



Twister® & CYCLONE

Our high performance Twister® and Cyclone drill ranges deliver extreme performance, penetration rates and outstanding hole finish on a wide range of materials from titanium, stainless steels and high temperature alloys through to aluminium and other non-ferrous metals.

(FR)

“Nos gammes de forets haute performance Twister® et Cyclone offrent des résultats exceptionnels, des vitesses d’avance et une qualité de trous remarquables sur un vaste éventail de matériaux comme le titane, les aciers inoxydables et les alliages à haute température ainsi que l’aluminium et les autres métaux non-ferreux.”

(DE)

Unser Hochleistungssortiment der Twister®- und Cyclone-Bohrer bieten höchste Leistungsfähigkeit, außergewöhnliche Bohrgeschwindigkeit und hervorragende Oberflächengüte der Bohrungen bei einem breiten Spektrum an Werkstoffen, von Titan, rostfreiem Stahl sowie hochtemperaturfesten Legierungen über Aluminium bis zu anderen, Nichteisenmetallen.

(IT)

Le nostre linee di punte ad alte prestazioni Twister® e Cyclone offrono estremo rendimento, capacità di penetrazione e straordinaria finitura del foro su una vasta gamma di materiali come titanio, acciai inossidabili e leghe ad alta temperatura, alluminio e altri metalli non ferrosi.

(PL)

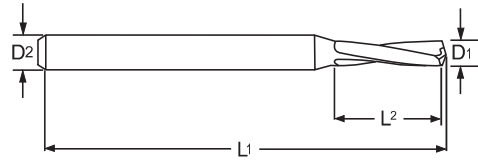
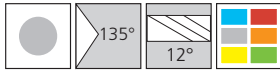
Nasze wysokowydajne wiertła Twister® i Cyclone zapewniają ekstremalne osiągi, prędkość zagłębiania się i doskonałe wykończenie otworów w szerokim zakresie materiałów od tytanu, stali nierdzewnych i stopów wysokotemperaturowych do aluminium i innych metali nieżelaznych.

High Performance Drills

Foret Haute Performance Hochleistungsbohrer
Punte ad alte prestazioni Wiertła wysoko wydajne

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Twister® Micro-Tuff™ Drill Series 305 Uncoated

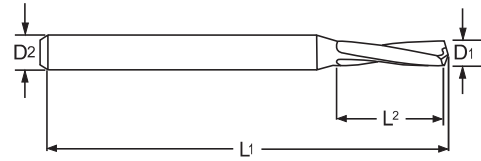
 Non Revêtu | Unbeschichtet
 Non Rivestite | Niepowlekanie


Series 305	Drill Dimensions			
Tool No	Ø D1	Ø D2	L1	L2
305 0010	0.1	3.0	38.0	1.7
305 0011	0.11			
305 0012	0.12			
305 0013	0.13			
305 0014	0.14	3.0	38.0	1.7
305 0015	0.15	3.0	38.0	2.5
305 0016	0.16			
305 0017	0.17			
305 0018	0.18			
305 0019	0.19			
305 0020	0.2			
305 0021	0.21			
305 0022	0.22			
305 0023	0.23			
305 0024	0.24	3.0	38.0	2.5
305 0025	0.25	3.0	38.0	3.2
305 0026	0.26			
305 0027	0.27			
305 0028	0.28			
305 0029	0.29	3.0	38.0	3.2
305 0030	0.3	3.0	38.0	4.8
305 0031	0.31			
305 0032	0.32			
305 0033	0.33			
305 0034	0.34			
305 0035	0.35			
305 0036	0.36			
305 0037	0.37			
305 0038	0.38			
305 0039	0.39			
305 0040	0.4	3.0	38.0	4.8
305 0041	0.41	3.0	38.0	6.4
305 0042	0.42			
305 0043	0.43			
305 0044	0.44			
305 0045	0.45			
305 0046	0.46			
305 0047	0.47			
305 0048	0.48			
305 0049	0.49			
305 0050	0.5			
305 0051	0.51			
305 0052	0.52			
305 0053	0.53			
305 0054	0.54	3.0	38.0	6.4

Series 305	Drill Dimensions			
Tool No	Ø D1	Ø D2	L1	L2
305 0055	0.55	3.0	38.0	6.4
305 0056	0.56			
305 0057	0.57			
305 0058	0.58			
305 0059	0.59			
305 0060	0.6			
305 0061	0.61			
305 0062	0.62			
305 0063	0.63			
305 0064	0.64			
305 0065	0.65	3.0	38.0	6.4
305 0066	0.66	3.0	38.0	8.1
305 0067	0.67			
305 0068	0.68			
305 0069	0.69			
305 0070	0.7			
305 0071	0.71			
305 0072	0.72			
305 0073	0.73			
305 0074	0.74			
305 0075	0.75	3.0	38.0	8.1
305 0076	0.76	3.0	38.0	10.2
305 0077	0.77			
305 0078	0.78			
305 0079	0.79			
305 0080	0.8			
305 0081	0.81			
305 0082	0.82			
305 0083	0.83			
305 0084	0.84			
305 0085	0.85			
305 0086	0.86			
305 0087	0.87			
305 0088	0.88			
305 0089	0.89			
305 0090	0.9			
305 0091	0.91			
305 0092	0.92			
305 0093	0.93			
305 0094	0.94			
305 0095	0.95			
305 0096	0.96			
305 0097	0.97			
305 0098	0.98			
305 0099	0.99	3.0	38.0	10.2

Twister® Micro-Tuff™ Drill Series 305 Uncoated

Non Revêtu · Unbeschichtet
Non Rivestite · Niepowlekane



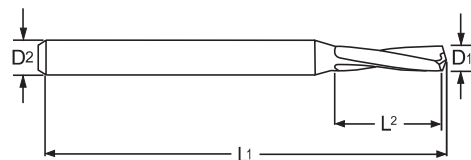
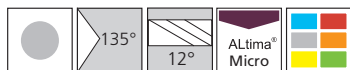
Series 305	Drill Dimensions			
Tool No	Ø D1	Ø D2	L1	L2
305 0100	1.0	3.0	38.0	10.2
305 0105	1.05			
305 0110	1.1			
305 0115	1.15			
305 0120	1.2			
305 0125	1.25			
305 0130	1.3			
305 0135	1.35			
305 0140	1.4			
305 0145	1.45			
305 0150	1.5			
305 0155	1.55	3.0	38.0	10.2
305 0160	1.6	3.0	38.0	12.2
305 0165	1.65			
305 0170	1.7			
305 0175	1.75			
305 0180	1.8			
305 0185	1.85			
305 0190	1.9			
305 0195	1.95			
305 0200	2.0	3.0	38.0	12.2

Series 305	Drill Dimensions			
Tool No	Ø D1	Ø D2	L1	L2
305 0205	2.05	3.0	38.0	12.2
305 0210	2.1			
305 0215	2.15			
305 0220	2.2			
305 0225	2.25			
305 0230	2.3			
305 0235	2.35			
305 0240	2.4			
305 0245	2.45			
305 0250	2.5			
305 0255	2.55			
305 0260	2.6			
305 0265	2.65			
305 0270	2.7			
305 0275	2.75			
305 0280	2.8			
305 0285	2.85			
305 0290	2.9			
305 0295	2.95			
305 0300	3.0	3.0	38.0	12.2



Twister® Micro-Tuff™ Drill Series 305AM Coated

| Revêtu | Beschichtet | Rivestite | Powlekane

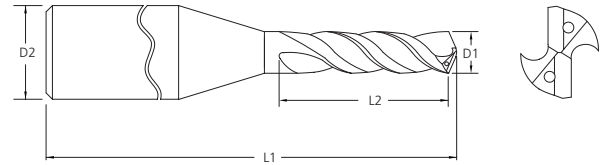
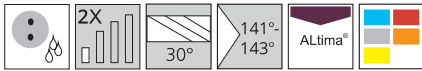


Series 305	Drill Dimensions			
Tool No	Ø D1	Ø D2	L1	L2
305 0010AM	0.1	3.0	38.0	1.7
305 0015AM	0.15			2.5
305 0020AM	0.2			2.5
305 0025AM	0.25			3.2
305 0030AM	0.3			4.8
305 0035AM	0.35			
305 0040AM	0.4			4.8
305 0045AM	0.45			6.4
305 0050AM	0.5			
305 0055AM	0.55			
305 0060AM	0.6			
305 0065AM	0.65			6.4
305 0070AM	0.7			8.1
305 0075AM	0.75			8.1
305 0080AM	0.8			10.2
305 0085AM	0.85			
305 0090AM	0.9			
305 0095AM	0.95			
305 0100AM	1.0			
305 0105AM	1.05			
305 0110AM	1.1			
305 0115AM	1.15			
305 0120AM	1.2			
305 0125AM	1.25			
305 0130AM	1.3			
305 0135AM	1.35			
305 0140AM	1.4			
305 0145AM	1.45			
305 0150AM	1.5			
305 0155AM	1.55	3.0	38.0	10.2

Series 305	Drill Dimensions			
Tool No	Ø D1	Ø D2	L1	L2
305 0160AM	1.6	3.0	38.0	12.2
305 0165AM	1.65			
305 0170AM	1.7			
305 0175AM	1.75			
305 0180AM	1.8			
305 0185AM	1.85			
305 0190AM	1.9			
305 0195AM	1.95			
305 0200AM	2.0			
305 0205AM	2.05			
305 0210AM	2.1			
305 0215AM	2.15			
305 0220AM	2.2			
305 0225AM	2.25			
305 0230AM	2.3			
305 0235AM	2.35			
305 0240AM	2.4			
305 0245AM	2.45			
305 0250AM	2.5			
305 0255AM	2.55			
305 0260AM	2.6			
305 0265AM	2.65			
305 0270AM	2.7			
305 0275AM	2.75			
305 0280AM	2.8			
305 0285AM	2.85			
305 0290AM	2.9			
305 0295AM	2.95			
305 0300AM	3.0	3.0	38.0	12.2



Twister® Micro XD Series MPDCS



Series MPDCS		Drill Dimensions			
Tool No.	EDP	Ø D1	Ø D2	L1	L2
MPDCSM0100A	04874	1.00	3	45	4
MPDCSM0105A	04875	1.05	3	45	4
MPDCSM0110A	04876	1.10	3	45	4
MPDCSM0115A	04877	1.15	3	45	5
MPDCSM0120A	04878	1.20	3	45	5
MPDCSM0125A	04879	1.25	3	45	5
MPDCSM0130A	04880	1.30	3	45	5
MPDCSM0135A	04881	1.35	3	45	5
MPDCSM0140A	04882	1.40	3	45	6
MPDCSM0145A	04883	1.45	3	45	6
MPDCSM0150A	04884	1.50	3	45	6
MPDCSM0155A	04885	1.55	3	45	6
MPDCSM0160A	04886	1.60	3	45	6
MPDCSM0165A	04887	1.65	3	50	7
MPDCSM0170A	04888	1.70	3	50	7
MPDCSM0175A	04889	1.75	3	50	7
MPDCSM0180A	04890	1.80	3	50	7
MPDCSM0185A	04891	1.85	3	50	7
MPDCSM0190A	04892	1.90	3	50	8
MPDCSM0195A	04893	1.95	3	50	8

