

Newest Addition

Twister **XD**<sup>®</sup>  
XTREME DRILLING

Coolant Stub Drill



*Xtreme High Performance Drilling  
with Xtended Tool Life*

 **M.A. FORD**  
*High Performance Cutting Tools*

## NEW Addition

Celebrating

**90** Years  
1919 - 2009

# Twister X<sup>D</sup><sup>®</sup>

**XTREME DRILLING**

## 2XDCS

3X Coolant Stub



### Features

- Advanced “Active Cut” Geometric Design
- Redefined Critical Cut Zone Characteristics
- High-Efficiency Flute Profile
- “State-of-the-Art” Proprietary Coating
- Stable Low-Thrust Point Form
- Coolant-Fed
- Diameter Range - 3mm to 16mm, #31 (.1200”) - 5/8”
- Stub (3X)
- Engineered and Produced in the USA

### Benefits

- Extended Tool Life
- Elevated Metal Removal Rates (MRR)
- Lower cost Per Hole
- Improved Hole/Part Quality
- Increased Tool Reliability
- Factory Trained Network of Application & Technical Specialists
- Factory Reconditioning Service
- Ideal Platform for Modification or an Engineered “Special” Tool
- Compatibility to a Wide Range of Standard Toolholder Systems

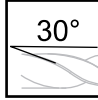
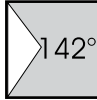
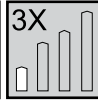
## Reduced “Cost/Hole”

See the Complete Twister X<sup>D</sup><sup>®</sup> Line of High Performance Drills  
in our New 2009 Catalog or at [www.maford.com](http://www.maford.com)

3X, 5X Solid

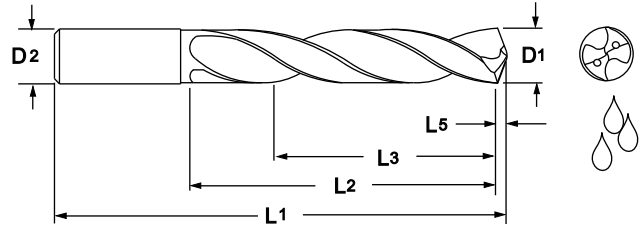
3X, 5X, 7X &amp; 12-25X Coolant Fed

# Twister XD® 2XDCS



Metric/  
>5mm  
DIN  
6537K

Designed for high performance drilling in a broad range of materials.



Tool Number	EDP	Diameter				Shank	OAL	Flute Length		Drill Length		Point Length	
		D1						D2 (h6)	L1	L2 Max.	L3 Ref.	L4	L5
		Fraction	Letter/Wire	mm	Decimal								
2XDCS1181A	04400			3.0	.1181								
2XDCS1200A	04402		31		.1200	1/8		2.250	.750		.600	13	.019
2XDCS1220A	04404			3.1	.1220		4.0		63		22	18	0.48
2XDCS1250A	04406	1/8			.1250	1/8		2.250	.750		.600	13	.019
2XDCS1260A	04408			3.2	.1260		4.0		63		22	18	0.50
2XDCS1285A	04410		30		.1285	5/32		2.500	.875		.700	18	.020
2XDCS1299A	04412			3.3	.1299		4.0		63		22	18	0.51
2XDCS1339A	04414			3.4	.1339		4.0		63		22	18	0.53
2XDCS1360A	04416		29		.1360	5/32		2.500	.875		.700	18	.021
2XDCS1378A	04418			3.5	.1378		4.0		63		22	18	0.54
2XDCS1406A	04420	9/64			.1406	5/32		2.500	.875		.700	18	.022
2XDCS1417A	04422			3.6	.1417		4.0		63		22	18	0.56
2XDCS1457A	04424			3.7	.1457		4.0		63		22	18	0.57
2XDCS1496A	04426			3.8	.1496		4.0		63		22	18	0.59
2XDCS1520A	04428		24		.1520	5/32		2.500	.875		.700	18	.024
2XDCS1535A	04430			3.9	.1535		4.0		63		22	18	0.60
2XDCS1562A	04432	5/32			.1562	5/32		2.500	.875		.700	18	.024
2XDCS1575A	04434			4.0	.1575		4.0		63		22	18	0.62
2XDCS1590A	04436		21		.1590	3/16		2.500	1.000		.800	20	.025
2XDCS1614A	04438			4.1	.1614		5.0		63		26	21	0.64
2XDCS1654A	04440			4.2	.1654		5.0		63		26	21	0.65
2XDCS1693A	04442			4.3	.1693		5.0		63		26	21	0.67
2XDCS1719A	04444	11/64			.1719	3/16		2.500	1.000		.800	20	.027
2XDCS1732A	04446			4.4	.1732		5.0		63		26	21	0.68
2XDCS1772A	04448			4.5	.1772		5.0		63		26	21	0.70
2XDCS1811A	04450			4.6	.1811		5.0		63		26	21	0.71
2XDCS1850A	04452			4.7	.1850		5.0		63		26	21	0.73
2XDCS1875A	04454	3/16			.1875	3/16		2.500	1.000		.800	20	.029
2XDCS1890A	04456			4.8	.1890		5.0		63		26	21	0.74
2XDCS1929A	04458			4.9	.1929		5.0		63		26	21	0.76
2XDCS1968A	04460			5.0	.1968		5.0		63		26	21	0.77
2XDCS2008A	04462			5.1	.2008		6.0		66		28	20	0.79
2XDCS2031A	04464	13/64			.2031	15/64		2.598	1.102		.787	20	.031
2XDCS2047A	04466			5.2	.2047		6.0		66		28	20	0.81
2XDCS2087A	04468			5.3	.2087		6.0		66		28	20	0.82
2XDCS2126A	04470			5.4	.2126		6.0		66		28	20	0.84
2XDCS2165A	04472			5.5	.2165		6.0		66		28	20	0.85
2XDCS2187A	04474	7/32			.2187	15/64		2.598	1.102		.787	20	.034
2XDCS2210A	04476		2		.2210	15/64		2.598	1.102		.787	20	.034
2XDCS2244A	04478			5.7	.2244		6.0		66		28	20	0.88

