

**Alu
program**



since 1991

PENTAGON

Întotdeauna Soluția Potrivită

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Pentagon Ltd. is a company with wholly private capital, established in 1991, which promotes and sells high-performance products, as a representative and distributor of companies with a long history and tradition at national and international level.

We are a forward-thinking, flexible company with prudent development and a capable team of specialists to always offer complete technical solutions at a very good price / quality ratio.

Having a range of products with a wide range of uses in all branches of industry and construction, we had the possibility to collaborate with many companies in the country.

In order to keep you informed on the evolution and strategy of our company, we regularly participate in fairs and local and national exhibitions, we distribute catalogs and leaflets, we support an online promotion campaign and we support directly through area representatives.

We have the following trademarks:

“Pentagon Romania”, “PTG”, “Terentex”, “Teraweld”, “Întotdeauna Soluția Potrivită” and logo



Our company has implemented and applies the Quality Management System: ISO 9001-2015



Product finder



Code	1144	1154	1004	1004	1014	1014	2706	2736	1104	1114
Coating					ZRN	ZRN				
DIN	844	844					844	844	844	844
Type	WR	WR	W	W	W	W	W	W	W	W
Material	HSSCo8	HSSCo8	HSSCo5	HSSCo5	HSSCo5	HSSCo5	HSSCo8	HSSCo8	HSSCo8	HSSCo8
Dimens. (mm)	6-20	6-20	3-12	3-12	3,2-10	3,2-10	2-32	2-35	2-30	6-30
Page	7	7	8	8	10	10	11-12	11-12	13	13

P	P1						•	•	•	•
	P2									
	P3									
	P4									
	P5									
	P6									
M	M.1									
	M.2									
	M.3									
K	K.1									
	K.2									
N	N.1	•	•							
	N.2	•	•	•	•	•	•	•	•	•
	N.3	•	•							
	N.4									
	N.5									
S	S.1									
	S.2									
H	H.1									
	H.2									

Product finder



Code	C1213	S1154	S1715	S1005	S1006	S1116	S1114	S1114R	S1114RC	S1124R
Coating								ZrN	ta-C	ZrN
DIN										
Type	W	WR	W	W	W	W	W	W	W	W
Material	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC
Dimens. (mm)	3-20	6-20	3-12	3-12	3-12	3-20	3-20	6-25	6-25	6-25
Page	14	15	16	17	18	19	20	21	22	23

P	P1									
	P2									
	P3									
	P4									
	P5									
	P6									
M	M.1									
	M.2									
	M.3									
K	K.1									
	K.2									
N	N.1	•	•	•	•	•	•	•	•	•
	N.2		•	•	•	•	•	•	•	•
	N.3	•								
	N.4	•		•	•	•	•	•	•	•
	N.5									
S	S.1									
	S.2									
H	H.1									
	H.2									

Product finder

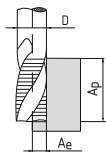
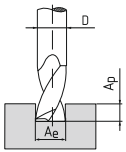
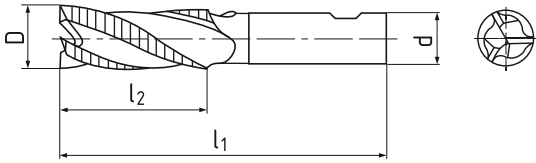


Code	S1124RC	S1124L	S1124LR	S1115	T2002	VN10030	VN10920	S10132
Coating	ta-C							ZrN
DIN						338	338	
Type	W	W	W	W	W	W	WN	W
Material	SC	SC	SC	SC	SC	HSS	HSS	SC
Dimens. (mm)	6-25	3-25	3-20	4-20	2-12	0,5-16	1-13	3-20
Page	24	25	26	27	28	29	30	32-33

P	P1							•			
	P2							•			
	P3							•			
	P4							•			
	P5							•			
	P6							•			
M	M.1							•			
	M.2										
	M.3										
K	K.1							•			
	K.2										
N	N.1	•	•	•	•		•	•	•		
	N.2	•	•	•	•		•	•	•		
	N.3						•	•	•		
	N.4	•	•	•	•		•	•	•		
	N.5					•		•	•		
S	S.1										
	S.2										
H	H.1										
	H.2										

End mills

1 tooth cut over centre



1144

1154



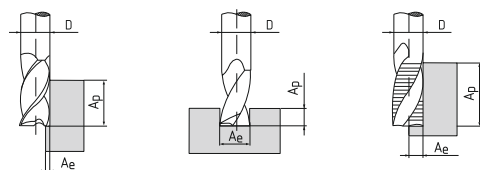
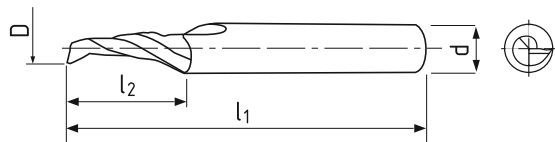
D	d	l1	l1	l2	l2	Z	114418	115418
k12	h 6	1144	1154	1144	1154			
6	6	57	68	13	24	3	.060	.060
8	10	69	88	19	38	3	.080	.080
10	10	72	95	22	45	3	.100	.100
12	12	83	110	26	53	3	.120	.120
16	16	92	123	32	63	3	.160	.160
18	16	92		32		3	.180	
20	20	104	141	38	75	3	.200	.200

Cutting conditions

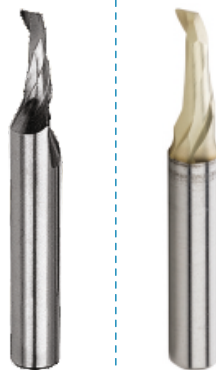
Material	Ap	Ae	Vc	fz (mm/z)						
				Ø 6	Ø 8	Ø 10	Ø 12	Ø 16	Ø 20	
114418										
N.1	≤ 400 N/mm ²	1,5xD	0,5xD	108	0,0246	0,0328	0,041	0,0492	0,0656	0,082
N.2	≤ 600 N/mm ²	1,5xD	0,5xD	165	0,0264	0,0352	0,044	0,0528	0,0704	0,088
N.3	≤ 600 N/mm ²	1,5xD	0,5xD	196	0,0276	0,0368	0,046	0,0552	0,0736	0,092
115418										
N.1	≤ 400 N/mm ²	1,5xD	0,5xD	123	0,027	0,036	0,045	0,054	0,072	0,09
N.2	≤ 600 N/mm ²	1,5xD	0,5xD	138	0,0288	0,0384	0,048	0,0576	0,0768	0,096
N.3	≤ 600 N/mm ²	1,5xD	0,5xD	143	0,0306	0,0408	0,051	0,0612	0,0816	0,102

