



VALOR[®] HOLEMAKING

Victory Starts With Valor Holeshaping

PREMIERING
2023
PRODUCT
CATALOG



2023 Canada Catalog
All Prices in Canadian Dollar

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Rethink your holemaking routine with Valor Holemaking's new line of the world's most premium quality, high performance drills and holemaking solutions. Our products are meticulously tested, engineered, and manufactured in the USA to deliver excellent service levels and quality that your shop deserves.



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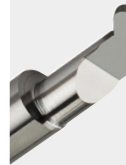
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Reduced Cost-Per-Hole

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OUR OFFERING

11 High Performance Spotting Drills



13 High Performance Drills for Aluminum & Aluminum Alloys



32 High Performance Drills for Steels



55 Combined Drill & Countersinks



56 High Performance Chamfer Cutters



58 Counterbores



61 Thread Mills



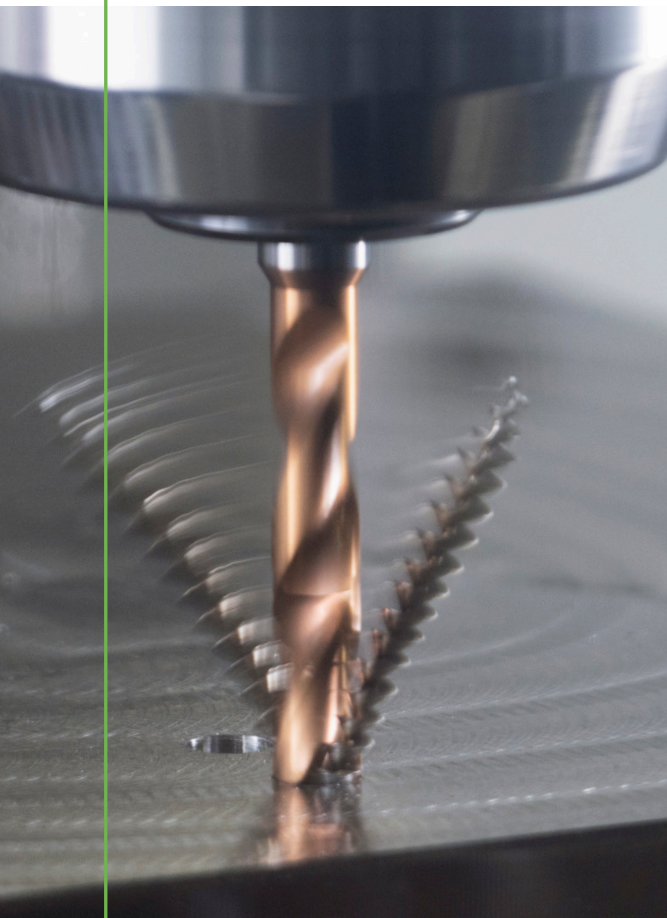
**Victory Starts With
Valor Holemaking**





Outstanding Hole Accuracy & Repeatability

Enjoy incredible repeatability, reliability, and part-to-part consistency with drills meticulously tested to deliver impeccable hole circularity, straightness, and true position that matches the best in the industry.



Exceptional Surface Finish

Achieve impressive surface finish that increases your through put, reduces your scraps, and eliminates post-processing operations. Our High Performance Drill geometries undergo a precision edge prep, coating, and post-polish process, allowing chips to effectively evacuate up and out of a part with minimal entry and exit burrs.



Amazing Tool Life & Performance

Rely on industry-leading material-specific geometry and coatings that minimize stress and breakage, resulting in reduced cutting forces, high quality holes, and long tool life.



Impressive Cost-Per-Hole Results

Get an immediate boost to your shop's efficiency by realizing impressive cost-per-hole results. Our High Performance Drills are priced competitively, built to last, and engineered to drill more quickly, effectively, and reliably, providing you with unbeatable cost savings.

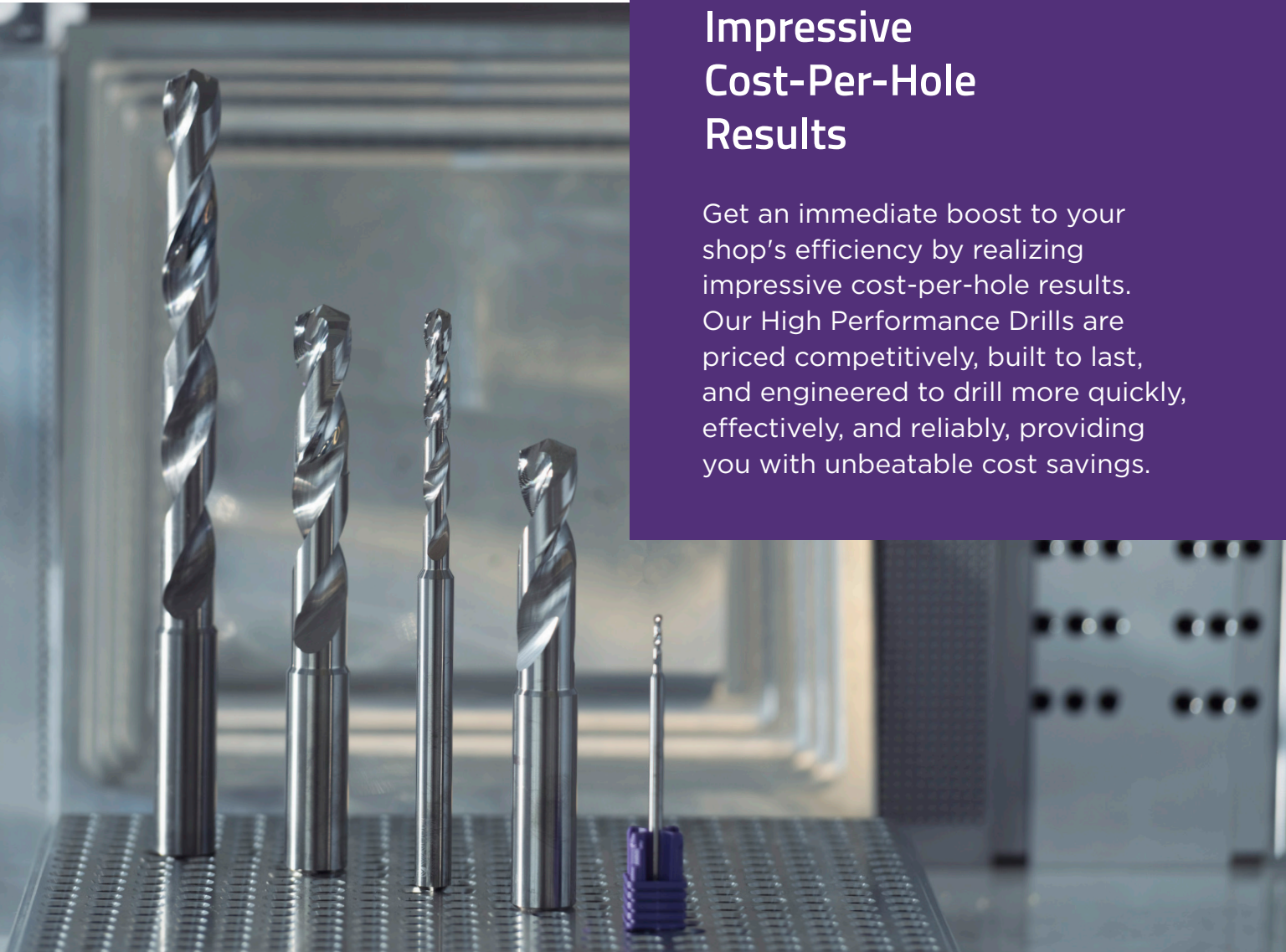




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THREADING





Val-Max Coating Technology

Valor Holemaking's proprietary high performance coating technology is specially engineered to revolutionize your drilling operations. At Valor, we select each coating to provide the best performance in the material it's optimized for, so you can drill more high quality holes with Valor tooling.

	Val-Max V	Val-Max X
		
Application Benefits	Val-Max V technology provides tooling with higher hardness, lubricity, and abrasion resistance to deliver outstanding performance in aluminum with high silicon content, and a variety of other non-ferrous materials.	Val-Max X technology is specially engineered to improve tool life and heat resistance in a wide variety of ferrous materials. Achieve excellent performance in difficult-to-machine materials including alloy steels, stainless steels, nickel alloys, and other high hardness materials up to 65 Rc.
Materials	Wrought Aluminum, Cast Aluminum, and Non-Ferrous Materials	Alloy Steels, Stainless Steels, Hardened Steels, Cast Iron, and Nickel Alloys
Coating Appearance	Light Gold / Champagne	Copper
Max Temperature Usage	1,110° F	2,192° F
Microhardness (HV 0.05)	2243 (22 GPa)	4487 (44 GPa)
Coefficient of Friction	0.40	0.35

Tolerance Chart

High Performance Drills & Spotting Drills

Diameter (mm)	Drill Diameter D1 (h8)		Shank Diameter D2 (h6)	
	inch	microns	inch	microns
0 mm - 3 mm	+0" / -.0006"	+0 μm / -14 μm	+0" / -.0002"	+0 μm / -6 μm
3 mm - 6 mm	+0" / -.0007"	+0 μm / -18 μm	+0" / -.0003"	+0 μm / -8 μm
6 mm - 10 mm	+0" / -.0009"	+0 μm / -22 μm	+0" / -.0004"	+0 μm / -9 μm
10 mm - 18 mm	+0" / -.0011"	+0 μm / -27 μm	+0" / -.0004"	+0 μm / -11 μm



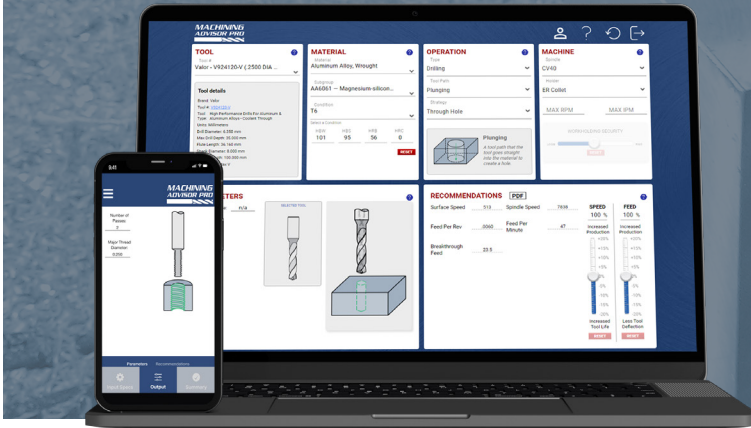
The Cutting-Edge Resource You Need to Take You Further at the Spindle



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Take your **Valor Holemaking** products further by generating and following customized running parameters for your specific setup and workpiece material.

CAM Partners

Valor Holemaking is proud to partner with these industry-leading CAM software packages so using our tools is as simple as possible.

Valuable Time Savings

Import tool libraries directly into CAM software, so you can spend more time at the machine.

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Program confidently with accurate tool dimensions and CAM-specific tool data.

Growing Libraries & Partnerships

Count on up-to-date product libraries across a roster of leading CAM partners.

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Build & Send Shopping Carts to Your Distributor at valorholemaking.com

Valor Holemaking is also equipped with several technical resources, from Sim Files and Speeds & Feeds charts to CAM Tool Libraries, we complement your high quality tool with equally beneficial resources.



Once logged in, create your own personalized Shopping Cart of the Valor Holemaking tools you're most interested in, then send it directly to a participating distributor, or share it with a colleague or purchasing agent.



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Machining Advisor Pro



Speeds & Feeds



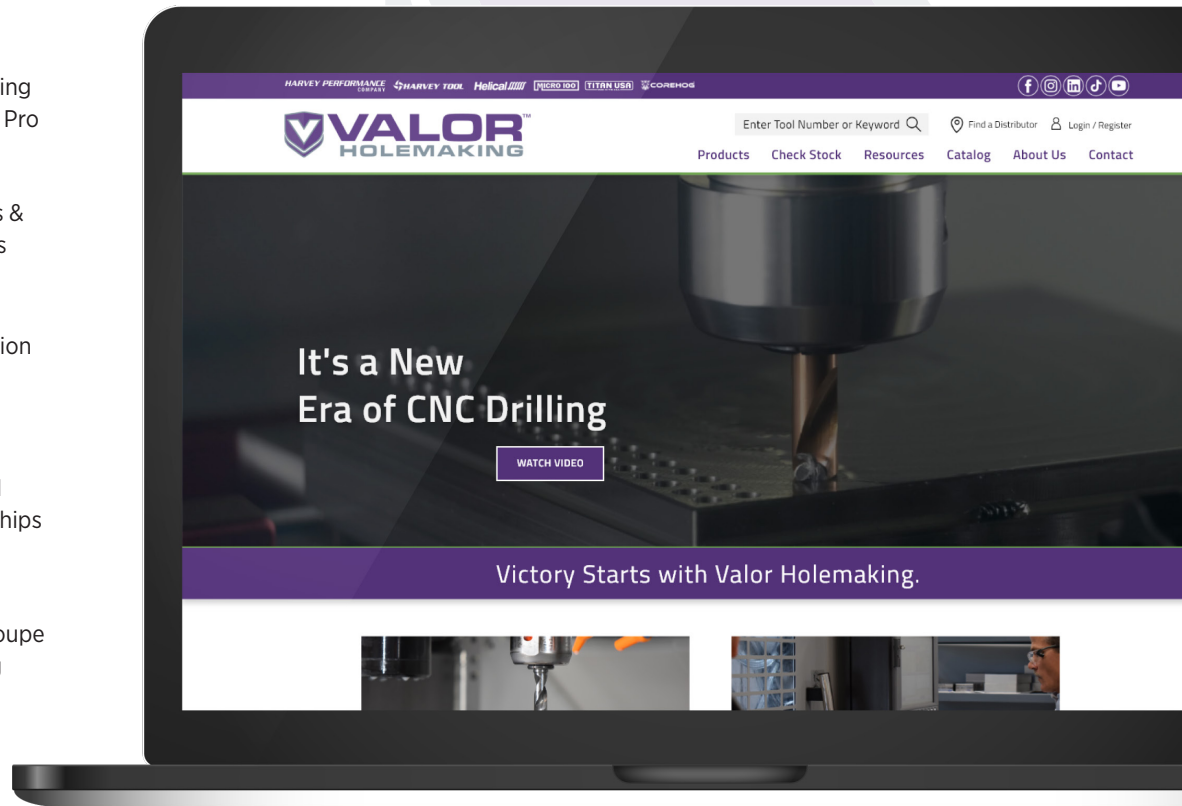
Simulation Files

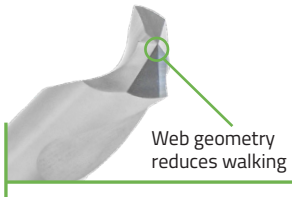


CAM Partnerships



In The Loupe Blog





High Performance Spotting Drills

Delivers Incredible Accuracy for High Performance Drilling

- Highly engineered point design provides better positioning and stability for high performance drilling applications
- Thinned web to reduce walking
- Uncoated option well-suited for spot drilling Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Excellent for aluminum and non-ferrous alloys

Outstanding in ferrous materials

Point Angle	Drill Diameter		Flute Length (inclusive of point angle)		Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max X Coated	
	inch	metric	inch	metric				Tool #	Price	Tool #	Price
A ^{+2°} / _{-0°}	D1 (h8)*		L2		L4	D2 (h6)*	L1	Tool #	Price	Tool #	Price
90°	.1181	3.00 mm	.3937	10.00 mm	1.50 mm	3 mm	63 mm	V528289	39.28	V528289-X	49.08
	.1575	4.00 mm	.5905	15.00 mm	2.00 mm	4 mm	63 mm	V401556	43.68	V401556-X	54.88
	.2362	6.00 mm	.7874	20.00 mm	3.00 mm	6 mm	63 mm	V133679	67.18	V133679-X	80.68
	.3150	8.00 mm	.7874	20.00 mm	4.00 mm	8 mm	75 mm	V925137	90.48	V925137-X	109.68
	.3937	10.00 mm	.9842	25.00 mm	5.00 mm	10 mm	75 mm	V870885	95.68	V870885-X	117.88
	.4724	12.00 mm	1.1811	30.00 mm	6.00 mm	12 mm	100 mm	V625792	165.58	V625792-X	193.38
	.6299	16.00 mm	1.5748	40.00 mm	8.00 mm	16 mm	100 mm	V397909	240.88	V397909-X	279.38
135°	.1181	3.00 mm	.3937	10.00 mm	0.62 mm	3 mm	63 mm	V828908	39.28	V828908-X	49.08
	.1575	4.00 mm	.5905	15.00 mm	0.82 mm	4 mm	63 mm	V578430	43.68	V578430-X	54.88
	.2362	6.00 mm	.7874	20.00 mm	1.24 mm	6 mm	63 mm	V126235	67.18	V126235-X	80.68
	.3150	8.00 mm	.7874	20.00 mm	1.65 mm	8 mm	75 mm	V965469	90.48	V965469-X	109.68
	.3937	10.00 mm	.9842	25.00 mm	2.07 mm	10 mm	75 mm	V856609	95.68	V856609-X	117.88
	.4724	12.00 mm	1.1811	30.00 mm	2.48 mm	12 mm	100 mm	V705482	165.58	V705482-X	193.38
	.6299	16.00 mm	1.5748	40.00 mm	3.31 mm	16 mm	100 mm	V827330	240.88	V827330-X	279.38
140°	.1181	3.00 mm	.3937	10.00 mm	0.54 mm	3 mm	63 mm	V261312	39.28	V261312-X	49.08
	.1575	4.00 mm	.5905	15.00 mm	0.72 mm	4 mm	63 mm	V589772	43.68	V589772-X	54.88
	.2362	6.00 mm	.7874	20.00 mm	1.09 mm	6 mm	63 mm	V661563	67.18	V661563-X	80.68
	.3150	8.00 mm	.7874	20.00 mm	1.45 mm	8 mm	75 mm	V102716	90.48	V102716-X	109.68
	.3937	10.00 mm	.9842	25.00 mm	1.81 mm	10 mm	75 mm	V634710	95.68	V634710-X	117.88
	.4724	12.00 mm	1.1811	30.00 mm	2.18 mm	12 mm	100 mm	V443621	165.58	V443621-X	193.38
	.6299	16.00 mm	1.5748	40.00 mm	2.91 mm	16 mm	100 mm	V941564	240.88	V941564-X	279.38

* For h6 and h8 tolerances, see page 8.



Speeds & Feeds

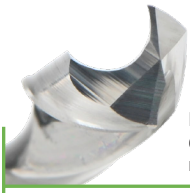
High Performance Spotting Drills

Material Guide		Hardness	SFM	Chip Load (IPR) by Drill Diameter						
				1/8	3/16	1/4	3/8	1/2	5/8	3/4
Carbon Steels	10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	29-37 Rc (279-344 HBn)	150	.00270	.00404	.00540	.00810	.01080	.01350	.01620
Low Alloy Steels	13XX, 41XX, 43XX, 51XX, 86XX, 93XX	29-37 Rc (279-344 HBn)	240	.00295	.00442	.00591	.00886	.01181	.01477	.01772
Tool Steels	A, L, O, P, W series	29-37 Rc (279-344 HBn)	125	.00270	.00404	.00540	.00810	.01080	.01350	.01620
		38-45 Rc (353-421 HBn)	100	.00180	.00269	.00360	.00540	.00720	.00900	.01080
	D, H, M, T, S series	29-37 Rc (279-344 HBn)	90	.00169	.00252	.00338	.00506	.00675	.00844	.01013
		38-45 Rc (353-421 HBn)	75	.00113	.00168	.00225	.00338	.00450	.00563	.00675
Austenitic Stainless Steels	Nitronic 50, Nitronic 60, 301, 303, 304, 304L, Incoloy 27-7MO, 316, 316L, 321, 347	29-37 Rc (279-344 HBn)	180	.00295	.00442	.00591	.00886	.01181	.01477	.01772
Martensitic & Ferritic Stainless Steels	403, 410, 416, 420, 440, 430, 446	29-37 Rc (279-344 HBn)	150	.00270	.00404	.00540	.00810	.01080	.01350	.01620
		38-45 Rc (353-421 HBn)	100	.00180	.00269	.00360	.00540	.00720	.00900	.01080
PH Stainless Steels	15-5, 17-4, Carpenter 450, Carpenter 465	29-37 Rc (279-344 HBn)	125	.00169	.00252	.00338	.00506	.00675	.00844	.01013
		38-45 Rc (353-421 HBn)	90	.00113	.00168	.00225	.00338	.00450	.00563	.00675
Nickel Alloys	Hastelloy C-22, Inconel 625, Waspaloy, René 41, Inconel 718, Incoloy 20	29-37 Rc (279-344 HBn)	70	.00169	.00252	.00338	.00506	.00675	.00844	.01013
		38-45 Rc (353-421 HBn)	50	.00113	.00168	.00225	.00338	.00450	.00563	.00675
Titanium Alloys	Ti 3Al-2.5V, Ti 6Al-4V, Ti 10V-2Fe-3Al	29-37 Rc (279-344 HBn)	100	.00169	.00252	.00338	.00506	.00675	.00844	.01013
		38-45 Rc (353-421 HBn)	75	.00113	.00168	.00225	.00338	.00450	.00563	.00675
Wrought Aluminum Alloys	2014, 5062, 6061, 7050, 7075, 7475	≤ 28 Rc (≤ 271 HBn)	600	.00338	.00505	.00675	.01013	.01350	.01688	.02025
	5% - 8% Si (4XXX)		600	.00304	.00454	.00608	.00911	.01215	.01519	.01823
	8% - 12% Si (4XXX)		480							
Cast Aluminum Alloys	319.0, 328.0, 355.0, 360.0, 380.0, 383.0, 390.0, 520.0, 535.0	≤ 28 Rc (≤ 271 HBn)	450	.00338	.00505	.00675	.01013	.01350	.01688	.02025
	3% - 5% Si (3XX, A3XX, C3XX, 4XX, A4XX, B4XX)		450							
	5% - 8% Si (3XX, A3XX, C3XX, 4XX, A4XX, B4XX)		420							
	8% - 12% Si (3XX, A3XX, C3XX, 4XX, A4XX, B4XX)		390							
	12% - 16% Si (3XX, A3XX, C3XX, 4XX, A4XX, B4XX)		350							
Copper Alloys	Cu-ETP, CuBe2, CuZn30, CuZn36Pb3, CuZn10, CuSn5	≤ 28 Rc (≤ 271 HBn)	170-400	.00270	.00404	.00540	.00810	.01080	.01350	.01620
Magnesium Alloys	—	≤ 28 Rc (≤ 271 HBn)	900	.00338	.00505	.00675	.01013	.01350	.01688	.02025
Zinc Alloys	480									

General Notes

All posted speed and feed parameters are suggested starting values that may be increased given optimal setup conditions. Chip loads reflect uncoated cutters and may be increased 10%-20% if coated. For ferrous materials with hardness ≤ 28 Rc, chip loads can be increased 10%-20%.

If you require additional information, Valor Holmaking has a team of technical experts available to assist you through even the most challenging applications. Please contact us at **866-840-1505** or Valortech@harveyperformance.com.



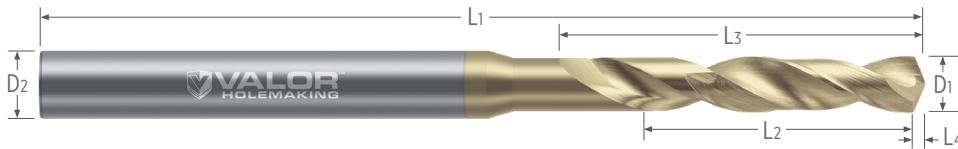
Point geometry designed to minimize burrs

High Performance Drills

For Aluminum & Aluminum Alloys

Best-In-Class for High Performance Drilling in 6061 Aluminum

- Optimized for best-in-class performance in 6061 Aluminum with superior performance in Aluminum and Aluminum Alloys
- Provides excellent performance in other Non-Ferrous Alloys
- Geometry is designed to provide minimal entry and exit burrs
- Engineered cylindrical margin design ensures stability and improved performance
- Pre and post polish process delivers reduced friction and ensures outstanding chip management
- 135° point angle with 4-facet geometry for improved self-centering
- h6 shank tolerance for high precision tool holders
- Proprietary Val-Max V coating delivers outstanding performance in Aluminum Alloys and other Non-Ferrous Alloys
- Solid carbide

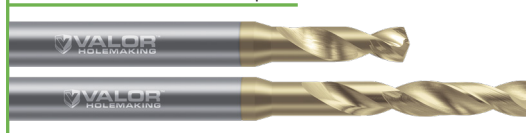


Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth					Tool #	Price	Tool #	Price
	D1 (h8)*		L2		L3	L4	D2 (h6)*	L1				
.0625 (1/16)	1.587 mm	.187	4.75 mm	(3x)	6.17 mm	.33 mm	3 mm	63 mm	V194685	59.68	V194685-V	67.18
.0625 (1/16)	1.587 mm	.312	7.95 mm	(5x)	9.51 mm	.33 mm	3 mm	63 mm	V810911	109.68	V810911-V	117.18
.0630	1.600 mm	.188	4.80 mm	(3x)	6.22 mm	.33 mm	3 mm	63 mm	V350774	59.68	V350774-V	67.18
.0630	1.600 mm	.314	8.00 mm	(5x)	9.58 mm	.33 mm	3 mm	63 mm	V440239	109.68	V440239-V	117.18
.0669	1.700 mm	.200	5.10 mm	(3x)	6.61 mm	.35 mm	3 mm	63 mm	V912750	59.68	V912750-V	67.18
.0669	1.700 mm	.334	8.50 mm	(5x)	10.18 mm	.35 mm	3 mm	63 mm	V962712	109.68	V962712-V	117.18
.0708	1.800 mm	.212	5.40 mm	(3x)	7.00 mm	.37 mm	3 mm	63 mm	V354482	59.68	V354482-V	67.18
.0708	1.800 mm	.354	9.00 mm	(5x)	10.78 mm	.37 mm	3 mm	63 mm	V269342	109.68	V269342-V	117.18
.0748	1.900 mm	.224	5.70 mm	(3x)	7.39 mm	.39 mm	3 mm	63 mm	V491940	59.68	V491940-V	67.18
.0748	1.900 mm	.374	9.50 mm	(5x)	11.38 mm	.39 mm	3 mm	63 mm	V732481	109.68	V732481-V	117.18
.0781 (5/64)	1.984 mm	.234	5.95 mm	(3x)	7.72 mm	.41 mm	3 mm	63 mm	V380076	59.68	V380076-V	67.18
.0781 (5/64)	1.984 mm	.389	9.90 mm	(5x)	11.88 mm	.41 mm	3 mm	63 mm	V870254	109.68	V870254-V	117.18
.0787	2.000 mm	.236	6.00 mm	(3x)	7.78 mm	.41 mm	3 mm	63 mm	V692266	59.68	V692266-V	67.18
.0787	2.000 mm	.393	10.00 mm	(5x)	11.98 mm	.41 mm	3 mm	63 mm	V843172	109.68	V843172-V	117.18
.0826	2.100 mm	.248	6.30 mm	(3x)	8.17 mm	.43 mm	3 mm	63 mm	V352580	59.68	V352580-V	67.18
.0826	2.100 mm	.413	10.50 mm	(5x)	12.58 mm	.43 mm	3 mm	63 mm	V249129	109.68	V249129-V	117.18

* For h6 and h8 tolerances, see page 8.

continued on next page

Stocked in 3x and 5x hole depths





High Performance Drills

For Aluminum & Aluminum Alloys (cont.)

continued from previous page

Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth	L3	L4	D2 (h6)*	L1	Tool #	Price	Tool #	Price
D1 (h8)*		L2										
.0866	2.200 mm	.259	6.60 mm	(3x)	8.56 mm	.46 mm	3 mm	63 mm	V666234	59.68	V666234-V	67.18
.0866	2.200 mm	.433	11.00 mm	(5x)	13.18 mm	.46 mm	3 mm	63 mm	V259897	109.68	V259897-V	117.18
.0905	2.300 mm	.271	6.90 mm	(3x)	8.95 mm	.48 mm	3 mm	63 mm	V599496	59.68	V599496-V	67.18
.0905	2.300 mm	.452	11.50 mm	(5x)	13.78 mm	.48 mm	3 mm	63 mm	V652049	109.68	V652049-V	117.18
.0937 (3/32)	2.381 mm	.281	7.15 mm	(3x)	9.26 mm	.49 mm	3 mm	63 mm	V538054	59.68	V538054-V	67.18
.0937 (3/32)	2.381 mm	.468	11.90 mm	(5x)	14.26 mm	.49 mm	3 mm	63 mm	V572375	109.68	V572375-V	117.18
.0944	2.400 mm	.283	7.20 mm	(3x)	9.34 mm	.50 mm	3 mm	63 mm	V431788	59.68	V431788-V	67.18
.0944	2.400 mm	.472	12.00 mm	(5x)	14.38 mm	.50 mm	3 mm	63 mm	V785917	109.68	V785917-V	117.18
.0984	2.500 mm	.295	7.50 mm	(3x)	9.73 mm	.52 mm	3 mm	63 mm	V536698	59.68	V536698-V	67.18
.0984	2.500 mm	.492	12.50 mm	(5x)	14.98 mm	.52 mm	3 mm	63 mm	V445649	109.68	V445649-V	117.18
.1023	2.600 mm	.307	7.80 mm	(3x)	10.12 mm	.54 mm	3 mm	63 mm	V315845	59.68	V315845-V	67.18
.1023	2.600 mm	.511	13.00 mm	(5x)	15.58 mm	.54 mm	3 mm	63 mm	V788414	109.68	V788414-V	117.18
.1062	2.700 mm	.318	8.10 mm	(3x)	10.50 mm	.56 mm	3 mm	63 mm	V481040	59.68	V481040-V	67.18
.1062	2.700 mm	.531	13.50 mm	(5x)	16.17 mm	.56 mm	3 mm	63 mm	V165528	109.68	V165528-V	117.18
.1093 (7/64)	2.778 mm	.328	8.35 mm	(3x)	10.81 mm	.58 mm	3 mm	63 mm	V954203	59.68	V954203-V	67.18
.1093 (7/64)	2.778 mm	.547	13.90 mm	(5x)	16.64 mm	.58 mm	3 mm	63 mm	V195817	109.68	V195817-V	117.18
.1102	2.800 mm	.330	8.40 mm	(3x)	10.89 mm	.58 mm	3 mm	63 mm	V838163	59.68	V838163-V	67.18
.1102	2.800 mm	.551	14.00 mm	(5x)	16.77 mm	.58 mm	3 mm	63 mm	V802613	109.68	V802613-V	117.18
.1141	2.900 mm	.342	8.70 mm	(3x)	11.28 mm	.60 mm	3 mm	63 mm	V729681	59.68	V729681-V	67.18
.1141	2.900 mm	.570	14.50 mm	(5x)	17.37 mm	.60 mm	3 mm	63 mm	V960568	109.68	V960568-V	117.18
.1181	3.000 mm	.354	9.00 mm	(3x)	11.67 mm	.62 mm	4 mm	63 mm	V438428	59.68	V438428-V	68.58
.1181	3.000 mm	.590	15.00 mm	(5x)	17.97 mm	.62 mm	4 mm	63 mm	V116498	109.68	V116498-V	118.58
.1220	3.100 mm	.366	9.30 mm	(3x)	12.06 mm	.64 mm	4 mm	63 mm	V793541	59.68	V793541-V	68.58
.1220	3.100 mm	.610	15.50 mm	(5x)	18.57 mm	.64 mm	4 mm	63 mm	V569668	109.68	V569668-V	118.58
.1250 (1/8)	3.175 mm	.374	9.50 mm	(3x)	12.35 mm	.66 mm	4 mm	63 mm	V367456	59.68	V367456-V	68.58
.1250 (1/8)	3.175 mm	.625	15.90 mm	(5x)	19.02 mm	.66 mm	4 mm	63 mm	V844439	109.68	V844439-V	118.58
.1260	3.200 mm	.377	9.60 mm	(3x)	12.45 mm	.66 mm	4 mm	63 mm	V660156	59.68	V660156-V	68.58
.1260	3.200 mm	.629	16.00 mm	(5x)	19.17 mm	.66 mm	4 mm	63 mm	V390641	109.68	V390641-V	118.58
.1300	3.300 mm	.389	9.90 mm	(3x)	12.84 mm	.68 mm	4 mm	63 mm	V171897	59.68	V171897-V	68.58
.1300	3.300 mm	.649	16.50 mm	(5x)	19.77 mm	.68 mm	4 mm	63 mm	V999845	109.68	V999845-V	118.58
.1338	3.400 mm	.401	10.20 mm	(3x)	13.23 mm	.70 mm	4 mm	63 mm	V781405	59.68	V781405-V	68.58
.1338	3.400 mm	.669	17.00 mm	(5x)	20.37 mm	.70 mm	4 mm	63 mm	V262808	109.68	V262808-V	118.58
.1377	3.500 mm	.413	10.50 mm	(3x)	13.62 mm	.72 mm	4 mm	63 mm	V839259	59.68	V839259-V	68.58
.1377	3.500 mm	.688	17.50 mm	(5x)	20.97 mm	.72 mm	4 mm	63 mm	V920406	109.68	V920406-V	118.58

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth	L3	L4	D2 (h6)*	L1	Tool #	Price	Tool #	Price
D1 (h8)*		L2										
.1406 (9/64)	3.571 mm	.421	10.70 mm	(3x)	13.89 mm	.74 mm	4 mm	63 mm	V740344	59.68	V740344-V	68.58
.1406 (9/64)	3.571 mm	.702	17.85 mm	(5x)	21.39 mm	.74 mm	4 mm	63 mm	V747490	109.68	V747490-V	118.58
.1417	3.600 mm	.425	10.80 mm	(3x)	14.01 mm	.75 mm	4 mm	63 mm	V137136	59.68	V137136-V	68.58
.1417	3.600 mm	.708	18.00 mm	(5x)	21.57 mm	.75 mm	4 mm	63 mm	V813201	109.68	V813201-V	118.58
.1456	3.700 mm	.437	11.10 mm	(3x)	14.40 mm	.77 mm	4 mm	63 mm	V282861	59.68	V282861-V	68.58
.1456	3.700 mm	.728	18.50 mm	(5x)	22.17 mm	.77 mm	4 mm	63 mm	V334748	109.68	V334748-V	118.58
.1496	3.800 mm	.448	11.40 mm	(3x)	14.79 mm	.79 mm	4 mm	63 mm	V728547	59.68	V728547-V	68.58
.1496	3.800 mm	.748	19.00 mm	(5x)	22.77 mm	.79 mm	4 mm	63 mm	V454017	109.68	V454017-V	118.58
.1535	3.900 mm	.460	11.70 mm	(3x)	15.18 mm	.81 mm	4 mm	63 mm	V438470	59.68	V438470-V	68.58
.1535	3.900 mm	.767	19.50 mm	(5x)	23.37 mm	.81 mm	4 mm	63 mm	V878966	109.68	V878966-V	118.58
.1562 (5/32)	3.968 mm	.468	11.90 mm	(3x)	15.44 mm	.82 mm	4 mm	63 mm	V648893	59.68	V648893-V	68.58
.1562 (5/32)	3.968 mm	.781	19.85 mm	(5x)	23.77 mm	.82 mm	4 mm	63 mm	V458952	109.68	V458952-V	118.58
.1574	4.000 mm	.472	12.00 mm	(3x)	15.56 mm	.83 mm	6 mm	63 mm	V421509	59.68	V421509-V	69.98
.1574	4.000 mm	.787	20.00 mm	(5x)	23.96 mm	.83 mm	6 mm	75 mm	V338334	109.68	V338334-V	119.98
.1614	4.100 mm	.484	12.30 mm	(3x)	15.95 mm	.85 mm	6 mm	63 mm	V174492	69.28	V174492-V	79.58
.1614	4.100 mm	.807	20.50 mm	(5x)	24.56 mm	.85 mm	6 mm	75 mm	V885910	119.98	V885910-V	130.28
.1653	4.200 mm	.496	12.60 mm	(3x)	16.34 mm	.87 mm	6 mm	63 mm	V106883	69.28	V106883-V	79.58
.1653	4.200 mm	.826	21.00 mm	(5x)	25.16 mm	.87 mm	6 mm	75 mm	V261808	119.98	V261808-V	130.28
.1692	4.300 mm	.507	12.90 mm	(3x)	16.73 mm	.89 mm	6 mm	63 mm	V831806	69.28	V831806-V	79.58
.1692	4.300 mm	.846	21.50 mm	(5x)	25.76 mm	.89 mm	6 mm	75 mm	V911321	119.98	V911321-V	130.28
.1718 (11/64)	4.365 mm	.515	13.10 mm	(3x)	16.99 mm	.90 mm	6 mm	63 mm	V639993	69.28	V639993-V	79.58
.1718 (11/64)	4.365 mm	.860	21.85 mm	(5x)	26.15 mm	.90 mm	6 mm	75 mm	V374159	119.98	V374159-V	130.28
.1732	4.400 mm	.519	13.20 mm	(3x)	17.12 mm	.91 mm	6 mm	63 mm	V582968	69.28	V582968-V	79.58
.1732	4.400 mm	.866	22.00 mm	(5x)	26.36 mm	.91 mm	6 mm	75 mm	V197740	119.98	V197740-V	130.28
.1771	4.500 mm	.531	13.50 mm	(3x)	17.51 mm	.93 mm	6 mm	63 mm	V956195	69.28	V956195-V	79.58
.1771	4.500 mm	.885	22.50 mm	(5x)	26.96 mm	.93 mm	6 mm	75 mm	V441617	119.98	V441617-V	130.28
.1811	4.600 mm	.543	13.80 mm	(3x)	17.90 mm	.95 mm	6 mm	63 mm	V866527	69.28	V866527-V	79.58
.1811	4.600 mm	.905	23.00 mm	(5x)	27.56 mm	.95 mm	6 mm	75 mm	V224773	119.98	V224773-V	130.28
.1850	4.700 mm	.555	14.10 mm	(3x)	18.29 mm	.97 mm	6 mm	63 mm	V344265	69.28	V344265-V	79.58
.1850	4.700 mm	.925	23.50 mm	(5x)	28.16 mm	.97 mm	6 mm	75 mm	V433090	119.98	V433090-V	130.28
.1875 (3/16)	4.762 mm	.562	14.30 mm	(3x)	18.53 mm	.99 mm	6 mm	63 mm	V850660	69.28	V850660-V	79.58
.1875 (3/16)	4.762 mm	.937	23.80 mm	(5x)	28.53 mm	.99 mm	6 mm	75 mm	V771194	119.98	V771194-V	130.28
.1890	4.800 mm	.566	14.40 mm	(3x)	18.68 mm	.99 mm	6 mm	63 mm	V568557	69.28	V568557-V	79.58
.1890	4.800 mm	.944	24.00 mm	(5x)	28.76 mm	.99 mm	6 mm	75 mm	V856912	119.98	V856912-V	130.28

