

Introducing...

Widia's New Top Drill S+[™]

NEW!

***...specifically engineered to
boost productivity in steel and
cast iron applications!***

- Four-margin design improves hole straightness and provides stability!
- Lower thrust requirements provide versatility across a range of machining environments!
- New PVD coating delivers excellent wear resistance!
- Available in diameters from .118" to .787" (3,0mm to 20,0mm).

➤ DISTRIBUTED BY:



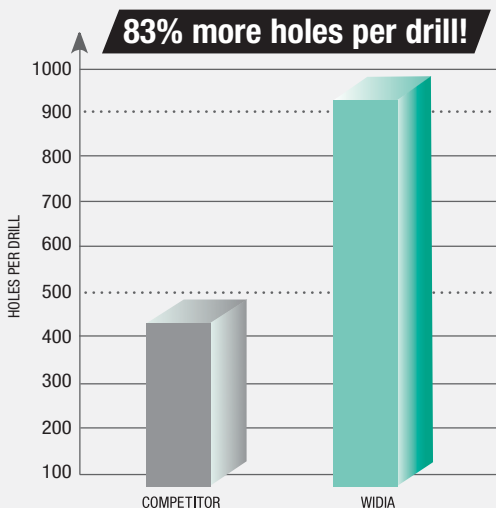
Markets and Applications

- Ideally suited for all general engineering steel and cast iron applications, as well as select stainless steel workpiece materials.

Featured Application:

Operation: Blind Hole
 Customer: Electric Tool Manufacturer
 Material: Steel 4140 (190-210 HB) Rc29
 Workpiece: Wobble Shaft
 Solution: 1 705 02 07500
 Results: 83% more holes

	COMPETITOR	WIDIA
tool:	—	1 705 02 07500
grade:	—	coated K20F
material:	Steel 4140 (190–210 HB)	Steel 4140 (190–210 HB)
diameter:	.2950" (7,5mm)	.2950" (7,5mm)
depth of cut:	1.181" (30mm)	1.181" (30mm)
speed:	300 sfm (99,06 m/min)	300 sfm (99,06 m/min)
feed:	.0079 in/rev (0,20mm/rev)	.0110 in/rev (0,28mm/rev)
revolution speed:	4181	4181
coolant pressure:	2.7576	2.7576
holes per drill:	500	919



Key Product Features

- Four-margin design improves hole straightness and provides stability through inclusions, irregular exits, crossholes, interrupted cuts, and incline exits.
- Lower thrust requirements provide versatility across a range of machining environments.
- PVD coating offers improved chip ejection, wear life, and thread finish, especially in high-temperature applications.
- Available in diameters from .118" to .787" (3,0mm to 20,0mm).



