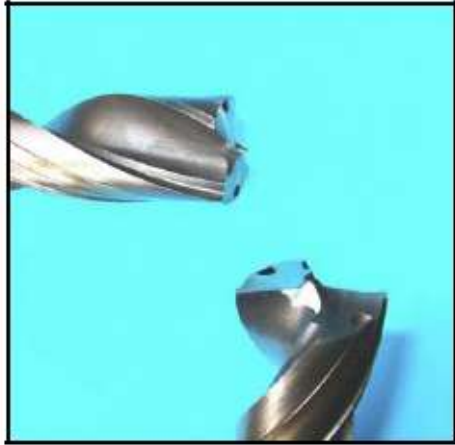


Penetrator speed & feed rates

SPEEDS AND FEEDS for holes up to 2" depth in TYPICAL STRUCTURAL STEEL						
The New Ocean Penetrator Cobalt Drill Bit with 170° drill point angle	STANDARD DRILL SIZES		RPM		FEED RATE	
	Fractional Size	Decimal Equiv.	From	To	in/rev	mm/rev
	7/16	0.4375	710	1050	0.012	0.30
	1/2	0.5	611	840	0.013	0.33
	9/16	0.5625	590	810	0.014	0.36
	5/8	0.625	562	773	0.015	0.38
	11/16	0.6875	480	670	0.016	0.41
	3/4	0.75	469	644	0.017	0.43
	13/16	0.8125	410	560	0.018	0.46
	7/8	0.875	370	510	0.019	0.48
	15/16	0.9375	350	480	0.02	0.51
	1	1	320	440	0.021	0.53
	1.1/16	1.0625	300	420	0.022	0.56
	1.1/8	1.125	280	400	0.023	0.58
	1.3/16	1.1875	270	380	0.024	0.61
	1.1/4	1.25	260	360	0.024	0.61
	1.5/16	1.3125	250	350	0.026	0.66
	1.3/8	1.375	222	306	0.027	0.69
	1.7/16	1.4375	213	292	0.028	0.71
	1.1/2	1.5	204	280	0.03	0.76
	1.9/16	1.5625	196	269	0.032	0.81
	1.5/8	1.625	188	259	0.033	0.84
	1.11/16	1.6875	180	248	0.034	0.86
	1.3/4	1.75	175	240	0.036	0.91
	1.13/16	1.8125	168	230	0.037	0.94
	1.7/8	1.875	160	222	0.038	0.97
	1.15/16	1.9375	156	216	0.039	0.99
	2	2	150	210	0.04	1.02

The Drill RPM's shown in the table are for drilling depths up to 2" and must be considered as a "Starting Point" as individual drilling machines and conditions are always subject to change.

To optimize the drilling operation, it is recommended that you vary the RPM and not the FEED RATE.

Nachi speed & feed rate

Taper Shank Oil Hole Drills / Cobalt List No. 683

Workpiece Material		Carbon Steels		Alloy Steels		Mold Steels		Cast Irons		Aluminum Alloys	
Speed (SFM)				Hardened Steels		Stainless Steels				Nonferrous Metals	
Drill Diameter		55 - 65 SFM		50 - 60 SFM		35 - 45 SFM		65 - 80 SFM		100 - 110 SFM	
Fractional	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3/8	0.3750	680	0.008	620	0.007	480	0.008	820	0.010	1,200	0.010
7/16	0.4375	580	0.009	530	0.007	400	0.008	700	0.011	970	0.011
1/2	0.5000	510	0.009	460	0.008	350	0.007	620	0.012	850	0.012
5/8	0.6250	410	0.011	370	0.010	280	0.008	490	0.014	680	0.014
23/32	0.7188	380	0.012	320	0.010	240	0.009	430	0.015	590	0.014
3/4	0.7500	340	0.013	310	0.011	230	0.009	410	0.015	570	0.015
7/8	0.8750	290	0.013	270	0.011	200	0.010	360	0.017	490	0.017
1	1.0000	260	0.014	230	0.012	180	0.011	310	0.018	430	0.018
1 1/4	1.2500	210	0.016	190	0.013	140	0.011	250	0.019	340	0.019
1 1/2	1.5000	170	0.017	160	0.014	120	0.012	210	0.021	290	0.021

- 1) The above values apply when coolant is used in a vertical machine. In a horizontal machine or deep hole, use pecking.
- 2) Adjust drilling condition when unusual vibration or different sound occurs.

Allied speed & feed rates

Super Cobalt Notch Point[®] and 150° Structural Steel Drill Insert

MATERIAL	MATERIAL HARDNESS (BHN)	-NP TiAIN Mist Coolant (SFM)	FEED (IPR)			
			9/16" to 11/16"	13/16" to 15/16"	1" to 1-3/8"	1-13/32" to 1-7/8"
Structural Steel A36, A285, A516, etc.	100 - 150	110	0.010	0.012	0.014	0.018
	150 - 250	100	0.009	0.011	0.012	0.016
	250 - 350	90	0.008	0.010	0.011	0.014

Formulas: $IPM = RPM \cdot IPR$

$SFM = RPM \cdot 0.262 \cdot DIA$

$RPM = SFM \cdot 3.82/DIA$