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth	L3	L4	D2 (h6)*	L1	Tool #	Price	Tool #	Price
D1 (h8)*		L2										
.1930	4.900 mm	.578	14.70 mm	(3x)	19.07 mm	1.01 mm	6 mm	63 mm	V728480	69.28	V728480-V	79.58
.1930	4.900 mm	.964	24.50 mm	(5x)	29.36 mm	1.01 mm	6 mm	75 mm	V367252	119.98	V367252-V	130.28
.1968	5.000 mm	.590	15.00 mm	(3x)	19.46 mm	1.04 mm	6 mm	63 mm	V330699	69.28	V330699-V	79.58
.1968	5.000 mm	.984	25.00 mm	(5x)	29.96 mm	1.04 mm	6 mm	75 mm	V234458	119.98	V234458-V	130.28
.2007	5.100 mm	.602	15.30 mm	(3x)	19.85 mm	1.06 mm	6 mm	63 mm	V368184	69.28	V368184-V	79.58
.2007	5.100 mm	1.003	25.50 mm	(5x)	30.56 mm	1.06 mm	6 mm	75 mm	V224687	119.98	V224687-V	130.28
.2031 (13/64)	5.159 mm	.610	15.50 mm	(3x)	20.08 mm	1.07 mm	6 mm	63 mm	V977882	69.28	V977882-V	79.58
.2031 (13/64)	5.159 mm	1.015	25.80 mm	(5x)	30.91 mm	1.07 mm	6 mm	75 mm	V420736	119.98	V420736-V	130.28
.2047	5.200 mm	.614	15.60 mm	(3x)	20.24 mm	1.08 mm	6 mm	63 mm	V485216	69.28	V485216-V	79.58
.2047	5.200 mm	1.023	26.00 mm	(5x)	31.16 mm	1.08 mm	6 mm	75 mm	V357300	119.98	V357300-V	130.28
.2086	5.300 mm	.625	15.90 mm	(3x)	20.63 mm	1.10 mm	6 mm	63 mm	V110782	69.28	V110782-V	79.58
.2086	5.300 mm	1.043	26.50 mm	(5x)	31.76 mm	1.10 mm	6 mm	75 mm	V727361	119.98	V727361-V	130.28
.2125	5.400 mm	.637	16.20 mm	(3x)	21.01 mm	1.12 mm	6 mm	63 mm	V836676	69.28	V836676-V	79.58
.2125	5.400 mm	1.062	27.00 mm	(5x)	32.35 mm	1.12 mm	6 mm	75 mm	V834281	119.98	V834281-V	130.28
.2165	5.500 mm	.649	16.50 mm	(3x)	21.40 mm	1.14 mm	6 mm	63 mm	V106542	69.28	V106542-V	79.58
.2165	5.500 mm	1.082	27.50 mm	(5x)	32.95 mm	1.14 mm	6 mm	75 mm	V492013	119.98	V492013-V	130.28
.2187 (7/32)	5.556 mm	.655	16.65 mm	(3x)	21.62 mm	1.15 mm	6 mm	63 mm	V656902	69.28	V656902-V	79.58
.2187 (7/32)	5.556 mm	1.094	27.80 mm	(5x)	33.29 mm	1.15 mm	6 mm	75 mm	V700600	119.98	V700600-V	130.28
.2205	5.600 mm	.661	16.80 mm	(3x)	21.79 mm	1.16 mm	6 mm	63 mm	V770182	69.28	V770182-V	79.58
.2205	5.600 mm	1.102	28.00 mm	(5x)	33.55 mm	1.16 mm	6 mm	75 mm	V896743	119.98	V896743-V	130.28
.2244	5.700 mm	.673	17.10 mm	(3x)	22.18 mm	1.18 mm	6 mm	63 mm	V403734	69.28	V403734-V	79.58
.2244	5.700 mm	1.122	28.50 mm	(5x)	34.15 mm	1.18 mm	6 mm	75 mm	V770664	119.98	V770664-V	130.28
.2283	5.800 mm	.685	17.40 mm	(3x)	22.57 mm	1.20 mm	6 mm	63 mm	V899133	69.28	V899133-V	79.58
.2283	5.800 mm	1.141	29.00 mm	(5x)	34.75 mm	1.20 mm	6 mm	75 mm	V380680	119.98	V380680-V	130.28
.2322	5.900 mm	.696	17.70 mm	(3x)	22.96 mm	1.22 mm	6 mm	63 mm	V590239	69.28	V590239-V	79.58
.2322	5.900 mm	1.161	29.50 mm	(5x)	35.35 mm	1.22 mm	6 mm	75 mm	V537399	119.98	V537399-V	130.28
.2343 (15/64)	5.953 mm	.702	17.85 mm	(3x)	23.17 mm	1.23 mm	6 mm	63 mm	V353700	69.28	V353700-V	79.58
.2343 (15/64)	5.953 mm	1.171	29.75 mm	(5x)	35.67 mm	1.23 mm	6 mm	75 mm	V430775	119.98	V430775-V	130.28
.2362	6.000 mm	.708	18.00 mm	(3x)	23.35 mm	1.24 mm	8 mm	75 mm	V234178	69.28	V234178-V	81.58
.2362	6.000 mm	1.181	30.00 mm	(5x)	35.95 mm	1.24 mm	8 mm	100 mm	V927207	119.98	V927207-V	133.68
.2401	6.100 mm	.720	18.30 mm	(3x)	23.74 mm	1.26 mm	8 mm	75 mm	V524686	72.68	V524686-V	84.98
.2401	6.100 mm	1.200	30.50 mm	(5x)	36.55 mm	1.26 mm	8 mm	100 mm	V699896	139.18	V699896-V	152.88
.2440	6.200 mm	.732	18.60 mm	(3x)	24.13 mm	1.28 mm	8 mm	75 mm	V147676	72.68	V147676-V	84.98
.2440	6.200 mm	1.220	31.00 mm	(5x)	37.15 mm	1.28 mm	8 mm	100 mm	V973436	139.18	V973436-V	152.88

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth	L3	L4	D2 (h6)*	L1	Tool #	Price	Tool #	Price
D1 (h8)*		L2										
.2480	6.300 mm	.744	18.90 mm	(3x)	24.52 mm	1.30 mm	8 mm	75 mm	V627609	72.68	V627609-V	84.98
.2480	6.300 mm	1.240	31.50 mm	(5x)	37.75 mm	1.30 mm	8 mm	100 mm	V753195	139.18	V753195-V	152.88
.2500 (1/4)	6.350 mm	.749	19.05 mm	(3x)	24.71 mm	1.32 mm	8 mm	75 mm	V463324	72.68	V463324-V	84.98
.2500 (1/4)	6.350 mm	1.249	31.75 mm	(5x)	38.05 mm	1.32 mm	8 mm	100 mm	V890966	139.18	V890966-V	152.88
.2520	6.400 mm	.755	19.20 mm	(3x)	24.91 mm	1.33 mm	8 mm	75 mm	V470320	72.68	V470320-V	84.98
.2520	6.400 mm	1.259	32.00 mm	(5x)	38.35 mm	1.33 mm	8 mm	100 mm	V610421	139.18	V610421-V	152.88
.2559	6.500 mm	.767	19.50 mm	(3x)	25.30 mm	1.35 mm	8 mm	75 mm	V904272	72.68	V904272-V	84.98
.2559	6.500 mm	1.279	32.50 mm	(5x)	38.95 mm	1.35 mm	8 mm	100 mm	V503831	139.18	V503831-V	152.88
.2598	6.600 mm	.779	19.80 mm	(3x)	25.69 mm	1.37 mm	8 mm	75 mm	V591811	72.68	V591811-V	84.98
.2598	6.600 mm	1.299	33.00 mm	(5x)	39.55 mm	1.37 mm	8 mm	100 mm	V548894	139.18	V548894-V	152.88
.2638	6.700 mm	.791	20.10 mm	(3x)	26.07 mm	1.39 mm	8 mm	75 mm	V863925	72.68	V863925-V	84.98
.2638	6.700 mm	1.318	33.50 mm	(5x)	40.14 mm	1.39 mm	8 mm	100 mm	V956352	139.18	V956352-V	152.88
.2656 (17/64)	6.746 mm	.797	20.25 mm	(3x)	26.25 mm	1.40 mm	8 mm	75 mm	V230372	72.68	V230372-V	84.98
.2656 (17/64)	6.746 mm	1.328	33.75 mm	(5x)	40.42 mm	1.40 mm	8 mm	100 mm	V330745	139.18	V330745-V	152.88
.2677	6.800 mm	.803	20.40 mm	(3x)	26.46 mm	1.41 mm	8 mm	75 mm	V586533	72.68	V586533-V	84.98
.2677	6.800 mm	1.338	34.00 mm	(5x)	40.74 mm	1.41 mm	8 mm	100 mm	V112067	139.18	V112067-V	152.88
.2717	6.900 mm	.814	20.70 mm	(3x)	26.85 mm	1.43 mm	8 mm	75 mm	V585346	72.68	V585346-V	84.98
.2717	6.900 mm	1.358	34.50 mm	(5x)	41.34 mm	1.43 mm	8 mm	100 mm	V766452	139.18	V766452-V	152.88
.2756	7.000 mm	.826	21.00 mm	(3x)	27.24 mm	1.45 mm	8 mm	75 mm	V793057	72.68	V793057-V	84.98
.2756	7.000 mm	1.377	35.00 mm	(5x)	41.94 mm	1.45 mm	8 mm	100 mm	V812884	139.18	V812884-V	152.88
.2795	7.100 mm	.838	21.30 mm	(3x)	27.63 mm	1.47 mm	8 mm	75 mm	V971883	75.48	V971883-V	87.78
.2795	7.100 mm	1.397	35.50 mm	(5x)	42.54 mm	1.47 mm	8 mm	100 mm	V526212	141.88	V526212-V	155.58
.2812 (9/32)	7.142 mm	.844	21.45 mm	(3x)	27.79 mm	1.48 mm	8 mm	75 mm	V745358	75.48	V745358-V	87.78
.2812 (9/32)	7.142 mm	1.405	35.70 mm	(5x)	42.79 mm	1.48 mm	8 mm	100 mm	V974925	141.88	V974925-V	155.58
.2834	7.200 mm	.850	21.60 mm	(3x)	28.02 mm	1.49 mm	8 mm	75 mm	V318182	75.48	V318182-V	87.78
.2834	7.200 mm	1.417	36.00 mm	(5x)	43.14 mm	1.49 mm	8 mm	100 mm	V243742	141.88	V243742-V	155.58
.2874	7.300 mm	.862	21.90 mm	(3x)	28.41 mm	1.51 mm	8 mm	75 mm	V400766	75.48	V400766-V	87.78
.2874	7.300 mm	1.437	36.50 mm	(5x)	43.74 mm	1.51 mm	8 mm	100 mm	V340474	141.88	V340474-V	155.58
.2913	7.400 mm	.874	22.20 mm	(3x)	28.80 mm	1.53 mm	8 mm	75 mm	V583325	75.48	V583325-V	87.78
.2913	7.400 mm	1.456	37.00 mm	(5x)	44.34 mm	1.53 mm	8 mm	100 mm	V884228	141.88	V884228-V	155.58
.2952	7.500 mm	.885	22.50 mm	(3x)	29.19 mm	1.55 mm	8 mm	75 mm	V833945	75.48	V833945-V	87.78
.2952	7.500 mm	1.476	37.50 mm	(5x)	44.94 mm	1.55 mm	8 mm	100 mm	V759862	141.88	V759862-V	155.58
.2969 (19/64)	7.541 mm	.889	22.60 mm	(3x)	29.35 mm	1.56 mm	8 mm	75 mm	V222380	75.48	V222380-V	87.78
.2969 (19/64)	7.541 mm	1.484	37.70 mm	(5x)	45.18 mm	1.56 mm	8 mm	100 mm	V440832	141.88	V440832-V	155.58

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth	L3	L4	D2 (h6)*	L1	Tool #	Price	Tool #	Price
D1 (h8)*		L2			L3	L4	D2 (h6)*	L1	Tool #	Price	Tool #	Price
.2992	7.600 mm	.897	22.80 mm	(3x)	29.58 mm	1.57 mm	8 mm	75 mm	V931842	75.48	V931842-V	87.78
.2992	7.600 mm	1.496	38.00 mm	(5x)	45.54 mm	1.57 mm	8 mm	100 mm	V883385	141.88	V883385-V	155.58
.3031	7.700 mm	.909	23.10 mm	(3x)	29.97 mm	1.59 mm	8 mm	75 mm	V649826	75.48	V649826-V	87.78
.3031	7.700 mm	1.515	38.50 mm	(5x)	46.14 mm	1.59 mm	8 mm	100 mm	V696121	141.88	V696121-V	155.58
.3071	7.800 mm	.921	23.40 mm	(3x)	30.36 mm	1.62 mm	8 mm	75 mm	V402097	75.48	V402097-V	87.78
.3071	7.800 mm	1.535	39.00 mm	(5x)	46.74 mm	1.62 mm	8 mm	100 mm	V914982	141.88	V914982-V	155.58
.3110	7.900 mm	.933	23.70 mm	(3x)	30.75 mm	1.64 mm	8 mm	75 mm	V217709	75.48	V217709-V	87.78
.3110	7.900 mm	1.555	39.50 mm	(5x)	47.34 mm	1.64 mm	8 mm	100 mm	V960211	141.88	V960211-V	155.58
.3125 (5/16)	7.937 mm	.937	23.80 mm	(3x)	30.89 mm	1.64 mm	8 mm	75 mm	V785367	75.48	V785367-V	87.78
.3125 (5/16)	7.937 mm	1.562	39.70 mm	(5x)	47.56 mm	1.64 mm	8 mm	100 mm	V504447	141.88	V504447-V	155.58
.3150	8.000 mm	.944	24.00 mm	(3x)	31.13 mm	1.66 mm	10 mm	75 mm	V899583	75.48	V899583-V	90.48
.3150	8.000 mm	1.574	40.00 mm	(5x)	47.93 mm	1.66 mm	10 mm	100 mm	V959977	141.88	V959977-V	157.68
.3189	8.100 mm	.956	24.30 mm	(3x)	31.52 mm	1.68 mm	10 mm	75 mm	V926444	85.68	V926444-V	100.78
.3189	8.100 mm	1.594	40.50 mm	(5x)	48.53 mm	1.68 mm	10 mm	100 mm	V759625	167.18	V759625-V	182.98
.3228	8.200 mm	.968	24.60 mm	(3x)	31.91 mm	1.70 mm	10 mm	75 mm	V724837	85.68	V724837-V	100.78
.3228	8.200 mm	1.614	41.00 mm	(5x)	49.13 mm	1.70 mm	10 mm	100 mm	V873208	167.18	V873208-V	182.98
.3268	8.300 mm	.980	24.90 mm	(3x)	32.30 mm	1.72 mm	10 mm	75 mm	V555652	85.68	V555652-V	100.78
.3268	8.300 mm	1.633	41.50 mm	(5x)	49.73 mm	1.72 mm	10 mm	100 mm	V573287	167.18	V573287-V	182.98
.3281 (21/64)	8.333 mm	.984	25.00 mm	(3x)	32.43 mm	1.73 mm	10 mm	75 mm	V733277	85.68	V733277-V	100.78
.3281 (21/64)	8.333 mm	1.639	41.65 mm	(5x)	49.93 mm	1.73 mm	10 mm	100 mm	V919579	167.18	V919579-V	182.98
.3307	8.400 mm	.992	25.20 mm	(3x)	32.69 mm	1.74 mm	10 mm	75 mm	V167766	85.68	V167766-V	100.78
.3307	8.400 mm	1.653	42.00 mm	(5x)	50.33 mm	1.74 mm	10 mm	100 mm	V633981	167.18	V633981-V	182.98
.3346	8.500 mm	1.003	25.50 mm	(3x)	33.08 mm	1.76 mm	10 mm	75 mm	V408664	85.68	V408664-V	100.78
.3346	8.500 mm	1.673	42.50 mm	(5x)	50.93 mm	1.76 mm	10 mm	100 mm	V861150	167.18	V861150-V	182.98
.3386	8.600 mm	1.015	25.80 mm	(3x)	33.47 mm	1.78 mm	10 mm	75 mm	V390096	85.68	V390096-V	100.78
.3386	8.600 mm	1.692	43.00 mm	(5x)	51.53 mm	1.78 mm	10 mm	100 mm	V844326	167.18	V844326-V	182.98
.3425	8.700 mm	1.027	26.10 mm	(3x)	33.86 mm	1.80 mm	10 mm	75 mm	V151969	85.68	V151969-V	100.78
.3425	8.700 mm	1.712	43.50 mm	(5x)	52.13 mm	1.80 mm	10 mm	100 mm	V879893	167.18	V879893-V	182.98
.3438 (11/32)	8.732 mm	1.031	26.20 mm	(3x)	33.98 mm	1.81 mm	10 mm	75 mm	V104671	85.68	V104671-V	100.78
.3438 (11/32)	8.732 mm	1.718	43.65 mm	(5x)	52.32 mm	1.81 mm	10 mm	100 mm	V335452	167.18	V335452-V	182.98
.3465	8.800 mm	1.039	26.40 mm	(3x)	34.25 mm	1.82 mm	10 mm	75 mm	V891293	85.68	V891293-V	100.78
.3465	8.800 mm	1.732	44.00 mm	(5x)	52.73 mm	1.82 mm	10 mm	100 mm	V260828	167.18	V260828-V	182.98
.3504	8.900 mm	1.051	26.70 mm	(3x)	34.64 mm	1.84 mm	10 mm	75 mm	V365922	85.68	V365922-V	100.78
.3504	8.900 mm	1.751	44.50 mm	(5x)	53.33 mm	1.84 mm	10 mm	100 mm	V781535	167.18	V781535-V	182.98

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys (cont.)

continued from previous page

Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth	L3	L4	D2 (h6)*	L1	Tool #	Price	Tool #	Price
D1 (h8)*		L2										
.3543	9.000 mm	1.062	27.00 mm	(3x)	35.03 mm	1.86 mm	10 mm	75 mm	V386241	85.68	V386241-V	100.78
.3543	9.000 mm	1.771	45.00 mm	(5x)	53.93 mm	1.86 mm	10 mm	100 mm	V656849	167.18	V656849-V	182.98
.3583	9.100 mm	1.074	27.30 mm	(3x)	35.42 mm	1.88 mm	10 mm	75 mm	V637527	112.38	V637527-V	127.48
.3583	9.100 mm	1.791	45.50 mm	(5x)	54.53 mm	1.88 mm	10 mm	100 mm	V134756	187.08	V134756-V	202.88
.3594 (23/64)	9.128 mm	1.078	27.40 mm	(3x)	35.53 mm	1.89 mm	10 mm	75 mm	V324647	112.38	V324647-V	127.48
.3594 (23/64)	9.128 mm	1.797	45.65 mm	(5x)	54.69 mm	1.89 mm	10 mm	100 mm	V928900	187.08	V928900-V	202.88
.3622	9.200 mm	1.086	27.60 mm	(3x)	35.81 mm	1.91 mm	10 mm	75 mm	V332586	112.38	V332586-V	127.48
.3622	9.200 mm	1.811	46.00 mm	(5x)	55.13 mm	1.91 mm	10 mm	100 mm	V326648	187.08	V326648-V	202.88
.3661	9.300 mm	1.098	27.90 mm	(3x)	36.19 mm	1.93 mm	10 mm	75 mm	V589859	112.38	V589859-V	127.48
.3661	9.300 mm	1.830	46.50 mm	(5x)	55.72 mm	1.93 mm	10 mm	100 mm	V975106	187.08	V975106-V	202.88
.3701	9.400 mm	1.110	28.20 mm	(3x)	36.58 mm	1.95 mm	10 mm	75 mm	V656422	112.38	V656422-V	127.48
.3701	9.400 mm	1.850	47.00 mm	(5x)	56.32 mm	1.95 mm	10 mm	100 mm	V807457	187.08	V807457-V	202.88
.3740	9.500 mm	1.122	28.50 mm	(3x)	36.97 mm	1.97 mm	10 mm	75 mm	V306233	112.38	V306233-V	127.48
.3740	9.500 mm	1.870	47.50 mm	(5x)	56.92 mm	1.97 mm	10 mm	100 mm	V983594	187.08	V983594-V	202.88
.3750 (3/8)	9.525 mm	1.125	28.60 mm	(3x)	37.07 mm	1.97 mm	10 mm	75 mm	V893492	112.38	V893492-V	127.48
.3750 (3/8)	9.525 mm	1.875	47.65 mm	(5x)	57.07 mm	1.97 mm	10 mm	100 mm	V937306	187.08	V937306-V	202.88
.3780	9.600 mm	1.133	28.80 mm	(3x)	37.36 mm	1.99 mm	10 mm	75 mm	V883648	112.38	V883648-V	127.48
.3780	9.600 mm	1.889	48.00 mm	(5x)	57.52 mm	1.99 mm	10 mm	100 mm	V796500	187.08	V796500-V	202.88
.3819	9.700 mm	1.145	29.10 mm	(3x)	37.75 mm	2.01 mm	10 mm	75 mm	V695542	112.38	V695542-V	127.48
.3819	9.700 mm	1.909	48.50 mm	(5x)	58.12 mm	2.01 mm	10 mm	100 mm	V247210	187.08	V247210-V	202.88
.3858	9.800 mm	1.157	29.40 mm	(3x)	38.14 mm	2.03 mm	10 mm	75 mm	V676169	112.38	V676169-V	127.48
.3858	9.800 mm	1.929	49.00 mm	(5x)	58.72 mm	2.03 mm	10 mm	100 mm	V823528	187.08	V823528-V	202.88
.3898	9.900 mm	1.169	29.70 mm	(3x)	38.53 mm	2.05 mm	10 mm	75 mm	V263386	112.38	V263386-V	127.48
.3898	9.900 mm	1.948	49.50 mm	(5x)	59.32 mm	2.05 mm	10 mm	100 mm	V879509	187.08	V879509-V	202.88
.3906 (25/64)	9.921 mm	1.171	29.75 mm	(3x)	38.61 mm	2.05 mm	10 mm	75 mm	V405503	112.38	V405503-V	127.48
.3906 (25/64)	9.921 mm	1.952	49.60 mm	(5x)	59.45 mm	2.05 mm	10 mm	100 mm	V287196	187.08	V287196-V	202.88
.3937	10.000 mm	1.181	30.00 mm	(3x)	38.92 mm	2.07 mm	12 mm	100 mm	V532196	112.38	V532196-V	134.38
.3937	10.000 mm	1.968	50.00 mm	(5x)	59.92 mm	2.07 mm	12 mm	125 mm	V856596	187.08	V856596-V	210.38
.3976	10.100 mm	1.192	30.30 mm	(3x)	39.31 mm	2.09 mm	12 mm	100 mm	V621639	144.78	V621639-V	166.58
.3976	10.100 mm	1.988	50.50 mm	(5x)	60.52 mm	2.09 mm	12 mm	125 mm	V848057	280.38	V848057-V	303.58
.4016	10.200 mm	1.204	30.60 mm	(3x)	39.70 mm	2.11 mm	12 mm	100 mm	V641835	144.78	V641835-V	166.58
.4016	10.200 mm	2.007	51.00 mm	(5x)	61.12 mm	2.11 mm	12 mm	125 mm	V210101	280.38	V210101-V	303.58
.4055	10.300 mm	1.216	30.90 mm	(3x)	40.09 mm	2.13 mm	12 mm	100 mm	V589355	144.78	V589355-V	166.58
.4055	10.300 mm	2.027	51.50 mm	(5x)	61.72 mm	2.13 mm	12 mm	125 mm	V333787	280.38	V333787-V	303.58

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys (cont.)

continued from previous page

Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price	Tool #	Price
.4062 (13/32)	10.317 mm	1.218	30.95 mm	(3x)	40.15 mm	2.14 mm	12 mm	100 mm	V576080	144.78	V576080-V	166.58
.4062 (13/32)	10.317 mm	2.031	51.60 mm	(5x)	61.82 mm	2.14 mm	12 mm	125 mm	V227073	280.38	V227073-V	303.58
.4094	10.400 mm	1.228	31.20 mm	(3x)	40.48 mm	2.15 mm	12 mm	100 mm	V708410	144.78	V708410-V	166.58
.4094	10.400 mm	2.047	52.00 mm	(5x)	62.32 mm	2.15 mm	12 mm	125 mm	V195280	280.38	V195280-V	303.58
.4134	10.500 mm	1.240	31.50 mm	(3x)	40.87 mm	2.17 mm	12 mm	100 mm	V879946	144.78	V879946-V	166.58
.4134	10.500 mm	2.066	52.50 mm	(5x)	62.92 mm	2.17 mm	12 mm	125 mm	V496598	280.38	V496598-V	303.58
.4173	10.600 mm	1.251	31.80 mm	(3x)	41.26 mm	2.20 mm	12 mm	100 mm	V455218	144.78	V455218-V	166.58
.4173	10.600 mm	2.086	53.00 mm	(5x)	63.52 mm	2.20 mm	12 mm	125 mm	V452314	280.38	V452314-V	303.58
.4213	10.700 mm	1.263	32.10 mm	(3x)	41.64 mm	2.22 mm	12 mm	100 mm	V155404	144.78	V155404-V	166.58
.4213	10.700 mm	2.106	53.50 mm	(5x)	64.11 mm	2.22 mm	12 mm	125 mm	V634560	280.38	V634560-V	303.58
.4219 (27/64)	10.716 mm	1.265	32.15 mm	(3x)	41.71 mm	2.22 mm	12 mm	100 mm	V826638	144.78	V826638-V	166.58
.4219 (27/64)	10.716 mm	2.110	53.60 mm	(5x)	64.21 mm	2.22 mm	12 mm	125 mm	V814056	280.38	V814056-V	303.58
.4252	10.800 mm	1.275	32.40 mm	(3x)	42.03 mm	2.24 mm	12 mm	100 mm	V213641	144.78	V213641-V	166.58
.4252	10.800 mm	2.125	54.00 mm	(5x)	64.71 mm	2.24 mm	12 mm	125 mm	V455956	280.38	V455956-V	303.58
.4291	10.900 mm	1.287	32.70 mm	(3x)	42.42 mm	2.26 mm	12 mm	100 mm	V681558	144.78	V681558-V	166.58
.4291	10.900 mm	2.145	54.50 mm	(5x)	65.31 mm	2.26 mm	12 mm	125 mm	V872776	280.38	V872776-V	303.58
.4331	11.000 mm	1.299	33.00 mm	(3x)	42.81 mm	2.28 mm	12 mm	100 mm	V486441	144.78	V486441-V	166.58
.4331	11.000 mm	2.165	55.00 mm	(5x)	65.91 mm	2.28 mm	12 mm	125 mm	V840142	280.38	V840142-V	303.58
.4370	11.100 mm	1.311	33.30 mm	(3x)	43.20 mm	2.30 mm	12 mm	100 mm	V569821	157.68	V569821-V	179.58
.4370	11.100 mm	2.185	55.50 mm	(5x)	66.51 mm	2.30 mm	12 mm	125 mm	V786789	287.78	V786789-V	311.08
.4375 (7/16)	11.112 mm	1.312	33.35 mm	(3x)	43.25 mm	2.30 mm	12 mm	100 mm	V194265	157.68	V194265-V	179.58
.4375 (7/16)	11.112 mm	2.187	55.55 mm	(5x)	66.58 mm	2.30 mm	12 mm	125 mm	V266796	287.78	V266796-V	311.08
.4409	11.200 mm	1.322	33.60 mm	(3x)	43.59 mm	2.32 mm	12 mm	100 mm	V800667	157.68	V800667-V	179.58
.4409	11.200 mm	2.204	56.00 mm	(5x)	67.11 mm	2.32 mm	12 mm	125 mm	V503159	287.78	V503159-V	311.08
.4449	11.300 mm	1.334	33.90 mm	(3x)	43.98 mm	2.34 mm	12 mm	100 mm	V309259	157.68	V309259-V	179.58
.4449	11.300 mm	2.224	56.50 mm	(5x)	67.71 mm	2.34 mm	12 mm	125 mm	V346861	287.78	V346861-V	311.08
.4488	11.400 mm	1.346	34.20 mm	(3x)	44.37 mm	2.36 mm	12 mm	100 mm	V434511	157.68	V434511-V	179.58
.4488	11.400 mm	2.244	57.00 mm	(5x)	68.31 mm	2.36 mm	12 mm	125 mm	V662862	287.78	V662862-V	311.08
.4527	11.500 mm	1.358	34.50 mm	(3x)	44.76 mm	2.38 mm	12 mm	100 mm	V848030	157.68	V848030-V	179.58
.4527	11.500 mm	2.263	57.50 mm	(5x)	68.91 mm	2.38 mm	12 mm	125 mm	V786485	287.78	V786485-V	311.08
.4531 (29/64)	11.508 mm	1.358	34.50 mm	(3x)	44.79 mm	2.38 mm	12 mm	100 mm	V293298	157.68	V293298-V	179.58
.4531 (29/64)	11.508 mm	2.265	57.55 mm	(5x)	68.96 mm	2.38 mm	12 mm	125 mm	V128189	287.78	V128189-V	311.08
.4567	11.600 mm	1.370	34.80 mm	(3x)	45.15 mm	2.40 mm	12 mm	100 mm	V713188	157.68	V713188-V	179.58
.4567	11.600 mm	2.283	58.00 mm	(5x)	69.51 mm	2.40 mm	12 mm	125 mm	V314182	287.78	V314182-V	311.08

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length		Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth	L3	L4	D2 (h6)*	L1	Tool #	Price	Tool #	Price	
D1 (h8)*		L2			L3	L4	D2 (h6)*	L1	Tool #	Price	Tool #	Price	
.4606	11.700 mm	1.381	35.10 mm	(3x)	45.54 mm	2.42 mm	12 mm	100 mm	V136399	157.68	V136399-V	179.58	
.4606	11.700 mm	2.303	58.50 mm	(5x)	70.11 mm	2.42 mm	12 mm	125 mm	V357863	287.78	V357863-V	311.08	
.4646	11.800 mm	1.393	35.40 mm	(3x)	45.93 mm	2.44 mm	12 mm	100 mm	V891844	157.68	V891844-V	179.58	
.4646	11.800 mm	2.322	59.00 mm	(5x)	70.71 mm	2.44 mm	12 mm	125 mm	V101325	287.78	V101325-V	311.08	
.4685	11.900 mm	1.405	35.70 mm	(3x)	46.32 mm	2.46 mm	12 mm	100 mm	V393491	157.68	V393491-V	179.58	
.4685	11.900 mm	2.342	59.50 mm	(5x)	71.31 mm	2.46 mm	12 mm	125 mm	V470839	287.78	V470839-V	311.08	
.4688 (15/32)	11.907 mm	1.405	35.70 mm	(3x)	46.34 mm	2.47 mm	12 mm	100 mm	V477349	157.68	V477349-V	179.58	
.4688 (15/32)	11.907 mm	2.344	59.55 mm	(5x)	71.35 mm	2.47 mm	12 mm	125 mm	V910118	287.78	V910118-V	311.08	
.4724	12.000 mm	1.417	36.00 mm	(3x)	46.70 mm	2.49 mm	14 mm	100 mm	V890909	157.68	V890909-V	182.98	
.4724	12.000 mm	2.362	60.00 mm	(5x)	71.90 mm	2.49 mm	14 mm	125 mm	V660828	287.78	V660828-V	314.48	
.4764	12.100 mm	1.429	36.30 mm	(3x)	47.09 mm	2.51 mm	14 mm	100 mm	V634940	207.68	V634940-V	232.98	
.4764	12.100 mm	2.381	60.50 mm	(5x)	72.50 mm	2.51 mm	14 mm	125 mm	V932711	360.38	V932711-V	387.08	
.4803	12.200 mm	1.440	36.60 mm	(3x)	47.48 mm	2.53 mm	14 mm	100 mm	V905748	207.68	V905748-V	232.98	
.4803	12.200 mm	2.401	61.00 mm	(5x)	73.10 mm	2.53 mm	14 mm	125 mm	V781595	360.38	V781595-V	387.08	
.4843	12.300 mm	1.452	36.90 mm	(3x)	47.87 mm	2.55 mm	14 mm	100 mm	V170687	207.68	V170687-V	232.98	
.4843	12.300 mm	2.421	61.50 mm	(5x)	73.70 mm	2.55 mm	14 mm	125 mm	V699007	360.38	V699007-V	387.08	
.4882 (31/64)	12.400 mm	1.464	37.20 mm	(3x)	48.26 mm	2.57 mm	14 mm	100 mm	V359843	207.68	V359843-V	232.98	
.4882 (31/64)	12.400 mm	2.440	62.00 mm	(5x)	74.30 mm	2.57 mm	14 mm	125 mm	V692988	360.38	V692988-V	387.08	
.4921	12.500 mm	1.476	37.50 mm	(3x)	48.65 mm	2.59 mm	14 mm	100 mm	V512726	207.68	V512726-V	232.98	
.4921	12.500 mm	2.460	62.50 mm	(5x)	74.90 mm	2.59 mm	14 mm	125 mm	V684136	360.38	V684136-V	387.08	
.4961	12.600 mm	1.488	37.80 mm	(3x)	49.04 mm	2.61 mm	14 mm	100 mm	V622722	226.38	V622722-V	251.48	
.4961	12.600 mm	2.480	63.00 mm	(5x)	75.50 mm	2.61 mm	14 mm	125 mm	V951870	360.38	V951870-V	387.08	
.5000 (1/2)	12.700 mm	1.499	38.10 mm	(3x)	49.43 mm	2.63 mm	14 mm	100 mm	V503316	226.38	V503316-V	251.48	
.5000 (1/2)	12.700 mm	2.499	63.50 mm	(5x)	76.10 mm	2.63 mm	14 mm	125 mm	V805106	360.38	V805106-V	387.08	

* For h6 and h8 tolerances, see page 8.

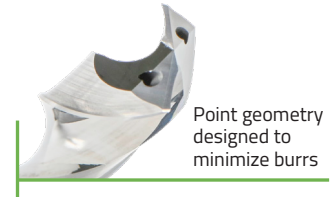
Tech Tip

If your machine does not have coolant-through capabilities, opt for a high performance solid carbide drill, to ensure your drill will **last longer**, **run faster**, and **hold true position** in 3x and 5x applications.