Recommended Cutting Data

Widia Top Drill S+
1705... Series — Through Coolant

Cutting Speed											Tool diameter												
Starting Value	sfm	49	30	98	164	242	328	394	462	558	656	820	984	1148	inch	0.118	0.157	0.236	0.315	0.394	0.472	0.630	0.787
	m/min	15	80	50	100	120	150	180	200	250	300	350	400	mm	3.0	4.0	6.0	8.0	10.0	12.0	16.0	20.0	
P1 Low-Carbon Steels, Long Chipping											Content: C < .25% Tensile Strength RM (MPa)*: <530 Hardness (HB) or HRC: <125												
											Feed rate by diameter												
427	sfm										ipr	.003 - .006	.004 - .007	.005 - .009	.006 - .011	.007 - .013	.008 - .015	.009 - .019	.012 - .024				
130	m/min										90	170	mm/r	0.08 - 0.16	0.09 - 0.18	0.12 - 0.24	0.14 - 0.29	0.17 - 0.34	0.20 - 0.39	0.24 - 0.47	0.31 - 0.60		
P2 Low-Carbon Steels, Free Machining, and Short Chipping											Content: C < .25% Tensile Strength RM (MPa)*: <650 Hardness (HB) or HRC: <220												
											Feed rate by diameter												
476	sfm										ipr	.003 - .006	.004 - .007	.005 - .009	.006 - .011	.007 - .013	.009 - .015	.011 - .019	.013 - .023				
145	m/min										110	180	mm/r	0.08 - 0.16	0.09 - 0.18	0.13 - 0.24	0.16 - 0.29	0.19 - 0.34	0.22 - 0.39	0.27 - 0.47	0.34 - 0.59		
P3 Medium to High Plain-Carbon Steels and Alloy Steels											Content: C > .25% Tensile Strength RM (MPa)*: 600-850 Hardness (HB) or HRC: <330												
											Feed rate by diameter												
328	sfm										ipr	.004 - .007	.004 - .007	.005 - .010	.007 - .012	.008 - .014	.009 - .017	.011 - .020	.015 - .026				
100	m/min										80	120	mm/r	0.09 - 0.17	0.10 - 0.19	0.14 - 0.25	0.17 - 0.31	0.21 - 0.37	0.24 - 0.42	0.29 - 0.52	0.38 - 0.65		
P4 Alloy Steels and Tool Steels											Content: C > .25% Tensile Strength RM (MPa)*: 800-1100 Hardness (HB) or HRC: 350-450												
											Feed rate by diameter												
312	sfm										ipr	.003 - .007	.004 - .007	.005 - .010	.006 - .012	0.07 - .014	.008 - .017	.010 - .020	.013 - .026				
95	m/min										70	120	mm/r	0.08 - 0.17	0.09 - 0.19	0.13 - 0.25	0.16 - 0.31	0.19 - 0.37	0.21 - 0.42	0.26 - 0.52	0.32 - 0.65		
P6 High-Strength Ferritic, Martensitic, and PH Stainless Steels											Content: C = .1-.6% Tensile Strength RM (MPa)*: 900-1350 Hardness (HB) or HRC: 350-450												
											Feed rate by diameter												
213	sfm										ipr	.002 - .004	.002 - .004	.004 - .006	.004 - .008	.005 - .009	.006 - .011	.008 - .014	.010 - .018				
65	m/min										50	80	mm/r	0.05 - 0.09	0.06 - 0.11	0.09 - 0.16	0.11 - 0.20	0.14 - 0.24	0.15 - 0.27	0.20 - 0.35	0.26 - 0.45		
K1 Gray Cast Irons and Low-Strength Ductile Irons											Tensile Strength RM (MPa)*: 150-400 Hardness (HB) or HRC: 120-290												
											Feed rate by diameter												
509	sfm										ipr	.004 - .009	.005 - .009	.006 - .012	.008 - .015	.009 - .017	.010 - .019	.012 - .024	.015 - .029				
155	m/min										100	210	mm/r	0.11 - 0.22	0.12 - 0.24	0.16 - 0.31	0.20 - 0.38	0.23 - 0.44	0.25 - 0.49	0.31 - 0.60	0.38 - 0.74		
K2 Low- and Medium-Strength CGI and Ductile Irons											Tensile Strength RM (MPa)*: 400-600 Hardness (HB) or HRC: 130-260												
											Feed rate by diameter												
459	sfm										ipr	.004 - .007	.005 - .007	.006 - .010	.008 - .012	.009 - .014	.010 - .016	.012 - .019	.015 - .024				
140	m/min										100	180	mm/r	0.11 - 0.17	0.12 - 0.19	0.16 - 0.25	0.20 - 0.31	0.23 - 0.36	0.25 - 0.40	0.31 - 0.48	0.38 - 0.60		
K3 High-Strength Ductile and Austempered Ductile Irons											Tensile Strength RM (MPa)*: 600-900 Hardness (HB) or HRC: 180-350												
											Feed rate by diameter												
427	sfm										ipr	.003 - .007	.004 - .007	.005 - .010	.006 - .012	.006 - .014	.007 - .016	.009 - .019	.012 - .024				
130	m/min										100	160	mm/r	0.08 - 0.17	0.09 - 0.19	0.12 - 0.25	0.14 - 0.30	0.17 - 0.35	0.19 - 0.40	0.24 - 0.48	0.30 - 0.60		

* 1 MPa = 145 psi

Top Drill S+™ with Through Coolant

.118" to .248" (3,00mm to 6,30mm)

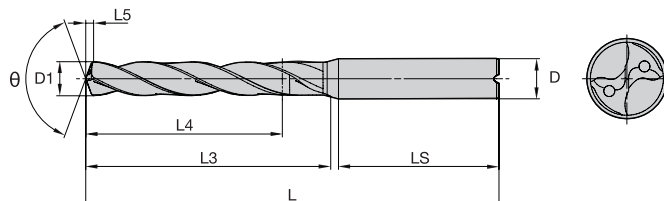
Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

- Standard stock item.
- Standard non-stock item (14 days).
- Non-standard, non-stock item (made to order).

