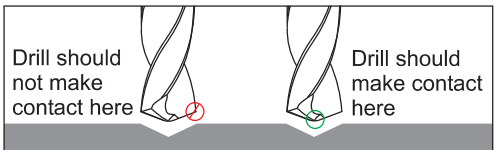
Series CXDCE Technical Information

Process For Successful Deep Hole Drilling:

1. Start by producing a 1.5 x diameter to 3 x diameter pilot hole using a coolant or non-coolant pilot drill. Typically this tool will have a point angle the same as or greater than the deep hole drill. Run this drill at 100% of the final drill speed and 1/2 the normal IPM (mm/min).



2. Retract and tool change to the final deep hole (CXDCE M.A. Ford® Series) drill.
3. Rapid to clearance plane and enter the pilot hole at 25% (don't exceed 400 to 500 RPM (n)) of the final speed and 1 to 2 IPM (25.4 to 50.8 mm/min). This will help with true position by eliminating drill whip. Once into the hole, turn on the coolant and advance to the material start. At this point, you can add a dwell to clear any chips that have been left from the previous drill and let the spindle get to full speed. Increase the speed and feed to final drilling parameters.
4. Drill one shot to the final hole depth or through.
5. Should you experience any squeaking you may need to retract the drill and increase your feed. Chip packing is occurring and will need to be addressed.
6. Once through the material, it may be necessary to reduce the RPM (n) to eliminate breakage of the drill due to drill whip. Then retract to the clearance plane.

Recommended Machine Requirements

500-1,000 PSI through-spindle coolant pressure
Machine runout of .0003" (.008mm) Max.

Due to the conditions of equipment, tool holders, and conditions beyond M.A. Ford®'s control, your results may vary.

Should your application require more in depth discussion or a special tool, please contact M.A. Ford®'s Application Engineering Department at 563-391-6220 / 800-553-8024.

Made in USA

Recommended Cutting Data Series CXDCE - Inch

15xD, Coolant-Fed Drilling

Material Group	ISO	Hardness	Vc - SFM	Drill Diameter (inch)			
				1/8	3/16	1/4	5/16
			Low - **Mid** - High	Feed (in/rev)			
Low Carbon Steels 12L14, 1018, A36	P	≤ 180 HB	280 - **350** - 420	.0025 - .0038	.0038 - .0056	.0050 - .0075	.0063 - .0094
Med Carbon / Alloy Steels 1045, 1050, 4140, 4340	P	≤ 38 HRC	220 - **270** - 320	.0025 - .0038	.0038 - .0056	.0050 - .0075	.0063 - .0094
Die / Tool Steels A2, D2, H13, P20	P	≤ 45 HRC	130 - **165** - 200	.0013 - .0019	.0019 - .0028	.0025 - .0038	.0031 - .0047
Ferritic / Martensitic Stainless 400 Series	M	≤ 28 HRC	240 - **300** - 360	.0019 - .0031	.0028 - .0047	.0038 - .0063	.0047 - .0078
Austenitic Stainless 300 Series	M	≤ 28 HRC	140 - **180** - 220	.0019 - .0031	.0028 - .0047	.0038 - .0063	.0047 - .0078
PH Stainless 15-5 PH, 17-4 PH, 17-7 PH	M	≤ 45 HRC	100 - **120** - 140	.0013 - .0025	.0019 - .0038	.0025 - .0050	.0031 - .0063
Cast Iron - Gray	K	≤ 240 HB	320 - **400** - 480	.0031 - .0044	.0047 - .0066	.0063 - .0088	.0078 - .0109
Cast Iron - Ductile & Malleable	K	> 240 HB	210 - **265** - 320	.0025 - .0038	.0038 - .0056	.0050 - .0075	.0063 - .0094
Aluminum - Wrought (≤ 10% Si)	N	≤ 100 HB	400 - **500** - 600	.0044 - .0063	.0066 - .0094	.0088 - .0125	.0109-.0156
Aluminum - Cast (> 10% Si)	N	≤ 100 HB	280 - **350** - 420	.0044 - .0063	.0066 - .0094	.0088 - .0125	.0109-.0156

