












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
3xD					
3 x D	Solid carbide drill	X	1,0 - 10,0		338
3 x D	Solid carbide drill	X	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	X	1,0 - 13,0		351
3 x D	Solid carbide drill, 3 flutes	✓	5,0 - 20,0		353
5xD					
5 x D	Solid carbide drill	X	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

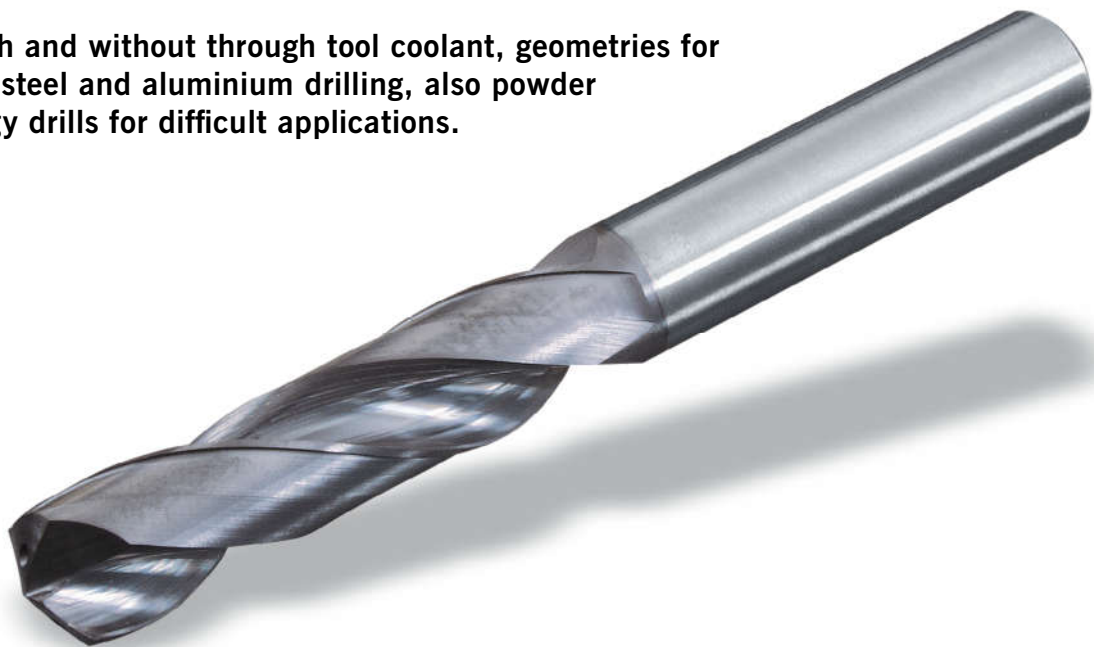
Design	Type	Through tool coolant	Diameter [mm]	Picture	Page
5 x D	Solid carbide drill, 3 flutes	✓	5,0 - 20,0		366
5 x D	Solid carbide drill for hardened steel	✗	3,0 - 14,5		368
7 x D					
7 x D	Solid carbide drill	✗	1,0 - 10,0		370
7 x D	Solid carbide drill	✗	1,0 - 10,0		372
7 x D	Powder metal drill	✗	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
20xD					
20 x D	Solid carbide drill	✓	3,0 - 12,0		383
25xD					
25 x D	Solid carbide drill	✓	3,0 - 10,0		384
30xD					
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

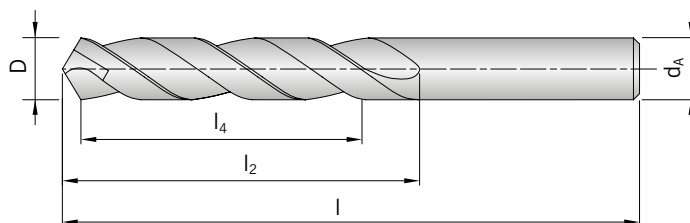
CARBIDE AND POWDER METAL DRILLS TO COVER ALL MATERIALS.

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 <i>h7</i>	d _A <i>h6</i>	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	◆

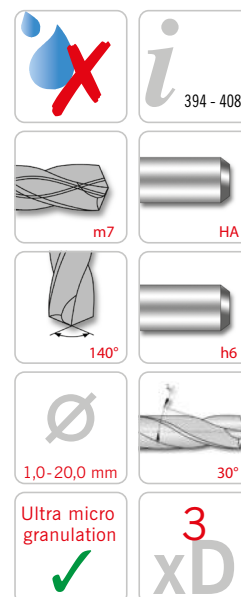
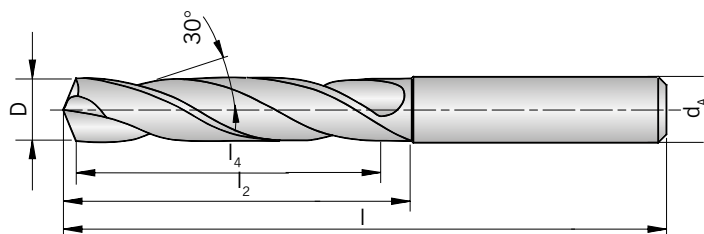
HU = Carbide uncoated

