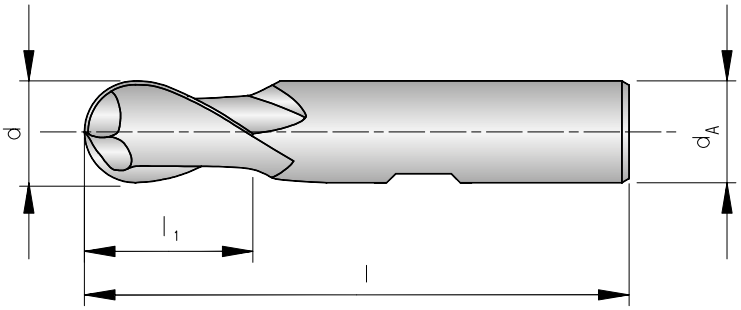
● Main application

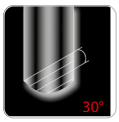
○ Secondary application

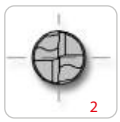
Dimensions in mm

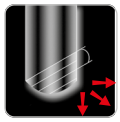
AF60320-...

2 flutes, short design









Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	R *± 0,02*	HC TiAlN
AF60320-020	2	6	3	50	1.0	◆
AF60320-030	3	6	4	50	1.5	◆
AF60320-040	4	6	5	54	2.0	◆
AF60320-050	5	6	6	54	2.5	◆
AF60320-060	6	6	7	54	3.0	◆
AF60320-080	8	8	9	58	4.0	◆
AF60320-100	10	10	11	66	5.0	◆
AF60320-120	12	12	12	73	6.0	◆
AF60320-140	14	14	14	75	7.0	◆
AF60320-160	16	16	16	82	8.0	◆
AF60320-180	18	18	18	84	9.0	◆
AF60320-200	20	20	20	92	10.0	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

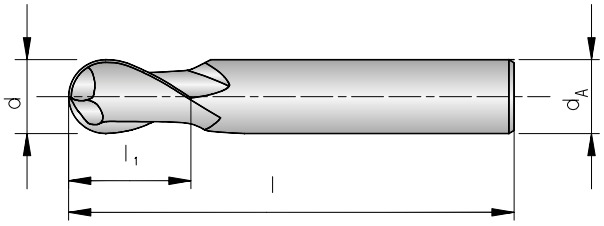
● Main application

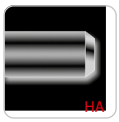
○ Secondary application

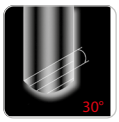
Dimensions in mm

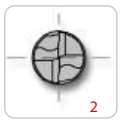
AF50321-...

2 flutes, long design

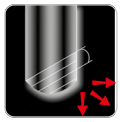








Ultra micro granulation ✓



Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R *± 0,02*	HC TiAlN
AF50321-030	3	3	5	75	1.5	◆
AF50321-040	4	4	8	75	2.0	◆
AF50321-050	5	5	9	75	2.5	◆
AF50321-060	6	6	10	100	3.0	◆
AF50321-080	8	8	12	100	4.0	◆
AF50321-100	10	10	14	100	5.0	◆
AF50321-120	12	12	16	100	6.0	◆
AF50321-140	14	14	18	100	7.0	◆
AF50321-160	16	16	22	150	8.0	◆
AF50321-200	20	20	26	150	10.0	◆

HC = Carbide coated

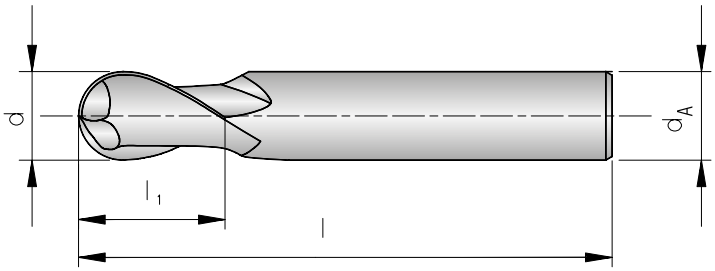
P	●
M	●
K	●
N	
S	
H	

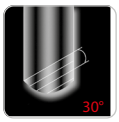
● Main application
○ Secondary application

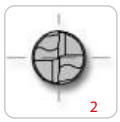
Dimensions in mm

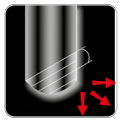
AF60321-...

2 flutes, long design









Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	R *± 0,02*	HC TiAlN
AF60321-030	3	6	7	57	1.5	◆
AF60321-040	4	6	8	57	2.0	◆
AF60321-050	5	6	10	57	2.5	◆
AF60321-060	6	6	10	57	3.0	◆
AF60321-080	8	8	16	63	4.0	◆
AF60321-100	10	10	19	72	5.0	◆
AF60321-120	12	12	22	83	6.0	◆
AF60321-140	14	14	22	83	7.0	◆
AF60321-160	16	16	26	92	8.0	◆
AF60321-180	18	18	26	92	9.0	◆
AF60321-200	20	20	32	104	10.0	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

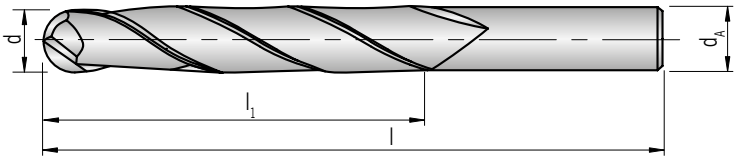
● Main application

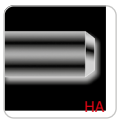
○ Secondary application

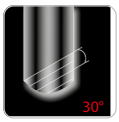
Dimensions in mm

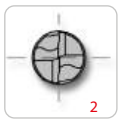
AF50322-...

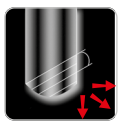
2 flutes, extra long design











Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R *± 0,02*	HC TiAlN
AF50322-030	3	3	20	60	1.5	◆
AF50322-040	4	4	20	60	2.0	◆
AF50322-050	5	5	25	75	2.5	◆
AF50322-060	6	6	30	75	3.0	◆
AF50322-080	8	8	30	75	4.0	◆
AF50322-100	10	10	40	100	5.0	◆
AF50322-120	12	12	45	100	6.0	◆
AF50322-140	14	14	45	100	7.0	◆
AF50322-160	16	16	45	100	8.0	◆
AF50322-180	18	18	45	100	9.0	◆
AF50322-200	20	20	45	100	10.0	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

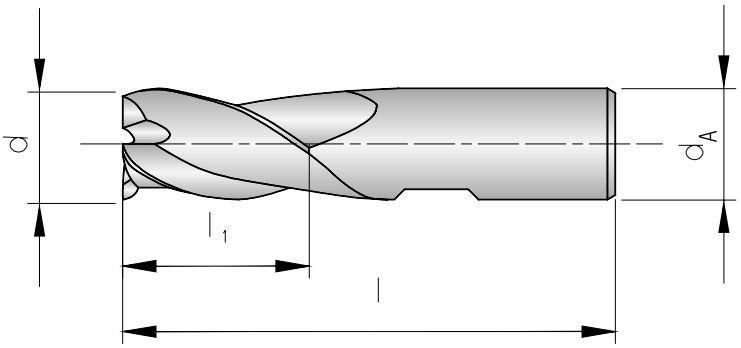
● Main application

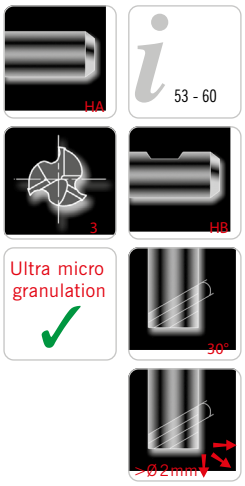
○ Secondary application

Dimensions in mm

AF50135-... / AF60135-...

3 flutes, extra short design





Shank DIN 6535HA	d -0,03	d_A h6	l_1	l	HC TiAlN
AF50135-005	0.5	3	1.5	38	◆
AF50135-006	0.6	3	1.5	38	◆
AF50135-008	0.8	3	2.0	38	◆
AF50135-010	1.0	3	2.0	38	◆
AF50135-012	1.2	3	2.0	38	◆
AF50135-015	1.5	3	2.0	38	◆
AF50135-018	1.8	3	2.0	38	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

● Main application
○ Secondary application

Shank DIN 6535HB	d -0,03	d_A h6	l_1	l	HC TiAlN
AF60135-020	2.00	6	4	35	◆
AF60135-025	2.50	6	5	36	◆
AF60135-030	3.00	6	5	36	◆
AF60135-035	3.50	6	6	37	◆
AF60135-040	4.00	6	7	38	◆
AF60135-045	4.50	6	8	38	◆
AF60135-050	5.00	6	8	39	◆
AF60135-055	5.50	6	8	39	◆
AF60135-0575	5.75	6	8	39	◆
AF60135-060	6.00	6	8	39	◆
AF60135-065	6.50	8	10	42	◆
AF60135-0675	6.75	8	10	42	◆
AF60135-070	7.00	8	10	42	◆

Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF60135-075	7.50	8	11	43	◆
AF60135-0775	7.75	8	10	42	◆
AF60135-080	8.00	8	11	43	◆
AF60135-085	8.50	10	13	50	◆
AF60135-087	8.70	10	11	48	◆
AF60135-090	9.00	10	11	48	◆
AF60135-095	9.50	10	13	50	◆
AF60135-097	9.70	10	11	48	◆
AF60135-100	10.00	10	13	50	◆
AF60135-105	10.50	12	15	55	◆
AF60135-110	11.00	12	15	55	◆
AF60135-115	11.50	12	15	55	◆
AF60135-120	12.00	12	15	55	◆
AF60135-130	13.00	14	15	58	◆
AF60135-140	14.00	14	15	58	◆
AF60135-150	15.00	16	18	62	◆
AF60135-160	16.00	16	18	62	◆
AF60135-180	18.00	18	20	70	◆
AF60135-200	20.00	20	22	75	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

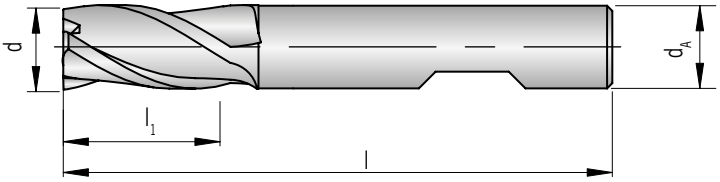
● Main application

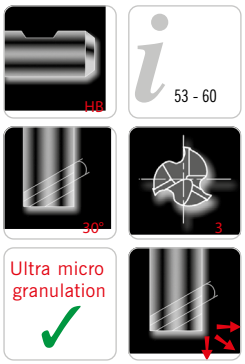
○ Secondary application

Dimensions in mm

AF61330-...

3 flutes, short design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF61330-020	2.0	6	3	50	◆
AF61330-030	3.0	6	4	50	◆
AF61330-035	3.5	6	4	50	◆
AF61330-040	4.0	6	5	54	◆
AF61330-045	4.5	6	5	54	◆
AF61330-050	5.0	6	6	54	◆
AF61330-060	6.0	6	7	54	◆
AF61330-070	7.0	8	8	58	◆
AF61330-080	8.0	8	9	58	◆
AF61330-090	9.0	10	10	66	◆
AF61330-100	10.0	10	11	66	◆
AF61330-120	12.0	12	12	73	◆
AF61330-140	14.0	14	14	75	◆
AF61330-160	16.0	16	16	82	◆
AF61330-180	18.0	18	18	84	◆
AF61330-200	20.0	20	20	92	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

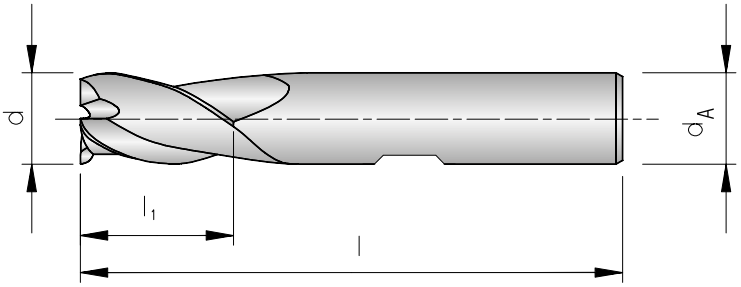
● Main application

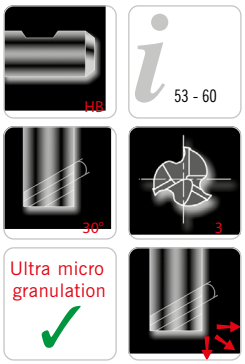
○ Secondary application

Dimensions in mm

AF60131-...

3 flutes, long design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF60131-030	3	6	7	57	◆
AF60131-040	4	6	8	57	◆
AF60131-050	5	6	10	57	◆
AF60131-060	6	6	10	57	◆
AF60131-080	8	8	16	63	◆
AF60131-090	9	10	16	72	◆
AF60131-100	10	10	19	72	◆
AF60131-120	12	12	22	83	◆
AF60131-140	14	14	22	83	◆
AF60131-160	16	16	26	92	◆
AF60131-180	18	18	26	92	◆
AF60131-200	20	20	32	104	◆

HC = Carbide coated

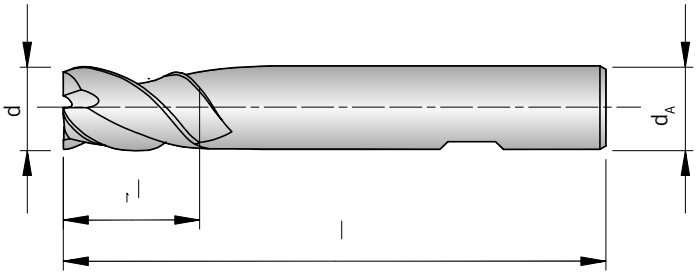
P	●
M	●
K	●
N	
S	
H	

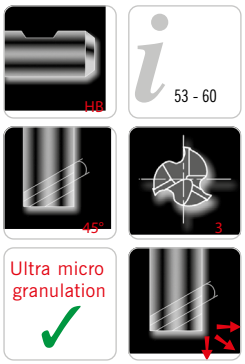
● Main application
○ Secondary application

Dimensions in mm

AF60231-...

3 flutes, long design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF60231-030	3.0	6	7	57	◆
AF60231-035	3.5	6	7	57	◆
AF60231-040	4.0	6	8	57	◆
AF60231-045	4.5	6	8	57	◆
AF60231-050	5.0	6	10	57	◆
AF60231-060	6.0	6	10	57	◆
AF60231-070	7.0	8	13	63	◆
AF60231-080	8.0	8	16	63	◆
AF60231-090	9.0	10	16	72	◆
AF60231-100	10.0	10	19	72	◆
AF60231-120	12.0	12	22	83	◆
AF60231-140	14.0	14	22	83	◆
AF60231-160	16.0	16	26	92	◆
AF60231-180	18.0	18	26	92	◆
AF60231-200	20.0	20	32	104	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

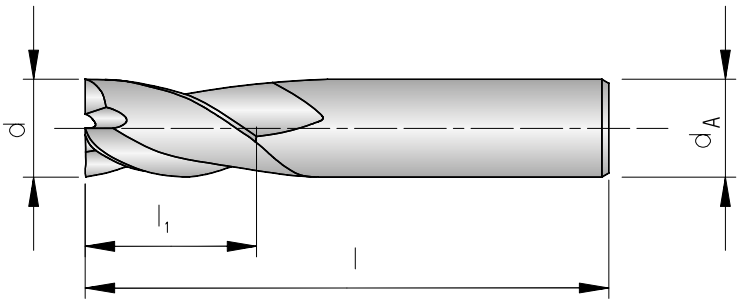
● Main application

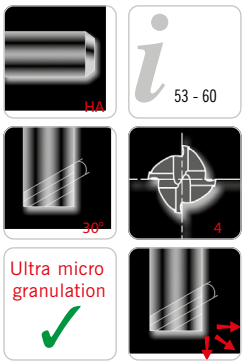
○ Secondary application

Dimensions in mm

AF50140-...

4 flutes, short design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF50140-010	1.0	4,0	3.0	40	◆
AF50140-015	1.5	4,0	4.5	40	◆
AF50140-020	2.0	2,0	8.0	32	◆
AF50140-025	2.5	2,5	8.0	32	◆
AF50140-030	3.0	3,0	12.0	32	◆
AF50140-035	3.5	3,5	12.0	32	◆
AF50140-040	4.0	4,0	12.0	40	◆
AF50140-045	4.5	4,5	14.0	50	◆
AF50140-050	5.0	5,0	14.0	50	◆
AF50140-055	5.5	5,5	16.0	50	◆
AF50140-060	6.0	6,0	16.0	50	◆
AF50140-070	7.0	7,0	20.0	60	◆
AF50140-080	8.0	8,0	20.0	60	◆
AF50140-090	9.0	9,0	20.0	60	◆
AF50140-100	10.0	10,0	22.0	70	◆
AF50140-120	12.0	12,0	22.0	70	◆
AF50140-140	14.0	14,0	25.0	75	◆
AF50140-160	16.0	16,0	25.0	75	◆
AF50140-200	20.0	20,0	32.0	100	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

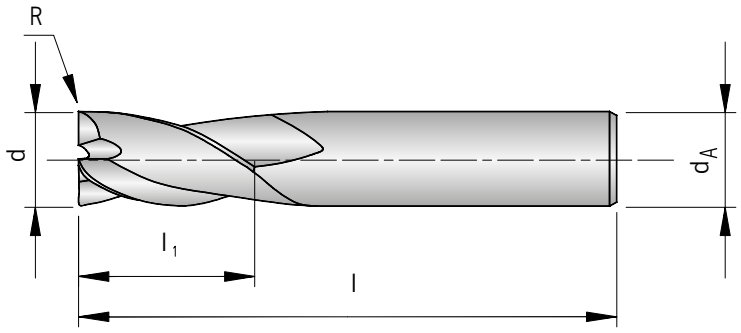
● Main application

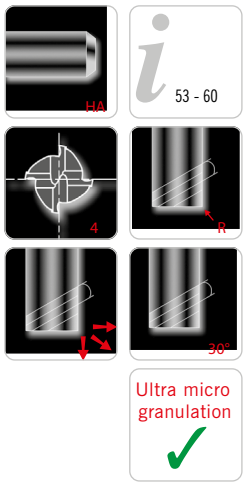
○ Secondary application

Dimensions in mm

AF50140-...R...

4 flutes, short design, with corner radius





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R *± 0,03*	HC TiAlN
AF50140-020R0,2	2.0	4	4	50	0.2	◆
AF50140-020R0,3	2.0	4	4	50	0.3	◆
AF50140-020R0,5	2.0	4	4	50	0.5	◆
AF50140-025R0,2	2.5	4	5	50	0.2	◆
AF50140-025R0,3	2.5	4	5	50	0.3	◆
AF50140-025R0,5	2.5	4	5	50	0.5	◆
AF50140-030R0,2	3.0	4	6	50	0.2	◆
AF50140-030R0,3	3.0	4	6	50	0.3	◆
AF50140-030R0,5	3.0	4	6	50	0.5	◆
AF50140-030R1,0	3.0	4	6	50	1.0	◆
AF50140-040R0,2	4.0	4	8	50	0.2	◆
AF50140-040R0,3	4.0	4	8	50	0.3	◆
AF50140-040R0,5	4.0	4	8	50	0.5	◆
AF50140-040R1,0	4.0	4	8	50	1.0	◆
AF50140-050R0,2	5.0	6	10	50	0.2	◆
AF50140-050R0,3	5.0	6	10	50	0.3	◆
AF50140-050R0,5	5.0	6	10	50	0.5	◆
AF50140-050R1,0	5.0	6	10	50	1.0	◆
AF50140-060R0,2	6.0	6	12	50	0.2	◆
AF50140-060R0,3	6.0	6	12	50	0.3	◆
AF50140-060R0,5	6.0	6	12	50	0.5	◆
AF50140-060R1,0	6.0	6	12	50	1.0	◆
AF50140-080R0,5	8.0	8	16	60	0.5	◆
AF50140-080R1,0	8.0	8	16	60	1.0	◆
AF50140-080R1,5	8.0	8	16	60	1.5	◆
AF50140-080R2,0	8.0	8	16	60	2.0	◆
AF50140-080R2,5	8.0	8	16	60	2.5	◆
AF50140-100R0,5	10.0	10	20	75	0.5	◆
AF50140-100R1,0	10.0	10	20	75	1.0	◆
AF50140-100R1,5	10.0	10	20	75	1.5	◆
AF50140-100R2,0	10.0	10	20	75	2.0	◆
AF50140-100R2,5	10.0	10	20	75	2.5	◆
AF50140-120R0,5	12.0	12	24	75	0.5	◆
AF50140-120R1,0	12.0	12	24	75	1.0	◆

Dimensions in mm

Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R *± 0,03*	HC TiAlN
AF50140-120R1,5	12.0	12	24	75	1.5	◆
AF50140-120R2,0	12.0	12	24	75	2.0	◆
AF50140-120R2,5	12.0	12	24	75	2.5	◆

HC = Carbide coated

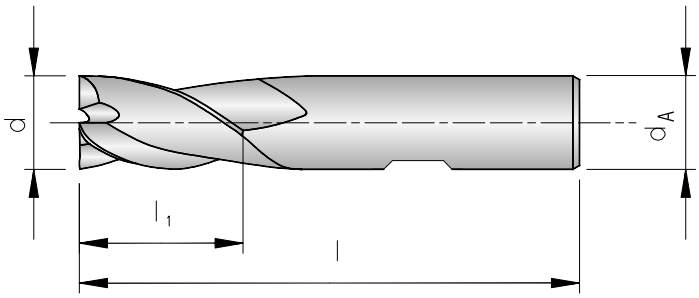
P	●
M	●
K	●
N	
S	
H	

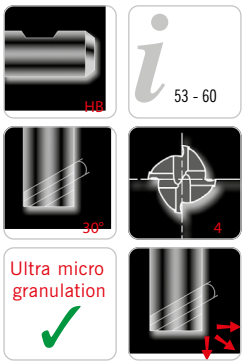
● Main application

○ Secondary application

AF60140-...X ...

4 flutes, short design





NEW

Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF60140-020X	2.0	6	4	50	◆
AF60140-025X	2.5	6	4	50	◆
AF60140-030X	3.0	6	5	50	◆
AF60140-035X	3.5	6	6	50	◆
AF60140-040X	4.0	6	8	54	◆
AF60140-045X	4.5	6	8	54	◆
AF60140-050X	5.0	6	9	54	◆
AF60140-060X	6.0	6	10	54	◆
AF60140-070X	7.0	8	11	58	◆
AF60140-080X Ⓝ	8.0	8	12	58	◆
AF60140-090X	9.0	10	13	66	◆
AF60140-100X	10.0	10	14	66	◆
AF60140-120X	12.0	12	16	73	◆
AF60140-140X	14.0	14	18	75	◆
AF60140-160X	16.0	16	22	82	◆
AF60140-180X	18.0	18	24	84	◆
AF60140-200X	20.0	20	26	92	◆

HC = Carbide coated

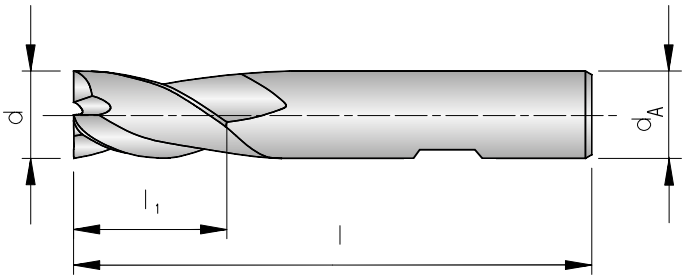
P	●
M	●
K	●
N	
S	
H	

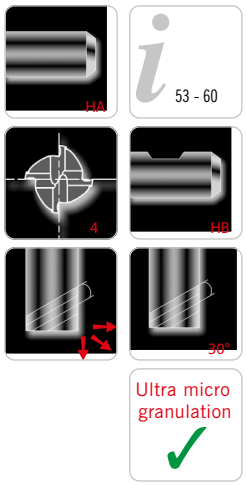
● Main application
○ Secondary application

Dimensions in mm

AF50141-... / AF60141-...

4 flutes, long design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF50141-020	2	3	7	38	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

● Main application
○ Secondary application

Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF60141-030	3.0	6	8	57	◆
AF60141-035	3.5	6	10	57	◆
AF60141-040	4.0	6	11	57	◆
AF60141-045	4.5	6	11	57	◆
AF60141-050	5.0	6	13	57	◆
AF60141-060	6.0	6	13	57	◆
AF60141-070	7.0	8	16	63	◆
AF60141-080	8.0	8	19	63	◆
AF60141-090	9.0	10	19	72	◆
AF60141-100	10.0	10	22	72	◆
AF60141-120	12.0	12	26	83	◆
AF60141-140	14.0	14	26	83	◆

Dimensions in mm

Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF60141-160	16.0	16	32	92	◆
AF60141-180	18.0	18	32	92	◆
AF60141-200	20.0	20	38	104	◆

HC = Carbide coated

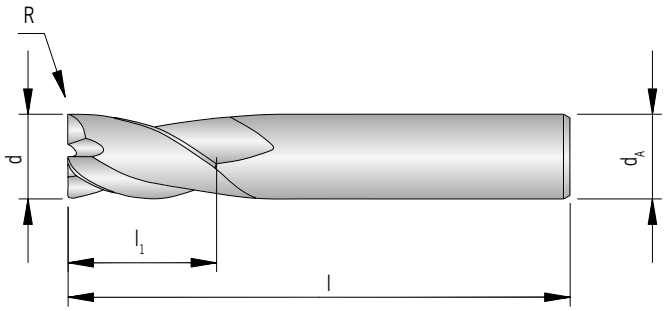
P	●
M	●
K	●
N	
S	
H	

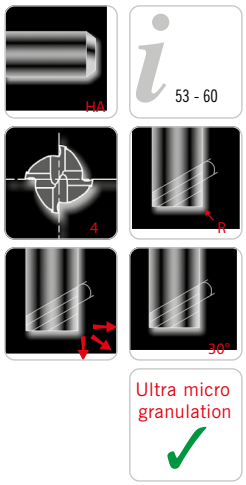
● Main application

○ Secondary application

AF50141-...R...

4 flutes, long design, with corner radius





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R *± 0,03*	HC TiAlN
AF50141-030R0,5	3	4	6	75	0.5	◆
AF50141-030R1,0	3	4	6	75	1.0	◆
AF50141-040R0,5	4	4	8	75	0.5	◆
AF50141-040R1,0	4	4	8	75	1.0	◆
AF50141-050R0,5	5	6	10	75	0.5	◆
AF50141-050R1,0	5	6	10	75	1.0	◆
AF50141-060R0,5	6	6	12	75	0.5	◆
AF50141-060R1,0	6	6	12	75	1.0	◆
AF50141-080R0,5	8	8	16	100	0.5	◆
AF50141-080R1,0	8	8	16	100	1.0	◆
AF50141-080R1,5	8	8	16	100	1.5	◆
AF50141-080R2,0	8	8	16	100	2.0	◆
AF50141-080R2,5	8	8	16	100	2.5	◆
AF50141-100R0,5	10	10	20	100	0.5	◆
AF50141-100R1,0	10	10	20	100	1.0	◆
AF50141-100R1,5	10	10	20	100	1.5	◆
AF50141-100R2,0	10	10	20	100	2.0	◆
AF50141-100R2,5	10	10	20	100	2.5	◆
AF50141-120R0,5	12	12	24	100	0.5	◆
AF50141-120R1,0	12	12	24	100	1.0	◆
AF50141-120R1,5	12	12	24	100	1.5	◆
AF50141-120R2,0	12	12	24	100	2.0	◆
AF50141-120R2,5	12	12	24	100	2.5	◆

HC = Carbide coated

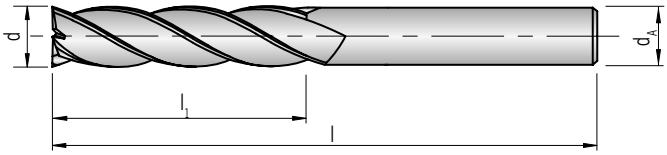
P	●
M	●
K	●
N	
S	
H	

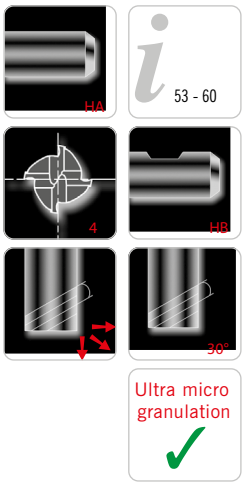
● Main application
○ Secondary application

Dimensions in mm

AF50142-...X ... / AF60142-...X ...

4 flutes, extra long design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF50142-030X	3	3	20	60	◆
AF50142-040X	4	4	20	60	◆
AF50142-050X	5	5	25	75	◆
AF50142-060X	6	6	30	75	◆
AF50142-080X	8	8	30	75	◆
AF50142-100X	10	10	40	100	◆
AF50142-120X	12	12	45	100	◆
AF50142-140X	14	14	45	100	◆
AF50142-160X	16	16	45	100	◆
AF50142-180X	18	18	45	100	◆
AF50142-200X	20	20	45	100	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

● Main application

○ Secondary application

Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AF60142-060X	6	6	30	75	◆
AF60142-080X	8	8	30	75	◆
AF60142-100X	10	10	40	100	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

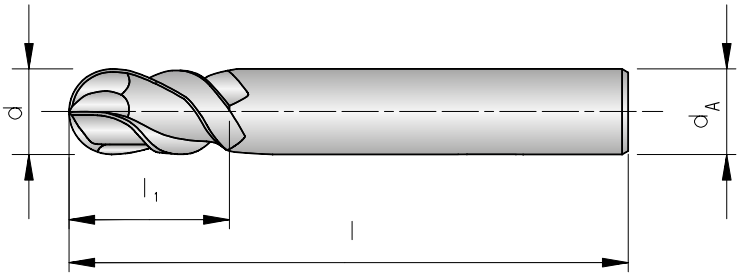
● Main application

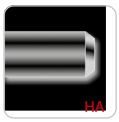
○ Secondary application

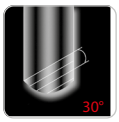
Dimensions in mm

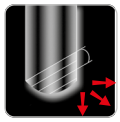
AF50340-...

4 flutes, short design









Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R *± 0,02*	HC TiAlN
AF50340-020	2	6	4	48	1.0	◆
AF50340-030	3	6	4	48	1.5	◆
AF50340-040	4	6	6	50	2.0	◆
AF50340-050	5	6	7	51	2.5	◆
AF50340-060	6	6	7	51	3.0	◆
AF50340-080	8	8	9	59	4.0	◆
AF50340-100	10	10	10	60	5.0	◆
AF50340-120	12	12	14	71	6.0	◆
AF50340-140	14	14	14	71	7.0	◆
AF50340-160	16	16	16	76	8.0	◆
AF50340-180	18	18	18	76	9.0	◆
AF50340-200	20	20	20	82	10.0	◆

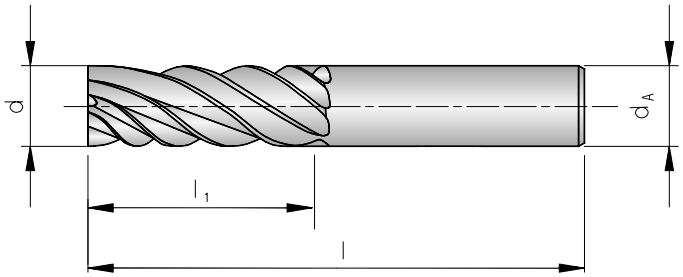
HC = Carbide coated

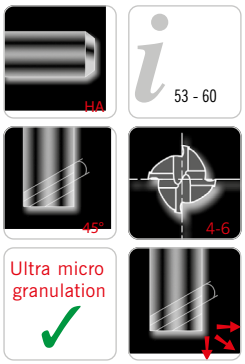
P	●
M	●
K	●
N	
S	
H	

● Main application
○ Secondary application

AF502.0-...

4 - 6 flutes, short design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	z	HC TiAlN
AF50240-030	3	4	8	50	4	◆
AF50240-040	4	4	11	50	4	◆
AF50260-050	5	6	13	50	6	◆
AF50260-060	6	6	16	50	6	◆
AF50260-080	8	8	19	60	6	◆
AF50260-100	10	10	22	75	6	◆
AF50260-120	12	12	26	75	6	◆
AF50260-140	14	14	30	90	6	◆
AF50260-160	16	16	32	100	6	◆
AF50260-180	18	18	38	100	6	◆
AF50260-200	20	20	38	100	6	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

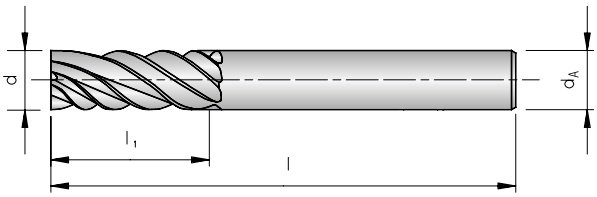
● Main application

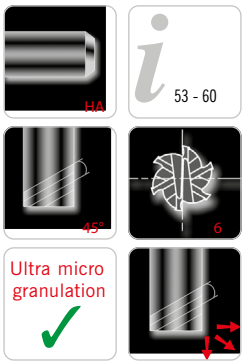
○ Secondary application

Dimensions in mm

AF50261-...

6 flutes, long design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	z	HC TiAlN
AF50261-120	12	12	50	100	6	◆
AF50261-160	16	16	65	150	6	◆
AF50261-200	20	20	70	150	6	◆

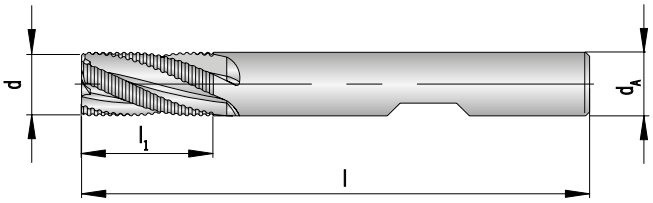
HC = Carbide coated

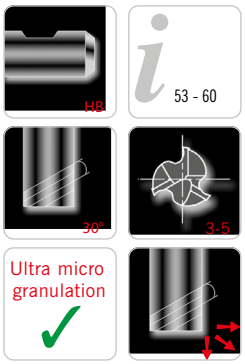
P	●
M	●
K	●
N	
S	
H	

● Main application
○ Secondary application

AF614.1-...

3 - 5 flutes, long design





Shank DIN 6535HB	d *h10*	d_A *h6*	l_1	l	z	HC TiAlN
AF61431-060	6	6	16	57	3	◆
AF61431-080	8	8	16	63	3	◆
AF61441-100	10	10	22	72	4	◆
AF61441-120	12	12	26	83	4	◆
AF61441-140	14	14	26	83	4	◆
AF61441-160	16	16	32	92	4	◆
AF61441-180	18	18	32	92	4	◆
AF61441-200	20	20	38	104	4	◆
AF61451-250	25	25	45	121	5	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	
H	

● Main application

○ Secondary application

Dimensions in mm

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Correction factor	Cutting speed V_c (m/min) VHM TiAlN
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	1,2	100 - 170 - 240
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	1,2	100 - 170 - 240
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	1,2	90 - 155 - 220
		C > 0.55 %	annealed	190	639	P4	1,2	100 - 170 - 240
		C > 0.55 %	hardened and tempered	300	1013	P5	1,0	60 - 100 - 140
		Machining steel (short-chipping)	tempered	220	745	P6	1,2	100 - 170 - 240
	Low alloyed steel	annealed		175	591	P7	1,2	90 - 145 - 200
		hardened and tempered		300	1013	P8	1,0	90 - 105 - 120
		hardened and tempered		380	1282	P9	0,8	60 - 90 - 120
		hardened and tempered		430	1477	P10	0,8	61 - 90 - 120
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	1,2	90 - 145 - 200
		hardened		300	1013	P12	1,0	90 - 115 - 140
		hardened		400	1361	P13	0,8	60 - 85 - 110
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	1,0	50 - 85 - 120
		martensitic, hardened and tempered		330	1114	P15	0,9	30 - 55 - 80
M	Stainless steel	austenitic, chilled		200	675	M1	1,0	60 - 90 - 20
		austenitic, precipitation-hardened (PH)		300	1013	M2	0,9	30 - 55 - 80
		austenitic-ferritic, Duplex		230	778	M3	1,0	50 - 85 -120
K	Malleable cast iron	ferritic		200	675	K1	1,0	80 - 120 - 160
		pearlitic		260	867	K2	0,8	70 - 110 -150
	Cast iron	low tensile strength		180	602	K3	1,0	80 - 120 - 160
		high tensile strength / austenitic		245	825	K4	1,0	70 - 110 - 150
	Cast iron with nodular graphite	ferritic		155	518	K5	1,0	80 - 120 - 160
		pearlitic		265	885	K6	1,0	70 - 110 - 150
	GGV (CGI)			200	675	K7	1,0	80 - 120 - 160
N	Aluminium alloys long chipping	not heat treatable		30	-	N1		-
		heat treatable, heat treated		100	343	N2		-
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3		-
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4		-
		> 12 % Si, not heat treatable		130	447	N5		-
	Magnesium alloys			70	250	N6		-
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7		-
		Brass, Bronze		90	314	N8		-
		Cu-alloys, short-chipping		110	382	N9		-
		High-tensile, Ampco		300	1013	N10		-
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11		-
		Duroplastic (without abrasive filling material)		-	-	N12		-
		Plastic glas fibre reinforced GFRP		-	-	N13		-
		Plastic carbon fibre reinforced CFRP		-	-	N14		-
		Plastic aramid fibre reinforced AFRP		-	-	N15		-
		Graphite (tech.)		80 Shore	-	N16		-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1		-
			heat treated	280	943	S2		-
		Ni- or Co-alloyed	annealed	250	839	S3		-
			heat treated	350	1177	S4		-
			casting	320	1076	S5		-
	Titanium alloys	Pure titan		200	675	S6		-
		α- and β-alloys, heat treated		375	1262	S7		-
		β-alloys		410	1396	S8		-
	Wolfram alloys			300	1013	S9		-
	Molybdän alloys			300	1013	S10		-
H	Hardened steel	hardened		50 HRC	-	H1		-
		hardened		55 HRC	-	H2		-
		hardened		60 HRC	-	H3		-
	Hardened cast iron	hardened		55 HRC	-	H4		-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

ARNO WERKZEUGE

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Square shoulder and high feed (HFC) milling with just one tool.

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The positive face-milling-cutter, in which both a round and an octogonal insert can be used.

For the following feed tables the values must be corrected depending on the material being machined in line with the correction factor.

An example using a cutter with ø 6 mm is detailed:

V_c-table

ISO	Material	Strength [N/mm² - HB]	Kf [x f_z]	TiAlN V_c [m/min]
P	General construction steel	< 800 N/mm²	1,2	100 - 150
	Free cutting steel	< 800 N/mm²	1,2	100 - 150
	Case hardened steel, non alloyed	< 800 N/mm²	1,2	100 - 150
	Alloyed case hardened steel	< 1000 N/mm²	1	90 - 120
	Tempering steel, non alloyed	< 850 N/mm²	1,2	90 - 130
	Tempering steel, non alloyed	< 1000 N/mm²	1	60 - 90
	Tempering steel, alloyed	< 800 N/mm²	1,2	90 - 120
	Tempering steel, alloyed	< 1300 N/mm²	0,8	60 - 80
	Steel castings	< 850 N/mm²	1,2	70 - 100

f_z-table

Ø d_1	Correction factor		
[mm]	1	0,7	0,8
1	0,004	0,003	0,003
2	0,008	0,006	0,006
3	0,012	0,008	0,010
4	0,016	0,011	0,013
5	0,020	0,014	0,016
6	0,024	0,017	0,019
8	0,032	0,022	0,026

For case-hardening alloy steel the feed value from the table is valid: Kf (f_z) = 1 (according to 100 %) f_z = 0,024
For heat treatable steel alloys < 1300 N/mm² the feed value from the table is reduced by 20 %.
Kf (fz) = 0,8 (according to 80 %) fz = 0,019

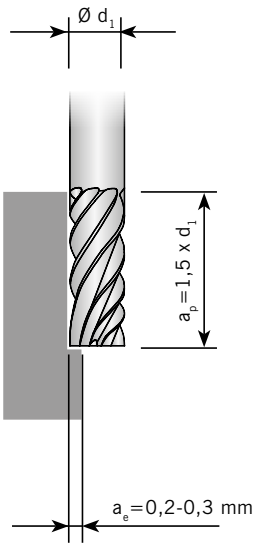
General rule:

Feed per tooth: = f_z • Kf (f_z)

For axial plunge milling: = Table value / Number of teeth

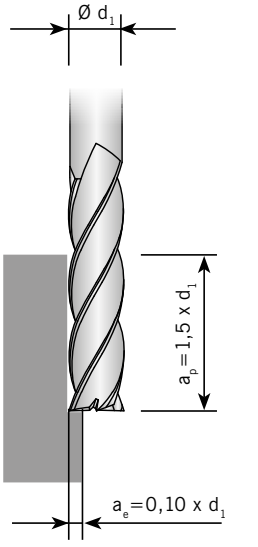
Feed per tooth with radial depth of cut from 0,2 – 0,3 mm

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,004	0,003	0,003	0,004	0,004	0,005	0,006	0,006	0,007	0,008
2	0,008	0,006	0,006	0,007	0,009	0,010	0,012	0,013	0,014	0,015
3	0,012	0,008	0,010	0,011	0,013	0,014	0,018	0,019	0,022	0,023
4	0,016	0,011	0,013	0,014	0,018	0,019	0,024	0,026	0,029	0,030
5	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
6	0,024	0,017	0,019	0,022	0,026	0,029	0,036	0,038	0,043	0,046
8	0,032	0,022	0,026	0,029	0,035	0,038	0,048	0,051	0,058	0,061
10	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
12	0,048	0,034	0,038	0,043	0,053	0,058	0,072	0,077	0,086	0,091
14	0,056	0,039	0,045	0,050	0,062	0,067	0,084	0,090	0,101	0,106
16	0,064	0,045	0,051	0,058	0,070	0,077	0,096	0,102	0,115	0,122
18	0,072	0,050	0,058	0,065	0,079	0,086	0,108	0,115	0,130	0,137
20	0,080	0,056	0,064	0,072	0,088	0,096	0,120	0,128	0,144	0,152
25	0,100	0,070	0,080	0,090	0,110	0,120	0,150	0,160	0,180	0,190



Feed per tooth with radial depth of cut of 10 % of the cutter (ø d_1)

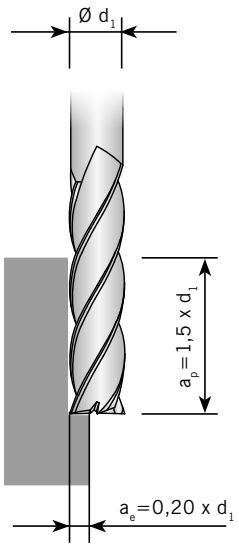
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,003	0,002	0,002	0,003	0,003	0,004	0,005	0,005	0,005	0,006
2	0,008	0,006	0,006	0,007	0,009	0,010	0,012	0,013	0,014	0,015
3	0,012	0,008	0,010	0,011	0,013	0,014	0,018	0,019	0,022	0,023
4	0,014	0,010	0,011	0,013	0,015	0,017	0,021	0,022	0,025	0,027
5	0,017	0,012	0,014	0,015	0,019	0,020	0,026	0,027	0,031	0,032
6	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
8	0,027	0,019	0,022	0,024	0,030	0,032	0,041	0,043	0,049	0,051
10	0,033	0,023	0,026	0,030	0,036	0,040	0,050	0,053	0,059	0,063
12	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
14	0,047	0,033	0,038	0,042	0,052	0,056	0,071	0,075	0,085	0,089
16	0,053	0,037	0,042	0,048	0,058	0,064	0,080	0,085	0,095	0,101
18	0,060	0,042	0,048	0,054	0,066	0,072	0,090	0,096	0,108	0,114
20	0,067	0,047	0,054	0,060	0,074	0,080	0,101	0,107	0,121	0,127
25	0,083	0,058	0,066	0,075	0,091	0,100	0,125	0,133	0,149	0,158



Attention: Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with a_p = 1 x d_1 -> 1,2 with a_p = 0,5 x d_1

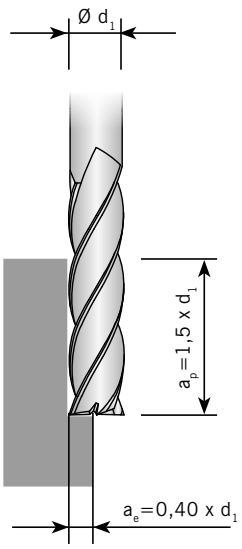
Feed per tooth with radial depth of cut of 20 % of the cutter (ø d_1)

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,002	0,001	0,001	0,001	0,002	0,002	0,003	0,003	0,003	0,003
2	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
3	0,008	0,005	0,006	0,007	0,008	0,009	0,012	0,012	0,014	0,015
4	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
5	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
6	0,015	0,010	0,012	0,013	0,016	0,018	0,022	0,024	0,027	0,028
8	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
10	0,025	0,017	0,020	0,022	0,027	0,030	0,037	0,040	0,045	0,047
12	0,030	0,021	0,024	0,027	0,033	0,036	0,045	0,048	0,054	0,057
14	0,035	0,024	0,028	0,031	0,038	0,042	0,052	0,056	0,063	0,066
16	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
18	0,045	0,031	0,036	0,040	0,049	0,054	0,067	0,072	0,081	0,085
20	0,050	0,035	0,040	0,045	0,055	0,060	0,075	0,080	0,090	0,095
25	0,063	0,044	0,050	0,056	0,069	0,075	0,094	0,100	0,113	0,119



Feed per tooth with radial depth of cut of 40 % of the cutter (ø d_1)

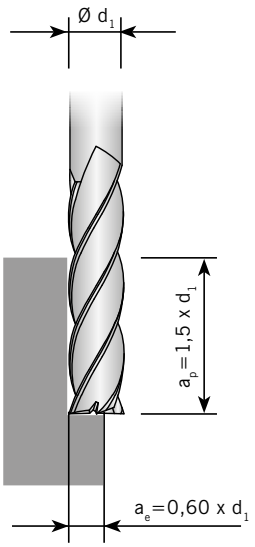
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002	0,003
2	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
3	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
4	0,008	0,005	0,006	0,007	0,008	0,009	0,012	0,012	0,014	0,015
5	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
6	0,012	0,008	0,009	0,010	0,013	0,014	0,018	0,019	0,021	0,022
8	0,016	0,011	0,012	0,014	0,017	0,019	0,024	0,025	0,028	0,030
10	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
12	0,024	0,016	0,019	0,021	0,026	0,028	0,036	0,038	0,043	0,045
14	0,028	0,019	0,022	0,025	0,030	0,033	0,042	0,044	0,050	0,053
16	0,032	0,022	0,025	0,028	0,035	0,038	0,048	0,051	0,057	0,060
18	0,036	0,025	0,028	0,032	0,039	0,043	0,054	0,057	0,064	0,068
20	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
25	0,050	0,035	0,040	0,045	0,055	0,060	0,075	0,080	0,090	0,095



Attention: Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with a_p = 1 x d_1 -> 1,2 with a_p = 0,5 x d_1

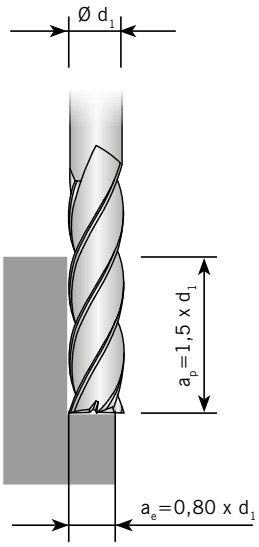
Feed per tooth with radial depth of cut of 60 % of the cutter (ø d_1)

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,005	0,005	0,006
3	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
4	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
5	0,008	0,005	0,006	0,007	0,009	0,010	0,012	0,013	0,015	0,016
6	0,009	0,006	0,007	0,008	0,010	0,011	0,014	0,015	0,017	0,018
8	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
10	0,016	0,011	0,013	0,014	0,017	0,019	0,024	0,026	0,029	0,030
12	0,019	0,013	0,015	0,017	0,021	0,023	0,029	0,031	0,035	0,037
14	0,022	0,015	0,018	0,020	0,025	0,027	0,034	0,036	0,040	0,043
16	0,026	0,018	0,020	0,023	0,028	0,031	0,039	0,041	0,046	0,049
18	0,029	0,020	0,023	0,026	0,032	0,035	0,043	0,046	0,052	0,055
20	0,032	0,022	0,026	0,029	0,035	0,039	0,048	0,052	0,058	0,061
25	0,040	0,028	0,032	0,036	0,045	0,049	0,061	0,065	0,073	0,077



Feed per tooth with radial depth of cut of 80 % of the cutter (ø d_1)

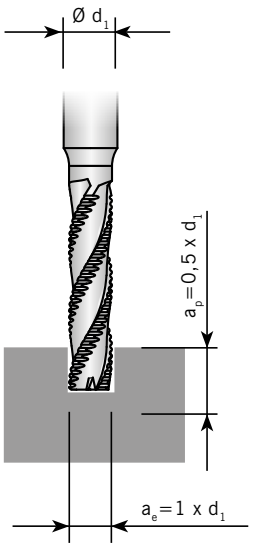
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001
2	0,002	0,001	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,004
3	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
4	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
5	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
6	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,012	0,013	0,014
8	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
10	0,012	0,008	0,010	0,011	0,013	0,015	0,018	0,020	0,022	0,023
12	0,015	0,010	0,012	0,013	0,016	0,018	0,022	0,024	0,027	0,028
14	0,017	0,012	0,014	0,015	0,019	0,021	0,026	0,028	0,031	0,033
16	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
18	0,022	0,015	0,018	0,020	0,024	0,027	0,033	0,036	0,040	0,042
20	0,025	0,017	0,020	0,022	0,027	0,030	0,037	0,040	0,045	0,047
25	0,031	0,022	0,025	0,028	0,034	0,037	0,047	0,050	0,056	0,059



Attention: Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with a_p = 1 x d_1 -> 1,2 with a_p = 0,5 x d_1

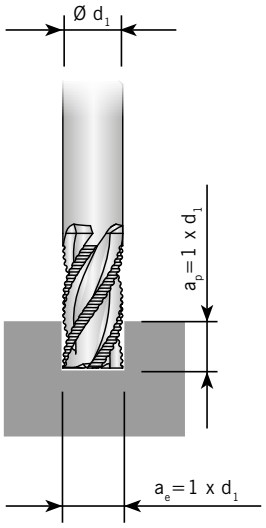
Feed per tooth when full slot milling ➜ ap = 0,5 x d_1

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,002	0,001	0,001	0,001	0,002	0,002	0,003	0,003	0,003	0,003
2	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
3	0,007	0,004	0,005	0,006	0,007	0,008	0,010	0,011	0,012	0,013
4	0,009	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,016	0,017
5	0,011	0,007	0,008	0,009	0,012	0,013	0,016	0,017	0,019	0,020
6	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
8	0,018	0,012	0,014	0,016	0,019	0,021	0,027	0,028	0,032	0,034
10	0,022	0,015	0,017	0,019	0,024	0,026	0,033	0,035	0,039	0,041
12	0,030	0,021	0,024	0,027	0,033	0,036	0,045	0,048	0,054	0,057
14	0,032	0,022	0,025	0,028	0,035	0,038	0,048	0,051	0,057	0,060
16	0,036	0,025	0,028	0,032	0,039	0,043	0,054	0,057	0,064	0,068
18	0,042	0,029	0,033	0,037	0,046	0,050	0,063	0,067	0,075	0,079
20	0,045	0,031	0,036	0,040	0,049	0,054	0,067	0,072	0,081	0,085
25	0,056	0,039	0,044	0,050	0,061	0,067	0,084	0,089	0,100	0,106



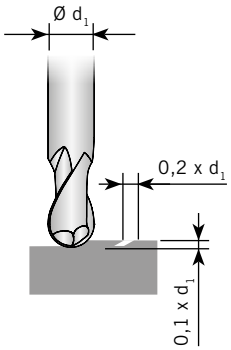
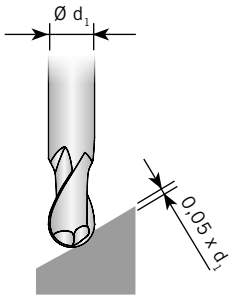
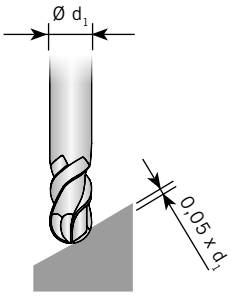
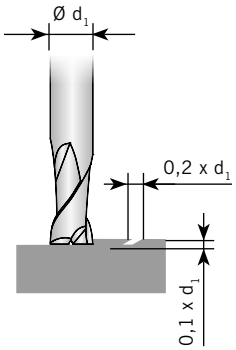
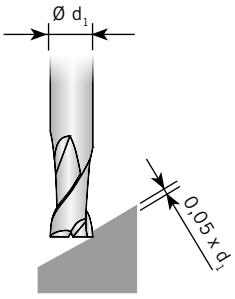
Feed per tooth when full slot milling ➜ ap = 1 x d_1

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,005	0,005
3	0,005	0,003	0,004	0,004	0,005	0,005	0,007	0,007	0,008	0,009
4	0,006	0,004	0,005	0,005	0,006	0,007	0,009	0,009	0,011	0,011
5	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,011	0,013	0,014
6	0,008	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,015	0,016
8	0,012	0,008	0,009	0,011	0,013	0,014	0,018	0,019	0,021	0,022
10	0,014	0,010	0,011	0,013	0,016	0,017	0,021	0,023	0,026	0,027
12	0,020	0,014	0,016	0,018	0,021	0,023	0,029	0,031	0,035	0,037
14	0,021	0,015	0,017	0,019	0,023	0,025	0,031	0,033	0,037	0,040
16	0,023	0,016	0,019	0,021	0,026	0,028	0,035	0,037	0,042	0,044
18	0,027	0,019	0,022	0,025	0,030	0,033	0,041	0,044	0,049	0,052
20	0,029	0,020	0,023	0,026	0,032	0,035	0,044	0,047	0,053	0,056
25	0,036	0,025	0,029	0,033	0,040	0,044	0,055	0,058	0,066	0,069



Attention: Feed rates are reduced by 10 - 20 % for uncoated tools.

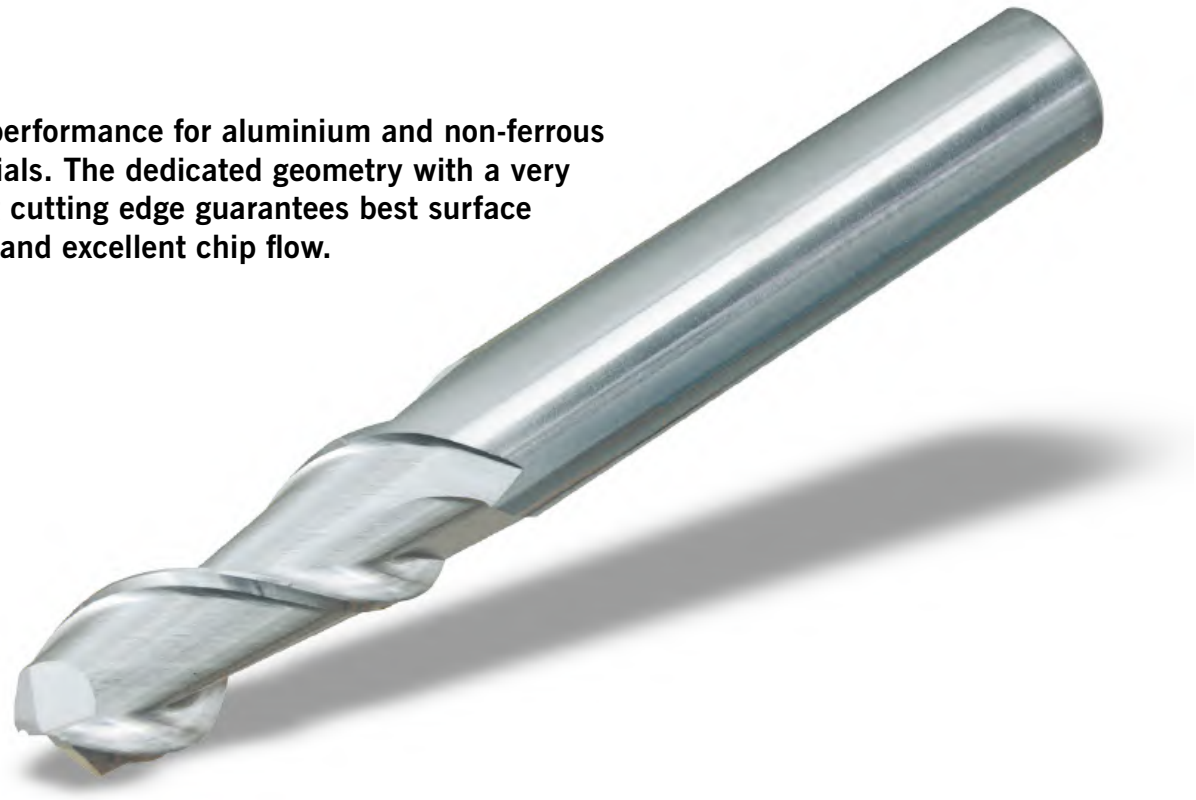
Feed rates for ball nosed- and High feed cutters

	Ball nose end milling cutters	Ball nose end milling cutters	Ball nose cutter for mold and die production	Torus end milling cutters	Torus end milling cutters
					
d_1 [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]
2	0,015	0,010	0,005	0,010	0,015
3	0,030	0,020	0,015	0,015	0,020
4	0,040	0,030	0,030	0,020	0,030
5	0,060	0,050	0,050	0,030	0,040
6	0,070	0,060	0,060	0,050	0,060
8	0,100	0,080	0,070	0,070	0,080
10	0,120	0,100	0,080	0,080	0,100
12	0,150	0,120	0,090	0,100	0,120
16	0,180	0,150	0,100	0,120	0,150
18	0,200	0,180	0,110	0,140	0,160
20	0,220	0,200	0,120	0,150	0,180
25	0,240	0,220	0,140	0,160	0,200

Attention: Feed rates are reduced by 10 - 20 % for uncoated tools.

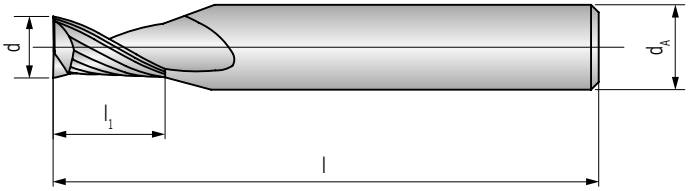
HIGH PERFORMANCE FOR ALUMINIUM AND NON-FERROUS MATERIALS.

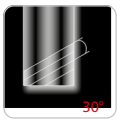
Best performance for aluminium and non-ferrous materials. The dedicated geometry with a very strong cutting edge guarantees best surface finish and excellent chip flow.

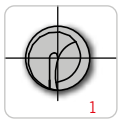


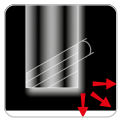
AFA50116-...

1 flute, mid-length design









Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiCN
AFA50116-020	2	3	8	50	◆
AFA50116-030	3	3	12	50	◆
AFA50116-040	4	4	15	60	◆
AFA50116-050	5	5	17	60	◆
AFA50116-060	6	6	20	65	◆
AFA50116-080	8	8	22	65	◆
AFA50116-100	10	10	25	75	◆
AFA50116-120	12	12	30	80	◆

HC = Carbide coated

P	
M	
K	
N	●
S	
H	

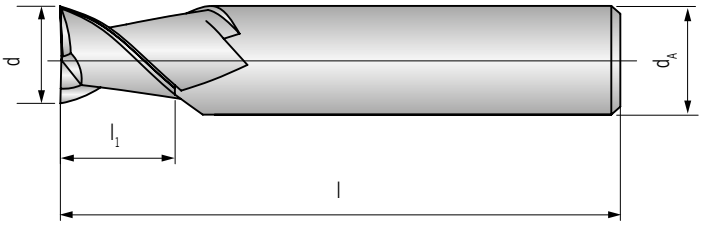
● Main application

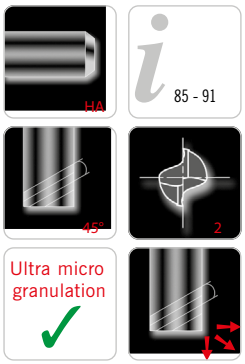
○ Secondary application

Dimensions in mm

AFA50220-...

2 flutes, short design





Shank DIN 6535HA	d *-0,015*	d_A *h6*	l_1	l	HC TiCN
AFA50220-030	3	6	5	50	◆
AFA50220-040	4	6	8	54	◆
AFA50220-050	5	6	9	54	◆
AFA50220-060	6	6	10	54	◆
AFA50220-080	8	8	12	58	◆
AFA50220-100	10	10	14	66	◆
AFA50220-120	12	12	16	73	◆
AFA50220-140	14	14	18	75	◆
AFA50220-160	16	16	22	82	◆
AFA50220-180	18	18	24	84	◆
AFA50220-200	20	20	26	92	◆

HC = Carbide coated

P	
M	
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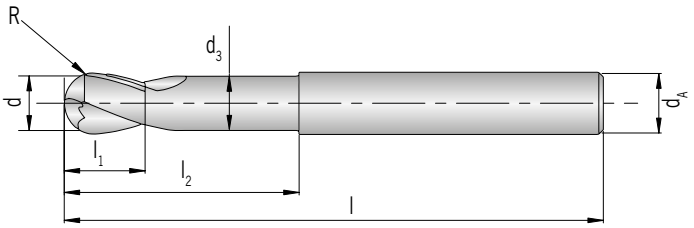
N	●
S	
H	

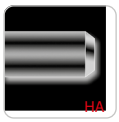
● Main application

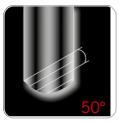
○ Secondary application

AFA51820-...

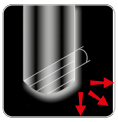
2 flutes, short design







Ultra micro granulation ✓



Shank DIN 6535HA	d *-0,02*	d_A *h6*	d_3	l_1	l_2	l	R *±0,01*	HC TiCN
AFA51820-060	6	6	5.4	5.5	25	55	3	◆
AFA51820-080	8	8	7.2	7.0	30	65	4	◆
AFA51820-100	10	10	9.0	8.5	35	75	5	◆
AFA51820-120	12	12	11.0	10.5	40	75	6	◆
AFA51820-160	16	16	14.5	14.0	50	90	8	◆
AFA51820-200	20	20	18.0	17.0	50	100	10	◆

HC = Carbide coated

P	
M	
K	
N	●
S	
H	

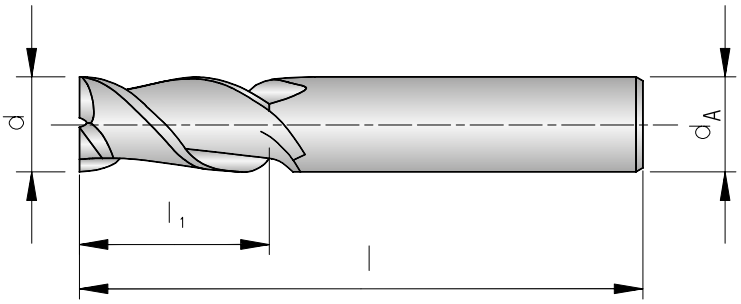
● Main application

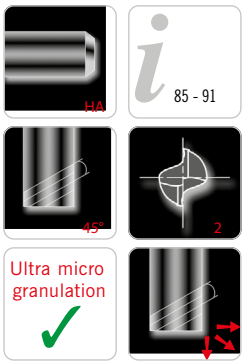
○ Secondary application

Dimensions in mm

AFA51521-...

2 flutes, long design, uncoated





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HU AK1010
AFA51521-030	3	6	8	57	◆
AFA51521-040	4	6	11	57	◆
AFA51521-050	5	6	13	57	◆
AFA51521-060	6	6	13	57	◆
AFA51521-080	8	8	19	63	◆
AFA51521-100	10	10	22	72	◆
AFA51521-120	12	12	26	83	◆
AFA51521-160	16	16	32	92	◆
AFA51521-200	20	20	38	104	◆

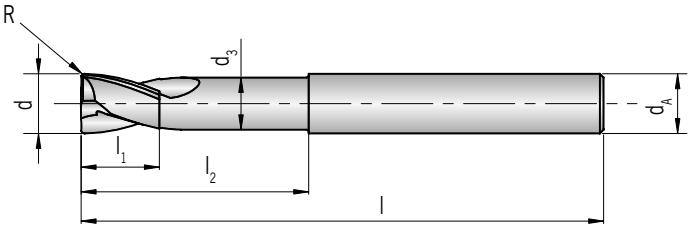
HU = Carbide uncoated

P	
M	
K	
N	●
S	
H	

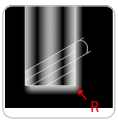
● Main application
○ Secondary application

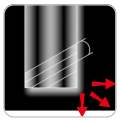
AFA50720-...R...

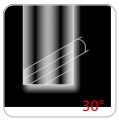
2 flutes, long design with corner radius



85 - 91







Ultra micro granulation ✓

Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	R	HC TiCN
AFA50720-040R0,3	4	6	3.6	5	10	50	0.3	◆
AFA50720-060R0,5	6	6	5.4	8	20	60	0.5	◆
AFA50720-080R0,6	8	8	7.2	10	30	70	0.6	◆
AFA50720-100R0,8	10	10	9.0	12	36	80	0.8	◆
AFA50720-120R1,0	12	12	11.0	14	40	90	1.0	◆
AFA50720-160R1,3	16	16	14.5	18	45	100	1.3	◆
AFA50720-200R1,6	20	20	18.0	24	45	100	1.6	◆

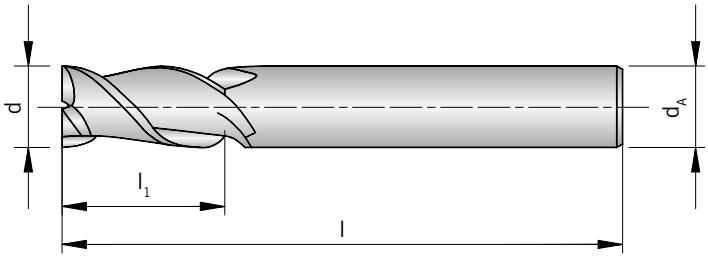
HC = Carbide coated

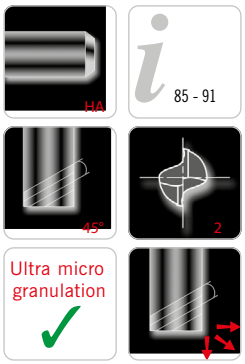
P	
M	
K	
N	●
S	
H	

● Main application
○ Secondary application

AFA51522-...

2 flutes, extra long design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiCN
AFA51522-010	1.0	6	3	40	◆
AFA51522-015	1.5	6	5	40	◆
AFA51522-020	2.0	6	6	40	◆
AFA51522-025	2.5	6	8	40	◆
AFA51522-030	3.0	6	11	50	◆
AFA51522-040	4.0	6	13	50	◆
AFA51522-040A	4.0	6	16	70	◆
AFA51522-050	5.0	6	17	55	◆
AFA51522-050A	5.0	6	22	70	◆
AFA51522-060	6.0	6	17	55	◆
AFA51522-060A	6.0	6	22	70	◆
AFA51522-070	7.0	8	22	65	◆
AFA51522-080	8.0	8	22	65	◆
AFA51522-080A	8.0	8	28	80	◆
AFA51522-090	9.0	10	27	70	◆
AFA51522-100	10.0	10	27	70	◆
AFA51522-100A	10.0	10	32	90	◆
AFA51522-120	12.0	12	32	80	◆
AFA51522-120A	12.0	12	38	95	◆
AFA51522-140	14.0	14	37	85	◆
AFA51522-160	16.0	16	42	100	◆
AFA51522-160A	16.0	16	52	110	◆
AFA51522-180	18.0	16	48	110	◆
AFA51522-200	20.0	20	48	110	◆
AFA51522-200A	20.0	20	55	110	◆

HC = Carbide coated

P	
M	
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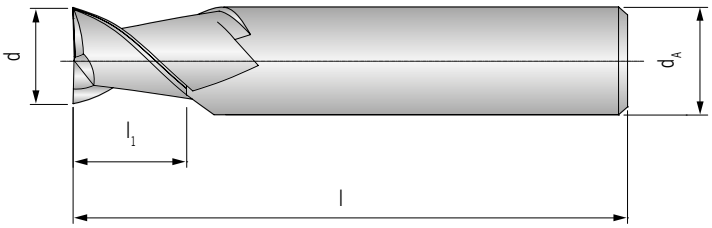
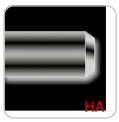
N	●
S	
H	

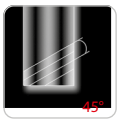
● Main application
○ Secondary application

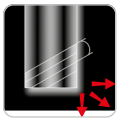
AFA50222-...

2 flutes, extra long design









Shank DIN 6535HA	d *-0,015*	d_A *h6*	l_1	l	HC TiCN
AFA50222-010A	1.0	6	3	50	◆
AFA50222-010B	1.0	6	6	60	◆
AFA50222-012A	1.2	6	4	50	◆
AFA50222-015A	1.5	6	5	50	◆
AFA50222-015B	1.5	6	8	60	◆
AFA50222-020A	2.0	6	6	50	◆
AFA50222-020B	2.0	6	10	60	◆
AFA50222-025A	2.5	6	8	55	◆
AFA50222-030A	3.0	6	11	55	◆
AFA50222-030B	3.0	6	15	65	◆
AFA50222-040A	4.0	6	13	55	◆
AFA50222-040B	4.0	6	16	65	◆
AFA50222-050A	5.0	6	17	55	◆
AFA50222-050B	5.0	6	22	60	◆
AFA50222-060A	6.0	6	17	60	◆
AFA50222-060B	6.0	6	25	70	◆
AFA50222-070A	7.0	8	22	65	◆
AFA50222-080A	8.0	8	22	70	◆
AFA50222-080B	8.0	8	30	80	◆
AFA50222-100A	10.0	10	27	75	◆
AFA50222-100B	10.0	10	35	90	◆
AFA50222-120A	12.0	12	32	80	◆
AFA50222-120B	12.0	12	40	95	◆
AFA50222-140A	14.0	16	37	90	◆
AFA50222-160A	16.0	16	42	100	◆
AFA50222-160B	16.0	16	52	110	◆

Shank DIN 6535HA	d *-0,015*	d_A *h6*	l_1	l	HC TiCN
AFA50222-180A	18.0	16	48	100	◆
AFA50222-200A	20.0	20	48	100	◆
AFA50222-200B	20.0	20	55	110	◆

HC = Carbide coated

P	
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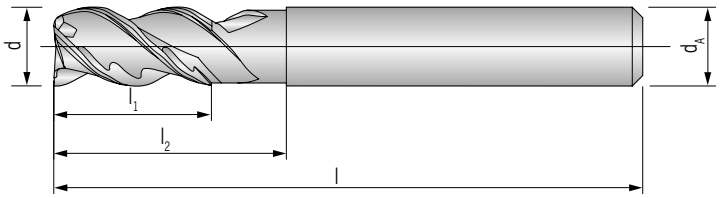
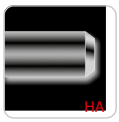
● Main application

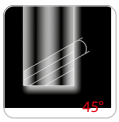
○ Secondary application

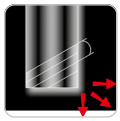
AFA51836-...

3 flutes, mid-length design









Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l_2	l	HC TiCN
AFA51836-060	6	6	13	20	70	◆
AFA51836-080	8	8	19	26	80	◆
AFA51836-100	10	10	22	32	80	◆
AFA51836-120	12	12	26	36	90	◆
AFA51836-140	14	16	28	40	110	◆
AFA51836-160	16	16	32	46	120	◆
AFA51836-180	18	20	35	50	120	◆
AFA51836-200	20	20	38	52	120	◆

HC = Carbide coated

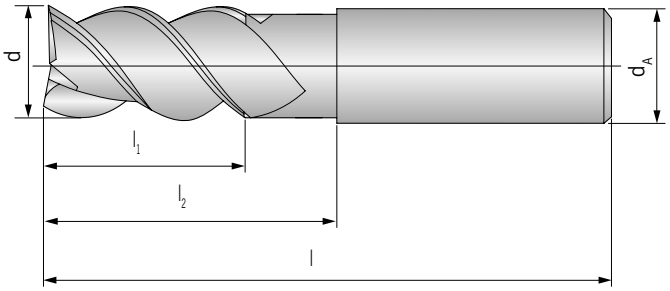
P	
M	
K	
N	●
S	
H	

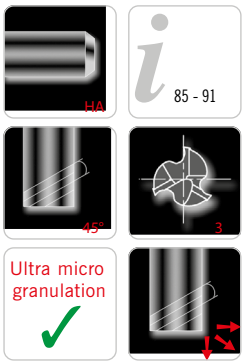
● Main application
○ Secondary application

Dimensions in mm

AFA52336-...

3 flutes, mid-length design, with neck





Shank DIN 6535HA	d *-0,015*	d_A *h6*	l_1	l_2	l	HC TiCN
AFA52336-030	3	6	8	12	57	◆
AFA52336-040	4	6	11	18	57	◆
AFA52336-050	5	6	13	18	57	◆
AFA52336-060	6	6	13	18	57	◆
AFA52336-080	8	8	21	25	63	◆
AFA52336-100	10	10	22	30	72	◆
AFA52336-120	12	12	26	36	83	◆
AFA52336-160	16	16	36	42	92	◆
AFA52336-200	20	20	41	52	104	◆

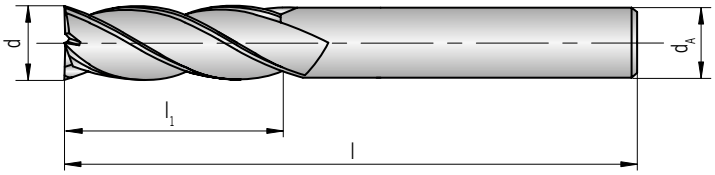
HC = Carbide coated

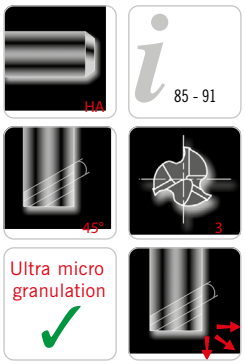
P	
M	
K	
N	●
S	
H	

● Main application
○ Secondary application

AFA51531...

3 flutes, long design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiCN
AFA51531-030	3	6	11	50	◆
AFA51531-030A	3	6	14	65	◆
AFA51531-040	4	6	13	50	◆
AFA51531-040A	4	6	16	65	◆
AFA51531-050	5	6	17	55	◆
AFA51531-050A	5	6	22	70	◆
AFA51531-060	6	6	17	55	◆
AFA51531-060A	6	6	22	70	◆
AFA51531-070	7	8	22	65	◆
AFA51531-080	8	8	22	65	◆
AFA51531-080A	8	8	28	80	◆
AFA51531-090	9	10	27	70	◆
AFA51531-100	10	10	27	70	◆
AFA51531-100A	10	10	32	90	◆
AFA51531-120	12	12	32	80	◆
AFA51531-120A	12	12	38	95	◆
AFA51531-140	14	14	37	85	◆
AFA51531-160	16	16	42	100	◆
AFA51531-160A	16	16	52	110	◆
AFA51531-180	18	16	48	110	◆
AFA51531-200	20	20	48	110	◆
AFA51531-200A	20	20	55	110	◆

HC = Carbide coated

P	
M	
K	
N	●
S	
H	

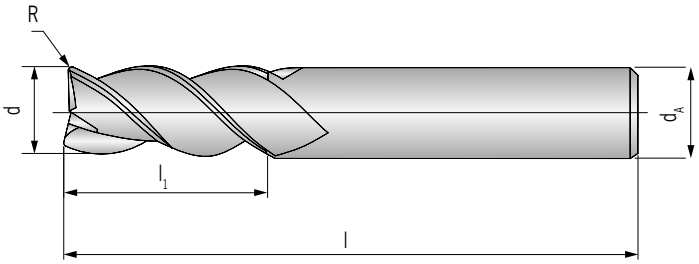
● Main application

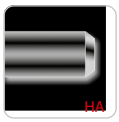
○ Secondary application

Dimensions in mm

AFA50231-...R...

3 flutes, long design, with corner radius





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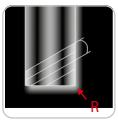
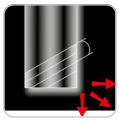
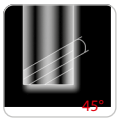






Ultra micro granulation ✓

Shank DIN 6535HA	d *-0,015*	d_A *h6*	l_1	l	R	HC TiCN
AFA50231-030R0,5	3	6	12	57	0.5	◆
AFA50231-030R1,0	3	6	12	57	1.0	◆
AFA50231-040R0,5	4	6	15	57	0.5	◆
AFA50231-040R1,0	4	6	15	57	1.0	◆
AFA50231-050R0,5	5	6	20	57	0.5	◆
AFA50231-050R1,0	5	6	20	57	1.0	◆
AFA50231-060R0,5	6	6	20	65	0.5	◆
AFA50231-060R1,0	6	6	20	65	1.0	◆
AFA50231-080R0,5	8	8	22	65	0.5	◆
AFA50231-080R1,0	8	8	22	65	1.0	◆
AFA50231-100R0,5	10	10	25	70	0.5	◆
AFA50231-100R1,0	10	10	25	70	1.0	◆
AFA50231-100R2,0	10	10	25	70	2.0	◆
AFA50231-120R0,5	12	12	25	75	0.5	◆
AFA50231-120R1,0	12	12	25	75	1.0	◆
AFA50231-120R2,0	12	12	25	75	2.0	◆
AFA50231-160R0,5	16	16	35	90	0.5	◆
AFA50231-160R1,0	16	16	35	90	1.0	◆
AFA50231-160R2,0	16	16	35	90	2.0	◆
AFA50231-200R0,5	20	20	40	100	0.5	◆
AFA50231-200R1,0	20	20	40	100	1.0	◆
AFA50231-200R2,0	20	20	40	100	2.0	◆

HC = Carbide coated

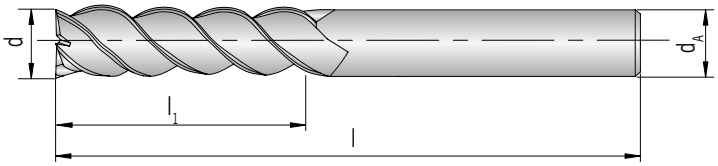
P	
M	
K	
N	●
S	
H	

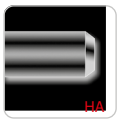
● Main application

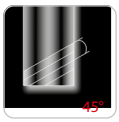
○ Secondary application

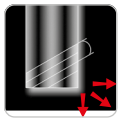
AFA51532-...

3 flutes, extra long design









Shank DIN 6535HA	d -0,03	d_A h6	l_1	l	HC TiCN
AFA51532-030A	3	6	15	65	◆
AFA51532-030B	3	6	20	70	◆
AFA51532-030C	3	6	25	75	◆
AFA51532-040A	4	6	20	70	◆
AFA51532-040B	4	6	25	75	◆
AFA51532-040C	4	6	30	80	◆
AFA51532-050A	5	6	25	70	◆
AFA51532-050B	5	6	30	75	◆
AFA51532-050C	5	6	35	80	◆
AFA51532-060A	6	6	25	70	◆
AFA51532-060B	6	6	30	75	◆
AFA51532-060C	6	6	35	80	◆
AFA51532-060D	6	6	42	90	◆
AFA51532-080A	8	8	30	80	◆
AFA51532-080B	8	8	35	85	◆
AFA51532-080C	8	8	40	90	◆
AFA51532-080D	8	8	45	95	◆
AFA51532-100A	10	10	35	90	◆
AFA51532-100B	10	10	45	100	◆
AFA51532-100C	10	10	55	110	◆
AFA51532-100D	10	10	65	120	◆
AFA51532-120A	12	12	40	95	◆
AFA51532-120B	12	12	45	100	◆
AFA51532-120C	12	12	55	110	◆
AFA51532-120D	12	12	65	120	◆
AFA51532-120E	12	12	75	135	◆
AFA51532-120F	12	12	60	110	◆
AFA51532-160A	16	16	55	120	◆
AFA51532-160B	16	16	65	135	◆
AFA51532-160C	16	16	75	150	◆
AFA51532-160D	16	16	85	160	◆
AFA51532-160E	16	16	95	180	◆
AFA51532-160F	16	16	105	190	◆
AFA51532-160G	16	16	115	200	◆
AFA51532-200A	20	20	55	125	◆
AFA51532-200B	20	20	65	140	◆
AFA51532-200C	20	20	75	150	◆

Dimensions in mm

Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiCN
AFA51532-200D	20	20	85	160	◆
AFA51532-200E	20	20	95	180	◆
AFA51532-200F	20	20	105	190	◆
AFA51532-200G	20	20	115	200	◆
AFA51532-200H	20	20	125	220	◆

HC = Carbide coated

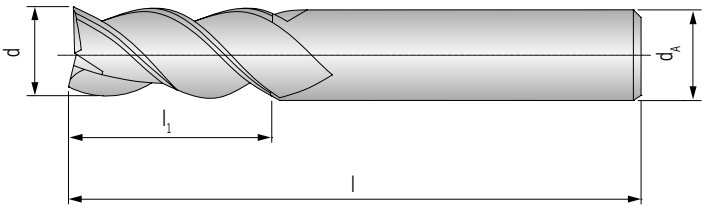
P	
M	
K	
N	●
S	
H	

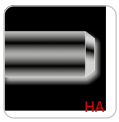
● Main application

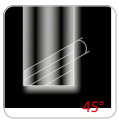
○ Secondary application

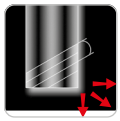
AFA50232-...

3 flutes, extra long design









Shank DIN 6535HA	d -0,015	d_A h6	l_1	l	HC TiCN
AFA50232-010A	1.0	6	3.0	50	◆
AFA50232-010B	1.0	6	2.0	40	◆
AFA50232-010C	1.0	6	2.5	40	◆
AFA50232-010D	1.0	6	4.0	60	◆
AFA50232-010E	1.0	6	6.0	60	◆
AFA50232-012A	1.2	6	4.0	50	◆
AFA50232-015A	1.5	6	5.0	50	◆
AFA50232-015B	1.5	6	3.0	40	◆
AFA50232-015C	1.5	6	8.0	60	◆
AFA50232-015D	1.5	6	10.0	60	◆
AFA50232-020A	2.0	6	6.0	50	◆
AFA50232-020B	2.0	6	3.0	40	◆
AFA50232-020C	2.0	6	8.0	60	◆
AFA50232-020D	2.0	6	10.0	60	◆
AFA50232-020E	2.0	6	12.0	60	◆
AFA50232-025A	2.5	6	10.0	55	◆
AFA50232-025B	2.5	6	8.0	40	◆
AFA50232-025C	2.5	6	12.0	60	◆
AFA50232-030A	3.0	6	11.0	55	◆
AFA50232-030B	3.0	6	4.0	45	◆
AFA50232-030C	3.0	6	8.0	45	◆
AFA50232-030D	3.0	6	15.0	65	◆
AFA50232-030E	3.0	6	20.0	70	◆
AFA50232-030F	3.0	6	25.0	75	◆
AFA50232-030G	3.0	6	30.0	80	◆
AFA50232-035A	3.5	6	12.0	55	◆
AFA50232-040A	4.0	6	13.0	55	◆
AFA50232-040B	4.0	6	5.0	45	◆
AFA50232-040C	4.0	6	11.0	45	◆
AFA50232-040D	4.0	6	16.0	65	◆
AFA50232-040E	4.0	6	20.0	70	◆
AFA50232-040F	4.0	6	26.0	75	◆
AFA50232-040G	4.0	6	30.0	80	◆
AFA50232-045A	4.5	6	15.0	55	◆
AFA50232-050A	5.0	6	17.0	55	◆
AFA50232-050B	5.0	6	6.0	45	◆
AFA50232-050C	5.0	6	22.0	60	◆

Dimensions in mm

Shank DIN 6535HA	d -0,015	d_A h6	l_1	l	HC TiCN
AFA50232-050D	5.0	6	25.0	70	◆
AFA50232-050E	5.0	6	30.0	75	◆
AFA50232-050F	5.0	6	35.0	80	◆
AFA50232-050G	5.0	6	40.0	85	◆
AFA50232-050H	5.0	6	45.0	90	◆
AFA50232-055A	5.5	6	17.0	55	◆
AFA50232-060A	6.0	6	17.0	60	◆
AFA50232-060B	6.0	6	7.0	50	◆
AFA50232-060C	6.0	6	13.0	50	◆
AFA50232-060D	6.0	6	22.0	60	◆
AFA50232-060E	6.0	6	25.0	70	◆
AFA50232-060F	6.0	6	30.0	75	◆
AFA50232-060G	6.0	6	35.0	80	◆
AFA50232-060H	6.0	6	42.0	90	◆
AFA50232-060I	6.0	6	50.0	100	◆
AFA50232-070A	7.0	8	22.0	65	◆
AFA50232-080A	8.0	8	22.0	70	◆
AFA50232-080B	8.0	8	9.0	60	◆
AFA50232-080C	8.0	8	19.0	60	◆
AFA50232-080D	8.0	8	28.0	80	◆
AFA50232-080E	8.0	8	30.0	80	◆
AFA50232-080F	8.0	8	35.0	85	◆
AFA50232-080G	8.0	8	40.0	90	◆
AFA50232-080H	8.0	8	45.0	95	◆
AFA50232-080I	8.0	8	50.0	100	◆
AFA50232-080J	8.0	8	55.0	105	◆
AFA50232-080K	8.0	8	65.0	110	◆
AFA50232-090A	9.0	10	27.0	70	◆
AFA50232-100A	10.0	10	27.0	75	◆
AFA50232-100B	10.0	10	11.0	65	◆
AFA50232-100C	10.0	10	22.0	65	◆
AFA50232-100D	10.0	10	32.0	90	◆
AFA50232-100E	10.0	10	35.0	90	◆
AFA50232-100F	10.0	10	40.0	90	◆
AFA50232-100G	10.0	10	45.0	100	◆
AFA50232-100H	10.0	10	50.0	100	◆
AFA50232-100I	10.0	10	55.0	110	◆
AFA50232-100J	10.0	10	60.0	110	◆
AFA50232-100K	10.0	10	65.0	120	◆
AFA50232-120A	12.0	12	32.0	80	◆
AFA50232-120B	12.0	12	13.0	70	◆
AFA50232-120C	12.0	12	26.0	70	◆
AFA50232-120D	12.0	12	40.0	95	◆
AFA50232-120E	12.0	12	45.0	100	◆
AFA50232-120F	12.0	12	50.0	100	◆
AFA50232-120G	12.0	12	55.0	110	◆
AFA50232-120H	12.0	12	60.0	110	◆
AFA50232-120I	12.0	12	65.0	120	◆
AFA50232-120J	12.0	12	70.0	120	◆
AFA50232-120K	12.0	12	75.0	135	◆
AFA50232-140A	14.0	16	37.0	90	◆
AFA50232-160A	16.0	16	18.0	90	◆
AFA50232-160B	16.0	16	32.0	90	◆
AFA50232-160C	16.0	16	42.0	100	◆
AFA50232-160D	16.0	16	52.0	105	◆
AFA50232-160E	16.0	16	55.0	110	◆
AFA50232-160F	16.0	16	65.0	130	◆

Shank DIN 6535HA	d -0,015	d_A h6	l_1	l	HC TiCN
AFA50232-160G	16.0	16	75.0	150	◆
AFA50232-160H	16.0	16	85.0	160	◆
AFA50232-160I	16.0	16	95.0	180	◆
AFA50232-160J	16.0	16	105.0	190	◆
AFA50232-160K	16.0	16	115.0	200	◆
AFA50232-180A	18.0	16	48.0	100	◆
AFA50232-200A	20.0	20	22.0	90	◆
AFA50232-200B	20.0	20	38.0	90	◆
AFA50232-200C	20.0	20	48.0	100	◆
AFA50232-200D	20.0	20	55.0	110	◆
AFA50232-200E	20.0	20	65.0	130	◆
AFA50232-200F	20.0	20	75.0	150	◆
AFA50232-200G	20.0	20	85.0	160	◆
AFA50232-200H	20.0	20	95.0	180	◆
AFA50232-200I	20.0	20	105.0	190	◆
AFA50232-200J	20.0	20	115.0	200	◆
AFA50232-200K	20.0	20	125.0	220	◆

HC = Carbide coated

P	
M	
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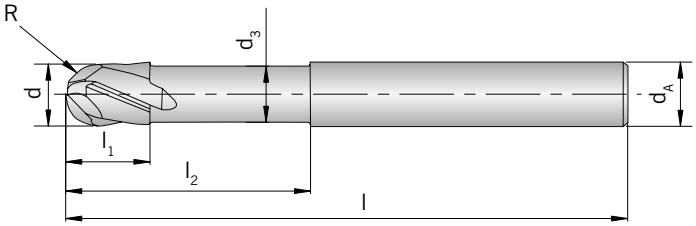
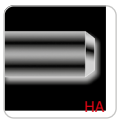
● Main application

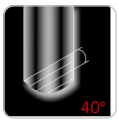
○ Secondary application

AFA51831-...

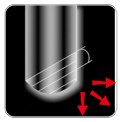
3 flutes, short design







Ultra micro granulation ✓



Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	R *±0,01*	HC TiCN
AFA51831-020	2.0	6	1.9	3.0	5.0	60	1.00	◆
AFA51831-025	2.5	6	2.4	4.0	6.0	60	1.25	◆
AFA51831-030	3.0	6	2.8	4.5	6.5	60	1.50	◆
AFA51831-035	3.5	6	3.2	5.0	7.0	65	1.75	◆
AFA51831-040	4.0	6	3.7	6.0	8.0	65	2.00	◆
AFA51831-050	5.0	6	4.6	7.5	10.0	65	2.50	◆
AFA51831-060	6.0	6	5.6	9.0	12.0	75	3.00	◆
AFA51831-080	8.0	8	7.4	12.0	25.0	75	4.00	◆
AFA51831-100	10.0	10	9.4	15.0	30.0	80	5.00	◆
AFA51831-120	12.0	12	11.4	18.0	36.0	90	6.00	◆
AFA51831-160	16.0	16	15.4	24.0	40.0	100	8.00	◆
AFA51831-200	20.0	20	18.0	30.0	50.0	110	10.00	◆

HC = Carbide coated

P	
M	
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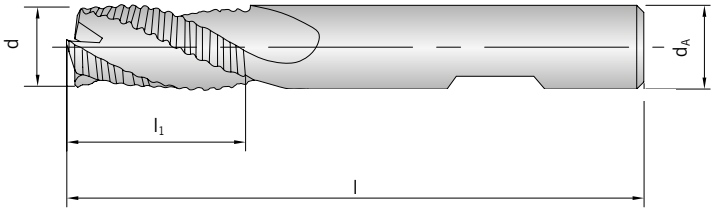
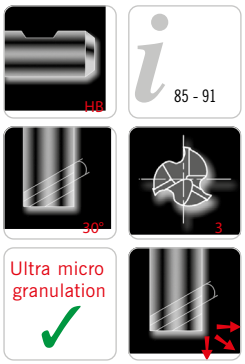
● Main application
○ Secondary application

Dimensions in mm

AFA61431-...

3 flutes, long design, uncoated





Shank DIN 6535HB	d *h10*	d_A *h6*	l_1	l	HU AK1010
AFA61431-060	6	6	16	57	◆
AFA61431-070	7	8	16	63	◆
AFA61431-080	8	8	16	63	◆
AFA61431-090	9	10	19	72	◆
AFA61431-100	10	10	22	72	◆
AFA61431-120	12	12	26	83	◆
AFA61431-140	14	14	26	83	◆
AFA61431-160	16	16	32	92	◆
AFA61431-180	18	18	32	92	◆
AFA61431-200	20	20	38	104	◆
AFA61431-250	25	25	45	121	◆

HU = Carbide uncoated

P	
M	
K	
N	●
S	
H	

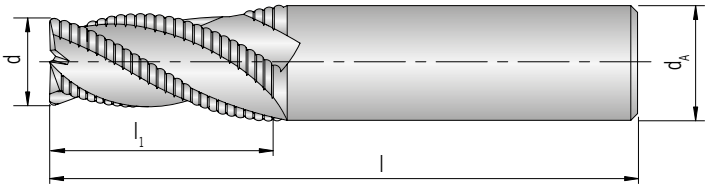
● Main application

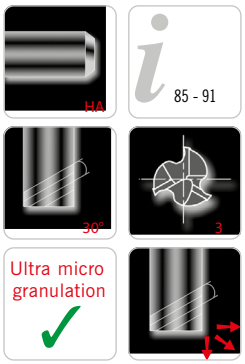
○ Secondary application

Dimensions in mm

AFA51431-...

3 flutes, long design





Shank DIN 6535HA	d *js12*	d_A *h6*	l_1	l	HC TiCN
AFA51431-060	6	6	16	57	◆
AFA51431-070	7	8	16	63	◆
AFA51431-080	8	8	16	63	◆
AFA51431-090	9	10	19	72	◆
AFA51431-100	10	10	22	72	◆
AFA51431-120	12	12	26	83	◆
AFA51431-140	14	14	26	83	◆
AFA51431-160	16	16	32	92	◆
AFA51431-180	18	18	32	92	◆
AFA51431-200	20	20	38	104	◆
AFA51431-250	25	25	45	121	◆

HC = Carbide coated

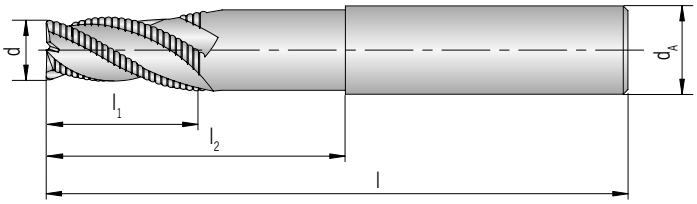
P	
M	
K	
N	●
S	
H	

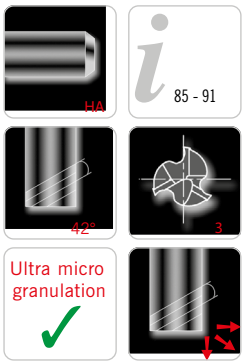
● Main application

○ Secondary application

AFA52131-...

3 flutes, long design





Shank DIN 6535HA	d *js12*	d_A *h6*	l_1	l_2	l	HC TiCN
AFA52131-040A	4	6	6	14	60	◆
AFA52131-060A	6	6	10	20	65	◆
AFA52131-060B	6	6	18	-	60	◆
AFA52131-060C	6	6	30	-	70	◆
AFA52131-070A	7	8	20	-	65	◆
AFA52131-080A	8	8	12	26	80	◆
AFA52131-080B	8	8	20	-	65	◆
AFA52131-080C	8	8	30	-	100	◆
AFA52131-100A	10	10	14	30	85	◆
AFA52131-100B	10	10	26	-	70	◆
AFA52131-100C	10	10	40	-	100	◆
AFA52131-120A	12	12	16	36	100	◆
AFA52131-120B	12	12	30	-	80	◆
AFA52131-120C	12	12	50	-	120	◆
AFA52131-160A	16	16	20	42	110	◆
AFA52131-160B	16	16	40	-	100	◆
AFA52131-160C	16	16	56	-	120	◆
AFA52131-200A	20	20	24	52	110	◆
AFA52131-200B	20	20	46	-	100	◆
AFA52131-200C	20	20	60	-	120	◆

HC = Carbide coated

P	
M	
K	
N	●
S	
H	

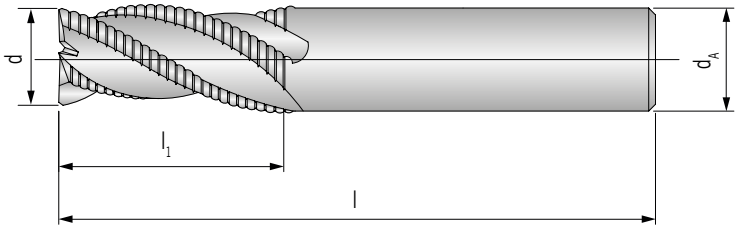
● Main application

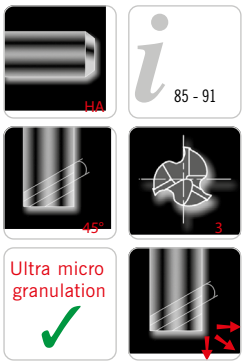
○ Secondary application

Dimensions in mm

AFA51931-...

3 flutes, long design





Shank DIN 6535HA	d *h10*	d_A *h6*	l_1	l	HC TiCN
AFA51931-040	4	6	10	55	◆
AFA51931-050	5	6	15	55	◆
AFA51931-060	6	6	15	60	◆
AFA51931-060A	6	6	25	80	◆
AFA51931-080	8	8	20	65	◆
AFA51931-080A	8	8	30	90	◆
AFA51931-100	10	10	25	70	◆
AFA51931-100A	10	10	40	100	◆
AFA51931-120	12	12	30	80	◆
AFA51931-120A	12	12	50	110	◆
AFA51931-140	14	16	35	90	◆
AFA51931-160	16	16	42	100	◆
AFA51931-160A	16	16	52	150	◆
AFA51931-180	18	20	45	100	◆
AFA51931-200	20	20	48	100	◆
AFA51931-200A	20	20	55	160	◆

HC = Carbide coated

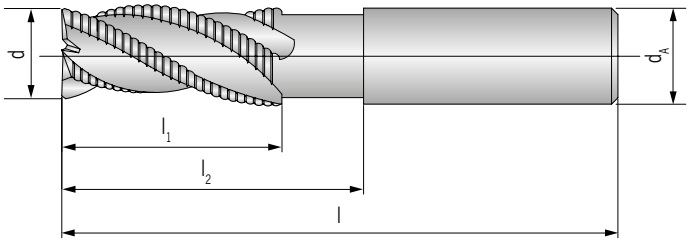
P	
M	
K	
N	●
S	
H	

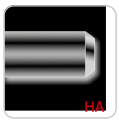
● Main application

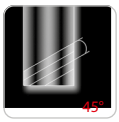
○ Secondary application

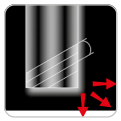
AFA52331-...

3 flutes, long design, with neck









Shank DIN 6535HA	d *h10*	d_A *h6*	l_1	l_2	l	HC TiCN
AFA52331-040	4	6	6	12	60	◆
AFA52331-050	5	6	7	20	60	◆
AFA52331-060	6	6	8	20	70	◆
AFA52331-080	8	8	10	26	80	◆
AFA52331-100	10	10	12	32	90	◆
AFA52331-120	12	12	14	36	100	◆
AFA52331-160	16	16	18	46	120	◆
AFA52331-200	20	20	22	52	120	◆

HC = Carbide coated

P	
M	
K	
N	●
S	
H	

● Main application

○ Secondary application

Dimensions in mm

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Correction factor	Cutting speed V_c (m/min) AK1010	Cutting speed V_c (m/min) VHM TiCN
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1		-	-
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2		-	-
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3		-	-
		C > 0.55 %	annealed	190	639	P4		-	-
		C > 0.55 %	hardened and tempered	300	1013	P5		-	-
		Machining steel (short-chipping)	tempered	220	745	P6		-	-
	Low alloyed steel	annealed		175	591	P7		-	-
		hardened and tempered		300	1013	P8		-	-
		hardened and tempered		380	1282	P9		-	-
		hardened and tempered		430	1477	P10		-	-
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11		-	-
		hardened		300	1013	P12		-	-
		hardened		400	1361	P13		-	-
	Stainless steel	ferritic / martensitic, annealed		200	675	P14		-	-
		martensitic, hardened and tempered		330	1114	P15		-	-
M	Stainless steel	austenitic, chilled		200	675	M1		-	-
		austenitic, precipitation-hardened (PH)		300	1013	M2		-	-
		austenitic-ferritic, Duplex		230	778	M3		-	-
K	Malleable cast iron	ferritic		200	675	K1		-	-
		pearlitic		260	867	K2		-	-
	Cast iron	low tensile strength		180	602	K3		-	-
		high tensile strength / austenitic		245	825	K4		-	-
	Cast iron with nodular graphite	ferritic		155	518	K5		-	-
		pearlitic		265	885	K6		-	-
	GGV (CGI)			200	675	K7		-	-
N	Aluminium alloys long chipping	not heat treatable		30	-	N1	1,9	280 - 430 - 580	280 - 430 - 580
		heat treatable, heat treated		100	343	N2	1,8	220 - 350 - 480	220 - 350 - 480
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3	1,9	280 - 405 - 530	280 - 405 - 530
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4	1,7	170 - 265 - 360	170 - 265 - 360
		> 12 % Si, not heat treatable		130	447	N5	1,6	120 - 200 - 280	120 - 200 - 280
	Magnesium alloys			70	250	N6	1,8	150 - 185 - 220	150 - 185 - 220
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7	1,2	100 - 170 - 240	100 - 170 - 240
		Brass, Bronze		90	314	N8	1,1	100 - 175 - 250	100 - 175 - 250
		Cu-alloys, short-chipping		110	382	N9	1,1	90 - 155 - 220	90 - 155 - 220
		High-tensile, Ampco		300	1013	N10	0,7	70 - 125 - 180	70 - 125 - 180
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11	1,9	70 - 105 - 140	70 - 105 - 140
		Duroplastic (without abrasive filling material)		-	-	N12	1,9	120 - 185 - 250	120 - 185 - 250
		Plastic glas fibre reinforced GFRP		-	-	N13	1,0	50 - 95 - 140	50 - 95 - 140
		Plastic carbon fibre reinforced CFRP		-	-	N14	1,0	50 - 95 - 140	50 - 95 - 140
		Plastic aramid fibre reinforced AFRP		-	-	N15	1,0	50 - 95 - 140	50 - 95 - 140
		Graphite (tech.)		80 Shore	-	N16		-	-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1		-	-
			heat treated	280	943	S2		-	-
		Ni- or Co-alloyed	annealed	250	839	S3		-	-
			heat treated	350	1177	S4		-	-
			casting	320	1076	S5		-	-
	Titanium alloys	Pure titan		200	675	S6		-	-
		α- and β-alloys, heat treated		375	1262	S7		-	-
		β-alloys		410	1396	S8		-	-
	Wolfram alloys			300	1013	S9		-	-
	Molybdän alloys			300	1013	S10		-	-
H	Hardened steel	hardened		50 HRC	-	H1		-	-
		hardened		55 HRC	-	H2		-	-
		hardened		60 HRC	-	H3		-	-
	Hardened cast iron	hardened		55 HRC	-	H4		-	-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

AFA

For the following feed tables the values must be corrected depending on the material being machined in line with the correction factor.

An example using a cutter with ø 6 mm is detailed:

V_c-table

ISO	Material	Strength [N/mm² - HB]	Kf [x f_z]	TiAlN V_c [m/min]
P	General construction steel	< 800 N/mm²	1,2	100 - 150
	Free cutting steel	< 800 N/mm²	1,2	100 - 150
	Case hardened steel, non alloyed	< 800 N/mm²	1,2	100 - 150
	Alloyed case hardened steel	< 1000 N/mm²	1	90 - 120
	Tempering steel, non alloyed	< 850 N/mm²	1,2	90 - 130
	Tempering steel, non alloyed	< 1000 N/mm²	1	60 - 90
	Tempering steel, alloyed	< 800 N/mm²	1,2	90 - 120
	Tempering steel, alloyed	< 1300 N/mm²	0,8	60 - 80
	Steel castings	< 850 N/mm²	1,2	70 - 100

f_z-table

Ø d_1	Correction factor		
[mm]	1	0,7	0,8
1	0,004	0,003	0,003
2	0,008	0,006	0,006
3	0,012	0,008	0,010
4	0,016	0,011	0,013
5	0,020	0,014	0,016
6	0,024	0,017	0,019
8	0,032	0,022	0,026

For case-hardening alloy steel the feed value from the table is valid: Kf (f_z) = 1 (according to 100 %) f_z = 0,024
For heat treatable steel alloys < 1300 N/mm² the feed value from the table is reduced by 20 %.
Kf (fz) = 0,8 (according to 80 %) fz = 0,019

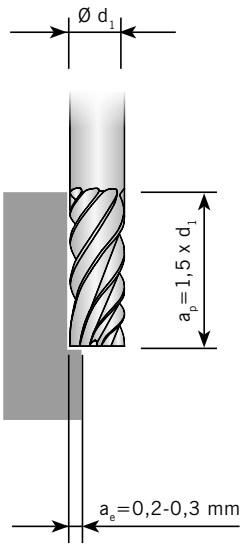
General rule:

Feed per tooth: = f_z • Kf (f_z)

For axial plunge milling: = Table value / Number of teeth

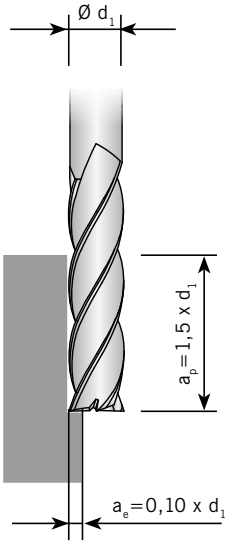
Feed per tooth with radial depth of cut from 0,2 – 0,3 mm

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,004	0,003	0,003	0,004	0,004	0,005	0,006	0,006	0,007	0,008
2	0,008	0,006	0,006	0,007	0,009	0,010	0,012	0,013	0,014	0,015
3	0,012	0,008	0,010	0,011	0,013	0,014	0,018	0,019	0,022	0,023
4	0,016	0,011	0,013	0,014	0,018	0,019	0,024	0,026	0,029	0,030
5	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
6	0,024	0,017	0,019	0,022	0,026	0,029	0,036	0,038	0,043	0,046
8	0,032	0,022	0,026	0,029	0,035	0,038	0,048	0,051	0,058	0,061
10	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
12	0,048	0,034	0,038	0,043	0,053	0,058	0,072	0,077	0,086	0,091
14	0,056	0,039	0,045	0,050	0,062	0,067	0,084	0,090	0,101	0,106
16	0,064	0,045	0,051	0,058	0,070	0,077	0,096	0,102	0,115	0,122
18	0,072	0,050	0,058	0,065	0,079	0,086	0,108	0,115	0,130	0,137
20	0,080	0,056	0,064	0,072	0,088	0,096	0,120	0,128	0,144	0,152
25	0,100	0,070	0,080	0,090	0,110	0,120	0,150	0,160	0,180	0,190



Feed per tooth with radial depth of cut of 10 % of the cutter (ø d_1)

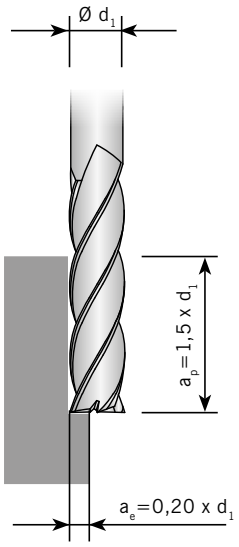
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,003	0,002	0,002	0,003	0,003	0,004	0,005	0,005	0,005	0,006
2	0,008	0,006	0,006	0,007	0,009	0,010	0,012	0,013	0,014	0,015
3	0,012	0,008	0,010	0,011	0,013	0,014	0,018	0,019	0,022	0,023
4	0,014	0,010	0,011	0,013	0,015	0,017	0,021	0,022	0,025	0,027
5	0,017	0,012	0,014	0,015	0,019	0,020	0,026	0,027	0,031	0,032
6	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
8	0,027	0,019	0,022	0,024	0,030	0,032	0,041	0,043	0,049	0,051
10	0,033	0,023	0,026	0,030	0,036	0,040	0,050	0,053	0,059	0,063
12	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
14	0,047	0,033	0,038	0,042	0,052	0,056	0,071	0,075	0,085	0,089
16	0,053	0,037	0,042	0,048	0,058	0,064	0,080	0,085	0,095	0,101
18	0,060	0,042	0,048	0,054	0,066	0,072	0,090	0,096	0,108	0,114
20	0,067	0,047	0,054	0,060	0,074	0,080	0,101	0,107	0,121	0,127
25	0,083	0,058	0,066	0,075	0,091	0,100	0,125	0,133	0,149	0,158



Attention: Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with a_p = 1 x d_1 -> 1,2 with a_p = 0,5 x d_1

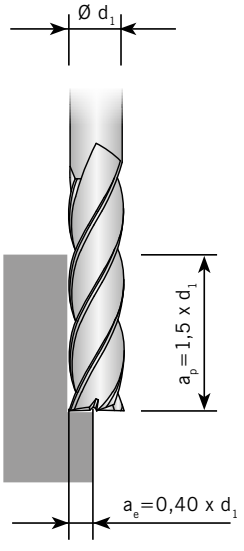
Feed per tooth with radial depth of cut of 20 % of the cutter (ø d_1)

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,002	0,001	0,001	0,001	0,002	0,002	0,003	0,003	0,003	0,003
2	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
3	0,008	0,005	0,006	0,007	0,008	0,009	0,012	0,012	0,014	0,015
4	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
5	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
6	0,015	0,010	0,012	0,013	0,016	0,018	0,022	0,024	0,027	0,028
8	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
10	0,025	0,017	0,020	0,022	0,027	0,030	0,037	0,040	0,045	0,047
12	0,030	0,021	0,024	0,027	0,033	0,036	0,045	0,048	0,054	0,057
14	0,035	0,024	0,028	0,031	0,038	0,042	0,052	0,056	0,063	0,066
16	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
18	0,045	0,031	0,036	0,040	0,049	0,054	0,067	0,072	0,081	0,085
20	0,050	0,035	0,040	0,045	0,055	0,060	0,075	0,080	0,090	0,095
25	0,063	0,044	0,050	0,056	0,069	0,075	0,094	0,100	0,113	0,119



Feed per tooth with radial depth of cut of 40 % of the cutter (ø d_1)

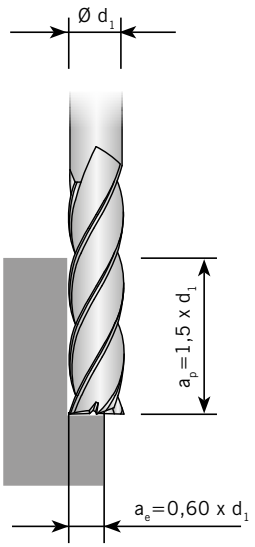
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002	0,003
2	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
3	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
4	0,008	0,005	0,006	0,007	0,008	0,009	0,012	0,012	0,014	0,015
5	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
6	0,012	0,008	0,009	0,010	0,013	0,014	0,018	0,019	0,021	0,022
8	0,016	0,011	0,012	0,014	0,017	0,019	0,024	0,025	0,028	0,030
10	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
12	0,024	0,016	0,019	0,021	0,026	0,028	0,036	0,038	0,043	0,045
14	0,028	0,019	0,022	0,025	0,030	0,033	0,042	0,044	0,050	0,053
16	0,032	0,022	0,025	0,028	0,035	0,038	0,048	0,051	0,057	0,060
18	0,036	0,025	0,028	0,032	0,039	0,043	0,054	0,057	0,064	0,068
20	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
25	0,050	0,035	0,040	0,045	0,055	0,060	0,075	0,080	0,090	0,095



Attention: Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with a_p = 1 x d_1 -> 1,2 with a_p = 0,5 x d_1

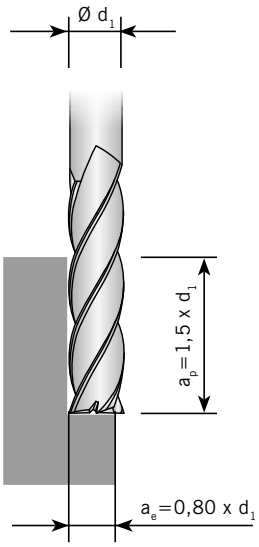
Feed per tooth with radial depth of cut of 60 % of the cutter (ø d_1)

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,005	0,005	0,006
3	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
4	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
5	0,008	0,005	0,006	0,007	0,009	0,010	0,012	0,013	0,015	0,016
6	0,009	0,006	0,007	0,008	0,010	0,011	0,014	0,015	0,017	0,018
8	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
10	0,016	0,011	0,013	0,014	0,017	0,019	0,024	0,026	0,029	0,030
12	0,019	0,013	0,015	0,017	0,021	0,023	0,029	0,031	0,035	0,037
14	0,022	0,015	0,018	0,020	0,025	0,027	0,034	0,036	0,040	0,043
16	0,026	0,018	0,020	0,023	0,028	0,031	0,039	0,041	0,046	0,049
18	0,029	0,020	0,023	0,026	0,032	0,035	0,043	0,046	0,052	0,055
20	0,032	0,022	0,026	0,029	0,035	0,039	0,048	0,052	0,058	0,061
25	0,040	0,028	0,032	0,036	0,045	0,049	0,061	0,065	0,073	0,077



Feed per tooth with radial depth of cut of 80 % of the cutter (ø d_1)

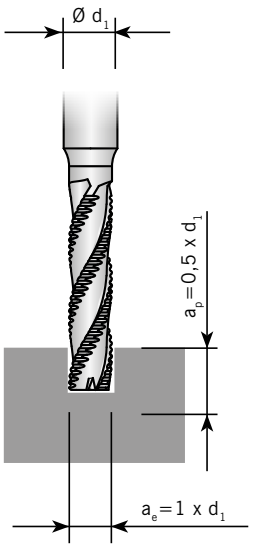
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001
2	0,002	0,001	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,004
3	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
4	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
5	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
6	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,012	0,013	0,014
8	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
10	0,012	0,008	0,010	0,011	0,013	0,015	0,018	0,020	0,022	0,023
12	0,015	0,010	0,012	0,013	0,016	0,018	0,022	0,024	0,027	0,028
14	0,017	0,012	0,014	0,015	0,019	0,021	0,026	0,028	0,031	0,033
16	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
18	0,022	0,015	0,018	0,020	0,024	0,027	0,033	0,036	0,040	0,042
20	0,025	0,017	0,020	0,022	0,027	0,030	0,037	0,040	0,045	0,047
25	0,031	0,022	0,025	0,028	0,034	0,037	0,047	0,050	0,056	0,059



Attention: Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with a_p = 1 x d_1 -> 1,2 with a_p = 0,5 x d_1

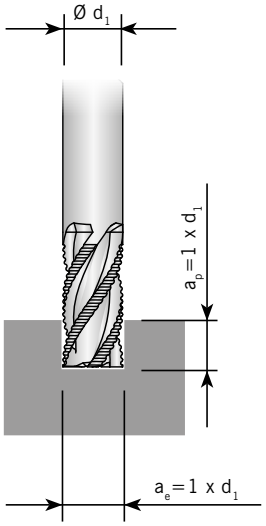
Feed per tooth when full slot milling ➜ ap = 0,5 x d_1

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,002	0,001	0,001	0,001	0,002	0,002	0,003	0,003	0,003	0,003
2	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
3	0,007	0,004	0,005	0,006	0,007	0,008	0,010	0,011	0,012	0,013
4	0,009	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,016	0,017
5	0,011	0,007	0,008	0,009	0,012	0,013	0,016	0,017	0,019	0,020
6	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
8	0,018	0,012	0,014	0,016	0,019	0,021	0,027	0,028	0,032	0,034
10	0,022	0,015	0,017	0,019	0,024	0,026	0,033	0,035	0,039	0,041
12	0,030	0,021	0,024	0,027	0,033	0,036	0,045	0,048	0,054	0,057
14	0,032	0,022	0,025	0,028	0,035	0,038	0,048	0,051	0,057	0,060
16	0,036	0,025	0,028	0,032	0,039	0,043	0,054	0,057	0,064	0,068
18	0,042	0,029	0,033	0,037	0,046	0,050	0,063	0,067	0,075	0,079
20	0,045	0,031	0,036	0,040	0,049	0,054	0,067	0,072	0,081	0,085
25	0,056	0,039	0,044	0,050	0,061	0,067	0,084	0,089	0,100	0,106



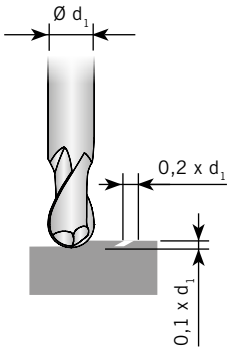
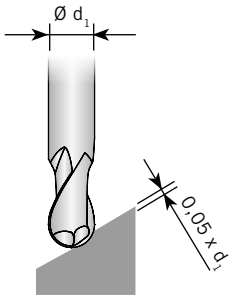
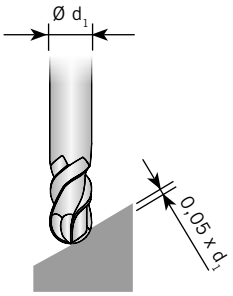
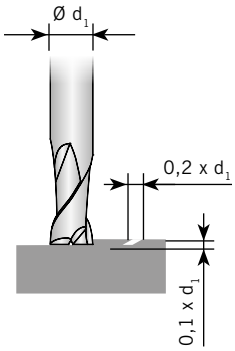
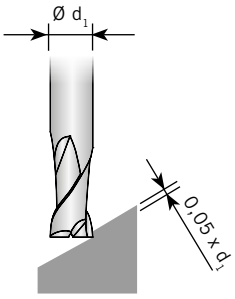
Feed per tooth when full slot milling ➜ ap = 1 x d_1

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,005	0,005
3	0,005	0,003	0,004	0,004	0,005	0,005	0,007	0,007	0,008	0,009
4	0,006	0,004	0,005	0,005	0,006	0,007	0,009	0,009	0,011	0,011
5	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,011	0,013	0,014
6	0,008	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,015	0,016
8	0,012	0,008	0,009	0,011	0,013	0,014	0,018	0,019	0,021	0,022
10	0,014	0,010	0,011	0,013	0,016	0,017	0,021	0,023	0,026	0,027
12	0,020	0,014	0,016	0,018	0,021	0,023	0,029	0,031	0,035	0,037
14	0,021	0,015	0,017	0,019	0,023	0,025	0,031	0,033	0,037	0,040
16	0,023	0,016	0,019	0,021	0,026	0,028	0,035	0,037	0,042	0,044
18	0,027	0,019	0,022	0,025	0,030	0,033	0,041	0,044	0,049	0,052
20	0,029	0,020	0,023	0,026	0,032	0,035	0,044	0,047	0,053	0,056
25	0,036	0,025	0,029	0,033	0,040	0,044	0,055	0,058	0,066	0,069



Attention: Feed rates are reduced by 10 - 20 % for uncoated tools.

