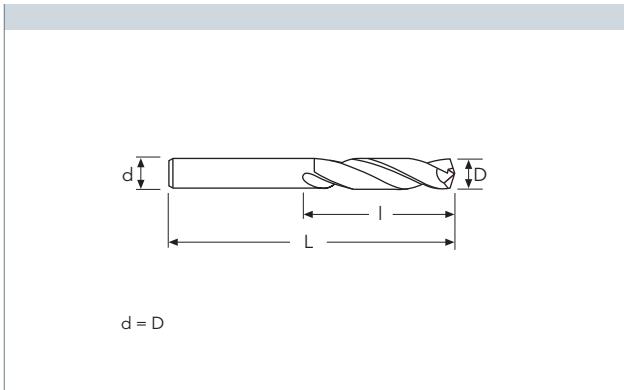


PAGE 250~252

DIN 338

138N - 1386STI - 138NTI - 138HB - 138WB (h8)

Ø mm	1~3	3.1~6	6.1~10	10.1~18	18.1~20
tol. D µ	0 / -14	0 / -18	0 / -22	0 / -27	0 / -33



138N	1386STI	138NTI	138HB	138WB
HSS OX +	HSS TiN	HSS TiN	HSS BR	HSS BR

D(h8)	I	L		Stock	Stock	Stock	Stock	Stock
mm 0.20	2.5	19	10	●				
0.30	3	19	10	●				
0.40	5	20	10	●				
0.50	6	22	10	●				
0.60	7	24	10	●				
0.70	9	28	10	●				
0.75	9	28	10	●				
0.80	10	30	10	●				
0.90	11	32	10	●				
1.00	12	34	10	●	●**	●		
1.10	14	36	10	●	●**	●		
1.20	16	38	10	●	●**	●		
1.25	16	38	10	●				
1.30	16	38	10	●	●**	●		
1.40	18	40	10	●	●**	●		
1.50	18	40	10	●	●**	●	●	●
1.60	20	43	10	●	●	●	○	○
1.70	20	43	10	●	●	●	○	○
1.75	22	46	10	●				
1.80	22	46	10	●	●	●	○	○
1.90	22	46	10	●	●	●	○	○
2.00	24	49	10	●	●	●	●	●
2.10	24	49	10	●	●	●	○	○
2.20	27	53	10	●	●	●	●	●
2.25	27	53	10	●				
2.30	27	53	10	●	●	●	○	○
2.40	30	57	10	●	●	●	●	●
2.50	30	57	10	●	●	●	●	●
2.60	30	57	10	●	●	●	●	○
2.70	33	61	10	●	●	●	○	○
2.75	33	61	10	●				
2.80	33	61	10	●	●	●	○	○
2.90	33	61	10	●	●	●	○	○
3.00	33	61	10	●	●	●	●	●
3.10	36	65	10	●	●	●	○	○
3.20	36	65	10	●	●	●	●	●

* OX ≥ mm. 2

** N TYPE ≤ mm. 1.5 = 1385NTI

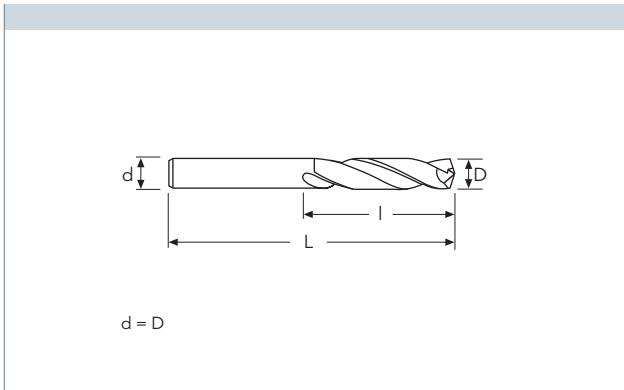
● stock standard ○ non-standard stock ■ stock exhaustion