End mills

short, 1 tooth cut over centre



1004



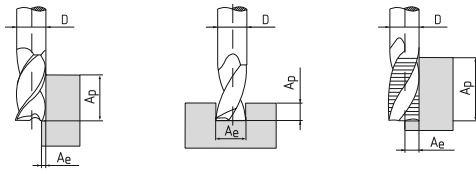
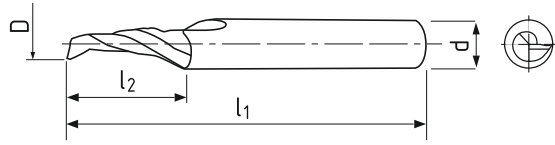
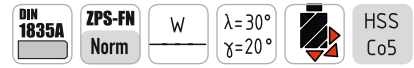
D k 12	d h 6	l ₁	l ₂	Z	100405	100405
3	8	60	10	1	.030	.030 ZrN
4	8	60	12	1	.040	.040 ZrN
5	8	60	14	1	.050	.050 ZrN
6	8	60	14	1	.060	.060 ZrN
7	8	60	14	1	.070	.070 ZrN
8	8	80	14	1	.080	.080 ZrN
9	8	80	14	1	.090	.090 ZrN
10	8	80	14	1	.100	.100 ZrN
12	8	80	14	1	.120	.120 ZrN

Cutting conditions

Material	A _p	A _e	V _c	f _z (mm/z)				
				∅ 3	∅ 6	∅ 8	∅ 10	∅ 12
N.2 ≤ 600 N/mm ²	1,5xD	0,5xD	160260	0,008	0,018	0,024	0,03	0,033

Set of end mills

short, 1 tooth cut over centre



100405



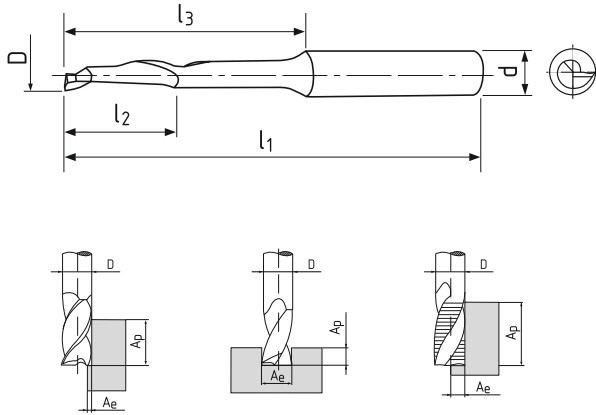
D k 12	d h 6	l ₁	l ₂	Z	.SET3-10
3	8	60	10	1	
4	8	60	12	1	
5	8	60	14	1	
6	8	60	14	1	
8	8	80	14	1	
10	8	80	14	1	

Cutting conditions

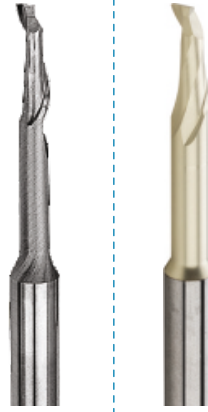
Material	A _p	A _e	V _c	f _z (mm/z)				
				∅ 3	∅ 6	∅ 8	∅ 10	∅ 12
N.2 ≤ 600 N/mm ²	1,5xD	0,5xD	160260	0,008	0,018	0,024	0,03	0,033

End mills

long 1 tooth cut over centre



1014



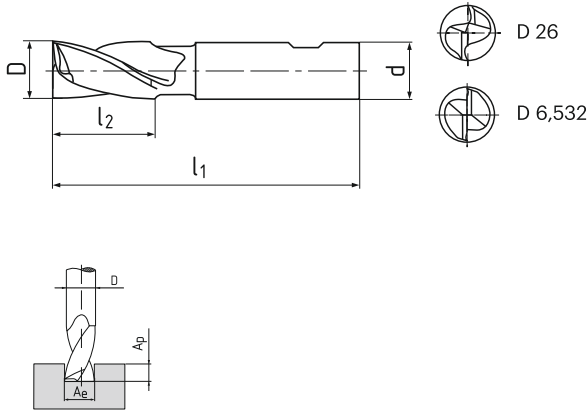
D	d	l1	l2	l3	Z	101405	101405
k 12	h 6						
3,2	8	80	10	38	1	.032080	.032080 ZrN
4	8	80	16	45	1	.040	.040 ZrN
4,2	8	80	10	37	1	.042080	.042080 ZrN
5	8	80	14	36	1	.050080	.050080 ZrN
5	8	80	16	45	1	.050	.050 ZrN
5	8	120	16	84	1	.050120	.050120 ZrN
6	8	80	14	37	1	.060080	.060080 ZrN
6	8	90	16	45	1	.060	.060 ZrN
8	8	80	14	55	1	.080080	.080080 ZrN
8	8	100	30	70	1	.080100	.080100 ZrN
8	8	120	16	90	1	.080120	.080120 ZrN
10	10	80	14	60	1	.10010	.10010 ZrN

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)						
				Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	
N.2 ≤ 600 N/mm ²	1,5xD	0,5xD	160260	0,0056	0,008	0,010	0,0126	0,0168	0,021	

End mills

2 fluted, 2 teeth cut to centre



2706

2736



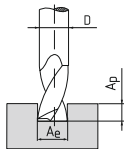
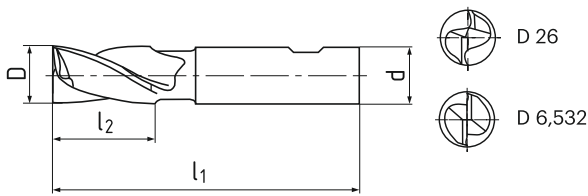
D e 8	d h 6	l1		l2		Z	270618		273618	
		2706	2736	2706	2736					
2	6	51	54	7	10	2	.020		.020	
2,5	6	52		8		2	.025			
3	6	52	56	8	12	2	.030		.030	
3,5	6	54		10		2	.035			
4	6	55	63	11	19	2	.040		.040	
4,5	6	55		11		2	.045			
5	6	57	68	13	24	2	.050		.050	
5,5	6	57		13		2	.055			
6	6	57	68	13	24	2	.060		.060	
6,5	10	66		16		2	.065			
7	10	66	80	16	30	2	.070		.070	
7,5	10	66		16		2	.075			
8	10	69	88	19	38	2	.080		.080	
8,5	10	69		19		2	.085			
9	10	69	88	19	38	2	.090		.090	
9,5	10	69		19		2	.095			
10	10	72	95	22	45	2	.100		.100	
11	12	79	102	22	45	2	.110		.110	
12	12	83	110	26	53	2	.120		.120	
13	12	83	110	26	53	2	.130		.130	
14	12	83	110	26	53	2	.140		.140	
15	12	83	110	26	53	2	.150		.150	
16	16	92	123	32	63	2	.160		.160	

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)					
				Ø 3	Ø 6	Ø 8	Ø 10	Ø 12	Ø 16
P.1 ≤ 600 N/mm ²	0,5xD	1xD	45	0,009	0,022	0,029	0,036	0,044	0,058
N.2 ≤ 600 N/mm ²	0,5xD	1xD	160-300	0,0117	0,0286	0,0377	0,0468	0,0572	0,0754