*Length to diameter ratios, are approximate.

For exact ratios please refer to call-out info.



Diameter D1						Regular 3xD1*					Long 5xD1*					Extra Long 7xD1*				
						θ = 140°					θ = 140°					θ = 132°				
decimal	fract.	wire	D			code	L	L3	L4	stock	code	L	L3	L4	stock	code	L	L3	L4	stock
mm	inch	inch	letter	mm	inch															
3,00	.118			6	.236	1 705 01 03000	62	20	14	●	1 705 02 03000	66	28	23	●	1 705 03 03000	78	40	33	●
3,10	.122			6	.236	...01 03100	62	20	14	●	...02 03100	66	28	23	●	...03 03100	78	40	33	●
3,18	.125	1/8		6	.236	...01 03175	62	20	14	●	...02 03175				●	...03 03175	78	40	33	●
3,20	.126			6	.236	...01 03200	62	20	14	○	...02 03200	66	28	23	○	...03 03200	78	40	33	●
3,25	.128			6	.236	...01 03250	62	20	14	●	...02 03250	66	28	23	●	...03 03250	78	40	33	●
3,30	.130			6	.236	...01 03300	62	20	14	●	...02 03300	66	28	23	●	...03 03300	78	40	33	●
3,40	.134			6	.236	...01 03400	62	20	14	●	...02 03400	66	28	23	●	...03 03400	78	40	33	●
3,45	.136	29		6	.236	...01 03450	62	20	14	●	...02 03175				●	...03 03175	78	40	33	●
3,50	.138			6	.236	...01 03500	62	20	14	●	...02 03500	66	28	23	●	...03 03500	78	40	33	●
3,60	.142			6	.236	...01 03600	62	20	14	○	...02 03600	66	28	23	○	...03 03600	78	40	33	●
3,70	.146			6	.236	...01 03700	62	20	14	●	...02 03700	66	28	23	●	...03 03700	78	40	33	●
3,80	.150	25		6	.236	...01 03800	66	24	17	●	...02 03800	74	36	29	●	...03 03800	87	49	41	●
3,90	.154			6	.236	...01 03900	66	24	17	●	1 705 02 03900	74	36	29	●	1 705 03 03900	87	49	41	●
4,00	.157			6	.236	1 705 01 04000	66	24	17	●	...02 04000	74	36	29	●	...03 04000	87	49	41	●
4,10	.161			6	.236	...01 04100	66	24	17	●	...02 04100	74	36	29	●	...03 04100	87	49	41	●
4,20	.165	14		6	.236	...01 04200	66	24	17	●	...02 04200	74	36	29	●	...03 04200	87	49	41	●
4,30	.169			6	.236	...01 04300	66	24	17	●	...02 04300	74	36	29	●	...03 04300	87	49	41	●
4,37	.172	11/64		6	.236	...01 04370	66	24	17	●	...02 04370	74	36	29	●	...03 04370	87	49	41	●
4,40	.173			6	.236	...01 04400	66	24	17	●	...02 04400	74	36	29	●	...03 04400	87	49	41	●
4,50	.177	16		6	.236	...01 04500	66	24	17	●	...02 04500	74	36	29	●	...03 04500	87	49	41	●
4,60	.181	15		6	.236	...01 04600	66	24	17	●	...02 04600	74	36	29	●	...03 04600	87	49	41	●
4,65	.183			6	.236	...01 04650	66	24	17	○	...02 04650	74	36	29	○	...03 04650	87	49	41	●
4,70	.185			6	.236	...01 04700	66	24	17	●	...02 04700	74	36	29	●	...03 04700	87	49	41	●
4,76	.187	3/16		6	.236	...01 04760	66	28	20	●	...02 04760	82	44	35	●	...03 04760	94	56	48	●
4,80	.189			6	.236	...01 04800	66	28	20	●	...02 04800	82	44	35	●	...03 04800	94	56	48	●
4,90	.193			6	.236	...01 04900	66	28	20	○	...02 04900	82	44	35	○	...03 04900	94	56	48	●
5,00	.197			6	.236	1 705 01 05000	66	28	20	●	1 705 02 05000	82	44	35	●	1 705 03 05000	94	56	48	●
5,10	.201	7		6	.236	...01 05100	66	28	20	●	...02 05100	82	44	35	●	...03 05100	94	56	48	●
5,16	.203	13/64		6	.236	...01 05160	66	28	20	●	...02 05160	82	44	35	●	...03 05160	94	56	48	●
5,20	.205			6	.236	...01 05200	66	28	20	●	...02 05200	82	44	35	●	...03 05200	94	56	48	●
5,30	.209			6	.236	...01 05300	66	28	20	●	...02 05300	82	44	35	●	...03 05300	94	56	48	●
5,40	.213	3		6	.236	...01 05400	66	28	20	○	...02 05400	82	44	35	○	...03 05400	94	56	48	●
5,50	.217			6	.236	...01 05500	66	28	20	●	...02 05500	82	44	35	●	...03 05500	94	56	48	●
5,55	.219			6	.236	...01 05550	66	28	20	○	...02 05550	82	44	35	○	...03 05550	94	56	48	●
5,56	.219	7/32		6	.236	...01 05560	66	28	20	○	...02 05560	82	44	35	○	...03 05560	94	56	48	●
5,60	.220			6	.236	...01 05600	66	28	20	●	...02 05600	82	44	35	●	...03 05600	94	56	48	●
5,70	.224			6	.236	...01 05700	66	28	20	○	...02 05700	82	44	35	○	...03 05700	94	56	48	●
5,80	.228	1		6	.236	...01 05800	66	28	20	●	...02 05800	82	44	35	●	...03 05800	94	56	48	●
5,90	.232			6	.236	...01 05900	66	28	20	●	...02 05900	82	44	35	●	...03 05900	94	56	48	●
5,95	.234	15/64		6	.236	...01 05950	66	28	20	●	...02 05950	82	44	35	●	...03 05950	94	56	48	●
6,00	.236			6	.236	1 705 01 06000	66	28	20	●	1 705 02 06000	82	44	35	●	1 705 03 06000	94	56	48	●
6,10	.240			8	.315	...01 06100	79	34	24	●	...02 06100	91	53	43	●	...03 06100	105	67	57	●
6,20	.244			8	.315	...01 06200	79	34	24	○	...02 06200	91	53	43	○	...03 06200	105	67	57	●
6,30	.248			8	.315	...01 06300	79	34	24	○	...02 06300	91	53	43	○	...03 06300	105	67	57	●