TYPHOON
 C-SD-TA
 LFTA
 SUTA
 HSS-HSS/CO DRILLS
 UH RED
 MEX ORANGE
 HF EVO
 MEF ENDLESS
 ALU
 MDC
 G2
 MDTA
 ULTRA MILLS
 HSS/CO
 CARBIDE BURRS
 PARAMETERS

	DIN 338
PAGE 250~252	

138N - 1386STI - 138NTI - 138HB - 138WB (h8)

Ø mm	1~3	3.1~6	6.1~10	10.1~18	18.1~20
tol. D µ	0 / -14	0 / -18	0 / -22	0 / -27	0 / -33



HSS OX	HSS TiN	HSS TiN	HSS BR	HSS BR

D(h8)	I	L		Stock	Stock	Stock	Stock	Stock
mm 3.25	36	65	10	●				
3.30	36	65	10	●	●		●	●
3.40	39	70	10	●	●	●	○	○
3.50	39	70	10	●	●	●	●	●
3.60	39	70	10	●	●	●	○	●
3.70	39	70	10	●	●	●	○	●
3.75	39	70	10	●		●		
3.80	43	75	10	●	●	●	●	●
3.90	43	75	10	●	●	●	○	●
4.00	43	75	10	●	●	●	●	●
4.10	43	75	10	●	●	●	○	●
4.20	43	75	10	●	●	●	●	●
4.25	43	75	10	●				
4.30	47	80	10	●	●	●	○	○
4.40	47	80	10	●	●	●	○	○
4.50	47	80	10	●	●	●	●	●
4.60	47	80	10	●	●	●	○	●
4.70	47	80	10	●	●	●	○	○
4.75	47	80	10	●				
4.80	52	86	10	●	●	●	●	●
4.90	52	86	10	●	●	●	○	○
5.00	52	86	10	●	●	●	●	●
5.10	52	86	10	●	●	●	○	○
5.20	52	86	10	●	●	●	○	●
5.25	52	86	10	●				
5.30	52	86	10	●	●	●	○	○
5.40	57	93	10	●	●	●	○	○
5.50	57	93	10	●	●	●	●	●
5.60	57	93	10	●	●	●	○	●
5.70	57	93	10	●	●	●	○	○
5.75	57	93	10	●				
5.80	57	93	10	●	●	●	○	○
5.90	57	93	10	●	●	●	○	○
6.00	57	93	10	●	●	●	●	●
6.10	63	101	10	●	●	●	○	○
6.20	63	101	10	●	●	●	○	○

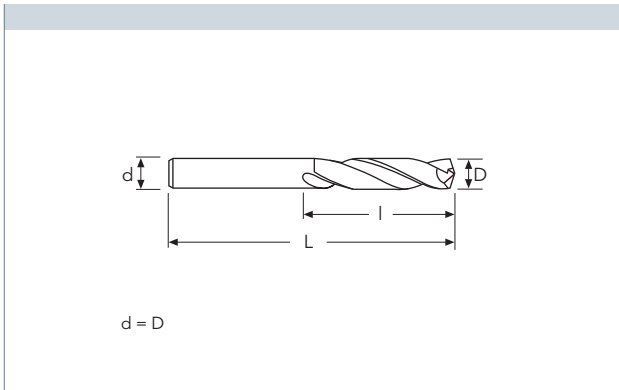
● stock standard ○ non-standard stock ■ stock exhaustion

n **Vf**
PAGE
250~252

DIN
338

138N - 1386STI - 138NTI - 138HB - 138WB (h8)

Ø mm	1~3	3.1~6	6.1~10	10.1~18	18.1~20
tol. D µ	0 / -14	0 / -18	0 / -22	0 / -27	0 / -33