End mills

2 fluted, 2 teeth cut to centre



2706

2736



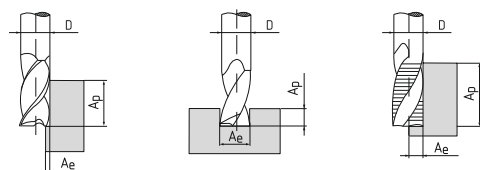
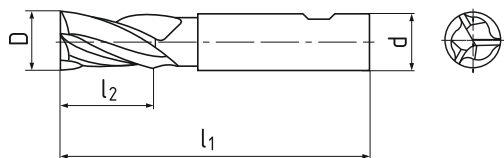
D	d	l1	l1	l2	l2	Z	270618		273618	
e 8	h 6	2706	2736	2706	2736					
17	16	92		32		2	.170			
18	16	92	123	32	63	2	.180		.180	
19	16	92		32		2	.190			
20	20	104	141	38	75	2	.200		.200	
21	20	104		38		2	.210			
22	20	104	141	38	75	2	.220		.220	
23	20	104		38		2	.230			
24	25	121		45		2	.240			
25	25	121	166	45	90	2	.250		.250	
26	25	121		45		2	.260			
28	25	121		45		2	.280			
30	25	121		45		2	.300			
32	32	133		53		2	.320			

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)				
				Ø 16	Ø 18	Ø 20	Ø 25	Ø 30
P.1 ≤ 600 N/mm ²	0,5xD	1xD	45	0,058	0,065	0,073	0,091	0,11
N.2 ≤ 600 N/mm ²	0,5xD	1xD	160-300	0,0754	0,0845	0,0949	0,1183	0,143

End mills

1 tooth cut over centre



1104



1114



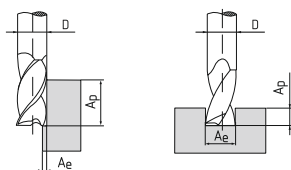
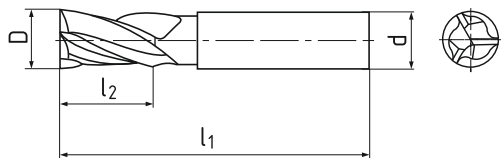
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k 10	h 6	1104	1114	1104	1114			
2	6	51		7		3	.020	
2,5	6	52		8		3	.025	
3	6	52		8		3	.030	
4	6	55		11		3	.040	
4,5	6	55		11		3	.045	
5	6	57		13		3	.050	
6	6	57	68	13	24	3	.060	.060
7	10	66	80	16	30	3	.070	.070
8	10	69	88	19	38	3	.080	.080
9	10	69	88	19	38	3	.090	.090
10	10	72	95	22	45	3	.100	.100
11	12		102		45	3		.110
12	12	83	110	26	53	3	.120	.120
14	12	83	110	26	53	3	.140	.140
15	12	83	110	26	53	3	.150	.150
16	16	92	123	32	63	3	.160	.160
18	16	92	123	32	63	3	.180	.180
20	20	104	141	38	75	3	.200	.200
25	25	121	166	45	90	3	.250	.250
30	25	121	166	45	90	3	.300	.300

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)									
				Ø 3	Ø 6	Ø 8	Ø 10	Ø 12	Ø 16	Ø 18	Ø 20	Ø 25	
P.1 ≤ 600 N/mm²	1,5xD	0,1xD	45	0,006	0,015	0,021	0,028	0,034	0,044	0,051	0,057	0,071	
N.2 ≤ 600 N/mm²	1,5xD	0,1xD	160-300	0,0078	0,0195	0,0273	0,0364	0,0442	0,0572	0,0663	0,0741	0,092	

End mills

long, 1 tooth cut over centre, 20°



C1213



C1213



D h10	d	l1	l2	Z	C121302	C121312
3	6	57	8	3	.030	.030
3,5	6	57	10	3	.035	.035
4	6	57	10	3	.040	.040
4,5	6	57	11	3	.035	.035
5	6	57	13	3	.050	.050
6	6	57	13	3	.060	.060
8	8	63	19	3	.080	.080
10	10	72	22	3	.100	.100
12	12	83	26	3	.120	.120
14	14	83	26	3	.140	.140
16	16	92	32	3	.160	.160
18	18	92	32	3	.180	.180
20	20	104	38	3	.200	.200

Cutting conditions

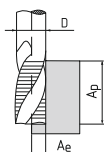
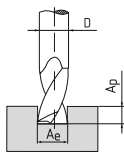
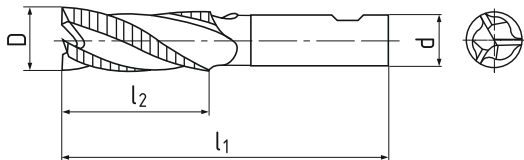
Material	Ap	Ae	Vc	fz (mm/z)									
				Ø 4	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20	
N.1 ≤ 400 N/mm ²	0,3xD	1xD	250	0,03	0,045	0,06	0,075	0,09	0,105	0,12	0,135	0,15	
N.2 ≤ 600 N/mm ²	0,3xD	1xD	200	0,03	0,045	0,06	0,075	0,09	0,105	0,12	0,135	0,15	
N.4 ≤ 800 N/mm ²	0,3xD	1xD	200	0,03	0,045	0,06	0,075	0,09	0,105	0,12	0,135	0,15	

End mills

long, WR, 1 tooth cut over centre, 25°



SC



S1154

S1154



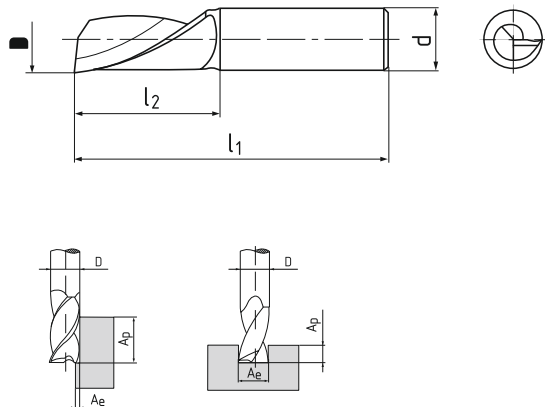
D h 10	d h 6	l ₁	l ₂	Z	S115402	S115412
6	6	57	13	3	.060	.060
8	8	63	19	3	.080	.080
10	10	72	22	3	.100	.100
12	12	83	26	3	.120	.120
14	14	83	26	3	.140	.140
16	16	92	32	3	.160	.160
18	18	92	32	3	.180	.180
20	20	104	38	3	.200	.200

Cutting conditions

Material	A _p	A _e	V _c	f _z (mm/z)						
				∅ 6	∅ 8	∅ 10	∅ 12	∅ 16	∅ 18	∅ 20
N.1 ≤ 400 N/mm ²	2xD	0,4xD	160	0,055	0,073	0,092	0,11	0,147	0,165	0,183
N.2 ≤ 600 N/mm ²	2xD	0,4xD	220	0,055	0,073	0,092	0,11	0,147	0,165	0,183

End mills

short, 1 tooth cut over centre, left helix, 20°



S1715



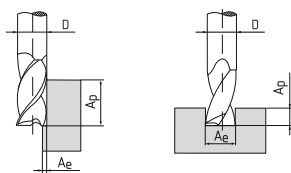
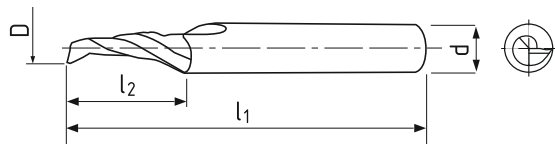
D h10	d	l1	l2	Z	S171502
3	6	57	8	1	.030
4	6	57	11	1	.040
5	6	63	13	1	.050
6	6	63	13	1	.060
8	8	70	19	1	.080
10	10	80	22	1	.100
12	12	93	26	1	.120

