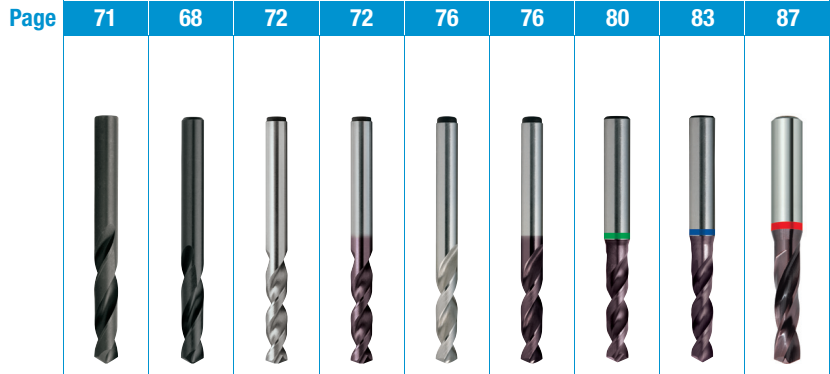


A	P	Steel
R	M	Stainless Steel
F	K	Cast Iron
N	N	Non-Ferrous Metals, Aluminiums & Coppers
S	S	Titaniums & Super Alloys
H	H	Hard Materials (≥ 45 HRC)

^ VDI 3323 material groups can also be determined by referring to the material cross reference listing in the application guide at the back of this catalogue.



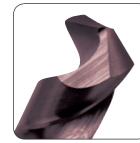
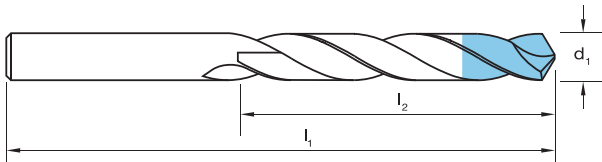
Page	71	68	72	72	76	76	80	83	87
Catalogue Code	D100	D186	D146	D151	D190	D177	D155	D153	D156
Material	HSS		HSS Co				SPM	HSS Co	
Surface Finish	Blu		Brt	TiAIN		Brt	TiAIN		
Colour Ring & Application	Ferrous Materials		NH		WN		UNI	VA	H
Standard	ANSI B94-11		DIN 1897				~ DIN 1897		
Depth of Cut	≤ 3xØ								
Shank Tolerance	-		h9				h7		