138N	1386STI	138NTI	138HB	138WB
HSS OX	HSS TiN	HSS TiN	HSS BR	HSS BR

D(h8)	I	L		Stock	Stock	Stock	Stock	Stock
mm 6.25	63	101	10	●	●	●	○	○
6.30	63	101	10	●	●	●	○	○
6.40	63	101	10	●	●	●	○	○
6.50	63	101	10	●	●	●	○	○
6.60	63	101	5	●	●	●	○	○
6.70	63	101	5	●	●	●	○	○
6.75	69	109	5	●	●	●	○	○
6.80	69	109	5	●	●	●	○	●
6.90	69	109	5	●	●	●	○	○
7.00	69	109	5	●	●	●	○	●
7.10	69	109	5	●	●	●	○	○
7.20	69	109	5	●	●	●	○	○
7.25	69	109	5	●	●	●	○	○
7.30	69	109	5	●	●	●	○	○
7.40	69	109	5	●	●	●	○	○
7.50	69	109	5	●	●	●	○	●
7.60	75	117	5	●	●	○	○	○
7.70	75	117	5	●	●	●	○	○
7.75	75	117	5	●	●	●	○	○
7.80	75	117	5	●	●	●	○	○
7.90	75	117	5	●	●	●	○	○
8.00	75	117	5	●	●	●	○	○
8.10	75	117	5	●	●	●	○	○
8.20	75	117	5	●	●	●	○	○
8.25	75	117	5	●	●	●	○	○
8.30	75	117	5	●	●	●	○	○
8.40	75	117	5	●	●	○	○	○
8.50	75	117	5	●	●	●	○	○
8.60	81	125	5	●	●	●	○	○
8.70	81	125	5	●	●	●	○	○
8.75	81	125	5	●	●	●	○	○
8.80	81	125	5	●	●	●	○	○
8.90	81	125	5	●	●	●	○	○
9.00	81	125	5	●	●	●	○	○
9.10	81	125	5	●	●	○	○	○
9.20	81	125	5	●	●	○	○	○

● stock standard ○ non-standard stock ■ stock exhaustion

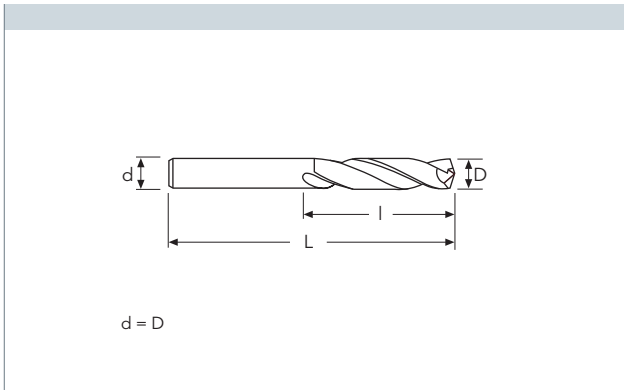
- TYPHOON
- C-SD-TA
- LFTA
- SUTA
- HSS-HSS/CO DRILLS
- UH RED
- MEX ORANGE
- HF EVO
- MEF ENDLESS
- ALU
- MDC
- G2
- MDTA
- ULTRA MILLS
- HSS/CO
- CARBIDE BURRS
- PARAMETERS

DIN
338

PAGE
250~252

138N - 1386STI - 138NTI - 138HB - 138WB (h8)

Ø mm	1~3	3.1~6	6.1~10	10.1~18	18.1~20
tol. D µ	0 / -14	0 / -18	0 / -22	0 / -27	0 / -33