Feed rates for ball nosed- and High feed cutters

	Ball nose end milling cutters	Ball nose end milling cutters	Ball nose cutter for mold and die production	Torus end milling cutters	Torus end milling cutters
					
d_1 [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]
2	0,015	0,010	0,005	0,010	0,015
3	0,030	0,020	0,015	0,015	0,020
4	0,040	0,030	0,030	0,020	0,030
5	0,060	0,050	0,050	0,030	0,040
6	0,070	0,060	0,060	0,050	0,060
8	0,100	0,080	0,070	0,070	0,080
10	0,120	0,100	0,080	0,080	0,100
12	0,150	0,120	0,090	0,100	0,120
16	0,180	0,150	0,100	0,120	0,150
18	0,200	0,180	0,110	0,140	0,160
20	0,220	0,200	0,120	0,150	0,180
25	0,240	0,220	0,140	0,160	0,200

ARNO®
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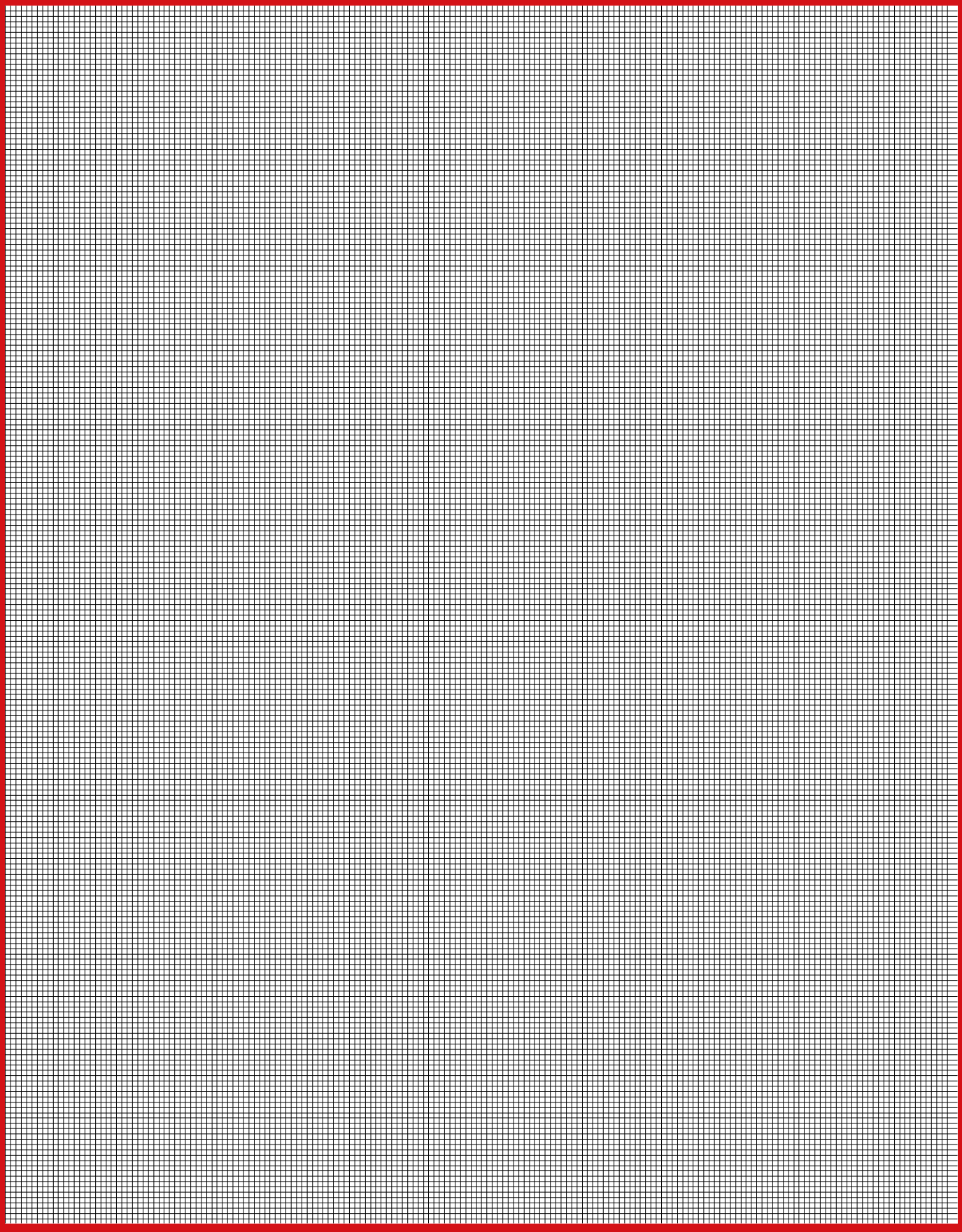
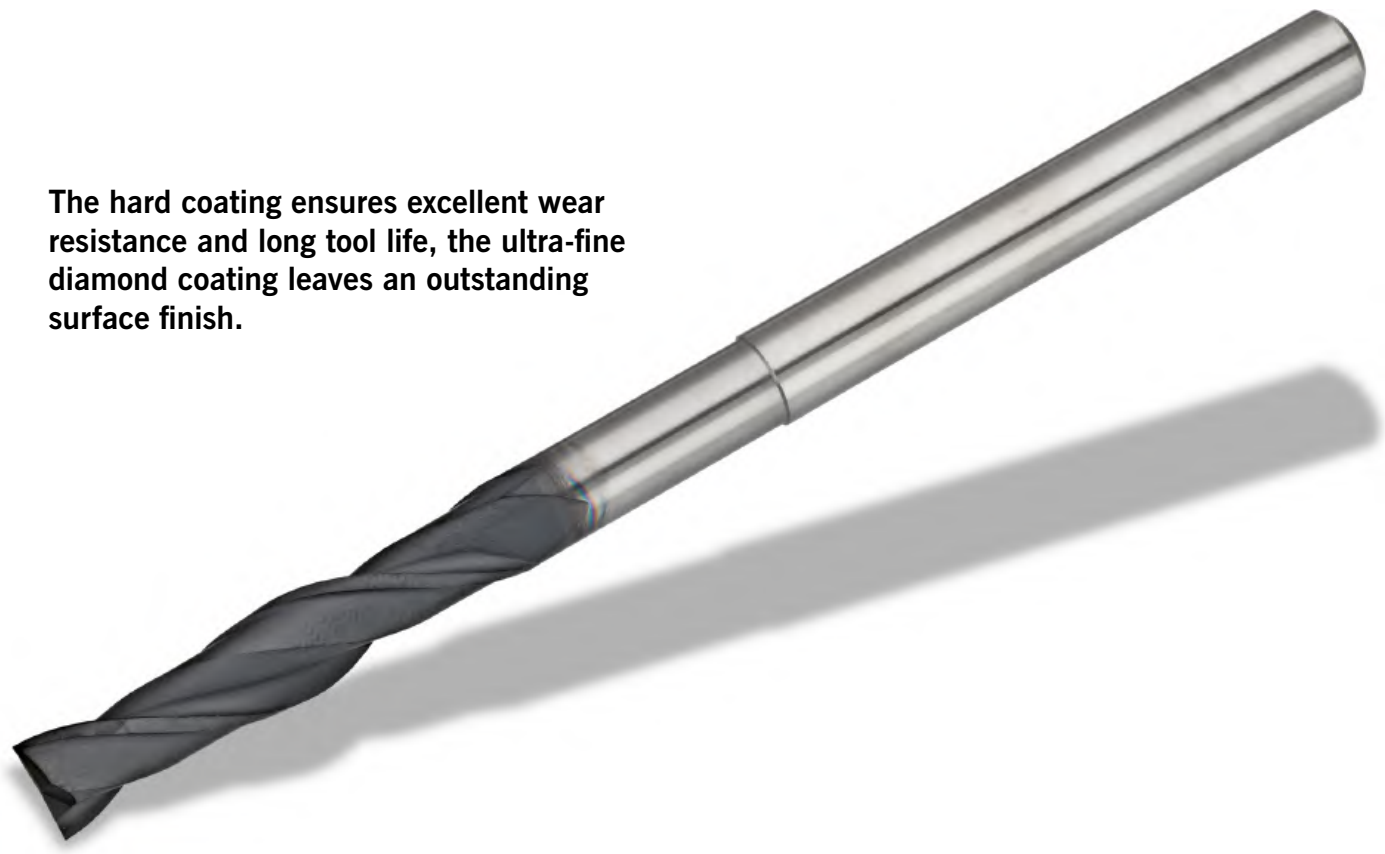
www.arno.de



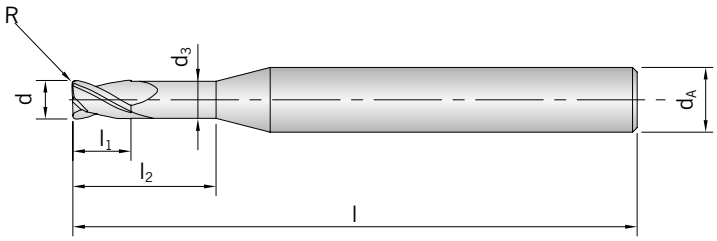
ESPECIALLY FOR GRAPHITE MACHINING

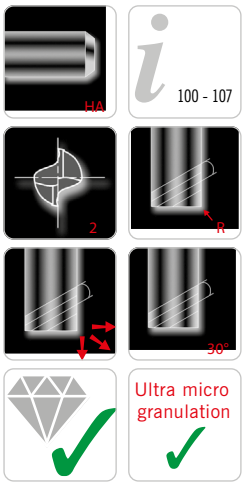
The hard coating ensures excellent wear resistance and long tool life, the ultra-fine diamond coating leaves an outstanding surface finish.



AFD50724-...R...

2 flutes, mini design, with corner radius





AFD

Only for graphite machining

Shank DIN 6535HA	d -0,02	d_A h6	d_3	l_1	l_2	l	R	HC D100
AFD50724-002A	0.2	3	-	0.3	-	40	-	◆
AFD50724-003A	0.3	3	-	0.5	-	40	-	◆
AFD50724-004A	0.4	3	-	0.6	-	40	-	◆
AFD50724-005AR0,05	0.5	3	0.45	0.7	2.5	40	0.05	◆
AFD50724-005BR0,05	0.5	3	0.45	0.7	4.0	40	0.05	◆
AFD50724-006AR0,05	0.6	3	0.55	0.9	3.0	40	0.05	◆
AFD50724-006BR0,05	0.6	3	0.55	0.9	5.0	40	0.05	◆
AFD50724-008AR0,05	0.8	3	0.75	1.2	4.0	40	0.05	◆
AFD50724-008BR0,05	0.8	3	0.75	1.2	7.0	40	0.05	◆
AFD50724-010AR0,1	1.0	3	0.95	1.5	5.0	40	0.10	◆
AFD50724-010BR0,1	1.0	3	0.95	1.5	8.5	40	0.10	◆
AFD50724-010CR0,1	1.0	3	0.95	1.5	12.0	40	0.10	◆
AFD50724-012AR0,1	1.2	3	1.15	1.8	6.0	50	0.10	◆
AFD50724-012BR0,1	1.2	3	1.15	1.8	10.0	50	0.10	◆
AFD50724-015AR0,15	1.5	3	1.40	2.2	7.5	50	0.15	◆
AFD50724-015BR0,15	1.5	3	1.40	2.2	12.0	50	0.15	◆
AFD50724-015CR0,15	1.5	3	1.40	2.2	18.0	50	0.15	◆
AFD50724-020AR0,15	2.0	3	1.90	2.2	10.0	60	0.15	◆
AFD50724-020BR0,15	2.0	3	1.90	2.2	16.0	60	0.15	◆
AFD50724-020CR0,15	2.0	3	1.90	2.2	25.0	60	0.15	◆
AFD50724-030AR0,2	3.0	4	2.90	3.0	10.0	65	0.20	◆
AFD50724-030BR0,2	3.0	4	2.90	3.0	15.0	65	0.20	◆
AFD50724-030CR0,2	3.0	4	2.90	3.0	20.0	65	0.20	◆
AFD50724-030DR0,2	3.0	4	2.90	3.0	25.0	75	0.20	◆
AFD50724-030ER0,2	3.0	4	2.90	3.0	30.0	75	0.20	◆
AFD50724-040AR0,2	4.0	6	3.90	4.0	20.0	65	0.20	◆
AFD50724-040BR0,2	4.0	6	3.90	4.0	30.0	75	0.20	◆
AFD50724-040CR0,2	4.0	6	3.90	4.0	40.0	90	0.20	◆
AFD50724-050AR0,3	5.0	6	4.90	5.0	20.0	75	0.30	◆
AFD50724-050BR0,3	5.0	6	4.90	5.0	30.0	75	0.30	◆
AFD50724-050CR0,3	5.0	6	4.90	5.0	40.0	90	0.30	◆

Dimensions in mm

Only for graphite machining

Shank DIN 6535HA	d *-0,02*	d_A *h6*	d_3	l_1	l_2	l	R	HC D100
AFD50724-050DR0,3	5.0	6	4.90	5.0	50.0	90	0.30	◆
AFD50724-060AR0,3	6.0	6	5.90	6.0	30.0	75	0.30	◆
AFD50724-060BR0,3	6.0	6	5.90	6.0	40.0	90	0.30	◆
AFD50724-060CR0,3	6.0	6	5.90	6.0	50.0	90	0.30	◆
AFD50724-060DR0,3	6.0	6	5.90	6.0	60.0	100	0.30	◆

HC = Carbide coated

P	
M	
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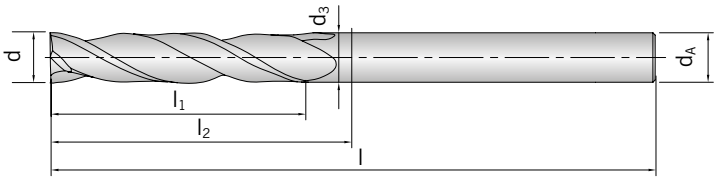
S	
H	

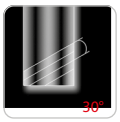
● Main application

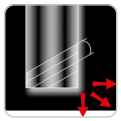
○ Secondary application

AFD50121-...

2 flutes, long design







Only for graphite machining

Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	HC D100
AFD50121-005	0.5	3	0.45	1	2	40	◆
AFD50121-006	0.6	3	0.55	2	3	40	◆
AFD50121-007	0.7	3	0.65	2	4	40	◆
AFD50121-008	0.8	3	0.75	2	5	40	◆
AFD50121-009	0.9	3	0.85	2	6	40	◆
AFD50121-010	1.0	4	0.95	3	8	75	◆
AFD50121-015	1.5	4	1.45	4	10	75	◆
AFD50121-020	2.0	4	1.90	6	16	100	◆
AFD50121-025	2.5	4	2.40	8	20	100	◆
AFD50121-030	3.0	6	2.80	8	30	100	◆
AFD50121-035	3.5	6	3.20	10	35	100	◆
AFD50121-040	4.0	6	3.70	20	40	100	◆
AFD50121-050	5.0	6	4.60	25	50	125	◆
AFD50121-060	6.0	6	5.60	30	60	140	◆
AFD50121-070	7.0	6	-	35	-	140	◆
AFD50121-080	8.0	8	7.40	40	80	150	◆
AFD50121-090	9.0	8	-	45	-	150	◆
AFD50121-100	10.0	10	9.40	50	80	150	◆
AFD50121-110	11.0	10	-	50	-	150	◆
AFD50121-120	12.0	12	11.40	55	80	150	◆

HC = Carbide coated

P	
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S	
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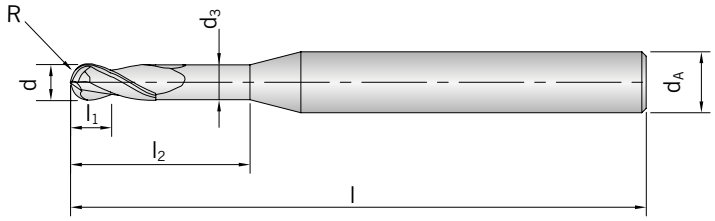
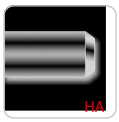
● Main application
○ Secondary application

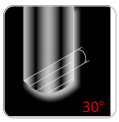
Dimensions in mm

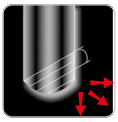
AFD51824-...

2 flutes, mini design









AFD

Only for graphite machining

Shank DIN 6535HA	d *-0,02*	d_A *h6*	d_3	l_1	l_2	l	R *± 0,01*	HC D100
AFD51824-002A	0.2	3	-	0.2	-	40	0.10	◆
AFD51824-003A	0.3	3	-	0.3	-	40	0.15	◆
AFD51824-004A	0.4	3	-	0.4	-	40	0.20	◆
AFD51824-005A	0.5	3	0.45	0.5	2.5	40	0.25	◆
AFD51824-006A	0.6	3	0.55	0.6	3.0	40	0.30	◆
AFD51824-006B	0.6	3	0.55	0.6	5.0	40	0.30	◆
AFD51824-008A	0.8	3	0.75	0.8	4.0	40	0.40	◆
AFD51824-008B	0.8	3	0.75	0.8	7.0	40	0.40	◆
AFD51824-010A	1.0	3	0.95	1.0	5.0	40	0.50	◆
AFD51824-010B	1.0	3	0.95	1.0	8.5	40	0.50	◆
AFD51824-010C	1.0	3	0.95	1.0	12.0	40	0.50	◆
AFD51824-012A	1.2	3	1.15	1.2	6.0	50	0.60	◆
AFD51824-012B	1.2	3	1.15	1.2	10.0	50	0.60	◆
AFD51824-015A	1.5	3	1.40	1.5	7.5	50	0.75	◆
AFD51824-015B	1.5	3	1.40	1.5	12.0	50	0.75	◆
AFD51824-015C	1.5	3	1.40	1.5	18.0	50	0.75	◆
AFD51824-020A	2.0	3	1.90	2.2	10.0	60	1.00	◆
AFD51824-020B	2.0	3	1.90	2.2	16.0	60	1.00	◆
AFD51824-020C	2.0	3	1.90	2.2	25.0	60	1.00	◆
AFD51824-030A	3.0	4	2.90	3.0	10.0	65	1.50	◆
AFD51824-030B	3.0	4	2.90	3.0	15.0	65	1.50	◆
AFD51824-030C	3.0	4	2.90	3.0	20.0	65	1.50	◆
AFD51824-030D	3.0	4	2.90	3.0	25.0	75	1.50	◆
AFD51824-030E	3.0	4	2.90	3.0	30.0	75	1.50	◆
AFD51824-040A	4.0	6	3.90	4.0	20.0	65	2.00	◆
AFD51824-040B	4.0	6	3.90	4.0	30.0	75	2.00	◆
AFD51824-040C	4.0	6	3.90	4.0	40.0	90	2.00	◆
AFD51824-050A	5.0	6	4.90	5.0	20.0	65	2.50	◆
AFD51824-050B	5.0	6	4.90	5.0	30.0	75	2.50	◆
AFD51824-050C	5.0	6	4.90	5.0	40.0	90	2.50	◆
AFD51824-050D	5.0	6	4.90	5.0	50.0	90	2.50	◆

Dimensions in mm

Only for graphite machining

Shank DIN 6535HA	d *-0,02*	d_A *h6*	d_3	l_1	l_2	l	R *± 0,01*	HC D100
AFD51824-060A	6.0	6	5.90	6.0	30.0	75	3.00	◆
AFD51824-060B	6.0	6	5.90	6.0	40.0	90	3.00	◆
AFD51824-060C	6.0	6	5.90	6.0	50.0	90	3.00	◆
AFD51824-060D	6.0	6	5.90	6.0	60.0	100	3.00	◆

HC = Carbide coated

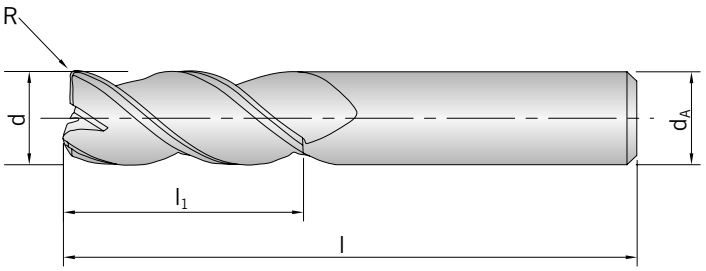
P	
M	
K	
N	●
S	
H	

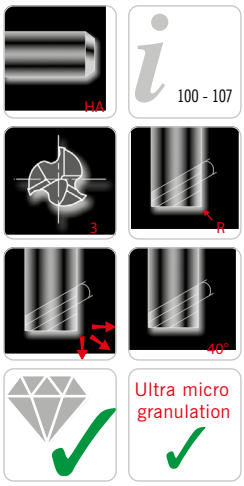
● Main application

○ Secondary application

AFD54030-...R...

3 flutes, short design, with corner radius





AFD

Only for graphite machining

Shank DIN 6535HA	d -0,03	d_A h6	l_1	l	R	HC D100
AFD54030-020R0,15	2	3	6	40	0.15	◆
AFD54030-030R0,15	3	3	12	40	0.15	◆
AFD54030-040R0,2	4	4	14	50	0.20	◆
AFD54030-050R0,3	5	5	16	50	0.30	◆
AFD54030-060R0,3	6	6	20	65	0.30	◆
AFD54030-080R0,5	8	8	20	65	0.50	◆
AFD54030-100R0,5	10	10	25	75	0.50	◆
AFD54030-120R0,5	12	12	25	75	0.50	◆

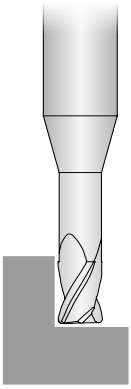
HC = Carbide coated

P	
M	
K	
N	●
S	
H	

● Main application
○ Secondary application

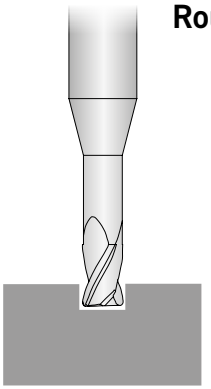
AFD50724-...R...

D100 coating for graphite machining



Roughing

Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,2	2	0,004	120	200	240	360
0,3	2	0,005	150	250	300	450
0,4	2	0,005	150	250	300	450
0,5	2	0,006	180	300	360	540
0,6	2	0,007	210	350	420	630
0,8	2	0,009	270	450	540	810
1,0	2	0,012	360	600	720	1080
1,2	2	0,015	450	750	900	1350
1,5	2	0,018	540	900	1080	1620
2,0	2	0,024	720	1200	1440	2160
3,0	2	0,035	1050	1750	2100	3150
4,0	2	0,047	1410	2350	2820	4230
5,0	2	0,059	1770	2950	3540	5310
6,0	2	0,071	2130	3550	4260	6390



Roughing

Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,2	2	0,004	120	200	240	360
0,3	2	0,004	120	200	240	360
0,4	2	0,004	120	200	240	360
0,5	2	0,005	150	250	300	450
0,6	2	0,005	150	250	300	450
0,8	2	0,007	210	350	420	630
1,0	2	0,009	270	450	540	810
1,2	2	0,011	330	550	660	990
1,5	2	0,014	420	700	840	1260
2,0	2	0,018	540	900	1080	1620
3,0	2	0,027	810	1350	1620	2430
4,0	2	0,036	1080	1800	2160	3240
5,0	2	0,045	1350	2250	2700	4050
6,0	2	0,055	1650	2750	3300	4950

Attention: These cutting data are recommendations only.
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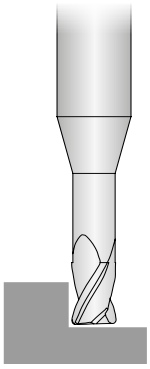
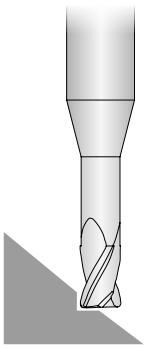
AFD50724-...R...

D100 coating for graphite machining



Finishing

Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,2	2	0,004	120	200	240	360
0,3	2	0,004	120	200	240	360
0,4	2	0,005	150	250	300	450
0,5	2	0,007	210	350	420	630
0,6	2	0,008	240	400	480	720
0,8	2	0,011	330	550	660	990
1,0	2	0,013	390	650	780	1170
1,2	2	0,015	450	750	900	1350
1,5	2	0,020	600	1000	1200	1800
2,0	2	0,027	810	1350	1620	2430
3,0	2	0,040	1200	2000	2400	3600
4,0	2	0,053	1590	2650	3180	4770
5,0	2	0,067	2010	3350	4020	6030
6,0	2	0,080	2400	4000	4800	7200



Finishing

Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,2	2	0,004	120	200	240	360
0,3	2	0,004	120	200	240	360
0,4	2	0,005	150	250	300	450
0,5	2	0,007	210	350	420	630
0,6	2	0,008	240	400	480	720
0,8	2	0,011	330	550	660	990
1,0	2	0,013	390	650	780	1170
1,2	2	0,015	450	750	900	1350
1,5	2	0,020	600	1000	1200	1800
2,0	2	0,027	810	1350	1620	2430
3,0	2	0,040	1200	2000	2400	3600
4,0	2	0,053	1590	2650	3180	4770
5,0	2	0,067	2010	3350	4020	6030
6,0	2	0,080	2400	4000	4800	7200

Attention: These cutting data are recommendations only.
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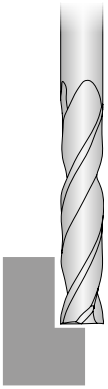
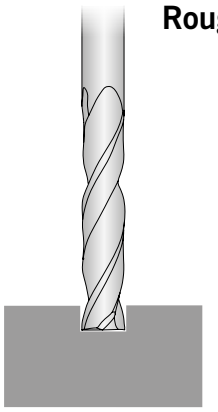
AFD50121-...

D100 coating for graphite machining



Roughing

Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,5	2	0,005	150	250	300	450
0,6	2	0,006	180	300	360	540
0,7	2	0,007	210	350	420	630
0,8	2	0,008	240	400	480	720
0,9	2	0,008	240	400	480	720
1,0	2	0,009	270	450	540	810
1,5	2	0,014	420	700	840	1260
2,0	2	0,019	570	950	1140	1710
2,5	2	0,024	720	1200	1440	2160
3,0	2	0,029	840	1400	1680	2520
3,5	2	0,032	960	1600	1920	2880
4,0	2	0,040	1200	2000	2400	3600
5,0	2	0,045	1350	2250	2700	4050
6,0	2	0,050	1500	2500	3000	4500
7,0	2	0,055	1650	2750	3300	4950
8,0	2	0,060	1800	3000	3600	5400
9,0	2	0,065	1950	3250	3900	5850
10,0	2	0,070	2100	3500	4200	6300
11,0	2	0,075	2250	3750	4500	6750
12,0	2	0,080	2400	4000	4800	7200



Roughing

Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,5	2	0,003	90	150	180	270
0,6	2	0,003	90	150	180	270
0,7	2	0,003	90	150	180	270
0,8	2	0,004	120	200	240	360
0,9	2	0,005	150	250	300	450
1,0	2	0,005	150	250	300	450
1,5	2	0,008	240	400	480	720
2,0	2	0,011	330	550	660	990
2,5	2	0,014	420	700	840	1260
3,0	2	0,016	480	800	960	1440
3,5	2	0,019	570	950	1140	1710
4,0	2	0,021	630	1050	1260	1890
5,0	2	0,026	780	1300	1560	2340
6,0	2	0,031	930	1550	1860	2790
7,0	2	0,036	1080	1800	2160	3240
8,0	2	0,040	1200	2000	2400	3600
9,0	2	0,045	1350	2250	2700	4050
10,0	2	0,050	1500	2500	3000	4500
11,0	2	0,055	1650	2750	3300	4950
12,0	2	0,060	1800	3000	3600	5400

Attention: These cutting data are recommendations only.
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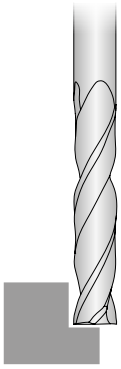
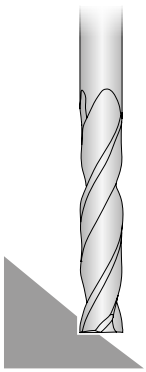
AFD50121-...

D100 coating for graphite machining



Finishing

Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,5	2	0,005	150	250	300	450
0,6	2	0,006	180	300	360	540
0,7	2	0,007	210	350	420	630
0,8	2	0,009	270	450	540	810
0,9	2	0,009	270	450	540	810
1,0	2	0,011	330	550	660	990
1,5	2	0,016	480	800	960	1440
2,0	2	0,021	630	1050	1260	1890
2,5	2	0,026	780	1300	1560	2340
3,0	2	0,031	930	1550	1860	2790
3,5	2	0,036	1080	1800	2160	3240
4,0	2	0,040	1200	2000	2400	3600
5,0	2	0,045	1350	2250	2700	4050
6,0	2	0,050	1500	2500	3000	4500
7,0	2	0,055	1650	2750	3300	4950
8,0	2	0,060	1800	3000	3600	5400
9,0	2	0,065	1950	3250	3900	5850
10,0	2	0,070	2100	3500	4200	6300
11,0	2	0,075	2250	3750	4500	6750
12,0	2	0,080	2400	4000	4800	7200



Finishing

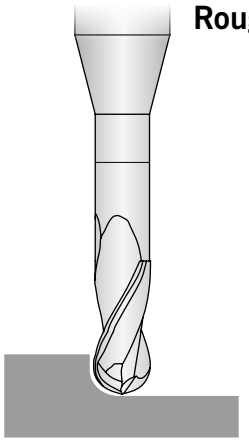
Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,5	2	0,005	150	250	300	450
0,6	2	0,006	180	300	360	540
0,7	2	0,007	210	350	420	630
0,8	2	0,009	270	450	540	810
0,9	2	0,009	270	450	540	810
1,0	2	0,011	330	550	660	990
1,5	2	0,016	480	800	960	1440
2,0	2	0,021	630	1050	1260	1890
2,5	2	0,026	780	1300	1560	2340
3,0	2	0,031	930	1550	1860	2790
3,5	2	0,036	1080	1800	2160	3240
4,0	2	0,040	1200	2000	2400	3600
5,0	2	0,045	1350	2250	2700	4050
6,0	2	0,050	1500	2500	3000	4500
7,0	2	0,055	1650	2750	3300	4950
8,0	2	0,060	1800	3000	3600	5400
9,0	2	0,065	1950	3250	3900	5850
10,0	2	0,070	2100	3500	4200	6300
11,0	2	0,075	2250	3750	4500	6750
12,0	2	0,080	2400	4000	4800	7200

Attention: These cutting data are recommendations only.
Customer specific circumstances such as machine power, stability, tool overhang etc. are not taken into consideration.

AFD51824-...

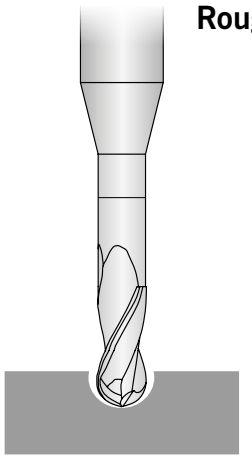
D100 coating for graphite machining

Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,2	2	0,003	90	150	180	270
0,3	2	0,004	120	200	240	360
0,4	2	0,004	120	200	240	360
0,5	2	0,005	150	250	300	450
0,6	2	0,006	180	300	360	540
0,8	2	0,008	240	400	480	720
1,0	2	0,009	270	450	540	810
1,2	2	0,011	330	550	660	990
1,5	2	0,014	420	700	840	1260
2,0	2	0,019	570	950	1140	1710
3,0	2	0,028	840	1400	1680	2520
4,0	2	0,037	1110	1850	2220	3330
5,0	2	0,046	1380	2300	2760	4140
6,0	2	0,055	1650	2750	3300	4950



Roughing

Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,2	2	0,003	90	150	180	270
0,3	2	0,003	90	150	180	270
0,4	2	0,004	120	200	240	360
0,5	2	0,004	120	200	240	360
0,6	2	0,004	120	200	240	360
0,8	2	0,006	180	300	360	540
1,0	2	0,007	210	350	420	630
1,2	2	0,009	270	450	540	810
1,5	2	0,011	330	550	660	990
2,0	2	0,015	450	750	900	1350
3,0	2	0,022	660	1100	1320	1980
4,0	2	0,029	870	1450	1740	2610
5,0	2	0,036	1080	1800	2160	3240
6,0	2	0,043	1290	2150	2580	3870



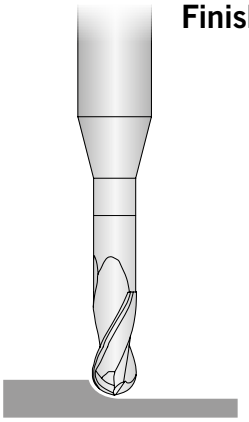
Roughing

Attention: These cutting data are recommendations only.
Customer specific circumstances such as machine power, stability, tool overhang etc. are not taken into consideration.

AFD51824-...

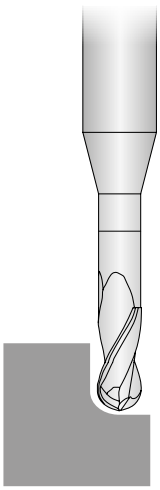
D100 coating for graphite machining

Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,2	2	0,003	90	150	180	270
0,3	2	0,004	120	200	240	360
0,4	2	0,004	120	200	240	360
0,5	2	0,005	150	250	300	450
0,6	2	0,006	180	300	360	540
0,8	2	0,009	270	450	540	810
1,0	2	0,011	330	550	660	990
1,2	2	0,013	390	650	780	1170
1,5	2	0,016	480	800	960	1440
2,0	2	0,021	630	1050	1260	1890
3,0	2	0,032	960	1600	1920	2880
4,0	2	0,042	1260	2100	2520	3780
5,0	2	0,053	1590	2650	3180	4770
6,0	2	0,063	1890	3150	3780	5670



Finishing

Ø d_1 [mm]	Z	fz [mm]	n 15000 min1 vf [mm/min.]	n 25000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]	n 45000 min1 vf [mm/min.]
0,2	2	0,003	90	150	180	270
0,3	2	0,004	120	200	240	360
0,4	2	0,004	120	200	240	360
0,5	2	0,005	150	250	300	450
0,6	2	0,006	180	300	360	540
0,8	2	0,009	270	450	540	810
1,0	2	0,011	330	550	660	990
1,2	2	0,013	390	650	780	1170
1,5	2	0,016	480	800	960	1440
2,0	2	0,021	630	1050	1260	1890
3,0	2	0,032	960	1600	1920	2880
4,0	2	0,042	1260	2100	2520	3780
5,0	2	0,053	1590	2650	3180	4770
6,0	2	0,063	1890	3150	3780	5670



Finishing

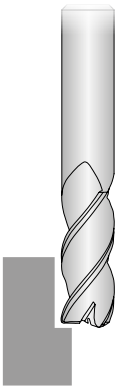
Attention: These cutting data are recommendations only.
Customer specific circumstances such as machine power, stability, tool overhang etc. are not taken into consideration.

AFD54030-...R...

D100 coating for graphite machining

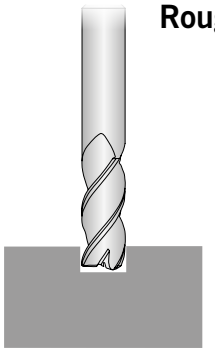
Ø d_1 [mm]	Z	fz [mm]	n 10000 min1 vf [mm/min.]	n 15000 min1 vf [mm/min.]	n 20000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]
2,0	3	0,024	720	1080	1440	2160
3,0	3	0,035	1050	1575	2100	3150
4,0	3	0,047	1410	2115	2820	4230
5,0	3	0,059	1770	2655	3540	5310
6,0	3	0,071	2130	3195	4260	6390
8,0	3	0,094	2820	4230	5640	8460
10,0	3	0,118	3540	5310	7080	10620
12,0	3	0,141	4230	6345	8460	12690

Roughing



Ø d_1 [mm]	Z	fz [mm]	n 10000 min1 vf [mm/min.]	n 15000 min1 vf [mm/min.]	n 20000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]
2,0	3	0,018	540	810	1080	1620
3,0	3	0,027	810	1215	1620	2430
4,0	3	0,036	1080	1620	2160	3240
5,0	3	0,045	1350	2025	2700	4050
6,0	3	0,055	1650	2475	3300	4950
8,0	3	0,073	2190	3285	4380	6570
10,0	3	0,091	2730	4095	5460	8190
12,0	3	0,109	3270	4905	6540	9810

Roughing

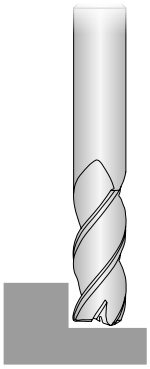


Attention: These cutting data are recommendations only.
Customer specific circumstances such as machine power, stability, tool overhang etc. are not taken into consideration.

AFD54030-...R...

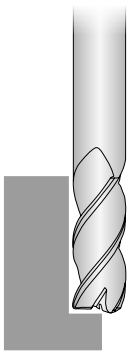
D100 coating for graphite machining

Ø d_1 [mm]	Z	fz [mm]	n 10000 min1 vf [mm/min.]	n 15000 min1 vf [mm/min.]	n 20000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]
2,0	3	0,027	810	1215	1620	2430
3,0	3	0,040	1200	1800	2400	3600
4,0	3	0,053	1590	2385	3180	4770
5,0	3	0,067	2010	3015	4020	6030
6,0	3	0,080	2400	3600	4800	7200
8,0	3	0,107	3210	4815	6420	9630
10,0	3	0,133	3990	5985	7980	11970
12,0	3	0,160	4800	7200	9600	14400



Finishing

Ø d_1 [mm]	Z	fz [mm]	n 10000 min1 vf [mm/min.]	n 15000 min1 vf [mm/min.]	n 20000 min1 vf [mm/min.]	n 30000 min1 vf [mm/min.]
2,0	3	0,027	810	1215	1620	2430
3,0	3	0,040	1200	1800	2400	3600
4,0	3	0,053	1590	2385	3180	4770
5,0	3	0,067	2010	3015	4020	6030
6,0	3	0,080	2400	3600	4800	7200
8,0	3	0,107	3210	4815	6420	9630
10,0	3	0,133	3990	5985	7980	11970
12,0	3	0,160	4800	7200	9600	14400



Finishing

Attention: These cutting data are recommendations only.
Customer specific circumstances such as machine power, stability, tool overhang etc. are not taken into consideration.

ARNO®
WERKZEUGE

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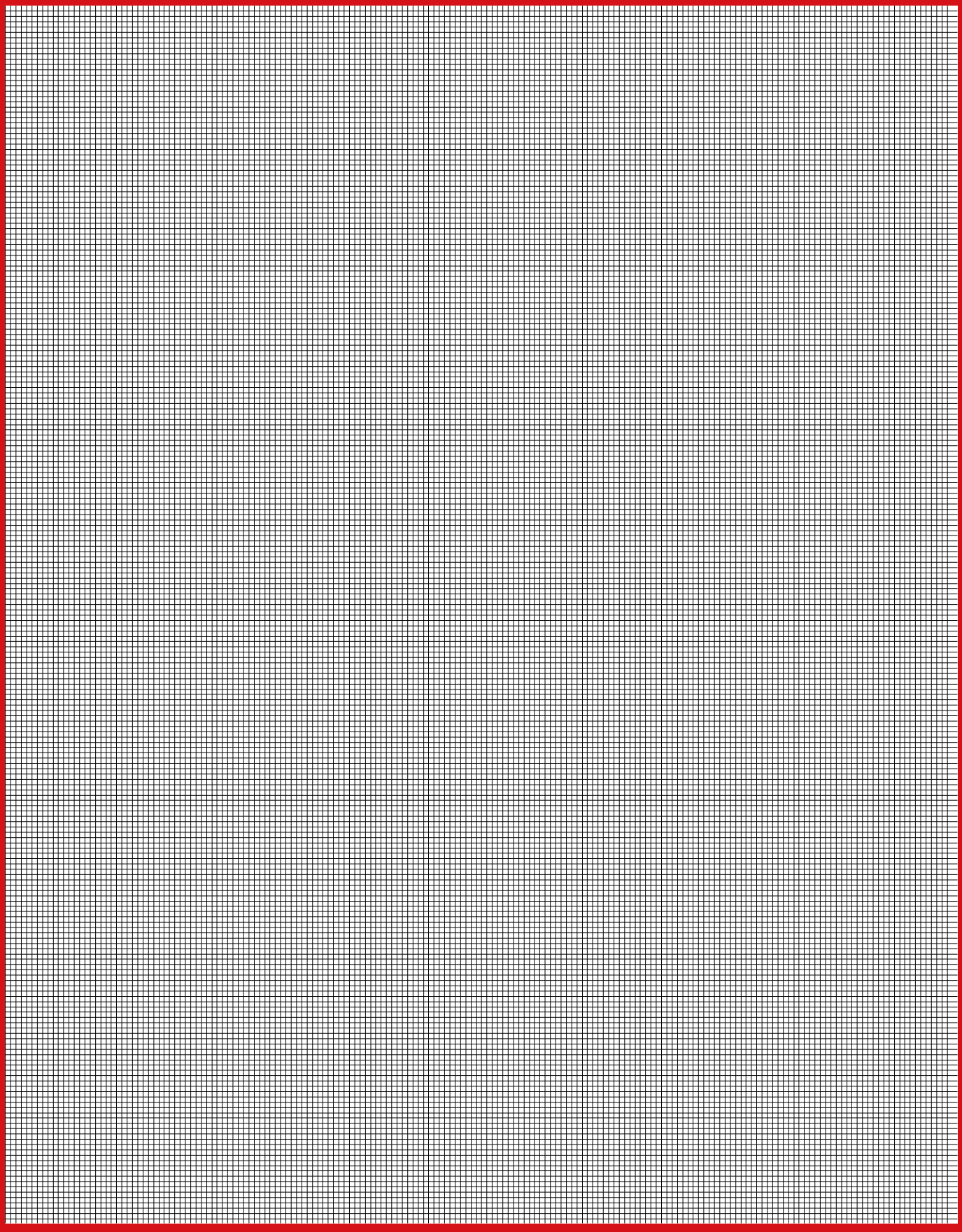
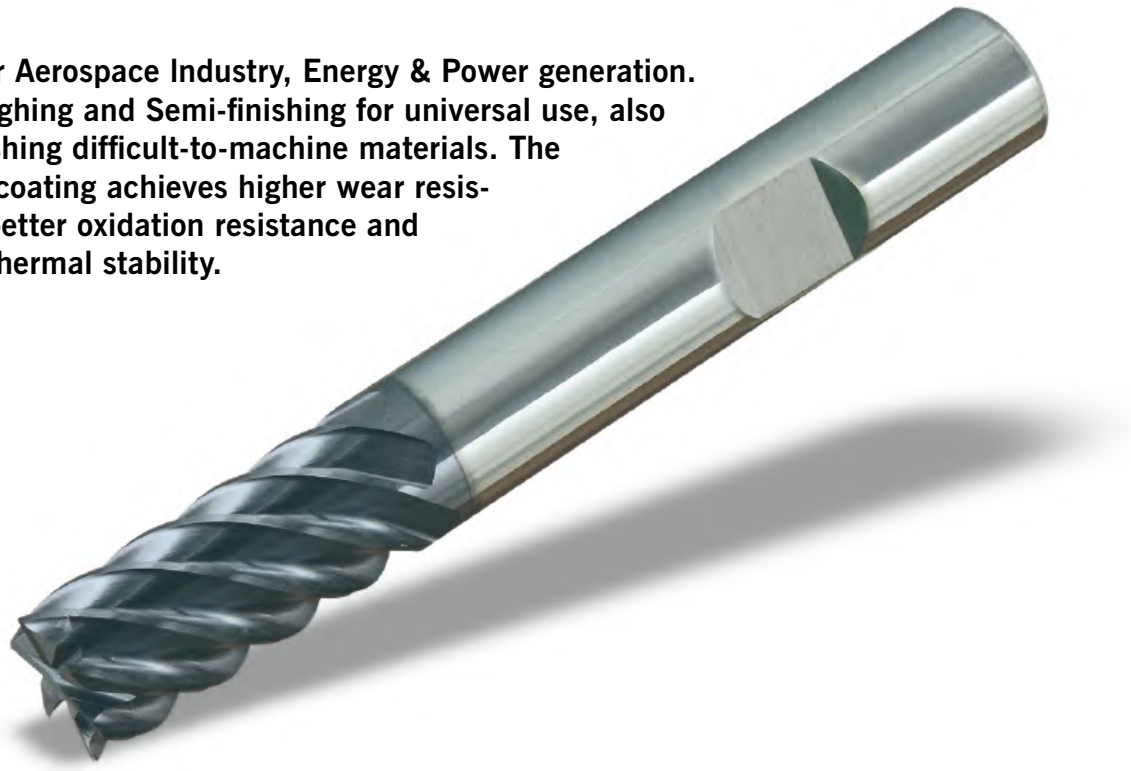


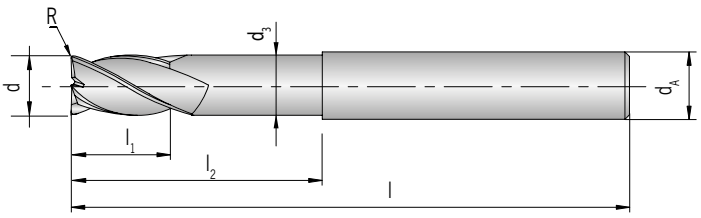
IDEAL FOR HIGH SPEED MACHINING OF EXOTIC MATERIALS (TITANIUM, INCONEL) AND STAINLESS STEELS.

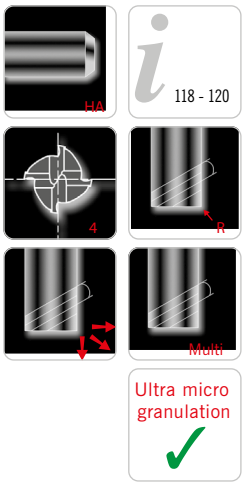
Tools for Aerospace Industry, Energy & Power generation. For Roughing and Semi-finishing for universal use, also for Finishing difficult-to-machine materials. The special coating achieves higher wear resistance, better oxidation resistance and higher thermal stability.



AFE51840-...R...

4 flutes, short design, with corner radius





AFE

Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	R	HC E200
AFE51840-060R0,5	6	6,0	5.5	13	20	57	0.5	◆
AFE51840-060R1,0	6	6,0	5.5	13	20	57	1.0	◆
AFE51840-080R0,5	8	8,0	7.5	19	25	63	0.5	◆
AFE51840-080R1,0	8	8,0	7.5	19	25	63	1.0	◆
AFE51840-080R1,5	8	8,0	7.5	19	25	63	1.5	◆
AFE51840-080R2,0	8	8,0	7.5	19	25	63	2.0	◆
AFE51840-100R0,5	10	10,0	9.2	22	30	72	0.5	◆
AFE51840-100R1,0	10	10,0	9.2	22	30	72	1.0	◆
AFE51840-100R1,5	10	10,0	9.2	22	30	72	1.5	◆
AFE51840-100R2,0	10	10,0	9.2	22	30	72	2.0	◆
AFE51840-120R0,5	12	12,0	11.0	26	35	83	0.5	◆
AFE51840-120R1,0	12	12,0	11.0	26	35	83	1.0	◆
AFE51840-120R1,5	12	12,0	11.0	26	35	83	1.5	◆
AFE51840-120R2,0	12	12,0	11.0	26	35	83	2.0	◆
AFE51840-120R3,0	12	12,0	11.0	26	35	83	3.0	◆
AFE51840-140R1,0	14	14,0	13.0	26	35	83	1.0	◆
AFE51840-140R2,0	14	14,0	13.0	26	35	83	2.0	◆
AFE51840-160R1,0	16	16,0	15.0	35	43	92	1.0	◆
AFE51840-160R1,5	16	16,0	15.0	35	43	92	1.5	◆
AFE51840-160R2,0	16	16,0	15.0	35	43	92	2.0	◆
AFE51840-160R3,0	16	16,0	15.0	35	43	92	3.0	◆
AFE51840-160R4,0	16	16,0	15.0	35	43	92	4.0	◆
AFE51840-200R1,0	20	20,0	19.0	44	56	110	1.0	◆
AFE51840-200R1,5	20	20,0	19.0	44	56	110	1.5	◆
AFE51840-200R2,0	20	20,0	19.0	44	56	110	2.0	◆
AFE51840-200R3,0	20	20,0	19.0	44	56	110	3.0	◆
AFE51840-200R3,5	20	20,0	19.0	44	56	110	3.5	◆
AFE51840-200R4,0	20	20,0	19.0	44	56	110	4.0	◆
AFE51840-250R1,0	25	25,0	24.0	55	70	130	1.0	◆

Dimensions in mm

Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	R	HC E200
AFE51840-250R1,5	25	25,0	24.0	55	70	130	1.5	◆
AFE51840-250R2,0	25	25,0	24.0	55	70	130	2.0	◆
AFE51840-250R3,0	25	25,0	24.0	55	70	130	3.0	◆
AFE51840-250R4,0	25	25,0	24.0	55	70	130	4.0	◆

HC = Carbide coated

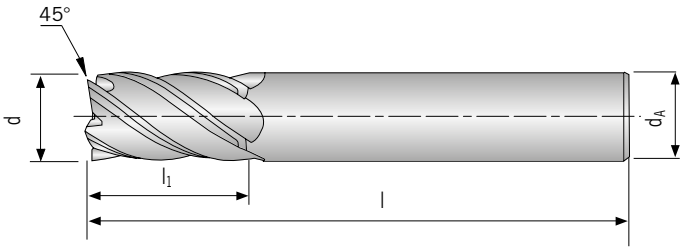
P	○
M	●
K	○
N	
S	●
H	

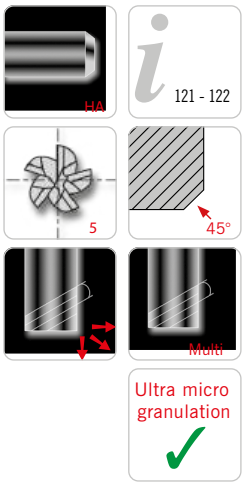
● Main application

○ Secondary application

AFE51850-...

5 flutes, short design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	Chamfer	HC E200
AFE51850-060	6	6,0	10	54	0,2x45°	◆
AFE51850-080	8	8,0	12	58	0,2x45°	◆
AFE51850-100	10	10,0	14	66	0,3x45°	◆
AFE51850-120	12	12,0	16	73	0,35x45°	◆
AFE51850-160	16	16,0	22	82	0,4x45°	◆
AFE51850-200	20	20,0	26	92	0,5x45°	◆
AFE51850-250	25	25,0	29	100	0,5x45°	◆

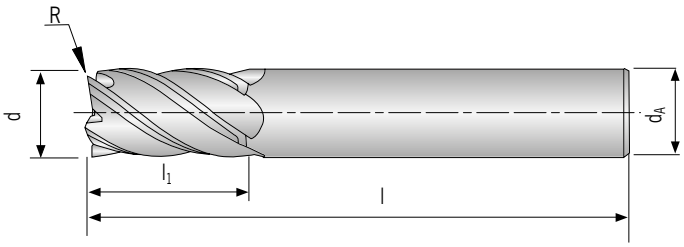
HC = Carbide coated

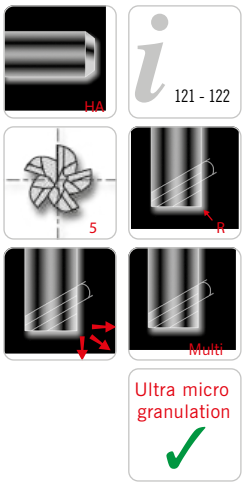
P	○
M	●
K	○
N	
S	●
H	

● Main application
○ Secondary application

AFE51850-...R...

5 flutes, short design with corner radius





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R	HC E200
AFE51850-060R0,5	6	6,0	10	54	0.5	◆
AFE51850-080R0,5	8	8,0	12	58	0.5	◆
AFE51850-100R0,5	10	10,0	14	66	0.5	◆
AFE51850-120R0,5	12	12,0	16	73	0.5	◆
AFE51850-160R1,0	16	16,0	22	82	1.0	◆
AFE51850-200R1,0	20	20,0	26	92	1.0	◆
AFE51850-250R1,0	25	25,0	29	100	1.0	◆

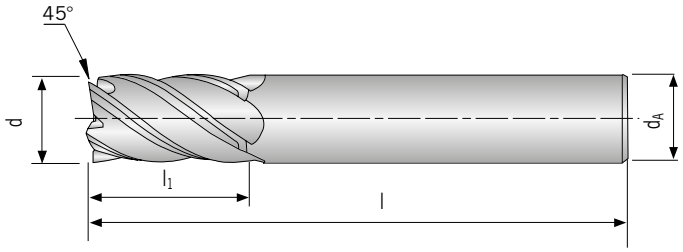
HC = Carbide coated

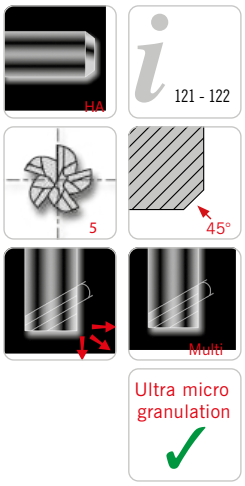
P	○
M	●
K	○
N	
S	●
H	

● Main application
○ Secondary application

AFE51851-...

5 flutes, long design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	Chamfer	HC E200
AFE51851-060	6	6,0	13	57	0,2x45°	◆
AFE51851-080	8	8,0	19	63	0,2x45°	◆
AFE51851-100	10	10,0	22	72	0,3x45°	◆
AFE51851-120	12	12,0	26	83	0,35x45°	◆
AFE51851-160	16	16,0	36	92	0,4x45°	◆
AFE51851-200	20	20,0	44	104	0,5x45°	◆
AFE51851-250	25	25,0	54	121	0,5x45°	◆

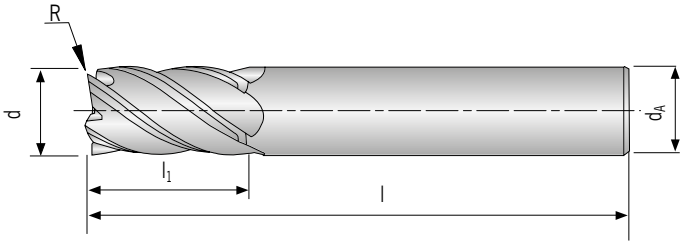
HC = Carbide coated

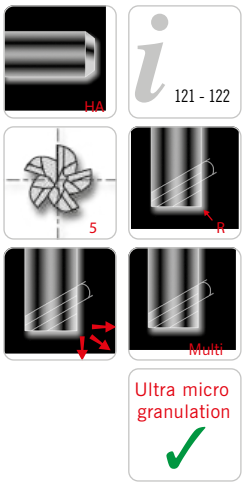
P	○
M	●
K	○
N	
S	●
H	

● Main application
○ Secondary application

AFE51851-...R...

5 flutes, long design with corner radius





AFE

Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R	HC E200
AFE51851-060R0,3	6	6,0	13	57	0.3	◆
AFE51851-060R0,5	6	6,0	13	57	0.5	◆
AFE51851-060R1,0	6	6,0	13	57	1.0	◆
AFE51851-080R0,5	8	8,0	19	63	0.5	◆
AFE51851-080R1,0	8	8,0	19	63	1.0	◆
AFE51851-080R1,5	8	8,0	19	63	1.5	◆
AFE51851-080R2,0	8	8,0	19	63	2.0	◆
AFE51851-100R0,5	10	10,0	22	72	0.5	◆
AFE51851-100R1,0	10	10,0	22	72	1.0	◆
AFE51851-100R1,5	10	10,0	22	72	1.5	◆
AFE51851-100R2,0	10	10,0	22	72	2.0	◆
AFE51851-120R0,5	12	12,0	26	83	0.5	◆
AFE51851-120R1,0	12	12,0	26	83	1.0	◆
AFE51851-120R1,5	12	12,0	26	83	1.5	◆
AFE51851-120R2,0	12	12,0	26	83	2.0	◆
AFE51851-120R2,5	12	12,0	26	83	2.5	◆
AFE51851-120R3,0	12	12,0	26	83	3.0	◆
AFE51851-160R1,0	16	16,0	36	92	1.0	◆
AFE51851-160R1,5	16	16,0	36	92	1.5	◆
AFE51851-160R2,0	16	16,0	36	92	2.0	◆
AFE51851-160R2,5	16	16,0	36	92	2.5	◆
AFE51851-160R3,0	16	16,0	36	92	3.0	◆
AFE51851-160R4,0	16	16,0	36	92	4.0	◆
AFE51851-200R1,0	20	20,0	44	104	1.0	◆
AFE51851-200R1,5	20	20,0	44	104	1.5	◆
AFE51851-200R2,0	20	20,0	44	104	2.0	◆
AFE51851-200R2,5	20	20,0	44	104	2.5	◆
AFE51851-200R3,0	20	20,0	44	104	3.0	◆
AFE51851-200R4,0	20	20,0	44	104	4.0	◆
AFE51851-200R5,0	20	20,0	44	104	5.0	◆
AFE51851-250R1,0	25	25,0	54	121	1.0	◆
AFE51851-250R1,5	25	25,0	54	121	1.5	◆
AFE51851-250R2,0	25	25,0	54	121	2.0	◆
AFE51851-250R2,5	25	25,0	54	121	2.5	◆

Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R	HC E200
AFE51851-250R3,0	25	25,0	54	121	3.0	◆
AFE51851-250R4,0	25	25,0	54	121	4.0	◆
AFE51851-250R5,0	25	25,0	54	121	5.0	◆

HC = Carbide coated

P	○
M	●
K	○
N	
S	●
H	

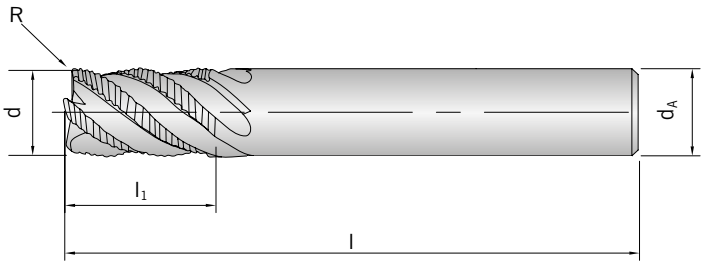
● Main application

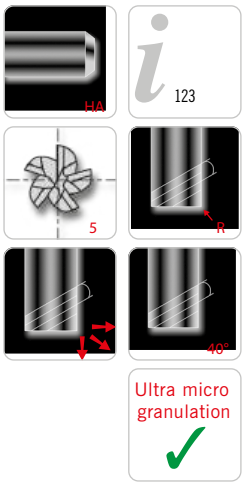
○ Secondary application

Dimensions in mm

AFE52451-...R...

5 flutes, long design with corner radius





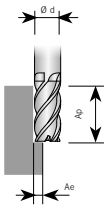
Shank DIN 6535HA	d *h10*	d_A *h6*	l_1	l	R	HC TiAlN
AFE52451-060R0,2	6	6,0	16	57	0.2	◆
AFE52451-080R0,2	8	8,0	16	63	0.2	◆
AFE52451-100R0,3	10	10,0	22	72	0.3	◆
AFE52451-120R0,3	12	12,0	26	83	0.3	◆
AFE52451-140R0,3	14	14,0	26	83	0.3	◆
AFE52451-160R0,3	16	16,0	32	92	0.3	◆
AFE52451-200R0,3	20	20,0	38	104	0.3	◆
AFE52451-250R0,3	25	25,0	45	121	0.3	◆

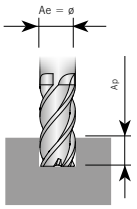
HC = Carbide coated

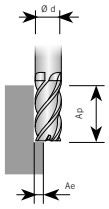
P	
M	●
K	
N	
S	●
H	

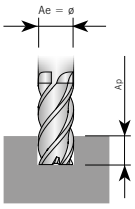
● Main application
○ Secondary application

	Carbon steel						Carbon steel					
	< 300 Brinell						> 300 / < 380 Brinell					
	1.1191 (C45) • 1.0726 (35 S 20) • 1.0715 (9 SMn 28) • 1.0718 (9 SMnPb 28)						1.2330 (35 CrMo 4) • 1.6565 (40NiCrMo6) • 1.7033 (34Cr4) • 1.6523 (21 NiCrMo2)					
	Side cutting			Slotting			Side cutting			Slotting		
	Ap 1 x d / Ae 0,4 x d			Ap 1 x d / Ae 1 x d			Ap 1 x d / Ae 0,4 x d			Ap 1 x d / Ae 1 x d		
	Vc = 128 - 160 - 192 m/min			Vc = 100 - 125 - 150 m/min			Vc = 120 - 150 - 180 m/min			Vc = 96 - 120 - 144 m/min		
d	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED
(mm)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)
6	8488	0,027	917	6631	0,025	663	7958	0,025	796	6366	0,025	637
8	6366	0,035	891	4974	0,034	676	5968	0,035	836	4775	0,034	649
10	5093	0,042	856	3979	0,042	668	4775	0,042	802	3820	0,042	642
12	4244	0,053	900	3316	0,049	650	3979	0,049	780	3183	0,049	624
14	3638	0,058	844	2842	0,056	637	3410	0,056	764	2728	0,056	611
16	3183	0,063	802	2487	0,063	627	2984	0,063	752	2387	0,063	602
20	2546	0,077	784	1989	0,07	557	2387	0,070	668	1910	0,07	535
25	2037	0,084	684	1592	0,084	535	1910	0,084	642	1528	0,077	471

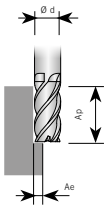


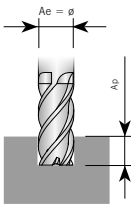


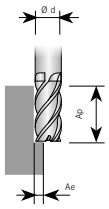


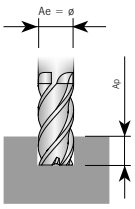


	Tool steels						Cast iron					
	> 380 Brinell						< 280 Brinell					
	1.2363 (X100 CrMoV 5 1) • 1.2379 (X155 CrVMo 12 1) • 1.2344 (X40 CrMoV 5 1) • 1.3243 (S 6-5-2-5)						0.6020 (GG20) • 0.8145 (GTS-45-06) • 0.7060 (GGG-60)					
	Side cutting			Slotting			Side cutting			Slotting		
	Ap 1 x d / Ae 0,4 x d			Ap 1 x d / Ae 1 x d			Ap 1 x d / Ae 0,4 x d			Ap 1 x d / Ae 1 x d		
	Vc = 120 - 150 - 180 m/min			Vc = 96 - 120 - 144 m/min			Vc = 140 - 175 - 210 m/min			Vc = 112 - 140 - 168 m/min		
d	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED
(mm)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)
6	7958	0,027	859	6366	0,027	688	9284	0,021	780	7427	0,021	624
8	5968	0,035	836	4775	0,035	668	6963	0,028	780	5570	0,028	624
10	4775	0,046	879	3820	0,042	642	5570	0,035	780	4456	0,035	624
12	3979	0,053	844	3183	0,053	675	4642	0,042	780	3714	0,042	624
14	3410	0,06	819	2728	0,058	633	3979	0,048	764	3183	0,048	611
16	2984	0,067	800	2387	0,063	602	3482	0,053	738	2785	0,053	590
20	2387	0,077	735	1910	0,077	588	2785	0,06	668	2228	0,06	535
25	1910	0,084	642	1528	0,084	513	2228	0,07	624	1783	0,067	478









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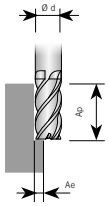
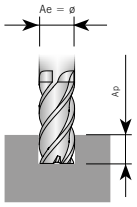
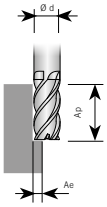
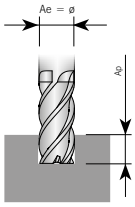
	Stainless steel 300						Stainless steel 400					
	1.4301(X5 CrNi 18 10) • 1.4436(X3 CrNiMo 17 13 3) • 1.4306(X2 CrNi 19 11) • 1.4435(X2 CrNiMo 18 14 3)						1.4005(X12 CrS 13) • 1.4104(X14 CrMoS 17)					
	Side cutting			Slotting			Side cutting			Slotting		
	Ap 1 x d / Ae 0,4 x d			Ap 1 x d / Ae 1 x d			Ap 1 x d / Ae 0,4 x d			Ap 1 x d / Ae 1 x d		
	Vc = 84 - 105 - 126 m/min			Vc = 68 - 85 - 102 m/min			Vc = 124 - 155 - 186 m/min			Vc = 100 - 125 - 150 m/min		
d	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED
(mm)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)
6	5570	0,025	550	4509	0,025	446	8223	0,034	1125	6631	0,034	907
8	4178	0,034	572	3382	0,034	463	6167	0,046	1125	4974	0,046	907
10	3342	0,042	559	2706	0,042	452	4934	0,057	1125	3979	0,057	907
12	2785	0,048	529	2255	0,048	428	4112	0,067	1094	3316	0,067	882
14	2387	0,055	525	1933	0,056	425	3524	0,076	1071	2842	0,074	841
16	2089	0,062	516	1691	0,062	418	3084	0,086	1055	2487	0,081	803
20	1671	0,071	476	1353	0,071	386	2467	0,095	937	1989	0,095	756
25	1337	0,081	432	1082	0,081	350	1974	0,114	900	1592	0,105	665

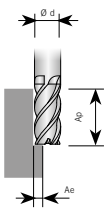


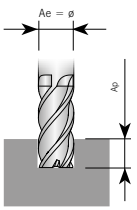


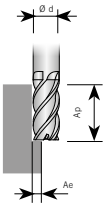


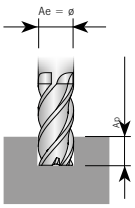


	Stainless steel PH						Titanium					
	1.4594(27 CNU 1505)						Ti6Al4V • Ti5Al5V5Mo • Ti7Al4Mo					
	Side cutting			Slotting			Side cutting			Slotting		
	Ap 1 x d / Ae 0,4 x d			Ap 1 x d / Ae 1 x d			Ap 1 x d / Ae 0,4 x d			Ap 1 x d / Ae 1 x d		
	Vc = 35 - 44 - 53 m/min			Vc = 29 - 36 - 43 m/min			Vc = 56 - 70 - 84 m/min			Vc = 44 - 55 - 66 m/min		
d	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED
(mm)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)
6	2334	0,016	151	1910	0,016	123	3714	0,034	508	2918	0,034	399
8	1751	0,021	146	1432	0,021	120	2785	0,048	529	2188	0,046	399
10	1401	0,027	149	1146	0,027	122	2228	0,057	508	1751	0,057	399
12	1167	0,032	151	955	0,032	123	1857	0,067	494	1459	0,067	388
14	1000	0,036	144	819	0,036	118	1592	0,076	484	1251	0,076	380
16	875	0,04	140	716	0,04	114	1393	0,086	476	1094	0,086	374
20	700	0,046	128	573	0,046	105	1114	0,095	423	875	0,095	333
25	560	0,052	117	458	0,052	96	891	0,114	406	700	0,105	293









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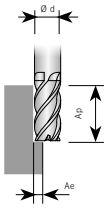
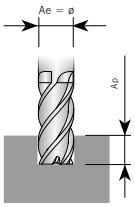
High Temperature Alloys						
RENE • INCONEL • WASPALOY • HASTELLOY						
	Side cutting			**Slotting**		
	Ap 0,6 x d / Ae 0,3 x d			Ap 0,4 x d / Ae 1 x d		
	Vc = 26 - 32 - 38 m/min			Vc = 20 - 55 - 30 m/min		
d	RPM	Fz	FEED	RPM	Fz	FEED
(mm)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)
6	1698	0,02	136	1326	0,018	95
8	1273	0,026	132	995	0,024	95
10	1019	0,032	130	796	0,03	95
12	849	0,038	129	663	0,036	95
14	728	0,044	128	568	0,04	91
16	637	0,048	122	497	0,044	88
20	509	0,055	112	398	0,05	80
25	407	0,065	106	318	0,055	70





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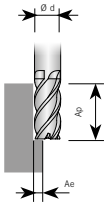
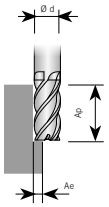
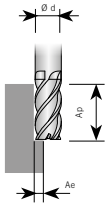
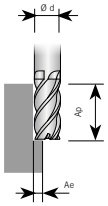
	Carbon steel			Carbon steel			Tool steels			Cast iron		
	< 300 Brinell			> 300 / < 380 Brinell			> 380 Brinell			< 260 Brinell		
	1.1191 (C45) • 1.0726 (35 S 20) • 1.0715 (9 SMn 28) • 1.0718 (9 SMnPb 28)			1.2330 (35 CrMo 4) • 1.6565 (40NiCrMo6) • 1.7033 (34Cr4) • 1.6523 (21 NiCrMo2)			1.2363 (X100 CrMoV 5 1) • 1.2379 (X155 CrVMo 12 1) • 1.2344 (X40 CrMoV 5 1) • 1.3243 (S 6-5-2-5)			0.6020 (GG20) 0.8145 (GTS-45-06) 0.7060 (GGG-60)		
	Side cutting			**Side cutting**			**Side cutting**			**Side cutting**		
	Ap 1,5 x d / Ae 0,3 x d			Ap 1,5 x d / Ae 0,3 x d			Ap 1,5 x d / Ae 0,3 x d			Ap 1,5 x d / Ae 0,3 x d		
	Vc = 115 - 144 - 173 m/min			Vc = 81 - 101 - 121 m/min			Vc = 48 - 60 - 72 m/min			Vc = 85 - 106 - 127 m/min		
d	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED
(mm)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)
6	7639	0,034	1299	5358	0,034	911	3183	0,024	382	5623	0,043	1209
8	5730	0,038	1089	4019	0,038	764	2387	0,027	322	4218	0,048	1012
10	4584	0,050	1146	3215	0,050	804	1910	0,035	334	3374	0,063	1063
12	3820	0,063	1203	2679	0,063	844	1592	0,044	350	2812	0,079	1111
14	3274	0,069	1130	2296	0,069	792	1364	0,049	334	2410	0,087	1048
16	2865	0,076	1089	2009	0,076	764	1194	0,054	322	2109	0,096	1012
18	2546	0,083	1057	1786	0,083	741	1061	0,058	308	1874	0,103	965
20	2292	0,089	1020	1607	0,089	715	955	0,062	296	1687	0,111	936
25	1833	0,101	926	1286	0,101	649	764	0,071	271	1350	0,126	850

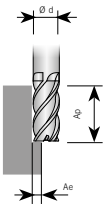


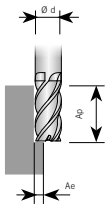


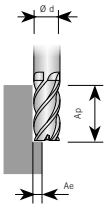


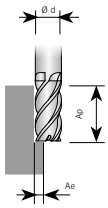


	Stainless steel 300			Stainless steel 400			Stainless steel PH			Titanium		
	1.4301(X5 CrNi 18 10) • 1.4436(X3 CrNiMo 17 13 3) • 1.4306(X2 CrNi 19 11) • 1.4435(X2 CrNiMo 18 14 3)			1.4005(X12 CrS 13) 1.4104(X14 CrMoS 17)			1.4594(27 CNU 1505)			Ti6Al4V • Ti5Al5V5Mo • Ti7Al4Mo		
	Side cutting			**Side cutting**			**Side cutting**			**Side cutting**		
	Ap 1,5 x d / Ae 0,3 x d			Ap 1,5 x d / Ae 0,3 x d			Ap 1,5 x d / Ae 0,3 x d			Ap 1,5 x d / Ae 0,3 x d		
	Vc = 66 - 82 - 98 m/min			Vc = 94 - 117 - 140 m/min			Vc = 47 - 59 - 71 m/min			Vc = 55 - 69 - 83 m/min		
d	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED
(mm)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)
6	4350	0,030	653	6207	0,024	745	3130	0,03	470	3661	0,027	494
8	3263	0,032	522	4655	0,025	582	2348	0,032	376	2745	0,029	398
10	2610	0,038	496	3724	0,03	559	1878	0,038	357	2196	0,034	373
12	2175	0,063	685	3104	0,046	714	1565	0,063	493	1830	0,057	522
14	1864	0,065	606	2660	0,051	678	1341	0,065	436	1569	0,059	463
16	1631	0,069	563	2328	0,054	628	1174	0,069	405	1373	0,062	426
18	1450	0,070	508	2069	0,057	590	1043	0,07	365	1220	0,063	384
20	1305	0,076	496	1862	0,061	568	939	0,076	357	1098	0,069	379
25	1044	0,088	459	1490	0,071	529	751	0,088	331	879	0,079	347









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High Temperature Alloys

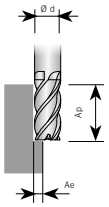
RENE
- INCONEL
- WASPALOY
- HASTELLOY

Side cutting

Ap 1,5 x d / Ae 0,1 x d

Vc = 25 - 31 - 37 m/min

d (mm)	RPM (U/min)	Fz (mm/Zahn)	FEED (mm/min)
6	1645	0,021	173
8	1233	0,022	136
10	987	0,027	133
12	822	0,044	181
14	705	0,046	162
16	617	0,048	148
18	548	0,049	134
20	493	0,053	131
25	395	0,062	122



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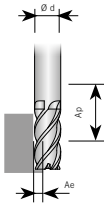
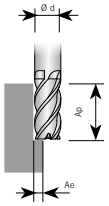
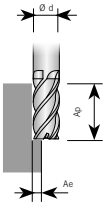
	Stainless steel 1.4005(X12 CrS 13) 1.4104(X14 CrMoS 17) Side cutting Ap: 1,5 x d Ae: ø6 - ø10: 0.15 x d ø12 - ø16: 0,10 x d ø20 - ø25: 0.05 x d Vc = 64 - 80 - 96 m/min			Titanium Ti6Al4V • Ti5Al5V5Mo • Ti7Al4Mo Side cutting Ap: 1 x d Ae: ø6 - ø10: 0.15 x d ø12 - ø16: 0,10 x d ø20 - ø25: 0.05 x d Vc = 52 - 65 - 78 m/min			High Temperature Alloys Inconel Side cutting Ap 1 x d Ae: 0,05 x d Vc = 32 - 40 - 48 m/min		
d	RPM	Fz	FEED	RPM	Fz	FEED	RPM	Fz	FEED
(mm)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)	(U/min)	(mm/Zahn)	(mm/min)
6	4244	0,025	531	3448	0,022	379	2122	0,020	212
8	3183	0,034	541	2586	0,031	401	1592	0,025	199
10	2546	0,041	522	2069	0,038	393	1273	0,037	236
12	2122	0,051	541	1724	0,046	397	1061	0,040	212
14	1819	0,057	518	1478	0,052	384	909	0,046	209
16	1592	0,063	501	1293	0,058	375	796	0,052	207
20	1273	0,081	516	1035	0,074	383	637	0,061	194
25	1019	0,091	463	828	0,084	348	509	0,068	173







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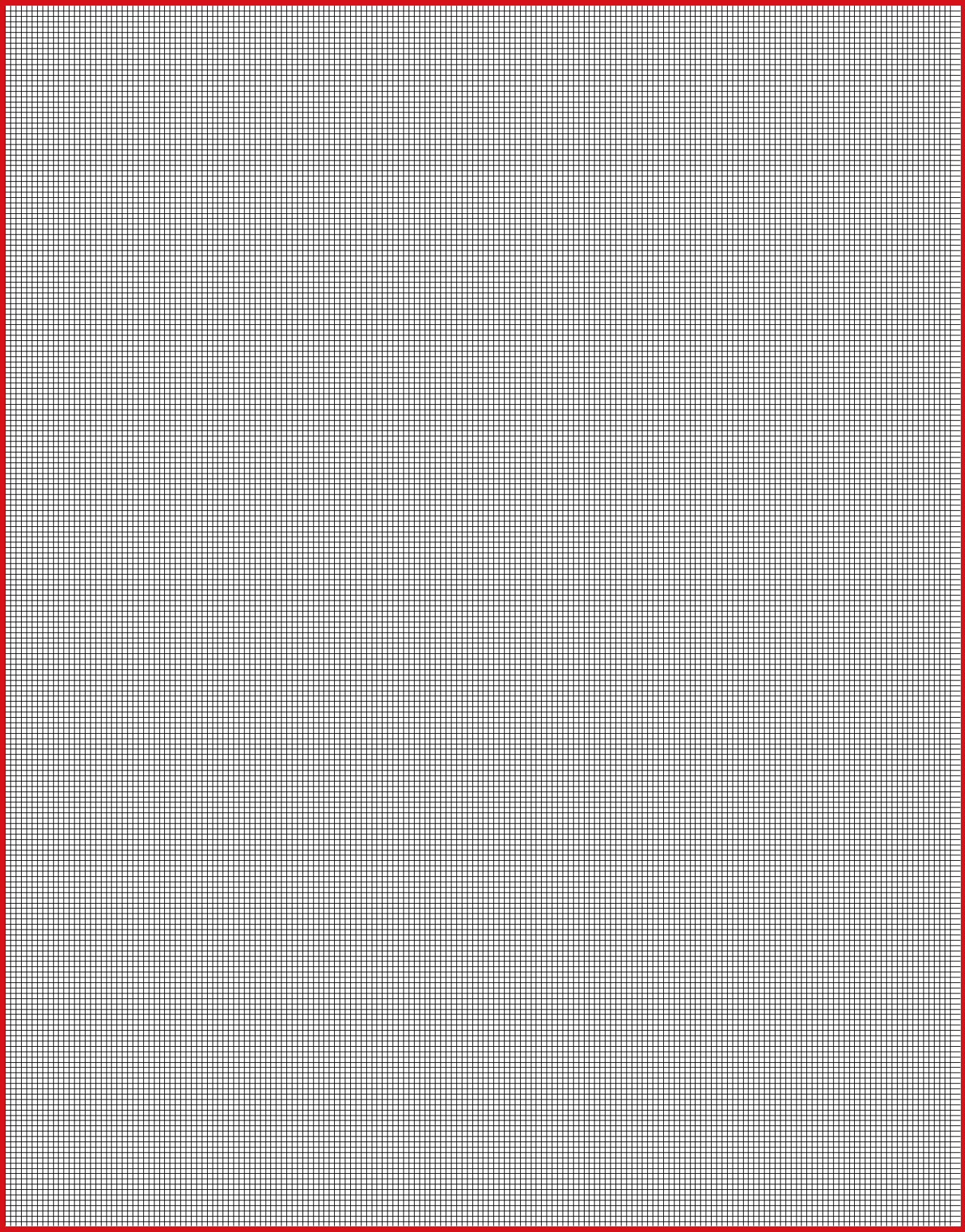
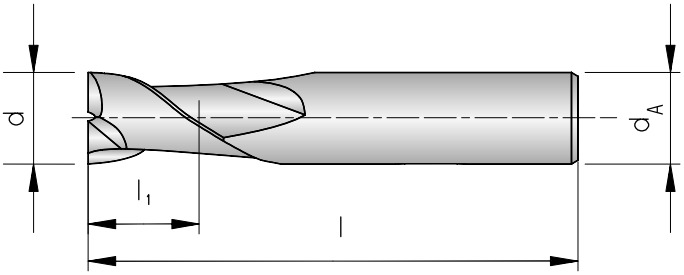


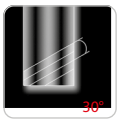
EXCELLENT FOR MACHINING STEEL AND HARDENED STEEL.

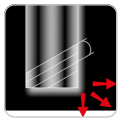
**Not just for milling of alloy and non-alloy steel, but also for hard steel (up to 50 HRC) as well as other tough materials.
Also suitable for dry machining.**

AFG50120-...

2 flutes, short design







Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AFG50120-020B	2	6	6	40	◆
AFG50120-030	3	6	8	45	◆
AFG50120-040	4	6	11	45	◆
AFG50120-050	5	6	13	50	◆
AFG50120-060	6	6	13	50	◆
AFG50120-080	8	8	19	60	◆
AFG50120-100	10	10	22	70	◆
AFG50120-120	12	12	26	75	◆
AFG50120-140	14	14	26	85	◆
AFG50120-160	16	16	32	100	◆
AFG50120-180	18	18	32	100	◆
AFG50120-200	20	20	38	105	◆
AFG50120-220	22	20	38	105	◆
AFG50120-250	25	25	45	120	◆

HC = Carbide coated

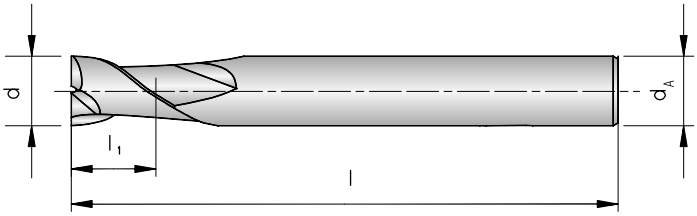
P	●
M	●
K	
N	
S	
H	○

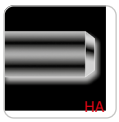
● Main application

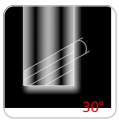
○ Secondary application

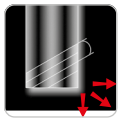
AFG50121-...

2 flutes, long design









Shank DIN 6535HA	d -0,03	d_A h6	l_1	l	HC TiAlN
AFG50121-020	2	4	8	40	◆
AFG50121-030	3	6	12	50	◆
AFG50121-040	4	6	15	50	◆
AFG50121-050	5	6	20	60	◆
AFG50121-060	6	6	20	60	◆
AFG50121-080	8	8	25	70	◆
AFG50121-100	10	10	30	90	◆
AFG50121-120	12	12	30	90	◆
AFG50121-140	14	16	40	110	◆
AFG50121-160	16	16	50	110	◆
AFG50121-180	18	20	50	110	◆
AFG50121-200	20	20	55	110	◆
AFG50121-250	25	25	75	140	◆

HC = Carbide coated

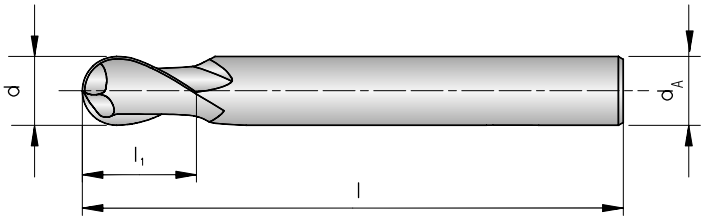
P	●
M	●
K	
N	
S	
H	○

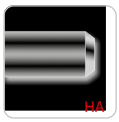
● Main application

○ Secondary application

AFG50321-...

2 flutes, long design





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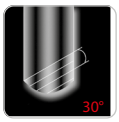
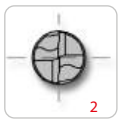
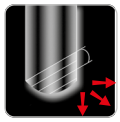




Ultra micro granulation ✓



Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R	HC TiAlN
AFG50321-020	2	6	5	50	1.0	◆
AFG50321-030	3	6	8	60	1.5	◆
AFG50321-040	4	6	8	70	2.0	◆
AFG50321-050	5	6	10	80	2.5	◆
AFG50321-060	6	6	12	90	3.0	◆
AFG50321-080	8	8	14	100	4.0	◆
AFG50321-100	10	10	18	100	5.0	◆
AFG50321-120	12	12	22	110	6.0	◆
AFG50321-140	14	14	26	110	7.0	◆
AFG50321-160	16	16	30	140	8.0	◆
AFG50321-180	18	18	34	140	9.0	◆
AFG50321-200	20	20	38	160	10.0	◆
AFG50321-250	25	25	50	180	12.5	◆

HC = Carbide coated

P	●
M	●
K	
N	
S	
H	○

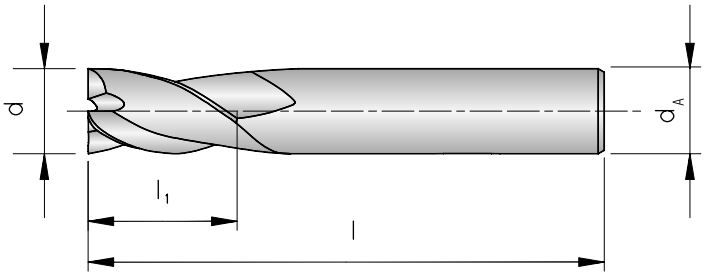
● Main application

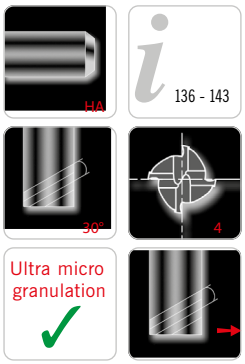
○ Secondary application

Dimensions in mm

AFG50140-...

4 flutes, short design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AFG50140-020A	2.0	4	6	40	◆
AFG50140-020B	2.0	6	6	40	◆
AFG50140-025A	2.5	4	8	40	◆
AFG50140-030	3.0	6	8	45	◆
AFG50140-040	4.0	6	11	45	◆
AFG50140-050	5.0	6	13	50	◆
AFG50140-060	6.0	6	13	50	◆
AFG50140-080	8.0	8	19	60	◆
AFG50140-100	10.0	10	22	70	◆
AFG50140-120	12.0	12	26	75	◆
AFG50140-140	14.0	14	26	85	◆
AFG50140-160	16.0	16	32	100	◆
AFG50140-180	18.0	18	32	100	◆
AFG50140-200	20.0	20	38	105	◆
AFG50140-220	22.0	20	38	105	◆
AFG50140-250	25.0	25	45	120	◆

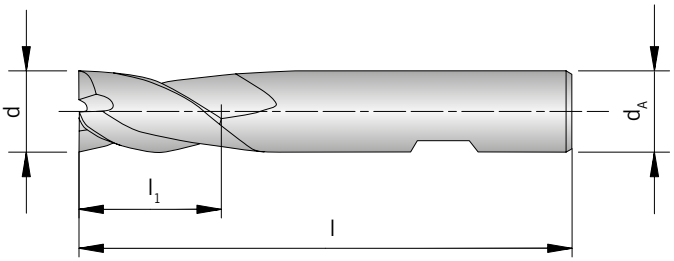
HC = Carbide coated

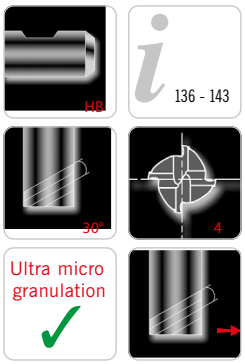
P	●
M	●
K	
N	
S	
H	○

● Main application
○ Secondary application

AFG60140-...

4 flutes, short design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AFG60140-020B	2	6	6	40	◆
AFG60140-030	3	6	8	45	◆
AFG60140-040	4	6	11	45	◆
AFG60140-050	5	6	13	50	◆
AFG60140-060	6	6	13	50	◆
AFG60140-080	8	8	19	60	◆
AFG60140-100	10	10	22	70	◆
AFG60140-120	12	12	26	75	◆
AFG60140-140	14	14	26	85	◆
AFG60140-160	16	16	32	100	◆
AFG60140-180	18	18	32	100	◆
AFG60140-200	20	20	38	105	◆

HC = Carbide coated

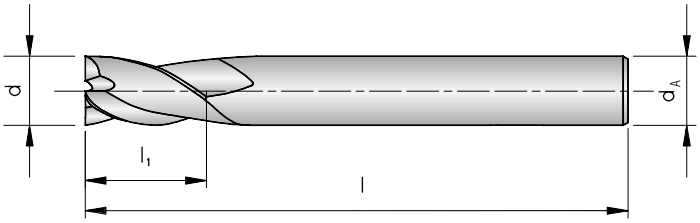
P	●
M	●
K	
N	
S	
H	○

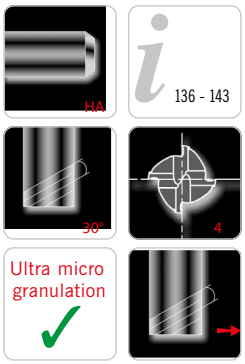
● Main application
○ Secondary application

Dimensions in mm

AFG50141-...

4 flutes, long design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AFG50141-020	2	4	8	40	◆
AFG50141-030	3	6	12	50	◆
AFG50141-040	4	6	15	50	◆
AFG50141-050	5	6	20	60	◆
AFG50141-060	6	6	20	60	◆
AFG50141-080	8	8	25	70	◆
AFG50141-100	10	10	30	90	◆
AFG50141-120	12	12	30	90	◆
AFG50141-140	14	16	40	110	◆
AFG50141-160	16	16	50	110	◆
AFG50141-180	18	20	50	110	◆
AFG50141-200	20	20	55	110	◆
AFG50141-250	25	25	75	140	◆

HC = Carbide coated

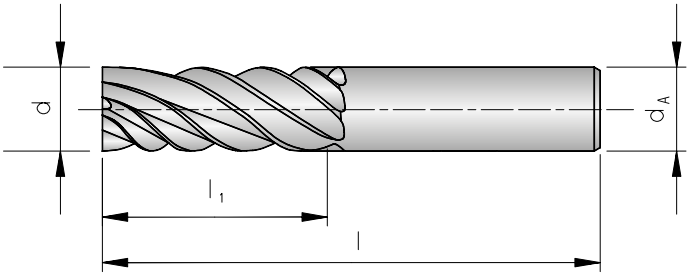
P	●
M	●
K	
N	
S	
H	○

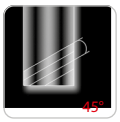
● Main application

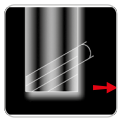
○ Secondary application

AFG502.0-...

4 - 8 flutes, long design







Shank DIN 6535HA	d -0,03	d_A h6	l_1	l	z	HC TiAlN
AFG50240-040	4	6	11	57	4	◆
AFG50260-060	6	6	13	57	6	◆
AFG50260-080	8	8	19	63	6	◆
AFG50260-100	10	10	22	72	6	◆
AFG50260-120	12	12	26	83	6	◆
AFG50260-140	14	14	26	83	6	◆
AFG50260-160	16	16	32	92	6	◆
AFG50280-180	18	18	32	92	8	◆
AFG50280-200	20	20	38	104	8	◆
AFG50280-250	25	25	44	104	8	◆

HC = Carbide coated

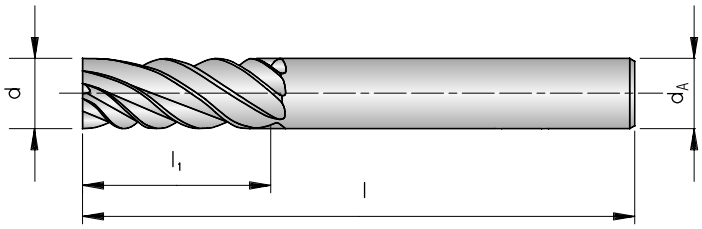
P	●
M	●
K	
N	
S	
H	○

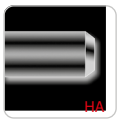
● Main application

○ Secondary application

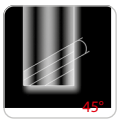
AFG50262-...

6 flutes, extra long design

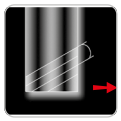




136 - 143



Ultra micro granulation ✓



Shank DIN 6535HA	d -0,03	d_A h6	l_1	l	HC TiAlN
AFG50262-060	6	6	26	70	◆
AFG50262-080	8	8	36	90	◆
AFG50262-100	10	10	46	100	◆
AFG50262-120	12	12	56	110	◆
AFG50262-160	16	16	66	130	◆
AFG50262-200	20	20	76	140	◆
AFG50262-250	25	25	92	180	◆

HC = Carbide coated

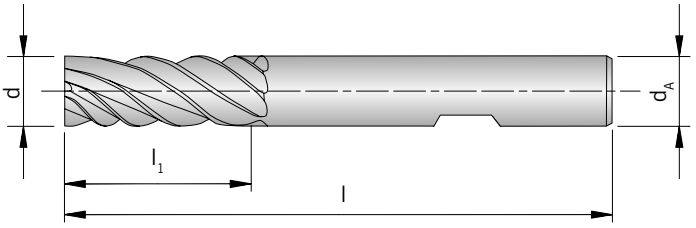
P	●
M	●
K	
N	
S	
H	○

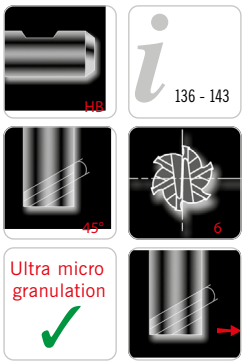
● Main application

○ Secondary application

AFG60262-...

6 flutes, extra long design





AFG

Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC TiAlN
AFG60262-060	6	6	26	70	◆
AFG60262-080	8	8	36	90	◆
AFG60262-100	10	10	46	100	◆
AFG60262-120	12	12	56	110	◆
AFG60262-160	16	16	66	130	◆
AFG60262-200	20	20	76	140	◆
AFG60262-250	25	25	92	180	◆

HC = Carbide coated

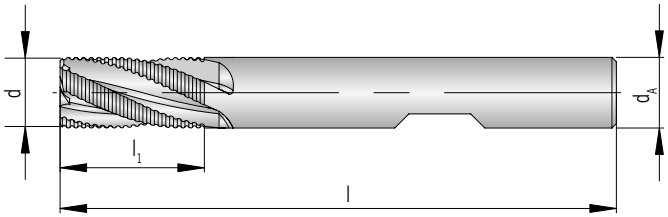
P	●
M	●
K	
N	
S	
H	○

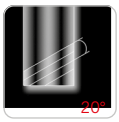
● Main application
○ Secondary application

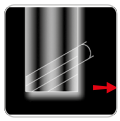
Dimensions in mm

AFG606.1-...

3 - 5 flutes, long design







Shank DIN 6535HB	d *h10*	d_A *h6*	l_1	l	z	HC TiAlN
AFG60631-040	4	6	11	57	3	◆
AFG60631-050	5	6	13	57	3	◆
AFG60631-060	6	6	16	57	3	◆
AFG60631-070	7	8	16	63	3	◆
AFG60631-080	8	8	16	63	3	◆
AFG60641-090	9	10	19	72	4	◆
AFG60641-100	10	10	22	72	4	◆
AFG60641-120	12	12	26	83	4	◆
AFG60641-140	14	14	26	83	4	◆
AFG60641-160	16	16	32	92	4	◆
AFG60641-180	18	18	32	92	4	◆
AFG60641-200	20	20	38	104	4	◆
AFG60651-250	25	25	45	121	5	◆

HC = Carbide coated

P	●
M	●
K	
N	
S	
H	○

● Main application

○ Secondary application

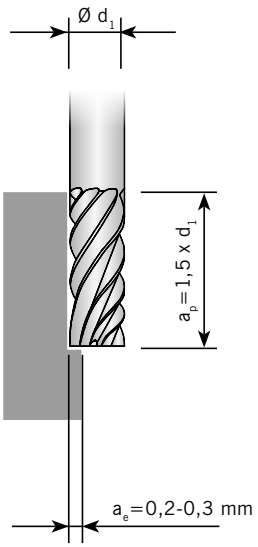
Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Correction factor	Cutting speed V_c (m/min) VHM TiAlN
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	1,2	100 - 170 - 240
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	1,2	100 - 170 - 240
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	1,2	90 - 155 - 220
		C > 0.55 %	annealed	190	639	P4	1,2	100 - 170 - 240
		C > 0.55 %	hardened and tempered	300	1013	P5	1,0	60 - 100 - 140
		Machining steel (short-chipping)	tempered	220	745	P6	1,2	100 - 170 - 240
	Low alloyed steel	annealed		175	591	P7	1,2	90 - 145 - 200
		hardened and tempered		300	1013	P8	1,0	90 - 145 - 200
		hardened and tempered		380	1282	P9	0,8	60 - 90 - 120
		hardened and tempered		430	1477	P10	0,8	60 - 90 - 120
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	1,2	90 - 145 - 200
		hardened		300	1013	P12	1,0	80 - 110 - 140
		hardened		400	1361	P13	0,8	60 - 85 - 110
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	1,0	50 - 85 - 120
		martensitic, hardened and tempered		330	1114	P15	0,9	30 - 55 - 80
M	Stainless steel	austenitic, chilled		200	675	M1	1,0	60 - 90 - 120
		austenitic, precipitation-hardened (PH)		300	1013	M2	0,9	30 - 55 - 80
		austenitic-ferritic, Duplex		230	778	M3	1,0	50 - 85 - 120
K	Malleable cast iron	ferritic		200	675	K1		-
		pearlitic		260	867	K2		-
	Cast iron	low tensile strength		180	602	K3		-
		high tensile strength / austenitic		245	825	K4		-
	Cast iron with nodular graphite	ferritic		155	518	K5		-
		pearlitic		265	885	K6		-
	GGV (CGI)			200	675	K7		-
N	Aluminium alloys long chipping	not heat treatable		30	-	N1		-
		heat treatable, heat treated		100	343	N2		-
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3		-
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4		-
		> 12 % Si, not heat treatable		130	447	N5		-
	Magnesium alloys			70	250	N6		-
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7		-
		Brass, Bronze		90	314	N8		-
		Cu-alloys, short-chipping		110	382	N9		-
		High-tensile, Ampco		300	1013	N10		-
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11		-
		Duroplastic (without abrasive filling material)		-	-	N12		-
		Plastic glas fibre reinforced GFRP		-	-	N13		-
		Plastic carbon fibre reinforced CFRP		-	-	N14		-
		Plastic aramid fibre reinforced AFRP		-	-	N15		-
		Graphite (tech.)		80 Shore	-	N16		-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1		-
			heat treated	280	943	S2		-
		Ni- or Co-alloyed	annealed	250	839	S3		-
			heat treated	350	1177	S4		-
			casting	320	1076	S5		-
	Titanium alloys	Pure titan		200	675	S6		-
		α- and β-alloys, heat treated		375	1262	S7		-
		β-alloys		410	1396	S8		-
	Wolfram alloys			300	1013	S9		-
	Molybdän alloys			300	1013	S10		-
H	Hardened steel	hardened		50 HRC	-	H1	0,7	20 - 70 - 120
		hardened		55 HRC	-	H2	0,7	20 - 70 - 120
		hardened		60 HRC	-	H3	1,1	12 - 36 - 60
	Hardened cast iron	hardened		55 HRC	-	H4	0,7	20 - 70 - 120

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Feed per tooth with radial depth of cut from 0,2 – 0,3 mm

≤ 40 HRC

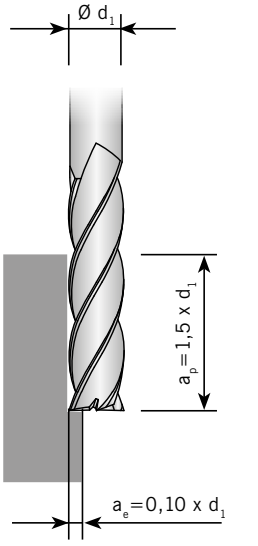
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,004	0,003	0,003	0,004	0,004	0,005	0,006	0,006	0,007	0,008
2	0,008	0,006	0,006	0,007	0,009	0,010	0,012	0,013	0,014	0,015
3	0,012	0,008	0,010	0,011	0,013	0,014	0,018	0,019	0,022	0,023
4	0,016	0,011	0,013	0,014	0,018	0,019	0,024	0,026	0,029	0,030
5	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
6	0,024	0,017	0,019	0,022	0,026	0,029	0,036	0,038	0,043	0,046
8	0,032	0,022	0,026	0,029	0,035	0,038	0,048	0,051	0,058	0,061
10	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
12	0,048	0,034	0,038	0,043	0,053	0,058	0,072	0,077	0,086	0,091
14	0,056	0,039	0,045	0,050	0,062	0,067	0,084	0,090	0,101	0,106
16	0,064	0,045	0,051	0,058	0,070	0,077	0,096	0,102	0,115	0,122
18	0,072	0,050	0,058	0,065	0,079	0,086	0,108	0,115	0,130	0,137
20	0,080	0,056	0,064	0,072	0,088	0,096	0,120	0,128	0,144	0,152
22	0,090	0,060	0,070	0,080	0,095	0,110	0,130	0,140	0,160	0,170
25	0,100	0,070	0,080	0,090	0,110	0,120	0,150	0,160	0,180	0,190



Feed per tooth with radial depth of cut of 10% of the cutter (ø d1)

≤ 40 HRC

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,003	0,002	0,002	0,003	0,003	0,004	0,005	0,005	0,005	0,006
2	0,008	0,006	0,006	0,007	0,009	0,010	0,012	0,013	0,014	0,015
3	0,012	0,008	0,010	0,011	0,013	0,014	0,018	0,019	0,022	0,023
4	0,014	0,010	0,011	0,013	0,015	0,017	0,021	0,022	0,025	0,027
5	0,017	0,012	0,014	0,015	0,019	0,020	0,026	0,027	0,031	0,032
6	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
8	0,027	0,019	0,022	0,024	0,030	0,032	0,041	0,043	0,049	0,051
10	0,033	0,023	0,026	0,030	0,036	0,040	0,050	0,053	0,059	0,063
12	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
14	0,047	0,033	0,038	0,042	0,052	0,056	0,071	0,075	0,085	0,089
16	0,053	0,037	0,042	0,048	0,058	0,064	0,080	0,085	0,095	0,101
18	0,060	0,042	0,048	0,054	0,066	0,072	0,090	0,096	0,108	0,114
20	0,067	0,047	0,054	0,060	0,074	0,080	0,101	0,107	0,121	0,127
25	0,083	0,058	0,066	0,075	0,091	0,100	0,125	0,133	0,149	0,158

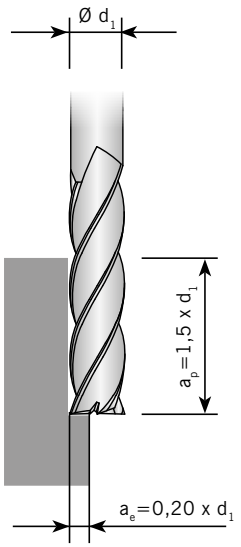


Attention: Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with a_p = 1 x d_1 -> 1,2 with a_p = 0,5 x d_1

Feed per tooth with radial depth of cut of 20 % of the cutter (ø d1)

≤ 40 HRC

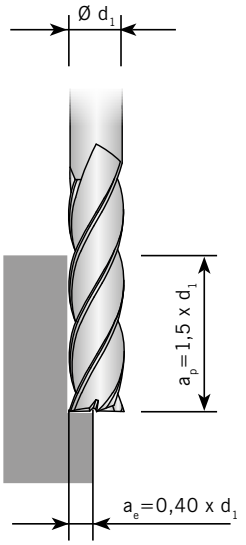
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,002	0,001	0,001	0,001	0,002	0,002	0,003	0,003	0,003	0,003
2	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
3	0,008	0,005	0,006	0,007	0,008	0,009	0,012	0,012	0,014	0,015
4	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
5	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
6	0,015	0,010	0,012	0,013	0,016	0,018	0,022	0,024	0,027	0,028
8	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
10	0,025	0,017	0,020	0,022	0,027	0,030	0,037	0,040	0,045	0,047
12	0,030	0,021	0,024	0,027	0,033	0,036	0,045	0,048	0,054	0,057
14	0,035	0,024	0,028	0,031	0,038	0,042	0,052	0,056	0,063	0,066
16	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
18	0,045	0,031	0,036	0,040	0,049	0,054	0,067	0,072	0,081	0,085
20	0,050	0,035	0,040	0,045	0,055	0,060	0,075	0,080	0,090	0,095
22	0,055	0,040	0,045	0,050	0,060	0,065	0,080	0,090	0,100	0,100
25	0,063	0,044	0,050	0,056	0,069	0,075	0,094	0,100	0,113	0,119



Feed per tooth with radial depth of cut of 40 % of the cutter (ø d1)

≤ 40 HRC

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002	0,003
2	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
3	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
4	0,008	0,005	0,006	0,007	0,008	0,009	0,012	0,012	0,014	0,015
5	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
6	0,012	0,008	0,009	0,010	0,013	0,014	0,018	0,019	0,021	0,022
8	0,016	0,011	0,012	0,014	0,017	0,019	0,024	0,025	0,028	0,030
10	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
12	0,024	0,016	0,019	0,021	0,026	0,028	0,036	0,038	0,043	0,045
14	0,028	0,019	0,022	0,025	0,030	0,033	0,042	0,044	0,050	0,053
16	0,032	0,022	0,025	0,028	0,035	0,038	0,048	0,051	0,057	0,060
18	0,036	0,025	0,028	0,032	0,039	0,043	0,054	0,057	0,064	0,068
20	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
22	0,045	0,030	0,035	0,040	0,045	0,050	0,065	0,070	0,080	0,085
25	0,050	0,035	0,040	0,045	0,055	0,060	0,075	0,080	0,090	0,095

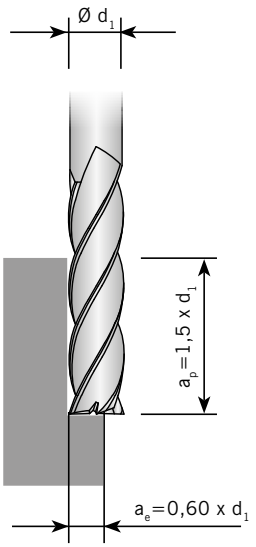


Attention: Feed rate correction factor → Kf f_z = 1,10 with a_p = 1 x d_1 and → Kf f_z = 1,25 with a_p = 0,5 x d_1. Feed rates are reduced by 10-20 % for uncoated tools.

Feed per tooth with radial depth of cut of 60% of the cutter (ø d1)

≤ 40 HRC

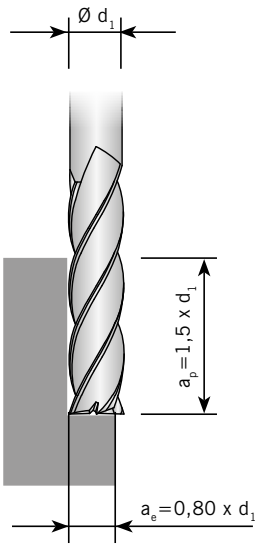
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,005	0,005	0,006
3	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
4	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
5	0,008	0,005	0,006	0,007	0,009	0,010	0,012	0,013	0,015	0,016
6	0,009	0,006	0,007	0,008	0,010	0,011	0,014	0,015	0,017	0,018
8	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
10	0,016	0,011	0,013	0,014	0,017	0,019	0,024	0,026	0,029	0,030
12	0,019	0,013	0,015	0,017	0,021	0,023	0,029	0,031	0,035	0,037
14	0,022	0,015	0,018	0,020	0,025	0,027	0,034	0,036	0,040	0,043
16	0,026	0,018	0,020	0,023	0,028	0,031	0,039	0,041	0,046	0,049
18	0,029	0,020	0,023	0,026	0,032	0,035	0,043	0,046	0,052	0,055
20	0,032	0,022	0,026	0,029	0,035	0,039	0,048	0,052	0,058	0,061
22	0,035	0,025	0,030	0,031	0,038	0,041	0,053	0,054	0,064	0,066
25	0,040	0,028	0,032	0,036	0,045	0,049	0,061	0,065	0,073	0,077



Feed per tooth with radial depth of cut of 80% of the cutter (ø d1)

≤ 40 HRC

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001
2	0,002	0,001	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,004
3	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
4	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
5	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
6	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,012	0,013	0,014
8	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
10	0,012	0,008	0,010	0,011	0,013	0,015	0,018	0,020	0,022	0,023
12	0,015	0,010	0,012	0,013	0,016	0,018	0,022	0,024	0,027	0,028
14	0,017	0,012	0,014	0,015	0,019	0,021	0,026	0,028	0,031	0,033
16	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
18	0,022	0,015	0,018	0,020	0,024	0,027	0,033	0,036	0,040	0,042
20	0,025	0,017	0,020	0,022	0,027	0,030	0,037	0,040	0,045	0,047
22	0,030	0,020	0,020	0,024	0,030	0,031	0,040	0,045	0,050	0,050
25	0,031	0,022	0,025	0,028	0,034	0,037	0,047	0,050	0,056	0,059

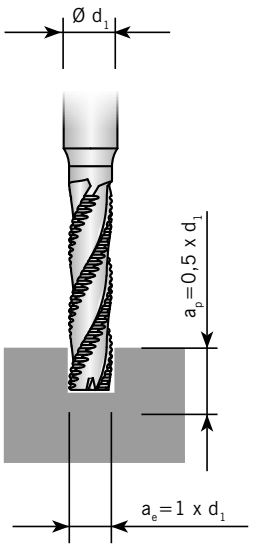


Attention: Feed rate correction factor → Kf f_z = 1,10 with a_p = 1 x d_1 and → Kf f_z = 1,25 with a_p = 0,5 x d_1. Feed rates are reduced by 10-20% for uncoated tools.

Feed per tooth when full slot milling ➜ ap = 0,5 x d_1

≤ 40 HRC

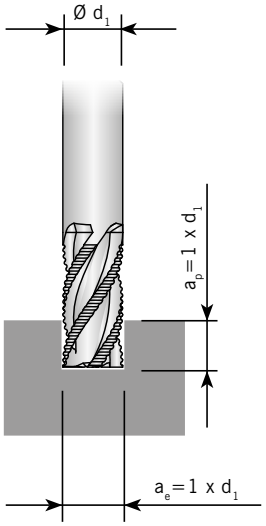
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,002	0,001	0,001	0,001	0,002	0,002	0,003	0,003	0,003	0,003
2	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
3	0,007	0,004	0,005	0,006	0,007	0,008	0,010	0,011	0,012	0,013
4	0,009	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,016	0,017
5	0,011	0,007	0,008	0,009	0,012	0,013	0,016	0,017	0,019	0,020
6	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
8	0,018	0,012	0,014	0,016	0,019	0,021	0,027	0,028	0,032	0,034
10	0,022	0,015	0,017	0,019	0,024	0,026	0,033	0,035	0,039	0,041
12	0,030	0,021	0,024	0,027	0,033	0,036	0,045	0,048	0,054	0,057
14	0,032	0,022	0,025	0,028	0,035	0,038	0,048	0,051	0,057	0,060
16	0,036	0,025	0,028	0,032	0,039	0,043	0,054	0,057	0,064	0,068
18	0,042	0,029	0,033	0,037	0,046	0,050	0,063	0,067	0,075	0,079
20	0,045	0,031	0,036	0,040	0,049	0,054	0,067	0,072	0,081	0,085
22	0,050	0,035	0,040	0,045	0,055	0,060	0,072	0,076	0,090	0,095
25	0,056	0,039	0,044	0,050	0,061	0,067	0,084	0,089	0,100	0,106



Feed per tooth when full slot milling ➜ ap = 1 x d_1

≤ 40 HRC

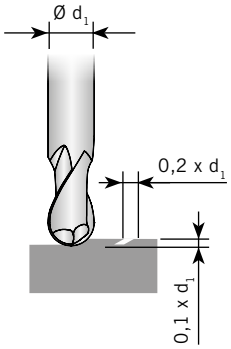
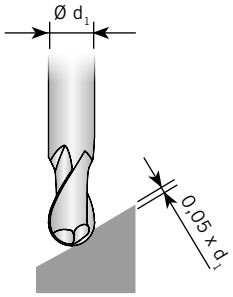
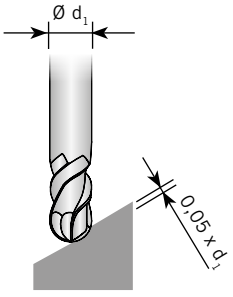
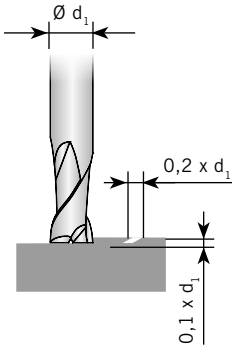
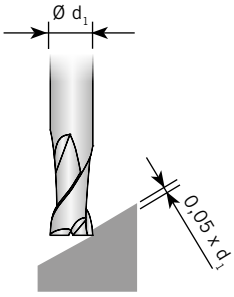
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,005	0,005
3	0,005	0,003	0,004	0,004	0,005	0,005	0,007	0,007	0,008	0,009
4	0,006	0,004	0,005	0,005	0,006	0,007	0,009	0,009	0,011	0,011
5	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,011	0,013	0,014
6	0,008	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,015	0,016
8	0,012	0,008	0,009	0,011	0,013	0,014	0,018	0,019	0,021	0,022
10	0,014	0,010	0,011	0,013	0,016	0,017	0,021	0,023	0,026	0,027
12	0,020	0,014	0,016	0,018	0,021	0,023	0,029	0,031	0,035	0,037
14	0,021	0,015	0,017	0,019	0,023	0,025	0,031	0,033	0,037	0,040
16	0,023	0,016	0,019	0,021	0,026	0,028	0,035	0,037	0,042	0,044
18	0,027	0,019	0,022	0,025	0,030	0,033	0,041	0,044	0,049	0,052
20	0,029	0,020	0,023	0,026	0,032	0,035	0,044	0,047	0,053	0,056
22	0,031	0,022	0,025	0,030	0,038	0,040	0,050	0,050	0,060	0,061
25	0,036	0,025	0,029	0,033	0,040	0,044	0,055	0,058	0,066	0,069



Attention: Feed rate correction factor → Kf f_z = 1,10 with a_p = 1 x d_1 and → Kf f_z = 1,25 with a_p = 0,5 x d_1. Feed rates are reduced by 10-20% for uncoated tools.

Feed rates for ball nosed- and High feed cutters

≤ 40 HRC

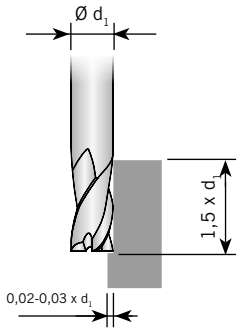
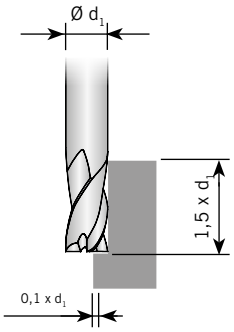
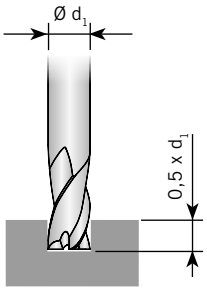
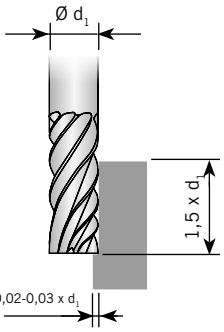
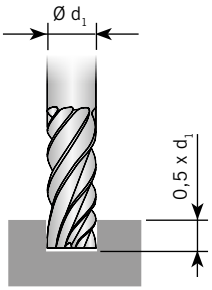
Ball nose end milling cutters	Ball nose end milling cutters	Ball nose cutter for mold and die production	Torus end milling cutters	Torus end milling cutters
				

	TiAlN-coated	TiAlN-coated	TiAlN-coated	TiAlN-coated	TiAlN-coated
d_1 [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]
2	0,015	0,010	0,005	0,010	0,015
3	0,030	0,020	0,015	0,015	0,020
4	0,040	0,030	0,030	0,020	0,030
5	0,060	0,050	0,050	0,030	0,040
6	0,070	0,060	0,060	0,050	0,060
8	0,100	0,080	0,070	0,070	0,080
10	0,120	0,100	0,080	0,080	0,100
12	0,150	0,120	0,090	0,100	0,120
14	0,160	0,140	0,090	0,110	0,130
16	0,180	0,150	0,100	0,120	0,150
18	0,200	0,180	0,110	0,140	0,160
20	0,220	0,200	0,120	0,150	0,180
25	0,240	0,220	0,140	0,170	0,200

Attention: Feed rates are reduced by 10 - 20 % for uncoated tools.

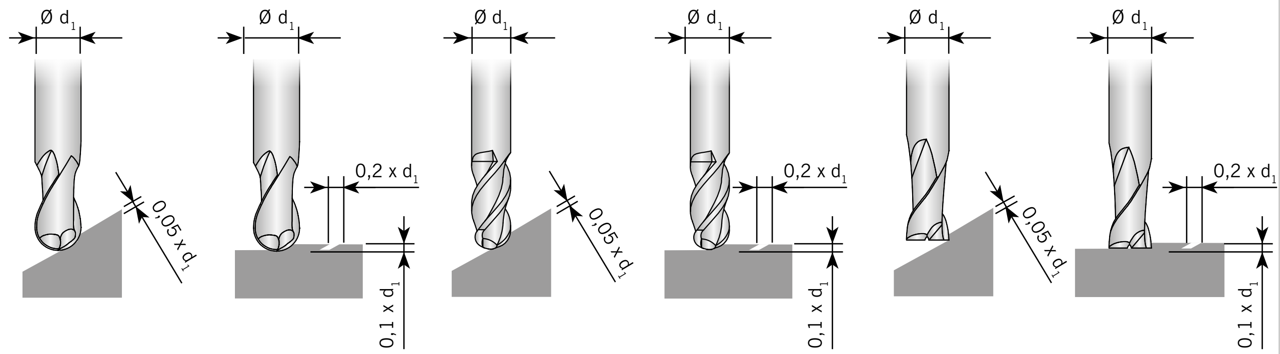
Feed per tooth fz [mm], hardened materials, dry processing

≤ 40 HRC

	Solid carbide end-mill	Solid carbide end-mill	Solid carbide end-mill	Solid carbide end-mill	Solid carbide end-mill
	Hardness = 40 - 56 HRC Vc = 80 - 120 m/min	Hardness = 40 - 56 HRC Vc = 80 - 120 m/min	Hardness = 40 - 56 HRC Vc = 20 - 50 m/min	Hardness = 52 - 66 HRC Vc = 80 - 120 m/min	Hardness = 52 - 60 HRC Vc = 12 - 20 m/min
					
	TiAlN-coated	TiAlN-coated	TiAlN-coated	TiAlN-coated	TiAlN-coated
d_1 [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]
2	0,005	0,005	0,004	0,005	0,002
3	0,008	0,008	0,006	0,008	0,003
4	0,015	0,013	0,009	0,010	0,004
5	0,020	0,017	0,011	0,013	0,006
6	0,026	0,021	0,015	0,015	0,008
8	0,035	0,029	0,020	0,020	0,010
10	0,043	0,036	0,025	0,025	0,013
12	0,052	0,043	0,030	0,030	0,015
14	0,060	0,050	0,035	0,035	0,018
16	0,060	0,057	0,040	0,040	0,020
18	0,060	0,060	0,045	0,045	0,023
20	0,060	0,060	0,050	0,050	0,025
22	0,060	0,060	0,050	0,050	0,030
25	0,060	0,065	0,055	0,055	0,035

Attention: Feed rates are reduced by 10 - 20 % for uncoated tools.

Feed per tooth fz [mm], hardened materials, dry processing ≤ 40 HRC



	Ball nose end milling cutters	Ball nose end milling cutters	Ball nose cutter for mold and die production	Ball nose cutter for mold and die production	Torus end milling cutters	Torus end milling cutters
	Hardness = 40-63 HRC Vc= 80-120 m/min	Hardness = 40-60 HRC Vc = 80-120 m/min	Hardness = 40-56 HRC Vc= 80-120 m/min	Hardness = 40-60 HRC Vc = 80-120 m/min	Hardness = 40-60 HRC Vc = 80-120 m/min	Hardness = 40-60 HRC Vc = 80-120 m/min
	TiAlN-coated	TiAlN-coated	TiAlN-coated	TiAlN-coated	TiAlN-coated	TiAlN-coated
d_1 [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]
2	0,005	0,005	0,005	0,005	0,005	0,005
3	0,015	0,010	0,015	0,010	0,015	0,010
4	0,030	0,015	0,030	0,015	0,030	0,015
5	0,050	0,020	0,050	0,020	0,050	0,020
6	0,060	0,030	0,060	0,030	0,060	0,030
8	0,070	0,035	0,070	0,035	0,070	0,035
10	0,080	0,040	0,080	0,040	0,080	0,040
12	0,080	0,050	0,080	0,050	0,080	0,050
14	0,090	0,065	0,100	0,065	0,090	0,065
16	0,100	0,080	0,100	0,080	0,100	0,080
18	0,100	0,100	0,110	0,100	0,110	0,100
20	0,120	0,120	0,130	0,120	0,120	0,120
25	0,120	0,120	0,130	0,120	0,120	0,120

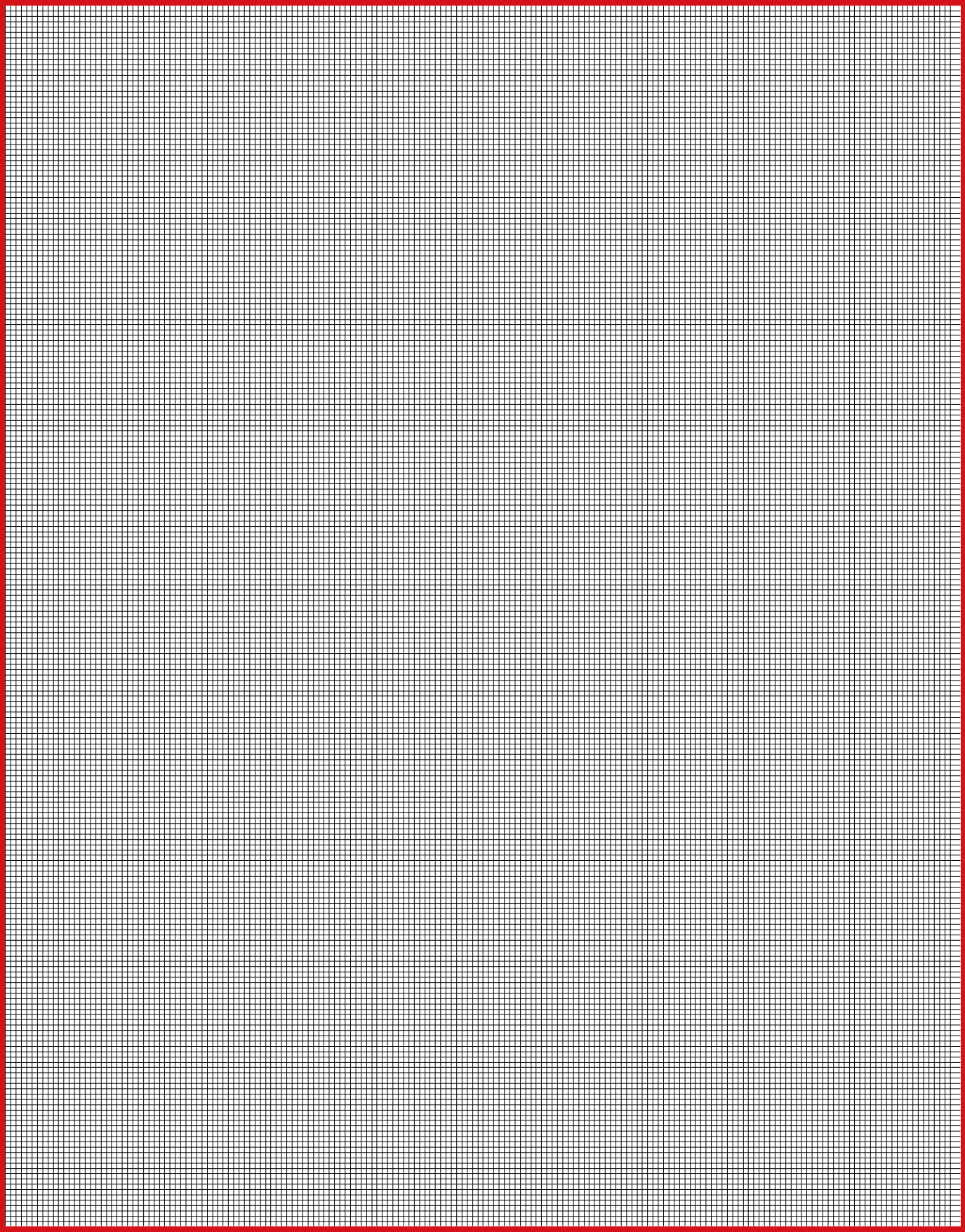
Attention: Feed rates are reduced by 10-20% for uncoated tools.

