



Where *high performance*  
is the *standard*<sup>®</sup>

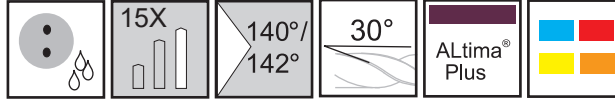


**CYCLONE**

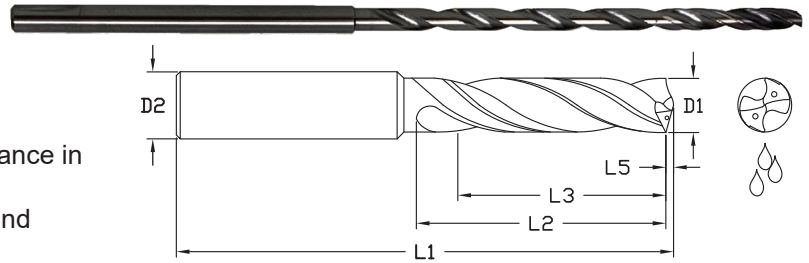
Series CXDCE  
15X Coolant Fed Drill

[www.maford.com](http://www.maford.com)

## Cylcone CXDCE Series



- Coolant fed solid carbide
- Double Margin
- Tip coated with ALtima® Plus
- Common shank
- Modified margin relief for improved performance in deep hole drilling
- Corner chamfer for added corner strength and improved finish



ALtima® Plus		Diameter			Shank Diameter	OAL	Flute Length	Drill Length Ref.	Point Length
Tool Number	EDP	D1			D2	L1	L2	L3	L5
		Fraction	mm	Decimal	mm	mm	mm	mm	mm
CXDCEM0300AP	07436		3.0	.1181	3	105	56	42	0.46
CXDCE1200AP	07493	#31		.1200	4	120	60	45	0.48
CXDCE1250AP	07437	1/8		.1250	4	120	60	45	0.48
CXDCEM0350AP	07438		3.5	.1378	4	120	66	50	0.54
CXDCE1406AP	07439	9/64		.1406	4	120	67	50	0.56
CXDCE1562AP	07440	5/32		.1562	4	120	74	56	0.61
CXDCEM0400AP	07441		4.0	.1575	4	120	75	56	0.62
CXDCEM0410AP	07494		4.1	.1614	5	143	77	58	0.64
CXDCEM0420AP	07442		4.2	.1654	5	143	79	59	0.65
CXDCEM0430AP	07443		4.3	.1693	5	143	81	61	0.67
CXDCEM0440AP	07444		4.4	.1732	5	143	83	62	0.68
CXDCEM0450AP	07445		4.5	.1772	5	143	84	63	0.70
CXDCE1875AP	07446	3/16		.1875	5	143	89	67	0.74
CXDCEM0480AP	07447		4.8	.1890	5	143	90	68	0.74
CXDCEM0490AP	07448		4.9	.1929	5	143	92	69	0.76
CXDCEM0500AP	07449		5.0	.1968	5	143	94	71	0.77
CXDCEM0520AP	07450		5.2	.2047	6	162	98	74	0.81
CXDCEM0540AP	07451		5.4	.2126	6	162	101	76	0.84
CXDCEM0550AP	07452		5.5	.2165	6	162	103	77	0.85
CXDCE2187AP	07453	7/32		.2187	6	162	104	78	0.86
CXDCEM0560AP	07454		5.6	.2205	6	162	105	79	0.86
CXDCEM0580AP	07455		5.8	.2283	6	162	109	82	0.90
CXDCEM0600AP	07456		6.0	.2362	6	162	113	85	0.93
CXDCEM0610AP	07457		6.1	.2402	8	200	114	86	0.95
CXDCEM0620AP	07458		6.2	.2441	8	200	116	87	0.96
CXDCEM0630AP	07459		6.3	.2480	8	200	118	89	0.98
CXDCE2500AP	07460	1/4		.2500	8	200	119	89	0.99
CXDCEM0650AP	07461		6.5	.2559	8	200	122	92	1.01

Inch	
D1	Tolerance (h7)
.0000 - .1181	+0/-0.0039
.1182 - .2362	+0/-0.0047
.2363 - .3937	+0/-0.0059
.3938 - .4688	+0/-0.0071