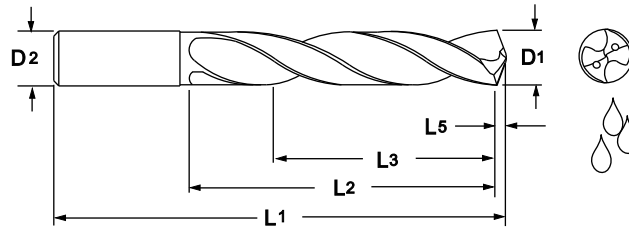
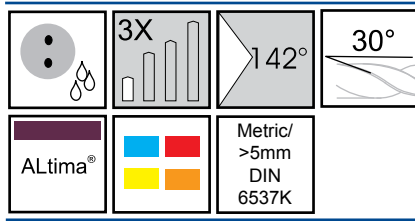
Inch	
D1	Tolerance (h7)
.0000 - .1181	+0/- .00039
.1182 - .2362	+0/- .00047
.2363 - .3937	+0/- .00059
.3938 - .6299	+0/- .00071

Inch	
D2	Tolerance (h6)
.0000 - .1181	+0/- .00024
.1182 - .2362	+0/- .00031
.2363 - .3937	+0/- .00035
.3938 - .6299	+0/- .00043

Metric (mm)	
D1	Tolerance (h7)
0 - 3.0	+0/- .010
3.01 - 6.0	+0/- .012
6.01 - 10.0	+0/- .015
10.01 - 16.0	+0/- .018

Metric (mm)	
D2	Tolerance (h6)
0 - 3.0	+0/- .006
3.01 - 6.0	+0/- .008
6.01 - 10.0	+0/- .009
10.01 - 16.0	+0/- .011

For product information, call your local distributor.



