Twister[®] Micro XD

Recommended Cutting Data MPDCS / MXDSR / MXDCR / MXDCL Series - Inch

Warksiege				т					Drill Diam	eter (mm)			
Workpiece Material	I S	Hardness	Tool Series	Y P	Р	vc- SFM	0.5	1.0	1.5	2.0	2.5	2.95	
Group	0			E	T H				f -	IPR			
			MXDSR		5	150	.0005	.0010	.0015	.0020	.0025	.0030	
Free Machining & Low Carbon Steels 1006, 1008, 1015, 1018, 1020, 1022, 1025, 1117, 1140, 1141, 11L08, 11L14, 1213,	Р	up to	MPDCS		2			0040	0045	0000	0005	0000	
12L13, 12L14, 1215, 1330		28 Rc	MXDCR	: 	5	300	-	.0010	.0015	.0020	.0025	.0030	
			MXDCL	00	12	260		.0007	.0010	.0013	.0017	.0020	
Medium Carbon & High Carbon Steels, Alloy Steels & Easy to Machine Tool Steels 1030, 1035, 1040, 1045, 1050, 1052, 1055,			MXDSR		5	130	.0005	.0010	.0015	.0020	.0025	.0030	
1060, 1085, 1095, 1541, 1551, 9255, 2515, 3135, 3415, 4130, 4137, 4140, 4150, 4320,	Р	28 to 38 Rc	MPDCS		2	300		.0010	.0015	.0020	.0025	.0030	
4340, 4520, 5015, 5115, 5120, 5132, 5140, 5155, 6150, 8620, 9262, 9840, 52100, O1,		T C	MXDCR	: 	5	500	-	.0010	.0013	.0020	.0025	.0000	
O2, O6, S2, W1 to W310			MXDCL		12	260		.0007	.0010	.0013	.0017	.0020	
Tool Steels & Die Steels			MXDSR		5	120	.0005	.0010	.0015	.0020	.0025	.0030	
O7, M1, M2, M3, M4, M7, T1, T2, T4, T5, T8, T15, A2, A3, A6, A7, H10, H11, H12, H13,	Р	28 to 44 Rc	MPDCS	•	2 5	250		.0010	.0015	.0020	.0025	.0030	
H19, H21, L3, L6, L7, P2, P20, S1, S5, S7, 52100, A128, D2, D3, D4, D5, D7			MXDCR			200	-			.0020	.0020		
			MXDCL		12	230		.0007	.0010	.0013	.0017	.0020	
			MXDSR		5	50	.0002	.0004	.0007	.0009	.0011	.0014	
Hardened Steels A2 / 52100	н	45 to 55 Rc	MPDCS	•	2	2			.0004	.0007	.0009	.0011	.0014
			MXDCR		5	80	-						
			MXDCL		12			.0002	.0004	.0006	.0008	.0010	
Objeter Obel - French Machine			MXDSR		5	140	.0005	.0010	.0015	.0020	.0025	.0030	
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430	м	up to 28 Rc	MPDCS		2	300		.0010	.0015	.0020	.0025	.0030	
4201, 430			MXDCR	.	5		-						
			MXDCL		12	260		.0007	.0010	.0013	.0017	.0020	
Stainless Steel - Moderately Difficult			MXDSR		5	125	.0005	.0010	.0015	.0020	.0025	.0030	
301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH	м	up to 28 Rc	MPDCS			2			.0008	.0012	.0016	.0020	.0023
420, 13-3FA, 1/-4FA, 1/-7FA			MXDCR	:	5	230	-						
			MXDCL		12			.0007	.0010	.0013	.0017	.0020	
Stainless Steel - Difficult to Machine			MXDSR		5	60	.0002	.0004	.0007	.0009	.0011	.0014	
302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	м	over 28 Rc	MPDCS	•	2			.0004	.0007	.0009	.0011	.0014	
31611, 317, 317L, 321, PH13-8Mo, Nitrônics			MXDCR		5	80	-						
			MXDCL		12			.0002	.0004	.0006	.0008	.0010	

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application. M.A. Ford[®] Phone: 800-553-8024 or 563-391-6220 • email: sales@maford.com • www.maford.com

Technical Information

Twister[®] Micro XD

Recommended Cutting Data MPDCS / MXDSR / MXDCR / MXDCL Series - Inch (continued)