ISO	VDI 3323	Material	Condition	HB	N/mm ²									
P	1	Steel - Non-alloy, cast & free cutting	~ 0.15 %C	A	125	440	●	●	●	●	●	●	●	○
	2		~ 0.45 %C	A	190	640	○	○	○	○	○	○	○	○
	3			QT	250	840	○	○	○	○	○	○	○	○
	4	Steel - Low alloy & cast < 5% of alloying elements	~ 0.75 %C	A	270	910	○	○	○	○	○	○	○	○
	5			QT	300	1010	○	○	○	○	○	○	○	○
	6			A	180	610	○	○	○	○	○	○	○	○
	7	Steel - High alloy, cast & tool		QT	275	930	○	○	○	○	○	○	○	○
	8			QT	300	1010	○	○	○	○	○	○	○	○
	9			QT	350	1180					○			○
	10	Steel - Corrosion resistant & cast	Ferritic / Martensitic	A	200	680	○	○	○	○	○	○	○	○
	11		Martensitic	QT	240	810					○	●		○
M	14.1	Stainless Steel	Austenitic	AH	180	610	○	○	○	○	○	○	○	○
	14.2		Duplex		250	840	○	○	○	○	○	○	○	○
	14.3		Precipitation Hardening		250	840					○	○	○	○
K	15	Cast iron - Nodular (GGG)	Ferritic / Pearlitic		180	610	○	○	○	○	○	○	○	○
	16		Pearlitic		260	880	○	○	○	○	○	○	○	○
	17	Cast Iron - Grey (GG)	Ferritic		160	570	○	○	○	○	○	○	○	○
	18		Pearlitic		250	840	○	○	○	○	○	○	○	○
	19	Cast Iron - Malleable	Ferritic		130	460	○	○	○	○	○	○	○	○
20	Pearlitic			230	780	○	○	○	○	○	○	○	○	
N	21	Aluminum & Magnesium - wrought alloy	Non Heat Treatable		60	210				○	○	○	○	○
	22		Heat Treatable	AH	100	360				○	○	○	○	○
	23	Aluminum & Magnesium - cast alloy <=12% Si	Non Heat Treatable		75	270				○	○	○	○	○
	24		Heat Treatable	AH	90	320				○	○	○	○	○
	25	Al & Mg - cast alloy >12% Si	Non Heat Treatable		130	460				○	○	○	○	○
	26	Copper & Cu alloys (Brass/Bronze)	Free cutting, Pb > 1%		110	390				○	○	○	○	○
	27		Brass (CuZn, CuSnZn)		90	320				○	○	○	○	○
	28		Bronze (CuSn)		100	360				○	○	○	○	○
29	Non-metallic - Thermosetting & fiber-reinforced plastics					○	○	○	○	○	○	○	○	
30	Non-metallic - Hard rubber, wood etc.					○	○	○	○	○	○	○	○	
S	31	High temp. alloys	Fe based	A	200	680								
	32			AH	280	950								
	33		Ni / Co based	A	250	840								
	34			AH	350	1180								
	35			C	320	1080								
	36	Titanium & Ti alloys	CP Titanium		400	MPa								
37.1	Alpha alloys			860	MPa									
37.2	Alpha / Beta alloys		A	960	MPa									
37.3			AH	1170	MPa									
37.4	Beta alloys		A	830	MPa									
37.5		AH	1400	MPa										
H	38.1	Hardened steel		HT	45	HRC						○		
	38.2			HT	55	HRC								
	39.1			HT	58	HRC								
	39.2			HT	62	HRC								
	40	Cast Iron	Chilled	C	400	1350	○	○	○	○	○	○	○	○
41	HT			55	HRC									

Condition: A (Annealed), AH (Age Hardened), C (Cast), HT (Hardened & Tempered), QT (Quenched & Tempered)

● Optimal ○ Effective

- General purpose drill
- Split point for easier penetration
- TiAIN tip for good wear resistance

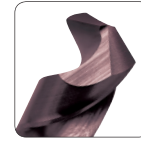
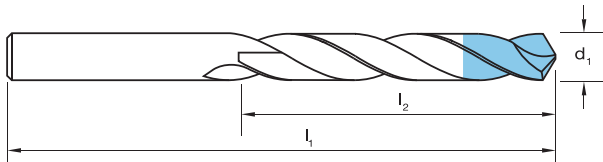


Catalogue Code	D179
Discount Group	A0420
Material	HSS
Surface Finish	TiAIN Tip
Colour Ring & Application	N
Geometry	R30
Point Type	118° Form C
Shank Tolerance	-

Size Ref.	d ₁ (h8)	l ₁	l ₂	Item #
0100	1.00*	34	12	D179 0100
0110	1.10*	36	14	D179 0110
0119	1.19* 3/64	44	19	D179 0119
0120	1.20*	38	16	D179 0120
0130	1.30*	38	16	D179 0130
0140	1.40*	40	18	D179 0140
0150	1.50*	40	18	D179 0150
0151	#53	48	22	D179 0151
0159	1.59* 1/16	48	22	D179 0159
0160	1.60*	43	20	D179 0160
0170	1.70*	43	20	D179 0170
0180	1.80*	46	22	D179 0180
0190	1.90*	46	22	D179 0190
0198	1.98* 5/64	51	25	D179 0198
0200	2.00	49	24	D179 0200
0210	2.10	49	24	D179 0210
0220	2.20	53	27	D179 0220
0230	2.30	53	27	D179 0230
0238	2.38 3/32	57	32	D179 0238
0240	2.40	57	30	D179 0240
0250	2.50	57	30	D179 0250
0260	2.60	57	30	D179 0260
0270	2.70	61	33	D179 0270
0278	2.78 7/64	67	38	D179 0278
0280	2.80	61	33	D179 0280
0290	2.90	61	33	D179 0290
0294	#32	70	41	D179 0294
0300	3.00	61	33	D179 0300
0310	3.10	65	36	D179 0310
0318	3.18 1/8	70	41	D179 0318
0320	3.20	65	36	D179 0320
0330	3.30	65	36	D179 0330
0340	3.40	70	39	D179 0340
0345	#29	73	44	D179 0345
0350	3.50	70	39	D179 0350
0357	3.57 9/64	73	44	D179 0357
0360	3.60	70	39	D179 0360
0370	3.70	70	39	D179 0370
0373	#26	76	48	D179 0373
0380	3.80	75	43	D179 0380
0390	3.90	75	43	D179 0390
0391	#23	79	51	D179 0391
0397	3.97 5/32	79	51	D179 0397
0400	4.00	75	43	D179 0400