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/ TAIN
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	◆

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	◆

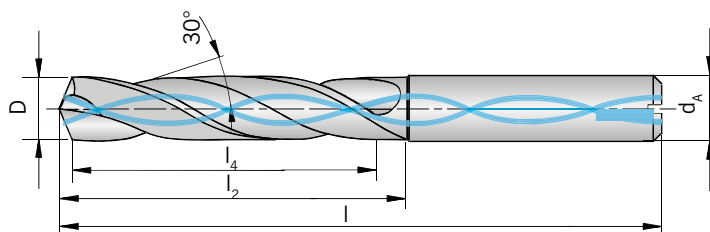
HC = Carbide coated

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/ TiAIN
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	◆

Shank	D <i>m7</i>	d _A <i>h6</i>	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 <i>m7</i>	d _A <i>h6</i>	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	◆

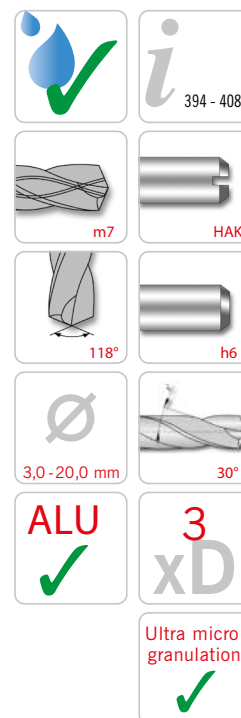
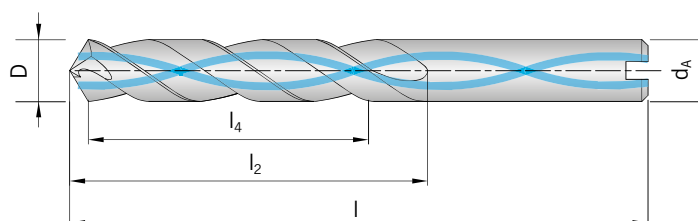
HC = Carbide coated

P	●
M	○
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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 <i>m7</i>	d _A <i>h6</i>	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	◆

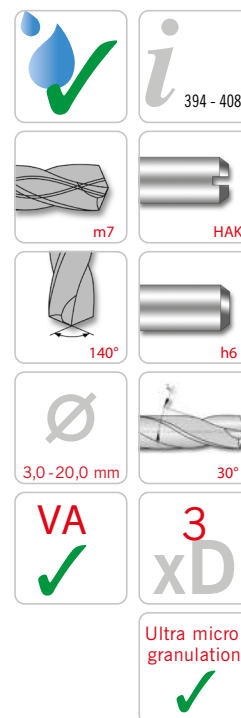
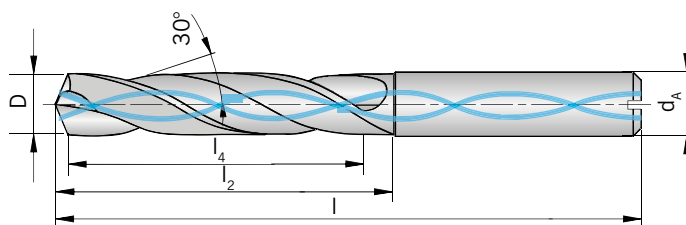
HC = Carbide coated

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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 <i>m7</i>	d _A <i>h6</i>	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	◆

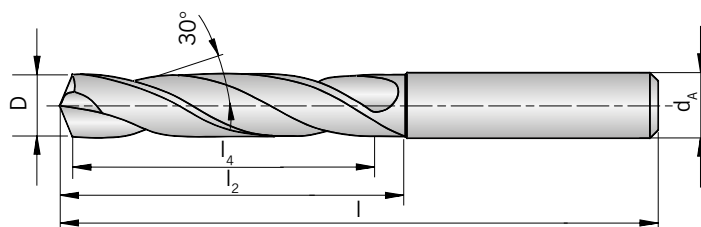
HC = Carbide coated

P	○
M	●
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H	

● 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
						TAIN
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	◆

Shank	D <i>h7</i>	d _A <i>h6</i>	l	l ₂	l ₄	PMC
						TiAlN
SP0055-0165-PM	5.50	6	72	28	16.50	◆
SP0055-01665-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