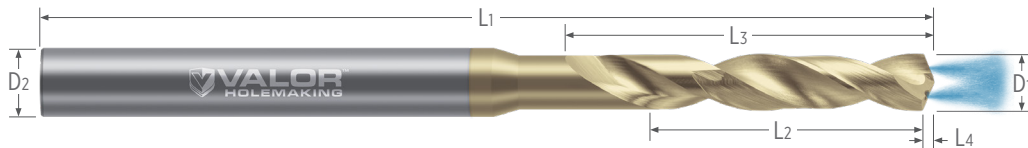
High Performance Drills

For Aluminum & Aluminum Alloys – Coolant-Through



Unmatched Precision in 6061 Aluminum Coolant-Through Drilling

- Optimized for best-in-class performance in 6061 Aluminum with superior performance in Aluminum and Aluminum Alloys
- Provides excellent performance in other Non-Ferrous Alloys
- Coolant-through channels further enhance chip evacuation
- Geometry is designed to provide minimal entry and exit burrs
- Engineered cylindrical margin design ensures stability and improved performance
- Pre and post polish process delivers reduced friction and ensures outstanding chip management
- 135° point angle with 4-facet geometry for improved self-centering
- h6 shank tolerance for high precision tool holders
- Proprietary Val-Max V coating delivers outstanding performance in Aluminum Alloys and other Non-Ferrous Alloys
- Solid carbide

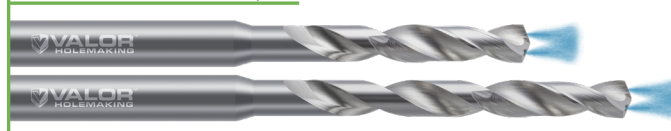


Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth					Tool #	Price	Tool #	Price
D1 (h8)*		L2			L3	L4	D2 (h6)*	L1				
.0625 (1/16)	1.587 mm	.312	7.95 mm	(5x)	9.51 mm	.33 mm	3 mm	63 mm	V995092	130.88	V995092-V	138.48
.0625 (1/16)	1.587 mm	.499	12.70 mm	(8x)	14.50 mm	.33 mm	3 mm	63 mm	V484828	222.68	V484828-V	230.28
.0630	1.600 mm	.314	8.00 mm	(5x)	9.58 mm	.33 mm	3 mm	63 mm	V501534	130.88	V501534-V	138.48
.0630	1.600 mm	.503	12.80 mm	(8x)	14.62 mm	.33 mm	3 mm	63 mm	V680349	222.68	V680349-V	230.28
.0669	1.700 mm	.334	8.50 mm	(5x)	10.18 mm	.35 mm	3 mm	63 mm	V605780	130.88	V605780-V	138.48
.0669	1.700 mm	.535	13.60 mm	(8x)	15.54 mm	.35 mm	3 mm	63 mm	V910907	222.68	V910907-V	230.28
.0708	1.800 mm	.354	9.00 mm	(5x)	10.78 mm	.37 mm	3 mm	63 mm	V322492	130.88	V322492-V	138.48
.0708	1.800 mm	.566	14.40 mm	(8x)	16.45 mm	.37 mm	3 mm	63 mm	V882014	222.68	V882014-V	230.28
.0748	1.900 mm	.374	9.50 mm	(5x)	11.38 mm	.39 mm	3 mm	63 mm	V531576	130.88	V531576-V	138.48
.0748	1.900 mm	.598	15.20 mm	(8x)	17.37 mm	.39 mm	3 mm	63 mm	V421746	222.68	V421746-V	230.28
.0781 (5/64)	1.984 mm	.389	9.90 mm	(5x)	11.88 mm	.41 mm	3 mm	63 mm	V658747	130.88	V658747-V	138.48
.0781 (5/64)	1.984 mm	.624	15.85 mm	(8x)	18.13 mm	.41 mm	3 mm	63 mm	V880813	222.68	V880813-V	230.28
.0787	2.000 mm	.393	10.00 mm	(5x)	11.98 mm	.41 mm	3 mm	63 mm	V420395	130.88	V420395-V	138.48
.0787	2.000 mm	.629	16.00 mm	(8x)	18.28 mm	.41 mm	3 mm	63 mm	V492205	222.68	V492205-V	230.28

* For h6 and h8 tolerances, see page 8.

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Stocked in 5x and 8x hole depths





High Performance Drills

For Aluminum & Aluminum Alloys – Coolant-Through (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price	Tool #	Price
.0826	2.100 mm	.413	10.50 mm	(5x)	12.58 mm	.43 mm	3 mm	63 mm	V260199	130.88	V260199-V	138.48
.0826	2.100 mm	.661	16.80 mm	(8x)	19.19 mm	.43 mm	3 mm	63 mm	V390543	222.68	V390543-V	230.28
.0866	2.200 mm	.433	11.00 mm	(5x)	13.18 mm	.46 mm	3 mm	63 mm	V507605	130.88	V507605-V	138.48
.0866	2.200 mm	.692	17.60 mm	(8x)	20.11 mm	.46 mm	3 mm	63 mm	V841569	222.68	V841569-V	230.28
.0905	2.300 mm	.452	11.50 mm	(5x)	13.78 mm	.48 mm	3 mm	63 mm	V303320	130.88	V303320-V	138.48
.0905	2.300 mm	.724	18.40 mm	(8x)	21.02 mm	.48 mm	3 mm	63 mm	V664000	222.68	V664000-V	230.28
.0937 (3/32)	2.381 mm	.468	11.90 mm	(5x)	14.26 mm	.49 mm	3 mm	63 mm	V626473	130.88	V626473-V	138.48
.0937 (3/32)	2.381 mm	.749	19.05 mm	(8x)	21.76 mm	.49 mm	3 mm	63 mm	V773519	222.68	V773519-V	230.28
.0944	2.400 mm	.472	12.00 mm	(5x)	14.38 mm	.50 mm	3 mm	63 mm	V199489	130.88	V199489-V	138.48
.0944	2.400 mm	.755	19.20 mm	(8x)	21.94 mm	.50 mm	3 mm	63 mm	V234473	222.68	V234473-V	230.28
.0984	2.500 mm	.492	12.50 mm	(5x)	14.98 mm	.52 mm	3 mm	63 mm	V302724	130.88	V302724-V	138.48
.0984	2.500 mm	.787	20.00 mm	(8x)	22.85 mm	.52 mm	3 mm	63 mm	V755519	222.68	V755519-V	230.28
.1023	2.600 mm	.511	13.00 mm	(5x)	15.58 mm	.54 mm	3 mm	63 mm	V520958	130.88	V520958-V	138.48
.1023	2.600 mm	.818	20.80 mm	(8x)	23.77 mm	.54 mm	3 mm	63 mm	V492168	222.68	V492168-V	230.28
.1062	2.700 mm	.531	13.50 mm	(5x)	16.17 mm	.56 mm	3 mm	63 mm	V527387	130.88	V527387-V	138.48
.1062	2.700 mm	.850	21.60 mm	(8x)	24.68 mm	.56 mm	3 mm	63 mm	V196896	222.68	V196896-V	230.28
.1093 (7/64)	2.778 mm	.547	13.90 mm	(5x)	16.64 mm	.58 mm	3 mm	63 mm	V278759	130.88	V278759-V	138.48
.1093 (7/64)	2.778 mm	.874	22.20 mm	(8x)	25.39 mm	.58 mm	3 mm	63 mm	V618198	222.68	V618198-V	230.28
.1102	2.800 mm	.551	14.00 mm	(5x)	16.77 mm	.58 mm	3 mm	63 mm	V730812	130.88	V730812-V	138.48
.1102	2.800 mm	.881	22.40 mm	(8x)	25.59 mm	.58 mm	3 mm	63 mm	V963101	222.68	V963101-V	230.28
.1141	2.900 mm	.570	14.50 mm	(5x)	17.37 mm	.60 mm	3 mm	63 mm	V882240	130.88	V882240-V	138.48
.1141	2.900 mm	.913	23.20 mm	(8x)	26.51 mm	.60 mm	3 mm	63 mm	V385580	222.68	V385580-V	230.28
.1181	3.000 mm	.590	15.00 mm	(5x)	17.97 mm	.62 mm	4 mm	63 mm	V187918	130.88	V187918-V	139.78
.1181	3.000 mm	.944	24.00 mm	(8x)	27.42 mm	.62 mm	4 mm	75 mm	V860963	222.68	V860963-V	231.58
.1220	3.100 mm	.610	15.50 mm	(5x)	18.57 mm	.64 mm	4 mm	63 mm	V443746	130.88	V443746-V	139.78
.1220	3.100 mm	.976	24.80 mm	(8x)	28.34 mm	.64 mm	4 mm	75 mm	V577751	222.68	V577751-V	231.58
.1250 (1/8)	3.175 mm	.625	15.90 mm	(5x)	19.02 mm	.66 mm	4 mm	63 mm	V877822	130.88	V877822-V	139.78
.1250 (1/8)	3.175 mm	.999	25.40 mm	(8x)	29.02 mm	.66 mm	4 mm	75 mm	V846347	222.68	V846347-V	231.58
.1260	3.200 mm	.629	16.00 mm	(5x)	19.17 mm	.66 mm	4 mm	63 mm	V527462	130.88	V527462-V	139.78
.1260	3.200 mm	1.007	25.60 mm	(8x)	29.25 mm	.66 mm	4 mm	75 mm	V478157	222.68	V478157-V	231.58
.1300	3.300 mm	.649	16.50 mm	(5x)	19.77 mm	.68 mm	4 mm	63 mm	V584441	130.88	V584441-V	139.78
.1300	3.300 mm	1.039	26.40 mm	(8x)	30.17 mm	.68 mm	4 mm	75 mm	V828022	222.68	V828022-V	231.58
.1338	3.400 mm	.669	17.00 mm	(5x)	20.37 mm	.70 mm	4 mm	63 mm	V837035	130.88	V837035-V	139.78
.1338	3.400 mm	1.070	27.20 mm	(8x)	31.08 mm	.70 mm	4 mm	75 mm	V915819	222.68	V915819-V	231.58
.1377	3.500 mm	.688	17.50 mm	(5x)	20.97 mm	.72 mm	4 mm	63 mm	V357695	130.88	V357695-V	139.78
.1377	3.500 mm	1.102	28.00 mm	(8x)	31.99 mm	.72 mm	4 mm	75 mm	V261340	222.68	V261340-V	231.58

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys – Coolant-Through (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth					Tool #	Price	Tool #	Price
D1 (h8)*		L2			L3	L4	D2 (h6)*	L1				
.1406 (9/64)	3.571 mm	.702	17.85 mm	(5x)	21.39 mm	.74 mm	4 mm	63 mm	V767730	130.88	V767730-V	139.78
.1406 (9/64)	3.571 mm	1.124	28.55 mm	(8x)	32.64 mm	.74 mm	4 mm	75 mm	V333089	222.68	V333089-V	231.58
.1417	3.600 mm	.708	18.00 mm	(5x)	21.57 mm	.75 mm	4 mm	63 mm	V139840	130.88	V139840-V	139.78
.1417	3.600 mm	1.133	28.80 mm	(8x)	32.91 mm	.75 mm	4 mm	75 mm	V241917	222.68	V241917-V	231.58
.1456	3.700 mm	.728	18.50 mm	(5x)	22.17 mm	.77 mm	4 mm	63 mm	V441225	130.88	V441225-V	139.78
.1456	3.700 mm	1.165	29.60 mm	(8x)	33.82 mm	.77 mm	4 mm	75 mm	V869984	222.68	V869984-V	231.58
.1496	3.800 mm	.748	19.00 mm	(5x)	22.77 mm	.79 mm	4 mm	63 mm	V818024	130.88	V818024-V	139.78
.1496	3.800 mm	1.196	30.40 mm	(8x)	34.74 mm	.79 mm	4 mm	75 mm	V756236	222.68	V756236-V	231.58
.1535	3.900 mm	.767	19.50 mm	(5x)	23.37 mm	.81 mm	4 mm	63 mm	V429888	130.88	V429888-V	139.78
.1535	3.900 mm	1.228	31.20 mm	(8x)	35.65 mm	.81 mm	4 mm	75 mm	V832803	222.68	V832803-V	231.58
.1562 (5/32)	3.968 mm	.781	19.85 mm	(5x)	23.77 mm	.82 mm	4 mm	63 mm	V205668	130.88	V205668-V	139.78
.1562 (5/32)	3.968 mm	1.249	31.75 mm	(8x)	36.27 mm	.82 mm	4 mm	75 mm	V576052	222.68	V576052-V	231.58
.1574	4.000 mm	.787	20.00 mm	(5x)	23.96 mm	.83 mm	6 mm	75 mm	V131303	136.38	V131303-V	146.68
.1574	4.000 mm	1.259	32.00 mm	(8x)	36.56 mm	.83 mm	6 mm	100 mm	V305691	222.68	V305691-V	233.68
.1614	4.100 mm	.807	20.50 mm	(5x)	24.56 mm	.85 mm	6 mm	75 mm	V679258	136.38	V679258-V	146.68
.1614	4.100 mm	1.291	32.80 mm	(8x)	37.48 mm	.85 mm	6 mm	100 mm	V557129	222.68	V557129-V	233.68
.1653	4.200 mm	.826	21.00 mm	(5x)	25.16 mm	.87 mm	6 mm	75 mm	V803894	136.38	V803894-V	146.68
.1653	4.200 mm	1.322	33.60 mm	(8x)	38.39 mm	.87 mm	6 mm	100 mm	V752243	222.68	V752243-V	233.68
.1692	4.300 mm	.846	21.50 mm	(5x)	25.76 mm	.89 mm	6 mm	75 mm	V223762	136.38	V223762-V	146.68
.1692	4.300 mm	1.354	34.40 mm	(8x)	39.31 mm	.89 mm	6 mm	100 mm	V775572	222.68	V775572-V	233.68
.1718 (11/64)	4.365 mm	.860	21.85 mm	(5x)	26.15 mm	.90 mm	6 mm	75 mm	V639751	136.38	V639751-V	146.68
.1718 (11/64)	4.365 mm	1.374	34.90 mm	(8x)	39.90 mm	.90 mm	6 mm	100 mm	V849166	222.68	V849166-V	233.68
.1732	4.400 mm	.866	22.00 mm	(5x)	26.36 mm	.91 mm	6 mm	75 mm	V918663	136.38	V918663-V	146.68
.1732	4.400 mm	1.385	35.20 mm	(8x)	40.22 mm	.91 mm	6 mm	100 mm	V356654	222.68	V356654-V	233.68
.1771	4.500 mm	.885	22.50 mm	(5x)	26.96 mm	.93 mm	6 mm	75 mm	V383315	136.38	V383315-V	146.68
.1771	4.500 mm	1.417	36.00 mm	(8x)	41.14 mm	.93 mm	6 mm	100 mm	V703950	222.68	V703950-V	233.68
.1811	4.600 mm	.905	23.00 mm	(5x)	27.56 mm	.95 mm	6 mm	75 mm	V342441	136.38	V342441-V	146.68
.1811	4.600 mm	1.448	36.80 mm	(8x)	42.05 mm	.95 mm	6 mm	100 mm	V202174	222.68	V202174-V	233.68
.1850	4.700 mm	.925	23.50 mm	(5x)	28.16 mm	.97 mm	6 mm	75 mm	V689582	136.38	V689582-V	146.68
.1850	4.700 mm	1.480	37.60 mm	(8x)	42.96 mm	.97 mm	6 mm	100 mm	V928497	222.68	V928497-V	233.68
.1875 (3/16)	4.762 mm	.937	23.80 mm	(5x)	28.53 mm	.99 mm	6 mm	75 mm	V675548	136.38	V675548-V	146.68
.1875 (3/16)	4.762 mm	1.499	38.10 mm	(8x)	43.53 mm	.99 mm	6 mm	100 mm	V431500	222.68	V431500-V	233.68
.1890	4.800 mm	.944	24.00 mm	(5x)	28.76 mm	.99 mm	6 mm	75 mm	V926654	136.38	V926654-V	146.68
.1890	4.800 mm	1.511	38.40 mm	(8x)	43.88 mm	.99 mm	6 mm	100 mm	V253484	222.68	V253484-V	233.68
.1930	4.900 mm	.964	24.50 mm	(5x)	29.36 mm	1.01 mm	6 mm	75 mm	V417508	136.38	V417508-V	146.68
.1930	4.900 mm	1.543	39.20 mm	(8x)	44.79 mm	1.01 mm	6 mm	100 mm	V904772	222.68	V904772-V	233.68

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys – Coolant-Through (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth					Tool #	Price	Tool #	Price
D1 (h8)*		L2			L3	L4	D2 (h6)*	L1				
.1968	5.000 mm	.984	25.00 mm	(5x)	29.96 mm	1.04 mm	6 mm	75 mm	V761883	136.38	V761883-V	146.68
.1968	5.000 mm	1.574	40.00 mm	(8x)	45.71 mm	1.04 mm	6 mm	100 mm	V858075	222.68	V858075-V	233.68
.2007	5.100 mm	1.003	25.50 mm	(5x)	30.56 mm	1.06 mm	6 mm	75 mm	V487502	136.38	V487502-V	146.68
.2007	5.100 mm	1.606	40.80 mm	(8x)	46.62 mm	1.06 mm	6 mm	100 mm	V663020	222.68	V663020-V	233.68
.2031 (13/64)	5.159 mm	1.015	25.80 mm	(5x)	30.91 mm	1.07 mm	6 mm	75 mm	V802986	136.38	V802986-V	146.68
.2031 (13/64)	5.159 mm	1.624	41.25 mm	(8x)	47.16 mm	1.07 mm	6 mm	100 mm	V386945	222.68	V386945-V	233.68
.2047	5.200 mm	1.023	26.00 mm	(5x)	31.16 mm	1.08 mm	6 mm	75 mm	V411179	136.38	V411179-V	146.68
.2047	5.200 mm	1.637	41.60 mm	(8x)	47.54 mm	1.08 mm	6 mm	100 mm	V855920	222.68	V855920-V	233.68
.2086	5.300 mm	1.043	26.50 mm	(5x)	31.76 mm	1.10 mm	6 mm	75 mm	V969066	136.38	V969066-V	146.68
.2086	5.300 mm	1.669	42.40 mm	(8x)	48.45 mm	1.10 mm	6 mm	100 mm	V555520	222.68	V555520-V	233.68
.2125	5.400 mm	1.062	27.00 mm	(5x)	32.35 mm	1.12 mm	6 mm	75 mm	V923077	136.38	V923077-V	146.68
.2125	5.400 mm	1.700	43.20 mm	(8x)	49.36 mm	1.12 mm	6 mm	100 mm	V412862	222.68	V412862-V	233.68
.2165	5.500 mm	1.082	27.50 mm	(5x)	32.95 mm	1.14 mm	6 mm	75 mm	V332947	136.38	V332947-V	146.68
.2165	5.500 mm	1.732	44.00 mm	(8x)	50.28 mm	1.14 mm	6 mm	100 mm	V692720	222.68	V692720-V	233.68
.2187 (7/32)	5.556 mm	1.094	27.80 mm	(5x)	33.29 mm	1.15 mm	6 mm	75 mm	V192488	136.38	V192488-V	146.68
.2187 (7/32)	5.556 mm	1.749	44.45 mm	(8x)	50.79 mm	1.15 mm	6 mm	100 mm	V421981	222.68	V421981-V	233.68
.2205	5.600 mm	1.102	28.00 mm	(5x)	33.55 mm	1.16 mm	6 mm	75 mm	V300624	136.38	V300624-V	146.68
.2205	5.600 mm	1.763	44.80 mm	(8x)	51.19 mm	1.16 mm	6 mm	100 mm	V625957	222.68	V625957-V	233.68
.2244	5.700 mm	1.122	28.50 mm	(5x)	34.15 mm	1.18 mm	6 mm	75 mm	V932148	136.38	V932148-V	146.68
.2244	5.700 mm	1.795	45.60 mm	(8x)	52.11 mm	1.18 mm	6 mm	100 mm	V662636	222.68	V662636-V	233.68
.2283	5.800 mm	1.141	29.00 mm	(5x)	34.75 mm	1.20 mm	6 mm	75 mm	V583286	136.38	V583286-V	146.68
.2283	5.800 mm	1.826	46.40 mm	(8x)	53.02 mm	1.20 mm	6 mm	100 mm	V664218	222.68	V664218-V	233.68
.2322	5.900 mm	1.161	29.50 mm	(5x)	35.35 mm	1.22 mm	6 mm	75 mm	V424468	136.38	V424468-V	146.68
.2322	5.900 mm	1.858	47.20 mm	(8x)	53.94 mm	1.22 mm	6 mm	100 mm	V406472	222.68	V406472-V	233.68
.2343 (15/64)	5.953 mm	1.171	29.75 mm	(5x)	35.67 mm	1.23 mm	6 mm	75 mm	V483232	136.38	V483232-V	146.68
.2343 (15/64)	5.953 mm	1.874	47.60 mm	(8x)	54.42 mm	1.23 mm	6 mm	100 mm	V857943	222.68	V857943-V	233.68
.2362	6.000 mm	1.181	30.00 mm	(5x)	35.95 mm	1.24 mm	8 mm	100 mm	V514442	136.38	V514442-V	150.08
.2362	6.000 mm	1.889	48.00 mm	(8x)	54.85 mm	1.24 mm	8 mm	125 mm	V965807	222.68	V965807-V	237.08
.2401	6.100 mm	1.200	30.50 mm	(5x)	36.55 mm	1.26 mm	8 mm	100 mm	V699389	176.08	V699389-V	189.78
.2401	6.100 mm	1.921	48.80 mm	(8x)	55.76 mm	1.26 mm	8 mm	125 mm	V512364	305.58	V512364-V	319.98
.2440	6.200 mm	1.220	31.00 mm	(5x)	37.15 mm	1.28 mm	8 mm	100 mm	V333318	176.08	V333318-V	189.78
.2440	6.200 mm	1.952	49.60 mm	(8x)	56.68 mm	1.28 mm	8 mm	125 mm	V246360	305.58	V246360-V	319.98
.2480	6.300 mm	1.240	31.50 mm	(5x)	37.75 mm	1.30 mm	8 mm	100 mm	V716403	176.08	V716403-V	189.78
.2480	6.300 mm	1.984	50.40 mm	(8x)	57.59 mm	1.30 mm	8 mm	125 mm	V171510	305.58	V171510-V	319.98
.2500 (1/4)	6.350 mm	1.249	31.75 mm	(5x)	38.05 mm	1.32 mm	8 mm	100 mm	V924120	176.08	V924120-V	189.78
.2500 (1/4)	6.350 mm	1.999	50.80 mm	(8x)	58.05 mm	1.32 mm	8 mm	125 mm	V515046	305.58	V515046-V	319.98

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys – Coolant-Through (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth					Tool #	Price	Tool #	Price
	D ₁ (h8)*		L ₂		L ₃	L ₄	D ₂ (h6)*	L ₁				
.2520	6.400 mm	1.259	32.00 mm	(5x)	38.35 mm	1.33 mm	8 mm	100 mm	V952739	176.08	V952739-V	189.78
.2520	6.400 mm	2.015	51.20 mm	(8x)	58.51 mm	1.33 mm	8 mm	125 mm	V442929	305.58	V442929-V	319.98
.2559	6.500 mm	1.279	32.50 mm	(5x)	38.95 mm	1.35 mm	8 mm	100 mm	V252657	176.08	V252657-V	189.78
.2559	6.500 mm	2.047	52.00 mm	(8x)	59.42 mm	1.35 mm	8 mm	125 mm	V981850	305.58	V981850-V	319.98
.2598	6.600 mm	1.299	33.00 mm	(5x)	39.55 mm	1.37 mm	8 mm	100 mm	V522677	176.08	V522677-V	189.78
.2598	6.600 mm	2.078	52.80 mm	(8x)	60.34 mm	1.37 mm	8 mm	125 mm	V583091	305.58	V583091-V	319.98
.2638	6.700 mm	1.318	33.50 mm	(5x)	40.14 mm	1.39 mm	8 mm	100 mm	V144907	176.08	V144907-V	189.78
.2638	6.700 mm	2.110	53.60 mm	(8x)	61.25 mm	1.39 mm	8 mm	125 mm	V320537	305.58	V320537-V	319.98
.2656 (17/64)	6.746 mm	1.328	33.75 mm	(5x)	40.42 mm	1.40 mm	8 mm	100 mm	V822656	176.08	V822656-V	189.78
.2656 (17/64)	6.746 mm	2.124	53.95 mm	(8x)	61.67 mm	1.40 mm	8 mm	125 mm	V403247	305.58	V403247-V	319.98
.2677	6.800 mm	1.338	34.00 mm	(5x)	40.74 mm	1.41 mm	8 mm	100 mm	V390334	176.08	V390334-V	189.78
.2677	6.800 mm	2.141	54.40 mm	(8x)	62.16 mm	1.41 mm	8 mm	125 mm	V892039	305.58	V892039-V	319.98
.2717	6.900 mm	1.358	34.50 mm	(5x)	41.34 mm	1.43 mm	8 mm	100 mm	V359934	176.08	V359934-V	189.78
.2717	6.900 mm	2.173	55.20 mm	(8x)	63.08 mm	1.43 mm	8 mm	125 mm	V272766	305.58	V272766-V	319.98
.2756	7.000 mm	1.377	35.00 mm	(5x)	41.94 mm	1.45 mm	8 mm	100 mm	V849487	176.08	V849487-V	189.78
.2756	7.000 mm	2.204	56.00 mm	(8x)	63.99 mm	1.45 mm	8 mm	125 mm	V582978	305.58	V582978-V	319.98
.2795	7.100 mm	1.397	35.50 mm	(5x)	42.54 mm	1.47 mm	8 mm	100 mm	V608576	176.08	V608576-V	189.78
.2795	7.100 mm	2.236	56.80 mm	(8x)	64.91 mm	1.47 mm	8 mm	125 mm	V700117	305.58	V700117-V	319.98
.2812 (9/32)	7.142 mm	1.405	35.70 mm	(5x)	42.79 mm	1.48 mm	8 mm	100 mm	V808410	176.08	V808410-V	189.78
.2812 (9/32)	7.142 mm	2.249	57.15 mm	(8x)	65.29 mm	1.48 mm	8 mm	125 mm	V298615	305.58	V298615-V	319.98
.2834	7.200 mm	1.417	36.00 mm	(5x)	43.14 mm	1.49 mm	8 mm	100 mm	V476150	176.08	V476150-V	189.78
.2834	7.200 mm	2.267	57.60 mm	(8x)	65.82 mm	1.49 mm	8 mm	125 mm	V933182	305.58	V933182-V	319.98
.2874	7.300 mm	1.437	36.50 mm	(5x)	43.74 mm	1.51 mm	8 mm	100 mm	V207592	176.08	V207592-V	189.78
.2874	7.300 mm	2.299	58.40 mm	(8x)	66.73 mm	1.51 mm	8 mm	125 mm	V359441	305.58	V359441-V	319.98
.2913	7.400 mm	1.456	37.00 mm	(5x)	44.34 mm	1.53 mm	8 mm	100 mm	V902089	176.08	V902089-V	189.78
.2913	7.400 mm	2.330	59.20 mm	(8x)	67.65 mm	1.53 mm	8 mm	125 mm	V654235	305.58	V654235-V	319.98
.2952	7.500 mm	1.476	37.50 mm	(5x)	44.94 mm	1.55 mm	8 mm	100 mm	V137771	176.08	V137771-V	189.78
.2952	7.500 mm	2.362	60.00 mm	(8x)	68.56 mm	1.55 mm	8 mm	125 mm	V444829	305.58	V444829-V	319.98
.2969 (19/64)	7.541 mm	1.484	37.70 mm	(5x)	45.18 mm	1.56 mm	8 mm	100 mm	V645522	176.08	V645522-V	189.78
.2969 (19/64)	7.541 mm	2.375	60.35 mm	(8x)	68.94 mm	1.56 mm	8 mm	125 mm	V319299	305.58	V319299-V	319.98
.2992	7.600 mm	1.496	38.00 mm	(5x)	45.54 mm	1.57 mm	8 mm	100 mm	V871764	176.08	V871764-V	189.78
.2992	7.600 mm	2.393	60.80 mm	(8x)	69.48 mm	1.57 mm	8 mm	125 mm	V937150	305.58	V937150-V	319.98
.3031	7.700 mm	1.515	38.50 mm	(5x)	46.14 mm	1.59 mm	8 mm	100 mm	V272800	176.08	V272800-V	189.78
.3031	7.700 mm	2.425	61.60 mm	(8x)	70.39 mm	1.59 mm	8 mm	125 mm	V733422	305.58	V733422-V	319.98
.3071	7.800 mm	1.535	39.00 mm	(5x)	46.74 mm	1.62 mm	8 mm	100 mm	V444378	176.08	V444378-V	189.78
.3071	7.800 mm	2.456	62.40 mm	(8x)	71.31 mm	1.62 mm	8 mm	125 mm	V467902	305.58	V467902-V	319.98

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys – Coolant-Through (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price	Tool #	Price
.3110	7.900 mm	1.555	39.50 mm	(5x)	47.34 mm	1.64 mm	8 mm	100 mm	V838506	176.08	V838506-V	189.78
.3110	7.900 mm	2.488	63.20 mm	(8x)	72.22 mm	1.64 mm	8 mm	125 mm	V118204	305.58	V118204-V	319.98
.3125 (5/16)	7.937 mm	1.562	39.70 mm	(5x)	47.56 mm	1.64 mm	8 mm	100 mm	V534118	176.08	V534118-V	189.78
.3125 (5/16)	7.937 mm	2.499	63.50 mm	(8x)	72.56 mm	1.64 mm	8 mm	125 mm	V181162	305.58	V181162-V	319.98
.3150	8.000 mm	1.574	40.00 mm	(5x)	47.93 mm	1.66 mm	10 mm	100 mm	V631086	176.08	V631086-V	191.88
.3150	8.000 mm	2.519	64.00 mm	(8x)	73.13 mm	1.66 mm	10 mm	125 mm	V372448	305.58	V372448-V	322.68
.3189	8.100 mm	1.594	40.50 mm	(5x)	48.53 mm	1.68 mm	10 mm	100 mm	V480410	200.78	V480410-V	216.58
.3189	8.100 mm	2.551	64.80 mm	(8x)	74.05 mm	1.68 mm	10 mm	125 mm	V373765	335.08	V373765-V	352.18
.3228	8.200 mm	1.614	41.00 mm	(5x)	49.13 mm	1.70 mm	10 mm	100 mm	V668382	200.78	V668382-V	216.58
.3228	8.200 mm	2.582	65.60 mm	(8x)	74.96 mm	1.70 mm	10 mm	125 mm	V581134	335.08	V581134-V	352.18
.3268	8.300 mm	1.633	41.50 mm	(5x)	49.73 mm	1.72 mm	10 mm	100 mm	V386606	200.78	V386606-V	216.58
.3268	8.300 mm	2.614	66.40 mm	(8x)	75.88 mm	1.72 mm	10 mm	125 mm	V496970	335.08	V496970-V	352.18
.3281 (21/64)	8.333 mm	1.639	41.65 mm	(5x)	49.93 mm	1.73 mm	10 mm	100 mm	V904466	200.78	V904466-V	216.58
.3281 (21/64)	8.333 mm	2.624	66.65 mm	(8x)	76.18 mm	1.73 mm	10 mm	125 mm	V185340	335.08	V185340-V	352.18
.3307	8.400 mm	1.653	42.00 mm	(5x)	50.33 mm	1.74 mm	10 mm	100 mm	V336999	200.78	V336999-V	216.58
.3307	8.400 mm	2.645	67.20 mm	(8x)	76.79 mm	1.74 mm	10 mm	125 mm	V555396	335.08	V555396-V	352.18
.3346	8.500 mm	1.673	42.50 mm	(5x)	50.93 mm	1.76 mm	10 mm	100 mm	V944598	200.78	V944598-V	216.58
.3346	8.500 mm	2.677	68.00 mm	(8x)	77.71 mm	1.76 mm	10 mm	125 mm	V102862	335.08	V102862-V	352.18
.3386	8.600 mm	1.692	43.00 mm	(5x)	51.53 mm	1.78 mm	10 mm	100 mm	V129890	200.78	V129890-V	216.58
.3386	8.600 mm	2.708	68.80 mm	(8x)	78.62 mm	1.78 mm	10 mm	125 mm	V259256	335.08	V259256-V	352.18
.3425	8.700 mm	1.712	43.50 mm	(5x)	52.13 mm	1.80 mm	10 mm	100 mm	V364436	200.78	V364436-V	216.58
.3425	8.700 mm	2.740	69.60 mm	(8x)	79.53 mm	1.80 mm	10 mm	125 mm	V578927	335.08	V578927-V	352.18
.3438 (11/32)	8.732 mm	1.718	43.65 mm	(5x)	52.32 mm	1.81 mm	10 mm	100 mm	V960893	200.78	V960893-V	216.58
.3438 (11/32)	8.732 mm	2.749	69.85 mm	(8x)	79.83 mm	1.81 mm	10 mm	125 mm	V828826	335.08	V828826-V	352.18
.3465	8.800 mm	1.732	44.00 mm	(5x)	52.73 mm	1.82 mm	10 mm	100 mm	V295589	200.78	V295589-V	216.58
.3465	8.800 mm	2.771	70.40 mm	(8x)	80.45 mm	1.82 mm	10 mm	125 mm	V682221	335.08	V682221-V	352.18

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys – Coolant-Through (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth					Tool #	Price	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁				
.3504	8.900 mm	1.751	44.50 mm	(5x)	53.33 mm	1.84 mm	10 mm	100 mm	V837355	200.78	V837355-V	216.58
.3504	8.900 mm	2.803	71.20 mm	(8x)	81.36 mm	1.84 mm	10 mm	150 mm	V650588	335.08	V650588-V	353.58
.3543	9.000 mm	1.771	45.00 mm	(5x)	53.93 mm	1.86 mm	10 mm	100 mm	V883001	200.78	V883001-V	216.58
.3543	9.000 mm	2.834	72.00 mm	(8x)	82.28 mm	1.86 mm	10 mm	150 mm	V158250	335.08	V158250-V	353.58
.3583	9.100 mm	1.791	45.50 mm	(5x)	54.53 mm	1.88 mm	10 mm	100 mm	V819645	200.78	V819645-V	216.58
.3583	9.100 mm	2.866	72.80 mm	(8x)	83.19 mm	1.88 mm	10 mm	150 mm	V132901	335.08	V132901-V	353.58
.3594 (23/64)	9.128 mm	1.797	45.65 mm	(5x)	54.69 mm	1.89 mm	10 mm	100 mm	V655775	200.78	V655775-V	216.58
.3594 (23/64)	9.128 mm	2.874	73.00 mm	(8x)	83.45 mm	1.89 mm	10 mm	150 mm	V272571	335.08	V272571-V	353.58
.3622	9.200 mm	1.811	46.00 mm	(5x)	55.13 mm	1.91 mm	10 mm	100 mm	V687657	200.78	V687657-V	216.58
.3622	9.200 mm	2.897	73.60 mm	(8x)	84.11 mm	1.91 mm	10 mm	150 mm	V871378	335.08	V871378-V	353.58
.3661	9.300 mm	1.830	46.50 mm	(5x)	55.72 mm	1.93 mm	10 mm	100 mm	V787709	200.78	V787709-V	216.58
.3661	9.300 mm	2.929	74.40 mm	(8x)	85.02 mm	1.93 mm	10 mm	150 mm	V503354	335.08	V503354-V	353.58
.3701	9.400 mm	1.850	47.00 mm	(5x)	56.32 mm	1.95 mm	10 mm	100 mm	V307018	200.78	V307018-V	216.58
.3701	9.400 mm	2.960	75.20 mm	(8x)	85.93 mm	1.95 mm	10 mm	150 mm	V207468	335.08	V207468-V	353.58
.3740	9.500 mm	1.870	47.50 mm	(5x)	56.92 mm	1.97 mm	10 mm	100 mm	V718117	200.78	V718117-V	216.58
.3740	9.500 mm	2.992	76.00 mm	(8x)	86.85 mm	1.97 mm	10 mm	150 mm	V732216	335.08	V732216-V	353.58
.3750 (3/8)	9.525 mm	1.875	47.65 mm	(5x)	57.07 mm	1.97 mm	10 mm	100 mm	V210563	200.78	V210563-V	216.58
.3750 (3/8)	9.525 mm	2.999	76.20 mm	(8x)	87.08 mm	1.97 mm	10 mm	150 mm	V224674	335.08	V224674-V	353.58
.3780	9.600 mm	1.889	48.00 mm	(5x)	57.52 mm	1.99 mm	10 mm	100 mm	V417983	200.78	V417983-V	216.58
.3780	9.600 mm	3.023	76.80 mm	(8x)	87.76 mm	1.99 mm	10 mm	150 mm	V845546	335.08	V845546-V	353.58
.3819	9.700 mm	1.909	48.50 mm	(5x)	58.12 mm	2.01 mm	10 mm	100 mm	V211508	200.78	V211508-V	216.58
.3819	9.700 mm	3.055	77.60 mm	(8x)	88.68 mm	2.01 mm	10 mm	150 mm	V283637	335.08	V283637-V	353.58
.3858	9.800 mm	1.929	49.00 mm	(5x)	58.72 mm	2.03 mm	10 mm	100 mm	V183783	200.78	V183783-V	216.58
.3858	9.800 mm	3.086	78.40 mm	(8x)	89.59 mm	2.03 mm	10 mm	150 mm	V456526	335.08	V456526-V	353.58
.3898	9.900 mm	1.948	49.50 mm	(5x)	59.32 mm	2.05 mm	10 mm	100 mm	V828417	200.78	V828417-V	216.58
.3898	9.900 mm	3.118	79.20 mm	(8x)	90.51 mm	2.05 mm	10 mm	150 mm	V591316	335.08	V591316-V	353.58
.3906 (25/64)	9.921 mm	1.952	49.60 mm	(5x)	59.45 mm	2.05 mm	10 mm	100 mm	V206750	200.78	V206750-V	216.58
.3906 (25/64)	9.921 mm	3.124	79.35 mm	(8x)	90.70 mm	2.05 mm	10 mm	150 mm	V592921	335.08	V592921-V	353.58
.3937	10.000 mm	1.968	50.00 mm	(5x)	59.92 mm	2.07 mm	12 mm	125 mm	V510346	200.78	V510346-V	224.08
.3937	10.000 mm	3.149	80.00 mm	(8x)	91.42 mm	2.07 mm	12 mm	150 mm	V906154	335.08	V906154-V	360.38
.3976	10.100 mm	1.988	50.50 mm	(5x)	60.52 mm	2.09 mm	12 mm	125 mm	V393209	282.28	V393209-V	305.58
.3976	10.100 mm	3.181	80.80 mm	(8x)	92.33 mm	2.09 mm	12 mm	150 mm	V912984	443.28	V912984-V	468.58
.4016	10.200 mm	2.007	51.00 mm	(5x)	61.12 mm	2.11 mm	12 mm	125 mm	V241050	282.28	V241050-V	305.58
.4016	10.200 mm	3.212	81.60 mm	(8x)	93.25 mm	2.11 mm	12 mm	150 mm	V781707	443.28	V781707-V	468.58
.4055	10.300 mm	2.027	51.50 mm	(5x)	61.72 mm	2.13 mm	12 mm	125 mm	V693701	282.28	V693701-V	305.58
.4055	10.300 mm	3.244	82.40 mm	(8x)	94.16 mm	2.13 mm	12 mm	150 mm	V507787	443.28	V507787-V	468.58