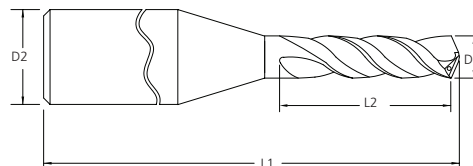
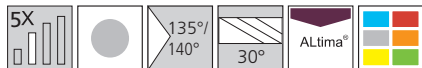
Series MPDCS		Drill Dimensions			
Tool No.	EDP	Ø D1	Ø D2	L1	L2
MPDCSM0200A	04894	2.00	3	50	8
MPDCSM0205A	04895	2.05	3	60	8
MPDCSM0210A	04896	2.10	3	60	8
MPDCSM0215A	04897	2.15	3	60	9
MPDCSM0220A	04898	2.20	3	60	9
MPDCSM0225A	04899	2.25	3	60	9
MPDCSM0230A	04900	2.30	3	60	9
MPDCSM0235A	04901	2.35	3	60	9
MPDCSM0240A	04902	2.40	3	60	10
MPDCSM0245A	04903	2.45	3	60	10
MPDCSM0250A	04904	2.50	3	60	10
MPDCSM0255A	04905	2.55	3	60	10
MPDCSM0260A	04906	2.60	3	60	10
MPDCSM0265A	04907	2.65	3	60	11
MPDCSM0270A	04908	2.70	3	60	11
MPDCSM0275A	04909	2.75	3	60	11
MPDCSM0280A	04910	2.80	3	60	11
MPDCSM0285A	04911	2.85	3	60	11
MPDCSM0290A	04912	2.90	3	60	12
MPDCSM0295A	04913	2.95	3	60	12

Metric (mm)	
D1	Tolerance
1.00 - 2.95	+0.004/-0.014

Metric (mm)	
D2	Tolerance (h6)
3.00	+0/-0.006



Twister® Micro XD Series MXDSR



ALtima®		Drill Dimensions			
Tool No	EDP	Ø D1	Ø D2	L1	L2
MXDSRM0050A	04694	0.5	3.0	57.0	4.0
MXDSRM0055A	04696	0.55	3.0	57.0	4.0
MXDSRM0060A	04698	0.6	3.0	57.0	5.0
MXDSRM0065A	04700	0.65	3.0	57.0	5.0
MXDSRM0070A	04702	0.7	3.0	57.0	5.0
MXDSRM0075A	04704	0.75	3.0	57.0	6.0
MXDSRM0080A	04706	0.8	3.0	57.0	6.0
MXDSRM0085A	04708	0.85	3.0	57.0	7.0
MXDSRM0090A	04710	0.9	3.0	57.0	7.0
MXDSRM0095A	04712	0.95	3.0	57.0	7.0
MXDSRM0100A	04714	1.0	3.0	57.0	8.0
MXDSRM0105A	04716	1.05	3.0	57.0	8.0
MXDSRM0110A	04718	1.1	3.0	57.0	8.0
MXDSRM0115A	04720	1.15	3.0	57.0	9.0
MXDSRM0120A	04722	1.2	3.0	57.0	9.0
MXDSRM0125A	04724	1.25	3.0	57.0	9.0
MXDSRM0130A	04726	1.3	3.0	57.0	10.0
MXDSRM0135A	04728	1.35	3.0	57.0	10.0
MXDSRM0140A	04730	1.4	3.0	57.0	10.0
MXDSRM0145A	04732	1.45	3.0	57.0	11.0
MXDSRM0150A	04734	1.5	3.0	57.0	11.0
MXDSRM0155A	04736	1.55	3.0	57.0	12.0
MXDSRM0160A	04738	1.6	3.0	57.0	12.0
MXDSRM0165A	04740	1.65	3.0	57.0	12.0
MXDSRM0170A	04742	1.7	3.0	57.0	13.0

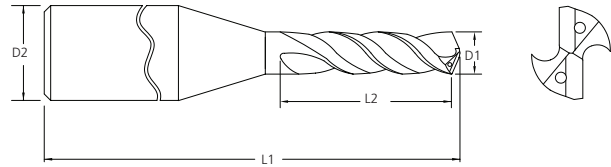
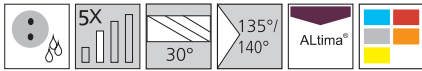
ALtima®		Drill Dimensions			
Tool No	EDP	Ø D1	Ø D2	L1	L2
MXDSRM0175A	04744	1.75	3.0	57.0	13.0
MXDSRM0180A	04746	1.8	3.0	57.0	13.0
MXDSRM0185A	04748	1.85	3.0	57.0	14.0
MXDSRM0190A	04750	1.9	3.0	57.0	14.0
MXDSRM0195A	04752	1.95	3.0	57.0	14.0
MXDSRM0200A	04754	2.0	3.0	57.0	15.0
MXDSRM0205A	04756	2.05	3.0	57.0	15.0
MXDSRM0210A	04758	2.1	3.0	57.0	15.0
MXDSRM0215A	04760	2.15	3.0	57.0	16.0
MXDSRM0220A	04762	2.2	3.0	57.0	16.0
MXDSRM0225A	04764	2.25	3.0	57.0	17.0
MXDSRM0230A	04766	2.3	3.0	57.0	17.0
MXDSRM0235A	04768	2.35	3.0	57.0	17.0
MXDSRM0240A	04770	2.4	3.0	57.0	18.0
MXDSRM0245A	04772	2.45	3.0	57.0	18.0
MXDSRM0250A	04774	2.5	3.0	57.0	18.0
MXDSRM0255A	04776	2.55	3.0	57.0	19.0
MXDSRM0260A	04778	2.6	3.0	57.0	19.0
MXDSRM0265A	04780	2.65	3.0	57.0	19.0
MXDSRM0270A	04782	2.7	3.0	57.0	20.0
MXDSRM0275A	04784	2.75	3.0	57.0	20.0
MXDSRM0280A	04786	2.8	3.0	57.0	20.0
MXDSRM0285A	04788	2.85	3.0	57.0	21.0
MXDSRM0290A	04790	2.9	3.0	57.0	21.0
MXDSRM0295A	04792	2.95	3.0	57.0	22.0

Metric (mm)	
D1	Tolerance (h7)
0 - 3.0	+0/-0.010

Metric (mm)	
D2	Tolerance (h6)
0 - 3.0	+0/-0.006



Twister® Micro XD Series MXDCR



ALtima®		Drill Dimensions			
Tool No.	EDP	Ø D1	Ø D2	L1	L2
MXDCRM0100A	04794	1.00	3	57	8
MXDCRM0105A	04795	1.05	3	57	8
MXDCRM0110A	04796	1.10	3	57	8
MXDCRM0115A	04797	1.15	3	57	9
MXDCRM0120A	04798	1.20	3	57	9
MXDCRM0125A	04799	1.25	3	57	9
MXDCRM0130A	04800	1.30	3	57	10
MXDCRM0135A	04801	1.35	3	57	10
MXDCRM0140A	04802	1.40	3	57	10
MXDCRM0145A	04803	1.45	3	57	11
MXDCRM0150A	04804	1.50	3	57	11
MXDCRM0155A	04805	1.55	3	57	12
MXDCRM0160A	04806	1.60	3	57	12
MXDCRM0165A	04807	1.65	3	57	12
MXDCRM0170A	04808	1.70	3	57	13
MXDCRM0175A	04809	1.75	3	57	13
MXDCRM0180A	04810	1.80	3	57	13
MXDCRM0185A	04811	1.85	3	57	14
MXDCRM0190A	04812	1.90	3	57	14
MXDCRM0195A	04813	1.95	3	57	14

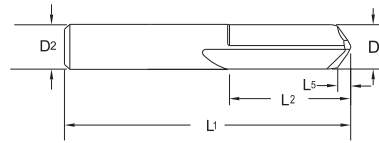
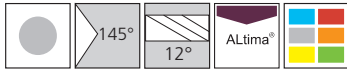
ALtima®		Drill Dimensions			
Tool No.	EDP	Ø D1	Ø D2	L1	L2
MXDCRM0200A	04814	2.00	3	57	15
MXDCRM0205A	04815	2.05	3	60	15
MXDCRM0210A	04816	2.10	3	60	15
MXDCRM0215A	04817	2.15	3	60	16
MXDCRM0220A	04818	2.20	3	60	16
MXDCRM0225A	04819	2.25	3	60	17
MXDCRM0230A	04820	2.30	3	60	17
MXDCRM0235A	04821	2.35	3	60	17
MXDCRM0240A	04822	2.40	3	60	18
MXDCRM0245A	04823	2.45	3	60	18
MXDCRM0250A	04824	2.50	3	60	18
MXDCRM0255A	04825	2.55	3	60	19
MXDCRM0260A	04826	2.60	3	60	19
MXDCRM0265A	04827	2.65	3	60	19
MXDCRM0270A	04828	2.70	3	60	20
MXDCRM0275A	04829	2.75	3	60	20
MXDCRM0280A	04830	2.80	3	60	20
MXDCRM0285A	04831	2.85	3	60	21
MXDCRM0290A	04832	2.90	3	60	21
MXDCRM0295A	04833	2.95	3	60	22

Metric (mm)	
D1	Tolerance (h7)
1.00 - 2.95	+0/-0.010

Metric (mm)	
D2	Tolerance (h6)
3.00	+0/-0.006



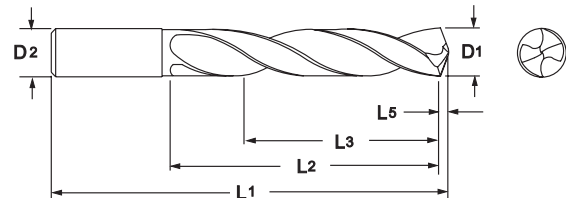
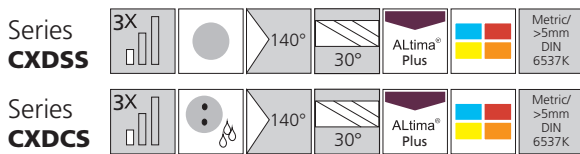
Twister® XD Spot Drill Series 200S



Series 200S	Drill Dimensions				
Tool No.	Ø D1	Ø D2	L1	L2	L5
200S 0300A	3.0	3.0	38.0	16.0	0.4
200S 0600A	6.0	6.0	51.0	19.0	0.8
200S 0800A	8.0	8.0	64.0	19.0	1.1
200S 1000A	10.0	10.0	70.0	25.0	1.4
200S 1200A	12.0	12.0	76.0	25.0	1.7
200S 1600A	16.0	16.0	89.0	32.0	2.2