AFG

ARNO®
WERKZEUGE

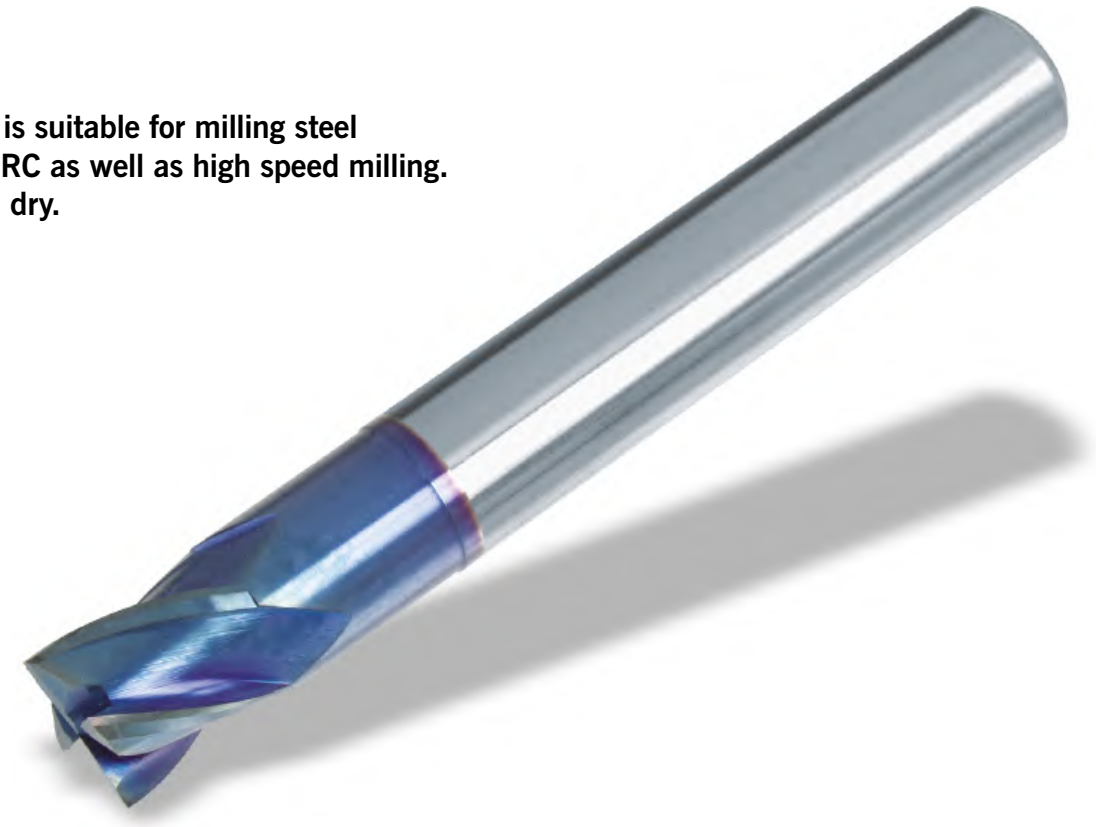
For more information see

www.arno.de



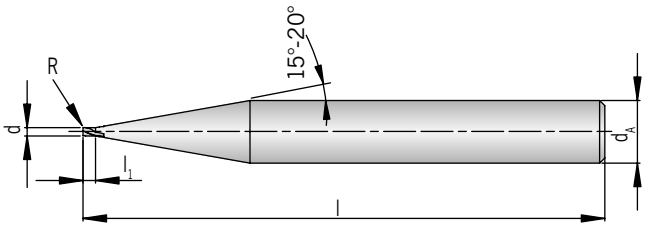
FOR THE REALLY HARD JOBS.

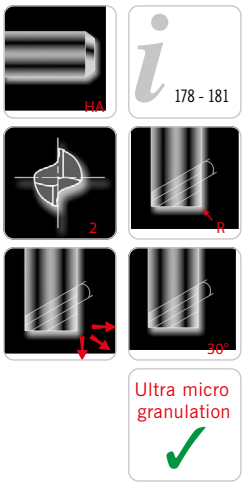
This series is suitable for milling steel up to 70 HRC as well as high speed milling. Can be run dry.



AFH50120-...R...

2 flutes, mini design, with corner radius





AFH

Shank DIN 6535HA	d *-0,012*	d_A *h6*	l_1	l	R *±0,010*	HC TiA70
AFH50120-003	0.3	6	0.45	50	-	◆
AFH50120-004	0.4	6	0.60	50	-	◆
AFH50120-005R0,05	0.5	6	0.70	50	0.05	◆
AFH50120-006R0,05	0.6	6	0.90	50	0.05	◆
AFH50120-008R0,05	0.8	6	1.20	50	0.05	◆
AFH50120-010R0,1	1.0	6	1.50	50	0.10	◆
AFH50120-012R0,1	1.2	6	1.80	50	0.10	◆
AFH50120-015R0,15	1.5	6	2.20	50	0.15	◆
AFH50120-020R0,15	2.0	6	2.20	50	0.15	◆

HC = Carbide coated

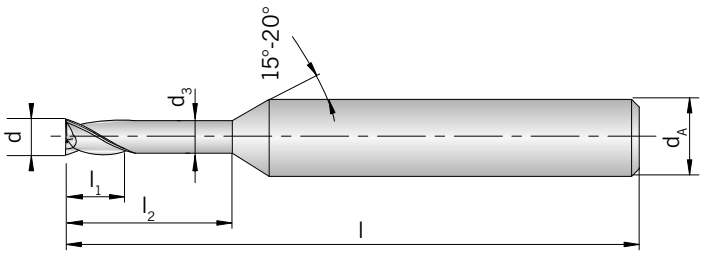
P	○
M	
K	
N	
S	
H	●

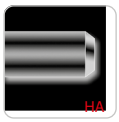
● Main application
○ Secondary application

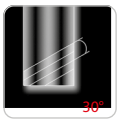
Dimensions in mm

AFH50526-...

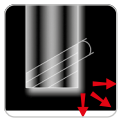
2 flutes, mini design







Ultra micro granulation ✓



Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	HC TiA70
AFH50526-001A	0.1	4	0.085	0.15	0.3	45	◆
AFH50526-001B	0.1	4	0.085	0.15	0.5	45	◆
AFH50526-002A	0.2	4	0.180	0.30	0.5	45	◆
AFH50526-002B	0.2	4	0.180	0.30	1.0	45	◆
AFH50526-002C	0.2	4	0.180	0.30	1.5	45	◆
AFH50526-003A	0.3	4	0.270	0.45	1.0	45	◆
AFH50526-003B	0.3	4	0.270	0.45	1.5	45	◆
AFH50526-003C	0.3	4	0.270	0.45	2.0	45	◆
AFH50526-003D	0.3	4	0.270	0.45	3.0	45	◆
AFH50526-003E	0.3	4	0.270	0.45	4.0	45	◆
AFH50526-004A	0.4	4	0.370	0.60	1.0	45	◆
AFH50526-004B	0.4	4	0.370	0.60	2.0	45	◆
AFH50526-004C	0.4	4	0.370	0.60	3.0	45	◆
AFH50526-004D	0.4	4	0.370	0.60	4.0	45	◆
AFH50526-004E	0.4	4	0.370	0.60	5.0	45	◆
AFH50526-005A	0.5	4	0.450	0.70	2.0	45	◆
AFH50526-005B	0.5	4	0.450	0.70	2.5	45	◆
AFH50526-005C	0.5	4	0.450	0.70	4.0	45	◆
AFH50526-005D	0.5	4	0.450	0.70	6.0	45	◆
AFH50526-005E	0.5	4	0.450	0.70	8.0	45	◆
AFH50526-006A	0.6	4	0.550	0.90	2.0	45	◆
AFH50526-006B	0.6	4	0.550	0.90	3.0	45	◆
AFH50526-006C	0.6	4	0.550	0.90	4.0	45	◆
AFH50526-006D	0.6	4	0.550	0.90	6.0	45	◆
AFH50526-006E	0.6	4	0.550	0.90	8.0	45	◆
AFH50526-006F	0.6	4	0.550	0.90	10.0	45	◆
AFH50526-008A	0.8	4	0.750	1.20	2.0	45	◆
AFH50526-008B	0.8	4	0.750	1.20	4.0	45	◆
AFH50526-008C	0.8	4	0.750	1.20	6.0	45	◆
AFH50526-008D	0.8	4	0.750	1.20	8.0	45	◆
AFH50526-008E	0.8	4	0.750	1.20	10.0	45	◆
AFH50526-008F	0.8	4	0.750	1.20	12.0	45	◆
AFH50526-010A	1.0	4	0.950	1.50	4.0	45	◆
AFH50526-010B	1.0	4	0.950	1.50	6.0	45	◆
AFH50526-010C	1.0	4	0.950	1.50	8.0	45	◆
AFH50526-010D	1.0	4	0.950	1.50	10.0	45	◆
AFH50526-010E	1.0	4	0.950	1.50	12.0	45	◆

Dimensions in mm

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	HC TiA70
AFH50526-010F	1.0	4	0.950	1.50	16.0	50	◆
AFH50526-010G	1.0	4	0.950	1.50	20.0	55	◆
AFH50526-012A	1.2	4	1.150	1.80	6.0	45	◆
AFH50526-012B	1.2	4	1.150	1.80	8.0	45	◆
AFH50526-012C	1.2	4	1.150	1.80	10.0	45	◆
AFH50526-012D	1.2	4	1.150	1.80	12.0	45	◆
AFH50526-012E	1.2	4	1.150	1.80	16.0	50	◆
AFH50526-015A	1.5	4	1.450	2.30	6.0	45	◆
AFH50526-015B	1.5	4	1.450	2.30	8.0	45	◆
AFH50526-015C	1.5	4	1.450	2.30	10.0	45	◆
AFH50526-015D	1.5	4	1.450	2.30	12.0	45	◆
AFH50526-015E	1.5	4	1.450	2.30	14.0	50	◆
AFH50526-015F	1.5	4	1.450	2.30	16.0	50	◆
AFH50526-015G	1.5	4	1.450	2.30	18.0	55	◆
AFH50526-015H	1.5	4	1.450	2.30	20.0	55	◆
AFH50526-020A	2.0	4	1.950	3.00	6.0	45	◆
AFH50526-020B	2.0	4	1.950	3.00	8.0	45	◆
AFH50526-020C	2.0	4	1.950	3.00	10.0	45	◆
AFH50526-020D	2.0	4	1.950	3.00	12.0	45	◆
AFH50526-020E	2.0	4	1.950	3.00	14.0	50	◆
AFH50526-020F	2.0	4	1.950	3.00	16.0	50	◆
AFH50526-020G	2.0	4	1.950	3.00	18.0	55	◆
AFH50526-020H	2.0	4	1.950	3.00	20.0	55	◆
AFH50526-020J	2.0	4	1.950	3.00	25.0	60	◆
AFH50526-020K	2.0	4	1.950	3.00	30.0	70	◆
AFH50526-030A	3.0	6	2.850	4.50	10.0	45	◆
AFH50526-030B	3.0	6	2.850	4.50	12.0	45	◆
AFH50526-030C	3.0	6	2.850	4.50	14.0	50	◆
AFH50526-030D	3.0	6	2.850	4.50	16.0	55	◆
AFH50526-030E	3.0	6	2.850	4.50	18.0	55	◆
AFH50526-030F	3.0	6	2.850	4.50	20.0	60	◆
AFH50526-030G	3.0	6	2.850	4.50	25.0	65	◆
AFH50526-030H	3.0	6	2.850	4.50	30.0	70	◆
AFH50526-030J	3.0	6	2.850	4.50	35.0	80	◆
AFH50526-030K	3.0	6	2.850	4.50	40.0	90	◆
AFH50526-040A	4.0	6	3.850	6.00	12.0	50	◆
AFH50526-040B	4.0	6	3.850	6.00	16.0	60	◆
AFH50526-040C	4.0	6	3.850	6.00	20.0	60	◆
AFH50526-040D	4.0	6	3.850	6.00	25.0	70	◆
AFH50526-040E	4.0	6	3.850	6.00	30.0	70	◆
AFH50526-040F	4.0	6	3.850	6.00	35.0	80	◆
AFH50526-040G	4.0	6	3.850	6.00	40.0	90	◆
AFH50526-040H	4.0	6	3.850	6.00	45.0	90	◆
AFH50526-040J	4.0	6	3.850	6.00	50.0	100	◆

HC = Carbide coated

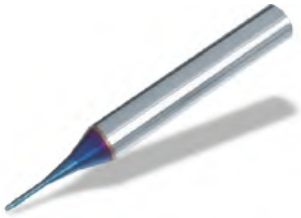
P	○
M	
K	
N	
S	
H	●

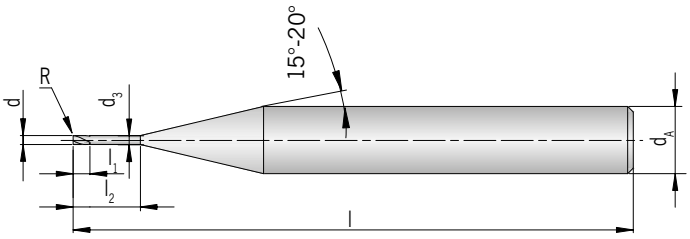
● Main application
○ Secondary application

Dimensions in mm

AFH50920-...R...

2 flutes, mini design, with corner radius





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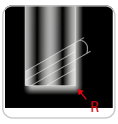

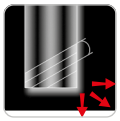

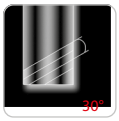

Ultra micro granulation ✓

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,010*	HC TiA70
AFH50920-005AR0,05	0.5	6	0.45	0.7	1.5	50	0.05	◆
AFH50920-005BR0,05	0.5	6	0.45	0.7	3.3	50	0.05	◆
AFH50920-006AR0,05	0.6	6	0.55	0.9	2.0	50	0.05	◆
AFH50920-006BR0,05	0.6	6	0.55	0.9	4.0	50	0.05	◆
AFH50920-008AR0,05	0.8	6	0.75	1.2	2.5	50	0.05	◆
AFH50920-008BR0,05	0.8	6	0.75	1.2	5.5	50	0.05	◆
AFH50920-010AR0,1	1.0	6	0.95	1.5	3.3	50	0.10	◆
AFH50920-010BR0,1	1.0	6	0.95	1.5	6.7	50	0.10	◆
AFH50920-012AR0,1	1.2	6	1.15	1.8	4.4	50	0.10	◆
AFH50920-012BR0,1	1.2	6	1.15	1.8	8.0	50	0.10	◆
AFH50920-015AR0,15	1.5	6	1.45	2.2	5.0	50	0.15	◆
AFH50920-015BR0,15	1.5	6	1.45	2.2	9.7	50	0.15	◆
AFH50920-020AR0,15	2.0	6	1.95	2.2	6.0	50	0.15	◆
AFH50920-020BR0,15	2.0	6	1.95	2.2	13.0	50	0.15	◆

HC = Carbide coated

P	○
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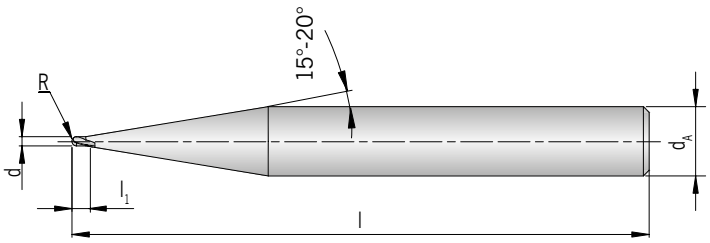
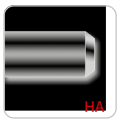
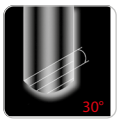
AFH50320-...

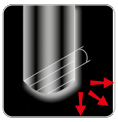
2 flutes, mini design







Ultra micro granulation ✓



Shank DIN 6535HA	d *-0,012*	d_A *h6*	l_1	l	R *±0,005*	HC TiA70
AFH50320-004	0.4	6	0.4	50	0.20	◆
AFH50320-005	0.5	6	0.5	50	0.25	◆
AFH50320-006	0.6	6	0.6	50	0.30	◆
AFH50320-008	0.8	6	0.8	50	0.40	◆
AFH50320-010	1.0	6	1.0	50	0.50	◆
AFH50320-012	1.2	6	1.2	50	0.60	◆
AFH50320-015	1.5	6	1.5	50	0.75	◆
AFH50320-020	2.0	6	2.0	50	1.00	◆

HC = Carbide coated

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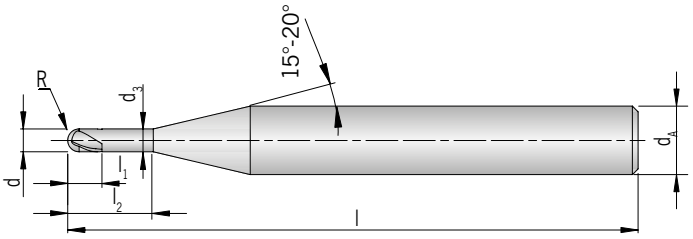
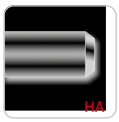
● Main application
○ Secondary application

Dimensions in mm

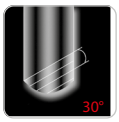
AFH52020-...

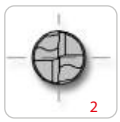
2 flutes, mini design



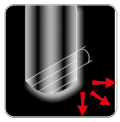


178 - 181





Ultra micro granulation ✓



Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,005*	HC TiA70
AFH52020-005A	0.5	6	0.45	0.5	1.5	50	0.25	◆
AFH52020-005B	0.5	6	0.45	0.5	3.3	50	0.25	◆
AFH52020-006A	0.6	6	0.55	0.6	2.0	50	0.30	◆
AFH52020-006B	0.6	6	0.55	0.6	4.0	50	0.30	◆
AFH52020-008A	0.8	6	0.75	0.8	2.5	50	0.40	◆
AFH52020-008B	0.8	6	0.75	0.8	5.5	50	0.40	◆
AFH52020-010A	1.0	6	0.95	1.0	3.3	50	0.50	◆
AFH52020-010B	1.0	6	0.95	1.0	6.7	50	0.50	◆
AFH52020-010C	1.0	6	0.95	1.0	12.0	50	0.50	◆
AFH52020-012A	1.2	6	1.15	1.2	4.4	50	0.60	◆
AFH52020-012B	1.2	6	1.15	1.2	8.0	50	0.60	◆
AFH52020-015A	1.5	6	1.45	1.5	5.0	50	0.75	◆
AFH52020-015B	1.5	6	1.45	1.5	9.7	50	0.75	◆
AFH52020-015C	1.5	6	1.45	1.5	15.0	50	0.75	◆
AFH52020-020A	2.0	6	1.95	2.0	6.0	50	1.00	◆
AFH52020-020B	2.0	6	1.95	2.0	13.0	50	1.00	◆
AFH52020-020C	2.0	6	1.95	2.0	20.0	60	1.00	◆

HC = Carbide coated

P	○
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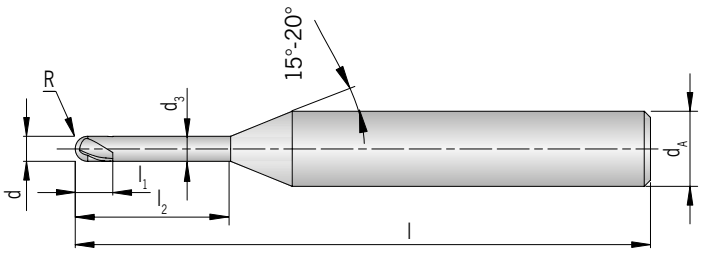
K	
N	
S	
H	●

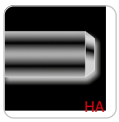
● Main application

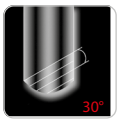
○ Secondary application

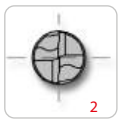
AFH52021-...

2 flutes, mini design

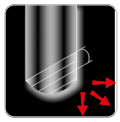








Ultra micro granulation ✓



AFH

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ± 0,005	HC TiA70
AFH52021-001A	0.1	4	0.085	0.1	0.3	45	0.05	◆
AFH52021-001B	0.1	4	0.085	0.1	0.5	45	0.05	◆
AFH52021-002A	0.2	4	0.180	0.2	0.5	45	0.10	◆
AFH52021-002B	0.2	4	0.180	0.2	1.0	45	0.10	◆
AFH52021-002C	0.2	4	0.180	0.2	1.5	45	0.10	◆
AFH52021-003A	0.3	4	0.270	0.3	1.0	45	0.15	◆
AFH52021-003B	0.3	4	0.270	0.3	2.0	45	0.15	◆
AFH52021-003C	0.3	4	0.270	0.3	3.0	45	0.15	◆
AFH52021-004A	0.4	4	0.370	0.4	1.0	45	0.20	◆
AFH52021-004B	0.4	4	0.370	0.4	2.0	45	0.20	◆
AFH52021-004C	0.4	4	0.370	0.4	3.0	45	0.20	◆
AFH52021-004D	0.4	4	0.370	0.4	4.0	45	0.20	◆
AFH52021-004E	0.4	4	0.370	0.4	5.0	45	0.20	◆
AFH52021-005A	0.5	4	0.450	0.4	2.0	45	0.25	◆
AFH52021-005B	0.5	4	0.450	0.4	2.5	45	0.25	◆
AFH52021-005C	0.5	4	0.450	0.4	4.0	45	0.25	◆
AFH52021-005D	0.5	4	0.450	0.4	6.0	45	0.25	◆
AFH52021-005E	0.5	4	0.450	0.4	8.0	45	0.25	◆
AFH52021-006A	0.6	4	0.550	0.5	2.0	45	0.30	◆
AFH52021-006B	0.6	4	0.550	0.5	3.0	45	0.30	◆
AFH52021-006C	0.6	4	0.550	0.5	4.0	45	0.30	◆
AFH52021-006D	0.6	4	0.550	0.5	5.0	45	0.30	◆
AFH52021-006E	0.6	4	0.550	0.5	6.0	45	0.30	◆
AFH52021-006F	0.6	4	0.550	0.5	8.0	45	0.30	◆
AFH52021-006G	0.6	4	0.550	0.5	10.0	45	0.30	◆
AFH52021-008A	0.8	4	0.750	0.6	2.0	45	0.40	◆
AFH52021-008B	0.8	4	0.750	0.6	4.0	45	0.40	◆
AFH52021-008C	0.8	4	0.750	0.6	6.0	45	0.40	◆
AFH52021-008D	0.8	4	0.750	0.6	8.0	45	0.40	◆
AFH52021-008E	0.8	4	0.750	0.6	10.0	45	0.40	◆
AFH52021-010A	1.0	4	0.950	0.8	3.0	45	0.50	◆
AFH52021-010B	1.0	4	0.950	0.8	4.0	45	0.50	◆
AFH52021-010C	1.0	4	0.950	0.8	5.0	45	0.50	◆
AFH52021-010D	1.0	4	0.950	0.8	6.0	45	0.50	◆
AFH52021-010E	1.0	4	0.950	0.8	7.0	45	0.50	◆
AFH52021-010F	1.0	4	0.950	0.8	8.0	45	0.50	◆
AFH52021-010G	1.0	4	0.950	0.8	9.0	45	0.50	◆

Dimensions in mm

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ± 0,005	HC TiA70
AFH52021-010H	1.0	4	0.950	0.8	10.0	45	0.50	◆
AFH52021-010J	1.0	4	0.950	0.8	12.0	45	0.50	◆
AFH52021-010K	1.0	4	0.950	0.8	14.0	50	0.50	◆
AFH52021-010L	1.0	4	0.950	0.8	16.0	50	0.50	◆
AFH52021-010M	1.0	4	0.950	0.8	20.0	55	0.50	◆
AFH52021-012A	1.2	4	1.150	1.0	6.0	45	0.60	◆
AFH52021-012B	1.2	4	1.150	1.0	8.0	45	0.60	◆
AFH52021-012C	1.2	4	1.150	1.0	10.0	45	0.60	◆
AFH52021-012D	1.2	4	1.150	1.0	12.0	45	0.60	◆
AFH52021-015A	1.5	4	1.450	1.2	6.0	45	0.75	◆
AFH52021-015B	1.5	4	1.450	1.2	8.0	45	0.75	◆
AFH52021-015C	1.5	4	1.450	1.2	10.0	45	0.75	◆
AFH52021-015D	1.5	4	1.450	1.2	12.0	45	0.75	◆
AFH52021-015E	1.5	4	1.450	1.2	14.0	50	0.75	◆
AFH52021-015F	1.5	4	1.450	1.2	16.0	50	0.75	◆
AFH52021-015G	1.5	4	1.450	1.2	20.0	55	0.75	◆
AFH52021-020A	2.0	4	1.950	1.6	4.0	45	1.00	◆
AFH52021-020B	2.0	4	1.950	1.6	6.0	45	1.00	◆
AFH52021-020C	2.0	4	1.950	1.6	8.0	45	1.00	◆
AFH52021-020D	2.0	4	1.950	1.6	10.0	45	1.00	◆
AFH52021-020E	2.0	4	1.950	1.6	12.0	50	1.00	◆
AFH52021-020F	2.0	4	1.950	1.6	14.0	50	1.00	◆
AFH52021-020G	2.0	4	1.950	1.6	16.0	50	1.00	◆
AFH52021-020H	2.0	4	1.950	1.6	18.0	55	1.00	◆
AFH52021-020J	2.0	4	1.950	1.6	20.0	55	1.00	◆
AFH52021-020K	2.0	4	1.950	1.6	22.0	60	1.00	◆
AFH52021-020L	2.0	4	1.950	1.6	25.0	60	1.00	◆
AFH52021-020M	2.0	4	1.950	1.6	30.0	70	1.00	◆
AFH52021-030A	3.0	6	2.850	2.4	12.0	50	1.50	◆
AFH52021-030B	3.0	6	2.850	2.4	14.0	55	1.50	◆
AFH52021-030C	3.0	6	2.850	2.4	16.0	55	1.50	◆
AFH52021-030D	3.0	6	2.850	2.4	18.0	60	1.50	◆
AFH52021-030E	3.0	6	2.850	2.4	20.0	60	1.50	◆
AFH52021-030F	3.0	6	2.850	2.4	25.0	65	1.50	◆
AFH52021-030G	3.0	6	2.850	2.4	30.0	70	1.50	◆
AFH52021-030H	3.0	6	2.850	2.4	35.0	80	1.50	◆
AFH52021-040A	4.0	6	3.850	3.2	12.0	60	2.00	◆
AFH52021-040B	4.0	6	3.850	3.2	16.0	60	2.00	◆
AFH52021-040C	4.0	6	3.850	3.2	20.0	65	2.00	◆
AFH52021-040D	4.0	6	3.850	3.2	25.0	70	2.00	◆
AFH52021-040E	4.0	6	3.850	3.2	30.0	70	2.00	◆
AFH52021-040F	4.0	6	3.850	3.2	35.0	80	2.00	◆
AFH52021-040G	4.0	6	3.850	3.2	40.0	90	2.00	◆
AFH52021-040H	4.0	6	3.850	3.2	45.0	90	2.00	◆
AFH52021-040J	4.0	6	3.850	3.2	50.0	100	2.00	◆

HC = Carbide coated

P	○
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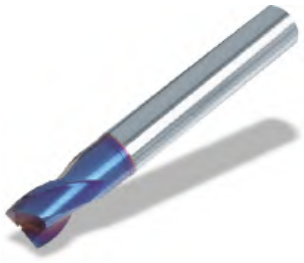
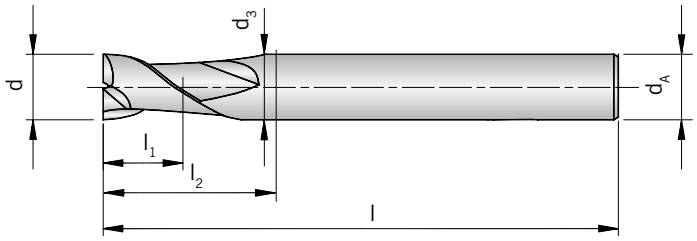
H	●

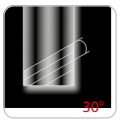
● Main application
○ Secondary application

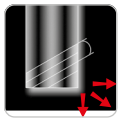
AFH50125-...

2 flutes









AFH

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	HC TiA70
AFH50125-001	0.1	4	-	0.2	-	40	◆
AFH50125-002	0.2	4	-	0.4	-	40	◆
AFH50125-003	0.3	4	-	0.6	-	40	◆
AFH50125-004	0.4	4	-	0.8	-	40	◆
AFH50125-005	0.5	4	-	1.0	-	40	◆
AFH50125-006	0.6	4	-	1.2	-	40	◆
AFH50125-007	0.7	4	-	1.4	-	40	◆
AFH50125-008	0.8	4	-	1.6	-	40	◆
AFH50125-009	0.9	4	-	2.0	-	40	◆
AFH50125-010	1.0	6	0.95	1.5	3	50	◆
AFH50125-015	1.5	6	1.45	1.7	4	50	◆
AFH50125-020	2.0	6	1.95	2.0	5	50	◆
AFH50125-025	2.5	6	2.40	2.5	6	55	◆
AFH50125-030	3.0	6	2.85	3.0	8	55	◆
AFH50125-035	3.5	6	3.35	3.5	9	55	◆
AFH50125-040	4.0	6	3.85	4.0	10	55	◆
AFH50125-050	5.0	6	4.85	5.0	13	55	◆

HC = Carbide coated

P	○
M	
K	
N	
S	
H	●

● **Main application**

○ **Secondary application**

Dimensions in mm

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	HC TiA70
AFH50125-060	6	6	5.85	6	15	55	◆
AFH50125-080	8	8	7.70	8	20	65	◆
AFH50125-100	10	10	9.70	10	25	75	◆
AFH50125-120	12	12	11.70	12	28	85	◆
AFH50125-160	16	16	15.70	16	32	90	◆
AFH50125-200	20	20	19.70	20	40	105	◆

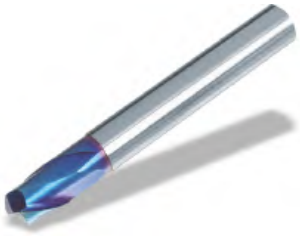
HC = Carbide coated

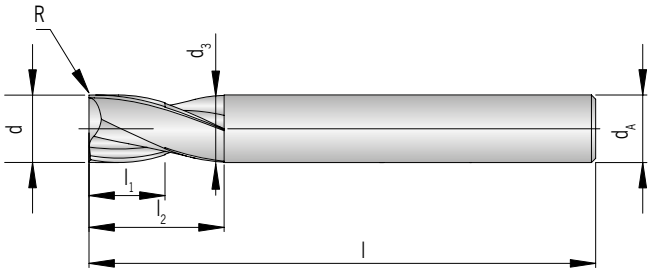
P	○
M	
K	
N	
S	
H	●

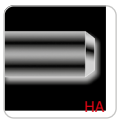
● Main application
○ Secondary application

AFH50725-...R...

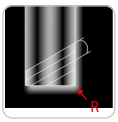
2 flutes, with corner radius

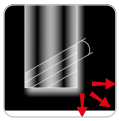


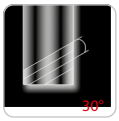




178 - 181







Ultra micro granulation ✓

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,010*	HC TiA70
AFH50725-005R0,05	0.5	4	-	1.0	-	40	0.05	◆
AFH50725-006R0,05	0.6	4	-	1.2	-	40	0.05	◆
AFH50725-007R0,05	0.7	4	-	1.4	-	40	0.05	◆
AFH50725-008R0,05	0.8	4	-	1.6	-	40	0.05	◆
AFH50725-009R0,05	0.9	4	-	2.0	-	40	0.05	◆
AFH50725-010AR0,1	1.0	4	-	1.5	-	40	0.10	◆
AFH50725-010BR0,1	1.0	6	-	1.5	-	40	0.10	◆
AFH50725-015R0,1	1.5	6	-	2.2	-	40	0.10	◆
AFH50725-020AR0,1	2.0	4	1.95	3.0	6	40	0.10	◆
AFH50725-020BR0,1	2.0	6	1.95	3.0	6	40	0.10	◆
AFH50725-025R0,1	2.5	6	2.40	4.0	6	40	0.10	◆
AFH50725-030R0,1	3.0	6	2.85	4.0	7	45	0.10	◆
AFH50725-035R0,1	3.5	6	3.35	5.0	9	45	0.10	◆
AFH50725-040R0,1	4.0	6	3.85	5.0	9	45	0.10	◆
AFH50725-045R0,1	4.5	6	4.35	6.0	10	45	0.10	◆
AFH50725-050R0,2	5.0	6	4.85	6.0	11	50	0.20	◆

HC = Carbide coated

P	○
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K	
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H	●

● **Main application**

○ **Secondary application**

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,010*	HC TiA70
AFH50725-060R0,2	6	6	5.85	7	14	50	0.2	◆
AFH50725-080R0,2	8	8	7.70	9	18	60	0.2	◆
AFH50725-100R0,2	10	10	9.70	12	25	75	0.2	◆
AFH50725-120R0,3	12	12	11.70	15	30	75	0.3	◆
AFH50725-160R0,3	16	16	15.70	18	38	90	0.3	◆
AFH50725-200R0,3	20	20	19.70	24	45	100	0.3	◆

HC = Carbide coated

P	○
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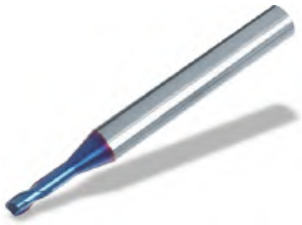
H	●

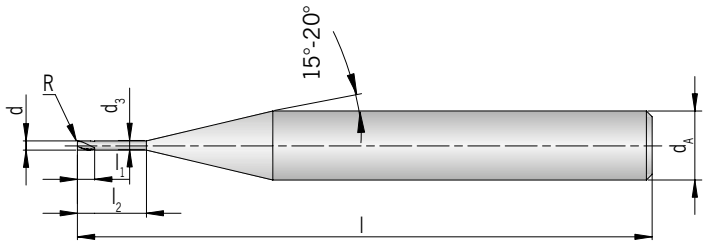
● Main application

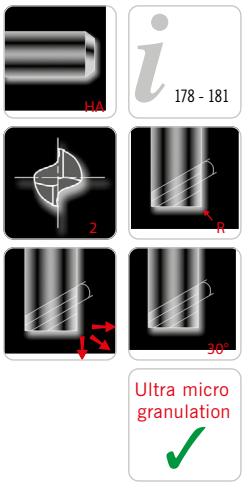
○ Secondary application

AFH50926-...R...

2 flutes, with corner radius







Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,010*	HC TiA70
AFH50926-005AR0,05	0.5	4	0.45	0.7	1.5	45	0.05	◆
AFH50926-005BR0,05	0.5	4	0.45	0.7	2.5	45	0.05	◆
AFH50926-005CR0,05	0.5	4	0.45	0.7	4.0	45	0.05	◆
AFH50926-006AR0,05	0.6	4	0.55	0.9	2.0	45	0.05	◆
AFH50926-006BR0,05	0.6	4	0.55	0.9	3.0	45	0.05	◆
AFH50926-006CR0,05	0.6	4	0.55	0.9	4.0	45	0.05	◆
AFH50926-006DR0,1	0.6	4	0.55	0.9	2.0	45	0.10	◆
AFH50926-007R0,1	0.7	4	0.65	1.0	4.0	45	0.10	◆
AFH50926-008AR0,1	0.8	4	0.75	1.2	2.0	45	0.10	◆
AFH50926-008BR0,1	0.8	4	0.75	1.2	4.0	45	0.10	◆
AFH50926-008CR0,1	0.8	4	0.75	1.2	6.0	45	0.10	◆
AFH50926-010AR0,1	1.0	6	0.95	1.5	4.0	50	0.10	◆
AFH50926-010BR0,1	1.0	6	0.95	1.5	6.0	50	0.10	◆
AFH50926-010CR0,2	1.0	6	0.95	1.5	4.0	50	0.20	◆
AFH50926-010DR0,2	1.0	6	0.95	1.5	6.0	50	0.20	◆
AFH50926-010ER0,2	1.0	6	0.95	1.5	8.0	50	0.20	◆
AFH50926-010FR0,3	1.0	6	0.95	1.5	4.0	50	0.30	◆
AFH50926-010GR0,3	1.0	6	0.95	1.5	6.0	50	0.30	◆
AFH50926-010HR0,3	1.0	6	0.95	1.5	8.0	50	0.30	◆
AFH50926-015AR0,2	1.5	6	1.45	2.5	4.0	50	0.20	◆
AFH50926-015BR0,2	1.5	6	1.45	2.5	6.0	50	0.20	◆
AFH50926-015CR0,2	1.5	6	1.45	2.5	8.0	50	0.20	◆
AFH50926-015DR0,2	1.5	6	1.45	2.5	10.0	50	0.20	◆
AFH50926-015ER0,2	1.5	6	1.45	2.5	12.0	50	0.20	◆
AFH50926-015FR0,3	1.5	6	1.45	2.5	4.0	50	0.30	◆
AFH50926-015GR0,3	1.5	6	1.45	2.5	6.0	50	0.30	◆
AFH50926-015HR0,3	1.5	6	1.45	2.5	8.0	50	0.30	◆
AFH50926-020AR0,2	2.0	6	1.95	3.0	6.0	50	0.20	◆
AFH50926-020BR0,2	2.0	6	1.95	3.0	8.0	50	0.20	◆
AFH50926-020CR0,2	2.0	6	1.95	3.0	10.0	55	0.20	◆
AFH50926-020DR0,2	2.0	6	1.95	3.0	12.0	55	0.20	◆
AFH50926-020ER0,3	2.0	6	1.95	3.0	6.0	50	0.30	◆
AFH50926-020FR0,3	2.0	6	1.95	3.0	8.0	50	0.30	◆
AFH50926-020GR0,3	2.0	6	1.95	3.0	10.0	55	0.30	◆
AFH50926-020HR0,3	2.0	6	1.95	3.0	12.0	55	0.30	◆
AFH50926-020JR0,3	2.0	6	1.95	3.0	16.0	55	0.30	◆
AFH50926-020KR0,5	2.0	6	1.95	3.0	6.0	50	0.50	◆

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,010*	HC TiA70
AFH50926-020LR0,5	2.0	6	1.95	3.0	10.0	55	0.50	◆
AFH50926-020MR0,5	2.0	6	1.95	3.0	12.0	55	0.50	◆
AFH50926-030AR0,2	3.0	6	2.85	4.0	8.0	55	0.20	◆
AFH50926-030BR0,2	3.0	6	2.85	4.0	10.0	55	0.20	◆
AFH50926-030CR0,2	3.0	6	2.85	4.0	12.0	55	0.20	◆
AFH50926-030DR0,2	3.0	6	2.85	4.0	16.0	55	0.20	◆
AFH50926-030ER0,3	3.0	6	2.85	4.0	8.0	55	0.30	◆
AFH50926-030FR0,3	3.0	6	2.85	4.0	10.0	55	0.30	◆
AFH50926-030GR0,3	3.0	6	2.85	4.0	12.0	55	0.30	◆
AFH50926-030HR0,3	3.0	6	2.85	4.0	16.0	55	0.30	◆
AFH50926-030JR0,5	3.0	6	2.85	4.0	10.0	55	0.50	◆
AFH50926-030KR0,5	3.0	6	2.85	4.0	12.0	55	0.50	◆
AFH50926-030LR0,5	3.0	6	2.85	4.0	16.0	55	0.50	◆
AFH50926-030MR0,5	3.0	6	2.85	4.0	20.0	55	0.50	◆
AFH50926-040AR0,2	4.0	6	3.85	5.0	12.0	55	0.20	◆
AFH50926-040BR0,2	4.0	6	3.85	5.0	16.0	55	0.20	◆
AFH50926-040CR0,2	4.0	6	3.85	5.0	20.0	55	0.20	◆
AFH50926-040DR0,3	4.0	6	3.85	5.0	10.0	55	0.30	◆
AFH50926-040ER0,3	4.0	6	3.85	5.0	12.0	55	0.30	◆
AFH50926-040FR0,3	4.0	6	3.85	5.0	16.0	55	0.30	◆
AFH50926-040GR0,3	4.0	6	3.85	5.0	20.0	55	0.30	◆
AFH50926-040HR0,5	4.0	6	3.85	5.0	12.0	55	0.50	◆
AFH50926-040JR0,5	4.0	6	3.85	5.0	16.0	55	0.50	◆
AFH50926-040KR0,5	4.0	6	3.85	5.0	20.0	55	0.50	◆
AFH50926-040LR1,0	4.0	6	3.85	5.0	12.0	55	1.00	◆
AFH50926-040MR1,0	4.0	6	3.85	5.0	16.0	55	1.00	◆

HC = Carbide coated

P	○
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● Main application
○ Secondary application

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,010*	HC TiA70
AFH50926-060AR0,3	6	6	5.85	7	20	60	0.3	◆
AFH50926-060BR0,5	6	6	5.85	7	20	60	0.5	◆
AFH50926-060CR1,0	6	6	5.85	7	20	60	1.0	◆
AFH50926-060DR1,5	6	6	5.85	7	20	60	1.5	◆
AFH50926-060ER2,0	6	6	5.85	7	20	60	2.0	◆
AFH50926-080AR0,3	8	8	7.70	9	25	60	0.3	◆
AFH50926-080BR0,5	8	8	7.70	9	25	60	0.5	◆
AFH50926-080CR1,0	8	8	7.70	9	25	60	1.0	◆
AFH50926-080DR1,5	8	8	7.70	9	25	60	1.5	◆
AFH50926-080ER2,0	8	8	7.70	9	25	60	2.0	◆
AFH50926-100AR0,3	10	10	9.70	11	32	70	0.3	◆
AFH50926-100BR0,5	10	10	9.70	11	32	70	0.5	◆
AFH50926-100CR1,0	10	10	9.70	11	32	70	1.0	◆
AFH50926-100DR1,5	10	10	9.70	11	32	70	1.5	◆
AFH50926-100ER2,0	10	10	9.70	11	32	70	2.0	◆
AFH50926-120AR0,5	12	12	11.70	12	38	80	0.5	◆
AFH50926-120BR1,0	12	12	11.70	12	38	80	1.0	◆
AFH50926-120CR1,5	12	12	11.70	12	38	80	1.5	◆
AFH50926-120DR2,0	12	12	11.70	12	38	80	2.0	◆

HC = Carbide coated

P	○
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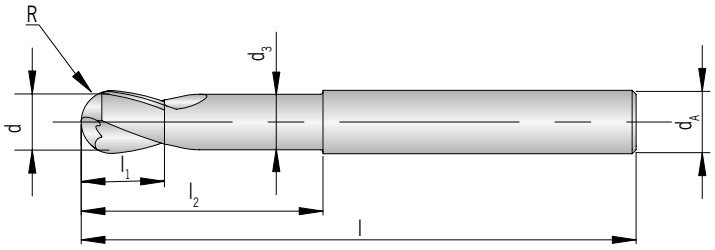
K	
N	
S	
H	●

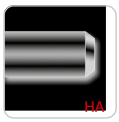
● **Main application**

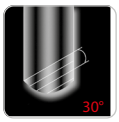
○ **Secondary application**

AFH51625-...

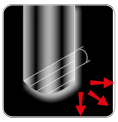
2 flutes







Ultra micro granulation ✓



Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,005*	HC TiA70
AFH51625-010	1.0	4	0.95	1.0	2.2	50	0.50	◆
AFH51625-012	1.2	4	1.15	1.2	2.6	50	0.60	◆
AFH51625-015	1.5	4	1.45	1.5	3.0	50	0.75	◆
AFH51625-020	2.0	6	1.95	2.0	4.0	50	1.00	◆
AFH51625-030	3.0	6	2.85	3.0	6.0	60	1.50	◆
AFH51625-040	4.0	6	3.85	4.0	8.0	70	2.00	◆
AFH51625-050	5.0	6	4.85	5.0	10.0	80	2.50	◆

HC = Carbide coated

P	○
M	
K	
N	
S	
H	●

● Main application
○ Secondary application

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,005*	HC TiA70
AFH51625-060	6	6	5.85	6	12	90	3.0	◆
AFH51625-070	7	8	6.70	7	14	90	3.5	◆
AFH51625-080	8	8	7.70	8	16	100	4.0	◆
AFH51625-090	9	10	8.70	9	18	100	4.5	◆
AFH51625-100	10	10	9.70	10	20	100	5.0	◆
AFH51625-120	12	12	11.70	12	24	110	6.0	◆
AFH51625-140	14	14	13.70	14	28	110	7.0	◆
AFH51625-160	16	16	15.70	16	32	140	8.0	◆
AFH51625-180	18	18	17.70	18	36	140	9.0	◆
AFH51625-200	20	20	19.70	20	40	160	10.0	◆
AFH51625-250	25	25	24.70	25	50	180	12.5	◆

HC = Carbide coated

P	○
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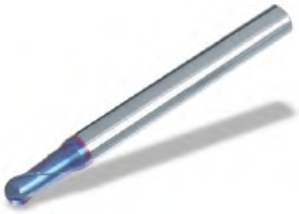
H	●

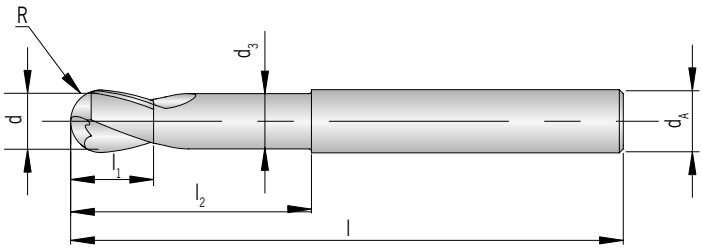
● Main application
○ Secondary application

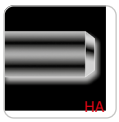
Dimensions in mm

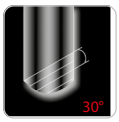
AFH51626-...

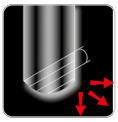
2 flutes











Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ±0,005	HC TiA70
AFH51626-001	0.1	4	-	0.2	-	40	0.05	◆
AFH51626-002	0.2	4	-	0.3	-	40	0.10	◆
AFH51626-003	0.3	4	-	0.5	-	40	0.15	◆
AFH51626-004	0.4	4	-	0.6	-	40	0.20	◆
AFH51626-005	0.5	4	-	0.7	-	40	0.25	◆
AFH51626-006	0.6	4	-	0.9	-	40	0.30	◆
AFH51626-007	0.7	4	-	1.1	-	40	0.35	◆
AFH51626-008	0.8	4	-	1.2	-	40	0.40	◆
AFH51626-009	0.9	4	-	1.4	-	40	0.45	◆
AFH51626-010	1.0	6	0.95	1.5	3	50	0.50	◆
AFH51626-015	1.5	6	1.45	2.0	4	50	0.75	◆
AFH51626-020	2.0	6	1.95	2.5	5	50	1.00	◆
AFH51626-025	2.5	6	2.40	3.0	7	50	1.25	◆
AFH51626-030	3.0	6	2.85	4.0	10	60	1.50	◆
AFH51626-035	3.5	6	3.35	4.5	10	60	1.75	◆
AFH51626-040	4.0	6	3.85	5.0	10	60	2.00	◆
AFH51626-045	4.5	6	4.35	5.5	10	60	2.25	◆
AFH51626-050	5.0	6	4.85	6.0	12	60	2.50	◆
AFH51626-055	5.5	6	5.35	6.5	12	60	2.75	◆

HC = Carbide coated

P	○
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N	
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H	●

● Main application
○ Secondary application

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ±0,005	HC TiA70
AFH51626-060A	6	6	5.85	7	15	60	3	◆

Dimensions in mm

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,005*	HC TiA70
AFH51626-060B	6	6	5.85	9	30	90	3	◆
AFH51626-080A	8	8	7.70	9	15	60	4	◆
AFH51626-080B	8	8	7.70	9	15	80	4	◆
AFH51626-080C	8	8	7.70	12	30	100	4	◆
AFH51626-100A	10	10	9.70	11	25	60	5	◆
AFH51626-100B	10	10	9.70	11	25	80	5	◆
AFH51626-100C	10	10	9.70	15	30	100	5	◆
AFH51626-120	12	12	11.70	14	25	80	6	◆

HC = Carbide coated

P	○
M	
K	
N	
S	
H	●

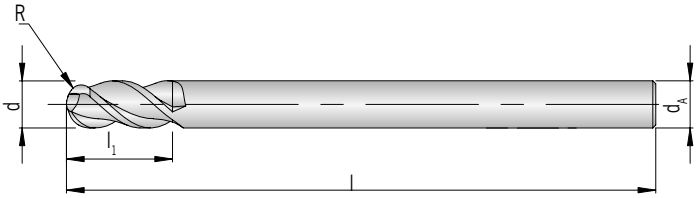
● Main application

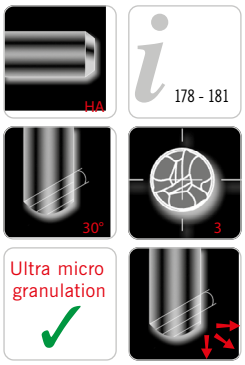
○ Secondary application

Dimensions in mm

AFH51635-...

3 flutes





Shank DIN 6535HA	d *-0,012*	d_A *h6*	l_1	l	R *±0,005*	HC TiA70
AFH51635-030	3	6	8	60	1.5	◆
AFH51635-040	4	6	8	70	2.0	◆
AFH51635-050	5	6	10	80	2.5	◆

HC = Carbide coated

P	○
M	
K	
N	
S	
H	●

● Main application
○ Secondary application

Shank DIN 6535HA	d *-0,012*	d_A *h6*	l_1	l	R *±0,005*	HC TiA70
AFH51635-060	6	6	12	90	3	◆
AFH51635-080	8	8	14	100	4	◆
AFH51635-100	10	10	18	100	5	◆
AFH51635-120	12	12	22	110	6	◆
AFH51635-160	16	16	30	140	8	◆
AFH51635-200	20	20	38	160	10	◆

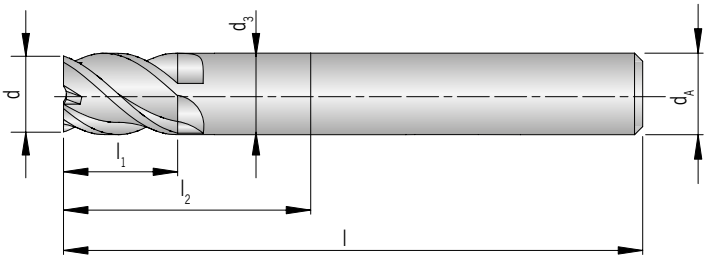
HC = Carbide coated

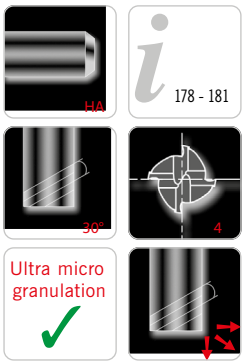
P	○
M	
K	
N	
S	
H	●

● Main application
○ Secondary application

AFH50140-...

4 flutes





AFH

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	HC TiA70
AFH50140-010	1	6	0.95	1.5	3	50	◆
AFH50140-020	2	6	1.95	2.0	5	50	◆
AFH50140-030	3	6	2.85	3.0	8	55	◆
AFH50140-040	4	6	3.85	4.0	10	55	◆
AFH50140-050	5	6	4.85	5.0	13	55	◆

HC = Carbide coated

P	○
M	
K	
N	
S	
H	●

● Main application
○ Secondary application

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	HC TiA70
AFH50140-060	6	6	5.85	6	15	55	◆
AFH50140-080	8	8	7.70	8	20	65	◆
AFH50140-100	10	10	9.70	10	25	75	◆
AFH50140-120	12	12	11.70	12	28	85	◆
AFH50140-160	16	16	15.70	16	32	90	◆
AFH50140-200	20	20	19.70	20	40	105	◆

HC = Carbide coated

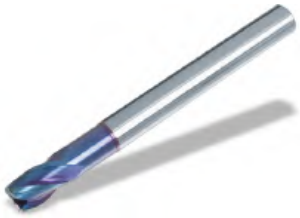
P	○
M	
K	
N	
S	
H	●

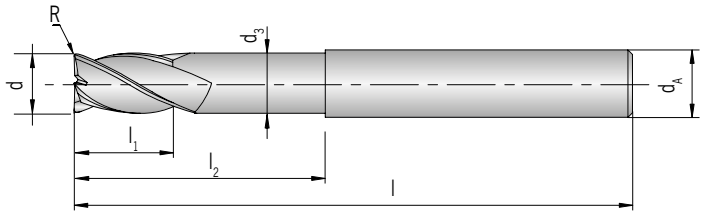
● Main application
○ Secondary application

Dimensions in mm

AFH50142-...R...

4 flutes, with corner radius





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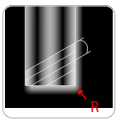
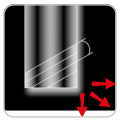
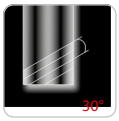






Ultra micro granulation ✓

Shank DIN 6535HA	d *-0,015*	d_A *h6*	d_3	l_1	l_2	l	R *±0,015*	HC TiA70
AFH50142-060R0,5	6	6	5.85	9	20	90	0.5	◆
AFH50142-060R1,0	6	6	5.85	9	20	90	1.0	◆
AFH50142-080R0,5	8	8	7.70	12	25	100	0.5	◆
AFH50142-080R1,0	8	8	7.70	12	25	100	1.0	◆
AFH50142-100R0,5	10	10	9.70	15	32	100	0.5	◆
AFH50142-100R1,0	10	10	9.70	15	32	100	1.0	◆
AFH50142-100R2,0	10	10	9.70	15	32	100	2.0	◆
AFH50142-120R0,5	12	12	11.70	18	38	110	0.5	◆
AFH50142-120R1,0	12	12	11.70	18	38	110	1.0	◆
AFH50142-120R2,0	12	12	11.70	18	38	110	2.0	◆

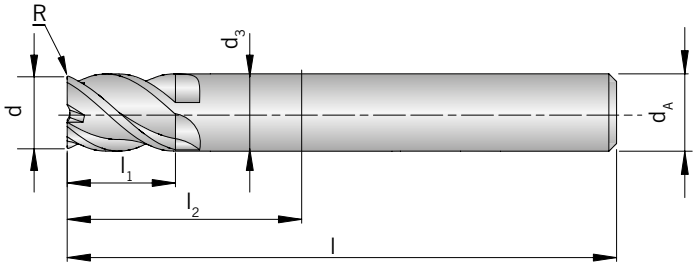
HC = Carbide coated

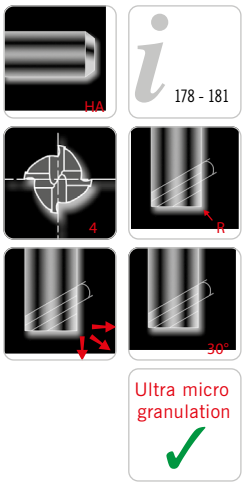
P	○
M	
K	
N	
S	
H	●

● Main application
○ Secondary application

AFH50146-...R...

4 flutes, with corner radius





Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ±0,010	HC TiA70
AFH50146-030AR0,3	3	6	2.85	4	12	55	0.3	◆
AFH50146-030BR0,3	3	6	2.85	4	16	55	0.3	◆
AFH50146-030CR0,3	3	6	2.85	4	20	55	0.3	◆
AFH50146-030DR0,5	3	6	2.85	4	10	55	0.5	◆
AFH50146-030ER0,5	3	6	2.85	4	16	55	0.5	◆
AFH50146-030FR0,5	3	6	2.85	4	20	55	0.5	◆
AFH50146-040AR0,3	4	6	3.85	5	12	55	0.3	◆
AFH50146-040BR0,3	4	6	3.85	5	16	55	0.3	◆
AFH50146-040CR0,3	4	6	3.85	5	20	55	0.3	◆
AFH50146-040DR0,5	4	6	3.85	5	12	55	0.5	◆
AFH50146-040ER0,5	4	6	3.85	5	16	55	0.5	◆
AFH50146-040FR0,5	4	6	3.85	5	20	55	0.5	◆
AFH50146-040GR1,0	4	6	3.85	5	12	55	1.0	◆

HC = Carbide coated

P	○
M	
K	
N	
S	
H	●

● Main application

○ Secondary application

Dimensions in mm

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,010*	HC TiA70
AFH50146-060AR0,5	6	6	5.85	7	20	60	0.5	◆
AFH50146-060BR1,0	6	6	5.85	7	20	60	1.0	◆
AFH50146-060CR1,5	6	6	5.85	7	20	60	1.5	◆
AFH50146-080AR0,5	8	8	7.70	9	25	60	0.5	◆
AFH50146-080BR1,0	8	8	7.70	9	25	60	1.0	◆
AFH50146-080CR1,5	8	8	7.70	9	25	60	1.5	◆
AFH50146-080DR2,0	8	8	7.70	9	25	60	2.0	◆
AFH50146-100AR0,5	10	10	9.70	11	32	70	0.5	◆
AFH50146-100BR1,0	10	10	9.70	11	32	70	1.0	◆
AFH50146-100CR1,5	10	10	9.70	11	32	70	1.5	◆
AFH50146-100DR2,0	10	10	9.70	11	32	70	2.0	◆
AFH50146-120AR0,5	12	12	11.70	12	38	80	0.5	◆
AFH50146-120BR1,0	12	12	11.70	12	38	80	1.0	◆
AFH50146-120CR1,5	12	12	11.70	12	38	80	1.5	◆
AFH50146-120DR2,0	12	12	11.70	12	38	80	2.0	◆

HC = Carbide coated

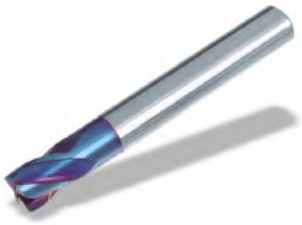
P	○
M	
K	
N	
S	
H	●

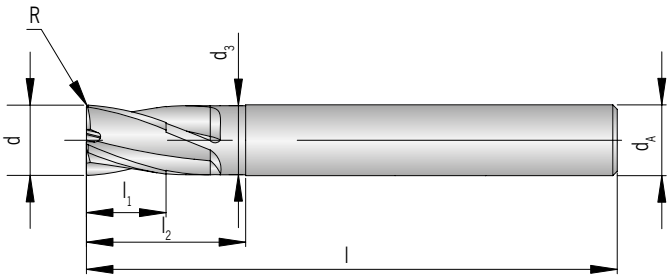
● Main application

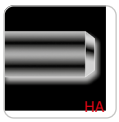
○ Secondary application

AFH50745-...R...

4 flutes, with corner radius







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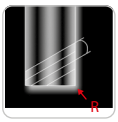
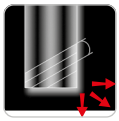
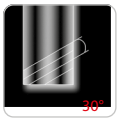






Ultra micro granulation ✓

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,010*	HC TiA70
AFH50745-010R0,1	1.0	6	-	1.5	-	40	0.1	◆
AFH50745-015R0,1	1.5	6	-	2.2	-	40	0.1	◆
AFH50745-020R0,1	2.0	6	1.95	3.0	6	40	0.1	◆
AFH50745-025R0,1	2.5	6	2.40	4.0	6	40	0.1	◆
AFH50745-030R0,1	3.0	6	2.85	4.0	7	45	0.1	◆
AFH50745-035R0,1	3.5	6	3.35	5.0	9	45	0.1	◆
AFH50745-040R0,1	4.0	6	3.85	5.0	9	45	0.1	◆
AFH50745-045R0,1	4.5	6	4.35	6.0	10	45	0.1	◆
AFH50745-050R0,2	5.0	6	4.85	6.0	11	50	0.2	◆

HC = Carbide coated

P	○
M	
K	
N	
S	
H	●

● Main application

○ Secondary application

Dimensions in mm

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,010*	HC TiA70
AFH50745-060R0,2	◆	6	5.85	7	14	50	0.2	◆
AFH50745-080R0,2	◆	8	7.70	9	18	60	0.2	◆
AFH50745-100R0,2	◆	10	9.70	12	25	75	0.2	◆
AFH50745-120R0,3	◆	12	11.70	15	30	75	0.3	◆
AFH50745-160R0,3	◆	16	15.70	18	38	90	0.3	◆
AFH50745-200R0,3	◆	20	19.70	24	45	100	0.3	◆

HC = Carbide coated

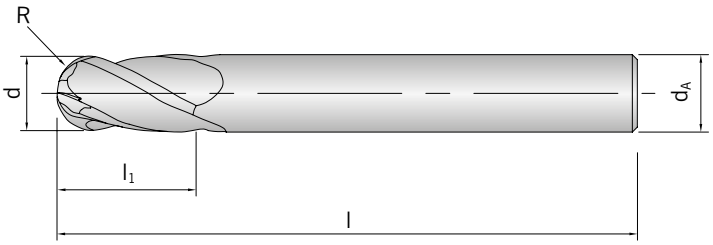
P	○
M	
K	
N	
S	
H	●

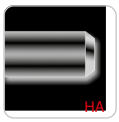
● Main application

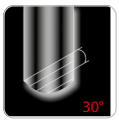
○ Secondary application

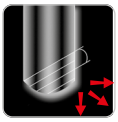
AFH50341-...

4 flutes









Shank DIN 6535HA	d -0,012	d_A h6	l_1	l	R ±0,005	HC TiA70
AFH50341-030	3	6	8	60	1.5	◆
AFH50341-040	4	6	8	70	2.0	◆
AFH50341-050	5	6	10	80	2.5	◆

HC = Carbide coated

P	○
M	
K	
N	
S	
H	●

● Main application
○ Secondary application

Shank DIN 6535HA	d -0,012	d_A h6	l_1	l	R ±0,005	HC TiA70
AFH50341-060	6	6	12	90	3	◆
AFH50341-080	8	8	14	100	4	◆
AFH50341-100	10	10	18	100	5	◆
AFH50341-120	12	12	22	110	6	◆
AFH50341-160	16	16	30	140	8	◆
AFH50341-200	20	20	38	160	10	◆

HC = Carbide coated

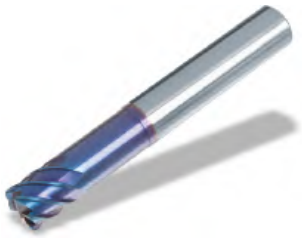
P	○
M	
K	
N	
S	
H	●

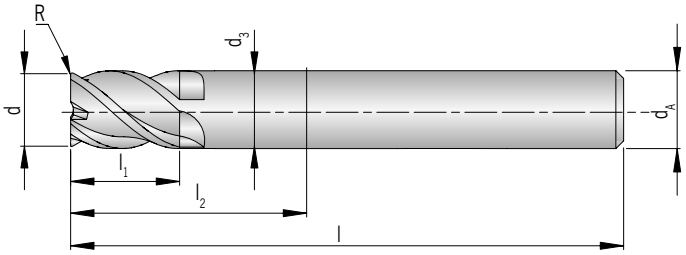
● Main application
○ Secondary application

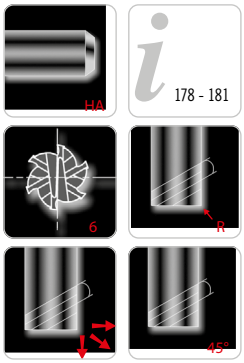
Dimensions in mm

AFH50865-...R...

6 flutes, with corner radius







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Ultra micro granulation ✓

Shank DIN 6535HA	d *-0,015*	d_A *h6*	d_3	l_1	l_2	l	R *±0,015*	HC TiA70
AFH50865-060AR0,25	6	6	5.85	6	14	50	0.25	◆
AFH50865-060BR0,5	6	6	5.85	6	14	50	0.50	◆
AFH50865-060CR0,5	6	6	-	13	-	70	0.50	◆
AFH50865-060DR0,5 [1]	6	6	-	26	-	70	0.50	◆
AFH50865-080AR0,5	8	8	7.70	8	24	60	0.50	◆
AFH50865-080BR0,5	8	8	-	19	-	90	0.50	◆
AFH50865-080CR0,5 [1]	8	8	-	36	-	90	0.50	◆
AFH50865-100AR0,5	10	10	-	22	-	100	0.50	◆
AFH50865-100BR1,0	10	10	9.70	10	30	70	1.00	◆
AFH50865-100CR1,0	10	10	-	22	-	100	1.00	◆
AFH50865-100DR1,0 [1]	10	10	-	46	-	100	1.00	◆
AFH50865-120AR0,5	12	12	-	26	-	110	0.50	◆
AFH50865-120BR1,0	12	12	11.70	12	30	75	1.00	◆
AFH50865-120CR1,0	12	12	-	26	-	110	1.00	◆
AFH50865-120DR1,0 [1]	12	12	-	56	-	110	1.00	◆
AFH50865-160AR1,0	16	16	-	32	-	130	1.00	◆
AFH50865-160BR1,5	16	16	-	32	-	130	1.50	◆
AFH50865-160CR1,5 [1]	16	16	-	66	-	130	1.50	◆
AFH50865-200AR1,0	20	20	-	38	-	140	1.00	◆
AFH50865-200BR1,5	20	20	-	38	-	140	1.50	◆
AFH50865-200CR2,0 [1]	20	20	-	38	-	140	2.00	◆
AFH50865-200DR2,0	20	20	-	76	-	140	2.00	◆

HC = Carbide coated

1) Tolerance for d of -0.03

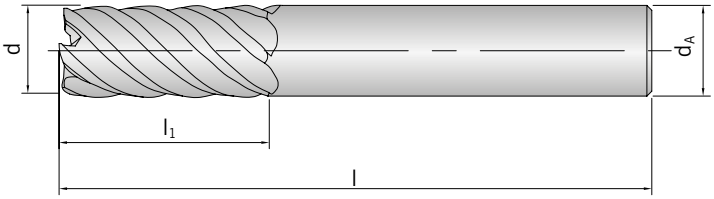
P	○
M	
K	
N	
S	
H	●

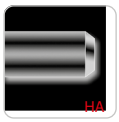
● Main application

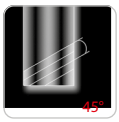
○ Secondary application

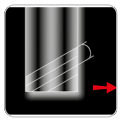
AFH508.1-...

6 - 8 flutes, long design









Shank DIN 6535HA	d *-0,02*	d_A *h6*	l_1	l	z	HC TiA70
AFH50861-060	6	6	13	57	6	◆
AFH50861-080	8	8	19	63	6	◆
AFH50861-100	10	10	22	72	6	◆
AFH50861-120	12	12	26	83	6	◆
AFH50861-140	14	14	26	83	6	◆
AFH50861-160	16	16	32	92	6	◆
AFH50881-180	18	18	32	92	8	◆
AFH50881-200	20	20	38	104	8	◆
AFH50881-250	25	25	44	104	8	◆

HC = Carbide coated

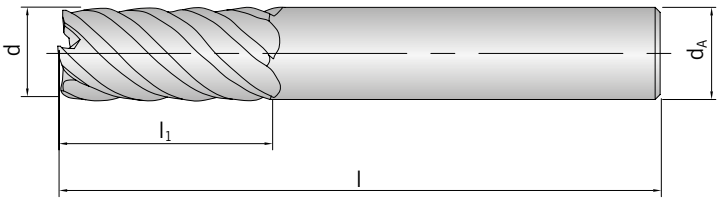
P	○
M	
K	
N	
S	
H	●

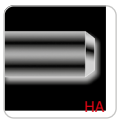
● Main application

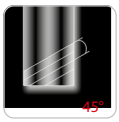
○ Secondary application

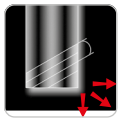
AFH508.2-...

6 - 8 flutes, extra long design









Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	z	HC TiA70
AFH50862-060	6	6	26	70	6	◆
AFH50862-080	8	8	36	90	6	◆
AFH50862-100	10	10	46	100	6	◆
AFH50862-120	12	12	56	110	6	◆
AFH50862-160	16	16	66	130	6	◆
AFH50882-200	20	20	76	140	8	◆
AFH50882-250	25	25	92	180	8	◆

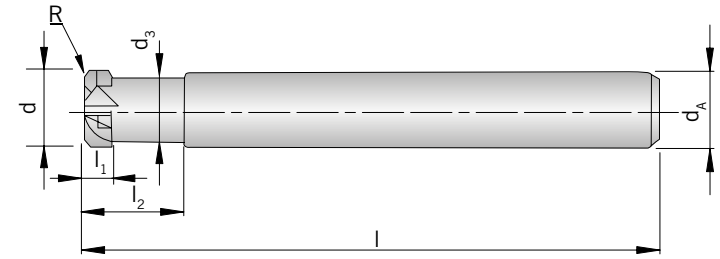
HC = Carbide coated

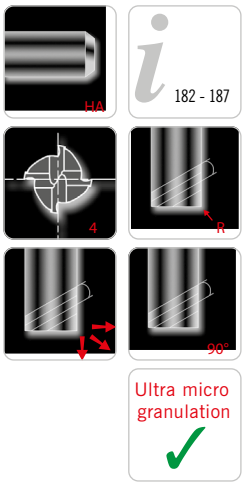
P	○
M	
K	
N	
S	
H	●

● Main application
○ Secondary application

AFH50746-...R...

4 flutes, short design, with corner radius





AFH

Shank DIN 6535HA	d -0,02	d_A h6	d_3	l_1	l_2	l	R ±0,005	HC TiA70
AFH50746-020 R0.5	2	6	1.8	1.0	6	50	0.5	◆
AFH50746-030 R0.5	3	6	2.8	1.2	8	50	0.5	◆
AFH50746-040 R0.5	4	6	3.8	1.5	10	50	0.5	◆
AFH50746-060 R0.5	6	6	5.4	2.5	12	60	0.5	◆
AFH50746-060 R1.0	6	6	5.4	2.5	12	60	1.0	◆
AFH50746-080 R1.0	8	8	7.2	3.5	16	60	1.0	◆
AFH50746-080 R2.0	8	8	7.2	3.5	16	60	2.0	◆
AFH50746-100 R1.0	10	10	9.0	4.0	20	70	1.0	◆
AFH50746-100 R2.0	10	10	9.0	4.0	20	70	2.0	◆
AFH50746-120 R2.0	12	12	11.0	5.0	25	80	2.0	◆
AFH50746-120 R3.0	12	12	11.0	5.0	25	80	3.0	◆

HC = Carbide coated

P	○
M	
K	
N	
S	
H	●

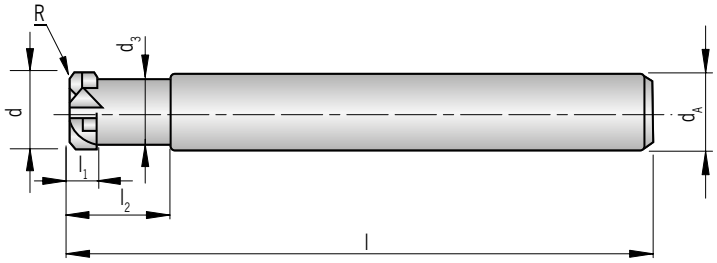
● Main application

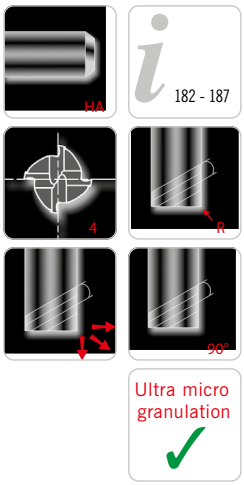
○ Secondary application

Dimensions in mm

AFH50741-...R...

4 flutes, long design, with corner radius





Shank DIN 6535HA	d -0,02	d_A h6	d_3	l_1	l_2	l	R ±0,005	HC TiA70
AFH50741-020 R0.5	2	6	1.8	1.0	6	70	0.5	◆
AFH50741-030 R0.5	3	6	2.8	1.2	8	70	0.5	◆
AFH50741-040 R0.5	4	6	3.8	1.5	10	70	0.5	◆
AFH50741-050 R0.5	5	6	4.6	2.0	10	70	0.5	◆
AFH50741-060 R0.5	6	6	5.4	2.5	12	90	0.5	◆
AFH50741-060 R1.0	6	6	5.4	2.5	12	90	1.0	◆
AFH50741-080 R1.0	8	8	7.2	3.5	16	100	1.0	◆
AFH50741-080 R2.0	8	8	7.2	3.5	16	100	2.0	◆
AFH50741-100 R1.0	10	10	9.0	4.0	20	100	1.0	◆
AFH50741-100 R2.0	10	10	9.0	4.0	20	100	2.0	◆
AFH50741-120 R2.0	12	12	11.0	5.0	25	110	2.0	◆
AFH50741-120 R3.0	12	12	11.0	5.0	25	110	3.0	◆
AFH50741-160 R3.0	16	16	15.0	6.5	30	130	3.0	◆

HC = Carbide coated

P	○
M	
K	
N	
S	
H	●

● Main application

○ Secondary application

➜ **Radius 0,1 mm – D 4,0 mm MINI Z2**

End-mill			Steel ≤ 800 N/mm² (≥ 22 HRC)				Steel ≤ 1100 N/mm² (25-35 HRC)				Steel ≤ 1400 N/mm² (35-45 HRC)				Hardened steel ≤ 1950 N/mm² (45-55 HRC)				Hardened steel ≥ 2000 N/mm² (55-70 HRC)			
D	R	l_1	a_p	n	f_z	v_f	a_p	n	f_z	v_f	a_p	n	f_z	v_f	a_p	n	f_z	v_f	a_p	n	f_z	v_f
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm/min]	[mm]	[mm]	[mm]	[mm/min]	[mm]	[mm]	[mm]	[mm/min]	[mm]	[mm]	[mm]	[mm/min]	[mm]	[mm]	[mm]	[mm/min]
0,10	-	0,15	0,006	50000	0,011	1050	0,005	50000	0,011	1050	0,004	50000	0,008	780	0,003	45000	0,007	594	0,002	42000	0,006	479
0,10	-	0,20	0,006	50000	0,011	1050	0,005	50000	0,011	1050	0,004	50000	0,008	780	0,003	45000	0,007	594	0,002	42000	0,006	479
0,20	-	0,30	0,020	45000	0,016	1418	0,018	40500	0,016	1276	0,014	38250	0,012	895	0,010	33750	0,010	668	0,008	31500	0,009	539
0,20	-	0,40	0,020	45000	0,016	1418	0,018	40500	0,016	1276	0,014	38250	0,012	895	0,010	33750	0,010	668	0,008	31500	0,009	539
0,30	-	0,45	0,021	40000	0,016	1260	0,019	36000	0,016	1134	0,015	34000	0,012	796	0,011	30000	0,010	594	0,008	28000	0,009	479
0,30	-	0,60	0,021	40000	0,016	1260	0,019	36000	0,016	1134	0,015	34000	0,012	796	0,011	30000	0,010	594	0,008	28000	0,009	479
0,40	-	0,60	0,040	32000	0,021	1344	0,036	28800	0,021	1210	0,028	27200	0,016	849	0,020	24000	0,013	634	0,016	22400	0,011	511
0,40	-	0,80	0,040	32000	0,021	1344	0,036	28800	0,021	1210	0,028	27200	0,016	849	0,020	24000	0,013	634	0,016	22400	0,011	511
0,50	-	0,70	0,050	32000	0,021	1344	0,045	28800	0,021	1210	0,035	27200	0,016	849	0,025	24000	0,013	634	0,020	22400	0,011	511
0,50	0,05	0,70	0,050	32000	0,021	1344	0,045	28800	0,021	1210	0,035	27200	0,016	849	0,025	24000	0,013	634	0,020	22400	0,011	511
0,50	-	1,00	0,050	32000	0,021	1344	0,045	28800	0,021	1210	0,035	27200	0,016	849	0,025	24000	0,013	634	0,020	22400	0,011	511
0,50	0,05	1,00	0,050	32000	0,021	1344	0,045	28800	0,021	1210	0,035	27200	0,016	849	0,025	24000	0,013	634	0,020	22400	0,011	511
0,60	-	0,90	0,042	32000	0,026	1680	0,038	28800	0,026	1512	0,029	27200	0,020	1061	0,021	24000	0,017	792	0,017	22400	0,014	638
0,60	0,05	0,90	0,042	32000	0,026	1680	0,038	28800	0,026	1512	0,029	27200	0,020	1061	0,021	24000	0,017	792	0,017	22400	0,014	638
0,60	-	1,20	0,042	32000	0,026	1680	0,038	28800	0,026	1512	0,029	27200	0,020	1061	0,021	24000	0,017	792	0,017	22400	0,014	638
0,60	0,05	1,20	0,042	32000	0,026	1680	0,038	28800	0,026	1512	0,029	27200	0,020	1061	0,021	24000	0,017	792	0,017	22400	0,014	638
0,70	-	1,40	0,049	28800	0,024	1382	0,044	25920	0,024	1244	0,034	24480	0,020	955	0,025	21600	0,017	713	0,020	20160	0,014	575
0,70	0,05	1,40	0,049	28800	0,024	1382	0,044	25920	0,024	1244	0,034	24480	0,020	955	0,025	21600	0,017	713	0,020	20160	0,014	575
0,70	0,10	1,00	0,049	28800	0,024	1382	0,044	25920	0,024	1244	0,034	24480	0,020	955	0,025	21600	0,017	713	0,020	20160	0,014	575
0,80	-	1,20	0,056	32000	0,026	1680	0,050	28800	0,026	1512	0,039	27200	0,020	1061	0,028	24000	0,017	792	0,022	22400	0,014	638
0,80	0,05	1,20	0,056	32000	0,026	1680	0,050	28800	0,026	1512	0,039	27200	0,020	1061	0,028	24000	0,017	792	0,022	22400	0,014	638
0,80	-	1,60	0,056	32000	0,026	1680	0,050	28800	0,026	1512	0,039	27200	0,020	1061	0,028	24000	0,017	792	0,022	22400	0,014	638
0,80	0,05	1,60	0,056	32000	0,026	1680	0,050	28800	0,026	1512	0,039	27200	0,020	1061	0,028	24000	0,017	792	0,022	22400	0,014	638
0,80	0,10	1,20	0,056	32000	0,026	1680	0,050	28800	0,026	1512	0,039	27200	0,020	1061	0,028	24000	0,017	792	0,022	22400	0,014	638
0,90	-	2,00	0,036	28800	0,024	1382	0,032	25920	0,024	1244	0,025	24480	0,020	955	0,018	21600	0,017	713	0,014	20160	0,014	575
0,90	0,05	2,00	0,036	28800	0,024	1382	0,032	25920	0,024	1244	0,025	24480	0,020	955	0,018	21600	0,017	713	0,014	20160	0,014	575
1,00	-	1,50	0,010	28800	0,032	1814	0,090	25920	0,032	1633	0,070	24480	0,023	1146	0,050	21600	0,020	855	0,040	20160	0,017	689
1,00	0,10	1,50	0,010	28800	0,032	1814	0,090	25920	0,032	1633	0,070	24480	0,023	1146	0,050	21600	0,020	855	0,040	20160	0,017	689
1,00	0,10	1,80	0,010	28800	0,032	1814	0,090	25920	0,032	1633	0,070	24480	0,023	1146	0,050	21600	0,020	855	0,040	20160	0,017	689
1,20	0,10	1,80	0,084	25600	0,032	1613	0,076	23040	0,032	1452	0,059	21760	0,023	1018	0,042	19200	0,020	760	0,034	17920	0,017	613
1,50	-	1,70	0,110	22400	0,032	1411	0,099	20160	0,032	1270	0,077	19040	0,023	891	0,055	16800	0,020	665	0,044	15680	0,017	536
1,50	-	2,30	0,110	22400	0,032	1411	0,099	20160	0,032	1270	0,077	19040	0,023	891	0,055	16800	0,020	665	0,044	15680	0,017	536
1,50	0,10	2,20	0,110	22400	0,032	1411	0,099	20160	0,032	1270	0,077	19040	0,023	891	0,055	16800	0,020	665	0,044	15680	0,017	536
1,50	0,15	2,20	0,110	22400	0,032	1411	0,099	20160	0,032	1270	0,077	19040	0,023	891	0,055	16800	0,020	665	0,044	15680	0,017	536
1,50	0,20	2,50	0,110	22400	0,032	1411	0,099	20160	0,032	1270	0,077	19040	0,023	891	0,055	16800	0,020	665	0,044	15680	0,017	536
2,00	-	2,00	0,200	16800	0,042	1411	0,180	15120	0,042	1270	0,140	14280	0,031	891	0,100	12600	0,026	665	0,080	11760	0,023	536
2,00	-	3,00	0,200	16800	0,042	1411	0,180	15120	0,042	1270	0,140	14280	0,031	891	0,100	12600	0,026	665	0,080	11760	0,023	536
2,00	0,10	3,00	0,200	16800	0,042	1411	0,180	15120	0,042	1270	0,140	14280	0,031	891	0,100	12600	0,026	665	0,080	11760	0,023	536
2,00	0,15	2,20	0,200	16800	0,042	1411	0,180	15120	0,042	1270	0,140	14280	0,031	891	0,100	12600	0,026	665	0,080	11760	0,023	536
2,00	0,20	3,00	0,200	16800	0,042	1411	0,180	15120	0,042	1270	0,140	14280	0,031	891	0,100	12600	0,026	665	0,080	11760	0,023	536
2,00	0,30	3,00	0,200	16800	0,042	1411	0,180	15120	0,042	1270	0,140	14280	0,031	891	0,100	12600	0,026	665	0,080	11760	0,023	536
2,00	0,50	3,00	0,200	16800	0,042	1411	0,180	15120	0,042	1270	0,140	14280	0,031	891	0,100	12600	0,026	665	0,080	11760	0,023	536
2,50	-	2,50	0,180	14400	0,053	1512	0,162	12960	0,053	1361	0,126	12240	0,039	955	0,090	10800	0,033	713	0,072	10080	0,029	575
2,50	0,10	4,00	0,180	14400	0,053	1512	0,162	12960	0,053	1361	0,126	12240	0,039	955	0,090	10800	0,033	713	0,072	10080	0,029	575
3,00	-	3,00	0,300	12800	0,053	1344	0,270	11520	0,053	1210	0,210	10880	0,039	849	0,150	9600	0,033	634	0,120	8960	0,029	511
3,00	-	4,50	0,300	12800	0,053	1344	0,270	11520	0,053	1210	0,210	10880	0,039	849	0,150	9600	0,033	634	0,120	8960	0,029	511
3,00	0,10	4,00	0,300	12800	0,053	1344	0,270	11520	0,053	1210	0,210	10880	0,039	849	0,150	9600	0,033	634	0,120	8960	0,029	511
3,00	0,30	4,00	0,300	12800	0,053	1344	0,270	11520	0,053	1210	0,210	10880	0,039	849	0,150	9600	0,033	634	0,120	8960	0,029	511
3,00	0,50	4,00	0,300	12800	0,053	1344	0,270	11520	0,053	1210	0,210	10880	0,039	849	0,150	9600	0,033	634	0,120	8960	0,029	511
3,50	-	3,50	0,350	11175	0,060	1340	0,310	1057	0,060	1207	0,250	9500	0,044	846	0,180	8380	0,038	632	0,140	7800	0,032	510
3,50	0,10	5,00	0,350	11175	0,060	1340	0,310	1057	0,060	1207	0,250	9500	0,044	846	0,180	8380	0,038	632	0,140	7800	0,032	510
4,00	-	4,00	0,400	9550	0,070	1337	0,360	8595	0,070	1203	0,280	8118	0,052	844	0,200	7163	0,044	630	0,160	6685	0,038	508
4,00	-	6,00	0,400	9550	0,070	1337	0,360	8595	0,070	1203	0,280	8118	0,052	844	0,200	7163	0,044	630	0,160	6685	0,038	508
4,00	0,10	5,00	0,400	9550	0,070	1337	0,360	8595	0,070	1203	0,280	8118	0,052	844	0,200	7163	0,044	630	0,160	6685	0,038	508
4,00	0,50	5,00	0,400	9550	0,070	1337	0,360	8595	0,070	1203	0,280	8118	0,052	844	0,200	7163	0,044	630	0,160	6685	0,038	508
4,00	1,00	5,00	0,400	9550	0,070	1337	0,360	8595	0,070	1203	0,280	8118	0,052	844	0,200	7163	0,044	630	0,160	6685	0,038	508

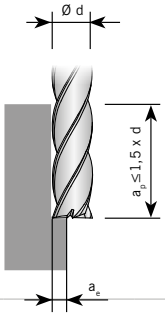
D = Shank diameter R = Radius l_1 = Cutting length

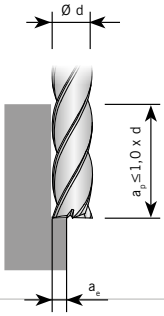
Attention: The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Contour milling

55–70 HRC

Ø	Hardened steel (≤ 55 HRC)			Hardened steel (55–62 HRC)			Hardened steel (62–70 HRC)		
D [mm]	n [min⁻¹]	v_f [mm/min]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	a_e [mm]
1,0	40000	1200	0,05	40000	800	0,03	32000	500	0,02
2,0	40000	2000	0,10	24000	1000	0,05	16000	600	0,05
3,0	32000	3800	0,20	16000	1900	0,10	11000	1200	0,05
4,0	24000	4400	0,20	12000	2200	0,10	8000	1300	0,05
6,0	16000	5800	0,30	8000	2900	0,20	5300	1800	0,10
8,0	12000	5800	0,40	6000	2900	0,20	4000	1800	0,10
10,0	9600	5800	0,50	4800	2900	0,30	3200	1800	0,20
12,0	8000	4800	0,60	4000	2400	0,30	2700	1500	0,20
16,0	6000	3600	0,80	3000	1800	0,50	2000	1100	0,30
20,0	4800	2900	1,00	2400	1400	0,50	1600	880	0,30

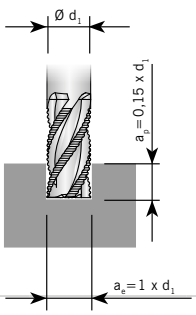




Slot milling

35–70 HRC

Ø	Steel ≤ 1400 N/mm² (35-45 HRC)					Hardened steel ≤ 1950 N/mm² (45-55 HRC)					Hardened steel > 2000 N/mm² (55-70 HRC)				
D [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	f_z [mm]	v_f [mm/min]	a_p [mm]	a_e [mm]	n [min⁻¹]	f_z [mm]	v_f [mm/min]	a_p [mm]	a_e [mm]	n [min⁻¹]	f_z [mm]	v_f [mm/min]
1,0	0,15	1,0	15000	0,008	240	0,15	1,0	12600	0,004	100	0,15	1,0	6300	0,003	38
2,0	0,30	2,0	7600	0,010	152	0,30	2,0	6400	0,006	76	0,30	2,0	3200	0,006	38
3,0	0,45	3,0	5100	0,015	153	0,45	3,0	4200	0,010	84	0,45	3,0	2100	0,009	38
4,0	0,60	4,0	3800	0,025	190	0,60	4,0	3200	0,018	115	0,60	4,0	1600	0,013	41
5,0	0,75	5,0	3100	0,030	186	0,75	5,0	2500	0,025	125	0,75	5,0	1300	0,018	47
6,0	0,90	6,0	2500	0,038	190	0,90	6,0	2100	0,030	126	0,90	6,0	1100	0,021	46
8,0	1,20	8,0	1900	0,050	190	1,20	8,0	1600	0,040	128	1,20	8,0	800	0,028	45
10,0	1,50	10,0	1500	0,063	189	1,50	10,0	1300	0,050	130	1,50	10,0	600	0,035	42
12,0	1,80	12,0	1300	0,070	182	1,80	12,0	1100	0,055	121	1,80	12,0	500	0,039	39
16,0	2,40	16,0	955	0,085	162	2,40	16,0	800	0,060	96	2,40	16,0	400	0,043	35
20,0	3,00	20,0	765	0,112	171	3,00	20,0	640	0,070	90	3,00	20,0	340	0,049	35



Information: Calculation is based on two tooth Z2

➜ **Radius 0,05 mm – 1,5 mm**

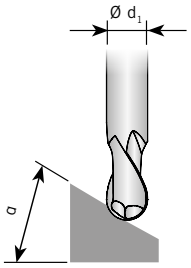
End-mill			Steel ≤ 800 N/mm² (≥ 22 HRC)					Steel ≤ 1100 N/mm² (25-35 HRC)					Steel ≤ 1400 N/mm² (35-45 HRC)					Hardened steel ≤ 1950 N/mm² (45-55 HRC)					Hardened steel ≥ 2000 N/mm² (55-70 HRC)				
D	R	l_1	a_p	a_e	n	f_z	v_f	a_p	a_e	n	f_z	v_f	a_p	a_e	n	f_z	v_f	a_p	a_e	n	f_z	v_f	a_p	a_e	n	f_z	v_f
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm/min]	[mm]	[mm]	[mm]	[mm]	[mm/min]	[mm]		[mm]	[mm]	[mm/min]	[mm]	[mm]	[mm]	[mm]	[mm/min]	[mm]	[mm]	[mm]	[mm]	[mm/min]
0,10	0,05	0,10	0,008	0,024	50000	0,015	1500	0,007	0,022	50000	0,015	1500	0,006	0,019	50000	0,014	1350	0,005	0,016	45000	0,012	1080	0,005	0,014	42000	0,011	882
0,10	0,05	0,20	0,008	0,024	50000	0,015	1500	0,007	0,022	50000	0,015	1500	0,006	0,019	50000	0,014	1350	0,005	0,016	45000	0,012	1080	0,005	0,014	42000	0,011	882
0,20	0,10	0,20	0,020	0,060	50000	0,023	2250	0,018	0,054	45000	0,023	2025	0,016	0,048	42500	0,020	1721	0,013	0,039	37500	0,018	1350	0,012	0,036	35000	0,016	1103
0,20	0,10	0,30	0,020	0,060	50000	0,023	2250	0,018	0,054	45000	0,023	2025	0,016	0,048	42500	0,020	1721	0,013	0,039	37500	0,018	1350	0,012	0,036	35000	0,016	1103
0,30	0,15	0,30	0,021	0,063	50000	0,023	2250	0,019	0,057	45000	0,023	2025	0,017	0,050	42500	0,020	1721	0,014	0,041	37500	0,018	1350	0,013	0,038	35000	0,016	1103
0,30	0,15	0,50	0,021	0,063	50000	0,023	2250	0,019	0,057	45000	0,023	2025	0,017	0,050	42500	0,020	1721	0,014	0,041	37500	0,018	1350	0,013	0,038	35000	0,016	1103
0,40	0,20	0,40	0,040	0,120	40000	0,030	2400	0,036	0,108	36000	0,030	2160	0,032	0,096	34000	0,027	1836	0,026	0,078	30000	0,024	1440	0,024	0,072	28000	0,021	1176
0,40	0,20	0,60	0,040	0,120	40000	0,030	2400	0,036	0,108	36000	0,030	2160	0,032	0,096	34000	0,027	1836	0,026	0,078	30000	0,024	1440	0,024	0,072	28000	0,021	1176
0,50	0,25	0,40	0,045	0,135	40000	0,030	2400	0,041	0,122	36000	0,030	2160	0,036	0,108	34000	0,027	1836	0,029	0,088	30000	0,024	1440	0,027	0,081	28000	0,021	1176
0,50	0,25	0,50	0,045	0,135	40000	0,030	2400	0,041	0,122	36000	0,030	2160	0,036	0,108	34000	0,027	1836	0,029	0,088	30000	0,024	1440	0,027	0,081	28000	0,021	1176
0,50	0,25	0,70	0,045	0,135	40000	0,030	2400	0,041	0,122	36000	0,030	2160	0,036	0,108	34000	0,027	1836	0,029	0,088	30000	0,024	1440	0,027	0,081	28000	0,021	1176
0,60	0,30	0,50	0,042	0,126	40000	0,038	3000	0,038	0,113	36000	0,038	2700	0,034	0,101	34000	0,034	2295	0,027	0,082	30000	0,030	1800	0,025	0,076	28000	0,026	1470
0,60	0,30	0,60	0,042	0,126	40000	0,038	3000	0,038	0,113	36000	0,038	2700	0,034	0,101	34000	0,034	2295	0,027	0,082	30000	0,030	1800	0,025	0,076	28000	0,026	1470
0,60	0,30	0,90	0,042	0,126	40000	0,038	3000	0,038	0,113	36000	0,038	2700	0,034	0,101	34000	0,034	2295	0,027	0,082	30000	0,030	1800	0,025	0,076	28000	0,026	1470
0,70	0,35	1,10	0,080	0,240	40000	0,038	3000	0,072	0,216	36000	0,038	2700	0,064	0,192	34000	0,034	2295	0,052	0,156	30000	0,030	1800	0,048	0,144	28000	0,026	1470
0,80	0,40	0,60	0,080	0,240	40000	0,038	3000	0,072	0,216	36000	0,038	2700	0,064	0,192	34000	0,034	2295	0,052	0,156	30000	0,030	1800	0,048	0,144	28000	0,026	1470
0,80	0,40	0,80	0,080	0,240	40000	0,038	3000	0,072	0,216	36000	0,038	2700	0,064	0,192	34000	0,034	2295	0,052	0,156	30000	0,030	1800	0,048	0,144	28000	0,026	1470
0,80	0,40	1,20	0,080	0,240	40000	0,038	3000	0,072	0,216	36000	0,038	2700	0,064	0,192	34000	0,034	2295	0,052	0,156	30000	0,030	1800	0,048	0,144	28000	0,026	1470
0,90	0,45	1,40	0,100	0,300	36000	0,045	3240	0,090	0,270	32400	0,045	2916	0,080	0,240	30600	0,041	2479	0,065	0,195	27000	0,036	1944	0,060	0,180	25200	0,032	1588
1,00	0,50	0,80	0,100	0,300	36000	0,045	3240	0,090	0,270	32400	0,045	2916	0,080	0,240	30600	0,041	2479	0,065	0,195	27000	0,036	1944	0,060	0,180	25200	0,032	1588
1,00	0,50	1,00	0,100	0,300	36000	0,045	3240	0,090	0,270	32400	0,045	2916	0,080	0,240	30600	0,041	2479	0,065	0,195	27000	0,036	1944	0,060	0,180	25200	0,032	1588
1,00	0,50	1,50	0,100	0,300	36000	0,045	3240	0,090	0,270	32400	0,045	2916	0,080	0,240	30600	0,041	2479	0,065	0,195	27000	0,036	1944	0,060	0,180	25200	0,032	1588
1,20	0,60	1,00	0,040	0,120	28800	0,041	2333	0,036	0,108	25920	0,041	2100	0,032	0,096	24480	0,041	1983	0,026	0,078	21600	0,036	1555	0,024	0,072	20160	0,032	1270
1,20	0,60	1,20	0,040	0,120	28800	0,041	2333	0,036	0,108	25920	0,041	2100	0,032	0,096	24480	0,041	1983	0,026	0,078	21600	0,036	1555	0,024	0,072	20160	0,032	1270
1,50	0,75	1,20	0,100	0,300	28000	0,045	2520	0,090	0,270	25200	0,045	2268	0,080	0,240	23800	0,041	1928	0,065	0,195	21000	0,036	1512	0,060	0,180	19600	0,032	1235
1,50	0,75	1,50	0,100	0,300	28000	0,045	2520	0,090	0,270	25200	0,045	2268	0,080	0,240	23800	0,041	1928	0,065	0,195	21000	0,036	1512	0,060	0,180	19600	0,032	1235
1,50	0,75	2,00	0,100	0,300	28000	0,045	2520	0,090	0,270	25200	0,045	2268	0,080	0,240	23800	0,041	1928	0,065	0,195	21000	0,036	1512	0,060	0,180	19600	0,032	1235
2,00	1,00	1,60	0,140	0,042	21000	0,075	3150	0,126	0,378	18900	0,075	2835	0,112	0,336	17850	0,075	2678	0,091	0,273	15750	0,060	1890	0,084	0,253	14700	0,053	1544
2,00	1,00	2,00	0,140	0,042	21000	0,075	3150	0,126	0,378	18900	0,075	2835	0,112	0,336	17850	0,075	2678	0,091	0,273	15750	0,060	1890	0,084	0,253	14700	0,053	1544
2,00	1,00	2,50	0,140	0,042	21000	0,075	3150	0,126	0,378	18900	0,075	2835	0,112	0,336	17850	0,075	2678	0,091	0,273	15750	0,060	1890	0,084	0,253	14700	0,053	1544
2,50	1,25	3,00	0,140	0,042	21000	0,075	3150	0,126	0,378	18900	0,075	2835	0,112	0,336	17850	0,075	2678	0,091	0,273	15750	0,060	1890	0,084	0,253	14700	0,053	1544
3,00	1,50	2,40	0,210	0,630	14400	0,068	1944	0,189	0,567	12960	0,068	1750	0,168	0,504	12240	0,069	1652	0,137	0,410	10800	0,060	1296	0,126	0,380	10080	0,053	1058
3,00	1,50	3,00	0,210	0,630	14400	0,068	1944	0,189	0,567	12960	0,068	1750	0,168	0,504	12240	0,069	1652	0,137	0,410	10800	0,060	1296	0,126	0,380	10080	0,053	1058
3,00	1,50	4,00	0,210	0,630	14400	0,068	1944	0,189	0,567	12960	0,068	1750	0,168	0,504	12240	0,069	1652	0,137	0,410	10800	0,060	1296	0,126	0,380	10080	0,053	1058
3,00	1,50	8,00	0,080	0,240	14400	0,068	1944	0,072	0,216	12960	0,068	1750	0,064	0,192	12240	0,068	1652	0,052	0,156	10800	0,060	1296	0,048	0,144	10080	0,053	1058

D = Shank diameter
R = Radius
l_1 = Cutting length

Attention: The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

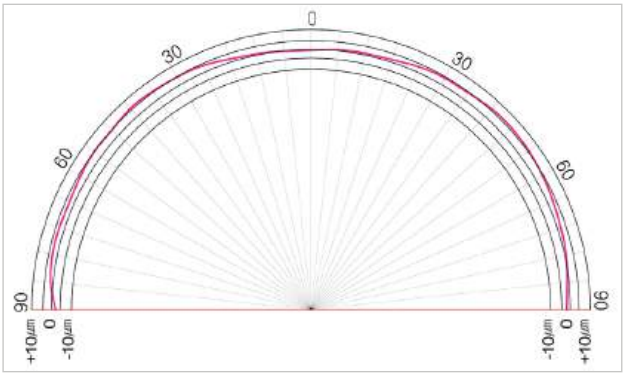
➜ **Radius 0,2 mm – 12,5 mm**

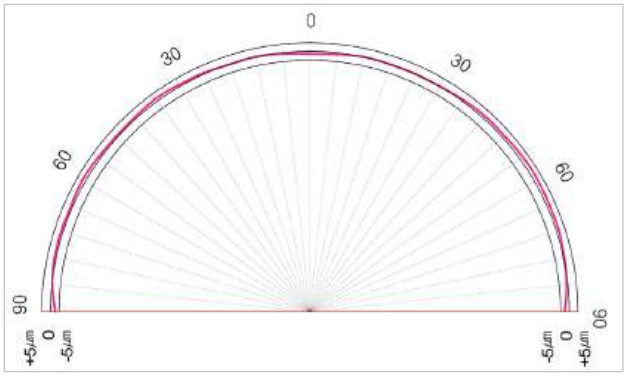
Radius	Hardened steel (≤ 55 HRC)					Hardened steel (55–62 HRC)					Hardened steel (62–70 HRC)				
	α < 15°		α > 15°			α < 15°		α > 15°			α < 15°		α > 15°		
R	n	v_f	n	v_f	a_p	n	v_f	n	v_f	a_p	n	v_f	n	v_f	a_p
[mm]	[min⁻¹]	[mm/min]	[min⁻¹]	[mm/min]	[mm]	[min⁻¹]	[mm/min]	[min⁻¹]	[mm/min]	[mm]	[min⁻¹]	[mm/min]	[min⁻¹]	[mm/min]	[mm]
2,0	32000	10880	20000	3600	0,15	24000	6200	12000	1900	0,13	12000	2400	8000	800	0,10
2,5	25000	9000	16000	2900	0,20	19000	5300	9600	1700	0,15	9600	2100	6000	600	0,10
3,0	21000	8400	13000	2600	0,25	16000	4800	8000	1600	0,20	8000	1700	5000	600	0,11
4,0	16000	6400	10000	2000	0,30	12000	3600	6000	1200	0,20	6000	1400	4000	480	0,11
4,5	14500	5800	9000	1800	0,40	11000	3300	5400	1080	0,20	5400	1200	3500	450	0,11
5,0	13000	5200	8000	1700	0,50	10000	3200	4800	960	0,20	4800	1100	3000	420	0,12
5,5	11000	4400	7000	1450	0,50	8500	2550	4200	840	0,30	3600	860	2200	310	0,12
6,0	9000	3600	6000	1300	0,50	7000	2200	3600	720	0,30	3000	780	1850	290	0,12
8,0	6000	2400	4000	1000	0,50	5000	1600	2500	500	0,30	2500	650	1500	240	0,15
9,0	5500	2200	3500	875	0,50	4500	1400	2100	420	0,30	2200	570	1250	200	0,15
10,0	4500	1800	3000	780	0,50	4000	1300	1800	360	0,30	1800	470	1000	160	0,15
12,5	3500	1400	2000	520	0,50	3500	1100	1500	300	0,30	1500	390	700	105	0,15



Information:
1. **In case of unstable workpiece or tool clamping or heavy vibration during machining, we recommend proportional reduction of feed rate and revolutions.**
2. **At low cutting depths, revolutions and feed rate can be increased.**
3. **“α” is the machine angle.**

Tighter radius tolerance 0,005 - 0,010 mm





Tighter radius tolerance ± 0,005 mm for a higher accurance and longer tool life.

Polished surface and specifically engineered coating for the best results also for high speed machining:

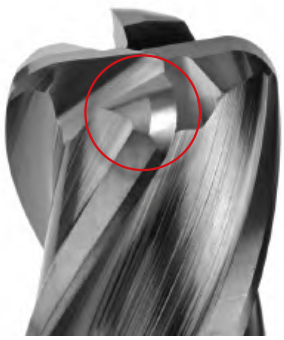
High end-mill

Normal end-mill

Special coating give consistent result in high speed cutting of high hardness materials.

Comparison of the endteeth shape: High feed end-mill – normal end-mill

High end-mill

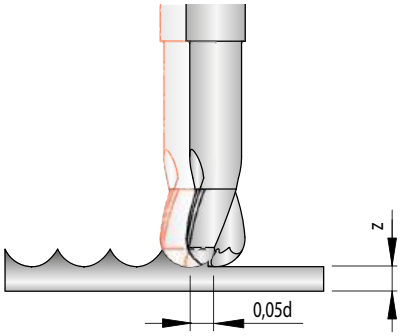


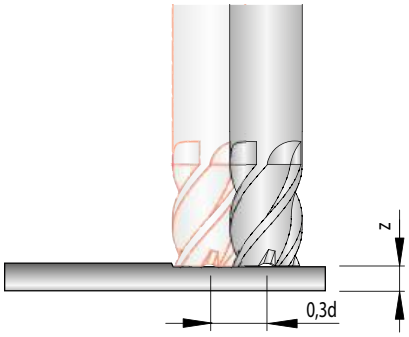
Normal end-mill

Comparison of the endteeth shape: High feed end-mill – normal end-mill

Reduced clearance angles and short strengthens corner radius and reduces chattering.

Extra short flutes length for high rigidity.

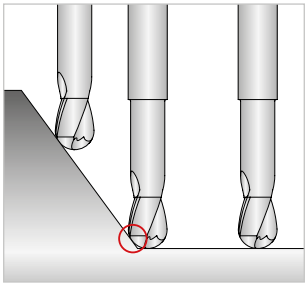




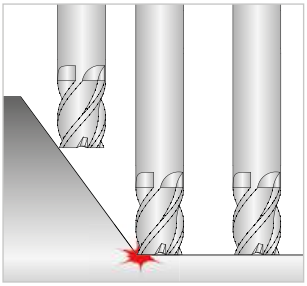
Example of performance

(HRC 50 - 55)

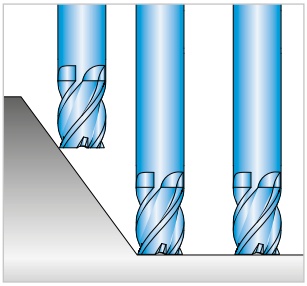
Item	Size	Revolution	Feed rate	Depth of cut	
	[mm]	[U/min] / RPM	[mm/U]	Z [mm]	X-Y [mm]
High feed end-mill	Ø10 R2	5400	11000	0,2	3,0



Ball-nose milling cutter



End-mill



Torus end-mill

Recommended cutting data solid carbide High feed end-mill

Approximate values Feed per tooth f_z [mm]

ISO	Material	Strength [N/mm²]	Medium machining V_c [m/min]	Rough machining V_c [m/min]	Medium d_1=2 mm a_p [mm]	Medium d_1=2 mm f_z [mm]	Roughing d_1=2 mm a_p [mm]	Roughing d_1=2 mm f_z [mm]
P	General construction steel	< 800	250-300	150-250	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Free cutting steel	< 800	250-300	150-250	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Case hardened steel, non alloyed	< 800	250-300	150-250	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Alloyed case hardened steel	< 1000	200-250	180-200	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Tempering steel, non alloyed	< 850	220-250	200-220	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Tempering steel, non alloyed	< 1000	220-250	200-220	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Tempering steel, alloyed	< 800	170-190	170-190	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Tempering steel, alloyed	< 1300	160-180	160-180	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Steel castings	< 850	220-250	200-220	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Nitriding steel	< 1000	170-190	170-190	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Nitriding steel	< 1200	160-180	160-180	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Roller bearing steel	< 1200	170-190	170-190	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Spring steel	< 1200	100-120	100-120	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	High-speed steel	< 1300	80-100	80-100	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Cold working tool steel	< 1300	140-180	140-180	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
	Hot working tool steel	< 1300	140-180	140-180	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
M	Steel and sulphured cast stainless steel	< 850						
	Stainless steel, ferritic	< 750						
	Stainless steel, martensitic	< 900						
	Stainless steel, ferritic / martensitic	< 1100						
	Stainless steel, austenitic / ferritic	< 850						
	Stainless steel, austenitic	< 750						
	Heat resistant steel	< 1100						
K	Grey cast iron with lamellar graphite	100-350						
	Grey cast iron with lamellar graphite	300-1000						
	Speroidal cast iron	300-500						
	Speroidal cast iron	550-800						
	White cast iron, tempered	350-450						
	White cast iron, tempered	500-650						
	Black cast iron, tempered	350-450						
	Black cast iron, tempered	500-700						
N	Aluminium (non alloyed, low alloyed)	< 350						
	Aluminium alloys < 0,5% Si	< 500						
	Aluminium alloys 0,5%-10% Si	< 400						
	Aluminium alloys 10%-15% Si	< 400						
	Aluminium alloys > 15% Si	< 400						
	Copper (non alloyed, low alloyed)	< 350						
	Copper wrought alloys	< 700						
	Special copper alloys	< 200 HB						
	Special copper alloys	< 300 HB						
	Special copper alloys	> 300 HB						
	Short-chipping brass, bronze, red bronze	< 600						
	Long-chipping brass	< 600						
	Thermoplastics							
	Duroplastics							
	Fibre-reinforced plastics							
	Magnesium and magnesium alloys	< 850						
	Graphite							
	Tungsten and tungsten alloys							
	Molybdenum and molybdenum alloys							
S	Pure nickel							
	Nickel alloys							
	Nickel alloys	< 850						
	Nickel-chromium alloys							
	Nickel and cobalt alloys	< 1300						
	Nickel and cobalt alloys	< 1300						
	Heat resistant alloys	< 1400						
	Nickel-cobalt-chromium alloys	< 1300						
	Pure titanium	< 900						
	Titanium alloys	< 700						
	Titanium alloys	< 1200						
H	Tempered steel	< 45 HRC	160-190	160-190	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
		46-55 HRC	150-180	80-120	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,3
		56-60 HRC	120-150	80-100	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,25
		61-65 HRC	80-110	60-90	0,05-0,2	0,1-0,2	0,2-0,3	0,2-0,25
		65-70 HRC						

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Recommended cutting data solid carbide High feed end-mill

Approximate values Feed per tooth f_z [mm]

Medium d_1=3 mm		Roughing d_1=3 mm		Medium d_1=4 mm		Roughing d_1=4 mm		Medium d_1=6 mm		Roughing d_1=6 mm	
a_p [mm]	f_z [mm]	a_p [mm]	f_z [mm]	a_p [mm]	f_z [mm]	a_p [mm]	f_z [mm]	a_p [mm]	f_z [mm]	a_p [mm]	f_z [mm]
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,22-0,35
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,25	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,2-0,3
0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,25	0,1-0,2	0,1-0,2	0,2-0,3	0,2-0,3	0,1-0,2	0,1-0,22	0,2-0,3	0,2-0,3

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Recommended cutting data solid carbide High feed end-mill

Approximate values Feed per tooth f_z [mm]

ISO	Material	Strength [N/mm²]	Medium machining V_c [m/min]	Rough machining V_c [m/min]	Medium d_1=8 mm a_p [mm]	Medium d_1=8 mm f_z [mm]	Roughing d_1=8 mm a_p [mm]	Roughing d_1=8 mm f_z [mm]
P	General construction steel	< 800	250 - 300	150-250	0,1-0,2	0,1-0,3	0,2-0,3	0,3-0,5
P	Free cutting steel	< 800	250-300	150-250	0,1-0,2	0,1-0,3	0,2-0,3	0,3-0,5
P	Case hardened steel, non alloyed	< 800	250-300	150-250	0,1-0,2	0,1-0,3	0,2-0,3	0,3-0,5
P	Alloyed case hardened steel	< 1000	200-250	180-200	0,1 0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	Tempering steel, non alloyed	< 850	220-250	200-220	0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	Tempering steel, non alloyed	< 1000	220-250	200-220	0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	Tempering steel, alloyed	< 800	170-190	170-190	0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	Tempering steel, alloyed	< 1300	160-180	160-180	0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	Steel castings	< 850	220-250	200-220	0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	Nitriding steel	< 1000	170-190	170-190	0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	Nitriding steel	< 1200	160-180	160-180	0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	Roller bearing steel	< 1200	170-190	170-190	0,1 0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	Spring steel	< 1200	100-120	100-120	0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	High-speed steel	< 1300	80-100	80-100	0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	Cold working tool steel	< 1300	140-180	140-180	0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4
P	Hot working tool steel	< 1300	140-180	140-180	0,1 0,2	0,1-0,25	0,2-0,3	0,25-0,4
M	Steel and sulphured cast stainless steel	< 850						
M	Stainless steel, ferritic	< 750						
M	Stainless steel, martensitic	< 900						
M	Stainless steel, ferritic/martensitic	< 1100						
M	Stainless steel, austenitic/ferritic	< 850						
M	Stainless steel, austenitic	< 750						
M	Heat resistant steel	< 1100						
K	Grey cast iron with lamellar graphite	100-350						
K	Grey cast iron with lamellar graphite	300-1000						
K	Speroidal cast iron	300-500						
K	Speroidal cast iron	550-800						
K	White cast iron, tempered	350-450						
K	White cast iron, tempered	500-650						
K	Black cast iron, tempered	350-450						
K	Black cast iron, tempered	500-700						
N	Aluminium (non alloyed, low alloyed)	< 350						
N	Aluminium alloys < 0,5% Si	< 500						
N	Aluminium alloys 0,5%-10% Si	< 400						
N	Aluminium alloys 10%-15% Si	< 400						
N	Aluminium alloys > 15% Si	< 400						
N	Copper (non alloyed, low alloyed)	< 350						
N	Copper wrought alloys	< 700						
N	Special copper alloys	< 200 HB						
N	Special copper alloys	< 300 HB						
N	Special copper alloys	> 300 HB						
N	Short-chipping brass, bronze, red bronze	< 600						
N	Long-chipping brass	< 600						
N	Thermoplastics							
N	Duroplastics							
N	Fibre-reinforced plastics							
N	Magnesium and magnesium alloys	< 850						
N	Graphite							
N	Tungsten and tungsten alloys							
N	Molybdenum and molybdenum alloys							
S	Pure nickel							
S	Nickel alloys							
S	Nickel alloys	< 850						
S	Nickel-chromium alloys							
S	Nickel and cobalt alloys	< 1300						
S	Nickel and cobalt alloys	< 1300						
S	Heat resistant alloys	< 1400						
S	Nickel-cobalt-chromium alloys	< 1300						
S	Pure titanium	< 900						
S	Titanium alloys	< 700						
S	Titanium alloys	< 1200						
H	Tempered steel	< 45 HRC	160-190	160-190	0,1-0,2	0,1-0,3	0,2-0,3	0,3-0,5
H		46-55 HRC	150-180	80-120	0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4
H		56-60 HRC	120-150	80-100	0,1-0,2	0,1-0,25	0,2-0,3	0,2-0,3
H		61-65 HRC	80-110	60-90	0,1-0,2	0,1-0,25	0,2-0,3	0,2-0,3
H		65-70 HRC						

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Recommended cutting data solid carbide High feed end-mill

Approximate values Feed per tooth f_z [mm]

Medium $d_1 = 10$ mm		Roughing $d_1 = 10$ mm		Medium $d_1 = 12$ mm		Roughing $d_1 = 12$ mm		Medium $d_1 = 16$ mm		Roughing $d_1 = 16$ mm	
a_p [mm]	f_z [mm]	a_p [mm]	f_z [mm]	a_p [mm]	f_z [mm]	a_p [mm]	f_z [mm]	a_p [mm]	f_z [mm]	a_p [mm]	f_z [mm]
0,1-0,2	0,1-0,4	0,2-0,3	0,4-0,7	0,1-0,2	0,1-0,45	0,2-0,3	0,45-0,8	0,25-0,4	0,45-0,8	0,1-0,25	0,1-0,45
0,1-0,2	0,1-0,4	0,2-0,3	0,4-0,7	0,1-0,2	0,1-0,45	0,2-0,3	0,45-0,8	0,25-0,4	0,45-0,8	0,1-0,25	0,1-0,45
0,1-0,2	0,1-0,4	0,2-0,3	0,4-0,7	0,1-0,2	0,1-0,45	0,2-0,3	0,45-0,8	0,25-0,4	0,45-0,8	0,1-0,25	0,1-0,45
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,4	0,2-0,3	0,4-0,7	0,1-0,2	0,1-0,45	0,2-0,3	0,45-0,8	0,25-0,4	0,45-0,8	0,1-0,25	0,1-0,45
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,4	0,1-0,2	0,1-0,35	0,2-0,3	0,35-0,6	0,25-0,4	0,35-0,6	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,35	0,1-0,2	0,1-0,35	0,2-0,3	0,3-0,4	0,25-0,4	0,35-0,45	0,1-0,25	0,1-0,35
0,1-0,2	0,1-0,25	0,2-0,3	0,25-0,35	0,1-0,2	0,1-0,35	0,2-0,3	0,3-0,4	0,25-0,4	0,35-0,45	0,1-0,25	0,1-0,35
								0,25-0,4	0,35-0,45	0,1-0,25	0,1-0,35

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Attention:
The width of cut (ae) in steel should be 60-90% of the cutter diameter ø d_1 with high-grade steels and for sticking materials 40% of ø d_1 maximum.

Coolant:
For machining stainless steel and non-ferrous materials use emulsion.
For cast iron and hardened materials use compressed air.
For steel and heat resistant alloys use MMS.

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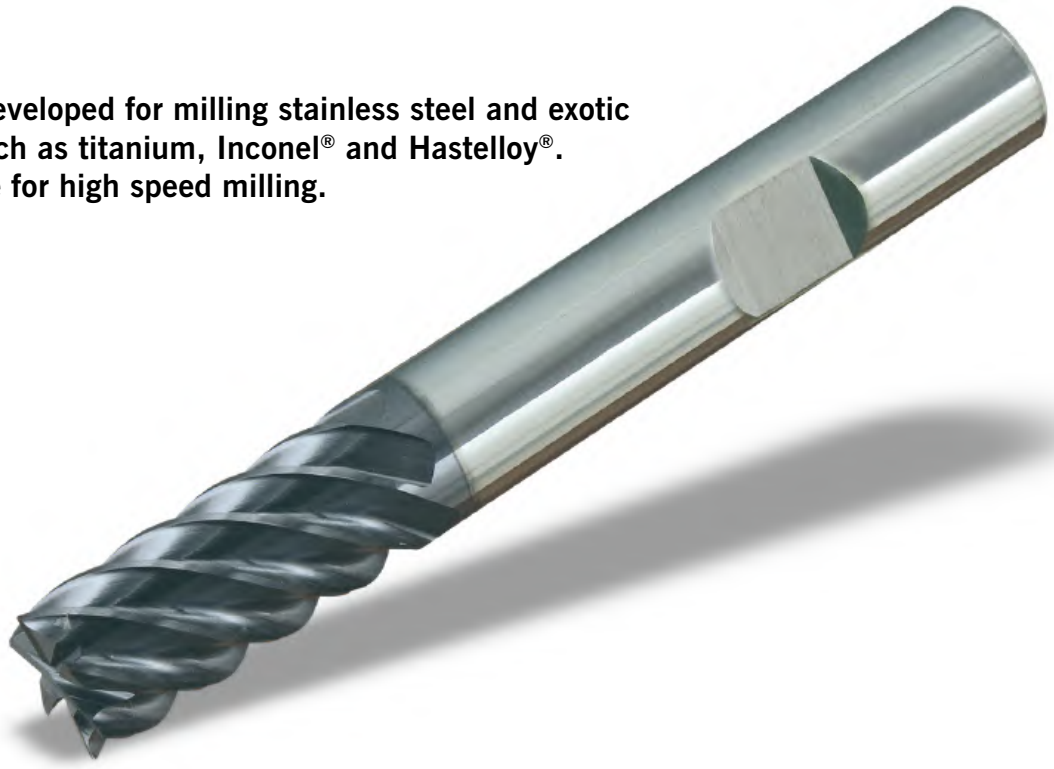

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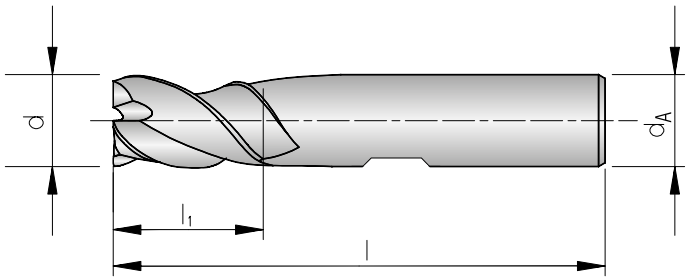
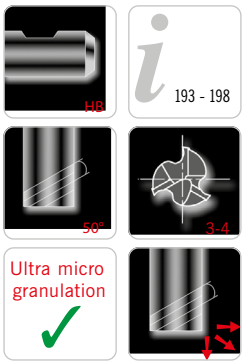
3 - 4 flutes, long design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	z	HC TiAlN
AFJ61231-030A	3	6	8	52	3	◆
AFJ61231-040A	4	6	11	55	3	◆
AFJ61231-050A	5	6	13	57	3	◆
AFJ61231-060	6	6	13	50	3	◆
AFJ61231-060A	6	6	13	57	3	◆
AFJ61231-080	8	8	19	60	3	◆
AFJ61231-080A	8	8	19	63	3	◆
AFJ61231-100	10	10	22	70	3	◆
AFJ61231-100A	10	10	22	72	3	◆
AFJ61231-120	12	12	25	75	3	◆
AFJ61231-120A	12	12	25	83	3	◆
AFJ61231-160	16	16	32	90	3	◆
AFJ61231-160A	16	16	32	92	3	◆
AFJ61241-200	20	20	38	100	4	◆
AFJ61241-200A	20	20	38	104	4	◆
AFJ61241-250	25	25	45	120	4	◆
AFJ61241-250A	25	25	45	121	4	◆

HC = Carbide coated

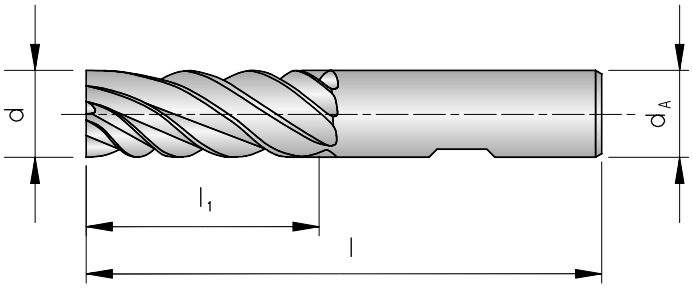
P	○
M	●
K	
N	
S	●
H	

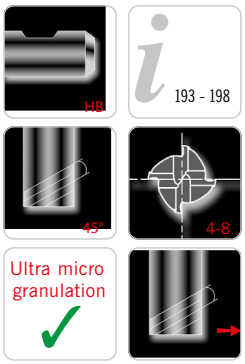
● Main application

○ Secondary application

AFJ602.0-...