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Aluminum & Aluminum Alloys – Coolant-Through (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth					Tool #	Price	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁				
.4062 (13/32)	10.317 mm	2.031	51.60 mm	(5x)	61.82 mm	2.14 mm	12 mm	125 mm	V426663	282.28	V426663-V	305.58
.4062 (13/32)	10.317 mm	3.249	82.55 mm	(8x)	94.32 mm	2.14 mm	12 mm	150 mm	V165261	443.28	V165261-V	468.58
.4094	10.400 mm	2.047	52.00 mm	(5x)	62.32 mm	2.15 mm	12 mm	125 mm	V805959	282.28	V805959-V	305.58
.4094	10.400 mm	3.275	83.20 mm	(8x)	95.08 mm	2.15 mm	12 mm	150 mm	V585515	443.28	V585515-V	468.58
.4134	10.500 mm	2.066	52.50 mm	(5x)	62.92 mm	2.17 mm	12 mm	125 mm	V891328	282.28	V891328-V	305.58
.4134	10.500 mm	3.307	84.00 mm	(8x)	95.99 mm	2.17 mm	12 mm	150 mm	V656520	443.28	V656520-V	468.58
.4173	10.600 mm	2.086	53.00 mm	(5x)	63.52 mm	2.20 mm	12 mm	125 mm	V811500	282.28	V811500-V	305.58
.4173	10.600 mm	3.338	84.80 mm	(8x)	96.91 mm	2.20 mm	12 mm	150 mm	V517271	443.28	V517271-V	468.58
.4213	10.700 mm	2.106	53.50 mm	(5x)	64.11 mm	2.22 mm	12 mm	125 mm	V980072	282.28	V980072-V	305.58
.4213	10.700 mm	3.370	85.60 mm	(8x)	97.82 mm	2.22 mm	12 mm	150 mm	V352223	443.28	V352223-V	468.58
.4219 (27/64)	10.716 mm	2.110	53.60 mm	(5x)	64.21 mm	2.22 mm	12 mm	125 mm	V422407	282.28	V422407-V	305.58
.4219 (27/64)	10.716 mm	3.375	85.75 mm	(8x)	97.97 mm	2.22 mm	12 mm	150 mm	V628625	443.28	V628625-V	468.58
.4252	10.800 mm	2.125	54.00 mm	(5x)	64.71 mm	2.24 mm	12 mm	125 mm	V433000	282.28	V433000-V	305.58
.4252	10.800 mm	3.401	86.40 mm	(8x)	98.73 mm	2.24 mm	12 mm	150 mm	V876124	443.28	V876124-V	468.58
.4291	10.900 mm	2.145	54.50 mm	(5x)	65.31 mm	2.26 mm	12 mm	125 mm	V507576	282.28	V507576-V	305.58
.4291	10.900 mm	3.433	87.20 mm	(8x)	99.65 mm	2.26 mm	12 mm	175 mm	V959173	443.28	V959173-V	470.68
.4331	11.000 mm	2.165	55.00 mm	(5x)	65.91 mm	2.28 mm	12 mm	125 mm	V216634	282.28	V216634-V	305.58
.4331	11.000 mm	3.464	88.00 mm	(8x)	100.56 mm	2.28 mm	12 mm	175 mm	V705619	443.28	V705619-V	470.68
.4370	11.100 mm	2.185	55.50 mm	(5x)	66.51 mm	2.30 mm	12 mm	125 mm	V838445	282.28	V838445-V	305.58
.4370	11.100 mm	3.496	88.80 mm	(8x)	101.48 mm	2.30 mm	12 mm	175 mm	V554353	443.28	V554353-V	470.68
.4375 (7/16)	11.112 mm	2.187	55.55 mm	(5x)	66.58 mm	2.30 mm	12 mm	125 mm	V258691	282.28	V258691-V	305.58
.4375 (7/16)	11.112 mm	3.499	88.90 mm	(8x)	101.59 mm	2.30 mm	12 mm	175 mm	V865610	443.28	V865610-V	470.68
.4409	11.200 mm	2.204	56.00 mm	(5x)	67.11 mm	2.32 mm	12 mm	125 mm	V837182	282.28	V837182-V	305.58
.4409	11.200 mm	3.527	89.60 mm	(8x)	102.39 mm	2.32 mm	12 mm	175 mm	V638291	443.28	V638291-V	470.68
.4449	11.300 mm	2.224	56.50 mm	(5x)	67.71 mm	2.34 mm	12 mm	125 mm	V104347	282.28	V104347-V	305.58
.4449	11.300 mm	3.559	90.40 mm	(8x)	103.30 mm	2.34 mm	12 mm	175 mm	V923125	443.28	V923125-V	470.68
.4488	11.400 mm	2.244	57.00 mm	(5x)	68.31 mm	2.36 mm	12 mm	125 mm	V145663	282.28	V145663-V	305.58
.4488	11.400 mm	3.590	91.20 mm	(8x)	104.22 mm	2.36 mm	12 mm	175 mm	V218282	443.28	V218282-V	470.68
.4527	11.500 mm	2.263	57.50 mm	(5x)	68.91 mm	2.38 mm	12 mm	125 mm	V845377	282.28	V845377-V	305.58
.4527	11.500 mm	3.622	92.00 mm	(8x)	105.13 mm	2.38 mm	12 mm	175 mm	V679783	443.28	V679783-V	470.68
.4531 (29/64)	11.508 mm	2.265	57.55 mm	(5x)	68.96 mm	2.38 mm	12 mm	125 mm	V520815	282.28	V520815-V	305.58
.4531 (29/64)	11.508 mm	3.624	92.05 mm	(8x)	105.21 mm	2.38 mm	12 mm	175 mm	V960077	443.28	V960077-V	470.68
.4567	11.600 mm	2.283	58.00 mm	(5x)	69.51 mm	2.40 mm	12 mm	125 mm	V214907	282.28	V214907-V	305.58
.4567	11.600 mm	3.653	92.80 mm	(8x)	106.05 mm	2.40 mm	12 mm	175 mm	V307195	443.28	V307195-V	470.68

* For h6 and h8 tolerances, see page 8.

continued on next page



High Performance Drills

For Aluminum & Aluminum Alloys – Coolant-Through (cont.)

continued from previous page

Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Uncoated		Val-Max V Coated	
inch	metric	inch	metric	hole depth					Tool #	Price	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁				
.4606	11.700 mm	2.303	58.50 mm	(5x)	70.11 mm	2.42 mm	12 mm	125 mm	V858509	282.28	V858509-V	305.58
.4606	11.700 mm	3.685	93.60 mm	(8x)	106.96 mm	2.42 mm	12 mm	175 mm	V313087	443.28	V313087-V	470.68
.4646	11.800 mm	2.322	59.00 mm	(5x)	70.71 mm	2.44 mm	12 mm	125 mm	V216870	282.28	V216870-V	305.58
.4646	11.800 mm	3.716	94.40 mm	(8x)	107.88 mm	2.44 mm	12 mm	175 mm	V902922	443.28	V902922-V	470.68
.4685	11.900 mm	2.342	59.50 mm	(5x)	71.31 mm	2.46 mm	12 mm	125 mm	V722943	282.28	V722943-V	305.58
.4685	11.900 mm	3.748	95.20 mm	(8x)	108.79 mm	2.46 mm	12 mm	175 mm	V889227	443.28	V889227-V	470.68
.4688 (15/32)	11.907 mm	2.344	59.55 mm	(5x)	71.35 mm	2.47 mm	12 mm	125 mm	V715708	282.28	V715708-V	305.58
.4688 (15/32)	11.907 mm	3.749	95.25 mm	(8x)	108.85 mm	2.47 mm	12 mm	175 mm	V209677	443.28	V209677-V	470.68
.4724	12.000 mm	2.362	60.00 mm	(5x)	71.90 mm	2.49 mm	14 mm	125 mm	V312296	282.28	V312296-V	308.98
.4724	12.000 mm	3.779	96.00 mm	(8x)	109.70 mm	2.49 mm	14 mm	175 mm	V339609	443.28	V339609-V	474.78
.4764	12.100 mm	2.381	60.50 mm	(5x)	72.50 mm	2.51 mm	14 mm	125 mm	V904889	389.18	V904889-V	415.88
.4764	12.100 mm	3.811	96.80 mm	(8x)	110.62 mm	2.51 mm	14 mm	175 mm	V264702	599.48	V264702-V	630.98
.4803	12.200 mm	2.401	61.00 mm	(5x)	73.10 mm	2.53 mm	14 mm	125 mm	V727024	389.18	V727024-V	415.88
.4803	12.200 mm	3.842	97.60 mm	(8x)	111.53 mm	2.53 mm	14 mm	175 mm	V954879	599.48	V954879-V	630.98
.4843	12.300 mm	2.421	61.50 mm	(5x)	73.70 mm	2.55 mm	14 mm	125 mm	V804318	389.18	V804318-V	415.88
.4843	12.300 mm	3.874	98.40 mm	(8x)	112.45 mm	2.55 mm	14 mm	175 mm	V559229	599.48	V559229-V	630.98
.4882 (31/64)	12.400 mm	2.440	62.00 mm	(5x)	74.30 mm	2.57 mm	14 mm	125 mm	V680043	389.18	V680043-V	415.88
.4882 (31/64)	12.400 mm	3.905	99.20 mm	(8x)	113.36 mm	2.57 mm	14 mm	175 mm	V597636	599.48	V597636-V	630.98
.4921	12.500 mm	2.460	62.50 mm	(5x)	74.90 mm	2.59 mm	14 mm	125 mm	V396773	389.18	V396773-V	415.88
.4921	12.500 mm	3.937	100.00 mm	(8x)	114.28 mm	2.59 mm	14 mm	175 mm	V576237	599.48	V576237-V	630.98
.4961	12.600 mm	2.480	63.00 mm	(5x)	75.50 mm	2.61 mm	14 mm	125 mm	V560508	389.18	V560508-V	415.88
.4961	12.600 mm	3.968	100.80 mm	(8x)	115.19 mm	2.61 mm	14 mm	175 mm	V511270	599.48	V511270-V	630.98
.5000 (1/2)	12.700 mm	2.499	63.50 mm	(5x)	76.10 mm	2.63 mm	14 mm	125 mm	V346191	389.18	V346191-V	415.88
.5000 (1/2)	12.700 mm	3.999	101.60 mm	(8x)	116.10 mm	2.63 mm	14 mm	175 mm	V190634	599.48	V190634-V	630.98

* For h6 and h8 tolerances, see page 8.

Tech Tip

When machining in deep hole aluminum applications, coolant-through drills **ensure chips are properly evacuated**, significantly improving tool life. Although aluminum is a softer material, chip evacuation is key to achieving superb part finish.



Speeds & Feeds

High Performance Drills for Aluminum & Aluminum Alloys

Important Notes

Values in table are in inches and are based on standard (up to 7x Dia) length of flute solid carbide drills.
 For longer lengths of flute, table values of IPR must be reduced (for 8x, reduce to 75%) and SFM must be reduced (for 8x, reduce to 80%).
 For Non-Ferrous materials, the initial peck should be 3-5x Diameter with each subsequent peck at 2-3x Diameter.
 For complete speeds and feeds charts, please see valorholemaking.com/resources/speeds-and-feeds.

Coolant-Through Notes

For Coolant-through carbide drills, table values of IPR must be reduced (reduced to 90%) and SFM can increase (increase up to 125%).

For best results, the following steps are recommended:

- For hole depths of 7x Diameter or greater, drill a pilot hole up to 1.5-2x D in depth using a drill with 3x LOF or shorter.
- Insert primary drill at low speed (~50-500 RPM) and start coolant flow.
- Increase speed and feed to recommended parameters.
- Under optimal conditions, a pecking cycle should not be needed.
- On through holes, reduce feed rate by 50% just before break through with drill point.
- Feed at 50% to final depth.
- After reaching desired hole depth, reduce speed (~500 RPM) before retracting the drill.
- Cutting oil is recommended. As an alternative, it is possible to use emulsions with EP additives. Use a fine mesh prefilter (=5µm) on spindle through coolant to prevent a blockage of the coolant hole. A minimum coolant pressure of 600-800 PSI is recommended.

Material Guide		SFM	Chip Load (IPR) by Drill Diameter									
			1/16	5/64	3/32	1/8	3/16	1/4	5/16	3/8	7/16	1/2
Wrought Aluminum Alloys	2014, 5062, 6061, 7050, 7075, 7475	350-1500	.003-.004	.003-.004	.004-.005	.005-.006	.005-.007	.006-.008	.008-.010	.009-.012	.010-.013	.011-.015
Cast Aluminum Alloys	319.0, 328.0, 355.0, 360.0, 380.0, 383.0, 390.0, 520.0, 535.0	300-875	.002-.003	.002-.003	.003-.004	.004-.005	.004-.006	.005-.007	.006-.008	.007-.010	.008-.011	.009-.013
Copper Alloys	Cu-ETP, CuBe2, CuZn30, CuZn36Pb3, CuZn10, CuSn5	300-520	.002-.003	.002-.003	.003-.004	.004-.005	.004-.006	.005-.007	.006-.008	.007-.010	.008-.011	.009-.013

General Notes

All posted speed and feed parameters are suggested starting values that may be increased given optimal setup conditions.

If you require additional information, Valor Holesmaking has a team of technical experts available to assist you through even the most challenging applications. Please contact us at **866-840-1505** or Valortech@harveyperformance.com.



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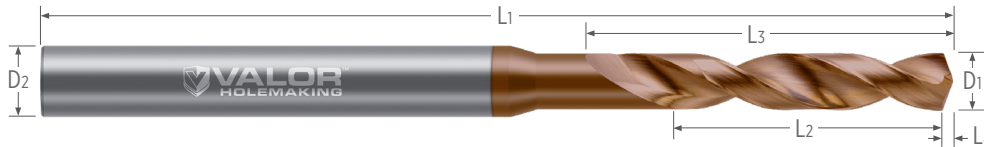
High Performance Drills

For Steels



Exceptional Design for Precision Drilling in 4140 Steel

- Optimized for best-in-class performance in 4140 Steel with superior performance in a wide variety of Steels and other Alloy Steels
- Provides excellent performance in Stainless Steels and Cast Iron
- Engineered double margin geometry provides performance and stability when drilling intersecting holes and/or exiting holes on inclined or irregular surfaces
- Pre and post polish process delivers reduced friction and ensures outstanding chip management
- 140° point angle with 4-facet geometry for improved self-centering
- h6 shank tolerance for high precision tool holders
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide

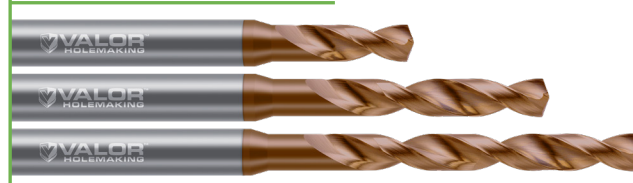


Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth					Tool #	Price
D1 (h8)*		L2			L3	L4	D2 (h6)*	L1		
.0625 (1/16)	1.587 mm	.187	4.75 mm	(3x)	6.13 mm	.29 mm	3 mm	63 mm	V973517-X	91.18
.0625 (1/16)	1.587 mm	.312	7.95 mm	(5x)	9.46 mm	.29 mm	3 mm	63 mm	V296154-X	117.18
.0625 (1/16)	1.587 mm	.499	12.70 mm	(8x)	14.46 mm	.29 mm	3 mm	63 mm	V623340-X	156.98
.0630	1.600 mm	.188	4.80 mm	(3x)	6.18 mm	.29 mm	3 mm	63 mm	V957351-X	91.18
.0630	1.600 mm	.314	8.00 mm	(5x)	9.54 mm	.29 mm	3 mm	63 mm	V462279-X	117.18
.0630	1.600 mm	.503	12.80 mm	(8x)	14.58 mm	.29 mm	3 mm	63 mm	V305247-X	156.98
.0669	1.700 mm	.200	5.10 mm	(3x)	6.57 mm	.31 mm	3 mm	63 mm	V868330-X	91.18
.0669	1.700 mm	.334	8.50 mm	(5x)	10.14 mm	.31 mm	3 mm	63 mm	V118791-X	117.18
.0669	1.700 mm	.535	13.60 mm	(8x)	15.49 mm	.31 mm	3 mm	63 mm	V896049-X	156.98
.0708	1.800 mm	.212	5.40 mm	(3x)	6.95 mm	.33 mm	3 mm	63 mm	V779567-X	91.18
.0708	1.800 mm	.354	9.00 mm	(5x)	10.73 mm	.33 mm	3 mm	63 mm	V794019-X	117.18
.0708	1.800 mm	.566	14.40 mm	(8x)	16.40 mm	.33 mm	3 mm	63 mm	V178926-X	156.98
.0748	1.900 mm	.224	5.70 mm	(3x)	7.34 mm	.35 mm	3 mm	63 mm	V185449-X	91.18
.0748	1.900 mm	.374	9.50 mm	(5x)	11.33 mm	.35 mm	3 mm	63 mm	V249203-X	117.18
.0748	1.900 mm	.598	15.20 mm	(8x)	17.32 mm	.35 mm	3 mm	63 mm	V483409-X	156.98

* For h6 and h8 tolerances, see page 8.

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Stocked in 3x, 5x, and 8x hole depths





High Performance Drills

For Steels (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
.0781 (5/64)	1.984 mm	.234	5.95 mm	(3x)	7.67 mm	.36 mm	3 mm	63 mm	V467156-X	91.18
.0781 (5/64)	1.984 mm	.389	9.90 mm	(5x)	11.83 mm	.36 mm	3 mm	63 mm	V224870-X	117.18
.0781 (5/64)	1.984 mm	.624	15.85 mm	(8x)	18.08 mm	.36 mm	3 mm	63 mm	V911271-X	156.98
.0787	2.000 mm	.236	6.00 mm	(3x)	7.73 mm	.36 mm	3 mm	63 mm	V826750-X	91.18
.0787	2.000 mm	.393	10.00 mm	(5x)	11.93 mm	.36 mm	3 mm	63 mm	V979538-X	126.08
.0787	2.000 mm	.629	16.00 mm	(8x)	18.23 mm	.36 mm	3 mm	63 mm	V918445-X	163.78
.0826	2.100 mm	.248	6.30 mm	(3x)	8.11 mm	.38 mm	3 mm	63 mm	V110651-X	91.18
.0826	2.100 mm	.413	10.50 mm	(5x)	12.52 mm	.38 mm	3 mm	63 mm	V392180-X	126.08
.0826	2.100 mm	.661	16.80 mm	(8x)	19.14 mm	.38 mm	3 mm	63 mm	V704770-X	163.78
.0866	2.200 mm	.259	6.60 mm	(3x)	8.50 mm	.40 mm	3 mm	63 mm	V569646-X	91.18
.0866	2.200 mm	.433	11.00 mm	(5x)	13.12 mm	.40 mm	3 mm	63 mm	V659262-X	126.08
.0866	2.200 mm	.692	17.60 mm	(8x)	20.05 mm	.40 mm	3 mm	63 mm	V259528-X	163.78
.0905	2.300 mm	.271	6.90 mm	(3x)	8.89 mm	.42 mm	3 mm	63 mm	V519827-X	91.18
.0905	2.300 mm	.452	11.50 mm	(5x)	13.72 mm	.42 mm	3 mm	63 mm	V941185-X	126.08
.0905	2.300 mm	.724	18.40 mm	(8x)	20.96 mm	.42 mm	3 mm	63 mm	V962527-X	163.78
.0937 (3/32)	2.381 mm	.281	7.15 mm	(3x)	9.20 mm	.43 mm	3 mm	63 mm	V964923-X	91.18
.0937 (3/32)	2.381 mm	.468	11.90 mm	(5x)	14.20 mm	.43 mm	3 mm	63 mm	V170896-X	126.08
.0937 (3/32)	2.381 mm	.749	19.05 mm	(8x)	21.70 mm	.43 mm	3 mm	63 mm	V630268-X	163.78
.0944	2.400 mm	.283	7.20 mm	(3x)	9.27 mm	.44 mm	3 mm	63 mm	V713265-X	91.18
.0944	2.400 mm	.472	12.00 mm	(5x)	14.31 mm	.44 mm	3 mm	63 mm	V766011-X	126.08
.0944	2.400 mm	.755	19.20 mm	(8x)	21.87 mm	.44 mm	3 mm	63 mm	V931255-X	163.78
.0984	2.500 mm	.295	7.50 mm	(3x)	9.66 mm	.45 mm	3 mm	63 mm	V441162-X	93.88
.0984	2.500 mm	.492	12.50 mm	(5x)	14.91 mm	.45 mm	3 mm	63 mm	V665871-X	129.58
.0984	2.500 mm	.787	20.00 mm	(8x)	22.79 mm	.45 mm	3 mm	63 mm	V753719-X	174.08
.1023	2.600 mm	.307	7.80 mm	(3x)	10.05 mm	.47 mm	3 mm	63 mm	V776161-X	93.88
.1023	2.600 mm	.511	13.00 mm	(5x)	15.51 mm	.47 mm	3 mm	63 mm	V935510-X	129.58
.1023	2.600 mm	.818	20.80 mm	(8x)	23.70 mm	.47 mm	3 mm	63 mm	V864115-X	174.08
.1062	2.700 mm	.318	8.10 mm	(3x)	10.43 mm	.49 mm	3 mm	63 mm	V375655-X	93.88
.1062	2.700 mm	.531	13.50 mm	(5x)	16.10 mm	.49 mm	3 mm	63 mm	V120072-X	129.58
.1062	2.700 mm	.850	21.60 mm	(8x)	24.61 mm	.49 mm	3 mm	63 mm	V111219-X	174.08
.1093 (7/64)	2.778 mm	.328	8.35 mm	(3x)	10.73 mm	.51 mm	3 mm	63 mm	V959991-X	93.88
.1093 (7/64)	2.778 mm	.547	13.90 mm	(5x)	16.57 mm	.51 mm	3 mm	63 mm	V610313-X	129.58
.1093 (7/64)	2.778 mm	.874	22.20 mm	(8x)	25.32 mm	.51 mm	3 mm	63 mm	V254288-X	174.08
.1102	2.800 mm	.330	8.40 mm	(3x)	10.82 mm	.51 mm	3 mm	63 mm	V113654-X	93.88
.1102	2.800 mm	.551	14.00 mm	(5x)	16.70 mm	.51 mm	3 mm	63 mm	V555135-X	129.58
.1102	2.800 mm	.881	22.40 mm	(8x)	25.52 mm	.51 mm	3 mm	63 mm	V587228-X	174.08

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth						
	D1 (h8)*		L2		L3	L4	D2 (h6)*	L1	Tool #	Price
.1141	2.900 mm	.342	8.70 mm	(3x)	11.21 mm	.53 mm	3 mm	63 mm	V934711-X	93.88
.1141	2.900 mm	.570	14.50 mm	(5x)	17.30 mm	.53 mm	3 mm	63 mm	V425270-X	129.58
.1141	2.900 mm	.913	23.20 mm	(8x)	26.43 mm	.53 mm	3 mm	63 mm	V466163-X	174.08
.1181	3.000 mm	.354	9.00 mm	(3x)	11.59 mm	.55 mm	4 mm	63 mm	V448334-X	93.88
.1181	3.000 mm	.590	15.00 mm	(5x)	17.89 mm	.55 mm	4 mm	63 mm	V728184-X	129.58
.1181	3.000 mm	.944	24.00 mm	(8x)	27.34 mm	.55 mm	4 mm	75 mm	V816162-X	174.08
.1220	3.100 mm	.366	9.30 mm	(3x)	11.98 mm	.56 mm	4 mm	63 mm	V980525-X	80.18
.1220	3.100 mm	.610	15.50 mm	(5x)	18.49 mm	.56 mm	4 mm	63 mm	V262531-X	103.48
.1220	3.100 mm	.976	24.80 mm	(8x)	28.25 mm	.56 mm	4 mm	75 mm	V175931-X	237.08
.1250 (1/8)	3.175 mm	.374	9.50 mm	(3x)	12.27 mm	.58 mm	4 mm	63 mm	V757262-X	80.18
.1250 (1/8)	3.175 mm	.625	15.90 mm	(5x)	18.94 mm	.58 mm	4 mm	63 mm	V407402-X	103.48
.1250 (1/8)	3.175 mm	.999	25.40 mm	(8x)	28.94 mm	.58 mm	4 mm	75 mm	V143044-X	237.08
.1260	3.200 mm	.377	9.60 mm	(3x)	12.37 mm	.58 mm	4 mm	63 mm	V241601-X	80.18
.1260	3.200 mm	.629	16.00 mm	(5x)	19.09 mm	.58 mm	4 mm	63 mm	V864366-X	103.48
.1260	3.200 mm	1.007	25.60 mm	(8x)	29.17 mm	.58 mm	4 mm	75 mm	V191656-X	237.08
.1300	3.300 mm	.389	9.90 mm	(3x)	12.75 mm	.60 mm	4 mm	63 mm	V446101-X	80.18
.1300	3.300 mm	.649	16.50 mm	(5x)	19.68 mm	.60 mm	4 mm	63 mm	V427484-X	103.48
.1300	3.300 mm	1.039	26.40 mm	(8x)	30.08 mm	.60 mm	4 mm	75 mm	V274069-X	237.08
.1338	3.400 mm	.401	10.20 mm	(3x)	13.14 mm	.62 mm	4 mm	63 mm	V345119-X	80.18
.1338	3.400 mm	.669	17.00 mm	(5x)	20.28 mm	.62 mm	4 mm	63 mm	V570427-X	103.48
.1338	3.400 mm	1.070	27.20 mm	(8x)	30.99 mm	.62 mm	4 mm	75 mm	V471156-X	237.08
.1377	3.500 mm	.413	10.50 mm	(3x)	13.53 mm	.64 mm	4 mm	63 mm	V219223-X	80.18
.1377	3.500 mm	.688	17.50 mm	(5x)	20.88 mm	.64 mm	4 mm	63 mm	V969665-X	103.48
.1377	3.500 mm	1.102	28.00 mm	(8x)	31.90 mm	.64 mm	4 mm	75 mm	V715223-X	237.08
.1406 (9/64)	3.571 mm	.421	10.70 mm	(3x)	13.80 mm	.65 mm	4 mm	63 mm	V119018-X	80.18
.1406 (9/64)	3.571 mm	.702	17.85 mm	(5x)	21.30 mm	.65 mm	4 mm	63 mm	V859368-X	103.48
.1406 (9/64)	3.571 mm	1.124	28.55 mm	(8x)	32.55 mm	.65 mm	4 mm	75 mm	V711502-X	237.08
.1417	3.600 mm	.425	10.80 mm	(3x)	13.91 mm	.66 mm	4 mm	63 mm	V171654-X	80.18
.1417	3.600 mm	.708	18.00 mm	(5x)	21.47 mm	.66 mm	4 mm	63 mm	V306978-X	103.48
.1417	3.600 mm	1.133	28.80 mm	(8x)	32.81 mm	.66 mm	4 mm	75 mm	V463513-X	237.08
.1456	3.700 mm	.437	11.10 mm	(3x)	14.30 mm	.67 mm	4 mm	63 mm	V372278-X	80.18
.1456	3.700 mm	.728	18.50 mm	(5x)	22.07 mm	.67 mm	4 mm	63 mm	V418855-X	103.48
.1456	3.700 mm	1.165	29.60 mm	(8x)	33.72 mm	.67 mm	4 mm	75 mm	V648706-X	237.08
.1496	3.800 mm	.448	11.40 mm	(3x)	14.69 mm	.69 mm	4 mm	63 mm	V381981-X	80.18
.1496	3.800 mm	.748	19.00 mm	(5x)	22.67 mm	.69 mm	4 mm	63 mm	V770195-X	103.48
.1496	3.800 mm	1.196	30.40 mm	(8x)	34.64 mm	.69 mm	4 mm	75 mm	V511673-X	237.08

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels (cont.)

continued from previous page

Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
	D _T (h8)*		L ₂							
.1535	3.900 mm	.460	11.70 mm	(3x)	15.07 mm	.71 mm	4 mm	63 mm	V464029-X	80.18
.1535	3.900 mm	.767	19.50 mm	(5x)	23.26 mm	.71 mm	4 mm	63 mm	V916343-X	103.48
.1535	3.900 mm	1.228	31.20 mm	(8x)	35.55 mm	.71 mm	4 mm	75 mm	V641665-X	237.08
.1562 (5/32)	3.968 mm	.468	11.90 mm	(3x)	15.34 mm	.72 mm	4 mm	63 mm	V535133-X	80.18
.1562 (5/32)	3.968 mm	.781	19.85 mm	(5x)	23.67 mm	.72 mm	4 mm	63 mm	V651106-X	103.48
.1562 (5/32)	3.968 mm	1.249	31.75 mm	(8x)	36.17 mm	.72 mm	4 mm	75 mm	V484175-X	237.08
.1574	4.000 mm	.472	12.00 mm	(3x)	15.46 mm	.73 mm	6 mm	63 mm	V956543-X	85.68
.1574	4.000 mm	.787	20.00 mm	(5x)	23.86 mm	.73 mm	6 mm	75 mm	V973327-X	106.28
.1574	4.000 mm	1.259	32.00 mm	(8x)	36.46 mm	.73 mm	6 mm	100 mm	V228877-X	237.08
.1614	4.100 mm	.484	12.30 mm	(3x)	15.85 mm	.75 mm	6 mm	63 mm	V144711-X	85.68
.1614	4.100 mm	.807	20.50 mm	(5x)	24.46 mm	.75 mm	6 mm	75 mm	V159304-X	106.28
.1614	4.100 mm	1.291	32.80 mm	(8x)	37.37 mm	.75 mm	6 mm	100 mm	V830649-X	237.08
.1653	4.200 mm	.496	12.60 mm	(3x)	16.23 mm	.76 mm	6 mm	63 mm	V691502-X	85.68
.1653	4.200 mm	.826	21.00 mm	(5x)	25.05 mm	.76 mm	6 mm	75 mm	V390642-X	106.28
.1653	4.200 mm	1.322	33.60 mm	(8x)	38.28 mm	.76 mm	6 mm	100 mm	V717833-X	237.08
.1692	4.300 mm	.507	12.90 mm	(3x)	16.62 mm	.78 mm	6 mm	63 mm	V853410-X	85.68
.1692	4.300 mm	.846	21.50 mm	(5x)	25.65 mm	.78 mm	6 mm	75 mm	V641050-X	106.28
.1692	4.300 mm	1.354	34.40 mm	(8x)	39.19 mm	.78 mm	6 mm	100 mm	V349549-X	237.08
.1718 (11/64)	4.365 mm	.515	13.10 mm	(3x)	16.87 mm	.79 mm	6 mm	63 mm	V690088-X	85.68
.1718 (11/64)	4.365 mm	.860	21.85 mm	(5x)	26.04 mm	.79 mm	6 mm	75 mm	V202897-X	106.28
.1718 (11/64)	4.365 mm	1.374	34.90 mm	(8x)	39.79 mm	.79 mm	6 mm	100 mm	V430080-X	237.08
.1732	4.400 mm	.519	13.20 mm	(3x)	17.01 mm	.80 mm	6 mm	63 mm	V696930-X	85.68
.1732	4.400 mm	.866	22.00 mm	(5x)	26.25 mm	.80 mm	6 mm	75 mm	V454165-X	106.28
.1732	4.400 mm	1.385	35.20 mm	(8x)	40.11 mm	.80 mm	6 mm	100 mm	V609491-X	237.08
.1771	4.500 mm	.531	13.50 mm	(3x)	17.39 mm	.82 mm	6 mm	63 mm	V945678-X	85.68
.1771	4.500 mm	.885	22.50 mm	(5x)	26.84 mm	.82 mm	6 mm	75 mm	V104541-X	106.28
.1771	4.500 mm	1.417	36.00 mm	(8x)	41.02 mm	.82 mm	6 mm	100 mm	V997034-X	237.08
.1811	4.600 mm	.543	13.80 mm	(3x)	17.78 mm	.84 mm	6 mm	63 mm	V587145-X	85.68
.1811	4.600 mm	.905	23.00 mm	(5x)	27.44 mm	.84 mm	6 mm	75 mm	V781819-X	106.28
.1811	4.600 mm	1.448	36.80 mm	(8x)	41.93 mm	.84 mm	6 mm	100 mm	V997000-X	237.08
.1850	4.700 mm	.555	14.10 mm	(3x)	18.17 mm	.86 mm	6 mm	63 mm	V846796-X	85.68
.1850	4.700 mm	.925	23.50 mm	(5x)	28.04 mm	.86 mm	6 mm	75 mm	V824714-X	106.28
.1850	4.700 mm	1.480	37.60 mm	(8x)	42.84 mm	.86 mm	6 mm	100 mm	V896167-X	237.08
.1875 (3/16)	4.762 mm	.562	14.30 mm	(3x)	18.41 mm	.87 mm	6 mm	63 mm	V400615-X	85.68
.1875 (3/16)	4.762 mm	.937	23.80 mm	(5x)	28.41 mm	.87 mm	6 mm	75 mm	V236564-X	106.28
.1875 (3/16)	4.762 mm	1.499	38.10 mm	(8x)	43.41 mm	.87 mm	6 mm	100 mm	V126929-X	237.08

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth						
	D1 (h8)*		L2		L3	L4	D2 (h6)*	L1	Tool #	Price
.1890	4.800 mm	.566	14.40 mm	(3x)	18.55 mm	.87 mm	6 mm	63 mm	V834057-X	85.68
.1890	4.800 mm	.944	24.00 mm	(5x)	28.63 mm	.87 mm	6 mm	75 mm	V321709-X	106.28
.1890	4.800 mm	1.511	38.40 mm	(8x)	43.75 mm	.87 mm	6 mm	100 mm	V290220-X	237.08
.1930	4.900 mm	.578	14.70 mm	(3x)	18.94 mm	.89 mm	6 mm	63 mm	V745413-X	85.68
.1930	4.900 mm	.964	24.50 mm	(5x)	29.23 mm	.89 mm	6 mm	75 mm	V381771-X	106.28
.1930	4.900 mm	1.543	39.20 mm	(8x)	44.66 mm	.89 mm	6 mm	100 mm	V449962-X	237.08
.1968	5.000 mm	.590	15.00 mm	(3x)	19.33 mm	.91 mm	6 mm	63 mm	V810779-X	85.68
.1968	5.000 mm	.984	25.00 mm	(5x)	29.83 mm	.91 mm	6 mm	75 mm	V661786-X	106.28
.1968	5.000 mm	1.574	40.00 mm	(8x)	45.58 mm	.91 mm	6 mm	100 mm	V727149-X	237.08
.2007	5.100 mm	.602	15.30 mm	(3x)	19.71 mm	.93 mm	6 mm	63 mm	V558333-X	85.68
.2007	5.100 mm	1.003	25.50 mm	(5x)	30.42 mm	.93 mm	6 mm	75 mm	V683701-X	106.28
.2007	5.100 mm	1.606	40.80 mm	(8x)	46.49 mm	.93 mm	6 mm	100 mm	V445203-X	237.08
.2031 (13/64)	5.159 mm	.610	15.50 mm	(3x)	19.94 mm	.94 mm	6 mm	63 mm	V536622-X	85.68
.2031 (13/64)	5.159 mm	1.015	25.80 mm	(5x)	30.77 mm	.94 mm	6 mm	75 mm	V743431-X	106.28
.2031 (13/64)	5.159 mm	1.624	41.25 mm	(8x)	47.02 mm	.94 mm	6 mm	100 mm	V479533-X	237.08
.2047	5.200 mm	.614	15.60 mm	(3x)	20.10 mm	.95 mm	6 mm	63 mm	V603666-X	85.68
.2047	5.200 mm	1.023	26.00 mm	(5x)	31.02 mm	.95 mm	6 mm	75 mm	V663747-X	106.28
.2047	5.200 mm	1.637	41.60 mm	(8x)	47.40 mm	.95 mm	6 mm	100 mm	V984977-X	237.08
.2086	5.300 mm	.625	15.90 mm	(3x)	20.49 mm	.96 mm	6 mm	63 mm	V612145-X	85.68
.2086	5.300 mm	1.043	26.50 mm	(5x)	31.62 mm	.96 mm	6 mm	75 mm	V947811-X	106.28
.2086	5.300 mm	1.669	42.40 mm	(8x)	48.31 mm	.96 mm	6 mm	100 mm	V464644-X	237.08
.2125	5.400 mm	.637	16.20 mm	(3x)	20.87 mm	.98 mm	6 mm	63 mm	V103818-X	85.68
.2125	5.400 mm	1.062	27.00 mm	(5x)	32.21 mm	.98 mm	6 mm	75 mm	V231435-X	106.28
.2125	5.400 mm	1.700	43.20 mm	(8x)	49.22 mm	.98 mm	6 mm	100 mm	V848179-X	237.08
.2165	5.500 mm	.649	16.50 mm	(3x)	21.26 mm	1.00 mm	6 mm	63 mm	V245936-X	85.68
.2165	5.500 mm	1.082	27.50 mm	(5x)	32.81 mm	1.00 mm	6 mm	75 mm	V590469-X	106.28
.2165	5.500 mm	1.732	44.00 mm	(8x)	50.13 mm	1.00 mm	6 mm	100 mm	V881807-X	237.08
.2187 (7/32)	5.556 mm	.655	16.65 mm	(3x)	21.47 mm	1.01 mm	6 mm	63 mm	V412034-X	85.68
.2187 (7/32)	5.556 mm	1.094	27.80 mm	(5x)	33.14 mm	1.01 mm	6 mm	75 mm	V550391-X	106.28
.2187 (7/32)	5.556 mm	1.749	44.45 mm	(8x)	50.64 mm	1.01 mm	6 mm	100 mm	V682954-X	237.08
.2205	5.600 mm	.661	16.80 mm	(3x)	21.65 mm	1.02 mm	6 mm	63 mm	V869257-X	85.68
.2205	5.600 mm	1.102	28.00 mm	(5x)	33.41 mm	1.02 mm	6 mm	75 mm	V885614-X	106.28
.2205	5.600 mm	1.763	44.80 mm	(8x)	51.05 mm	1.02 mm	6 mm	100 mm	V372811-X	237.08
.2244	5.700 mm	.673	17.10 mm	(3x)	22.03 mm	1.04 mm	6 mm	63 mm	V911021-X	85.68
.2244	5.700 mm	1.122	28.50 mm	(5x)	34.00 mm	1.04 mm	6 mm	75 mm	V674875-X	106.28
.2244	5.700 mm	1.795	45.60 mm	(8x)	51.96 mm	1.04 mm	6 mm	100 mm	V885969-X	237.08