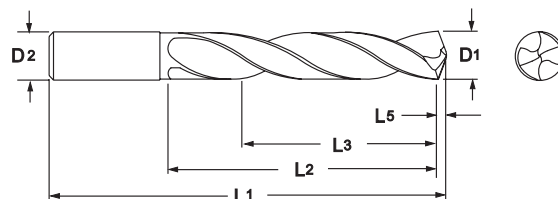
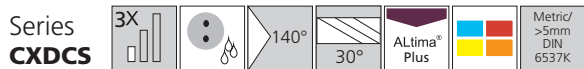
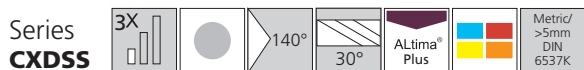


CYCLONE CXD High Performance Drill - 3xD Series CXDSS & CXDCS



Tool No.		Drill Dimensions (mm)					
CXDSS	CXDCS	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSS 0300AP	CXDCS 0300AP	3.0	3.0	62.0	20.0	14.0	0.46
CXDSS 0310AP	CXDCS 0310AP	3.1	4.0	62.0	20.0	14.0	0.48
CXDSS 0320AP	CXDCS 0320AP	3.2	4.0	62.0	20.0	14.0	0.5
CXDSS 0330AP	CXDCS 0330AP	3.3	4.0	62.0	20.0	14.0	0.51
CXDSS 0340AP	CXDCS 0340AP	3.4	4.0	62.0	20.0	14.0	0.53
CXDSS 0350AP	CXDCS 0350AP	3.5	4.0	62.0	20.0	14.0	0.54
CXDSS 0360AP	CXDCS 0360AP	3.6	4.0	62.0	20.0	14.0	0.56
CXDSS 0370AP	CXDCS 0370AP	3.7	4.0	62.0	20.0	14.0	0.57
CXDSS 0380AP	CXDCS 0380AP	3.8	4.0	66.0	24.0	17.0	0.59
CXDSS 0390AP	CXDCS 0390AP	3.9	4.0	66.0	24.0	17.0	0.6
CXDSS 0400AP	CXDCS 0400AP	4.0	4.0	66.0	24.0	17.0	0.62
CXDSS 0410AP	CXDCS 0410AP	4.1	5.0	66.0	24.0	17.0	0.64
CXDSS 0420AP	CXDCS 0420AP	4.2	5.0	66.0	24.0	17.0	0.65
CXDSS 0430AP	CXDCS 0430AP	4.3	5.0	66.0	24.0	17.0	0.67
CXDSS 0440AP	CXDCS 0440AP	4.4	5.0	66.0	24.0	17.0	0.68
CXDSS 0450AP	CXDCS 0450AP	4.5	5.0	66.0	24.0	17.0	0.7
CXDSS 0460AP	CXDCS 0460AP	4.6	5.0	66.0	24.0	17.0	0.71
CXDSS 0470AP	CXDCS 0470AP	4.7	5.0	66.0	24.0	17.0	0.73

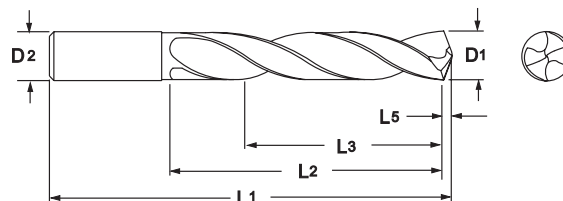
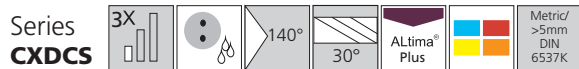
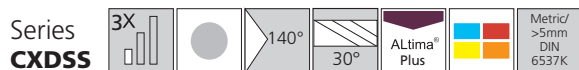
CYCLONE CXD High Performance Drill - 3xD Series CXDSS & CXDCS



Tool No.		Drill Dimensions (mm)					
CXDSS	CXDCS	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSS 0480AP	CXDCS 0480AP	4.8	5.0	66.0	28.0	20.0	0.74
CXDSS 0490AP	CXDCS 0490AP	4.9	5.0	66.0	28.0	20.0	0.76
CXDSS 0500AP	CXDCS 0500AP	5.0	5.0	66.0	28.0	20.0	0.77
CXDSS 0510AP	CXDCS 0510AP	5.1	6.0	66.0	28.0	20.0	0.79
CXDSS 0520AP	CXDCS 0520AP	5.2	6.0	66.0	28.0	20.0	0.81
CXDSS 0530AP	CXDCS 0530AP	5.3	6.0	66.0	28.0	20.0	0.82
CXDSS 0540AP	CXDCS 0540AP	5.4	6.0	66.0	28.0	20.0	0.84
CXDSS 0550AP	CXDCS 0550AP	5.5	6.0	66.0	28.0	20.0	0.85
CXDSS 0560AP	CXDCS 0560AP	5.6	6.0	66.0	28.0	20.0	0.86
CXDSS 0570AP	CXDCS 0570AP	5.7	6.0	66.0	28.0	20.0	0.88
CXDSS 0580AP	CXDCS 0580AP	5.8	6.0	66.0	28.0	20.0	0.9
CXDSS 0590AP	CXDCS 0590AP	5.9	6.0	66.0	28.0	20.0	0.91
CXDSS 0600AP	CXDCS 0600AP	6.0	6.0	66.0	28.0	20.0	0.93
CXDSS 0610AP	CXDCS 0610AP	6.1	8.0	79.0	34.0	24.0	0.95
CXDSS 0620AP	CXDCS 0620AP	6.2	8.0	79.0	34.0	24.0	0.96
CXDSS 0630AP	CXDCS 0630AP	6.3	8.0	79.0	34.0	24.0	0.98
CXDSS 0640AP	CXDCS 0640AP	6.4	8.0	79.0	34.0	24.0	0.99
CXDSS 0650AP	CXDCS 0650AP	6.5	8.0	79.0	34.0	24.0	1.01
CXDSS 0660AP	CXDCS 0660AP	6.6	8.0	79.0	34.0	24.0	1.03
CXDSS 0670AP	CXDCS 0670AP	6.7	8.0	79.0	34.0	24.0	1.04
CXDSS 0680AP	CXDCS 0680AP	6.8	8.0	79.0	34.0	24.0	1.05
CXDSS 0690AP	CXDCS 0690AP	6.9	8.0	79.0	34.0	24.0	1.07
CXDSS 0700AP	CXDCS 0700AP	7.0	8.0	79.0	34.0	24.0	1.08
CXDSS 0710AP	CXDCS 0710AP	7.1	8.0	79.0	41.0	29.0	1.1
CXDSS 0720AP	CXDCS 0720AP	7.2	8.0	79.0	41.0	29.0	1.12
CXDSS 0730AP	CXDCS 0730AP	7.3	8.0	79.0	41.0	29.0	1.13
CXDSS 0740AP	CXDCS 0740AP	7.4	8.0	79.0	41.0	29.0	1.15
CXDSS 0750AP	CXDCS 0750AP	7.5	8.0	79.0	41.0	29.0	1.16
CXDSS 0760AP	CXDCS 0760AP	7.6	8.0	79.0	41.0	29.0	1.18
CXDSS 0770AP	CXDCS 0770AP	7.7	8.0	79.0	41.0	29.0	1.19
CXDSS 0780AP	CXDCS 0780AP	7.8	8.0	79.0	41.0	29.0	1.21
CXDSS 0790AP	CXDCS 0790AP	7.9	8.0	79.0	41.0	29.0	1.22
CXDSS 0800AP	CXDCS 0800AP	8.0	8.0	79.0	41.0	29.0	1.24
CXDSS 0810AP	CXDCS 0810AP	8.1	10.0	89.0	47.0	35.0	1.26
CXDSS 0820AP	CXDCS 0820AP	8.2	10.0	89.0	47.0	35.0	1.27
CXDSS 0830AP	CXDCS 0830AP	8.3	10.0	89.0	47.0	35.0	1.29
CXDSS 0840AP	CXDCS 0840AP	8.4	10.0	89.0	47.0	35.0	1.31
CXDSS 0850AP	CXDCS 0850AP	8.5	10.0	89.0	47.0	35.0	1.32
CXDSS 0860AP	CXDCS 0860AP	8.6	10.0	89.0	47.0	35.0	1.33
CXDSS 0870AP	CXDCS 0870AP	8.7	10.0	89.0	47.0	35.0	1.35
CXDSS 0880AP	CXDCS 0880AP	8.8	10.0	89.0	47.0	35.0	1.36

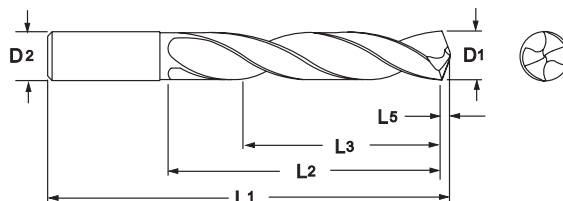
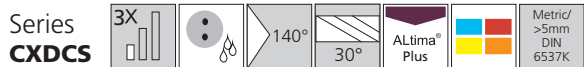
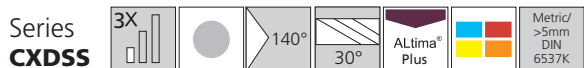