Inch	
D2	Tolerance (h6)
.0000 - .1181	+0/-0.0024
.1182 - .2362	+0/-0.0031
.2363 - .3937	+0/-0.0035
.3938 - .4688	+0/-0.0043

Metric (mm)	
D1	Tolerance (h7)
0 - 3.0	+0/-0.010
3.01 - 6.0	+0/-0.012
6.01 - 10.0	+0/-0.015
10.01 - 12.0	+0/-0.018

Metric (mm)	
D2	Tolerance (h6)
0 - 3.0	+0/-0.006
3.01 - 6.0	+0/-0.008
6.01 - 10.0	+0/-0.009
10.01 - 12.0	+0/-0.011

ALtima® Plus		Diameter			Shank Diameter	OAL	Flute Length	Drill Length Ref.	Point Length
		D1			D2	L1	L2	L3	L5
Tool Number	EDP	Fraction	mm	Decimal	mm	mm	mm	mm	mm
CXDCEM0680AP	07462		6.8	.2677	8	200	128	96	1.05
CXDCEM0700AP	07463		7.0	.2756	8	200	131	98	1.08
CXDCE2812AP	07464	9/32		.2812	8	200	134	101	1.12
CXDCEM0740AP	07465		7.4	.2913	8	200	139	104	1.15
CXDCEM0750AP	07466		7.5	.2953	8	200	141	106	1.16
CXDCEM0760AP	07467		7.6	.2992	8	200	143	107	1.18
CXDCEM0780AP	07468		7.8	.3071	8	200	146	110	1.21
CXDCE3125AP	07469	5/16		.3125	8	200	149	112	1.22
CXDCEM0800AP	07470		8.0	.3150	8	200	150	113	1.24
CXDCEM0820AP	07471		8.2	.3228	10	240	154	116	1.27
CXDCEM0830AP	07472		8.3	.3268	10	240	156	117	1.29
CXDCEM0840AP	07473		8.4	.3307	10	240	158	119	1.31
CXDCEM0850AP	07474		8.5	.3346	10	240	159	119	1.32
CXDCEM0870AP	07475		8.7	.3425	10	240	163	122	1.35
CXDCE3438AP	07476	11/32		.3438	10	240	164	123	1.35
CXDCEM0900AP	07477		9.0	.3543	10	240	169	127	1.39
CXDCEM0940AP	07478		9.4	.3701	10	240	176	132	1.46
CXDCE3750AP	07479	3/8		.3750	10	240	179	134	1.47
CXDCEM0980AP	07480		9.8	.3858	10	240	184	138	1.52
CXDCEM1000AP	07481		10.0	.3937	10	240	188	141	1.55
CXDCEM1020AP	07482		10.2	.4016	12	283	191	143	1.58
CXDCEM1030AP	07483		10.3	.4055	12	283	193	145	1.60
CXDCE4062AP	07484	13/32		.4062	12	283	193	145	1.60
CXDCEM1050AP	07485		10.5	.4134	12	283	197	148	1.63
CXDCEM1080AP	07486		10.8	.4252	12	283	203	152	1.67
CXDCEM1100AP	07487		11.0	.4331	12	283	206	155	1.70
CXDCE4375AP	07488	7/16		.4375	12	283	208	156	1.73
CXDCEM1150AP	07489		11.5	.4527	12	283	216	162	1.78
CXDCEM1180AP	07490		11.8	.4646	12	283	221	166	1.83
CXDCE4688AP	07491	15/32		.4688	12	283	223	167	1.85
CXDCEM1200AP	07492		12.0	.4724	12	283	225	169	1.86

## ISO 9001:2015 Certified



**⚠️ WARNING:** This product can expose you to chemicals including nickel, cobalt, and lead, which are known to the State of California to cause cancer, and chemicals including lead which are known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