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
D _T (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
.2283	5.800 mm	.685	17.40 mm	(3x)	22.42 mm	1.06 mm	6 mm	63 mm	V439914-X	85.68
.2283	5.800 mm	1.141	29.00 mm	(5x)	34.60 mm	1.06 mm	6 mm	75 mm	V260690-X	106.28
.2283	5.800 mm	1.826	46.40 mm	(8x)	52.87 mm	1.06 mm	6 mm	100 mm	V751036-X	237.08
.2322	5.900 mm	.696	17.70 mm	(3x)	22.80 mm	1.07 mm	6 mm	63 mm	V603655-X	85.68
.2322	5.900 mm	1.161	29.50 mm	(5x)	35.19 mm	1.07 mm	6 mm	75 mm	V519010-X	106.28
.2322	5.900 mm	1.858	47.20 mm	(8x)	53.78 mm	1.07 mm	6 mm	100 mm	V549472-X	237.08
.2343 (15/64)	5.953 mm	.702	17.85 mm	(3x)	23.01 mm	1.08 mm	6 mm	63 mm	V458998-X	85.68
.2343 (15/64)	5.953 mm	1.171	29.75 mm	(5x)	35.51 mm	1.08 mm	6 mm	75 mm	V623370-X	106.28
.2343 (15/64)	5.953 mm	1.874	47.60 mm	(8x)	54.26 mm	1.08 mm	6 mm	100 mm	V445403-X	237.08
.2362	6.000 mm	.708	18.00 mm	(3x)	23.19 mm	1.09 mm	8 mm	75 mm	V106008-X	85.68
.2362	6.000 mm	1.181	30.00 mm	(5x)	35.79 mm	1.09 mm	8 mm	100 mm	V170131-X	106.28
.2362	6.000 mm	1.889	48.00 mm	(8x)	54.69 mm	1.09 mm	8 mm	125 mm	V345369-X	237.08
.2401	6.100 mm	.720	18.30 mm	(3x)	23.58 mm	1.11 mm	8 mm	75 mm	V786634-X	102.88
.2401	6.100 mm	1.200	30.50 mm	(5x)	36.39 mm	1.11 mm	8 mm	100 mm	V638795-X	122.68
.2401	6.100 mm	1.921	48.80 mm	(8x)	55.60 mm	1.11 mm	8 mm	125 mm	V492775-X	248.08
.2440	6.200 mm	.732	18.60 mm	(3x)	23.96 mm	1.13 mm	8 mm	75 mm	V156414-X	102.88
.2440	6.200 mm	1.220	31.00 mm	(5x)	36.98 mm	1.13 mm	8 mm	100 mm	V246074-X	122.68
.2440	6.200 mm	1.952	49.60 mm	(8x)	56.51 mm	1.13 mm	8 mm	125 mm	V936607-X	248.08
.2480	6.300 mm	.744	18.90 mm	(3x)	24.35 mm	1.15 mm	8 mm	75 mm	V252509-X	102.88
.2480	6.300 mm	1.240	31.50 mm	(5x)	37.58 mm	1.15 mm	8 mm	100 mm	V349769-X	122.68
.2480	6.300 mm	1.984	50.40 mm	(8x)	57.43 mm	1.15 mm	8 mm	125 mm	V272919-X	248.08
.2500 (1/4)	6.350 mm	.749	19.05 mm	(3x)	24.54 mm	1.16 mm	8 mm	75 mm	V809169-X	102.88
.2500 (1/4)	6.350 mm	1.249	31.75 mm	(5x)	37.88 mm	1.16 mm	8 mm	100 mm	V715183-X	122.68
.2500 (1/4)	6.350 mm	1.999	50.80 mm	(8x)	57.88 mm	1.16 mm	8 mm	125 mm	V316828-X	248.08
.2520	6.400 mm	.755	19.20 mm	(3x)	24.74 mm	1.16 mm	8 mm	75 mm	V343209-X	102.88
.2520	6.400 mm	1.259	32.00 mm	(5x)	38.18 mm	1.16 mm	8 mm	100 mm	V664864-X	122.68
.2520	6.400 mm	2.015	51.20 mm	(8x)	58.34 mm	1.16 mm	8 mm	125 mm	V449441-X	248.08

* For h6 and h8 tolerances, see page 8.

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Tech Tip

Select a material specific drill to avoid hole misalignment. Material specific drills are designed with geometries that will mitigate the specific challenges that each unique material presents.



High Performance Drills

For Steels (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth					Tool #	Price
	D1 (h8)*		L2		L3	L4	D2 (h6)*	L1		
.2559	6.500 mm	.767	19.50 mm	(3x)	25.12 mm	1.18 mm	8 mm	75 mm	V749006-X	102.88
.2559	6.500 mm	1.279	32.50 mm	(5x)	38.77 mm	1.18 mm	8 mm	100 mm	V976126-X	122.68
.2559	6.500 mm	2.047	52.00 mm	(8x)	59.25 mm	1.18 mm	8 mm	125 mm	V426083-X	248.08
.2598	6.600 mm	.779	19.80 mm	(3x)	25.51 mm	1.20 mm	8 mm	75 mm	V734311-X	107.58
.2598	6.600 mm	1.299	33.00 mm	(5x)	39.37 mm	1.20 mm	8 mm	100 mm	V321248-X	126.78
.2598	6.600 mm	2.078	52.80 mm	(8x)	60.16 mm	1.20 mm	8 mm	125 mm	V978161-X	276.78
.2638	6.700 mm	.791	20.10 mm	(3x)	25.90 mm	1.22 mm	8 mm	75 mm	V695757-X	107.58
.2638	6.700 mm	1.318	33.50 mm	(5x)	39.97 mm	1.22 mm	8 mm	100 mm	V609211-X	126.78
.2638	6.700 mm	2.110	53.60 mm	(8x)	61.07 mm	1.22 mm	8 mm	125 mm	V416647-X	276.78
.2656 (17/64)	6.746 mm	.797	20.25 mm	(3x)	26.08 mm	1.23 mm	8 mm	75 mm	V577636-X	107.58
.2656 (17/64)	6.746 mm	1.328	33.75 mm	(5x)	40.24 mm	1.23 mm	8 mm	100 mm	V734759-X	126.78
.2656 (17/64)	6.746 mm	2.124	53.95 mm	(8x)	61.49 mm	1.23 mm	8 mm	125 mm	V738825-X	276.78
.2677	6.800 mm	.803	20.40 mm	(3x)	26.28 mm	1.24 mm	8 mm	75 mm	V338596-X	107.58
.2677	6.800 mm	1.338	34.00 mm	(5x)	40.56 mm	1.24 mm	8 mm	100 mm	V913970-X	126.78
.2677	6.800 mm	2.141	54.40 mm	(8x)	61.98 mm	1.24 mm	8 mm	125 mm	V219307-X	276.78
.2717	6.900 mm	.814	20.70 mm	(3x)	26.67 mm	1.26 mm	8 mm	75 mm	V291064-X	107.58
.2717	6.900 mm	1.358	34.50 mm	(5x)	41.16 mm	1.26 mm	8 mm	100 mm	V531112-X	126.78
.2717	6.900 mm	2.173	55.20 mm	(8x)	62.90 mm	1.26 mm	8 mm	125 mm	V950623-X	276.78
.2756	7.000 mm	.826	21.00 mm	(3x)	27.06 mm	1.27 mm	8 mm	75 mm	V663641-X	107.58
.2756	7.000 mm	1.377	35.00 mm	(5x)	41.76 mm	1.27 mm	8 mm	100 mm	V410825-X	126.78
.2756	7.000 mm	2.204	56.00 mm	(8x)	63.81 mm	1.27 mm	8 mm	125 mm	V604383-X	276.78
.2795	7.100 mm	.838	21.30 mm	(3x)	27.44 mm	1.29 mm	8 mm	75 mm	V600397-X	108.98
.2795	7.100 mm	1.397	35.50 mm	(5x)	42.35 mm	1.29 mm	8 mm	100 mm	V637495-X	133.68
.2795	7.100 mm	2.236	56.80 mm	(8x)	64.72 mm	1.29 mm	8 mm	125 mm	V993349-X	291.18
.2812 (9/32)	7.142 mm	.844	21.45 mm	(3x)	27.61 mm	1.30 mm	8 mm	75 mm	V952277-X	108.98
.2812 (9/32)	7.142 mm	1.405	35.70 mm	(5x)	42.60 mm	1.30 mm	8 mm	100 mm	V425690-X	133.68
.2812 (9/32)	7.142 mm	2.249	57.15 mm	(8x)	65.10 mm	1.30 mm	8 mm	125 mm	V956378-X	291.18
.2834	7.200 mm	.850	21.60 mm	(3x)	27.83 mm	1.31 mm	8 mm	75 mm	V226899-X	108.98
.2834	7.200 mm	1.417	36.00 mm	(5x)	42.95 mm	1.31 mm	8 mm	100 mm	V657275-X	133.68
.2834	7.200 mm	2.267	57.60 mm	(8x)	65.63 mm	1.31 mm	8 mm	125 mm	V672970-X	291.18
.2874	7.300 mm	.862	21.90 mm	(3x)	28.22 mm	1.33 mm	8 mm	75 mm	V653370-X	108.98
.2874	7.300 mm	1.437	36.50 mm	(5x)	43.55 mm	1.33 mm	8 mm	100 mm	V195918-X	133.68
.2874	7.300 mm	2.299	58.40 mm	(8x)	66.54 mm	1.33 mm	8 mm	125 mm	V727542-X	291.18
.2913	7.400 mm	.874	22.20 mm	(3x)	28.60 mm	1.35 mm	8 mm	75 mm	V489342-X	108.98
.2913	7.400 mm	1.456	37.00 mm	(5x)	44.14 mm	1.35 mm	8 mm	100 mm	V795527-X	133.68
.2913	7.400 mm	2.330	59.20 mm	(8x)	67.45 mm	1.35 mm	8 mm	125 mm	V172694-X	291.18

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
	D ₁ (h8)*		L ₂							
.2952	7.500 mm	.885	22.50 mm	(3x)	28.99 mm	1.36 mm	8 mm	75 mm	V148315-X	108.98
.2952	7.500 mm	1.476	37.50 mm	(5x)	44.74 mm	1.36 mm	8 mm	100 mm	V103072-X	133.68
.2952	7.500 mm	2.362	60.00 mm	(8x)	68.37 mm	1.36 mm	8 mm	125 mm	V145153-X	291.18
.2969 (19/64)	7.541 mm	.889	22.60 mm	(3x)	29.15 mm	1.37 mm	8 mm	75 mm	V285522-X	108.98
.2969 (19/64)	7.541 mm	1.484	37.70 mm	(5x)	44.99 mm	1.37 mm	8 mm	100 mm	V850668-X	133.68
.2969 (19/64)	7.541 mm	2.375	60.35 mm	(8x)	68.74 mm	1.37 mm	8 mm	125 mm	V781588-X	291.18
.2992	7.600 mm	.897	22.80 mm	(3x)	29.38 mm	1.38 mm	8 mm	75 mm	V558243-X	108.98
.2992	7.600 mm	1.496	38.00 mm	(5x)	45.34 mm	1.38 mm	8 mm	100 mm	V707294-X	133.68
.2992	7.600 mm	2.393	60.80 mm	(8x)	69.28 mm	1.38 mm	8 mm	125 mm	V944678-X	291.18
.3031	7.700 mm	.909	23.10 mm	(3x)	29.76 mm	1.40 mm	8 mm	75 mm	V515094-X	108.98
.3031	7.700 mm	1.515	38.50 mm	(5x)	45.93 mm	1.40 mm	8 mm	100 mm	V323536-X	133.68
.3031	7.700 mm	2.425	61.60 mm	(8x)	70.19 mm	1.40 mm	8 mm	125 mm	V316193-X	291.18
.3071	7.800 mm	.921	23.40 mm	(3x)	30.15 mm	1.42 mm	8 mm	75 mm	V613783-X	108.98
.3071	7.800 mm	1.535	39.00 mm	(5x)	46.53 mm	1.42 mm	8 mm	100 mm	V225740-X	133.68
.3071	7.800 mm	2.456	62.40 mm	(8x)	71.10 mm	1.42 mm	8 mm	125 mm	V543502-X	291.18
.3110	7.900 mm	.933	23.70 mm	(3x)	30.54 mm	1.44 mm	8 mm	75 mm	V643419-X	108.98
.3110	7.900 mm	1.555	39.50 mm	(5x)	47.13 mm	1.44 mm	8 mm	100 mm	V962384-X	133.68
.3110	7.900 mm	2.488	63.20 mm	(8x)	72.01 mm	1.44 mm	8 mm	125 mm	V199008-X	291.18
.3125 (5/16)	7.937 mm	.937	23.80 mm	(3x)	30.68 mm	1.44 mm	8 mm	75 mm	V922027-X	108.98
.3125 (5/16)	7.937 mm	1.562	39.70 mm	(5x)	47.35 mm	1.44 mm	8 mm	100 mm	V962711-X	133.68
.3125 (5/16)	7.937 mm	2.499	63.50 mm	(8x)	72.35 mm	1.44 mm	8 mm	125 mm	V832006-X	291.18
.3150	8.000 mm	.944	24.00 mm	(3x)	30.92 mm	1.46 mm	10 mm	75 mm	V437355-X	108.98
.3150	8.000 mm	1.574	40.00 mm	(5x)	47.72 mm	1.46 mm	10 mm	100 mm	V432969-X	133.68
.3150	8.000 mm	2.519	64.00 mm	(8x)	72.92 mm	1.46 mm	10 mm	125 mm	V414548-X	291.18
.3189	8.100 mm	.956	24.30 mm	(3x)	31.31 mm	1.47 mm	10 mm	75 mm	V172150-X	130.28
.3189	8.100 mm	1.594	40.50 mm	(5x)	48.32 mm	1.47 mm	10 mm	100 mm	V805974-X	148.68
.3189	8.100 mm	2.551	64.80 mm	(8x)	73.84 mm	1.47 mm	10 mm	125 mm	V784040-X	330.98
.3228	8.200 mm	.968	24.60 mm	(3x)	31.70 mm	1.49 mm	10 mm	75 mm	V104389-X	130.28
.3228	8.200 mm	1.614	41.00 mm	(5x)	48.92 mm	1.49 mm	10 mm	100 mm	V797513-X	148.68
.3228	8.200 mm	2.582	65.60 mm	(8x)	74.75 mm	1.49 mm	10 mm	125 mm	V889280-X	330.98
.3268	8.300 mm	.980	24.90 mm	(3x)	32.08 mm	1.51 mm	10 mm	75 mm	V431404-X	130.28
.3268	8.300 mm	1.633	41.50 mm	(5x)	49.51 mm	1.51 mm	10 mm	100 mm	V464819-X	148.68
.3268	8.300 mm	2.614	66.40 mm	(8x)	75.66 mm	1.51 mm	10 mm	125 mm	V922989-X	330.98
.3281 (21/64)	8.333 mm	.984	25.00 mm	(3x)	32.21 mm	1.52 mm	10 mm	75 mm	V729711-X	130.28
.3281 (21/64)	8.333 mm	1.639	41.65 mm	(5x)	49.71 mm	1.52 mm	10 mm	100 mm	V276452-X	148.68
.3281 (21/64)	8.333 mm	2.624	66.65 mm	(8x)	75.96 mm	1.52 mm	10 mm	125 mm	V423225-X	330.98

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth						
	D1 (h8)*		L2		L3	L4	D2 (h6)*	L1	Tool #	Price
.3307	8.400 mm	.992	25.20 mm	(3x)	32.47 mm	1.53 mm	10 mm	75 mm	V846086-X	130.28
.3307	8.400 mm	1.653	42.00 mm	(5x)	50.11 mm	1.53 mm	10 mm	100 mm	V619529-X	148.68
.3307	8.400 mm	2.645	67.20 mm	(8x)	76.57 mm	1.53 mm	10 mm	125 mm	V772576-X	330.98
.3346	8.500 mm	1.003	25.50 mm	(3x)	32.86 mm	1.55 mm	10 mm	75 mm	V285498-X	130.28
.3346	8.500 mm	1.673	42.50 mm	(5x)	50.71 mm	1.55 mm	10 mm	100 mm	V767363-X	148.68
.3346	8.500 mm	2.677	68.00 mm	(8x)	77.48 mm	1.55 mm	10 mm	125 mm	V593996-X	330.98
.3386	8.600 mm	1.015	25.80 mm	(3x)	33.24 mm	1.57 mm	10 mm	75 mm	V333326-X	130.28
.3386	8.600 mm	1.692	43.00 mm	(5x)	51.30 mm	1.57 mm	10 mm	100 mm	V713312-X	148.68
.3386	8.600 mm	2.708	68.80 mm	(8x)	78.39 mm	1.57 mm	10 mm	125 mm	V627207-X	330.98
.3425	8.700 mm	1.027	26.10 mm	(3x)	33.63 mm	1.58 mm	10 mm	75 mm	V812806-X	130.28
.3425	8.700 mm	1.712	43.50 mm	(5x)	51.90 mm	1.58 mm	10 mm	100 mm	V322323-X	148.68
.3425	8.700 mm	2.740	69.60 mm	(8x)	79.30 mm	1.58 mm	10 mm	125 mm	V697981-X	330.98
.3438 (11/32)	8.732 mm	1.031	26.20 mm	(3x)	33.75 mm	1.59 mm	10 mm	75 mm	V270614-X	130.28
.3438 (11/32)	8.732 mm	1.718	43.65 mm	(5x)	52.09 mm	1.59 mm	10 mm	100 mm	V831670-X	148.68
.3438 (11/32)	8.732 mm	2.749	69.85 mm	(8x)	79.60 mm	1.59 mm	10 mm	125 mm	V867816-X	330.98
.3465	8.800 mm	1.039	26.40 mm	(3x)	34.02 mm	1.60 mm	10 mm	75 mm	V243786-X	130.28
.3465	8.800 mm	1.732	44.00 mm	(5x)	52.50 mm	1.60 mm	10 mm	100 mm	V523931-X	148.68
.3465	8.800 mm	2.771	70.40 mm	(8x)	80.22 mm	1.60 mm	10 mm	125 mm	V231271-X	330.98
.3504	8.900 mm	1.051	26.70 mm	(3x)	34.40 mm	1.62 mm	10 mm	75 mm	V978768-X	130.28
.3504	8.900 mm	1.751	44.50 mm	(5x)	53.09 mm	1.62 mm	10 mm	100 mm	V367699-X	148.68
.3504	8.900 mm	2.803	71.20 mm	(8x)	81.13 mm	1.62 mm	10 mm	150 mm	V699423-X	330.98
.3543	9.000 mm	1.062	27.00 mm	(3x)	34.79 mm	1.64 mm	10 mm	75 mm	V820250-X	130.28
.3543	9.000 mm	1.771	45.00 mm	(5x)	53.69 mm	1.64 mm	10 mm	100 mm	V605839-X	148.68
.3543	9.000 mm	2.834	72.00 mm	(8x)	82.04 mm	1.64 mm	10 mm	150 mm	V477581-X	330.98
.3583	9.100 mm	1.074	27.30 mm	(3x)	35.18 mm	1.66 mm	10 mm	75 mm	V926579-X	138.48
.3583	9.100 mm	1.791	45.50 mm	(5x)	54.29 mm	1.66 mm	10 mm	100 mm	V227340-X	163.08
.3583	9.100 mm	2.866	72.80 mm	(8x)	82.95 mm	1.66 mm	10 mm	150 mm	V387177-X	348.78
.3594 (23/64)	9.128 mm	1.078	27.40 mm	(3x)	35.28 mm	1.66 mm	10 mm	75 mm	V520702-X	138.48
.3594 (23/64)	9.128 mm	1.797	45.65 mm	(5x)	54.45 mm	1.66 mm	10 mm	100 mm	V831468-X	163.08
.3594 (23/64)	9.128 mm	2.874	73.00 mm	(8x)	83.21 mm	1.66 mm	10 mm	150 mm	V492754-X	348.78
.3622	9.200 mm	1.086	27.60 mm	(3x)	35.56 mm	1.67 mm	10 mm	75 mm	V861199-X	138.48
.3622	9.200 mm	1.811	46.00 mm	(5x)	54.88 mm	1.67 mm	10 mm	100 mm	V909379-X	163.08
.3622	9.200 mm	2.897	73.60 mm	(8x)	83.86 mm	1.67 mm	10 mm	150 mm	V273373-X	348.78
.3661	9.300 mm	1.098	27.90 mm	(3x)	35.95 mm	1.69 mm	10 mm	75 mm	V341438-X	138.48
.3661	9.300 mm	1.830	46.50 mm	(5x)	55.48 mm	1.69 mm	10 mm	100 mm	V750726-X	163.08
.3661	9.300 mm	2.929	74.40 mm	(8x)	84.77 mm	1.69 mm	10 mm	150 mm	V491242-X	348.78

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
.3701	9.400 mm	1.110	28.20 mm	(3x)	36.34 mm	1.71 mm	10 mm	75 mm	V245183-X	138.48
.3701	9.400 mm	1.850	47.00 mm	(5x)	56.08 mm	1.71 mm	10 mm	100 mm	V773243-X	163.08
.3701	9.400 mm	2.960	75.20 mm	(8x)	85.69 mm	1.71 mm	10 mm	150 mm	V292278-X	348.78
.3740	9.500 mm	1.122	28.50 mm	(3x)	36.72 mm	1.73 mm	10 mm	75 mm	V368486-X	138.48
.3740	9.500 mm	1.870	47.50 mm	(5x)	56.67 mm	1.73 mm	10 mm	100 mm	V767819-X	163.08
.3740	9.500 mm	2.992	76.00 mm	(8x)	86.60 mm	1.73 mm	10 mm	150 mm	V982412-X	348.78
.3750 (3/8)	9.525 mm	1.125	28.60 mm	(3x)	36.82 mm	1.73 mm	10 mm	75 mm	V543634-X	138.48
.3750 (3/8)	9.525 mm	1.875	47.65 mm	(5x)	56.82 mm	1.73 mm	10 mm	100 mm	V294737-X	163.08
.3750 (3/8)	9.525 mm	2.999	76.20 mm	(8x)	86.83 mm	1.73 mm	10 mm	150 mm	V643720-X	348.78
.3780	9.600 mm	1.133	28.80 mm	(3x)	37.11 mm	1.75 mm	10 mm	75 mm	V558947-X	138.48
.3780	9.600 mm	1.889	48.00 mm	(5x)	57.27 mm	1.75 mm	10 mm	100 mm	V407796-X	163.08
.3780	9.600 mm	3.023	76.80 mm	(8x)	87.51 mm	1.75 mm	10 mm	150 mm	V407240-X	348.78
.3819	9.700 mm	1.145	29.10 mm	(3x)	37.50 mm	1.77 mm	10 mm	75 mm	V934556-X	138.48
.3819	9.700 mm	1.909	48.50 mm	(5x)	57.87 mm	1.77 mm	10 mm	100 mm	V538795-X	163.08
.3819	9.700 mm	3.055	77.60 mm	(8x)	88.42 mm	1.77 mm	10 mm	150 mm	V417626-X	348.78
.3858	9.800 mm	1.157	29.40 mm	(3x)	37.88 mm	1.78 mm	10 mm	75 mm	V229427-X	138.48
.3858	9.800 mm	1.929	49.00 mm	(5x)	58.46 mm	1.78 mm	10 mm	100 mm	V750562-X	163.08
.3858	9.800 mm	3.086	78.40 mm	(8x)	89.33 mm	1.78 mm	10 mm	150 mm	V797339-X	348.78
.3898	9.900 mm	1.169	29.70 mm	(3x)	38.27 mm	1.80 mm	10 mm	75 mm	V869506-X	138.48
.3898	9.900 mm	1.948	49.50 mm	(5x)	59.06 mm	1.80 mm	10 mm	100 mm	V429736-X	163.08
.3898	9.900 mm	3.118	79.20 mm	(8x)	90.24 mm	1.80 mm	10 mm	150 mm	V304892-X	348.78
.3906 (25/64)	9.921 mm	1.171	29.75 mm	(3x)	38.35 mm	1.81 mm	10 mm	75 mm	V612861-X	138.48
.3906 (25/64)	9.921 mm	1.952	49.60 mm	(5x)	59.18 mm	1.81 mm	10 mm	100 mm	V804543-X	163.08
.3906 (25/64)	9.921 mm	3.124	79.35 mm	(8x)	90.44 mm	1.81 mm	10 mm	150 mm	V656076-X	348.78
.3937	10.000 mm	1.181	30.00 mm	(3x)	38.66 mm	1.82 mm	12 mm	100 mm	V562092-X	138.48
.3937	10.000 mm	1.968	50.00 mm	(5x)	59.66 mm	1.82 mm	12 mm	125 mm	V550034-X	163.08
.3937	10.000 mm	3.149	80.00 mm	(8x)	91.16 mm	1.82 mm	12 mm	150 mm	V834651-X	348.78
.3976	10.100 mm	1.192	30.30 mm	(3x)	39.04 mm	1.84 mm	12 mm	100 mm	V297691-X	186.38
.3976	10.100 mm	1.988	50.50 mm	(5x)	60.25 mm	1.84 mm	12 mm	125 mm	V717095-X	216.58
.3976	10.100 mm	3.181	80.80 mm	(8x)	92.07 mm	1.84 mm	12 mm	150 mm	V946266-X	453.58
.4016	10.200 mm	1.204	30.60 mm	(3x)	39.43 mm	1.86 mm	12 mm	100 mm	V829282-X	186.38
.4016	10.200 mm	2.007	51.00 mm	(5x)	60.85 mm	1.86 mm	12 mm	125 mm	V905204-X	216.58
.4016	10.200 mm	3.212	81.60 mm	(8x)	92.98 mm	1.86 mm	12 mm	150 mm	V984655-X	453.58
.4055	10.300 mm	1.216	30.90 mm	(3x)	39.82 mm	1.87 mm	12 mm	100 mm	V755643-X	186.38
.4055	10.300 mm	2.027	51.50 mm	(5x)	61.45 mm	1.87 mm	12 mm	125 mm	V473326-X	216.58
.4055	10.300 mm	3.244	82.40 mm	(8x)	93.89 mm	1.87 mm	12 mm	150 mm	V319140-X	453.58

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth						
D1 (h8)*		L2			L3	L4	D2 (h6)*	L1	Tool #	Price
.4062 (13/32)	10.317 mm	1.218	30.95 mm	(3x)	39.88 mm	1.88 mm	12 mm	100 mm	V558064-X	186.38
.4062 (13/32)	10.317 mm	2.031	51.60 mm	(5x)	61.55 mm	1.88 mm	12 mm	125 mm	V617000-X	216.58
.4062 (13/32)	10.317 mm	3.249	82.55 mm	(8x)	94.05 mm	1.88 mm	12 mm	150 mm	V184156-X	453.58
.4094	10.400 mm	1.228	31.20 mm	(3x)	40.20 mm	1.89 mm	12 mm	100 mm	V476483-X	186.38
.4094	10.400 mm	2.047	52.00 mm	(5x)	62.04 mm	1.89 mm	12 mm	125 mm	V872922-X	216.58
.4094	10.400 mm	3.275	83.20 mm	(8x)	94.80 mm	1.89 mm	12 mm	150 mm	V997876-X	453.58
.4134	10.500 mm	1.240	31.50 mm	(3x)	40.59 mm	1.91 mm	12 mm	100 mm	V804705-X	186.38
.4134	10.500 mm	2.066	52.50 mm	(5x)	62.64 mm	1.91 mm	12 mm	125 mm	V656863-X	216.58
.4134	10.500 mm	3.307	84.00 mm	(8x)	95.71 mm	1.91 mm	12 mm	150 mm	V959781-X	453.58
.4173	10.600 mm	1.251	31.80 mm	(3x)	40.98 mm	1.93 mm	12 mm	100 mm	V716473-X	186.38
.4173	10.600 mm	2.086	53.00 mm	(5x)	63.24 mm	1.93 mm	12 mm	125 mm	V931959-X	216.58
.4173	10.600 mm	3.338	84.80 mm	(8x)	96.63 mm	1.93 mm	12 mm	150 mm	V589985-X	453.58
.4213	10.700 mm	1.263	32.10 mm	(3x)	41.36 mm	1.95 mm	12 mm	100 mm	V967963-X	186.38
.4213	10.700 mm	2.106	53.50 mm	(5x)	63.83 mm	1.95 mm	12 mm	125 mm	V260341-X	216.58
.4213	10.700 mm	3.370	85.60 mm	(8x)	97.54 mm	1.95 mm	12 mm	150 mm	V317299-X	453.58
.4219 (27/64)	10.716 mm	1.265	32.15 mm	(3x)	41.42 mm	1.95 mm	12 mm	100 mm	V248338-X	186.38
.4219 (27/64)	10.716 mm	2.110	53.60 mm	(5x)	63.93 mm	1.95 mm	12 mm	125 mm	V184802-X	216.58
.4219 (27/64)	10.716 mm	3.375	85.75 mm	(8x)	97.68 mm	1.95 mm	12 mm	150 mm	V459907-X	453.58
.4252	10.800 mm	1.275	32.40 mm	(3x)	41.75 mm	1.97 mm	12 mm	100 mm	V602726-X	186.38
.4252	10.800 mm	2.125	54.00 mm	(5x)	64.43 mm	1.97 mm	12 mm	125 mm	V247731-X	216.58
.4252	10.800 mm	3.401	86.40 mm	(8x)	98.45 mm	1.97 mm	12 mm	150 mm	V195896-X	453.58
.4291	10.900 mm	1.287	32.70 mm	(3x)	42.14 mm	1.98 mm	12 mm	100 mm	V429098-X	186.38
.4291	10.900 mm	2.145	54.50 mm	(5x)	65.03 mm	1.98 mm	12 mm	125 mm	V561591-X	216.58
.4291	10.900 mm	3.433	87.20 mm	(8x)	99.36 mm	1.98 mm	12 mm	175 mm	V726450-X	453.58
.4331	11.000 mm	1.299	33.00 mm	(3x)	42.52 mm	2.00 mm	12 mm	100 mm	V661693-X	186.38
.4331	11.000 mm	2.165	55.00 mm	(5x)	65.62 mm	2.00 mm	12 mm	125 mm	V111557-X	216.58
.4331	11.000 mm	3.464	88.00 mm	(8x)	100.27 mm	2.00 mm	12 mm	175 mm	V731416-X	453.58
.4370	11.100 mm	1.311	33.30 mm	(3x)	42.91 mm	2.02 mm	12 mm	100 mm	V144905-X	186.38
.4370	11.100 mm	2.185	55.50 mm	(5x)	66.22 mm	2.02 mm	12 mm	125 mm	V529674-X	216.58
.4370	11.100 mm	3.496	88.80 mm	(8x)	101.18 mm	2.02 mm	12 mm	175 mm	V768753-X	453.58
.4375 (7/16)	11.112 mm	1.312	33.35 mm	(3x)	42.95 mm	2.02 mm	12 mm	100 mm	V538378-X	186.38
.4375 (7/16)	11.112 mm	2.187	55.55 mm	(5x)	66.29 mm	2.02 mm	12 mm	125 mm	V533490-X	216.58
.4375 (7/16)	11.112 mm	3.499	88.90 mm	(8x)	101.29 mm	2.02 mm	12 mm	175 mm	V652629-X	453.58
.4409	11.200 mm	1.322	33.60 mm	(3x)	43.30 mm	2.04 mm	12 mm	100 mm	V543531-X	186.38
.4409	11.200 mm	2.204	56.00 mm	(5x)	66.82 mm	2.04 mm	12 mm	125 mm	V266717-X	216.58
.4409	11.200 mm	3.527	89.60 mm	(8x)	102.10 mm	2.04 mm	12 mm	175 mm	V188910-X	453.58

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
D _T (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
.4449	11.300 mm	1.334	33.90 mm	(3x)	43.68 mm	2.06 mm	12 mm	100 mm	V312875-X	186.38
.4449	11.300 mm	2.224	56.50 mm	(5x)	67.41 mm	2.06 mm	12 mm	125 mm	V579778-X	216.58
.4449	11.300 mm	3.559	90.40 mm	(8x)	103.01 mm	2.06 mm	12 mm	175 mm	V774245-X	453.58
.4488	11.400 mm	1.346	34.20 mm	(3x)	44.07 mm	2.07 mm	12 mm	100 mm	V650650-X	186.38
.4488	11.400 mm	2.244	57.00 mm	(5x)	68.01 mm	2.07 mm	12 mm	125 mm	V156993-X	216.58
.4488	11.400 mm	3.590	91.20 mm	(8x)	103.92 mm	2.07 mm	12 mm	175 mm	V872208-X	453.58
.4527	11.500 mm	1.358	34.50 mm	(3x)	44.45 mm	2.09 mm	12 mm	100 mm	V607294-X	186.38
.4527	11.500 mm	2.263	57.50 mm	(5x)	68.60 mm	2.09 mm	12 mm	125 mm	V663745-X	216.58
.4527	11.500 mm	3.622	92.00 mm	(8x)	104.83 mm	2.09 mm	12 mm	175 mm	V212865-X	453.58
.4531 (29/64)	11.508 mm	1.358	34.50 mm	(3x)	44.49 mm	2.09 mm	12 mm	100 mm	V564439-X	186.38
.4531 (29/64)	11.508 mm	2.265	57.55 mm	(5x)	68.65 mm	2.09 mm	12 mm	125 mm	V709414-X	216.58
.4531 (29/64)	11.508 mm	3.624	92.05 mm	(8x)	104.90 mm	2.09 mm	12 mm	175 mm	V208966-X	453.58
.4567	11.600 mm	1.370	34.80 mm	(3x)	44.84 mm	2.11 mm	12 mm	100 mm	V810836-X	195.28
.4567	11.600 mm	2.283	58.00 mm	(5x)	69.20 mm	2.11 mm	12 mm	125 mm	V824629-X	224.78
.4567	11.600 mm	3.653	92.80 mm	(8x)	105.74 mm	2.11 mm	12 mm	175 mm	V358116-X	453.58
.4606	11.700 mm	1.381	35.10 mm	(3x)	45.23 mm	2.13 mm	12 mm	100 mm	V125838-X	195.28
.4606	11.700 mm	2.303	58.50 mm	(5x)	69.80 mm	2.13 mm	12 mm	125 mm	V958629-X	224.78
.4606	11.700 mm	3.685	93.60 mm	(8x)	106.65 mm	2.13 mm	12 mm	175 mm	V540924-X	453.58
.4646	11.800 mm	1.393	35.40 mm	(3x)	45.61 mm	2.15 mm	12 mm	100 mm	V594549-X	195.28
.4646	11.800 mm	2.322	59.00 mm	(5x)	70.39 mm	2.15 mm	12 mm	125 mm	V537993-X	224.78
.4646	11.800 mm	3.716	94.40 mm	(8x)	107.56 mm	2.15 mm	12 mm	175 mm	V956277-X	453.58
.4685	11.900 mm	1.405	35.70 mm	(3x)	46.00 mm	2.17 mm	12 mm	100 mm	V683774-X	195.28
.4685	11.900 mm	2.342	59.50 mm	(5x)	70.99 mm	2.17 mm	12 mm	125 mm	V603568-X	224.78
.4685	11.900 mm	3.748	95.20 mm	(8x)	108.48 mm	2.17 mm	12 mm	175 mm	V902085-X	453.58
.4688 (15/32)	11.907 mm	1.405	35.70 mm	(3x)	46.03 mm	2.17 mm	12 mm	100 mm	V354466-X	195.28
.4688 (15/32)	11.907 mm	2.344	59.55 mm	(5x)	71.03 mm	2.17 mm	12 mm	125 mm	V650664-X	224.78
.4688 (15/32)	11.907 mm	3.749	95.25 mm	(8x)	108.54 mm	2.17 mm	12 mm	175 mm	V230482-X	453.58
.4724	12.000 mm	1.417	36.00 mm	(3x)	46.39 mm	2.18 mm	14 mm	100 mm	V447728-X	195.28
.4724	12.000 mm	2.362	60.00 mm	(5x)	71.59 mm	2.18 mm	14 mm	125 mm	V524845-X	224.78
.4724	12.000 mm	3.779	96.00 mm	(8x)	109.39 mm	2.18 mm	14 mm	175 mm	V955704-X	453.58
.4764	12.100 mm	1.429	36.30 mm	(3x)	46.77 mm	2.20 mm	14 mm	100 mm	V663610-X	252.18
.4764	12.100 mm	2.381	60.50 mm	(5x)	72.18 mm	2.20 mm	14 mm	125 mm	V879285-X	293.28
.4764	12.100 mm	3.811	96.80 mm	(8x)	110.30 mm	2.20 mm	14 mm	175 mm	V329060-X	482.28
.4803	12.200 mm	1.440	36.60 mm	(3x)	47.16 mm	2.22 mm	14 mm	100 mm	V818824-X	252.18
.4803	12.200 mm	2.401	61.00 mm	(5x)	72.78 mm	2.22 mm	14 mm	125 mm	V602362-X	293.28
.4803	12.200 mm	3.842	97.60 mm	(8x)	111.21 mm	2.22 mm	14 mm	175 mm	V342029-X	482.28

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth						
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
.4843	12.300 mm	1.452	36.90 mm	(3x)	47.55 mm	2.24 mm	14 mm	100 mm	V771146-X	252.18
.4843	12.300 mm	2.421	61.50 mm	(5x)	73.38 mm	2.24 mm	14 mm	125 mm	V286389-X	293.28
.4843	12.300 mm	3.874	98.40 mm	(8x)	112.12 mm	2.24 mm	14 mm	175 mm	V673379-X	482.28
.4882 (31/64)	12.400 mm	1.464	37.20 mm	(3x)	47.93 mm	2.26 mm	14 mm	100 mm	V790461-X	252.18
.4882 (31/64)	12.400 mm	2.440	62.00 mm	(5x)	73.97 mm	2.26 mm	14 mm	125 mm	V930755-X	293.28
.4882 (31/64)	12.400 mm	3.905	99.20 mm	(8x)	113.03 mm	2.26 mm	14 mm	175 mm	V997694-X	482.28
.4921	12.500 mm	1.476	37.50 mm	(3x)	48.32 mm	2.27 mm	14 mm	100 mm	V202412-X	252.18
.4921	12.500 mm	2.460	62.50 mm	(5x)	74.57 mm	2.27 mm	14 mm	125 mm	V131343-X	293.28
.4921	12.500 mm	3.937	100.00 mm	(8x)	113.95 mm	2.27 mm	14 mm	175 mm	V668048-X	482.28
.4961	12.600 mm	1.488	37.80 mm	(3x)	48.71 mm	2.29 mm	14 mm	100 mm	V369910-X	252.18
.4961	12.600 mm	2.480	63.00 mm	(5x)	75.17 mm	2.29 mm	14 mm	125 mm	V981463-X	293.28
.4961	12.600 mm	3.968	100.80 mm	(8x)	114.86 mm	2.29 mm	14 mm	175 mm	V682916-X	482.28
.5000 (1/2)	12.700 mm	1.499	38.10 mm	(3x)	49.09 mm	2.31 mm	14 mm	100 mm	V608930-X	252.18
.5000 (1/2)	12.700 mm	2.499	63.50 mm	(5x)	75.76 mm	2.31 mm	14 mm	125 mm	V915134-X	293.28
.5000 (1/2)	12.700 mm	3.999	101.60 mm	(8x)	115.77 mm	2.31 mm	14 mm	175 mm	V703694-X	482.28

* For h6 and h8 tolerances, see page 8.