4 - 8 flutes, short design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	z	HC TiAlN
AFJ60240-030	3	6	8	52	4	◆
AFJ60240-040	4	6	11	55	4	◆
AFJ60240-050	5	6	13	57	4	◆
AFJ60260-060	6	6	13	57	6	◆
AFJ60260-080	8	8	19	63	6	◆
AFJ60260-100	10	10	22	72	6	◆
AFJ60260-120	12	12	26	83	6	◆
AFJ60260-140	14	14	26	83	6	◆
AFJ60260-160	16	16	32	92	6	◆
AFJ60280-200	20	20	38	104	8	◆

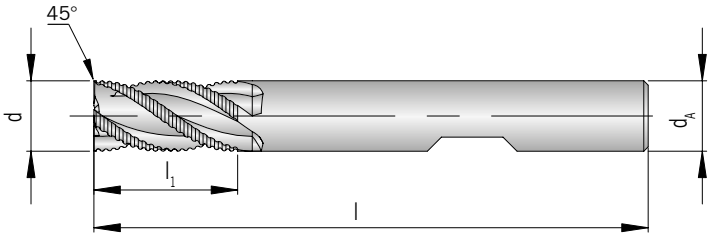
HC = Carbide coated

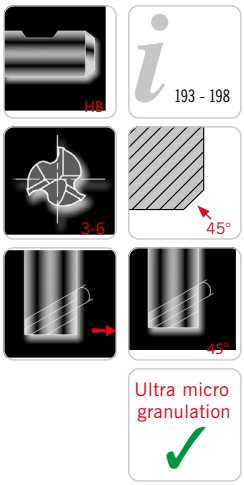
P	○
M	●
K	
N	
S	●
H	

● Main application
○ Secondary application

AFJ619.1-...

3 - 6 flutes, long design





Shank DIN 6535HB	d *h10*	d_A *h6*	l_1	l	Chamfer	z	HC TiAlN
AFJ61931-040	4	6	11	57	0,1 x 45°	3	◆
AFJ61941-050	5	6	13	57	0,13 x 45°	4	◆
AFJ61941-060	6	6	16	57	0,15 x 45°	4	◆
AFJ61941-080	8	8	16	63	0,18 x 45°	4	◆
AFJ61941-100	10	10	22	72	0,2 x 45°	4	◆
AFJ61941-120	12	12	26	83	0,2 x 45°	4	◆
AFJ61941-140	14	14	26	83	0,2 x 45°	4	◆
AFJ61951-160	16	16	32	92	0,2 x 45°	5	◆
AFJ61961-200	20	20	38	104	0,2 x 45°	6	◆
AFJ61961-250	25	25	45	121	0,2 x 45°	6	◆

HC = Carbide coated

P	○
M	●
K	
N	
S	●
H	

● Main application
○ Secondary application

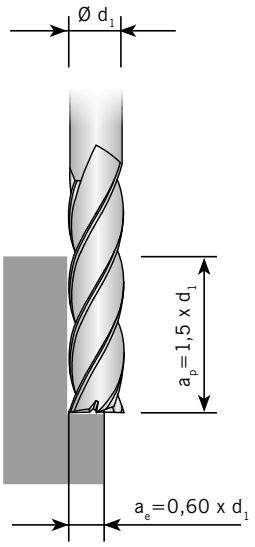
Dimensions in mm

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Correction factor	Cutting speed V_c (m/min) VHM TiAlN
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	1,2	100 - 170 - 240
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	1,2	100 - 170 - 240
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	1,2	90 - 155 - 220
		C > 0.55 %	annealed	190	639	P4	1,2	100 - 170 - 240
		C > 0.55 %	hardened and tempered	300	1013	P5	1,0	60 - 100 - 140
		Machining steel (short-chipping)	tempered	220	745	P6	1,2	100 - 170 - 240
	Low alloyed steel	annealed		175	591	P7	1,2	90 - 145 - 200
		hardened and tempered		300	1013	P8	1,0	90 - 105 - 120
		hardened and tempered		380	1282	P9	0,8	60 - 90 - 120
		hardened and tempered		430	1477	P10	0,8	60 - 90 - 120
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	1,2	90 - 145 - 200
		hardened		300	1013	P12	1,0	90 - 115 - 140
		hardened		400	1361	P13	0,8	60 - 85 - 110
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	1,0	50 - 85 - 120
		martensitic, hardened and tempered		330	1114	P15	0,9	30 - 55 - 80
M	Stainless steel	austenitic, chilled		200	675	M1	1,0	60 - 90 - 120
		austenitic, precipitation-hardened (PH)		300	1013	M2	0,9	30 - 55 - 80
		austenitic-ferritic, Duplex		230	778	M3	1,0	50 - 85 - 120
K	Malleable cast iron	ferritic		200	675	K1		-
		pearlitic		260	867	K2		-
	Cast iron	low tensile strength		180	602	K3		-
		high tensile strength / austenitic		245	825	K4		-
	Cast iron with nodular graphite	ferritic		155	518	K5		-
		pearlitic		265	885	K6		-
	GGV (CGI)			200	675	K7		-
N	Aluminium alloys long chipping	not heat treatable		30	-	N1		-
		heat treatable, heat treated		100	343	N2		-
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3		-
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4		-
		> 12 % Si, not heat treatable		130	447	N5		-
	Magnesium alloys			70	250	N6		-
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7		-
		Brass, Bronze		90	314	N8		-
		Cu-alloys, short-chipping		110	382	N9		-
		High-tensile, Ampco		300	1013	N10		-
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11		-
		Duroplastic (without abrasive filling material)		-	-	N12		-
		Plastic glas fibre reinforced GFRP		-	-	N13		-
		Plastic carbon fibre reinforced CFRP		-	-	N14		-
		Plastic aramid fibre reinforced AFRP		-	-	N15		-
		Graphite (tech.)		80 Shore	-	N16		-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1	0,7	30 - 60 - 90
			heat treated	280	943	S2	0,7	30 - 60 - 90
		Ni- or Co-alloyed	annealed	250	839	S3	0,9	30 - 50 - 70
			heat treated	350	1177	S4	0,7	30 - 55 - 80
			casting	320	1076	S5	0,7	30 - 55 - 80
	Titanium alloys	Pure titan		200	675	S6	1,0	50 - 85 - 120
		α- and β-alloys, heat treated		375	1262	S7	1,0	40 - 75 - 110
		β-alloys		410	1396	S8	1,0	40 - 75 - 110
	Wolfram alloys			300	1013	S9		-
	Molybdän alloys			300	1013	S10		-
H	Hardened steel	hardened		50 HRC	-	H1		-
		hardened		55 HRC	-	H2		-
		hardened		60 HRC	-	H3		-
	Hardened cast iron	hardened		55 HRC	-	H4		-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

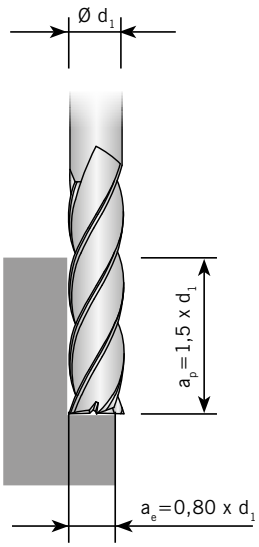
Feed per tooth with radial depth of cut of 60 % of the cutter (ø d_1)

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,005	0,005	0,006
3	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
4	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
5	0,008	0,005	0,006	0,007	0,009	0,010	0,012	0,013	0,015	0,016
6	0,009	0,006	0,007	0,008	0,010	0,011	0,014	0,015	0,017	0,018
8	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
10	0,016	0,011	0,013	0,014	0,017	0,019	0,024	0,026	0,029	0,030
12	0,019	0,013	0,015	0,017	0,021	0,023	0,029	0,031	0,035	0,037
14	0,022	0,015	0,018	0,020	0,025	0,027	0,034	0,036	0,040	0,043
16	0,026	0,018	0,020	0,023	0,028	0,031	0,039	0,041	0,046	0,049
18	0,029	0,020	0,023	0,026	0,032	0,035	0,043	0,046	0,052	0,055
20	0,032	0,022	0,026	0,029	0,035	0,039	0,048	0,052	0,058	0,061
25	0,040	0,028	0,032	0,036	0,045	0,049	0,061	0,065	0,073	0,077



Feed per tooth with radial depth of cut of 80 % of the cutter (ø d_1)

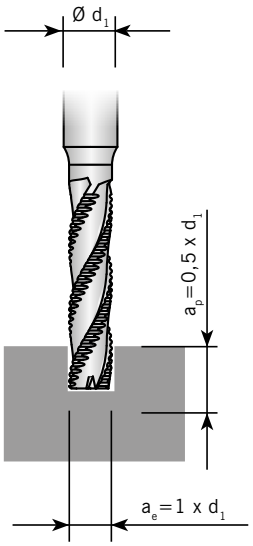
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001
2	0,002	0,001	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,004
3	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
4	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
5	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
6	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,012	0,013	0,014
8	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
10	0,012	0,008	0,010	0,011	0,013	0,015	0,018	0,020	0,022	0,023
12	0,015	0,010	0,012	0,013	0,016	0,018	0,022	0,024	0,027	0,028
14	0,017	0,012	0,014	0,015	0,019	0,021	0,026	0,028	0,031	0,033
16	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
18	0,022	0,015	0,018	0,020	0,024	0,027	0,033	0,036	0,040	0,042
20	0,025	0,017	0,020	0,022	0,027	0,030	0,037	0,040	0,045	0,047
25	0,031	0,022	0,025	0,028	0,034	0,037	0,047	0,050	0,056	0,059



Attention: Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with a_p = 1 x d_1 -> 1,2 with a_p = 0,5 x d_1

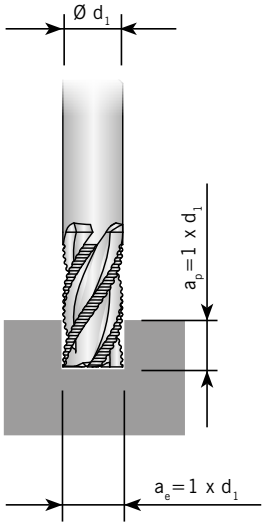
Feed per tooth when full slot milling ➜ ap = 0,5 x d_1

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,002	0,001	0,001	0,001	0,002	0,002	0,003	0,003	0,003	0,003
2	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
3	0,007	0,004	0,005	0,006	0,007	0,008	0,010	0,011	0,012	0,013
4	0,009	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,016	0,017
5	0,011	0,007	0,008	0,009	0,012	0,013	0,016	0,017	0,019	0,020
6	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
8	0,018	0,012	0,014	0,016	0,019	0,021	0,027	0,028	0,032	0,034
10	0,022	0,015	0,017	0,019	0,024	0,026	0,033	0,035	0,039	0,041
12	0,030	0,021	0,024	0,027	0,033	0,036	0,045	0,048	0,054	0,057
14	0,032	0,022	0,025	0,028	0,035	0,038	0,048	0,051	0,057	0,060
16	0,036	0,025	0,028	0,032	0,039	0,043	0,054	0,057	0,064	0,068
18	0,042	0,029	0,033	0,037	0,046	0,050	0,063	0,067	0,075	0,079
20	0,045	0,031	0,036	0,040	0,049	0,054	0,067	0,072	0,081	0,085
25	0,056	0,039	0,044	0,050	0,061	0,067	0,084	0,089	0,100	0,106



Feed per tooth when full slot milling ➜ ap = 1 x d_1

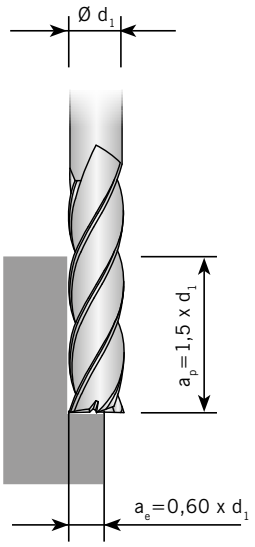
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,005	0,005
3	0,005	0,003	0,004	0,004	0,005	0,005	0,007	0,007	0,008	0,009
4	0,006	0,004	0,005	0,005	0,006	0,007	0,009	0,009	0,011	0,011
5	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,011	0,013	0,014
6	0,008	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,015	0,016
8	0,012	0,008	0,009	0,011	0,013	0,014	0,018	0,019	0,021	0,022
10	0,014	0,010	0,011	0,013	0,016	0,017	0,021	0,023	0,026	0,027
12	0,020	0,014	0,016	0,018	0,021	0,023	0,029	0,031	0,035	0,037
14	0,021	0,015	0,017	0,019	0,023	0,025	0,031	0,033	0,037	0,040
16	0,023	0,016	0,019	0,021	0,026	0,028	0,035	0,037	0,042	0,044
18	0,027	0,019	0,022	0,025	0,030	0,033	0,041	0,044	0,049	0,052
20	0,029	0,020	0,023	0,026	0,032	0,035	0,044	0,047	0,053	0,056
25	0,036	0,025	0,029	0,033	0,040	0,044	0,055	0,058	0,066	0,069



Attention: Feed rates are reduced by 10 - 20 % for uncoated tools.

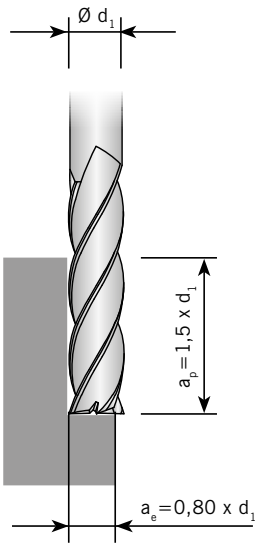
Feed per tooth with radial depth of cut of 60 % of the cutter (ø d_1)

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,005	0,005	0,006
3	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
4	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
5	0,008	0,005	0,006	0,007	0,009	0,010	0,012	0,013	0,015	0,016
6	0,009	0,006	0,007	0,008	0,010	0,011	0,014	0,015	0,017	0,018
8	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
10	0,016	0,011	0,013	0,014	0,017	0,019	0,024	0,026	0,029	0,030
12	0,019	0,013	0,015	0,017	0,021	0,023	0,029	0,031	0,035	0,037
14	0,022	0,015	0,018	0,020	0,025	0,027	0,034	0,036	0,040	0,043
16	0,026	0,018	0,020	0,023	0,028	0,031	0,039	0,041	0,046	0,049
18	0,029	0,020	0,023	0,026	0,032	0,035	0,043	0,046	0,052	0,055
20	0,032	0,022	0,026	0,029	0,035	0,039	0,048	0,052	0,058	0,061
25	0,040	0,028	0,032	0,036	0,045	0,049	0,061	0,065	0,073	0,077



Feed per tooth with radial depth of cut of 80 % of the cutter (ø d_1)

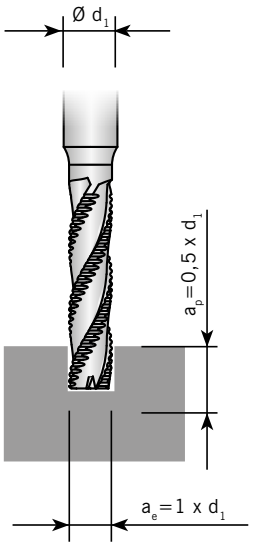
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001
2	0,002	0,001	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,004
3	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
4	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
5	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
6	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,012	0,013	0,014
8	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
10	0,012	0,008	0,010	0,011	0,013	0,015	0,018	0,020	0,022	0,023
12	0,015	0,010	0,012	0,013	0,016	0,018	0,022	0,024	0,027	0,028
14	0,017	0,012	0,014	0,015	0,019	0,021	0,026	0,028	0,031	0,033
16	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
18	0,022	0,015	0,018	0,020	0,024	0,027	0,033	0,036	0,040	0,042
20	0,025	0,017	0,020	0,022	0,027	0,030	0,037	0,040	0,045	0,047
25	0,031	0,022	0,025	0,028	0,034	0,037	0,047	0,050	0,056	0,059



Attention: Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with a_p = 1 x d_1 -> 1,2 with a_p = 0,5 x d_1

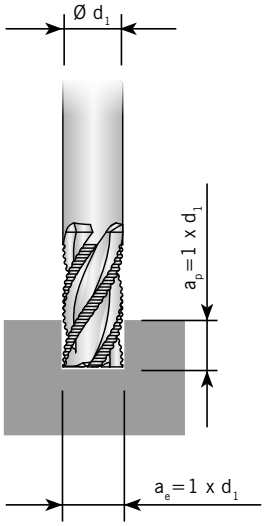
Feed per tooth when full slot milling ➜ ap = 0,5 x d_1

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,002	0,001	0,001	0,001	0,002	0,002	0,003	0,003	0,003	0,003
2	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
3	0,007	0,004	0,005	0,006	0,007	0,008	0,010	0,011	0,012	0,013
4	0,009	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,016	0,017
5	0,011	0,007	0,008	0,009	0,012	0,013	0,016	0,017	0,019	0,020
6	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
8	0,018	0,012	0,014	0,016	0,019	0,021	0,027	0,028	0,032	0,034
10	0,022	0,015	0,017	0,019	0,024	0,026	0,033	0,035	0,039	0,041
12	0,030	0,021	0,024	0,027	0,033	0,036	0,045	0,048	0,054	0,057
14	0,032	0,022	0,025	0,028	0,035	0,038	0,048	0,051	0,057	0,060
16	0,036	0,025	0,028	0,032	0,039	0,043	0,054	0,057	0,064	0,068
18	0,042	0,029	0,033	0,037	0,046	0,050	0,063	0,067	0,075	0,079
20	0,045	0,031	0,036	0,040	0,049	0,054	0,067	0,072	0,081	0,085
25	0,056	0,039	0,044	0,050	0,061	0,067	0,084	0,089	0,100	0,106



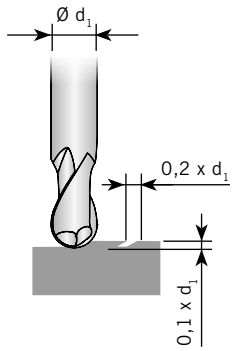
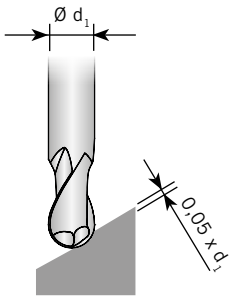
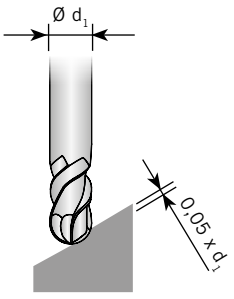
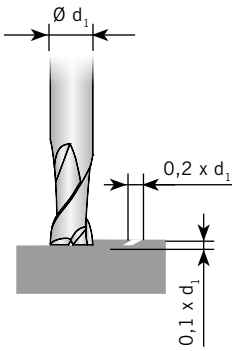
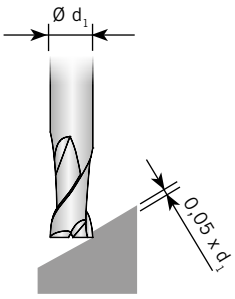
Feed per tooth when full slot milling ➜ ap = 1 x d_1

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,005	0,005
3	0,005	0,003	0,004	0,004	0,005	0,005	0,007	0,007	0,008	0,009
4	0,006	0,004	0,005	0,005	0,006	0,007	0,009	0,009	0,011	0,011
5	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,011	0,013	0,014
6	0,008	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,015	0,016
8	0,012	0,008	0,009	0,011	0,013	0,014	0,018	0,019	0,021	0,022
10	0,014	0,010	0,011	0,013	0,016	0,017	0,021	0,023	0,026	0,027
12	0,020	0,014	0,016	0,018	0,021	0,023	0,029	0,031	0,035	0,037
14	0,021	0,015	0,017	0,019	0,023	0,025	0,031	0,033	0,037	0,040
16	0,023	0,016	0,019	0,021	0,026	0,028	0,035	0,037	0,042	0,044
18	0,027	0,019	0,022	0,025	0,030	0,033	0,041	0,044	0,049	0,052
20	0,029	0,020	0,023	0,026	0,032	0,035	0,044	0,047	0,053	0,056
25	0,036	0,025	0,029	0,033	0,040	0,044	0,055	0,058	0,066	0,069



Attention: Feed rates are reduced by 10 - 20 % for uncoated tools.

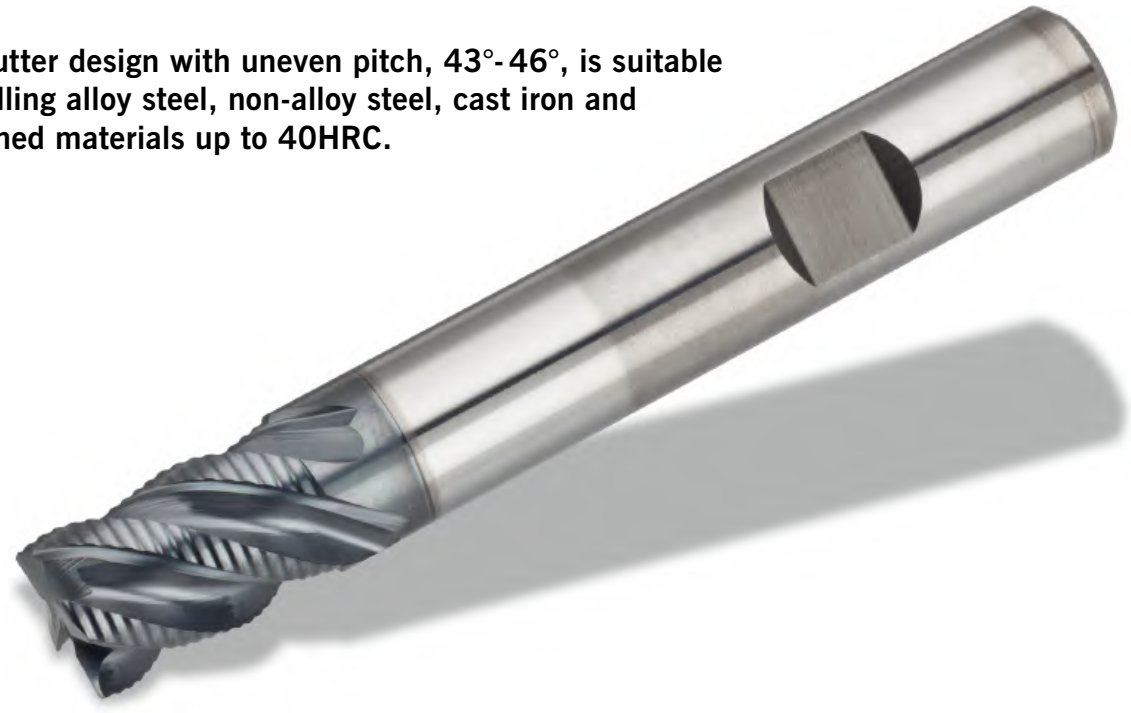
Vorschübe für Vollradius- und Torusfräser

	Ball nose end milling cutters	Ball nose end milling cutters	Ball nose cutter for mold	Torus end milling cutters	Torus end milling cutters
					
d_1 [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]
2	0,015	0,010	0,005	0,010	0,015
3	0,030	0,020	0,015	0,015	0,020
4	0,040	0,030	0,030	0,020	0,030
5	0,060	0,050	0,050	0,030	0,040
6	0,070	0,060	0,060	0,050	0,060
8	0,100	0,080	0,070	0,070	0,080
10	0,120	0,100	0,080	0,080	0,100
12	0,150	0,120	0,090	0,100	0,120
16	0,180	0,150	0,100	0,120	0,150
18	0,200	0,180	0,110	0,140	0,160
20	0,220	0,200	0,120	0,150	0,180
25	0,250	0,240	0,140	0,170	0,200

Attention: Feed rates are reduced by 10 - 20 % for uncoated tools.

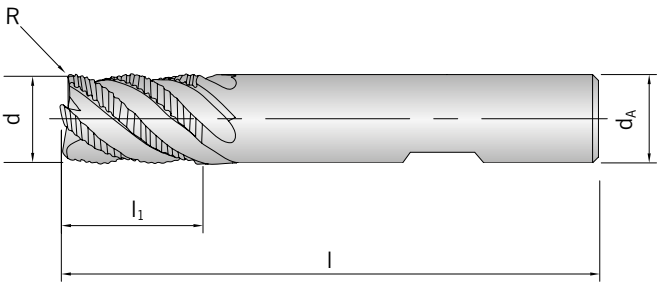
ROUGHING TO YOUR REQUIREMENTS.

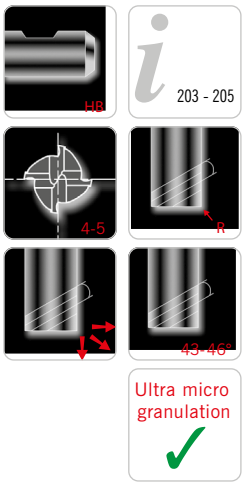
The cutter design with uneven pitch, 43°-46°, is suitable for milling alloy steel, non-alloy steel, cast iron and hardened materials up to 40HRC.



AFR619.0-...

4 - 5 flutes, short design





Shank DIN 6535HB	d *-0,05*	d_A *h6*	l_1	l	R	z	HC TiAlN
AFR61940-060	6	6	9	57	0.5	4	◆
AFR61940-080	8	8	12	63	0.5	4	◆
AFR61940-100	10	10	15	72	0.5	4	◆
AFR61940-120	12	12	18	83	0.5	4	◆
AFR61950-160	16	16	24	92	1.0	5	◆
AFR61950-200	20	20	30	104	1.0	5	◆

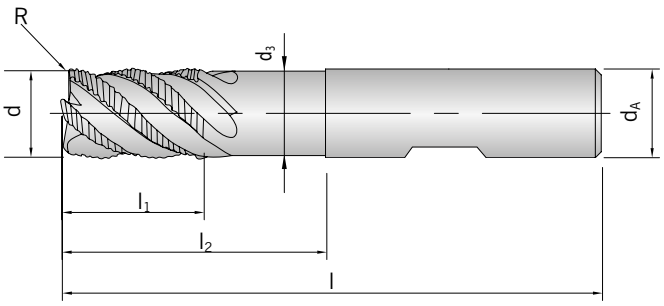
HC = Carbide coated

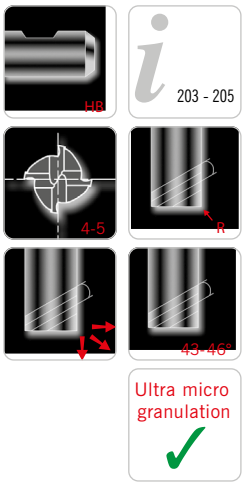
P	●
M	
K	●
N	
S	○
H	

● **Main application**
○ **Secondary application**

AFR619.1-...

4 - 5 flutes, extra long design





Shank DIN 6535HB	d *-0,05*	d_A *h6*	d_3	l_1	l_2	l	R	z	HC TiAlN
AFR61941-060	6	6	5.5	9	18	57	0.5	4	◆
AFR61941-080	8	8	7.5	12	24	63	0.5	4	◆
AFR61941-100	10	10	9.5	15	30	72	0.5	4	◆
AFR61941-120	12	12	11.5	18	36	83	0.5	4	◆
AFR61951-160	16	16	15.5	24	48	100	1.0	5	◆
AFR61951-200	20	20	19.2	30	60	110	1.0	5	◆

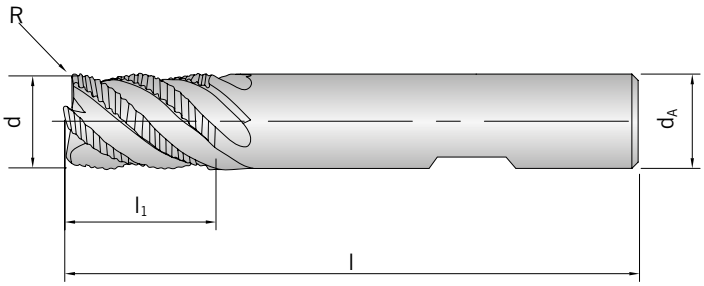
HC = Carbide coated

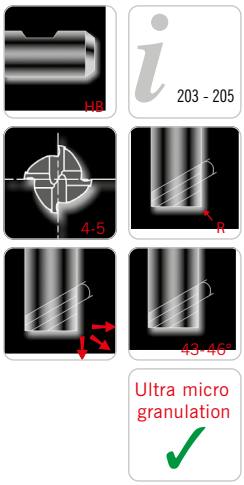
P	●
M	
K	●
N	
S	○
H	

● Main application
○ Secondary application

AFR619.2-...

4 - 5 flutes, long design





Shank DIN 6535HB	d *-0,05*	d_A *h6*	l_1	l	R	z	HC TiAlN
AFR61942-060	6	6	12	57	0.5	4	◆
AFR61942-080	8	8	16	63	0.5	4	◆
AFR61942-100	10	10	20	72	0.5	4	◆
AFR61942-120	12	12	24	83	0.5	4	◆
AFR61952-160	16	16	32	92	1.0	5	◆
AFR61952-200	20	20	40	104	1.0	5	◆

HC = Carbide coated

P	●
M	
K	●
N	
S	○
H	

● Main application

○ Secondary application

Dimensions in mm

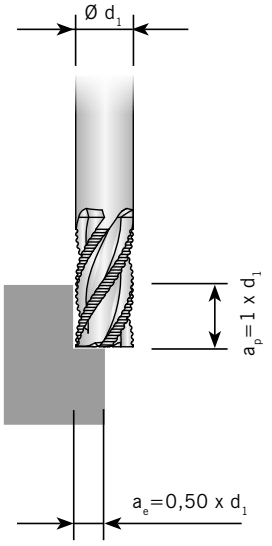
Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Correction factor	Cutting speed V_c (m/min) VHM AlCrN
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	1,2	150 - 175 - 200
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	1,2	140 - 165 - 190
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	1,2	140 - 165 - 190
		C > 0.55 %	annealed	190	639	P4	1,2	140 - 165 - 190
		C > 0.55 %	hardened and tempered	300	1013	P5	1,0	120 - 140 - 160
		Machining steel (short-chipping)	tempered	220	745	P6	1,2	170 - 195 - 220
	Low alloyed steel	annealed		175	591	P7	1,2	100 - 135 - 170
		hardened and tempered		300	1013	P8	1,0	100 - 135 - 170
		hardened and tempered		380	1282	P9	0,8	100 - 130 - 160
		hardened and tempered		430	1477	P10	0,8	100 - 130 - 160
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	1,2	100 - 135 - 170
		hardened		300	1013	P12	-	-
		hardened		400	1361	P13	0,8	80 - 115 - 150
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	-	-
		martensitic, hardened and tempered		330	1114	P15	-	-
M	Stainless steel	austenitic, chilled		200	675	M1	-	-
		austenitic, precipitation-hardened (PH)		300	1013	M2	-	-
		austenitic-ferritic, Duplex		230	778	M3	-	-
K	Malleable cast iron	ferritic		200	675	K1	1,0	100 - 120 - 140
		pearlitic		260	867	K2	0,8	80 - 100 - 120
	Cast iron	low tensile strength		180	602	K3	1,0	100 - 125 - 150
		high tensile strength / austenitic		245	825	K4	1,0	100 - 120 - 140
	Cast iron with nodular graphite	ferritic		155	518	K5	1,0	100 - 120 - 140
		pearlitic		265	885	K6	1,0	80 - 100 - 120
	GGV (CGI)			200	675	K7	1,0	100 - 120 - 140
N	Aluminium alloys long chipping	not heat treatable		30	-	N1	-	-
		heat treatable, heat treated		100	343	N2	-	-
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3	-	-
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4	-	-
		> 12 % Si, not heat treatable		130	447	N5	-	-
	Magnesium alloys			70	250	N6	-	-
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7	-	-
		Brass, Bronze		90	314	N8	-	-
		Cu-alloys, short-chipping		110	382	N9	-	-
		High-tensile, Ampco		300	1013	N10	-	-
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11	-	-
		Duroplastic (without abrasive filling material)		-	-	N12	-	-
		Plastic glas fibre reinforced GFRP		-	-	N13	-	-
		Plastic carbon fibre reinforced CFRP		-	-	N14	-	-
		Plastic aramid fibre reinforced AFRP		-	-	N15	-	-
		Graphite (tech.)		80 Shore	-	N16	-	-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1	0,7	30 - 60 - 90
			heat treated	280	943	S2	0,7	30 - 60 - 90
		Ni- or Co-alloyed	annealed	250	839	S3	0,9	30 - 50 - 70
			heat treated	350	1177	S4	0,7	30 - 55 - 80
			casting	320	1076	S5	0,7	30 - 50 - 70
	Titanium alloys	Pure titan		200	675	S6	1,0	50 - 85 - 120
		α- and β-alloys, heat treated		375	1262	S7	1,0	40 - 75 - 110
		β-alloys		410	1396	S8	1,0	40 - 75 - 110
	Wolfram alloys			300	1013	S9	-	-
	Molybdän alloys			300	1013	S10	-	-
H	Hardened steel	hardened		50 HRC	-	H1	-	-
		hardened		55 HRC	-	H2	-	-
		hardened		60 HRC	-	H3	-	-
	Hardened cast iron	hardened		55 HRC	-	H4	-	-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Solid carbide end-mill

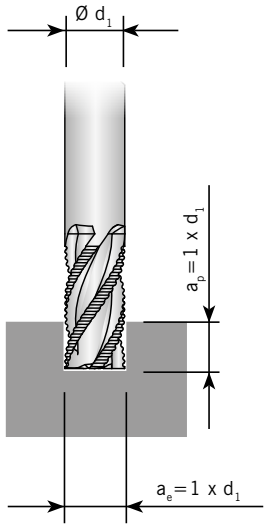
Feed per tooth with radial depth of cut of 50 % of the cutter (ø d_1)

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5
6	0,030	0,021	0,024	0,027	0,033	0,036	0,045
8	0,050	0,035	0,040	0,045	0,055	0,060	0,075
10	0,060	0,042	0,045	0,055	0,066	0,072	0,090
12	0,070	0,049	0,056	0,063	0,077	0,084	0,105
16	0,090	0,034	0,072	0,081	0,099	0,108	0,135
20	0,120	0,084	0,090	0,108	0,132	0,144	0,180



Feed per tooth when full slot milling ➜ ap = 1 x d_1

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5
6	0,028	0,020	0,022	0,025	0,031	0,035	0,042
8	0,040	0,028	0,032	0,036	0,044	0,048	0,060
10	0,050	0,035	0,040	0,045	0,055	0,060	0,075
12	0,060	0,042	0,048	0,054	0,066	0,072	0,090
16	0,080	0,056	0,064	0,072	0,088	0,096	0,120
20	0,100	0,070	0,089	0,090	0,110	0,120	0,150

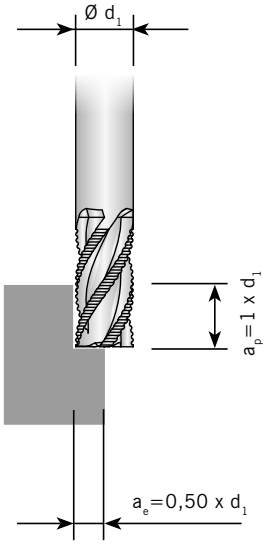


Attention:
Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with ap = 1 x d_1 -> 1,2 with ap = 0,5 x d_1

PM-HSS end-mill

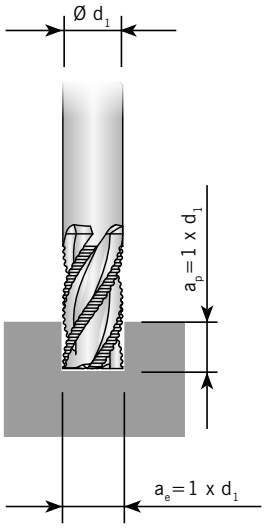
Feed per tooth with radial depth of cut of 50 % of the cutter (ø d_1)

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5
6	0,022	0,015	0,018	0,020	0,024	0,026	0,033
8	0,030	0,021	0,024	0,027	0,030	0,035	0,045
10	0,039	0,027	0,030	0,035	0,042	0,047	0,060
12	0,047	0,033	0,037	0,042	0,050	0,056	0,070
16	0,066	0,046	0,052	0,060	0,070	0,080	0,100
20	0,084	0,059	0,067	0,075	0,092	0,100	0,130



Feed per tooth when full slot milling ➜ ap = 1 x d_1

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5
6	0,019	0,013	0,015	0,017	0,020	0,023	0,025
8	0,026	0,018	0,020	0,023	0,028	0,031	0,040
10	0,034	0,029	0,028	0,030	0,037	0,041	0,050
12	0,041	0,029	0,033	0,037	0,045	0,049	0,060
16	0,057	0,040	0,046	0,050	0,063	0,070	0,080
20	0,073	0,050	0,060	0,065	0,080	0,090	0,110



Attention:
Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with ap = 1 x d_1 -> 1,2 with ap = 0,5 x d_1

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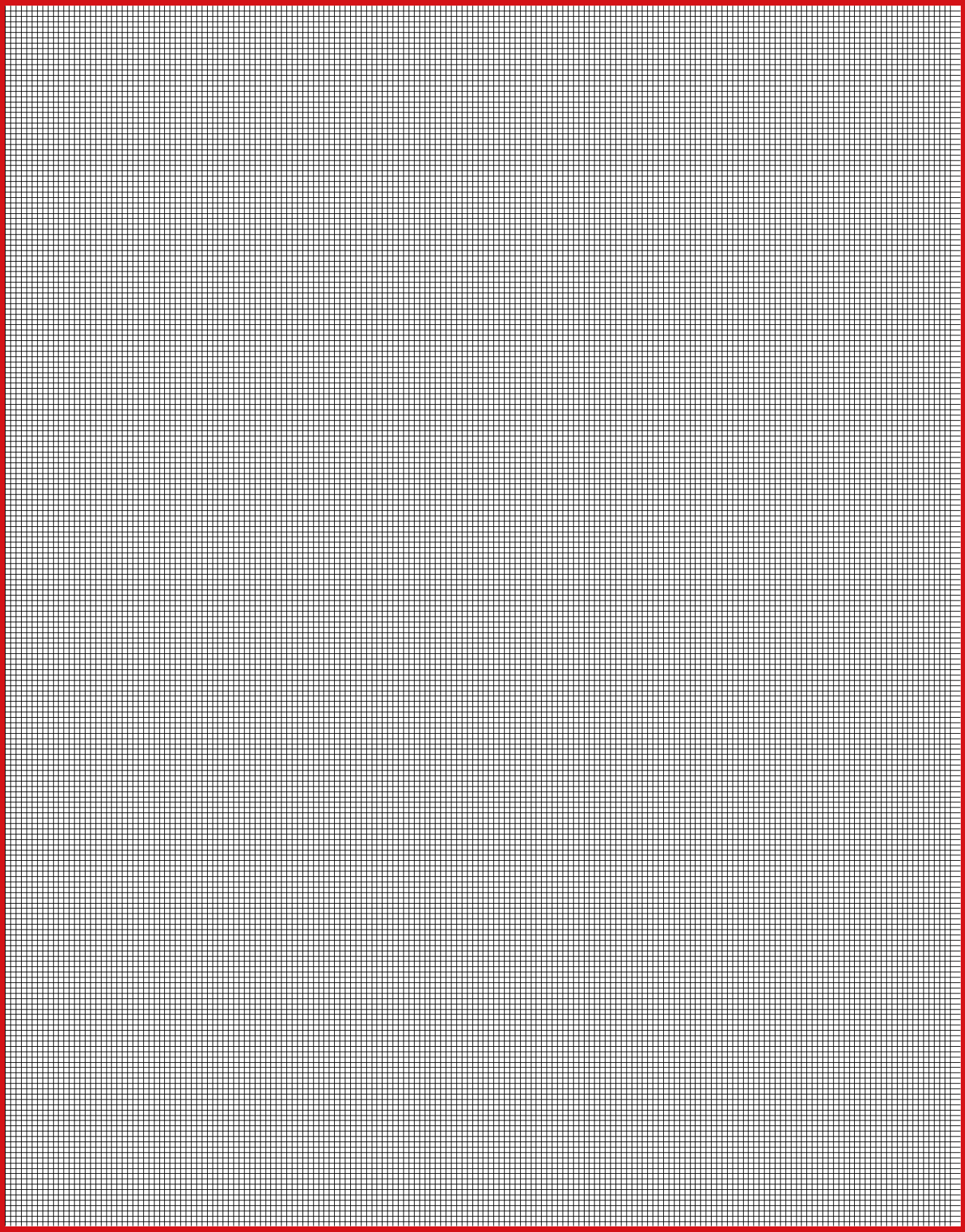
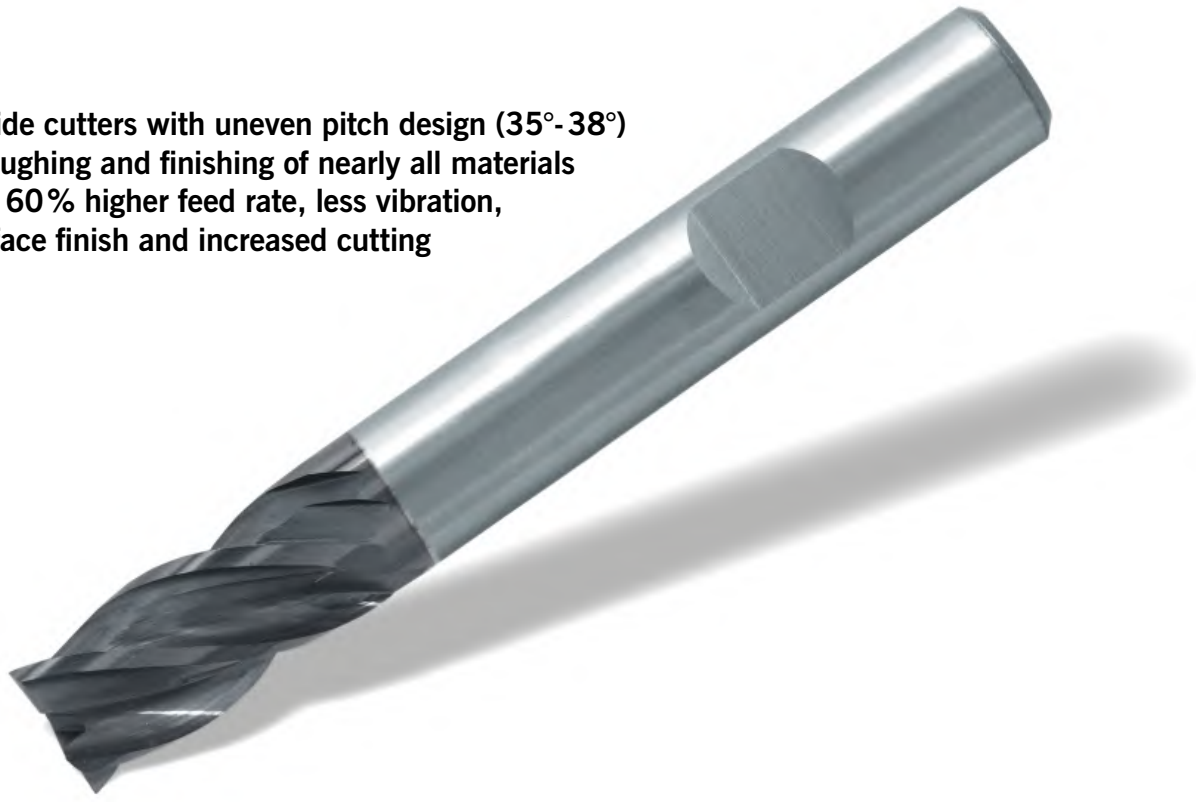


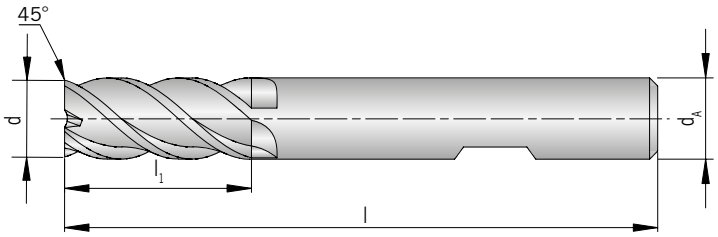
GENERAL PURPOSE HIGH PERFORMANCE FOR ROUGHING AND FINISHING.

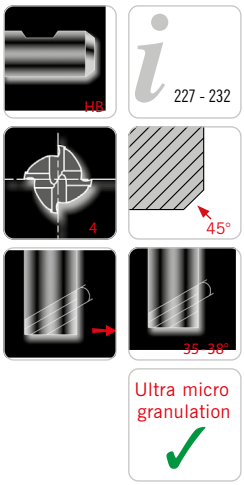
Solid carbide cutters with uneven pitch design (35°-38°) for both roughing and finishing of nearly all materials with up to 60% higher feed rate, less vibration, better surface finish and increased cutting depth.



AFV61840-...

4 flutes, short design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	Chamfer	HC TiAlN
AFV61840-030	3	6	7	54	0,1 x 45°	◆
AFV61840-040	4	6	8	54	0,15 x 45°	◆
AFV61840-050	5	6	10	54	0,15 x 45°	◆
AFV61840-060	6	6	10	54	0,2 x 45°	◆
AFV61840-080	8	8	12	58	0,2 x 45°	◆
AFV61840-100	10	10	14	66	0,3 x 45°	◆
AFV61840-120	12	12	16	73	0,35 x 45°	◆
AFV61840-140	14	14	18	75	0,4 x 45°	◆
AFV61840-160	16	16	22	82	0,4 x 45°	◆
AFV61840-180	18	18	24	84	0,5 x 45°	◆
AFV61840-200	20	20	26	92	0,5 x 45°	◆

HC = Carbide coated

P	○
M	●
K	○
N	
S	○
H	

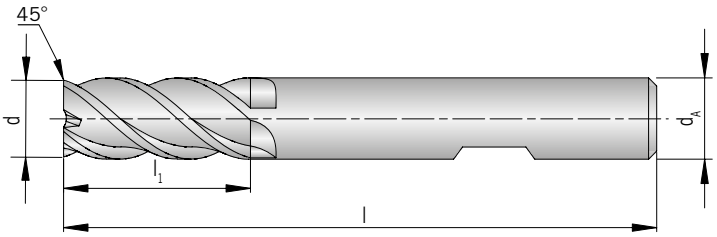
● Main application

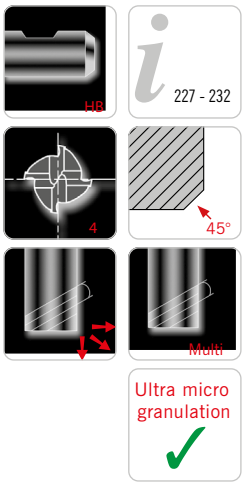
○ Secondary application

Dimensions in mm

AFV61840-...

4 flutes, short design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	Chamfer	HC S100
AFV61840-030	3	6	7	54	0,1 x 45°	◆
AFV61840-040	4	6	8	54	0,15 x 45°	◆
AFV61840-050	5	6	10	54	0,15 x 45°	◆
AFV61840-060	6	6	10	54	0,2 x 45°	◆
AFV61840-080	8	8	12	58	0,2 x 45°	◆
AFV61840-100	10	10	14	66	0,3 x 45°	◆
AFV61840-120	12	12	16	73	0,35 x 45°	◆
AFV61840-140	14	14	18	75	0,4 x 45°	◆
AFV61840-160	16	16	22	82	0,4 x 45°	◆
AFV61840-180	18	18	24	84	0,5 x 45°	◆
AFV61840-200	20	20	26	92	0,5 x 45°	◆

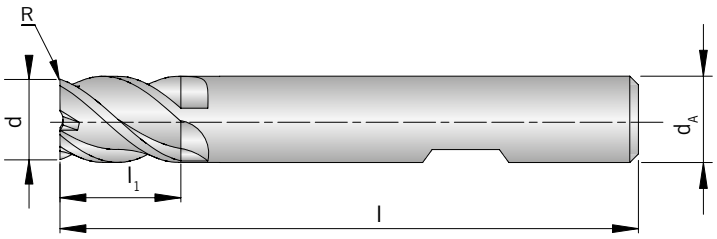
HC = Carbide coated

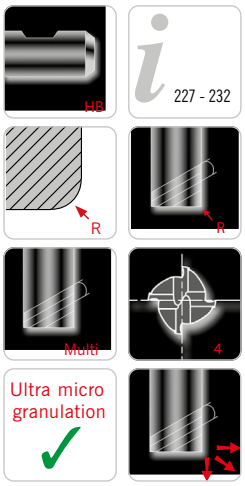
P	●
M	●
K	●
N	
S	●
H	

● Main application
○ Secondary application

AFV61840-...R...

4 flutes, short design, with corner radius





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	R	HC S100
AFV61840-030R0,3	3	6	7	54	0.3	◆
AFV61840-030R0,5	3	6	7	54	0.5	◆
AFV61840-040R0,3	4	6	8	54	0.3	◆
AFV61840-040R0,5	4	6	8	54	0.5	◆
AFV61840-050R0,3	5	6	10	54	0.3	◆
AFV61840-050R0,5	5	6	10	54	0.5	◆
AFV61840-060R0,3	6	6	10	54	0.3	◆
AFV61840-060R0,5	6	6	10	54	0.5	◆
AFV61840-060R1,0	6	6	10	54	1.0	◆
AFV61840-080R0,5	8	8	12	58	0.5	◆
AFV61840-080R1,0	8	8	12	58	1.0	◆
AFV61840-100R0,5	10	10	14	66	0.5	◆
AFV61840-100R1,0	10	10	14	66	1.0	◆
AFV61840-120R0,5	12	12	16	73	0.5	◆
AFV61840-120R1,0	12	12	16	73	1.0	◆
AFV61840-120R2,0	12	12	16	73	2.0	◆
AFV61840-140R0,5	14	14	18	75	0.5	◆
AFV61840-160R1,0	16	16	22	82	1.0	◆
AFV61840-160R2,0	16	16	22	82	2.0	◆
AFV61840-160R3,0	16	16	22	82	3.0	◆
AFV61840-180R1,0	18	18	24	84	1.0	◆
AFV61840-200R1,0	20	20	26	92	1.0	◆
AFV61840-200R2,0	20	20	26	92	2.0	◆
AFV61840-200R3,0	20	20	26	92	3.0	◆

HC = Carbide coated

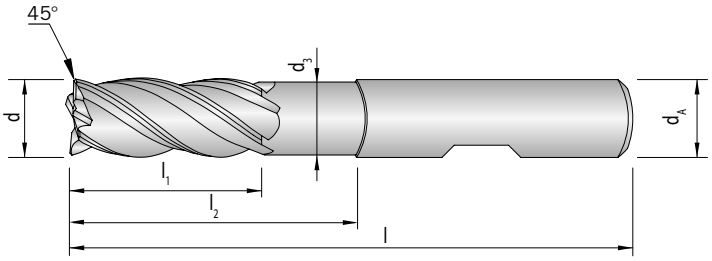
P	●
M	●
K	●
N	
S	●
H	

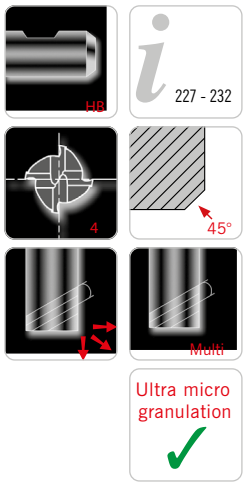
● Main application
○ Secondary application

Dimensions in mm

AFV62342-...

4 flutes, short design





with extended neck

Shank DIN 6535HB	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	Chamfer	HC S100
AFV62342-030A	3	6	2.7	7	12	54	0,1 x 45°	◆
AFV62342-030B	3	6	2.7	7	17	57	0,1 x 45°	◆
AFV62342-030C	3	6	2.7	8	14	57	0,1 x 45°	◆
AFV62342-040A	4	6	3.7	8	15	57	0,15 x 45°	◆
AFV62342-040B	4	6	3.7	8	22	63	0,15 x 45°	◆
AFV62342-040C	4	6	3.7	11	16	57	0,15 x 45°	◆
AFV62342-050A	5	6	4.7	10	17	57	0,15 x 45°	◆
AFV62342-050B	5	6	4.7	10	27	67	0,15 x 45°	◆
AFV62342-050C	5	6	4.7	13	18	57	0,15 x 45°	◆
AFV62342-060A	6	6	5.5	10	15	57	0,2 x 45°	◆
AFV62342-060B	6	6	5.5	10	20	62	0,2 x 45°	◆
AFV62342-060C	6	6	5.5	10	32	74	0,2 x 45°	◆
AFV62342-060D	6	6	5.5	13	21	57	0,2 x 45°	◆
AFV62342-080A	8	8	7.5	12	20	63	0,2 x 45°	◆
AFV62342-080B	8	8	7.5	12	30	73	0,2 x 45°	◆
AFV62342-080C	8	8	7.5	19	27	63	0,2 x 45°	◆
AFV62342-080D	8	8	7.5	12	46	90	0,2 x 45°	◆
AFV62342-100A	10	10	9.2	14	25	72	0,3 x 45°	◆
AFV62342-100B	10	10	9.2	14	35	82	0,3 x 45°	◆
AFV62342-100C	10	10	9.2	22	32	72	0,3 x 45°	◆
AFV62342-100D	10	10	9.2	14	55	102	0,3 x 45°	◆
AFV62342-120A	12	12	11.0	16	30	83	0,35 x 45°	◆
AFV62342-120B	12	12	11.0	16	40	93	0,35 x 45°	◆
AFV62342-120C	12	12	11.0	26	38	83	0,35 x 45°	◆
AFV62342-120D	12	12	11.0	16	64	117	0,35 x 45°	◆
AFV62342-160A	16	16	15.0	22	38	92	0,4 x 45°	◆
AFV62342-160B	16	16	15.0	32	44	92	0,4 x 45°	◆
AFV62342-160C	16	16	15.0	22	55	109	0,4 x 45°	◆
AFV62342-160D	16	16	15.0	22	87	141	0,4 x 45°	◆

with extended neck

Shank DIN 6535HB	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	Chamfer	HC S100
AFV62342-200A	20	20	19.0	26	50	104	0,5 x 45°	◆
AFV62342-200B	20	20	19.0	38	54	104	0,5 x 45°	◆
AFV62342-200C	20	20	19.0	26	70	124	0,5 x 45°	◆
AFV62342-200D	20	20	19.0	26	110	164	0,5 x 45°	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	●
H	

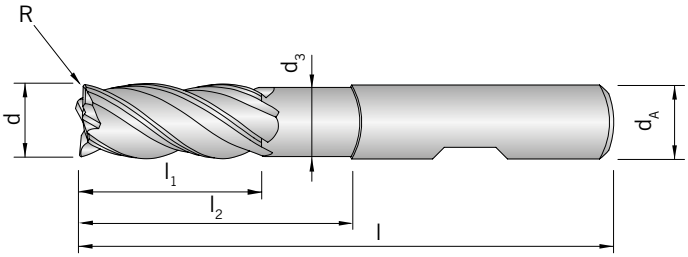
● Main application

○ Secondary application

Dimensions in mm

AFV62342-...R...

4 flutes, short design, with corner radius



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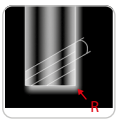
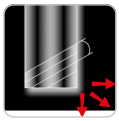




Ultra micro granulation ✓

with extended neck

Shank DIN 6535HB	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	R	HC S100
AFV62342-030AR0,3	3	6	2.7	7	12	54	0.3	◆
AFV62342-030AR0,5	3	6	2.7	7	12	54	0.5	◆
AFV62342-030BR0,3	3	6	2.7	7	17	57	0.3	◆
AFV62342-030BR0,5	3	6	2.7	7	17	57	0.5	◆
AFV62342-040AR0,3	4	6	3.7	8	15	57	0.3	◆
AFV62342-040AR0,5	4	6	3.7	8	15	57	0.5	◆
AFV62342-040BR0,3	4	6	3.7	8	22	63	0.3	◆
AFV62342-040BR0,5	4	6	3.7	8	22	63	0.5	◆
AFV62342-050AR0,3	5	6	4.7	10	17	57	0.3	◆
AFV62342-050AR0,5	5	6	4.7	10	17	57	0.5	◆
AFV62342-050BR0,3	5	6	4.7	10	27	67	0.3	◆
AFV62342-050BR0,5	5	6	4.7	10	27	67	0.5	◆
AFV62342-060AR0,3	6	6	5.5	10	15	57	0.3	◆
AFV62342-060AR0,5	6	6	5.5	10	15	57	0.5	◆
AFV62342-060AR1,0	6	6	5.5	10	15	57	1.0	◆
AFV62342-060BR0,3	6	6	5.5	10	20	62	0.3	◆
AFV62342-060BR0,5	6	6	5.5	10	20	62	0.5	◆
AFV62342-060BR1,0	6	6	5.5	10	20	62	1.0	◆
AFV62342-060CR0,3	6	6	5.5	10	32	74	0.3	◆
AFV62342-060CR0,5	6	6	5.5	10	32	74	0.5	◆
AFV62342-060CR1,0	6	6	5.5	10	32	74	1.0	◆
AFV62342-080AR0,5	8	8	7.5	12	20	63	0.5	◆
AFV62342-080AR1,0	8	8	7.5	12	20	63	1.0	◆
AFV62342-080BR0,5	8	8	7.5	12	30	73	0.5	◆
AFV62342-080BR1,0	8	8	7.5	12	30	73	1.0	◆
AFV62342-080CR0,5	8	8	7.5	12	46	90	0.5	◆
AFV62342-080CR1,0	8	8	7.5	12	46	90	1.0	◆
AFV62342-100AR0,5	10	10	9.2	14	25	72	0.5	◆
AFV62342-100AR1,0	10	10	9.2	14	25	72	1.0	◆
AFV62342-100BR0,5	10	10	9.2	14	35	82	0.5	◆
AFV62342-100BR1,0	10	10	9.2	14	35	82	1.0	◆
AFV62342-100CR0,5	10	10	9.2	14	55	102	0.5	◆
AFV62342-100CR1,0	10	10	9.2	14	55	102	1.0	◆
AFV62342-120AR0,5	12	12	11.0	16	30	83	0.5	◆
AFV62342-120AR1,0	12	12	11.0	16	30	83	1.0	◆

with extended neck

Shank DIN 6535HB	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	R	HC S100
AFV62342-120AR2,0	12	12	11.0	16	30	83	2.0	◆
AFV62342-120BR0,5	12	12	11.0	16	40	93	0.5	◆
AFV62342-120BR1,0	12	12	11.0	16	40	93	1.0	◆
AFV62342-120BR2,0	12	12	11.0	16	40	93	2.0	◆
AFV62342-120CR0,5	12	12	11.0	16	64	117	0.5	◆
AFV62342-120CR1,0	12	12	11.0	16	64	117	1.0	◆
AFV62342-120CR2,0	12	12	11.0	16	64	117	2.0	◆
AFV62342-160AR1,0	16	16	15.0	22	38	92	1.0	◆
AFV62342-160AR2,0	16	16	15.0	22	38	92	2.0	◆
AFV62342-160AR3,0	16	16	15.0	22	38	92	3.0	◆
AFV62342-160BR1,0	16	16	15.0	22	55	109	1.0	◆
AFV62342-160BR2,0	16	16	15.0	22	55	109	2.0	◆
AFV62342-160BR3,0	16	16	15.0	22	55	109	3.0	◆
AFV62342-160CR1,0	16	16	15.0	22	87	141	1.0	◆
AFV62342-160CR2,0	16	16	15.0	22	87	141	2.0	◆
AFV62342-160CR3,0	16	16	15.0	22	87	141	3.0	◆
AFV62342-200AR1,0	20	20	19.0	26	50	104	1.0	◆
AFV62342-200AR2,0	20	20	19.0	26	50	104	2.0	◆
AFV62342-200AR3,0	20	20	19.0	26	50	104	3.0	◆
AFV62342-200BR1,0	20	20	19.0	26	70	124	1.0	◆
AFV62342-200BR2,0	20	20	19.0	26	70	124	2.0	◆
AFV62342-200BR3,0	20	20	19.0	26	70	124	3.0	◆
AFV62342-200CR1,0	20	20	19.0	26	110	164	1.0	◆
AFV62342-200CR2,0	20	20	19.0	26	110	164	2.0	◆
AFV62342-200CR3,0	20	20	19.0	26	110	164	3.0	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	●
H	

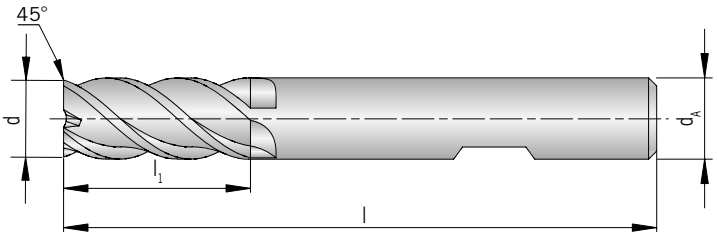
● Main application

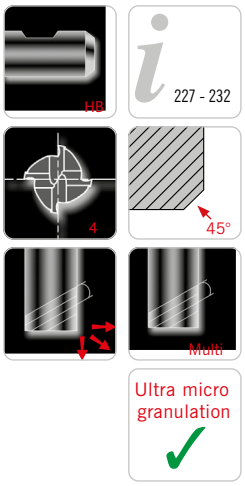
○ Secondary application

Dimensions in mm

AFV61841-...

4 flutes, long design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	Chamfer	HC S100
AFV61841-030	3	6	8	57	0,1 x 45°	◆
AFV61841-040	4	6	11	57	0,15 x 45°	◆
AFV61841-050	5	6	13	57	0,15 x 45°	◆
AFV61841-060	6	6	13	57	0,2 x 45°	◆
AFV61841-080	8	8	19	63	0,2 x 45°	◆
AFV61841-100	10	10	22	72	0,3 x 45°	◆
AFV61841-120	12	12	26	83	0,35 x 45°	◆
AFV61841-140	14	14	26	83	0,4 x 45°	◆
AFV61841-160	16	16	32	92	0,4 x 45°	◆
AFV61841-180	18	18	32	92	0,5 x 45°	◆
AFV61841-200	20	20	38	104	0,5 x 45°	◆
AFV61841-250	25	25	38	104	0,5 x 45°	◆

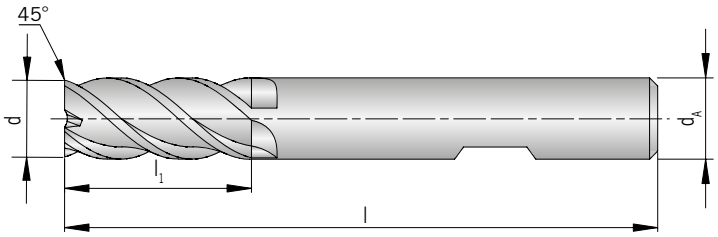
HC = Carbide coated

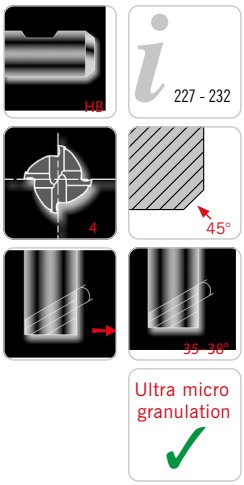
P	●
M	●
K	●
N	
S	●
H	

● Main application
○ Secondary application

AFV61841-...

4 flutes, long design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	Chamfer	HC TiAlN
AFV61841-030	3	6	8	57	0,1 x 45°	◆
AFV61841-040	4	6	11	57	0,15 x 45°	◆
AFV61841-050	5	6	13	57	0,15 x 45°	◆
AFV61841-060	6	6	13	57	0,2 x 45°	◆
AFV61841-080	8	8	19	63	0,2 x 45°	◆
AFV61841-100	10	10	22	72	0,3 x 45°	◆
AFV61841-120	12	12	26	83	0,35 x 45°	◆
AFV61841-140	14	14	26	83	0,4 x 45°	◆
AFV61841-160	16	16	32	92	0,4 x 45°	◆
AFV61841-180	18	18	32	92	0,5 x 45°	◆
AFV61841-200	20	20	38	104	0,5 x 45°	◆
AFV61841-250	25	25	38	104	0,5 x 45°	◆

HC = Carbide coated

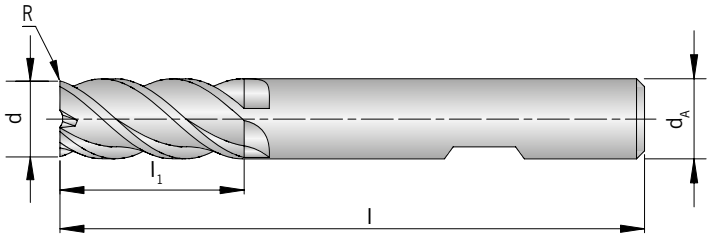
P	○
M	●
K	○
N	
S	○
H	

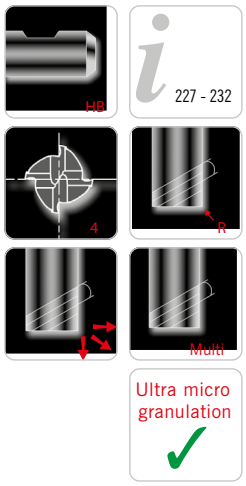
● Main application
○ Secondary application

Dimensions in mm

AFV61841-...R...

4 flutes, long design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	R	HC S100
AFV61841-030R0,3	3	6	8	57	0.3	◆
AFV61841-030R0,5	3	6	8	57	0.5	◆
AFV61841-040R0,3	4	6	11	57	0.3	◆
AFV61841-040R0,5	4	6	11	57	0.5	◆
AFV61841-050R0,3	5	6	13	57	0.3	◆
AFV61841-050R0,5	5	6	13	57	0.5	◆
AFV61841-060R0,3	6	6	13	57	0.3	◆
AFV61841-060R0,5	6	6	13	57	0.5	◆
AFV61841-060R1,0	6	6	13	57	1.0	◆
AFV61841-080R0,5	8	8	19	63	0.5	◆
AFV61841-080R1,0	8	8	19	63	1.0	◆
AFV61841-100R0,5	10	10	22	72	0.5	◆
AFV61841-100R1,0	10	10	22	72	1.0	◆
AFV61841-120R0,5	12	12	26	83	0.5	◆
AFV61841-120R1,0	12	12	26	83	1.0	◆
AFV61841-120R2,0	12	12	26	83	2.0	◆
AFV61841-140R0,5	14	14	26	83	0.5	◆
AFV61841-160R1,0	16	16	32	92	1.0	◆
AFV61841-160R2,0	16	16	32	92	2.0	◆
AFV61841-160R3,0	16	16	32	92	3.0	◆
AFV61841-180R1,0	18	18	32	92	1.0	◆
AFV61841-200R1,0	20	20	38	104	1.0	◆
AFV61841-200R2,0	20	20	38	104	2.0	◆
AFV61841-200R3,0	20	20	38	104	3.0	◆
AFV61841-250R1,0	25	25	38	104	1.0	◆

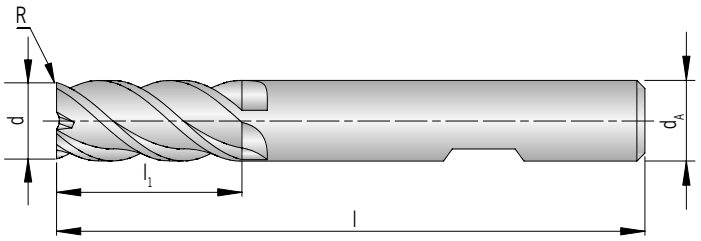
HC = Carbide coated

P	●
M	●
K	●
N	
S	●
H	

● Main application
○ Secondary application

AFV61841-...R...

4 flutes, long design



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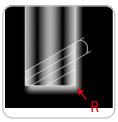
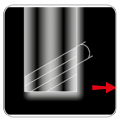
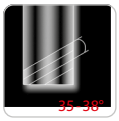






Ultra micro granulation ✓

Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	R *± 0,03*	HC TiAlN
AFV61841-100R1,5	10	10	22	72	1.5	◆
AFV61841-100R3,0	10	10	22	72	3.0	◆
AFV61841-160R1,5	16	16	32	92	1.5	◆
AFV61841-160R2,0	16	16	32	92	2.0	◆
AFV61841-160R3,0	16	16	32	92	3.0	◆
AFV61841-200R2,0	20	20	38	104	2.0	◆
AFV61841-200R3,0	20	20	38	104	3.0	◆
AFV61841-250R3,0	25	25	38	104	3.0	◆

HC = Carbide coated

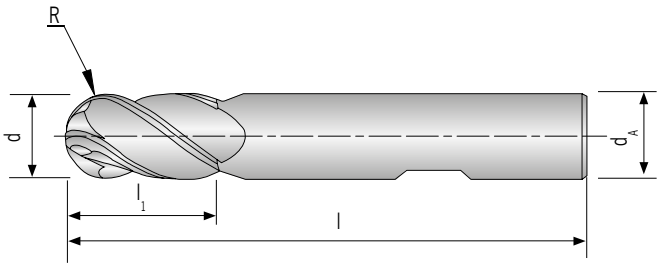
P	○
M	●
K	○
N	
S	○
H	

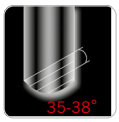
● Main application
○ Secondary application

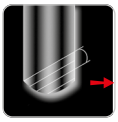
Dimensions in mm

AFV60341-...

4 flutes, long design







Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	R *± 0,01*	HC TiAlN
AFV60341-030	3	6	8	57	1.5	◆
AFV60341-040	4	6	11	57	2.0	◆
AFV60341-050	5	6	13	57	2.5	◆
AFV60341-060	6	6	13	57	3.0	◆
AFV60341-080	8	8	19	63	4.0	◆
AFV60341-100	10	10	22	72	5.0	◆
AFV60341-120	12	12	26	83	6.0	◆
AFV60341-160	16	16	32	92	8.0	◆
AFV60341-200	20	20	38	104	10.0	◆
AFV60341-250	25	25	38	104	12.5	◆

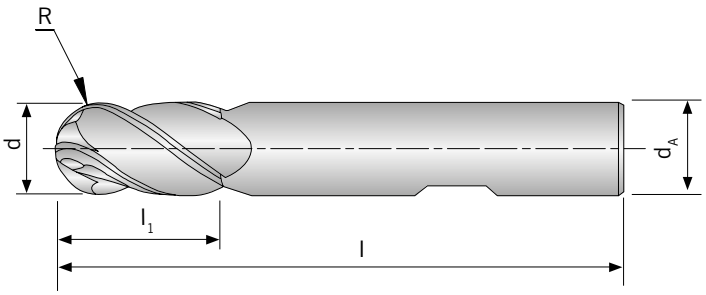
HC = Carbide coated

P	○
M	●
K	○
N	
S	○
H	

● Main application
○ Secondary application

AFV61646-...

4 flutes, long design



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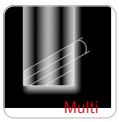
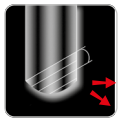


Ultra micro granulation ✓



Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	R *± 0,02*	HC S100
AFV61646-030	3	6	8	57	1.5	◆
AFV61646-040	4	6	11	57	2.0	◆
AFV61646-050	5	6	13	57	2.5	◆
AFV61646-060	6	6	13	57	3.0	◆
AFV61646-080	8	8	19	63	4.0	◆
AFV61646-100	10	10	22	72	5.0	◆
AFV61646-120	12	12	26	83	6.0	◆
AFV61646-160	16	16	32	92	8.0	◆
AFV61646-200	20	20	38	104	10.0	◆
AFV61646-250	25	25	38	104	12.5	◆

HC = Carbide coated

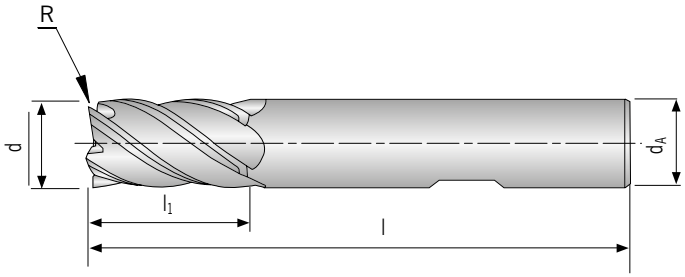
P	●
M	●
K	●
N	
S	●
H	

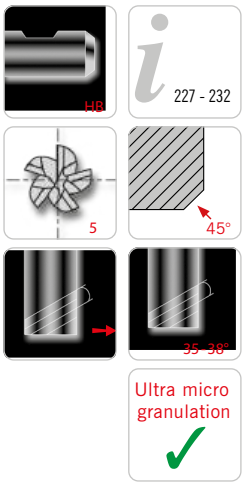
● Main application
○ Secondary application

Dimensions in mm

AFV61851-...

5 flutes, long design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	Chamfer	HC TiAlN
AFV61851-060	6	6	13	57	0,1 x 45°	◆
AFV61851-080	8	8	19	63	0,1 x 45°	◆
AFV61851-100	10	10	22	72	0,1 x 45°	◆
AFV61851-120	12	12	26	83	0,1 x 45°	◆
AFV61851-140	14	14	26	83	0,2 x 45°	◆
AFV61851-160	16	16	32	92	0,2 x 45°	◆
AFV61851-180	18	18	32	92	0,2 x 45°	◆
AFV61851-200	20	20	38	104	0,2 x 45°	◆
AFV61851-250	25	25	38	104	0,2 x 45°	◆

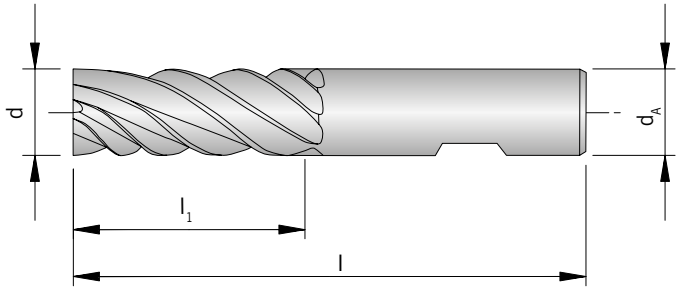
HC = Carbide coated

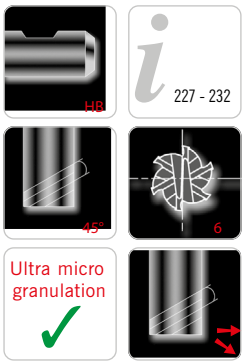
P	○
M	●
K	○
N	
S	○
H	

● Main application
○ Secondary application

AFV60266-...

6 flutes, long design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC S100
AFV60266-060	6	6	13	57	◆
AFV60266-080	8	8	19	63	◆
AFV60266-100	10	10	22	72	◆
AFV60266-120	12	12	26	83	◆
AFV60266-160	16	16	32	92	◆
AFV60266-200	20	20	38	104	◆
AFV60266-250	25	25	44	104	◆

HC = Carbide coated

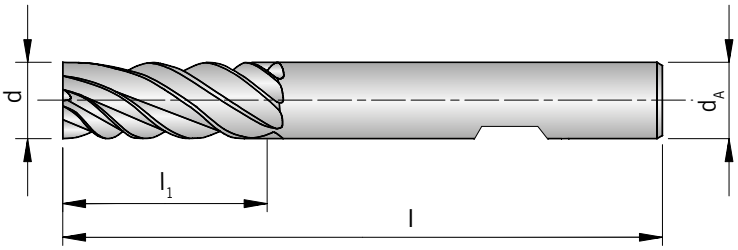
P	●
M	●
K	●
N	
S	●
H	

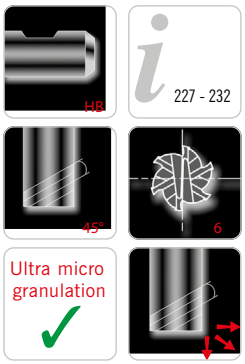
● Main application
○ Secondary application

Dimensions in mm

AFV60262-...

6 flutes, extra long design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	HC S100
AFV60262-060	6	6	24	75	◆
AFV60262-080	8	8	32	75	◆
AFV60262-100	10	10	40	100	◆
AFV60262-120	12	12	48	120	◆
AFV60262-160	16	16	64	140	◆
AFV60262-200	20	20	80	150	◆
AFV60262-250	25	25	100	170	◆

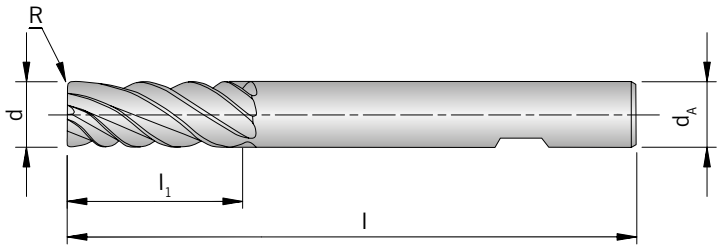
HC = Carbide coated

P	●
M	●
K	●
N	
S	●
H	

● Main application
○ Secondary application

AFV60861-...R...

6 flutes, long design, with corner radius



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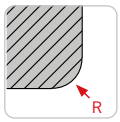
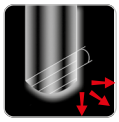
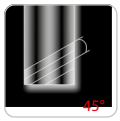






Ultra micro granulation ✓

Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	R	HC S100
AFV60861-060R0,5	6	6	13	57	0.5	◆
AFV60861-060R1,0	6	6	13	57	1.0	◆
AFV60861-080R0,5	8	8	19	63	0.5	◆
AFV60861-080R1,0	8	8	19	63	1.0	◆
AFV60861-100R0,5	10	10	22	72	0.5	◆
AFV60861-100R1,0	10	10	22	72	1.0	◆
AFV60861-100R1,5	10	10	22	72	1.5	◆
AFV60861-100R2,0	10	10	22	72	2.0	◆
AFV60861-120R0,5	12	12	26	83	0.5	◆
AFV60861-120R1,0	12	12	26	83	1.0	◆
AFV60861-120R1,5	12	12	26	83	1.5	◆
AFV60861-120R2,0	12	12	26	83	2.0	◆
AFV60861-120R3,0	12	12	26	83	3.0	◆
AFV60861-160R1,0	16	16	32	92	1.0	◆
AFV60861-160R1,5	16	16	32	92	1.5	◆
AFV60861-160R2,0	16	16	32	92	2.0	◆
AFV60861-160R3,0	16	16	32	92	3.0	◆
AFV60861-200R1,0	20	20	38	104	1.0	◆
AFV60861-200R1,5	20	20	38	104	1.5	◆
AFV60861-200R2,0	20	20	38	104	2.0	◆
AFV60861-200R3,0	20	20	38	104	3.0	◆
AFV60861-250R1,0	25	25	44	104	1.0	◆
AFV60861-250R1,5	25	25	44	104	1.5	◆
AFV60861-250R2,0	25	25	44	104	2.0	◆
AFV60861-250R3,0	25	25	44	104	3.0	◆

HC = Carbide coated

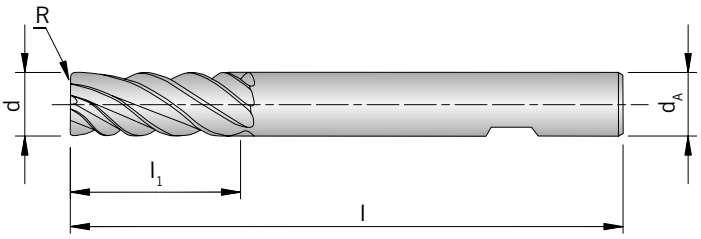
P	●
M	●
K	●
N	
S	●
H	

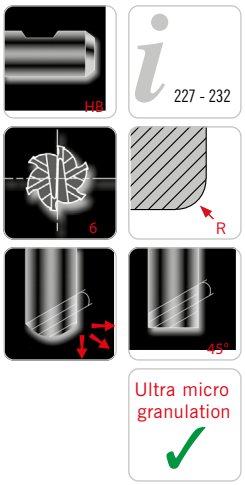
● **Main application**
○ **Secondary application**

Dimensions in mm

AFV60862-...R...

6 flutes, extra long design, with corner radius





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	R	HC S100
AFV60862-060R0,5	6	6	24	75	0.5	◆
AFV60862-060R1,0	6	6	24	75	1.0	◆
AFV60862-080R0,5	8	8	32	75	0.5	◆
AFV60862-080R1,0	8	8	32	75	1.0	◆
AFV60862-080R2,0	8	8	32	75	2.0	◆
AFV60862-100R0,5	10	10	40	100	0.5	◆
AFV60862-100R1,0	10	10	40	100	1.0	◆
AFV60862-100R1,5	10	10	40	100	1.5	◆
AFV60862-100R2,0	10	10	40	100	2.0	◆
AFV60862-120R0,5	12	12	48	120	0.5	◆
AFV60862-120R1,0	12	12	48	120	1.0	◆
AFV60862-120R1,5	12	12	48	120	1.5	◆
AFV60862-120R2,0	12	12	48	120	2.0	◆
AFV60862-120R3,0	12	12	48	120	3.0	◆
AFV60862-160R1,0	16	16	64	140	1.0	◆
AFV60862-160R1,5	16	16	64	140	1.5	◆
AFV60862-160R2,0	16	16	64	140	2.0	◆
AFV60862-160R3,0	16	16	64	140	3.0	◆
AFV60862-200R1,0	20	20	80	150	1.0	◆
AFV60862-200R1,5	20	20	80	150	1.5	◆
AFV60862-200R2,0	20	20	80	150	2.0	◆
AFV60862-200R3,0	20	20	80	150	3.0	◆
AFV60862-200R4,0	20	20	80	150	4.0	◆
AFV60862-200R5,0	20	20	80	150	5.0	◆
AFV60862-250R1,0	25	25	100	170	1.0	◆
AFV60862-250R1,5	25	25	100	170	1.5	◆
AFV60862-250R2,0	25	25	100	170	2.0	◆

Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	R	HC S100
AFV60862-250R3,0	25	25	100	170	3.0	◆
AFV60862-250R4,0	25	25	100	170	4.0	◆
AFV60862-250R5,0	25	25	100	170	5.0	◆

HC = Carbide coated

P	●
M	●
K	●
N	
S	●
H	

● Main application

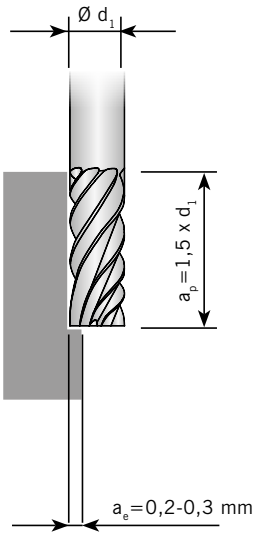
○ Secondary application

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Correction factor	Cutting speed V_c (m/min) VHM S100	Cutting speed V_c (m/min) VHM TIALN
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	1,2	110 - 185 - 260	100 - 170 - 240
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	1,2	110 - 185 - 260	100 - 170 - 240
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	1,2	100 - 180 - 260	90 - 155 - 220
		C > 0.55 %	annealed	190	639	P4	1,2	110 - 185 - 260	100 - 170 - 240
		C > 0.55 %	hardened and tempered	300	1013	P5	1,0	65 - 108 -150	60 - 100 - 140
		Machining steel (short-chipping)	tempered	220	745	P6	1,2	110 - 185 - 260	100 - 170 - 240
	Low alloyed steel	annealed		175	591	P7	1,2	100 - 160 - 220	90 - 145 - 200
		hardened and tempered		300	1013	P8	1,0	100 - 160 - 220	90 - 145 - 200
		hardened and tempered		380	1282	P9	0,8	65 - 98 - 130	60 - 90 - 120
		hardened and tempered		430	1477	P10	0,8	65 - 98 -130	60 - 90 - 120
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	1,2	100 - 160 - 220	90 - 145 - 200
		hardened		300	1013	P12	1,0	90 - 120 - 150	80 - 110 - 140
		hardened		400	1361	P13	0,8	65 - 93 - 120	60 - 85 - 110
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	1,0	55 - 93 - 130	50 - 85 - 120
		martensitic, hardened and tempered		330	1114	P15	0,9	35 - 63 - 90	30 - 55 - 80
M	Stainless steel	austenitic, chilled		200	675	M1	1,0	65 - 98 - 130	60 - 90 - 120
		austenitic, precipitation-hardened (PH)		300	1013	M2	0,9	35 - 63 - 90	30 - 55 - 80
		austenitic-ferritic, Duplex		230	778	M3	1,0	55 - 93 - 130	50 - 85 - 120
K	Malleable cast iron	ferritic		200	675	K1	1,0	90 - 135 - 180	80 - 120 - 160
		pearlitic		260	867	K2	0,8	80 - 125 - 170	70 - 110 - 150
	Cast iron	low tensile strength		180	602	K3	1,0	90 - 135 - 180	80 - 120 - 160
		high tensile strength / austenitic		245	825	K4	1,0	80 - 135 - 190	70 - 110 - 150
	Cast iron with nodular graphite	ferritic		155	518	K5	1,0	90 - 145 - 200	80 - 120 - 160
		pearlitic		265	885	K6	1,0	80 - 125 - 170	70 - 110 - 150
	GGV (CGI)			200	675	K7	1,0	90 - 145 - 200	80 - 120 - 160
N	Aluminium alloys long chipping	not heat treatable		30	-	N1		-	-
		heat treatable, heat treated		100	343	N2		-	-
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3		-	-
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4		-	-
		> 12 % Si, not heat treatable		130	447	N5		-	-
	Magnesium alloys			70	250	N6		-	-
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7		-	-
		Brass, Bronze		90	314	N8		-	-
		Cu-alloys, short-chipping		110	382	N9		-	-
		High-tensile, Ampco		300	1013	N10		-	-
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11		-	-
		Duroplastic (without abrasive filling material)		-	-	N12		-	-
		Plastic glas fibre reinforced GFRP		-	-	N13		-	-
		Plastic carbon fibre reinforced CFRP		-	-	N14		-	-
		Plastic aramid fibre reinforced AFRP		-	-	N15		-	-
		Graphite (tech.)		80 Shore	-	N16		-	-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1	0,7	30 - 60 - 90	30 - 60 - 90
			heat treated	280	943	S2	0,7	30 - 60 - 90	30 - 60 - 90
		Ni- or Co-alloyed	annealed	250	839	S3	0,9	30 - 50 - 70	30 - 50 - 70
			heat treated	350	1177	S4	0,7	30 - 55 - 80	30 - 55 - 80
			casting	320	1076	S5	0,7	30 - 50 - 70	30 - 55 - 80
	Titanium alloys	Pure titan		200	675	S6	1,0	50 - 85 - 120	50 - 85 - 120
		α- and β-alloys, heat treated		375	1262	S7	1,0	40 - 75 - 110	40 - 75 - 110
		β-alloys		410	1396	S8	1,0	40 - 75 - 110	40 - 75 - 110
	Wolfram alloys			300	1013	S9	1,1	-	-
	Molybdän alloys			300	1013	S10	1,0	-	-
H	Hardened steel	hardened		50 HRC	-	H1		-	-
		hardened		55 HRC	-	H2		-	-
		hardened		60 HRC	-	H3		-	-
	Hardened cast iron	hardened		55 HRC	-	H4		-	-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

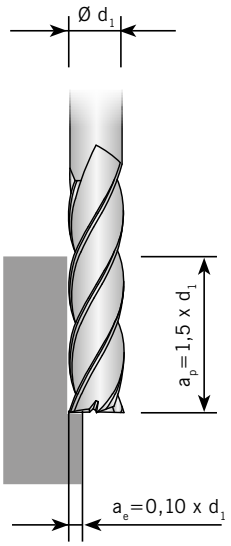
Feed per tooth with radial depth of cut from 0,2 – 0,3 mm

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,004	0,003	0,003	0,004	0,004	0,005	0,006	0,006	0,007	0,008
2	0,008	0,006	0,006	0,007	0,009	0,010	0,012	0,013	0,014	0,015
3	0,012	0,008	0,010	0,011	0,013	0,014	0,018	0,019	0,022	0,023
4	0,016	0,011	0,013	0,014	0,018	0,019	0,024	0,026	0,029	0,030
5	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
6	0,024	0,017	0,019	0,022	0,026	0,029	0,036	0,038	0,043	0,046
8	0,032	0,022	0,026	0,029	0,035	0,038	0,048	0,051	0,058	0,061
10	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
12	0,048	0,034	0,038	0,043	0,053	0,058	0,072	0,077	0,086	0,091
14	0,056	0,039	0,045	0,050	0,062	0,067	0,084	0,090	0,101	0,106
16	0,064	0,045	0,051	0,058	0,070	0,077	0,096	0,102	0,115	0,122
18	0,072	0,050	0,058	0,065	0,079	0,086	0,108	0,115	0,130	0,137
20	0,080	0,056	0,064	0,072	0,088	0,096	0,120	0,128	0,144	0,152
25	0,100	0,070	0,080	0,090	0,110	0,120	0,150	0,160	0,180	0,190



Feed per tooth with radial depth of cut of 10 % of the cutter (ø d_1)

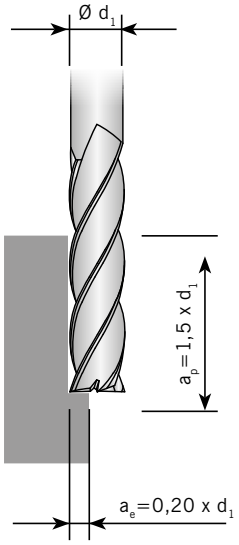
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,003	0,002	0,002	0,003	0,003	0,004	0,005	0,005	0,005	0,006
2	0,008	0,006	0,006	0,007	0,009	0,010	0,012	0,013	0,014	0,015
3	0,012	0,008	0,010	0,011	0,013	0,014	0,018	0,019	0,022	0,023
4	0,014	0,010	0,011	0,013	0,015	0,017	0,021	0,022	0,025	0,027
5	0,017	0,012	0,014	0,015	0,019	0,020	0,026	0,027	0,031	0,032
6	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
8	0,027	0,019	0,022	0,024	0,030	0,032	0,041	0,043	0,049	0,051
10	0,033	0,023	0,026	0,030	0,036	0,040	0,050	0,053	0,059	0,063
12	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
14	0,047	0,033	0,038	0,042	0,052	0,056	0,071	0,075	0,085	0,089
16	0,053	0,037	0,042	0,048	0,058	0,064	0,080	0,085	0,095	0,101
18	0,060	0,042	0,048	0,054	0,066	0,072	0,090	0,096	0,108	0,114
20	0,067	0,047	0,054	0,060	0,074	0,080	0,101	0,107	0,121	0,127
25	0,083	0,058	0,066	0,075	0,091	0,100	0,125	0,133	0,149	0,158



Attention: Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with a_p = 1 x d_1 -> 1,2 with a_p = 0,5 x d_1

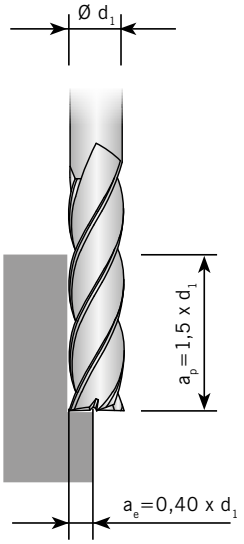
Feed per tooth with radial depth of cut of 20 % of the cutter (ø d_1)

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,002	0,001	0,001	0,001	0,002	0,002	0,003	0,003	0,003	0,003
2	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
3	0,008	0,005	0,006	0,007	0,008	0,009	0,012	0,012	0,014	0,015
4	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
5	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
6	0,015	0,010	0,012	0,013	0,016	0,018	0,022	0,024	0,027	0,028
8	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
10	0,025	0,017	0,020	0,022	0,027	0,030	0,037	0,040	0,045	0,047
12	0,030	0,021	0,024	0,027	0,033	0,036	0,045	0,048	0,054	0,057
14	0,035	0,024	0,028	0,031	0,038	0,042	0,052	0,056	0,063	0,066
16	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
18	0,045	0,031	0,036	0,040	0,049	0,054	0,067	0,072	0,081	0,085
20	0,050	0,035	0,040	0,045	0,055	0,060	0,075	0,080	0,090	0,095
25	0,063	0,044	0,050	0,056	0,069	0,075	0,094	0,100	0,113	0,119



Feed per tooth with radial depth of cut of 40 % of the cutter (ø d_1)

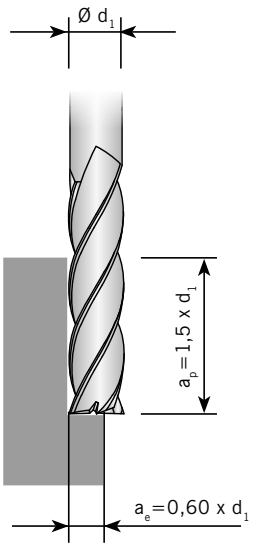
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002	0,003
2	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
3	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
4	0,008	0,005	0,006	0,007	0,008	0,009	0,012	0,012	0,014	0,015
5	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
6	0,012	0,008	0,009	0,010	0,013	0,014	0,018	0,019	0,021	0,022
8	0,016	0,011	0,012	0,014	0,017	0,019	0,024	0,025	0,028	0,030
10	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
12	0,024	0,016	0,019	0,021	0,026	0,028	0,036	0,038	0,043	0,045
14	0,028	0,019	0,022	0,025	0,030	0,033	0,042	0,044	0,050	0,053
16	0,032	0,022	0,025	0,028	0,035	0,038	0,048	0,051	0,057	0,060
18	0,036	0,025	0,028	0,032	0,039	0,043	0,054	0,057	0,064	0,068
20	0,040	0,028	0,032	0,036	0,044	0,048	0,060	0,064	0,072	0,076
25	0,050	0,035	0,040	0,045	0,055	0,060	0,075	0,080	0,090	0,095



Attention: Feed rate correction factor → Kf f_z = 1,10 with a_p = 1 x d_1 and → Kf f_z = 1,25 with a_p = 0,5 x d_1. Feed rates are reduced by 10 - 20 % for uncoated tools.

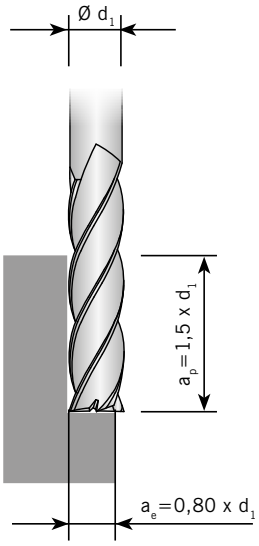
Feed per tooth with radial depth of cut of 60 % of the cutter (ø d_1)

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,005	0,005	0,006
3	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
4	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
5	0,008	0,005	0,006	0,007	0,009	0,010	0,012	0,013	0,015	0,016
6	0,009	0,006	0,007	0,008	0,010	0,011	0,014	0,015	0,017	0,018
8	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
10	0,016	0,011	0,013	0,014	0,017	0,019	0,024	0,026	0,029	0,030
12	0,019	0,013	0,015	0,017	0,021	0,023	0,029	0,031	0,035	0,037
14	0,022	0,015	0,018	0,020	0,025	0,027	0,034	0,036	0,040	0,043
16	0,026	0,018	0,020	0,023	0,028	0,031	0,039	0,041	0,046	0,049
18	0,029	0,020	0,023	0,026	0,032	0,035	0,043	0,046	0,052	0,055
20	0,032	0,022	0,026	0,029	0,035	0,039	0,048	0,052	0,058	0,061
25	0,040	0,028	0,032	0,036	0,045	0,049	0,061	0,065	0,073	0,077



Feed per tooth with radial depth of cut of 80 % of the cutter (ø d_1)

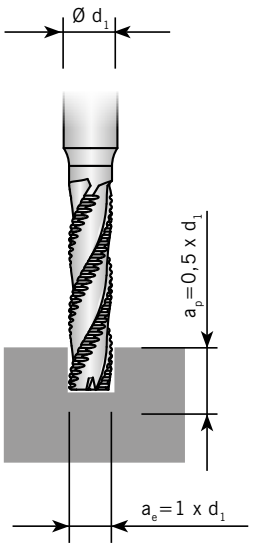
Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001	0,001
2	0,002	0,001	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,004
3	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
4	0,005	0,003	0,004	0,004	0,005	0,006	0,007	0,008	0,009	0,009
5	0,006	0,004	0,005	0,005	0,007	0,007	0,009	0,010	0,011	0,012
6	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,012	0,013	0,014
8	0,010	0,007	0,008	0,009	0,011	0,012	0,015	0,016	0,018	0,019
10	0,012	0,008	0,010	0,011	0,013	0,015	0,018	0,020	0,022	0,023
12	0,015	0,010	0,012	0,013	0,016	0,018	0,022	0,024	0,027	0,028
14	0,017	0,012	0,014	0,015	0,019	0,021	0,026	0,028	0,031	0,033
16	0,020	0,014	0,016	0,018	0,022	0,024	0,030	0,032	0,036	0,038
18	0,022	0,015	0,018	0,020	0,024	0,027	0,033	0,036	0,040	0,042
20	0,025	0,017	0,020	0,022	0,027	0,030	0,037	0,040	0,045	0,047
25	0,031	0,022	0,025	0,028	0,034	0,037	0,047	0,050	0,056	0,059



Attention: Take the correction factor from the table "Cutting speeds".
Correction factor -> 1,1 with a_p = 1 x d_1 -> 1,2 with a_p = 0,5 x d_1

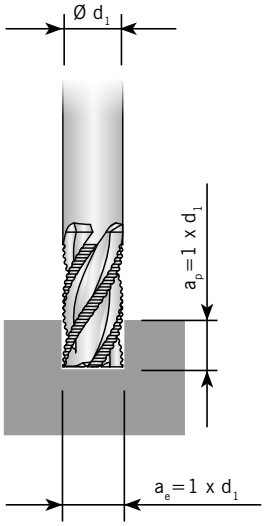
Feed per tooth when full slot milling ➜ ap = 0,5 x d_1

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,002	0,001	0,001	0,001	0,002	0,002	0,003	0,003	0,003	0,003
2	0,004	0,002	0,003	0,003	0,004	0,004	0,006	0,006	0,007	0,007
3	0,007	0,004	0,005	0,006	0,007	0,008	0,010	0,011	0,012	0,013
4	0,009	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,016	0,017
5	0,011	0,007	0,008	0,009	0,012	0,013	0,016	0,017	0,019	0,020
6	0,013	0,009	0,010	0,011	0,014	0,015	0,019	0,020	0,023	0,024
8	0,018	0,012	0,014	0,016	0,019	0,021	0,027	0,028	0,032	0,034
10	0,022	0,015	0,017	0,019	0,024	0,026	0,033	0,035	0,039	0,041
12	0,030	0,021	0,024	0,027	0,033	0,036	0,045	0,048	0,054	0,057
14	0,032	0,022	0,025	0,028	0,035	0,038	0,048	0,051	0,057	0,060
16	0,036	0,025	0,028	0,032	0,039	0,043	0,054	0,057	0,064	0,068
18	0,042	0,029	0,033	0,037	0,046	0,050	0,063	0,067	0,075	0,079
20	0,045	0,031	0,036	0,040	0,049	0,054	0,067	0,072	0,081	0,085
25	0,056	0,039	0,044	0,050	0,061	0,067	0,084	0,089	0,100	0,106



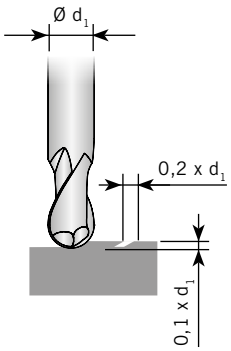
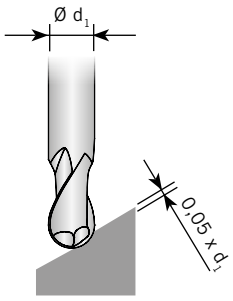
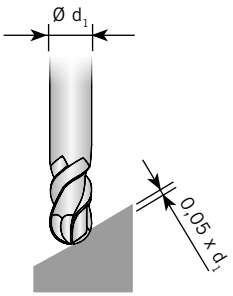
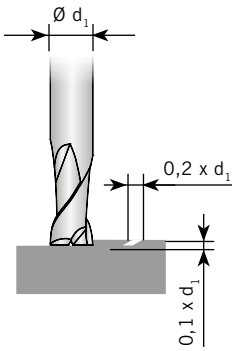
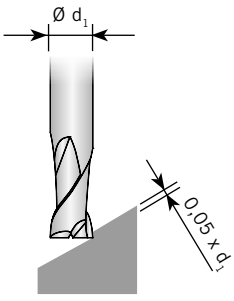
Feed per tooth when full slot milling ➜ ap = 1 x d_1

Ø d_1 [mm]	Correction factor 1	0,7	0,8	0,9	1,1	1,2	1,5	1,6	1,8	1,9
1	0,001	0,001	0,001	0,001	0,001	0,002	0,002	0,002	0,002	0,002
2	0,003	0,002	0,002	0,002	0,003	0,003	0,004	0,004	0,005	0,005
3	0,005	0,003	0,004	0,004	0,005	0,005	0,007	0,007	0,008	0,009
4	0,006	0,004	0,005	0,005	0,006	0,007	0,009	0,009	0,011	0,011
5	0,007	0,005	0,006	0,006	0,008	0,009	0,011	0,011	0,013	0,014
6	0,008	0,006	0,007	0,008	0,009	0,010	0,013	0,014	0,015	0,016
8	0,012	0,008	0,009	0,011	0,013	0,014	0,018	0,019	0,021	0,022
10	0,014	0,010	0,011	0,013	0,016	0,017	0,021	0,023	0,026	0,027
12	0,020	0,014	0,016	0,018	0,021	0,023	0,029	0,031	0,035	0,037
14	0,021	0,015	0,017	0,019	0,023	0,025	0,031	0,033	0,037	0,040
16	0,023	0,016	0,019	0,021	0,026	0,028	0,035	0,037	0,042	0,044
18	0,027	0,019	0,022	0,025	0,030	0,033	0,041	0,044	0,049	0,052
20	0,029	0,020	0,023	0,026	0,032	0,035	0,044	0,047	0,053	0,056
25	0,036	0,025	0,029	0,033	0,040	0,044	0,055	0,058	0,066	0,069



Attention: Feed rates are reduced by 10 - 20 % for uncoated tools.

Feed rates for ball nosed- and High feed cutters

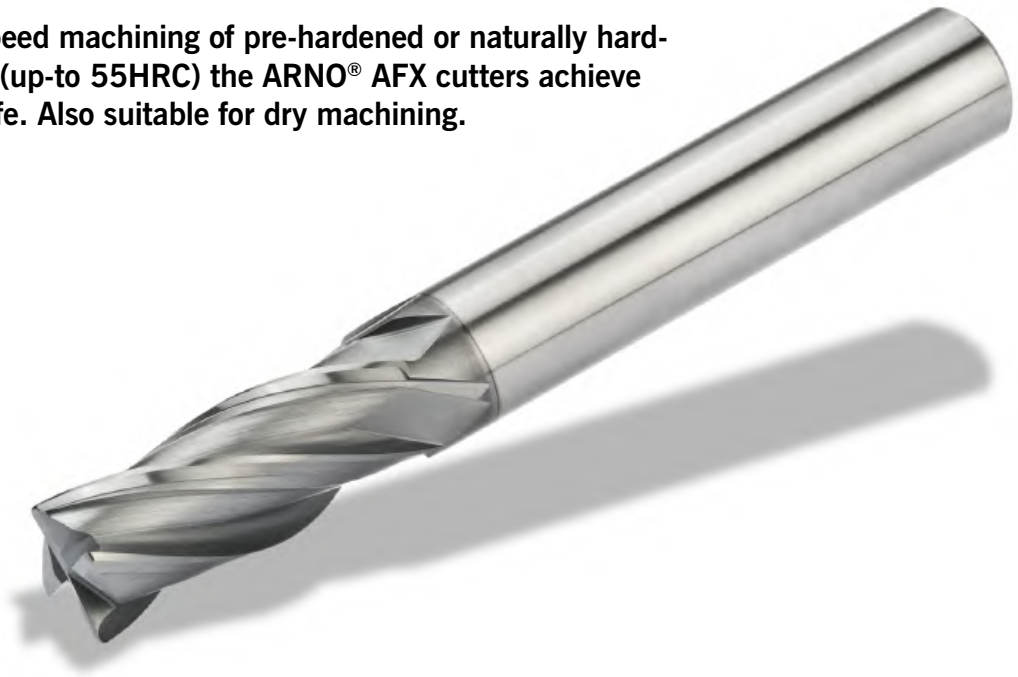
Ball nose end milling cutters	Ball nose end milling cutters	Ball nose cutter for mold and die production	Torus end milling cutters	Torus end milling cutters
				

d_1 [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]	fz [mm]
2	0,015	0,010	0,005	0,010	0,015
3	0,030	0,020	0,015	0,015	0,020
4	0,040	0,030	0,030	0,020	0,030
5	0,060	0,050	0,050	0,030	0,040
6	0,070	0,060	0,060	0,050	0,060
8	0,100	0,080	0,070	0,070	0,080
10	0,120	0,100	0,080	0,080	0,100
12	0,150	0,120	0,090	0,100	0,120
16	0,180	0,150	0,100	0,130	0,150
18	0,200	0,180	0,110	0,140	0,160
20	0,220	0,200	0,120	0,150	0,180
25	0,240	0,220	0,140	0,160	0,200

Attention: Feed rates are reduced by 10 - 20 % for uncoated tools.

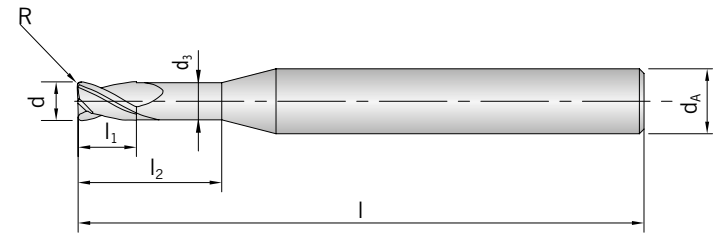
EXCELLENCE IN HIGH SPEED MACHINING.

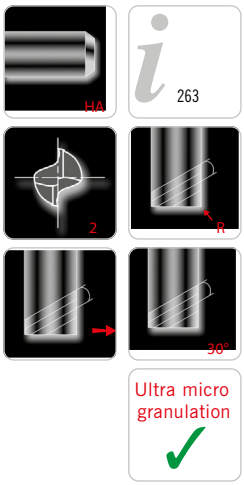
Even at high speed machining of pre-hardened or naturally hardened materials (up-to 55HRC) the ARNO® AFX cutters achieve excellent tool life. Also suitable for dry machining.



AFX50124-...R...

2 flutes, mini design, with corner radius





Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	R *±0,010*	HC S100
AFX50124-002AR0,02	0.2	4	0.17	0.3	1.0	40	0.02	◆
AFX50124-002AR0,05	0.2	4	0.17	0.3	1.0	40	0.05	◆
AFX50124-003AR0,02	0.3	4	0.27	0.5	1.0	40	0.02	◆
AFX50124-003AR0,05	0.3	4	0.27	0.5	1.0	40	0.05	◆
AFX50124-003BR0,02	0.3	4	0.27	0.5	2.0	40	0.02	◆
AFX50124-003BR0,05	0.3	4	0.27	0.5	2.0	40	0.05	◆
AFX50124-004AR0,05	0.4	4	0.37	0.6	1.0	40	0.05	◆
AFX50124-004AR0,1	0.4	4	0.37	0.6	1.0	40	0.10	◆
AFX50124-004BR0,05	0.4	4	0.37	0.6	1.5	40	0.05	◆
AFX50124-004BR0,1	0.4	4	0.37	0.6	2.0	40	0.10	◆
AFX50124-004CR0,05	0.4	4	0.37	0.6	2.0	40	0.05	◆
AFX50124-004DR0,05	0.4	4	0.37	0.6	2.5	40	0.05	◆
AFX50124-005AR0,05	0.5	4	0.45	0.7	1.0	45	0.05	◆
AFX50124-005AR0,1	0.5	4	0.45	0.7	2.0	45	0.10	◆
AFX50124-005BR0,05	0.5	4	0.45	0.7	1.5	45	0.05	◆
AFX50124-005BR0,1	0.5	4	0.45	0.7	3.0	45	0.10	◆
AFX50124-005CR0,05	0.5	4	0.45	0.7	2.0	45	0.05	◆
AFX50124-005DR0,05	0.5	4	0.45	0.7	4.0	45	0.05	◆
AFX50124-006AR0,05	0.6	4	0.55	0.9	3.0	45	0.05	◆
AFX50124-006AR0,1	0.6	4	0.55	0.9	2.0	45	0.10	◆
AFX50124-006AR0,2	0.6	4	0.55	0.9	2.0	45	0.20	◆
AFX50124-006BR0,05	0.6	4	0.55	0.9	6.0	45	0.05	◆
AFX50124-006BR0,1	0.6	4	0.55	0.9	3.0	45	0.10	◆
AFX50124-006BR0,2	0.6	4	0.55	0.9	4.0	45	0.20	◆
AFX50124-006CR0,1	0.6	4	0.55	0.9	4.0	45	0.10	◆
AFX50124-006CR0,2	0.6	4	0.55	0.9	6.0	45	0.20	◆
AFX50124-006DR0,1	0.6	4	0.55	0.9	6.0	45	0.10	◆
AFX50124-008AR0,05	0.8	4	0.75	1.2	2.0	45	0.05	◆
AFX50124-008AR0,1	0.8	4	0.75	1.2	2.0	45	0.10	◆
AFX50124-008AR0,2	0.8	4	0.75	1.2	2.0	45	0.20	◆
AFX50124-008BR0,05	0.8	4	0.75	1.2	4.0	45	0.05	◆
AFX50124-008BR0,1	0.8	4	0.75	1.2	4.0	45	0.10	◆
AFX50124-008BR0,2	0.8	4	0.75	1.2	4.0	45	0.20	◆
AFX50124-008CR0,05	0.8	4	0.75	1.2	6.0	45	0.05	◆
AFX50124-008CR0,1	0.8	4	0.75	1.2	6.0	45	0.10	◆
AFX50124-008CR0,2	0.8	4	0.75	1.2	6.0	45	0.20	◆
AFX50124-008DR0,1	0.8	4	0.75	1.2	8.0	45	0.10	◆

Dimensions in mm

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ±0,010	HC S100
AFX50124-008DR0,2	0.8	4	0.75	1.2	8.0	45	0.20	◆
AFX50124-010AR0,05	1.0	4	0.95	1.5	3.0	50	0.05	◆
AFX50124-010AR0,1	1.0	4	0.95	1.5	3.0	50	0.10	◆
AFX50124-010AR0,2	1.0	4	0.95	1.5	3.0	50	0.20	◆
AFX50124-010AR0,3	1.0	4	0.95	1.5	4.0	50	0.30	◆
AFX50124-010BR0,05	1.0	4	0.95	1.5	4.0	50	0.05	◆
AFX50124-010BR0,1	1.0	4	0.95	1.5	4.0	50	0.10	◆
AFX50124-010BR0,2	1.0	4	0.95	1.5	4.0	50	0.20	◆
AFX50124-010BR0,3	1.0	4	0.95	1.5	6.0	50	0.30	◆
AFX50124-010CR0,05	1.0	4	0.95	1.5	6.0	50	0.05	◆
AFX50124-010CR0,1	1.0	4	0.95	1.5	6.0	50	0.10	◆
AFX50124-010CR0,2	1.0	4	0.95	1.5	6.0	50	0.20	◆
AFX50124-010CR0,3	1.0	4	0.95	1.5	8.0	50	0.30	◆
AFX50124-010DR0,1	1.0	4	0.95	1.5	8.0	50	0.10	◆
AFX50124-010DR0,2	1.0	4	0.95	1.5	8.0	50	0.20	◆
AFX50124-010DR0,3	1.0	4	0.95	1.5	10.0	50	0.30	◆
AFX50124-010ER0,1	1.0	4	0.95	1.5	10.0	50	0.10	◆
AFX50124-010ER0,2	1.0	4	0.95	1.5	10.0	50	0.20	◆
AFX50124-010FR0,2	1.0	4	0.95	1.5	12.0	50	0.20	◆
AFX50124-012AR0,05	1.2	4	1.15	1.8	6.0	50	0.05	◆
AFX50124-012AR0,1	1.2	4	1.15	1.8	4.0	50	0.10	◆
AFX50124-012AR0,2	1.2	4	1.15	1.8	4.0	50	0.20	◆
AFX50124-012AR0,3	1.2	4	1.15	1.8	4.0	50	0.30	◆
AFX50124-012BR0,05	1.2	4	1.15	1.8	8.0	50	0.05	◆
AFX50124-012BR0,1	1.2	4	1.15	1.8	6.0	50	0.10	◆
AFX50124-012BR0,2	1.2	4	1.15	1.8	6.0	50	0.20	◆
AFX50124-012BR0,3	1.2	4	1.15	1.8	6.0	50	0.30	◆
AFX50124-012CR0,05	1.2	4	1.15	1.8	10.0	50	0.05	◆
AFX50124-012CR0,1	1.2	4	1.15	1.8	8.0	50	0.10	◆
AFX50124-012CR0,2	1.2	4	1.15	1.8	8.0	50	0.20	◆
AFX50124-012CR0,3	1.2	4	1.15	1.8	8.0	50	0.30	◆
AFX50124-015AR0,05	1.5	4	1.45	2.3	4.0	50	0.05	◆
AFX50124-015AR0,1	1.5	4	1.45	2.3	4.0	50	0.10	◆
AFX50124-015AR0,2	1.5	4	1.45	2.3	6.0	50	0.20	◆
AFX50124-015AR0,3	1.5	4	1.45	2.3	4.0	50	0.30	◆
AFX50124-015AR0,5	1.5	4	1.45	2.3	4.0	50	0.50	◆
AFX50124-015BR0,05	1.5	4	1.45	2.3	6.0	50	0.05	◆
AFX50124-015BR0,1	1.5	4	1.45	2.3	6.0	50	0.10	◆
AFX50124-015BR0,2	1.5	4	1.45	2.3	6.0	50	0.20	◆
AFX50124-015BR0,3	1.5	4	1.45	2.3	6.0	50	0.30	◆
AFX50124-015BR0,5	1.5	4	1.45	2.3	12.0	50	0.50	◆
AFX50124-015CR0,05	1.5	4	1.45	2.3	8.0	50	0.05	◆
AFX50124-015CR0,1	1.5	4	1.45	2.3	8.0	50	0.10	◆
AFX50124-015CR0,2	1.5	4	1.45	2.3	12.0	50	0.20	◆
AFX50124-015CR0,3	1.5	4	1.45	2.3	8.0	50	0.30	◆
AFX50124-015DR0,2	1.5	4	1.45	2.3	4.0	50	0.20	◆
AFX50124-015DR0,3	1.5	4	1.45	2.3	10.0	50	0.30	◆
AFX50124-015ER0,2	1.5	4	1.45	2.3	6.0	50	0.20	◆
AFX50124-015ER0,3	1.5	4	1.45	2.3	12.0	50	0.30	◆
AFX50124-020AR0,1	2.0	4	1.95	3.0	6.0	50	0.10	◆
AFX50124-020AR0,2	2.0	4	1.95	3.0	6.0	50	0.20	◆
AFX50124-020AR0,3	2.0	4	1.95	3.0	6.0	50	0.30	◆
AFX50124-020AR0,5	2.0	4	1.95	3.0	6.0	50	0.50	◆
AFX50124-020BR0,1	2.0	4	1.95	3.0	8.0	50	0.10	◆
AFX50124-020BR0,2	2.0	4	1.95	3.0	8.0	50	0.20	◆
AFX50124-020BR0,3	2.0	4	1.95	3.0	8.0	50	0.30	◆
AFX50124-020BR0,5	2.0	4	1.95	3.0	8.0	50	0.50	◆

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ±0,010	HC S100
AFX50124-020CR0,1	2.0	4	1.95	3.0	10.0	50	0.10	◆
AFX50124-020CR0,2	2.0	4	1.95	3.0	10.0	50	0.20	◆
AFX50124-020CR0,3	2.0	4	1.95	3.0	10.0	50	0.30	◆
AFX50124-020CR0,5	2.0	4	1.95	3.0	10.0	50	0.50	◆
AFX50124-020DR0,1	2.0	4	1.95	3.0	12.0	50	0.10	◆
AFX50124-020DR0,2	2.0	4	1.95	3.0	12.0	50	0.20	◆
AFX50124-020DR0,3	2.0	4	1.95	3.0	12.0	50	0.30	◆
AFX50124-020DR0,5	2.0	4	1.95	3.0	12.0	50	0.50	◆
AFX50124-020ER0,2	2.0	4	1.95	3.0	16.0	50	0.20	◆
AFX50124-020ER0,3	2.0	4	1.95	3.0	16.0	50	0.30	◆
AFX50124-020ER0,5	2.0	4	1.95	3.0	14.0	50	0.50	◆
AFX50124-020FR0,5	2.0	4	1.95	3.0	16.0	50	0.50	◆
AFX50124-030AR0,1	3.0	6	2.85	4.5	10.0	50	0.10	◆
AFX50124-030AR0,2	3.0	6	2.85	4.5	8.0	50	0.20	◆
AFX50124-030AR0,3	3.0	6	2.85	4.5	8.0	50	0.30	◆
AFX50124-030AR0,5	3.0	6	2.85	4.5	8.0	50	0.50	◆
AFX50124-030AR1,0	3.0	6	2.85	4.5	8.0	50	1.00	◆
AFX50124-030BR0,1	3.0	6	2.85	4.5	12.0	50	0.10	◆
AFX50124-030BR0,2	3.0	6	2.85	4.5	10.0	50	0.20	◆
AFX50124-030BR0,3	3.0	6	2.85	4.5	10.0	50	0.30	◆
AFX50124-030BR0,5	3.0	6	2.85	4.5	10.0	50	0.50	◆
AFX50124-030BR1,0	3.0	6	2.85	4.5	10.0	50	1.00	◆
AFX50124-030CR0,1	3.0	6	2.85	4.5	16.0	60	0.10	◆
AFX50124-030CR0,2	3.0	6	2.85	4.5	12.0	50	0.20	◆
AFX50124-030CR0,3	3.0	6	2.85	4.5	12.0	50	0.30	◆
AFX50124-030CR0,5	3.0	6	2.85	4.5	12.0	50	0.50	◆
AFX50124-030CR1,0	3.0	6	2.85	4.5	12.0	50	1.00	◆
AFX50124-030DR0,2	3.0	6	2.85	4.5	16.0	60	0.20	◆
AFX50124-030DR0,3	3.0	6	2.85	4.5	16.0	60	0.30	◆
AFX50124-030DR0,5	3.0	6	2.85	4.5	16.0	60	0.50	◆
AFX50124-030DR1,0	3.0	6	2.85	4.5	16.0	60	1.00	◆
AFX50124-030ER0,2	3.0	6	2.85	4.5	20.0	60	0.20	◆
AFX50124-030ER0,3	3.0	6	2.85	4.5	20.0	60	0.30	◆
AFX50124-030ER0,5	3.0	6	2.85	4.5	20.0	60	0.50	◆
AFX50124-030ER1,0	3.0	6	2.85	4.5	20.0	60	1.00	◆
AFX50124-030FR0,2	3.0	6	2.85	4.5	26.0	65	0.20	◆
AFX50124-030FR0,5	3.0	6	2.85	4.5	26.0	65	0.50	◆
AFX50124-040AR0,1	4.0	6	3.85	6.0	10.0	50	0.10	◆
AFX50124-040AR0,2	4.0	6	3.85	6.0	10.0	50	0.20	◆
AFX50124-040AR0,3	4.0	6	3.85	6.0	12.0	50	0.30	◆
AFX50124-040AR0,5	4.0	6	3.85	6.0	10.0	50	0.50	◆
AFX50124-040AR1,0	4.0	6	3.85	6.0	10.0	50	1.00	◆
AFX50124-040BR0,1	4.0	6	3.85	6.0	12.0	50	0.10	◆
AFX50124-040BR0,2	4.0	6	3.85	6.0	12.0	50	0.20	◆
AFX50124-040BR0,3	4.0	6	3.85	6.0	16.0	60	0.30	◆
AFX50124-040BR0,5	4.0	6	3.85	6.0	12.0	50	0.50	◆
AFX50124-040BR1,0	4.0	6	3.85	6.0	12.0	50	1.00	◆
AFX50124-040CR0,1	4.0	6	3.85	6.0	16.0	60	0.10	◆
AFX50124-040CR0,2	4.0	6	3.85	6.0	16.0	60	0.20	◆
AFX50124-040CR0,3	4.0	6	3.85	6.0	20.0	60	0.30	◆
AFX50124-040CR0,5	4.0	6	3.85	6.0	16.0	60	0.50	◆
AFX50124-040CR1,0	4.0	6	3.85	6.0	16.0	60	1.00	◆
AFX50124-040DR0,2	4.0	6	3.85	6.0	20.0	60	0.20	◆
AFX50124-040DR0,3	4.0	6	3.85	6.0	26.0	65	0.30	◆

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ±0,010	HC S100
AFX50124-040DR0,5	4.0	6	3.85	6.0	20.0	60	0.50	◆
AFX50124-040DR1,0	4.0	6	3.85	6.0	20.0	60	1.00	◆
AFX50124-040ER0,2	4.0	6	3.85	6.0	26.0	65	0.20	◆
AFX50124-040ER0,5	4.0	6	3.85	6.0	26.0	65	0.50	◆
AFX50124-040FR0,5	4.0	6	3.85	6.0	30.0	70	0.50	◆

HC = Carbide coated

P	●
M	○
K	●
N	
S	
H	●

● Main application
○ Secondary application

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ±0,010	HC S100
AFX50124-060AR0,2	6	6	5.85	9	20	60	0.2	◆
AFX50124-060AR0,3	6	6	5.85	9	20	60	0.3	◆
AFX50124-060AR0,5	6	6	5.85	9	20	60	0.5	◆
AFX50124-060AR1,0	6	6	5.85	9	20	60	1.0	◆
AFX50124-060BR0,5	6	6	5.85	15	30	90	0.5	◆
AFX50124-080AR0,2	8	8	7.70	12	25	70	0.2	◆
AFX50124-080AR0,3	8	8	7.70	12	25	70	0.3	◆
AFX50124-080AR0,5	8	8	7.70	12	25	70	0.5	◆
AFX50124-080AR1,0	8	8	7.70	15	25	70	1.0	◆
AFX50124-100AR0,3	10	10	9.70	15	30	75	0.3	◆
AFX50124-100AR0,5	10	10	9.70	15	30	75	0.5	◆
AFX50124-100AR1,0	10	10	9.70	18	30	75	1.0	◆
AFX50124-120AR0,5	12	12	11.70	18	32	80	0.5	◆
AFX50124-120AR1,0	12	12	11.70	18	32	80	1.0	◆
AFX50124-120AR1,5	12	12	11.70	18	32	80	1.5	◆
AFX50124-160AR0,5	16	16	15.70	20	35	100	0.5	◆
AFX50124-160AR1,0	16	16	15.70	20	35	100	1.0	◆
AFX50124-200AR0,5	20	20	19.70	25	40	100	0.5	◆
AFX50124-200AR1,0	20	20	19.70	25	40	100	1.0	◆

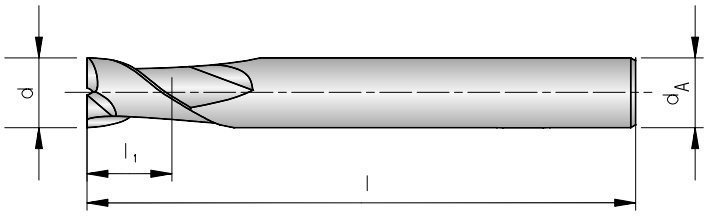
HC = Carbide coated

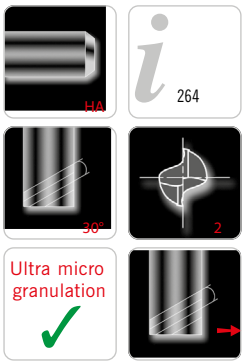
P	●
M	○
K	●
N	
S	
H	●

● Main application
○ Secondary application

AFX50120-...