Tool Number	EDP	Diameter				Shank		OAL		Flute Length		Drill Length		Point Length	
		D1				D2 (h6)		L1		L2 Max.		L3 Ref.		L5	
		Fraction	Letter/ Wire	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
2XDCS2283A	04480			5.8	.2283	6.0	6.0	66	28		20		0.90		
2XDCS2323A	04482			5.9	.2323	6.0	6.0	66	28		20		0.91		
2XDCS2344A	04484	15/64			.2344	15/64	2.598		1.102		.787		.036		
2XDCS2362A	04486			6.0	.2362	6.0	6.0	66	28		20		0.93		
2XDCS2402A	04488			6.1	.2402	8.0	8.0	79	34		24		0.95		
2XDCS2420A	04490		C		.2420	1/4	3.110		1.339		.945		.037		
2XDCS2441A	04492			6.2	.2441	8.0	8.0	79	34		24		0.96		
2XDCS2460A	04494		D		.2460	1/4	3.110		1.339		.945		.038		
2XDCS2480A	04496			6.3	.2480	8.0	8.0	79	34		24		0.98		
2XDCS2500A	04498	1/4			.2500	1/4	3.110		1.339		.945		.039		
2XDCS2520A	04500			6.4	.2520	8.0	8.0	79	34		24		0.99		
2XDCS2559A	04502			6.5	.2559	8.0	8.0	79	34		24		1.01		
2XDCS2570A	04504		F		.2570	5/16	3.110		1.339		.945		.040		
2XDCS2598A	04506			6.6	.2598	8.0	8.0	79	34		24		1.03		
2XDCS2610A	04508		G		.2610	5/16	3.110		1.339		.945		.040		
2XDCS2638A	04510			6.7	.2638	8.0	8.0	79	34		24		1.04		
2XDCS2656A	04512	17/64			.2656	5/16	3.110		1.339		.945		.041		
2XDCS2677A	04514			6.8	.2677	8.0	8.0	79	34		24		1.05		
2XDCS2717A	04516			6.9	.2717	8.0	8.0	79	34		24		1.07		
2XDCS2756A	04518			7.0	.2756	8.0	8.0	79	34		24		1.08		
2XDCS2795A	04520			7.1	.2795	8.0	8.0	79	41		29		1.10		
2XDCS2812A	04522	9/32			.2812	5/16	3.110		1.614		1.142		.044		
2XDCS2835A	04524			7.2	.2835	8.0	8.0	79	41		29		1.12		
2XDCS2874A	04526			7.3	.2874	8.0	8.0	79	41		29		1.13		
2XDCS2913A	04528			7.4	.2913	8.0	8.0	79	41		29		1.15		
2XDCS2953A	04530			7.5	.2953	8.0	8.0	79	41		29		1.16		
2XDCS2969A	04532	19/64			.2969	5/16	3.110		1.614		1.142		.046		
2XDCS2992A	04534			7.6	.2992	8.0	8.0	79	41		29		1.18		
2XDCS3031A	04536			7.7	.3031	8.0	8.0	79	41		29		1.19		
2XDCS3071A	04538			7.8	.3071	8.0	8.0	79	41		29		1.21		
2XDCS3110A	04540			7.9	.3110	8.0	8.0	79	41		29		1.22		
2XDCS3125A	04542	5/16			.3125	5/16	3.110		1.614		1.142		.048		
2XDCS3150A	04544			8.0	.3150	8.0	8.0	79	41		29		1.24		
2XDCS3189A	04546			8.1	.3189	10.0	8.0	89	47		35		1.26		
2XDCS3228A	04548			8.2	.3228	10.0	8.0	89	47		35		1.27		
2XDCS3268A	04550			8.3	.3268	10.0	8.0	89	47		35		1.29		
2XDCS3281A	04552	21/64			.3281	25/64	3.504		1.850		1.378		.051		
2XDCS3307A	04554			8.4	.3307	10.0	8.0	89	47		35		1.31		
2XDCS3320A	04556		Q		.3320	25/64	3.504		1.850		1.378		.051		
2XDCS3346A	04558			8.5	.3346	10.0	8.0	89	47		35		1.32		
2XDCS3386A	04560			8.6	.3386	10.0	8.0	89	47		35		1.33		
2XDCS3425A	04562			8.7	.3425	10.0	8.0	89	47		35		1.35		
2XDCS3438A	04564	11/32			.3438	25/64	3.504		1.850		1.378		.053		
2XDCS3465A	04566			8.8	.3465	10.0	8.0	89	47		35		1.36		
2XDCS3504A	04568			8.9	.3504	10.0	8.0	89	47		35		1.38		
2XDCS3543A	04570			9.0	.3543	10.0	8.0	89	47		35		1.39		
2XDCS3583A	04572			9.1	.3583	10.0	8.0	89	47		35		1.41		
2XDCS3594A	04574	23/64			.3594	25/64	3.504		1.850		1.378		.056		
2XDCS3622A	04576			9.2	.3622	10.0	8.0	89	47		35		1.43		
2XDCS3642A	04578			9.25	.3642	10.0	8.0	89	47		35		1.43		
2XDCS3661A	04580			9.3	.3661	10.0	8.0	89	47		35		1.44		
2XDCS3701A	04582			9.4	.3701	10.0	8.0	89	47		35		1.46		
2XDCS3740A	04584			9.5	.3740	10.0	8.0	89	47		35		1.47		
2XDCS3750A	04586	3/8			.3750	25/64	3.504		1.850		1.378		.058		
2XDCS3780A	04588			9.6	.3780	10.0	8.0	89	47		35		1.49		
2XDCS3819A	04590			9.7	.3819	10.0	8.0	89	47		35		1.50		
2XDCS3858A	04592			9.8	.3858	10.0	8.0	89	47		35		1.52		