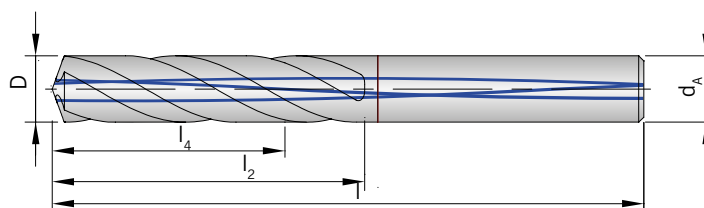
P	●
M	●
K	
N	
S	
H	

● 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	◆

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	◆

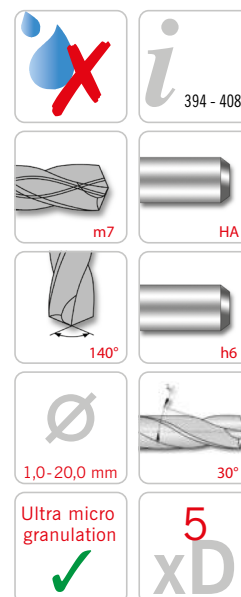
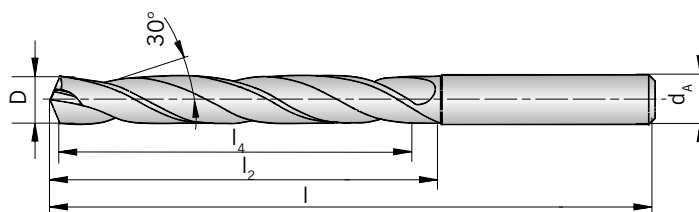
HC = Carbide coated

P	●
M	●
K	○
N	
S	
H	

● Main application
○ Secondary application

Execution 5 x D

Mid-length design, without through tool coolant



Shank	D m7	d _A h6	L	L ₂	L ₄	HC
						VHM/ TiAIN
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	◆

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 <i>m7</i>	d _A <i>h6</i>	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

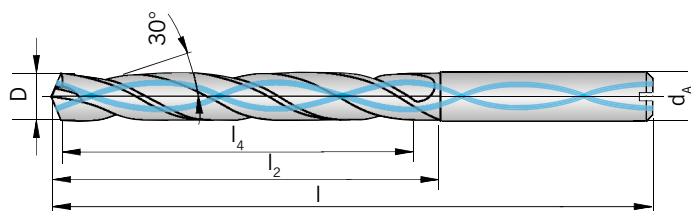
P	●
M	○
K	○
N	
S	
H	

● 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/ TiAIN
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 <i>m7</i>	d _A <i>h6</i>	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

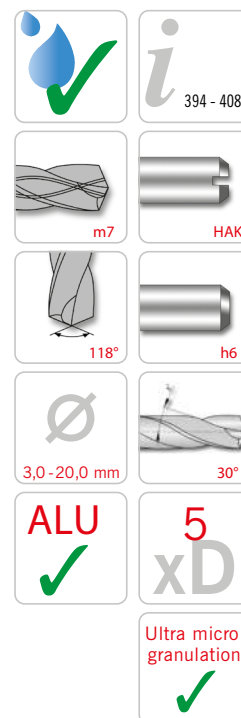
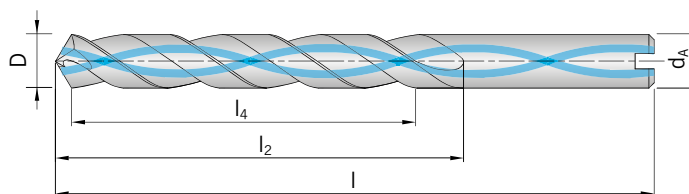
P	●
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● Main application

○ 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	◆

Shank	D <i>m7</i>	d _A <i>h6</i>	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

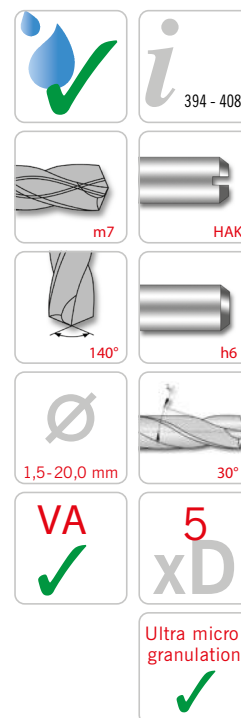
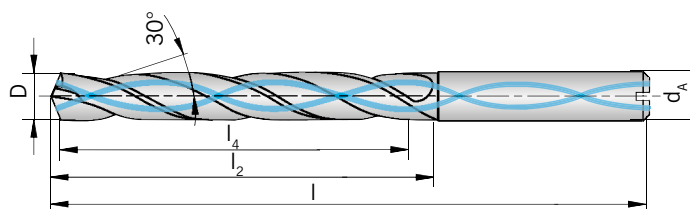
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● Main application

○ 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/ TIAN
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	◆

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 <i>m7</i>	d _A <i>h6</i>	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

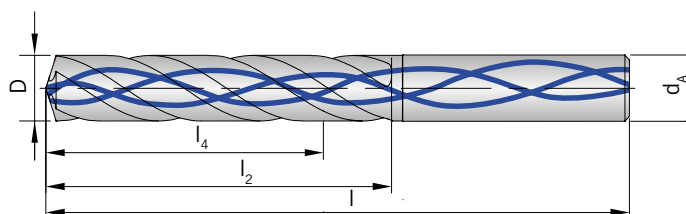
P	○
M	●
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● Main application