CYCLONE CXD High Performance Drill - 3xD Series CXDSS & CXDCS



Tool No.		Drill Dimensions (mm)					
CXDSS	CXDCS	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSS 0890AP	CXDCS 0890AP	8.9	10.0	89.0	47.0	35.0	1.38
CXDSS 0900AP	CXDCS 0900AP	9.0	10.0	89.0	47.0	35.0	1.39
CXDSS 0910AP	CXDCS 0910AP	9.1	10.0	89.0	47.0	35.0	1.41
CXDSS 0920AP	CXDCS 0920AP	9.2	10.0	89.0	47.0	35.0	1.43
CXDSS 0925AP	CXDCS 0925AP	9.25	10.0	89.0	47.0	35.0	1.43
CXDSS 0930AP	CXDCS 0930AP	9.3	10.0	89.0	47.0	35.0	1.44
CXDSS 0940AP	CXDCS 0940AP	9.4	10.0	89.0	47.0	35.0	1.46
CXDSS 0950AP	CXDCS 0950AP	9.5	10.0	89.0	47.0	35.0	1.47
CXDSS 0960AP	CXDCS 0960AP	9.6	10.0	89.0	47.0	35.0	1.49
CXDSS 0970AP	CXDCS 0970AP	9.7	10.0	89.0	47.0	35.0	1.5
CXDSS 0980AP	CXDCS 0980AP	9.8	10.0	89.0	47.0	35.0	1.52
CXDSS 0990AP	CXDCS 0990AP	9.9	10.0	89.0	47.0	35.0	1.53
CXDSS 1000AP	CXDCS 1000AP	10.0	10.0	89.0	47.0	35.0	1.55
CXDSS 1010AP	CXDCS 1010AP	10.1	12.0	102.0	55.0	40.0	1.56
CXDSS 1020AP	CXDCS 1020AP	10.2	12.0	102.0	55.0	40.0	1.58
CXDSS 1030AP	CXDCS 1030AP	10.3	12.0	102.0	55.0	40.0	1.6
CXDSS 1040AP	CXDCS 1040AP	10.4	12.0	102.0	55.0	40.0	1.61
CXDSS 1050AP	CXDCS 1050AP	10.5	12.0	102.0	55.0	40.0	1.63
CXDSS 1060AP	CXDCS 1060AP	10.6	12.0	102.0	55.0	40.0	1.64
CXDSS 1070AP	CXDCS 1070AP	10.7	12.0	102.0	55.0	40.0	1.66
CXDSS 1080AP	CXDCS 1080AP	10.8	12.0	102.0	55.0	40.0	1.67
CXDSS 1090AP	CXDCS 1090AP	10.9	12.0	102.0	55.0	40.0	1.69
CXDSS 1100AP	CXDCS 1100AP	11.0	12.0	102.0	55.0	40.0	1.7
CXDSS 1110AP	CXDCS 1110AP	11.1	12.0	102.0	55.0	40.0	1.72
CXDSS 1120AP	CXDCS 1120AP	11.2	12.0	102.0	55.0	40.0	1.74
CXDSS 1130AP	CXDCS 1130AP	11.3	12.0	102.0	55.0	40.0	1.75
CXDSS 1140AP	CXDCS 1140AP	11.4	12.0	102.0	55.0	40.0	1.77
CXDSS 1150AP	CXDCS 1150AP	11.5	12.0	102.0	55.0	40.0	1.78
CXDSS 1160AP	CXDCS 1160AP	11.6	12.0	102.0	55.0	40.0	1.8
CXDSS 1170AP	CXDCS 1170AP	11.7	12.0	102.0	55.0	40.0	1.81

CYCLONE CXD High Performance Drill - 3xD Series CXDSS & CXDCS



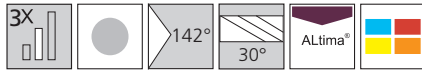
Tool No.		Drill Dimensions (mm)					
CXDSS	CXDCS	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSS 1180AP	CXDCS 1180AP	11.8	12.0	102.0	55.0	40.0	1.83
CXDSS 1190AP	CXDCS 1190AP	11.9	12.0	102.0	55.0	40.0	1.84
CXDSS 1200AP	CXDCS 1200AP	12.0	12.0	102.0	55.0	40.0	1.86
CXDSS 1210AP	CXDCS 1210AP	12.1	14.0	107.0	60.0	43.0	1.87
CXDSS 1250AP	CXDCS 1250AP	12.5	14.0	107.0	60.0	43.0	1.94
CXDSS 1280AP	CXDCS 1280AP	12.8	14.0	107.0	60.0	43.0	1.98
CXDSS 1283AP	CXDCS 1283AP	12.83	14.0	107.0	60.0	43.0	1.99
CXDSS 1290AP	CXDCS 1290AP	12.9	14.0	107.0	60.0	43.0	2.0
CXDSS 1300AP	CXDCS 1300AP	13.0	14.0	107.0	60.0	43.0	2.01
CXDSS 1350AP	CXDCS 1350AP	13.5	14.0	107.0	60.0	43.0	2.09
CXDSS 1370AP	CXDCS 1370AP	13.7	14.0	107.0	60.0	43.0	2.12
CXDSS 1400AP	CXDCS 1400AP	14.0	14.0	107.0	60.0	43.0	2.17
CXDSS 1450AP	CXDCS 1450AP	14.5	16.0	115.0	65.0	45.0	2.25
CXDSS 1470AP	CXDCS 1470AP	14.7	16.0	115.0	65.0	45.0	2.28
CXDSS 1500AP	CXDCS 1500AP	15.0	16.0	115.0	65.0	45.0	2.32
CXDSS 1530AP	CXDCS 1530AP	15.3	16.0	115.0	65.0	45.0	2.37
CXDSS 1550AP	CXDCS 1550AP	15.5	16.0	115.0	65.0	45.0	2.4
CXDSS 1570AP	CXDCS 1570AP	15.7	16.0	115.0	65.0	45.0	2.43
CXDSS 1600AP	CXDCS 1600AP	16.0	16.0	115.0	65.0	45.0	2.48
CXDSS 1608AP	-	16.08	18.0	123.0	73.0	51.0	2.49
CXDSS 1630AP	-	16.3	18.0	123.0	73.0	51.0	2.53
CXDSS 1650AP	-	16.5	18.0	123.0	73.0	51.0	2.56
CXDSS 1700AP	-	17.0	18.0	123.0	73.0	51.0	2.63
CXDSS 1750AP	-	17.5	18.0	123.0	73.0	51.0	2.71
CXDSS 1800AP	-	18.0	18.0	123.0	73.0	51.0	2.79
CXDSS 1850AP	-	18.5	20.0	131.0	79.0	55.0	2.87
CXDSS 1916AP	-	19.16	20.0	131.0	79.0	55.0	2.97
CXDSS 1925AP	-	19.25	20.0	131.0	79.0	55.0	2.98
CXDSS 1930AP	-	19.3	20.0	131.0	79.0	55.0	2.99
CXDSS 1950AP	-	19.5	20.0	131.0	79.0	55.0	3.02
CXDSS 2000AP	-	20.0	20.0	131.0	79.0	55.0	3.1

D1	Tolerance (m7)	D2	Tolerance (h6)
0 - 3.0	+0.002/+0.012	0 - 3.0	+0/-0.006
3.01 - 6.0	+0.004/+0.016	3.01 - 6.0	+0/-0.008
6.01 - 10.0	+0.006/+0.021	6.01 - 10.0	+0/-0.009
10.01 - 18.0	+0.007/+0.025	10.01 - 18.0	+0/-0.011
18.01 - 20.0	+0.008/+0.029	18.01 - 20.0	+0/-0.013

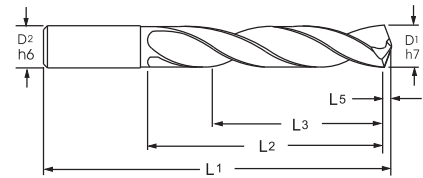


Twister® XD High Performance Drill - 3xD Series XDSSM & XDSCSM

Series
XD SSM

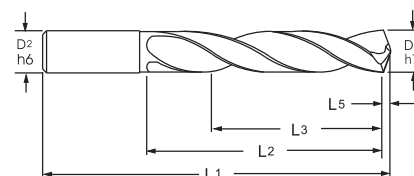
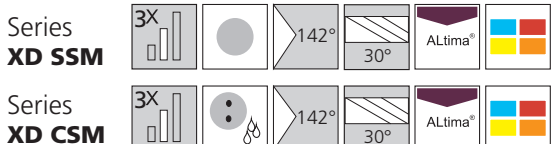


Series
XD CSM



Series 2XDSSM	Drill Dimensions XD SSM					Series 2XDSCSM	Drill Dimensions XD CSM					
	Tool No.	Ø D1 (h7)	Ø D2	L1	L2		L3	Tool No.	Ø D1	Ø D2	L1	L2
2XDSSM0250A	2.5	2.5	43.0	14.0	11.0	-	-	-	-	-	-	-
2XDSSM0290A	2.9	2.9	46.0	16.0	12.0	-	-	-	-	-	-	-
2XDSSM0300A	3.0	3.0	57.0	16.0	13.0	2XDSCSM0300A	3.0	3.0	57.0	16.0	13.0	-
2XDSSM0310A	3.1	4.0	63.0	22.0	18.0	2XDSCSM0310A	3.1	4.0	63.0	22.0	18.0	-
2XDSSM0320A	3.2					2XDSCSM0320A	3.2					
2XDSSM0330A	3.3					2XDSCSM0330A	3.3					
2XDSSM0340A	3.4					2XDSCSM0340A	3.4					
2XDSSM0350A	3.5					2XDSCSM0350A	3.5					
2XDSSM0360A	3.6					2XDSCSM0360A	3.6					
2XDSSM0370A	3.7					2XDSCSM0370A	3.7					
2XDSSM0380A	3.8					2XDSCSM0380A	3.8					
2XDSSM0390A	3.9					2XDSCSM0390A	3.9					
2XDSSM0400A	4.0	4.0	63.0	22.0	18.0	2XDSCSM0400A	4.0	4.0	63.0	22.0	18.0	-
2XDSSM0410A	4.1	5.0	63.0	26.0	21.0	2XDSCSM0410A	4.1	5.0	63.0	26.0	21.0	-
2XDSSM0420A	4.2					2XDSCSM0420A	4.2					
2XDSSM0430A	4.3					2XDSCSM0430A	4.3					
2XDSSM0440A	4.4					2XDSCSM0440A	4.4					
2XDSSM0450A	4.5					2XDSCSM0450A	4.5					
2XDSSM0460A	4.6					2XDSCSM0460A	4.6					
2XDSSM0470A	4.7					2XDSCSM0470A	4.7					
2XDSSM0480A	4.8					2XDSCSM0480A	4.8					
2XDSSM0490A	4.9					2XDSCSM0490A	4.9					
2XDSSM0500A	5.0	5.0	63.0	26.0	21.0	2XDSCSM0500A	5.0	5.0	63.0	26.0	21.0	-
2XDSSM0510A	5.1	6.0	76.0	30.0	24.0	2XDSCSM0510A	5.1	6.0	66.0	28.0	20.0	-
2XDSSM0520A	5.2					2XDSCSM0520A	5.2					
2XDSSM0530A	5.3					2XDSCSM0530A	5.3					
2XDSSM0540A	5.4					2XDSCSM0540A	5.4					
2XDSSM0550A	5.5					2XDSCSM0550A	5.5					
2XDSSM0570A	5.7					2XDSCSM0570A	5.7					
2XDSSM0580A	5.8					2XDSCSM0580A	5.8					
2XDSSM0590A	5.9					2XDSCSM0590A	5.9					
2XDSSM0600A	6.0	6.0	76.0	30.0	24.0	2XDSCSM0600A	6.0	6.0	66.0	28.0	20.0	-
2XDSSM0610A	6.1	8.0	82.0	35.0	28.0	2XDSCSM0610A	6.1	8.0	79.0	34.0	24.0	-
2XDSSM0620A	6.2					2XDSCSM0620A	6.2					
2XDSSM0630A	6.3					2XDSCSM0630A	6.3					
2XDSSM0640A	6.4					2XDSCSM0640A	6.4					
2XDSSM0650A	6.5					2XDSCSM0650A	6.5					
2XDSSM0660A	6.6					2XDSCSM0660A	6.6					
2XDSSM0670A	6.7					2XDSCSM0670A	6.7					
2XDSSM0680A	6.8					2XDSCSM0680A	6.8					
2XDSSM0690A	6.9					2XDSCSM0690A	6.9					
2XDSSM0700A	7.0	8.0	82.0	35.0	28.0	2XDSCSM0700A	7.0	8.0	79.0	34.0	24.0	-