*Sizes below 2.0mm are supplied uncoated

- General purpose drill
- Split point for easier penetration
- TiAIN tip for good wear resistance



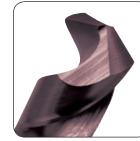
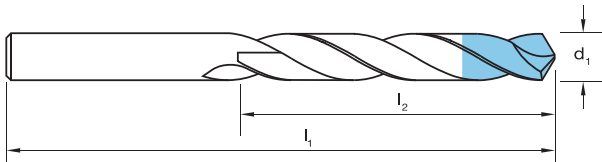
Catalogue Code	D179
Discount Group	A0420
Material	HSS
Surface Finish	TiAIN Tip
Colour Ring & Application	N
Geometry	R30
Point Type	118° Form C
Shank Tolerance	-

Size Ref.	d ₁ (h8)	l ₁	l ₂	Item #
0410	4.10	75	43	D179 0410
0420	4.20	75	43	D179 0420
0430	4.30	80	47	D179 0430
0437	4.37 11/64	83	54	D179 0437
0440	4.40	80	47	D179 0440
0450	4.50	80	47	D179 0450
0460	4.60	80	47	D179 0460
0470	4.70	80	47	D179 0470
0476	4.76 3/16	89	59	D179 0476
0480	4.80	86	52	D179 0480
0490	4.90	86	52	D179 0490
0500	5.00	86	52	D179 0500
0510	5.10	86	52	D179 0510
0511	#7	92	62	D179 0511
0516	5.16 13/64	92	62	D179 0516
0520	5.20	86	52	D179 0520
0530	5.30	86	52	D179 0530
0540	5.40	93	57	D179 0540
0541	#3	95	64	D179 0541
0550	5.50	93	57	D179 0550
0556	5.56 7/32	95	64	D179 0556
0560	5.60	93	57	D179 0560
0570	5.70	93	57	D179 0570
0580	5.80	93	57	D179 0580
0590	5.90	93	57	D179 0590
0595	5.95 15/64	98	67	D179 0595
0600	6.00	93	57	D179 0600
0610	6.10	101	63	D179 0610
0620	6.20	101	63	D179 0620
0624	D	102	70	D179 0624
0630	6.30	101	63	D179 0630
0635	6.35 1/4	102	70	D179 0635
0640	6.40	101	63	D179 0640
0650	6.50	101	63	D179 0650
0652	F	102	70	D179 0652
0660	6.60	101	63	D179 0660
0670	6.70	101	63	D179 0670
0676	6.75 17/64	105	73	D179 0676
0680	6.80	109	69	D179 0680
0690	6.90	109	69	D179 0690
0700	7.00	109	69	D179 0700
0710	7.10	109	69	D179 0710
0714	7.14 9/32	108	75	D179 0714
0720	7.20	109	69	D179 0720

suttontools

VIPER PLUS

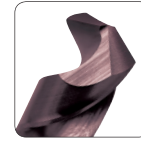
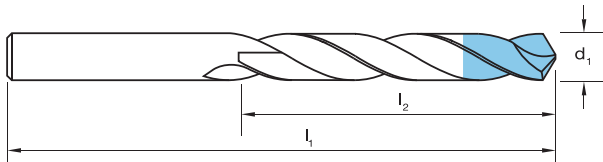
- General purpose drill
- Split point for easier penetration
- TiAIN tip for good wear resistance