Workpiece					Drill Diameter (mm)									
Material	s	Hardness	Tool Series	Y P	Р	vc- SFM	0.5	1.0	1.5	2.0	2.5	2.95		
Group	0			E I	T H		f - IPR							
Cast Iron - Gray CG,			MXDSR		5	150	.0005	.0010	.0015	.0020	.0025	.0030		
ASTM A48, CLASS 20, 25, 30, 35, SAE J431C, GRADES G1800, G3000, G3500, GG	к	up to 240 HB	MPDCS		2									
10, 15, 20, 25, 30, 35, 40		240116	MXDCR	ંદ્ર	5	325	-	.0010	.0015	.0020	.0025	.0030		
			MXDCL	0-	12	1								
Cast Iron - Ductile & Maileable CGI:			MXDSR		5	150	.0005	.0010	.0015	.0020	.0025	.0030		
60-40-18, 65-45-12, D4018, D4512, D5506, 32510, 35108, M3210, M4504, M5503, 250,	к	c over 240 HB	MPDCS	•	2	250								
300, 350, 400, 450			MXDCR		5		-	.0010	.0015	.0015 .0020	.0025	.0030		
			MXDCL		12									
			MXDSR		5	70	.0005	.0010	.0015	.0020	.0025	.0030		
Titanium 6AI-4V	s	up to 40 Rc	MPDCS		2									
		40110	MXDCR				5	230	-	.0004	.0006	.0008	.0010	.0012
			MXDCL	0	12									
			MXDSR		5	60	.0002	.0004	.0007	.0009	.0011	.0014		
High Temp Alloys Inconel / Hastelloy / Waspeloy / Nickel Based Alloys - Monel	S	up to 40 Rc	MPDCS		2									
			MXDCR	ંદ્ર	5	155	-	.0004	.0006	.0008	.0010	.0012		
			MXDCL	0-	12									

Recommended Peck Depths for MXDSR (Solid) Drilling

Diameter	Peck Depth
0.50 mm	.2 x Diameter
1.00 mm	.3 x Diameter
1.50 mm	.6 x Diameter
2.00 mm	.8 x Diameter
2.50 mm	1.0 x Diameter
2.95 mm	3.0 x Diameter

*Peck depths can vary by material type.

Recommended Machine Requirements

High Pressure Pump System (1,000 psi / 68.9 bar) Coolant filtration of 10 microns or better Total runout of .0004" (.01 mm) Max. at drill tip

For best MXDCL performance, the following steps are recommended:

- When Drilling with the MXDCL, drill a pilot hole 1.5 2 x diameter deep using a MPDCS drill.
- Insert MXDCL into pilot hole at a low speed (300-500 RPM) stopping short of the pilot hole bottom.
- Start coolant flow and increase speed to recommended RPM.
- Feed to full depth. (Pecking may be required for standard coolant pressure.
 Follow the MXDSR peck depth chart. To prevent drill whip and corner damage, do not retract all the way out of hole while pecking.)
- After reaching desired depth, reduce speed (300-500 RPM) before retracting from the hole at a feed of 2-4 times the drilling feed.

Note: Under optimal conditions (high pressure coolant), one shot drilling may be accomplished with the MXDCL.