Twister® XD High Performance Drill - 3xD Series XDSSM & XDSCSM



Series 2XDSSM	Drill Dimensions XD SSM					Series 2XDSCSM	Drill Dimensions XD CSM				
Tool No.	Ø D1 (h7)	Ø D2	L1	L2	L3	Tool No.	Ø D1	Ø D2	L1	L2	L3
2XDSSM0710A	7.1	8.0	82.0	38.0	31.0	2XDSCSM0710A	7.1	8.0	79.0	41.0	29.0
2XDSSM0720A	7.2					2XDSCSM0720A	7.2				
2XDSSM0730A	7.3	8.0	82.0	38.0	31.0	2XDSCSM0730A	7.3	8.0	79.0	41.0	29.0
2XDSSM0740A	7.4	8.0	82.0	38.0	31.0	2XDSCSM0740A	7.4	8.0	79.0	41.0	29.0
2XDSSM0750A	7.5					2XDSCSM0750A	7.5				
2XDSSM0760A	7.6					2XDSCSM0760A	7.6				
2XDSSM0770A	7.7	8.0	82.0	38.0	31.0	2XDSCSM0770A	7.7	8.0	79.0	41.0	29.0
2XDSSM0780A	7.8	8.0	89.0	43.0	35.0	2XDSCSM0780A	7.8	8.0	79.0	41.0	29.0
2XDSSM0790A	7.9					2XDSCSM0790A	7.9				
2XDSSM0800A	8.0	8.0	89.0	43.0	35.0	2XDSCSM0800A	8.0	8.0	79.0	41.0	29.0
2XDSSM0810A	8.1	10.0	89.0	43.0	35.0	2XDSCSM0810A	8.1	10.0	89.0	47.0	35.0
2XDSSM0820A	8.2					2XDSCSM0820A	8.2				
2XDSSM0830A	8.3					2XDSCSM0830A	8.3				
2XDSSM0840A	8.4					2XDSCSM0840A	8.4				
2XDSSM0850A	8.5					2XDSCSM0850A	8.5				
2XDSSM0860A	8.6					2XDSCSM0860A	8.6				
2XDSSM0870A	8.7					2XDSCSM0870A	8.7				
2XDSSM0880A	8.8					2XDSCSM0880A	8.8				
2XDSSM0890A	8.9					2XDSCSM0890A	8.9				
2XDSSM0900A	9.0					2XDSCSM0900A	9.0				
2XDSSM0910A	9.1					2XDSCSM0910A	9.1				
2XDSSM0920A	9.2					2XDSCSM0920A	9.2				
2XDSSM0925A	9.25					2XDSCSM0925A	9.25				
2XDSSM0930A	9.3					2XDSCSM0930A	9.3				
2XDSSM0940A	9.4					2XDSCSM0940A	9.4				
2XDSSM0950A	9.5					2XDSCSM0950A	9.5				
2XDSSM0960A	9.6					2XDSCSM0960A	9.6				
2XDSSM0970A	9.7					2XDSCSM0970A	9.7				
2XDSSM0980A	9.8					2XDSCSM0980A	9.8				
2XDSSM0990A	9.9					2XDSCSM0990A	9.9				
2XDSSM1000A	10.0	10.0	89.0	43.0	35.0	2XDSCSM1000A	10.0	10.0	89.0	47.0	35.0
2XDSSM1010A	10.1	12.0	101.0	51.0	41.0	2XDSCSM1010A	10.1	12.0	102.0	55.0	40.0
2XDSSM1020A	10.2					2XDSCSM1020A	10.2				
2XDSSM1030A	10.3					2XDSCSM1030A	10.3				
2XDSSM1040A	10.4					2XDSCSM1040A	10.4				
2XDSSM1050A	10.5					2XDSCSM1050A	10.5				
2XDSSM1060A	10.6					2XDSCSM1060A	10.6				
2XDSSM1070A	10.7					2XDSCSM1070A	10.7				
2XDSSM1080A	10.8					2XDSCSM1080A	10.8				
2XDSSM1090A	10.9					2XDSCSM1090A	10.9				
2XDSSM1100A	11.0					2XDSCSM1100A	11.0				
2XDSSM1110A	11.1					2XDSCSM1110A	11.1				

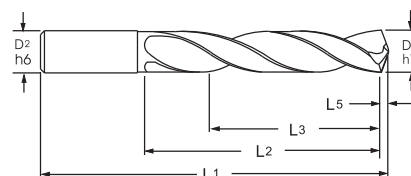


Twister® XD High Performance Drill - 3xD Series XDSSM & XDSCSM

Series
XD SSM



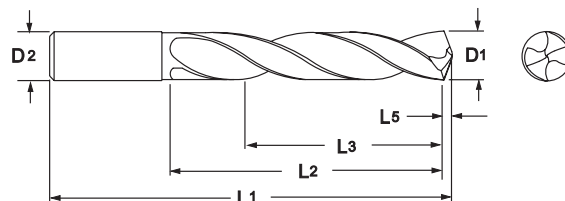
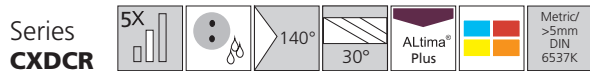
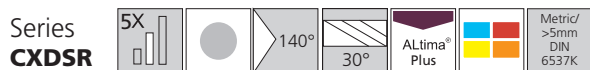
Series
XD CSM



Series 2XDSSM	Drill Dimensions XD SSM					Series 2XDSCSM	Drill Dimensions XD CSM					
	Tool No.	Ø D1 (h7)	Ø D2	L1	L2		L3	Tool No.	Ø D1	Ø D2	L1	L2
2XDSSM1120A	11.2					2XDSCSM1120A	11.2					
2XDSSM1130A	11.3					2XDSCSM1130A	11.3					
2XDSSM1140A	11.4					2XDSCSM1140A	11.4					
2XDSSM1150A	11.5					2XDSCSM1150A	11.5					
2XDSSM1160A	11.6					2XDSCSM1160A	11.6					
2XDSSM1170A	11.7	12.0	101.0	51.0	41.0	2XDSCSM1170A	11.7	12.0	102.0	55.0	40.0	
2XDSSM1180A	11.8	12.0	101.0	51.0	41.0	2XDSCSM1180A	11.8	12.0	102.0	55.0	40.0	
2XDSSM1190A	11.9					2XDSCSM1190A	11.9					
2XDSSM1200A	12.0	12.0	101.0	51.0	41.0	2XDSCSM1200A	12.0	12.0	102.0	55.0	40.0	
2XDSSM1210A	12.1	14.0	107.0	54.0	43.0	2XDSCSM1210A	12.1	14.0	107.0	60.0	43.0	
2XDSSM1250A	12.5					2XDSCSM1250A	12.5					
2XDSSM1280A	12.8	14.0	107.0	54.0	43.0	2XDSCSM1280A	12.8					
2XDSSM1283A	12.83	-	-	-	-	2XDSCSM1283A	12.83	14.0	107.0	60.0	43.0	
2XDSSM1290A	12.9	14.0	107.0	54.0	43.0	2XDSCSM1290A	12.9	14.0	107.0	60.0	43.0	
2XDSSM1300A	13.0					2XDSCSM1300A	13.0					
2XDSSM1350A	13.5					2XDSCSM1350A	13.5					
2XDSSM1370A	13.7					2XDSCSM1370A	13.7					
2XDSSM1400A	14.0	14.0	107.0	54.0	43.0	2XDSCSM1400A	14.0	14.0	107.0	60.0	43.0	
2XDSSM1450A	14.5	16.0	117.0	60.0	48.0	2XDSCSM1450A	14.5	16.0	115.0	65.0	45.0	
2XDSSM1470A	14.7					2XDSCSM1470A	14.7					
2XDSSM1500A	15.0					2XDSCSM1500A	15.0					
2XDSSM1530A	15.3					2XDSCSM1530A	15.3					
2XDSSM1550A	15.5					2XDSCSM1550A	15.5					
2XDSSM1570A	15.7					2XDSCSM1570A	15.7					
2XDSSM1600A	16.0	16.0	117.0	60.0	48.0	2XDSCSM1600A	16.0	16.0	115.0	65.0	45.0	
2XDSSM1608A	16.08	18.0	122.0	63.0	51.0							
2XDSSM1630A	16.3											
2XDSSM1650A	16.5											
2XDSSM1700A	17.0											
2XDSSM1750A	17.5											
2XDSSM1800A	18.0	18.0	122.0	63.0	51.0							
2XDSSM1850A	18.5	20.0	133.0	70.0	56.0							
2XDSSM1916A	19.16											
2XDSSM1925A	19.25											
2XDSSM1930A	19.3											
2XDSSM1950A	19.5											
2XDSSM2000A	20.0	20.0	133.0	70.0	56.0							



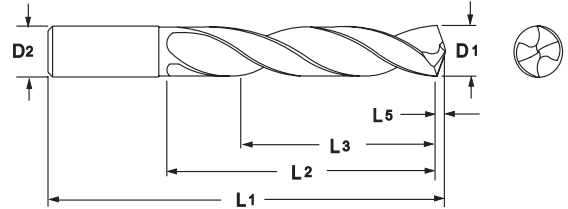
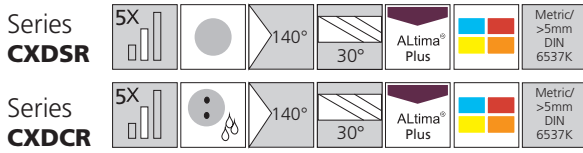
CYCLONE CXD High Performance Drill - 5xD Series CXDSR & CXDCR