2 flutes, short design





Shank DIN 6535HA	d *-0,012*	d_A *h6*	l_1	l	HC S100
AFX50120-001	0.1	4	0.2	40	◆
AFX50120-002	0.2	4	0.4	40	◆
AFX50120-003	0.3	4	0.6	40	◆
AFX50120-004	0.4	4	0.8	40	◆
AFX50120-005	0.5	4	1.0	40	◆
AFX50120-006	0.6	4	1.2	40	◆
AFX50120-007	0.7	4	1.4	40	◆
AFX50120-008	0.8	4	1.6	40	◆
AFX50120-009	0.9	4	1.8	40	◆
AFX50120-010	1.0	6	2.5	50	◆
AFX50120-012	1.2	6	3.0	50	◆
AFX50120-015	1.5	6	4.0	50	◆
AFX50120-020	2.0	6	6.0	50	◆
AFX50120-025	2.5	6	7.0	50	◆
AFX50120-030	3.0	6	8.0	50	◆
AFX50120-035	3.5	6	10.0	50	◆
AFX50120-040	4.0	6	10.0	50	◆
AFX50120-045	4.5	6	14.0	50	◆
AFX50120-050	5.0	6	15.0	60	◆
AFX50120-055	5.5	6	15.0	60	◆

HC = Carbide coated

P	●
M	○
K	●
N	
S	
H	●

● Main application
○ Secondary application

Dimensions in mm

Shank DIN 6535HA	d *-0,012*	d_A *h6*	l_1	l	HC S100
AFX50120-060	6.0	6	15	60	◆
AFX50120-065	6.5	8	18	60	◆
AFX50120-070	7.0	8	20	60	◆
AFX50120-075	7.5	8	20	60	◆
AFX50120-080	8.0	8	20	70	◆
AFX50120-085	8.5	10	22	70	◆
AFX50120-090	9.0	10	22	70	◆
AFX50120-095	9.5	10	24	70	◆
AFX50120-100	10.0	10	25	75	◆
AFX50120-105	10.5	12	26	75	◆
AFX50120-110	11.0	12	30	75	◆
AFX50120-115	11.5	12	30	80	◆
AFX50120-120	12.0	12	30	80	◆
AFX50120-130	13.0	12	35	100	◆
AFX50120-140	14.0	16	35	100	◆
AFX50120-150	15.0	16	38	100	◆
AFX50120-160	16.0	16	40	100	◆
AFX50120-180	18.0	16	45	100	◆
AFX50120-200	20.0	20	45	100	◆

HC = Carbide coated

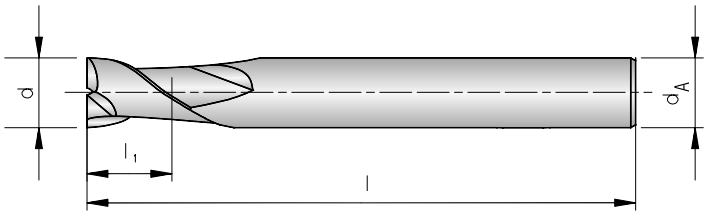
P	●
M	○
K	●
N	
S	
H	●

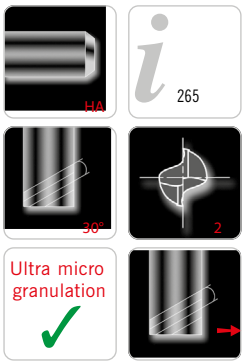
● Main application

○ Secondary application

AFX50121-...

2 flutes, long design





Shank DIN 6535HA	d -0,03	d_A h6	l_1	l	HC S100
AFX50121-010A	1.0	6	3	60	◆
AFX50121-010B	1.0	6	4	60	◆
AFX50121-010C	1.0	6	6	60	◆
AFX50121-010D	1.0	6	8	60	◆
AFX50121-010E	1.0	6	10	60	◆
AFX50121-015A	1.5	6	6	60	◆
AFX50121-015B	1.5	6	8	60	◆
AFX50121-015C	1.5	6	10	60	◆
AFX50121-015D	1.5	6	12	60	◆
AFX50121-015E	1.5	6	16	60	◆
AFX50121-020A	2.0	6	8	60	◆
AFX50121-020B	2.0	6	10	60	◆
AFX50121-020C	2.0	6	12	60	◆
AFX50121-020D	2.0	6	16	60	◆
AFX50121-025A	2.5	6	10	60	◆
AFX50121-025B	2.5	6	16	60	◆
AFX50121-030A	3.0	6	10	70	◆
AFX50121-030B	3.0	6	12	70	◆
AFX50121-030C	3.0	6	16	70	◆
AFX50121-030D	3.0	6	20	70	◆
AFX50121-030E	3.0	6	26	70	◆
AFX50121-040A	4.0	6	12	70	◆
AFX50121-040B	4.0	6	16	70	◆
AFX50121-040C	4.0	6	20	70	◆
AFX50121-040D	4.0	6	26	70	◆
AFX50121-040E	4.0	6	30	70	◆
AFX50121-050A	5.0	6	20	70	◆
AFX50121-050B	5.0	6	25	70	◆
AFX50121-050C	5.0	6	30	80	◆
AFX50121-050D	5.0	6	40	100	◆
AFX50121-060A	6.0	6	15	60	◆
AFX50121-060B	6.0	6	15	80	◆
AFX50121-060C	6.0	6	20	70	◆
AFX50121-060D	6.0	6	20	90	◆
AFX50121-060E	6.0	6	25	75	◆
AFX50121-060F	6.0	6	30	80	◆
AFX50121-060G	6.0	6	30	100	◆

Dimensions in mm

Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC S100
AFX50121-060H	6.0	6	30	150	◆
AFX50121-060I	6.0	6	35	90	◆
AFX50121-060J	6.0	6	40	90	◆
AFX50121-060K	6.0	6	45	150	◆
AFX50121-080A	8.0	8	25	80	◆
AFX50121-080B	8.0	8	30	80	◆
AFX50121-080C	8.0	8	35	90	◆
AFX50121-080D	8.0	8	40	90	◆
AFX50121-080E	8.0	8	40	120	◆
AFX50121-080F	8.0	8	45	100	◆
AFX50121-080G	8.0	8	50	100	◆
AFX50121-100A	10.0	10	30	80	◆
AFX50121-100B	10.0	10	30	100	◆
AFX50121-100C	10.0	10	35	90	◆
AFX50121-100D	10.0	10	40	90	◆
AFX50121-100E	10.0	10	40	120	◆
AFX50121-100F	10.0	10	45	100	◆
AFX50121-100G	10.0	10	50	100	◆
AFX50121-100H	10.0	10	50	150	◆
AFX50121-100I	10.0	10	60	110	◆
AFX50121-120A	12.0	12	35	90	◆
AFX50121-120B	12.0	12	40	100	◆
AFX50121-120C	12.0	12	40	120	◆
AFX50121-120D	12.0	12	45	130	◆
AFX50121-120E	12.0	12	50	100	◆
AFX50121-120F	12.0	12	55	110	◆
AFX50121-120G	12.0	12	60	110	◆
AFX50121-120H	12.0	12	60	150	◆
AFX50121-140	14.0	16	50	110	◆
AFX50121-160A	16.0	16	40	150	◆
AFX50121-160B	16.0	16	50	110	◆
AFX50121-180	18.0	20	50	120	◆
AFX50121-200A	20.0	20	90	200	◆
AFX50121-200B	20.0	20	110	200	◆

HC = Carbide coated

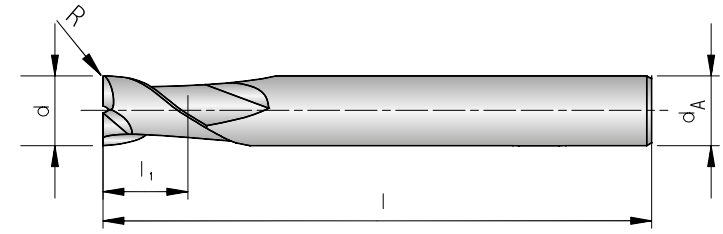
P	●
M	○
K	●
N	
S	
H	●

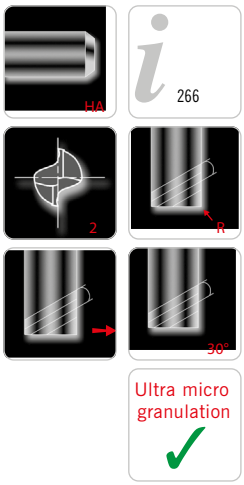
● Main application

○ Secondary application

AFX50121-...R...

2 flutes, long design with corner radius





Shank DIN 6535HA	d *-0,012*	d_A *h6*	l_1	l	R *±0,010*	HC S100
AFX50121-010AR0,1	1.0	4	2.5	50	0.1	◆
AFX50121-010AR0,2	1.0	4	2.5	50	0.2	◆
AFX50121-010AR0,3	1.0	4	2.5	50	0.3	◆
AFX50121-015AR0,2	1.5	4	4.0	50	0.2	◆
AFX50121-015AR0,3	1.5	4	4.0	50	0.3	◆
AFX50121-015AR0,5	1.5	4	4.0	50	0.5	◆
AFX50121-020AR0,1	2.0	4	6.0	50	0.1	◆
AFX50121-020AR0,2	2.0	4	6.0	50	0.2	◆
AFX50121-020AR0,3	2.0	4	6.0	50	0.3	◆
AFX50121-020AR0,5	2.0	4	6.0	50	0.5	◆
AFX50121-030AR0,1	3.0	6	8.0	60	0.1	◆
AFX50121-030AR0,2	3.0	6	8.0	60	0.2	◆
AFX50121-030AR0,3	3.0	6	8.0	60	0.3	◆
AFX50121-030AR0,5	3.0	6	8.0	60	0.5	◆
AFX50121-040AR0,2	4.0	4	10.0	70	0.2	◆
AFX50121-040AR0,3	4.0	4	10.0	70	0.3	◆
AFX50121-040AR0,5	4.0	4	10.0	70	0.5	◆
AFX50121-040AR1,0	4.0	4	10.0	70	1.0	◆
AFX50121-050AR0,2	5.0	6	13.0	90	0.2	◆
AFX50121-050AR0,3	5.0	6	13.0	90	0.3	◆
AFX50121-050AR0,5	5.0	6	13.0	90	0.5	◆
AFX50121-050AR1,0	5.0	6	13.0	90	1.0	◆

HC = Carbide coated

P	●
M	○
K	●
N	
S	
H	●

● Main application
○ Secondary application

Shank DIN 6535HA	d -0,012	d_A h6	l_1	l	R ±0,010	HC S100
AFX50121-060AR0,2	6	6	15	60	0.2	◆
AFX50121-060AR0,3	6	6	15	60	0.3	◆
AFX50121-060AR0,5	6	6	15	60	0.5	◆
AFX50121-060AR1,0	6	6	15	60	1.0	◆
AFX50121-060BR0,2	6	6	15	90	0.2	◆
AFX50121-060BR0,3	6	6	15	90	0.3	◆
AFX50121-060BR0,5	6	6	15	90	0.5	◆
AFX50121-060BR1,0	6	6	15	90	1.0	◆
AFX50121-060CR1,0	6	6	15	110	1.0	◆
AFX50121-060DR1,0	6	6	15	130	1.0	◆
AFX50121-080AR0,2	8	8	20	100	0.2	◆
AFX50121-080AR0,3	8	8	20	70	0.3	◆
AFX50121-080AR0,5	8	8	20	70	0.5	◆
AFX50121-080AR1,0	8	8	20	70	1.0	◆
AFX50121-080AR2,0	8	8	20	100	2.0	◆
AFX50121-080BR0,5	8	8	20	100	0.5	◆
AFX50121-080BR1,0	8	8	20	100	1.0	◆
AFX50121-080BR1,5	8	8	20	100	1.5	◆
AFX50121-100AR0,2	10	10	25	100	0.2	◆
AFX50121-100AR0,5	10	10	25	75	0.5	◆
AFX50121-100AR1,0	10	10	25	75	1.0	◆
AFX50121-100AR1,5	10	10	25	100	1.5	◆
AFX50121-100AR2,0	10	10	25	100	2.0	◆
AFX50121-100BR0,5	10	10	25	100	0.5	◆
AFX50121-100BR1,0	10	10	25	100	1.0	◆
AFX50121-120AR0,3	12	12	30	110	0.3	◆
AFX50121-120AR0,5	12	12	30	80	0.5	◆
AFX50121-120AR1,0	12	12	30	80	1.0	◆
AFX50121-120AR1,5	12	12	30	110	1.5	◆
AFX50121-120AR2,0	12	12	30	110	2.0	◆
AFX50121-120AR2,5	12	12	30	110	2.5	◆
AFX50121-120AR3,0	12	12	30	110	3.0	◆
AFX50121-120BR0,5	12	12	30	110	0.5	◆
AFX50121-120BR1,0	12	12	30	110	1.0	◆
AFX50121-120CR1,0	12	12	30	130	1.0	◆
AFX50121-160AR1,0	16	16	35	150	1.0	◆
AFX50121-160AR2,0	16	16	32	150	2.0	◆
AFX50121-160BR1,0	16	16	32	150	1.0	◆
AFX50121-200AR1,0	20	20	38	150	1.0	◆
AFX50121-200AR2,0	20	20	38	150	2.0	◆

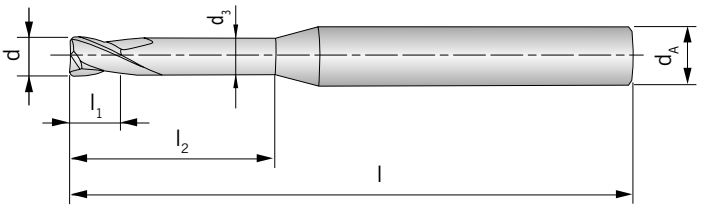
HC = Carbide coated

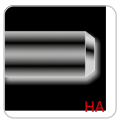
P	●
M	○
K	●
N	
S	
H	●

● Main application
○ Secondary application

AFX50122-...

2 flutes, extra long design





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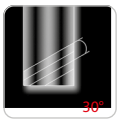
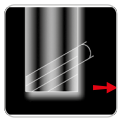


Ultra micro granulation ✓



Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	HC S100
AFX50122-002A	0.2	4	0.17	0.3	1.0	40	◆
AFX50122-003A	0.3	4	0.27	0.5	1.5	40	◆
AFX50122-003B	0.3	4	0.27	0.5	2.0	40	◆
AFX50122-004A	0.4	4	0.37	0.6	1.0	40	◆
AFX50122-004B	0.4	4	0.37	0.6	1.5	40	◆
AFX50122-004C	0.4	4	0.37	0.6	2.0	40	◆
AFX50122-004D	0.4	4	0.37	0.6	3.0	40	◆
AFX50122-004E	0.4	4	0.37	0.6	4.0	40	◆
AFX50122-004F	0.4	4	0.37	0.6	5.0	40	◆
AFX50122-005A	0.5	4	0.45	0.7	2.0	45	◆
AFX50122-005B	0.5	4	0.45	0.7	3.0	45	◆
AFX50122-005C	0.5	4	0.45	0.7	4.0	45	◆
AFX50122-005D	0.5	4	0.45	0.7	5.0	45	◆
AFX50122-005E	0.5	4	0.45	0.7	6.0	45	◆
AFX50122-006A	0.6	4	0.55	0.9	2.0	45	◆
AFX50122-006B	0.6	4	0.55	0.9	3.0	45	◆
AFX50122-006C	0.6	4	0.55	0.9	4.0	45	◆
AFX50122-006D	0.6	4	0.55	0.9	5.0	45	◆
AFX50122-006E	0.6	4	0.55	0.9	6.0	45	◆
AFX50122-006F	0.6	4	0.55	0.9	8.0	45	◆
AFX50122-006G	0.6	4	0.55	0.9	10.0	45	◆
AFX50122-008A	0.8	4	0.75	1.2	2.0	45	◆
AFX50122-008B	0.8	4	0.75	1.2	3.0	45	◆
AFX50122-008C	0.8	4	0.75	1.2	4.0	45	◆
AFX50122-008D	0.8	4	0.75	1.2	5.0	45	◆
AFX50122-008E	0.8	4	0.75	1.2	6.0	45	◆
AFX50122-008F	0.8	4	0.75	1.2	8.0	45	◆
AFX50122-008G	0.8	4	0.75	1.2	10.0	45	◆
AFX50122-010A	1.0	4	0.95	1.5	3.0	50	◆
AFX50122-010B	1.0	4	0.95	1.5	4.0	50	◆
AFX50122-010C	1.0	4	0.95	1.5	5.0	50	◆
AFX50122-010D	1.0	4	0.95	1.5	6.0	50	◆
AFX50122-010E	1.0	4	0.95	1.5	8.0	50	◆
AFX50122-010F	1.0	4	0.95	1.5	10.0	50	◆
AFX50122-010G	1.0	4	0.95	1.5	12.0	50	◆
AFX50122-010H	1.0	4	0.95	1.5	14.0	50	◆

Dimensions in mm

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	HC S100
AFX50122-010I	1.0	4	0.95	1.5	16.0	50	◆
AFX50122-010J	1.0	4	0.95	1.5	20.0	50	◆
AFX50122-012A	1.2	4	1.15	1.8	6.0	50	◆
AFX50122-012B	1.2	4	1.15	1.8	8.0	50	◆
AFX50122-012C	1.2	4	1.15	1.8	10.0	50	◆
AFX50122-014A	1.4	4	1.35	2.1	6.0	50	◆
AFX50122-014B	1.4	4	1.35	2.1	8.0	50	◆
AFX50122-015A	1.5	4	1.45	2.3	4.0	50	◆
AFX50122-015B	1.5	4	1.45	2.3	6.0	50	◆
AFX50122-015C	1.5	4	1.45	2.3	8.0	50	◆
AFX50122-015D	1.5	4	1.45	2.3	10.0	50	◆
AFX50122-015E	1.5	4	1.45	2.3	12.0	50	◆
AFX50122-015F	1.5	4	1.45	2.3	14.0	50	◆
AFX50122-015G	1.5	4	1.45	2.3	16.0	50	◆
AFX50122-015H	1.5	4	1.45	2.3	20.0	50	◆
AFX50122-018A	1.8	4	1.75	2.7	8.0	50	◆
AFX50122-018B	1.8	4	1.75	2.7	10.0	50	◆
AFX50122-018C	1.8	4	1.75	2.7	12.0	50	◆
AFX50122-020A	2.0	4	1.95	3.0	6.0	50	◆
AFX50122-020B	2.0	4	1.95	3.0	8.0	50	◆
AFX50122-020C	2.0	4	1.95	3.0	10.0	50	◆
AFX50122-020D	2.0	4	1.95	3.0	12.0	50	◆
AFX50122-020E	2.0	4	1.95	3.0	14.0	50	◆
AFX50122-020F	2.0	4	1.95	3.0	16.0	50	◆
AFX50122-020G	2.0	4	1.95	3.0	20.0	50	◆
AFX50122-025A	2.5	4	2.40	4.0	8.0	50	◆
AFX50122-025B	2.5	4	2.40	4.0	12.0	50	◆
AFX50122-025C	2.5	4	2.40	4.0	16.0	50	◆
AFX50122-025D	2.5	4	2.40	4.0	20.0	50	◆
AFX50122-030A	3.0	6	2.85	4.5	8.0	50	◆
AFX50122-030B	3.0	6	2.85	4.5	10.0	50	◆
AFX50122-030C	3.0	6	2.85	4.5	12.0	50	◆
AFX50122-030D	3.0	6	2.85	4.5	14.0	60	◆
AFX50122-030E	3.0	6	2.85	4.5	16.0	60	◆
AFX50122-030F	3.0	6	2.85	4.5	18.0	60	◆
AFX50122-030G	3.0	6	2.85	4.5	20.0	60	◆
AFX50122-030H	3.0	6	2.85	4.5	26.0	65	◆
AFX50122-040A	4.0	6	3.85	6.0	10.0	50	◆
AFX50122-040B	4.0	6	3.85	6.0	12.0	50	◆
AFX50122-040C	4.0	6	3.85	6.0	16.0	60	◆
AFX50122-040D	4.0	6	3.85	6.0	18.0	60	◆
AFX50122-040E	4.0	6	3.85	6.0	20.0	60	◆
AFX50122-040F	4.0	6	3.85	6.0	26.0	65	◆
AFX50122-040G	4.0	6	3.85	6.0	30.0	70	◆
AFX50122-050A	5.0	6	4.85	8.0	20.0	60	◆
AFX50122-050B	5.0	6	4.85	8.0	30.0	70	◆
AFX50122-050C	5.0	6	4.85	8.0	35.0	75	◆
AFX50122-050D	5.0	6	4.85	8.0	40.0	80	◆
AFX50122-050E	5.0	6	4.85	8.0	50.0	90	◆

HC = Carbide coated

P	●
M	○
K	●
N	
S	
H	●

● Main application

○ Secondary application

Dimensions in mm

Shank DIN 6535HA	d *-0,012*	d_A *h6*	d_3	l_1	l_2	l	HC S100
AFX50122-060A	6	6	5.85	9	15	60	◆
AFX50122-060B	6	6	5.85	9	20	60	◆
AFX50122-060C	6	6	5.85	9	30	70	◆
AFX50122-080A	8	8	7.70	12	25	70	◆
AFX50122-100A	10	10	9.70	15	30	75	◆
AFX50122-100B	10	10	9.70	15	45	100	◆
AFX50122-120A	12	12	11.70	20	35	80	◆
AFX50122-120B	12	12	11.70	20	50	110	◆

HC = Carbide coated

P	●
M	○
K	●
N	
S	
H	●

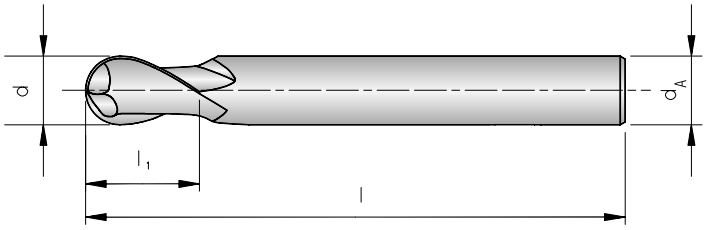
● Main application

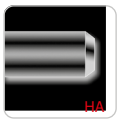
○ Secondary application

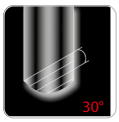
Dimensions in mm

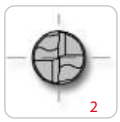
AFX50321-...

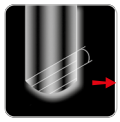
2 flutes, long design











Shank DIN 6535HA	d *-0,012*	d_A *h6*	l_1	l	R *±0,005*	HC S100
AFX50321-001A	0.1	4	0.2	40	0.05	◆
AFX50321-002A	0.2	4	0.4	40	0.10	◆
AFX50321-003A	0.3	4	0.6	40	0.15	◆
AFX50321-004A	0.4	4	0.8	40	0.20	◆
AFX50321-005A	0.5	4	1.0	40	0.25	◆
AFX50321-006A	0.6	4	1.2	40	0.30	◆
AFX50321-007A	0.7	4	1.4	40	0.35	◆
AFX50321-008A	0.8	4	1.6	40	0.40	◆
AFX50321-009A	0.9	4	1.8	40	0.45	◆
AFX50321-010A	1.0	4	2.5	50	0.50	◆
AFX50321-010B	1.0	6	2.5	50	0.50	◆
AFX50321-010C	1.0	6	2.5	70	0.50	◆
AFX50321-012A	1.2	6	3.0	50	0.60	◆
AFX50321-015A	1.5	4	4.0	50	0.75	◆
AFX50321-015B	1.5	6	4.0	50	0.75	◆
AFX50321-015C	1.5	6	4.0	70	0.75	◆
AFX50321-020A	2.0	4	5.0	50	1.00	◆
AFX50321-020B	2.0	6	3.0	40	1.00	◆
AFX50321-020C	2.0	6	5.0	50	1.00	◆
AFX50321-020D	2.0	6	5.0	80	1.00	◆
AFX50321-025A	2.5	6	6.0	60	1.25	◆
AFX50321-025B	2.5	6	6.0	80	1.25	◆
AFX50321-030A	3.0	4	6.0	60	1.50	◆
AFX50321-030B	3.0	6	4.5	40	1.50	◆
AFX50321-030C	3.0	6	6.0	60	1.50	◆
AFX50321-030D	3.0	6	6.0	80	1.50	◆
AFX50321-030E	3.0	6	6.0	100	1.50	◆
AFX50321-040A	4.0	4	8.0	70	2.00	◆
AFX50321-040B	4.0	4	8.0	100	2.00	◆
AFX50321-040C	4.0	6	6.0	50	2.00	◆
AFX50321-040D	4.0	6	8.0	70	2.00	◆
AFX50321-040E	4.0	6	8.0	100	2.00	◆
AFX50321-040F	4.0	6	8.0	120	2.00	◆

Shank DIN 6535HA	d -0,012	d_A h6	l_1	l	R ±0,005	HC S100
AFX50321-045	4.5	6	9.0	80	2.25	◆
AFX50321-050A	5.0	6	7.5	60	2.50	◆
AFX50321-050B	5.0	6	10.0	80	2.50	◆

HC = Carbide coated

P	●
M	○
K	●
N	
S	
H	●

● Main application
○ Secondary application

Shank DIN 6535HA	d -0,012	d_A h6	l_1	l	R ±0,005	HC S100
AFX50321-060	6	6	9	50	3.0	◆
AFX50321-060A	6	6	9	60	3.0	◆
AFX50321-060B	6	6	9	80	3.0	◆
AFX50321-060C	6	6	12	90	3.0	◆
AFX50321-060D	6	6	12	130	3.0	◆
AFX50321-060E	6	6	12	150	3.0	◆
AFX50321-070A	7	8	14	90	3.5	◆
AFX50321-080A	8	8	12	50	4.0	◆
AFX50321-080B	8	8	12	60	4.0	◆
AFX50321-080C	8	8	12	80	4.0	◆
AFX50321-080D	8	8	12	90	4.0	◆
AFX50321-080E	8	8	14	100	4.0	◆
AFX50321-080F	8	8	14	150	4.0	◆
AFX50321-090	9	10	18	100	4.5	◆
AFX50321-100A	10	10	15	60	5.0	◆
AFX50321-100B	10	10	15	90	5.0	◆
AFX50321-100C	10	10	18	100	5.0	◆
AFX50321-100D	10	10	18	130	5.0	◆
AFX50321-100E	10	10	18	150	5.0	◆
AFX50321-100F	10	10	18	180	5.0	◆
AFX50321-110	11	12	20	100	5.5	◆
AFX50321-120A	12	12	18	80	6.0	◆
AFX50321-120B	12	12	18	100	6.0	◆
AFX50321-120C	12	12	22	110	6.0	◆
AFX50321-120D	12	12	22	130	6.0	◆
AFX50321-120E	12	12	22	150	6.0	◆
AFX50321-120F	12	12	22	200	6.0	◆
AFX50321-130A	13	12	24	100	6.5	◆
AFX50321-140A	14	14	26	100	7.0	◆
AFX50321-160A	16	16	24	100	8.0	◆
AFX50321-160B	16	16	30	150	8.0	◆
AFX50321-200A	20	20	30	100	10.0	◆
AFX50321-200B	20	20	38	150	10.0	◆

HC = Carbide coated

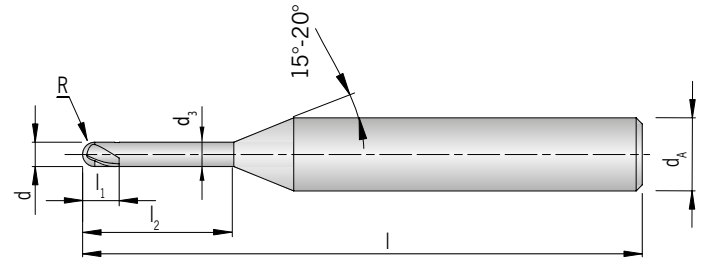
P	●
M	○
K	●
N	
S	
H	●

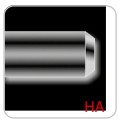
● Main application
○ Secondary application

Dimensions in mm

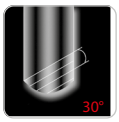
AFX52021-...

2 flutes, long design (Slotting)

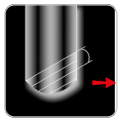




270 - 271



Ultra micro granulation ✓



Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ±0,005	HC S100
AFX52021-002A	0.2	4	0.17	0.2	0.5	40	0.10	◆
AFX52021-002B	0.2	4	0.17	0.2	1.0	40	0.10	◆
AFX52021-002C	0.2	4	0.17	0.2	1.5	40	0.10	◆
AFX52021-002D	0.2	4	0.17	0.2	3.0	40	0.10	◆
AFX52021-003A	0.3	4	0.27	0.3	1.0	40	0.15	◆
AFX52021-003B	0.3	4	0.27	0.3	1.5	40	0.15	◆
AFX52021-003C	0.3	4	0.27	0.3	2.0	40	0.15	◆
AFX52021-003D	0.3	4	0.27	0.3	3.0	40	0.15	◆
AFX52021-004A	0.4	4	0.37	0.4	1.0	40	0.20	◆
AFX52021-004B	0.4	4	0.37	0.4	1.5	40	0.20	◆
AFX52021-004C	0.4	4	0.37	0.4	2.0	40	0.20	◆
AFX52021-004D	0.4	4	0.37	0.4	3.0	40	0.20	◆
AFX52021-004E	0.4	4	0.37	0.4	4.0	40	0.20	◆
AFX52021-004F	0.4	4	0.37	0.4	5.0	40	0.20	◆
AFX52021-004G	0.4	4	0.37	0.4	6.0	40	0.20	◆
AFX52021-005A	0.5	4	0.45	0.5	1.0	45	0.25	◆
AFX52021-005B	0.5	4	0.45	0.5	2.0	45	0.25	◆
AFX52021-005C	0.5	4	0.45	0.5	3.0	45	0.25	◆
AFX52021-005D	0.5	4	0.45	0.5	4.0	45	0.25	◆
AFX52021-005E	0.5	4	0.45	0.5	5.0	45	0.25	◆
AFX52021-005F	0.5	4	0.45	0.5	6.0	45	0.25	◆
AFX52021-005G	0.5	4	0.45	0.5	8.0	45	0.25	◆
AFX52021-005H	0.5	4	0.45	0.5	10.0	45	0.25	◆
AFX52021-006A	0.6	4	0.55	0.6	1.0	45	0.30	◆
AFX52021-006B	0.6	4	0.55	0.6	2.0	45	0.30	◆
AFX52021-006C	0.6	4	0.55	0.6	3.0	45	0.30	◆
AFX52021-006D	0.6	4	0.55	0.6	4.0	45	0.30	◆
AFX52021-006E	0.6	4	0.55	0.6	5.0	45	0.30	◆
AFX52021-006F	0.6	4	0.55	0.6	6.0	45	0.30	◆
AFX52021-006G	0.6	4	0.55	0.6	8.0	45	0.30	◆
AFX52021-006H	0.6	4	0.55	0.6	10.0	45	0.30	◆
AFX52021-006I	0.6	4	0.55	0.6	12.0	45	0.30	◆
AFX52021-007A	0.7	4	0.65	0.7	6.0	45	0.35	◆
AFX52021-008A	0.8	4	0.75	0.8	2.0	45	0.40	◆
AFX52021-008B	0.8	4	0.75	0.8	3.0	45	0.40	◆
AFX52021-008C	0.8	4	0.75	0.8	4.0	45	0.40	◆
AFX52021-008D	0.8	4	0.75	0.8	5.0	45	0.40	◆
AFX52021-008E	0.8	4	0.75	0.8	6.0	45	0.40	◆
AFX52021-008F	0.8	4	0.75	0.8	8.0	45	0.40	◆
AFX52021-008G	0.8	4	0.75	0.8	10.0	45	0.40	◆

Dimensions in mm

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ±0,005	HC S100
AFX52021-010A	1.0	6	0.95	1.0	5.0	50	0.50	◆
AFX52021-010B	1.0	6	0.95	1.0	6.0	50	0.50	◆
AFX52021-010C	1.0	6	0.95	1.0	8.0	50	0.50	◆
AFX52021-020A	2.0	6	1.95	2.0	8.0	50	1.00	◆
AFX52021-020B	2.0	6	1.95	2.0	10.0	50	1.00	◆
AFX52021-030A	3.0	6	2.85	3.0	8.0	50	1.50	◆
AFX52021-030B	3.0	6	2.85	3.0	10.0	50	1.50	◆
AFX52021-030C	3.0	6	2.85	3.0	12.0	50	1.50	◆
AFX52021-030D	3.0	6	2.85	3.0	14.0	60	1.50	◆
AFX52021-030E	3.0	6	2.85	3.0	16.0	60	1.50	◆
AFX52021-030F	3.0	6	2.85	3.0	18.0	60	1.50	◆
AFX52021-030G	3.0	6	2.85	3.0	20.0	60	1.50	◆
AFX52021-030H	3.0	6	2.85	3.0	26.0	65	1.50	◆
AFX52021-030I	3.0	6	2.85	3.0	30.0	70	1.50	◆
AFX52021-030J	3.0	6	2.85	3.0	35.0	70	1.50	◆
AFX52021-040A	4.0	6	3.85	4.0	10.0	50	2.00	◆
AFX52021-040B	4.0	6	3.85	4.0	12.0	50	2.00	◆
AFX52021-040C	4.0	6	3.85	4.0	14.0	60	2.00	◆
AFX52021-040D	4.0	6	3.85	4.0	16.0	60	2.00	◆
AFX52021-040E	4.0	6	3.85	4.0	18.0	60	2.00	◆
AFX52021-040F	4.0	6	3.85	4.0	20.0	60	2.00	◆
AFX52021-040G	4.0	6	3.85	4.0	26.0	65	2.00	◆
AFX52021-040H	4.0	6	3.85	4.0	30.0	70	2.00	◆
AFX52021-040I	4.0	6	3.85	4.0	35.0	70	2.00	◆
AFX52021-040J	4.0	6	3.85	4.0	40.0	80	2.00	◆
AFX52021-050A	5.0	6	4.85	6.0	30.0	70	2.50	◆

HC = Carbide coated

P	●
M	○
K	●
N	
S	
H	●

● Main application
○ Secondary application

AFX

Shank DIN 6535HA	d -0,012	d_A h6	d_3	l_1	l_2	l	R ±0,005	HC S100
AFX52021-060A	6	6	5.85	8	20	60	3	◆
AFX52021-060B	6	6	5.85	8	30	60	3	◆
AFX52021-080A	8	8	7.70	10	25	70	4	◆
AFX52021-080B	8	8	7.70	14	35	100	4	◆
AFX52021-100A	10	10	9.70	12	30	75	5	◆
AFX52021-100B	10	10	9.70	18	30	100	5	◆
AFX52021-100C	10	10	9.70	18	40	100	5	◆
AFX52021-120A	12	12	11.70	14	32	80	6	◆
AFX52021-120B	12	12	11.70	22	32	110	6	◆

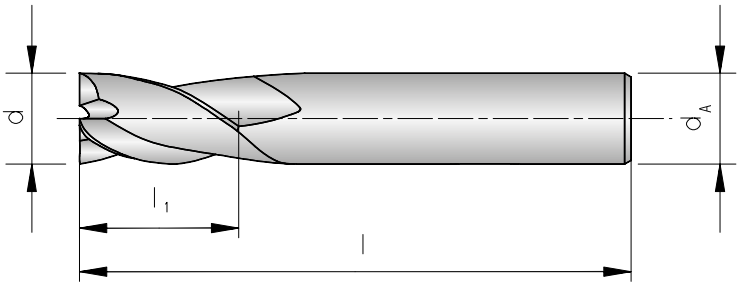
HC = Carbide coated

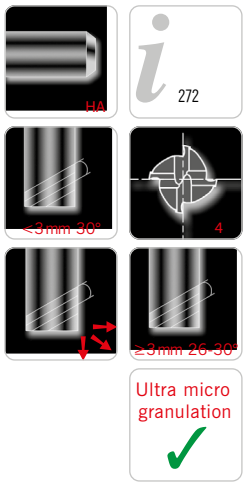
P	●
M	○
K	●
N	
S	
H	●

● Main application
○ Secondary application

AFX50140-...

4 flutes





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC S100
AFX50140-010	1.0	6	2.5	50	◆
AFX50140-015	1.5	6	4.0	50	◆
AFX50140-020	2.0	6	6.0	50	◆
AFX50140-025	2.5	6	7.0	50	◆
AFX50140-030	3.0	6	8.0	50	◆
AFX50140-035	3.5	6	10.0	50	◆
AFX50140-040	4.0	6	10.0	50	◆
AFX50140-045	4.5	6	14.0	50	◆
AFX50140-050	5.0	6	15.0	60	◆
AFX50140-055	5.5	6	15.0	60	◆
AFX50140-060	6.0	6	15.0	60	◆
AFX50140-065	6.5	8	18.0	60	◆
AFX50140-070	7.0	8	20.0	60	◆
AFX50140-075	7.5	8	20.0	60	◆
AFX50140-080	8.0	8	20.0	70	◆
AFX50140-085	8.5	10	22.0	70	◆
AFX50140-090	9.0	10	22.0	70	◆
AFX50140-095	9.5	10	24.0	70	◆
AFX50140-100	10.0	10	25.0	75	◆
AFX50140-105	10.5	12	26.0	75	◆
AFX50140-110	11.0	12	30.0	75	◆
AFX50140-115	11.5	12	30.0	80	◆
AFX50140-120	12.0	12	30.0	80	◆
AFX50140-130	13.0	12	35.0	100	◆
AFX50140-140	14.0	14	35.0	100	◆
AFX50140-160	16.0	16	40.0	100	◆
AFX50140-180	18.0	18	45.0	100	◆
AFX50140-200	20.0	20	45.0	100	◆
AFX50140-250	25.0	25	50.0	120	◆

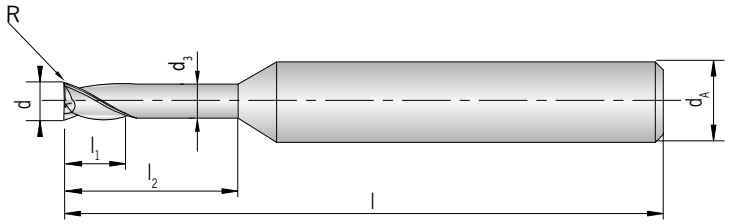
HC = Carbide coated

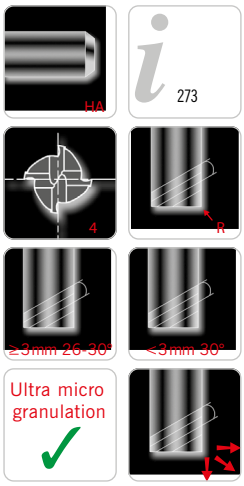
P	●
M	○
K	●
N	
S	
H	●

● Main application
○ Secondary application

AFX50041-...R...

4 flutes, long design, with corner radius





Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	R *± 0,02*	HC S100
AFX50041-010AR0,1	1.0	4	0.95	1.5	4	50	0.1	◆
AFX50041-010AR0,2	1.0	4	0.95	1.5	4	50	0.2	◆
AFX50041-010AR0,3	1.0	4	0.95	1.5	4	50	0.3	◆
AFX50041-010BR0,1	1.0	4	0.95	1.5	6	50	0.1	◆
AFX50041-010BR0,2	1.0	4	0.95	1.5	6	50	0.2	◆
AFX50041-010BR0,3	1.0	4	0.95	1.5	6	50	0.3	◆
AFX50041-010CR0,1	1.0	4	0.95	1.5	8	50	0.1	◆
AFX50041-010CR0,2	1.0	4	0.95	1.5	8	50	0.2	◆
AFX50041-010CR0,3	1.0	4	0.95	1.5	8	50	0.3	◆
AFX50041-012AR0,1	1.2	4	1.15	1.8	4	50	0.1	◆
AFX50041-012AR0,2	1.2	4	1.15	1.8	4	50	0.2	◆
AFX50041-012AR0,3	1.2	4	1.15	1.8	4	50	0.3	◆
AFX50041-012BR0,1	1.2	4	1.15	1.8	6	50	0.1	◆
AFX50041-012BR0,2	1.2	4	1.15	1.8	6	50	0.2	◆
AFX50041-012BR0,3	1.2	4	1.15	1.8	6	50	0.3	◆
AFX50041-012CR0,1	1.2	4	1.15	1.8	8	50	0.1	◆
AFX50041-012CR0,2	1.2	4	1.15	1.8	8	50	0.2	◆
AFX50041-012CR0,3	1.2	4	1.15	1.8	8	50	0.3	◆
AFX50041-015AR0,1	1.5	4	1.45	2.3	6	50	0.1	◆
AFX50041-015AR0,2	1.5	4	1.45	2.3	6	50	0.2	◆
AFX50041-015AR0,3	1.5	4	1.45	2.3	6	50	0.3	◆
AFX50041-015AR0,5	1.5	4	1.45	2.3	6	50	0.5	◆
AFX50041-015BR0,1	1.5	4	1.45	2.3	8	50	0.1	◆
AFX50041-015BR0,2	1.5	4	1.45	2.3	8	50	0.2	◆
AFX50041-015BR0,3	1.5	4	1.45	2.3	8	50	0.3	◆
AFX50041-015BR0,5	1.5	4	1.45	2.3	8	50	0.5	◆
AFX50041-015CR0,1	1.5	4	1.45	2.3	10	50	0.1	◆
AFX50041-015CR0,2	1.5	4	1.45	2.3	10	50	0.2	◆
AFX50041-015CR0,3	1.5	4	1.45	2.3	10	50	0.3	◆
AFX50041-015CR0,5	1.5	4	1.45	2.3	10	50	0.5	◆
AFX50041-015DR0,1	1.5	4	1.45	2.3	12	50	0.1	◆
AFX50041-015DR0,2	1.5	4	1.45	2.3	12	50	0.2	◆
AFX50041-015DR0,3	1.5	4	1.45	2.3	12	50	0.3	◆
AFX50041-015DR0,5	1.5	4	1.45	2.3	12	50	0.5	◆
AFX50041-020AR0,1	2.0	4	1.95	3.0	6	50	0.1	◆
AFX50041-020AR0,2	2.0	4	1.95	3.0	6	50	0.2	◆
AFX50041-020AR0,3	2.0	4	1.95	3.0	6	50	0.3	◆

Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	R *± 0,02*	HC S100
AFX50041-020AR0,5	2.0	4	1.95	3.0	6	50	0.5	◆
AFX50041-020BR0,1	2.0	4	1.95	3.0	8	50	0.1	◆
AFX50041-020BR0,2	2.0	4	1.95	3.0	8	50	0.2	◆
AFX50041-020BR0,3	2.0	4	1.95	3.0	8	50	0.3	◆
AFX50041-020BR0,5	2.0	4	1.95	3.0	8	50	0.5	◆
AFX50041-020CR0,1	2.0	4	1.95	3.0	10	50	0.1	◆
AFX50041-020CR0,2	2.0	4	1.95	3.0	10	50	0.2	◆
AFX50041-020CR0,3	2.0	4	1.95	3.0	10	50	0.3	◆
AFX50041-020CR0,5	2.0	4	1.95	3.0	10	50	0.5	◆
AFX50041-020DR0,1	2.0	4	1.95	3.0	12	50	0.1	◆
AFX50041-020DR0,2	2.0	4	1.95	3.0	12	50	0.2	◆
AFX50041-020DR0,3	2.0	4	1.95	3.0	12	50	0.3	◆
AFX50041-020DR0,5	2.0	4	1.95	3.0	12	50	0.5	◆
AFX50041-030AR0,1	3.0	6	2.85	4.5	8	50	0.1	◆
AFX50041-030AR0,2	3.0	6	2.85	4.5	10	50	0.2	◆
AFX50041-030AR0,3	3.0	6	2.85	4.5	8	50	0.3	◆
AFX50041-030AR0,5	3.0	6	2.85	4.5	8	60	0.5	◆
AFX50041-030AR1,0	3.0	6	2.85	4.5	8	50	1.0	◆
AFX50041-030BR0,1	3.0	6	2.85	4.5	10	50	0.1	◆
AFX50041-030BR0,2	3.0	6	2.85	4.5	12	60	0.2	◆
AFX50041-030BR0,3	3.0	6	2.85	4.5	10	60	0.3	◆
AFX50041-030BR0,5	3.0	6	2.85	4.5	10	50	0.5	◆
AFX50041-030BR1,0	3.0	6	2.85	4.5	10	50	1.0	◆
AFX50041-030CR0,1	3.0	6	2.85	4.5	12	50	0.1	◆
AFX50041-030CR0,2	3.0	6	2.85	4.5	16	60	0.2	◆
AFX50041-030CR0,3	3.0	6	2.85	4.5	12	50	0.3	◆
AFX50041-030CR0,5	3.0	6	2.85	4.5	12	50	0.5	◆
AFX50041-030CR1,0	3.0	6	2.85	4.5	12	50	1.0	◆
AFX50041-030DR0,1	3.0	6	2.85	4.5	16	60	0.1	◆
AFX50041-030DR0,2	3.0	6	2.85	4.5	20	60	0.2	◆
AFX50041-030DR0,3	3.0	6	2.85	4.5	16	60	0.3	◆
AFX50041-030DR0,5	3.0	6	2.85	4.5	16	60	0.5	◆
AFX50041-030DR1,0	3.0	6	2.85	4.5	16	60	1.0	◆
AFX50041-030ER0,3	3.0	6	2.85	4.5	20	60	0.3	◆
AFX50041-030ER0,5	3.0	6	2.85	4.5	20	60	0.5	◆
AFX50041-030FR0,5	3.0	6	2.85	4.5	26	65	0.5	◆
AFX50041-040AR0,1	4.0	6	3.85	6.0	10	50	0.1	◆
AFX50041-040AR0,2	4.0	6	3.85	6.0	10	50	0.2	◆
AFX50041-040AR0,3	4.0	6	3.85	6.0	10	50	0.3	◆
AFX50041-040AR0,5	4.0	6	3.85	6.0	10	50	0.5	◆
AFX50041-040AR1,0	4.0	6	3.85	6.0	10	50	1.0	◆
AFX50041-040BR0,1	4.0	6	3.85	6.0	12	50	0.1	◆
AFX50041-040BR0,2	4.0	6	3.85	6.0	12	50	0.2	◆
AFX50041-040BR0,3	4.0	6	3.85	6.0	12	50	0.3	◆
AFX50041-040BR0,5	4.0	6	3.85	6.0	12	50	0.5	◆
AFX50041-040BR1,0	4.0	6	3.85	6.0	12	50	1.0	◆
AFX50041-040CR0,1	4.0	6	3.85	6.0	16	60	0.1	◆
AFX50041-040CR0,2	4.0	6	3.85	6.0	16	60	0.2	◆
AFX50041-040CR0,3	4.0	6	3.85	6.0	16	60	0.3	◆
AFX50041-040CR0,5	4.0	6	3.85	6.0	16	60	0.5	◆
AFX50041-040CR1,0	4.0	6	3.85	6.0	16	60	1.0	◆
AFX50041-040DR0,1	4.0	6	3.85	6.0	20	60	0.1	◆
AFX50041-040DR0,2	4.0	6	3.85	6.0	20	60	0.2	◆
AFX50041-040DR0,3	4.0	6	3.85	6.0	20	60	0.3	◆
AFX50041-040DR0,5	4.0	6	3.85	6.0	20	60	0.5	◆
AFX50041-040DR1,0	4.0	6	3.85	6.0	20	60	1.0	◆
AFX50041-040ER0,2	4.0	6	3.85	6.0	26	65	0.2	◆

Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	R *± 0,02*	HC S100
AFX50041-040ER0,3	4.0	6	3.85	6.0	26	65	0.3	◆
AFX50041-040ER0,5	4.0	6	3.85	6.0	26	65	0.5	◆
AFX50041-040ER1,0	4.0	6	3.85	6.0	26	65	1.0	◆
AFX50041-060AR0,3	6.0	6	5.85	9.0	20	60	0.3	◆
AFX50041-060AR0,5	6.0	6	5.85	9.0	20	60	0.5	◆
AFX50041-060AR1,0	6.0	6	5.85	9.0	20	60	1.0	◆
AFX50041-080AR0,2	8.0	8	7.70	12.0	25	70	0.2	◆
AFX50041-080AR0,3	8.0	8	7.70	12.0	25	70	0.3	◆
AFX50041-080AR0,5	8.0	8	7.70	12.0	25	70	0.5	◆
AFX50041-080AR1,0	8.0	8	7.70	12.0	25	70	1.0	◆
AFX50041-080BR0,5	8.0	8	7.70	20.0	35	100	0.5	◆
AFX50041-100AR0,3	10.0	10	9.70	15.0	30	75	0.3	◆
AFX50041-100AR0,5	10.0	10	9.70	15.0	30	75	0.5	◆
AFX50041-100AR1,0	10.0	10	9.70	15.0	30	75	1.0	◆
AFX50041-100AR1,5	10.0	10	9.70	15.0	30	75	1.5	◆
AFX50041-100BR0,5	10.0	10	9.70	25.0	40	100	0.5	◆
AFX50041-120AR0,5	12.0	12	11.70	18.0	32	80	0.5	◆
AFX50041-120AR1,0	12.0	12	11.70	18.0	32	80	1.0	◆
AFX50041-120AR1,5	12.0	12	11.70	18.0	32	80	1.5	◆
AFX50041-120AR2,0	12.0	12	11.70	18.0	32	80	2.0	◆
AFX50041-120BR0,5	12.0	12	11.70	30.0	45	110	0.5	◆
AFX50041-160AR0,5	16.0	16	15.70	20.0	35	100	0.5	◆
AFX50041-160AR1,0	16.0	16	15.70	20.0	35	100	1.0	◆
AFX50041-200AR0,5	20.0	20	19.70	25.0	40	100	0.5	◆
AFX50041-200AR1,0	20.0	20	19.70	25.0	40	100	1.0	◆

HC = Carbide coated

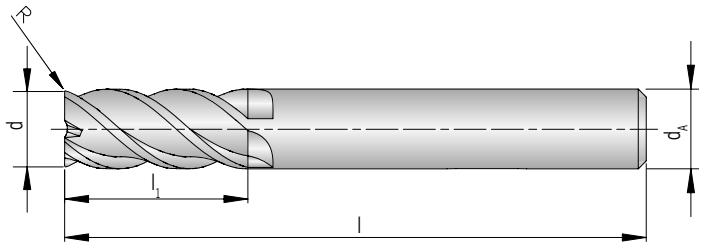
P	●
M	○
K	●
N	
S	
H	●

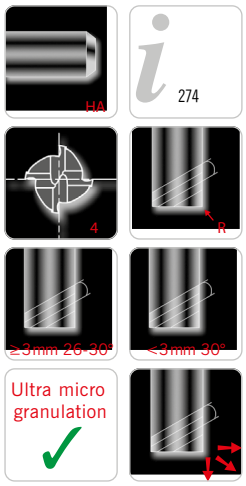
● Main application

○ Secondary application

AFX50741-...R...

4 flutes, long design, with corner radius





Shank DIN 6535HA	d -0,03	d_A h6	l_1	l	R ± 0,02	HC S100
AFX50741-010R0,1	1.0	6	2.5	50	0.1	◆
AFX50741-015R0,2	1.5	6	4.0	50	0.2	◆
AFX50741-020R0,1	2.0	6	6.0	50	0.1	◆
AFX50741-020R0,2	2.0	6	6.0	50	0.2	◆
AFX50741-025R0,2	2.5	6	7.0	60	0.2	◆
AFX50741-030R0,2	3.0	6	8.0	60	0.2	◆
AFX50741-030R0,3	3.0	6	8.0	60	0.3	◆
AFX50741-030R0,5	3.0	6	8.0	60	0.5	◆
AFX50741-040R0,2	4.0	6	10.0	70	0.2	◆
AFX50741-040R0,3	4.0	6	10.0	70	0.3	◆
AFX50741-040R0,5	4.0	6	10.0	70	0.5	◆
AFX50741-040R1,0	4.0	6	10.0	70	1.0	◆
AFX50741-050R0,3	5.0	6	13.0	90	0.3	◆
AFX50741-050R0,5	5.0	6	13.0	90	0.5	◆
AFX50741-060AR0,2	6.0	6	15.0	60	0.2	◆
AFX50741-060BR0,2	6.0	6	15.0	90	0.2	◆
AFX50741-060R0,3	6.0	6	15.0	90	0.3	◆
AFX50741-060R0,5	6.0	6	15.0	90	0.5	◆
AFX50741-060R1,0	6.0	6	15.0	90	1.0	◆
AFX50741-080AR0,3	8.0	8	20.0	70	0.3	◆
AFX50741-080AR0,5	8.0	8	20.0	70	0.5	◆
AFX50741-080AR1,0	8.0	8	20.0	70	1.0	◆
AFX50741-080BR0,3	8.0	8	20.0	100	0.3	◆
AFX50741-080BR0,5	8.0	8	20.0	100	0.5	◆
AFX50741-080BR1,0	8.0	8	20.0	100	1.0	◆
AFX50741-080R0,2	8.0	8	20.0	100	0.2	◆
AFX50741-080R1,5	8.0	8	20.0	100	1.5	◆
AFX50741-080R2,0	8.0	8	20.0	100	2.0	◆
AFX50741-100AR0,5	10.0	10	25.0	75	0.5	◆
AFX50741-100BR0,5	10.0	10	25.0	100	0.5	◆
AFX50741-100R0,3	10.0	10	25.0	100	0.3	◆
AFX50741-100R1,0	10.0	10	25.0	100	1.0	◆
AFX50741-100R1,5	10.0	10	25.0	100	1.5	◆
AFX50741-100R2,0	10.0	10	25.0	100	2.0	◆
AFX50741-120AR0,5	12.0	12	30.0	80	0.5	◆
AFX50741-120AR1,0	12.0	12	30.0	80	1.0	◆

Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	R *± 0,02*	HC S100
AFX50741-120BR0,5	12.0	12	30.0	110	0.5	◆
AFX50741-120R1,0	12.0	12	30.0	110	1.0	◆
AFX50741-120R1,5	12.0	12	30.0	110	1.5	◆
AFX50741-120R2,0	12.0	12	30.0	110	2.0	◆
AFX50741-160R0,5	16.0	16	32.0	150	0.5	◆
AFX50741-160R1,0	16.0	16	32.0	150	1.0	◆
AFX50741-160R1,5	16.0	16	32.0	150	1.5	◆
AFX50741-160R2,0	16.0	16	32.0	150	2.0	◆
AFX50741-200R1,0	20.0	20	38.0	150	1.0	◆
AFX50741-200R2,0	20.0	20	38.0	150	2.0	◆

HC = Carbide coated

P	●
M	○
K	●
N	
S	
H	●

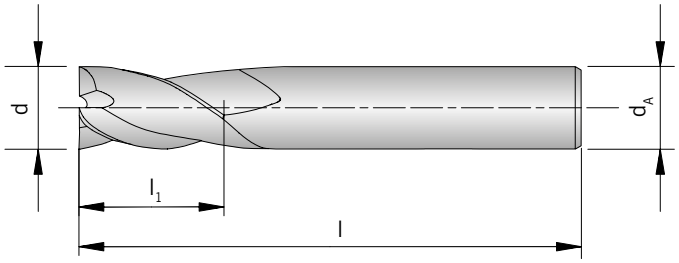
● Main application

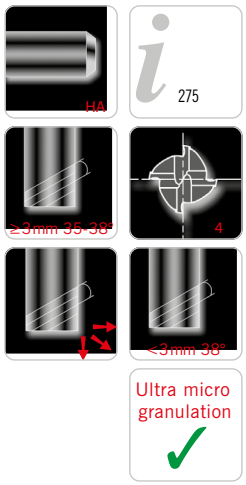
○ Secondary application

Dimensions in mm

AFX50042-...

4 flutes





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC S100
AFX50042-010A	1.0	6	2.5	50	◆
AFX50042-012A	1.2	6	3.0	50	◆
AFX50042-015A	1.5	6	4.0	50	◆
AFX50042-020A	2.0	6	6.0	50	◆
AFX50042-025A	2.5	6	7.0	50	◆
AFX50042-030A	3.0	6	8.0	50	◆
AFX50042-040A	4.0	6	10.0	50	◆
AFX50042-050A	5.0	6	15.0	60	◆
AFX50042-060A	6.0	6	15.0	60	◆
AFX50042-060B	6.0	6	25.0	60	◆
AFX50042-080A	8.0	8	20.0	70	◆
AFX50042-100A	10.0	10	25.0	75	◆
AFX50042-120A	12.0	12	30.0	80	◆
AFX50042-120B	12.0	12	35.0	80	◆
AFX50042-160A	16.0	16	32.0	100	◆
AFX50042-200A	20.0	20	45.0	100	◆

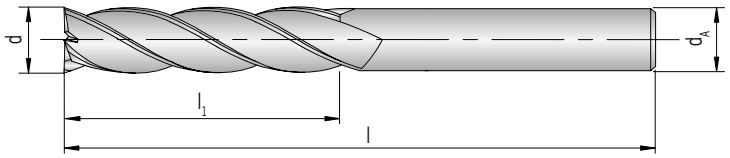
HC = Carbide coated

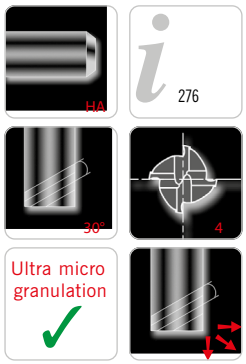
P	●
M	○
K	●
N	
S	
H	●

● Main application
○ Secondary application

AFX50141-...

4 flutes, long design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC S100
AFX50141-010A	1.0	6	3	60	◆
AFX50141-010B	1.0	6	4	60	◆
AFX50141-010C	1.0	6	5	60	◆
AFX50141-010D	1.0	6	6	60	◆
AFX50141-015A	1.5	6	6	60	◆
AFX50141-020A	2.0	6	8	60	◆
AFX50141-020B	2.0	6	10	60	◆
AFX50141-020C	2.0	6	12	60	◆
AFX50141-020D	2.0	6	14	60	◆
AFX50141-025A	2.5	6	10	60	◆
AFX50141-025B	2.5	6	12	60	◆
AFX50141-030A	3.0	6	10	70	◆
AFX50141-030B	3.0	6	12	70	◆
AFX50141-030C	3.0	6	16	70	◆
AFX50141-030D	3.0	6	20	70	◆
AFX50141-030E	3.0	6	26	70	◆
AFX50141-030F	3.0	6	30	70	◆
AFX50141-040A	4.0	6	12	70	◆
AFX50141-040B	4.0	6	16	70	◆
AFX50141-040C	4.0	6	20	70	◆
AFX50141-040D	4.0	6	26	70	◆
AFX50141-040E	4.0	6	30	70	◆
AFX50141-050A	5.0	6	20	70	◆
AFX50141-050B	5.0	6	25	70	◆
AFX50141-050C	5.0	6	30	80	◆
AFX50141-060A	6.0	6	15	60	◆
AFX50141-060B	6.0	6	20	70	◆
AFX50141-060C	6.0	6	20	90	◆
AFX50141-060D	6.0	6	25	75	◆
AFX50141-060E	6.0	6	30	80	◆
AFX50141-060F	6.0	6	30	100	◆
AFX50141-060G	6.0	6	35	90	◆
AFX50141-060H	6.0	6	40	90	◆
AFX50141-060I	6.0	6	40	120	◆
AFX50141-060J	6.0	6	45	150	◆
AFX50141-080A	8.0	8	25	80	◆
AFX50141-080B	8.0	8	30	80	◆

Dimensions in mm

Shank DIN 6535HA	d *-0,03*	d_A *h6*	l_1	l	HC S100
AFX50141-080C	8.0	8	35	80	◆
AFX50141-080D	8.0	8	40	90	◆
AFX50141-080E	8.0	8	45	100	◆
AFX50141-080F	8.0	8	50	100	◆
AFX50141-080G	8.0	8	50	150	◆
AFX50141-100A	10.0	10	30	80	◆
AFX50141-100B	10.0	10	30	100	◆
AFX50141-100C	10.0	10	35	90	◆
AFX50141-100D	10.0	10	40	90	◆
AFX50141-100E	10.0	10	45	100	◆
AFX50141-100F	10.0	10	50	100	◆
AFX50141-120A	12.0	12	35	90	◆
AFX50141-120B	12.0	12	40	100	◆
AFX50141-120C	12.0	12	45	130	◆
AFX50141-120D	12.0	12	50	100	◆
AFX50141-120E	12.0	12	55	110	◆
AFX50141-120F	12.0	12	60	110	◆
AFX50141-120G	12.0	12	60	150	◆
AFX50141-140A	14.0	16	50	110	◆
AFX50141-160B	16.0	16	50	110	◆
AFX50141-160C	16.0	16	60	120	◆
AFX50141-160D	16.0	16	70	130	◆
AFX50141-160E	16.0	16	70	150	◆
AFX50141-180A	18.0	20	50	120	◆
AFX50141-200A	20.0	20	60	130	◆
AFX50141-200B	20.0	20	90	200	◆
AFX50141-250A	25.0	25	90	150	◆

HC = Carbide coated

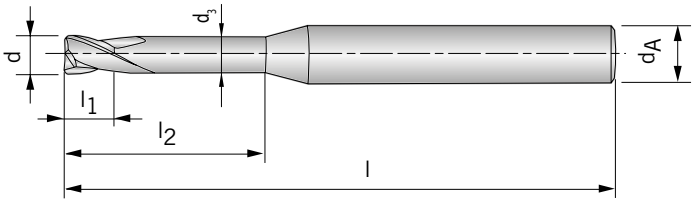
P	●
M	○
K	●
N	
S	
H	●

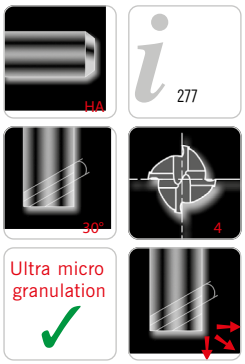
● Main application

○ Secondary application

AFX50142-...

4 flutes, extra long design





Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	HC S100
AFX50142-010A	1.0	4	0.95	1.5	4	50	◆
AFX50142-010B	1.0	4	0.95	1.5	5	50	◆
AFX50142-010C	1.0	4	0.95	1.5	6	50	◆
AFX50142-010D	1.0	4	0.95	1.5	8	50	◆
AFX50142-015A	1.5	4	1.45	2.3	6	50	◆
AFX50142-015B	1.5	4	1.45	2.3	8	50	◆
AFX50142-015C	1.5	4	1.45	2.3	10	50	◆
AFX50142-015D	1.5	4	1.45	2.3	12	50	◆
AFX50142-015E	1.5	4	1.45	2.3	16	50	◆
AFX50142-020A	2.0	4	1.95	3.0	8	50	◆
AFX50142-020B	2.0	4	1.95	3.0	10	50	◆
AFX50142-020C	2.0	4	1.95	3.0	12	50	◆
AFX50142-020D	2.0	4	1.95	3.0	16	50	◆
AFX50142-030A	3.0	6	2.85	4.5	10	50	◆
AFX50142-030B	3.0	6	2.85	4.5	12	50	◆
AFX50142-030C	3.0	6	2.85	4.5	16	60	◆
AFX50142-030D	3.0	6	2.85	4.5	20	60	◆
AFX50142-030E	3.0	6	2.85	4.5	30	70	◆
AFX50142-040A	4.0	6	3.85	6.0	12	50	◆
AFX50142-040B	4.0	6	3.85	6.0	16	60	◆
AFX50142-040C	4.0	6	3.85	6.0	20	60	◆
AFX50142-040D	4.0	6	3.85	6.0	30	70	◆
AFX50142-040E	4.0	6	3.85	6.0	40	80	◆
AFX50142-050A	5.0	6	4.85	8.0	20	60	◆
AFX50142-050B	5.0	6	4.85	8.0	40	80	◆
AFX50142-060A	6.0	6	5.85	9.0	15	60	◆
AFX50142-060B	6.0	6	5.85	9.0	30	70	◆
AFX50142-080A	8.0	8	7.70	12.0	25	70	◆
AFX50142-080B	8.0	8	7.70	12.0	42	100	◆
AFX50142-100A	10.0	10	9.70	15.0	30	75	◆

Dimensions in mm

Shank DIN 6535HA	d *-0,03*	d_A *h6*	d_3	l_1	l_2	l	HC S100
AFX50142-100B	10.0	10	9.70	15.0	45	100	◆
AFX50142-120A	12.0	12	11.70	20.0	35	80	◆
AFX50142-120B	12.0	12	11.70	20.0	50	110	◆

HC = Carbide coated

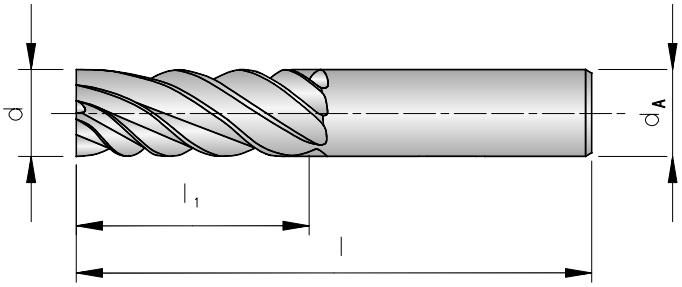
P	●
M	○
K	●
N	
S	
H	●

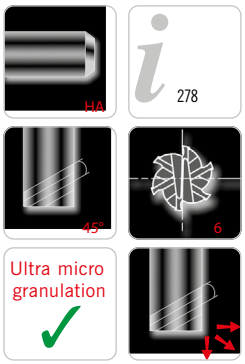
● Main application

○ Secondary application

AFX50260-...

6 flutes, short design





Shank DIN 6535HA	d -0,03	d_A h6	l_1	l	HC S100
AFX50260-060A	6	6	15	60	◆
AFX50260-060B	6	6	30	80	◆
AFX50260-080A	8	8	20	70	◆
AFX50260-080B	8	8	40	90	◆
AFX50260-100A	10	10	25	75	◆
AFX50260-100B	10	10	40	90	◆
AFX50260-120A	12	12	30	80	◆
AFX50260-120B	12	12	50	100	◆
AFX50260-120C	12	12	60	110	◆
AFX50260-160A	16	16	40	100	◆
AFX50260-160B	16	16	60	120	◆
AFX50260-200A	20	20	45	100	◆
AFX50260-200B	20	20	60	120	◆

HC = Carbide coated

P	●
M	○
K	●
N	
S	
H	●

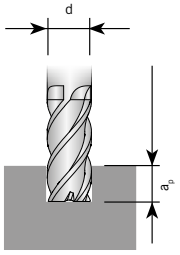
● Main application

○ Secondary application

Dimensions in mm

Design AFX

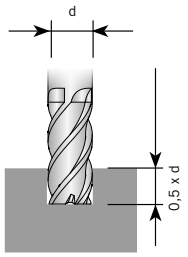
MATERIAL		Non-alloyed steel Alloy steel Cast iron					Alloy steel Heat resistant steel					Hardened steel				
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²					HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²					HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²				
d	l_2	a_p	n	f_z	v_f	v_c	a_p	n	f_z	v_f	v_c	a_p	n	f_z	v_f	v_c
(mm)	(mm)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)
0,2	1,0	0,028	50.000	0,002	170	31	0,021	34.500	0,001	75	22	0,017	21.150	0,001	45	13
0,3	1,0	0,042	50.000	0,002	200	47	0,032	32.000	0,001	85	30	0,025	20.000	0,001	50	19
0,3	2,0	0,024	45.000	0,002	160	42	0,018	28.800	0,001	70	27	0,014	18.000	0,001	40	17
0,4	1,0	0,080	50.000	0,002	200	63	0,060	32.000	0,001	85	40	0,048	20.000	0,001	50	25
0,4	1,5	0,056	50.000	0,002	200	63	0,042	32.000	0,001	85	40	0,034	20.000	0,001	50	25
0,4	2,0	0,056	50.000	0,002	200	63	0,042	32.000	0,001	85	40	0,034	20.000	0,001	50	25
0,4	2,5	0,032	45.000	0,002	160	57	0,024	28.800	0,001	70	36	0,019	18.000	0,001	40	23
0,5	1,0	0,100	43.000	0,003	220	68	0,075	28.000	0,002	95	44	0,060	17.100	0,002	60	27
0,5	1,5	0,100	43.000	0,003	220	68	0,075	28.000	0,002	95	44	0,060	17.100	0,002	60	27
0,5	2,0	0,070	43.000	0,003	220	68	0,053	28.000	0,002	95	44	0,042	17.100	0,002	60	27
0,5	3,0	0,040	38.700	0,002	180	61	0,030	25.200	0,001	75	40	0,024	15.390	0,002	50	24
0,5	4,0	0,040	38.700	0,002	180	61	0,030	25.200	0,001	75	40	0,024	15.390	0,002	50	24
0,6	2,0	0,084	36.400	0,003	250	69	0,063	24.000	0,002	110	45	0,050	14.500	0,002	65	27
0,6	3,0	0,084	36.400	0,003	250	69	0,063	24.000	0,002	110	45	0,050	14.500	0,002	65	27
0,6	4,0	0,048	32.760	0,003	205	62	0,036	21.600	0,002	90	41	0,029	13.050	0,002	55	25
0,6	6,0	0,030	32.760	0,003	205	62	0,023	21.600	0,002	90	41	0,018	13.050	0,002	55	25
0,8	2,0	0,160	36.400	0,003	250	91	0,120	24.000	0,002	110	60	0,096	14.500	0,002	65	36
0,8	4,0	0,112	36.400	0,003	250	91	0,084	24.000	0,002	110	60	0,067	14.500	0,002	65	36
0,8	6,0	0,064	32.760	0,003	205	82	0,048	21.600	0,002	90	54	0,038	13.050	0,002	55	33
0,8	8,0	0,040	32.760	0,003	205	82	0,030	21.600	0,002	90	54	0,024	13.050	0,002	55	33
1,0	3,0	0,200	33.100	0,004	280	104	0,150	21.600	0,003	120	68	0,120	13.200	0,003	70	41
1,0	4,0	0,140	33.100	0,004	280	104	0,105	21.600	0,003	120	68	0,084	13.200	0,003	70	41
1,0	6,0	0,080	29.790	0,004	225	94	0,060	19.440	0,002	95	61	0,048	11.880	0,002	55	37
1,0	8,0	0,080	29.790	0,004	225	94	0,060	19.440	0,002	95	61	0,048	11.880	0,002	55	37
1,0	10,0	0,050	29.790	0,004	225	94	0,038	19.440	0,002	95	61	0,030	11.880	0,002	55	37
1,0	12,0	0,050	26.480	0,003	180	83	0,038	17.280	0,002	75	54	0,030	10.560	0,002	45	33
1,2	4,0	0,168	29.750	0,005	290	112	0,126	18.900	0,003	125	71	0,101	11.700	0,003	70	44
1,2	6,0	0,168	29.750	0,005	290	112	0,126	18.900	0,003	125	71	0,101	11.700	0,003	70	44
1,2	8,0	0,096	26.780	0,004	235	101	0,072	17.010	0,003	100	64	0,058	10.530	0,003	55	40
1,2	10,0	0,060	26.780	0,004	235	101	0,045	17.010	0,003	100	64	0,036	10.530	0,003	55	40
2,0	6,0	0,400	21.600	0,007	310	136	0,300	13.800	0,005	140	87	0,240	8.640	0,005	80	54
2,0	8,0	0,280	21.600	0,007	310	136	0,210	13.800	0,005	140	87	0,168	8.640	0,005	80	54
2,0	10,0	0,280	21.600	0,007	310	136	0,210	13.800	0,005	140	87	0,168	8.640	0,005	80	54
2,0	12,0	0,160	19.440	0,006	250	122	0,120	12.420	0,005	115	78	0,096	7.780	0,004	65	49
2,0	14,0	0,160	19.440	0,006	250	122	0,120	12.420	0,005	115	78	0,096	7.780	0,004	65	49
2,0	16,0	0,160	19.440	0,006	250	122	0,120	12.420	0,005	115	78	0,096	7.780	0,004	65	49
3,0	8,0	0,600	15.900	0,010	330	150	0,450	10.300	0,008	160	97	0,360	6.300	0,006	80	59
3,0	10,0	0,420	15.900	0,010	330	150	0,315	10.300	0,008	160	97	0,252	6.300	0,006	80	59
3,0	12,0	0,420	15.900	0,010	330	150	0,315	10.300	0,008	160	97	0,252	6.300	0,006	80	59
3,0	14,0	0,420	15.900	0,010	330	150	0,315	10.300	0,008	160	97	0,252	6.300	0,006	80	59
3,0	16,0	0,240	14.310	0,009	265	135	0,180	9.270	0,007	130	87	0,144	5.670	0,006	65	53
3,0	20,0	0,240	14.310	0,009	265	135	0,180	9.270	0,007	130	87	0,144	5.670	0,006	65	53
3,0	26,0	0,150	14.310	0,009	265	135	0,113	9.270	0,007	130	87	0,090	5.670	0,006	65	53
4,0	10,0	0,800	12.800	0,016	400	161	0,600	8.200	0,012	200	103	0,480	5.150	0,009	95	65
4,0	12,0	0,800	12.800	0,016	400	161	0,600	8.200	0,012	200	103	0,480	5.150	0,009	95	65
4,0	16,0	0,560	12.800	0,016	400	161	0,420	8.200	0,012	200	103	0,336	5.150	0,009	95	65
4,0	20,0	0,560	12.800	0,016	400	161	0,420	8.200	0,012	200	103	0,336	5.150	0,009	95	65
4,0	26,0	0,320	11.520	0,014	325	145	0,240	7.380	0,011	160	93	0,192	4.640	0,008	78	58
4,0	30,0	0,320	11.520	0,014	325	145	0,240	7.380	0,011	160	93	0,192	4.640	0,008	78	58
6,0	20,0	0,840	9.500	0,032	600	179	0,630	6.000	0,025	300	113	0,504	3.930	0,018	140	74
6,0	30,0	0,840	9.500	0,032	600	179	0,630	6.000	0,025	300	113	0,504	3.930	0,018	140	74
8,0	25,0	1,120	7.200	0,044	640	181	0,840	4.550	0,033	300	114	0,672	3.020	0,023	140	76
10,0	30,0	2,000	6.000	0,053	640	188	1,500	4.000	0,038	300	126	1,200	2.420	0,029	140	76
12,0	32,0	2,400	5.000	0,050	500	188	1,800	3.340	0,040	270	126	1,440	2.000	0,030	120	75
16,0	35,0	3,200	3.720	0,060	450	187	2,400	2.520	0,042	210	127	1,920	1.540	0,031	95	77
20,0	40,0	4,000	3.000	0,055	330	188	3,000	1.950	0,036	140	123	2,400	1.200	0,029	70	75



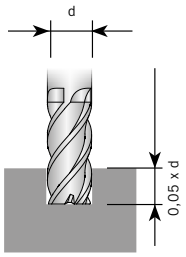
The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron			Alloy steel Heat resistant steel				Alloy steel Heat resistant steel			
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²			HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²				HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²			
d	n	f_z	v_f	v_c	n	f_z	v_f	v_c	n	f_z	v_f	v_c
(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)
0,1	42.000	0,001	80	13	25.200	0,001	47	8	16.800	0,001	16	5
0,2	42.000	0,001	85	26	25.200	0,001	50	16	16.800	0,001	17	11
0,3	39.000	0,001	90	37	23.400	0,001	54	22	15.600	0,001	18	15
0,4	39.000	0,001	95	49	23.400	0,001	57	29	15.600	0,001	19	20
0,5	36.000	0,002	110	57	21.600	0,002	66	34	14.400	0,001	22	23
0,6	32.000	0,002	125	60	19.200	0,002	76	36	12.800	0,001	25	24
0,7	28.000	0,003	140	62	16.800	0,003	85	37	11.200	0,001	28	25
0,8	25.000	0,003	155	63	15.000	0,003	95	38	10.000	0,002	32	25
0,9	23.500	0,004	165	66	14.100	0,003	98	40	9.400	0,002	33	27
1,0	21.500	0,004	170	68	12.900	0,004	101	41	8.600	0,002	34	27
1,2	18.000	0,005	175	68	10.800	0,005	104	41	7.200	0,002	35	27
1,5	15.000	0,006	180	71	9.000	0,006	107	42	6.000	0,003	36	28
2,0	11.560	0,009	200	73	7.560	0,008	125	48	5.040	0,004	37	32
2,5	10.240	0,010	210	80	6.560	0,010	135	52	4.200	0,005	39	33
3,0	8.920	0,012	220	84	5.560	0,013	145	52	3.360	0,006	42	32
3,5	8.240	0,016	270	91	5.090	0,017	170	56	3.150	0,007	42	35
4,0	7.560	0,021	315	95	4.620	0,021	190	58	2.940	0,007	42	37
4,5	6.930	0,023	325	98	4.200	0,023	195	59	2.630	0,009	47	37
5,0	6.300	0,027	335	99	3.780	0,026	200	59	2.320	0,011	53	36
5,5	5.930	0,030	350	102	3.570	0,030	215	62	2.160	0,013	55	37
6,0	5.560	0,033	370	105	3.360	0,034	230	63	2.000	0,015	58	38
6,5	5.220	0,036	375	107	3.150	0,036	225	64	1.920	0,016	63	39
7,0	4.880	0,039	385	107	2.940	0,037	220	65	1.840	0,018	68	40
7,5	4.540	0,043	390	107	2.730	0,039	215	64	1.760	0,021	74	41
8,0	4.200	0,048	400	106	2.520	0,042	210	63	1.680	0,024	79	42
8,5	3.965	0,049	385	106	2.390	0,042	200	64	1.600	0,023	74	43
9,0	3.730	0,050	375	105	2.260	0,042	190	64	1.520	0,022	68	43
9,5	3.495	0,051	355	104	2.130	0,042	180	64	1.440	0,022	63	43
10,0	3.260	0,053	345	102	2.000	0,043	170	63	1.360	0,023	63	43
10,5	3.130	0,053	330	103	1.920	0,042	160	63	1.310	0,023	61	43
11,0	3.000	0,053	320	104	1.840	0,041	150	64	1.260	0,023	58	44
11,5	2.870	0,053	305	104	1.760	0,040	140	64	1.210	0,024	58	44
12,0	2.740	0,054	295	103	1.680	0,040	135	63	1.160	0,025	58	44
13,0	2.605	0,054	280	106	1.600	0,041	130	65	1.095	0,025	55	45
14,0	2.470	0,054	265	109	1.520	0,041	125	67	1.030	0,024	49	45
15,0	2.335	0,052	245	110	1.440	0,042	120	68	965	0,023	45	45
16,0	2.200	0,052	230	111	1.360	0,042	115	68	900	0,023	42	45
18,0	1.940	0,053	205	110	1.210	0,041	100	68	790	0,023	37	45
20,0	1.680	0,054	180	106	1.060	0,040	84	67	680	0,024	32	43



< ø 1 mm - 0,15 x d
> ø 1 mm - 0,2 x d
> ø 3mm - 0,5 x d



< ø 1 mm - 0,02 x d
> ø 1mm - 0,05 x d

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron				Alloy steel Heat resistant steel				Hardened steel			
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²				HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²				HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²			
d (mm)	l_1 (mm)	n (U/min)	f_z (mm)	v_f (mm/min)	v_c (m/min)	n (U/min)	f_z (mm)	v_f (mm/min)	v_c (m/min)	n (U/min)	f_z (mm)	v_f (mm/min)	v_c (m/min)
1,0	3	16.000	0,002	70	50	12.800	0,002	60	40	8.000	0,002	30	25
1,0	4	16.000	0,002	70	50	12.800	0,002	60	40	8.000	0,002	30	25
1,0	6	14.400	0,002	55	45	11.520	0,002	50	36	7.200	0,002	25	23
1,0	8	14.400	0,002	50	45	11.520	0,002	45	36	7.200	0,002	20	23
1,0	10	14.400	0,002	50	45	11.520	0,002	45	36	7.200	0,002	20	23
1,5	6	11.200	0,004	80	53	8.960	0,004	70	42	5.600	0,003	30	26
1,5	8	10.080	0,003	70	48	8.060	0,004	60	38	5.040	0,003	30	24
1,5	10	10.080	0,003	65	48	8.060	0,003	55	38	5.040	0,002	25	24
1,5	12	10.080	0,003	60	48	8.060	0,003	50	38	5.040	0,002	25	24
1,5	16	8.960	0,003	45	42	7.170	0,003	40	34	4.480	0,002	20	21
2,0	8	9.070	0,005	85	57	7.260	0,005	70	46	4.540	0,004	35	29
2,0	10	9.070	0,005	85	57	7.260	0,005	70	46	4.540	0,004	35	29
2,0	12	8.160	0,004	70	51	6.530	0,005	60	41	4.090	0,004	30	26
2,0	16	8.160	0,004	60	51	6.530	0,004	50	41	4.090	0,003	25	26
2,5	10	7.700	0,006	95	60	6.200	0,006	80	49	3.850	0,005	40	30
2,5	16	6.930	0,005	75	54	5.580	0,006	65	44	3.470	0,004	30	27
3,0	10	6.350	0,008	100	60	5.150	0,008	85	49	3.170	0,006	40	30
3,0	12	6.350	0,008	100	60	5.150	0,008	85	49	3.170	0,006	40	30
3,0	16	5.720	0,008	90	54	4.640	0,008	75	44	2.850	0,007	40	27
3,0	20	5.720	0,007	80	54	4.640	0,008	70	44	2.850	0,006	35	27
3,0	26	5.720	0,006	70	54	4.640	0,006	60	44	2.850	0,005	30	27
4,0	12	5.150	0,012	120	65	4.100	0,012	100	52	2.580	0,010	50	32
4,0	16	5.150	0,012	120	65	4.100	0,012	100	52	2.580	0,010	50	32
4,0	20	5.150	0,012	120	65	4.100	0,012	100	52	2.580	0,010	50	32
4,0	26	4.640	0,010	95	58	3.690	0,012	85	46	2.320	0,009	40	29
4,0	30	4.640	0,010	95	58	3.690	0,012	85	46	2.320	0,009	40	29
5,0	20	4.400	0,017	150	69	3.480	0,018	125	55	2.280	0,012	55	36
5,0	25	4.400	0,017	150	69	3.480	0,018	125	55	2.280	0,012	55	36
5,0	30	3.960	0,015	120	62	3.130	0,016	100	49	2.050	0,011	45	32
5,0	40	3.960	0,014	110	62	3.130	0,014	90	49	2.050	0,010	40	32
6,0	15	3.800	0,024	180	72	3.050	0,025	150	57	1.970	0,018	70	37
6,0	20	3.800	0,024	180	72	3.050	0,025	150	57	1.970	0,018	70	37
6,0	25	3.800	0,024	180	72	3.050	0,025	150	57	1.970	0,018	70	37
6,0	30	3.800	0,020	155	72	3.050	0,021	130	57	1.970	0,015	60	37
6,0	35	3.420	0,020	140	64	2.750	0,021	115	52	1.770	0,016	55	33
6,0	40	3.420	0,018	120	64	2.750	0,018	100	52	1.770	0,014	50	33
6,0	45	3.420	0,018	120	64	2.750	0,018	100	52	1.770	0,014	50	33
8,0	25	2.880	0,033	190	72	2.280	0,033	150	57	1.510	0,023	70	38
8,0	30	2.880	0,033	190	72	2.280	0,033	150	57	1.510	0,023	70	38
8,0	35	2.880	0,033	190	72	2.280	0,033	150	57	1.510	0,023	70	38
8,0	40	2.880	0,028	160	72	2.280	0,027	125	57	1.510	0,020	60	38
8,0	45	2.590	0,028	145	65	2.050	0,028	115	52	1.360	0,020	55	34
8,0	50	2.590	0,025	130	65	2.050	0,024	100	52	1.360	0,018	50	34
10,0	30	2.450	0,039	190	77	2.000	0,038	150	63	1.210	0,029	70	38
10,0	35	2.450	0,039	190	77	2.000	0,038	150	63	1.210	0,029	70	38
10,0	40	2.450	0,039	190	77	2.000	0,038	150	63	1.210	0,029	70	38
10,0	45	2.450	0,033	160	77	2.000	0,031	125	63	1.210	0,025	60	38
10,0	50	2.450	0,033	160	77	2.000	0,031	125	63	1.210	0,025	60	38
10,0	60	2.210	0,029	130	69	1.800	0,028	100	57	1.090	0,023	50	34
12,0	35	2.000	0,038	150	75	1.670	0,040	135	63	1.010	0,027	55	38
12,0	40	2.000	0,038	150	75	1.670	0,040	135	63	1.010	0,027	55	38
12,0	45	2.000	0,033	130	75	1.670	0,034	115	63	1.010	0,022	45	38
12,0	50	2.000	0,033	130	75	1.670	0,034	115	63	1.010	0,022	45	38
12,0	55	2.000	0,033	130	75	1.670	0,034	115	63	1.010	0,022	45	38
12,0	60	2.000	0,028	110	75	1.670	0,030	110	63	1.010	0,020	40	38
14,0	50	1.850	0,034	125	81	1.480	0,034	100	65	910	0,025	45	40
16,0	40	1.700	0,041	140	85	1.280	0,041	105	64	800	0,031	50	40
16,0	50	1.700	0,041	140	85	1.280	0,041	105	64	800	0,031	50	40
18,0	50	1.450	0,041	120	82	1.120	0,040	90	63	700	0,029	40	40
20,0	90	1.220	0,031	75	77	950	0,029	55	60	600	0,021	25	38
20,0	110	1.100	0,032	70	69	860	0,029	50	45	540	0,023	25	34

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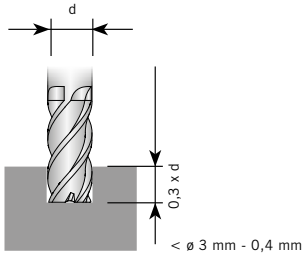
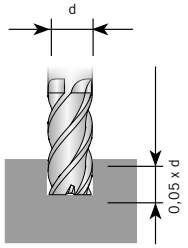
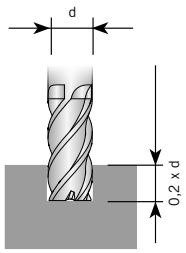




Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron				Alloy steel Heat resistant steel				Hardened steel			
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²				HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²				HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²			
d	n	f_z	v_f	v_c	n	f_z	v_f	v_c	n	f_z	v_f	v_c
(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)
1,0	27.600	0,004	240	87	18.000	0,003	100	57	11.000	0,003	60	35
1,5	22.000	0,006	250	104	13.500	0,004	110	64	8.500	0,004	60	40
2,0	18.000	0,007	260	113	11.560	0,005	120	73	7.200	0,005	70	45
3,0	13.240	0,011	280	125	8.560	0,008	140	81	5.280	0,007	70	50
4,0	10.720	0,016	340	135	6.820	0,012	170	86	4.300	0,009	80	54
5,0	9.160	0,023	420	144	5.800	0,017	200	91	3.800	0,013	100	60
6,0	7.900	0,032	500	149	5.040	0,025	250	95	3.280	0,018	120	62
8,0	6.000	0,045	540	151	3.800	0,033	250	96	2.520	0,024	120	63
10,0	5.040	0,054	540	158	3.280	0,038	250	103	2.020	0,030	120	63
12,0	4.120	0,051	420	155	2.780	0,041	230	105	1.680	0,030	100	63
16,0	3.100	0,058	360	156	2.100	0,040	170	106	1.280	0,031	80	64
20,0	2.520	0,056	280	158	1.640	0,037	120	103	1.000	0,030	60	63



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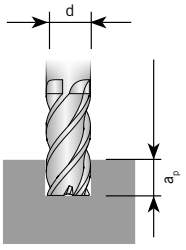
Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron					Alloy steel Heat resistant steel					Hardened steel				
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²					HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²					HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²				
d	l_2	a_p	n	f_z	v_f	v_c	a_p	n	f_z	v_f	v_c	a_p	n	f_z	v_f	v_c
(mm)	(mm)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)
0,2	1,0	0,013	38.500	0,005	380	24	0,010	36.300	0,004	270	23	0,007	32.100	0,003	200	20
0,3	1,5	0,019	34.200	0,006	390	32	0,015	32.300	0,004	270	30	0,011	28.500	0,004	230	27
0,3	2,0	0,011	30.780	0,005	315	29	0,008	29.070	0,004	220	27	0,006	25.650	0,004	185	24
0,4	1,0	0,036	27.400	0,010	540	34	0,028	25.800	0,007	380	32	0,020	22.800	0,006	280	29
0,4	1,5	0,025	27.400	0,010	540	34	0,020	25.800	0,007	380	32	0,014	22.800	0,006	280	29
0,4	2,0	0,025	27.400	0,010	540	34	0,020	25.800	0,007	380	32	0,014	22.800	0,006	280	29
0,4	3,0	0,014	24.660	0,009	435	31	0,011	23.220	0,007	310	29	0,008	20.520	0,005	225	26
0,4	4,0	0,009	24.660	0,009	435	31	0,007	23.220	0,007	310	29	0,005	20.520	0,005	225	26
0,4	5,0	0,009	21.920	0,008	345	28	0,007	20.640	0,006	245	26	0,005	18.240	0,005	180	23
0,5	2,0	0,032	27.400	0,010	540	43	0,025	25.800	0,008	425	41	0,018	22.800	0,006	285	36
0,5	3,0	0,018	24.660	0,009	435	39	0,014	23.220	0,007	345	36	0,010	20.520	0,006	230	32
0,5	4,0	0,018	24.660	0,009	435	39	0,014	23.220	0,007	345	36	0,010	20.520	0,006	230	32
0,5	5,0	0,011	24.660	0,009	435	39	0,009	23.220	0,007	345	36	0,006	20.520	0,006	230	32
0,5	6,0	0,011	21.920	0,008	345	34	0,009	20.640	0,007	270	32	0,006	18.240	0,005	180	29
0,6	2,0	0,038	27.400	0,014	775	52	0,029	25.800	0,011	545	49	0,021	22.800	0,009	405	43
0,6	3,0	0,038	27.400	0,014	775	52	0,029	25.800	0,011	545	49	0,021	22.800	0,009	405	43
0,6	4,0	0,022	24.660	0,013	630	46	0,017	23.220	0,009	440	44	0,012	20.520	0,008	330	39
0,6	5,0	0,014	24.660	0,013	630	46	0,011	23.220	0,009	440	44	0,008	20.520	0,008	330	39
0,6	6,0	0,014	24.660	0,013	630	46	0,011	23.220	0,009	440	44	0,008	20.520	0,008	330	39
0,6	8,0	0,008	21.920	0,011	495	41	0,006	20.640	0,008	350	39	0,005	18.240	0,007	260	34
0,6	10,0	0,005	16.440	0,010	325	31	0,004	15.480	0,007	230	29	0,003	13.680	0,006	170	26
0,8	2,0	0,072	27.400	0,014	775	69	0,056	25.800	0,012	605	65	0,040	22.800	0,010	450	57
0,8	3,0	0,050	27.400	0,014	775	69	0,039	25.800	0,012	605	65	0,028	22.800	0,010	450	57
0,8	4,0	0,050	27.400	0,014	775	69	0,039	25.800	0,012	605	65	0,028	22.800	0,010	450	57
0,8	5,0	0,029	24.660	0,013	630	62	0,022	23.220	0,011	490	58	0,016	20.520	0,009	365	52
0,8	6,0	0,029	24.660	0,013	630	62	0,022	23.220	0,011	490	58	0,016	20.520	0,009	365	52
0,8	8,0	0,018	24.660	0,013	630	62	0,014	23.220	0,011	490	58	0,010	20.520	0,009	365	52
0,8	10,0	0,018	21.920	0,011	495	55	0,014	20.640	0,009	385	52	0,010	18.240	0,008	290	46
1,0	3,0	0,090	24.600	0,021	1045	77	0,070	23.300	0,019	890	73	0,050	20.500	0,016	665	64
1,0	4,0	0,063	24.600	0,021	1045	77	0,049	23.300	0,019	890	73	0,035	20.500	0,016	665	64
1,0	5,0	0,063	24.600	0,021	1045	77	0,049	23.300	0,019	890	73	0,035	20.500	0,016	665	64
1,0	6,0	0,036	22.140	0,019	845	70	0,028	20.970	0,017	720	66	0,020	18.450	0,015	540	58
1,0	8,0	0,036	22.140	0,019	845	70	0,028	20.970	0,017	720	66	0,020	18.450	0,015	540	58
1,0	10,0	0,023	22.140	0,019	845	70	0,018	20.970	0,017	720	66	0,013	18.450	0,015	540	58
1,0	12,0	0,023	19.680	0,017	670	62	0,018	18.640	0,015	570	59	0,013	16.400	0,013	425	52
1,0	14,0	0,014	19.680	0,017	670	62	0,011	18.640	0,015	570	59	0,008	16.400	0,013	425	52
1,0	16,0	0,014	14.760	0,015	440	46	0,011	13.980	0,013	375	44	0,008	12.300	0,011	280	39
1,0	20,0	0,009	14.760	0,015	440	46	0,007	13.980	0,013	375	44	0,005	12.300	0,011	280	39
1,2	6,0	0,076	21.900	0,021	930	83	0,059	20.700	0,017	720	78	0,042	18.200	0,013	485	69
1,2	8,0	0,043	19.710	0,019	755	74	0,034	18.630	0,016	585	70	0,024	16.380	0,012	395	62
1,2	10,0	0,027	19.710	0,019	755	74	0,021	18.630	0,016	585	70	0,015	16.380	0,012	395	62
1,4	6,0	0,088	19.200	0,021	815	84	0,069	18.100	0,016	570	80	0,049	16.000	0,013	425	70
1,4	8,0	0,050	17.280	0,019	660	76	0,039	16.290	0,014	460	72	0,028	14.400	0,012	345	63
1,5	4,0	0,135	19.200	0,024	905	90	0,105	18.100	0,018	635	85	0,075	16.000	0,015	475	75
1,5	6,0	0,095	19.200	0,024	905	90	0,074	18.100	0,018	635	85	0,053	16.000	0,015	475	75
1,5	8,0	0,054	17.280	0,021	735	81	0,042	16.290	0,016	515	77	0,030	14.400	0,013	385	68
1,5	10,0	0,054	17.280	0,021	735	81	0,042	16.290	0,016	515	77	0,030	14.400	0,013	385	68
1,5	12,0	0,054	17.280	0,021	735	81	0,042	16.290	0,016	515	77	0,030	14.400	0,013	385	68
1,5	14,0	0,034	17.280	0,021	735	81	0,026	16.290	0,016	515	77	0,019	14.400	0,013	385	68
1,5	16,0	0,034	15.360	0,019	580	72	0,026	14.480	0,014	405	68	0,019	12.800	0,012	305	60
1,5	20,0	0,020	15.360	0,019	580	72	0,016	14.480	0,014	405	68	0,011	12.800	0,012	305	60
1,8	8,0	0,113	17.800	0,024	840	101	0,088	16.800	0,019	655	95	0,063	14.800	0,017	490	84
1,8	10,0	0,065	16.020	0,021	680	91	0,050	15.120	0,018	530	86	0,036	13.320	0,015	395	75

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron					Alloy steel Heat resistant steel					Hardened steel				
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²					HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²					HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²				
d	l_2	a_p	n	f_z	v_f	v_c	a_p	n	f_z	v_f	v_c	a_p	n	f_z	v_f	v_c
(mm)	(mm)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)
1,8	12,0	0,065	16.020	0,021	680	91	0,050	15.120	0,018	530	86	0,036	13.320	0,015	395	75
2,0	6,0	0,180	14.400	0,028	820	90	0,140	13.600	0,023	620	85	0,100	12.000	0,020	475	75
2,0	8,0	0,126	14.400	0,028	820	90	0,098	13.600	0,023	620	85	0,070	12.000	0,020	475	75
2,0	10,0	0,126	14.400	0,028	820	90	0,098	13.600	0,023	620	85	0,070	12.000	0,020	475	75
2,0	12,0	0,072	12.960	0,026	665	81	0,056	12.240	0,020	500	77	0,040	10.800	0,018	385	68
2,0	14,0	0,072	12.960	0,026	665	81	0,056	12.240	0,020	500	77	0,040	10.800	0,018	385	68
2,0	16,0	0,072	12.960	0,026	665	81	0,056	12.240	0,020	500	77	0,040	10.800	0,018	385	68
2,0	20,0	0,045	12.960	0,026	665	81	0,035	12.240	0,020	500	77	0,025	10.800	0,018	385	68
2,5	8,0	0,158	12.300	0,039	970	97	0,123	11.600	0,029	680	91	0,088	10.300	0,025	510	81
2,5	12,0	0,158	12.300	0,039	970	97	0,123	11.600	0,029	680	91	0,088	10.300	0,025	510	81
2,5	16,0	0,090	11.070	0,035	785	87	0,070	10.440	0,026	550	82	0,050	9.270	0,022	415	73
2,5	20,0	0,090	11.070	0,035	785	87	0,070	10.440	0,026	550	82	0,050	9.270	0,022	415	73
3,0	8,0	0,270	10.900	0,039	860	103	0,210	10.300	0,029	605	97	0,150	6.600	0,034	450	62
3,0	10,0	0,189	10.900	0,039	860	103	0,147	10.300	0,029	605	97	0,105	6.600	0,034	450	62
3,0	12,0	0,189	10.900	0,039	860	103	0,147	10.300	0,029	605	97	0,105	6.600	0,034	450	62
3,0	14,0	0,189	10.900	0,039	860	103	0,147	10.300	0,029	605	97	0,105	6.600	0,034	450	62
3,0	16,0	0,108	9.810	0,035	695	92	0,084	9.270	0,026	490	87	0,060	5.940	0,031	365	56
3,0	18,0	0,108	9.810	0,035	695	92	0,084	9.270	0,026	490	87	0,060	5.940	0,031	365	56
3,0	20,0	0,108	9.810	0,035	695	92	0,084	9.270	0,026	490	87	0,060	5.940	0,031	365	56
3,0	26,0	0,068	9.810	0,035	695	92	0,053	9.270	0,026	490	87	0,038	5.940	0,031	365	56
4,0	10,0	0,360	8.000	0,081	1300	101	0,280	7.600	0,076	1160	96	0,200	6.700	0,057	770	84
4,0	12,0	0,360	8.000	0,081	1300	101	0,280	7.600	0,076	1160	96	0,200	6.700	0,057	770	84
4,0	16,0	0,252	8.000	0,081	1300	101	0,196	7.600	0,076	1160	96	0,140	6.700	0,057	770	84
4,0	18,0	0,252	8.000	0,081	1300	101	0,196	7.600	0,076	1160	96	0,140	6.700	0,057	770	84
4,0	20,0	0,252	8.000	0,081	1300	101	0,196	7.600	0,076	1160	96	0,140	6.700	0,057	770	84
4,0	26,0	0,144	7.200	0,073	1055	90	0,112	6.840	0,069	940	86	0,080	6.030	0,052	625	76
4,0	30,0	0,144	7.200	0,073	1055	90	0,112	6.840	0,069	940	86	0,080	6.030	0,052	625	76
5,0	20,0	0,315	6.400	0,090	1155	101	0,245	6.100	0,074	900	96	0,175	5.400	0,056	605	85
5,0	30,0	0,180	5.760	0,081	935	90	0,140	5.790	0,066	730	86	0,100	4.860	0,050	490	76
5,0	35,0	0,180	5.760	0,081	935	90	0,140	5.790	0,066	730	86	0,100	4.860	0,050	490	76
5,0	40,0	0,180	5.760	0,081	935	90	0,140	5.790	0,066	730	86	0,100	4.860	0,050	490	76
5,0	50,0	0,113	5.760	0,081	935	90	0,088	5.790	0,066	730	86	0,063	4.860	0,050	490	76
6,0	15,0	0,540	5.300	0,100	1055	100	0,420	5.000	0,082	820	94	0,300	4.400	0,063	550	83
6,0	20,0	0,378	5.300	0,100	1055	100	0,294	5.000	0,082	820	94	0,210	4.400	0,063	550	83
6,0	30,0	0,378	5.300	0,100	1055	100	0,294	5.000	0,082	820	94	0,210	4.400	0,063	550	83
8,0	25,0	0,504	4.000	0,119	950	101	0,392	3.800	0,099	750	96	0,280	3.300	0,076	500	83
10,0	30,0	0,900	3.200	0,141	900	101	0,700	3.050	0,111	680	96	0,500	2.630	0,076	400	83
10,0	45,0	0,630	3.200	0,141	900	101	0,490	3.050	0,111	680	96	0,350	2.630	0,076	400	83
12,0	35,0	1,080	2.650	0,151	800	100	0,840	2.520	0,119	600	95	0,600	2.180	0,080	350	82
12,0	50,0	0,756	2.650	0,151	800	100	0,588	2.520	0,119	600	95	0,420	2.180	0,080	350	82

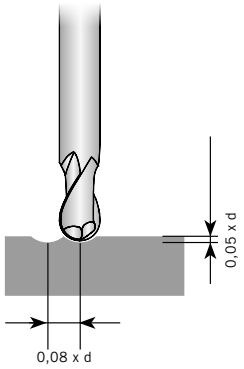


Depth of cut in one pass

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Design AFX

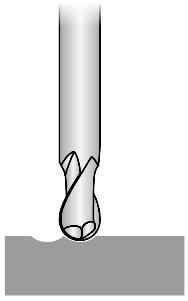
MATERIAL		Non-alloyed steel Alloy steel Cast iron				Alloy steel Heat resistant steel				Hardened steel			
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²				HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²				HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²			
d	R	n	f_z	v_f	v_c	n	f_z	v_f	v_c	n	f_z	v_f	v_c
(mm)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)
0,1	0,05	40.000	0,007	550	13	40.000	0,006	500	13	33.000	0,006	400	10
0,2	0,1	30.000	0,012	720	19	30.000	0,011	630	19	27.000	0,011	575	17
0,3	0,15	30.000	0,015	900	28	30.000	0,014	810	28	27.000	0,013	720	25
0,4	0,2	30.000	0,019	1140	38	30.000	0,017	1020	38	27.000	0,017	900	34
0,5	0,25	30.000	0,024	1440	47	30.000	0,021	1260	47	27.000	0,021	1140	42
0,6	0,3	30.000	0,029	1740	57	30.000	0,025	1500	57	27.000	0,024	1320	51
0,7	0,35	30.000	0,034	2040	66	30.000	0,029	1740	66	27.000	0,029	1560	59
0,8	0,4	30.000	0,039	2340	75	30.000	0,033	1980	75	27.000	0,033	1800	68
0,9	0,45	30.000	0,044	2610	85	30.000	0,038	2250	85	27.000	0,038	2040	76
1,0	0,5	30.000	0,048	2880	94	30.000	0,042	2520	94	27.000	0,042	2280	85
1,2	0,6	30.000	0,051	3060	113	28.800	0,045	2580	109	25.800	0,045	2310	97
1,5	0,75	30.000	0,054	3240	141	28.800	0,047	2700	136	25.800	0,047	2400	122
2,0	1,0	29.820	0,057	3420	187	28.680	0,050	2880	180	24.000	0,050	2400	151
2,5	1,25	23.800	0,074	3510	187	22.900	0,066	3030	180	19.200	0,063	2400	151
3,0	1,5	19.860	0,091	3600	187	19.080	0,083	3180	180	16.000	0,075	2400	151
4,0	2,0	14.900	0,121	3600	187	14.340	0,111	3180	180	12.000	0,100	2400	151
5,0	2,5	11.160	0,156	3480	175	10.680	0,138	2940	168	9.000	0,125	2250	141
6,0	3,0	8.340	0,174	2910	157	8.040	0,153	2460	152	6.600	0,141	1860	124
7,0	3,5	7.220	0,184	2650	159	6.960	0,159	2220	153	5.800	0,147	1700	128
8,0	4,0	6.660	0,189	2520	167	6.420	0,164	2100	161	5.400	0,150	1620	136
9,0	4,5	5.940	0,195	2320	168	5.700	0,170	1940	161	4.800	0,156	1500	136
10,0	5,0	5.580	0,199	2220	175	5.340	0,174	1860	168	4.500	0,160	1440	141
11,0	5,5	4.875	0,205	1995	168	4.670	0,180	1680	161	3.930	0,164	1290	136
12,0	6,0	4.170	0,212	1770	157	4.000	0,188	1500	151	3.360	0,170	1140	127
13,0	6,5	3.960	0,218	1725	162	3.800	0,197	1500	155	3.200	0,173	1110	131
14,0	7,0	3.750	0,224	1680	165	3.600	0,208	1500	158	3.030	0,178	1080	133
16,0	8,0	3.340	0,238	1590	168	3.210	0,206	1320	161	2.700	0,189	1020	136
20,0	10,0	2.670	0,264	1410	168	2.580	0,227	1170	162	2.160	0,208	900	136



The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron					Alloy steel Heat resistant steel					Hardened steel				
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²					HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²					HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²				
d	l_2	a_p	n	f_z	v_f	v_c	a_p	n	f_z	v_f	v_c	a_p	n	f_z	v_f	v_c
(mm)	(mm)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)
0,2	0,5	0,018	50.000	0,003	335	31	0,014	50.000	0,003	310	31	0,010	43.200	0,003	260	27
0,2	1,0	0,013	50.000	0,003	335	31	0,010	50.000	0,003	310	31	0,007	43.200	0,003	260	27
0,2	1,5	0,007	45.000	0,003	270	28	0,006	45.000	0,003	250	28	0,004	38.880	0,003	210	24
0,2	3,0	0,003	45.000	0,003	270	28	0,003	45.000	0,003	250	28	0,002	38.880	0,003	210	24
0,3	1,0	0,019	50.000	0,005	475	47	0,015	50.000	0,004	430	47	0,011	42.800	0,004	365	40
0,3	1,5	0,019	50.000	0,005	475	47	0,015	50.000	0,004	430	47	0,011	42.800	0,004	365	40
0,3	2,0	0,011	45.000	0,004	385	42	0,008	45.000	0,004	350	42	0,006	38.520	0,004	295	36
0,3	3,0	0,007	45.000	0,004	385	42	0,005	45.000	0,004	350	42	0,004	38.520	0,004	295	36
0,4	1,0	0,036	41.000	0,006	490	52	0,028	38.800	0,005	425	49	0,020	34.200	0,005	340	43
0,4	1,5	0,025	41.000	0,006	490	52	0,020	38.800	0,005	425	49	0,014	34.200	0,005	340	43
0,4	2,0	0,025	41.000	0,006	490	52	0,020	38.800	0,005	425	49	0,014	34.200	0,005	340	43
0,4	3,0	0,014	36.900	0,005	395	46	0,011	34.920	0,005	345	44	0,008	30.780	0,004	275	39
0,4	4,0	0,009	36.900	0,005	395	46	0,007	34.920	0,005	345	44	0,005	30.780	0,004	275	39
0,4	5,0	0,009	32.800	0,005	315	41	0,007	31.040	0,004	270	39	0,005	27.360	0,004	220	34
0,4	6,0	0,005	32.800	0,005	315	41	0,004	31.040	0,004	270	39	0,003	27.360	0,004	220	34
0,5	1,0	0,045	34.200	0,010	685	54	0,035	32.300	0,009	580	51	0,025	28.500	0,009	515	45
0,5	2,0	0,032	34.200	0,010	685	54	0,025	32.300	0,009	580	51	0,018	28.500	0,009	515	45
0,5	3,0	0,018	30.780	0,009	555	48	0,014	29.070	0,008	470	46	0,010	25.650	0,008	415	40
0,5	4,0	0,018	30.780	0,009	555	48	0,014	29.070	0,008	470	46	0,010	25.650	0,008	415	40
0,5	5,0	0,011	30.780	0,009	555	48	0,009	29.070	0,008	470	46	0,006	25.650	0,008	415	40
0,5	6,0	0,011	27.360	0,008	440	43	0,009	25.840	0,007	370	41	0,006	22.800	0,007	330	36
0,5	8,0	0,007	20.520	0,007	290	32	0,005	19.380	0,006	245	30	0,004	17.100	0,006	215	27
0,5	10,0	0,005	20.520	0,007	290	32	0,004	19.380	0,006	245	30	0,003	17.100	0,006	215	27
0,6	1,0	0,038	34.200	0,015	1025	64	0,029	32.300	0,013	840	61	0,021	28.500	0,012	685	54
0,6	2,0	0,038	34.200	0,015	1025	64	0,029	32.300	0,013	840	61	0,021	28.500	0,012	685	54
0,6	3,0	0,038	34.200	0,015	1025	64	0,029	32.300	0,013	840	61	0,021	28.500	0,012	685	54
0,6	4,0	0,022	30.780	0,013	830	58	0,017	29.070	0,012	680	55	0,012	25.650	0,011	555	48
0,6	5,0	0,014	30.780	0,013	830	58	0,011	29.070	0,012	680	55	0,008	25.650	0,011	555	48
0,6	6,0	0,014	30.780	0,013	830	58	0,011	29.070	0,012	680	55	0,008	25.650	0,011	555	48
0,6	8,0	0,008	27.360	0,012	655	52	0,006	25.840	0,010	540	49	0,005	22.800	0,010	440	43
0,6	10,0	0,005	20.520	0,010	430	39	0,004	19.380	0,009	355	37	0,003	17.100	0,008	290	32
0,6	12,0	0,005	20.520	0,010	430	39	0,004	19.380	0,009	355	37	0,003	17.100	0,008	290	32
0,7	6,0	0,016	30.780	0,015	915	68	0,012	29.070	0,013	755	64	0,009	25.650	0,012	620	56
0,8	2,0	0,072	34.200	0,018	1230	86	0,056	32.300	0,016	1035	81	0,040	28.500	0,015	855	72
0,8	3,0	0,050	34.200	0,018	1230	86	0,039	32.300	0,016	1035	81	0,028	28.500	0,015	855	72
0,8	4,0	0,050	34.200	0,018	1230	86	0,039	32.300	0,016	1035	81	0,028	28.500	0,015	855	72
0,8	5,0	0,029	30.780	0,016	995	77	0,022	29.070	0,014	840	73	0,016	25.650	0,014	695	64
0,8	6,0	0,029	30.780	0,016	995	77	0,022	29.070	0,014	840	73	0,016	25.650	0,014	695	64
0,8	8,0	0,018	30.780	0,016	995	77	0,014	29.070	0,014	840	73	0,010	25.650	0,014	695	64
0,8	10,0	0,018	27.360	0,014	785	69	0,014	25.840	0,013	660	65	0,010	22.800	0,012	545	57
1,0	5,0	0,063	30.800	0,025	1540	97	0,049	29.100	0,023	1310	91	0,035	25.700	0,021	1075	81
1,0	6,0	0,036	27.720	0,022	1245	87	0,028	26.190	0,020	1060	82	0,020	23.130	0,019	870	73

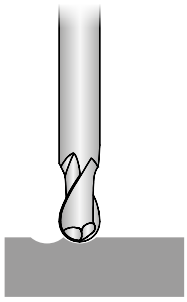


Depth of cut in one pass

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron					Alloy steel Heat resistant steel					Hardened steel				
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²					HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²					HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²				
d	l_2	a_p	n	f_z	v_f	v_c	a_p	n	f_z	v_f	v_c	a_p	n	f_z	v_f	v_c
(mm)	(mm)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)
1,0	8,0	0,036	27.720	0,022	1245	87	0,028	26.190	0,020	1060	82	0,020	23.130	0,019	870	73
2,0	8	0,126	18.000	0,050	1795	113	0,098	17.000	0,045	1525	107	0,070	15.000	0,043	1285	94
2,0	10	0,126	18.000	0,050	1795	113	0,098	17.000	0,045	1525	107	0,070	15.000	0,043	1285	94
3,0	8	0,270	13.700	0,075	2050	129	0,210	12.900	0,067	1730	122	0,150	11.400	0,063	1435	107
3,0	10	0,189	13.700	0,075	2050	129	0,147	12.900	0,067	1730	122	0,105	11.400	0,063	1435	107
3,0	12	0,189	13.700	0,075	2050	129	0,147	12.900	0,067	1730	122	0,105	11.400	0,063	1435	107
3,0	14	0,189	13.700	0,075	2050	129	0,147	12.900	0,067	1730	122	0,105	11.400	0,063	1435	107
3,0	16	0,108	12.330	0,067	1660	116	0,084	11.610	0,060	1400	109	0,060	10.260	0,057	1160	97
3,0	18	0,108	12.330	0,067	1660	116	0,084	11.610	0,060	1400	109	0,060	10.260	0,057	1160	97
3,0	20	0,108	12.330	0,067	1660	116	0,084	11.610	0,060	1400	109	0,060	10.260	0,057	1160	97
3,0	26	0,068	12.330	0,067	1660	116	0,053	11.610	0,060	1400	109	0,038	10.260	0,057	1160	97
3,0	30	0,068	12.330	0,067	1660	116	0,053	11.610	0,060	1400	109	0,038	10.260	0,057	1160	97
3,0	35	0,068	10.960	0,060	1310	103	0,053	10.320	0,054	1105	97	0,038	9.120	0,050	920	86
4,0	10	0,360	9.800	0,100	1965	123	0,280	9.300	0,090	1670	117	0,200	8.200	0,085	1395	103
4,0	12	0,360	9.800	0,100	1965	123	0,280	9.300	0,090	1670	117	0,200	8.200	0,085	1395	103
4,0	14	0,252	9.800	0,100	1965	123	0,196	9.300	0,090	1670	117	0,140	8.200	0,085	1395	103
4,0	16	0,252	9.800	0,100	1965	123	0,196	9.300	0,090	1670	117	0,140	8.200	0,085	1395	103
4,0	18	0,252	9.800	0,100	1965	123	0,196	9.300	0,090	1670	117	0,140	8.200	0,085	1395	103
4,0	20	0,252	9.800	0,100	1965	123	0,196	9.300	0,090	1670	117	0,140	8.200	0,085	1395	103
4,0	26	0,144	8.820	0,090	1590	111	0,122	8.370	0,081	1355	105	0,080	7.380	0,077	1130	93
4,0	30	0,144	8.820	0,090	1590	111	0,122	8.370	0,081	1355	105	0,080	7.380	0,077	1130	93
4,0	35	0,090	8.820	0,090	1590	111	0,070	8.370	0,081	1355	105	0,050	7.380	0,077	1130	93
4,0	40	0,090	8.820	0,090	1590	111	0,070	8.370	0,081	1355	105	0,050	7.380	0,077	1130	93
5,0	30	0,180	6.930	0,108	1495	109	0,140	6.570	0,090	1180	103	0,100	5.760	0,090	1040	90
6,0	20	0,378	6.500	0,146	1900	123	0,294	6.200	0,129	1600	117	0,210	5.500	0,121	1330	104
6,0	30	0,378	6.500	0,146	1900	123	0,294	6.200	0,129	1600	117	0,210	5.500	0,121	1330	104
8,0	25	0,504	4.850	0,186	1800	122	0,392	4.600	0,163	1500	116	0,280	4.000	0,160	1280	101
8,0	35	0,504	4.850	0,186	1800	122	0,392	4.600	0,163	1500	116	0,280	4.000	0,160	1280	101
10,0	30	0,900	3.850	0,214	1650	121	0,700	3.680	0,190	1400	116	0,500	3.200	0,188	1200	101
10,0	40	0,630	3.850	0,214	1650	121	0,490	3.680	0,190	1400	116	0,350	3.200	0,188	1200	101
12,0	32	1,080	3.200	0,238	1520	121	0,840	3.050	0,213	1300	115	0,600	2.650	0,208	1100	100



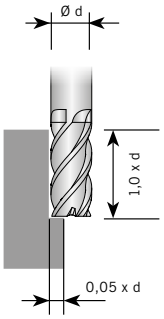
Depth of cut in one pass

AFX

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron			Alloy steel Heat resistant steel				Hardened steel			
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²			HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²				HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²			
d	n	f_z	v_f	v_c	n	f_z	v_f	v_c	n	f_z	v_f	v_c
(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)
1,0	26.800	0,002	250	84	16.080	0,002	150	51	10.720	0,001	47	34
1,2	22.500	0,003	265	85	13.500	0,003	160	51	9.000	0,001	47	34
1,5	18.750	0,004	270	88	11.250	0,004	165	53	7.500	0,002	47	35
2,0	14.450	0,005	295	91	9.450	0,005	180	59	6.300	0,002	53	40
2,5	12.800	0,006	315	101	8.200	0,006	195	64	5.250	0,003	58	41
3,0	11.150	0,008	335	105	6.950	0,008	210	66	4.200	0,004	63	40
3,5	10.300	0,011	465	113	6.360	0,011	290	70	3.940	0,004	63	43
4,0	9.450	0,016	600	119	5.780	0,016	370	73	3.680	0,004	63	46
4,5	8.660	0,018	615	122	5.250	0,018	375	74	3.290	0,005	70	47
5,0	7.880	0,020	630	124	4.730	0,020	380	74	2.900	0,006	75	46
5,5	7.410	0,022	660	128	4.460	0,023	405	77	2.700	0,007	80	47
6,0	6.950	0,025	695	131	4.200	0,026	430	79	2.500	0,009	85	47
6,5	6.530	0,027	710	133	3.940	0,027	425	80	2.400	0,010	95	49
7,0	6.100	0,030	720	134	3.680	0,028	415	81	2.300	0,011	100	51
7,5	5.680	0,032	735	134	3.410	0,030	410	80	2.200	0,013	110	52
8,0	5.250	0,035	745	132	3.150	0,032	400	79	2.100	0,014	115	53
8,5	4.960	0,036	720	132	2.990	0,032	380	80	2.000	0,014	110	53
9,0	4.660	0,037	695	132	2.830	0,031	355	80	1.900	0,014	105	54
9,5	4.370	0,038	665	130	2.660	0,031	335	79	1.800	0,014	100	54
10,0	4.080	0,039	640	128	2.500	0,032	315	79	1.700	0,014	95	53
10,5	3.910	0,040	620	129	2.400	0,032	305	79	1.640	0,014	95	54
11,0	3.750	0,040	595	130	2.300	0,032	290	79	1.580	0,014	90	55
11,5	3.590	0,040	570	130	2.200	0,032	280	79	1.510	0,015	90	50
12,0	3.430	0,040	545	129	2.100	0,032	265	79	1.450	0,015	85	55
13,0	3.260	0,040	520	133	2.000	0,031	250	82	1.370	0,015	80	56
14,0	3.090	0,040	490	136	1.900	0,031	235	84	1.290	0,015	75	57
16,0	2.750	0,040	440	138	1.700	0,032	215	85	1.130	0,014	65	57
18,0	2.430	0,040	385	137	1.510	0,031	190	85	990	0,014	55	56
20,0	2.100	0,040	335	132	1.330	0,032	170	84	850	0,012	42	53
25,0	1.700	0,039	265	134	1.050	0,032	135	82	680	0,012	32	53



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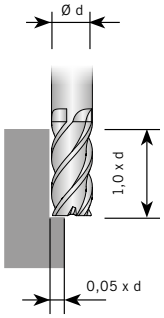
Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron					Alloy steel Heat resistant steel					Hardened steel				
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²					HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²					HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²				
d	l_2	a_e	n	f_z	v_f	v_c	a_e	n	f_z	v_f	v_c	a_e	n	f_z	v_f	v_c
(mm)	(mm)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)
1,0	4	0,021	33.100	0,003	360	104	0,016	21.600	0,003	260	68	0,013	13.200	0,003	140	41
1,0	6	0,012	29.790	0,002	290	94	0,009	19.440	0,003	210	61	0,007	11.880	0,002	115	37
1,0	8	0,012	29.790	0,002	290	94	0,009	19.440	0,003	210	61	0,007	11.880	0,002	115	37
1,2	4	0,025	29.750	0,003	365	112	0,019	18.900	0,004	265	71	0,015	11.700	0,003	140	44
1,2	6	0,025	29.750	0,003	365	112	0,019	18.900	0,004	265	71	0,015	11.700	0,003	140	44
1,2	8	0,014	26.780	0,003	295	101	0,011	17.010	0,003	215	64	0,009	10.530	0,003	115	40
1,5	6	0,032	26.400	0,004	370	124	0,024	16.200	0,004	270	76	0,019	10.200	0,003	140	48
1,5	8	0,018	23.760	0,003	300	112	0,014	14.580	0,004	220	69	0,011	9.180	0,003	115	43
1,5	10	0,018	23.760	0,003	300	112	0,014	14.580	0,004	220	69	0,011	9.180	0,003	115	43
1,5	12	0,018	23.760	0,003	300	112	0,014	14.580	0,004	220	69	0,011	9.180	0,003	115	43
2,0	6	0,060	21.600	0,004	380	136	0,045	13.800	0,005	280	87	0,036	8.640	0,004	150	54
2,0	8	0,042	21.600	0,004	380	136	0,032	13.800	0,005	280	87	0,025	8.640	0,004	150	54
2,0	10	0,042	21.600	0,004	380	136	0,032	13.800	0,005	280	87	0,025	8.640	0,004	150	54
2,0	12	0,024	19.440	0,004	310	122	0,018	12.420	0,005	225	78	0,014	7.780	0,004	120	49
3,0	8	0,090	15.900	0,006	400	150	0,068	10.300	0,008	310	97	0,054	6.300	0,006	150	59
3,0	10	0,063	15.900	0,006	400	150	0,047	10.300	0,008	310	97	0,038	6.300	0,006	150	59
3,0	12	0,063	15.900	0,006	400	150	0,047	10.300	0,008	310	97	0,038	6.300	0,006	150	59
3,0	16	0,036	14.310	0,006	325	135	0,027	9.270	0,007	250	87	0,022	5.670	0,005	120	53
3,0	20	0,036	14.310	0,006	325	135	0,027	9.270	0,007	250	87	0,022	5.670	0,005	120	53
3,0	26	0,023	14.310	0,006	325	135	0,017	9.270	0,007	250	87	0,014	5.670	0,005	120	53
4,0	10	0,120	12.800	0,010	500	161	0,090	8.200	0,011	360	103	0,072	5.150	0,008	160	65
4,0	12	0,120	12.800	0,010	500	161	0,090	8.200	0,011	360	103	0,072	5.150	0,008	160	65
4,0	16	0,084	12.800	0,010	500	161	0,063	8.200	0,011	360	103	0,050	5.150	0,008	160	65
4,0	20	0,084	12.800	0,010	500	161	0,063	8.200	0,011	360	103	0,050	5.150	0,008	160	65
4,0	26	0,048	11.520	0,009	405	145	0,036	7.380	0,010	290	93	0,029	4.640	0,007	130	58
6,0	20	0,126	9.500	0,013	510	179	0,095	6.000	0,018	430	113	0,076	3.930	0,013	200	74
8,0	25	0,168	7.200	0,019	550	181	0,126	4.550	0,024	430	114	0,101	3.020	0,017	200	76
8,0	35	0,168	7.200	0,019	550	181	0,126	4.550	0,024	430	114	0,101	3.020	0,017	200	76
10,0	30	0,300	6.000	0,023	550	188	0,225	4.000	0,027	430	126	0,180	2.420	0,021	200	76
10,0	40	0,210	6.000	0,023	550	188	0,158	4.000	0,027	430	126	0,126	2.420	0,021	200	76
12,0	32	0,360	5.000	0,022	430	188	0,270	3.340	0,028	380	126	0,216	2.000	0,020	160	75
12,0	45	0,252	5.000	0,022	430	188	0,189	3.340	0,028	380	126	0,151	2.000	0,020	160	75
16,0	35	0,480	3.720	0,022	330	187	0,360	2.520	0,028	280	127	0,288	1.540	0,022	135	77
20,0	40	0,600	3.000	0,023	270	188	0,450	1.950	0,027	210	123	0,360	1.200	0,021	100	75



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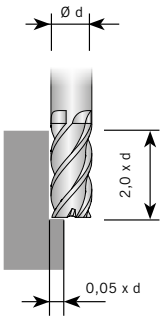
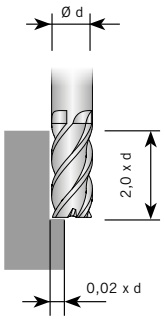
Design AFX

MATERIAL	Non-alloyed steel Alloy steel Cast iron				Alloy steel Heat resistant steel				Hardened steel			
Hardness Strengh	~ HRc 35 ~ 1100 N/mm²				HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²				HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²			
d	n	f_z	v_f	v_c	n	f_z	v_f	v_c	n	f_z	v_f	v_c
(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)
1,0	27.600	0,003	300	87	18.000	0,003	220	57	11.000	0,003	120	35
1,5	22.000	0,004	310	104	13.500	0,004	230	64	8.500	0,004	120	40
2,0	18.000	0,004	320	113	11.560	0,005	240	73	7.200	0,005	130	45
2,5	15.000	0,006	330	118	9.500	0,007	250	75	6.100	0,005	130	48
3,0	13.240	0,006	340	125	8.560	0,008	260	81	5.280	0,006	130	50
4,0	10.720	0,010	420	135	6.820	0,011	300	86	4.300	0,008	140	54
5,0	9.160	0,012	430	144	5.800	0,016	360	91	3.800	0,011	170	60
6,0	7.900	0,014	430	149	5.040	0,018	360	95	3.280	0,013	170	62
8,0	6.000	0,019	460	151	3.800	0,024	360	96	2.520	0,017	170	63
10,0	5.040	0,023	460	158	3.280	0,027	360	103	2.020	0,021	170	63
12,0	4.120	0,022	360	155	2.780	0,029	320	105	1.680	0,021	140	63
16,0	3.100	0,023	280	156	2.100	0,027	230	106	1.280	0,022	115	64
20,0	2.520	0,023	230	158	1.640	0,027	180	103	1.000	0,023	90	63





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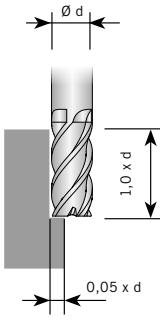
Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron				Alloy steel Heat resistant steel				Hardened steel			
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²				HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²				HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²			
d	n	f_z	v_f	v_c	n	f_z	v_f	v_c	n	f_z	v_f	v_c
(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)
1,0	26.800	0,002	250	84	16.080	0,002	150	51	10.720	0,001	47	34
1,2	22.500	0,003	265	85	13.500	0,003	160	51	9.000	0,001	47	34
1,5	18.750	0,004	270	88	11.250	0,004	165	53	7.500	0,002	47	35
2,0	14.450	0,005	295	91	9.450	0,005	180	59	6.300	0,002	53	40
2,5	12.800	0,006	315	101	8.200	0,006	195	64	5.250	0,003	58	41
3,0	11.150	0,008	335	105	6.950	0,008	210	66	4.200	0,004	63	40
3,5	10.300	0,011	465	113	6.360	0,011	290	70	3.940	0,004	63	43
4,0	9.450	0,016	600	119	5.780	0,016	370	73	3.680	0,004	63	46
4,5	8.660	0,018	615	122	5.250	0,018	375	74	3.290	0,005	70	47
5,0	7.880	0,020	630	124	4.730	0,020	380	74	2.900	0,006	75	46
5,5	7.410	0,022	660	128	4.460	0,023	405	77	2.700	0,007	80	47
6,0	6.950	0,025	695	131	4.200	0,026	430	79	2.500	0,009	85	47
6,5	6.530	0,027	710	133	3.940	0,027	425	80	2.400	0,010	95	49
7,0	6.100	0,030	720	134	3.680	0,028	415	81	2.300	0,011	100	51
7,5	5.680	0,032	735	134	3.410	0,030	410	80	2.200	0,013	110	52
8,0	5.250	0,035	745	132	3.150	0,032	400	79	2.100	0,014	115	53
8,5	4.960	0,036	720	132	2.990	0,032	380	80	2.000	0,014	110	53
9,0	4.660	0,037	695	132	2.830	0,031	355	80	1.900	0,014	105	54
9,5	4.370	0,038	665	130	2.660	0,031	335	79	1.800	0,014	100	54
10,0	4.080	0,039	640	128	2.500	0,032	315	79	1.700	0,014	95	53
10,5	3.910	0,040	620	129	2.400	0,032	305	79	1.640	0,014	95	54
11,0	3.750	0,040	595	130	2.300	0,032	290	79	1.580	0,014	90	55
11,5	3.590	0,040	570	130	2.200	0,032	280	79	1.510	0,015	90	50
12,0	3.430	0,040	545	129	2.100	0,032	265	79	1.450	0,015	85	55
13,0	3.260	0,040	520	133	2.000	0,031	250	82	1.370	0,015	80	56
14,0	3.090	0,040	490	136	1.900	0,031	235	84	1.290	0,015	75	57
16,0	2.750	0,040	440	138	1.700	0,032	215	85	1.130	0,014	65	57
18,0	2.430	0,040	385	137	1.510	0,031	190	85	990	0,014	55	56
20,0	2.100	0,040	335	132	1.330	0,032	170	84	850	0,012	42	53
25,0	1.700	0,039	265	134	1.050	0,032	135	82	680	0,012	32	53



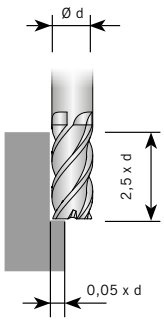
AFX

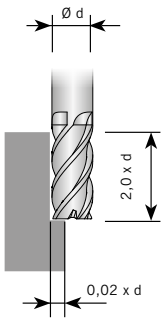
The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron				Alloy steel Heat resistant steel				Hardened steel			
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²				HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²				HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²			
d	l_1	n	f_z	v_f	v_c	n	f_z	v_f	v_c	n	f_z	v_f	v_c
(mm)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)	(U/min)	(mm)	(mm/min)	(m/min)
1,0	3	19.200	0,002	180	60	10.940	0,002	70	34	6.720	0,001	35	21
1,0	4	19.200	0,002	180	60	10.940	0,002	70	34	6.720	0,001	35	21
1,0	5	19.200	0,002	180	60	10.940	0,002	70	34	6.720	0,001	35	21
1,0	6	17.280	0,002	145	54	9.850	0,002	60	31	6.050	0,001	30	19
1,5	6	13.800	0,004	215	65	7.870	0,003	85	37	4.830	0,002	45	23
2,0	8	10.580	0,006	240	66	6.050	0,004	95	38	3.780	0,004	55	24
2,0	10	10.580	0,006	240	66	6.050	0,004	95	38	3.780	0,004	55	24
2,0	12	9.530	0,005	195	60	5.440	0,004	80	34	3.400	0,003	45	21
2,0	14	9.530	0,005	195	60	5.440	0,004	80	34	3.400	0,003	45	21
2,5	10	8.990	0,007	260	71	5.170	0,005	110	41	3.210	0,005	60	25
2,5	12	8.990	0,007	260	71	5.170	0,005	110	41	3.210	0,005	60	25
3,0	10	7.400	0,009	275	70	4.280	0,007	120	40	2.640	0,006	65	25
3,0	12	7.400	0,009	275	70	4.280	0,007	120	40	2.640	0,006	65	25
3,0	16	6.660	0,009	250	63	3.860	0,007	110	36	2.380	0,006	60	22
3,0	20	6.660	0,008	225	63	3.860	0,006	95	36	2.380	0,006	55	22
3,0	26	6.660	0,008	200	63	3.860	0,006	85	36	2.380	0,005	50	22
3,0	30	6.660	0,008	200	63	3.860	0,006	85	36	2.380	0,005	50	22
4,0	12	6.000	0,014	335	75	3.410	0,010	140	43	2.150	0,008	70	27
4,0	16	6.000	0,014	335	75	3.410	0,010	140	43	2.150	0,008	70	27
4,0	20	6.000	0,014	335	75	3.410	0,010	140	43	2.150	0,008	70	27
4,0	26	5.400	0,013	270	68	3.070	0,009	110	39	1.930	0,008	60	24
4,0	30	5.400	0,013	270	68	3.070	0,009	110	39	1.930	0,008	60	24
5,0	20	5.120	0,021	430	80	2.900	0,015	170	46	1.900	0,011	85	30
5,0	25	5.120	0,021	430	80	2.900	0,015	170	46	1.900	0,011	85	30
5,0	30	4.610	0,019	350	72	2.610	0,013	135	41	1.710	0,010	70	27
6,0	15	4.420	0,029	515	83	2.520	0,021	215	48	1.640	0,017	110	31
6,0	20	4.420	0,029	515	83	2.520	0,021	215	48	1.640	0,017	110	31
6,0	25	4.420	0,029	515	83	2.520	0,021	215	48	1.640	0,017	110	31
6,0	30	4.420	0,025	440	83	2.520	0,018	185	48	1.640	0,014	90	31
6,0	35	3.970	0,025	395	75	2.270	0,018	165	43	1.480	0,014	85	28
6,0	40	3.970	0,022	350	75	2.270	0,016	145	43	1.480	0,013	75	28
6,0	45	3.970	0,022	350	75	2.270	0,016	145	43	1.480	0,013	75	28
8,0	25	3.360	0,041	550	84	1.900	0,028	215	48	1.260	0,022	110	32
8,0	30	3.360	0,041	550	84	1.900	0,028	215	48	1.260	0,022	110	32
8,0	35	3.360	0,041	550	84	1.900	0,028	215	48	1.260	0,022	110	32
8,0	40	3.360	0,035	470	84	1.900	0,024	185	48	1.260	0,018	90	32
8,0	45	3.020	0,035	420	76	1.710	0,024	165	43	1.130	0,019	85	28
8,0	50	3.020	0,031	375	76	1.710	0,021	145	43	1.130	0,017	75	28
10,0	30	2.820	0,049	550	59	1.640	0,033	215	52	1.010	0,027	110	32
10,0	35	2.820	0,049	550	59	1.640	0,033	215	52	1.010	0,027	110	32
10,0	40	2.820	0,049	550	59	1.640	0,033	215	52	1.010	0,027	110	32
10,0	45	2.820	0,042	470	89	1.640	0,028	185	52	1.010	0,022	90	32
10,0	50	2.820	0,042	470	89	1.640	0,028	185	52	1.010	0,022	90	32
12,0	35	2.300	0,047	430	87	1.390	0,034	190	52	840	0,025	85	32
12,0	40	2.300	0,047	430	87	1.390	0,034	190	52	840	0,025	85	32
12,0	45	2.300	0,040	365	87	1.390	0,030	165	52	840	0,021	70	32
12,0	50	2.300	0,040	365	87	1.390	0,030	165	52	840	0,021	70	32
12,0	55	2.300	0,040	365	87	1.390	0,030	165	52	840	0,021	70	32
12,0	60	2.300	0,035	325	87	1.390	0,026	145	52	840	0,019	65	32
14,0	50	2.120	0,041	345	93	1.230	0,029	145	54	760	0,021	68	33
16,0	50	1.940	0,050	385	98	1.070	0,035	150	54	670	0,026	70	34
16,0	60	1.940	0,042	325	98	1.070	0,030	130	54	670	0,022	60	34
16,0	70	1.940	0,042	325	98	1.070	0,030	130	54	670	0,022	60	34
18,0	50	1.680	0,049	330	95	940	0,035	130	53	590	0,028	65	33
20,0	60	1.420	0,048	275	89	820	0,034	110	52	500	0,028	55	31
20,0	90	1.420	0,036	205	89	820	0,024	80	52	500	0,020	40	31
25,0	90	1.100	0,042	185	86	820	0,027	90	64	500	0,023	45	39

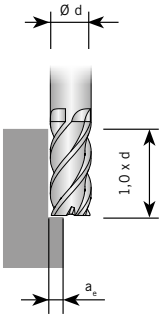
The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.