Catalogue Code	D179
Discount Group	A0420
Material	HSS
Surface Finish	TiAIN Tip
Colour Ring & Application	N
Geometry	R30
Point Type	118° Form C
Shank Tolerance	-

Size Ref.	d ₁ (h8)	l ₁	l ₂	Item #
0730	7.30	109	69	D179 0730
0740	7.40	109	69	D179 0740
0750	7.50	109	69	D179 0750
0754	7.54 19/64	111	78	D179 0754
0760	7.60	117	75	D179 0760
0770	7.70	117	75	D179 0770
0780	7.80	117	75	D179 0780
0790	7.90	117	75	D179 0790
0794	7.94 5/16	114	81	D179 0794
0800	8.00	117	75	D179 0800
0810	8.10	117	75	D179 0810
0820	8.20	117	75	D179 0820
0830	8.30	117	75	D179 0830
0833	8.33 21/64	117	84	D179 0833
0840	8.40	117	75	D179 0840
0850	8.50	117	75	D179 0850
0860	8.60	125	81	D179 0860
0870	8.70	125	81	D179 0870
0873	8.73 11/32	121	87	D179 0873
0880	8.80	125	81	D179 0880
0890	8.90	125	81	D179 0890
0900	9.00	125	81	D179 0900
0910	9.10	125	81	D179 0910
0913	9.13 23/64	124	89	D179 0913
0920	9.20	125	81	D179 0920
0930	9.30	125	81	D179 0930
0940	9.40	125	81	D179 0940
0950	9.50	125	81	D179 0950
0953	9.52 3/8	127	92	D179 0953
0960	9.60	133	87	D179 0960
0970	9.70	133	87	D179 0970
0980	9.80	133	87	D179 0980
0990	9.90	133	87	D179 0990
0992	9.92 25/64	130	95	D179 0992
1000	10.00	133	87	D179 1000
1010	10.10	133	87	D179 1010
1020	10.20	133	87	D179 1020
1030	10.30	133	87	D179 1030
1032	10.32 13/32	133	98	D179 1032
1040	10.40	133	87	D179 1040
1050	10.50	133	87	D179 1050
1060	10.60	133	87	D179 1060
1070	10.70	142	94	D179 1070
1072	10.72 27/64	137	100	D179 1072

- General purpose drill
- Split point for easier penetration
- TiAIN tip for good wear resistance



Catalogue Code	D179
Discount Group	A0420
Material	HSS
Surface Finish	TiAIN Tip
Colour Ring & Application	N
Geometry	R30
Point Type	118° Form C
Shank Tolerance	-

Size Ref.	d ₁ (h8)	l ₁	l ₂	Pieces	Item #
1080	10.80	142	94		D179 1080
1090	10.90	142	94		D179 1090
1100	11.00	142	94		D179 1100
1110	11.10	142	94		D179 1110
1111	11.11 7/16	140	103		D179 1111
1120	11.20	142	94		D179 1120
1130	11.30	142	94		D179 1130
1140	11.40	142	94		D179 1140
1150	11.50	142	94		D179 1150
1151	11.51 29/64	143	106		D179 1151
1160	11.60	142	94		D179 1160
1170	11.70	142	94		D179 1170
1180	11.80	142	94		D179 1180
1190	11.90	142	94		D179 1190
1191	11.91 15/32	146	110		D179 1191
1200	12.00	151	101		D179 1200
1210	12.10	151	101		D179 1210
1220	12.20	151	101		D179 1220
1230	12.30	151	101		D179 1230
1231	12.30 31/64	149	111		D179 1231
1240	12.40	151	101		D179 1240
1250	12.50	151	101		D179 1250
1260	12.60	151	101		D179 1260
1269	12.70 1/2	152	114		D179 1269
1270	12.70	151	101		D179 1270
1280	12.80	151	101		D179 1280
1290	12.90	151	101		D179 1290
1300	13.00	151	101		D179 1300
1310	13.10 33/64	151	101		D179 1310
1349	13.49 17/32	160	108		D179 1349
1350	13.50	160	108		D179 1350
1400	14.00	160	108		D179 1400
1429	14.29 9/16	169	114		D179 1429
1450	14.50	169	114		D179 1450
1500	15.00	169	114		D179 1500
1550	15.50	178	120		D179 1550
1588	15.88 5/8	178	120		D179 1588
1600	16.00	178	120		D179 1600
Sets					
SM2	1.0 – 10mm x 0.5			19	D179 SM2
SM3	1.0 – 13mm x 0.5			25	D179 SM3
S2	1/16 – 3/8 x 64ths			21	D179 S2
S3	1/16 – 1/2 x 64ths			29	D179 S3