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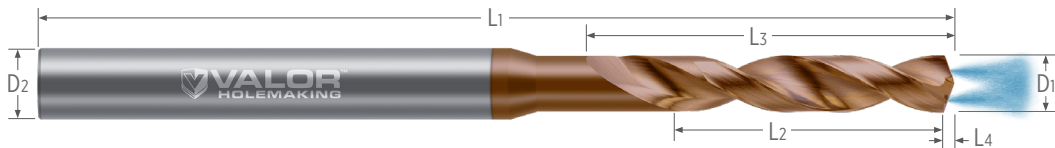
Double margin design for increased stability

High Performance Drills

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Unbeatable Performance When Coolant-Through Drilling 4140 Steel

- Optimized for best-in-class performance in 4140 Steel with superior performance in a wide variety of Steels and other Alloy Steels
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- Solid carbide



Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth						
D1 (h8)*		L2			L3	L4	D2 (h6)*	L1	Tool #	Price
.0625 (1/16)	1.587 mm	.312	7.95 mm	(5x)	9.46 mm	.29 mm	3 mm	63 mm	V189491-X	143.28
.0625 (1/16)	1.587 mm	.499	12.70 mm	(8x)	14.46 mm	.29 mm	3 mm	63 mm	V709480-X	252.18
.0630	1.600 mm	.314	8.00 mm	(5x)	9.54 mm	.29 mm	3 mm	63 mm	V231543-X	143.28
.0630	1.600 mm	.503	12.80 mm	(8x)	14.58 mm	.29 mm	3 mm	63 mm	V886196-X	252.18
.0669	1.700 mm	.334	8.50 mm	(5x)	10.14 mm	.31 mm	3 mm	63 mm	V282030-X	143.28
.0669	1.700 mm	.535	13.60 mm	(8x)	15.49 mm	.31 mm	3 mm	63 mm	V538281-X	252.18
.0708	1.800 mm	.354	9.00 mm	(5x)	10.73 mm	.33 mm	3 mm	63 mm	V148595-X	143.28
.0708	1.800 mm	.566	14.40 mm	(8x)	16.40 mm	.33 mm	3 mm	63 mm	V604910-X	252.18
.0748	1.900 mm	.374	9.50 mm	(5x)	11.33 mm	.35 mm	3 mm	63 mm	V525056-X	143.28
.0748	1.900 mm	.598	15.20 mm	(8x)	17.32 mm	.35 mm	3 mm	63 mm	V766740-X	252.18
.0781 (5/64)	1.984 mm	.389	9.90 mm	(5x)	11.83 mm	.36 mm	3 mm	63 mm	V622465-X	143.28
.0781 (5/64)	1.984 mm	.624	15.85 mm	(8x)	18.08 mm	.36 mm	3 mm	63 mm	V830353-X	252.18
.0787	2.000 mm	.393	10.00 mm	(5x)	11.93 mm	.36 mm	3 mm	63 mm	V995928-X	143.28
.0787	2.000 mm	.629	16.00 mm	(8x)	18.23 mm	.36 mm	3 mm	63 mm	V475077-X	252.18

* For h6 and h8 tolerances, see page 8.

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Stocked in 5x and 8x hole depths





High Performance Drills

For Steels - Coolant-Through (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth					Tool #	Price
D1 (h8)*		L2			L3	L4	D2 (h6)*	L1		
.0826	2.100 mm	.413	10.50 mm	(5x)	12.52 mm	.38 mm	3 mm	63 mm	V507543-X	143.28
.0826	2.100 mm	.661	16.80 mm	(8x)	19.14 mm	.38 mm	3 mm	63 mm	V870311-X	252.18
.0866	2.200 mm	.433	11.00 mm	(5x)	13.12 mm	.40 mm	3 mm	63 mm	V344957-X	143.28
.0866	2.200 mm	.692	17.60 mm	(8x)	20.05 mm	.40 mm	3 mm	63 mm	V324289-X	252.18
.0905	2.300 mm	.452	11.50 mm	(5x)	13.72 mm	.42 mm	3 mm	63 mm	V869740-X	143.28
.0905	2.300 mm	.724	18.40 mm	(8x)	20.96 mm	.42 mm	3 mm	63 mm	V742025-X	252.18
.0937 (3/32)	2.381 mm	.468	11.90 mm	(5x)	14.20 mm	.43 mm	3 mm	63 mm	V941421-X	143.28
.0937 (3/32)	2.381 mm	.749	19.05 mm	(8x)	21.70 mm	.43 mm	3 mm	63 mm	V250208-X	252.18
.0944	2.400 mm	.472	12.00 mm	(5x)	14.31 mm	.44 mm	3 mm	63 mm	V307669-X	143.28
.0944	2.400 mm	.755	19.20 mm	(8x)	21.87 mm	.44 mm	3 mm	63 mm	V518131-X	252.18
.0984	2.500 mm	.492	12.50 mm	(5x)	14.91 mm	.45 mm	3 mm	63 mm	V539575-X	143.28
.0984	2.500 mm	.787	20.00 mm	(8x)	22.79 mm	.45 mm	3 mm	63 mm	V411727-X	252.18
.1023	2.600 mm	.511	13.00 mm	(5x)	15.51 mm	.47 mm	3 mm	63 mm	V216770-X	143.28
.1023	2.600 mm	.818	20.80 mm	(8x)	23.70 mm	.47 mm	3 mm	63 mm	V895404-X	252.18
.1062	2.700 mm	.531	13.50 mm	(5x)	16.10 mm	.49 mm	3 mm	63 mm	V324255-X	143.28
.1062	2.700 mm	.850	21.60 mm	(8x)	24.61 mm	.49 mm	3 mm	63 mm	V455663-X	252.18
.1093 (7/64)	2.778 mm	.547	13.90 mm	(5x)	16.57 mm	.51 mm	3 mm	63 mm	V247870-X	143.28
.1093 (7/64)	2.778 mm	.874	22.20 mm	(8x)	25.32 mm	.51 mm	3 mm	63 mm	V484388-X	252.18
.1102	2.800 mm	.551	14.00 mm	(5x)	16.70 mm	.51 mm	3 mm	63 mm	V406948-X	143.28
.1102	2.800 mm	.881	22.40 mm	(8x)	25.52 mm	.51 mm	3 mm	63 mm	V580945-X	252.18
.1141	2.900 mm	.570	14.50 mm	(5x)	17.30 mm	.53 mm	3 mm	63 mm	V401097-X	143.28
.1141	2.900 mm	.913	23.20 mm	(8x)	26.43 mm	.53 mm	3 mm	63 mm	V463539-X	252.18
.1181	3.000 mm	.590	15.00 mm	(5x)	17.89 mm	.55 mm	4 mm	63 mm	V801593-X	143.28
.1181	3.000 mm	.944	24.00 mm	(8x)	27.34 mm	.55 mm	4 mm	75 mm	V457776-X	252.18
.1220	3.100 mm	.610	15.50 mm	(5x)	18.49 mm	.56 mm	4 mm	63 mm	V364491-X	143.28
.1220	3.100 mm	.976	24.80 mm	(8x)	28.25 mm	.56 mm	4 mm	75 mm	V220312-X	252.18
.1250 (1/8)	3.175 mm	.625	15.90 mm	(5x)	18.94 mm	.58 mm	4 mm	63 mm	V809756-X	143.28
.1250 (1/8)	3.175 mm	.999	25.40 mm	(8x)	28.94 mm	.58 mm	4 mm	75 mm	V996102-X	252.18
.1260	3.200 mm	.629	16.00 mm	(5x)	19.09 mm	.58 mm	4 mm	63 mm	V416396-X	143.28
.1260	3.200 mm	1.007	25.60 mm	(8x)	29.17 mm	.58 mm	4 mm	75 mm	V674784-X	252.18
.1300	3.300 mm	.649	16.50 mm	(5x)	19.68 mm	.60 mm	4 mm	63 mm	V512932-X	143.28
.1300	3.300 mm	1.039	26.40 mm	(8x)	30.08 mm	.60 mm	4 mm	75 mm	V397319-X	252.18
.1338	3.400 mm	.669	17.00 mm	(5x)	20.28 mm	.62 mm	4 mm	63 mm	V618699-X	143.28
.1338	3.400 mm	1.070	27.20 mm	(8x)	30.99 mm	.62 mm	4 mm	75 mm	V677203-X	252.18
.1377	3.500 mm	.688	17.50 mm	(5x)	20.88 mm	.64 mm	4 mm	63 mm	V270510-X	143.28
.1377	3.500 mm	1.102	28.00 mm	(8x)	31.90 mm	.64 mm	4 mm	75 mm	V173165-X	252.18

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels – Coolant-Through (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
.1406 (9/64)	3.571 mm	.702	17.85 mm	(5x)	21.30 mm	.65 mm	4 mm	63 mm	V431644-X	143.28
.1406 (9/64)	3.571 mm	1.124	28.55 mm	(8x)	32.55 mm	.65 mm	4 mm	75 mm	V576472-X	252.18
.1417	3.600 mm	.708	18.00 mm	(5x)	21.47 mm	.66 mm	4 mm	63 mm	V818634-X	143.28
.1417	3.600 mm	1.133	28.80 mm	(8x)	32.81 mm	.66 mm	4 mm	75 mm	V855115-X	252.18
.1456	3.700 mm	.728	18.50 mm	(5x)	22.07 mm	.67 mm	4 mm	63 mm	V800060-X	143.28
.1456	3.700 mm	1.165	29.60 mm	(8x)	33.72 mm	.67 mm	4 mm	75 mm	V947623-X	252.18
.1496	3.800 mm	.748	19.00 mm	(5x)	22.67 mm	.69 mm	4 mm	63 mm	V598062-X	143.28
.1496	3.800 mm	1.196	30.40 mm	(8x)	34.64 mm	.69 mm	4 mm	75 mm	V264988-X	252.18
.1535	3.900 mm	.767	19.50 mm	(5x)	23.26 mm	.71 mm	4 mm	63 mm	V853122-X	143.28
.1535	3.900 mm	1.228	31.20 mm	(8x)	35.55 mm	.71 mm	4 mm	75 mm	V704607-X	252.18
.1562 (5/32)	3.968 mm	.781	19.85 mm	(5x)	23.67 mm	.72 mm	4 mm	63 mm	V635360-X	143.28
.1562 (5/32)	3.968 mm	1.249	31.75 mm	(8x)	36.17 mm	.72 mm	4 mm	75 mm	V976984-X	252.18
.1574	4.000 mm	.787	20.00 mm	(5x)	23.86 mm	.73 mm	6 mm	75 mm	V203097-X	156.28
.1574	4.000 mm	1.259	32.00 mm	(8x)	36.46 mm	.73 mm	6 mm	100 mm	V976894-X	258.28
.1614	4.100 mm	.807	20.50 mm	(5x)	24.46 mm	.75 mm	6 mm	75 mm	V123430-X	156.28
.1614	4.100 mm	1.291	32.80 mm	(8x)	37.37 mm	.75 mm	6 mm	100 mm	V852607-X	258.28
.1653	4.200 mm	.826	21.00 mm	(5x)	25.05 mm	.76 mm	6 mm	75 mm	V565742-X	156.28
.1653	4.200 mm	1.322	33.60 mm	(8x)	38.28 mm	.76 mm	6 mm	100 mm	V251176-X	258.28
.1692	4.300 mm	.846	21.50 mm	(5x)	25.65 mm	.78 mm	6 mm	75 mm	V726600-X	156.28
.1692	4.300 mm	1.354	34.40 mm	(8x)	39.19 mm	.78 mm	6 mm	100 mm	V898991-X	258.28
.1718 (11/64)	4.365 mm	.860	21.85 mm	(5x)	26.04 mm	.79 mm	6 mm	75 mm	V599958-X	156.28
.1718 (11/64)	4.365 mm	1.374	34.90 mm	(8x)	39.79 mm	.79 mm	6 mm	100 mm	V939471-X	258.28
.1732	4.400 mm	.866	22.00 mm	(5x)	26.25 mm	.80 mm	6 mm	75 mm	V910547-X	156.28
.1732	4.400 mm	1.385	35.20 mm	(8x)	40.11 mm	.80 mm	6 mm	100 mm	V336021-X	258.28
.1771	4.500 mm	.885	22.50 mm	(5x)	26.84 mm	.82 mm	6 mm	75 mm	V953328-X	156.28
.1771	4.500 mm	1.417	36.00 mm	(8x)	41.02 mm	.82 mm	6 mm	100 mm	V645357-X	258.28
.1811	4.600 mm	.905	23.00 mm	(5x)	27.44 mm	.84 mm	6 mm	75 mm	V522954-X	156.28
.1811	4.600 mm	1.448	36.80 mm	(8x)	41.93 mm	.84 mm	6 mm	100 mm	V696903-X	258.28
.1850	4.700 mm	.925	23.50 mm	(5x)	28.04 mm	.86 mm	6 mm	75 mm	V725949-X	156.28
.1850	4.700 mm	1.480	37.60 mm	(8x)	42.84 mm	.86 mm	6 mm	100 mm	V572954-X	258.28
.1875 (3/16)	4.762 mm	.937	23.80 mm	(5x)	28.41 mm	.87 mm	6 mm	75 mm	V897179-X	156.28
.1875 (3/16)	4.762 mm	1.499	38.10 mm	(8x)	43.41 mm	.87 mm	6 mm	100 mm	V900083-X	258.28
.1890	4.800 mm	.944	24.00 mm	(5x)	28.63 mm	.87 mm	6 mm	75 mm	V787648-X	156.28
.1890	4.800 mm	1.511	38.40 mm	(8x)	43.75 mm	.87 mm	6 mm	100 mm	V836739-X	258.28
.1930	4.900 mm	.964	24.50 mm	(5x)	29.23 mm	.89 mm	6 mm	75 mm	V709396-X	156.28
.1930	4.900 mm	1.543	39.20 mm	(8x)	44.66 mm	.89 mm	6 mm	100 mm	V871826-X	258.28

* For h6 and h8 tolerances, see page 8.

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High Performance Drills

For Steels - Coolant-Through (cont.)

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth					Tool #	Price
	D1 (h8)*		L2		L3	L4	D2 (h6)*	L1		
.1968	5.000 mm	.984	25.00 mm	(5x)	29.83 mm	.91 mm	6 mm	75 mm	V676356-X	161.78
.1968	5.000 mm	1.574	40.00 mm	(8x)	45.58 mm	.91 mm	6 mm	100 mm	V826060-X	258.28
.2007	5.100 mm	1.003	25.50 mm	(5x)	30.42 mm	.93 mm	6 mm	75 mm	V123829-X	161.78
.2007	5.100 mm	1.606	40.80 mm	(8x)	46.49 mm	.93 mm	6 mm	100 mm	V775217-X	258.28
.2031 (13/64)	5.159 mm	1.015	25.80 mm	(5x)	30.77 mm	.94 mm	6 mm	75 mm	V709714-X	161.78
.2031 (13/64)	5.159 mm	1.624	41.25 mm	(8x)	47.02 mm	.94 mm	6 mm	100 mm	V486375-X	258.28
.2047	5.200 mm	1.023	26.00 mm	(5x)	31.02 mm	.95 mm	6 mm	75 mm	V284483-X	161.78
.2047	5.200 mm	1.637	41.60 mm	(8x)	47.40 mm	.95 mm	6 mm	100 mm	V489580-X	258.28
.2086	5.300 mm	1.043	26.50 mm	(5x)	31.62 mm	.96 mm	6 mm	75 mm	V505303-X	161.78
.2086	5.300 mm	1.669	42.40 mm	(8x)	48.31 mm	.96 mm	6 mm	100 mm	V397648-X	258.28
.2125	5.400 mm	1.062	27.00 mm	(5x)	32.21 mm	.98 mm	6 mm	75 mm	V608241-X	161.78
.2125	5.400 mm	1.700	43.20 mm	(8x)	49.22 mm	.98 mm	6 mm	100 mm	V639671-X	258.28
.2165	5.500 mm	1.082	27.50 mm	(5x)	32.81 mm	1.00 mm	6 mm	75 mm	V563013-X	161.78
.2165	5.500 mm	1.732	44.00 mm	(8x)	50.13 mm	1.00 mm	6 mm	100 mm	V967384-X	258.28
.2187 (7/32)	5.556 mm	1.094	27.80 mm	(5x)	33.14 mm	1.01 mm	6 mm	75 mm	V435943-X	161.78
.2187 (7/32)	5.556 mm	1.749	44.45 mm	(8x)	50.64 mm	1.01 mm	6 mm	100 mm	V340002-X	258.28
.2205	5.600 mm	1.102	28.00 mm	(5x)	33.41 mm	1.02 mm	6 mm	75 mm	V687630-X	161.78
.2205	5.600 mm	1.763	44.80 mm	(8x)	51.05 mm	1.02 mm	6 mm	100 mm	V296219-X	258.28
.2244	5.700 mm	1.122	28.50 mm	(5x)	34.00 mm	1.04 mm	6 mm	75 mm	V902097-X	161.78
.2244	5.700 mm	1.795	45.60 mm	(8x)	51.96 mm	1.04 mm	6 mm	100 mm	V190000-X	258.28
.2283	5.800 mm	1.141	29.00 mm	(5x)	34.60 mm	1.06 mm	6 mm	75 mm	V860180-X	161.78
.2283	5.800 mm	1.826	46.40 mm	(8x)	52.87 mm	1.06 mm	6 mm	100 mm	V472294-X	258.28
.2322	5.900 mm	1.161	29.50 mm	(5x)	35.19 mm	1.07 mm	6 mm	75 mm	V506705-X	161.78
.2322	5.900 mm	1.858	47.20 mm	(8x)	53.78 mm	1.07 mm	6 mm	100 mm	V211763-X	258.28
.2343 (15/64)	5.953 mm	1.171	29.75 mm	(5x)	35.51 mm	1.08 mm	6 mm	75 mm	V443731-X	161.78
.2343 (15/64)	5.953 mm	1.874	47.60 mm	(8x)	54.26 mm	1.08 mm	6 mm	100 mm	V301658-X	258.28
.2362	6.000 mm	1.181	30.00 mm	(5x)	35.79 mm	1.09 mm	8 mm	100 mm	V316316-X	161.78
.2362	6.000 mm	1.889	48.00 mm	(8x)	54.69 mm	1.09 mm	8 mm	125 mm	V639871-X	258.28
.2401	6.100 mm	1.200	30.50 mm	(5x)	36.39 mm	1.11 mm	8 mm	100 mm	V912503-X	198.78
.2401	6.100 mm	1.921	48.80 mm	(8x)	55.60 mm	1.11 mm	8 mm	125 mm	V673335-X	264.48
.2440	6.200 mm	1.220	31.00 mm	(5x)	36.98 mm	1.13 mm	8 mm	100 mm	V898914-X	198.78
.2440	6.200 mm	1.952	49.60 mm	(8x)	56.51 mm	1.13 mm	8 mm	125 mm	V252129-X	264.48
.2480	6.300 mm	1.240	31.50 mm	(5x)	37.58 mm	1.15 mm	8 mm	100 mm	V361266-X	198.78
.2480	6.300 mm	1.984	50.40 mm	(8x)	57.43 mm	1.15 mm	8 mm	125 mm	V948444-X	264.48
.2500 (1/4)	6.350 mm	1.249	31.75 mm	(5x)	37.88 mm	1.16 mm	8 mm	100 mm	V596625-X	198.78
.2500 (1/4)	6.350 mm	1.999	50.80 mm	(8x)	57.88 mm	1.16 mm	8 mm	125 mm	V471924-X	264.48

* For h6 and h8 tolerances, see page 8.

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth						
Di (h8)*		L2			L3	L4	D2 (h6)*	Li	Tool #	Price
.2520	6.400 mm	1.259	32.00 mm	(5x)	38.18 mm	1.16 mm	8 mm	100 mm	V745398-X	198.78
.2520	6.400 mm	2.015	51.20 mm	(8x)	58.34 mm	1.16 mm	8 mm	125 mm	V480804-X	264.48
.2559	6.500 mm	1.279	32.50 mm	(5x)	38.77 mm	1.18 mm	8 mm	100 mm	V493400-X	198.78
.2559	6.500 mm	2.047	52.00 mm	(8x)	59.25 mm	1.18 mm	8 mm	125 mm	V486583-X	264.48
.2598	6.600 mm	1.299	33.00 mm	(5x)	39.37 mm	1.20 mm	8 mm	100 mm	V974827-X	198.78
.2598	6.600 mm	2.078	52.80 mm	(8x)	60.16 mm	1.20 mm	8 mm	125 mm	V348482-X	294.68
.2638	6.700 mm	1.318	33.50 mm	(5x)	39.97 mm	1.22 mm	8 mm	100 mm	V533319-X	198.78
.2638	6.700 mm	2.110	53.60 mm	(8x)	61.07 mm	1.22 mm	8 mm	125 mm	V354955-X	294.68
.2656 (17/64)	6.746 mm	1.328	33.75 mm	(5x)	40.24 mm	1.23 mm	8 mm	100 mm	V375598-X	198.78
.2656 (17/64)	6.746 mm	2.124	53.95 mm	(8x)	61.49 mm	1.23 mm	8 mm	125 mm	V286319-X	294.68
.2677	6.800 mm	1.338	34.00 mm	(5x)	40.56 mm	1.24 mm	8 mm	100 mm	V931711-X	198.78
.2677	6.800 mm	2.141	54.40 mm	(8x)	61.98 mm	1.24 mm	8 mm	125 mm	V685021-X	294.68
.2717	6.900 mm	1.358	34.50 mm	(5x)	41.16 mm	1.26 mm	8 mm	100 mm	V903976-X	198.78
.2717	6.900 mm	2.173	55.20 mm	(8x)	62.90 mm	1.26 mm	8 mm	125 mm	V577100-X	294.68
.2756	7.000 mm	1.377	35.00 mm	(5x)	41.76 mm	1.27 mm	8 mm	100 mm	V530079-X	198.78
.2756	7.000 mm	2.204	56.00 mm	(8x)	63.81 mm	1.27 mm	8 mm	125 mm	V914234-X	294.68
.2795	7.100 mm	1.397	35.50 mm	(5x)	42.35 mm	1.29 mm	8 mm	100 mm	V451380-X	198.78
.2795	7.100 mm	2.236	56.80 mm	(8x)	64.72 mm	1.29 mm	8 mm	125 mm	V282100-X	294.68
.2812 (9/32)	7.142 mm	1.405	35.70 mm	(5x)	42.60 mm	1.30 mm	8 mm	100 mm	V583258-X	198.78
.2812 (9/32)	7.142 mm	2.249	57.15 mm	(8x)	65.10 mm	1.30 mm	8 mm	125 mm	V764606-X	294.68
.2834	7.200 mm	1.417	36.00 mm	(5x)	42.95 mm	1.31 mm	8 mm	100 mm	V258366-X	198.78
.2834	7.200 mm	2.267	57.60 mm	(8x)	65.63 mm	1.31 mm	8 mm	125 mm	V215750-X	294.68
.2874	7.300 mm	1.437	36.50 mm	(5x)	43.55 mm	1.33 mm	8 mm	100 mm	V684490-X	198.78
.2874	7.300 mm	2.299	58.40 mm	(8x)	66.54 mm	1.33 mm	8 mm	125 mm	V446805-X	294.68
.2913	7.400 mm	1.456	37.00 mm	(5x)	44.14 mm	1.35 mm	8 mm	100 mm	V391189-X	198.78
.2913	7.400 mm	2.330	59.20 mm	(8x)	67.45 mm	1.35 mm	8 mm	125 mm	V568456-X	294.68
.2952	7.500 mm	1.476	37.50 mm	(5x)	44.74 mm	1.36 mm	8 mm	100 mm	V466533-X	198.78
.2952	7.500 mm	2.362	60.00 mm	(8x)	68.37 mm	1.36 mm	8 mm	125 mm	V899537-X	294.68
.2969 (19/64)	7.541 mm	1.484	37.70 mm	(5x)	44.99 mm	1.37 mm	8 mm	100 mm	V130050-X	198.78
.2969 (19/64)	7.541 mm	2.375	60.35 mm	(8x)	68.74 mm	1.37 mm	8 mm	125 mm	V555955-X	294.68
.2992	7.600 mm	1.496	38.00 mm	(5x)	45.34 mm	1.38 mm	8 mm	100 mm	V446731-X	198.78
.2992	7.600 mm	2.393	60.80 mm	(8x)	69.28 mm	1.38 mm	8 mm	125 mm	V473739-X	294.68
.3031	7.700 mm	1.515	38.50 mm	(5x)	45.93 mm	1.40 mm	8 mm	100 mm	V623196-X	198.78
.3031	7.700 mm	2.425	61.60 mm	(8x)	70.19 mm	1.40 mm	8 mm	125 mm	V597159-X	294.68
.3071	7.800 mm	1.535	39.00 mm	(5x)	46.53 mm	1.42 mm	8 mm	100 mm	V516266-X	198.78
.3071	7.800 mm	2.456	62.40 mm	(8x)	71.10 mm	1.42 mm	8 mm	125 mm	V980882-X	294.68

* For h6 and h8 tolerances, see page 8.

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
.3110	7.900 mm	1.555	39.50 mm	(5x)	47.13 mm	1.44 mm	8 mm	100 mm	V880723-X	198.78
.3110	7.900 mm	2.488	63.20 mm	(8x)	72.01 mm	1.44 mm	8 mm	125 mm	V592896-X	294.68
.3125 (5/16)	7.937 mm	1.562	39.70 mm	(5x)	47.35 mm	1.44 mm	8 mm	100 mm	V227077-X	198.78
.3125 (5/16)	7.937 mm	2.499	63.50 mm	(8x)	72.35 mm	1.44 mm	8 mm	125 mm	V284014-X	294.68
.3150	8.000 mm	1.574	40.00 mm	(5x)	47.72 mm	1.46 mm	10 mm	100 mm	V793102-X	198.78
.3150	8.000 mm	2.519	64.00 mm	(8x)	72.92 mm	1.46 mm	10 mm	125 mm	V543490-X	294.68
.3189	8.100 mm	1.594	40.50 mm	(5x)	48.32 mm	1.47 mm	10 mm	100 mm	V794819-X	241.18
.3189	8.100 mm	2.551	64.80 mm	(8x)	73.84 mm	1.47 mm	10 mm	125 mm	V558544-X	352.88
.3228	8.200 mm	1.614	41.00 mm	(5x)	48.92 mm	1.49 mm	10 mm	100 mm	V224541-X	241.18
.3228	8.200 mm	2.582	65.60 mm	(8x)	74.75 mm	1.49 mm	10 mm	125 mm	V791173-X	352.88
.3268	8.300 mm	1.633	41.50 mm	(5x)	49.51 mm	1.51 mm	10 mm	100 mm	V846287-X	241.18
.3268	8.300 mm	2.614	66.40 mm	(8x)	75.66 mm	1.51 mm	10 mm	125 mm	V847161-X	352.88
.3281 (21/64)	8.333 mm	1.639	41.65 mm	(5x)	49.71 mm	1.52 mm	10 mm	100 mm	V132654-X	241.18
.3281 (21/64)	8.333 mm	2.624	66.65 mm	(8x)	75.96 mm	1.52 mm	10 mm	125 mm	V837883-X	352.88
.3307	8.400 mm	1.653	42.00 mm	(5x)	50.11 mm	1.53 mm	10 mm	100 mm	V800950-X	241.18
.3307	8.400 mm	2.645	67.20 mm	(8x)	76.57 mm	1.53 mm	10 mm	125 mm	V429782-X	352.88
.3346	8.500 mm	1.673	42.50 mm	(5x)	50.71 mm	1.55 mm	10 mm	100 mm	V629626-X	241.18
.3346	8.500 mm	2.677	68.00 mm	(8x)	77.48 mm	1.55 mm	10 mm	125 mm	V365117-X	352.88
.3386	8.600 mm	1.692	43.00 mm	(5x)	51.30 mm	1.57 mm	10 mm	100 mm	V934750-X	241.18
.3386	8.600 mm	2.708	68.80 mm	(8x)	78.39 mm	1.57 mm	10 mm	125 mm	V672857-X	352.88
.3425	8.700 mm	1.712	43.50 mm	(5x)	51.90 mm	1.58 mm	10 mm	100 mm	V535214-X	241.18
.3425	8.700 mm	2.740	69.60 mm	(8x)	79.30 mm	1.58 mm	10 mm	125 mm	V724736-X	352.88
.3438 (11/32)	8.732 mm	1.718	43.65 mm	(5x)	52.09 mm	1.59 mm	10 mm	100 mm	V188406-X	241.18
.3438 (11/32)	8.732 mm	2.749	69.85 mm	(8x)	79.60 mm	1.59 mm	10 mm	125 mm	V365910-X	352.88
.3465	8.800 mm	1.732	44.00 mm	(5x)	52.50 mm	1.60 mm	10 mm	100 mm	V293144-X	241.18
.3465	8.800 mm	2.771	70.40 mm	(8x)	80.22 mm	1.60 mm	10 mm	125 mm	V817884-X	352.88
.3504	8.900 mm	1.751	44.50 mm	(5x)	53.09 mm	1.62 mm	10 mm	100 mm	V818572-X	241.18
.3504	8.900 mm	2.803	71.20 mm	(8x)	81.13 mm	1.62 mm	10 mm	150 mm	V648679-X	352.88
.3543	9.000 mm	1.771	45.00 mm	(5x)	53.69 mm	1.64 mm	10 mm	100 mm	V936127-X	241.18
.3543	9.000 mm	2.834	72.00 mm	(8x)	82.04 mm	1.64 mm	10 mm	150 mm	V150387-X	352.88
.3583	9.100 mm	1.791	45.50 mm	(5x)	54.29 mm	1.66 mm	10 mm	100 mm	V347102-X	241.18
.3583	9.100 mm	2.866	72.80 mm	(8x)	82.95 mm	1.66 mm	10 mm	150 mm	V201118-X	352.88
.3594 (23/64)	9.128 mm	1.797	45.65 mm	(5x)	54.45 mm	1.66 mm	10 mm	100 mm	V859797-X	241.18
.3594 (23/64)	9.128 mm	2.874	73.00 mm	(8x)	83.21 mm	1.66 mm	10 mm	150 mm	V984555-X	352.88
.3622	9.200 mm	1.811	46.00 mm	(5x)	54.88 mm	1.67 mm	10 mm	100 mm	V317969-X	241.18
.3622	9.200 mm	2.897	73.60 mm	(8x)	83.86 mm	1.67 mm	10 mm	150 mm	V217215-X	352.88

* For h6 and h8 tolerances, see page 8.

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
.3661	9.300 mm	1.830	46.50 mm	(5x)	55.48 mm	1.69 mm	10 mm	100 mm	V400752-X	241.18
.3661	9.300 mm	2.929	74.40 mm	(8x)	84.77 mm	1.69 mm	10 mm	150 mm	V105289-X	352.88
.3701	9.400 mm	1.850	47.00 mm	(5x)	56.08 mm	1.71 mm	10 mm	100 mm	V220320-X	241.18
.3701	9.400 mm	2.960	75.20 mm	(8x)	85.69 mm	1.71 mm	10 mm	150 mm	V421207-X	352.88
.3740	9.500 mm	1.870	47.50 mm	(5x)	56.67 mm	1.73 mm	10 mm	100 mm	V614370-X	241.18
.3740	9.500 mm	2.992	76.00 mm	(8x)	86.60 mm	1.73 mm	10 mm	150 mm	V888115-X	352.88
.3750 (3/8)	9.525 mm	1.875	47.65 mm	(5x)	56.82 mm	1.73 mm	10 mm	100 mm	V527488-X	241.18
.3750 (3/8)	9.525 mm	2.999	76.20 mm	(8x)	86.83 mm	1.73 mm	10 mm	150 mm	V571908-X	352.88
.3780	9.600 mm	1.889	48.00 mm	(5x)	57.27 mm	1.75 mm	10 mm	100 mm	V602463-X	258.98
.3780	9.600 mm	3.023	76.80 mm	(8x)	87.51 mm	1.75 mm	10 mm	150 mm	V778318-X	352.88
.3819	9.700 mm	1.909	48.50 mm	(5x)	57.87 mm	1.77 mm	10 mm	100 mm	V504675-X	258.98
.3819	9.700 mm	3.055	77.60 mm	(8x)	88.42 mm	1.77 mm	10 mm	150 mm	V739150-X	352.88
.3858	9.800 mm	1.929	49.00 mm	(5x)	58.46 mm	1.78 mm	10 mm	100 mm	V803165-X	258.98
.3858	9.800 mm	3.086	78.40 mm	(8x)	89.33 mm	1.78 mm	10 mm	150 mm	V526907-X	352.88
.3898	9.900 mm	1.948	49.50 mm	(5x)	59.06 mm	1.80 mm	10 mm	100 mm	V162974-X	258.98
.3898	9.900 mm	3.118	79.20 mm	(8x)	90.24 mm	1.80 mm	10 mm	150 mm	V265965-X	352.88
.3906 (25/64)	9.921 mm	1.952	49.60 mm	(5x)	59.18 mm	1.81 mm	10 mm	100 mm	V955537-X	258.98
.3906 (25/64)	9.921 mm	3.124	79.35 mm	(8x)	90.44 mm	1.81 mm	10 mm	150 mm	V598968-X	352.88
.3937	10.000 mm	1.968	50.00 mm	(5x)	59.66 mm	1.82 mm	12 mm	125 mm	V666168-X	258.98
.3937	10.000 mm	3.149	80.00 mm	(8x)	91.16 mm	1.82 mm	12 mm	150 mm	V703861-X	352.88
.3976	10.100 mm	1.988	50.50 mm	(5x)	60.25 mm	1.84 mm	12 mm	125 mm	V556342-X	333.68
.3976	10.100 mm	3.181	80.80 mm	(8x)	92.07 mm	1.84 mm	12 mm	150 mm	V268015-X	472.08
.4016	10.200 mm	2.007	51.00 mm	(5x)	60.85 mm	1.86 mm	12 mm	125 mm	V239429-X	333.68
.4016	10.200 mm	3.212	81.60 mm	(8x)	92.98 mm	1.86 mm	12 mm	150 mm	V358630-X	472.08
.4055	10.300 mm	2.027	51.50 mm	(5x)	61.45 mm	1.87 mm	12 mm	125 mm	V795138-X	333.68
.4055	10.300 mm	3.244	82.40 mm	(8x)	93.89 mm	1.87 mm	12 mm	150 mm	V932200-X	472.08
.4062 (13/32)	10.317 mm	2.031	51.60 mm	(5x)	61.55 mm	1.88 mm	12 mm	125 mm	V193040-X	333.68
.4062 (13/32)	10.317 mm	3.249	82.55 mm	(8x)	94.05 mm	1.88 mm	12 mm	150 mm	V880263-X	472.08
.4094	10.400 mm	2.047	52.00 mm	(5x)	62.04 mm	1.89 mm	12 mm	125 mm	V455264-X	333.68
.4094	10.400 mm	3.275	83.20 mm	(8x)	94.80 mm	1.89 mm	12 mm	150 mm	V403117-X	472.08
.4134	10.500 mm	2.066	52.50 mm	(5x)	62.64 mm	1.91 mm	12 mm	125 mm	V720867-X	333.68
.4134	10.500 mm	3.307	84.00 mm	(8x)	95.71 mm	1.91 mm	12 mm	150 mm	V789723-X	472.08
.4173	10.600 mm	2.086	53.00 mm	(5x)	63.24 mm	1.93 mm	12 mm	125 mm	V799193-X	333.68
.4173	10.600 mm	3.338	84.80 mm	(8x)	96.63 mm	1.93 mm	12 mm	150 mm	V713139-X	472.08
.4213	10.700 mm	2.106	53.50 mm	(5x)	63.83 mm	1.95 mm	12 mm	125 mm	V146857-X	333.68
.4213	10.700 mm	3.370	85.60 mm	(8x)	97.54 mm	1.95 mm	12 mm	150 mm	V786898-X	472.08

* For h6 and h8 tolerances, see page 8.