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)						
				∅ 3	∅ 4	∅ 5	∅ 6	∅ 8	∅ 10	∅ 12
N.1 ≤ 400 N/mm ²	0,3xD	1xD	250	0,023	0,03	0,038	0,045	0,06	0,075	0,09
N.2 ≤ 600 N/mm ²	0,3xD	1xD	200	0,023	0,03	0,038	0,045	0,06	0,075	0,09
N.4 ≤ 800 N/mm ²	0,3xD	1xD	200	0,023	0,03	0,038	0,045	0,06	0,075	0,09

End mills

short, 1 tooth cut over centre, 25°



S1005



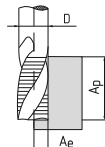
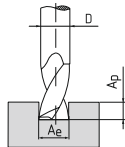
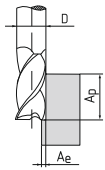
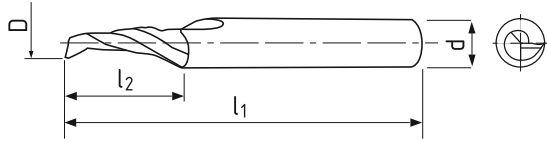
D h10	d	l1	l2	Z	S100502
3	6	50	8	1	.030
4	6	54	11	1	.040
5	6	54	13	1	.050
6	6	54	13	1	.060
8	8	58	19	1	.080
10	10	66	22	1	.100
12	12	73	26	1	.120

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)						
				∅ 3	∅ 4	∅ 5	∅ 6	∅ 8	∅ 10	∅ 12
N.1 ≤ 400 N/mm ²	0,3xD	1xD	250	0,023	0,03	0,038	0,045	0,06	0,075	0,09
N.2 ≤ 600 N/mm ²	0,3xD	1xD	200	0,023	0,03	0,038	0,045	0,06	0,075	0,09
N.4 ≤ 800 N/mm ²	0,3xD	1xD	200	0,023	0,03	0,038	0,045	0,06	0,075	0,09

End mills

short, 1 tooth cut over centre, 30°



S1006



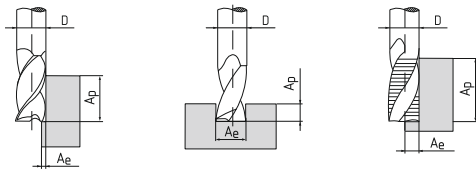
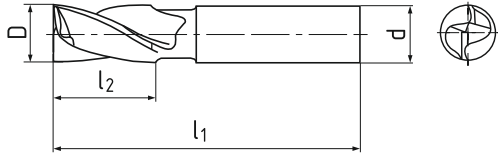
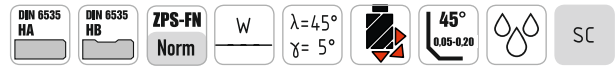
D h 10	d h 6	l ₁	l ₂	Z	S100602
3	6	50	8	1	.030
4	6	54	11	1	.040
5	6	54	13	1	.050
6	6	54	13	1	.060
8	8	58	19	1	.080
10	10	66	22	1	.100
12	12	73	26	1	.120

Cutting conditions

Material	A _p	A _e	V _c	f _z (mm/z)				
				∅ 3	∅ 6	∅ 8	∅ 10	∅ 12
N.1 ≤ 400 N/mm ²	1,5xD	0,2xD	160	0,015	0,03	0,04	0,05	0,06
N.2 ≤ 600 N/mm ²	1,5xD	0,2xD	220	0,015	0,03	0,04	0,05	0,06
N.4 ≤ 800 N/mm ²	1,5xD	0,2xD	176	0,015	0,03	0,04	0,05	0,06

End mills

long, 1 tooth cut over centre, 45°



S1116



S1116



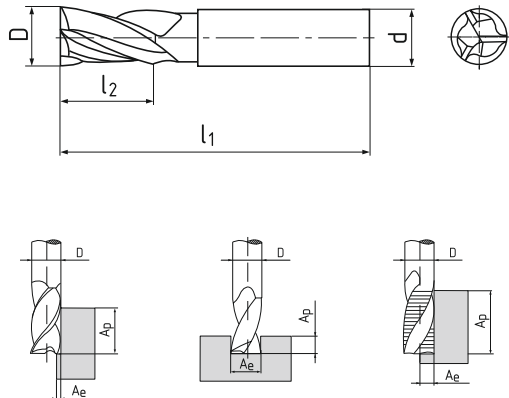
D	d	l1	l2	Z	S111602	S111612
h 10	h 6					
3	6	57	8	2	.030	.030
3,5	6	57	10	2	.035	.035
4	6	57	11	2	.040	.040
4,5	6	57	11	2	.045	.045
5	6	57	13	2	.050	.050
6	6	57	13	2	.060	.060
7	8	63	16	2	.070	.070
8	8	63	19	2	.080	.080
9	10	72	19	2	.090	.090
10	10	72	22	2	.100	.100
12	12	83	26	2	.120	.120
14	14	83	26	2	.140	.140
16	16	92	32	2	.160	.160
18	18	92	32	2	.180	.180
20	20	104	38	2	.200	.200

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)							
				∅ 3	∅ 6	∅ 8	∅ 10	∅ 12	∅ 16	∅ 18	∅ 20
N.1 ≤ 400 N/mm ²	1,5xD	0,2xD	160	0,02	0,04	0,053	0,067	0,08	0,107	0,13	0,135
N.2 ≤ 600 N/mm ²	1,5xD	0,2xD	220	0,02	0,04	0,053	0,067	0,08	0,107	0,13	0,135
N.4 ≤ 800 N/mm ²	1,5xD	0,2xD	176	0,016	0,032	0,0424	0,0536	0,064	0,0856	0,096	0,1064

End mills

long, 1 tooth cut over centre, 45°



S1114

S1114



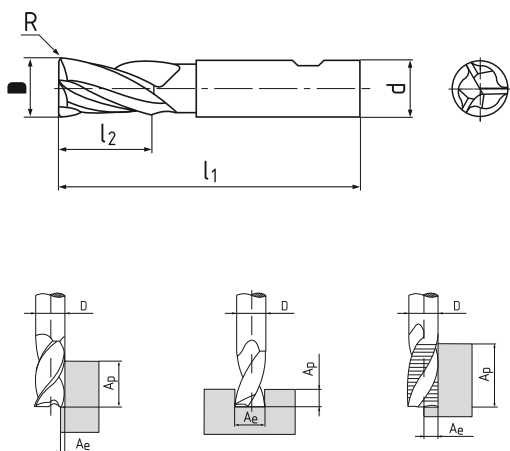
D h 10	d h 6	l ₁	l ₂	Z	S111402	S111412
3	6	57	8	3	.030	.030
3,5	6	57	10	3	.035	.035
4	6	57	11	3	.040	.040
4,5	6	57	11	3	.045	.045
5	6	57	13	3	.050	.050
6	6	57	13	3	.060	.060
8	8	63	19	3	.080	.080
10	10	72	22	3	.100	.100
12	12	83	26	3	.120	.120
14	14	83	26	3	.140	.140
16	16	92	32	3	.160	.160
18	18	92	32	3	.180	.180
20	20	104	38	3	.200	.200