JOBBER																									
D101	D102	D103	D179	D109	D158	D163	D200	D165	D168	D182	D180	D169													
HSS			HSS Co										SPM	HSS Co	HSS	HSS Co									
Brt	Blu	TiN	TiAIN Tip	Colour Tempered	Brt	TiAIN	Brt	TiAIN	Brt	TiAIN	UNI	NH	TiAIN Tip	TiAIN											
N				Hard Materials		NH		WN			NH		VA		VA										
R30				R25		R40						R40 - IK		R40											
≤ 5xØ																									
Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #	Vc	Feed #						
12	5	20	5	24	5	24	5	20	5	24	5	20	4	29	4	65	7	20	4	58	6				
10	5	16	5	20	5	20	5	20	5	18	4	25	4	45	7	55	7	16	4	58	6				
8	5	12	5	18	5	18	5	15	5	12	5	20	5	18	4	25	4	45	7	50	7	12	4	58	5
8	5	12	5	18	5	18	5	15	5	12	5	20	5	18	4	25	4	45	7	50	7	12	4	58	5
-	-	10	4	12	4	12	4	12	4	10	4	12	4	-	-	10	4	20	6	25	5	-	-	-	-
8	5	12	5	18	5	18	5	15	5	12	5	20	5	18	4	25	4	45	7	50	7	12	4	58	5
8	4	12	4	18	4	18	4	15	4	12	4	20	4	7	4	20	4	30	7	40	7	12	3	25	4
-	-	10	4	12	4	12	4	12	4	10	4	12	4	-	-	10	4	20	6	25	5	-	-	-	-
-	-	8	3	10	3	10	3	10	4	8	4	10	4	-	-	-	-	12	6	15	5	-	-	-	-
-	-	10	4	12	4	12	4	12	4	10	4	12	4	-	-	10	4	20	6	25	5	-	-	-	-
-	-	8	3	10	3	10	3	10	4	8	4	10	4	-	-	-	-	12	6	15	5	-	-	-	-
-	-	-	-	10	3	10	3	-	-	-	-	12	4	-	-	-	-	10	3	14	3	7	3	12	4
-	-	8	3	10	3	10	3	10	4	8	4	10	4	-	-	-	-	12	6	15	5	-	-	-	-
-	-	8	4	10	4	10	4	10	4	10	4	12	4	8	3	10	4	16	4	12	4	12	4	25	6
-	-	6	4	8	4	8	4	8	4	-	-	10	10	-	-	10	4	8	4	12	4	10	4	14	5
-	-	-	-	10	3	10	3	-	-	-	-	12	4	-	-	-	-	10	3	14	3	7	3	12	4
-	-	16	6	18	6	18	6	20	6	20	6	20	6	-	-	-	-	40	5	40	5	-	-	-	-
-	-	16	6	18	6	18	6	20	6	20	6	20	6	-	-	-	-	40	5	40	5	-	-	-	-
12	6	20	6	25	6	25	6	25	6	20	6	24	6	20	5	29	5	40	6	40	6	-	-	-	-
10	5	16	5	20	5	20	5	20	5	20	5	20	5	-	-	20	5	35	6	35	6	-	-	-	-
-	-	16	6	18	6	18	6	20	6	20	6	20	6	-	-	-	-	40	5	40	5	-	-	-	-
-	-	16	6	18	6	18	6	20	6	20	6	20	6	-	-	-	-	40	5	40	5	-	-	-	-
25	5	-	-	-	-	-	-	-	-	48	6	-	-	36	6	48	6	80	5	60	6	50	6	112	8
25	5	-	-	-	-	-	-	-	-	48	6	-	-	36	6	48	6	80	5	60	6	50	6	112	8
18	4	-	-	30	4	30	4	-	-	32	5	32	5	24	5	32	5	48	5	40	5	40	5	70	6
18	4	-	-	30	4	30	4	-	-	32	5	32	5	24	5	32	5	48	5	40	5	40	5	70	6
12	6	-	-	20	6	20	6	-	-	-	-	25	6	20	7	25	7	30	6	40	5	30	5	-	-
20	4	-	-	30	4	30	4	-	-	48	5	48	5	36	5	48	5	35	4	50	5	50	5	40	5
15	4	-	-	25	4	25	4	25	6	32	5	32	5	24	5	32	5	40	5	36	5	-	-	-	-
15	4	-	-	25	4	25	4	-	-	-	-	-	-	40	5	40	5	30	5	45	5	30	5	70	3
25	3	30	4	35	4	35	4	-	-	50	4	50	4	50	4	60	5	60	4	70	5	50	4	50	4
25	3	30	4	35	4	35	4	-	-	50	4	50	4	50	4	60	5	60	4	70	5	50	4	50	4
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	4	8	3	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	4	8	3	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	5	8	3	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	4	8	3	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	4	8	3	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	4	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	4	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	4	10	4	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	5	16	5	20	5	20	5	20	5	20	5	-	-	20	5	35	6	35	6	-	-	-	-	-	-