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Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth	L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
D ₁ (h8)*		L ₂			L ₃	L ₄	D ₂ (h6)*	L ₁	Tool #	Price
.4219 (27/64)	10.716 mm	2.110	53.60 mm	(5x)	63.93 mm	1.95 mm	12 mm	125 mm	V399606-X	333.68
.4219 (27/64)	10.716 mm	3.375	85.75 mm	(8x)	97.68 mm	1.95 mm	12 mm	150 mm	V248975-X	472.08
.4252	10.800 mm	2.125	54.00 mm	(5x)	64.43 mm	1.97 mm	12 mm	125 mm	V422061-X	333.68
.4252	10.800 mm	3.401	86.40 mm	(8x)	98.45 mm	1.97 mm	12 mm	150 mm	V195955-X	472.08
.4291	10.900 mm	2.145	54.50 mm	(5x)	65.03 mm	1.98 mm	12 mm	125 mm	V540329-X	333.68
.4291	10.900 mm	3.433	87.20 mm	(8x)	99.36 mm	1.98 mm	12 mm	175 mm	V876962-X	472.08
.4331	11.000 mm	2.165	55.00 mm	(5x)	65.62 mm	2.00 mm	12 mm	125 mm	V343592-X	333.68
.4331	11.000 mm	3.464	88.00 mm	(8x)	100.27 mm	2.00 mm	12 mm	175 mm	V899093-X	472.08
.4370	11.100 mm	2.185	55.50 mm	(5x)	66.22 mm	2.02 mm	12 mm	125 mm	V352322-X	333.68
.4370	11.100 mm	3.496	88.80 mm	(8x)	101.18 mm	2.02 mm	12 mm	175 mm	V760218-X	472.08
.4375 (7/16)	11.112 mm	2.187	55.55 mm	(5x)	66.29 mm	2.02 mm	12 mm	125 mm	V845356-X	333.68
.4375 (7/16)	11.112 mm	3.499	88.90 mm	(8x)	101.29 mm	2.02 mm	12 mm	175 mm	V439028-X	472.08
.4409	11.200 mm	2.204	56.00 mm	(5x)	66.82 mm	2.04 mm	12 mm	125 mm	V543395-X	333.68
.4409	11.200 mm	3.527	89.60 mm	(8x)	102.10 mm	2.04 mm	12 mm	175 mm	V275937-X	472.08
.4449	11.300 mm	2.224	56.50 mm	(5x)	67.41 mm	2.06 mm	12 mm	125 mm	V274775-X	333.68
.4449	11.300 mm	3.559	90.40 mm	(8x)	103.01 mm	2.06 mm	12 mm	175 mm	V718898-X	472.08
.4488	11.400 mm	2.244	57.00 mm	(5x)	68.01 mm	2.07 mm	12 mm	125 mm	V212694-X	333.68
.4488	11.400 mm	3.590	91.20 mm	(8x)	103.92 mm	2.07 mm	12 mm	175 mm	V700150-X	472.08
.4527	11.500 mm	2.263	57.50 mm	(5x)	68.60 mm	2.09 mm	12 mm	125 mm	V711465-X	333.68
.4527	11.500 mm	3.622	92.00 mm	(8x)	104.83 mm	2.09 mm	12 mm	175 mm	V356032-X	472.08
.4531 (29/64)	11.508 mm	2.265	57.55 mm	(5x)	68.65 mm	2.09 mm	12 mm	125 mm	V353391-X	333.68
.4531 (29/64)	11.508 mm	3.624	92.05 mm	(8x)	104.90 mm	2.09 mm	12 mm	175 mm	V409601-X	472.08
.4567	11.600 mm	2.283	58.00 mm	(5x)	69.20 mm	2.11 mm	12 mm	125 mm	V646698-X	333.68
.4567	11.600 mm	3.653	92.80 mm	(8x)	105.74 mm	2.11 mm	12 mm	175 mm	V865206-X	472.08
.4606	11.700 mm	2.303	58.50 mm	(5x)	69.80 mm	2.13 mm	12 mm	125 mm	V847917-X	333.68
.4606	11.700 mm	3.685	93.60 mm	(8x)	106.65 mm	2.13 mm	12 mm	175 mm	V559316-X	472.08
.4646	11.800 mm	2.322	59.00 mm	(5x)	70.39 mm	2.15 mm	12 mm	125 mm	V925309-X	333.68
.4646	11.800 mm	3.716	94.40 mm	(8x)	107.56 mm	2.15 mm	12 mm	175 mm	V336564-X	472.08
.4685	11.900 mm	2.342	59.50 mm	(5x)	70.99 mm	2.17 mm	12 mm	125 mm	V168544-X	333.68
.4685	11.900 mm	3.748	95.20 mm	(8x)	108.48 mm	2.17 mm	12 mm	175 mm	V985664-X	472.08
.4688 (15/32)	11.907 mm	2.344	59.55 mm	(5x)	71.03 mm	2.17 mm	12 mm	125 mm	V798383-X	333.68
.4688 (15/32)	11.907 mm	3.749	95.25 mm	(8x)	108.54 mm	2.17 mm	12 mm	175 mm	V603519-X	472.08
.4724	12.000 mm	2.362	60.00 mm	(5x)	71.59 mm	2.18 mm	14 mm	125 mm	V282193-X	333.68
.4724	12.000 mm	3.779	96.00 mm	(8x)	109.39 mm	2.18 mm	14 mm	175 mm	V588339-X	472.08

* For h6 and h8 tolerances, see page 8.

continued on next page



High Performance Drills

For Steels – Coolant-Through (cont.)

continued from previous page

Drill Diameter		Max Drill Depth			Flute Length	Point Angle Length	Shank Dia.	Overall Length	Val-Max X Coated	
inch	metric	inch	metric	hole depth					Tool #	Price
Di (h8)*		L2			L3	L4	D2 (h6)*	Li		
.4764	12.100 mm	2.381	60.50 mm	(5x)	72.18 mm	2.20 mm	14 mm	125 mm	V165416-X	439.88
.4764	12.100 mm	3.811	96.80 mm	(8x)	110.30 mm	2.20 mm	14 mm	175 mm	V611187-X	483.68
.4803	12.200 mm	2.401	61.00 mm	(5x)	72.78 mm	2.22 mm	14 mm	125 mm	V499243-X	439.88
.4803	12.200 mm	3.842	97.60 mm	(8x)	111.21 mm	2.22 mm	14 mm	175 mm	V556731-X	483.68
.4843	12.300 mm	2.421	61.50 mm	(5x)	73.38 mm	2.24 mm	14 mm	125 mm	V606643-X	439.88
.4843	12.300 mm	3.874	98.40 mm	(8x)	112.12 mm	2.24 mm	14 mm	175 mm	V449949-X	483.68
.4882 (31/64)	12.400 mm	2.440	62.00 mm	(5x)	73.97 mm	2.26 mm	14 mm	125 mm	V619843-X	439.88
.4882 (31/64)	12.400 mm	3.905	99.20 mm	(8x)	113.03 mm	2.26 mm	14 mm	175 mm	V558340-X	483.68
.4921	12.500 mm	2.460	62.50 mm	(5x)	74.57 mm	2.27 mm	14 mm	125 mm	V436056-X	439.88
.4921	12.500 mm	3.937	100.00 mm	(8x)	113.95 mm	2.27 mm	14 mm	175 mm	V744710-X	483.68
.4961	12.600 mm	2.480	63.00 mm	(5x)	75.17 mm	2.29 mm	14 mm	125 mm	V509952-X	439.88
.4961	12.600 mm	3.968	100.80 mm	(8x)	114.86 mm	2.29 mm	14 mm	175 mm	V520602-X	483.68
.5000 (1/2)	12.700 mm	2.499	63.50 mm	(5x)	75.76 mm	2.31 mm	14 mm	125 mm	V838117-X	439.88
.5000 (1/2)	12.700 mm	3.999	101.60 mm	(8x)	115.77 mm	2.31 mm	14 mm	175 mm	V188335-X	483.68

* For h6 and h8 tolerances, see page 8.

Tech Tip

Opt for a coolant-through drill to assist with heat management at the drill point and chip evacuation by flushing the chips from a hole, **drastically increasing tool life and lubricity.**





Speeds & Feeds

High Performance Drills for Steels

Important Notes

Values in table are in inches and are based on standard (up to 7x Dia) length of flute solid carbide drills.

Longer lengths of flute: table values of IPR must be reduced (for 8x, reduce to 75%) and SFM must be reduced (for 8x, reduce to 80%).

Steels at 29-37 Rc: an initial peck should be 2-3x Diameter, and each subsequent peck should be 1-2x Diameter.

Harder steels at 38-45 Rc: 1-2x Diameter is recommended for an initial peck, and each subsequent peck should be .5-1x Diameter.

For complete speeds and feeds charts, please see valorholemaking.com/resources/speeds-and-feeds.

Coolant-Through Notes

For Coolant-through carbide drills, table values of IPR must be reduced (reduced to 90%) and SFM can increase (increase up to 125%).

For best results, the following steps are recommended:

- For hole depths of 7x Diameter or greater, drill a pilot hole up to 1.5-2x D in depth using a drill with 3x LOF or shorter.
- Insert primary drill at low speed (-50-500 RPM) and start coolant flow.
- Increase speed and feed to recommended parameters.
- Under optimal conditions, a pecking cycle should not be needed.
- On through holes, reduce feed rate by 50% just before break through with drill point.
- Feed at 50% to final depth.
- After reaching desired hole depth, reduce speed (-500 RPM) before retracting the drill.
- Cutting oil is recommended. As an alternative, it is possible to use emulsions with EP additives. Use a fine mesh prefilter (=5µm) on spindle through coolant to prevent a blockage of the coolant hole. A minimum coolant pressure of 600-800 PSI is recommended.

Material Guide		SFM	Chip Load (IPR) by Drill Diameter									
			1/16	5/64	3/32	1/8	3/16	1/4	5/16	3/8	7/16	1/2
Carbon Steel	10XX, 11XX, 12XX, 12LXX, ASTM A27, ASTM A36	475-560	.002-.003	.002-.003	.003-.004	.004-.005	.004-.006	.005-.007	.006-.008	.007-.010	.008-.011	.009-.013
Low Alloy Steel	13XX, 41XX, 43XX, 51XX, 86XX, 93XX	360-500	.003-.004	.003-.004	.004-.005	.005-.006	.005-.007	.006-.008	.008-.010	.009-.012	.010-.013	.011-.015
Tool Steel	A2, H13, L6, P20, S7	200-275	.002-.003	.002-.003	.003-.004	.004-.005	.004-.006	.005-.007	.006-.008	.007-.010	.008-.011	.009-.013
Austenitic Stainless Steels	Nitronic 50, Nitronic 60, 301, 303, 304, 304L, Incoloy 27-7MO, 316, 316L, 321, 347	150-275	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.006-.008	.007-.010	.008-.011	.009-.013
Martensitic & Ferritic Stainless Steels	403, 410, 416, 420, 440, 430, 446	150-275	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.006-.008	.007-.010	.008-.011	.009-.013
PH Stainless Steels	15-5, 17-4, Carpenter 450, Carpenter 465	100-200	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.006-.008	.007-.010	.008-.011	.009-.013
Gray Cast Irons	SAE J431, ASTM A48	525-690	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.006-.008	.007-.010	.008-.011	.009-.013
Malleable Cast Irons	ASTM A47, ASTM A220, ASTM A602	425-460	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.006-.008	.007-.010	.008-.011	.009-.013
Nodular (Ductile) Cast Irons	ASTM A536, ASTM 897	360-500	.002-.003	.002-.003	.003-.004	.003-.004	.004-.006	.005-.007	.006-.008	.007-.010	.008-.011	.009-.013

General Notes

All posted speed and feed parameters are suggested starting values that may be increased given optimal setup conditions.

If you require additional information, Valor Holesmaking has a team of technical experts available to assist you through even the most challenging applications. Please contact us at **866-840-1505** or Valortech@harveyperformance.com.



Combined Drill & Countersinks



Val-Max X coated for superior performance

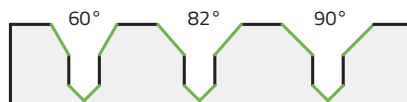
Excellent Choice for Predrilling Applications

- Designed for predrilling 60°, 82°, or 90° live center holes
- Double-ended design for minimized downtime and increased productivity
- 2 flutes
- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Included Angle	Size	Drill Diameter	Drill Length	Shank Diameter	Overall Length	Uncoated		Val-Max X Coated	
						Tool #	Price	Tool #	Price
A $^{+1^{\circ}}$ $^{-1^{\circ}}$		$D_1^{+.0015''}$ $^{+.0005''}$	$L_2^{+.005''}$ $^{-.000''}$	D2	L1				
60°	000	.020	.020	1/8	1-1/2	V556663	41.98	V556663-X	51.28
	00	.025	.025	1/8	1-1/2	V185274	32.78	V185274-X	42.18
	0	1/32	1/32	1/8	1-1/2	V859307	32.78	V859307-X	42.18
	1	3/64	3/64	1/8	1-1/2	V302266	27.48	V302266-X	36.78
	2	5/64	5/64	3/16	2	V894928	41.98	V894928-X	52.58
	3	7/64	7/64	1/4	2	V866774	47.78	V866774-X	60.38
	4	1/8	1/8	5/16	2-1/2	V903674	65.28	V903674-X	81.48
	5	3/16	3/16	7/16	2-3/4	V797008	97.58	V797008-X	119.98
82°	00	.025	.025	1/8	1-1/2	V929455	35.18	V929455-X	44.48
	0	1/32	1/32	1/8	1-1/2	V909420	34.78	V909420-X	44.08
	1	3/64	3/64	1/8	1-1/2	V217225	29.08	V217225-X	38.48
	2	5/64	5/64	3/16	2	V237177	44.78	V237177-X	55.28
	3	7/64	7/64	1/4	2	V364987	50.88	V364987-X	63.48
	4	1/8	1/8	5/16	2-1/2	V905694	68.98	V905694-X	84.98
	5	3/16	3/16	7/16	2-3/4	V256631	103.68	V256631-X	125.88
90°	000	.020	.020	1/8	1-1/2	V358715	43.38	V358715-X	52.68
	00	.025	.025	1/8	1-1/2	V493350	33.88	V493350-X	43.28
	0	1/32	1/32	1/8	1-1/2	V914209	33.88	V914209-X	43.28
	1	3/64	3/64	1/8	1-1/2	V734917	28.58	V734917-X	37.88
	2	5/64	5/64	3/16	2	V813931	43.38	V813931-X	53.88
	3	7/64	7/64	1/4	2	V814543	49.28	V814543-X	61.88
	4	1/8	1/8	5/16	2-1/2	V690770	66.98	V690770-X	82.98
	5	3/16	3/16	7/16	2-3/4	V698131	100.48	V698131-X	122.68

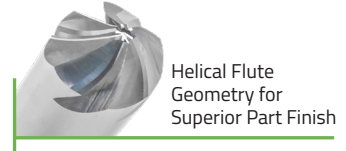
Stocked in three included angles





High Performance Chamfer Cutters

Helically Fluted



Outstanding in High Performance Countersinking Applications

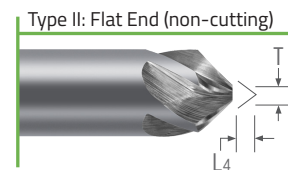
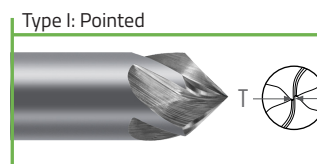
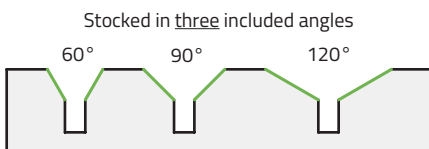
- Optimized for countersinking and chamfering operations while providing excellent performance in deburring applications
- Free cutting action design provides excellent surface finish and chip evacuation
- Engineered with a specialized helical flute design for superior performance
- Offered in Type I pointed and Type II flat end (non-cutting) styles
- Offered in 60°, 90°, and 120° included angles
- 2, 3, 4, and 5 flute options
- h6 shank tolerance for high precision tool holders
- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Included Angle	Diameter	Flutes	Tip	Type	Length of Cut		Overall Length	Uncoated		Val-Max X Coated	
					L2	L4 (Max.)		Tool #	Price	Tool #	Price
60°	1/8	2	.010	I	.100		1-1/2	V303773	31.88	V303773-X	41.18
		3	.040	II	.074	.036	1-1/2	V672817	32.58	V672817-X	41.88
		5	.040	II	.074	.036	1-1/2	V295829	35.18	V295829-X	44.48
	3/16	2	.010	I	.154		2	V699490	43.88	V699490-X	54.38
		3	.050	II	.119	.045	2	V337326	43.88	V337326-X	54.38
		5	.050	II	.119	.045	2	V752883	46.78	V752883-X	57.38
	1/4	2	.010	I	.208		2-1/2	V127405	54.18	V127405-X	67.58
		3	.060	II	.164	.054	2-1/2	V209624	50.78	V209624-X	64.18
		4	.010	I	.208		2-1/2	V712592	57.18	V712592-X	70.68
	3/8	2	.010	I	.316		2-1/2	V313911	72.38	V313911-X	91.58
		3	.070	II	.264	.062	2-1/2	V124536	68.08	V124536-X	87.18
		4	.010	I	.316		2-1/2	V164693	72.38	V164693-X	91.58
3/8	5	.070	II	.264	.062	2-1/2	V631112	68.08	V631112-X	87.18	

*Tolerance for Type I is +.000"/-.005". Tolerance for Type II is +.002"/-.002"

continued on next page





High Performance Chamfer Cutters

Helically Fluted (cont.)

continued from previous page

Included Angle	Diameter	Flutes	Tip	Type	Length of Cut			Overall Length		Uncoated		Val-Max X Coated	
					L2	L4 (Max.)	L1	Tool #	Price	Tool #	Price		
60°	1/2	2	.010	I	.424		3	V419548	101.58	V419548-X	127.48		
		3	.080	II	.364	.071	3	V660602	95.28	V660602-X	121.28		
		4	.010	I	.424		3	V349044	101.58	V349044-X	127.48		
		5	.080	II	.364	.071	3	V927193	95.28	V927193-X	121.28		
90°	1/8	2	.010	I	.058		1-1/2	V429507	31.88	V429507-X	41.18		
		3	.040	II	.043	.021	1-1/2	V200401	31.88	V200401-X	41.18		
		4	.010	I	.058		1-1/2	V786295	35.18	V786295-X	44.48		
		5	.040	II	.043	.021	1-1/2	V908769	35.18	V908769-X	44.48		
	3/16	2	.010	I	.089		2	V531414	42.98	V531414-X	53.48		
		3	.050	II	.069	.026	2	V811095	42.98	V811095-X	53.48		
		4	.010	I	.089		2	V622369	45.88	V622369-X	56.28		
		5	.050	II	.069	.026	2	V527430	45.88	V527430-X	56.28		
	1/4	2	.010	I	.120		2-1/2	V919405	54.18	V919405-X	67.58		
		3	.060	II	.095	.031	2-1/2	V280810	50.78	V280810-X	64.18		
		4	.010	I	.120		2-1/2	V958539	57.18	V958539-X	70.68		
		5	.060	II	.095	.031	2-1/2	V790762	53.78	V790762-X	67.18		
	3/8	2	.010	I	.183		2-1/2	V311320	72.38	V311320-X	91.58		
		3	.070	II	.153	.036	2-1/2	V345394	68.08	V345394-X	87.18		
		4	.010	I	.183		2-1/2	V236486	72.38	V236486-X	91.58		
		5	.070	II	.153	.036	2-1/2	V612425	68.08	V612425-X	87.18		
1/2	2	.010	I	.245		3	V666461	101.58	V666461-X	127.48			
	3	.080	II	.210	.041	3	V966684	95.28	V966684-X	121.28			
	4	.010	I	.245		3	V800918	101.58	V800918-X	127.48			
	5	.080	II	.210	.041	3	V796283	95.28	V796283-X	121.28			
120°	1/8	2	.010	I	.033		1-1/2	V712928	35.18	V712928-X	44.48		
		3/16	2	.010	I	.051		2	V289865	43.88	V289865-X	54.38	
	3/16	4	.010	I	.051		2	V100906	43.88	V100906-X	54.38		
		1/4	2	.010	I	.069		2-1/2	V190535	54.18	V190535-X	67.58	
	1/4	3	.060	II	.057	.018	2-1/2	V373551	52.18	V373551-X	65.58		
		4	.010	I	.069		2-1/2	V724215	57.18	V724215-X	70.68		
	1/4	5	.060	II	.057	.018	2-1/2	V199619	55.38	V199619-X	68.88		
		3/8	2	.010	I	.105		2-1/2	V295545	73.88	V295545-X	92.98	
	3/8	3	.070	II	.091	.021	2-1/2	V546651	68.08	V546651-X	87.18		
		4	.010	I	.105		2-1/2	V647726	76.78	V647726-X	95.98		
	3/8	5	.070	II	.091	.021	2-1/2	V590509	72.78	V590509-X	91.88		
		1/2	2	.010	I	.141		3	V998108	101.58	V998108-X	127.48	
	1/2	3	.080	II	.126	.024	3	V327236	98.08	V327236-X	124.08		
		4	.010	I	.141		3	V147300	101.58	V147300-X	127.48		
1/2	5	.080	II	.126	.024	3	V628260	101.08	V628260-X	127.08			

*Tolerance for Type I is +.000"/-.005". Tolerance for Type II is +.002"/-.002"



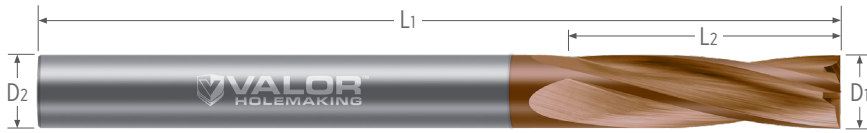
Counterbores

Flat Bottom



Outstanding for Flat Bottom Reaming or Straightening Misaligned Holes

- Flat bottom design (no dish) allows for spot facing or counterboring on irregular surfaces commonly found on rounded or complex parts
- Provides excellent performance when flat bottom reaming or straightening misaligned holes
- Ground with full cylindrical margin (not side cutting)
- Center cutting
- 15° helix
- 4 flutes
- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide

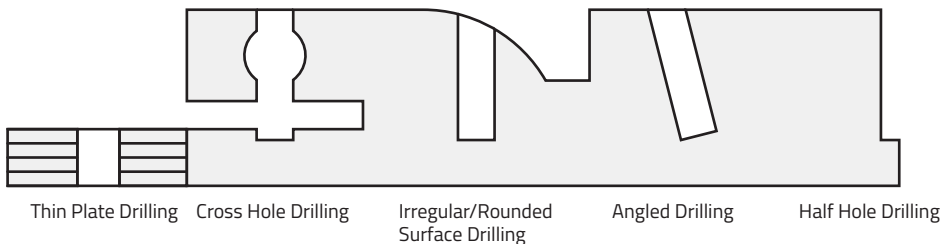


Cutter Diameter	Flute Length	Shank Diameter	Overall Length	Uncoated		Val-Max X Coated	
				Tool #	Price	Tool #	Price
D1 ^{+0.000*} / _{-0.005}	L2 ^{+0.030"} / _{-0.000"}	D2	L1				
.0625 (1/16)	1/4	1/8	1-1/2	V695306	69.08	V695306-X	78.48
.0781 (5/64)	5/16	1/8	1-1/2	V778476	69.08	V778476-X	78.48
.0787 (2 mm)	5/16	1/8	1-1/2	V408316	69.08	V408316-X	78.48
.0937 (3/32)	3/8	1/8	1-1/2	V892625	69.08	V892625-X	78.48
.1094 (7/64)	3/8	1/8	1-1/2	V745187	69.08	V745187-X	78.48
.1181 (3 mm)	3/8	1/8	1-1/2	V939405	69.08	V939405-X	78.48
.1250 (1/8)	1/2	1/8	1-1/2	V527625	69.08	V527625-X	78.48
.1406 (9/64)	9/16	3/16	2	V783531	66.08	V783531-X	76.68
.1562 (5/32)	5/8	3/16	2	V321622	66.08	V321622-X	76.68
.1575 (4 mm)	5/8	3/16	2	V372376	66.08	V372376-X	76.68
.1719 (11/64)	5/8	3/16	2	V508715	66.08	V508715-X	76.68
.1875 (3/16)	3/4	3/16	2	V370840	66.08	V370840-X	76.68
.1968 (5 mm)	3/4	1/4	2-1/2	V699368	90.38	V699368-X	103.78

*Tolerance refers to uncoated counterbores. Tolerance for Val-Max X coated counterbores is +.0002"/-.0005".

continued on next page

Flat Bottom Counterbore Applications





Counterbores

Flat Bottom (cont.)

continued from previous page

Cutter Diameter	Flute Length	Shank Diameter	Overall Length	Uncoated		Val-Max X Coated	
				Tool #	Price	Tool #	Price
D1 ^{+0.0000*} -0.0005	L2 ^{+0.030"} -0.000"	D2	L1				
.2031 (13/64)	3/4	1/4	2-1/2	V568926	90.38	V568926-X	103.78
.2187 (7/32)	3/4	1/4	2-1/2	V631036	90.38	V631036-X	103.78
.2344 (15/64)	7/8	1/4	2-1/2	V478565	90.38	V478565-X	103.78
.2362 (6 mm)	7/8	1/4	2-1/2	V105885	90.38	V105885-X	103.78
.2500 (1/4)	7/8	1/4	2-1/2	V472098	90.38	V472098-X	103.78
.2656 (17/64)	7/8	5/16	2-1/2	V418764	111.48	V418764-X	127.48
.2812 (9/32)	7/8	5/16	2-1/2	V865510	111.48	V865510-X	127.48
.2969 (19/64)	7/8	5/16	2-1/2	V700371	111.48	V700371-X	127.48
.3125 (5/16)	1	5/16	2-1/2	V487755	111.48	V487755-X	127.48
.3150 (8 mm)	1	3/8	2-1/2	V740046	133.08	V740046-X	152.28
.3281 (21/64)	1	3/8	2-1/2	V202645	133.08	V202645-X	152.28
.3437 (11/32)	1	3/8	2-1/2	V538304	133.08	V538304-X	152.28
.3594 (23/64)	1	3/8	2-1/2	V311756	133.08	V311756-X	152.28
.3750 (3/8)	1	3/8	2-1/2	V712621	133.08	V712621-X	152.28
.3937 (10 mm)	1	7/16	2-3/4	V802980	164.18	V802980-X	186.58
.4062 (13/32)	1	7/16	2-3/4	V217929	164.18	V217929-X	186.58
.4375 (7/16)	1	7/16	2-3/4	V151214	164.18	V151214-X	186.58
.4724 (12 mm)	1	1/2	3	V585315	215.98	V585315-X	241.88
.5000 (1/2)	1	1/2	3	V847030	215.98	V847030-X	241.88
.5625 (9/16)	1-1/2	5/8	3-1/2	V294033	306.68	V294033-X	338.98
.6250 (5/8)	1-1/2	5/8	3-1/2	V127143	343.58	V127143-X	375.88
.7500 (3/4)	1-1/2	3/4	4	V988795	497.98	V988795-X	536.28

*Tolerance refers to uncoated counterbores. Tolerance for Val-Max X coated counterbores is +.0002"/-.0005".

Tech Tip

When drilling into an extremely irregular surface, a spot drill may not be sufficient to keep holes in the correct position. For these applications, first use a Flat Bottom Counterbore to **level off the area you intend to machine**, then continue to a spotting application.



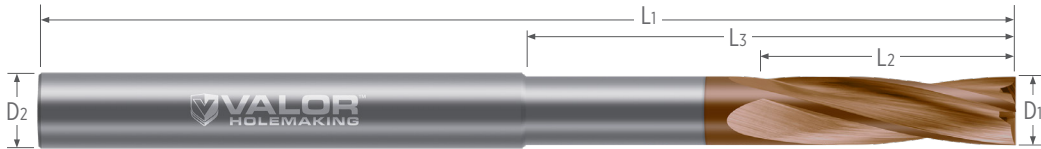
Counterbores

Flat Bottom - Long Reach



Unmatched Precision in Long Reach Counterboring Applications

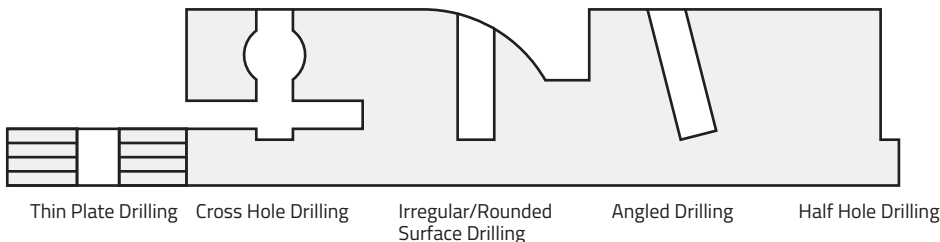
- Engineered with an undersized neck to avoid heeling
- Flat bottom design (no dish) allows for spot facing or counterboring on irregular surfaces commonly found on rounded or complex parts
- Provides excellent performance when flat bottom reaming or straightening misaligned holes
- Ground with full cylindrical margin (not side cutting)
- Center cutting
- 15° helix
- 4 flutes
- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Cutter Diameter	Flute Length	Overall Reach	Shank Diameter	Overall Length	Uncoated		Val-Max X Coated	
					Tool #	Price	Tool #	Price
$D_1^{+.0000*}_{-.0005}$	$L_2^{+.030}_{-.000}$	$L_3^{+.030}_{-.000}$	D_2	L_1	Tool #	Price	Tool #	Price
.0625 (1/16)	1/4	1/2	1/8	2-1/2	V198627	82.58	V198627-X	92.38
.0937 (3/32)	3/8	3/4	1/8	2-1/2	V916746	82.58	V916746-X	92.38
.1181 (3 mm)	3/8	1	1/8	2-1/2	V951006	82.58	V951006-X	92.38
.1250 (1/8)	1/2	1	1/8	2-1/2	V970511	82.58	V970511-X	92.38
.1406 (9/64)	9/16	1-1/8	3/16	3	V416335	100.48	V416335-X	111.78
.1562 (5/32)	5/8	1-1/4	3/16	3	V663791	100.48	V663791-X	111.78
.1719 (11/64)	5/8	1-3/8	3/16	3	V809396	100.48	V809396-X	111.78
.1875 (3/16)	3/4	1-1/2	3/16	3	V595314	100.48	V595314-X	111.78
.2187 (7/32)	3/4	1-3/4	1/4	4	V912152	133.38	V912152-X	147.78
.2500 (1/4)	7/8	2	1/4	4	V655322	133.38	V655322-X	147.78
.3125 (5/16)	1	2-1/2	5/16	4	V184545	169.18	V184545-X	186.38
.3437 (11/32)	1	2-3/4	3/8	4	V484325	203.98	V484325-X	224.48
.3750 (3/8)	1	3	3/8	4	V559859	203.98	V559859-X	224.48
.4375 (7/16)	1	3	7/16	4	V317536	236.78	V317536-X	260.68
.5000 (1/2)	1	3	1/2	4	V593960	290.28	V593960-X	318.08

* Tolerance refers to uncoated counterbores. Tolerance for Val-Max X coating is $+.0002"/-0.0005"$

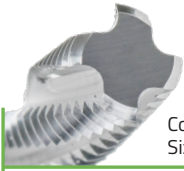
Flat Bottom Counterbore Applications





Thread Mills

Multi-Form – UN Threads



Common Thread Sizes Available

- Specifically engineered to cut internal and external 60° UN threads
- Designed to mill right hand and left hand threads for added versatility
- Able to cut larger threads of the same pitch
- Offered in 3, 4, and 6 helical flutes

Amazingly Versatile in Right & Left Hand Thread Milling

- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Thread Size	Cutter Diameter D1 ^{+0.0005} / _{-0.0005}	Length of Cut L2	Flutes	Shank Diameter D2	Overall Length L1	Uncoated		Val-Max X Coated	
						Tool #	Price	Tool #	Price
2-56	.065	.125	3*	1/8	2	V776212	148.28	V776212-X	157.68
3-48	.075	.167	3*	1/8	2	V223050	156.68	V223050-X	165.98
4-40	.085	.175	3*	1/8	2	V825130	156.68	V825130-X	165.98
5-44	.095	.228	3	1/8	2	V333694	156.68	V333694-X	165.98
6-32	.100	.218	3	1/8	2	V729602	162.18	V729602-X	171.48
8-32	.115	.250	3	1/8	2	V619489	173.98	V619489-X	183.28
8-36	.115	.250	3	1/8	2	V338962	173.98	V338962-X	183.28
10-24	.120	.312	3	1/8	2	V196853	182.98	V196853-X	192.28
10-32	.120	.312	3	1/8	2	V370770	182.98	V370770-X	192.28
1/4-20	.180	.500	3	3/16	2-1/2	V740289	218.98	V740289-X	230.28
1/4-28	.180	.500	3	3/16	2-1/2	V605861	218.98	V605861-X	230.28
5/16-18	.235	.625	3	1/4	2-1/2	V728692	237.18	V728692-X	250.68
5/16-24	.235	.625	3	1/4	2-1/2	V794382	268.18	V794382-X	281.58
3/8-16	.285	.750	4	5/16	3	V397436	319.28	V397436-X	335.48
3/8-24	.285	.750	4	5/16	3	V891917	319.28	V891917-X	335.48
7/16-14	.305	.750	4	5/16	3	V801115	319.28	V801115-X	335.48
7/16-20	.335	.875	4	3/8	3-1/2	V198821	344.68	V198821-X	365.08
1/2-13	.350	.875	4	3/8	3-1/2	V274534	356.18	V274534-X	376.58
1/2-20	.370	1.000	6	3/8	3-1/2	V547751	373.98	V547751-X	394.38

*Straight flutes

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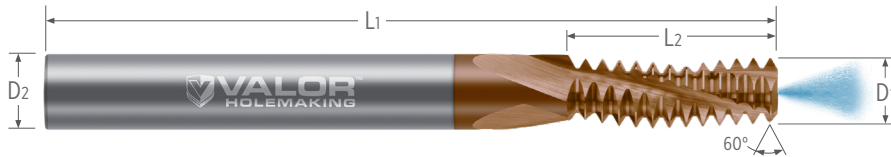
Thread Mills

Multi-Form - UN Threads - Coolant-Through



Enhanced Coolant-Through Design for Superior Chip Ejection

- Coolant-through design allows for maximum chip ejection in blind holes
- Designed to mill right hand and left hand 60° UN threads
- Able to cut larger threads of the same pitch
- Offered in 3 and 4 helical flutes
- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Thread Size	Cutter Diameter D1 ^{+0.000} _{-0.002}	Length of Cut L2	Flutes	Shank Diameter D2	Overall Length L1	Uncoated		Val-Max X Coated	
						Tool #	Price	Tool #	Price
10-24	.145	.312	3	3/16	2-3/8	V396731	201.78	V396731-X	212.88
10-32	.150	.312	3	3/16	2-3/8	V889790	201.78	V889790-X	212.88
1/4-20	.180	.500	3	3/16	2-3/8	V656064	242.28	V656064-X	253.58
1/4-28	.180	.500	3	3/16	2-3/8	V989312	242.28	V989312-X	253.58
5/16-18	.235	.625	3	1/4	2-3/8	V843484	261.08	V843484-X	274.48
5/16-24	.235	.625	3	1/4	2-3/8	V722664	304.88	V722664-X	318.38
3/8-16	.285	.750	4	5/16	3	V720638	352.08	V720638-X	368.08
3/8-24	.285	.750	4	5/16	3	V756737	352.08	V756737-X	368.08
7/16-14	.305	.750	4	5/16	3	V217976	352.08	V217976-X	368.08
7/16-20	.335	.875	4	3/8	3	V454378	379.18	V454378-X	398.18
1/2-13	.350	.875	4	3/8	3	V492881	391.18	V492881-X	410.28

Tech Tip

Opt for a coolant-through thread mill in blind hole applications. The coolant-through ability of the tool produces **superior chip evacuation** while also delivering coolant directly to the tip of the tool, decreasing friction and allowing for increased cutting speeds.