Design AFX

MATERIAL		Non-alloyed steel Alloy steel Cast iron					Alloy steel Heat resistant steel					Hardened steel				
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²					HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²					HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²				
d	l_2	a_e	n	f_z	v_f	v_c	a_e	n	f_z	v_f	v_c	a_e	n	f_z	v_f	v_c
(mm)	(mm)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)	(mm)	(U/min)	(mm)	(mm/min)	(m/min)
1,0	4	0,015	22.000	0,004	310	69	0,011	13.500	0,003	180	42	0,009	8.500	0,001	50	27
1,0	5	0,015	22.000	0,004	310	69	0,011	13.500	0,003	180	42	0,009	8.500	0,001	50	27
1,0	6	0,008	19.800	0,003	250	62	0,006	12.150	0,003	145	38	0,005	7.650	0,001	40	24
1,0	8	0,008	19.800	0,003	250	62	0,006	12.150	0,003	145	38	0,005	7.650	0,001	40	24
1,5	6	0,022	17.000	0,005	320	80	0,017	10.700	0,004	190	50	0,013	6.500	0,002	50	31
1,5	8	0,013	15.300	0,004	260	72	0,009	9.630	0,004	155	45	0,008	5.850	0,002	40	28
1,5	10	0,013	15.300	0,004	260	72	0,009	9.630	0,004	155	45	0,008	5.850	0,002	40	28
1,5	12	0,013	15.300	0,004	260	72	0,009	9.630	0,004	155	45	0,008	5.850	0,002	40	28
1,5	16	0,008	13.600	0,004	205	64	0,006	8.560	0,004	120	40	0,005	5.200	0,001	30	25
2,0	8	0,029	13.900	0,006	330	87	0,022	9.070	0,006	200	57	0,018	6.000	0,003	60	38
2,0	10	0,029	13.900	0,006	330	87	0,022	9.070	0,006	200	57	0,018	6.000	0,003	60	38
2,0	12	0,017	12.510	0,005	265	79	0,013	8.160	0,005	160	51	0,010	5.400	0,002	50	34
2,0	16	0,017	12.510	0,005	265	79	0,013	8.160	0,005	160	51	0,010	5.400	0,002	50	34
3,0	10	0,044	10.700	0,009	380	101	0,033	6.670	0,009	240	63	0,026	4.030	0,004	70	38
3,0	12	0,044	10.700	0,009	380	101	0,033	6.670	0,009	240	63	0,026	4.030	0,004	70	38
3,0	16	0,025	9.630	0,008	310	91	0,019	6.000	0,008	195	57	0,015	3.630	0,004	55	34
3,0	20	0,025	9.630	0,008	310	91	0,019	6.000	0,008	195	57	0,015	3.630	0,004	55	34
3,0	30	0,016	9.630	0,008	310	91	0,012	6.000	0,008	198	57	0,009	3.630	0,004	55	34
4,0	12	0,084	9.070	0,019	680	114	0,063	5.540	0,019	420	70	0,050	3.530	0,005	70	44
4,0	16	0,059	9.070	0,019	680	114	0,044	5.540	0,019	420	70	0,035	3.530	0,005	70	44
4,0	20	0,059	9.070	0,019	680	114	0,044	5.540	0,019	420	70	0,035	3.530	0,005	70	44
4,0	30	0,034	8.160	0,017	550	103	0,025	4.990	0,017	340	63	0,020	3.180	0,004	55	40
4,0	40	0,021	8.160	0,017	550	103	0,016	4.990	0,017	340	63	0,013	3.180	0,004	55	40
5,0	20	0,074	7.560	0,024	720	119	0,055	5.430	0,024	430	71	0,044	2.780	0,008	85	44
5,0	40	0,042	6.800	0,022	585	107	0,032	4.080	0,021	350	64	0,025	2.500	0,007	70	39
6,0	15	0,126	6.670	0,030	790	126	0,095	4.030	0,030	490	76	0,076	2.400	0,010	95	45
6,0	30	0,088	6.670	0,030	790	126	0,066	4.030	0,030	490	76	0,053	2.400	0,010	95	45
8,0	25	0,118	5.040	0,042	850	127	0,088	3.020	0,037	450	76	0,071	2.010	0,016	130	51
8,0	42	0,067	4.540	0,038	690	114	0,050	2.720	0,034	365	68	0,040	1.810	0,015	105	45
10,0	30	0,210	3.910	0,047	730	123	0,158	2.400	0,038	360	75	0,126	1.630	0,016	105	51
10,0	45	0,147	3.910	0,047	730	123	0,110	2.400	0,038	360	75	0,088	1.630	0,016	105	51
12,0	35	0,252	3.300	0,047	620	124	0,189	2.010	0,037	300	76	0,151	1.400	0,017	95	53
12,0	50	0,176	3.300	0,047	620	124	0,132	2.010	0,037	300	76	0,106	1.400	0,017	95	53



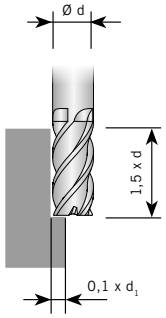
AFX

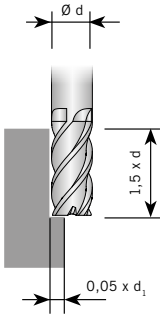
The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

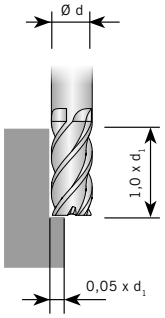
Design AFX

Normal speed

MATERIAL		Non-alloyed steel Alloy steel Cast iron				Alloy steel Heat resistant steel				Hardened steel			
Hardness Strengh		~ HRc 35 ~ 1100 N/mm²				HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²				HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²			
d_1 (mm)	l_1 (mm)	n (U/min)	f_z (mm)	v_f (mm/min)	v_c (m/min)	n (U/min)	f_z (mm)	v_f (mm/min)	v_c (m/min)	n (U/min)	f_z (mm)	v_f (mm/min)	v_c (m/min)
6,0	15	5.840	0,060	2.100	110	4.075	0,059	1.440	77	1.660	0,022	220	31
6,0	30	5.840	0,051	1.785	110	4.075	0,050	1.225	77	1.660	0,019	190	31
8,0	20	4.410	0,079	2.100	111	3.085	0,078	1.440	78	1.220	0,030	220	31
8,0	40	4.410	0,067	1.785	111	3.085	0,066	1.225	78	1.220	0,026	190	31
10,0	25	3.530	0,099	2.100	111	2.435	0,099	1.440	76	1.050	0,035	220	33
10,0	40	3.530	0,099	2.100	111	2.435	0,099	1.440	76	1.050	0,035	220	33
12,0	30	2.980	0,099	1.765	112	2.100	0,097	1.220	79	880	0,036	190	33
12,0	50	2.980	0,084	1.500	112	2.100	0,082	1.035	79	880	0,031	165	33
12,0	60	2.980	0,074	1.325	112	2.100	0,073	915	79	880	0,027	140	33
16,0	40	2.205	0,100	1.325	111	1.555	0,099	925	78	670	0,034	135	34
16,0	60	2.205	0,085	1.125	111	1.555	0,085	790	78	670	0,029	115	34
20,0	45	1.765	0,100	1.060	111	1.220	0,099	725	77	525	0,037	115	33
20,0	60	1.765	0,100	1.060	111	1.220	0,099	725	77	525	0,037	115	33

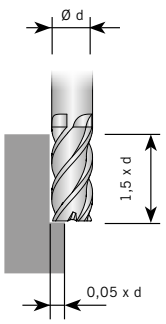


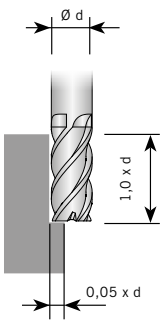




High speed

MATERIAL		Alloy steel Heat resistant steel				Hardened steel			
Hardness Strengh		HRc 35 ~ HRc 45 1110 ~ 1500 N/mm²				HRc 45 ~ HRc 55 1500 ~ 2000 N/mm²			
d_1 (mm)	l_1 (mm)	n (U/min)	f_z (mm)	v_f (mm/min)	v_c (m/min)	n (U/min)	f_z (mm)	v_f (mm/min)	v_c (m/min)
6,0	15	17.640	0,060	6.395	333	8.820	0,061	3.205	166
6,0	30	17.640	0,051	5.435	333	8.820	0,051	2.720	166
8,0	20	13.230	0,081	6.395	333	6.615	0,081	3.205	166
8,0	40	13.230	0,068	5.435	333	6.615	0,069	2.725	166
10,0	25	10.480	0,100	6.290	329	5.290	0,101	3.205	166
10,0	40	10.480	0,100	6.290	329	5.290	0,101	3.205	166
12,0	30	8.820	0,100	5.290	333	4.410	0,100	2.645	166
12,0	50	8.820	0,085	4.500	333	4.410	0,085	2.245	166
12,0	60	8.820	0,075	3.970	333	4.410	0,075	1.985	166
16,0	40	6.615	0,100	3.970	333	3.320	0,100	1.985	167
16,0	60	6.615	0,085	3.375	333	3.320	0,085	1.685	137
20,0	45	5.290	0,101	3.205	332	2.645	0,097	1.545	166
20,0	60	5.290	0,101	3.205	332	2.645	0,097	1.545	166





The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

AFX

PM AND HSS MILLING CUTTERS

Design

FP - for steel, stainless steel and cast materials

Overview powder metal HSS millings

Description	Flutes	Type	Design	Helix angle	Picture	Page
FP - Universal cutter for steel, stainless steel and cast materials						
FP60120-...	2	**PM-HSS end-mill**	**short**	30°		**284**
FP60121-...	2	**PM-HSSPM-HSS end mill**	**long**	30°		**285**
FP60320-...	2	**PM-HSS ball-nose end-mill**	**short**	30°		**286**
FP60135-...	3	**PM-HSS end-mill**	**extra short**	30°		**287**
FP60130-...	3	**PM-HSS end-mill**	**short**	30°		**288**
FP601.0-...	4 - 6	**PM-HSS end-mill**	**short**	30°		**289**
FP601.1-...	4 - 6	**PM-HSS end-mill**	**long**	30°		**290**
FP618.0-...	3 - 6	**PM-HSS roughing end-mill**	**short**	30°		**291**
FP618.6-...	3 - 6	**PM-HSS roughing end-mill**	**mid-length**	30°		**292**
FP618.1-...	3 - 6	**PM-HSS roughing end-mill**	**long**	30°		**293**

Overview powder metal HSS millings

Description	Flutes	Type	Design	Helix angle	Picture	Page
FP - Universal cutter for steel, stainless steel and cast materials						
FP619.5-...	4 - 6	**PM-HSS roughing end-mill**	**extra short**	45°		**294**
FP619.0-...	3 - 6	**PM-HSS roughing end-mill**	**short**	45°		**295**
FP620.0-...	3 - 6	**PM-HSS roughing end-mill**	**short**	30°		**296**
FP623.1-...	4 - 5	**PM-HSS roughing end-mill**	**extra long**	30°		**297**

ARNO WERKZEUGE

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Other highlights from our milling range.

ARNO® milling-system DUO-MILL

Square shoulder and high feed (HFC) milling with just one tool.

ARNO® milling-system FTA

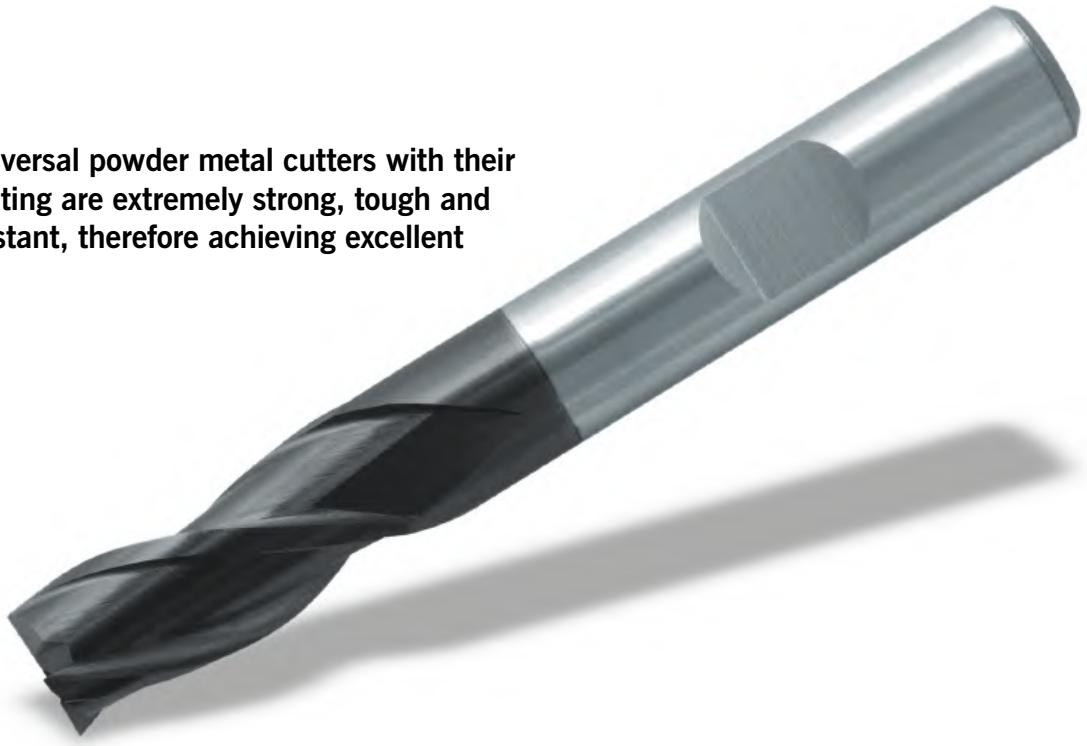
Face milling tool for cost reduction.

ARNO® milling-system FOA

The positive face-milling-cutter, in which both a round and an octogonal insert can be used.

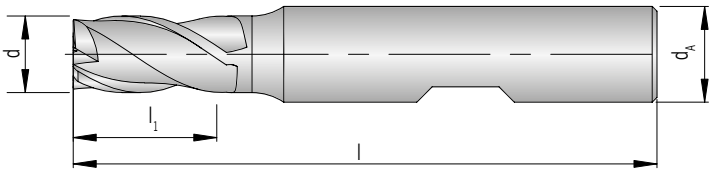
GREAT PERFORMANCE AND MINIMAL WEAR FOR MACHINING STEEL, STAINLESS STEEL, EXOTICS AND CAST MATERIALS.

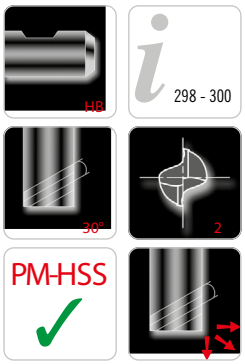
These universal powder metal cutters with their TiAlN coating are extremely strong, tough and wear resistant, therefore achieving excellent tool life.



FP60120-...

2 flutes, short design





Shank DIN 6535HB	d *e8*	d_A *h6*	l_1	l	PMC TiAlN
FP60120-020	2	6	4	48	◆
FP60120-030	3	6	5	49	◆
FP60120-040	4	6	7	51	◆
FP60120-050	5	6	8	52	◆
FP60120-060	6	6	8	52	◆
FP60120-070	7	10	10	60	◆
FP60120-080	8	10	11	61	◆
FP60120-090	9	10	11	61	◆
FP60120-100	10	10	13	63	◆
FP60120-120	12	12	16	73	◆
FP60120-140	14	12	16	73	◆
FP60120-160	16	16	19	79	◆
FP60120-180	18	16	19	79	◆
FP60120-200	20	20	22	88	◆
FP60120-220	22	20	22	88	◆
FP60120-250	25	25	26	102	◆

PMC = PM-HSS coated

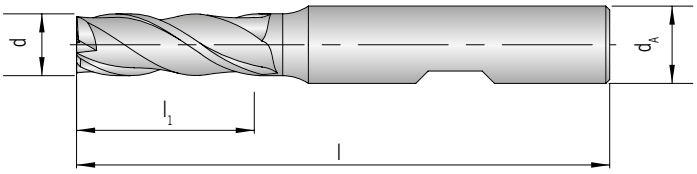
P	●
M	●
K	●
N	
S	○
H	

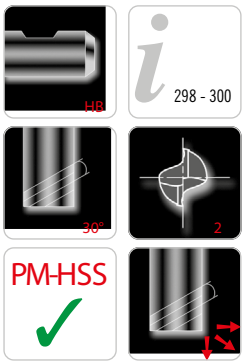
● Main application

○ Secondary application

FP60121-...

2 flutes, long design





Shank DIN 6535HB	d *e8*	d_A *h6*	l_1	l	PMC TiAlN
FP60121-020	2	6	7	51	◆
FP60121-030	3	6	8	52	◆
FP60121-040	4	6	11	55	◆
FP60121-050	5	6	13	57	◆
FP60121-060	6	6	13	57	◆
FP60121-070	7	10	16	66	◆
FP60121-080	8	10	19	69	◆
FP60121-090	9	10	19	69	◆
FP60121-100	10	10	22	72	◆
FP60121-120	12	12	26	83	◆
FP60121-140	14	12	26	83	◆
FP60121-160	16	16	32	92	◆
FP60121-180	18	16	32	92	◆
FP60121-200	20	20	38	104	◆
FP60121-220	22	20	38	104	◆
FP60121-250	25	25	45	121	◆

PMC = PM-HSS coated

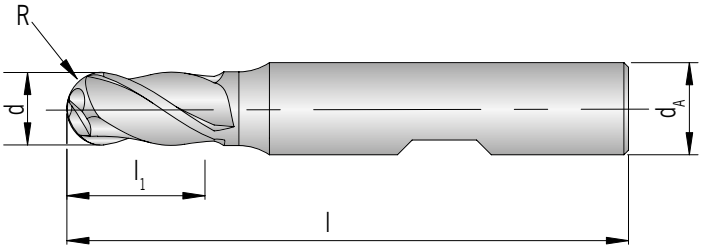
P	●
M	●
K	●
N	
S	○
H	

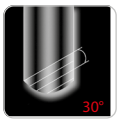
● Main application

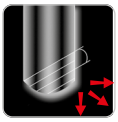
○ Secondary application

FP60320-...

2 flutes, short design







Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	R *±0,02*	PMC TiAlN
FP60320-020	2	6	4	48	1.0	◆
FP60320-030	3	6	5	49	1.5	◆
FP60320-040	4	6	7	51	2.0	◆
FP60320-050	5	6	8	52	2.5	◆
FP60320-060	6	6	8	52	3.0	◆
FP60320-070	7	10	10	60	3.5	◆
FP60320-080	8	10	11	61	4.0	◆
FP60320-090	9	10	11	61	4.5	◆
FP60320-100	10	10	13	63	5.0	◆
FP60320-120	12	12	16	73	6.0	◆
FP60320-140	14	12	16	73	7.0	◆
FP60320-160	16	16	19	79	8.0	◆
FP60320-180	18	16	19	79	9.0	◆
FP60320-200	20	20	22	88	10.0	◆
FP60320-220	22	20	22	88	11.0	◆
FP60320-250	25	25	26	102	12.5	◆

PMC = PM-HSS coated

P	●
M	●
K	●
N	
S	○
H	

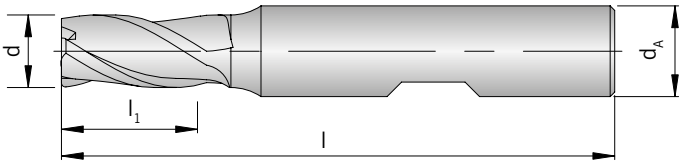
● Main application

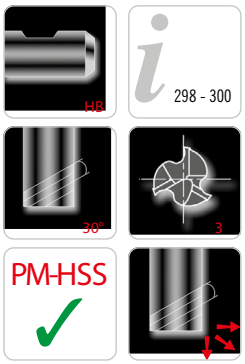
○ Secondary application

Dimensions in mm

FP60135-...

3 flutes, extra short design





Shank DIN 6535HB	d *e8*	d_A *h6*	l_1	l	PMC TiAlN
FP60135-020	2	6	4	48	◆
FP60135-030	3	6	5	49	◆
FP60135-040	4	6	7	51	◆
FP60135-050	5	6	8	52	◆
FP60135-060	6	6	8	52	◆
FP60135-070	7	10	10	60	◆
FP60135-080	8	10	11	61	◆
FP60135-090	9	10	11	61	◆
FP60135-100	10	10	13	63	◆
FP60135-120	12	12	16	73	◆
FP60135-140	14	12	16	73	◆
FP60135-160	16	16	19	79	◆
FP60135-180	18	16	19	79	◆
FP60135-200	20	20	22	88	◆
FP60135-220	22	20	22	88	◆
FP60135-250	25	25	26	102	◆

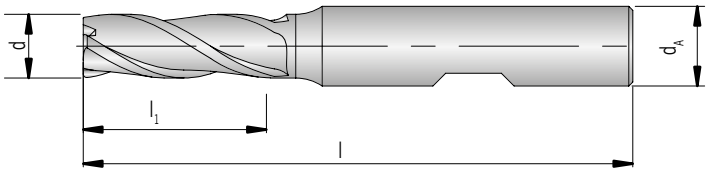
PMC = PM-HSS coated

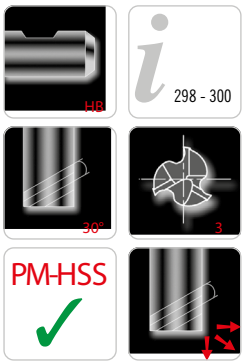
P	●
M	●
K	●
N	
S	○
H	

● Main application
○ Secondary application

FP60130-...

3 flutes, short design





Shank DIN 6535HB	d *e8*	d_A *h6*	l_1	l	PMC TiAlN
FP60130-020	2	6	7	51	◆
FP60130-030	3	6	8	52	◆
FP60130-040	4	6	11	55	◆
FP60130-050	5	6	13	57	◆
FP60130-060	6	6	13	57	◆
FP60130-070	7	10	16	66	◆
FP60130-080	8	10	19	69	◆
FP60130-090	9	10	19	69	◆
FP60130-100	10	10	22	72	◆
FP60130-120	12	12	26	83	◆
FP60130-140	14	12	26	83	◆
FP60130-160	16	16	32	92	◆
FP60130-180	18	16	32	92	◆
FP60130-200	20	20	38	104	◆
FP60130-220	22	20	38	104	◆
FP60130-250	25	25	45	121	◆

PMC = PM-HSS coated

P	●
M	●
K	●
N	
S	○
H	

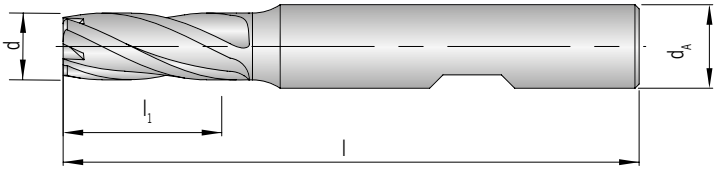
● Main application

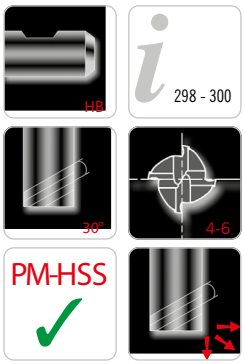
○ Secondary application

Dimensions in mm

FP601.0-...

4 - 6 flutes, short design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	z	PMC TiAlN
FP60140-020	2	6	7	51	4	◆
FP60140-030	3	6	8	52	4	◆
FP60140-040	4	6	11	55	4	◆
FP60140-050	5	6	13	57	4	◆
FP60140-060	6	6	13	57	4	◆
FP60140-070	7	10	16	66	4	◆
FP60140-080	8	10	19	69	4	◆
FP60140-090	9	10	19	69	4	◆
FP60140-100	10	10	22	72	4	◆
FP60140-120	12	12	26	83	4	◆
FP60140-140	14	12	26	83	4	◆
FP60140-160	16	16	32	92	4	◆
FP60140-180	18	16	32	92	4	◆
FP60140-200	20	20	38	104	4	◆
FP60140-220	22	20	38	104	4	◆
FP60140-250	25	25	45	121	4	◆
FP60160-280	28	25	45	121	6	◆
FP60160-300	30	25	45	121	6	◆
FP60160-320	32	32	53	133	6	◆

PMC = PM-HSS coated

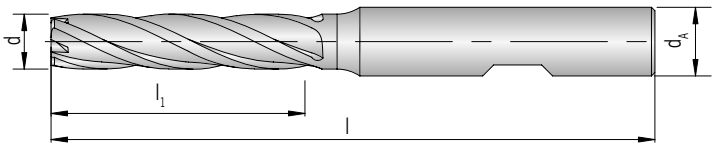
P	●
M	●
K	●
N	
S	○
H	

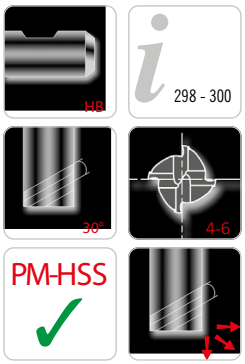
● Main application
○ Secondary application

FP

FP601.1-...

4 - 6 flutes, long design





Shank DIN 6535HB	d *-0,03*	d_A *h6*	l_1	l	z	PMC TiAlN
FP60141-020	2	6	10	54	4	◆
FP60141-030	3	6	12	56	4	◆
FP60141-040	4	6	19	63	4	◆
FP60141-050	5	6	24	68	4	◆
FP60141-060	6	6	24	68	4	◆
FP60141-070	7	10	30	80	4	◆
FP60141-080	8	10	38	88	4	◆
FP60141-090	9	10	38	88	4	◆
FP60141-100	10	10	45	95	4	◆
FP60141-120	12	12	53	110	4	◆
FP60141-140	14	12	53	110	4	◆
FP60141-160	16	16	63	123	4	◆
FP60141-180	18	16	63	123	4	◆
FP60141-200	20	20	75	141	4	◆
FP60141-220	22	20	75	141	4	◆
FP60141-250	25	25	90	166	4	◆
FP60161-280	28	25	90	166	6	◆
FP60161-300	30	25	90	166	6	◆
FP60161-320	32	32	106	186	6	◆

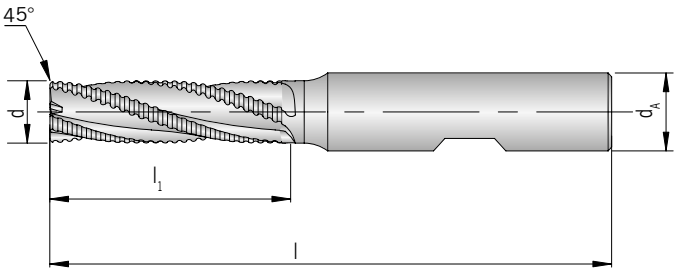
PMC = PM-HSS coated

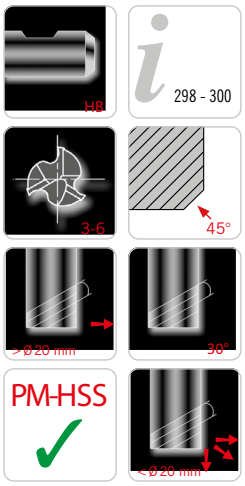
P	●
M	●
K	●
N	
S	○
H	

● Main application
○ Secondary application

FP618.0-...

3 - 6 flutes, short design





Shank DIN 6535HB	d *js12*	d_A *h6*	l_1	l	Chamfer	z	PMC TiAlN
FP61830-060	6	6	13	57	0,18 x 45°	3	◆
FP61830-070	7	10	16	66	0,18 x 45°	3	◆
FP61830-080	8	10	19	69	0,18 x 45°	3	◆
FP61830-090	9	10	19	69	0,18 x 45°	3	◆
FP61840-100	10	10	22	72	0,18 x 45°	4	◆
FP61840-120	12	12	26	83	0,18 x 45°	4	◆
FP61840-140	14	12	26	83	0,25 x 45°	4	◆
FP61840-160	16	16	32	92	0,25 x 45°	4	◆
FP61840-180	18	16	32	92	0,25 x 45°	4	◆
FP61840-200	20	20	38	104	0,25 x 45°	4	◆
FP61850-220	22	20	38	104	0,36 x 45°	5	◆
FP61850-250	25	25	45	121	0,36 x 45°	5	◆
FP61860-280	28	25	45	121	0,36 x 45°	6	◆
FP61860-300	30	25	45	121	0,36 x 45°	6	◆
FP61860-320	32	32	53	133	0,36 x 45°	6	◆

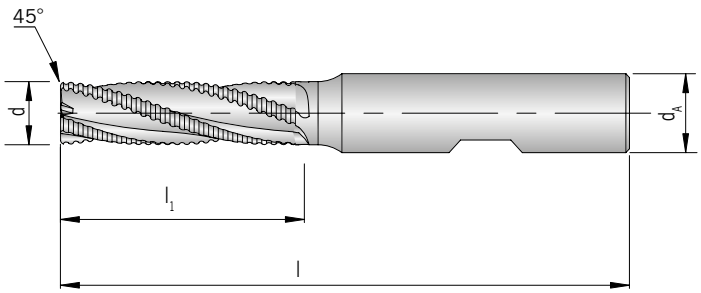
PMC = PM-HSS coated

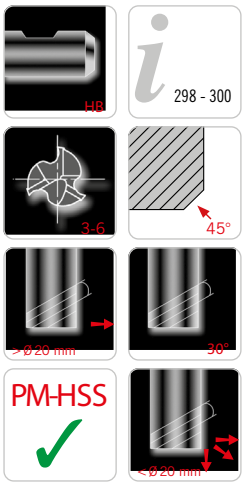
P	●
M	●
K	●
N	
S	○
H	

● Main application
○ Secondary application

FP618.6-...

3 - 6 flutes, mid-length design





Shank DIN 6535HB	d *js12*	d_A *h6*	l_1	l	Chamfer	z	PMC TiAlN
FP61836-060	6	6	19	63	0,18 x 45°	3	◆
FP61836-070	7	6	19	63	0,18 x 45°	3	◆
FP61836-080	8	10	28	74	0,18 x 45°	3	◆
FP61836-090	9	10	28	74	0,18 x 45°	3	◆
FP61846-100	10	10	35	84	0,18 x 45°	4	◆
FP61846-120	12	12	40	97	0,18 x 45°	4	◆
FP61846-140	14	12	40	97	0,25 x 45°	4	◆
FP61846-160	16	16	48	108	0,25 x 45°	4	◆
FP61846-180	18	16	48	108	0,25 x 45°	4	◆
FP61846-200	20	20	58	122	0,25 x 45°	4	◆
FP61856-220	22	20	58	122	0,36 x 45°	5	◆
FP61856-250	25	25	68	144	0,36 x 45°	5	◆
FP61866-280	28	25	68	144	0,36 x 45°	6	◆
FP61866-300	30	25	68	144	0,36 x 45°	6	◆
FP61866-320	32	32	78	158	0,36 x 45°	6	◆

PMC = PM-HSS coated

P	●
M	●
K	●
N	
S	○
H	

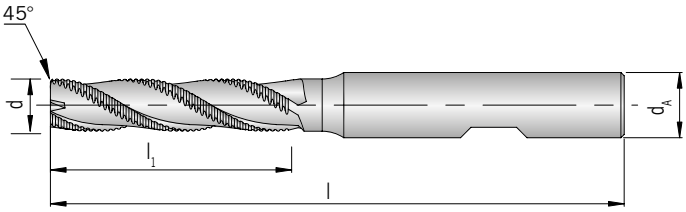
● Main application

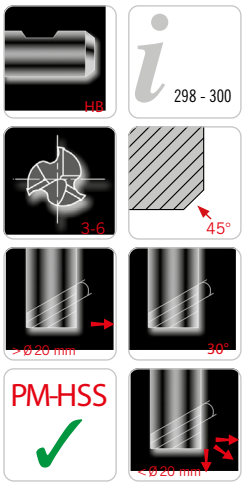
○ Secondary application

Dimensions in mm

FP618.1-...

3 - 6 flutes, long design





Shank DIN 6535HB	d *js12*	d_A *h6*	l_1	l	Chamfer	z	PMC TiAlN
FP61831-060	6	6	24	68	0,18 x 45°	3	◆
FP61831-070	7	10	30	80	0,18 x 45°	3	◆
FP61831-080	8	10	38	88	0,18 x 45°	3	◆
FP61831-090	9	10	38	88	0,18 x 45°	3	◆
FP61841-100	10	10	45	95	0,18 x 45°	4	◆
FP61841-120	12	12	53	110	0,18 x 45°	4	◆
FP61841-140	14	12	53	110	0,25 x 45°	4	◆
FP61841-160	16	16	63	123	0,25 x 45°	4	◆
FP61841-180	18	16	63	123	0,25 x 45°	4	◆
FP61841-200	20	20	75	141	0,25 x 45°	4	◆
FP61851-220	22	20	75	141	0,36 x 45°	5	◆
FP61851-250	25	25	90	166	0,36 x 45°	5	◆
FP61861-280	28	25	90	166	0,36 x 45°	6	◆
FP61861-300	30	25	90	166	0,36 x 45°	6	◆
FP61861-320	32	32	106	186	0,36 x 45°	6	◆

PMC = PM-HSS coated

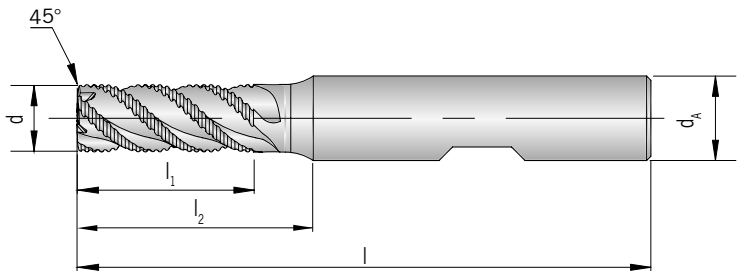
P	●
M	●
K	●
N	
S	○
H	

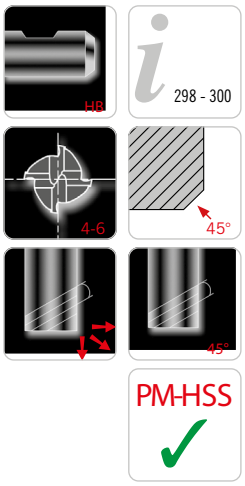
● Main application

○ Secondary application

FP619.5-...

4 - 6 flutes, extra short design





Shank DIN 6535HB	d *js12*	d_A *h6*	l_1	l_2	l	Chamfer	z	PMC TiAlN
FP61945-060	6	6	8	-	52	0,15 x 45°	4	◆
FP61945-080	8	10	11	-	61	0,18 x 45°	4	◆
FP61945-100	10	10	13	23	63	0,20 x 45°	4	◆
FP61945-120	12	12	16	28	73	0,20 x 45°	4	◆
FP61955-140	14	12	16	-	73	0,20 x 45°	5	◆
FP61955-160	16	16	19	31	79	0,20 x 45°	5	◆
FP61965-180	18	16	19	-	79	0,20 x 45°	6	◆
FP61965-200	20	20	22	38	88	0,20 x 45°	6	◆
FP61965-250	25	25	26	46	102	0,20 x 45°	6	◆

PMC = PM-HSS coated

P	●
M	●
K	●
N	
S	○
H	

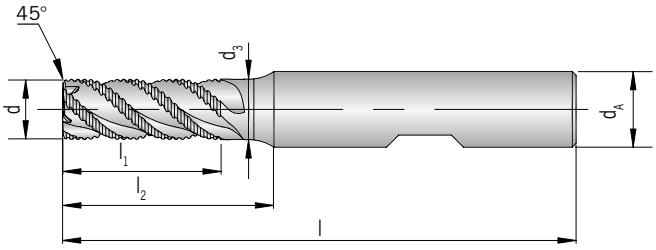
● Main application

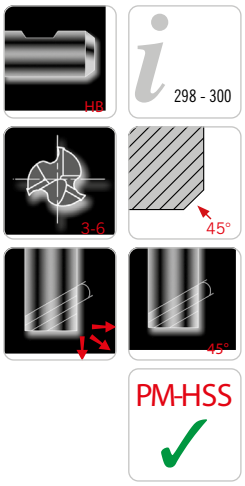
○ Secondary application

Dimensions in mm

FP619.0-...

3 - 6 flutes, short design





Shank DIN 6535HB	d *js12*	d_A *h6*	d_3	l_1	l_2	l	Chamfer	z	PMC TiAlN
FP61930-040	4	6	-	11	-	57	0,10 x 45°	3	◆
FP61940-050	5	6	-	13	-	57	0,13 x 45°	4	◆
FP61940-060	6	6	-	13	-	57	0,15 x 45°	4	◆
FP61940-070	7	10	-	16	-	66	0,15 x 45°	4	◆
FP61940-080	8	10	-	19	-	69	0,18 x 45°	4	◆
FP61940-090	9	10	-	19	-	69	0,18 x 45°	4	◆
FP61940-100	10	10	9.5	22	31	72	0,20 x 45°	4	◆
FP61940-110	11	12	10.5	22	27	80	0,20 x 45°	4	◆
FP61940-120	12	12	11.5	26	37	83	0,20 x 45°	4	◆
FP61940-130	13	12	-	26	-	84	0,20 x 45°	4	◆
FP61950-140	14	12	-	26	-	83	0,20 x 45°	5	◆
FP61950-150	15	12	-	26	-	85	0,20 x 45°	5	◆
FP61950-160	16	16	15.0	32	44	92	0,20 x 45°	5	◆
FP61960-180	18	16	-	32	-	92	0,20 x 45°	6	◆
FP61960-200	20	20	19.0	38	54	104	0,20 x 45°	6	◆
FP61960-250	25	25	24.0	45	63	121	0,20 x 45°	6	◆

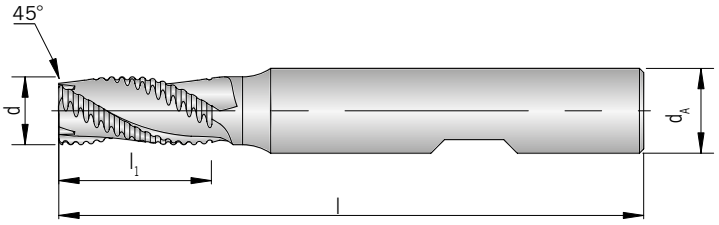
PMC = PM-HSS coated

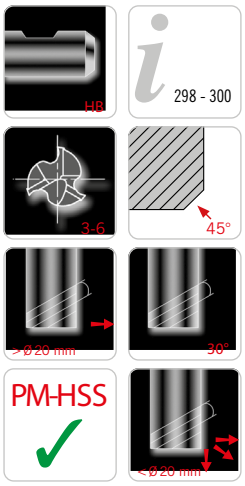
P	●
M	●
K	●
N	
S	○
H	

● Main application
○ Secondary application

FP620.0-...

3 - 6 flutes, short design





Shank DIN 6535HB	d *js12*	d_A *h6*	l_1	l	Chamfer	z	PMC TiAlN
FP62030-060	6	6	13	57	0,25 x 45°	3	◆
FP62030-070	7	10	16	66	0,25 x 45°	3	◆
FP62030-080	8	10	19	69	0,25 x 45°	3	◆
FP62030-090	9	10	19	69	0,36 x 45°	3	◆
FP62040-100	10	10	22	72	0,36 x 45°	4	◆
FP62040-120	12	12	26	83	0,50 x 45°	4	◆
FP62040-140	14	12	26	83	0,55 x 45°	4	◆
FP62040-160	16	16	32	92	0,55 x 45°	4	◆
FP62040-180	18	16	32	92	0,55 x 45°	4	◆
FP62040-200	20	20	38	104	0,55 x 45°	4	◆
FP62050-220	22	20	38	104	0,55 x 45°	5	◆
FP62050-250	25	25	45	121	0,55 x 45°	5	◆
FP62060-300	30	25	45	121	0,55 x 45°	6	◆
FP62060-320	32	32	53	133	0,55 x 45°	6	◆

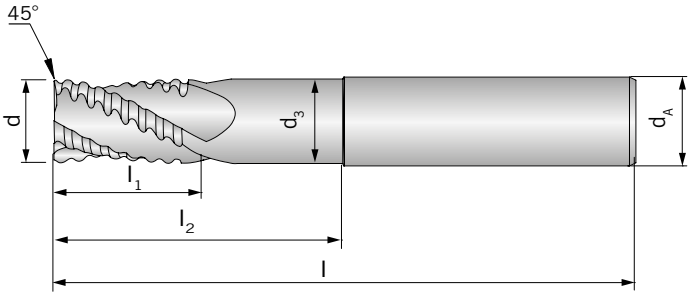
PMC = PM-HSS coated

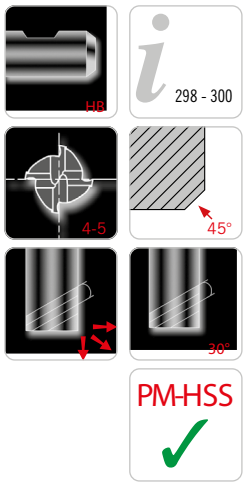
P	●
M	●
K	●
N	
S	○
H	

● Main application
○ Secondary application

FP623.1-...

4 - 5 flutes, extra long design





Shank DIN 6535HB	d *js12*	d_A *h6*	d_3	l_1	l_2	l	Chamfer	z	PMC TiAlN
FP62341-100	10	10	8.5	22	69	110	0,34 x 45°	4	◆
FP62341-120	12	12	10.5	26	78	125	0,50 x 45°	4	◆
FP62341-160	16	16	14.0	32	87	138	0,55 x 45°	4	◆
FP62341-200	20	20	18.0	38	108	160	0,55 x 45°	4	◆
FP62351-250	25	25	23.0	45	155	216	0,55 x 45°	5	◆

PMC = PM-HSS coated

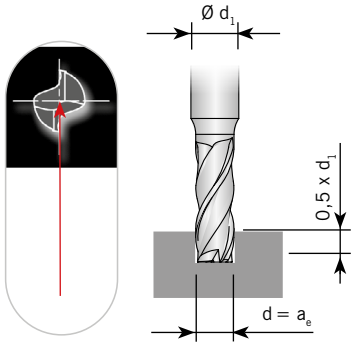
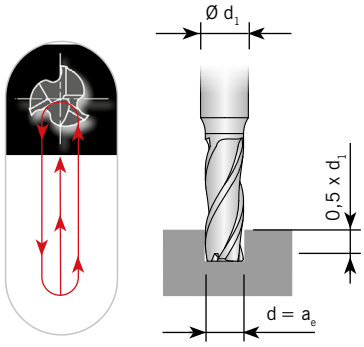
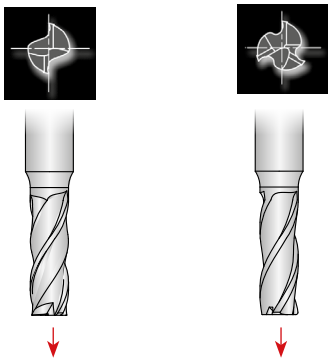
P	●
M	●
K	●
N	
S	○
H	

● Main application
○ Secondary application

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Correction factor	Cutting speed V_c (m/min) PM-HSS TiAlN
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	1,2	60 - 73 - 85
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	1,2	45 - 53 - 60
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	1,2	45 - 53 - 60
		C > 0.55 %	annealed	190	639	P4	1,2	45 - 53 - 60
		C > 0.55 %	hardened and tempered	300	1013	P5	1,0	30 - 35 - 40
		Machining steel (short-chipping)	tempered	220	745	P6	1,2	50 - 60 - 70
	Low alloyed steel	annealed		175	591	P7	1,2	40 - 50 - 60
		hardened and tempered		300	1013	P8	1,0	40 - 50 - 60
		hardened and tempered		380	1282	P9	0,8	30 - 35 - 40
		hardened and tempered		430	1477	P10	0,8	30 - 35 - 40
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	1,2	40 - 50 - 60
		hardened		300	1013	P12	1,0	30 - 35 - 40
		hardened		400	1361	P13	0,8	20 - 25 - 30
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	1,0	20 - 25 - 30
		martensitic, hardened and tempered		330	1114	P15		-
M	Stainless steel	austenitic, chilled		200	675	M1	1,0	20 - 25 - 30
		austenitic, precipitation-hardened (PH)		300	1013	M2	0,9	15 - 18 - 20
		austenitic-ferritic, Duplex		230	778	M3	1,0	10 - 13 - 15
K	Malleable cast iron	ferritic		200	675	K1	1,0	30 - 35 - 40
		pearlitic		260	867	K2	0,8	25 - 30 - 35
	Cast iron	low tensile strength		180	602	K3	1,0	35 - 43 - 50
		high tensile strength / austenitic		245	825	K4	1,0	25 - 30 - 35
	Cast iron with nodular graphite	ferritic		155	518	K5	1,0	30 - 35 - 40
		pearlitic		265	885	K6	1,0	30 - 35 - 40
	GGV (CGI)			200	675	K7	1,0	30 - 35 - 40
N	Aluminium alloys long chipping	not heat treatable		30	-	N1		-
		heat treatable, heat treated		100	343	N2		-
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3		-
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4		-
		> 12 % Si, not heat treatable		130	447	N5		-
	Magnesium alloys			70	250	N6		-
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7		-
		Brass, Bronze		90	314	N8		-
		Cu-alloys, short-chipping		110	382	N9		-
		High-tensile, Ampco		300	1013	N10		-
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11		-
		Duroplastic (without abrasive filling material)		-	-	N12		-
		Plastic glas fibre reinforced GFRP		-	-	N13		-
		Plastic carbon fibre reinforced CFRP		-	-	N14		-
		Plastic aramid fibre reinforced AFRP		-	-	N15		-
		Graphite (tech.)		80 Shore	-	N16		-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1		-
			heat treated	280	943	S2		-
		Ni- or Co-alloyed	annealed	250	839	S3	0,9	10 - 13 - 16
			heat treated	350	1177	S4	0,7	9 - 12 - 14
			casting	320	1076	S5	0,7	9 - 12 - 14
	Titanium alloys	Pure titan		200	675	S6	1,0	20 - 25 - 30
		α- and β-alloys, heat treated		375	1262	S7		-
		β-alloys		410	1396	S8		-
	Wolfram alloys			300	1013	S9	1,1	10 - 15 - 20
	Molybdän alloys			300	1013	S10		-
H	Hardened steel	hardened		50 HRC	-	H1		-
		hardened		55 HRC	-	H2		-
		hardened		60 HRC	-	H3		-
	Hardened cast iron	hardened		55 HRC	-	H4		-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Feed per tooth fz [$_m$m]

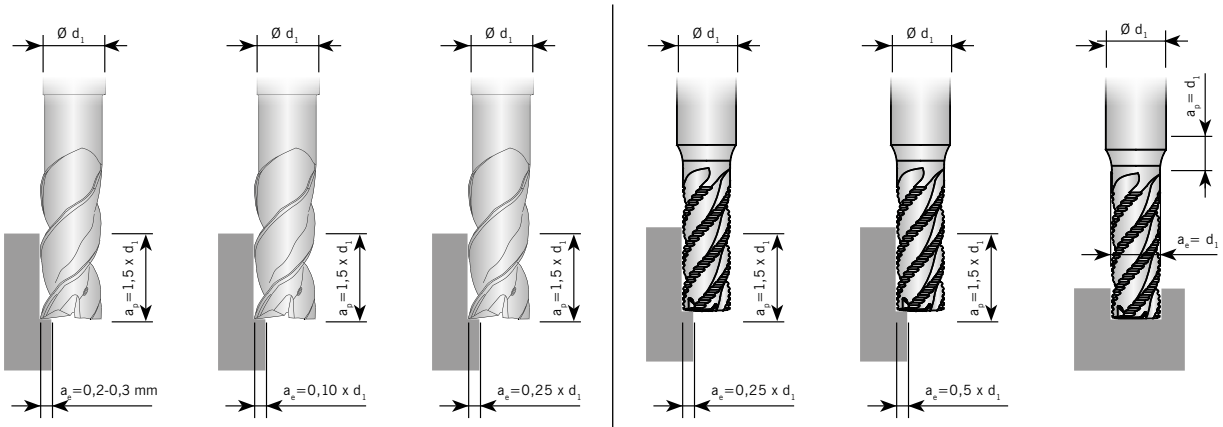
	Full slot miliing (in one cut)	Profile slot milling (internal profile milling)		Circular ramping	
					
	coated	coated		coated	coated
d_1		Schruppen / Roughing	Schlichten / Fine cutting		
[mm]	f_z [mm]	f_z [mm]	f_z [mm]	f_z [mm]	f_z [mm]
1,5	0,005	0,005	0,007	0,002	0,001
2,0	0,006	0,006	0,009	0,003	0,002
3,0	0,010	0,010	0,016	0,005	0,003
4,0	0,013	0,013	0,024	0,007	0,004
5,0	0,017	0,017	0,033	0,009	0,006
6,0	0,022	0,022	0,043	0,011	0,007
7,0	0,026	0,025	0,051	0,012	0,008
8,0	0,029	0,029	0,061	0,014	0,010
9,0	0,032	0,032	0,071	0,016	0,011
10,0	0,037	0,037	0,082	0,019	0,012
12,0	0,044	0,044	0,101	0,022	0,015
14,0	0,054	0,054	0,118	0,027	0,018
16,0	0,062	0,062	0,135	0,031	0,021
18,0	0,072	0,072	0,151	0,036	0,024
20,0	0,078	0,078	0,167	0,039	0,026
22,0	0,088	0,088	0,184	0,044	0,029
25,0	0,098	0,098	0,208	0,049	0,033
28,0	0,108	0,108	0,217	0,052	0,039
30,0	0,120	0,120	0,230	0,060	0,041
32,0	0,135	0,135	0,251	0,071	0,048
40,0	0,150	0,150	0,260	0,070	0,050

Attention: For optimal results it is recommended to climb mill.

General rule:
Feed per tooth = fz • Kf (fz)
For axial plunge milling: = Table value/Number of teeth

Feed per tooth fz [$_m$m]

Fine cutting | **Roughing**



	coated			coated		
d_1	**Schlichtgeometrie** / Geometry for peripheral milling			**Schruppgeometrie** / Geometry for roughing		
[mm]	f_z [mm]	f_z [mm]	f_z [mm]	f_z [mm]	f_z [mm]	f_z [mm]
1,0	0,005	0,005	0,005	0,005	0,005	0,005
1,5	0,007	0,007	0,007	0,007	0,007	0,007
2,0	0,009	0,009	0,009	0,010	0,010	0,008
3,0	0,012	0,012	0,010	0,013	0,012	0,010
4,0	0,018	0,015	0,014	0,016	0,014	0,012
5,0	0,026	0,020	0,015	0,021	0,018	0,016
6,0	0,035	0,024	0,017	0,027	0,022	0,019
7,0	0,045	0,028	0,021	0,031	0,027	0,022
8,0	0,051	0,032	0,022	0,036	0,030	0,026
9,0	0,061	0,036	0,025	0,052	0,034	0,031
10,0	0,072	0,041	0,028	0,047	0,039	0,034
12,0	0,091	0,049	0,034	0,057	0,047	0,041
14,0	0,106	0,059	0,041	0,069	0,058	0,050
16,0	0,121	0,067	0,046	0,079	0,066	0,057
18,0	0,136	0,077	0,053	0,093	0,078	0,067
20,0	0,151	0,083	0,057	0,101	0,084	0,073
22,0	0,166	0,094	0,065	0,114	0,096	0,082
25,0	0,188	0,104	0,072	0,129	0,108	0,093
28,0	0,210	0,120	0,083	0,150	0,125	0,108
30,0	0,225	0,127	0,088	0,161	0,135	0,116
32,0	0,240	0,137	0,094	0,173	0,145	0,125
40,0	0,240	0,170	0,120	0,200	0,160	0,140

Attention: **For optimal results it is recommended to climb mill.**

General rule:
Feed per tooth = fz • Kf (fz)
For axial plunge milling: = Table value/Number of teeth

SOLID CARBIDE THREAD MILLING CUTTERS

Esecuzione

AFT - Thread milling cutter ISO - internal thread
- Thread milling cutter UNC - internal thread
- Thread milling cutter UNF - internal thread
- Thread milling cutter BSP - internal thread
- Thread milling cutter NPT - internal thread

Overview solid carbide thread milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AFT - hread milling cutter ISO-internal thread						
AFT525.1-ISO-...	3 - 5	Thread milling cutter ISO - internal thread	medium length	15°		306
AFT525.1-ISO-...IK ...	3 - 5	Thread milling cutter ISO - internal thread	Innenkühlung	15°		307
AFT525.1-ISO-...IK-F ...	3 - 4	Thread milling cutter ISO - internal thread	medium length with through tool coolant and chamfers	15°		308
AFT525.0-ISO-...	3 - 5	Thread milling cutter ISO - internal thread	short	15°		309
AFT525.0-ISO-...-IK ...	3 - 5	Thread milling cutter ISO - internal thread	short with through tool coolant	15°		310
AFT525.0-ISO-...-IK-F ...	3 - 5	Thread milling cutter ISO - internal thread	short with through tool coolant and chamfers	15°		311
AFT52534-ISO-...	3	Thread milling cutter ISO - internal thread	mini *mini*	15°		312
AFT52621-ISO-...-IK-F ...	2	Thread milling cutter ISO - internal thread	long with through tool coolant and chamfers	15°		313

Overview solid carbide thread milling cutter

Description	Flutes	Type	Design	Helix angle	Picture	Page
AFT - Thread milling cutter UNC-internal thread						
AFT525.1-UNC-...	3 - 5	Thread milling cutter UNC - internal thread	medium length	15°		314
AFT525.1-UNC-...IK-F ...	3 - 5	Thread milling cutter UNC - internal thread	medium length with through tool coolant and chamfers	15°		315
AFT52534-UNC-...	3	Thread milling cutter UNC - internal thread	mini	15°		316
AFT - Thread milling cutter UNF-internal thread						
AFT525.1-UNF-...	3 - 5	UNF - internal thread	medium length	15°		317
AFT525.1-UNF-...IK-F ...	3 - 5	UNF - internal thread	medium length with through tool coolant and chamfers	15°		318
AFT - Thread milling cutter BSP-internal thread						
AFT525.1-BSP-...IK ...	3 - 5	BSP - internal thread	medium length with through tool coolant	15°		319
AFT - Thread milling cutter NPT-internal thread						
AFT525.1-NPT-...IK-F ...	3 - 4	NPT - internal thread	short with through tool coolant and chamfers	15°		320

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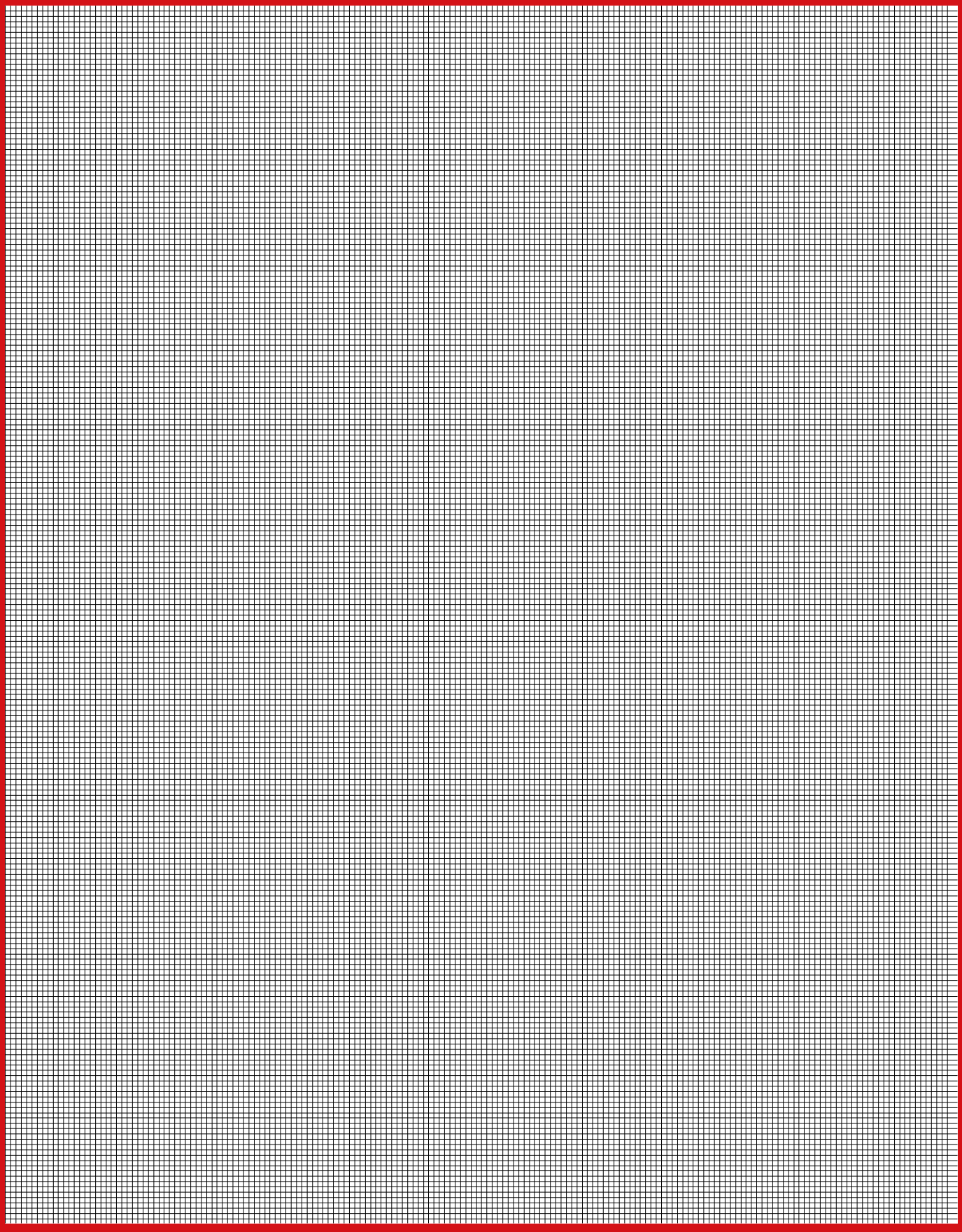
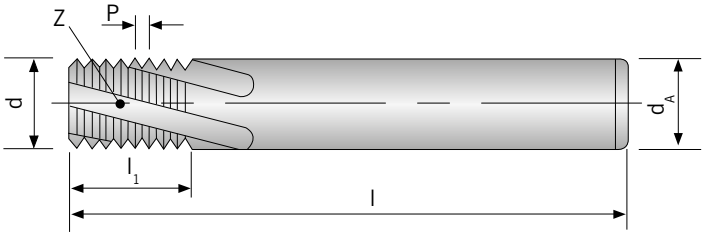


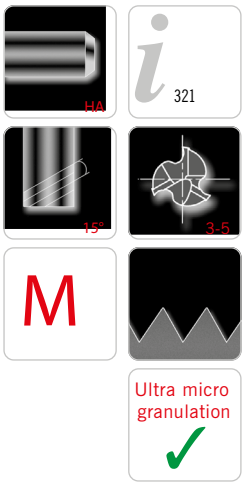
SOLID CARBIDE THREAD MILLS FOR STEEL, ALUMINIUM AND NON-FERROUS MATERIALS.

Fine grain solid carbide cutters with TiAlN coating, some with through tool coolant and chamfering edge.

AFT525.1-ISO-...

3 - 5 flutes, 15 degree helix angle, mid-length design





Shank DIN 6535HA	G Thread	P Pitch	d	d_A	l_1	l	z	HC TiAlN
AFT52531-ISO-M3X0.5	M3	0.50	2.2	6	5.00	57	3	◆
AFT52531-ISO-M4X0.7	M4	0.70	2.9	6	7.00	57	3	◆
AFT52531-ISO-M5X0.8	M5	0.80	3.8	6	8.00	57	3	◆
AFT52531-ISO-M6X1.0	M6	1.00	4.5	6	13.00	57	3	◆
AFT52531-ISO-M8X1.25	M8	1.25	6.0	6	17.50	65	3	◆
AFT52541-ISO-M10X1.5	M10	1.50	7.5	8	21.00	72	4	◆
AFT52541-ISO-M12X1.75	M12	1.75	9.5	10	26.25	80	4	◆
AFT52541-ISO-M14X2.0	M14	2.00	10.0	10	30.00	83	4	◆
AFT52541-ISO-M16X2.0	M16	2.00	12.0	12	34.00	92	4	◆
AFT52551-ISO-M18X2.5	M18	2.50	14.0	14	37.50	92	5	◆
AFT52551-ISO-M20X2.5	M20	2.50	16.0	16	42.50	105	5	◆

HC = Carbide coated

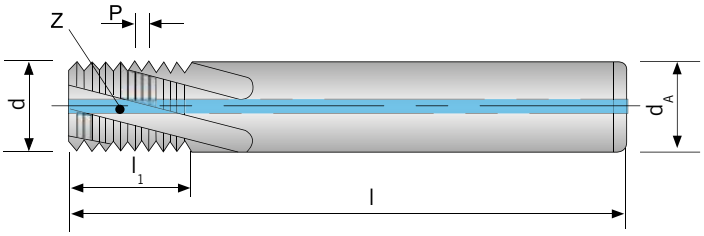
P	●
M	●
K	●
N	●
S	●
H	

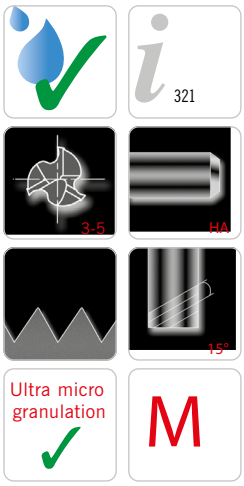
● Main application

○ Secondary application

AFT525.1-ISO-...IK ...

3 - 5 flutes, 15 degree helix angle, mid-length design





Shank DIN 6535HA	G Thread	P Pitch	d	d_A	l_1	l	z	HC TiAlN
AFT52531-ISO-M6X1.0IK	M6	1.00	4.5	6	13.00	57	3	◆
AFT52531-ISO-M8X1.25IK	M8	1.25	6.0	6	17.50	65	3	◆
AFT52541-ISO-M10X1.5IK	M10	1.50	7.5	8	21.00	72	4	◆
AFT52541-ISO-M12X1.75IK	M12	1.75	9.5	10	26.25	80	4	◆
AFT52541-ISO-M14X2.0IK	M14	2.00	10.0	10	30.00	83	4	◆
AFT52541-ISO-M16X2.0IK	M16	2.00	12.0	12	34.00	92	4	◆
AFT52551-ISO-M20X2.5IK	M20	2.50	16.0	16	42.50	105	5	◆

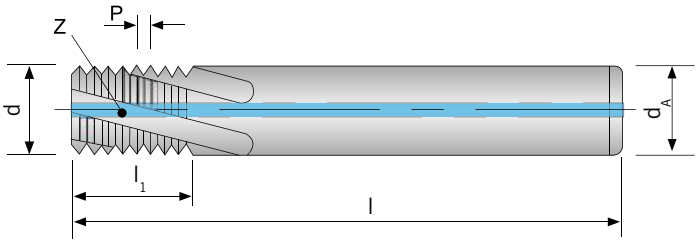
HC = Carbide coated

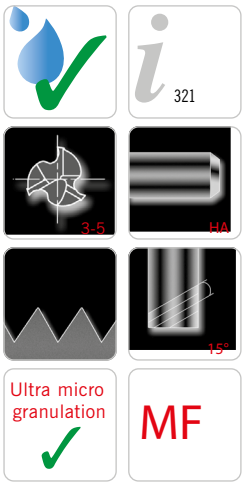
P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

AFT525.1-ISO-...IK- ...

3 - 5 flutes, 15 degree helix angle, short design





Shank DIN 6535HA	G Thread	P Pitch	d	d_A	l_1	l	z	HC TiAlN
AFT52530-ISO-M8X0.75IK	M8	0.75	6.0	6	12.75	57	3	◆
AFT52530-ISO-M8X1.0IK	M8	1.00	6.0	6	13.00	57	3	◆
AFT52540-ISO-M10X1.0IK	M10	1.00	8.0	8	16.00	63	4	◆
AFT52540-ISO-M12X1.0IK	M12	1.00	9.5	10	19.00	72	4	◆
AFT52540-ISO-M12X1.5IK	M12	1.50	9.5	10	19.50	72	4	◆
AFT52540-ISO-M12X1.25IK	M12	1.25	9.5	10	18.75	72	4	◆
AFT52540-ISO-M14X1.0IK	M14	1.00	10.0	10	22.00	83	4	◆
AFT52540-ISO-M14X1.5IK	M14	1.50	10.0	10	22.50	83	4	◆
AFT52540-ISO-M16X1.0IK	M16	1.00	12.0	12	25.00	83	4	◆
AFT52540-ISO-M16X1.5IK	M16	1.50	12.0	12	25.50	83	4	◆
AFT52550-ISO-M18X1.0IK	M18	1.00	14.0	14	28.00	92	5	◆
AFT52550-ISO-M18X1.5IK	M18	1.50	14.0	14	28.50	92	5	◆
AFT52550-ISO-M20X1.0IK	M20	1.00	16.0	16	31.00	92	5	◆
AFT52550-ISO-M20X1.5IK	M20	1.50	16.0	16	31.50	92	5	◆

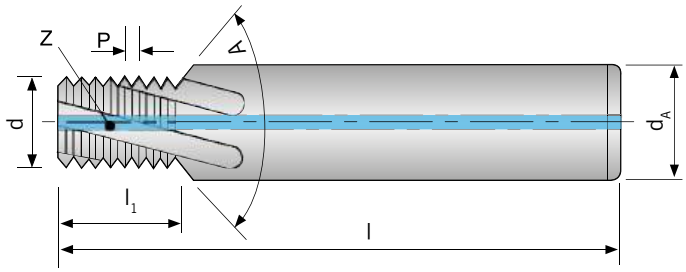
HC = Carbide coated

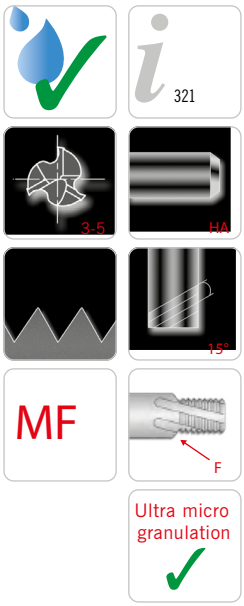
P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

AFT525.0-ISO-...IK-F ...

3 - 5 flutes, 15 degree helix angle, short design





Shank DIN 6535HA	G Thread	P Pitch	d	d_A	l_1	l	A	z	HC TiAlN
AFT52530-ISO-M8X1.0IK-F	M8	1.00	6.7	10	12.40	74	90°	3	◆
AFT52540-ISO-M10X1.0IK-F	M10	1.00	8.7	12	15.40	80	90°	4	◆
AFT52540-ISO-M10X1.25IK-F	M10	1.25	8.3	12	15.90	80	90°	4	◆
AFT52540-ISO-M12X1.0IK-F	M12	1.00	10.7	14	18.40	90	90°	4	◆
AFT52540-ISO-M12X1.5IK-F	M12	1.50	10.0	14	18.65	90	90°	4	◆
AFT52540-ISO-M12X1.25IK-F	M12	1.25	10.3	14	18.30	80	90°	4	◆
AFT52540-ISO-M14X1.5IK-F	M14	1.50	12.0	16	21.65	100	90°	4	◆
AFT52550-ISO-M16X1.5IK-F	M16	1.50	14.0	18	24.65	102	90°	5	◆

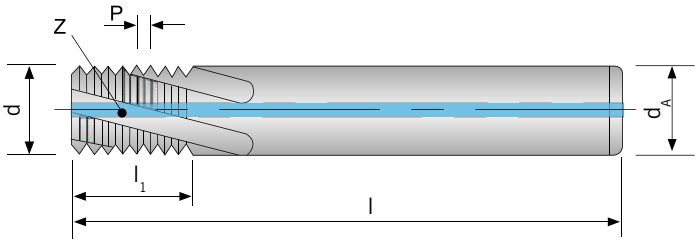
HC = Carbide coated

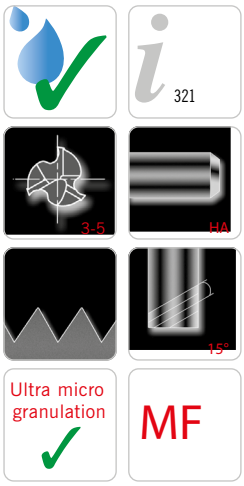
P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

AFT525.0-ISO-...IK ...

3 - 5 flutes, 15 degree helix angle, short design





Shank DIN 6535HA	G Thread	P Pitch	d	d_A	l_1	l	z	HC TiAlN
AFT52530-ISO-M8X0.75IK	M8	0.75	6.0	6	12.75	57	3	◆
AFT52530-ISO-M8X1.0IK	M8	1.00	6.0	6	13.00	57	3	◆
AFT52540-ISO-M10X1.0IK	M10	1.00	8.0	8	16.00	63	4	◆
AFT52540-ISO-M12X1.0IK	M12	1.00	9.5	10	19.00	72	4	◆
AFT52540-ISO-M12X1.5IK	M12	1.50	9.5	10	19.50	72	4	◆
AFT52540-ISO-M12X1.25IK	M12	1.25	9.5	10	18.75	72	4	◆
AFT52540-ISO-M14X1.0IK	M14	1.00	10.0	10	22.00	83	4	◆
AFT52540-ISO-M14X1.5IK	M14	1.50	10.0	10	22.50	83	4	◆
AFT52540-ISO-M16X1.0IK	M16	1.00	12.0	12	25.00	83	4	◆
AFT52540-ISO-M16X1.5IK	M16	1.50	12.0	12	25.50	83	4	◆
AFT52550-ISO-M18X1.0IK	M18	1.00	14.0	14	28.00	92	5	◆
AFT52550-ISO-M18X1.5IK	M18	1.50	14.0	14	28.50	92	5	◆
AFT52550-ISO-M20X1.0IK	M20	1.00	16.0	16	31.00	92	5	◆
AFT52550-ISO-M20X1.5IK	M20	1.50	16.0	16	31.50	92	5	◆

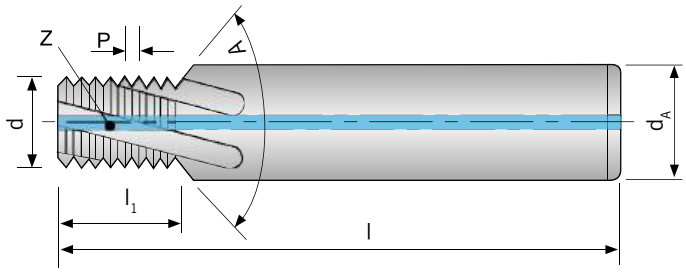
HC = Carbide coated

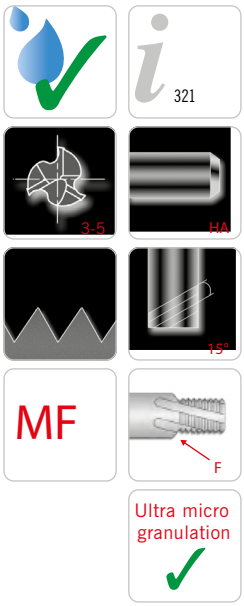
P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

AFT525.0-ISO-...IK-F ...

3 - 5 flutes, 15 degree helix angle, short design





Shank DIN 6535HA	G Thread	P Pitch	d	d_A	l_1	l	A	z	HC TiAlN
AFT52530-ISO-M8X1.0IK-F	M8	1.00	6.7	10	12.40	74	90°	3	◆
AFT52540-ISO-M10X1.0IK-F	M10	1.00	8.7	12	15.40	80	90°	4	◆
AFT52540-ISO-M10X1.25IK-F	M10	1.25	8.3	12	15.90	80	90°	4	◆
AFT52540-ISO-M12X1.0IK-F	M12	1.00	10.7	14	18.40	90	90°	4	◆
AFT52540-ISO-M12X1.5IK-F	M12	1.50	10.0	14	18.65	90	90°	4	◆
AFT52540-ISO-M12X1.25IK-F	M12	1.25	10.3	14	18.30	80	90°	4	◆
AFT52540-ISO-M14X1.5IK-F	M14	1.50	12.0	16	21.65	100	90°	4	◆
AFT52550-ISO-M16X1.5IK-F	M16	1.50	14.0	18	24.65	102	90°	5	◆

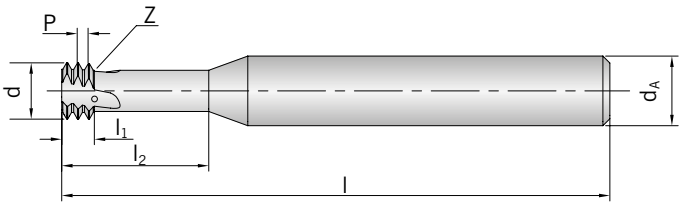
HC = Carbide coated

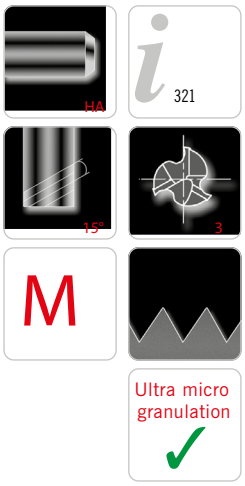
P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

AFT52534-ISO-...

3 flutes, 15 degree helix angle, mini design





Shank DIN 6535HA	G Thread	P Pitch	d	d_A	l_1	l_2	l	z	HC TiAlN
AFT52534-ISO-M1.6X0.35	M1,6	0.35	1.18	3	1.05	3.4	30	3	◆
AFT52534-ISO-M2.2X0.45	M2,2	0.45	1.66	6	1.35	4.6	57	3	◆
AFT52534-ISO-M2.5X0.45	M2,5	0.45	1.96	6	1.35	5.3	57	3	◆
AFT52534-ISO-M2X0.4	M2	0.40	1.52	6	1.20	4.2	57	3	◆
AFT52534-ISO-M3X0.5	M3	0.50	2.40	6	1.50	6.3	57	3	◆
AFT52534-ISO-M4X0.7	M4	0.70	3.16	6	2.10	8.4	57	3	◆
AFT52534-ISO-M5X0.8	M5	0.80	4.04	6	2.40	10.5	57	3	◆
AFT52534-ISO-M6X1.0	M6	1.00	4.80	6	3.00	12.6	57	3	◆
AFT52534-ISO-M8X1.25	M8	1.25	6.50	8	3.75	16.8	63	3	◆
AFT52534-ISO-M10X1.5	M10	1.50	8.20	10	4.50	21.0	73	3	◆
AFT52534-ISO-M12X1.75	M12	1.75	9.90	10	5.25	25.2	73	3	◆

HC = Carbide coated

P	●
M	●
K	●
N	●
S	●
H	

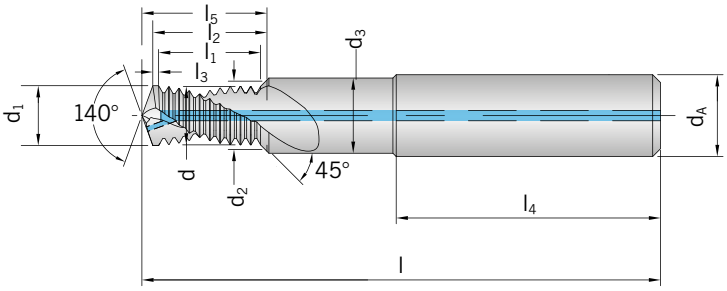
● Main application

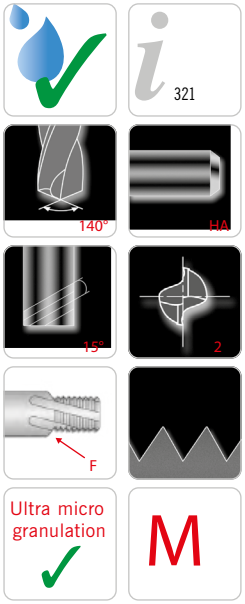
○ Secondary application

Dimensions in mm

AFT52621-ISO-...IK-F ...

2 flutes, 15 degree helix angle, long design





Shank DIN 6535HA	G Thread	P Pitch	d	d_A	d_1	d_2	d_3	l_1	l_2	l_3	l_4	l_5	l	HC TiAlN
AFT52621-ISO-M6X1.0IK-F	M6	1.00	4.75	8	5.00	6.3	6.6	13.00	13.77	1.00	36	14.68	62	◆
AFT52621-ISO-M8X1.25IK-F	M8	1.25	6.35	10	6.75	8.3	9.0	16.27	17.25	1.25	40	18.48	74	◆
AFT52621-ISO-M10X1.5IK-F	M10	1.50	7.95	12	8.50	10.3	11.0	21.05	22.22	1.50	45	23.77	79	◆
AFT52621-ISO-M12X1.75IK-F	M12	1.75	9.95	14	10.25	12.3	13.5	24.21	25.38	1.50	45	27.25	89	◆
AFT52621-ISO-M14X2.0IK-F	M14	2.00	11.20	16	12.00	14.3	15.5	29.58	31.13	1.50	48	33.32	102	◆

HC = Carbide coated

P	●
M	●
K	●
N	●
S	●
H	

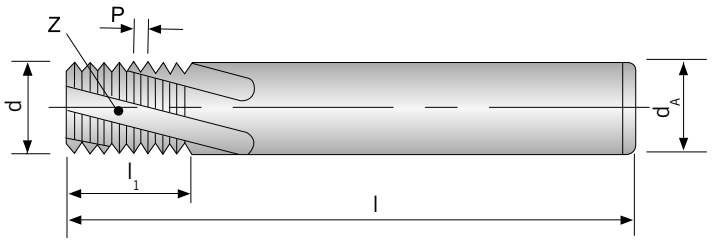
● Main application
○ Secondary application

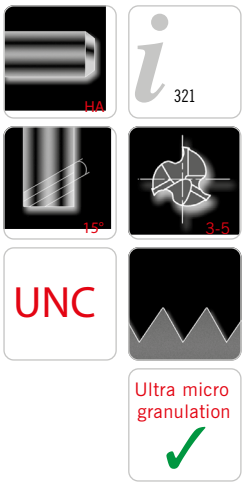
AFT

Dimensions in mm

AFT525.1-UNC-...

3 - 5 flutes, 15 degree helix angle, mid-length design





Shank DIN 6535HA	G Thread	P Pitch [Inch]	d	d_A	l_1	l	z	HC TiAlN
AFT52531-UNC-1/4X20	1/4“	20	4.5	6	14.0	57	3	◆
AFT52531-UNC-5/16X18	5/16“	18	5.8	6	16.9	65	3	◆
AFT52541-UNC-1/2X13	1/2“	13	9.5	10	27.4	80	4	◆
AFT52541-UNC-3/8X16	3/8“	16	7.0	8	20.6	72	4	◆
AFT52541-UNC-5/8X11	5/8“	11	12.0	12	34.6	92	4	◆
AFT52541-UNC-7/16X14	7/16“	14	8.0	8	23.6	72	4	◆
AFT52541-UNC-9/16X12	9/16“	12	10.0	10	31.8	83	4	◆
AFT52551-UNC-3/4X10	3/4“	10	14.0	14	40.6	104	5	◆

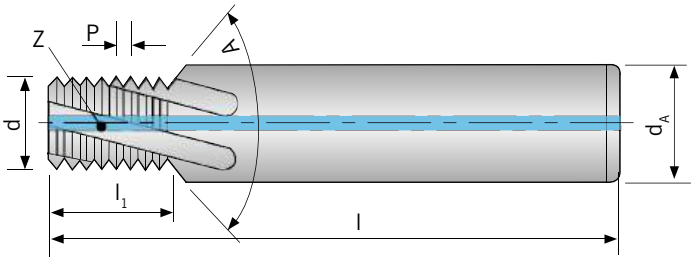
HC = Carbide coated

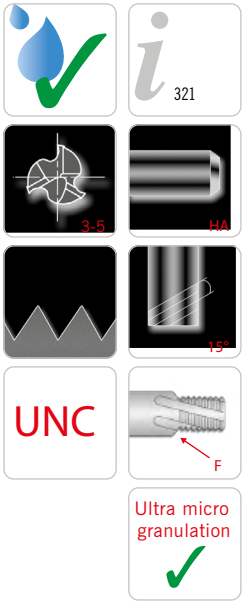
P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

AFT525.1-UNC-...IK-F ...

3 - 5 flutes, 15 degree helix angle, mid-length design





Shank DIN 6535HA	G Thread	P Pitch [Inch]	d	d_A	l_1	l	A	z	HC TiAlN
AFT52531-UNC-1/4X20IK-F	1/4“	20	4.8	8	13.30	62	90°	3	◆
AFT52531-UNC-5/16X18IK-F	5/16“	18	6.2	10	16.18	74	90°	3	◆
AFT52541-UNC-1/2X13IK-F	1/2“	13	10.3	14	26.32	90	90°	4	◆
AFT52541-UNC-3/8X16IK-F	3/8“	16	7.6	12	19.80	80	90°	4	◆
AFT52541-UNC-5/8X11IK-F	5/8“	11	13.1	18	33.41	102	90°	4	◆
AFT52541-UNC-7/16X14IK-F	7/16“	14	8.9	12	22.62	80	90°	4	◆
AFT52541-UNC-9/16X12IK-F	9/16“	12	11.7	16	30.63	100	90°	4	◆
AFT52551-UNC-3/4X10IK-F	3/4“	10	16.0	20	39.29	110	90°	5	◆

HC = Carbide coated

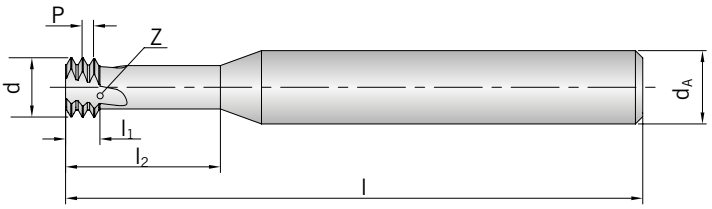
P	●
M	●
K	●
N	●
S	●
H	

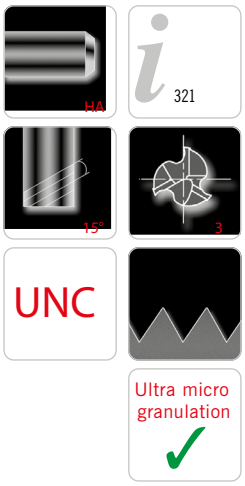
● Main application

○ Secondary application

AFT52534-UNC-...

3 flutes, 15 degree helix angle, mini design





Shank DIN 6535HA	G Thread	P Pitch [Inch]	d	d_A	l_1	l_2	l	z	HC TiAlN
AFT52534-UNC-1/4X20	1/4“	20	4.83	6	3.81	13.3	57	3	◆
AFT52534-UNC-1X64	1	64	1.38	6	1.19	3.9	57	3	◆
AFT52534-UNC-2X56	2	56	1.64	6	1.36	4.6	57	3	◆
AFT52534-UNC-3/8X16	3/8“	16	7.62	8	4.76	20.0	63	3	◆
AFT52534-UNC-4X40	4	40	2.08	6	1.91	6.0	57	3	◆
AFT52534-UNC-5/16X18	5/16“	18	6.24	8	4.23	16.7	63	3	◆
AFT52534-UNC-6X32	6	32	2.55	6	2.38	7.4	57	3	◆
AFT52534-UNC-7/16X14	7/16“	14	8.94	10	5.44	23.3	73	3	◆
AFT52534-UNC-8X32	8	32	3.21	6	2.38	8.7	57	3	◆
AFT52534-UNC-10X24	10	24	3.56	6	3.18	10.1	57	3	◆
AFT52534-UNC-12X24	12	24	4.22	6	3.18	11.5	57	3	◆

HC = Carbide coated

P	●
M	●
K	●
N	●
S	●
H	

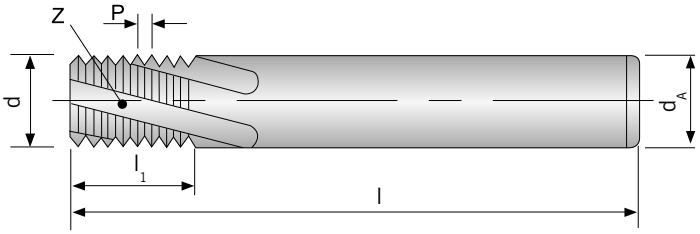
● Main application

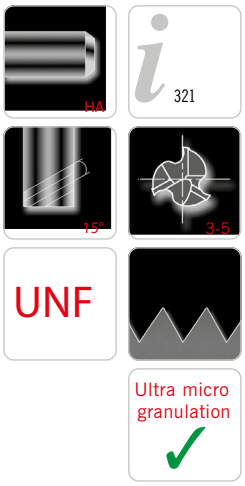
○ Secondary application

Dimensions in mm

AFT525.1-UNF-...

3 - 5 flutes, 15 degree helix angle, mid-length design





Shank DIN 6535HA	G Thread	P Pitch [Inch]	d	d_A	l_1	l	z	HC TiAlN
AFT52531-UNF-1/4X28	1/4“	28	5	6	13.6	57	3	◆
AFT52531-UNF-5/16X24	5/16“	24	6	6	16.9	65	3	◆
AFT52541-UNF-1/2X20	1/2“	20	10	10	26.7	80	4	◆
AFT52541-UNF-3/8X24	3/8“	24	8	8	20.1	72	4	◆
AFT52541-UNF-5/8X18	5/8“	18	12	12	33.9	92	4	◆
AFT52541-UNF-7/16X20	7/16“	20	8	8	24.1	72	4	◆
AFT52541-UNF-9/16X18	9/16“	18	12	12	29.6	83	4	◆
AFT52551-UNF-3/4X16	3/4“	16	14	14	39.7	104	5	◆

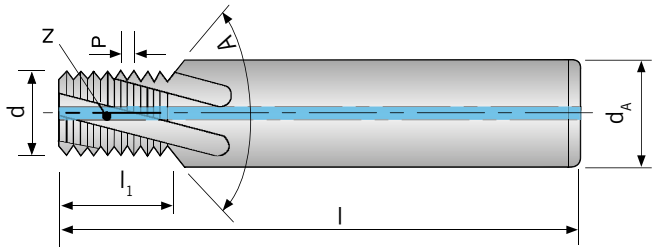
HC = Carbide coated

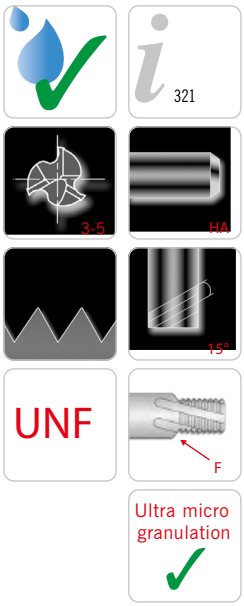
P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

AFT525.1-UNF-...IK-F ...

3 - 5 flutes, 15 degree helix angle, mid-length design





Shank DIN 6535HA	G Thread	P Pitch [Inch]	d	d_A	l_1	l	A	z	HC TiAlN
AFT52531-UNF-1/4X28IK-F	1/4“	28	5.1	8	13.21	62	90°	3	◆
AFT52531-UNF-5/16X24IK-F	5/16“	24	6.5	10	16.37	74	90°	3	◆
AFT52541-UNF-1/2X20IK-F	1/2“	20	11.0	14	26.00	90	90°	4	◆
AFT52541-UNF-3/8X24IK-F	3/8“	24	8.1	12	19.54	80	90°	4	◆
AFT52541-UNF-7/16X20IK-F	7/16“	20	9.4	12	22.19	80	90°	4	◆
AFT52541-UNF-9/16X18IK-F	9/16“	18	12.4	16	28.88	100	90°	4	◆
AFT52551-UNF-3/4X16IK-F	3/4“	16	17.0	20	38.86	110	90°	5	◆
AFT52551-UNF-5/8X18IK-F	5/8“	18	14.0	18	33.12	102	90°	5	◆

HC = Carbide coated

P	●
M	●
K	●
N	●
S	●
H	

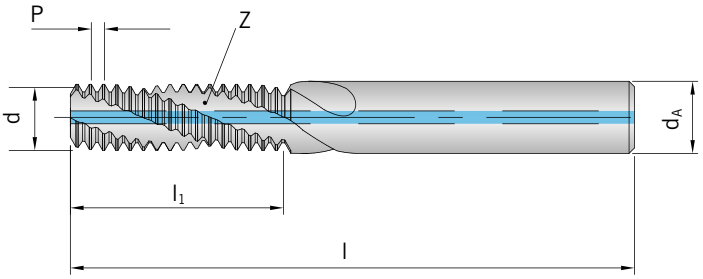
● Main application

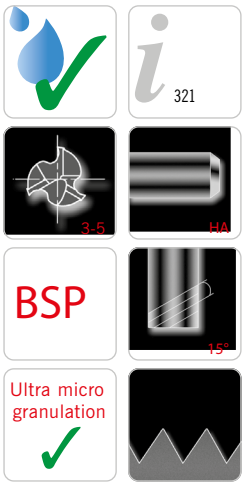
○ Secondary application

Dimensions in mm

AFT525.1-BSP-...IK ...

3 - 5 flutes, 15 degree helix angle, mid-length design





Shank DIN 6535HA	G Thread	P Pitch [Inch]	d	d_A	l_1	l	z	HC TiAlN
AFT52531-BSP-1/16X28IK	1/16“	28	5.9	6	16.3	65	3	◆
AFT52541-BSP-1/4X19IK	1/4“	19	9.9	10	26.7	80	4	◆
AFT52541-BSP-1/8X28IK	1/8“	28	7.9	8	20.0	70	4	◆
AFT52541-BSP-3/8X19IK	3/8“	19	13.9	14	33.4	92	4	◆
AFT52551-BSP-1/2X14IK	1/2“	14	15.9	16	43.5	104	5	◆
AFT52551-BSP-1X11IK	1“	11	19.9	20	34.6	100	5	◆
AFT52551-BSP-3/4X14IK	3/4“	14	17.9	18	34.5	100	5	◆

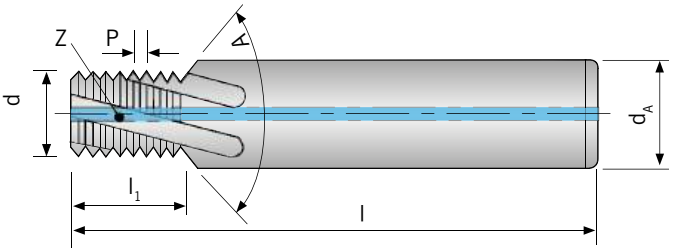
HC = Carbide coated

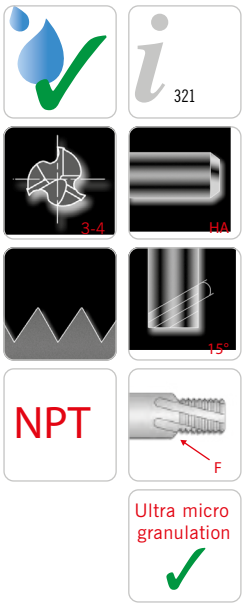
P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

AFT525.1-NPT-...IK-F ...

3 - 4 flutes, 15 degree helix angle, short design





Shank DIN 6535HA	G Thread	P Pitch [Inch]	d	d_A	l_1	l	A	z	HC TiAlN
AFT52531-NPT-1/16X27IK-F	1/16“	27	5.90	10	8.9	64	90°	3	◆
AFT52541-NPT-1/8X27IK-F	1/8“	27	7.80	12	8.9	70	90°	4	◆
AFT52541-NPT-1/4X18IK-F	1/4“	18	10.05	16	13.4	81	90°	4	◆
AFT52541-NPT-3/8X18IK-F	3/8“	18	13.45	18	13.4	81	90°	4	◆

HC = Carbide coated

P	●
M	●
K	●
N	●
S	●
H	

● Main application

○ Secondary application

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Cutting speed V_c (m/min)	Feed per tooth f_z (mm)	Feed per tooth f_z (mm)
							VHM TiAlN	Ø 3 - 10 mm	Ø 12 - 20 mm
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	105 - 115 - 125	0,015 - 0,03 - 0,045	0,07 - 0,085 - 0,1
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	145 - 155 - 165	0,012 - 0,0285 - 0,045	0,07 - 0,085 - 0,1
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	120 - 130 - 140	0,02 - 0,0325 - 0,045	0,07 - 0,085 - 0,1
		C > 0.55 %	annealed	190	639	P4	120 - 130 - 140	0,02 - 0,0325 - 0,045	0,07 - 0,085 - 0,1
		C > 0.55 %	hardened and tempered	300	1013	P5	85 - 95 - 105	0,02 - 0,0325 - 0,045	0,07 - 0,085 - 0,1
		Machining steel (short-chipping)	tempered	220	745	P6	120 - 130 - 140	0,012 - 0,0285 - 0,045	0,07 - 0,085 - 0,1
	Low alloyed steel	annealed		175	591	P7	120 - 130 - 140	0,012 - 0,0285 - 0,045	0,07 - 0,085 - 0,1
		hardened and tempered		300	1013	P8	70 - 80 - 90	0,01 - 0,025 - 0,04	0,07 - 0,085 - 0,1
		hardened and tempered		380	1282	P9	65 - 75 - 85	0,02 - 0,03 - 0,04	0,07 - 0,085 - 0,1
		hardened and tempered		430	1477	P10	55 - 65 - 75	0,02 - 0,03 - 0,04	0,07 - 0,085 - 0,1
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	140 - 150 - 160	0,025 - 0,045 - 0,065	0,07 - 0,085 - 0,1
		hardened		300	1013	P12	100 - 110 - 120	0,03 - 0,0475 - 0,065	0,07 - 0,085 - 0,1
		hardened		400	1361	P13	80 - 90 - 100	0,03 - 0,0475 - 0,065	0,07 - 0,085 - 0,1
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	45 - 55 - 65	0,02 - 0,0425 - 0,065	0,07 - 0,085 - 0,1
		martensitic, hardened and tempered		330	1114	P15	35 - 45 - 55	0,03 - 0,0525 - 0,075	0,095 - 0,0975 - 0,1
M	Stainless steel	austenitic, chilled		200	675	M1	45 - 55 - 65	0,015 - 0,0225 - 0,03	0,05 - 0,075 - 0,1
		austenitic, precipitation-hardened (PH)		300	1013	M2	30 - 40 - 50	0,02 - 0,03 - 0,04	0,05 - 0,075 - 0,1
		austenitic-ferritic, Duplex		230	778	M3	35 - 45 - 55	0,013 - 0,0215 - 0,03	0,05 - 0,075 - 0,1
K	Malleable cast iron	ferritic		200	675	K1	80 - 105 - 130	0,02 - 0,035 - 0,05	0,075 - 0,0875 - 0,1
		pearlitic		260	867	K2	75 - 100 - 125	0,025 - 0,0375 - 0,05	0,075 - 0,0875 - 0,1
	Cast iron	low tensile strength		180	602	K3	105 - 130 - 155	0,02 - 0,035 - 0,05	0,075 - 0,0875 - 0,1
		high tensile strength / austenitic		245	825	K4	85 - 110 - 135	0,025 - 0,0375 - 0,05	0,075 - 0,0875 - 0,1
	Cast iron with nodular graphite	ferritic		155	518	K5	80 - 105 - 130	0,02 - 0,035 - 0,05	0,075 - 0,0875 - 0,1
		pearlitic		265	885	K6	75 - 100 - 125	0,02 - 0,03 - 0,04	0,075 - 0,0875 - 0,1
	GGV (CGI)			200	675	K7	60 - 85 - 110	0,025 - 0,0375 - 0,05	0,075 - 0,0875 - 0,1
N	Aluminium alloys long chipping	not heat treatable		30	-	N1	-	-	-
		heat treatable, heat treated		100	343	N2	-	-	-
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3	-	-	-
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4	-	-	-
		> 12 % Si, not heat treatable		130	447	N5	-	-	-
	Magnesium alloys			70	250	N6	130 - 170 - 210	0,03 - 0,0525 - 0,075	0,08 - 0,1 - 0,12
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7	300 - 360 - 420	0,03 - 0,0525 - 0,075	0,08 - 0,1 - 0,12
		Brass, Bronze		90	314	N8	300 - 360 - 420	0,03 - 0,0525 - 0,075	0,08 - 0,1 - 0,12
		Cu-alloys, short-chipping		110	382	N9	300 - 360 - 420	0,03 - 0,0525 - 0,075	0,08 - 0,1 - 0,12
		High-tensile, Ampco		300	1013	N10	35 - 50 - 65	0,03 - 0,0525 - 0,075	0,08 - 0,1 - 0,12
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11	250 - 290 - 330	0,011 - 0,023 - 0,035	0,05 - 0,075 - 0,1
		Duroplastic (without abrasive filling material)		-	-	N12	100 - 145 - 190	0,011 - 0,023 - 0,035	0,05 - 0,075 - 0,1
		Plastic glas fibre reinforced GFRP		-	-	N13	50 - 65 - 80	0,011 - 0,023 - 0,035	0,05 - 0,075 - 0,1
		Plastic carbon fibre reinforced CFRP		-	-	N14	50 - 65 - 80	-	0,05 - 0,075 - 0,1
		Plastic aramid fibre reinforced AFRP		-	-	N15	50 - 65 - 80	-	0,05 - 0,075 - 0,1
		Graphite (tech.)		80 Shore	-	N16	-	-	-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1	25 - 35 - 45	0,015 - 0,0225 - 0,03	0,05 - 0,075 - 0,1
			heat treated	280	943	S2	15 - 25 - 35	0,015 - 0,0325 - 0,05	0,05 - 0,0675 - 0,085
		Ni- or Co-alloyed	annealed	250	839	S3	30 - 40 - 50	0,015 - 0,0325 - 0,05	0,05 - 0,07 - 0,09
			heat treated	350	1177	S4	15 - 25 - 35	0,02 - 0,035 - 0,05	0,05 - 0,075 - 0,1
			casting	320	1076	S5	15 - 25 - 35	0,013 - 0,0315 - 0,05	0,05 - 0,075 - 0,1
	Titanium alloys	Pure titan		200	675	S6	30 - 40 - 50	0,011 - 0,023 - 0,035	0,05 - 0,075 - 0,1
		α- and β-alloys, heat treated		375	1262	S7	30 - 40 - 50	0,015 - 0,025 - 0,035	0,05 - 0,075 - 0,1
		β-alloys		410	1396	S8	10 - 20 - 30	0,015 - 0,025 - 0,035	0,05 - 0,075 - 0,1
	Wolfram alloys			300	1013	S9	40 - 50 - 60	0,015 - 0,0225 - 0,03	0,05 - 0,07 - 0,09
	Molybdän alloys			300	1013	S10	50 - 60 - 70	0,015 - 0,0325 - 0,05	0,05 - 0,07 - 0,09
H	Hardened steel	hardened		50 HRC	-	H1	-	-	-
		hardened		55 HRC	-	H2	-	-	-
		hardened		60 HRC	-	H3	-	-	-
	Hardened cast iron	hardened		55 HRC	-	H4	-	-	-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

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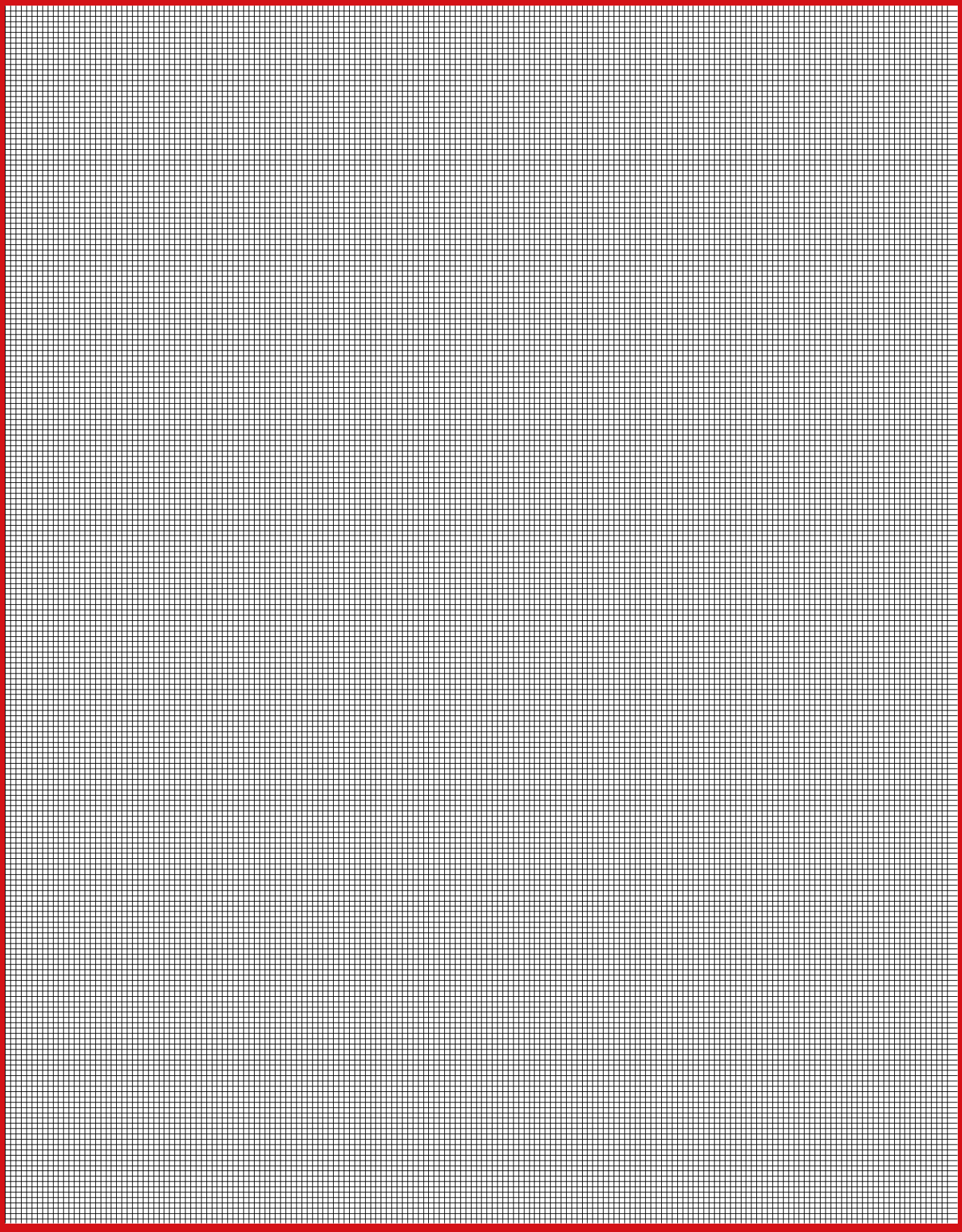


PM AND HSS DEBURRING CUTTERS

Design

AE
- 4 flutes, 60°
- 4 flutes, 90°
- 4 flutes, 120°

Overview PM and HSS deburring cutters

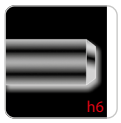
Description	Flutes	Type	Design	Helix angle	Picture	Page
AE - Solid carbide deburring cutter						
AE63041-...	4	Solid carbide deburring cutter	short	60°		326
AE63141-...	4	Solid carbide deburring cutter	short	90°		328
AE63241-...	4	Solid carbide deburring cutter	short	120°		330
AE - Powder metal deburring cutter						
AE63041-...-PM ...	4	Powder metal deburring cutter	short	60°		327
AE63141-...-PM ...	4	Powder metal deburring cutter	short	90°		329
AE63241-...-PM ...	4	Powder metal deburring cutter	short	120°		331

COATED FOR SPEED.

**Thanks to the TiAlN coating this NC-drill can be up to 50 % faster than the equivalent uncoated version.
Suitable for nearly all materials.
The tools can be used with micro lubrication coolant or run dry.**

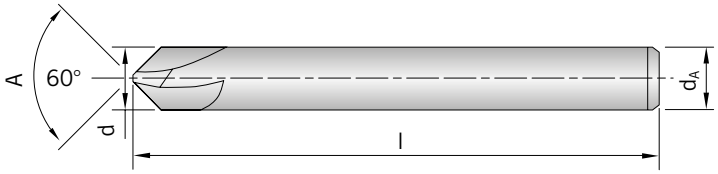
AE63041-...

4 flutes, 60°



60° ✓

Ultra micro granulation ✓



Shank	d	d_A	l	A	HC TiAlN
AE63041-040	4	4	54	60°	◆
AE63041-060	6	6	54	60°	◆
AE63041-080	8	8	58	60°	◆
AE63041-100	10	10	66	60°	◆
AE63041-120	12	12	73	60°	◆

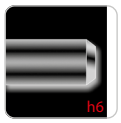
HC = Carbide coated

P	●
M	●
K	●
N	●
S	●
H	●

● Main application
○ Secondary application

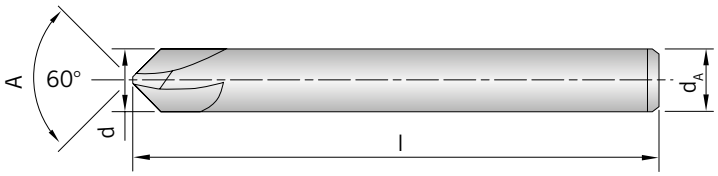
AE63041-...-PM ...

4 flutes, 60°



60° ✓

PM-HSS ✓



Shank	d	d_A	l	A	PG 24 / Price in £ PMC
					TiAlN
AE63041-040-PM	4	4	54	60°	◆
AE63041-060-PM	6	6	54	60°	◆
AE63041-080-PM	8	8	58	60°	◆
AE63041-100-PM	10	10	66	60°	◆
AE63041-120-PM	12	12	73	60°	◆

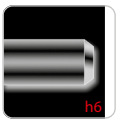
PMC = PM-HSS coated

P	●
M	●
K	●
N	●
S	●
H	●

● Main application
○ Secondary application

AE63141-...