Cutting conditions

Material	A _p	A _e	V _c	f _z (mm/z)							
				Ø 3	Ø 6	Ø 8	Ø 10	Ø 12	Ø 16	Ø 18	Ø 20
N.1 ≤ 400 N/mm ²	1,5xD	0,2xD	160	0,02	0,04	0,053	0,067	0,08	0,107	0,13	0,135
N.2 ≤ 600 N/mm ²	1,5xD	0,2xD	220	0,02	0,04	0,053	0,067	0,08	0,107	0,13	0,135
N.4 ≤ 800 N/mm ²	1,5xD	0,2xD	176	0,016	0,032	0,0424	0,0536	0,064	0,0856	0,096	0,1064

End mills

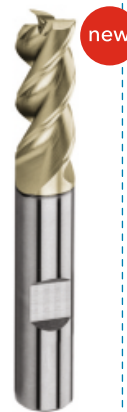
long, 1 tooth cut over centre, 44°/46°



S1114R



S1114R



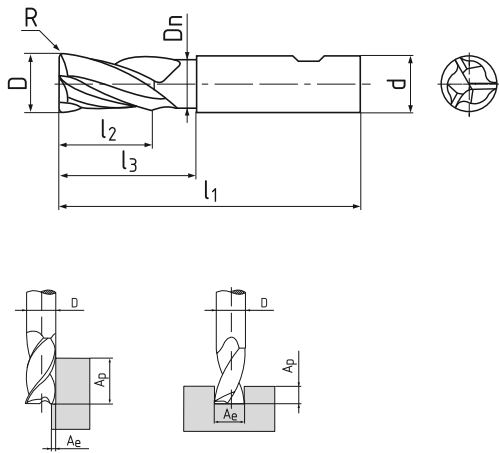
D e 8	d h 5	l ₁	l ₂	R	Z	S111402R	S111412R
6	6	57	15	0,2	3	.060	.060
8	8	63	21	0,2	3	.080	.080
10	10	72	24	0,3	3	.100	.100
12	12	83	28	0,4	3	.120	.120
14	14	83	30	0,4	3	.140	.140
16	16	92	35	0,5	3	.160	.160
18	18	92	38	0,5	3	.180	.180
20	20	104	42	0,6	3	.200	.200
25	25	120	50	0,6	3	.250	.250

Cutting conditions

Material	A _p	A _e	V _c	f _z (mm/z)						
				∅ 6	∅ 8	∅ 10	∅ 12	∅ 16	∅ 20	∅ 25
N.1 ≤ 400 N/mm ²	2xD	0,4xD	200	0,036	0,048	0,06	0,072	0,096	0,12	0,15
N.2 ≤ 600 N/mm ²	2xD	0,4xD	200	0,036	0,048	0,06	0,072	0,096	0,12	0,15
N.4 ≤ 800 N/mm ²	2xD	0,4xD	500	0,036	0,048	0,06	0,072	0,096	0,12	0,15

End mills

long, 1 tooth cut over centre, 44°/46°, inner cooling



S1114RC



S1114RC



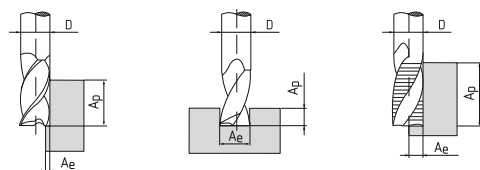
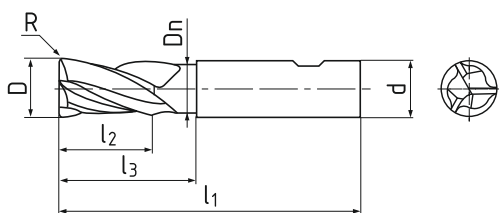
D e8	d	l1	l2	l3	Dn	R	Z	S111402RC	S111412RC
6	6	57	15	19	5,4	0,1	3	.060	.060
8	8	63	21	25	7,2	0,1	3	.080	.080
10	10	72	24	32	9	0,1	3	.100	.100
12	12	83	28	36	11	0,2	3	.120	.120
14	14	83	30	36	13	0,2	3	.140	.140
16	16	92	35	42	15	0,2	3	.160	.160
18	18	92	38	42	17	0,2	3	.180	.180
20	20	104	42	52	19	0,2	3	.200	.200
25	25	120	50	62	24	0,2	3	.250	.250

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)										
				Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 16	Ø 20	Ø 25	
N.1 ≤ 400 N/mm ²	0,3xD	1xD	400	0,039	0,052	0,065	0,078	0,104	0,13	0,156	0,208	0,26	0,325	
N.2 ≤ 600 N/mm ²	0,3xD	1xD	350	0,039	0,052	0,065	0,078	0,104	0,13	0,156	0,208	0,26	0,325	
N.4 ≤ 800 N/mm ²	0,3xD	1xD	350	0,039	0,052	0,065	0,078	0,104	0,13	0,156	0,208	0,26	0,325	

End mills

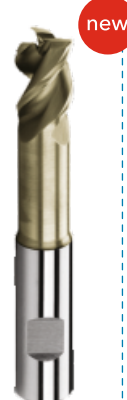
long, 1 tooth cut over centre, 44°/46°



S1124R



S1124R



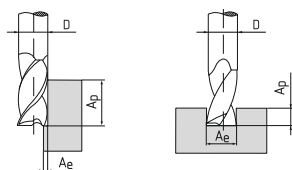
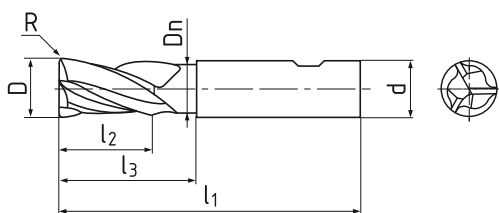
D e 8	d h 5	l ₁	l ₂	l ₃	Dn	R	Z	S112402R	S112412R
6	6	62	7	24	5	0,2	3	.060	.060
8	8	68	9	30	7	0,2	3	.080	.080
10	10	80	11	38	9	0,3	3	.100	.100
12	12	93	13	46	11	0,4	3	.120	.120
14	14	93	15	46	13	0,4	3	.140	.140
16	16	108	17	58	15	0,5	3	.160	.160
18	18	108	19	58	17	0,5	3	.180	.180
20	20	126	21	74	19	0,6	3	.200	.200
25	25	150	26	92	24	0,6	3	.250	.250

Cutting conditions

Material	A _p	A _e	V _c	f _z (mm/z)							
				∅ 6	∅ 8	∅ 10	∅ 12	∅ 16	∅ 18	∅ 20	∅ 25
N.1 ≤ 400 N/mm ²	0,5xD	0,3xD	200	0,08	0,1	0,12	0,14	0,16	0,18	0,2	0,25
N.2 ≤ 600 N/mm ²	0,5xD	0,3xD	200	0,08	0,1	0,12	0,14	0,16	0,18	0,2	0,25
N.4 ≤ 800 N/mm ²	0,5xD	0,3xD	500	0,08	0,1	0,12	0,14	0,16	0,18	0,2	0,25