HSS OX	HSS TiN	HSS TiN	HSS BR	HSS BR

D(h8)	I	L		Stock	Stock	Stock	Stock	Stock
mm 9.25	81	125	5	●	●	○	○	○
9.30	81	125	5	●	●	○	○	○
9.40	81	125	5	●	●	○	○	○
9.50	81	125	5	●	●	●	●	●
9.60	87	133	5	●	●	○	○	○
9.70	87	133	5	●	●	○	○	○
9.75	87	133	5	●	●	○	○	○
9.80	87	133	5	●	●	○	○	○
9.90	87	133	5	●	●	○	○	○
10.00	87	133	5	●	●	●	●	●
10.10	87	133	5	●	●			
10.20	87	133	5	●	●	●		
10.25	87	133	5	●	●			
10.30	87	133	5	●	●			
10.40	87	133	5	●	●			
10.50	87	133	5	●	●	●	○	○
10.60	87	133	5	●	●			
10.70	94	142	5	●	●			
10.75	94	142	5	●	●			
10.80	94	142	5	●	●			
10.90	94	142	5	●	●			
11.00	94	142	5	●	●	●	○	○
11.10	94	142	5	●	●			
11.20	94	142	5	●	●			
11.25	94	142	5	●	●			
11.30	94	142	5	●	●			
11.40	94	142	5	●	●			
11.50	94	142	5	●	●	●	○	○
11.60	94	142	5	●	●			
11.70	94	142	5	●	●			
11.75	94	142	5	●	●			
11.80	94	142	5	●	●			
11.90	101	151	5	●	●			
12.00	101	151	5	●	●	●	○	○
12.10	101	151	5	●	●			
12.20	101	151	5	●	●			

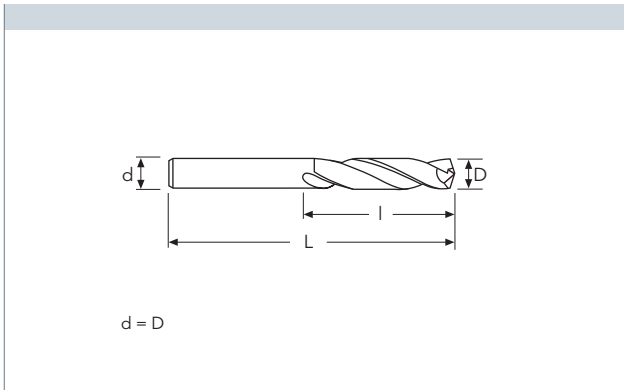
● stock standard ○ non-standard stock ■ stock exhaustion

PAGE 250~252

DIN 338

138N - 1386STI - 138NTI - 138HB - 138WB (h8)

Ø mm	1~3	3.1~6	6.1~10	10.1~18	18.1~20
tol. D µ	0 / -14	0 / -18	0 / -22	0 / -27	0 / -33



138N	1386STI	138NTI	138HB	138WB
HSS OX	HSS TiN	HSS TiN	HSS BR	HSS BR

D(h8)	I	L		Stock	Stock	Stock	Stock	Stock
mm 12.25	101	151	5	●				
12.30	101	151	5	●	●			
12.40	101	151	5	●	●			
12.50	101	151	5	●	●	●	○	○
12.60	101	151	5	●	●			
12.70	101	151	5	●	●			
12.75	101	151	5	●	●			
12.80	101	151	5	●	●			
12.90	101	151	5	●	●			
13.00	101	151	5	●	●	●	○	○
13.25	108	160	1	●				
13.50	108	160	1	●	●			
13.75	108	160	1	●				
14.00	108	160	1	●	●			
14.25	114	169	1	●				
14.50	114	169	1	●	●			
14.75	114	169	1	●				
15.00	114	169	1	●	●			
15.25	120	178	1	●				
15.50	120	178	1	●	●			
15.75	120	178	1	●				
16.00	120	178	1	●	●			
16.25	125	184	1	●				
16.50	125	184	1	●				
16.75	125	184	1	●				
17.00	125	184	1	●				
17.50	130	191	1	●				
18.00	130	191	1	●				
18.50	135	198	1	●				
19.00	135	198	1	●				
19.50	140	205	1	●				
20.00	140	205	1	●				

● stock standard ○ non-standard stock ■ stock exhaustion

TYPHOON
 C-SD-TA
 LFTA
 SUTA
 HSS-
HSS/CO
DRILLS
 UH
RED
 MEX
ORANGE
 HF
EVO
 MEF
ENDLESS
 ALU
 MDC
 G2
 MDTA
 ULTRA
MILLS
 HSS/CO
 CARBIDE
BURRS
 PARAMETERS