○ 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 <i>m7</i>	d _A <i>h6</i>	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

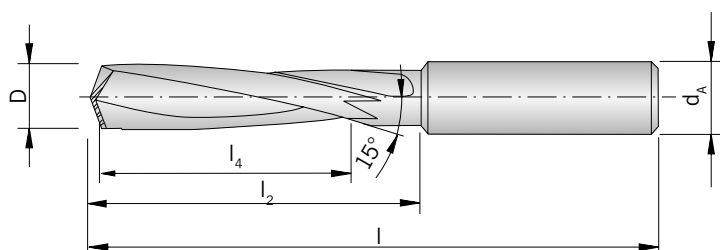
P	●
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● Main application

○ Secondary application

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/ TAIN
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 <i>h7</i>	d _A <i>h6</i>	l	l ₂	l ₄	HC
						VHM/ TiAIN
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	◆

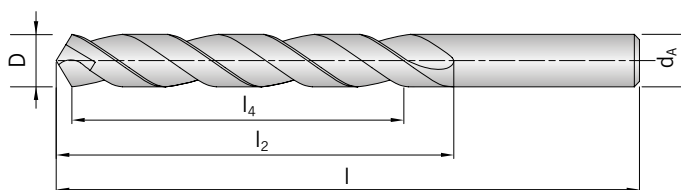
HC = Carbide coated

P	
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H	●

- Main application
- Secondary application

Execution 7 x D

Long design, without 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 <i>h7</i>	d _A <i>h6</i>	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	◆

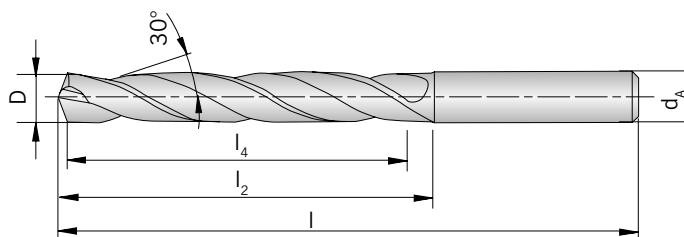
HU = Carbide uncoated

P	●
M	○
K	○
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● Main application
○ Secondary application

Execution 7 x D

Long design, without tool coolant



Shank	D h7	d _A h6	L	L ₂	L ₄	HC
						VHM/ TAIN
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 <i>h7</i>	d _A <i>h6</i>	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	◆

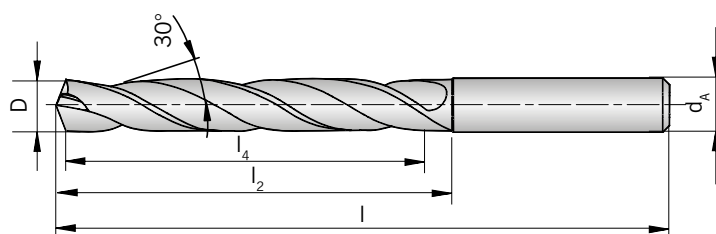
HC = Carbide coated

P	●
M	○
K	○
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H	

● 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
						TAIN
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 <i>h7</i>	d _A <i>h6</i>	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	◆

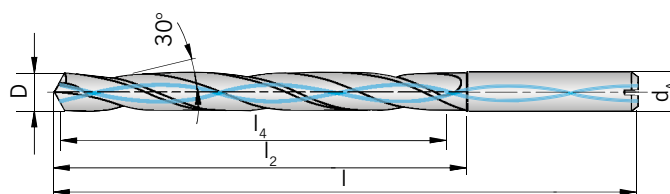
PMC = PM-HSS coated

P	●
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● 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/ TAIN
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	◆

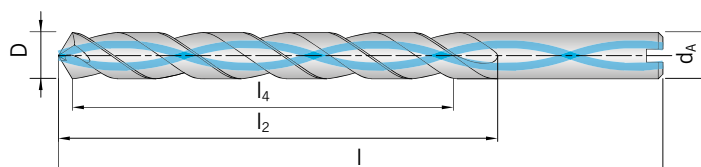
HC = Carbide coated

P	●
M	○
K	○
N	
S	
H	

● 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	◆

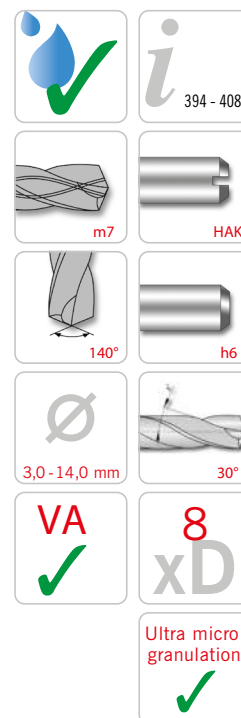
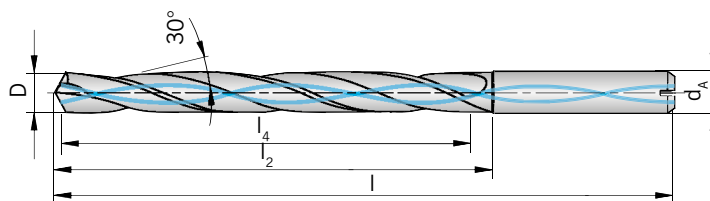
HC = Carbide coated