End mills

long, 1 tooth cut over centre, 44°/46°, inner cooling



S1124RC



S1124RC



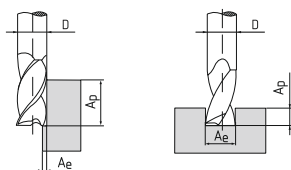
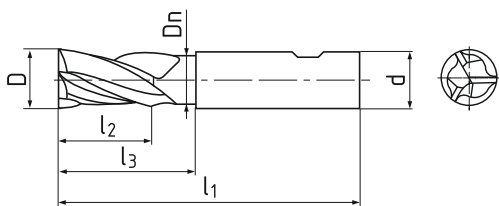
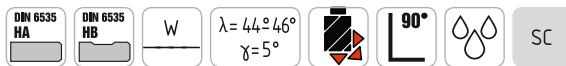
D e8	d	l1	l2	l3	Dn	R	Z	S1124RC	
								S112402RC	S112412RC
6	6	62	7	24	5,4	0,1	3	.060	.060
8	8	68	9	30	7,2	0,1	3	.080	.080
10	10	80	11	38	9	0,1	3	.100	.100
12	12	93	13	46	11	0,2	3	.120	.120
14	14	93	15	46	13	0,2	3	.140	.140
16	16	108	17	58	15	0,2	3	.160	.160
18	18	108	19	59	17	0,2	3	.180	.180
20	20	126	21	74	19	0,2	3	.200	.200
25	25	150	26	92	24	0,2	3	.250	.250

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)										
				Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 16	Ø 20	Ø 25	
N.1 ≤ 400 N/mm ²	0,3xD	1xD	400	0,039	0,052	0,065	0,078	0,104	0,13	0,156	0,208	0,26	0,325	
N.2 ≤ 600 N/mm ²	0,3xD	1xD	350	0,039	0,052	0,065	0,078	0,104	0,13	0,156	0,208	0,26	0,325	
N.4 ≤ 800 N/mm ²	0,3xD	1xD	350	0,039	0,052	0,065	0,078	0,104	0,13	0,156	0,208	0,26	0,325	

End mills

long, 1 tooth cut over centre, 44°/46°



S1124L



S1124L



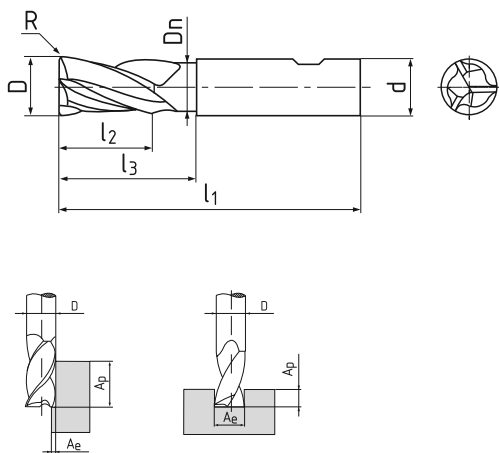
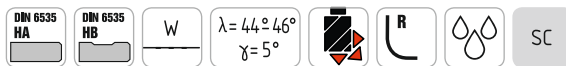
D e8	d	l1	l2	l3	Dn	Z	S112402L	S112412L
3	6	54	5	15	2,7	3	.030	.030
4	6	58	7	20	3,6	3	.040	.040
5	6	63	9	25	4,5	3	.050	.050
6	6	70	10	30	5,4	3	.060	.060
8	8	80	14	40	7,2	3	.080	.080
10	10	92	17	50	9	3	.100	.100
12	12	110	20	60	11	3	.120	.120
16	16	130	27	80	15	3	.160	.160
20	20	152	33	100	19	3	.200	.200
25	25	185	42	125	24	3	.250	.250

Cutting conditions | Řežné podmínky | Schnittbedingungen | Условия резания

Material	Ap	Ae	Vc	fz (mm/z)										
				Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 16	Ø 20	Ø 25	
N.1 ≤ 400 N/mm²	0,3xD	1xD	300	0,03	0,04	0,05	0,06	0,08	0,1	0,12	0,16	0,2	0,25	
N.2 ≤ 600 N/mm²	0,3xD	1xD	250	0,03	0,04	0,05	0,06	0,08	0,1	0,12	0,16	0,2	0,25	
N.4 ≤ 800 N/mm²	0,3xD	1xD	250	0,03	0,04	0,05	0,06	0,08	0,1	0,12	0,16	0,2	0,25	

End mills

long, 1 tooth cut over centre, 44°/46°



S1124LR



S1124LR



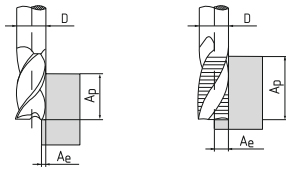
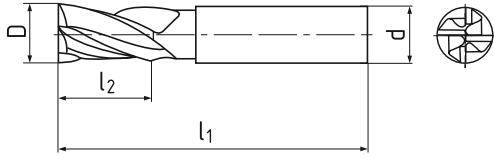
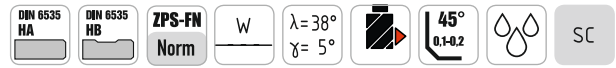
D e8	d	l1	l2	l3	Dn	R	Z	S112402LR		S112412LR	
3	6	54	5	15	2,7	0,1	3	.03001		.03001	
4	6	58	7	20	3,6	0,2	3	.04002		.04002	
5	6	63	9	25	4,5	0,2	3	.05002		.05002	
6	6	70	10	30	5,4	0,2	3	.06002		.06002	
6	6	70	10	30	5,4	0,2	3	.06002		.06002	
6	6	70	10	30	5,4	0,4	3	.06004		.06004	
6	6	70	10	30	7,2	0,8	3	.06008		.06008	
8	8	80	14	40	7,2	0,2	3	.08002		.08002	
8	8	80	14	40	7,2	0,4	3	.08004		.08004	
8	8	80	14	40	7,2	0,8	3	.08008		.08008	
10	10	92	17	50	9	0,2	3	.10002		.10002	
10	10	92	17	50	9	0,4	3	.10004		.10004	
10	10	92	17	50	9	0,8	3	.10008		.10008	
10	10	92	17	50	9	1,6	3	.10016		.10016	
12	12	110	20	60	11	0,2	3	.12002		.12002	
12	12	110	20	60	11	0,4	3	.12004		.12004	
12	12	110	20	60	11	0,8	3	.12008		.12008	
12	12	110	20	60	11	1,6	3	.12016		.12016	
12	12	110	20	60	11	2	3	.12020		.12020	
12	12	110	20	60	11	2,5	3	.12025		.12025	
16	16	130	27	80	15	0,2	3	.16002		.16002	
16	16	130	27	80	15	0,4	3	.16004		.16004	
16	16	130	27	80	15	0,8	3	.16008		.16008	
16	16	130	27	80	15	1,6	3	.16016		.16016	
16	16	130	27	80	15	2	3	.16020		.16020	
16	16	130	27	80	15	2,5	3	.16025		.16025	
16	16	130	27	80	15	3,2	3	.16032		.16032	
16	16	130	27	80	15	4	3	.16040		.16040	
16	16	130	27	80	15	5	3	.16050		.16050	
20	20	152	33	100	19	0,2	3	.20002		.20002	
20	20	152	33	100	19	0,4	3	.20004		.20004	
20	20	152	33	100	19	0,8	3	.20008		.20008	
20	20	152	33	100	19	1,6	3	.20016		.20016	