Twister[®] Micro XD

Recommended Cutting Data MPDCS / MXDSR / MXDCR / MXDCL Series - Metric

Washington a	Workpiece			Drill Diameter (mm)										
Workpiece Material	S Hardness Sories	Y P	Р	vc- m/min.	0.5	1.0	1.5	2.0	2.5	2.95				
Group	0			Ē	T H		f - mm/Rev							
Free Machining & Low Carbon Steels			MXDSR		5	45	.013	.025	.038	.051	.064	.076		
1006, 1008, 1015, 1018, 1020, 1022, 1025, 1117, 1140, 1141, 11L08, 11L14, 1213,	Р	up to 28 Rc	MPDCS		2	90		.025	.038	.051	.064	.076		
12L13, 12L14, 1215, 1330		20110	MXDCR	•	5		-	.025	.000	.001	.004	.070		
			MXDCL	0	12	80		.017	.026	.034	.043	.050		
Medium Carbon & High Carbon Steels, Alloy Steels & Easy to Machine Tool Steels 1030, 1035, 1040, 1045, 1050, 1052, 1055,			MXDSR		5	40	.013	.025	.038	.051	.064	.076		
1060, 1085, 1095, 1541, 1551, 9255, 2515, 3135, 3415, 4130, 4137, 4140, 4150, 4320,	Р	28 to 38 Rc	MPDCS		2	90		.025	.038	.051	.064	.076		
4340, 4520, 5015, 5115, 5120, 5132, 5140, 5155, 6150, 8620, 9262, 9840, 52100, O1,		T\C	MXDCR	: 	5		-	.025	.030	1 CU.	.064	.070		
O2, O6, S2, W1 to W310			MXDCL	0	12	80		.017	.026	.034	.043	.050		
Tool Steels & Die Steels				MXDSR		5	35	.013	.025	.038	.051	.064	.076	
O7, M1, M2, M3, M4, M7, T1, T2, T4, T5, T8, T15, A2, A3, A6, A7, H10, H11, H12, H13,	Р	28 to 44 Rc	MPDCS	•	2	75	_	.025	.038	.051	.064	.076		
H19, H21, L3, L6, L7, P2, P20, S1, S5, S7, 52100, A128, D2, D3, D4, D5, D7			MXDCR		5			.020	.000	.001	.004	.070		
			MXDCL	0	12	70		.017	.026	.034	.043	.050		
			MXDSR		5	15	.005	.010	.018	.023	.028	.036		
Hardened Steels A2 / 52100	н	45 to 55 Rc	MPDCS	•	2			.010	.018	.023	.028	.036		
			MXDCR		5	25	-		.010	.020	.020			
			MXDCL	Ű	12			.005	.010	.015	.020	.025		
			MXDSR		5	40	.013	.025	.038	.051	.064	.076		
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430	м	up to 28 Rc	MPDCS		2	90		.025	.038	.051	.064	.076		
420F, 430			MXDCR	ંદ્ર	5		-							
			MXDCL		12	80		.017	.026	.034	.043	.050		
Objects Obert, Madasatala Different			MXDSR		5	38	.013	.025	.038	.051	.064	.076		
Stainless Steel - Moderately Difficult 301, 302, 303 High Tensile, 304, 304L, 305,	м	M up to 28 Rc		MPDCS			2			.020	.030	.040	.050	.059
420, 15-5PH, 17-4PH, 17-7PH			MXDCR	: 	5	70	-	.020	.030 .040	.010				
			MXDCL	Ŭ	12			.017	.026	.034	.043	.050		
Objector Objector Differentiate Marchine			MXDSR		5	18	.005	.010	.018	.023	.028	.036		
Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 2407L 247, 247L 204, DU42, DU42, Nitration	м	over 28 Rc	MPDCS		2			.010	.018	.023	.028	.036		
316Ti, 317, 317L, 321, PH13-8Mo, Nitronics			MXDCR	ં્ર	5	25	-	.010	.010	.020	.020	.000		
			MXDCL		12			.005	.010	.015	.020	.025		

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Workpiece				T E					Drill Diam	eter (mm)					
Material	l S	Hardness	Tool Series	Y P	Р	vc- SFM	0.5	1.0	1.5	2.0	2.5	2.95			
Group	0			E	T H			f - mm/Rev							
Cast Iron - Gray CG,			MXDSR		5	45	.013	.025	.038	.051	.064	.076			
ASTM A48, CLASS 20, 25, 30, 35, SAE J431C, GRADES G1800, G3000, G3500, GG	к	up to 240 HB	MPDCS		2										
10, 15, 20, 25, 30, 35, 40		240 HB	MXDCR	: 	5	100	-	.025	.038	.051	.064	.076			
			MXDCL	0-	12										
Cast Iron - Ductile & Malleable CGI:			MXDSR		5	45	.013	.025	.038	.051	.064	.076			
60-40-18, 65-45-12, D4018, D4512, D5506, 32510, 35108, M3210, M4504, M5503, 250,	к	c over 240 HB	MPDCS	•	2										
300, 350, 400, 450			MXDCR			€.	5	75	-	.025	.038	.051	.064	.076	
			MXDCL		12										
			MXDSR		5	20	.013	.025	.038	.051	.064	.076			
Titanium 6AI-4V	s	up to 40 Rc	MPDCS	•	2										
		40110	MXDCR			€.	5	70	-	.010	.015	.020	.025	.030	
			MXDCL	0.	12										
			MXDSR		5	18	.005	.010	.018	.023	.028	.036			
High Temp Alloys Inconel / Hastelloy / Waspeloy / Nickel Based Alloys - Monel	s	s up to 40 Rc	MPDCS		•	2									
Alloys - Moner			MXDCR			5	47	-	.010	.015	.020	.025	.030		
			MXDCL	0.	12										

Recommended Peck Depths For MXDSR Solid Drilling by Diameter*

Diameter	Peck Depth
0.50 mm	.2 x Diameter
1.00 mm	.3 x Diameter
1.50 mm	.6 x Diameter
2.00 mm	.8 x Diameter
2.50 mm	1.0 x Diameter
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Note: Under optimal conditions (high pressure coolant), one shot drilling may be accomplished with the MXDCL

ISO 9001:2015 Certified

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