Top Drill S+™ with Through Coolant, continued

.250" to .390" (6,35mm to 9,90mm)

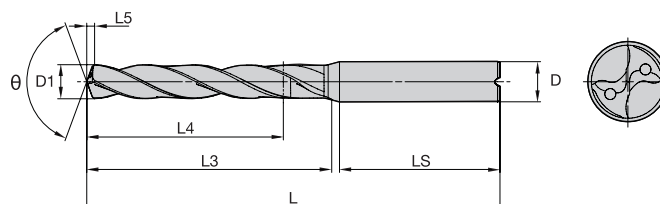
Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

- Standard stock item.
- Standard non-stock item (14 days).
- Non-standard, non-stock item (made to order).

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For exact ratios please refer to call-out info.



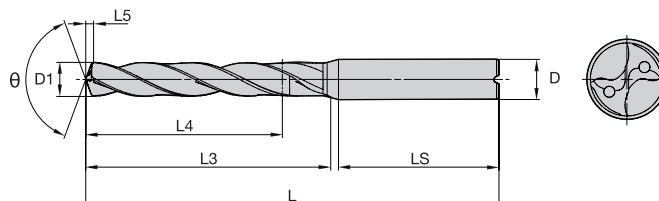
Diameter D1						Regular 3xD1*					Long 5xD1*					Extra Long 7xD1*				
						θ = 140°					θ = 140°					θ = 132°				
mm	inch	fract.	wire	D		code	L	L3	L4	stock	code	L	L3	L4	stock	code	L	L3	L4	stock
6,35	.250	1/4		8	.315	...01 06350	79	34	24	○	...02 06350	91	53	43	○	...03 06350	105	67	57	●
6,40	.252			8	.315	...01 06400	79	34	24	●	...02 06400	91	53	43	●	...03 06400	105	67	57	●
6,50	.256			8	.315	...01 06500	79	34	24	○	...02 06500	91	53	43	○	...03 06500	105	67	57	○
6,60	.260			8	.315	...01 06600	79	34	24	●	...02 06600	91	53	43	●	...03 06600	105	67	57	●
6,70	.264			8	.315	...01 06700	79	34	24	○	...02 06700	91	53	43	○	...03 06700	105	67	57	○
6,75	.266	17/64		8	.315	...01 06750	79	34	24	○	...02 06750	91	53	43	○	...03 06750	105	67	57	○
6,80	.268			8	.315	...01 06800	79	34	24	●	...02 06800	91	53	43	●	...03 06800	105	67	57	●
6,90	.272		I	8	.315	...01 06900	79	34	24	○	...02 06900	91	53	43	○	...03 06900	105	67	57	○
7,00	.276			8	.315	1 705 01 07000	79	34	24	●	1 705 02 07000	91	53	43	●	1 705 03 07000	105	67	57	●
7,10	.280			8	.315	...01 07100	79	41	29	○	...02 07100	91	53	43	○	...03 07100	110	72	61	○
7,14	.281	9/32		8	.315	...01 07140	79	41	29	○	...02 07140	91	53	43	○	...03 07140	110	72	61	○
7,20	.283			8	.315	...01 07200	79	41	29	○	...02 07200	91	53	43	○	...03 07200	110	72	61	○
7,30	.287			8	.315	...01 07300	79	41	29	○	...02 07300	91	53	43	○	...03 07300	110	72	61	○
7,40	.291			8	.315	...01 07400	79	41	29	●	...02 07400	91	53	43	●	...03 07400	110	72	61	○
7,50	.295		M	8	.315	...01 07500	79	41	29	●	...02 07500	91	53	43	●	...03 07500	110	72	61	●
7,54	.297	19/64		8	.315	...01 07540	79	41	29	●	...02 07540	91	53	43	●	...03 07540	110	72	61	●
7,60	.299			8	.315	...01 07600	79	41	29	○	...02 07600	91	53	43	○	...03 07600	110	72	61	○
7,70	.303			8	.315	...01 07700	79	41	29	○	...02 07700	91	53	43	○	...03 07700	110	72	61	○
7,80	.307			8	.315	...01 07800	79	41	29	●	...02 07800	91	53	43	●	...03 07800	110	72	61	●