Feed Table (f) (mm/rev)										
Ø	Feed #									
	1	2	3	4	5	6	7	8	9	10
2.0	0.020	0.025	0.030	0.040	0.050	0.060	0.075	0.095	0.120	0.15
3.0	0.030	0.035	0.045	0.055	0.070	0.090	0.110	0.135	0.17	0.21
4.0	0.040	0.045	0.060	0.075	0.090	0.115	0.140	0.18	0.22	0.27
5.0	0.045	0.055	0.070	0.090	0.110	0.135	0.17	0.21	0.26	0.32
6.0	0.055	0.065	0.080	0.100	0.125	0.16	0.19	0.24	0.30	0.37
8.0	0.070	0.085	0.105	0.130	0.16	0.20	0.25	0.31	0.38	0.47
10.0	0.085	0.105	0.125	0.16	0.19	0.24	0.30	0.37	0.46	0.56
12.0	0.095	0.120	0.15	0.18	0.23	0.28	0.34	0.42	0.52	0.64
16.0	0.125	0.15	0.19	0.23	0.29	0.36	0.44	0.54	0.66	0.82
20.0	0.15	0.18	0.23	0.28	0.34	0.42	0.52	0.64	0.80	0.98
25.0	0.18	0.22	0.27	0.33	0.41	0.50	0.60	0.74	0.90	1.10
32.0	0.23	0.27	0.33	0.41	0.50	0.60	0.74	0.88	1.10	1.30
38.0	0.26	0.32	0.38	0.46	0.56	0.68	0.82	1.00	1.20	1.45
45.0	0.30	0.36	0.43	0.52	0.64	0.76	0.92	1.10	1.35	1.60
52.0	0.33	0.40	0.48	0.58	0.70	0.84	1.00	1.20	1.45	1.75
63.0	0.39	0.47	0.56	0.67	0.80	0.96	1.14	1.35	1.65	1.95

LEGEND

Ø = diameter (mm)
n = spindle speed (RPM)
vc = cutting speed (m/min)
f = feed (mm/rev)
vr = feed rate (mm/min)

FORMULAS

$$n = \frac{v_c \times 1000}{\pi \times \phi} \approx \frac{v_c}{\phi} \times 318$$

$$v_c = \frac{n \times \phi \times \pi}{1000} \approx \frac{n \times \phi}{318}$$

$$v_f = f \times n$$