118N - 218NVA* - 138N - 238NVA - 234NVA* - 145N - 245N - 138NTI** - 145NTI														
MATERIAL GROUPS	1 2		2 3 4		4 5		5 6		6		9		26	
HRC			~23		23~28		23~34		34~38					
N/mm ²	~570		570~830		830~950		830~1110		1110~1260					
Vc [m/min]	24~28		18~22		14~18		16~20		10~12		18~22		10~12	
Ø mm.	n	fn	n	fn	n	fn	n	fn	n	fn	n	fn	n	fn
2	4250	0.025	3200	0.025	2400	0.015	3000	0.020	1750	0.015	3200	0.025	1750	0.020
2.5	3400	0.025	2600	0.025	1900	0.015	2400	0.020	1400	0.015	2600	0.025	1400	0.020
3	2700	0.050	2000	0.050	1500	0.025	1900	0.050	1100	0.020	2000	0.050	1100	0.025
4	2200	0.060	1650	0.060	1250	0.030	1600	0.060	900	0.020	1700	0.060	900	0.030
5	1700	0.065	1300	0.065	950	0.038	1200	0.063	700	0.025	1300	0.063	700	0.038
6	1500	0.090	1100	0.090	850	0.050	1100	0.090	600	0.030	1100	0.090	600	0.050
7	1250	0.110	950	0.110	700	0.060	900	0.110	520	0.030	950	0.110	520	0.060
8	1100	0.130	780	0.130	600	0.076	750	0.130	430	0.038	780	0.130	430	0.076
9	950	0.140	710	0.140	540	0.080	860	0.150	390	0.040	710	0.140	430	0.080
10	850	0.140	650	0.140	460	0.080	590	0.160	350	0.050	650	0.140	430	0.080
11	750	0.150	550	0.150	430	0.076	520	0.180	300	0.050	550	0.150	430	0.080
12	710	0.160	530	0.160	410	0.080	500	0.190	290	0.050	530	0.160	400	0.080
13	680	0.170	510	0.170	390	0.090	470	0.190	280	0.050	510	0.170	370	0.090
14	640	0.180	480	0.180	350	0.110	440	0.200	260	0.050	480	0.180	340	0.100
16	590	0.190	440	0.190	320	0.110	410	0.210	240	0.050	440	0.190	300	0.100
18	550	0.200	410	0.200	280	0.120	350	0.210	210	0.050	410	0.200	270	0.110
19	450	0.230	330	0.230	270	0.130	300	0.230	180	0.050	330	0.230	200	0.130
20	430	0.230	320	0.230	250	0.130	290	0.230	170	0.060	320	0.230	180	0.130
22	400	0.240	300	0.240	230	0.140	270	0.230	160	0.060	300	0.240	170	0.140
24	370	0.250	280	0.250	220	0.150	260	0.240	150	0.060	280	0.250	150	0.150
26	350	0.260	260	0.260	200	0.160	240	0.240	140	0.070	260	0.260	140	0.160
28	320	0.260	240	0.260	180	0.160	220	0.240	130	0.070	240	0.260	130	0.160
30	290	0.270	220	0.270	160	0.170	200	0.250	120	0.080	220	0.270	120	0.170
32	250	0.280	200	0.280	150	0.180	180	0.250	110	0.080	200	0.280	110	0.180
35	250	0.320	190	0.320	140	0.200	170	0.270	100	0.080	190	0.320	100	0.200
40	220	0.330	170	0.330	120	0.200	150	0.280	90	0.080	170	0.330	90	0.200
45	190	0.330	150	0.330	110	0.200	140	0.290	80	0.080	150	0.330	80	0.200
50	170	0.330	130	0.330	95	0.200	120	0.300	70	0.080	130	0.330	70	0.200

**n & fn = +30%~-+15%

* DIN1897 - DIN340 - DIN1869 - DIN341 - DIN1870 : n= n x Q (page 251)
 DIN1897 - DIN340 - DIN1869 - DIN341 - DIN1870 : fn= fn x R (page 251)