Tool Number	EDP	Diameter				Shank		OAL		Flute Length		Drill Length		Point Length	
		D1				D2 (h6)		L1		L2 Max.		L3 Ref.		L5	
		Fraction	Letter/ Wire	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
2XDCS3898A	04594			9.9	.3898		10.0		89		47		35	1.53	
2XDCS3906A	04596	25/64			.3906	25/64		3.504		1.850		1.378		.061	
2XDCS3937A	04598			10.0	.3937		10.0		89		47		35	1.55	
2XDCS3976A	04600			10.1	.3976		12.0		102		55		40	1.56	
2XDCS4016A	04602			10.2	.4016		12.0		102		55		40	1.58	
2XDCS4055A	04604			10.3	.4055		12.0		102		55		40	1.60	
2XDCS4062A	04606	13/32			.4062	15/32		4.016		2.165		1.575		.063	
2XDCS4094A	04608			10.4	.4094		12.0		102		55		40	1.61	
2XDCS4134A	04610			10.5	.4134		12.0		102		55		40	1.63	
2XDCS4173A	04612			10.6	.4173		12.0		102		55		40	1.64	
2XDCS4213A	04614			10.7	.4213		12.0		102		55		40	1.66	
2XDCS4219A	04616	27/64			.4219	15/32		4.016		2.165		1.575		.065	
2XDCS4252A	04618			10.8	.4252		12.0		102		55		40	1.67	
2XDCS4291A	04620			10.9	.4291		12.0		102		55		40	1.69	
2XDCS4331A	04622			11.0	.4331		12.0		102		55		40	1.70	
2XDCS4370A	04624			11.1	.4370		12.0		102		55		40	1.72	
2XDCS4375A	04626	7/16			.4375	15/32		4.016		2.165		1.575		.068	
2XDCS4409A	04628			11.2	.4409		12.0		102		55		40	1.74	
2XDCS4449A	04630			11.3	.4449		12.0		102		55		40	1.75	
2XDCS4488A	04632			11.4	.4488		12.0		102		55		40	1.77	
2XDCS4527A	04634			11.5	.4527		12.0		102		55		40	1.78	
2XDCS4567A	04636			11.6	.4567		12.0		102		55		40	1.80	
2XDCS4606A	04638			11.7	.4606		12.0		102		55		40	1.81	
2XDCS4646A	04640			11.8	.4646		12.0		102		55		40	1.83	
2XDCS4685A	04642			11.9	.4685		12.0		102		55		40	1.84	
2XDCS4688A	04644	15/32			.4688	15/32		4.016		2.165		1.575		.073	
2XDCS4724A	04646			12.0	.4724		12.0		102		55		40	1.86	
2XDCS4764A	04648			12.1	.4764		14.0		107		60		43	1.87	
2XDCS4844A	04650	31/64			.4844	1/2		4.213		2.362		1.693		.075	
2XDCS4921A	04652			12.5	.4921		14.0		107		60		43	1.94	
2XDCS5000A	04654	1/2			.5000	1/2		4.213		2.362		1.693		.077	
2XDCS5039A	04656			12.8	.5039		14.0		107		60		43	1.98	
2XDCS5051A	04658			12.83	.5051		14.0		107		60		43	1.99	
2XDCS5079A	04660			12.9	.5079		14.0		107		60		43	2.00	
2XDCS5118A	04662			13.0	.5118		14.0		107		60		43	2.01	
2XDCS5156A	04664	33/64			.5156	35/64		4.213		2.362		1.693		.080	
2XDCS5315A	04666			13.5	.5315		14.0		107		60		43	2.09	
2XDCS5394A	04668			13.7	.5394		14.0		107		60		43	2.12	
2XDCS5469A	04670	35/64			.5469	35/64		4.213		2.362		1.693		.085	
2XDCS5512A	04672			14.0	.5512		14.0		107		60		43	2.17	
2XDCS5625A	04674	9/16			.5625	5/8		4.528		2.559		1.772		.087	
2XDCS5709A	04676			14.5	.5709		16.0		115		65		45	2.25	
2XDCS5787A	04678			14.7	.5787		16.0		115		65		45	2.28	
2XDCS5905A	04680			15.0	.5905		16.0		115		65		45	2.32	
2XDCS5938A	04682	19/32			.5938	5/8		4.528		2.559		1.772		.092	
2XDCS6024A	04684			15.3	.6024		16.0		115		65		45	2.37	
2XDCS6102A	04686			15.5	.6102		16.0		115		65		45	2.40	
2XDCS6181A	04688			15.7	.6181		16.0		115		65		45	2.43	
2XDCS6250A	04690	5/8			.6250	5/8		4.528		2.559		1.772		.097	
2XDCS6299A	04692			16.0	.6299		16.0		115		65		45	2.48	