## Cyclone Drill Line

CXDCE - Coolant Fed, 15X

CXDCL - Coolant Fed, 8X

CXDCC - Coolant Fed, 5X

CXDCCS - Coolant Fed, 3X

CXDSCR - Solid, 5X

CXDSS - Solid, 3X

15X



8X



5X



3X



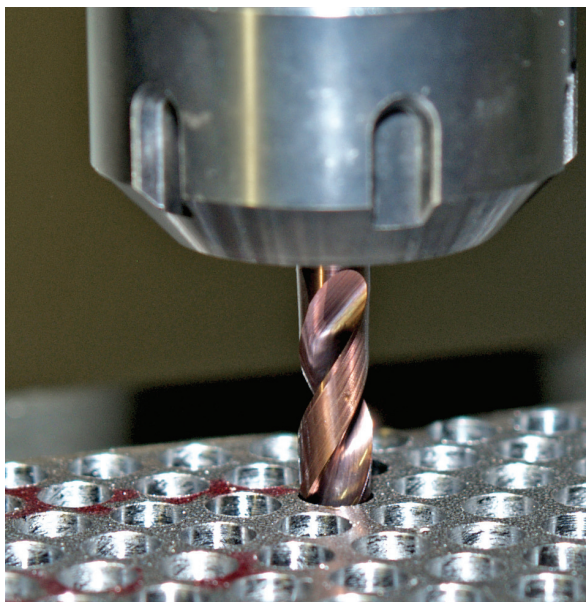
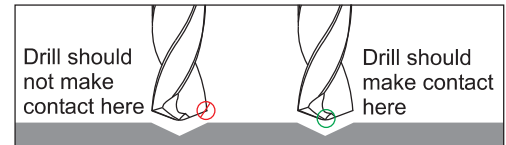
Visit [www.maford.com](http://www.maford.com)  
for the complete offering.



## 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 CXDCE - Inch

Workpiece Material Group	ISO	Hardness	TYPE	DEPTH	vc - SFM	Drill Diameter				
						3/16	1/4	5/16	3/8	15/32
						f - IPR				
Free Machining & Low Carbon Steels 1006, 1008, 1015, 1018, 1020, 1022, 1025, 1117, 1140, 1141, 11L08, 11L14, 1213, 12L13, 12L14, 1215, 1330	P	up to 28 Rc		15X	345	.0030	.0040	.0080	.0090	.0100
Medium Carbon & High Carbon Steels, Alloy Steels & Easy to Machine Tool Steels 1030, 1035, 1040, 1045, 1050, 1052, 1055, 1060, 1085, 1095, 1541, 1551, 9255, 2515, 3135, 3415, 4130, 4137, 4140, 4150, 4320, 4340, 4520, 5015, 5115, 5120, 5132, 5140, 5155, 6150, 8620, 9262, 9840, 52100, O1, O2, O6, S2, W1 to W310	P	28 to 35 Rc		15X	265	.0030	.0040	.0080	.0090	.0100
Tool Steels & Die Steels O7, M1, M2, M3, M4, M7, T1, T2, T4, T5, T8, T15, A2, A3, A6, A7, H10, H11, H12, H13, H19, H21, L3, L6, L7, P2, P20, S1, S5, S7, 52100, A128, D2, D3, D4, D5, D7	P	28 to 35 Rc		15X	265	.0030	.0040	.0080	.0090	.0100
Hardened Steels	H	35-45 Rc		15X	115	.0006	.0009	.0020	.0024	.0030
Hardened Steels		45-55 Rc			80					
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430	M	up to 28 Rc		15X	300	.0030	.0040	.0080	.0090	.0100
Stainless Steel - Moderately Difficult 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH	M	up to 28 Rc		15X	180	.0030	.0040	.0080	.0090	.0100
Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	M	over 28 Rc		15X	130	.0020	.0030	.0060	.0080	.0100
High Temp Alloys Nimonic, Inconel, Monel, Hastelloy	S	up to 42 Rc		15X	65-80	.0009	.0014	.0025	.0030	.0033
Titanium Alloys 6Al-4V, 5Al-2.5 Sn, 6Al-2 Sn-4Zr-6Mo, 3Al-8V-6Cr4Mo-4Zr, 10V-2Fe-3Al, 13V-11Cr-3Al	S	up to 42 Rc		15X	150	.0016	.0024	.0050	.0060	.0060
Cast Iron - Gray CG, ASTM A48, CLASS 20, 25, 30, 35, SAE J431C, GRADES G1800, G3000, G3500, GG 10, 15, 20, 25, 30, 35, 40	K	up to 240 HB		15X	400	.0030	.0050	.0080	.0090	.0100
Cast Iron - Ductile & Malleable CGI 60-40-18, 65-45-12, D4018, D4512, D5506, 32510, 35108, M3210, M4504, M5503, 250, 300, 350, 400, 450	K	over 240 HB		15X	265	.0030	.0050	.0080	.0090	.0100
Non-Ferrous - Al < 14% Si	N			15X	500	.0043	.0070	.0110	.0138	.0149
Non-Ferrous - Al > 14% Si	N			15X	350	.0043	.0070	.0110	.0138	.0149
Non-Ferrous - Brass	N			15X	400	.0030	.0040	.0110	.0130	.0140
Non-Ferrous - Cu/Cu Alloys/Magnesium	N			15X	300	.0030	.0040	.0110	.0130	.0140