Tool No.		Drill Dimensions (mm)					
CXDSR	CXDCR	D1 (m7)	D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSR 0300AP	CXDCR 0300AP	3.0	3.0	66.0	28.0	23.0	0.46
CXDSR 0310AP	CXDCR 0310AP	3.1	4.0	66.0	28.0	23.0	0.48
CXDSR 0320AP	CXDCR 0320AP	3.2	4.0	66.0	28.0	23.0	0.5
CXDSR 0330AP	CXDCR 0330AP	3.3	4.0	66.0	28.0	23.0	0.51
CXDSR 0340AP	CXDCR 0340AP	3.4	4.0	66.0	28.0	23.0	0.53
CXDSR 0350AP	CXDCR 0350AP	3.5	4.0	66.0	28.0	23.0	0.54
CXDSR 0360AP	CXDCR 0360AP	3.6	4.0	66.0	28.0	23.0	0.56
CXDSR 0370AP	CXDCR 0370AP	3.7	4.0	66.0	28.0	23.0	0.57
CXDSR 0380AP	CXDCR 0380AP	3.8	4.0	74.0	36.0	29.0	0.59
CXDSR 0390AP	CXDCR 0390AP	3.9	4.0	74.0	36.0	29.0	0.6
CXDSR 0400AP	CXDCR 0400AP	4.0	4.0	74.0	36.0	29.0	0.62
CXDSR 0410AP	CXDCR 0410AP	4.1	5.0	74.0	36.0	29.0	0.64
CXDSR 0420AP	CXDCR 0420AP	4.2	5.0	74.0	36.0	29.0	0.65
CXDSR 0430AP	CXDCR 0430AP	4.3	5.0	74.0	36.0	29.0	0.67
CXDSR 0440AP	CXDCR 0440AP	4.4	5.0	74.0	36.0	29.0	0.68
CXDSR 0450AP	CXDCR 0450AP	4.5	5.0	74.0	36.0	29.0	0.7
CXDSR 0460AP	CXDCR 0460AP	4.6	5.0	74.0	36.0	29.0	0.71
CXDSR 0470AP	CXDCR 0470AP	4.7	5.0	74.0	36.0	29.0	0.73
CXDSR 0480AP	CXDCR 0480AP	4.8	5.0	82.0	44.0	35.0	0.74
CXDSR 0490AP	CXDCR 0490AP	4.9	5.0	82.0	44.0	35.0	0.76
CXDSR 0500AP	CXDCR 0500AP	5.0	5.0	82.0	44.0	35.0	0.77
CXDSR 0510AP	CXDCR 0510AP	5.1	6.0	82.0	44.0	35.0	0.79
CXDSR 0520AP	CXDCR 0520AP	5.2	6.0	82.0	44.0	35.0	0.81
CXDSR 0530AP	CXDCR 0530AP	5.3	6.0	82.0	44.0	35.0	0.82
CXDSR 0540AP	CXDCR 0540AP	5.4	6.0	82.0	44.0	35.0	0.84
CXDSR 0550AP	CXDCR 0550AP	5.5	6.0	82.0	44.0	35.0	0.85
CXDSR 0560AP	CXDCR 0560AP	5.6	6.0	82.0	44.0	35.0	0.86
CXDSR 0570AP	CXDCR 0570AP	5.7	6.0	82.0	44.0	35.0	0.88
CXDSR 0580AP	CXDCR 0580AP	5.8	6.0	82.0	44.0	35.0	0.9
CXDSR 0590AP	CXDCR 0590AP	5.9	6.0	82.0	44.0	35.0	0.91
CXDSR 0600AP	CXDCR 0600AP	6.0	6.0	82.0	44.0	35.0	0.93
CXDSR 0610AP	CXDCR 0610AP	6.1	8.0	91.0	53.0	43.0	0.95
CXDSR 0620AP	CXDCR 0620AP	6.2	8.0	91.0	53.0	43.0	0.96
CXDSR 0630AP	CXDCR 0630AP	6.3	8.0	91.0	53.0	43.0	0.98
CXDSR 0640AP	CXDCR 0640AP	6.4	8.0	91.0	53.0	43.0	0.99
CXDSR 0650AP	CXDCR 0650AP	6.5	8.0	91.0	53.0	43.0	1.01
CXDSR 0660AP	CXDCR 0660AP	6.6	8.0	91.0	53.0	43.0	1.03
CXDSR 0670AP	CXDCR 0670AP	6.7	8.0	91.0	53.0	43.0	1.04
CXDSR 0680AP	CXDCR 0680AP	6.8	8.0	91.0	53.0	43.0	1.05
CXDSR 0690AP	CXDCR 0690AP	6.9	8.0	91.0	53.0	43.0	1.07

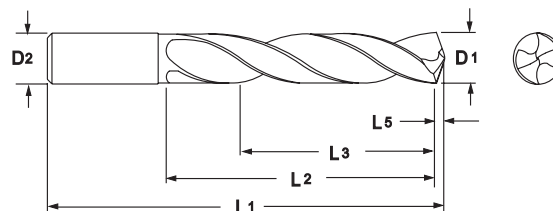
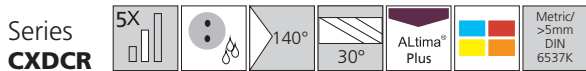
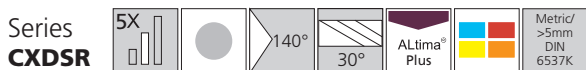


CYCLONE CXD High Performance Drill - 5xD Series CXDSR & CXDCR



Tool No.		Drill Dimensions (mm)					
CXDSR	CXDCR	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSR 0700AP	CXDCR 0700AP	7.0	8.0	91.0	53.0	43.0	1.08
CXDSR 0710AP	CXDCR 0710AP	7.1	8.0	91.0	53.0	43.0	1.1
CXDSR 0720AP	CXDCR 0720AP	7.2	8.0	91.0	53.0	43.0	1.12
CXDSR 0730AP	CXDCR 0730AP	7.3	8.0	91.0	53.0	43.0	1.13
CXDSR 0740AP	CXDCR 0740AP	7.4	8.0	91.0	53.0	43.0	1.15
CXDSR 0750AP	CXDCR 0750AP	7.5	8.0	91.0	53.0	43.0	1.16
CXDSR 0760AP	CXDCR 0760AP	7.6	8.0	91.0	53.0	43.0	1.18
CXDSR 0770AP	CXDCR 0770AP	7.7	8.0	91.0	53.0	43.0	1.19
CXDSR 0780AP	CXDCR 0780AP	7.8	8.0	91.0	53.0	43.0	1.21
CXDSR 0790AP	CXDCR 0790AP	7.9	8.0	91.0	53.0	43.0	1.22
CXDSR 0800AP	CXDCR 0800AP	8.0	8.0	91.0	53.0	43.0	1.24
CXDSR 0810AP	CXDCR 0810AP	8.1	10.0	103.0	61.0	49.0	1.26
CXDSR 0820AP	CXDCR 0820AP	8.2	10.0	103.0	61.0	49.0	1.27
CXDSR 0830AP	CXDCR 0830AP	8.3	10.0	103.0	61.0	49.0	1.29
CXDSR 0840AP	CXDCR 0840AP	8.4	10.0	103.0	61.0	49.0	1.31
CXDSR 0850AP	CXDCR 0850AP	8.5	10.0	103.0	61.0	49.0	1.32
CXDSR 0860AP	CXDCR 0860AP	8.6	10.0	103.0	61.0	49.0	1.33
CXDSR 0870AP	CXDCR 0870AP	8.7	10.0	103.0	61.0	49.0	1.35
CXDSR 0880AP	CXDCR 0880AP	8.8	10.0	103.0	61.0	49.0	1.36
CXDSR 0890AP	CXDCR 0890AP	8.9	10.0	103.0	61.0	49.0	1.38
CXDSR 0900AP	CXDCR 0900AP	9.0	10.0	103.0	61.0	49.0	1.39
CXDSR 0910AP	CXDCR 0910AP	9.1	10.0	103.0	61.0	49.0	1.41
CXDSR 0920AP	CXDCR 0920AP	9.2	10.0	103.0	61.0	49.0	1.43
CXDSR 0925AP	CXDCR 0925AP	9.3	10.0	103.0	61.0	49.0	1.43
CXDSR 0930AP	CXDCR 0930AP	9.3	10.0	103.0	61.0	49.0	1.44
CXDSR 0940AP	CXDCR 0940AP	9.4	10.0	103.0	61.0	49.0	1.46
CXDSR 0950AP	CXDCR 0950AP	9.5	10.0	103.0	61.0	49.0	1.47
CXDSR 0960AP	CXDCR 0960AP	9.6	10.0	103.0	61.0	49.0	1.49
CXDSR 0970AP	CXDCR 0970AP	9.7	10.0	103.0	61.0	49.0	1.5
CXDSR 0980AP	CXDCR 0980AP	9.8	10.0	103.0	61.0	49.0	1.52
CXDSR 0990AP	CXDCR 0990AP	9.9	10.0	103.0	61.0	49.0	1.53
CXDSR 1000AP	CXDCR 1000AP	10.0	10.0	103.0	61.0	49.0	1.55
CXDSR 1010AP	CXDCR 1010AP	10.1	12.0	118.0	71.0	56.0	1.56
CXDSR 1020AP	CXDCR 1020AP	10.2	12.0	118.0	71.0	56.0	1.58
CXDSR 1030AP	CXDCR 1030AP	10.3	12.0	118.0	71.0	56.0	1.6
CXDSR 1040AP	CXDCR 1040AP	10.4	12.0	118.0	71.0	56.0	1.61
CXDSR 1050AP	CXDCR 1050AP	10.5	12.0	118.0	71.0	56.0	1.63
CXDSR 1060AP	CXDCR 1060AP	10.6	12.0	118.0	71.0	56.0	1.64
CXDSR 1070AP	CXDCR 1070AP	10.7	12.0	118.0	71.0	56.0	1.66
CXDSR 1080AP	CXDCR 1080AP	10.8	12.0	118.0	71.0	56.0	1.67

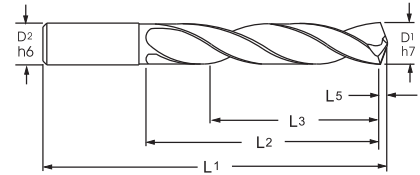
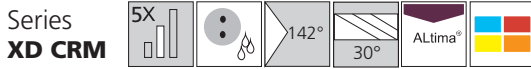
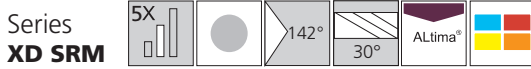
CYCLONE CXD High Performance Drill - 5xD Series CXDSR & CXDCR