7,90	.311			8	.315	...01 07900	79	41	29	○	...02 07900	91	53	43	○	...03 07900	110	72	61	○
7,94	.313	5/16		8	.315	...01 07940	79	41	29	○	...02 07940	91	53	43	○	...03 07940	110	72	61	○
8,00	.315			8	.315	1 705 01 08000	79	41	29	●	1 705 02 08000	91	53	43	●	1 705 03 08000	110	72	61	●
8,10	.319			10	.394	...01 08100	89	47	35	●	...02 08100	103	61	49	●	...03 08100	122	80	68	○
8,20	.323			10	.394	...01 08200	89	47	35	●	...02 08200	103	61	49	●	...03 08200	122	80	68	○
8,30	.327			10	.394	...01 08300	89	47	35	○	...02 08300	103	61	49	○	...03 08300	122	80	68	○
8,33	.328	21/64		10	.394	...01 08330	89	47	35	○	...02 08330	103	61	49	○	...03 08330	122	80	68	○
8,40	.331			10	.394	...01 08400	89	47	35	○	...02 08400	103	61	49	○	...03 08400	122	80	68	○
8,50	.335			10	.394	...01 08500	89	47	35	●	...02 08500	103	61	49	●	...03 08500	122	80	68	●
8,60	.339			10	.394	...01 08600	89	47	35	○	...02 08600	103	61	49	○	...03 08600	122	80	68	○
8,70	.343			10	.394	...01 08700	89	47	35	●	...02 08700	103	61	49	●	...03 08700	122	80	68	○
8,80	.346			10	.394	...01 08800	89	47	35	●	...02 08800	103	61	49	●	...03 08800	122	80	68	○
8,90	.350			10	.394	...01 08900	89	47	35	○	...02 08900	103	61	49	○	...03 08900	122	80	68	○
9,00	.354			10	.394	1 705 01 09000	89	47	35	●	1 705 02 09000	103	61	49	●	1 705 03 09000	122	80	68	●
9,10	.358			10	.394	...01 09100	89	47	35	○	...02 09100	103	61	49	○	...03 09100	122	80	68	○
9,13	.359	23/64		10	.394	...01 09130	89	47	35	○	...02 09130	103	61	49	○	...03 09130	122	80	68	○
9,20	.362			10	.394	...01 09200	89	47	35	○	...02 09200	103	61	49	○	...03 09200	122	80	68	○
9,30	.366			10	.394	...01 09300	89	47	35	●	...02 09300	103	61	49	●	...03 09300	122	80	68	○
9,40	.370			10	.394	...01 09400	89	47	35	○	...02 09400	103	61	49	○	...03 09400	122	80	68	○
9,50	.374			10	.394	...01 09500	89	47	35	●	...02 09500	103	61	49	●	...03 09500	122	80	68	●
9,52	.375	3/8		10	.394	...01 09520	89	47	35	○	...02 09520	103	61	49	○	...03 09520	122	80	68	○
9,60	.378			10	.394	...01 09600	89	47	35	○	...02 09600	103	61	49	○	...03 09600	122	80	68	○
9,70	.382			10	.394	...01 09700	89	47	35	●	...02 09700	103	61	49	●	...03 09700	122	80	68	○
9,80	.386			10	.394	...01 09800	89	47	35	●	...02 09800	103	61	49	●	...03 09800	122	80	68	○
9,90	.390			10	.394	...01 09900	89	47	35	○	...02 09900	103	61	49	○	...03 09900	122	80	68	○