RETURN

## Go Green with Red Box

RECONDITION

Extend the Life of Your Cutting Tools with  
M.A. Ford® 's Reconditioning Service



Drills • End Mills • Countersinks • Burs

REDUCE COST

Call Customer Service at 800-553-8024 or 563-391-6220  
or visit [www.maford.com/reconditioning](http://www.maford.com/reconditioning) for details.

For product information, call your local distributor.

## 2XDCS Inch

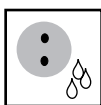
Workpiece Material Group		Examples	SFM	Tool Diameter					
				1/8	1/4	3/8	1/2	5/8	3/4
				IPR					
Steels	P	Low Carbon Steels 1018/12L14	500-625	.0038-.0063	.0063-.0088	.0088-.0110	.0100-.0125	.0110-.0150	.0120-.0170
		Alloy Steels (up to 35 Rc) 4140/A2/D2/400	315-435						
		Alloy Steels (36-45 Rc) 4140/A2/D2	190-250						
Cast Irons	K	Gray Cast Iron A48, Class 20/G4000	500-625	.0038-.0063	.0063-.0088	.0088-.0110	.0100-.0125	.0110-.0150	.0120-.0170
		Ductile Cast Iron 60-40-18	375-450						
Austenitic	M	304/316	220-315	.0038-.0063	.0063-.0088	.0088-.0110	.0100-.0125	.0110-.0150	.0120-.0170
Precipitation Hardened Stainless Steels	M	17-4 PH 13-8 PH	155-220	.0019-.0031	.0038-.0063	.0050-.0088	.0063-.0100	.0088-.0120	.0100-.0140
Special Alloys	S	Titanium 6AL-4V	180	.0010	.0025	.0040	.0050	.0060	.0075
		Cobalt-Based Alloys Stellite, Haynes 25/188	50						
		Nickel-Based Alloys Inconel 625/718 Iron-Based Alloys Incoloy 800-802/Multimet	95						
		High Nickel Alloys Monel	120						



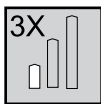
## 2XDCS Metric

Workpiece Material Group	Examples	SMM	Tool Diameter(mm)						
			3	6	10	12	16	19	
			mm/rev.						
Steels	P	Low Carbon Steels 1018/12L14	150-190	.102-.152	.152-.229	.229-.279	.254-.330	.279-.381	.305-.432
		Alloy Steels (up to 35 Rc) 4140/A2/D2/400							
		Alloy Steels (36-45 Rc) 4140/A2/D2	60-75						
Cast Irons	K	Gray Cast Iron A48, Class 20/G4000	150-190	.102-.152	.152-.229	.229-.279	.254-.330	.279-.381	.305-.432
		Ductile Cast Iron 60-40-18	115-135						
Austenitic	M	304/316	220-315	.102-.152	.152-.229	.229-.279	.254-.330	.279-.381	.305-.432
Precipitation Hardened Stainless Steels	M	17-4 PH 13-8 PH	155-220	.051-.076	.102-.152	.127-.229	.152-.254	.229-.305	.254-.356
Special Alloys	S	Titanium 6AL-4V	55	.025	.064	.102	.127	.152	.191
		Cobalt-Based Alloys Stellite, Haynes 25/188	15						
		Nickel-Based Alloys Inconel 625/718 Iron-Based Alloys Incoloy 800-802/Multimet	30						
		High Nickel Alloys Monel	35						

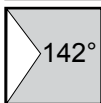
## Drill Icon Glossary



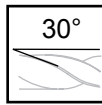
Coolant Fed



Drill Length



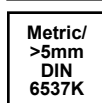
Drill Point Angle



Helix Angle



Coatings



DIN Specs

Workpiece Material Group



Steels

Hardened Steels  
(35-65Rc)

Stainless Steels

Cast Iron

Special Alloys

Non-Ferrous

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