P	
M	
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N	●
S	
H	

● 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/ TIAN
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	◆

Shank	D <i>m7</i>	d _A <i>h6</i>	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	◆

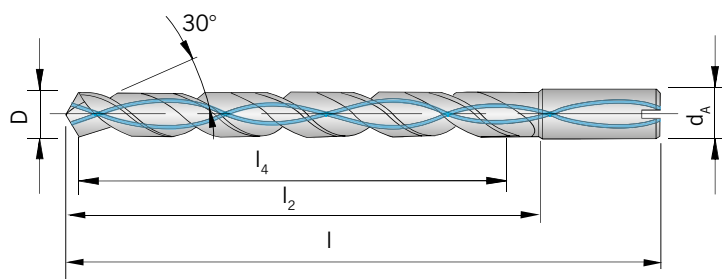
HC = Carbide coated

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	◆

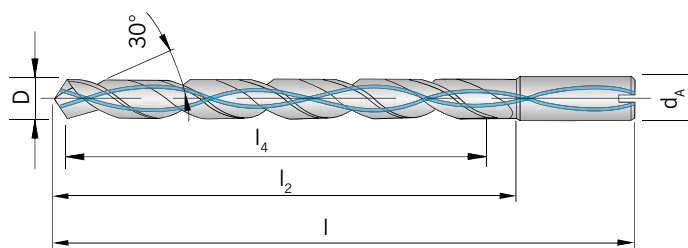
HC = Carbide coated

P	●
M	○
K	○
N	
S	
H	

● Main application
○ Secondary application

Execution 15 x D

Extra long design, with through tool coolant



Shank	D h7	d _A h6	L	L ₂	L ₄	HC
						VHM/ TiAIN
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	◆

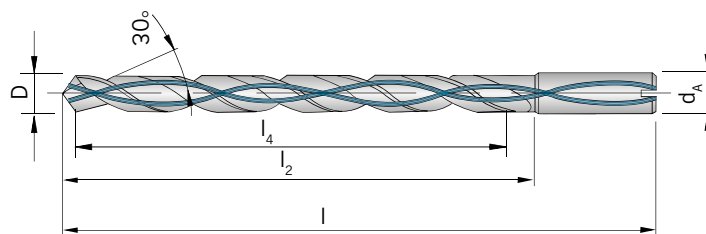
HC = Carbide coated

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/ TiAIN
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	◆

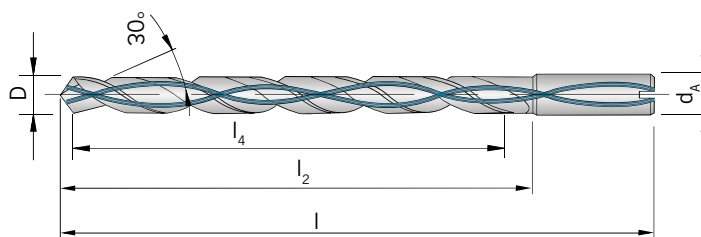
HC = Carbide coated

P	●
M	○
K	○
N	
S	
H	

● Main application
○ Secondary application

Execution 25 x D

Extra long design, with through tool coolant



Shank	D h7	d _A h6	L	L ₂	L ₄	HC
						VHM/ TiAIN
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	◆

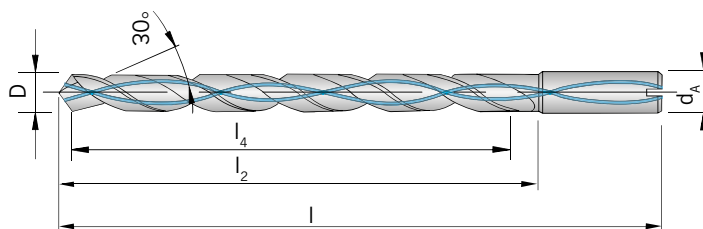
HC = Carbide coated

P	●
M	○
K	○
N	
S	
H	

● Main application
○ Secondary application

Execution 30 x D

Extra long design, with through tool coolant



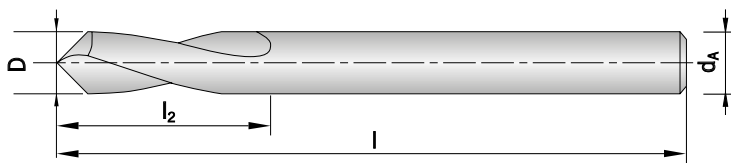
Shank	D h7	d _A h6	l	l ₂	l ₄	HC
						VHM/ TiAlN
SPC0030-0900-XL	3.0	6	140	100	90	◆
SPC0035-1050-XL	3.5	6	157	117	105	◆
SPC0040-1200-XL	4.0	6	173	133	120	◆
SPC0045-1350-XL	4.5	6	190	150	135	◆
SPC0050-1500-XL	5.0	6	206	166	150	◆
SPC0055-1650-XL	5.5	6	223	183	165	◆
SPC0060-1800-XL	6.0	6	239	199	180	◆
SPC0070-2100-XL	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°