Top Drill S+™ with Through Coolant, continued

.391" to .650" (9,92mm to 16,50mm)

Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013



- Standard stock item.
- Standard non-stock item (14 days).
- Non-standard, non-stock item (made to order).

*Length to diameter ratios, are approximate.

For exact ratios please refer to call-out info.

Diameter D1					Regular 3xD1*					Long 5xD1*					Extra Long 7xD1*					
decimal		fract.	wire	D	θ = 140°					θ = 140°					θ = 132°					
mm	inch	inch	letter	mm	inch	code	L	L3	L4	stock	code	L	L3	L4	stock	code	L	L3	L4	stock
9,92	.391	25/64		10	.394	...01 09920	89	47	35	○	...02 09920	103	61	49	○	...03 09920	122	80	68	○
10,00	.394			10	.394	1 705 01 10000	89	47	35	●	1 705 02 10000	103	61	49	●	1 705 03 10000	122	80	68	●
10,10	.398			12	.472	...01 10100	102	55	40	●	...02 10100	118	71	56	●	...03 10100	141	94	79	
10,20	.402			12	.472	...01 10200	102	55	40	●	...02 10200	118	71	56	●	...03 10300	141	94	79	●
10,30	.406			12	.472	...01 10300	102	55	40	●	...02 10300	118	71	56	●	...03 10300	141	94	79	
10,32	.406	13/32		12	.472	...01 10320	102	55	40	○	...02 10320	118	71	56	○	...03 10320	141	94	79	○
10,40	.409			12	.472	...01 10400	102	55	40	○	...02 10400	118	71	56	○	...03 10400	141	94	79	
10,50	.413			12	.472	...01 10500	102	55	40	●	...02 10500	118	71	56	●	...03 10500	141	94	79	●
10,60	.417			12	.472	...01 10600	102	55	40	○	...02 10600	118	71	56	○	...03 10600	141	94	79	
10,70	.421			12	.472	...01 10700	102	55	40	●	...02 10700	118	71	56	●	...03 10700	141	94	79	
10,72	.422	27/64		12	.472	...01 10720	102	55	40	○	...02 10720	118	71	56	○	...03 10720	141	94	79	○
10,80	.425			12	.472	...01 10800	102	55	40	●	...02 10800	118	71	56	●	...03 10800	141	94	79	●
10,90	.429			12	.472	...01 10900	102	55	40	○	...02 10900	118	71	56	○	...03 10900	141	94	79	
11,00	.433			12	.472	1 705 01 11000	102	55	40	●	1 705 02 11000	118	71	56	●	1 705 03 11000	141	94	79	●
11,10	.437			12	.472	...01 11100	102	55	40	○	...02 11100	118	71	56	○	...03 11100	141	94	79	
11,11	.437	7/16		12	.472	...01 11110	102	55	40	○	...02 11110	118	71	56	○	...03 11110	141	94	79	
11,20	.441			12	.472	...01 11200	102	55	40	●	...02 11200	118	71	56	●	...03 11200	141	94	79	
11,30	.445			12	.472	...01 11300	102	55	40	○	...02 11300	118	71	56	○	...03 11300	141	94	79	
11,40	.449			12	.472	...01 11400	102	55	40	○	...02 11400	118	71	56	○	...03 11400	141	94	79	