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)									
				Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 16	Ø 20	
N.1 ≤ 400 N/mm²	0,3xD	1xD	300	0,03	0,04	0,05	0,06	0,08	0,1	0,12	0,16	0,2	
N.2 ≤ 600 N/mm²	0,3xD	1xD	250	0,03	0,04	0,05	0,06	0,08	0,1	0,12	0,16	0,2	
N.4 ≤ 800 N/mm²	0,3xD	1xD	250	0,03	0,04	0,05	0,06	0,08	0,1	0,12	0,16	0,2	

End mills

long, 2 teeth cut to centre, 38°



S1115



S1115

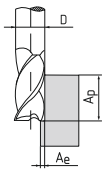
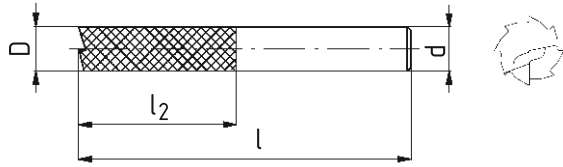


D h 10	d h 6	l1	l2	Z	S111502	S111512
4	6	62	15	4	.040	.040
5	6	62	18	4	.050	.050
6	6	62	18	4	.060	.060
8	8	68	24	4	.080	.080
10	10	80	30	4	.100	.100
12	12	93	36	4	.120	.120
16	16	108	48	4	.160	.160
20	20	126	60	4	.200	.200

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)						
				Ø 4	Ø 6	Ø 8	Ø 10	Ø 12	Ø 16	Ø 20
N.1 ≤ 400 N/mm ²	2,5xD	0,1xD	160	0,027	0,04	0,053	0,067	0,08	0,107	0,133
N.2 ≤ 600 N/mm ²	2,5xD	0,1xD	220	0,027	0,04	0,053	0,067	0,08	0,107	0,133
N.4 ≤ 800 N/mm ²	2,5xD	0,1xD	176	0,0216	0,032	0,0424	0,0536	0,064	0,0856	0,1064

Contour end mills for plastics



T2002



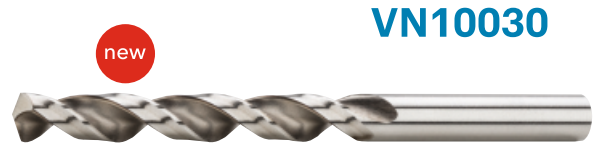
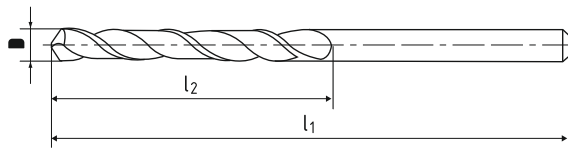
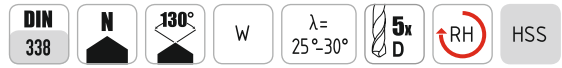
D	d	l1	l2	Z	T2002
2	3	40	9	2	.020
3	3	40	12	2	.030
4	4	50	16	2	.040
6	6	50	19	2	.060
6	6	100	40	2	.060100
8	8	60	25	2	.080
8	8	100	40	2	.080100
10	10	70	25	2	.100
10	10	100	40	2	.100100
12	12	75	25	2	.120
12	12	100	40	2	.120100

Cutting conditions

Material	Ap	Ae	Vc	fz (mm/z)							
				∅ 3	∅ 4	∅ 5	∅ 6	∅ 8	∅ 10	∅ 12	
N.5	≤ 300 N/mm ²	1,5xD	0,1xD	90	0,02	0,02	0,027	0,027	0,054	0,072	0,089

Straight shank twist drills

jobber series, type W



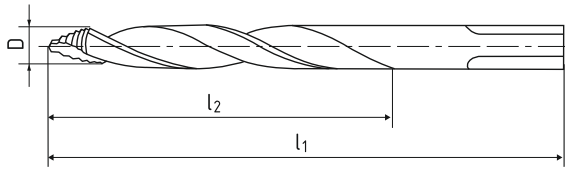
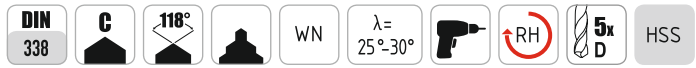
D h 8	l1	l2	VN10030	D h 8	l1	l2	VN10030
0,5	22	6	.0050	6	93	57	.0600
0,7	28	9	.0070	6,5	101	63	.0650
0,8	30	10	.0080	6,8	109	69	.0680
1	34	12	.0100	7	109	69	.0700
1,5	40	18	.0150	7,5	109	69	.0750
2	49	24	.0200	8	117	75	.0800
2,5	57	30	.0250	8,5	117	75	.0850
3	61	33	.0300	9,5	125	81	.0950
3,2	65	36	.0320	10	133	87	.1000
3,3	65	36	.0330	10,2	133	87	.1020
3,5	70	39	.0350	10,5	133	87	.1050
4	75	43	.0400	11	142	94	.1100
4,2	75	43	.0420	12	151	101	.1200
4,5	80	47	.0450	13	151	101	.1300
5	86	52	.0500	14	160	108	.1400
5,1	86	52	.0510	15	169	114	.1500
5,2	86	52	.0520	16	178	120	.1600
5,5	93	57	.0550				

Cutting conditions

Material	A _p	A _e	V _c	f (mm/r)									
				Ø 1	Ø 2	Ø 3,15	Ø 4	Ø 5	Ø 6,3	Ø 8	Ø 10	Ø 12,5	Ø 16
N.1 ≤ 400 N/mm ²			80	0,02	0,08	0,125	0,16	0,16	0,2	0,25	0,315	0,315	0,4
N.2 ≤ 600 N/mm ²			70	0,02	0,08	0,125	0,16	0,16	0,2	0,25	0,315	0,315	0,4
N.3 ≤ 600 N/mm ²			70	0,02	0,08	0,125	0,16	0,16	0,2	0,25	0,315	0,315	0,4
N.4 ≤ 800 N/mm ²			50	0,016	0,05	0,08	0,1	0,1	0,125	0,16	0,2	0,2	0,25
N.5 ≤ 300 N/mm ²			28	0,016	0,05	0,08	0,1	0,1	0,125	0,16	0,2	0,2	0,25

RS drills

for general purpose, type WN



VN10920

D h 8	I1	I2	VN10920	D h 8	I1	I2	VN10920
1	34	12	.0100	6	93	57	.0600
1,5	40	18	.0150	6,5	101	63	.0650
2	49	24	.0200	6,8	109	69	.0680
2,5	57	30	.0250	7	109	69	.0700
3	61	33	.0300	7,5	109	69	.0750
3,2	65	36	.0320	8	117	75	.0800
3,3	65	36	.0330	8,5	117	75	.0850
3,5	70	39	.0350	9	125	81	.0900
4	75	43	.0400	9,5	125	81	.0950
4,1	75	43	.0410	10	133	87	.1000
4,2	75	43	.0420	10,2	133	87	.1020
4,5	80	47	.0450	10,5	133	87	.1050
4,9	86	52	.0490	11	142	94	.1100
5	86	52	.0500	11,5	142	94	.1150
5,1	86	52	.0510	12	151	101	.1200
5,2	86	52	.0520	12,5	151	101	.1250
5,5	93	57	.0550	13	151	101	.1300