4 flutes, 90°



90° ✓

Ultra micro granulation ✓

Shank	d	d_A	l	A	HC TiAlN
AE63141-040	4	4	54	90°	◆
AE63141-060	6	6	54	90°	◆
AE63141-080	8	8	58	90°	◆
AE63141-100	10	10	66	90°	◆
AE63141-120	12	12	73	90°	◆

HC = Carbide coated

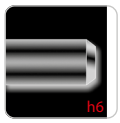
P	●
M	●
K	●
N	●
S	●
H	●

● Main application

○ Secondary application

AE63141-...-PM ...

4 flutes, 90°



90° ✓

PM-HSS ✓

Shank	d	d_A	l	A	PG 24 / Price in £ PMC
					TiAlN
AE63141-040-PM	4	4	54	90°	◆
AE63141-060-PM	6	6	54	90°	◆
AE63141-080-PM	8	8	58	90°	◆
AE63141-100-PM	10	10	66	90°	◆
AE63141-120-PM	12	12	73	90°	◆

PMC = PM-HSS coated

P	●
M	●
K	●
N	●
S	●
H	●

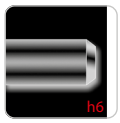
● Main application

○ Secondary application

AE

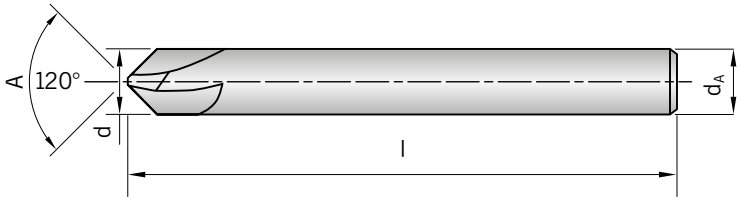
AE63241-...

4 flutes, 120°



120° ✓

Ultra micro granulation ✓



Shank	d	d_A	l	A	HC TiAlN
AE63241-040	4	4	54	120°	◆
AE63241-060	6	6	54	120°	◆
AE63241-080	8	8	58	120°	◆
AE63241-100	10	10	66	120°	◆
AE63241-120	12	12	73	120°	◆

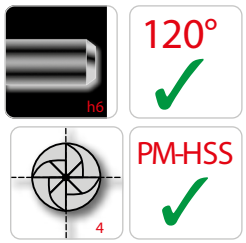
HC = Carbide coated

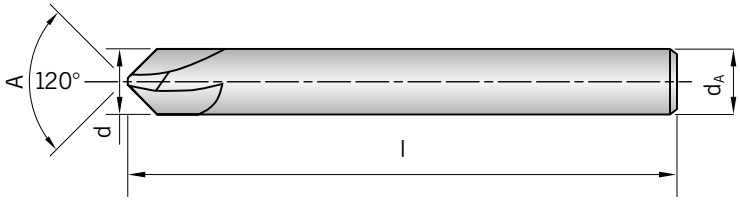
P	●
M	●
K	●
N	●
S	●
H	●

● Main application
○ Secondary application

AE63241-...-PM ...

4 flutes, 120°





Shank	d	d_A	l	A	PG 24 / Price in £ PMC
					TiAlN
AE63241-040-PM	4	4	54	120°	◆
AE63241-060-PM	6	6	54	120°	◆
AE63241-080-PM	8	8	58	120°	◆
AE63241-100-PM	10	10	66	120°	◆
AE63241-120-PM	12	12	73	120°	◆

PMC = PM-HSS coated

P	●
M	●
K	●
N	●
S	●
H	●

● Main application
○ Secondary application

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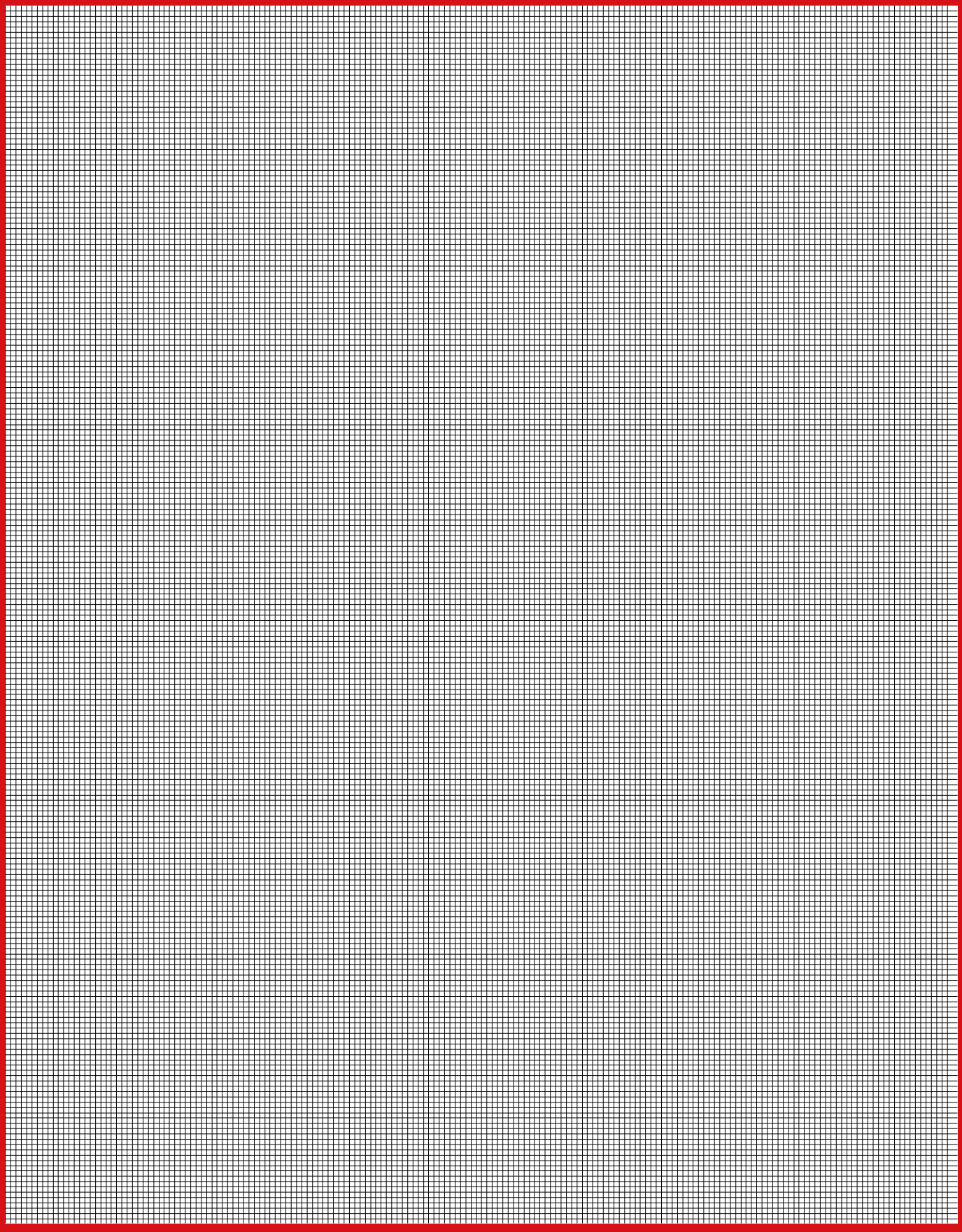


SOLID CARBIDE AND PM-HSS DRILLS

Design

SP
- 3 x D
- 3 x D for aluminium
- 3 x D for stainless steel
- 3 x D powder metal drill
- 3 x D 3 flutes
- 5 x D
- 5 x D for aluminium
- 5 x D for stainless steel
- 5 x D 3 flutes
- 5 x D for hardened steel
- 7 x D
- 7 x D powder metal drill
- 8 x D
- 8 x D for aluminium
- 8 x D for stainless steel
- 10 x D
- 15 x D
- 20 x D
- 25 x D
- 30 x D
- NC spot drills, 4 flutes, 90°, 120° and 135°
- Centre drills

Overview of solid carbide drills and powder metal drills

Design	Type	Through tool coolant	Diameter [mm]	Picture	Page
3 x D					
3 x D	Solid carbide drill	✗	1,0 - 10,0		338
3 x D	Solid carbide drill	✗	1,0 - 20,0		340
3 x D	Solid carbide drill	✓	1,0 - 20,0		343
3 x D	Solid carbide drill for aluminium – diamond coated	✓	3,0 - 20,0		346
3 x D	Solid carbide drill for stainless steel	✓	3,0 - 20,0		348
3 x D	Powder metal drill	✗	1,0 - 13,0		351
3 x D	Solid carbide drill, 3 flutes	✓	5,0 - 20,0		353
5 x D					
5 x D	Solid carbide drill	✗	1,0 - 20,0		355
5 x D	Solid carbide drill	✓	1,0 - 20,0		358
5 x D	Solid carbide drill for aluminium – diamond coated	✓	3,0 - 20,0		361
5 x D	Solid carbide drill for stainless steel	✓	1,5 - 20,0		363

Overview of solid carbide drills and powder metal drills

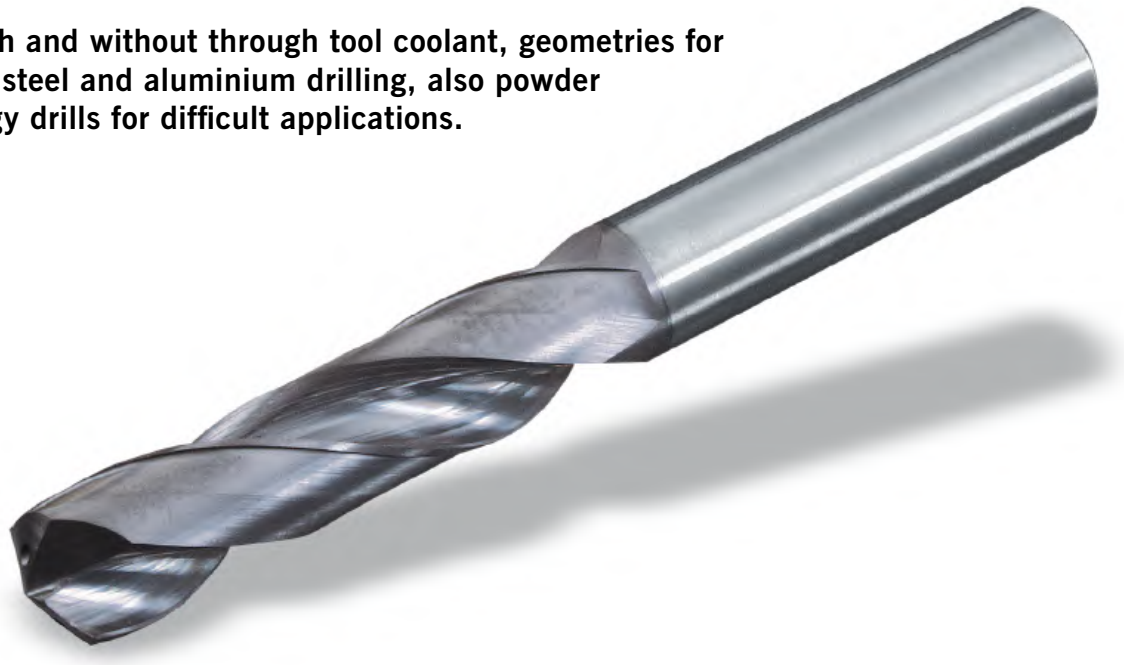
Design	Type	Through tool coolant	Diameter [mm]	Picture	Page
5 x D	Solid carbide drill, 3 flutes	✓	5,0 - 20,0		366
5 x D	Solid carbide drill for hardened steel	✗	3,0 - 14,5		368
7 x D					
7 x D	Solid carbide drill	✗	1,0 - 10,0		370
7 x D	Solid carbide drill	✗	1,0 - 10,0		372
7 x D	Powder metal drill	✗	2,0 - 13,0		374
8 x D					
8 x D	Solid carbide drill	✓	3,0 - 12,0		376
8 x D	Solid carbide drill for aluminium – diamond coated	✓	3,0 - 14,0		378
8 x D	Solid carbide drill for stainless steel	✓	3,0 - 14,0		379
10 x D					
10 x D	Punta elicoidale in metallo duro	✓	3,0 - 14,0		381
15 x D					
15 x D	Punta elicoidale in metallo duro	✓	3,0 - 12,0		382

Overview Spot drills and centre drills

Design	Type	Through tool coolant	Diameter [mm]	Picture	Page
20 x D					
20 x D	Solid carbide drill	✓	3,0 - 12,0		383
25 x D					
25 x D	Solid carbide drill	✓	3,0 - 10,0		384
30 x D					
30 x D	Solid carbide drill	✓	3,0 - 8,0		385
Spot drills and centre drills					
Spot drills	Solid carbide NC spot drills 90°	✗	2,0 - 20,0		386
Spot drills	Solid carbide NC spot drills 120°	✗	2,0 - 20,0		387
Spot drills	Solid carbide NC spot drills 135°	✗	12,0 - 20,0		388
Spot drills	Powder metal NC spot drills 90°	✗	2,0 - 20,0		389
Spot drills	Powder metal NC spot drills 120°	✗	2,0 - 20,0		390
Spot drills	Powder metal NC spot drills 135°	✗	12,0 - 20,0		391
Centre drills	Solid carbide centre drills	✗	1,0 - 6,3		392
Centre drills	Powder metal centre drills	✗	1,0 - 6,3		393

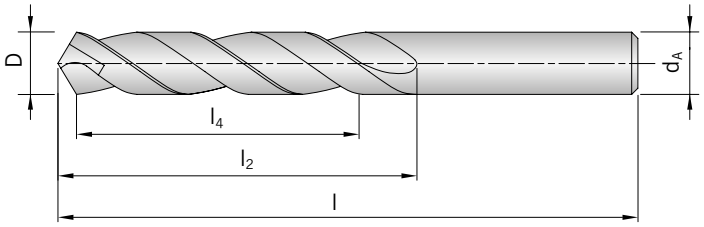
CARBIDE AND POWDER METAL DRILLS TO COVER ALL MATERIALS.

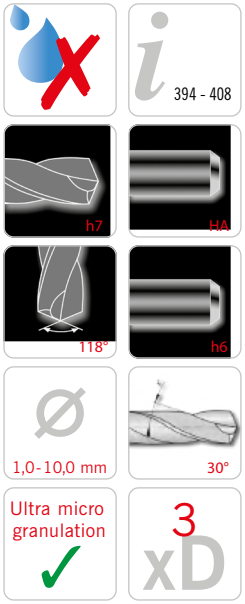
Drills with and without through tool coolant, geometries for stainless steel and aluminium drilling, also powder metallurgy drills for difficult applications.



Execution 3 x D

Short design, without through tool coolant





Shank	D *h7*	d_A *h6*	l	l_2	l_4	HU VHM/FK
SP0100-0030	1.0	1.0	26	6	3.0	◆
SP0110-0033	1.1	1.1	28	7	3.3	◆
SP0120-0036	1.2	1.2	30	8	3.6	◆
SP0130-0039	1.3	1.3	30	8	3.9	◆
SP0140-0042	1.4	1.4	32	9	4.2	◆
SP0150-0045	1.5	1.5	32	9	4.5	◆
SP0160-0048	1.6	1.6	34	10	4.8	◆
SP0170-0051	1.7	1.7	34	10	5.1	◆
SP0180-0054	1.8	1.8	36	11	5.4	◆
SP0190-0057	1.9	1.9	36	11	5.7	◆
SP0200-0060	2.0	2.0	38	12	6.0	◆
SP0210-0063	2.1	2.1	38	12	6.3	◆
SP0220-0066	2.2	2.2	40	13	6.6	◆
SP0230-0069	2.3	2.3	40	13	6.9	◆
SP0240-0072	2.4	2.4	43	14	7.2	◆
SP0250-0075	2.5	2.5	43	14	7.5	◆
SP0260-0078	2.6	2.6	43	14	7.8	◆
SP0270-0081	2.7	2.7	46	16	8.1	◆
SP0280-0084	2.8	2.8	46	16	8.4	◆
SP0290-0087	2.9	2.9	46	16	8.7	◆
SP0300-0090	3.0	3.0	46	16	9.0	◆
SP0310-0093	3.1	3.1	49	18	9.3	◆
SP0320-0096	3.2	3.2	49	18	9.6	◆
SP0330-0099	3.3	3.3	49	18	9.9	◆
SP0340-0102	3.4	3.4	52	20	10.2	◆
SP0350-0105	3.5	3.5	52	20	10.5	◆
SP0360-0108	3.6	3.6	52	20	10.8	◆
SP0370-0111	3.7	3.7	52	20	11.1	◆
SP0380-0114	3.8	3.8	52	20	11.4	◆
SP0390-0117	3.9	3.9	55	22	11.7	◆
SP0400-0120	4.0	4.0	55	22	12.0	◆
SP0410-0123	4.1	4.1	55	22	12.3	◆
SP0420-0126	4.2	4.2	55	22	12.6	◆
SP0430-0129	4.3	4.3	58	24	12.9	◆
SP0440-0132	4.4	4.4	58	24	13.2	◆

Shank	D *h7*	d_A *h6*	l	l_2	l_4	HU VHM/FK
SP0450-0135	4.5	4.5	58	24	13.5	◆
SP0460-0138	4.6	4.6	58	24	13.8	◆
SP0470-0141	4.7	4.7	58	24	14.1	◆
SP0480-0144	4.8	4.8	62	26	14.4	◆
SP0490-0147	4.9	4.9	62	26	14.7	◆
SP0500-0150	5.0	5.0	62	26	15.0	◆
SP0510-0153	5.1	5.1	62	26	15.3	◆
SP0520-0156	5.2	5.2	62	26	15.6	◆
SP0530-0159	5.3	5.3	62	26	15.9	◆
SP0550-0165	5.5	5.5	66	28	16.5	◆
SP0560-0168	5.6	5.6	66	28	16.8	◆
SP0570-0171	5.7	5.7	66	28	17.1	◆
SP0580-0174	5.8	5.8	66	28	17.4	◆
SP0590-0177	5.9	5.9	66	28	17.7	◆
SP0600-0180	6.0	6.0	66	28	18.0	◆
SP0610-0183	6.1	6.1	70	31	18.3	◆
SP0620-0186	6.2	6.2	70	31	18.6	◆
SP0640-0192	6.4	6.4	70	31	19.2	◆
SP0650-0195	6.5	6.5	70	31	19.5	◆
SP0660-0198	6.6	6.6	70	31	19.8	◆
SP0670-0201	6.7	6.7	70	31	20.1	◆
SP0680-0204	6.8	6.8	74	34	20.4	◆
SP0690-0207	6.9	6.9	74	34	20.7	◆
SP0700-0210	7.0	7.0	74	34	21.0	◆
SP0730-0219	7.3	7.3	74	34	21.9	◆
SP0750-0225	7.5	7.5	74	34	22.5	◆
SP0780-0234	7.8	7.8	79	37	23.4	◆
SP0800-0240	8.0	8.0	79	37	24.0	◆
SP0810-0243	8.1	8.1	79	37	24.3	◆
SP0850-0255	8.5	8.5	79	37	25.5	◆
SP0860-0258	8.6	8.6	84	40	25.8	◆
SP0880-0264	8.8	8.8	84	40	26.4	◆
SP0890-0267	8.9	8.9	84	40	26.7	◆
SP0900-0270	9.0	9.0	84	40	27.0	◆
SP1000-0300	10.0	10.0	89	43	30.0	◆

HU = Carbide uncoated

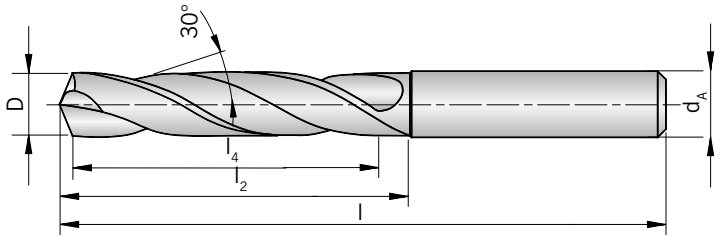
P	●
M	○
K	○
N	
S	
H	

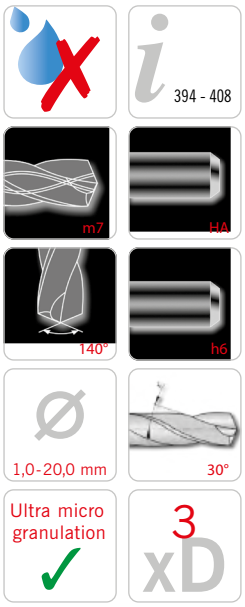
● Main application

○ Secondary application

Execution 3 x D

Short design, without through tool coolant





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SP0100-0030	1.00	3	45	7	3.0	◆
SP0110-0033	1.10	3	45	7	3.3	◆
SP0120-0036	1.20	3	45	7	3.6	◆
SP0130-0039	1.30	3	45	7	3.9	◆
SP0140-0042	1.40	3	45	7	4.2	◆
SP0150-0045	1.50	3	55	14	4.5	◆
SP0160-0048	1.60	3	55	14	4.8	◆
SP0170-0051	1.70	3	55	14	5.1	◆
SP0180-0054	1.80	3	55	14	5.4	◆
SP0190-0057	1.90	4	55	14	5.7	◆
SP0200-0060	2.00	4	55	20	6.0	◆
SP0210-0063	2.10	4	55	20	6.3	◆
SP0220-0066	2.20	4	55	20	6.6	◆
SP0230-0069	2.30	4	55	20	6.9	◆
SP0240-0072	2.40	4	55	20	7.2	◆
SP0250-0075	2.50	4	55	20	7.5	◆
SP0260-0078	2.60	4	55	20	7.8	◆
SP0270-0081	2.70	4	55	20	8.1	◆
SP0280-0084	2.80	4	55	20	8.4	◆
SP0290-0087	2.90	4	55	20	8.7	◆
SP0300-0090	3.00	6	62	20	9.0	◆
SP0310-0093	3.10	6	62	20	9.3	◆
SP0320-0096	3.20	6	62	20	9.6	◆
SP0330-0099	3.30	6	62	20	9.9	◆
SP0340-0102	3.40	6	62	20	10.2	◆
SP0350-0105	3.50	6	62	20	10.5	◆
SP0360-0108	3.60	6	62	20	10.8	◆
SP0370-0111	3.70	6	62	20	11.1	◆
SP0380-0114	3.80	6	66	24	11.4	◆
SP0390-0117	3.90	6	66	24	11.7	◆
SP0400-0120	4.00	6	66	24	12.0	◆
SP0408-0122	4.08	6	66	24	12.2	◆
SP0410-0123	4.10	6	66	24	12.3	◆
SP0420-0126	4.20	6	66	24	12.6	◆
SP0425-0128	4.25	6	66	24	12.8	◆

Dimensions in mm

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SP0430-0129	4.30	6	66	24	12.9	◆
SP0440-0132	4.40	6	66	24	13.2	◆
SP0450-0135	4.50	6	66	24	13.5	◆
SP0460-0138	4.60	6	66	24	13.8	◆
SP0470-0141	4.70	6	66	24	14.1	◆
SP0480-0144	4.80	6	66	28	14.4	◆
SP0490-0147	4.90	6	66	28	14.7	◆
SP0497-0150	4.97	6	66	28	15.0	◆
SP0500-0150	5.00	6	66	28	15.0	◆
SP0509-0153	5.09	6	66	28	15.3	◆
SP0510-0153	5.10	6	66	28	15.3	◆
SP0520-0156	5.20	6	66	28	15.6	◆
SP0530-0159	5.30	6	66	28	15.9	◆
SP0540-0162	5.40	6	66	28	16.2	◆
SP0550-0165	5.50	6	66	28	16.5	◆
SP0560-0168	5.60	6	66	28	16.8	◆
SP0570-0171	5.70	6	66	28	17.1	◆
SP0580-0174	5.80	6	66	28	17.4	◆
SP0590-0177	5.90	6	66	28	17.7	◆
SP0600-0180	6.00	6	66	28	18.0	◆
SP0609-0183	6.09	8	79	34	18.3	◆
SP0610-0183	6.10	8	79	34	18.3	◆
SP0620-0186	6.20	8	79	34	18.6	◆
SP0630-0189	6.30	8	79	34	18.9	◆
SP0640-0192	6.40	8	79	34	19.2	◆
SP0650-0195	6.50	8	79	34	19.5	◆
SP0655-0197	6.55	8	79	34	19.7	◆
SP0660-0198	6.60	8	79	34	19.8	◆
SP0670-0201	6.70	8	79	34	20.1	◆
SP0680-0204	6.80	8	79	34	20.4	◆
SP0690-0207	6.90	8	79	34	20.7	◆
SP0700-0210	7.00	8	79	34	21.0	◆
SP0710-0213	7.10	8	79	41	21.3	◆
SP0720-0216	7.20	8	79	41	21.6	◆
SP0730-0219	7.30	8	79	41	21.9	◆
SP0740-0222	7.40	8	79	41	22.2	◆
SP0750-0225	7.50	8	79	41	22.5	◆
SP0760-0228	7.60	8	79	41	22.8	◆
SP0770-0231	7.70	8	79	41	23.1	◆
SP0780-0234	7.80	8	79	41	23.4	◆
SP0790-0237	7.90	8	79	41	23.7	◆
SP0800-0240	8.00	8	79	41	24.0	◆
SP0810-0243	8.10	10	89	47	24.3	◆
SP0820-0246	8.20	10	89	47	24.6	◆
SP0830-0249	8.30	10	89	47	24.9	◆
SP0840-0252	8.40	10	89	47	25.2	◆
SP0850-0255	8.50	10	89	47	25.5	◆
SP0860-0258	8.60	10	89	47	25.8	◆
SP0870-0261	8.70	10	89	47	26.1	◆
SP0880-0264	8.80	10	89	47	26.4	◆
SP0890-0267	8.90	10	89	47	26.7	◆
SP0900-0270	9.00	10	89	47	27.0	◆
SP0910-0273	9.10	10	89	47	27.3	◆
SP0920-0276	9.20	10	89	47	27.6	◆
SP0930-0279	9.30	10	89	47	27.9	◆
SP0950-0285	9.50	10	89	47	28.5	◆
SP0970-0291	9.70	10	89	47	29.1	◆

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SP0980-0294	9.80	10	89	47	29.4	◆
SP0990-0297	9.90	10	89	47	29.7	◆
SP1000-0300	10.00	10	89	47	30.0	◆
SP1010-0303	10.10	12	102	55	30.3	◆
SP1020-0306	10.20	12	102	55	30.6	◆
SP1030-0309	10.30	12	102	55	30.9	◆
SP1040-0312	10.40	12	102	55	31.2	◆
SP1050-0315	10.50	12	102	55	31.5	◆
SP1060-0318	10.60	12	102	55	31.8	◆
SP1070-0321	10.70	12	102	55	32.1	◆
SP1080-0324	10.80	12	102	55	32.4	◆
SP1090-0327	10.90	12	102	55	32.7	◆
SP1100-0330	11.00	12	102	55	33.0	◆
SP1110-0333	11.10	12	102	55	33.3	◆
SP1120-0336	11.20	12	102	55	33.6	◆
SP1130-0339	11.30	12	102	55	33.9	◆
SP1150-0345	11.50	12	102	55	34.5	◆
SP1170-0351	11.70	12	102	55	35.1	◆
SP1180-0354	11.80	12	102	55	35.4	◆
SP1190-0357	11.90	12	102	55	35.7	◆
SP1200-0360	12.00	12	102	55	36.0	◆
SP1230-0369	12.30	14	107	60	36.9	◆
SP1250-0375	12.50	14	107	60	37.5	◆
SP1280-0384	12.80	14	107	60	38.4	◆
SP1300-0390	13.00	14	107	60	39.0	◆
SP1350-0405	13.50	14	107	60	40.5	◆
SP1380-0414	13.80	14	107	60	41.4	◆
SP1400-0420	14.00	14	107	60	42.0	◆
SP1450-0435	14.50	16	115	65	43.5	◆
SP1480-0444	14.80	16	115	65	44.4	◆
SP1500-0450	15.00	16	115	65	45.0	◆
SP1550-0465	15.50	16	115	65	46.5	◆
SP1580-0474	15.80	16	115	65	47.4	◆
SP1600-0480	16.00	16	115	65	48.0	◆
SP1650-0495	16.50	18	123	73	49.5	◆
SP1700-0510	17.00	18	123	73	51.0	◆
SP1750-0525	17.50	18	123	73	52.5	◆
SP1800-0540	18.00	18	123	73	54.0	◆
SP1850-0555	18.50	20	131	79	55.5	◆
SP1900-0570	19.00	20	131	79	57.0	◆
SP1950-0585	19.50	20	131	79	58.5	◆
SP2000-0600	20.00	20	131	79	60.0	◆

HC = Carbide coated

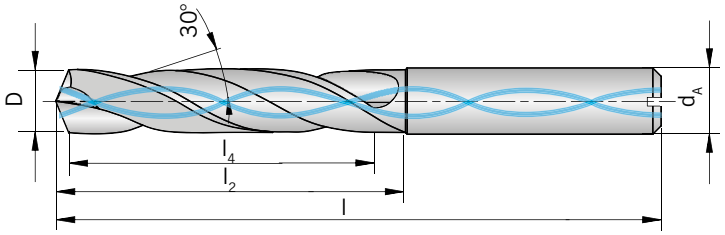
P	●
M	○
K	○
N	
S	
H	

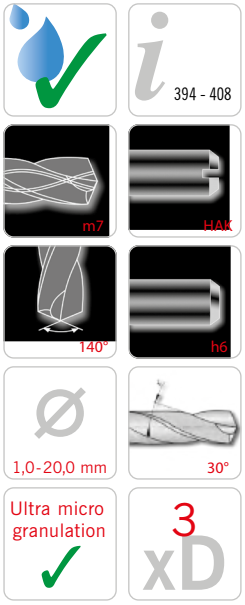
● Main application

○ Secondary application

Execution 3 x D

Short design, with through tool coolant





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0100-0030	1.00	3	45	7	3.0	◆
SPC0140-0042	1.40	3	45	7	4.2	◆
SPC0150-0045	1.50	3	55	14	4.5	◆
SPC0160-0048	1.60	3	55	14	4.8	◆
SPC0170-0051	1.70	3	55	14	5.1	◆
SPC0180-0054	1.80	3	55	14	5.4	◆
SPC0190-0057	1.90	3	55	14	5.7	◆
SPC0200-0060	2.00	4	55	20	6.0	◆
SPC0210-0063	2.10	4	55	20	6.3	◆
SPC0220-0066	2.20	4	55	20	6.6	◆
SPC0230-0069	2.30	4	55	20	6.9	◆
SPC0240-0072	2.40	4	55	20	7.2	◆
SPC0250-0075	2.50	4	55	20	7.5	◆
SPC0260-0078	2.60	4	55	20	7.8	◆
SPC0270-0081	2.70	4	55	20	8.1	◆
SPC0280-0084	2.80	4	55	20	8.4	◆
SPC0290-0087	2.90	4	55	20	8.7	◆
SPC0300-0090	3.00	6	62	20	9.0	◆
SPC0310-0093	3.10	6	62	20	9.3	◆
SPC0320-0096	3.20	6	62	20	9.6	◆
SPC0325-0098	3.25	6	62	20	9.8	◆
SPC0330-0099	3.30	6	62	20	9.9	◆
SPC0340-0102	3.40	6	62	20	10.2	◆
SPC0350-0105	3.50	6	62	20	10.5	◆
SPC0360-0108	3.60	6	62	20	10.8	◆
SPC0370-0111	3.70	6	62	20	11.1	◆
SPC0380-0114	3.80	6	66	24	11.4	◆
SPC0390-0117	3.90	6	66	24	11.7	◆
SPC0400-0120	4.00	6	66	24	12.0	◆
SPC0410-0123	4.10	6	66	24	12.3	◆
SPC0415-0125	4.15	6	66	24	12.5	◆
SPC0420-0126	4.20	6	66	24	12.6	◆
SPC0430-0129	4.30	6	66	24	12.9	◆
SPC0440-0132	4.40	6	66	24	13.2	◆
SPC0450-0135	4.50	6	66	24	13.5	◆

Dimensions in mm

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0460-0138	4.60	6	66	24	13.8	◆
SPC0465-0140	4.65	6	66	24	14.0	◆
SPC0470-0141	4.70	6	66	24	14.1	◆
SPC0480-0144	4.80	6	66	28	14.4	◆
SPC0490-0147	4.90	6	66	28	14.7	◆
SPC0500-0150	5.00	6	66	28	15.0	◆
SPC0510-0153	5.10	6	66	28	15.3	◆
SPC0520-0156	5.20	6	66	28	15.6	◆
SPC0530-0159	5.30	6	66	28	15.9	◆
SPC0540-0162	5.40	6	66	28	16.2	◆
SPC0550-0165	5.50	6	66	28	16.5	◆
SPC0555-0167	5.55	6	66	28	16.7	◆
SPC0560-0168	5.60	6	66	28	16.8	◆
SPC0570-0171	5.70	6	66	28	17.1	◆
SPC0580-0174	5.80	6	66	28	17.4	◆
SPC0590-0177	5.90	6	66	28	17.7	◆
SPC0600-0180	6.00	6	66	28	18.0	◆
SPC0610-0183	6.10	8	79	34	18.3	◆
SPC0620-0186	6.20	8	79	34	18.6	◆
SPC0630-0189	6.30	8	79	34	18.9	◆
SPC0640-0192	6.40	8	79	34	19.2	◆
SPC0650-0195	6.50	8	79	34	19.5	◆
SPC0660-0198	6.60	8	79	34	19.8	◆
SPC0670-0201	6.70	8	79	34	20.1	◆
SPC0680-0204	6.80	8	79	34	20.4	◆
SPC0690-0207	6.90	8	79	34	20.7	◆
SPC0700-0210	7.00	8	79	34	21.0	◆
SPC0710-0213	7.10	8	79	41	21.3	◆
SPC0720-0216	7.20	8	79	41	21.6	◆
SPC0730-0219	7.30	8	79	41	21.9	◆
SPC0740-0222	7.40	8	79	41	22.2	◆
SPC0745-0224	7.45	8	79	41	22.4	◆
SPC0750-0225	7.50	8	79	41	22.5	◆
SPC0760-0228	7.60	8	79	41	22.8	◆
SPC0780-0234	7.80	8	79	41	23.4	◆
SPC0790-0237	7.90	8	79	41	23.7	◆
SPC0800-0240	8.00	8	79	41	24.0	◆
SPC0810-0243	8.10	10	89	47	24.3	◆
SPC0820-0246	8.20	10	89	47	24.6	◆
SPC0830-0249	8.30	10	89	47	24.9	◆
SPC0840-0252	8.40	10	89	47	25.2	◆
SPC0850-0255	8.50	10	89	47	25.5	◆
SPC0860-0258	8.60	10	89	47	25.8	◆
SPC0870-0261	8.70	10	89	47	26.1	◆
SPC0880-0264	8.80	10	89	47	26.4	◆
SPC0890-0267	8.90	10	89	47	26.7	◆
SPC0900-0270	9.00	10	89	47	27.0	◆
SPC0910-0273	9.10	10	89	47	27.3	◆
SPC0930-0279	9.30	10	89	47	27.9	◆
SPC0940-0282	9.40	10	89	47	28.2	◆
SPC0950-0285	9.50	10	89	47	28.5	◆
SPC0960-0288	9.60	10	89	47	28.8	◆
SPC0970-0291	9.70	10	89	47	29.1	◆
SPC0980-0294	9.80	10	89	47	29.4	◆
SPC0990-0297	9.90	10	89	47	29.7	◆
SPC1000-0300	10.00	10	89	47	30.0	◆
SPC1010-0303	10.10	12	102	55	30.3	◆
SPC1020-0306	10.20	12	102	55	30.6	◆
SPC1030-0309	10.30	12	102	55	30.9	◆

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC1040-0312	10.40	12	102	55	31.2	◆
SPC1050-0315	10.50	12	102	55	31.5	◆
SPC1080-0324	10.80	12	102	55	32.4	◆
SPC1090-0327	10.90	12	102	55	32.7	◆
SPC1100-0330	11.00	12	102	55	33.0	◆
SPC1110-0333	11.10	12	102	55	33.3	◆
SPC1120-0336	11.20	12	102	55	33.6	◆
SPC1130-0339	11.30	12	102	55	33.9	◆
SPC1150-0345	11.50	12	102	55	34.5	◆
SPC1160-0348	11.60	12	102	55	34.8	◆
SPC1170-0351	11.70	12	102	55	35.1	◆
SPC1180-0354	11.80	12	102	55	35.4	◆
SPC1200-0360	12.00	12	102	55	36.0	◆
SPC1220-0366	12.20	14	107	60	36.0	◆
SPC1250-0375	12.50	14	107	60	37.5	◆
SPC1280-0384	12.80	14	107	60	38.4	◆
SPC1300-0390	13.00	14	107	60	39.0	◆
SPC1310-0393	13.10	14	107	60	39.3	◆
SPC1350-0405	13.50	14	107	60	40.5	◆
SPC1380-0414	13.80	14	107	60	41.4	◆
SPC1400-0420	14.00	14	107	60	42.0	◆
SPC1420-0426	14.20	16	115	65	42.6	◆
SPC1450-0435	14.50	16	115	65	43.5	◆
SPC1500-0450	15.00	16	115	65	45.0	◆
SPC1510-0453	15.10	16	115	65	45.3	◆
SPC1520-0456	15.20	16	115	65	45.6	◆
SPC1550-0465	15.50	16	115	65	46.5	◆
SPC1580-0474	15.80	16	115	65	47.4	◆
SPC1600-0480	16.00	16	115	65	48.0	◆
SPC1650-0495	16.50	18	123	73	49.5	◆
SPC1690-0507	16.90	18	123	73	50.7	◆
SPC1700-0510	17.00	18	123	73	51.0	◆
SPC1750-0525	17.50	18	123	73	52.5	◆
SPC1800-0540	18.00	18	123	73	54.0	◆
SPC1850-0555	18.50	20	131	73	55.5	◆
SPC1880-0564	18.80	20	131	79	56.4	◆
SPC1890-0567	18.90	20	131	79	56.7	◆
SPC1900-0570	19.00	20	131	79	57.0	◆
SPC1950-0585	19.50	20	131	79	58.5	◆
SPC1980-0594	19.80	20	131	79	59.4	◆
SPC2000-0600	20.00	20	131	79	60.0	◆

HC = Carbide coated

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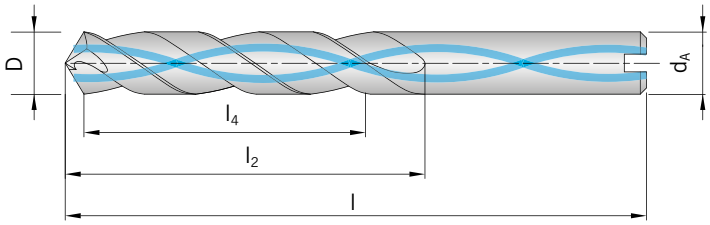
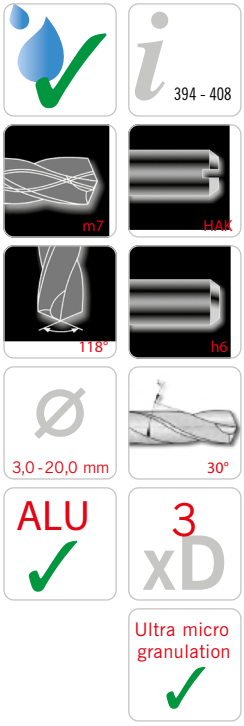
● Main application

○ Secondary application

Execution 3 x D for aluminium

Short design, with through tool coolant, diamond coated





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC DLC
SPC0300-0090-ALU	3.0	6	62	20	9.0	◆
SPC0320-0096-ALU	3.2	6	62	20	9.6	◆
SPC0380-0114-ALU	3.8	6	66	24	11.4	◆
SPC0400-0120-ALU	4.0	6	66	24	12.0	◆
SPC0450-0135-ALU	4.5	6	66	24	13.5	◆
SPC0500-0150-ALU	5.0	6	66	28	15.0	◆
SPC0510-0153-ALU	5.1	6	66	28	15.3	◆
SPC0600-0180-ALU	6.0	6	66	28	18.0	◆
SPC0640-0192-ALU	6.4	8	79	34	19.2	◆
SPC0680-0204-ALU	6.8	8	79	34	20.4	◆
SPC0700-0210-ALU	7.0	8	79	34	21.0	◆
SPC0750-0225-ALU	7.5	8	79	41	22.5	◆
SPC0800-0240-ALU	8.0	10	79	41	24.0	◆
SPC0860-0258-ALU	8.6	10	89	47	25.8	◆
SPC0880-0264-ALU	8.8	10	89	47	26.4	◆
SPC0900-0270-ALU	9.0	10	89	47	27.0	◆
SPC0910-0273-ALU	9.1	10	89	47	27.3	◆
SPC0940-0282-ALU	9.4	10	89	47	28.2	◆
SPC1000-0300-ALU	10.0	10	89	55	30.0	◆
SPC1100-0330-ALU	11.0	12	102	55	33.0	◆
SPC1200-0360-ALU	12.0	12	102	55	36.0	◆
SPC1300-0390-ALU	13.0	14	107	60	39.0	◆
SPC1400-0420-ALU	14.0	14	107	60	42.0	◆
SPC1500-0450-ALU	15.0	16	115	65	45.0	◆
SPC1600-0480-ALU	16.0	16	115	65	48.0	◆
SPC1700-0510-ALU	17.0	18	123	73	51.0	◆
SPC1800-0540-ALU	18.0	18	123	73	54.0	◆

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC DLC
SPC1900-0570-ALU	19.0	20	131	79	57.0	◆
SPC2000-0600-ALU	20.0	20	131	79	60.0	◆

HC = Carbide coated

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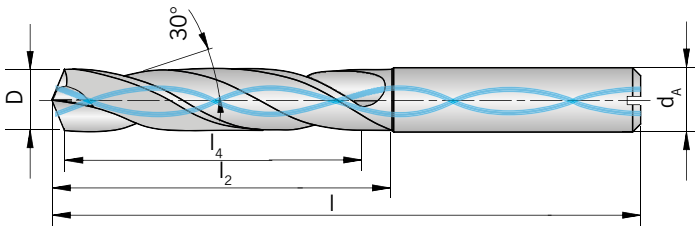
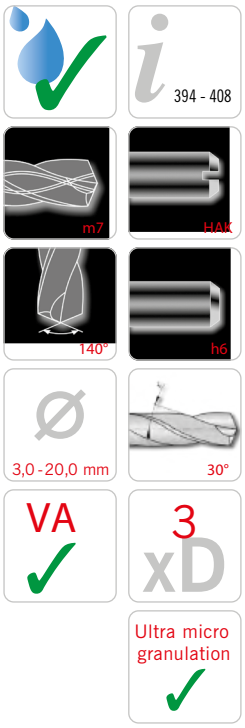
● Main application

○ Secondary application

Execution 3 x D for stainless steel

Short design, with through tool coolant





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0300-0090-VA	3.0	6	62	20	9.0	◆
SPC0310-0093-VA	3.1	6	62	20	9.3	◆
SPC0320-0096-VA	3.2	6	62	20	9.6	◆
SPC0330-0099-VA	3.3	6	62	20	9.9	◆
SPC0340-0102-VA	3.4	6	62	20	10.2	◆
SPC0350-0105-VA	3.5	6	62	20	10.5	◆
SPC0360-0108-VA	3.6	6	62	20	10.8	◆
SPC0370-0111-VA	3.7	6	62	20	11.1	◆
SPC0380-0114-VA	3.8	6	66	24	11.4	◆
SPC0390-0117-VA	3.9	6	66	24	11.7	◆
SPC0400-0120-VA	4.0	6	66	24	12.0	◆
SPC0410-0123-VA	4.1	6	66	24	12.3	◆
SPC0420-0126-VA	4.2	6	66	24	12.6	◆
SPC0430-0129-VA	4.3	6	66	24	12.9	◆
SPC0440-0132-VA	4.4	6	66	24	13.2	◆
SPC0450-0135-VA	4.5	6	66	24	13.5	◆
SPC0470-0141-VA	4.7	6	66	24	14.1	◆
SPC0480-0144-VA	4.8	6	66	28	14.4	◆
SPC0490-0147-VA	4.9	6	66	28	14.7	◆
SPC0500-0150-VA	5.0	6	66	28	15.0	◆
SPC0510-0153-VA	5.1	6	66	28	15.3	◆
SPC0520-0156-VA	5.2	6	66	28	15.6	◆
SPC0530-0159-VA	5.3	6	66	28	15.9	◆
SPC0540-0162-VA	5.4	6	66	28	16.2	◆
SPC0550-0165-VA	5.5	6	66	28	16.5	◆
SPC0560-0168-VA	5.6	6	66	28	16.8	◆
SPC0570-0171-VA	5.7	6	66	28	17.1	◆
SPC0580-0174-VA	5.8	6	66	28	17.4	◆

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0600-0180-VA	6.0	6	66	28	18.0	◆
SPC0610-0183-VA	6.1	8	79	34	18.3	◆
SPC0620-0186-VA	6.2	8	79	34	18.6	◆
SPC0630-0189-VA	6.3	8	79	34	18.9	◆
SPC0640-0192-VA	6.4	8	79	34	19.2	◆
SPC0650-0195-VA	6.5	8	79	34	19.5	◆
SPC0660-0198-VA	6.6	8	79	34	19.8	◆
SPC0670-0201-VA	6.7	8	79	34	20.1	◆
SPC0680-0204-VA	6.8	8	79	34	20.4	◆
SPC0690-0207-VA	6.9	8	79	34	20.7	◆
SPC0700-0210-VA	7.0	8	79	34	21.0	◆
SPC0720-0216-VA	7.2	8	79	41	21.6	◆
SPC0730-0219-VA	7.3	8	79	41	21.9	◆
SPC0740-0222-VA	7.4	8	79	41	22.2	◆
SPC0750-0225-VA	7.5	8	79	41	22.5	◆
SPC0760-0228-VA	7.6	8	79	41	22.8	◆
SPC0770-0231-VA	7.7	8	79	41	23.1	◆
SPC0780-0234-VA	7.8	8	79	41	23.4	◆
SPC0790-0237-VA	7.9	8	79	41	23.7	◆
SPC0800-0240-VA	8.0	8	79	41	24.0	◆
SPC0810-0243-VA	8.1	10	89	47	24.3	◆
SPC0820-0246-VA	8.2	10	89	47	24.6	◆
SPC0830-0249-VA	8.3	10	89	47	24.9	◆
SPC0850-0255-VA	8.5	10	89	47	25.5	◆
SPC0860-0258-VA	8.6	10	89	47	25.8	◆
SPC0870-0261-VA	8.7	10	89	47	26.1	◆
SPC0880-0264-VA	8.8	10	89	47	26.4	◆
SPC0890-0267-VA	8.9	10	89	47	26.7	◆
SPC0900-0270-VA	9.0	10	89	47	27.0	◆
SPC0920-0276-VA	9.2	10	89	47	27.6	◆
SPC0930-0279-VA	9.3	10	89	47	27.9	◆
SPC0960-0288-VA	9.6	10	89	47	28.8	◆
SPC0980-0294-VA	9.8	10	89	47	29.4	◆
SPC0990-0297-VA	9.9	10	89	47	29.7	◆
SPC1000-0300-VA	10.0	10	89	47	30.0	◆
SPC1010-0303-VA	10.1	12	102	55	30.3	◆
SPC1020-0306-VA	10.2	12	102	55	30.6	◆
SPC1030-0309-VA	10.3	12	102	55	30.9	◆
SPC1050-0315-VA	10.5	12	102	55	31.5	◆
SPC1080-0324-VA	10.8	12	102	55	32.4	◆
SPC1100-0330-VA	11.0	12	102	55	33.0	◆
SPC1110-0333-VA	11.1	12	102	55	33.3	◆
SPC1140-0342-VA	11.4	12	102	55	34.2	◆
SPC1150-0345-VA	11.5	12	102	55	34.5	◆
SPC1170-0351-VA	11.7	12	102	55	35.1	◆
SPC1180-0354-VA	11.8	12	102	55	35.4	◆
SPC1200-0360-VA	12.0	12	102	55	36.0	◆
SPC1250-0375-VA	12.5	14	107	60	37.5	◆
SPC1300-0390-VA	13.0	14	107	60	39.0	◆
SPC1350-0405-VA	13.5	14	107	60	40.5	◆
SPC1400-0420-VA	14.0	14	107	60	42.0	◆
SPC1450-0435-VA	14.5	16	115	65	43.5	◆
SPC1500-0450-VA	15.0	16	115	65	45.0	◆
SPC1550-0465-VA	15.5	16	115	65	46.5	◆

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC1600-0480-VA	16.0	16	115	65	48.0	◆
SPC1700-0510-VA	17.0	18	123	73	51.0	◆
SPC1800-0540-VA	18.0	18	123	73	54.0	◆
SPC1900-0570-VA	19.0	20	131	79	57.0	◆
SPC2000-0600-VA	20.0	20	131	79	60.0	◆

HC = Carbide coated

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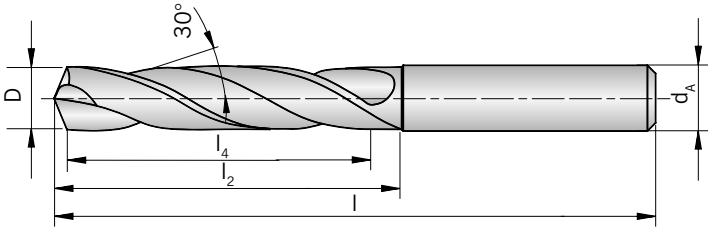
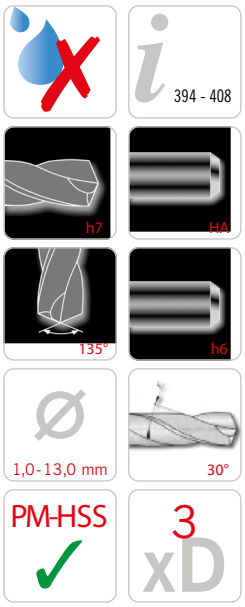
● Main application

○ Secondary application

Execution 3 x D powder metal drill

Short design, without through tool coolant





Shank	D *h7*	d_A *h6*	l	l_2	l_4	PMC TiAlN
SP0010-0030-PM	1.00	3	38	6	3.00	◆
SP0012-0036-PM	1.20	3	40	8	3.60	◆
SP0013-0039-PM	1.30	3	40	8	3.90	◆
SP0014-0042-PM	1.40	3	41	9	4.20	◆
SP0015-0045-PM	1.50	3	41	9	4.50	◆
SP0016-0048-PM	1.60	3	42	10	4.80	◆
SP0017-0051-PM	1.70	3	42	10	5.10	◆
SP0018-0054-PM	1.80	3	43	11	5.40	◆
SP0020-0060-PM	2.00	3	44	12	6.00	◆
SP0021-0063-PM	2.10	3	44	12	6.30	◆
SP0022-0066-PM	2.20	3	45	13	6.60	◆
SP0024-0072-PM	2.40	3	46	14	7.20	◆
SP0025-0075-PM	2.50	3	46	14	7.50	◆
SP0026-0078-PM	2.60	3	46	14	7.80	◆
SP0028-0084-PM	2.80	3	48	16	8.40	◆
SP0029-0087-PM	2.90	3	48	16	8.70	◆
SP0030-0090-PM	3.00	3	48	16	9.00	◆
SP0031-0093-PM	3.10	4	50	18	9.30	◆
SP0033-0099-PM	3.30	4	50	18	9.90	◆
SP0034-0102-PM	3.40	4	52	20	10.20	◆
SP0035-0105-PM	3.50	4	52	20	10.50	◆
SP0036-0108-PM	3.60	4	52	20	10.80	◆
SP0037-0111-PM	3.70	4	52	20	11.10	◆
SP0040-0120-PM	4.00	4	54	22	12.00	◆
SP0042-0126-PM	4.20	6	66	22	12.60	◆
SP0043-0129-PM	4.30	6	68	24	12.90	◆
SP0044-0132-PM	4.40	6	68	24	13.20	◆
SP0045-0135-PM	4.50	6	68	24	13.50	◆
SP0046-0138-PM	4.60	6	68	24	13.80	◆
SP0047-0141-PM	4.70	6	68	24	14.10	◆
SP0048-0144-PM	4.80	6	70	26	14.40	◆
SP0049-0147-PM	4.90	6	70	26	14.70	◆
SP0050-0150-PM	5.00	6	70	26	15.00	◆
SP0051-0153-PM	5.10	6	70	26	15.30	◆
SP0052-0156-PM	5.20	6	70	26	15.60	◆

Dimensions in mm

Shank	D *h7*	d_A *h6*	l	l_2	l_4	PMC TiAlN
SP0055-0165-PM	5.50	6	72	28	16.50	◆
SP00555-01665-PM	5.55	6	72	28	16.65	◆
SP0056-0168-PM	5.60	6	72	28	16.80	◆
SP0058-0174-PM	5.80	6	72	28	17.40	◆
SP0059-0177-PM	5.90	6	72	28	17.70	◆
SP0060-0180-PM	6.00	6	72	28	18.00	◆
SP0061-0183-PM	6.10	8	75	31	18.30	◆
SP0062-0186-PM	6.20	8	75	31	18.60	◆
SP0065-0195-PM	6.50	8	75	31	19.50	◆
SP0066-0198-PM	6.60	8	75	31	19.80	◆
SP0068-0204-PM	6.80	8	78	34	20.40	◆
SP0069-0207-PM	6.90	8	78	34	20.70	◆
SP0070-0210-PM	7.00	8	78	34	21.00	◆
SP0072-0216-PM	7.20	8	78	34	21.60	◆
SP0074-0222-PM	7.40	8	78	34	22.20	◆
SP0075-0225-PM	7.50	8	78	34	22.50	◆
SP0076-0228-PM	7.60	8	81	37	22.80	◆
SP0078-0234-PM	7.80	8	81	37	23.40	◆
SP0079-0237-PM	7.90	8	81	37	23.70	◆
SP0080-0240-PM	8.00	8	81	37	24.00	◆
SP0081-0243-PM	8.10	10	87	37	24.30	◆
SP0082-0246-PM	8.20	10	87	37	24.60	◆
SP0083-0249-PM	8.30	10	87	37	24.90	◆
SP0084-0252-PM	8.40	10	87	37	25.20	◆
SP0085-0255-PM	8.50	10	87	37	25.50	◆
SP0087-0261-PM	8.70	10	90	40	26.10	◆
SP0090-0270-PM	9.00	10	90	40	27.00	◆
SP0097-0291-PM	9.70	10	93	43	29.10	◆
SP0099-0297-PM	9.90	10	93	43	29.70	◆
SP0100-0300-PM	10.00	10	93	43	30.00	◆
SP0102-0306-PM	10.20	12	100	43	30.60	◆
SP0103-0309-PM	10.30	12	100	43	30.90	◆
SP0105-0315-PM	10.50	12	100	43	31.50	◆
SP0110-0330-PM	11.00	12	104	47	33.00	◆
SP0114-0342-PM	11.40	12	104	47	34.20	◆
SP0115-0345-PM	11.50	12	104	47	34.50	◆
SP0120-0360-PM	12.00	12	108	51	36.00	◆
SP0121-0363-PM	12.10	12	108	51	36.30	◆
SP0122-0366-PM	12.20	12	108	51	36.60	◆
SP0125-0375-PM	12.50	12	108	51	37.50	◆
SP0130-0390-PM	13.00	12	108	51	39.00	◆

PMC = PM-HSS coated

P	●
M	●
K	
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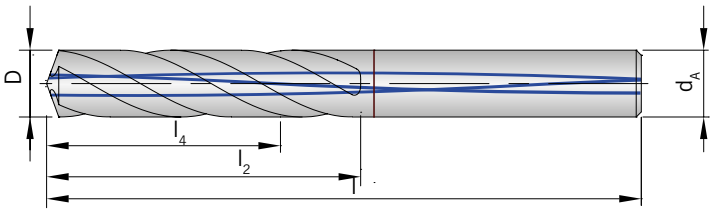
S	
H	

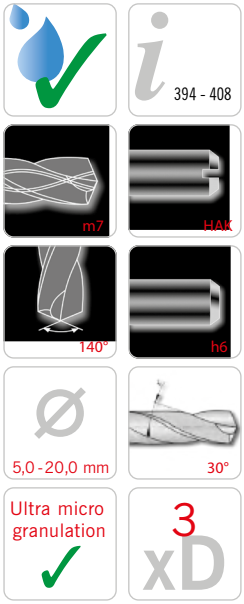
● Main application

○ Secondary application

Execution 3 x D

3 flutes, short design with through tool coolant





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC S200
SPC0500-0150-3S	5.0	6	66	28	15.0	◆
SPC0510-0153-3S	5.1	6	66	28	15.3	◆
SPC0530-0159-3S	5.3	6	66	28	15.9	◆
SPC0540-0162-3S	5.4	6	66	28	16.2	◆
SPC0550-0165-3S	5.5	6	66	28	16.5	◆
SPC0560-0165-3S	5.6	6	66	28	16.8	◆
SPC0570-0165-3S	5.7	6	66	28	17.1	◆
SPC0580-0174-3S	5.8	6	66	28	17.4	◆
SPC0590-0177-3S	5.9	6	66	28	17.7	◆
SPC0600-0180-3S	6.0	6	66	28	18.0	◆
SPC0610-0183-3S	6.1	8	79	34	18.3	◆
SPC0620-0186-3S	6.2	8	79	34	18.6	◆
SPC0630-0189-3S	6.3	8	79	34	18.9	◆
SPC0640-0192-3S	6.4	8	79	34	19.2	◆
SPC0650-0195-3S	6.5	8	79	34	19.5	◆
SPC0660-0198-3S	6.6	8	79	34	19.8	◆
SPC0670-0201-3S	6.7	8	79	34	20.1	◆
SPC0680-0204-3S	6.8	8	79	34	20.4	◆
SPC0700-0210-3S	7.0	8	79	34	21.0	◆
SPC0710-0213-3S	7.1	8	79	41	21.3	◆
SPC0720-0216-3S	7.2	8	79	41	21.6	◆
SPC0730-0219-3S	7.3	8	79	41	21.9	◆
SPC0740-0222-3S	7.4	8	79	41	22.2	◆
SPC0750-0225-3S	7.5	8	79	41	22.5	◆
SPC0760-0228-3S	7.6	8	79	41	22.8	◆
SPC0770-0231-3S	7.7	8	79	41	22.8	◆
SPC0780-0234-3S	7.8	8	79	41	23.4	◆
SPC0790-0237-3S	7.9	8	79	41	23.7	◆
SPC0800-0240-3S	8.0	8	79	41	24.0	◆
SPC0810-0243-3S	8.1	10	89	47	24.3	◆
SPC0820-0246-3S	8.2	10	89	47	24.3	◆
SPC0830-0249-3S	8.3	10	89	47	24.9	◆
SPC0840-0252-3S	8.4	10	89	47	25.2	◆
SPC0850-0255-3S	8.5	10	89	47	25.5	◆
SPC0860-0258-3S	8.6	10	89	47	25.8	◆
SPC0870-0261-3S	8.7	10	89	47	26.1	◆

Dimensions in mm

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC S200
SPC0880-0264-3S	8.8	10	89	47	26.4	◆
SPC0890-0267-3S	8.9	10	89	47	26.7	◆
SPC0900-0270-3S	9.0	10	89	47	27.0	◆
SPC0910-0273-3S	9.1	10	89	47	27.3	◆
SPC0920-0276-3S	9.2	10	89	47	27.6	◆
SPC0930-0279-3S	9.3	10	89	47	27.9	◆
SPC0940-0282-3S	9.4	10	89	47	28.2	◆
SPC0950-0285-3S	9.5	10	89	47	28.5	◆
SPC0960-0288-3S	9.6	10	89	47	28.8	◆
SPC0970-0291-3S	9.7	10	89	47	29.1	◆
SPC0980-0294-3S	9.8	10	89	47	29.4	◆
SPC0990-0297-3S	9.9	10	89	47	29.7	◆
SPC1000-0300-3S	10.0	10	89	47	30.0	◆
SPC1010-0303-3S	10.1	12	102	55	30.3	◆
SPC1020-0306-3S	10.2	12	102	55	30.6	◆
SPC1030-0309-3S	10.3	12	102	55	30.9	◆
SPC1040-0312-3S	10.4	12	102	55	31.2	◆
SPC1050-0315-3S	10.5	12	102	55	31.5	◆
SPC1060-0318-3S	10.6	12	102	55	31.8	◆
SPC1070-0321-3S	10.7	12	102	55	32.1	◆
SPC1080-0324-3S	10.8	12	102	55	32.4	◆
SPC1090-0327-3S	10.9	12	102	55	32.7	◆
SPC1100-0330-3S	11.0	12	102	55	33.0	◆
SPC1110-0333-3S	11.1	12	102	55	33.3	◆
SPC1120-0336-3S	11.2	12	102	55	33.6	◆
SPC1130-0339-3S	11.3	12	102	55	33.9	◆
SPC1140-0342-3S	11.4	12	102	55	34.2	◆
SPC1150-0345-3S	11.5	12	102	55	34.5	◆
SPC1160-0348-3S	11.6	12	102	55	34.8	◆
SPC1170-0351-3S	11.7	12	102	55	35.1	◆
SPC1180-0354-3S	11.8	12	102	55	35.4	◆
SPC1190-0357-3S	11.9	12	102	55	35.7	◆
SPC1200-0360-3S	12.0	12	102	55	36.0	◆
SPC1250-0375-3S	12.5	14	107	60	37.5	◆
SPC1300-0390-3S	13.0	14	107	60	39.0	◆
SPC1350-0405-3S	13.5	14	107	60	40.5	◆
SPC1400-0420-3S	14.0	14	107	60	42.0	◆
SPC1450-0435-3S	14.5	16	115	65	43.5	◆
SPC1500-0450-3S	15.0	16	115	65	45.0	◆
SPC1550-0465-3S	15.5	16	115	65	46.5	◆
SPC1600-0480-3S	16.0	16	115	65	48.0	◆
SPC1650-0495-3S	16.5	18	123	73	49.5	◆
SPC1700-0510-3S	17.0	18	123	73	51.0	◆
SPC1750-0525-3S	17.5	18	123	73	52.5	◆
SPC1800-0540-3S	18.0	18	123	73	54.0	◆
SPC1850-0555-3S	18.5	20	131	79	55.5	◆
SPC1900-0570-3S	19.0	20	131	79	57.0	◆
SPC1950-0585-3S	19.5	20	131	79	58.5	◆
SPC2000-0600-3S	20.0	20	131	79	60.0	◆

HC = Carbide coated

P	●
M	●
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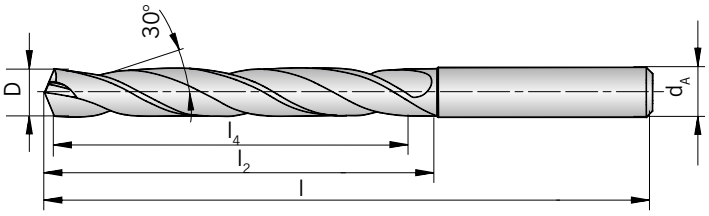
● Main application

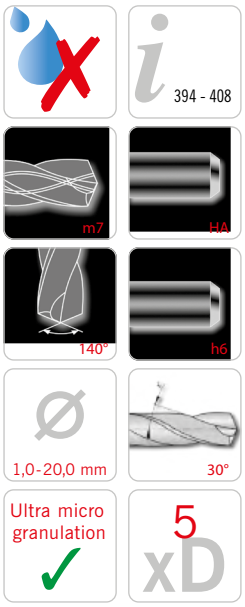
○ Secondary application

Dimensions in mm

Execution 5 x D

Mid-length design, without through tool coolant





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SP0010-0050	1.0	3	55	8	5.0	◆
SP0011-0055	1.1	3	55	12	5.5	◆
SP0012-0060	1.2	3	55	12	6.0	◆
SP0013-0065	1.3	3	55	12	6.5	◆
SP0014-0070	1.4	3	55	12	7.0	◆
SP0015-0075	1.5	3	55	16	7.5	◆
SP0016-0080	1.6	3	55	16	8.0	◆
SP0017-0085	1.7	3	55	16	8.5	◆
SP0018-0090	1.8	3	55	16	9.0	◆
SP0019-0095	1.9	3	55	16	9.5	◆
SP0020-0100	2.0	4	57	21	10.0	◆
SP0021-0105	2.1	4	57	21	10.5	◆
SP0022-0110	2.2	4	57	21	11.0	◆
SP0023-0115	2.3	4	57	21	11.5	◆
SP0024-0120	2.4	4	57	21	12.0	◆
SP0025-0125	2.5	4	57	21	12.5	◆
SP0026-0130	2.6	4	57	21	13.0	◆
SP0027-0135	2.7	4	57	21	13.5	◆
SP0028-0140	2.8	4	57	21	14.0	◆
SP0029-0145	2.9	4	57	21	14.5	◆
SP0030-0150	3.0	6	66	28	15.0	◆
SP0031-0155	3.1	6	66	28	15.5	◆
SP0032-0160	3.2	6	66	28	16.0	◆
SP0033-0165	3.3	6	66	28	16.5	◆
SP0034-0170	3.4	6	66	28	17.0	◆
SP0035-0175	3.5	6	66	28	17.5	◆
SP0036-0180	3.6	6	66	28	18.0	◆
SP0037-0185	3.7	6	66	28	18.5	◆
SP0038-0190	3.8	6	74	36	19.0	◆
SP0039-0195	3.9	6	74	36	19.5	◆
SP0040-0200	4.0	6	74	36	20.0	◆
SP0041-0205	4.1	6	74	36	20.5	◆
SP0042-0210	4.2	6	74	36	21.0	◆
SP0043-0215	4.3	6	74	36	21.5	◆
SP0044-0220	4.4	6	74	36	22.0	◆

Dimensions in mm

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SP0045-0225	4.5	6	74	36	22.5	◆
SP0046-0230	4.6	6	74	36	23.0	◆
SP0047-0235	4.7	6	74	36	23.5	◆
SP0048-0240	4.8	6	82	44	24.0	◆
SP0049-0245	4.9	6	82	44	24.5	◆
SP0050-0250	5.0	6	82	44	25.0	◆
SP0051-0255	5.1	6	82	44	25.5	◆
SP0052-0260	5.2	6	82	44	26.0	◆
SP0053-0265	5.3	6	82	44	26.5	◆
SP0054-0270	5.4	6	82	44	27.0	◆
SP0055-0275	5.5	6	82	44	27.5	◆
SP0056-0280	5.6	6	82	44	28.0	◆
SP0057-0285	5.7	6	82	44	28.5	◆
SP0058-0290	5.8	6	82	44	29.0	◆
SP0059-0295	5.9	6	82	44	29.5	◆
SP0060-0300	6.0	6	82	44	30.0	◆
SP0061-0305	6.1	8	91	53	30.5	◆
SP0062-0310	6.2	8	91	53	31.0	◆
SP0063-0315	6.3	8	91	53	31.5	◆
SP0064-0320	6.4	8	91	53	32.0	◆
SP0065-0325	6.5	8	91	53	32.5	◆
SP0066-0330	6.6	8	91	53	33.0	◆
SP0067-0335	6.7	8	91	53	33.5	◆
SP0068-0340	6.8	8	91	53	34.0	◆
SP0069-0345	6.9	8	91	53	34.5	◆
SP0070-0350	7.0	8	91	53	35.0	◆
SP0071-0355	7.1	8	91	53	35.5	◆
SP0072-0360	7.2	8	91	53	36.0	◆
SP0073-0365	7.3	8	91	53	36.5	◆
SP0074-0370	7.4	8	91	53	37.0	◆
SP0075-0375	7.5	8	91	53	37.5	◆
SP0076-0380	7.6	8	91	53	38.0	◆
SP0077-0385	7.7	8	91	53	38.5	◆
SP0078-0390	7.8	8	91	53	39.0	◆
SP0079-0395	7.9	8	91	53	39.5	◆
SP0080-0400	8.0	8	91	53	40.0	◆
SP0081-0405	8.1	10	103	61	40.5	◆
SP0082-0410	8.2	10	103	61	41.0	◆
SP0083-0415	8.3	10	103	61	41.5	◆
SP0085-0425	8.5	10	103	61	42.5	◆
SP0086-0430	8.6	10	103	61	43.0	◆
SP0087-0435	8.7	10	103	61	43.5	◆
SP0088-0440	8.8	10	103	61	44.0	◆
SP0089-0445	8.9	10	103	61	44.5	◆
SP0090-0450	9.0	10	103	61	45.0	◆
SP0091-0455	9.1	10	103	61	45.5	◆
SP0092-0460	9.2	10	103	61	46.0	◆
SP0093-0465	9.3	10	103	61	46.5	◆
SP0095-0475	9.5	10	103	61	47.5	◆
SP0096-0480	9.6	10	103	61	48.0	◆
SP0097-0485	9.7	10	103	61	48.5	◆
SP0098-0490	9.8	10	103	61	49.0	◆
SP0099-0495	9.9	10	103	61	49.5	◆
SP0100-0500	10.0	10	103	61	50.0	◆
SP0101-0505	10.1	12	118	71	50.5	◆
SP0102-0510	10.2	12	118	71	51.0	◆
SP0103-0515	10.3	12	118	71	51.5	◆

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SP0104-0520	10.4	12	118	71	52.0	◆
SP0105-0525	10.5	12	118	71	52.5	◆
SP0106-0530	10.6	12	118	71	53.0	◆
SP0110-0550	11.0	12	118	71	55.0	◆
SP0112-0560	11.2	12	118	71	56.0	◆
SP0115-0575	11.5	12	118	71	57.5	◆
SP0118-0590	11.8	12	118	71	59.0	◆
SP0120-0600	12.0	12	118	71	60.0	◆
SP0125-0625	12.5	14	124	77	62.5	◆
SP0128-0640	12.8	14	124	77	64.0	◆
SP0130-0650	13.0	14	124	77	65.0	◆
SP0135-0675	13.5	14	124	77	67.5	◆
SP0138-0690	13.8	14	124	77	69.0	◆
SP0140-0700	14.0	14	124	77	70.0	◆
SP0145-0725	14.5	16	133	83	72.5	◆
SP0150-0750	15.0	16	133	83	75.0	◆
SP0158-0790	15.8	16	133	83	79.0	◆
SP0160-0800	16.0	16	133	83	80.0	◆
SP0170-0850	17.0	18	143	93	85.0	◆
SP0175-0875	17.5	18	143	93	87.5	◆
SP0180-0900	18.0	18	143	93	90.0	◆
SP0185-0925	18.5	20	153	101	92.5	◆
SP0190-0950	19.0	20	153	101	95.0	◆
SP0195-0975	19.5	20	153	101	97.5	◆
SP0198-0990	19.8	20	153	101	99.0	◆
SP0200-1000	20.0	20	153	101	100.0	◆

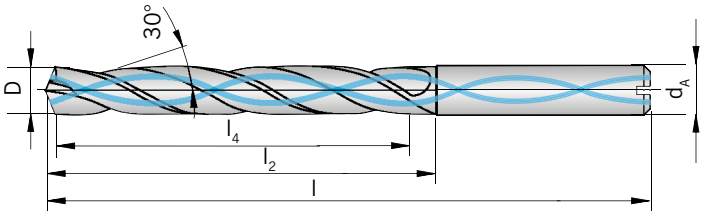
HC = Carbide coated

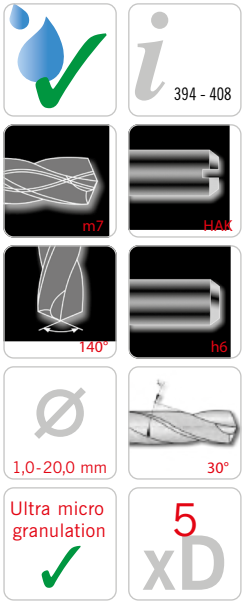
P	●
M	○
K	○
N	
S	
H	

● Main application
○ Secondary application

Execution 5 x D

Mid-length design, with through tool coolant





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0010-0050	1.00	3	55	8	5.0	◆
SPC0011-0055	1.10	3	55	12	5.5	◆
SPC0012-0060	1.20	3	55	12	6.0	◆
SPC0013-0065	1.30	3	55	12	6.5	◆
SPC0014-0070	1.40	3	55	12	7.0	◆
SPC0015-0075	1.50	3	55	16	7.5	◆
SPC0016-0080	1.60	3	55	16	8.0	◆
SPC0017-0085	1.70	3	55	16	8.5	◆
SPC0018-0090	1.80	3	55	16	9.0	◆
SPC0019-0095	1.90	3	55	16	9.5	◆
SPC0020-0100	2.00	4	57	21	10.0	◆
SPC0021-0105	2.10	4	57	21	10.5	◆
SPC0022-0110	2.20	4	57	21	11.0	◆
SPC0023-0115	2.30	4	57	21	11.5	◆
SPC0024-0120	2.40	4	57	21	12.0	◆
SPC0025-0125	2.50	4	57	21	12.5	◆
SPC0026-0130	2.60	4	57	21	13.0	◆
SPC0027-0135	2.70	4	57	21	13.5	◆
SPC0028-0140	2.80	4	57	21	14.0	◆
SPC0029-0145	2.90	4	57	21	14.5	◆
SPC0030-0150	3.00	6	66	28	15.0	◆
SPC0031-0155	3.10	6	66	28	15.5	◆
SPC0032-0160	3.20	6	66	28	16.0	◆
SPC0033-0165	3.30	6	66	28	16.5	◆
SPC0034-0170	3.40	6	66	28	17.0	◆
SPC0035-0175	3.50	6	66	28	17.5	◆
SPC0036-0180	3.60	6	66	28	18.0	◆
SPC0037-0185	3.70	6	66	28	18.5	◆
SPC0038-0190	3.80	6	74	36	19.0	◆
SPC0039-0195	3.90	6	74	36	19.5	◆
SPC0040-0200	4.00	6	74	36	20.0	◆
SPC0041-0205	4.10	6	74	36	20.5	◆
SPC0042-0210	4.20	6	74	36	21.0	◆
SPC0043-0215	4.30	6	74	36	21.5	◆
SPC0044-0220	4.40	6	74	36	22.0	◆

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0045-0225	4.50	6	74	36	22.5	◆
SPC0046-0230	4.60	6	74	36	23.0	◆
SPC00465-0233	4.65	6	74	36	23.3	◆
SPC0047-0235	4.70	6	74	36	23.5	◆
SPC0048-0240	4.80	6	82	44	24.0	◆
SPC0049-0245	4.90	6	82	44	24.5	◆
SPC0050-0250	5.00	6	82	44	25.0	◆
SPC0051-0255	5.10	6	82	44	25.5	◆
SPC0052-0260	5.20	6	82	44	26.0	◆
SPC0053-0265	5.30	6	82	44	26.5	◆
SPC0054-0270	5.40	6	82	44	27.0	◆
SPC0055-0275	5.50	6	82	44	27.5	◆
SPC00555-0278	5.55	6	82	44	27.8	◆
SPC0056-0280	5.60	6	82	44	28.0	◆
SPC0057-0285	5.70	6	82	44	28.5	◆
SPC0058-0290	5.80	6	82	44	29.0	◆
SPC0059-0295	5.90	6	82	44	29.5	◆
SPC0060-0300	6.00	6	82	44	30.0	◆
SPC0061-0305	6.10	8	91	53	30.5	◆
SPC0062-0310	6.20	8	91	53	31.0	◆
SPC0063-0315	6.30	8	91	53	31.5	◆
SPC0064-0320	6.40	8	91	53	32.0	◆
SPC0065-0325	6.50	8	91	53	32.5	◆
SPC0066-0330	6.60	8	91	53	33.0	◆
SPC0067-0335	6.70	8	91	53	33.5	◆
SPC0068-0340	6.80	8	91	53	34.0	◆
SPC0069-0345	6.90	8	91	53	34.5	◆
SPC0070-0350	7.00	8	91	53	35.0	◆
SPC0071-0355	7.10	8	91	53	35.5	◆
SPC0072-0360	7.20	8	91	53	36.0	◆
SPC0073-0365	7.30	8	91	53	36.5	◆
SPC0074-0370	7.40	8	91	53	37.0	◆
SPC0075-0375	7.50	8	91	53	37.5	◆
SPC0076-0380	7.60	8	91	53	38.0	◆
SPC0077-0385	7.70	8	91	53	38.5	◆
SPC0078-0390	7.80	8	91	53	39.0	◆
SPC0079-0395	7.90	8	91	53	39.5	◆
SPC0080-0400	8.00	8	91	53	40.0	◆
SPC0081-0405	8.10	10	103	61	40.5	◆
SPC0082-0410	8.20	10	103	61	41.0	◆
SPC0083-0415	8.30	10	103	61	41.5	◆
SPC0084-0420	8.40	10	103	61	42.0	◆
SPC0085-0425	8.50	10	103	61	42.5	◆
SPC0086-0430	8.60	10	103	61	43.0	◆
SPC0087-0435	8.70	10	103	61	43.5	◆
SPC0088-0440	8.80	10	103	61	44.0	◆
SPC0089-0445	8.90	10	103	61	44.5	◆
SPC0090-0450	9.00	10	103	61	45.0	◆
SPC0091-0455	9.10	10	103	61	45.5	◆
SPC0092-0460	9.20	10	103	61	46.0	◆
SPC0093-0465	9.30	10	103	61	46.5	◆
SPC0094-0470	9.40	10	103	61	47.0	◆
SPC0095-0475	9.50	10	103	61	47.5	◆
SPC0096-0480	9.60	10	103	61	48.0	◆
SPC0097-0485	9.70	10	103	61	48.5	◆
SPC0098-0490	9.80	10	103	61	49.0	◆
SPC0099-0495	9.90	10	103	61	49.5	◆

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0100-0500	10.00	10	103	61	50.0	◆
SPC0101-0505	10.10	12	118	71	50.5	◆
SPC0102-0510	10.20	12	118	71	51.0	◆
SPC0103-0515	10.30	12	118	71	51.5	◆
SPC0104-0520	10.40	12	118	71	52.0	◆
SPC0105-0525	10.50	12	118	71	52.5	◆
SPC0106-0530	10.60	12	118	71	53.0	◆
SPC0108-0540	10.80	12	118	71	54.0	◆
SPC0110-0550	11.00	12	118	71	55.0	◆
SPC0111-0555	11.10	12	118	71	55.5	◆
SPC0112-0560	11.20	12	118	71	56.0	◆
SPC0113-0565	11.30	12	118	71	56.5	◆
SPC0114-0570	11.40	12	118	71	57.0	◆
SPC0115-0575	11.50	12	118	71	57.5	◆
SPC0116-0580	11.60	12	118	71	58.0	◆
SPC0117-0585	11.70	12	118	71	58.5	◆
SPC0118-0590	11.80	12	118	71	59.0	◆
SPC0119-0595	11.90	12	118	71	59.5	◆
SPC0120-0600	12.00	12	118	71	60.0	◆
SPC0125-0625	12.50	14	124	77	62.5	◆
SPC0127-0635	12.70	14	124	77	63.5	◆
SPC0128-0640	12.80	14	124	77	64.0	◆
SPC0130-0650	13.00	14	124	77	65.0	◆
SPC0132-0660	13.20	14	124	77	66.0	◆
SPC0135-0675	13.50	14	124	77	67.5	◆
SPC0140-0700	14.00	14	124	77	70.0	◆
SPC0142-0710	14.20	16	133	83	71.0	◆
SPC0145-0725	14.50	16	133	83	72.5	◆
SPC0150-0750	15.00	16	133	83	75.0	◆
SPC0155-0775	15.50	16	133	83	77.5	◆
SPC0160-0800	16.00	16	133	83	80.0	◆
SPC0165-0825	16.50	18	143	93	82.5	◆
SPC0170-0850	17.00	18	143	93	85.0	◆
SPC0175-0875	17.50	18	143	93	87.5	◆
SPC0180-0900	18.00	18	143	93	90.0	◆
SPC0185-0925	18.50	20	153	101	92.5	◆
SPC0190-0950	19.00	20	153	101	95.0	◆
SPC0200-1000	20.00	20	153	101	100.0	◆

HC = Carbide coated

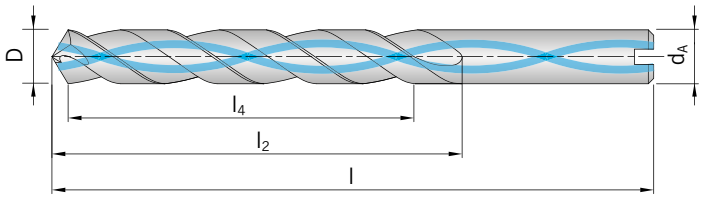
P	●
M	○
K	○
N	
S	
H	

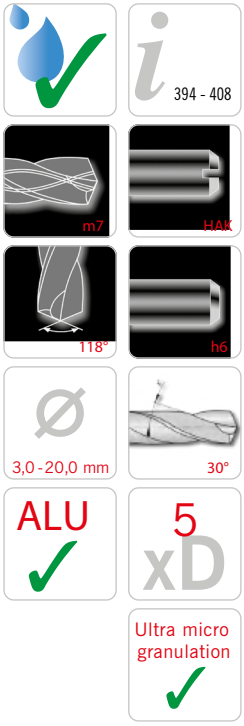
● Main application

○ Secondary application

Execution 5 x D for aluminium

Mid-length design, with through tool coolant, diamond coated





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC DLC
SPC0030-0150-ALU	3.0	6	66	28	15.0	◆
SPC0033-0165-ALU	3.3	6	66	28	16.5	◆
SPC0034-0170-ALU	3.4	6	66	28	17.0	◆
SPC0035-0175-ALU	3.5	6	66	28	17.5	◆
SPC0037-0185-ALU	3.7	6	66	28	18.5	◆
SPC0040-0200-ALU	4.0	6	74	36	20.0	◆
SPC0042-0210-ALU	4.2	6	74	36	21.0	◆
SPC0045-0225-ALU	4.5	6	74	36	22.5	◆
SPC0047-0235-ALU	4.7	6	74	36	23.5	◆
SPC0050-0250-ALU	5.0	6	82	44	25.0	◆
SPC0051-0255-ALU	5.1	6	82	44	25.5	◆
SPC0052-0260-ALU	5.2	6	82	44	26.0	◆
SPC0055-0275-ALU	5.5	6	82	44	27.5	◆
SPC0056-0280-ALU	5.6	6	82	44	28.0	◆
SPC0060-0300-ALU	6.0	6	82	44	30.0	◆
SPC0061-0305-ALU	6.1	8	91	53	30.5	◆
SPC0068-0340-ALU	6.8	8	91	53	34.0	◆
SPC0070-0350-ALU	7.0	8	91	53	35.0	◆
SPC0071-0355-ALU	7.1	8	91	53	35.5	◆
SPC0072-0360-ALU	7.2	8	91	53	36.0	◆
SPC0073-0365-ALU	7.3	8	91	53	36.5	◆
SPC0075-0375-ALU	7.5	8	91	53	37.5	◆
SPC0080-0400-ALU	8.0	8	91	53	40.0	◆
SPC0081-0405-ALU	8.1	10	103	61	40.5	◆
SPC0082-0410-ALU	8.2	10	103	61	41.0	◆
SPC0085-0425-ALU	8.5	10	103	61	42.5	◆
SPC0088-0440-ALU	8.8	10	103	61	44.0	◆
SPC0090-0450-ALU	9.0	10	103	61	45.0	◆
SPC0093-0465-ALU	9.3	10	103	61	46.5	◆
SPC0098-0490-ALU	9.8	10	103	61	49.0	◆
SPC0100-0500-ALU	10.0	10	103	61	50.0	◆

Dimensions in mm

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC DLC
SPC0101-0505-ALU	10.1	12	118	71	50.5	◆
SPC0105-0525-ALU	10.5	12	118	71	52.5	◆
SPC0110-0550-ALU	11.0	12	118	71	55.0	◆
SPC0120-0600-ALU	12.0	12	118	71	60.0	◆
SPC0130-0650-ALU	13.0	14	124	77	65.0	◆
SPC0140-0700-ALU	14.0	14	124	77	70.0	◆
SPC0150-0750-ALU	15.0	16	133	83	75.0	◆
SPC0160-0800-ALU	16.0	16	133	83	80.0	◆
SPC0170-0850-ALU	17.0	18	143	93	85.0	◆
SPC0180-0900-ALU	18.0	18	143	93	90.0	◆
SPC0190-0950-ALU	19.0	20	153	101	95.0	◆
SPC0200-1000-ALU	20.0	20	153	101	100.0	◆

HC = Carbide coated

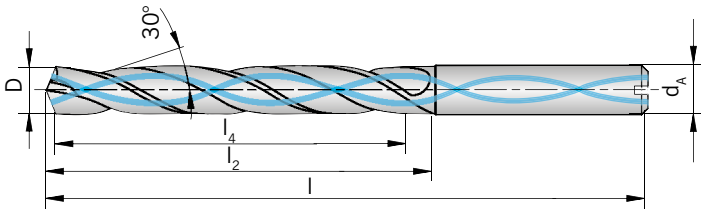
P	
M	
K	
N	●
S	
H	

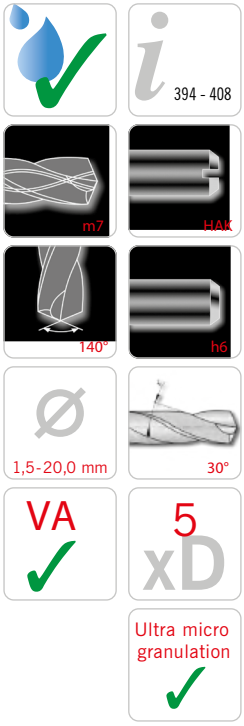
● Main application

○ Secondary application

Execution 5 x D for stainless steel

Mid-length design, with through tool coolant





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0015-0075-VA	1.50	3	55	16	7.5	◆
SPC0016-0080-VA	1.60	3	55	16	8.0	◆
SPC0017-0085-VA	1.70	3	55	16	8.5	◆
SPC0018-0090-VA	1.80	3	55	16	9.0	◆
SPC0019-0095-VA	1.90	3	55	16	9.5	◆
SPC0020-0100-VA	2.00	4	57	21	10.0	◆
SPC0021-0105-VA	2.10	4	57	21	10.5	◆
SPC0022-0110-VA	2.20	4	57	21	11.0	◆
SPC0023-0115-VA	2.30	4	57	21	11.5	◆
SPC0024-0120-VA	2.40	4	57	21	12.0	◆
SPC0025-0125-VA	2.50	4	57	21	12.5	◆
SPC0026-0130-VA	2.60	4	57	21	13.0	◆
SPC0027-0135-VA	2.70	4	57	21	13.5	◆
SPC0028-0140-VA	2.80	4	57	21	14.0	◆
SPC0029-0145-VA	2.90	4	57	21	14.5	◆
SPC0030-0150-VA	3.00	6	66	28	15.0	◆
SPC0031-0155-VA	3.10	6	66	28	15.5	◆
SPC0032-0160-VA	3.20	6	66	28	16.0	◆
SPC0033-0165-VA	3.30	6	66	28	16.5	◆
SPC0034-0170-VA	3.40	6	66	28	17.0	◆
SPC0035-0175-VA	3.50	6	66	28	17.5	◆
SPC0036-0180-VA	3.60	6	66	28	18.0	◆
SPC0037-0185-VA	3.70	6	66	28	18.5	◆
SPC0038-0190-VA	3.80	6	74	36	19.0	◆
SPC0039-0195-VA	3.90	6	74	36	19.5	◆
SPC0040-0200-VA	4.00	6	74	36	20.0	◆
SPC0041-0205-VA	4.10	6	74	36	20.5	◆
SPC0042-0210-VA	4.20	6	74	36	21.0	◆
SPC0043-0215-VA	4.30	6	74	36	21.5	◆
SPC0044-0220-VA	4.40	6	74	36	22.0	◆
SPC0045-0225-VA	4.50	6	74	36	22.5	◆

Dimensions in mm

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0046-0230-VA	4.60	6	74	36	23.0	◆
SPC0047-0235-VA	4.70	6	74	36	23.5	◆
SPC0048-0240-VA	4.80	6	82	44	24.0	◆
SPC0049-0245-VA	4.90	6	82	44	24.5	◆
SPC0050-0250-VA	5.00	6	82	44	25.0	◆
SPC0051-0255-VA	5.10	6	82	44	25.5	◆
SPC0052-0260-VA	5.20	6	82	44	26.0	◆
SPC0053-0265-VA	5.30	6	82	44	26.5	◆
SPC0054-0270-VA	5.40	6	82	44	27.0	◆
SPC0055-0275-VA	5.50	6	82	44	27.5	◆
SPC0056-0280-VA	5.60	6	82	44	28.0	◆
SPC0057-0285-VA	5.70	6	82	44	28.5	◆
SPC0058-0290-VA	5.80	6	82	44	29.0	◆
SPC0059-0295-VA	5.90	6	82	44	29.5	◆
SPC0060-0300-VA	6.00	6	82	44	30.0	◆
SPC0061-0305-VA	6.10	8	91	53	30.5	◆
SPC0062-0310-VA	6.20	8	91	53	31.0	◆
SPC0063-0315-VA	6.30	8	91	53	31.5	◆
SPC0065-0325-VA	6.50	8	91	53	32.5	◆
SPC0066-0330-VA	6.60	8	91	53	33.0	◆
SPC0068-0340-VA	6.80	8	91	53	34.0	◆
SPC0069-0345-VA	6.90	8	91	53	34.5	◆
SPC0070-0350-VA	7.00	8	91	53	35.0	◆
SPC0071-0355-VA	7.10	8	91	53	35.5	◆
SPC0072-0360-VA	7.20	8	91	53	36.0	◆
SPC0074-0370-VA	7.40	8	91	53	37.0	◆
SPC0075-0375-VA	7.50	8	91	53	37.5	◆
SPC00765-0383-VA	7.65	8	91	53	38.3	◆
SPC0078-0390-VA	7.80	8	91	53	39.0	◆
SPC0080-0400-VA	8.00	8	91	53	40.0	◆
SPC0081-0405-VA	8.10	10	103	61	40.5	◆
SPC0082-0410-VA	8.20	10	103	61	41.0	◆
SPC0084-0420-VA	8.40	10	103	61	42.0	◆
SPC0085-0425-VA	8.50	10	103	61	42.5	◆
SPC0086-0430-VA	8.60	10	103	61	43.0	◆
SPC0087-0435-VA	8.70	10	103	61	43.5	◆
SPC0088-0440-VA	8.80	10	103	61	44.0	◆
SPC0089-0445-VA	8.90	10	103	61	44.5	◆
SPC0090-0450-VA	9.00	10	103	61	45.0	◆
SPC0091-0455-VA	9.10	10	103	61	45.5	◆
SPC0092-0460-VA	9.20	10	103	61	46.0	◆
SPC0094-0470-VA	9.40	10	103	61	47.0	◆
SPC0095-0475-VA	9.50	10	103	61	47.5	◆
SPC00955-0488-VA	9.55	10	103	61	48.8	◆
SPC0097-0485-VA	9.70	10	103	61	48.5	◆
SPC0098-0490-VA	9.80	10	103	61	49.0	◆
SPC0100-0500-VA	10.00	10	103	61	50.0	◆
SPC0101-0505-VA	10.10	12	118	71	50.5	◆
SPC0102-0510-VA	10.20	12	118	71	51.0	◆
SPC0103-0515-VA	10.30	12	118	71	51.5	◆
SPC0104-0520-VA	10.40	12	118	71	52.0	◆
SPC0105-0525-VA	10.50	12	118	71	52.5	◆
SPC0106-0530-VA	10.60	12	118	71	53.0	◆
SPC0108-0540-VA	10.80	12	118	71	54.0	◆
SPC0110-0550-VA	11.00	12	118	71	55.0	◆
SPC0117-0585-VA	11.70	12	118	71	58.5	◆
SPC0118-0590-VA	11.80	12	118	71	59.0	◆

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0120-0600-VA	12.00	12	118	71	60.0	◆
SPC0125-0625-VA	12.50	14	124	77	62.5	◆
SPC0130-0650-VA	13.00	14	124	77	65.0	◆
SPC0135-0675-VA	13.50	14	124	77	67.5	◆
SPC0140-0700-VA	14.00	14	124	77	70.0	◆
SPC0150-0750-VA	15.00	16	133	83	75.0	◆
SPC0155-0775-VA	15.50	16	133	83	77.5	◆
SPC0160-0800-VA	16.00	16	133	83	80.0	◆
SPC0165-0825-VA	16.50	18	143	93	82.5	◆
SPC0170-0850-VA	17.00	18	143	93	85.0	◆
SPC0180-0900-VA	18.00	18	143	93	90.0	◆
SPC0190-0950-VA	19.00	20	153	101	95.0	◆
SPC0200-1000-VA	20.00	20	153	101	100.0	◆

HC = Carbide coated

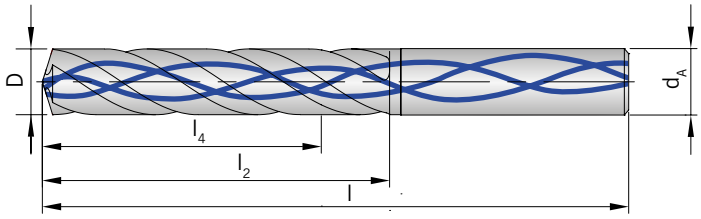
P	○
M	●
K	
N	○
S	
H	

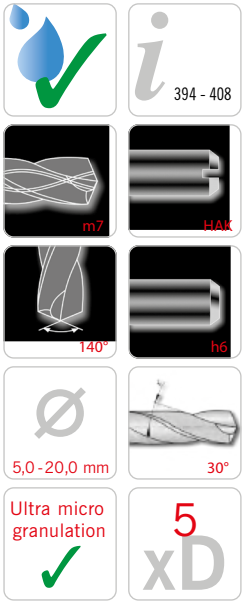
● Main application

○ Secondary application

Execution 5 x D

3 flutes, mid-length design, with through tool coolant





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC S200
SPC0500-0250-3S	5.0	6	82	44	25.0	◆
SPC0510-0255-3S	5.1	6	82	44	25.5	◆
SPC0520-0260-3S	5.2	6	82	44	26.0	◆
SPC0530-0265-3S	5.3	6	82	44	26.5	◆
SPC0540-0270-3S	5.4	6	82	44	27.0	◆
SPC0550-0275-3S	5.5	6	82	44	27.5	◆
SPC0560-0280-3S	5.6	6	82	44	28.0	◆
SPC0570-0285-3S	5.7	6	82	44	28.5	◆
SPC0580-0290-3S	5.8	6	82	44	29.0	◆
SPC0590-0295-3S	5.9	6	82	44	29.5	◆
SPC0600-0300-3S	6.0	6	82	44	30.0	◆
SPC0610-0305-3S	6.1	8	91	53	30.5	◆
SPC0620-0310-3S	6.2	8	91	53	31.0	◆
SPC0630-0315-3S	6.3	8	91	53	31.5	◆
SPC0640-0320-3S	6.4	8	91	53	32.0	◆
SPC0650-0325-3S	6.5	8	91	53	32.5	◆
SPC0660-0330-3S	6.6	8	91	53	33.0	◆
SPC0670-0335-3S	6.7	8	91	53	33.5	◆
SPC0680-0340-3S	6.8	8	91	53	34.0	◆
SPC0690-0345-3S	6.9	8	91	53	34.5	◆
SPC0700-0350-3S	7.0	8	91	53	35.0	◆
SPC0710-0355-3S	7.1	8	91	53	35.5	◆
SPC0720-0360-3S	7.2	8	91	53	36.0	◆
SPC0730-0365-3S	7.3	8	91	53	36.5	◆
SPC0740-0370-3S	7.4	8	91	53	37.0	◆
SPC0750-0375-3S	7.5	8	91	53	37.5	◆
SPC0760-0380-3S	7.6	8	91	53	38.0	◆
SPC0770-0385-3S	7.7	8	91	53	38.5	◆
SPC0780-0390-3S	7.8	8	91	53	39.0	◆
SPC0790-0395-3S	7.9	8	91	53	39.5	◆
SPC0800-0400-3S	8.0	8	91	53	40.0	◆
SPC0810-0405-3S	8.1	10	103	61	40.5	◆
SPC0820-0410-3S	8.2	10	103	61	41.0	◆
SPC0830-0415-3S	8.3	10	103	61	41.5	◆
SPC0840-0420-3S	8.4	10	103	61	42.0	◆
SPC0850-0425-3S	8.5	10	103	61	42.5	◆
SPC0860-0430-3S	8.6	10	103	61	43.0	◆

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC S200
SPC0880-0440-3S	8.8	10	103	61	44.0	◆
SPC0890-0445-3S	8.9	10	103	61	44.5	◆
SPC0900-0450-3S	9.0	10	103	61	45.0	◆
SPC0910-0455-3S	9.1	10	103	61	45.5	◆
SPC0920-0460-3S	9.2	10	103	61	46.0	◆
SPC0930-0465-3S	9.3	10	103	61	46.5	◆
SPC0940-0470-3S	9.4	10	103	61	47.0	◆
SPC0950-0475-3S	9.5	10	103	61	47.5	◆
SPC0960-0480-3S	9.6	10	103	61	48.0	◆
SPC0970-0485-3S	9.7	10	103	61	48.5	◆
SPC0980-0490-3S	9.8	10	103	61	49.0	◆
SPC0990-04953S	9.9	10	103	61	49.5	◆
SPC1000-0500-3S	10.0	10	103	61	50.0	◆
SPC1010-0505-3S	10.1	12	118	71	50.5	◆
SPC1020-0510-3S	10.2	12	118	71	51.0	◆
SPC1030-0515-3S	10.3	12	118	71	51.5	◆
SPC1040-0520-3S	10.4	12	118	71	52.0	◆
SPC1050-0525-3S	10.5	12	118	71	52.5	◆
SPC1060-0530-3S	10.6	12	118	71	53.0	◆
SPC1070-0535-3S	10.7	12	118	71	53.5	◆
SPC1080-0540-3S	10.8	12	118	71	54.0	◆
SPC1090-0545-3S	10.9	12	118	71	54.5	◆
SPC1100-0550-3S	11.0	12	118	71	55.0	◆
SPC1110-0555-3S	11.1	12	118	71	55.5	◆
SPC1120-0560-3S	11.2	12	118	71	56.0	◆
SPC1130-0565-3S	11.3	12	118	71	56.5	◆
SPC1140-0570-3S	11.4	12	118	71	57.0	◆
SPC1150-0575-3S	11.5	12	118	71	57.5	◆
SPC1160-0580-3S	11.6	12	118	71	58.0	◆
SPC1170-0585-3S	11.7	12	118	71	58.5	◆
SPC1180-0590-3S	11.8	12	118	71	59.0	◆
SPC1190-0595-3S	11.9	12	118	71	59.5	◆
SPC1200-0600-3S	12.0	12	118	71	60.0	◆
SPC1250-0625-3S	12.5	14	124	77	62.5	◆
SPC1300-0650-3S	13.0	14	124	77	65.0	◆
SPC1350-0675-3S	13.5	14	124	77	67.5	◆
SPC1400-0700-3S	14.0	14	124	77	70.0	◆
SPC1450-0725-3S	14.5	16	133	83	72.5	◆
SPC1500-0750-3S	15.0	16	133	83	75.0	◆
SPC1550-0775-3S	15.5	16	133	83	77.5	◆
SPC1600-0800-3S	16.0	16	133	83	80.0	◆
SPC1650-0825-3S	16.5	18	143	93	82.5	◆
SPC1700-0850-3S	17.0	18	143	93	85.0	◆
SPC1750-0875-3S	17.5	18	143	93	87.5	◆
SPC1800-0900-3S	18.0	18	143	93	90.0	◆
SPC1850-0925-3S	18.5	20	153	101	92.5	◆
SPC1900-0950-3S	19.0	20	153	101	95.0	◆
SPC1950-0975-3S	19.5	20	153	101	97.5	◆
SPC2000-1000-3S	20.0	20	153	101	100.0	◆

HC = Carbide coated

P	●
M	●
K	○
N	
S	
H	

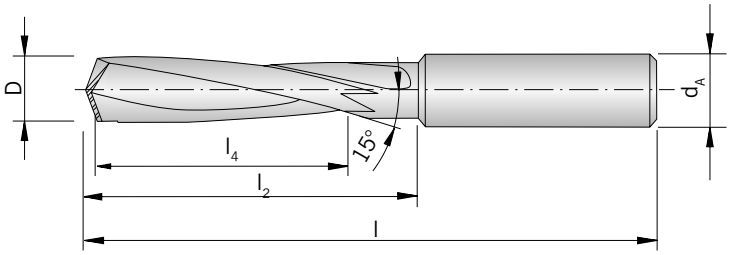
● Main application

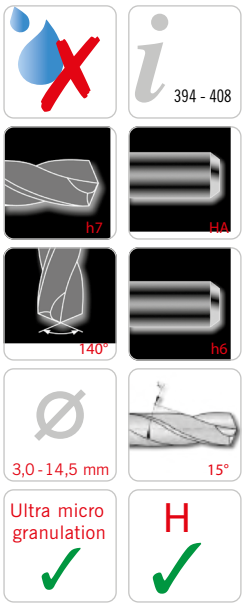
○ Secondary application

Dimensions in mm

Mid-length execution for hardened steel

Mid-length design, without through tool coolant





Shank	D *h7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SP0030-0150-H	3.0	3	46	16	15.0	◆
SP0033-0165-H	3.3	4	48	18	16.5	◆
SP0034-0170-H	3.4	4	50	20	17.0	◆
SP0035-0175-H	3.5	4	50	20	17.5	◆
SP0040-0200-H	4.0	4	52	22	20.0	◆
SP0042-0210-H	4.2	6	65	25	21.0	◆
SP0043-0215-H	4.3	6	68	28	21.5	◆
SP0044-0220-H	4.4	6	68	28	22.0	◆
SP0045-0225-H	4.5	6	68	28	22.5	◆
SP0050-0250-H	5.0	6	72	32	25.0	◆
SP0051-0255-H	5.1	6	72	32	25.5	◆
SP0052-0260-H	5.2	6	72	32	26.0	◆
SP0055-0275-H	5.5	6	75	35	27.5	◆
SP0060-0300-H	6.0	6	75	35	30.0	◆
SP0065-0325-H	6.5	8	80	40	32.5	◆
SP0068-0340-H	6.8	8	85	45	34.0	◆
SP0069-0345-H	6.9	8	85	45	34.5	◆
SP0070-0350-H	7.0	8	85	45	35.0	◆
SP0075-0375-H	7.5	8	85	45	37.5	◆
SP0080-0400-H	8.0	8	98	50	40.0	◆
SP0085-0425-H	8.5	10	98	50	42.5	◆
SP0086-0430-H	8.6	10	105	57	43.0	◆
SP0088-0440-H	8.8	10	105	57	44.0	◆
SP0090-0450-H	9.0	10	105	57	45.0	◆
SP0100-0500-H	10.0	10	111	63	50.0	◆
SP0102-0510-H	10.2	12	111	63	51.0	◆
SP0103-0515-H	10.3	12	111	63	51.5	◆

Shank	D *h7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SP0110-0550-H	11.0	12	119	71	55.0	◆
SP0120-0600-H	12.0	12	119	71	60.0	◆
SP0140-0700-H	14.0	14	125	77	70.0	◆
SP0145-0725-H	14.5	16	125	77	72.5	◆

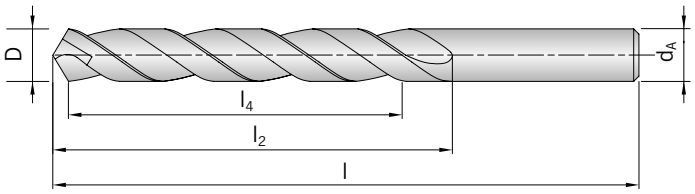
HC = Carbide coated

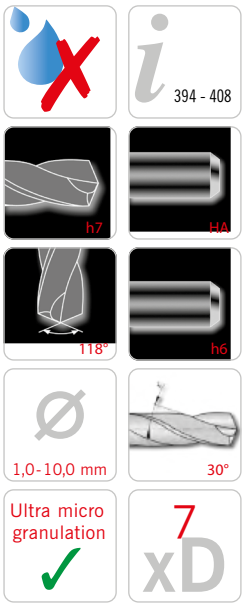
P	
M	
K	
N	
S	
H	●

● Main application
○ Secondary application

Execution 7 x D

Long design, without through tool coolant





Shank	D *h7*	d_A *h6*	l	l_2	l_4	HU VHM/FK
SP0010-0070	1.0	1.0	34	12	7.0	◆
SP0011-0077	1.1	1.1	36	14	7.7	◆
SP0012-0084	1.2	1.2	38	16	8.4	◆
SP0013-0091	1.3	1.3	38	16	9.1	◆
SP0014-0098	1.4	1.4	40	18	9.8	◆
SP0015-0105	1.5	1.5	40	18	10.5	◆
SP0016-0112	1.6	1.6	43	20	11.2	◆
SP0017-0119	1.7	1.7	43	20	11.9	◆
SP0018-0126	1.8	1.8	46	22	12.6	◆
SP0019-0133	1.9	1.9	46	22	13.3	◆
SP0020-0140	2.0	2.0	49	24	14.0	◆
SP0021-0147	2.1	2.1	49	24	14.7	◆
SP0022-0154	2.2	2.2	53	27	15.4	◆
SP0023-0161	2.3	2.3	53	27	16.1	◆
SP0024-0168	2.4	2.4	57	30	16.8	◆
SP0025-0175	2.5	2.5	57	30	17.5	◆
SP0026-0182	2.6	2.6	57	30	18.2	◆
SP0027-0189	2.7	2.7	61	33	18.9	◆
SP0028-0196	2.8	2.8	61	33	19.6	◆
SP0029-0203	2.9	2.9	61	33	20.3	◆
SP0030-0210	3.0	3.0	61	33	21.0	◆
SP0031-0217	3.1	3.1	65	36	21.7	◆
SP0032-0224	3.2	3.2	65	36	22.4	◆
SP0033-0231	3.3	3.3	65	36	23.1	◆
SP0034-0238	3.4	3.4	70	39	23.8	◆
SP0035-0245	3.5	3.5	70	39	24.5	◆
SP0036-0252	3.6	3.6	70	39	25.2	◆
SP0037-0259	3.7	3.7	70	39	25.9	◆
SP0038-0266	3.8	3.8	75	43	26.6	◆
SP0039-0273	3.9	3.9	75	43	27.3	◆
SP0040-0280	4.0	4.0	75	43	28.0	◆
SP0041-0287	4.1	4.1	75	43	28.7	◆
SP0042-0294	4.2	4.2	75	43	29.4	◆
SP0043-0301	4.3	4.3	80	47	30.1	◆
SP0044-0308	4.4	4.4	80	47	30.8	◆

Shank	D *h7*	d_A *h6*	l	l_2	l_4	HU VHM/FK
SP0045-0315	4.5	4.5	80	47	31.5	◆
SP0046-0322	4.6	4.6	80	47	32.2	◆
SP0047-0329	4.7	4.7	80	47	32.9	◆
SP0048-0336	4.8	4.8	86	52	33.6	◆
SP0050-0350	5.0	5.0	86	52	35.0	◆
SP0051-0357	5.1	5.1	86	52	35.7	◆
SP0053-0371	5.3	5.3	86	52	37.1	◆
SP0055-0385	5.5	5.5	93	57	38.5	◆
SP0056-0392	5.6	5.6	93	57	39.2	◆
SP0058-0406	5.8	5.8	93	57	40.6	◆
SP0060-0420	6.0	6.0	93	57	42.0	◆
SP0063-0441	6.3	6.3	101	63	44.1	◆
SP0065-0455	6.5	6.5	101	63	45.5	◆
SP0068-0476	6.8	6.8	109	69	47.6	◆
SP0070-0490	7.0	7.0	109	69	49.0	◆
SP0080-0560	8.0	8.0	117	75	56.0	◆
SP0085-0595	8.5	8.5	117	75	59.5	◆
SP0100-0700	10.0	10.0	133	87	70.0	◆

HU = Carbide uncoated

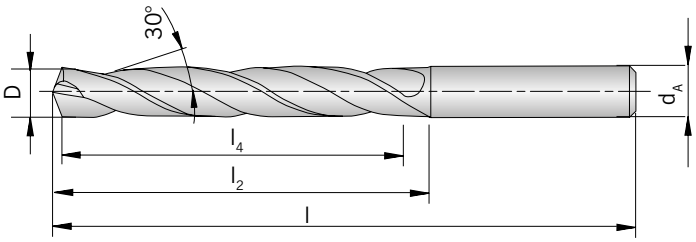
P	●
M	○
K	○
N	
S	
H	

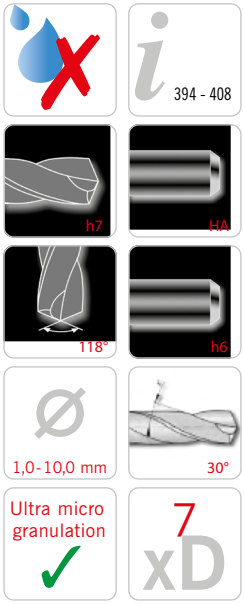
● Main application

○ Secondary application

Execution 7 x D

Long design, without through tool coolant





Shank	D *h7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SP0010-0070	1.0	1.0	34	12	7.0	◆
SP0011-0077	1.1	1.1	36	14	7.7	◆
SP0012-0084	1.2	1.2	38	16	8.4	◆
SP0013-0091	1.3	1.3	38	16	9.1	◆
SP0014-0098	1.4	1.4	40	18	9.8	◆
SP0015-0105	1.5	1.5	40	18	10.5	◆
SP0016-0112	1.6	1.6	43	20	11.2	◆
SP0017-0119	1.7	1.7	43	20	11.9	◆
SP0018-0126	1.8	1.8	46	22	12.6	◆
SP0019-0133	1.9	1.9	46	22	13.3	◆
SP0020-0140	2.0	2.0	49	24	14.0	◆
SP0021-0147	2.1	2.1	49	24	14.7	◆
SP0022-0154	2.2	2.2	53	27	15.4	◆
SP0023-0161	2.3	2.3	53	27	16.1	◆
SP0024-0168	2.4	2.4	57	30	16.8	◆
SP0025-0175	2.5	2.5	57	30	17.5	◆
SP0026-0182	2.6	2.6	57	30	18.2	◆
SP0027-0189	2.7	2.7	61	33	18.9	◆
SP0028-0196	2.8	2.8	61	33	19.6	◆
SP0029-0203	2.9	2.9	61	33	20.3	◆
SP0030-0210	3.0	3.0	61	33	21.0	◆
SP0031-0217	3.1	3.1	65	36	21.7	◆
SP0032-0224	3.2	3.2	65	36	22.4	◆
SP0033-0231	3.3	3.3	65	36	23.1	◆
SP0034-0238	3.4	3.4	70	39	23.8	◆
SP0035-0245	3.5	3.5	70	39	24.5	◆
SP0036-0252	3.6	3.6	70	39	25.2	◆
SP0037-0259	3.7	3.7	70	39	25.9	◆
SP0038-0266	3.8	3.8	75	43	26.6	◆
SP0039-0273	3.9	3.9	75	43	27.3	◆
SP0040-0280	4.0	4.0	75	43	28.0	◆
SP0041-0287	4.1	4.1	75	43	28.7	◆
SP0042-0294	4.2	4.2	75	43	29.4	◆
SP0043-0301	4.3	4.3	80	47	30.1	◆
SP0044-0308	4.4	4.4	80	47	30.8	◆

Shank	D *h7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SP0045-0315	4.5	4.5	80	47	31.5	◆
SP0046-0322	4.6	4.6	80	47	32.2	◆
SP0047-0329	4.7	4.7	80	47	32.9	◆
SP0048-0336	4.8	4.8	86	52	33.6	◆
SP0050-0350	5.0	5.0	86	52	35.0	◆
SP0051-0357	5.1	5.1	86	52	35.7	◆
SP0052-0364	5.2	5.2	86	52	36.4	◆
SP0053-0371	5.3	5.3	86	52	37.1	◆
SP0055-0385	5.5	5.5	93	57	38.5	◆
SP0058-0406	5.8	5.8	93	57	40.6	◆
SP0060-0420	6.0	6.0	93	57	42.0	◆
SP0061-0427	6.1	6.1	101	63	42.7	◆
SP0063-0441	6.3	6.3	101	63	44.1	◆
SP0064-0448	6.4	6.4	101	63	44.8	◆
SP0065-0455	6.5	6.5	101	63	45.5	◆
SP0068-0476	6.8	6.8	109	69	47.6	◆
SP0070-0490	7.0	7.0	109	69	49.0	◆
SP0080-0560	8.0	8.0	117	75	56.0	◆
SP0085-0595	8.5	8.5	117	75	59.5	◆
SP0100-0700	10.0	10.0	133	87	70.0	◆

HC = Carbide coated

P	●
M	○
K	○
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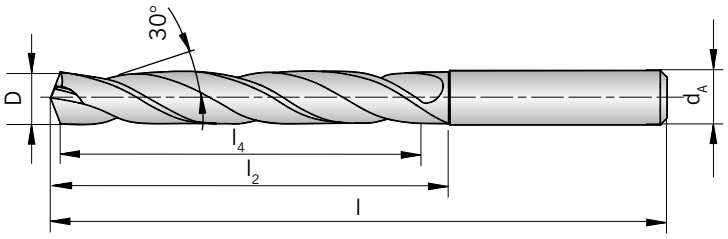
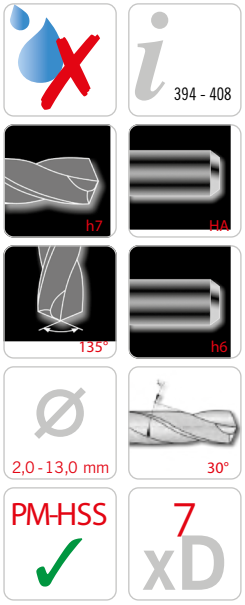
● Main application

○ Secondary application

Execution 7 x D powder metal drill

Long design, without through tool coolant





Shank	D *h7*	d_A *h6*	l	l_2	l_4	PMC TiAlN
SP0020-0140-PM	2.0	3	56	24	14.0	◆
SP0021-0147-PM	2.1	3	56	24	14.7	◆
SP0022-0154-PM	2.2	3	56	25	15.4	◆
SP0024-0168-PM	2.4	3	61	30	16.8	◆
SP0025-0175-PM	2.5	3	61	30	17.5	◆
SP0027-0189-PM	2.7	3	64	33	18.9	◆
SP0028-0196-PM	2.8	3	64	33	19.6	◆
SP0030-0210-PM	3.0	3	64	33	21.0	◆
SP0031-0217-PM	3.1	4	68	36	21.7	◆
SP0032-0224-PM	3.2	4	68	36	22.4	◆
SP0033-0231-PM	3.3	4	68	36	23.1	◆
SP0034-0238-PM	3.4	4	71	39	23.8	◆
SP0035-0245-PM	3.5	4	71	39	24.5	◆
SP0037-0259-PM	3.7	4	71	39	25.9	◆
SP0039-0273-PM	3.9	4	75	43	27.3	◆
SP0040-0280-PM	4.0	4	75	43	28.0	◆
SP0041-0287-PM	4.1	6	85	43	28.7	◆
SP0042-0294-PM	4.2	6	85	43	29.4	◆
SP0045-0315-PM	4.5	6	89	47	31.5	◆
SP0048-0336-PM	4.8	6	94	52	33.6	◆
SP0050-0350-PM	5.0	6	94	52	35.0	◆
SP0051-0357-PM	5.1	6	94	52	35.7	◆
SP0052-0364-PM	5.2	6	94	52	36.4	◆
SP0055-0385-PM	5.5	6	99	57	38.5	◆
SP0057-0399-PM	5.7	6	99	57	39.9	◆
SP0060-0420-PM	6.0	6	99	57	42.0	◆
SP0061-0427-PM	6.1	8	107	63	42.7	◆
SP0062-0434-PM	6.2	8	107	63	43.4	◆
SP0065-0455-PM	6.5	8	107	63	45.5	◆
SP0068-0476-PM	6.8	8	113	69	47.6	◆
SP0069-0483-PM	6.9	8	113	69	48.3	◆
SP0070-0490-PM	7.0	8	113	69	49.0	◆
SP0071-0497-PM	7.1	8	113	69	49.7	◆
SP0074-0518-PM	7.4	8	113	69	51.8	◆
SP0076-0532-PM	7.6	8	119	75	53.2	◆

Shank	D *h7*	d_A *h6*	l	l_2	l_4	PMC TiAlN
SP0078-0546-PM	7.8	8	119	75	54.6	◆
SP0080-0560-PM	8.0	8	119	75	56.0	◆
SP0083-0581-PM	8.3	10	125	75	58.1	◆
SP0085-0595-PM	8.5	10	125	75	59.5	◆
SP0090-0630-PM	9.0	10	131	81	63.0	◆
SP0099-0693-PM	9.9	10	137	87	69.3	◆
SP0100-0700-PM	10.0	10	137	87	70.0	◆
SP0102-0714-PM	10.2	12	144	87	71.4	◆
SP0103-0721-PM	10.3	12	144	87	72.1	◆
SP0105-0735-PM	10.5	12	144	87	73.5	◆
SP0110-0770-PM	11.0	12	151	94	77.0	◆
SP0114-0798-PM	11.4	12	151	94	79.8	◆
SP0120-0840-PM	12.0	12	158	101	84.0	◆
SP0121-0847-PM	12.1	12	158	101	84.7	◆
SP0130-0910-PM	13.0	12	158	101	91.0	◆

PMC = PM-HSS coated

P	●
M	●
K	
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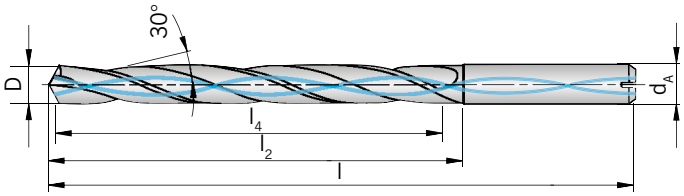
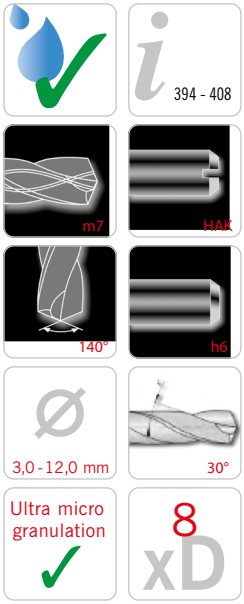
S	
H	

● Main application
○ Secondary application

Execution 8 x D

Long design, with through tool coolant





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0030-0240	3.0	6	72	34	24.0	◆
SPC0031-0248	3.1	6	72	34	24.8	◆
SPC0032-0256	3.2	6	72	34	25.6	◆
SPC0033-0264	3.3	6	72	34	26.4	◆
SPC0034-0272	3.4	6	72	34	27.2	◆
SPC0035-0280	3.5	6	72	34	28.0	◆
SPC0036-0288	3.6	6	72	34	28.8	◆
SPC0037-0296	3.7	6	72	34	29.6	◆
SPC0038-0304	3.8	6	81	43	30.4	◆
SPC0039-0312	3.9	6	81	43	31.2	◆
SPC0040-0320	4.0	6	81	43	32.0	◆
SPC0041-0328	4.1	6	81	43	32.8	◆
SPC0042-0336	4.2	6	81	43	33.6	◆
SPC0043-0344	4.3	6	81	43	34.4	◆
SPC0044-0352	4.4	6	81	43	35.2	◆
SPC0045-0360	4.5	6	81	43	36.0	◆
SPC0046-0368	4.6	6	81	43	36.8	◆
SPC0047-0376	4.7	6	81	43	37.6	◆
SPC0048-0384	4.8	6	95	57	38.4	◆
SPC0050-0400	5.0	6	95	57	40.0	◆
SPC0051-0408	5.1	6	95	57	40.8	◆
SPC0052-0416	5.2	6	95	57	41.6	◆
SPC0053-0424	5.3	6	95	57	42.4	◆
SPC0054-0432	5.4	6	95	57	43.2	◆
SPC0055-0440	5.5	6	95	57	44.0	◆
SPC0056-0448	5.6	6	95	57	44.8	◆
SPC0057-0456	5.7	6	95	57	45.6	◆
SPC0058-0464	5.8	6	95	57	46.4	◆
SPC0059-0472	5.9	6	95	57	47.2	◆
SPC0060-0480	6.0	6	95	57	48.0	◆
SPC0061-0488	6.1	8	114	76	48.8	◆
SPC0062-0496	6.2	8	114	76	49.6	◆
SPC0063-0504	6.3	8	114	76	50.4	◆
SPC0065-0520	6.5	8	114	76	52.0	◆
SPC0066-0528	6.6	8	114	76	52.8	◆

