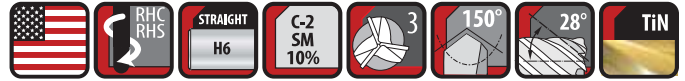


DRILLING RECOMMENDATIONS - TWIST DRILLS
- STUB DRILLS
- STRAIGHT FLUTE DRILLS
- 3 FLUTE DRILLS

Workpiece Material Group	Hardness	Surface Feet Per Minute (SFM)	Inches Per Revolution (IPR)								
			(IPR) Cutting Tool Diameter								
			1/32	1/16	1/8	1/4	3/8	1/2	5/8	3/4	
Steels Free Machining & Low Carbon, 10XX, 11XX, 12XX 12LXX, ASTM A27 ASTM A36 Medium / High Carbon, Alloys, & Easy to Machine Tool Steels	≤ 28 Rc	175									
	28-38 Rc	165	0.0010	0.0020	0.0030	0.0060	0.0080	0.0100	0.0110	0.0120	
Tool & Die Steels A2, D2, H13, L6, P20, S7	28-44 Rc	150									
Stainless Steels Moderately Difficult to Machine, Nitronic 50, Nitronic 60, 301, 303, 304, 304L, Incoloy 27-7MO, 316 316L, 321, 347 Difficult to Machine, 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	≤ 28 Rc	140	0.0010	0.0020	0.0030	0.0060	0.0080	0.0100	0.0110	0.0120	
	> 28 Rc	60	0.0003	0.0005	0.0020	0.0040	0.0050	0.0060	0.0080	0.0100	
Super Alloys High Temp, Nimonic, Inconel, Monel, Hastelloy Titanium: Ti 3Al-2.5V, Ti 6Al-4V Ti 10V-2Fe-3Al	≤ 42 Rc	60									
	≤ 42 Rc	80	0.0003	0.0005	0.0020	0.0040	0.0050	0.0060	0.0080	0.0100	
Hardened Materials	45 to 65 Rc	50	0.0003	0.0010	0.0010	0.0010	0.0020	0.0020	0.0020	0.0030	
Cast Iron Gray, SAE J431, ASTM A48 Ductile & Malleable, ASTM A536, ASTM 897, ASTM A47, ASTM A220 ASTM A602	≤ 240 HB	175	0.0010	0.0020	0.0030	0.0060	0.0080	0.0100	0.0110	0.0120	
	> 240 HB	175									
Non-Ferrous Aluminium, Brass, Bronze, Copper, Plastics Kevlar/Graphite		300	0.0003	0.0005	0.0020	0.0040	0.0050	0.0060	0.0080	0.0100	
		375									

NOTE: ALL RECOMMENDATIONS ARE CONSIDERED AS STARTING PARAMETERS ONLY

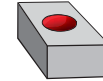
3 FLUTE DRILLS



Performs exceedingly well in short-chip materials like steel, iron, brass, and bronze

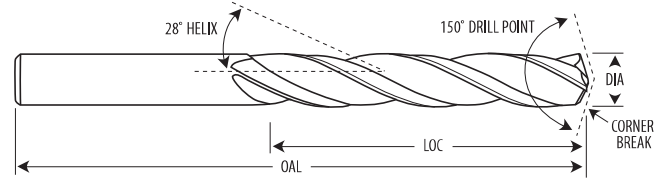
Universally rated for use on all ISO materials

Rapid penetration and the utmost in accuracy are made possible due to a three-fluted design complemented by a 150° split point



Proprietary drill point technology utilizes a perfected combination of facets, corner breaks, and edge prep to produce the strongest cutting action

No preliminary drilling or spotting operations needed



DIAMETER TOLERANCE: +0.0000 / -0.0005"

SIZE	Dec In	LOC	OAL	TiN
3.0mm	0.1181	32mm	57mm	453-401181B
1/8	0.1250	1-1/4	2-1/4	453-101250B
9/64	0.1406	1-3/8	2-1/2	453-101406B
5/32	0.1563	1-3/8	2-1/2	453-101562B
4.0mm	0.1575	35mm	64mm	453-401575B
11/64	0.1719	1-5/8	2-3/4	453-101719B
3/16	0.1875	1-5/8	2-3/4	453-101875B
5.0mm	0.1969	45mm	76mm	453-401969B
13/64	0.2031	1-3/4	3	453-102031B
7/32	0.2188	1-3/4	3	453-102188B
15/64	0.2344	2	3-1/4	453-102344B
6.0mm	0.2362	51mm	83mm	453-402362B
1/4	0.2500	2	3-1/4	453-102500B
17/64	0.2656	2-1/8	3-1/2	453-102656B
7.0mm	0.2756	54mm	89mm	453-402756B
9/32	0.2813	2-1/8	3-1/2	453-102812B
19/64	0.2969	2-3/8	3-3/4	453-102969B
5/16	0.3125	2-3/8	3-3/4	453-103125B
8.0mm	0.3150	60mm	95mm	453-403150B
21/64	0.3281	2-1/2	4	453-103281B
11/32	0.3438	2-1/2	4	453-103438B
9.0mm	0.3543	64mm	102mm	453-403543B
23/64	0.3594	2-3/4	4-1/4	453-103594B
3/8	0.3750	2-3/4	4-1/4	453-103750B
25/64	0.3906	2-7/8	4-1/2	453-103906B
10.0mm	0.3937	73mm	114mm	453-403937B
13/32	0.4063	2-7/8	4-1/2	453-104062B
27/64	0.4219	2-7/8	4-1/2	453-104219B
11.0mm	0.4331	73mm	114mm	453-404331B
7/16	0.4375	2-7/8	4-1/2	453-104375B
29/64	0.4531	3	4-3/4	453-104531B
15/32	0.4688	3	4-3/4	453-104688B
12.0mm	0.4724	76mm	121mm	453-404724B
31/64	0.4844	3	4-3/4	453-104844B
1/2	0.5000	3	4-3/4	453-105000B
17/32	0.5313	3	4-3/4	453-105312B
14.0mm	0.5512	89mm	146mm	453-405512B
9/16	0.5625	3-1/2	5-3/4	453-105625B
5/8	0.6250	3-1/2	5-3/4	453-106250B
16.0mm	0.6299	90mm	146mm	453-406299B
3/4	0.7500	4	5-3/4	453-107500B