VN10920 P.1 P.2 P.3 P.4 P.5 P.6 M.1 K.1 N.1 N.2 N.3 N.4 N.5

Set of RS drills

for general purpose, type WN



VN10920

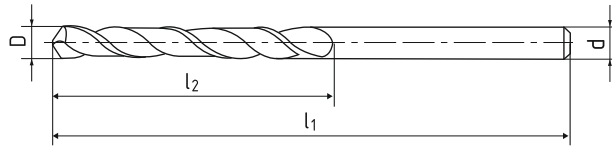


D h 8	I1	I2	.SET04	.SET05	D h 8	I1	I2	.SET04	.SET05
1	34	12			7,5	109	69		
1,5	40	18			8	117	75		
2	49	24			8,5	117	75		
2,5	57	30			9	125	81		
3	61	33			9,5	125	81		
3,5	70	39			10	133	87		
4	75	43			10,5	133	87		
4,5	80	47			11	142	94		
5	86	52			11,5	142	94		
5,5	93	57			12	151	101		
6	93	57			12,5	151	101		
6,5	101	63			13	151	101		
7	109	69							

VN10920 P.1 P.2 P.3 P.4 P.5 P.6 M.1 K.1 N.1 N.2 N.3 N.4 N.5

Solid carbide drills

type W



S10132

D m 7	l1	l2	d	S10132	D m 7	l1	l2	d	S10132
3	66	28	6	.030	5,6	82	44	6	.056
3,1	66	28	6	.031	5,7	82	44	6	.057
3,2	66	28	6	.032	5,8	82	44	6	.058
3,3	66	28	6	.033	5,9	82	44	6	.059
3,4	66	28	6	.034	6	82	44	6	.060
3,5	66	28	6	.035	6,1	91	53	8	.061
3,6	66	28	6	.036	6,2	91	53	8	.062
3,7	66	28	6	.037	6,3	91	53	8	.063
3,8	74	36	6	.038	6,4	91	53	8	.064
3,9	74	36	6	.039	6,5	91	53	8	.065
4	74	36	6	.040	6,6	91	53	8	.066
4,1	74	36	6	.041	6,7	91	53	8	.067
4,2	74	36	6	.042	6,8	91	53	8	.068
4,3	74	36	6	.043	6,9	91	53	8	.069
4,4	74	36	6	.044	7	91	53	8	.070
4,5	74	36	6	.045	7,1	91	53	8	.071
4,6	74	36	6	.046	7,2	91	53	8	.072
4,7	74	36	6	.047	7,3	91	53	8	.073
4,8	82	44	6	.048	7,4	91	53	8	.074
4,9	82	44	6	.049	7,5	91	53	8	.075
5	82	44	6	.050	7,6	91	53	8	.076
5,1	82	44	6	.051	7,7	91	53	8	.077
5,2	82	44	6	.052	7,8	91	53	8	.078
5,3	82	44	6	.053	7,9	91	53	8	.079
5,4	82	44	6	.054	8	91	53	8	.080
5,5	82	44	6	.055	8,1	103	61	10	.081

Cutting conditions

Material	Ap	Ae	Vc	f (mm/r)							
				Ø 3	Ø 5	Ø 8	Ø 10	Ø 12	Ø 15	Ø 17	Ø 20
N.1 ≤ 400 N/mm ²			260	0,14	0,14	0,2	0,28	0,35	0,35	0,45	0,45
N.2 ≤ 600 N/mm ²			160	0,14	0,14	0,2	0,28	0,35	0,35	0,45	0,45
N.3 ≤ 600 N/mm ²			160	0,14	0,14	0,2	0,28	0,35	0,35	0,45	0,45
N.4 ≤ 800 N/mm ²			150	0,14	0,14	0,2	0,28	0,35	0,35	0,45	0,45
N.5 ≤ 300 N/mm ²			140	0,12	0,12	0,16	0,21	0,27	0,27	0,35	0,35

Solid carbide drills

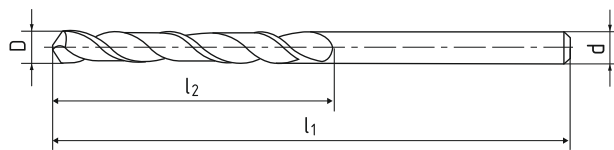
type W



CZ Vrtáky SK | typ W

DE VHM Spiralbohrer | Type W

RU Твердосплавные сверла | тип W



S10132

D m 7	l1	l2	d	S10132	D m 7	l1	l2	d	S10132
8,2	103	61	10	.082	11,4	118	71	12	.114
8,3	103	61	10	.083	11,5	118	71	12	.115
8,4	103	61	10	.084	11,6	118	71	12	.116
8,5	103	61	10	.085	11,7	118	71	12	.117
8,6	103	61	10	.086	11,8	118	71	12	.118
8,7	103	61	10	.087	11,9	118	71	12	.119
8,8	103	61	10	.088	12	118	71	12	.120
8,9	103	61	10	.089	12,2	124	77	14	.122
9	103	61	10	.090	12,3	124	77	14	.123
9,1	103	61	10	.091	12,5	124	77	14	.125
9,2	103	61	10	.092	12,8	124	77	14	.128
9,3	103	61	10	.093	13	124	77	14	.130
9,4	103	61	10	.094	13,5	124	77	14	.135
9,5	103	61	10	.095	13,8	124	77	14	.138
9,6	103	61	10	.096	14	124	77	14	.140
9,7	103	61	10	.097	14,5	133	83	16	.145
9,8	103	61	10	.098	14,8	133	83	16	.148
9,9	103	61	10	.099	15	133	83	16	.150
10	103	61	10	.100	15,5	133	83	16	.155
10,1	118	71	12	.101	15,8	133	83	16	.158
10,2	118	71	12	.102	16	133	83	16	.160
10,3	118	71	12	.103	16,5	143	93	18	.165
10,4	118	71	12	.104	16,8	143	93	18	.168
10,5	118	71	12	.105	17	143	93	18	.170
10,6	118	71	12	.106	17,5	143	93	18	.175
10,7	118	71	12	.107	17,8	143	93	18	.178
10,8	118	71	12	.108	18	143	93	18	.180
10,9	118	71	12	.109	18,5	153	101	20	.185
11	118	71	12	.110	19	153	101	20	.190
11,1	118	71	12	.111	19,5	153	101	20	.194
11,2	118	71	12	.112	20	153	101	20	.194
11,3	118	71	12	.113					.200

Cutting conditions

Material	Ap	Ae	Vc	f (mm/r)							
				Ø 3	Ø 5	Ø 8	Ø 10	Ø 12	Ø 15	Ø 17	Ø 20
N.1 ≤ 400 N/mm ²			260	0,14	0,14	0,2	0,28	0,35	0,35	0,45	0,45
N.2 ≤ 600 N/mm ²			160	0,14	0,14	0,2	0,28	0,35	0,35	0,45	0,45
N.3 ≤ 600 N/mm ²			160	0,14	0,14	0,2	0,28	0,35	0,35	0,45	0,45
N.4 ≤ 800 N/mm ²			150	0,14	0,14	0,2	0,28	0,35	0,35	0,45	0,45
N.5 ≤ 300 N/mm ²			140	0,12	0,12	0,16	0,21	0,27	0,27	0,35	0,35

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