Thread Mills

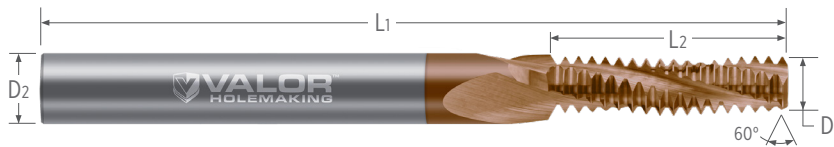
Multi-Form – UN Threads – Long Flute



Long Flute Design
for Deep Threading

Superb Strength in UN Applications

- Specifically designed for deep threaded applications
- Increased cutter diameter allows for maximum strength while achieving 60% threads
- Designed to mill right hand and left hand internal 60° UN threads
- Able to cut larger threads of the same pitch
- Offered in 3 and 4 helical flutes
- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Thread Size	Cutter Diameter $D_1^{+0.0005}_{-0.0005}$	Length of Cut L_2	Flutes	Shank Diameter D_2	Overall Length L_1	Uncoated		Val-Max X Coated	
						Tool #	Price	Tool #	Price
2-56	.069	.215	3	1/8	2	V862814	187.88	V862814-X	197.18
3-48	.079	.250	3	1/8	2	V175206	197.38	V175206-X	206.68
4-40	.089	.275	3	1/8	2	V764399	197.38	V764399-X	206.68
6-32	.110	.375	3	1/8	2	V139322	197.38	V139322-X	206.68
8-32	.131	.407	3	3/16	2-1/2	V911231	210.08	V911231-X	221.38
8-36	.131	.417	3	3/16	2-1/2	V109682	220.88	V109682-X	231.98
10-24	.145	.500	3	3/16	2-1/2	V547075	259.28	V547075-X	270.38
10-32	.150	.500	3	3/16	2-1/2	V571131	259.28	V571131-X	270.38
1/4-20	.195	.750	3	1/4	2-1/2	V904085	263.58	V904085-X	276.98
1/4-28	.195	.750	3	1/4	2-1/2	V377926	263.58	V377926-X	276.98
5/16-18	.245	.944	3	5/16	3	V455088	342.28	V455088-X	358.48
5/16-24	.245	.958	3	5/16	3	V184026	351.38	V184026-X	367.38
3/8-16	.300	1.125	4	3/8	3-1/2	V868122	408.18	V868122-X	428.58
3/8-24	.300	1.125	4	3/8	3-1/2	V558722	420.08	V558722-X	440.68
7/16-20	.350	1.300	4	3/8	3-1/2	V108189	420.08	V108189-X	440.68
1/2-13	.400	1.308	4	1/2	3-1/2	V518107	426.18	V518107-X	453.98



Access Simulation Files in .STEP Format
for Every Valor HOLEMAKING Tool

valorholemaking.com/resources/simulation-files



Thread Mills

Multi-Form – Metric Threads



Common Thread Sizes Available

Efficiently Machines Both Internal & External Metric Threads

- Specifically engineered to cut internal and external 60° Metric threads
- Designed to mill right hand and left hand Metric threads for added versatility
- Able to cut larger threads of the same pitch
- Offered in 3 and 4 helical flutes
- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Thread Size	Cutter Diameter $D_1^{+0.0005}_{-0.0005}$	Length of Cut L_2	Flutes	Shank Diameter D_2	Overall Length L_1	Uncoated		Val-Max X Coated	
						Tool #	Price	Tool #	Price
M3-0.50	.085	.178	3	1/8	2	V705769	180.68	V705769-X	189.98
M4-0.70	.115	.276	3	1/8	2	V221421	180.68	V221421-X	189.98
M4.5-0.75	.120	.250	3	1/8	2	V751646	180.68	V751646-X	189.98
M5-0.80	.120	.312	3	1/8	2	V520089	180.68	V520089-X	189.98
M6-1.00	.170	.500	3	3/16	2-1/2	V411343	219.28	V411343-X	230.48
M8-1.25	.235	.625	3	1/4	2-1/2	V689550	235.68	V689550-X	249.18
M10-1.50	.300	.750	4	5/16	3	V473531	317.88	V473531-X	334.08
M12-1.75	.360	.875	4	3/8	3-1/2	V550418	353.78	V550418-X	374.18
M14-1.50	.370	.875	4	3/8	3-1/2	V956048	353.78	V956048-X	374.18

Tech Tip

Provide an immediate boost in your threading jobs with a multi-form thread mill, as they are optimized to produce a **full thread in a single helical interpolation**. Additionally, they allow a machinist to quickly turn around production-style jobs.



Thread Mills

Multi-Form – Metric Threads – Coolant-Through

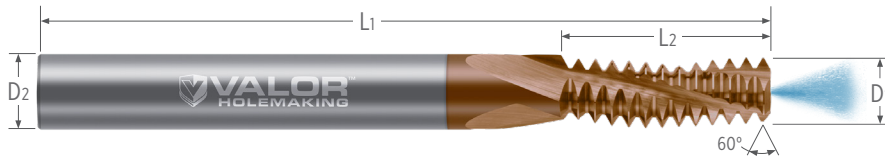


Single Coolant-Through Channel Design

- Coolant-through design allows for maximum chip ejection in blind holes
- Designed to mill right hand and left hand 60° Metric threads
- Able to cut larger threads of the same pitch
- 3 helical flutes

Maximum Chip Ejection in Blind Hole Applications

- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Thread Size	Cutter Diameter $D_1^{+0.000}_{-0.002}$	Length of Cut L_2	Flutes	Shank Diameter D_2	Overall Length L_1	Uncoated		Val-Max X Coated	
						Tool #	Price	Tool #	Price
M3-0.50	.085	.1780	3	1/8	2	V757297	207.78	V757297-X	217.08
M4-0.70	.115	.2760	3	1/8	2	V954960	207.78	V954960-X	217.08
M5-0.80	.120	.3125	3	1/8	2	V490771	207.78	V490771-X	217.08
M6-1.00	.170	.5000	3	3/16	2-1/2	V875636	252.48	V875636-X	263.58
M8-1.25	.235	.6250	3	1/4	2-1/2	V388421	271.18	V388421-X	284.58

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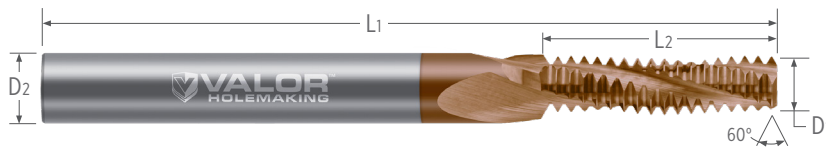
Thread Mills

Multi-Form – Metric Threads – Long Flute



Excellent in Deep Threading Metric Applications

- Specifically designed for deep threaded applications
- Increased cutter diameter allows for maximum strength while achieving 60% threads
- Designed to mill right hand and left hand internal 60° Metric threads
- Able to cut larger threads of the same pitch
- Offered in 3 and 4 helical flutes
- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Thread Size	Cutter Diameter $D_1^{+0.0005}_{-0.0005}$	Length of Cut L_2	Flutes	Shank Diameter D_2	Overall Length L_1	Uncoated		Val-Max X Coated	
						Tool #	Price	Tool #	Price
M3-0.50	.090	.276	3	1/8	2	V837004	232.48	V837004-X	241.78
M4-0.70	.124	.441	3	3/16	2-1/2	V503448	238.18	V503448-X	249.38
M5-0.80	.155	.504	3	3/16	2-1/2	V256903	238.18	V256903-X	249.38
M6-1.00	.186	.748	3	1/4	2-1/2	V790009	275.88	V790009-X	289.28
M8-1.25	.245	.984	3	5/16	2-1/2	V659859	354.78	V659859-X	370.78
M10-1.50	.311	1.122	4	3/8	3-1/2	V975146	445.38	V975146-X	465.78

Tech Tip

When your job requires deep threads, opt for a Long Flute Thread Mill. They are engineered with a **large cutter diameter and core**, equipping them with the necessary geometries for superior tool strength and stability.



Thread Mills

Multi-Form – NPT Threads



Available in 3 and 4 Helical Flutes

Optimized Specifically for Internal & External 60° NPT Threads

- Engineered to cut internal and external 60° National Pipe Taper (NPT) threads
- Designed to mill right hand and left hand threads for added versatility
- Offered in 3 and 4 helical flutes
- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Thread Size	Major Cutter Diameter	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		Val-Max X Coated	
						Tool #	Price	Tool #	Price
	$D_1^{+0.0005}_{-0.0005}$	L ₂		D ₂	L ₁				
1/16, 1/8-27	.245	.437	3	1/4	2-1/2	V614054	224.08	V614054-X	237.48
1/4, 3/8-18	.305	.625	4	5/16	3	V897256	307.08	V897256-X	323.28
1/4, 3/8-18	.363	.680	4	3/8	3-1/2	V224635	326.68	V224635-X	347.28
1/2, 3/4-14	.495	.875	4	1/2	3-1/2	V641508	358.38	V641508-X	386.18
1, 2-11.5	.620	1.125	4	5/8	4	V175728	506.68	V175728-X	539.08



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Thread Mills

Multi-Form – NPTF Threads



Geometry designed for NPTF Threading

Efficiency-Boosting Design for Right Hand & Left Hand Thread Milling

- Engineered to cut internal and external 60° National Pipe Taper Fuel (NPTF) threads
- Designed to mill right hand and left hand threads for added versatility
- Offered in 3 and 4 helical flutes
- Uncoated option well-suited for Aluminum Alloys and other Non-Ferrous Alloys
- Proprietary Val-Max X coating for improved tool life and heat resistance in ferrous materials, including Alloy Steels, Stainless Steels, Nickel Alloys, and other high hardness materials up to 65 Rc
- Solid carbide



Thread Size	Major Cutter Diameter	Length of Cut	Flutes	Shank Diameter	Overall Length	Uncoated		Val-Max X Coated	
						Tool #	Price	Tool #	Price
	$D_1^{+0.0005}_{-0.0005}$	L_2		D_2	L_1				
1/16, 1/8-27	.245	.437	3	1/4	2-1/2	V284224	261.78	V284224-X	275.18
1/4, 3/8-18	.305	.625	4	5/16	3	V169267	312.58	V169267-X	328.78
1/2, 3/4-14	.495	.875	4	1/2	3-1/2	V683311	405.78	V683311-X	433.58
1, 2-11.5	.620	1.125	4	5/8	4	V633813	603.88	V633813-X	636.18

Tech Tip

When selecting a thread mill, choose only a cutter diameter as large as your job requires. A smaller cutter diameter will help achieve higher quality threads.



Technical Information

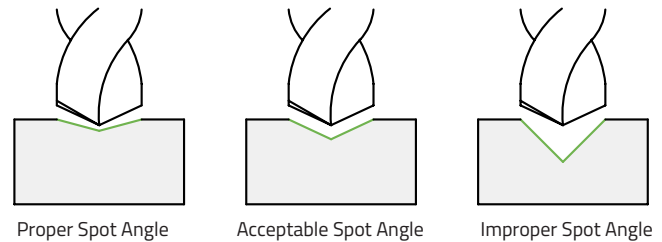
Properly Select a Valor Holemaking High Performance Spotting Drill

Drilling an ultra-precise hole is often tough, but it doesn't have to be. A Valor Holemaking High Performance Spotting Drill, if used properly, will eliminate the chance of drill walking and will help to ensure a more accurate final product. A Spotting Drill's purpose is to create a small divot to correctly locate the center of a drill when initiating a plunge.

Choosing a High Performance Spotting Drill

Point Angle

Ideally, the center of a carbide drill should always be the first point to contact your part. Therefore, a spotting drill should have a **slightly larger point angle** than that of your drill. If a spotting drill with a smaller point angle than your drill is used, your drill may be damaged due to shock loading when the outer portion of its cutting surface contacts the workpiece before the center. Using a drill angle equal to the drill angle is also an acceptable situation.



Valor Holemaking High Performance Spotting Drills are offered with **90°**, **135°**, and **140°** point angles.

Drill Diameter

Valor Holemaking High Performance Spotting Drills are offered in 3.00 mm, 4.00 mm, 6.00 mm, 8.00 mm, 10.00 mm, 12.00 mm, and 16.00 mm drill diameters for each of its point angle options. Opting for a Spotting Drill drill diameter of at least 67% of your High Performance Drill diameter, is a great starting point.

When Won't a Spot Drill Work for My Application?

When drilling into an extremely irregular surface, such as the side of a cylinder or an inclined plane, a High Performance Spotting Drill alone may not be sufficient to keep holes in the correct position. For these applications, Flat Bottom Counterbores may be needed to creating accurate features. Explore Counterbores on page 58 of this catalog.

Coolant Usage Best Practices & Recommendations

There are several advantages to following a proper coolant strategy when performing a CNC drilling operation, regardless of if the Valor Holemaking High Performance Drill being used is enabled with coolant-through geometry or not.

Coolant-through geometry allows for coolant to travel within the drill, itself, and be applied directly to the cutting location. In doing so, concerns of chip packing in blind hole applications are mitigated, even in depths beyond 5x that of the drill diameter (5xD), as chips are easily removed from the created hole via high pressure coolant. Because of this, coolant-through geometry is extremely beneficial to a high performance drilling application, and should be a machinist's first choice.

At a minimum, coolant pressure of 600–800 psi is recommended for deep hole drilling in applications that exceed a drill depth of larger than 8xD. When coolant-through geometry is not an option due to machine or material concerns, flood coolant or other means of coolant will be necessary.

Did You Know?

When Using a Valor Holemaking Coolant-Through High Performance Drill, a pecking cycle is not needed under optimal conditions. When using a solid round drill, a pecking cycle approach may be needed when exceeding depths of 3xD. Please review Speeds & Feeds information for each Valor Holemaking High Performance Drill offering on pages 31 or 54 for more information.



Technical Information

Decimal Equivalent Chart

Drill Size & Fractions	MM	Inch
-	0.05	0.0020
-	0.1	0.0039
#97	0.15	0.0059
#96	-	0.0063
#95	-	0.0067
#94	-	0.0071
#93	-	0.0075
#92	0.2	0.0079
#91	-	0.0083
#90	-	0.0087
#89	-	0.0091
#88	-	0.0095
-	0.25	0.0098
#87	-	0.0100
#86	-	0.0105
#85	-	0.0110
#84	-	0.0115
-	0.3	0.0118
#83	-	0.0120
#82	-	0.0125
#81	-	0.0130
#80	-	0.0135
-	0.35	0.0138
#79	-	0.0145
1/64 in	-	0.0156
-	0.4	0.0157
#78	-	0.0160
-	0.45	0.0177
#77	-	0.0180
-	0.5	0.0197
#76	-	0.0200
#75	-	0.0210
-	0.55	0.0217
#74	-	0.0225
-	0.6	0.0236
#73	-	0.0240
#72	-	0.0250
-	0.65	0.0256
#71	-	0.0260
-	0.7	0.0276
#70	-	0.0280
#69	-	0.0292
-	0.75	0.0295
#68	-	0.0310
1/32 in	-	0.0313
-	0.8	0.0315
#67	-	0.0320
#66	-	0.0330
-	0.85	0.0335
#65	-	0.0350
-	0.9	0.0354
#64	-	0.0360
#63	-	0.0370
-	0.95	0.0374
#62	-	0.0380
#61	-	0.0390
-	1	0.0394
#60	-	0.0400
#59	-	0.0410
-	1.05	0.0413
#58	-	0.0420
#57	-	0.0430
-	1.1	0.0433
-	1.15	0.0453
#56	-	0.0465
3/64 in	-	0.0469
-	1.2	0.0472
-	1.25	0.0492
-	1.3	0.0512
#55	-	0.0520
-	1.35	0.0531
#54	-	0.0550
-	1.4	0.0551
-	1.45	0.0571
-	1.5	0.0591

Drill Size & Fractions	MM	Inch
#53	-	0.0595
-	1.55	0.0610
1/16 in	-	0.0625
-	1.6	0.0630
#52	-	0.0635
-	1.65	0.0650
-	1.7	0.0669
#51	-	0.0670
-	1.75	0.0689
#50	-	0.0700
-	1.8	0.0709
-	1.85	0.0728
#49	-	0.0730
-	1.9	0.0748
#48	-	0.0760
-	1.95	0.0768
5/64 in	-	0.0781
#47	-	0.0785
-	2	0.0787
-	2.05	0.0807
#46	-	0.0810
#45	-	0.0820
-	2.1	0.0827
-	2.15	0.0846
#44	-	0.0860
-	2.2	0.0866
-	2.25	0.0886
#43	-	0.0890
-	2.3	0.0906
-	2.35	0.0925
#42	-	0.0935
3/32 in	-	0.0938
-	2.4	0.0945
#41	-	0.0960
-	2.45	0.0965
#40	-	0.0980
-	2.5	0.0984
#39	-	0.0995
-	2.55	0.1004
#38	-	0.1015
-	2.6	0.1024
#37	-	0.1040
-	2.65	0.1043
-	2.7	0.1063
#36	-	0.1065
-	2.75	0.1083
7/64 in	-	0.1094
#35	-	0.1100
-	2.8	0.1102
#34	-	0.1110
-	2.85	0.1122
#33	-	0.1130
-	2.9	0.1142
#32	-	0.1160
-	2.95	0.1161
-	3	0.1181
#31	-	0.1200
-	3.05	0.1201
-	3.1	0.1220
-	3.15	0.1240
1/8 in	-	0.1250
-	3.2	0.1260
-	3.25	0.1280
#30	-	0.1285
-	3.3	0.1299
-	3.35	0.1319
-	3.4	0.1339
-	3.45	0.1358
#29	-	0.1360
-	3.5	0.1378
-	3.55	0.1398
#28	-	0.1405
9/64 in	-	0.1406
-	3.6	0.1417
-	3.65	0.1437

Drill Size & Fractions	MM	Inch
#27	-	0.1440
-	3.7	0.1457
#26	-	0.1470
-	3.75	0.1476
#25	-	0.1495
-	3.8	0.1496
-	3.85	0.1516
#24	-	0.1520
-	3.9	0.1535
#23	-	0.1540
-	3.95	0.1555
5/32 in	-	0.1563
#22	-	0.1570
-	4	0.1575
#21	-	0.1590
#20	-	0.1610
-	4.1	0.1614
-	4.2	0.1654
#19	-	0.1660
-	4.3	0.1693
#18	-	0.1695
11/64 in	-	0.1719
#17	-	0.1730
-	4.4	0.1732
#16	-	0.1770
-	4.5	0.1772
#15	-	0.1800
-	4.6	0.1811
#14	-	0.1820
#13	4.7	0.1850
3/16 in	-	0.1875
#12	4.8	0.1890
#11	-	0.1910
-	4.9	0.1929
#10	-	0.1935
#9	-	0.1960
-	5	0.1969
#8	-	0.1990
-	5.1	0.2008
#7	-	0.2010
13/64 in	-	0.2031
#6	-	0.2040
-	5.2	0.2047
#5	-	0.2055
-	5.3	0.2087
#4	-	0.2090
-	5.4	0.2126
#3	-	0.2130
-	5.5	0.2165
7/32 in	-	0.2188
-	5.6	0.2205
#2	-	0.2210
-	5.7	0.2244
#1	-	0.2280
-	5.8	0.2283
-	5.9	0.2323
A	-	0.2340
15/64 in	-	0.2344
-	6	0.2362
B	-	0.2380
-	6.1	0.2402
C	-	0.2420
-	6.2	0.2441
D	-	0.2460
-	6.3	0.2480
1/4 in - E	-	0.2500
-	6.4	0.2520
-	6.5	0.2559
F	-	0.2570
-	6.6	0.2598
G	-	0.2610
-	6.7	0.2638
17/64 in	-	0.2656
H	-	0.2660
-	6.8	0.2677

Drill Size & Fractions	MM	Inch
-	6.9	0.2717
I	-	0.2720
-	7	0.2756
J	-	0.2770
-	7.1	0.2795
K	-	0.2810
9/32 in	-	0.2813
-	7.2	0.2835
-	7.3	0.2874
L	-	0.2900
-	7.4	0.2913
M	-	0.2950
-	7.5	0.2953
19/64 in	-	0.2969
-	7.6	0.2992
N	-	0.3020
-	7.7	0.3031
-	7.8	0.3071
-	7.9	0.3110
5/16 in	-	0.3125
-	8	0.3150
O	-	0.3160
-	8.1	0.3189
-	8.2	0.3228
P	-	0.3230
-	8.3	0.3268
21/64 in	-	0.3281
-	8.4	0.3307
Q	-	0.3320
-	8.5	0.3346
-	8.6	0.3386
R	-	0.3390
-	8.7	0.3425
11/32 in	-	0.3438
-	8.8	0.3465
S	-	0.3480
-	8.9	0.3504
-	9	0.3543
T	-	0.3580
-	9.1	0.3583
23/64 in	-	0.3594
-	9.2	0.3622
-	9.3	0.3661
U	-	0.3680
-	9.4	0.3701
-	9.5	0.3740
3/8 in	-	0.3750
V	-	0.3770
-	9.6	0.3780
-	9.7	0.3819
-	9.8	0.3858
W	-	0.3860
-	9.9	0.3898
25/64 in	-	0.3906
-	10	0.3937
X	-	0.3970
-	10.1	0.3976
-	10.2	0.4016
Y	-	0.4040
-	10.3	0.4055
13/32 in	-	0.4063
-	10.4	0.4094
Z	-	0.4130
-	10.5	0.4134
-	10.6	0.4173
-	10.7	0.4213
27/64 in	-	0.4219
-	10.8	0.4252
-	10.9	0.4291
-	11	0.4331
-	11.1	0.4370
7/16 in	-	0.4375
-	11.2	0.4409
-	11.3	0.4449
-	11.4	0.4488

Drill Size & Fractions	MM	Inch
-	11.5	0.4528
29/64 in	-	0.4531
-	11.6	0.4567
-	11.7	0.4606
-	11.8	0.4646
-	11.9	0.4685
15/32 in	-	0.4688
-	12	0.4724
-	12.1	0.4764
-	12.2	0.4803
-	12.3	0.4843
31/64 in	-	0.4844
-	12.4	0.4882
-	12.5	0.4921
-	12.6	0.4961
1/2 in	-	0.5000
-	12.8	0.5039
-	12.9	0.5079
-	13	0.5118
33/64 in	-	0.5156
17/32 in	-	0.5313
-	13.5	0.5315
35/64 in	-	0.5469
-	14	0.5512
9/16 in	-	0.5625
-	14.5	0.5709
37/64 in	-	0.5781
-	15	0.5906
19/32 in	-	0.5938
39/64 in	-	0.6094
-	15.5	0.6102
5/8 in	-	0.6250
-	16	0.6299
41/64 in	-	0.6406
-	16.5	0.6496
21/32 in	-	0.6563
-	17	0.6693
43/64 in	-	0.6719
11/16 in	-	0.6875
-	17.5	0.6890
45/64 in	-	0.7031
-	18	0.7087
23/32 in	-	0.7188
-	18.5	0.7283
47/64 in	-	0.7344
-	19	0.7480
3/4 in	-	0.7500
49/64 in	-	0.7656
-	19.5	0.7677
25/32 in	-	0.7813
-	20	0.7874
51/64 in	-	0.7969
-	20.5	0.8071
13/16 in	-	0.8125
-	21	0.8268
53/64 in	-	0.8281
27/32 in	-	0.8438
-	21.5	0.8465
55/64 in	-	0.8594
-	22	0.8661
7/8 in	-	0.8750
-	22.5	0.8858
57/64 in	-	0.8906
-	23	0.9055
29/32 in	-	0.9063
59/64 in	-	0.9219
-	23.5	0.9252
15/16 in	-	0.9375
-	24	0.9449
61/64 in	-	0.9531
-	24.5	0.9646
31/32 in	-	0.9688
-	25	0.9843
63/64 in	-	0.9844
1 in	25.4	1.0000



Technical Information

Tap & Drill Sizes and Equations

Tap Size	CUT TAPS - Target Theor. % of Thread			FORM TAPS - Target Theor. % of Thread		
	-55%	-65%	-75%	-55%	-65%	-75%
0 - 80	1.30 mm	1.25 mm	1.20 mm	1.40 mm	1.38 mm	1.36 mm
M1.6 x 0.35	1.35 mm	1.30 mm	1.25 mm	1.47 mm	1.44 mm	1.42 mm
M1.8 x 0.35	1.55 mm	1.50 mm	1.45 mm	1.67 mm	1.64 mm	1.62 mm
1 - 64	1/16 in	# 53	1.45 mm	# 51	1.68 mm	1.65 mm
1 - 72	1.60 mm	1.55 mm	# 53	1.72 mm	1.70 mm	1.67 mm
M2 x 0.40	# 51	1.65 mm	1.60 mm	# 49	1.82 mm	1.79 mm
2 - 56	# 49	1.80 mm	1.73 mm	2.01 mm	5/64 in	1.95 mm
2 - 64	1.87 mm	# 49	1.80 mm	2.03 mm	2.00 mm	5/64 in
M2.2 x 0.45	# 49	1.80 mm	1.75 mm	2.03 mm	2.00 mm	1.97 mm
M2.5 x 0.45	# 44	2.10 mm	# 46	2.33 mm	2.30 mm	2.27 mm
3 - 48	2.12 mm	# 46	2.00 mm	2.32 mm	2.27 mm	2.24 mm
3 - 56	# 44	2.13 mm	# 46	2.34 mm	2.30 mm	2.28 mm
4 - 40	3/32 in	2.30 mm	2.20 mm	2.60 mm	2.55 mm	2.52 mm
4 - 48	2.45 mm	3/32 in	2.32 mm	# 37	2.60 mm	# 38
M3 x 0.50	# 37	# 38	2.50 mm	2.80 mm	7/64 in	2.75 mm
M3 x 0.35	2.75 mm	2.70 mm	2.65 mm	# 33	2.85 mm	# 34
5 - 40	# 36	# 37	# 39	2.93 mm	2.88 mm	2.85 mm
5 - 44	2.75 mm	2.70 mm	2.60 mm	2.95 mm	2.92 mm	# 33
M3.5 x 0.60	# 31	3.00 mm	2.90 mm	3.27 mm	3.23 mm	3.20 mm
M3.5 x 0.35	3.25 mm	3.20 mm	3.15 mm	3.37 mm	3.35 mm	3.32 mm
6 - 32	# 32	# 34	# 36	3.20 mm	3.15 mm	3.10 mm
6 - 40	# 31	# 32	# 33	# 30	3.22 mm	1/8 in
M4 x 0.70	3.50 mm	3.40 mm	3.30 mm	# 26	3.70 mm	3.65 mm
M4 x 0.50	3.65 mm	9/64 in	3.50 mm	# 25	3.77 mm	3.77 mm
8 - 32	3.60 mm	3.50 mm	3.40 mm	# 24	# 25	3.75 mm
8 - 36	# 27	9/64 in	# 29	3.90 mm	# 24	# 25
M4.5 x 0.75	5/32 in	# 24	# 25	# 19	4.15 mm	4.10 mm
M4.5 x 0.50	4.15 mm	4.06 mm	4.00 mm	# 18	4.27 mm	4.25 mm
10 - 24	# 21	# 23	# 25	4.42 mm	11/64 in	4.27 mm
10 - 32	4.25 mm	4.15 mm	# 21	4.52 mm	4.45 mm	4.40 mm
M5 x 0.80	4.40 mm	4.30 mm	4.20 mm	# 13	4.65 mm	4.60 mm
M5 x 0.50	# 14	# 15	# 16	# 12	3/16 in	4.75 mm
12 - 24	# 13	4.60 mm	4.45 mm	5.06 mm	5.00 mm	4.95 mm
12 - 28	# 12	# 13	4.60 mm	5.15 mm	5.06 mm	5.00 mm
M6 x 1.00	5.25 mm	13/64 in	5.00 mm	# 2	7/32 in	5.50 mm
M6 x 0.75	5.45 mm	5.35 mm	5.25 mm	5.70 mm	5.65 mm	# 2
1/4 - 20	# 3	# 5	# 7	5.85 mm	# 1	5.70 mm
1/4 - 28	5.70 mm	7/32 in	5.45 mm	6.00 mm	15/64 in	5.90 mm
M7 x 1.00	Ltr D	Ltr C	6.00 mm	Ltr G	Ltr F	6.50 mm
M7 x 0.75	6.40 mm	1/4 in	Ltr D	6.70 mm	6.65 mm	6.60 mm
5/16 - 18	Ltr I	17/64 in	Ltr F	7.40 mm	7.30 mm	7.20 mm
5/16 - 24	9/32 in	Ltr J	Ltr I	19/64 in	7.45 mm	7.40 mm
M8 x 1.25	7.10 mm	Ltr I	Ltr H	19/64 in	7.45 mm	Ltr L
M8 x 1.00	7.25 mm	9/32 in	7.00 mm	7.60 mm	19/64 in	7.50 mm
3/8 - 16	8.40 mm	Ltr P	5/16 in	8.90 mm	8.80 mm	11/32 in
3/8 - 24	11/32 in	Ltr R	8.50 mm	23/64 in	9.05 mm	9.00 mm
M10 x 1.50	8.90 mm	11/32 in	8.50 mm	9.40 mm	9.30 mm	9.20 mm
M10 x 1.25	9.10 mm	8.90 mm	11/32 in	3/8 in	9.45 mm	Ltr U
M10 x 1.00	9.25 mm	23/64 in	9.00 mm	9.60 mm	9.55 mm	9.50 mm
7/16 - 14	Ltr W	Ltr V	Ltr U	10.40 mm	10.30 mm	10.20 mm
7/16 - 20	10.20 mm	10.00 mm	9.95 mm	10.60 mm	10.50 mm	Ltr Z
M12 x 1.75	27/64 in	10.50 mm	10.30 mm	11.30 mm	11.20 mm	7/16 in
M12 x 1.50	10.90 mm	27/64 in	10.50 mm	11.40 mm	11.30 mm	11.20 mm
M12 x 1.00	11.25 mm	7/16 in	11.00 mm	11.60 mm	11.55 mm	11.50 mm
1/2 - 13	11.30 mm	11.00 mm	27/64 in	15/32 in	11.80 mm	11.70 mm
1/2 - 20	11.80 mm	11.60 mm	11.40 mm	12.20 mm	12.10 mm	12.05 mm
M14 x 2.00	12.50 mm	31/64 in	12.00 mm	13.20 mm	33/64 in	13.00 mm
M14 x 1.50	12.90 mm	1/2 in	12.50 mm	13.40 mm	13.30 mm	13.20 mm
9/16 - 12	1/2 in	12.50 mm	12.20 mm	17/32 in	13.30 mm	13.20 mm
9/16 - 18	13.25 mm	33/64 in	12.90 mm	13.75 mm	13.65 mm	13.55 mm
5/8 - 11	14.20 mm	13.90 mm	13.60 mm	15.00 mm	14.80 mm	37/64 in
5/8 - 18	14.80 mm	37/64 in	14.50 mm	15.30 mm	15.25 mm	15.15 mm
M16 x 2.00	14.50 mm	9/16 in	14.00 mm	15.25 mm	15.10 mm	15.00 mm
M16 x 1.50	14.90 mm	14.70 mm	14.50 mm	15.40 mm	15.30 mm	15.20 mm
M18 x 2.50	16.20 mm	5/8 in	15.50 mm	17.40 mm	17.30 mm	17.25 mm
M18 x 1.50	16.90 mm	21/32 in	16.50 mm	17.40 mm	17.30 mm	17.25 mm
3/4 - 10	17.20 mm	16.90 mm	16.50 mm	18.10 mm	45/64 in	17.70 mm
3/4 - 16	17.90 mm	17.70 mm	17.40 mm	18.40 mm	18.30 mm	23/32 in
M20 x 2.50	18.20 mm	45/64 in	17.50 mm	3/4 in	18.90 mm	47/64 in
M20 x 1.50	18.90 mm	18.75 mm	8.50 mm	49/64 in	9.30 mm	19.25 mm
M22 x 2.50	51/64 in	25/32 in	9.50 mm	53/64 in	20.90 mm	20.75 mm
M22 x 1.50	20.90 mm	20.75 mm	20.50 mm	27/32 in	21.30 mm	21.25 mm
7/8 - 9	51/64 in	25/32 in	19.50 mm	21.10 mm	21.00 mm	20.75 mm
7/8 - 14	20.90 mm	13/16 in	20.40 mm	21.50 mm	27/32 in	21.30 mm
M24 x 3.00	55/64 in	27/32 in	53/64 in	22.80 mm	57/64 in	22.50 mm
M24 x 2.00	22.50 mm	7/8 in	22.00 mm	23.25 mm	23.10 mm	23.00 mm
1 - 8	29/32 in	57/64 in	22.25 mm	61/64 in	24.00 mm	23.75 mm
1 - 12	15/16 in	23.60 mm	23.30 mm	31/32 in	24.40 mm	24.25 mm

- = approximately

UNC/UNF Taps: Calculating Drill Size for Specific % of Thread

$$\text{Drill Size (in)} = \frac{\text{Cut Taps} = \text{BD} - \text{Desired \% of Thread} \times .01299}{\text{TPI}}$$

$$\text{Drill Size (in)} = \frac{\text{Form Taps} = \text{BD} - \text{Desired \% of Thread} \times .0068}{\text{TPI}}$$

M/MF Taps: Calculating Drill Size for Specific % of Thread

$$\text{Drill Size (mm)} = \frac{\text{Cut Taps Drill} = \text{BD} - \text{Desired \% of Thread} \times \text{Pitch}}{76.98}$$

$$\text{Drill Size (mm)} = \frac{\text{Form Taps Drill} = \text{BD} - \text{Desired \% of Thread} \times \text{Pitch}}{10.5}$$

Speed / Feed Equations

$$\text{RPM} = \frac{\text{SFM}}{\text{Dia. in}} \times 3.82 \quad \text{RPM} = \frac{\text{SFM}}{\text{Dia. (mm)}} \times 97.028$$

$$\text{IPR} = \frac{1}{\text{TPI}} \quad \text{IPR} = \text{Pitch (mm)} \times 0.0394$$

End Mill Equations

$$\text{SFM} = 0.26 \times \text{RPM} \times \text{Dia. in}$$

$$\text{IPM} = \text{No. of teeth} \times \text{IPT} \times \text{RPM}$$

$$\text{Cut time sec} = \frac{\text{Milling Length}}{\text{IPM}} \times 60$$

$$\text{Q} = \text{Depth of Cut in.} \times \text{Width of Cut in.}$$

$$\text{RPM} = \frac{\text{SFM}}{\text{Dia. in}} \times 3.82$$

Drill Equations

$$\text{IPM} = \text{IPR} \times \text{R}$$

$$\text{SFM} = 0.26 \times \text{RPM} \times \text{Dia. in} \quad \text{RPM} = \frac{\text{SFM}}{\text{Dia. in}} \times 3.82$$

$$\text{Cut time sec} = \frac{\text{Milling Length}}{\text{IPM}} \times 60$$

Conversions

$$\text{Inch} = \frac{\text{mm}}{25.4} \quad \text{Gal} = \frac{\text{Liter}}{3.79} \quad \text{PSI} = \text{Bar} \times 14.7$$

$$\text{SFM} = \text{m/min.} \times 3.28 \quad \text{IPR} = \frac{\text{mm/rev.}}{25.4} \quad \text{Torque} = \text{NM} \times 0.7376$$

$$\text{HP} = \text{KW} \times 1.34$$

Equation Key

- SFM = Surface Foot Per Min. PSI = Pounds Per Square Inch
- RPM = Rotations Per Minute Q = Minimum Cutting Depth
- IPT = Inches Per Tooth HP = Horse Power
- TPI = Threads Per Inch KW = Kilowatts Per Hour
- IPR = Inches Per Revolution BD = Basic Diameter



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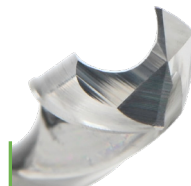
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Reconditioning Program

(cont.)

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STEP 2

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STEP 3

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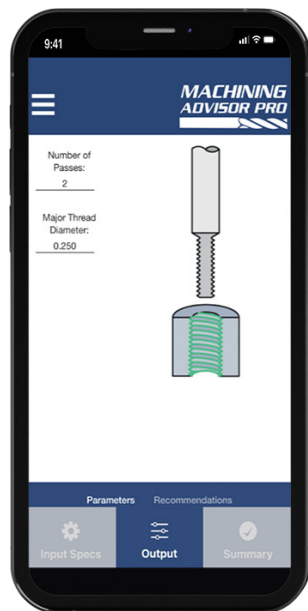
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