Tool No.		Drill Dimensions (mm)					
CXDSR	CXDCR	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSR 1090AP	CXDCR 1090AP	10.9	12.0	118.0	71.0	56.0	1.69
CXDSR 1100AP	CXDCR 1100AP	11.0	12.0	118.0	71.0	56.0	1.7
CXDSR 1110AP	CXDCR 1110AP	11.1	12.0	118.0	71.0	56.0	1.72
CXDSR 1120AP	CXDCR 1120AP	11.2	12.0	118.0	71.0	56.0	1.74
CXDSR 1130AP	CXDCR 1130AP	11.3	12.0	118.0	71.0	56.0	1.75
CXDSR 1140AP	CXDCR 1140AP	11.4	12.0	118.0	71.0	56.0	1.77
CXDSR 1150AP	CXDCR 1150AP	11.5	12.0	118.0	71.0	56.0	1.78
CXDSR 1160AP	CXDCR 1160AP	11.6	12.0	118.0	71.0	56.0	1.8
CXDSR 1170AP	CXDCR 1170AP	11.7	12.0	118.0	71.0	56.0	1.81
CXDSR 1180AP	CXDCR 1180AP	11.8	12.0	118.0	71.0	56.0	1.83
CXDSR 1190AP	CXDCR 1190AP	11.9	12.0	118.0	71.0	56.0	1.84
CXDSR 1200AP	CXDCR 1200AP	12.0	12.0	118.0	71.0	56.0	1.86
CXDSR 1210AP	CXDCR 1210AP	12.1	14.0	124.0	77.0	60.0	1.87
CXDSR 1250AP	CXDCR 1250AP	12.5	14.0	124.0	77.0	60.0	1.94
CXDSR 1280AP	CXDCR 1280AP	12.8	14.0	124.0	77.0	60.0	1.98
CXDSR 1283AP	CXDCR 1283AP	12.8	14.0	124.0	77.0	60.0	1.99
CXDSR 1290AP	CXDCR 1290AP	12.9	14.0	124.0	77.0	60.0	2.0
CXDSR 1300AP	CXDCR 1300AP	13.0	14.0	124.0	77.0	60.0	2.01
CXDSR 1350AP	CXDCR 1350AP	13.5	14.0	124.0	77.0	60.0	2.09
CXDSR 1370AP	CXDCR 1370AP	13.7	14.0	124.0	77.0	60.0	2.12
CXDSR 1400AP	CXDCR 1400AP	14.0	14.0	124.0	77.0	60.0	2.17
CXDSR 1450AP	CXDCR 1450AP	14.5	16.0	133.0	83.0	63.0	2.25
CXDSR 1470AP	CXDCR 1470AP	14.7	16.0	133.0	83.0	63.0	2.28
CXDSR 1500AP	CXDCR 1500AP	15.0	16.0	133.0	83.0	63.0	2.32
CXDSR 1530AP	CXDCR 1530AP	15.3	16.0	133.0	83.0	63.0	2.37
CXDSR 1550AP	CXDCR 1550AP	15.5	16.0	133.0	83.0	63.0	2.4
CXDSR 1570AP	CXDCR 1570AP	15.7	16.0	133.0	83.0	63.0	2.43
CXDSR 1600AP	CXDCR 1600AP	16.0	16.0	133.0	83.0	63.0	2.48
-	CXDCR 1608AP	16.08	16.08	143.0	93.0	71.0	2.49
-	CXDCR 1630AP	16.3	16.3	143.0	93.0	71.0	2.53
-	CXDCR 1650AP	16.5	16.5	143.0	93.0	71.0	2.56
-	CXDCR 1700AP	17.0	17.0	143.0	93.0	71.0	2.63
-	CXDCR 1750AP	17.5	17.5	143.0	93.0	71.0	2.71
-	CXDCR 1800AP	18.0	18.0	143.0	93.0	71.0	2.79
-	CXDCR 1850AP	18.5	18.5	153.0	101.0	79.0	2.87
-	CXDCR 1916AP	19.16	19.16	153.0	101.0	79.0	2.97
-	CXDCR 1925AP	19.25	19.25	153.0	101.0	79.0	2.98
-	CXDCR 1930AP	19.3	19.3	153.0	101.0	79.0	2.99
-	CXDCR 1950AP	19.5	19.5	153.0	101.0	79.0	3.02
-	CXDCR 2000AP	20.0	20.0	153.0	101.0	79.0	3.1

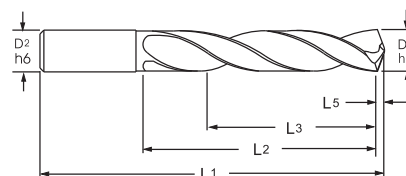
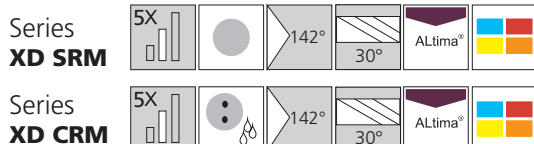


Twister® XD High Performance Drill - 5xD Series XDSRM & XDCRM



Series 2XD SRM	Drill Dimensions XD SRM					Series 2XD CRM	Drill Dimensions XD CRM						
	Tool No.	Ø D1 (h7)	Ø D2	L1	L2		L3	Tool No.	Ø D1	Ø D2	L1	L2	L3
2XD SRM0050A	0.5	0.5	26.0	6.0	5.0	-	-	-	-	-	-	-	
2XD SRM0060A	0.6	0.6	26.0	7.0	5.0	-	-	-	-	-	-	-	
2XD SRM0065A	0.65	0.65	26.0	8.0	6.0	-	-	-	-	-	-	-	
2XD SRM0095A	0.95	0.95	32.0	11.0	8.0	-	-	-	-	-	-	-	
2XD SRM0100A	1.0	1.0	34.0	12.0	9.0	-	-	-	-	-	-	-	
2XD SRM0105A	1.05	1.05	34.0	12.0	9.0	-	-	-	-	-	-	-	
2XD SRM0125A	1.25	1.25	38.0	16.0	12.0	-	-	-	-	-	-	-	
2XD SRM0150A	1.5	1.5	40.0	18.0	14.0	-	-	-	-	-	-	-	
2XD SRM0160A	1.6	1.6	43.0	20.0	15.0	-	-	-	-	-	-	-	
2XD SRM0180A	1.8	1.8	46.0	22.0	17.0	-	-	-	-	-	-	-	
2XD SRM0190A	1.9	1.9	46.0	22.0	17.0	-	-	-	-	-	-	-	
2XD SRM0200A	2.0	2.0	49.0	24.0	18.0	-	-	-	-	-	-	-	
2XD SRM0205A	2.05	2.05	49.0	24.0	18.0	-	-	-	-	-	-	-	
2XD SRM0230A	2.3	2.3	53.0	27.0	20.0	-	-	-	-	-	-	-	
2XD SRM0240A	2.4	2.4	57.0	30.0	23.0	-	-	-	-	-	-	-	
2XD SRM0250A	2.5	2.5	57.0	30.0	23.0	-	-	-	-	-	-	-	
2XD SRM0290A	2.9	2.9	61.0	33.0	25.0	-	-	-	-	-	-	-	
2XD SRM0300A	3.0	3.0	63.0	24.0	19.0	2XD CRM0300A	3.0	3.0	75.0	24.0	19.0	-	-
2XD SRM0310A	3.1	4.0	69.0	32.0	26.0	2XD CRM0310A	3.1	4.0	80.0	32.0	26.0	-	-
2XD SRM0320A	3.2					2XD CRM0320A	3.2						
2XD SRM0330A	3.3					2XD CRM0330A	3.3						
2XD SRM0340A	3.4					2XD CRM0340A	3.4						
2XD SRM0350A	3.5					2XD CRM0350A	3.5						
2XD SRM0360A	3.6					2XD CRM0360A	3.6						
2XD SRM0370A	3.7					2XD CRM0370A	3.7						
2XD SRM0380A	3.8					2XD CRM0380A	3.8						
2XD SRM0390A	3.9					2XD CRM0390A	3.9						
2XD SRM0400A	4.0	4.0	69.0	32.0	26.0	2XD CRM0400A	4.0	4.0	80.0	32.0	26.0	-	-
2XD SRM0410A	4.1	5.0	80.0	38.0	30.0	2XD CRM0410A	4.1	5.0	82.0	38.0	30.0	-	-
2XD SRM0420A	4.2					2XD CRM0420A	4.2						
2XD SRM0430A	4.3					2XD CRM0430A	4.3						
2XD SRM0440A	4.4					2XD CRM0440A	4.4						
2XD SRM0450A	4.5					2XD CRM0450A	4.5						
2XD SRM0460A	4.6					2XD CRM0460A	4.6						
2XD SRM0470A	4.7					2XD CRM0470A	4.7						
2XD SRM0480A	4.8					2XD CRM0480A	4.8						
2XD SRM0490A	4.9					2XD CRM0490A	4.9						
2XD SRM0500A	5.0	5.0	80.0	38.0	30.0	2XD CRM0500A	5.0	5.0	82.0	38.0	30.0	-	-
2XD SRM0510A	5.1	6.0	82.0	40.0	32.0	2XD CRM0510A	5.1	6.0	82.0	40.0	32.0	-	-
2XD SRM0520A	5.2					2XD CRM0520A	5.2						
2XD SRM0530A	5.3					2XD CRM0530A	5.3						
2XD SRM0540A	5.4					2XD CRM0540A	5.4						
2XD SRM0550A	5.5					2XD CRM0550A	5.5						

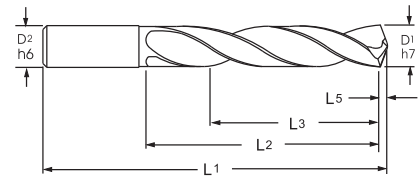
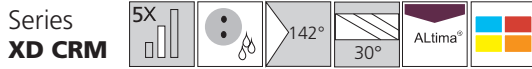
Twister® XD High Performance Drill - 5xD Series XDSRM & XD CRM