LS DIN338*														
MATERIAL GROUPS	3 4		5 6		13 14		13 14							
HRC	~30		20~40											
N/mm ²	700~1000		800~1200		~250 (HB)		~300 (HB)							
Vc [m/min]	15~18		12~14		24~28		10~12							
Ø mm.	n	fn	n	fn	n	fn	n	fn						
2	2650	0.030	2100	0.025	4200	0.060	1700	0.050						
2.5	2100	0.040	1700	0.030	3300	0.080	1300	0.060						
3	1700	0.050	1300	0.040	2650	0.100	1050	0.080						
4	1300	0.080	1050	0.050	2100	0.130	850	0.100						
5	1050	0.060	850	0.050	1700	0.130	660	0.100						
6	850	0.080	660	0.060	1300	0.180	530	0.130						
8	650	0.100	530	0.080	1050	0.200	420	0.170						
10	530	0.130	420	0.100	850	0.250	330	0.210						
13	420	0.130	330	0.100	650	0.250	260	0.210						
16	330	0.150	260	0.130	530	0.300	210	0.250						
20	260	0.200	210	0.150	420	0.400	170	0.300						
25	210	0.250	170	0.200	330	0.500	130	0.500						
30	170	0.250	130	0.200	260	0.500	110	0.500						

* DIN340 - DIN1869 - DIN341 - DIN1870 : n= n x Q (page 251)
 DIN340 - DIN1869 - DIN341 - DIN1870 : fn= fn x R (page 251)

MATERIAL GROUPS		13 14		15 16	
HRC		~23			
N/mm ²		570~830			
Vc [m/min]		19~20		18~55	
Ø mm.		n	fn	n	fn
2	2800	0.025	8000	0.038	
2.5	2300	0.025	6400	0.038	
3	2000	0.050	5000	0.063	
4	1700	0.060	4100	0.070	
5	1300	0.063	3200	0.076	
6	1100	0.090	2800	0.110	
7	950	0.110	2400	0.150	
8	800	0.130	2000	0.180	
9	710	0.140	1800	0.160	
10	650	0.140	1600	0.190	
11	550	0.150	1400	0.200	
12	530	0.160	1350	0.210	
13	510	0.170	1260	0.230	
14	480	0.160	1200	0.240	
16	440	0.190	1100	0.250	
18	410	0.200	1000	0.260	
19	330	0.230	820	0.300	
20	320	0.230	800	0.310	
22	300	0.240	750	0.320	
24	280	0.250	700	0.330	
26	260	0.260	640	0.340	
28	240	0.260	590	0.360	
30	220	0.270	540	0.370	
32	200	0.280	500	0.380	
35	190	0.310	460	0.440	
40	170	0.320	410	0.450	
45	150	0.330	360	0.460	
50	130	0.330	300	0.460	

✳ CUTTING SPEED AND FEED ADJUSTMENT ACCORDING TO THE DRILL LENGTH AND HOLE DEPTH
 I VARIAZIONE VELOCITÀ E AVANZAMENTO IN BASE ALLA LUNGHEZZA DELLA PUNTA E ALLA PROFONDITÀ DEL FORO
 ● SCHNEIDGESCHWINDIGKEIT UND VORSCHUBSCHWANKUNG GEMÄSS DER BOHRERLÄNGE UND BOHRUNGSTIEFE
 I VARIATION DE LA VITESSE DE COUPE ET DE L'AVANCE SELON LA LONGUEUR DU FORÊT ET LA PROFONDEUR DU TROU
 ● VARIACIÓN DE LA VELOCIDAD DE AVANCE EN FUNDITIÓN DE LA LONGITUD DE LA PUNTA Y DE LA PROFUNDIDAD DEL AGUJERO
 ● ИЗМЕНЕНИЕ СКОРОСТИ И ПОДАЧИ В ЗАВИСИМОСТИ ОТ ДЛИНЫ СВЕРЛА И ГЛУБИНЫ ОТВЕРСТИЯ