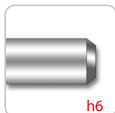
h6




i 394 - 408



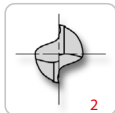
90°



h6




Ø 2,0 - 20,0 mm



2

Ultra micro granulation



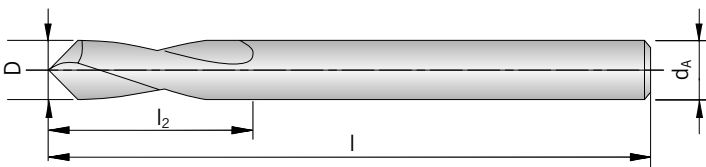
Shank	D <i>h6</i>	d _A <i>h6</i>	l	l ₂	HC
					VHM/ TAIN
SPA0020-090	2	2	40	8	◆
SPA0030-090	3	3	40	10	◆
SPA0040-090	4	4	40	12	◆
SPA0050-090	5	5	50	15	◆
SPA0060-090	6	6	50	20	◆
SPA0080-090	8	8	63	22	◆
SPA0100-090	10	10	74	23	◆
SPA0120-090	12	12	83	25	◆
SPA0140-090	14	14	83	26	◆
SPA0160-090	16	16	92	28	◆
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°






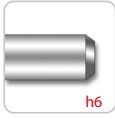
h6




i 394 - 408



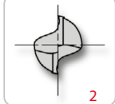
120°



h6




Ø 2,0 - 20,0 mm



2

Ultra micro granulation



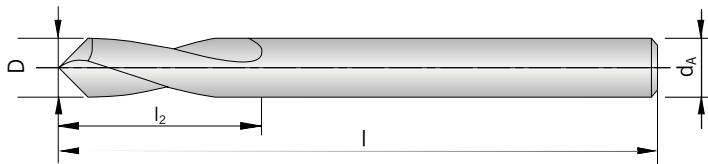
Shank	D <i>h6</i>	d _A <i>h6</i>	l	l ₂	HC
					VHM/ TAIN
SPA0020-120	2	2	40	8	◆
SPA0030-120	3	3	40	10	◆
SPA0040-120	4	4	40	12	◆
SPA0050-120	5	5	50	15	◆
SPA0060-120	6	6	50	20	◆
SPA0080-120	8	8	63	22	◆
SPA0100-120	10	10	74	23	◆
SPA0120-120	12	12	83	25	◆
SPA0140-120	14	14	83	26	◆
SPA0160-120	16	16	92	28	◆
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

NC spot drill 135°
2 flutes, 135°






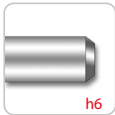
h6




394 - 408



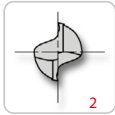
135°



h6




12,0 -20,0 mm



2

Ultra micro granulation



Shank	D <i>h6</i>	d _A <i>h6</i>	l	l ₂	HC
					VHM/ TAIN
SPA0120-135	12	12	83	25	◆
SPA0160-135	16	16	92	28	◆
SPA0200-135	20	20	104	30	◆

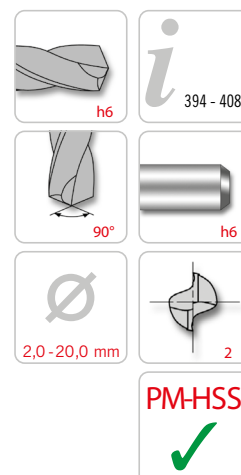
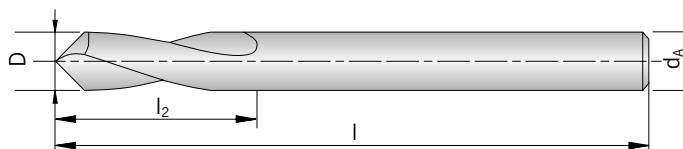
HC = Carbide coated

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
					TAIN
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	◆

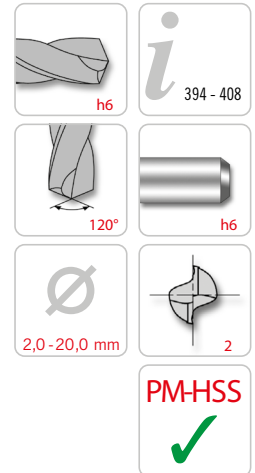
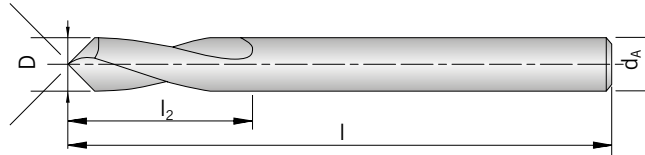
PMC = PM-HSS coated