Material Group	ISO	Hardness	Vc - SFM	Drill Diameter (inch)	
				3/8	1/2
			Low - **Mid** - High	Feed (in/rev)	
Low Carbon Steels 12L14, 1018, A36	P	≤ 180 HB	280 - **350** - 420	.0075 - .0113	.0100 - .0150
Med Carbon / Alloy Steels 1045, 1050, 4140, 4340	P	≤ 38 HRC	220 - **270** - 320	.0075 - .0113	.0100 - .0150
Die / Tool Steels A2, D2, H13, P20	P	≤ 45 HRC	130 - **165** - 200	.0038 - .0056	.0050 - .0075
Ferritic /Martensitic Stainless 400 Series	M	≤ 28 HRC	240 - **300** - 360	.0056 - .0094	.0075 - .0125
Austenitic Stainless 300 Series	M	≤ 28 HRC	140 - **180** - 220	.0056 - .0094	.0075 - .0125
PH Stainless 15-5 PH, 17-4 PH, 17-7 PH	M	≤ 45 HRC	100 - **120** - 140	.0038 - .0075	.0050 - .0100
Cast Iron - Gray	K	≤ 240 HB	320 - **400** - 480	.0094 - .0131	.0125 -.0175
Cast Iron - Ductile & Malleable	K	> 240 HB	210 - **265** - 320	.0075 - .0113	.0100 - .0150
Aluminum - Wrought (≤ 10% Si)	N	≤ 100 HB	400 - **500** - 600	.0131 - .0188	.0175 - .0250
Aluminum - Cast (> 10% Si)	N	≤ 100 HB	280 - **350** - 420	.0131 - .0188	.0175 - .0250

Recommended Cutting Data Series CXDCE - Metric

15xD, Coolant-Fed Drilling

Material Group	ISO	Hardness	Vc - M/Min	Drill Diameter (mm)			
				3	5	6	8
			Low - **Mid** - High	Feed (mm/rev)			
Low Carbon Steels 12L14, 1018, A36	P	≤ 180 HB	85 - **105** - 125	0.060 - 0.090	0.100 - 0.150	0.120 - 0.180	0.160 - 0.240
Med Carbon / Alloy Steels 1045, 1050, 4140, 4340	P	≤ 38 HRC	65 - **80** - 95	0.060 - 0.090	0.100 - 0.150	0.120 - 0.180	0.160 - 0.240
Die / Tool Steels A2, D2, H13, P20	P	≤ 45 HRC	40 - **50** - 60	0.030 - 0.045	0.050 - 0.075	0.060 - 0.090	0.080 - 0.120
Ferritic / Martensitic Stainless 400 Series	M	≤ 28 HRC	70 - **90** - 110	0.045 - 0.075	0.075 - 0.125	0.090 - 0.150	0.120 - 0.200
Austenitic Stainless 300 Series	M	≤ 28 HRC	45 - **55** - 65	0.045 - 0.075	0.075 - 0.125	0.090 - 0.150	0.120 - 0.200
PH Stainless 15-5 PH, 17-4 PH, 17-7 PH	M	≤ 45 HRC	30 - **35** - 40	0.030 - 0.060	0.050 - 0.100	0.060 - 0.120	0.080 - 0.160
Cast Iron - Gray	K	≤ 240 HB	95 - **120** - 145	0.075 - 0.105	0.125 - 0.175	0.150 - 0.210	0.200 - 0.280
Cast Iron - Ductile & Malleable	K	> 240 HB	65 - **80** - 95	0.060 - 0.090	0.100 - 0.150	0.120 - 0.180	0.160 - 0.240
Aluminum - Wrought (≤ 10% Si)	N	≤ 100 HB	120 - **150** - 180	0.105 - 0.150	0.175 - 0.250	0.210 - 0.300	0.280 - 0.400
Aluminum - Cast (> 10% Si)	N	≤ 100 HB	85 - **105** - 125	0.105 - 0.150	0.175 - 0.250	0.210 - 0.300	0.280 - 0.400

Material Group	ISO	Hardness	Vc - M/Min	Drill Diameter (mm)	
				10	12
			Low - **Mid** - High	Feed (mm/rev)	
Low Carbon Steels 12L14, 1018, A36	P	≤ 180 HB	85 - **105** - 125	0.200 - 0.300	0.240 - 0.360
Med Carbon / Alloy Steels 1045, 1050, 4140, 4340	P	≤ 38 HRC	65 - **80** - 95	0.200 - 0.300	0.240 - 0.360
Die / Tool Steels A2, D2, H13, P20	P	≤ 45 HRC	40 - **50** - 60	0.100 - 0.150	0.120 - 0.180
Ferritic /Martensitic Stainless 400 Series	M	≤ 28 HRC	70 - **90** - 110	0.150 - 0.250	0.180 - 0.300
Austenitic Stainless 300 Series	M	≤ 28 HRC	45 - **55** - 65	0.150 - 0.250	0.180 - 0.300
PH Stainless 15-5 PH, 17-4 PH, 17-7 PH	M	≤ 45 HRC	30 - **35** - 40	0.100 - 0.200	0.120 - 0.240
Cast Iron - Gray	K	≤ 240 HB	95 - **120** - 145	0.250 - 0.350	0.300 - 0.420
Cast Iron - Ductile & Malleable	K	> 240 HB	65 - **80** - 95	0.200 - 0.300	0.240 - 0.360
Aluminum - Wrought (≤ 10% Si)	N	≤ 100 HB	120 - **150** - 180	0.350 - 0.500	0.420 - 0.600
Aluminum - Cast (> 10% Si)	N	≤ 100 HB	85 - **105** - 125	0.350 - 0.500	0.420 - 0.600