11,50	.453			12	.472	...01 11500	102	55	40	●	...02 11500	118	71	56	●	...03 11500	141	94	79	●
11,60	.457			12	.472	...01 11600	102	55	40	○	...02 11600	118	71	56	○	...03 11600	141	94	79	
11,70	.461			12	.472	...01 11700	102	55	40	○	...02 11700	118	71	56	○	...03 11700	141	94	79	
11,80	.465			12	.472	...01 11800	102	55	40	●	...02 11800	118	71	56	●	...03 11800	141	94	79	●
11,90	.469			12	.472	...01 11900	102	55	40	○	...02 11900	118	71	56	○	...03 11900	141	94	79	○
11,91	.469	15/32		12	.472	...01 11910	102	55	40	○	...02 11910	118	71	56	○	...03 11910	141	94	79	○
12,00	.472			12	.472	1 705 01 12000	102	55	40	●	1 705 02 12000	118	71	56	●	1 705 03 12000	141	94	79	●
12,30	.484	31/64		14	.551	...01 12300	107	60	43	○	...02 12300	124	77	60	○	...03 12300	155	108	91	○
12,50	.492			14	.551	...01 12500	107	60	43	●	...02 12500	124	77	60	●	...03 12500	155	108	91	●
12,70	.500	1/2		14	.551	...01 12700	107	60	43	○	...02 12700	124	77	60	○	...03 12700	155	108	91	○
12,80	.504			14	.551	...01 12800	107	60	43	●	...02 12800	124	77	60	●	...03 12800	155	108	91	●
13,00	.512			14	.551	1 705 01 13000	107	60	43	●	1 705 02 13000	124	77	60	●	1 705 03 13000	155	108	91	●
13,10	.516	33/64		14	.551	...01 13100	107	60	43	●	...02 13100				●	...03 13100	155	108	91	
13,50	.531			14	.551	...01 13500	107	60	43	●	...02 13500	124	77	60	●	...03 13500	155	108	91	●
13,80	.543			14	.551	...01 13800	107	60	43	○	...02 13800	124	77	60	○	...03 13800	155	108	91	○
14,00	.551			14	.551	1 705 01 14000	107	60	43	●	1 705 02 14000	124	77	60	●	1 705 03 14000	155	108	91	●
14,29	.563	9/16		16	.630	...01 14290	115	65	45	○	...02 14290	133	83	63	○	...03 14290	171	121	101	○
14,50	.571			16	.630	...01 14500	115	65	45	●	...02 14500	133	83	63	●	...03 14500	171	121	101	●
14,80	.583			16	.630	...01 14800	115	65	45	○	...02 14800	133	83	63	○	...03 14800	171	121	101	○
15,00	.591			16	.630	1 705 01 15000	115	65	45	●	1 705 02 15000	133	83	63	●	1 705 03 15000	171	121	101	●
15,50	.610			16	.630	...01 15500	115	65	45	●	...02 15500	133	83	63	●	...03 15500	171	121	101	●
15,80	.622			16	.630	...01 15800	115	65	45	○	...02 15800	133	83	63	○	...03 15800	171	121	101	○
15,87	.625	5/8		16	.630	...01 15870	115	65	45	○	...02 15870	133	83	63	○	...03 15870	171	121	101	○
16,00	.630			16	.630	1 705 01 16000	115	65	45	●	1 705 02 16000	133	83	63	●	1 705 03 16000	171	121	101	●
16,50	.650			18	.709	...01 16500	123	73	51	●	...02 16500	143	93	71	●	...03 16500	185	135	113	