P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

NC spot drill 120°

2 flutes, 120°



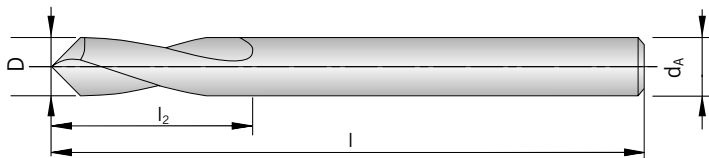
Shank	D h6	d _A h6	l	l ₂	PMC
					TAIN
SPA0020-120-PM	2	2	40	8	◆
SPA0030-120-PM	3	3	40	10	◆
SPA0040-120-PM	4	4	40	12	◆
SPA0050-120-PM	5	5	50	15	◆
SPA0060-120-PM	6	6	50	20	◆
SPA0080-120-PM	8	8	63	22	◆
SPA0100-120-PM	10	10	74	23	◆
SPA0120-120-PM	12	12	83	25	◆
SPA0140-120-PM	14	14	83	26	◆
SPA0160-120-PM	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°






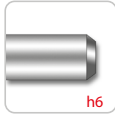
h6




i 394 - 408



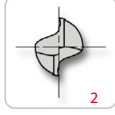
135°



h6




Ø 12,0 -20,0 mm



2

PM-HSS



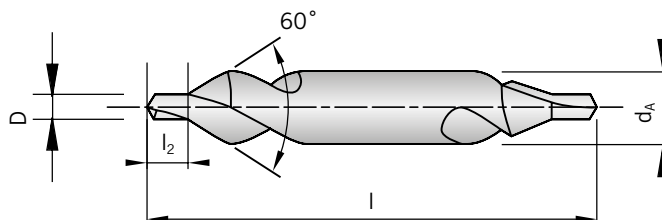
Shank	D <i>h6</i>	d _A <i>h6</i>	l	l ₂	PMC
					TAIN
SPA0120-135-PM	12	12	83	25	◆
SPA0160-135-PM	16	16	92	28	◆
SPA0200-135-PM	20	20	104	30	◆

PMC = PM-HSS coated

P	●
M	●
K	●
N	●
S	●
H	

● Main application
○ Secondary application

Centre drills DIN 333, Form A



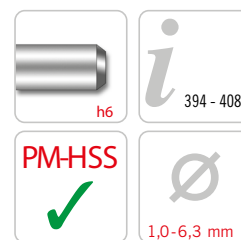
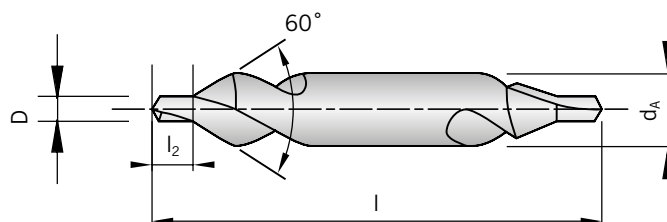
Shank	D m7	d _A h6	l	l ₂	HC
					VHM/ TAIN
SPZ0100-0016	1.00	3.15	31.5	1.6	◆
SPZ0125-0019	1.25	3.15	31.5	1.9	◆
SPZ0160-0024	1.60	4.00	35.5	2.4	◆
SPZ0200-0029	2.00	5.00	40.0	2.9	◆
SPZ0250-0036	2.50	6.30	45.0	3.6	◆
SPZ0315-0044	3.15	8.00	50.0	4.4	◆
SPZ0400-0056	4.00	10.00	56.0	5.6	◆
SPZ0500-0069	5.00	12.50	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



Shank	D <i>m7</i>	d _A <i>h6</i>	l	l ₂	PMC
					TiAIN
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

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	-	
N	GGV (CGI)		200	675	K7	63 - 77 - 91	90 - 110 - 130	-	
	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	-	
			280	943	S2	-	15 - 24 - 33	-	
		Ni- or Co-alloyed annealed	250	839	S3	-	15 - 24 - 33	-	
			350	1177	S4	-	15 - 24 - 33	-	
			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.

Solid carbide-/PM-HSS Tools 395

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	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	-	-	
			280	943	S2	-	-	
		Ni- or Co-alloyed annealed	250	839	S3	-	-	
			350	1177	S4	-	-	
			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
	0,07 - 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	-	
N	GGV (CGI)		200	675	K7	63 - 77 - 91	90 - 110 - 130	-	
	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	-	
			280	943	S2		15 - 24 - 33	-	
		Ni- or Co-alloyed annealed	250	839	S3		15 - 24 - 33	-	
			350	1177	S4		15 - 24 - 33	-	
			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.

Solid carbide-/PM-HSS Tools 399

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	TAIN
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.

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/mm ²)	Chipping group	Cutting speed V _c (m/min)		
						VHM TiAlN	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	
N	GGV (CGI)		200	675	K7	-	-	
	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	-	
			280	943	S2	4 - 7 - 10	-	
		Ni- or Co-alloyed annealed	250	839	S3	4 - 7 - 10	-	
			350	1177	S4	4 - 7 - 10	-	
			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.