	DIN1897	DIN338	DIN340	DIN1869			DIN345	DIN341	DIN1870	
				1	2	3			1	2
P	4xD	6~8xD	8~12xD	14~24xD	18~30xD	22~36xD	5~8xD	7~10xD	8~16xD	10~20xD
Q	1.25	1.00	0.80	0.70	0.60	0.50	1.00	0.80	0.70	0.60
R	1.20	1.00	0.90	0.80	0.70	0.60	1.00	0.90	0.80	0.70

TYPHOON

C-SD-TA

LFTA

SUTA

HSS-
HSS/CO
DRILLS

UH
RED

MEX
ORANGE

HF
EVO

MEF
ENDLESS

ALU

MDC

G2

MDTA

ULTRA
MILLS

HSS/CO

CARBIDE
BURRS

PARAMETERS

138HB			
MATERIAL GROUPS	18		
HRC			
N/mm ²			
Vc [m/min]	50~60		
Ø mm.	n	fn	
2	8800	0.08	
3	5900	0.10	
4	4400	0.12	
5	3500	0.14	
6	2900	0.16	
7	2500	0.18	
8	2200	0.20	
9	2000	0.22	
10	1800	0.25	
11	1600	0.27	
12	1500	0.28	
13	1300	0.32	

138WB				
MATERIAL GROUPS	15		16	
HRC				
N/mm ²				
Vc [m/min]	50~60		30~40	
Ø mm.	n	fn	n	fn
2	8000	0.08	5600	0.05
3	5300	0.10	3700	0.07
4	4000	0.12	2800	0.08
5	3200	0.14	2250	0.09
6	2700	0.16	1900	0.10
7	2300	0.18	1600	0.11
8	2000	0.20	1400	0.12
9	1800	0.22	1250	0.14
10	1600	0.25	1100	0.16
11	1500	0.28	1000	0.18
12	1350	0.32	950	0.20
13	1250	0.35	800	0.25

1386STI - 2386STI																						
MATERIAL GROUPS	1		2		2		3		4		5		6		9		10		16		26	
HRC					~23		23~34															
N/mm ²	~570		570~830		830~1110																	
Vc [m/min]	40~45		38~42		22~26		20~24		90~100		22~27											
Ø mm.	n	fn	n	fn	n	fn	n	fn	n	fn	n	fn	n	fn	n	fn	n	fn	n	fn	n	fn
1	14000	0.020	12500	0.020	7700	0.020	7000	0.020	30000	0.020	8100	0.020										
2	7000	0.060	6100	0.060	3900	0.060	3500	0.060	15000	0.060	4100	0.060										
3	4700	0.100	4100	0.080	2500	0.080	2400	0.080	9900	0.100	2700	0.080										
4	3500	0.110	3100	0.110	2000	0.100	1800	0.100	7500	0.110	2000	0.090										
5	2800	0.120	2450	0.110	1600	0.100	1400	0.100	6000	0.120	1600	0.100										
6	2400	0.140	2100	0.130	1300	0.120	1200	0.120	5000	0.140	1350	0.120										
7	2000	0.160	1750	0.150	1100	0.140	1000	0.140	4300	0.160	1150	0.140										
8	1700	0.180	1550	0.180	950	0.150	880	0.150	3700	0.180	1000	0.150										
9	1500	0.200	1350	0.220	850	0.180	780	0.180	3300	0.200	900	0.170										
10	1400	0.210	1250	0.220	770	0.180	700	0.180	3000	0.230	800	0.180										
11	1250	0.220	1100	0.220	700	0.180	650	0.180	2700	0.230	730	0.180										
12	1150	0.230	1000	0.220	650	0.200	690	0.200	2500	0.230	670	0.200										
13	1000	0.230	950	0.220	650	0.200	550	0.200	2300	0.230	620	0.200										