Top Drill S+™ with Through Coolant, continued

.656" to .787" (16,67mm to 20,00mm)

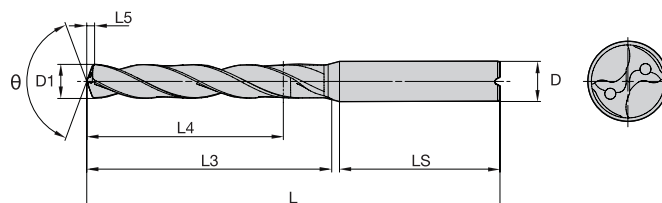
Tolerance

D1	Tolerance m7	D	Tolerance h6
>3 to 6	0,004/0,016	6	0,000/-0,008
>6 to 10	0,006/0,021	8 to 10	0,000/-0,009
>10 to 18	0,007/0,025	12 to 18	0,000/-0,011
>18 to 20	0,008/0,029	20	0,000/-0,013

- Standard stock item.
- Standard non-stock item (14 days).
- Non-standard, non-stock item (made to order).

*Length to diameter ratios, are approximate.

For exact ratios please refer to call-out info.

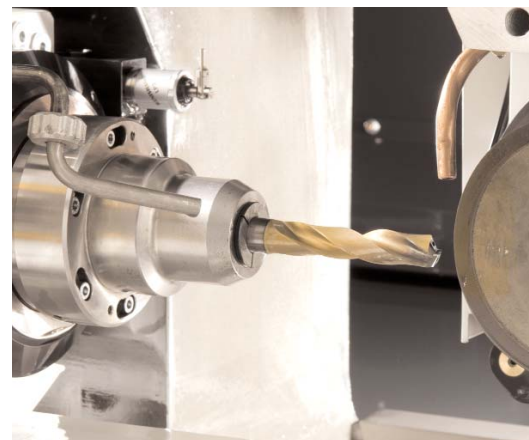


Diameter D1						Regular 3xD1*					Long 5xD1*					Extra Long 7xD1*				
decimal		fract.	wire	D		θ = 140°					θ = 140°					θ = 132°				
mm	inch	inch	letter	mm	inch	code	L	L3	L4	stock	code	L	L3	L4	stock	code	L	L3	L4	stock
16,67	.656	21/32		18	.709	...01 16670	123	73	51	○	...02 16670	143	93	71	○	...03 16670	185	135	113	
16,80	.661			18	.709	...01 16800	123	73	51	○	...02 16800	143	93	71	○	...03 16800	185	135	113	
17,00	.669			18	.709	1 705 01 17000	123	73	51	●	1 705 02 17000	143	93	71	●	1 705 03 17000	185	135	113	
17,50	.689			18	.709	...01 17500	123	73	51	●	...02 17500	143	93	71	●	...03 17500	185	135	113	
17,80	.701			18	.709	...01 17800	123	73	51	○	...02 17800	143	93	71	○	...03 17800	185	135	113	
18,00	.709			18	.709	1 705 01 18000	123	73	51	●	1 705 02 18000	143	93	71	●	1 705 03 18000	185	135	113	
18,50	.728			20	.787	...01 18500	131	79	55	●	...02 18500	153	101	77	●	...03 18500	200	148	124	
18,80	.740			20	.787	...01 18800	131	79	55	●	...02 18800	153	101	77	●	...03 18800	200	148	124	
19,00	.748			20	.787	1 705 01 19000	131	79	55	●	1 705 02 19000	153	101	77	●	1 705 03 19000	200	148	124	
19,05	.750	3/4		20	.787	...01 19050	131	79	55	○	...02 19050	153	101	77	○	...03 19050	200	148	124	
19,50	.768			20	.787	...01 19500	131	79	55	○	...02 19500	153	101	77	○	...03 19500	200	148	124	
19,80	.780			20	.787	...01 19800	131	79	55	○	...02 19800	153	101	77	○	...03 19800	200	148	124	
20,00	.787			20	.787	1 705 01 20000	131	79	55	○	1 705 02 20000	153	101	77	○	1 705 03 20000	200	148	124	

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2. Complete the form, include it with your worn tools, and ship to the address shown at the top of the form.



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