Solid carbide-/PM-HSS Tools 403

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	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	
N	GGV (CGI)		200	675	K7	-	-	
	Aluminium alloys long chipping	not heat treatable	30	-	N1	-	-	
		heat treatable, heat treated	100	343	N2	-	-	
		≤ 12 % Si, not heat treatable	75	260	N3	-	-	
	Casted aluminium alloys	≤ 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	
			280	943	S2	4 - 6 - 8	2 - 3 - 4	
		Ni- or Co-alloyed annealed	250	839	S3	4 - 6 - 8	2 - 3 - 4	
			350	1177	S4	4 - 6 - 8	2 - 3 - 4	
			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
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-

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%)

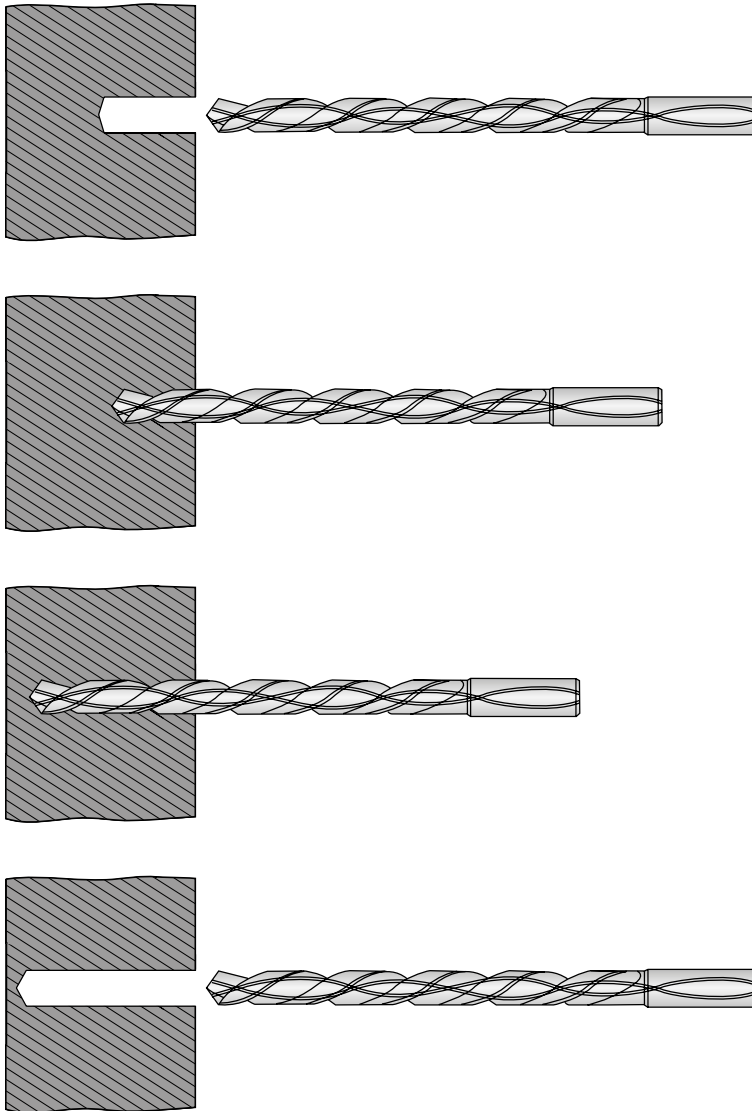
Min. coolant pressure

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 10xD / 15xD / 20xD / 25xD / 30xD



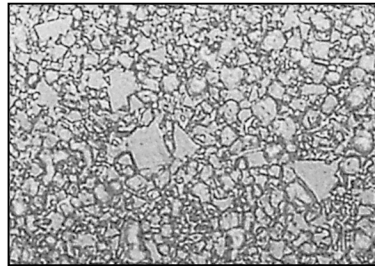
1. Pre-Drilling should be done at the diameter $+0.1$ mm using $3 \times D$ or $5 \times D$.
2. For main drilling, proceed with low RPM for pre-drilled length. (RPM 300 U/min, Feed 400 mm/min).
3. Just before the end of the pre-drilled hole, reduce feed to zero and increase the RPM according to the recommended 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%. ($f = \text{ca. } 0.05 - 0.1$ mm/U).

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 TiAlN).



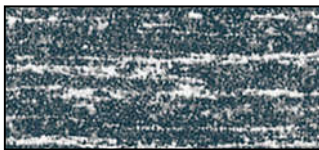
Finegrain-hardmetal structure
Ultra-micro-grain, grain size 0–0.5 micron



General carbide structure

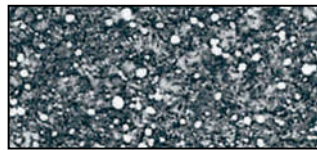
Powder metal HSS milling... the new powder steel generation! Very tough and wear resistant.

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.