### Safety Note

Always wear the appropriate personal protective equipment such as safety glasses and protective clothing when using solid carbide or HSS cutting tools. Machines should be fully guarded.

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.

## Recommended Cutting Data CXDCE - Metric

Workpiece Material Group	I S O	Hardness	T Y P E	D E P T H	vc - m/min	Drill Diameter (mm)						
						5	6	7	8	9	10	12
						f - mm/Rev						
Free Machining & Low Carbon Steels 1006, 1008, 1015, 1018, 1020, 1022, 1025, 1117, 1140, 1141, 11L08, 11L14, 1213, 12L13, 12L14, 1215, 1330	P	up to 28 Rc		15X	105	.088	.106	.127	.193	.215	.238	.254
Medium Carbon & High Carbon Steels, Alloy Steels & Easy to Machine Tool Steels 1030, 1035, 1040, 1045, 1050, 1052, 1055, 1060, 1085, 1095, 1541, 1551, 9255, 2515, 3135, 3415, 4130, 4137, 4140, 4150, 4320, 4340, 4520, 5015, 5115, 5120, 5132, 5140, 5155, 6150, 8620, 9262, 9840, 52100, O1, O2, O6, S2, W1 to W310	P	28 to 35 Rc		15X	80	.088	.106	.127	.193	.215	.238	.254
Tool Steels & Die Steels O7, M1, M2, M3, M4, M7, T1, T2, T4, T5, T8, T15, A2, A3, A6, A7, H10, H11, H12, H13, H19, H21, L3, L6, L7, P2, P20, S1, S5, S7, 52100, A128, D2, D3, D4, D5, D7	P	28 to 35 Rc		15X	80	.088	.106	.127	.193	.215	.238	.254
Hardened Steels	H	35-45 Rc		15X	35	.020	.022	.027	.046	.053	.060	.066
Hardened Steels		45-55 Rc			25							
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430	M	up to 28 Rc		15X	90	.090	.105	.127	.193	.215	.238	.254
Stainless Steel - Moderately Difficult 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH	M	up to 28 Rc		15X	55	.090	.105	.127	.193	.215	.238	.254
Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	M	over 28 Rc		15X	40	.090	.105	.127	.193	.215	.238	.254
High Temp Alloys Nimonic, Inconel, Monel, Hastelloy	S	up to 42 Rc		15X	20-25	.030	.035	.048	.051	.071	.078	.085
Titanium Alloys 6Al-4V, 5Al-2.5 Sn, 6Al-2 Sn-4Zr-6Mo, 3Al-8V-6Cr4Mo-4Zr, 10V-2Fe-3Al, 13V-11Cr-3Al	S	up to 42 Rc		15X	45	.050	.060	.071	.098	.127	.140	.152
Cast Iron - Gray CG, ASTM A48, CLASS 20, 25, 30, 35, SAE J431C, GRADES G1800, G3000, G3500, GG 10, 15, 20, 25, 30, 35, 40	K	up to 240 HB		15X	120	.100	.120	.140	.200	.215	.240	.254
Cast Iron - Ductile & Malleable CGI 60-40-18, 65-45-12, D4018, D4512, D5506, 32510, 35108, M3210, M4504, M5503, 250, 300, 350, 400, 450	K	over 240 HB		15X	80	.100	.120	.140	.200	.215	.240	.254
Non-Ferrous - Al < 14% Si	N			15X	150	.140	.170	.195	.280	.314	.350	.378
Non-Ferrous - Al > 14% Si	N				105	.140	.170	.195	.280	.314	.350	.378
Non-Ferrous - Brass	N				120	.088	.106	.127	.279	.314	.350	.378
Non-Ferrous - Cu/Cu Alloys/Magnesium	N				90	.088	.106	.127	.279	.314	.350	.378



Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.

Also available:



Where **high performance** is the **standard**®



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