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0067-0536	6.7	8	114	76	53.6	◆
SPC0068-0544	6.8	8	114	76	54.4	◆
SPC0069-0552	6.9	8	114	76	55.2	◆
SPC0070-0560	7.0	8	114	76	56.0	◆
SPC0071-0568	7.1	8	114	76	56.8	◆
SPC0072-0576	7.2	8	114	76	57.6	◆
SPC0074-0592	7.4	8	114	76	59.2	◆
SPC0075-0600	7.5	8	114	76	60.0	◆
SPC0076-0608	7.6	8	114	76	60.8	◆
SPC0077-0616	7.7	8	114	76	61.6	◆
SPC0078-0624	7.8	8	114	76	62.4	◆
SPC0079-0632	7.9	8	114	76	63.2	◆
SPC0080-0640	8.0	8	114	76	64.0	◆
SPC0081-0648	8.1	10	142	95	64.8	◆
SPC0082-0656	8.2	10	142	95	65.6	◆
SPC0083-0664	8.3	10	142	95	66.4	◆
SPC0085-0680	8.5	10	142	95	68.0	◆
SPC0086-0688	8.6	10	142	95	68.8	◆
SPC0087-0696	8.7	10	142	95	69.6	◆
SPC0088-0704	8.8	10	142	95	70.4	◆
SPC0089-0712	8.9	10	142	95	71.2	◆
SPC0090-0720	9.0	10	142	95	72.0	◆
SPC0091-0728	9.1	10	142	95	72.8	◆
SPC0093-0744	9.3	10	142	95	74.4	◆
SPC0094-0752	9.4	10	142	95	75.2	◆
SPC0095-0760	9.5	10	142	95	76.0	◆
SPC0096-0768	9.6	10	142	95	76.8	◆
SPC0097-0776	9.7	10	142	95	77.6	◆
SPC0098-0784	9.8	10	142	95	78.4	◆
SPC0100-0800	10.0	10	142	95	80.0	◆
SPC0101-0808	10.1	12	162	114	80.8	◆
SPC0102-0816	10.2	12	162	114	81.6	◆
SPC0103-0824	10.3	12	162	114	82.4	◆
SPC0104-0832	10.4	12	162	114	83.2	◆
SPC0105-0840	10.5	12	162	114	84.0	◆
SPC0108-0864	10.8	12	162	114	86.4	◆
SPC0110-0880	11.0	12	162	114	88.0	◆
SPC0113-0904	11.3	12	162	114	90.4	◆
SPC0115-0920	11.5	12	162	114	92.0	◆
SPC0116-0928	11.6	12	162	114	92.8	◆
SPC0118-0944	11.8	12	162	114	94.4	◆
SPC0120-0960	12.0	12	162	114	96.0	◆

HC = Carbide coated

P	●
M	○
K	○
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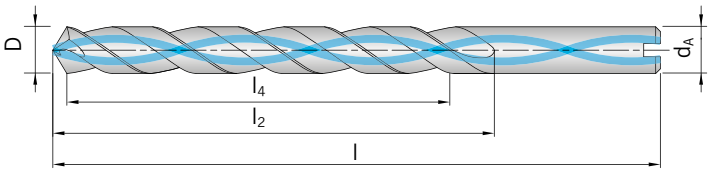
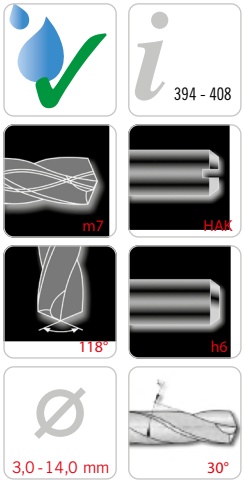
● Main application

○ Secondary application

Execution 8 x D for aluminium

Long design, with through tool coolant, diamond coated





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC DLC
SPC0030-0240-ALU	3.0	6	72	34	24.0	◆
SPC0031-0248-ALU	3.1	6	72	34	24.8	◆
SPC0038-0304-ALU	3.8	6	81	43	30.4	◆
SPC0040-0320-ALU	4.0	6	81	43	32.0	◆
SPC0042-0336-ALU	4.2	6	81	43	33.6	◆
SPC0043-0344-ALU	4.3	6	81	43	34.4	◆
SPC0050-0400-ALU	5.0	6	95	57	40.0	◆
SPC0052-0416-ALU	5.2	6	95	57	41.6	◆
SPC0060-0480-ALU	6.0	6	95	57	48.0	◆
SPC0061-0488-ALU	6.1	8	114	76	48.8	◆
SPC0065-0520-ALU	6.5	8	114	76	52.0	◆
SPC0066-0528-ALU	6.6	8	114	76	52.8	◆
SPC0068-0544-ALU	6.8	8	114	76	54.4	◆
SPC0070-0560-ALU	7.0	8	114	76	56.0	◆
SPC0080-0640-ALU	8.0	8	114	76	64.0	◆
SPC0081-0648-ALU	8.1	10	142	95	64.8	◆
SPC0085-0680-ALU	8.5	10	142	95	68.0	◆
SPC0090-0720-ALU	9.0	10	142	95	72.0	◆
SPC0095-0760-ALU	9.5	10	142	95	76.0	◆
SPC0100-0800-ALU	10.0	10	142	95	80.0	◆
SPC0110-0880-ALU	11.0	12	162	114	88.0	◆
SPC0120-0960-ALU	12.0	12	162	114	96.0	◆
SPC0130-1040-ALU	13.0	14	178	133	104.0	◆
SPC0140-1120-ALU	14.0	14	178	133	112.0	◆

HC = Carbide coated

P	
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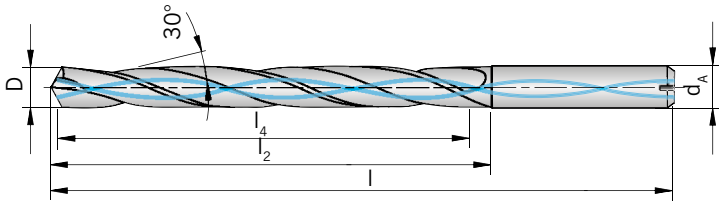
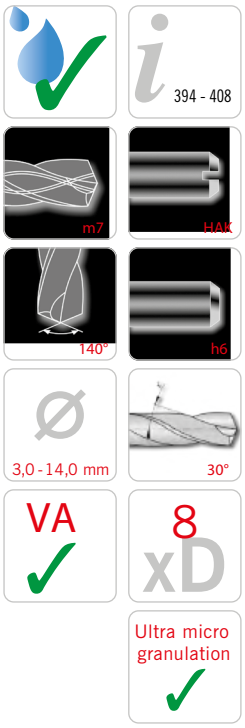
● Main application
○ Secondary application

Execution 8 x D for stainless steel

Long design, with through tool coolant





Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0030-0240-VA	3.0	6	72	34	24.0	◆
SPC0031-0248-VA	3.1	6	72	34	24.8	◆
SPC0032-0256-VA	3.2	6	72	34	25.6	◆
SPC0034-0272-VA	3.4	6	72	34	27.2	◆
SPC0035-0280-VA	3.5	6	72	34	28.0	◆
SPC0038-0304-VA	3.8	6	81	43	30.4	◆
SPC0039-0312-VA	3.9	6	81	43	31.2	◆
SPC0040-0320-VA	4.0	6	81	43	32.0	◆
SPC0042-0336-VA	4.2	6	81	43	33.6	◆
SPC0045-0360-VA	4.5	6	81	43	36.0	◆
SPC0048-0384-VA	4.8	6	95	57	38.4	◆
SPC0049-0392-VA	4.9	6	95	57	39.2	◆
SPC0050-0400-VA	5.0	6	95	57	40.0	◆
SPC0051-0408-VA	5.1	6	95	57	40.8	◆
SPC0053-0424-VA	5.3	6	95	57	42.4	◆
SPC0055-0440-VA	5.5	6	95	57	44.0	◆
SPC0056-0448-VA	5.6	6	95	57	44.8	◆
SPC0057-0456-VA	5.7	6	95	57	45.6	◆
SPC0058-0464-VA	5.8	6	95	57	46.4	◆
SPC0060-0480-VA	6.0	6	95	57	48.0	◆
SPC0061-0488-VA	6.1	8	114	76	48.8	◆
SPC0064-0512-VA	6.4	8	114	76	51.2	◆
SPC0066-0528-VA	6.6	8	114	76	52.8	◆
SPC0068-0544-VA	6.8	8	114	76	54.4	◆
SPC0069-0552-VA	6.9	8	114	76	55.2	◆
SPC0070-0560-VA	7.0	8	114	76	56.0	◆
SPC0075-0600-VA	7.5	8	114	76	60.0	◆
SPC0077-0616-VA	7.7	8	114	76	61.6	◆
SPC0078-0624-VA	7.8	8	114	76	62.4	◆
SPC0080-0640-VA	8.0	8	114	76	64.0	◆
SPC0083-0664-VA	8.3	10	142	95	66.4	◆

Dimensions in mm

Shank	D *m7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0085-0680-VA	8.5	10	142	95	68.0	◆
SPC0090-0720-VA	9.0	10	142	95	72.0	◆
SPC0092-0736-VA	9.2	10	142	95	73.6	◆
SPC0095-0760-VA	9.5	10	142	95	76.0	◆
SPC0096-0768-VA	9.6	10	142	95	76.8	◆
SPC0098-0784-VA	9.8	10	142	95	78.4	◆
SPC0100-0800-VA	10.0	10	142	95	80.0	◆
SPC0102-0816-VA	10.2	12	162	114	81.6	◆
SPC0105-0840-VA	10.5	12	162	114	84.0	◆
SPC0110-0880-VA	11.0	12	162	114	88.0	◆
SPC0112-0896-VA	11.2	12	162	114	89.6	◆
SPC0118-0944-VA	11.8	12	162	114	94.4	◆
SPC0120-0960-VA	12.0	12	162	114	96.0	◆
SPC0125-1000-VA	12.5	14	178	133	100.0	◆
SPC0130-1040-VA	13.0	14	178	133	104.0	◆
SPC0135-1080-VA	13.5	14	178	133	108.0	◆
SPC0140-1120-VA	14.0	14	178	133	112.0	◆

HC = Carbide coated

P	○
M	●
K	
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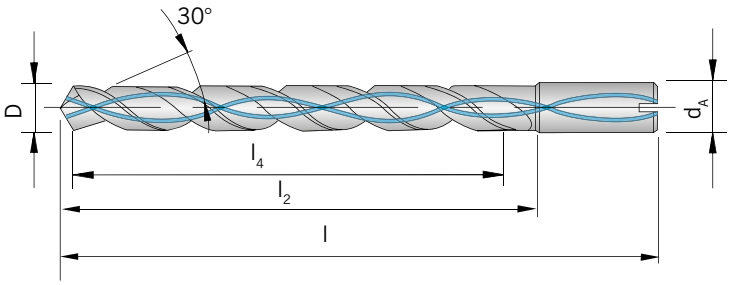
S	○
H	

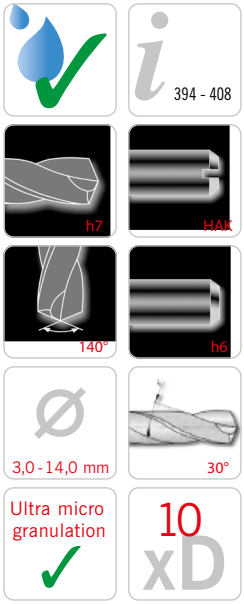
● Main application

○ Secondary application

Execution 10 x D

Extra long design, with through tool coolant





Shank	D *h7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0030-0300-XL	3.0	6	80	40	30	◆
SPC0033-0330-XL	3.3	6	87	47	33	◆
SPC0035-0350-XL	3.5	6	87	47	35	◆
SPC0040-0400-XL	4.0	6	93	53	40	◆
SPC0042-0420-XL	4.2	6	100	60	42	◆
SPC0045-0450-XL	4.5	6	100	60	45	◆
SPC0050-0500-XL	5.0	6	106	66	50	◆
SPC0055-0550-XL	5.5	6	113	73	55	◆
SPC0060-0600-XL	6.0	6	119	79	60	◆
SPC0065-0650-XL	6.5	8	126	86	65	◆
SPC0068-0680-XL	6.8	8	132	92	68	◆
SPC0070-0700-XL	7.0	8	132	92	70	◆
SPC0075-0750-XL	7.5	8	139	99	75	◆
SPC0080-0800-XL	8.0	8	145	105	80	◆
SPC0085-0850-XL	8.5	10	156	112	85	◆
SPC0090-0900-XL	9.0	10	162	118	90	◆
SPC0095-0950-XL	9.5	10	170	126	95	◆
SPC0100-1000-XL	10.0	10	176	132	100	◆
SPC0105-1050-XL	10.5	12	188	139	105	◆
SPC0110-1100-XL	11.0	12	195	145	110	◆
SPC0115-1150-XL	11.5	12	201	152	115	◆
SPC0120-1200-XL	12.0	12	207	158	120	◆
SPC0125-1250-XL	12.5	14	214	165	125	◆
SPC0130-1300-XL	13.0	14	220	171	130	◆
SPC0135-1350-XL	13.5	14	227	178	135	◆
SPC0140-1400-XL	14.0	14	233	184	140	◆

HC = Carbide coated

P	●
M	○
K	○
N	
S	
H	

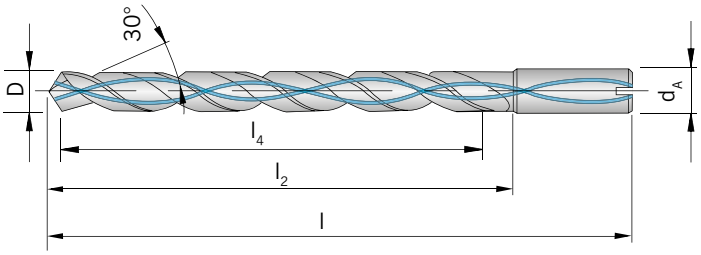
● Main application
○ Secondary application

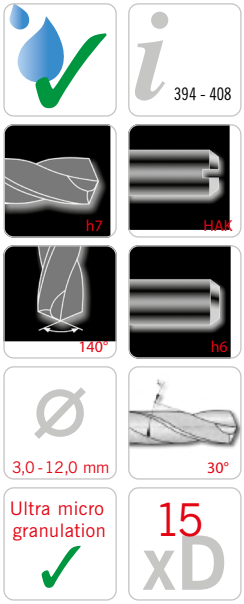
SP

Dimensions in mm

Execution 15 x D

Extra long design, with through tool coolant





Shank	D *h7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0030-0450-XL	3.0	6	95	55	45.0	◆
SPC0032-0480-XL	3.2	6	104	64	48.0	◆
SPC0035-0525-XL	3.5	6	104	64	52.5	◆
SPC0040-0600-XL	4.0	6	113	73	60.0	◆
SPC0045-0675-XL	4.5	6	122	82	67.5	◆
SPC0050-0750-XL	5.0	6	131	91	75.0	◆
SPC0055-0825-XL	5.5	6	140	100	82.5	◆
SPC0060-0900-XL	6.0	6	149	109	90.0	◆
SPC0070-1050-XL	7.0	8	167	127	105.0	◆
SPC0080-1200-XL	8.0	8	185	145	120.0	◆
SPC0085-1275-XL	8.5	10	198	154	127.5	◆
SPC0090-1350-XL	9.0	10	207	163	135.0	◆
SPC0100-1500-XL	10.0	10	226	182	150.0	◆
SPC0105-1575-XL	10.5	12	240	191	157.5	◆
SPC0110-1650-XL	11.0	12	249	200	165.0	◆
SPC0115-1725-XL	11.5	12	258	209	172.5	◆
SPC0120-1800-XL	12.0	12	267	218	180.0	◆

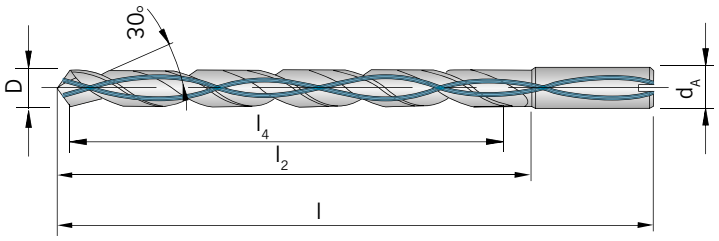
HC = Carbide coated

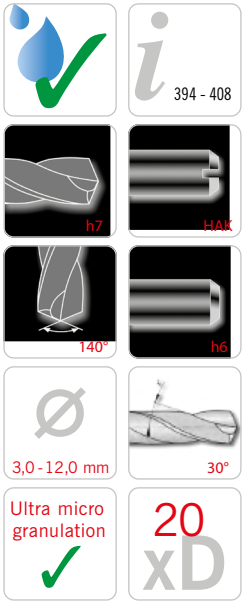
P	●
M	○
K	○
N	
S	
H	

● Main application
○ Secondary application

Execution 20 x D

Extra long design, with through tool coolant





Shank	D *h7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0030-0600-XL	3.0	6	110	70	60	◆
SPC0032-0640-XL	3.2	6	122	82	64	◆
SPC0035-0700-XL	3.5	6	122	82	70	◆
SPC0040-0800-XL	4.0	6	133	93	80	◆
SPC0045-0900-XL	4.5	6	145	105	90	◆
SPC0048-0960-XL	4.8	6	156	116	96	◆
SPC0050-1000-XL	5.0	6	156	116	100	◆
SPC0053-1060-XL	5.3	6	168	128	106	◆
SPC0055-1100-XL	5.5	6	168	128	110	◆
SPC0060-1200-XL	6.0	6	179	139	120	◆
SPC0070-1400-XL	7.0	8	202	162	140	◆
SPC0080-1600-XL	8.0	8	225	185	160	◆
SPC0085-1700-XL	8.5	10	241	197	170	◆
SPC0090-1800-XL	9.0	10	252	208	180	◆
SPC0100-2000-XL	10.0	10	276	232	200	◆
SPC0105-2100-XL	10.5	12	293	244	210	◆
SPC0120-2400-XL	12.0	12	327	278	240	◆

HC = Carbide coated

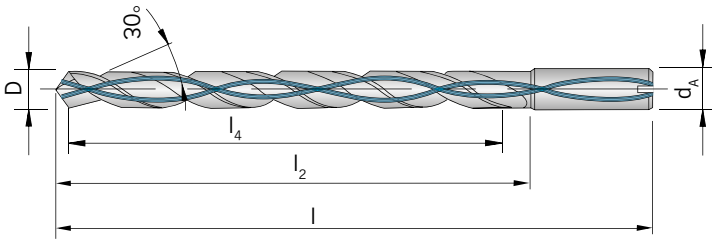
P	●
M	○
K	○
N	
S	
H	

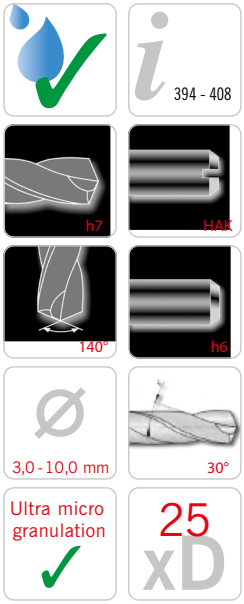
● Main application
○ Secondary application

SP

Execution 25 x D

Extra long design, with through tool coolant





Shank	D *h7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0030-0750-XL	3.0	6	125	85	75.0	◆
SPC0035-0875-XL	3.5	6	139	99	87.5	◆
SPC0040-1000-XL	4.0	6	153	113	100.0	◆
SPC0045-1125-XL	4.5	6	167	127	112.5	◆
SPC0050-1250-XL	5.0	6	181	141	125.0	◆
SPC0055-1375-XL	5.5	6	195	155	137.5	◆
SPC0060-1500-XL	6.0	6	209	169	150.0	◆
SPC0070-1750-XL	7.0	8	237	197	175.0	◆
SPC0080-2000-XL	8.0	8	265	225	200.0	◆
SPC0085-2125-XL	8.5	10	283	239	212.5	◆
SPC0090-2250-XL	9.0	10	297	253	225.0	◆
SPC0100-2500-XL	10.0	10	326	282	250.0	◆

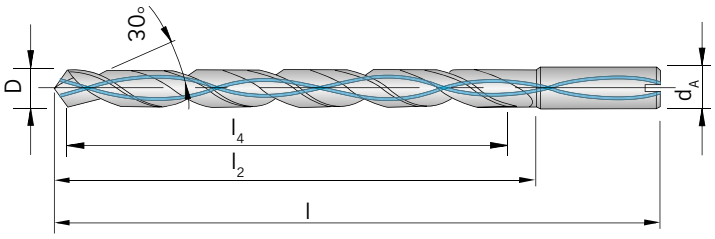
HC = Carbide coated

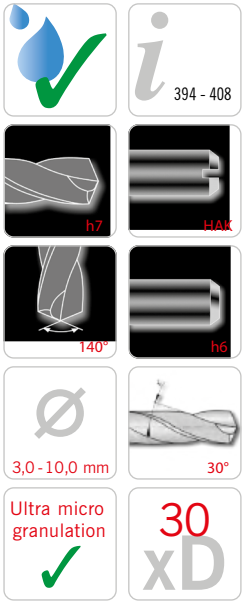
P	●
M	○
K	○
N	
S	
H	

● Main application
○ Secondary application

Execution 30 x D

Extra long design, with through tool coolant





Shank	D *h7*	d_A *h6*	l	l_2	l_4	HC VHM/ TiAlN
SPC0030-0900-XL	3.0	6	140	100	90	◆
SPC0035-1050-XL	3.5	6	157	117	105	◆
SPC0040-1200-XL	4.0	6	173	133	120	◆
SPC0045-1350-XL	4.5	6	190	150	135	◆
SPC0050-1500-XL	5.0	6	206	166	150	◆
SPC0055-1650-XL	5.5	6	223	183	165	◆
SPC0060-1800-XL	6.0	6	239	199	180	◆
SPC0070-2100-XL	7.0	8	272	232	210	◆
SPC0080-2400-XL	8.0	8	305	265	240	◆

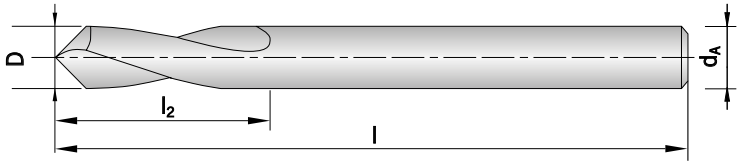
HC = Carbide coated

P	●
M	○
K	○
N	
S	
H	

● Main application
○ Secondary application

NC spot drill 90°

2 flutes, 90°



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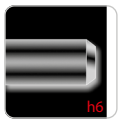


Ultra micro granulation ✓

Shank	D *h6*	d_A *h6*	l	l_2	HC VHM/ TiAlN
SPA0020-090	2	2	40	8	◆
SPA0030-090	3	3	40	10	◆
SPA0040-090	4	4	40	12	◆
SPA0050-090	5	5	50	15	◆
SPA0060-090	6	6	50	20	◆
SPA0080-090	8	8	63	22	◆
SPA0100-090	10	10	74	23	◆
SPA0120-090	12	12	83	25	◆
SPA0140-090	14	14	83	26	◆
SPA0160-090	16	16	92	28	◆
SPA0180-090	18	18	92	30	◆
SPA0200-090	20	20	104	30	◆

HC = Carbide coated

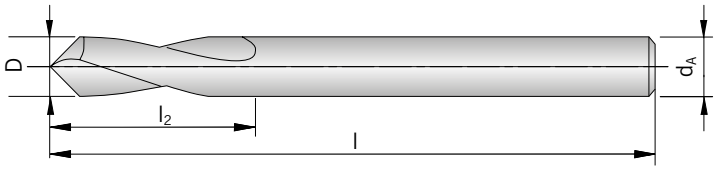
P	●
M	●
K	●
N	●
S	●
H	

● Main application

○ Secondary application

NC spot drill 120°

2 flutes, 120°



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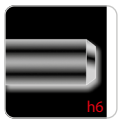


2,0 - 20,0 mm

Ultra micro granulation ✓

Shank	D *h6*	d_A *h6*	l	l_2	HC VHM/ TiAlN
SPA0020-120	2	2	40	8	◆
SPA0030-120	3	3	40	10	◆
SPA0040-120	4	4	40	12	◆
SPA0050-120	5	5	50	15	◆
SPA0060-120	6	6	50	20	◆
SPA0080-120	8	8	63	22	◆
SPA0100-120	10	10	74	23	◆
SPA0120-120	12	12	83	25	◆
SPA0140-120	14	14	83	26	◆
SPA0160-120	16	16	92	28	◆
SPA0180-120	18	18	92	30	◆
SPA0200-120	20	20	104	30	◆

HC = Carbide coated

P	●
M	●
K	●
N	●
S	●
H	

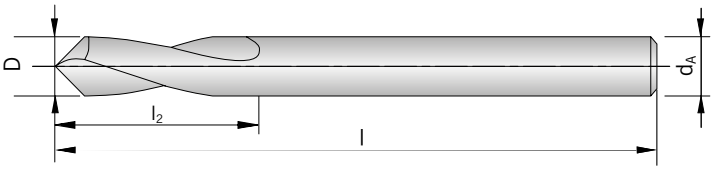
● Main application

○ Secondary application

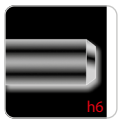
SP

NC spot drill 135°

2 flutes, 135°



394 - 408



12,0 -20,0 mm

Ultra micro granulation ✓

Shank	D *h6*	d_A *h6*	l	l_2	HC VHM/ TiAlN
SPA0120-135	12	12	83	25	◆
SPA0160-135	16	16	92	28	◆
SPA0200-135	20	20	104	30	◆

HC = Carbide coated

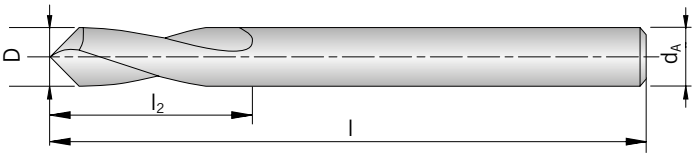
P	●
M	●
K	●
N	●
S	●
H	

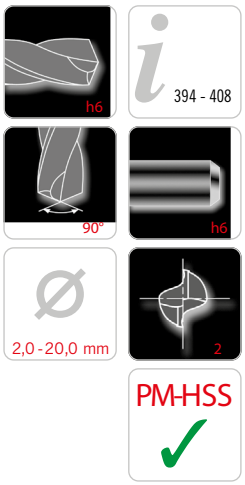
● Main application

○ Secondary application

NC spot drill 90°

2 flutes, 90°





Shank	D *h6*	d_A *h6*	l	l_2	PMC TiAlN
SPA0020-090-PM	2	2	40	8	◆
SPA0030-090-PM	3	3	40	10	◆
SPA0040-090-PM	4	4	40	12	◆
SPA0050-090-PM	5	5	50	15	◆
SPA0060-090-PM	6	6	50	20	◆
SPA0080-090-PM	8	8	63	22	◆
SPA0100-090-PM	10	10	74	23	◆
SPA0120-090-PM	12	12	83	25	◆
SPA0140-090-PM	14	14	83	26	◆
SPA0160-090-PM	16	16	92	28	◆
SPA0180-090-PM	18	18	92	30	◆
SPA0200-090-PM	20	20	104	30	◆

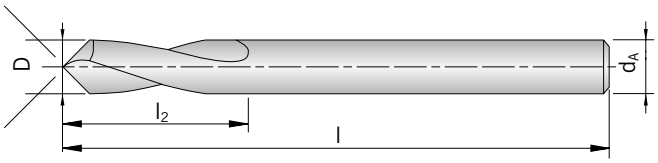
PMC = PM-HSS coated

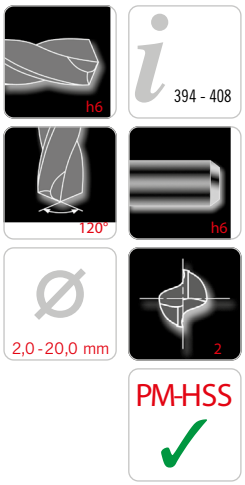
P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

NC spot drill 120°

2 flutes, 120°





Shank	D *h6*	d_A *h6*	l	l_2	PMC TiAlN
SPA0020-120-PM	2	2	40	8	◆
SPA0030-120-PM	3	3	40	10	◆
SPA0040-120-PM	4	4	40	12	◆
SPA0050-120-PM	5	5	50	15	◆
SPA0060-120-PM	6	6	50	20	◆
SPA0080-120-PM	8	8	63	22	◆
SPA0100-120-PM	10	10	74	23	◆
SPA0120-120-PM	12	12	83	25	◆
SPA0140-120-PM	14	14	83	26	◆
SPA0160-120-PM	16	16	92	28	◆
SPA0180-120-PM	18	18	92	30	◆
SPA0200-120-PM	20	20	104	30	◆

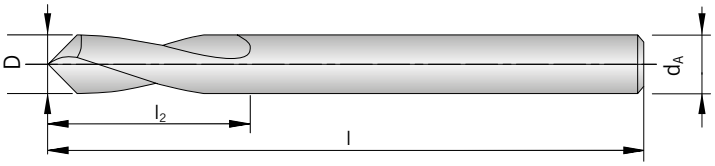
PMC = PM-HSS coated

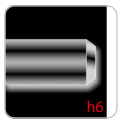
P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

NC spot drill 135°

2 flutes, 135°





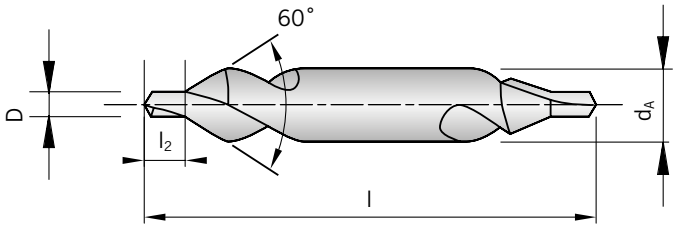
Shank	D *h6*	d_A *h6*	l	l_2	PMC TiAlN
SPA0120-135-PM	12	12	83	25	◆
SPA0160-135-PM	16	16	92	28	◆
SPA0200-135-PM	20	20	104	30	◆

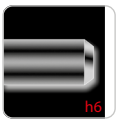
PMC = PM-HSS coated

P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

Centre drills DIN 333, Form A





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Ultra micro granulation ✓

1,0-6,3 mm

Shank	D *m7*	d_A *h6*	l	l_2	HC VHM/ TiAlN
SPZ0100-0016	1.00	3.15	31.5	1.6	◆
SPZ0125-0019	1.25	3.15	31.5	1.9	◆
SPZ0160-0024	1.60	4.00	35.5	2.4	◆
SPZ0200-0029	2.00	5.00	40.0	2.9	◆
SPZ0250-0036	2.50	6.30	45.0	3.6	◆
SPZ0315-0044	3.15	8.00	50.0	4.4	◆
SPZ0400-0056	4.00	10.00	56.0	5.6	◆
SPZ0500-0069	5.00	12.50	63.0	6.9	◆
SPZ0630-0086	6.30	16.00	71.0	8.6	◆

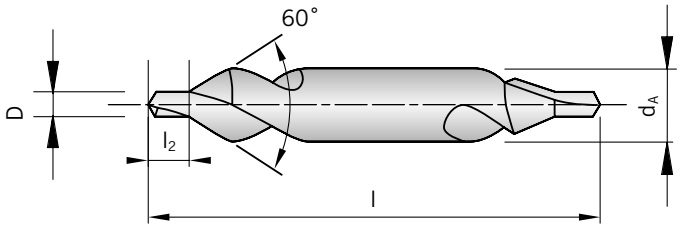
HC = Carbide coated

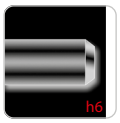
P	●
M	●
K	●
N	●
S	●
H	

● Main application

○ Secondary application

Centre drills DIN 333, Form A





394 - 408

PM-HSS ✓

1,0-6,3 mm

Shank	D *m7*	d_A *h6*	l	l_2	PMC TiAlN
SPZ0100-0016-PM	1.00	3.15	31.5	1.6	◆
SPZ0125-0019-PM	1.25	3.15	31.5	1.9	◆
SPZ0160-0024-PM	1.60	4.00	35.5	2.4	◆
SPZ0200-0029-PM	2.00	5.00	40.0	2.9	◆
SPZ0250-0036-PM	2.50	6.30	45.0	3.6	◆
SPZ0315-0044-PM	3.15	8.00	50.0	4.4	◆
SPZ0400-0056-PM	4.00	10.00	56.0	5.6	◆
SPZ0500-0069-PM	5.00	12.50	63.0	6.9	◆
SPZ0630-0086-PM	6.30	16.00	71.0	8.6	◆

PMC = PM-HSS coated

P	●
M	●
K	●
N	●
S	●
H	

● Main application

○ Secondary application

SP

Recommended cutting data Solid carbide end-mill ≤ 3xD

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Cutting speed V_c (m/min) VHM uncoated	VHM TiAlN	DLC (Diamond)
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	70 - 77 - 84	100 - 110 - 120	-
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	70 - 77 - 84	100 - 110 - 120	-
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	56 - 63 - 70	80 - 90 - 100	-
		C > 0.55 %	annealed	190	639	P4	70 - 77 - 84	100 - 110 - 120	-
		C > 0.55 %	hardened and tempered	300	1013	P5	56 - 63 - 70	80 - 90 - 100	-
		Machining steel (short-chipping)	tempered	220	745	P6	70 - 77 - 84	100 - 110 - 120	-
	Low alloyed steel	annealed		175	591	P7	46 - 54 - 63	65 - 78 - 90	-
		hardened and tempered		300	1013	P8	35 - 42 - 49	50 - 60 - 70	-
		hardened and tempered		380	1282	P9	30 - 36 - 42	43 - 52 - 60	-
		hardened and tempered		430	1477	P10	30 - 36 - 42	43 - 52 - 60	-
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	46 - 54 - 63	65 - 78 - 90	-
		hardened		300	1013	P12	35 - 42 - 49	50 - 60 - 70	-
		hardened		400	1361	P13	30 - 36 - 42	43 - 52 - 60	-
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	32 - 37 - 42	45 - 53 - 60	-
		martensitic, hardened and tempered		330	1114	P15	25 - 30 - 35	35 - 43 - 50	-
M	Stainless steel	austenitic, chilled		200	675	M1	32 - 37 - 42	45 - 53 - 60	-
		austenitic, precipitation-hardened (PH)		300	1013	M2	25 - 30 - 35	35 - 43 - 50	-
		austenitic-ferritic, Duplex		230	778	M3	32 - 37 - 42	45 - 53 - 60	-
K	Malleable cast iron	ferritic		200	675	K1	63 - 77 - 91	90 - 110 - 130	-
		pearlitic		260	867	K2	49 - 54 - 60	70 - 78 - 85	-
	Cast iron	low tensile strength		180	602	K3	63 - 77 - 91	90 - 110 - 130	-
		high tensile strength / austenitic		245	825	K4	49 - 54 - 60	70 - 78 - 85	-
	Cast iron with nodular graphite	ferritic		155	518	K5	63 - 77 - 91	90 - 110 - 130	-
		pearlitic		265	885	K6	49 - 54 - 60	70 - 78 - 85	-
	GGV (CGI)			200	675	K7	63 - 77 - 91	90 - 110 - 130	-
N	Aluminium alloys long chipping	not heat treatable		30	-	N1	-	-	140 - 260 - 380
		heat treatable, heat treated		100	343	N2	-	-	141 - 260 - 380
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3	-	-	120 - 210 - 300
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4	-	-	120 - 210 - 300
		> 12 % Si, not heat treatable		130	447	N5	-	-	120 - 180 - 240
	Magnesium alloys			70	250	N6	-	-	140 - 260 - 380
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7	-	-	-
		Brass, Bronze		90	314	N8	-	-	120 - 180 - 240
		Cu-alloys, short-chipping		110	382	N9	-	-	140 - 260 - 380
		High-tensile, Ampco		300	1013	N10	-	-	120 - 180 - 240
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11	-	-	-
		Duroplastic (without abrasive filling material)		-	-	N12	-	-	-
		Plastic glas fibre reinforced GFRP		-	-	N13	-	-	-
		Plastic carbon fibre reinforced CFRP		-	-	N14	-	-	-
		Plastic aramid fibre reinforced AFRP		-	-	N15	-	-	-
		Graphite (tech.)		80 Shore	-	N16	-	-	-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1	-	15 - 24 - 33	-
			heat treated	280	943	S2	-	15 - 24 - 33	-
		Ni- or Co-alloyed	annealed	250	839	S3	-	15 - 24 - 33	-
			heat treated	350	1177	S4	-	15 - 24 - 33	-
			casting	320	1076	S5	-	15 - 24 - 33	-
	Titanium alloys	Pure titan		200	675	S6	-	15 - 24 - 33	-
		α- and β-alloys, heat treated		375	1262	S7	-	15 - 24 - 33	-
		β-alloys		410	1396	S8	-	15 - 24 - 33	-
	Wolfram alloys			300	1013	S9	-	-	-
	Molybdän alloys			300	1013	S10	-	-	-
H	Hardened steel	hardened		50 HRC	-	H1	-	-	-
		hardened		55 HRC	-	H2	-	-	-
		hardened		60 HRC	-	H3	-	-	-
	Hardened cast iron	hardened		55 HRC	-	H4	-	-	-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

PM-HSS TiAIN	Feed per revolution fn (mm/U)						
	Ø 1 - 3 mm	Ø 3 - 5 mm	Ø 5 - 8 mm	Ø 8 - 10 mm	Ø 10 - 12 mm	Ø 12 - 14 mm	Ø 14 - 20 mm
40 - 50 - 60	0,05 - 0,08 - 0,10	0,10 - 0,14 - 0,18	0,15 - 0,20 - 0,25	0,18 - 0,23 - 0,28	0,20 - 0,25 - 0,30	0,20 - 0,28 - 0,35	0,25 - 0,33 - 0,40
40 - 50 - 60	0,05 - 0,08 - 0,10	0,10 - 0,14 - 0,18	0,15 - 0,20 - 0,25	0,18 - 0,23 - 0,28	0,20 - 0,25 - 0,30	0,20 - 0,28 - 0,35	0,25 - 0,33 - 0,40
40 - 50 - 60	0,05 - 0,08 - 0,10	0,10 - 0,14 - 0,18	0,15 - 0,20 - 0,25	0,18 - 0,23 - 0,28	0,20 - 0,25 - 0,30	0,20 - 0,28 - 0,35	0,25 - 0,33 - 0,40
40 - 50 - 60	0,05 - 0,08 - 0,10	0,10 - 0,14 - 0,18	0,15 - 0,20 - 0,25	0,18 - 0,23 - 0,28	0,20 - 0,25 - 0,30	0,20 - 0,28 - 0,35	0,25 - 0,33 - 0,40
30 - 34 - 38	0,05 - 0,08 - 0,10	0,10 - 0,14 - 0,18	0,15 - 0,20 - 0,25	0,18 - 0,23 - 0,28	0,20 - 0,25 - 0,30	0,20 - 0,28 - 0,35	0,25 - 0,33 - 0,40
40 - 50 - 60	0,05 - 0,08 - 0,10	0,10 - 0,14 - 0,18	0,15 - 0,20 - 0,25	0,18 - 0,23 - 0,28	0,20 - 0,25 - 0,30	0,20 - 0,28 - 0,35	0,25 - 0,33 - 0,40
40 - 50 - 60	0,05 - 0,08 - 0,10	0,10 - 0,15 - 0,20	0,15 - 0,20 - 0,25	0,18 - 0,24 - 0,28	0,18 - 0,27 - 0,35	0,20 - 0,28 - 0,35	0,25 - 0,34 - 0,40
30 - 34 - 38	0,06 - 0,09 - 0,12	0,08 - 0,12 - 0,15	0,10 - 0,14 - 0,18	0,12 - 0,16 - 0,20	0,15 - 0,20 - 0,25	0,16 - 0,23 - 0,30	0,20 - 0,26 - 0,32
30 - 34 - 38	0,06 - 0,09 - 0,12	0,08 - 0,12 - 0,15	0,10 - 0,14 - 0,18	0,12 - 0,16 - 0,20	0,15 - 0,20 - 0,25	0,16 - 0,23 - 0,30	0,20 - 0,26 - 0,32
30 - 34 - 38	0,06 - 0,09 - 0,12	0,08 - 0,12 - 0,15	0,10 - 0,14 - 0,18	0,12 - 0,16 - 0,20	0,15 - 0,20 - 0,25	0,16 - 0,23 - 0,30	0,20 - 0,26 - 0,32
30 - 34 - 38	0,05 - 0,10 - 0,15	0,10 - 0,15 - 0,20	0,15 - 0,20 - 0,25	0,18 - 0,24 - 0,28	0,18 - 0,27 - 0,35	0,20 - 0,28 - 0,35	0,25 - 0,34 - 0,42
30 - 34 - 38	0,06 - 0,09 - 0,12	0,08 - 0,12 - 0,15	0,10 - 0,14 - 0,18	0,12 - 0,16 - 0,20	0,15 - 0,20 - 0,25	0,16 - 0,23 - 0,32	0,20 - 0,26 - 0,32
30 - 34 - 38	0,06 - 0,09 - 0,12	0,08 - 0,12 - 0,15	0,10 - 0,14 - 0,18	0,12 - 0,16 - 0,20	0,15 - 0,20 - 0,25	0,16 - 0,23 - 0,30	0,20 - 0,26 - 0,32
20 - 23 - 25	0,02 - 0,05 - 0,08	0,04 - 0,07 - 0,10	0,06 - 0,09 - 0,12	0,10 - 0,14 - 0,18	0,10 - 0,15 - 0,20	0,10 - 0,15 - 0,20	0,12 - 0,19 - 0,25
10 - 13 - 15	0,02 - 0,05 - 0,08	0,04 - 0,07 - 0,10	0,06 - 0,09 - 0,12	0,10 - 0,14 - 0,18	0,10 - 0,15 - 0,20	0,10 - 0,15 - 0,20	0,12 - 0,19 - 0,25
20 - 23 - 25	0,02 - 0,05 - 0,08	0,04 - 0,07 - 0,10	0,06 - 0,09 - 0,12	0,10 - 0,14 - 0,18	0,10 - 0,15 - 0,20	0,10 - 0,15 - 0,20	0,12 - 0,19 - 0,25
10 - 13 - 15	0,02 - 0,05 - 0,08	0,04 - 0,07 - 0,10	0,06 - 0,09 - 0,12	0,10 - 0,14 - 0,18	0,10 - 0,15 - 0,20	0,10 - 0,15 - 0,20	0,12 - 0,19 - 0,25
20 - 23 - 25	0,02 - 0,05 - 0,08	0,04 - 0,07 - 0,10	0,06 - 0,09 - 0,12	0,10 - 0,14 - 0,18	0,10 - 0,15 - 0,20	0,10 - 0,15 - 0,20	0,12 - 0,19 - 0,25
55 - 63 - 70	0,08 - 0,09 - 0,10	0,12 - 0,14 - 0,16	0,15 - 0,24 - 0,33	0,20 - 0,30 - 0,40	0,25 - 0,35 - 0,45	0,30 - 0,40 - 050	0,35 - 0,45 - 055
45 - 55 - 65	0,08 - 0,09 - 0,10	0,10 - 0,13 - 0,16	0,12 - 0,21 - 0,30	0,20 - 0,28 - 0,35	0,20 - 0,30 - 0,40	0,25 - 0,33 - 0,40	0,30 - 0,38 - 0,45
55 - 63 - 70	0,08 - 0,09 - 0,10	0,12 - 0,14 - 0,16	0,15 - 0,24 - 0,33	0,20 - 0,30 - 0,40	0,25 - 0,35 - 0,45	0,30 - 0,40 - 050	0,35 - 0,45 - 055
45 - 55 - 65	0,08 - 0,09 - 0,10	0,10 - 0,13 - 0,16	0,12 - 0,21 - 0,30	0,20 - 0,28 - 0,35	0,20 - 0,30 - 0,40	0,25 - 0,33 - 0,40	0,30 - 0,38 - 0,45
55 - 63 - 70	0,08 - 0,09 - 0,10	0,12 - 0,14 - 0,16	0,15 - 0,24 - 0,33	0,20 - 0,30 - 0,40	0,25 - 0,35 - 0,45	0,30 - 0,40 - 050	0,35 - 0,45 - 055
45 - 55 - 65	0,08 - 0,09 - 0,10	0,10 - 0,13 - 0,16	0,12 - 0,21 - 0,30	0,20 - 0,28 - 0,35	0,20 - 0,30 - 0,40	0,25 - 0,33 - 0,40	0,30 - 0,38 - 0,45
55 - 63 - 70	0,08 - 0,09 - 0,10	0,12 - 0,14 - 0,16	0,15 - 0,24 - 0,33	0,20 - 0,30 - 0,40	0,25 - 0,35 - 0,45	0,30 - 0,40 - 050	0,35 - 0,45 - 055
-	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,28 - 0,31 - 0,34	0,37 - 0,40 - 0,43	0,43 - 0,46 - 0,49	0,49 - 0,52 - 0,55
-	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,28 - 0,31 - 0,34	0,37 - 0,40 - 0,43	0,43 - 0,46 - 0,49	0,49 - 0,52 - 0,55
-	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,28 - 0,31 - 0,34	0,37 - 0,40 - 0,43	0,43 - 0,46 - 0,49	0,49 - 0,52 - 0,55
-	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,28 - 0,31 - 0,34	0,37 - 0,40 - 0,43	0,43 - 0,46 - 0,49	0,49 - 0,52 - 0,55
-	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,28 - 0,31 - 0,34	0,37 - 0,40 - 0,43	0,43 - 0,46 - 0,49	0,49 - 0,52 - 0,55
-	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,28 - 0,31 - 0,34	0,37 - 0,40 - 0,43	0,43 - 0,46 - 0,49	0,49 - 0,52 - 0,55
-	0,02 - 0,09 - 0,16	0,06 - 0,12 - 0,18	0,10 - 0,15 - 0,20	0,18 - 0,24 - 0,30	0,25 - 0,30 - 0,35	0,30 - 0,34 - 0,38	0,30 - 0,40 - 0,50
-	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,28 - 0,31 - 0,34	0,37 - 0,40 - 0,43	0,43 - 0,46 - 0,49	0,49 - 0,52 - 0,55
-	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,28 - 0,31 - 0,34	0,37 - 0,40 - 0,43	0,43 - 0,46 - 0,49	0,49 - 0,52 - 0,55
-	0,09 - 0,12 - 0,15	0,13 - 0,16 - 0,19	0,13 - 0,16 - 0,19	0,17 - 0,20 - 0,23	0,23 - 0,26 - 0,28	0,28 - 0,31 - 0,34	0,34 - 0,37 - 0,40
-	0,01 - 0,03 - 0,05	0,05 - 0,07 - 0,09	0,09 - 0,11 - 0,13	0,11 - 0,13 - 0,15	0,13 - 0,15 - 0,17	0,15 - 0,17 - 0,19	0,17 - 0,19 - 0,20
-	0,01 - 0,03 - 0,05	0,05 - 0,07 - 0,09	0,09 - 0,11 - 0,13	0,11 - 0,13 - 0,15	0,13 - 0,15 - 0,17	0,15 - 0,17 - 0,19	0,17 - 0,19 - 0,20
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	0,02 - 0,04 - 0,06	0,03 - 0,05 - 0,07	0,04 - 0,06 - 0,08	0,06 - 0,08 - 0,10	0,08 - 0,10 - 0,12	0,08 - 0,11 - 0,14	0,08 - 0,12 - 0,16
-	0,02 - 0,04 - 0,06	0,03 - 0,05 - 0,07	0,04 - 0,06 - 0,08	0,06 - 0,08 - 0,10	0,08 - 0,10 - 0,12	0,08 - 0,11 - 0,14	0,08 - 0,12 - 0,16
6 - 9 - 12	0,02 - 0,04 - 0,06	0,03 - 0,05 - 0,07	0,04 - 0,06 - 0,08	0,06 - 0,08 - 0,10	0,08 - 0,10 - 0,12	0,08 - 0,11 - 0,14	0,08 - 0,12 - 0,16
6 - 9 - 12	0,02 - 0,04 - 0,06	0,03 - 0,05 - 0,07	0,04 - 0,06 - 0,08	0,06 - 0,08 - 0,10	0,08 - 0,10 - 0,12	0,08 - 0,11 - 0,14	0,08 - 0,12 - 0,16
6 - 9 - 12	0,02 - 0,04 - 0,06	0,03 - 0,05 - 0,07	0,04 - 0,06 - 0,08	0,06 - 0,08 - 0,10	0,08 - 0,10 - 0,12	0,08 - 0,11 - 0,14	0,08 - 0,12 - 0,16
7 - 9 - 11	0,01 - 0,03 - 0,04	0,03 - 0,05 - 0,07	0,06 - 0,09 - 0,12	0,06 - 0,08 - 0,12	0,08 - 0,10 - 0,15	0,08 - 0,12 - 0,15	0,10 - 0,13 - 0,16
7 - 9 - 11	0,01 - 0,03 - 0,04	0,03 - 0,05 - 0,07	0,06 - 0,09 - 0,12	0,06 - 0,08 - 0,12	0,08 - 0,10 - 0,15	0,08 - 0,12 - 0,15	0,10 - 0,13 - 0,16
7 - 9 - 11	0,01 - 0,03 - 0,04	0,03 - 0,05 - 0,07	0,06 - 0,09 - 0,12	0,06 - 0,08 - 0,12	0,08 - 0,10 - 0,15	0,08 - 0,12 - 0,15	0,10 - 0,13 - 0,16
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Recommended cutting data Solid carbide end-mill ≤ 5xD

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Cutting speed V_c (m/min) VHM TiAlN	Cutting speed V_c (m/min) DLC (Diamond)
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	100 - 110 - 120	-
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	100 - 110 - 120	-
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	80 - 90 - 100	-
		C > 0.55 %	annealed	190	639	P4	100 - 110 - 120	-
		C > 0.55 %	hardened and tempered	300	1013	P5	80 - 90 - 100	-
		Machining steel (short-chipping)	tempered	220	745	P6	100 - 110 - 120	-
	Low alloyed steel	annealed		175	591	P7	65 - 78 - 90	-
		hardened and tempered		300	1013	P8	50 - 60 - 70	-
		hardened and tempered		380	1282	P9	43 - 52 - 60	-
		hardened and tempered		430	1477	P10	43 - 52 - 60	-
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	65 - 78 - 90	-
		hardened		300	1013	P12	50 - 60 - 70	-
		hardened		400	1361	P13	43 - 52 - 60	-
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	45 - 53 - 60	-
		martensitic, hardened and tempered		330	1114	P15	35 - 43 - 50	-
M	Stainless steel	austenitic, chilled		200	675	M1	45 - 53 - 60	-
		austenitic, precipitation-hardened (PH)		300	1013	M2	35 - 43 - 50	-
		austenitic-ferritic, Duplex		230	778	M3	45 - 53 - 60	-
K	Malleable cast iron	ferritic		200	675	K1	90 - 110 - 130	-
		pearlitic		260	867	K2	70 - 78 - 85	-
	Cast iron	low tensile strength		180	602	K3	90 - 110 - 130	-
		high tensile strength / austenitic		245	825	K4	70 - 78 - 85	-
	Cast iron with nodular graphite	ferritic		155	518	K5	90 - 110 - 130	-
		pearlitic		265	885	K6	70 - 78 - 85	-
	GGV (CGI)			200	675	K7	90 - 110 - 130	-
N	Aluminium alloys long chipping	not heat treatable		30	-	N1	-	140 - 260 - 380
		heat treatable, heat treated		100	343	N2	-	140 - 260 - 380
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3	-	120 - 210 - 300
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4	-	120 - 210 - 300
		> 12 % Si, not heat treatable		130	447	N5	-	120 - 180 - 240
	Magnesium alloys			70	250	N6	-	140 - 260 - 380
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7	-	-
		Brass, Bronze		90	314	N8	-	120 - 180 - 240
		Cu-alloys, short-chipping		110	382	N9	-	140 - 260 - 380
		High-tensile, Ampco		300	1013	N10	-	120 - 180 - 240
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11	-	-
		Duroplastic (without abrasive filling material)		-	-	N12	-	-
		Plastic glas fibre reinforced GFRP		-	-	N13	-	-
		Plastic carbon fibre reinforced CFRP		-	-	N14	-	-
		Plastic aramid fibre reinforced AFRP		-	-	N15	-	-
		Graphite (tech.)		80 Shore	-	N16	-	-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1	-	-
			heat treated	280	943	S2	-	-
		Ni- or Co-alloyed	annealed	250	839	S3	-	-
			heat treated	350	1177	S4	-	-
			casting	320	1076	S5	-	-
	Titanium alloys	Pure titan		200	675	S6	-	-
		α- and β-alloys, heat treated		375	1262	S7	-	-
		β-alloys		410	1396	S8	-	-
	Wolfram alloys			300	1013	S9	-	-
	Molybdän alloys			300	1013	S10	-	-
H	Hardened steel	hardened		50 HRC	-	H1	14 - 18 - 22	-
		hardened		55 HRC	-	H2	10 - 13 - 16	-
		hardened		60 HRC	-	H3	8 - 11 - 13	-
	Hardened cast iron	hardened		55 HRC	-	H4	10 - 13 - 16	-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Feed per revolution fn (mm/U)						
Ø 1 - 3 mm	Ø 3 - 5 mm	Ø 5 - 8 mm	Ø 8 - 10 mm	Ø 10 - 12 mm	Ø 12 - 14 mm	Ø 14 - 20 mm
0,04 - 0,07 - 0,09	0,09 - 0,12 - 0,15	0,13 - 0,17 - 0,21	0,15 - 0,20 - 0,24	0,17 - 0,20 - 0,26	0,17 - 0,24 - 0,30	0,21 - 0,28 - 0,34
0,04 - 0,07 - 0,09	0,09 - 0,12 - 0,15	0,13 - 0,17 - 0,21	0,15 - 0,20 - 0,24	0,17 - 0,20 - 0,26	0,17 - 0,24 - 0,30	0,21 - 0,28 - 0,34
0,04 - 0,07 - 0,09	0,09 - 0,12 - 0,15	0,13 - 0,17 - 0,21	0,15 - 0,20 - 0,24	0,17 - 0,20 - 0,26	0,17 - 0,24 - 0,30	0,21 - 0,28 - 0,34
0,04 - 0,07 - 0,09	0,09 - 0,12 - 0,15	0,13 - 0,17 - 0,21	0,15 - 0,20 - 0,24	0,17 - 0,20 - 0,26	0,17 - 0,24 - 0,30	0,21 - 0,28 - 0,34
0,04 - 0,07 - 0,09	0,09 - 0,12 - 0,15	0,13 - 0,17 - 0,21	0,15 - 0,20 - 0,24	0,17 - 0,20 - 0,26	0,17 - 0,24 - 0,30	0,21 - 0,28 - 0,34
0,04 - 0,07 - 0,09	0,09 - 0,12 - 0,15	0,13 - 0,17 - 0,21	0,15 - 0,20 - 0,24	0,17 - 0,20 - 0,26	0,17 - 0,24 - 0,30	0,21 - 0,28 - 0,34
0,04 - 0,07 - 0,09	0,09 - 0,13 - 0,15	0,13 - 0,17 - 0,21	0,15 - 0,21 - 0,26	0,15 - 0,23 - 0,30	0,17 - 0,24 - 0,30	0,21 - 0,29 - 0,36
0,05 - 0,08 - 0,10	0,07 - 0,10 - 0,13	0,09 - 0,12 - 0,15	0,10 - 0,14 - 0,17	0,13 - 0,17 - 0,21	0,14 - 0,20 - 0,26	0,17 - 0,22 - 0,27
0,05 - 0,08 - 0,10	0,07 - 0,10 - 0,13	0,09 - 0,12 - 0,15	0,10 - 0,14 - 0,17	0,13 - 0,17 - 0,21	0,14 - 0,20 - 0,26	0,17 - 0,22 - 0,27
0,05 - 0,08 - 0,10	0,07 - 0,10 - 0,13	0,09 - 0,12 - 0,15	0,10 - 0,14 - 0,17	0,13 - 0,17 - 0,21	0,14 - 0,20 - 0,26	0,17 - 0,22 - 0,27
0,04 - 0,09 - 0,13	0,09 - 0,13 - 0,17	0,13 - 0,17 - 0,21	0,15 - 0,21 - 0,26	0,15 - 0,23 - 0,30	0,17 - 0,24 - 0,30	0,21 - 0,29 - 0,36
0,05 - 0,08 - 0,10	0,07 - 0,10 - 0,13	0,09 - 0,12 - 0,15	0,10 - 0,14 - 0,17	0,13 - 0,17 - 0,21	0,14 - 0,20 - 0,26	0,17 - 0,22 - 0,27
0,05 - 0,08 - 0,10	0,07 - 0,10 - 0,13	0,09 - 0,12 - 0,15	0,10 - 0,14 - 0,17	0,13 - 0,17 - 0,21	0,14 - 0,20 - 0,26	0,17 - 0,22 - 0,27
0,02 - 0,05 - 0,07	0,03 - 0,06 - 0,09	0,05 - 0,08 - 0,10	0,09 - 0,12 - 0,15	0,09 - 0,13 - 0,17	0,09 - 0,13 - 0,17	0,10 - 0,16 - 0,21
0,02 - 0,05 - 0,07	0,03 - 0,06 - 0,09	0,05 - 0,08 - 0,10	0,09 - 0,12 - 0,15	0,09 - 0,13 - 0,17	0,09 - 0,13 - 0,17	0,10 - 0,16 - 0,21
0,02 - 0,05 - 0,07	0,03 - 0,06 - 0,09	0,05 - 0,08 - 0,10	0,09 - 0,12 - 0,15	0,09 - 0,13 - 0,17	0,09 - 0,13 - 0,17	0,10 - 0,16 - 0,21
0,02 - 0,05 - 0,07	0,03 - 0,06 - 0,09	0,05 - 0,08 - 0,10	0,09 - 0,12 - 0,15	0,09 - 0,13 - 0,17	0,09 - 0,13 - 0,17	0,10 - 0,16 - 0,21
0,02 - 0,05 - 0,07	0,03 - 0,06 - 0,09	0,05 - 0,08 - 0,10	0,09 - 0,12 - 0,15	0,09 - 0,13 - 0,17	0,09 - 0,13 - 0,17	0,10 - 0,16 - 0,21
0,07 - 0,08 - 0,09	0,10 - 0,12 - 0,14	0,13 - 0,21 - 0,28	0,17 - 0,26 - 0,34	0,21 - 0,30 - 0,38	0,26 - 0,35 - 0,43	0,30 - 0,39 - 0,47
0,07 - 0,08 - 0,09	0,09 - 0,12 - 0,14	0,10 - 0,18 - 0,26	0,17 - 0,24 - 0,30	0,17 - 0,26 - 0,34	0,21 - 0,28 - 0,34	0,26 - 0,32 - 0,38
0,07 - 0,08 - 0,09	0,10 - 0,12 - 0,14	0,13 - 0,21 - 0,28	0,17 - 0,26 - 0,34	0,21 - 0,30 - 0,38	0,26 - 0,35 - 0,43	0,30 - 0,39 - 0,47
0,07 - 0,08 - 0,09	0,09 - 0,12 - 0,14	0,10 - 0,18 - 0,26	0,17 - 0,24 - 0,30	0,17 - 0,26 - 0,34	0,21 - 0,28 - 0,34	0,26 - 0,32 - 0,38
0,07 - 0,08 - 0,09	0,10 - 0,12 - 0,14	0,13 - 0,21 - 0,28	0,17 - 0,26 - 0,34	0,21 - 0,30 - 0,38	0,26 - 0,35 - 0,43	0,30 - 0,39 - 0,47
0,07 - 0,08 - 0,09	0,09 - 0,12 - 0,14	0,10 - 0,18 - 0,26	0,17 - 0,24 - 0,30	0,17 - 0,26 - 0,34	0,21 - 0,28 - 0,34	0,26 - 0,32 - 0,38
0,07 - 0,08 - 0,09	0,10 - 0,12 - 0,14	0,13 - 0,21 - 0,28	0,17 - 0,26 - 0,34	0,21 - 0,30 - 0,38	0,26 - 0,35 - 0,43	0,30 - 0,39 - 0,47
0,10 - 0,13 - 0,15	0,14 - 0,17 - 0,20	0,19 - 0,22 - 0,24	0,24 - 0,27 - 0,29	0,31 - 0,34 - 0,37	0,37 - 0,40 - 0,42	0,42 - 0,45 - 0,47
0,10 - 0,13 - 0,15	0,14 - 0,17 - 0,20	0,19 - 0,22 - 0,24	0,24 - 0,27 - 0,29	0,31 - 0,34 - 0,37	0,37 - 0,40 - 0,42	0,42 - 0,45 - 0,47
0,10 - 0,13 - 0,15	0,14 - 0,17 - 0,20	0,19 - 0,22 - 0,24	0,24 - 0,27 - 0,29	0,31 - 0,34 - 0,37	0,37 - 0,40 - 0,42	0,42 - 0,45 - 0,47
0,10 - 0,13 - 0,15	0,14 - 0,17 - 0,20	0,19 - 0,22 - 0,24	0,24 - 0,27 - 0,29	0,31 - 0,34 - 0,37	0,37 - 0,40 - 0,42	0,42 - 0,45 - 0,47
0,10 - 0,13 - 0,15	0,14 - 0,17 - 0,20	0,19 - 0,22 - 0,24	0,24 - 0,27 - 0,29	0,31 - 0,34 - 0,37	0,37 - 0,40 - 0,42	0,42 - 0,45 - 0,47
0,10 - 0,13 - 0,15	0,14 - 0,17 - 0,20	0,19 - 0,22 - 0,24	0,24 - 0,27 - 0,29	0,31 - 0,34 - 0,37	0,37 - 0,40 - 0,42	0,42 - 0,45 - 0,47
0,02 - 0,08 - 0,14	0,05 - 0,10 - 0,15	0,19 - 0,13 - 0,24	0,15 - 0,21 - 0,26	0,21 - 0,26 - 0,30	0,26 - 0,29 - 0,32	0,26 - 0,35 - 0,43
0,10 - 0,13 - 0,15	0,14 - 0,17 - 0,20	0,19 - 0,22 - 0,24	0,24 - 0,27 - 0,29	0,31 - 0,34 - 0,37	0,37 - 0,40 - 0,42	0,42 - 0,45 - 0,47
0,10 - 0,13 - 0,15	0,14 - 0,17 - 0,20	0,19 - 0,22 - 0,24	0,24 - 0,27 - 0,29	0,31 - 0,34 - 0,37	0,37 - 0,40 - 0,42	0,42 - 0,45 - 0,47
0,08 - 0,11 - 0,13	0,11 - 0,14 - 0,16	0,11 - 0,14 - 0,16	0,14 - 0,17 - 0,20	0,20 - 0,22 - 0,24	0,24 - 0,27 - 0,29	0,29 - 0,32 - 0,34
0,01 - 0,03 - 0,04	0,04 - 0,06 - 0,08	0,08 - 0,10 - 0,11	0,09 - 0,11 - 0,13	0,11 - 0,13 - 0,14	0,13 - 0,15 - 0,16	0,14 - 0,16 - 0,17
0,01 - 0,03 - 0,04	0,04 - 0,06 - 0,08	0,08 - 0,10 - 0,11	0,09 - 0,11 - 0,13	0,11 - 0,13 - 0,14	0,13 - 0,15 - 0,16	0,14 - 0,16 - 0,17
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
0,02 - 0,04 - 0,05	0,03 - 0,05 - 0,06	0,03 - 0,05 - 0,07	0,05 - 0,07 - 0,09	0,07 - 0,09 - 0,10	0,07 - 0,10 - 0,12	0,07 - 0,11 - 0,14
0,02 - 0,04 - 0,05	0,03 - 0,05 - 0,06	0,03 - 0,05 - 0,07	0,05 - 0,07 - 0,09	0,07 - 0,09 - 0,10	0,07 - 0,10 - 0,12	0,07 - 0,11 - 0,14
0,02 - 0,04 - 0,05	0,03 - 0,05 - 0,06	0,03 - 0,05 - 0,07	0,05 - 0,07 - 0,09	0,07 - 0,09 - 0,10	0,07 - 0,10 - 0,12	0,07 - 0,11 - 0,14
0,02 - 0,04 - 0,05	0,03 - 0,05 - 0,06	0,03 - 0,05 - 0,07	0,05 - 0,07 - 0,09	0,07 - 0,09 - 0,10	0,07 - 0,10 - 0,12	0,07 - 0,11 - 0,14
0,02 - 0,04 - 0,05	0,03 - 0,05 - 0,06	0,03 - 0,05 - 0,07	0,05 - 0,07 - 0,09	0,07 - 0,09 - 0,10	0,07 - 0,10 - 0,12	0,07 - 0,11 - 0,14
0,01 - 0,02 - 0,03	0,03 - 0,05 - 0,06	0,05 - 0,05 - 0,10	0,05 - 0,08 - 0,10	0,07 - 0,10 - 0,13	0,07 - 0,10 - 0,13	0,09 - 0,12 - 0,14
0,01 - 0,02 - 0,03	0,03 - 0,05 - 0,06	0,05 - 0,05 - 0,10	0,05 - 0,08 - 0,10	0,07 - 0,10 - 0,13	0,07 - 0,10 - 0,13	0,09 - 0,12 - 0,14
0,01 - 0,02 - 0,03	0,03 - 0,05 - 0,06	0,05 - 0,05 - 0,10	0,05 - 0,08 - 0,10	0,07 - 0,10 - 0,13	0,07 - 0,10 - 0,13	0,09 - 0,12 - 0,14
-	-	-	-	-	-	-
-	-	-	-	-	-	-
0,04 - 0,05 - 0,06	0,04 - 0,06 - 0,07	0,04 - 0,06 - 0,08	0,04 - 0,07 - 0,09	0,04 - 0,07 - 0,09	0,04 - 0,07 - 0,10	-
0,04 - 0,05 - 0,06	0,04 - 0,06 - 0,07	0,04 - 0,06 - 0,08	0,04 - 0,07 - 0,09	0,04 - 0,07 - 0,09	0,04 - 0,07 - 0,10	-
0,04 - 0,05 - 0,06	0,04 - 0,06 - 0,07	0,04 - 0,06 - 0,08	0,04 - 0,07 - 0,09	0,04 - 0,07 - 0,09	0,04 - 0,07 - 0,10	-
0,04 - 0,05 - 0,06	0,04 - 0,06 - 0,07	0,04 - 0,06 - 0,08	0,04 - 0,07 - 0,09	0,04 - 0,07 - 0,09	0,04 - 0,07 - 0,10	-

Recommended cutting data Solid carbide end-mill ≤ 10xD

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Cutting speed V_c (m/min) VHM uncoated	VHM TiAlN	DLC (Diamond)
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	70 - 77 - 84	100 - 110 - 120	-
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	70 - 77 - 84	100 - 110 - 120	-
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	56 - 63 - 70	80 - 90 - 100	-
		C > 0.55 %	annealed	190	639	P4	70 - 77 - 84	100 - 110 - 120	-
		C > 0.55 %	hardened and tempered	300	1013	P5	56 - 63 - 70	80 - 90 - 100	-
		Machining steel (short-chipping)	tempered	220	745	P6	70 - 77 - 84	100 - 110 - 120	-
	Low alloyed steel	annealed		175	591	P7	46 - 54 - 63	65 - 78 - 90	-
		hardened and tempered		300	1013	P8	35 - 42 - 49	50 - 60 - 70	-
		hardened and tempered		380	1282	P9	30 - 36 - 42	43 - 52 - 60	-
		hardened and tempered		430	1477	P10	30 - 36 - 42	43 - 52 - 60	-
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	46 - 54 - 63	65 - 78 - 90	-
		hardened		300	1013	P12	35 - 42 - 49	50 - 60 - 70	-
		hardened		400	1361	P13	30 - 36 - 42	43 - 52 - 60	-
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	32 - 37 - 42	45 - 53 - 60	-
		martensitic, hardened and tempered		330	1114	P15	25 - 30 - 35	35 - 43 - 50	-
M	Stainless steel	austenitic, chilled		200	675	M1	32 - 37 - 42	45 - 53 - 60	-
		austenitic, precipitation-hardened (PH)		300	1013	M2	25 - 30 - 35	35 - 43 - 50	-
		austenitic-ferritic, Duplex		230	778	M3	32 - 37 - 42	45 - 53 - 60	-
K	Malleable cast iron	ferritic		200	675	K1	63 - 77 - 91	90 - 110 - 130	-
		pearlitic		260	867	K2	49 - 54 - 60	70 - 78 - 85	-
	Cast iron	low tensile strength		180	602	K3	63 - 77 - 91	90 - 110 - 130	-
		high tensile strength / austenitic		245	825	K4	49 - 54 - 60	70 - 78 - 85	-
	Cast iron with nodular graphite	ferritic		155	518	K5	63 - 77 - 91	90 - 110 - 130	-
		pearlitic		265	885	K6	49 - 54 - 60	70 - 78 - 85	-
	GGV (CGI)			200	675	K7	63 - 77 - 91	90 - 110 - 130	-
N	Aluminium alloys long chipping	not heat treatable		30	-	N1	-	-	140 - 260 - 380
		heat treatable, heat treated		100	343	N2	-	-	141 - 260 - 380
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3	-	-	120 - 210 - 300
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4	-	-	120 - 210 - 300
		> 12 % Si, not heat treatable		130	447	N5	-	-	120 - 180 - 240
	Magnesium alloys			70	250	N6	-	-	140 - 260 - 380
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7	-	-	-
		Brass, Bronze		90	314	N8	-	-	120 - 180 - 240
		Cu-alloys, short-chipping		110	382	N9	-	-	140 - 260 - 380
		High-tensile, Ampco		300	1013	N10	-	-	120 - 180 - 240
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11	-	-	-
		Duroplastic (without abrasive filling material)		-	-	N12	-	-	-
		Plastic glas fibre reinforced GFRP		-	-	N13	-	-	-
		Plastic carbon fibre reinforced CFRP		-	-	N14	-	-	-
		Plastic aramid fibre reinforced AFRP		-	-	N15	-	-	-
		Graphite (tech.)		80 Shore	-	N16	-	-	-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1		15 - 24 - 33	-
			heat treated	280	943	S2		15 - 24 - 33	-
		Ni- or Co-alloyed	annealed	250	839	S3		15 - 24 - 33	-
			heat treated	350	1177	S4		15 - 24 - 33	-
			casting	320	1076	S5		15 - 24 - 33	-
	Titanium alloys	Pure titan		200	675	S6		15 - 24 - 33	-
		α- and β-alloys, heat treated		375	1262	S7		15 - 24 - 33	-
		β-alloys		410	1396	S8		15 - 24 - 33	-
	Wolfram alloys			300	1013	S9	-	-	-
	Molybdän alloys			300	1013	S10	-	-	-
H	Hardened steel	hardened		50 HRC	-	H1	-	-	-
		hardened		55 HRC	-	H2	-	-	-
		hardened		60 HRC	-	H3	-	-	-
	Hardened cast iron	hardened		55 HRC	-	H4	-	-	-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

PM-HSS TiAlN	Feed per revolution fn (mm/U)					
	Ø 1 - 3 mm	Ø 3 - 5 mm	Ø 5 - 8 mm	Ø 8 - 10 mm	Ø 10 - 12 mm	Ø 12 - 14 mm
40 - 50 - 60	0,04 - 0,06 - 0,07	0,07 - 0,10 - 0,13	0,11 - 0,15 - 0,18	0,13 - 0,17 - 0,20	0,14 - 0,18 - 0,21	0,14 - 0,20 - 0,25
40 - 50 - 60	0,04 - 0,06 - 0,07	0,07 - 0,10 - 0,13	0,11 - 0,15 - 0,18	0,13 - 0,17 - 0,20	0,14 - 0,18 - 0,21	0,14 - 0,20 - 0,25
40 - 50 - 60	0,04 - 0,06 - 0,07	0,07 - 0,10 - 0,13	0,11 - 0,15 - 0,18	0,13 - 0,17 - 0,20	0,14 - 0,18 - 0,21	0,14 - 0,20 - 0,25
40 - 50 - 60	0,04 - 0,06 - 0,07	0,07 - 0,10 - 0,13	0,11 - 0,15 - 0,18	0,13 - 0,17 - 0,20	0,14 - 0,18 - 0,21	0,14 - 0,20 - 0,25
30 - 34 - 38	0,04 - 0,06 - 0,07	0,07 - 0,10 - 0,13	0,11 - 0,15 - 0,18	0,13 - 0,17 - 0,20	0,14 - 0,18 - 0,21	0,14 - 0,20 - 0,25
40 - 50 - 60	0,04 - 0,06 - 0,07	0,07 - 0,10 - 0,13	0,11 - 0,15 - 0,18	0,13 - 0,17 - 0,20	0,14 - 0,18 - 0,21	0,14 - 0,20 - 0,25
40 - 50 - 60	0,04 - 0,08 - 0,11	0,07 - 0,11 - 0,14	0,11 - 0,15 - 0,18	0,13 - 0,17 - 0,20	0,13 - 0,19 - 0,25	0,14 - 0,20 - 0,25
30 - 34 - 38	0,04 - 0,06 - 0,08	0,06 - 0,09 - 0,11	0,07 - 0,10 - 0,13	0,10 - 0,13 - 0,14	0,11 - 0,15 - 0,18	0,11 - 0,16 - 0,21
30 - 34 - 38	0,04 - 0,06 - 0,08	0,06 - 0,09 - 0,11	0,07 - 0,10 - 0,13	0,08 - 0,11 - 0,14	0,11 - 0,15 - 0,18	0,11 - 0,16 - 0,21
30 - 34 - 38	0,04 - 0,06 - 0,08	0,06 - 0,09 - 0,11	0,07 - 0,10 - 0,13	0,08 - 0,11 - 0,14	0,11 - 0,15 - 0,18	0,11 - 0,16 - 0,21
30 - 34 - 38	0,04 - 0,08 - 0,11	0,07 - 0,11 - 0,14	0,11 - 0,15 - 0,18	0,13 - 0,17 - 0,21	0,13 - 0,19 - 0,25	0,14 - 0,20 - 0,25
30 - 34 - 38	0,04 - 0,06 - 0,07	0,06 - 0,09 - 0,11	0,07 - 0,10 - 0,13	0,08 - 0,11 - 0,14	0,11 - 0,15 - 0,18	0,11 - 0,16 - 0,21
30 - 34 - 38	0,04 - 0,06 - 0,07	0,06 - 0,09 - 0,11	0,07 - 0,10 - 0,13	0,08 - 0,11 - 0,14	0,11 - 0,15 - 0,18	0,11 - 0,16 - 0,21
20 - 23 - 25	0,01 - 0,04 - 0,06	0,03 - 0,05 - 0,07	0,04 - 0,06 - 0,08	0,06 - 0,08 - 0,13	0,07 - 0,11 - 0,14	0,07 - 0,11 - 0,14
10 - 13 - 15	0,01 - 0,04 - 0,06	0,03 - 0,05 - 0,07	0,04 - 0,06 - 0,08	0,07 - 0,10 - 0,13	0,07 - 0,11 - 0,14	0,07 - 0,11 - 0,14
20 - 23 - 25	0,01 - 0,04 - 0,06	0,03 - 0,05 - 0,07	0,04 - 0,06 - 0,08	0,07 - 0,10 - 0,13	0,07 - 0,11 - 0,14	0,07 - 0,11 - 0,14
10 - 13 - 15	0,01 - 0,04 - 0,06	0,03 - 0,05 - 0,07	0,04 - 0,06 - 0,08	0,07 - 0,10 - 0,13	0,07 - 0,11 - 0,14	0,07 - 0,11 - 0,14
20 - 23 - 25	0,01 - 0,04 - 0,06	0,03 - 0,05 - 0,07	0,04 - 0,06 - 0,08	0,07 - 0,10 - 0,13	0,07 - 0,11 - 0,14	0,07 - 0,11 - 0,14
55 - 63 - 70	0,06 - 0,07 - 0,07	0,08 - 0,10 - 0,11	0,11 - 0,17 - 0,23	0,14 - 0,21 - 0,28	0,18 - 0,25 - 0,32	0,21 - 0,28 - 0,35
45 - 55 - 65	0,06 - 0,07 - 0,07	0,07 - 0,09 - 0,11	0,08 - 0,15 - 0,21	0,14 - 0,20 - 0,25	0,14 - 0,21 - 0,28	0,18 - 0,23 - 0,28
55 - 63 - 70	0,06 - 0,07 - 0,07	0,08 - 0,10 - 0,11	0,11 - 0,17 - 0,23	0,14 - 0,21 - 0,28	0,18 - 0,25 - 0,32	0,21 - 0,28 - 0,35
45 - 55 - 65	0,06 - 0,07 - 0,07	0,07 - 0,09 - 0,11	0,08 - 0,15 - 0,21	0,14 - 0,20 - 0,25	0,14 - 0,21 - 0,28	0,18 - 0,23 - 0,28
55 - 63 - 70	0,06 - 0,07 - 0,07	0,08 - 0,10 - 0,11	0,11 - 0,17 - 0,23	0,14 - 0,21 - 0,28	0,18 - 0,25 - 0,32	0,21 - 0,28 - 0,35
45 - 55 - 65	0,06 - 0,07 - 0,07	0,07 - 0,09 - 0,11	0,08 - 0,15 - 0,21	0,14 - 0,20 - 0,25	0,14 - 0,21 - 0,28	0,18 - 0,23 - 0,28
55 - 63 - 70	0,06 - 0,07 - 0,07	0,08 - 0,10 - 0,11	0,11 - 0,17 - 0,23	0,14 - 0,21 - 0,28	0,18 - 0,25 - 0,32	0,21 - 0,28 - 0,35
-	0,08 - 0,11 - 0,13	0,12 - 0,14 - 0,16	0,15 - 0,18 - 0,20	0,20 - 0,22 - 0,24	0,26 - 0,28 - 0,30	0,30 - 0,32 - 0,34
-	0,08 - 0,11 - 0,13	0,12 - 0,14 - 0,16	0,15 - 0,18 - 0,20	0,20 - 0,22 - 0,24	0,26 - 0,28 - 0,30	0,30 - 0,32 - 0,34
-	0,08 - 0,11 - 0,13	0,12 - 0,14 - 0,16	0,15 - 0,18 - 0,20	0,20 - 0,22 - 0,24	0,26 - 0,28 - 0,30	0,30 - 0,32 - 0,34
-	0,08 - 0,11 - 0,13	0,12 - 0,14 - 0,16	0,15 - 0,18 - 0,20	0,20 - 0,22 - 0,24	0,26 - 0,28 - 0,30	0,30 - 0,32 - 0,34
-	0,08 - 0,11 - 0,13	0,12 - 0,14 - 0,16	0,15 - 0,18 - 0,20	0,20 - 0,22 - 0,24	0,26 - 0,28 - 0,30	0,30 - 0,32 - 0,34
-	0,08 - 0,11 - 0,13	0,12 - 0,14 - 0,16	0,15 - 0,18 - 0,20	0,20 - 0,22 - 0,24	0,26 - 0,28 - 0,30	0,30 - 0,32 - 0,34
-	0,01 - 0,06 - 0,11	0,04 - 0,09 - 0,13	0,07 - 0,11 - 0,14	0,13 - 0,17 - 0,21	0,18 - 0,22 - 0,25	0,21 - 0,24 - 0,27
-	0,08 - 0,11 - 0,13	0,12 - 0,14 - 0,16	0,15 - 0,18 - 0,22	0,20 - 0,22 - 0,24	0,26 - 0,28 - 0,30	0,30 - 0,32 - 0,34
-	0,08 - 0,11 - 0,13	0,12 - 0,14 - 0,16	0,15 - 0,18 - 0,23	0,20 - 0,22 - 0,24	0,26 - 0,28 - 0,30	0,30 - 0,32 - 0,34
-	0,06 - 0,09 - 0,11	0,09 - 0,11 - 0,13	0,09 - 0,11 - 0,13	0,12 - 0,14 - 0,16	0,16 - 0,18 - 0,20	0,20 - 0,22 - 0,24
-	0,01 - 0,03 - 0,04	0,04 - 0,05 - 0,06	0,06 - 0,08 - 0,09	0,08 - 0,10 - 0,11	0,09 - 0,11 - 0,12	0,11 - 0,12 - 0,13
-	0,01 - 0,03 - 0,04	0,04 - 0,05 - 0,06	0,06 - 0,08 - 0,09	0,08 - 0,10 - 0,11	0,09 - 0,11 - 0,12	0,11 - 0,12 - 0,13
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	0,01 - 0,03 - 0,04	0,02 - 0,04 - 0,05	0,03 - 0,05 - 0,06	0,04 - 0,06 - 0,07	0,06 - 0,07 - 0,08	0,06 - 0,08 - 0,10
-	0,01 - 0,03 - 0,04	0,02 - 0,04 - 0,05	0,03 - 0,05 - 0,06	0,04 - 0,06 - 0,07	0,06 - 0,07 - 0,08	0,06 - 0,08 - 0,10
6 - 9 - 12	0,01 - 0,03 - 0,04	0,02 - 0,04 - 0,05	0,03 - 0,05 - 0,06	0,04 - 0,06 - 0,07	0,06 - 0,07 - 0,08	0,06 - 0,08 - 0,10
6 - 9 - 12	0,01 - 0,03 - 0,04	0,02 - 0,04 - 0,05	0,03 - 0,05 - 0,06	0,04 - 0,06 - 0,07	0,06 - 0,07 - 0,08	0,06 - 0,08 - 0,10
6 - 9 - 12	0,01 - 0,03 - 0,04	0,02 - 0,04 - 0,05	0,03 - 0,05 - 0,06	0,04 - 0,06 - 0,07	0,06 - 0,07 - 0,08	0,06 - 0,08 - 0,10
7 - 9 - 11	0,01 - 0,02 - 0,03	0,02 - 0,04 - 0,05	0,04 - 0,06 - 0,08	0,04 - 0,06 - 0,08	0,06 - 0,09 - 0,11	0,06 - 0,09 - 0,11
7 - 9 - 11	0,01 - 0,02 - 0,03	0,02 - 0,04 - 0,05	0,04 - 0,06 - 0,08	0,04 - 0,06 - 0,08	0,06 - 0,09 - 0,11	0,06 - 0,09 - 0,11
7 - 9 - 11	0,01 - 0,02 - 0,03	0,02 - 0,04 - 0,05	0,04 - 0,06 - 0,08	0,04 - 0,06 - 0,08	0,06 - 0,09 - 0,11	0,06 - 0,09 - 0,11
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Recommended cutting data Solid carbide end-mill > 10xD

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Cutting speed V_c (m/min) VHM TiAlN
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	90 - 100 - 110
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	75 - 88 - 100
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	75 - 88 - 100
		C > 0.55 %	annealed	190	639	P4	75 - 88 - 100
		C > 0.55 %	hardened and tempered	300	1013	P5	75 - 85 - 95
		Machining steel (short-chipping)	tempered	220	745	P6	75 - 88 - 100
	Low alloyed steel	annealed		175	591	P7	70 - 83 - 95
		hardened and tempered		300	1013	P8	70 - 83 - 95
		hardened and tempered		380	1282	P9	55 - 65 - 75
		hardened and tempered		430	1477	P10	55 - 65 - 75
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	70 - 83 - 95
		hardened		300	1013	P12	70 - 83 - 95
		hardened		400	1361	P13	55 - 65 - 75
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	70 - 73 - 75
		martensitic, hardened and tempered		330	1114	P15	45 - 53 - 60
M	Stainless steel	austenitic, chilled		200	675	M1	50 - 58 - 65
		austenitic, precipitation-hardened (PH)		300	1013	M2	35 - 43 - 50
		austenitic-ferritic, Duplex		230	778	M3	45 - 53 - 60
K	Malleable cast iron	ferritic		200	675	K1	80 - 93 - 105
		pearlitic		260	867	K2	75 - 88 - 100
	Cast iron	low tensile strength		180	602	K3	85 - 95 - 105
		high tensile strength / austenitic		245	825	K4	75 - 88 - 100
	Cast iron with nodular graphite	ferritic		155	518	K5	80 - 93 - 105
		pearlitic		265	885	K6	75 - 88 - 100
	GGV (CGI)			200	675	K7	80 - 93 - 105
N	Aluminium alloys long chipping	not heat treatable		30	-	N1	-
		heat treatable, heat treated		100	343	N2	-
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3	-
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4	-
		> 12 % Si, not heat treatable		130	447	N5	-
	Magnesium alloys			70	250	N6	-
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7	-
		Brass, Bronze		90	314	N8	-
		Cu-alloys, short-chipping		110	382	N9	-
		High-tensile, Ampco		300	1013	N10	-
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11	-
		Duroplastic (without abrasive filling material)		-	-	N12	-
		Plastic glas fibre reinforced GFRP		-	-	N13	-
		Plastic carbon fibre reinforced CFRP		-	-	N14	-
		Plastic aramid fibre reinforced AFRP		-	-	N15	-
		Graphite (tech.)		80 Shore	-	N16	-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1	-
			heat treated	280	943	S2	-
		Ni- or Co-alloyed	annealed	250	839	S3	-
			heat treated	350	1177	S4	-
			casting	320	1076	S5	-
	Titanium alloys	Pure titan		200	675	S6	-
		α- and β-alloys, heat treated		375	1262	S7	-
		β-alloys		410	1396	S8	-
	Wolfram alloys			300	1013	S9	-
	Molybdän alloys			300	1013	S10	-
H	Hardened steel	hardened		50 HRC	-	H1	-
		hardened		55 HRC	-	H2	-
		hardened		60 HRC	-	H3	-
	Hardened cast iron	hardened		55 HRC	-	H4	-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

SP

	Feed per revolution fn (mm/U)			
	Ø 3 - 5 mm	Ø 5 - 8 mm	Ø 8 - 10 mm	Ø 10 - 12 mm
	0,11 - 0,14 - 0,17	0,17 - 0,20 - 0,23	0,24 - 0,27 - 0,30	0,32 - 0,35 - 0,38
	0,07 - 0,10 - 0,13	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,23 - 0,26 - 0,28
	0,07 - 0,10 - 0,13	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,23 - 0,26 - 0,28
	0,07 - 0,10 - 0,13	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,23 - 0,26 - 0,28
	0,07 - 0,10 - 0,13	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,23 - 0,26 - 0,28
	0,07 - 0,10 - 0,13	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,23 - 0,26 - 0,28
	0,11 - 0,14 - 0,17	0,17 - 0,20 - 0,23	0,24 - 0,27 - 0,30	0,23 - 0,26 - 0,28
	0,07 - 0,10 - 0,13	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,23 - 0,26 - 0,28
	0,07 - 0,10 - 0,13	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,23 - 0,26 - 0,28
	0,07 - 0,10 - 0,13	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,23 - 0,26 - 0,28
	0,11 - 0,14 - 0,17	0,17 - 0,20 - 0,23	0,24 - 0,27 - 0,30	0,32 - 0,35 - 0,38
	0,07 - 0,10 - 0,13	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,23 - 0,26 - 0,28
	0,07 - 0,10 - 0,13	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23	0,23 - 0,26 - 0,28
	0,05 - 0,08 - 0,11	0,09 - 0,12 - 0,15	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23
	0,05 - 0,08 - 0,11	0,09 - 0,12 - 0,15	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23
	0,05 - 0,08 - 0,11	0,09 - 0,12 - 0,15	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23
	0,05 - 0,08 - 0,11	0,09 - 0,12 - 0,15	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23
	0,05 - 0,08 - 0,11	0,09 - 0,12 - 0,15	0,12 - 0,15 - 0,18	0,17 - 0,20 - 0,23
	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,32 - 0,35 - 0,38	0,37 - 0,40 - 0,43
	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,32 - 0,35 - 0,38	0,37 - 0,40 - 0,43
	0,20 - 0,23 - 0,26	0,30 - 0,33 - 0,36	0,39 - 0,42 - 0,45	0,47 - 0,50 - 0,53
	0,20 - 0,23 - 0,26	0,30 - 0,33 - 0,36	0,39 - 0,42 - 0,45	0,47 - 0,50 - 0,53
	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,32 - 0,35 - 0,38	0,37 - 0,40 - 0,43
	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,32 - 0,35 - 0,38	0,35 - 0,38 - 0,43
	0,17 - 0,20 - 0,23	0,22 - 0,25 - 0,28	0,32 - 0,35 - 0,38	0,37 - 0,40 - 0,43
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Recommended cutting data Solid carbide end-mill – NC spot drills

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Cutting speed V_c (m/min) VHM TiAlN	Cutting speed V_c (m/min) PM-HSS TiAlN
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	40 - 44 - 48	20 - 25 - 30
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	40 - 44 - 48	20 - 25 - 30
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	40 - 44 - 48	20 - 25 - 30
		C > 0.55 %	annealed	190	639	P4	40 - 44 - 48	20 - 25 - 30
		C > 0.55 %	hardened and tempered	300	1013	P5	35 - 40 - 45	15 - 23 - 30
		Machining steel (short-chipping)	tempered	220	745	P6	38 - 42 - 46	25 - 30 - 35
	Low alloyed steel	annealed		175	591	P7	22 - 26 - 30	10 - 15 - 20
		hardened and tempered		300	1013	P8	18 - 22 - 26	8 - 12 - 16
		hardened and tempered		380	1282	P9	18 - 22 - 26	8 - 12 - 16
		hardened and tempered		430	1477	P10	18 - 22 - 26	8 - 12 - 16
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	18 - 22 - 26	12 - 16 - 20
		hardened		300	1013	P12	12 - 16 - 20	-
		hardened		400	1361	P13	12 - 16 - 20	-
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	14 - 18 - 22	6 - 10 - 14
		martensitic, hardened and tempered		330	1114	P15	8 - 12 - 16	4 - 8 - 12
M	Stainless steel	austenitic, chilled		200	675	M1	14 - 18 - 22	6 - 10 - 14
		austenitic, precipitation-hardened (PH)		300	1013	M2	8 - 12 - 16	4 - 8 - 12
		austenitic-ferritic, Duplex		230	778	M3	10 - 15 - 20	2 - 6 - 10
K	Malleable cast iron	ferritic		200	675	K1	29 - 33 - 37	21 - 25 - 29
		pearlitic		260	867	K2	24 - 28 - 32	16 - 20 - 24
	Cast iron	low tensile strength		180	602	K3	34 - 38 - 42	26 - 30 - 34
		high tensile strength / austenitic		245	825	K4	31 - 35 - 39	26 - 30 - 34
	Cast iron with nodular graphite	ferritic		155	518	K5	29 - 33 - 37	20 - 25 - 30
		pearlitic		265	885	K6	24 - 28 - 32	15 - 20 - 25
	GGV (CGI)			200	675	K7	-	-
N	Aluminium alloys long chipping	not heat treatable		30	-	N1	-	-
		heat treatable, heat treated		100	343	N2	-	-
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3	-	-
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4	-	-
		> 12 % Si, not heat treatable		130	447	N5	-	-
	Magnesium alloys			70	250	N6	70 - 80 - 90	60 - 70 - 80
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7	65 - 70 - 75	55 - 60 - 65
		Brass, Bronze		90	314	N8	70 - 75 - 80	55 - 60 - 65
		Cu-alloys, short-chipping		110	382	N9	40 -45 - 50	25 - 30 - 35
		High-tensile, Ampco		300	1013	N10	15 - 20 - 25	8 - 12 - 16
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11	20 - 25 - 30	14 - 18 - 22
		Duroplastic (without abrasive filling material)		-	-	N12	35 - 40 - 45	24 - 28 - 32
		Plastic glas fibre reinforced GFRP		-	-	N13	-	-
		Plastic carbon fibre reinforced CFRP		-	-	N14	-	-
		Plastic aramid fibre reinforced AFRP		-	-	N15	-	-
		Graphite (tech.)		80 Shore	-	N16	-	-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1	4 - 7 - 10	-
			heat treated	280	943	S2	4 - 7 - 10	-
		Ni- or Co-alloyed	annealed	250	839	S3	4 - 7 - 10	-
			heat treated	350	1177	S4	4 - 7 - 10	-
			casting	320	1076	S5	4 - 7 - 10	-
	Titanium alloys	Pure titan		200	675	S6	7 - 10 - 13	-
		α- and β-alloys, heat treated		375	1262	S7	5 - 8 - 11	-
		β-alloys		410	1396	S8	5 - 8 - 11	-
	Wolfram alloys			300	1013	S9	-	-
	Molybdän alloys			300	1013	S10	-	-
H	Hardened steel	hardened		50 HRC	-	H1	-	-
		hardened		55 HRC	-	H2	-	-
		hardened		60 HRC	-	H3	-	-
	Hardened cast iron	hardened		55 HRC	-	H4	-	-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

	Feed per revolution fn (mm/U)						
	Ø 1 - 3 mm	Ø 3 - 5 mm	Ø 5 - 8 mm	Ø 8 - 10 mm	Ø 10 - 12 mm	Ø 12 - 14 mm	Ø 14 - 20 mm
	0,01 - 0,04 - 0,06	0,08 - 0,09 - 0,10	0,12 - 0, 14 - 0, 16	0,16 - 0,20 - 0,24	0,16 - 0,20 - 0,24	0,21 - 0,25 - 0,29	0,26 - 0,30 - 0,34
	0,01 - 0,04 - 0,06	0,08 - 0,09 - 0,10	0,12 - 0, 14 - 0, 16	0,16 - 0,20 - 0,24	0,16 - 0,20 - 0,24	0,21 - 0,25 - 0,29	0,26 - 0,30 - 0,34
	0,01 - 0,04 - 0,06	0,08 - 0,09 - 0,10	0,12 - 0, 14 - 0, 16	0,16 - 0,20 - 0,24	0,16 - 0,20 - 0,24	0,21 - 0,25 - 0,29	0,26 - 0,30 - 0,34
	0,01 - 0,04 - 0,06	0,08 - 0,09 - 0,10	0,12 - 0, 14 - 0, 16	0,16 - 0,20 - 0,24	0,16 - 0,20 - 0,24	0,21 - 0,25 - 0,29	0,26 - 0,30 - 0,34
	0,01 - 0,04 - 0,06	0,08 - 0,09 - 0,10	0,12 - 0, 14 - 0, 16	0,16 - 0,20 - 0,24	0,16 - 0,20 - 0,24	0,21 - 0,25 - 0,29	0,26 - 0,30 - 0,34
	0,01 - 0,04 - 0,06	0,08 - 0,09 - 0,10	0,12 - 0, 14 - 0, 16	0,16 - 0,20 - 0,24	0,16 - 0,20 - 0,24	0,21 - 0,25 - 0,29	0,26 - 0,30 - 0,34
	0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0, 12	0,12 - 0,16 - 0,20	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24	0,21 - 0,25 - 0,29
	0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,07	0,08 - 0,09 - 0,10	0,08 - 0,12 - 0,16	0,08 - 0,12 - 0,16	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24
	0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,07	0,08 - 0,09 - 0,10	0,08 - 0,12 - 0,16	0,08 - 0,12 - 0,16	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24
	0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,07	0,08 - 0,09 - 0,10	0,08 - 0,12 - 0,16	0,08 - 0,12 - 0,16	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24
	0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0, 12	0,12 - 0,16 - 0,20	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24	0,21 - 0,25 - 0,29
	0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,07	0,08 - 0,09 - 0,10	0,08 - 0,12 - 0,16	0,08 - 0,12 - 0,16	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24
	0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,07	0,08 - 0,09 - 0,10	0,08 - 0,12 - 0,16	0,08 - 0,12 - 0,16	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24
	0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,07	0,08 - 0,09 - 0,10	0,08 - 0,12 - 0,16	0,08 - 0,12 - 0,16	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24
	0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,07	0,08 - 0,09 - 0,10	0,08 - 0,12 - 0,16	0,08 - 0,12 - 0,16	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24
	0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,07	0,08 - 0,09 - 0,10	0,08 - 0,12 - 0,16	0,08 - 0,12 - 0,16	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24
	0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,07	0,08 - 0,09 - 0,10	0,08 - 0,12 - 0,16	0,08 - 0,12 - 0,16	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24
	0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,07	0,08 - 0,09 - 0,10	0,08 - 0,12 - 0,16	0,08 - 0,12 - 0,16	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24
	0,01 - 0,05 - 0,08	0,10 - 0, 11 - 0,12	0,16 - 0,18 - 0,20	0,21 - 0,25 - 0,29	0,21 - 0,25 - 0,29	0,27 - 0,31 - 0,35	0,36 - 0,40 - 0, 44
	0,01 - 0,05 - 0,08	0,10 - 0, 11 - 0,12	0,16 - 0,18 - 0,20	0,21 - 0,25 - 0,29	0,21 - 0,25 - 0,29	0,27 - 0,31 - 0,35	0,36 - 0,40 - 0, 44
	0,01 - 0,05 - 0,08	0,10 - 0, 11 - 0,12	0,16 - 0,18 - 0,20	0,21 - 0,25 - 0,29	0,21 - 0,25 - 0,29	0,27 - 0,31 - 0,35	0,36 - 0,40 - 0, 44
	0,01 - 0,05 - 0,08	0,10 - 0, 11 - 0,12	0,16 - 0,18 - 0,20	0,21 - 0,25 - 0,29	0,21 - 0,25 - 0,29	0,27 - 0,31 - 0,35	0,36 - 0,40 - 0, 44
	0,01 - 0,05 - 0,08	0,10 - 0, 11 - 0,12	0,16 - 0,18 - 0,20	0,21 - 0,25 - 0,29	0,21 - 0,25 - 0,29	0,27 - 0,31 - 0,35	0,36 - 0,40 - 0, 44
	0,01 - 0,05 - 0,08	0,10 - 0, 11 - 0,12	0,16 - 0,18 - 0,20	0,21 - 0,25 - 0,29	0,21 - 0,25 - 0,29	0,27 - 0,31 - 0,35	0,36 - 0,40 - 0, 44
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	0,01 - 0,05 - 0,08	0,10 - 0, 11 - 0,12	0,16 - 0,18 - 0,20	0,22 - 0,25 - 0,27	0,22 - 0,25 - 0,27	0,29 - 0,31 - 0,33	0,38 - 0,40 - 0,42
	0,01 - 0,05 - 0,08	0,10 - 0, 11 - 0,12	0,16 - 0,18 - 0,20	0,22 - 0,25 - 0,27	0,22 - 0,25 - 0,27	0,29 - 0,31 - 0,33	0,38 - 0,40 - 0,42
	0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0, 12	0,12 - 0,16 - 0,20	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24	0,21 - 0,25 - 0,29
	0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0, 12	0,12 - 0,16 - 0,20	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24	0,21 - 0,25 - 0,29
	0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0, 12	0,12 - 0,16 - 0,20	0,12 - 0,16 - 0,20	0,16 - 0,20 - 0,24	0,21 - 0,25 - 0,29
	0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0, 12	0,14 - 0,16 - 0,18	0,14 - 0,16 - 0,18	0,18 - 0,20 - 0,22	0,23 - 0,25 - 0, 27
	0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0, 12	0,14 - 0,16 - 0,18	0,14 - 0,16 - 0,18	0,18 - 0,20 - 0,22	0,23 - 0,25 - 0, 27
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	0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,07 - 0,08	0,07 - 0,08 - 0,09	0,07 - 0,08 - 0,09	0,10 - 0,11 - 0,12	0,10 - 0,13 - 0,16
	0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,07 - 0,08	0,07 - 0,08 - 0,09	0,07 - 0,08 - 0,09	0,10 - 0,11 - 0,12	0,10 - 0,13 - 0,16
	0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,07 - 0,08	0,07 - 0,08 - 0,09	0,07 - 0,08 - 0,09	0,10 - 0,11 - 0,12	0,10 - 0,13 - 0,16
	0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,07 - 0,08	0,07 - 0,08 - 0,09	0,07 - 0,08 - 0,09	0,10 - 0,11 - 0,12	0,10 - 0,13 - 0,16
	0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,07 - 0,08	0,07 - 0,08 - 0,09	0,07 - 0,08 - 0,09	0,10 - 0,11 - 0,12	0,10 - 0,13 - 0,16
	0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,07 - 0,08	0,07 - 0,08 - 0,09	0,07 - 0,08 - 0,09	0,10 - 0,11 - 0,12	0,10 - 0,13 - 0,16
	0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,07 - 0,08	0,07 - 0,08 - 0,09	0,07 - 0,08 - 0,09	0,10 - 0,11 - 0,12	0,10 - 0,13 - 0,16
	0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,07 - 0,08	0,07 - 0,08 - 0,09	0,07 - 0,08 - 0,09	0,10 - 0,11 - 0,12	0,10 - 0,13 - 0,16
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Recommended cutting data Solid carbide end-mill – Centre drills

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Cutting speed V_c (m/min) VHM TiAlN	Cutting speed V_c (m/min) PM-HSS TiAlN
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	25 - 30 - 35	20 - 25 - 30
		C > 0.25 … ≤ 0.55 %	annealed	190	639	P2	25 - 30 - 35	20 - 25 - 30
		C > 0.25 … ≤ 0.55 %	hardened and tempered	210	708	P3	25 - 30 - 35	20 - 25 - 30
		C > 0.55 %	annealed	190	639	P4	25 - 30 - 35	20 - 25 - 30
		C > 0.55 %	hardened and tempered	300	1013	P5	20 - 25 - 30	15 - 20 - 25
		Machining steel (short-chipping)	tempered	220	745	P6	30 -35 - 40	25 - 30 - 35
	Low alloyed steel	annealed		175	591	P7	14 - 18 - 22	10 - 15 - 20
		hardened and tempered		300	1013	P8	14 - 18 - 22	10 - 15 - 20
		hardened and tempered		380	1282	P9	8 - 10 - 12	4 - 8 - 12
		hardened and tempered		430	1477	P10	8 - 10 - 12	4 - 8 - 12
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	8 - 10 - 12	8 - 10 - 12
		hardened		300	1013	P12	8 - 10 - 12	8 - 10 - 12
		hardened		400	1361	P13	4 - 8 - 12	4 - 6 - 8
	Stainless steel	ferritic / martensitic, annealed		200	675	P14	12 - 15 - 18	8 - 10 - 12
		martensitic, hardened and tempered		330	1114	P15	4 - 8 - 12	4 - 6 - 8
M	Stainless steel	austenitic, chilled		200	675	M1	12 - 15 - 18	8 - 10 - 12
		austenitic, precipitation-hardened (PH)		300	1013	M2	8 - 10 - 12	4 - 8 - 12
		austenitic-ferritic, Duplex		230	778	M3	12 - 15 - 18	8 - 10 - 12
K	Malleable cast iron	ferritic		200	675	K1	25 - 30 - 35	20 - 25 - 30
		pearlitic		260	867	K2	20 - 25 - 30	15 - 20 - 25
	Cast iron	low tensile strength		180	602	K3	25 - 30 - 35	20 - 25 - 30
		high tensile strength / austenitic		245	825	K4	25 - 30 - 35	20 - 25 - 30
	Cast iron with nodular graphite	ferritic		155	518	K5	25 - 30 - 35	20 - 25 - 30
		pearlitic		265	885	K6	20 - 25 - 30	15 - 20 - 25
	GGV (CGI)			200	675	K7	-	-
N	Aluminium alloys long chipping	not heat treatable		30	-	N1	-	-
		heat treatable, heat treated		100	343	N2	-	-
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3	-	-
		≤ 12 % Si, aushärtbar, ausgehärtet		90	314	N4	-	-
		> 12 % Si, not heat treatable		130	447	N5	-	-
	Magnesium alloys			70	250	N6	65 - 70 - 75	55 - 60 - 65
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7	55 - 60 - 65	45 - 50 - 55
		Brass, Bronze		90	314	N8	65 - 70 - 75	55 - 60 - 65
		Cu-alloys, short-chipping		110	382	N9	30 - 35 - 40	25 - 30 - 35
		High-tensile, Ampco		300	1013	N10	18 - 20 - 22	12 - 15 - 18
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11	25 - 30 - 35	20 - 25 - 30
		Duroplastic (without abrasive filling material)		-	-	N12	15 - 20 - 25	12 - 15 - 18
		Plastic glas fibre reinforced GFRP		-	-	N13	-	-
		Plastic carbon fibre reinforced CFRP		-	-	N14	-	-
		Plastic aramid fibre reinforced AFRP		-	-	N15	-	-
		Graphite (tech.)		80 Shore	-	N16	-	-
S	High temperature resistant alloys	Fe-Basis	annealed	200	675	S1	4 - 6 - 8	2 - 3 - 4
			heat treated	280	943	S2	4 - 6 - 8	2 - 3 - 4
		Ni- or Co-alloyed	annealed	250	839	S3	4 - 6 - 8	2 - 3 - 4
			heat treated	350	1177	S4	4 - 6 - 8	2 - 3 - 4
			casting	320	1076	S5	4 - 6 - 8	2 - 3 - 4
	Titanium alloys	Pure titan		200	675	S6	4 - 6 - 8	3 - 5 - 7
		α- and β-alloys, heat treated		375	1262	S7	3 - 5 - 7	2 - 4 - 6
		β-alloys		410	1396	S8	3 - 5 - 7	2 - 4 - 6
	Wolfram alloys			300	1013	S9	-	-
	Molybdän alloys			300	1013	S10	-	-
H	Hardened steel	hardened		50 HRC	-	H1	-	-
		hardened		55 HRC	-	H2	-	-
		hardened		60 HRC	-	H3	-	-
	Hardened cast iron	hardened		55 HRC	-	H4	-	-

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application.

Feed per revolution fn (mm/U)		
Ø 1 - 3 mm	Ø 3 - 5 mm	Ø 5 - 8 mm
0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0,12
0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0,12
0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0,12
0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0,12
0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0,12
0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0,12
0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0,12
0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0,12
0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,06	0,08 - 0,09 - 0,10
0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,06	0,08 - 0,09 - 0,10
0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,06	0,08 - 0,09 - 0,10
0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,06	0,08 - 0,09 - 0,10
0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,06	0,08 - 0,09 - 0,10
0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,06	0,08 - 0,09 - 0,10
0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,06	0,08 - 0,09 - 0,10
0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,06	0,08 - 0,09 - 0,10
0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,06	0,08 - 0,09 - 0,10
0,01 - 0,03 - 0,04	0,05 - 0,06 - 0,06	0,08 - 0,09 - 0,10
0,01 - 0,05 - 0,08	0,10 - 0,11 - 0,12	0,16 - 0,18 - 0,20
0,01 - 0,04 - 0,06	0,08 - 0,09 - 0,10	0,12 - 0,14 - 0,16
0,01 - 0,05 - 0,08	0,10 - 0,11 - 0,12	0,16 - 0,18 - 0,20
0,01 - 0,05 - 0,08	0,10 - 0,11 - 0,12	0,16 - 0,18 - 0,20
0,01 - 0,05 - 0,08	0,10 - 0,11 - 0,12	0,16 - 0,18 - 0,20
0,01 - 0,04 - 0,06	0,08 - 0,09 - 0,10	0,12 - 0,14 - 0,16
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
0,01 - 0,05 - 0,08	0,10 - 0,11 - 0,12	0,16 - 0,18 - 0,20
0,01 - 0,04 - 0,06	0,08 - 0,09 - 0,10	0,12 - 0,14 - 0,16
0,01 - 0,04 - 0,06	0,08 - 0,09 - 0,10	0,12 - 0,14 - 0,16
0,01 - 0,04 - 0,06	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0,12
0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0,12
0,01 - 0,03 - 0,05	0,08 - 0,09 - 0,10	0,12 - 0,14 - 0,16
0,01 - 0,03 - 0,05	0,06 - 0,07 - 0,08	0,10 - 0,11 - 0,12
-	-	-
-	-	-
-	-	-
-	-	-
0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,06 - 0,07
0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,06 - 0,07
0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,06 - 0,07
0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,06 - 0,07
0,01 - 0,02 - 0,03	0,03 - 0,04 - 0,05	0,05 - 0,06 - 0,07
0,01 - 0,02 - 0,03	0,04 - 0,05 - 0,05	0,06 - 0,07 - 0,08
0,01 - 0,02 - 0,03	0,04 - 0,05 - 0,05	0,06 - 0,07 - 0,08
0,01 - 0,02 - 0,03	0,04 - 0,05 - 0,05	0,06 - 0,07 - 0,08
-	-	-
-	-	-
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-	-	-

Recommended coolant

Material	Recommended coolant
Structural steel, Carbon steel	Emulsion (approx. 7-8%)
Alloy steel, Cast steel	Emulsion (approx. 7-8%) or [oil]
Stainless steel, Spring steel	Oil or (Emulsion approx. 10-12%)

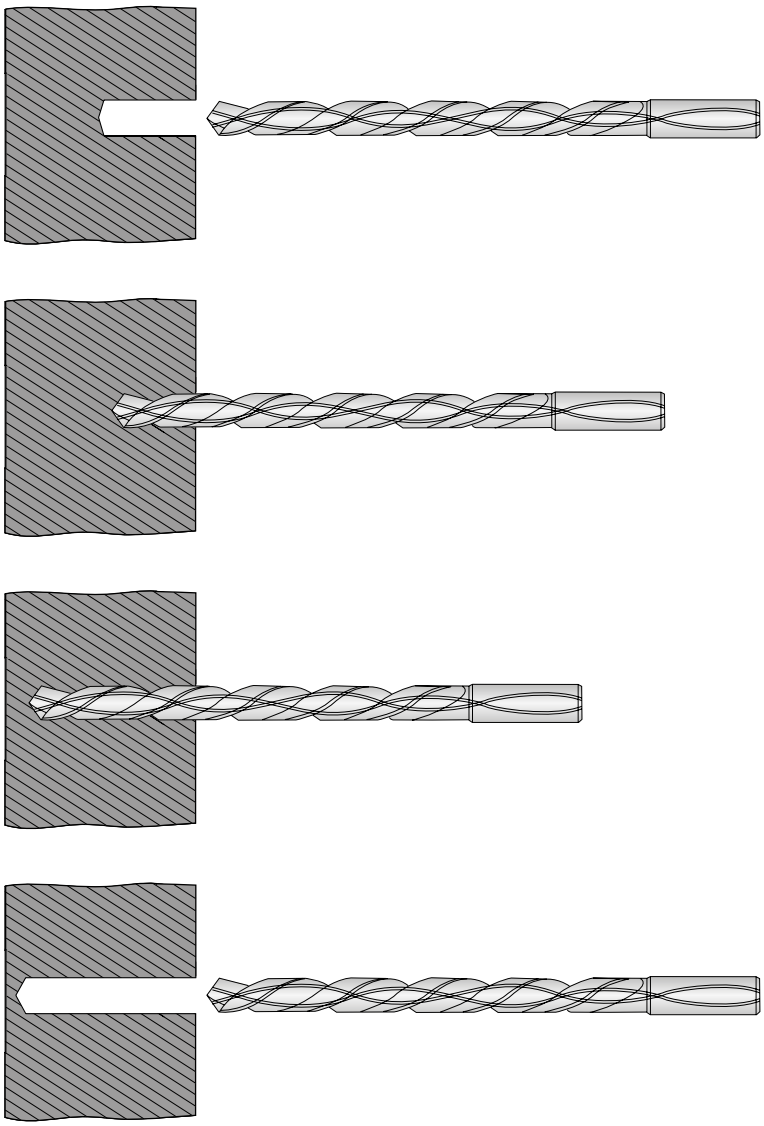
Min. coolant pressure

Material	Diameter [mm]			
	5 [bar]	10 [bar]	15 [bar]	20 [bar]
Steel drilling	22	15	9	5
Aluminium drilling	25	20	15	10
Cast drilling	38	30	20	18

Min. coolant volume [l/min]

Materiale	Diameter [mm]			
	5 [L/min]	10 [L/min]	15 [L/min]	20 [L/min]
Refrigerante nella foratura di Acciaio	3	6	7	9
Refrigerante nella foratura di Alluminio	4	6	9	10
Refrigerante nella foratura di Ghisa	5	9	14	16

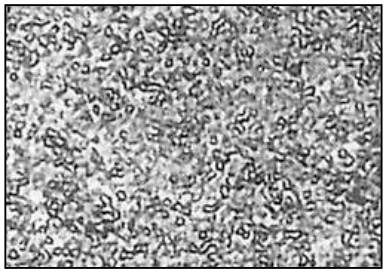
Application notes 10 x D / 15 x D / 20 x D / 25 x D / 30 x D



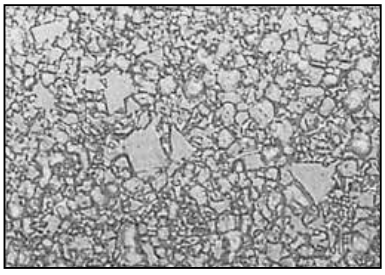
1. Pre-Drilling should be done at the diameter +0.1 mm using 3 x D or 5 x D.
2. For main drilling, proceed with low RPM for pre-drilled length. (RPM 300 U/min, Feed 400 mm/min).
3. Just before the end of the pre-drilled hole, reduce feed to zero and increase the RPM according to the recommended cutting condition chart (see below).
4. Then continue to drill the hole by increasing the feed without step drilling.
5. When retracting drill from pre-drilled hole after drilling, RPM should be reduced to 300 U/Min and feed should be 1000 mm/min.
6. When retracting the drill from the pre-drilled hole, when clear the feed can then be reduced by 50 %. (f = ca. 0.05 – 0.1 mm/U).

Characteristics of solid carbide drills and powder metal drills

**The ARNO® Solid carbide milling range is made of ultra micrograin carbide.
The grain size is between 0–0.5 micron and coated depending on application with various coatings (TiAlN, TiCN or TIA70).**



**Finegrain-hardmetal structure
Ultra-micro-grain, grain size 0–0.5 micron**

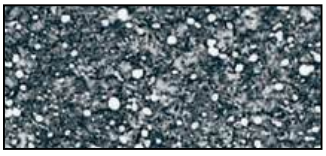


General carbide structure

Powder metal HSS milling... the new powder steel generation! Very tough and wear resistant.

This PM-HSS-steel overshadows the performance of all previous results. We have succeeded to reduce the oxide components and particles in the steel to an absolute minimum. This especially pure powdersteel guarantees the best cutting performance.

Original HSS-milling cutter
- **brittle construction**
- **limited strength**



Powder metallurgy HSS-milling cutter
- **fine micro grain structure**
- **even grain formation**
- **highest strength**

In traditional high speed steel the grain size is often so big, that the amount of 10–20 μm larger particles makes no difference. The above pictures shows clearly that in powder steel the grain size is much smaller (approx 1–3 μm). Therefore the contamination by particles is much reduced.

The Result: A very clean steel, which strongly reduces the risk of tool breakage due to contamination.

SP

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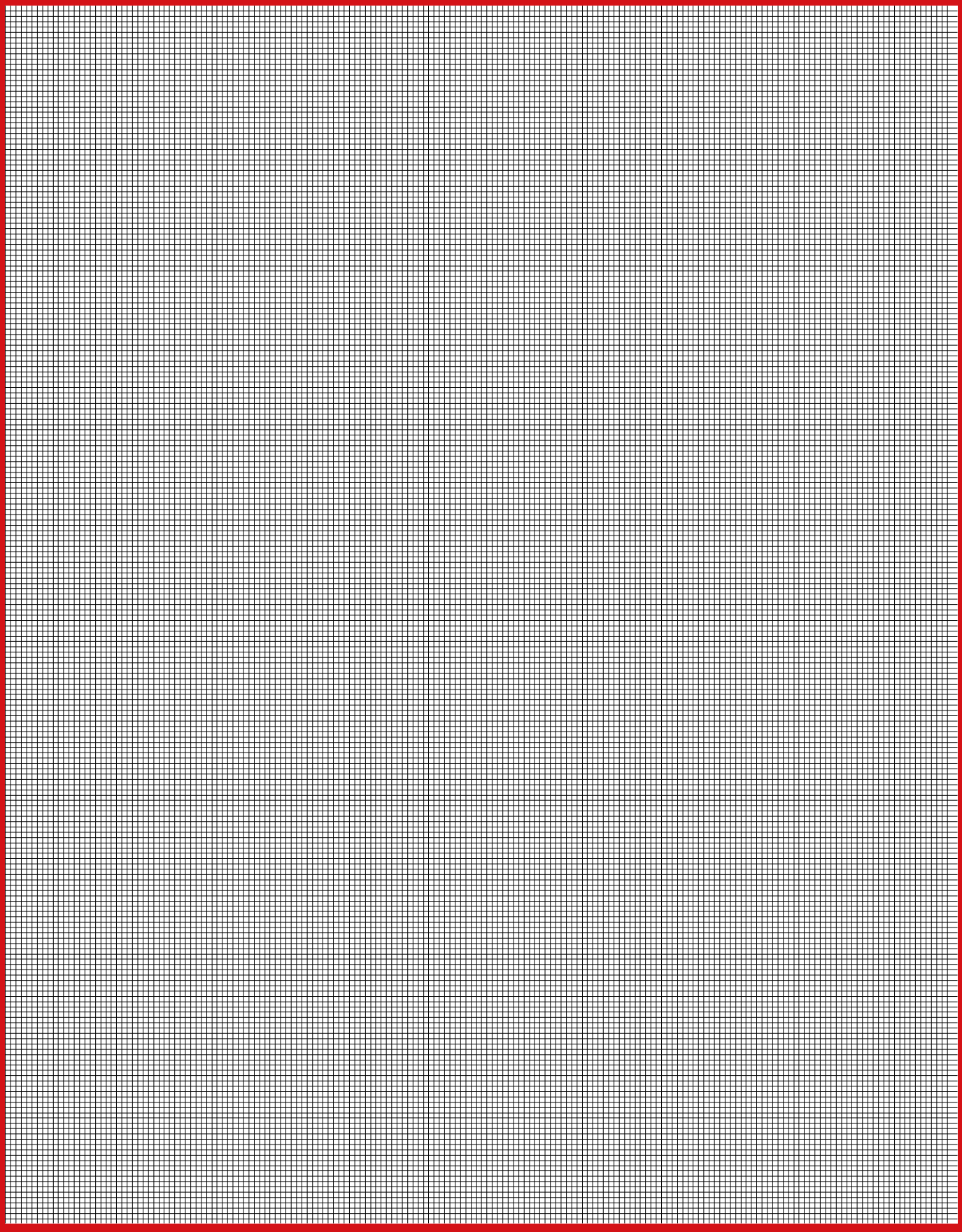

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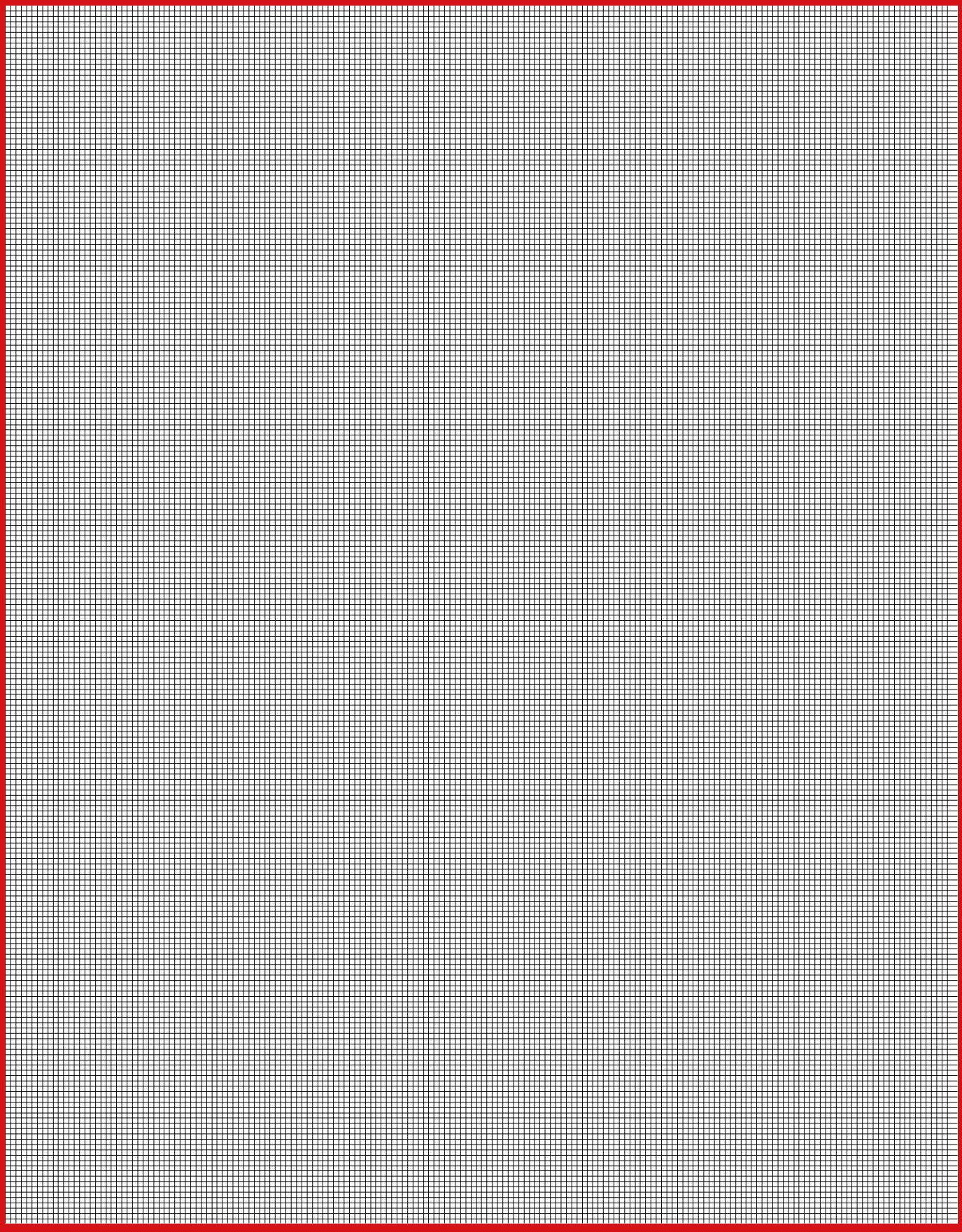

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