Series 2XD SRM	Drill Dimensions XD SRM					Series 2XD CRM	Drill Dimensions XD CRM				
Tool No.	Ø D1 (h7)	Ø D2	L1	L2	L3	Tool No.	Ø D1	Ø D2	L1	L2	L3
2XD SRM0570A	5.7					2XD CRM0570A	5.7				
2XD SRM0580A	5.8	6.0	82.0	40.0	32.0	2XD CRM0580A	5.8	6.0	82.0	40.0	32.0
2XD SRM0590A	5.9	6.0	82.0	40.0	32.0	2XD CRM0590A	5.9	6.0	82.0	40.0	32.0
2XD SRM0600A	6.0	6.0	82.0	40.0	32.0	2XD CRM0600A	6.0	6.0	82.0	40.0	32.0
2XD SRM0610A	6.1	8.0	91.0	48.0	38.0	2XD CRM0610A	6.1	8.0	91.0	48.0	38.0
2XD SRM0620A	6.2					2XD CRM0620A	6.2				
2XD SRM0630A	6.3					2XD CRM0630A	6.3				
2XD SRM0640A	6.4					2XD CRM0640A	6.4				
2XD SRM0650A	6.5					2XD CRM0650A	6.5				
2XD SRM0660A	6.6					2XD CRM0660A	6.6				
2XD SRM0670A	6.7					2XD CRM0670A	6.7				
2XD SRM0680A	6.8					2XD CRM0680A	6.8				
2XD SRM0690A	6.9					2XD CRM0690A	6.9				
2XD SRM0700A	7.0					2XD CRM0700A	7.0				
2XD SRM0710A	7.1					2XD CRM0710A	7.1				
2XD SRM0720A	7.2					2XD CRM0720A	7.2				
2XD SRM0730A	7.3					2XD CRM0730A	7.3				
2XD SRM0740A	7.4					2XD CRM0740A	7.4				
2XD SRM0750A	7.5					2XD CRM0750A	7.5				
2XD SRM0760A	7.6					2XD CRM0760A	7.6				
2XD SRM0770A	7.7					2XD CRM0770A	7.7				
2XD SRM0780A	7.8					2XD CRM0780A	7.8				
2XD SRM0790A	7.9					2XD CRM0790A	7.9				
2XD SRM0800A	8.0	8.0	91.0	48.0	38.0	2XD CRM0800A	8.0	8.0	91.0	48.0	38.0
2XD SRM0810A	8.1	10.0	103.0	55.0	44.0	2XD CRM0810A	8.1	10.0	103.0	55.0	44.0
2XD SRM0820A	8.2					2XD CRM0820A	8.2				
2XD SRM0830A	8.3					2XD CRM0830A	8.3				
2XD SRM0840A	8.4					2XD CRM0840A	8.4				
2XD SRM0850A	8.5					2XD CRM0850A	8.5				
2XD SRM0860A	8.6					2XD CRM0860A	8.6				
2XD SRM0870A	8.7					2XD CRM0870A	8.7				
2XD SRM0880A	8.8					2XD CRM0880A	8.8				
2XD SRM0890A	8.9					2XD CRM0890A	8.9				
2XD SRM0900A	9.0					2XD CRM0900A	9.0				
2XD SRM0910A	9.1					2XD CRM0910A	9.1				
2XD SRM0920A	9.2					2XD CRM0920A	9.2				
2XD SRM0925A	9.25					2XD CRM0925A	9.25				
2XD SRM0930A	9.3					2XD CRM0930A	9.3				
2XD SRM0940A	9.4					2XD CRM0940A	9.4				
2XD SRM0950A	9.5					2XD CRM0950A	9.5				
2XD SRM0960A	9.6					2XD CRM0960A	9.6				
2XD SRM0970A	9.7					2XD CRM0970A	9.7				
2XD SRM0980A	9.8					2XD CRM0980A	9.8				

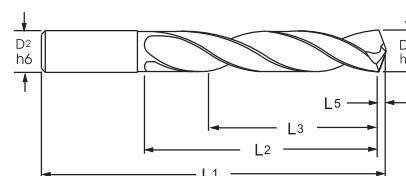
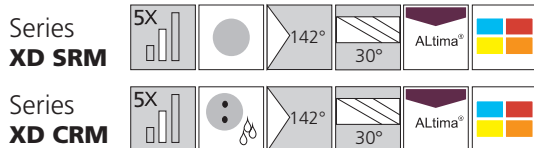


Twister® XD High Performance Drill - 5xD Series XDSRM & XDCRM



Series 2XDSRM	Drill Dimensions XD SRM					Series 2XDCRM	Drill Dimensions XD CRM				
Tool No.	Ø D1 (h7)	Ø D2	L1	L2	L3	Tool No.	Ø D1 (h7)	Ø D2	L1	L2	L3
2XDSRM0990A	9.9					2XDCRM0990A	9.9				
2XDSRM1000A	10.0	10.0	103.0	55.0	44.0	2XDCRM1000A	10.0	10.0	103.0	55.0	44.0
2XDSRM1010A	10.1	12.0	120.0	60.0	48.0	2XDCRM1010A	10.1	12.0	120.0	60.0	48.0
2XDSRM1020A	10.2	12.0	120.0	60.0	48.0	2XDCRM1020A	10.2	12.0	120.0	60.0	48.0
2XDSRM1030A	10.3	12.0	120.0	60.0	48.0	2XDCRM1030A	10.3	12.0	120.0	60.0	48.0
2XDSRM1040A	10.4					2XDCRM1040A	10.4				
2XDSRM1050A	10.5					2XDCRM1050A	10.5				
2XDSRM1060A	10.6					2XDCRM1060A	10.6				
2XDSRM1070A	10.7	12.0	120.0	60.0	48.0	2XDCRM1070A	10.7	12.0	120.0	60.0	48.0
2XDSRM1080A	10.8	12.0	120.0	60.0	48.0	2XDCRM1080A	10.8	12.0	120.0	60.0	48.0
2XDSRM1090A	10.9					2XDCRM1090A	10.9				
2XDSRM1100A	11.0					2XDCRM1100A	11.0	12.0	120.0	60.0	48.0
2XDSRM1110A	11.1					2XDCRM1110A	11.1	12.0	120.0	66.0	53.0
2XDSRM1120A	11.2					2XDCRM1120A	11.2				
2XDSRM1130A	11.3					2XDCRM1130A	11.3				
2XDSRM1140A	11.4					2XDCRM1140A	11.4				
2XDSRM1150A	11.5					2XDCRM1150A	11.5				
2XDSRM1160A	11.6					2XDCRM1160A	11.6				
2XDSRM1170A	11.7					2XDCRM1170A	11.7				
2XDSRM1180A	11.8					2XDCRM1180A	11.8				
2XDSRM1190A	11.9					2XDCRM1190A	11.9				
2XDSRM1200A	12.0	12.0	120.0	66.0	53.0	2XDCRM1200A	12.0	12.0	120.0	66.0	53.0
2XDSRM1210A	12.1	14.0	126.0	72.0	58.0	2XDCRM1210A	12.1	14.0	126.0	72.0	58.0
2XDSRM1250A	12.5					2XDCRM1250A	12.5				
2XDSRM1280A	12.8					2XDCRM1280A	12.8				
2XDSRM1290A	12.9					2XDCRM1290A	12.9				
2XDSRM1300A	13.0	14.0	126.0	72.0	58.0	2XDCRM1300A	13.0	14.0	126.0	72.0	58.0
2XDSRM1350A	13.5	14.0	134.0	77.0	62.0	2XDCRM1350A	13.5	14.0	134.0	77.0	62.0
2XDSRM1370A	13.7					2XDCRM1370A	13.7				
2XDSRM1400A	14.0	14.0	134.0	77.0	62.0	2XDCRM1400A	14.0	14.0	134.0	77.0	62.0
2XDSRM1450A	14.5	16.0	140.0	80.0	64.0	2XDCRM1450A	14.5	16.0	140.0	80.0	64.0
2XDSRM1470A	14.7					2XDCRM1470A	14.7				
2XDSRM1500A	15.0	16.0	140.0	80.0	64.0	2XDCRM1500A	15.0	16.0	140.0	80.0	64.0
2XDSRM1530A	15.3	16.0	146.0	82.0	66.0	2XDCRM1530A	15.3	16.0	146.0	82.0	66.0
2XDSRM1550A	15.5					2XDCRM1550A	15.5				
2XDSRM1570A	15.7					2XDCRM1570A	15.7				
2XDSRM1600A	16.0	16.0	146.0	82.0	66.0	2XDCRM1600A	16.0	16.0	146.0	82.0	66.0
-	-	-	-	-	-	2XDCRM1608A	16.08	18.0	158.0	90.0	72.0
-	-	-	-	-	-	2XDCRM1630A	16.3				
-	-	-	-	-	-	2XDCRM1650A	16.5				
-	-	-	-	-	-	2XDCRM1700A	17.0	18.0	158.0	90.0	72.0
-	-	-	-	-	-	2XDCRM1750A	17.5	18.0	158.0	95.0	76.0
-	-	-	-	-	-	2XDCRM1800A	18.0	18.0	158.0	95.0	76.0

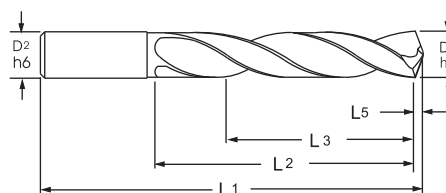
Twister® XD High Performance Drill - 5xD Series XDSRM & XDCRM



Series 2XD SRM	Drill Dimensions XD SRM					Series 2XD CRM	Drill Dimensions XD CRM				
Tool No.	Ø D1 (h7)	Ø D2	L1	L2	L3	Tool No.	Ø D1 (h7)	Ø D2	L1	L2	L3
-	-	-	-	-	-	2XD CRM1850A	18.5	20.0	160.0	100.0	80.0
-	-	-	-	-	-	2XD CRM1916A	19.16				
-	-	-	-	-	-	2XD CRM1925A	19.25				
-	-	-	-	-	-	2XD CRM1930A	19.3				
-	-	-	-	-	-	2XD CRM1950A	19.5				
-	-	-	-	-	-	2XD CRM2000A	20.0	20.0	160.0	100.0	80.0

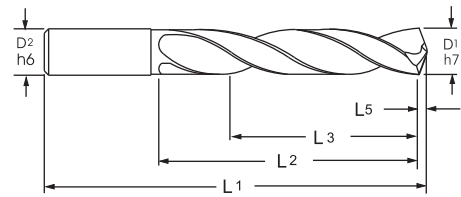
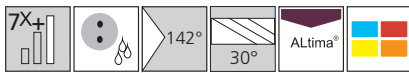


Twister® XD High Performance Drill - 7+xD Series XDCLM



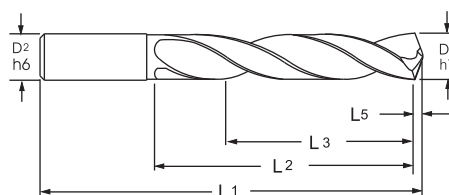
Series 2XDCLM	Drill Dimensions XD CLM				
Tool No.	Ø D1 (h7)	Ø D2	L1	L2	L3
2XDCLM0300A	3.0	3.0	81.0	33.0	26.0
2XDCLM0310A	3.1	4.0	92.0	44.0	35.0
2XDCLM0320A	3.2				
2XDCLM0330A	3.3				
2XDCLM0340A	3.4				
2XDCLM0350A	3.5				
2XDCLM0360A	3.6				
2XDCLM0370A	3.7				
2XDCLM0380A	3.8				
2XDCLM0390A	3.9				
2XDCLM0400A	4.0	4.0	92.0	44.0	35.0
2XDCLM0410A	4.1	5.0	100.0	45.0	36.0
2XDCLM0420A	4.2				
2XDCLM0430A	4.3				
2XDCLM0440A	4.4				
2XDCLM0450A	4.5				
2XDCLM0460A	4.6				
2XDCLM0470A	4.7				
2XDCLM0480A	4.8				
2XDCLM0490A	4.9				
2XDCLM0500A	5.0	5.0	100.0	45.0	36.0

Twister® XD High Performance Drill - 7⁺xD Series XDCLM



Series 2XDCLM	Drill Dimensions XD CLM				
Tool No.	Ø D1 (h7)	Ø D2	L1	L2	L3
2XDCLM0510A	5.1	6.0	100.0	51.0	41.0
2XDCLM0520A	5.2				
2XDCLM0530A	5.3				
2XDCLM0540A	5.4				
2XDCLM0550A	5.5				
2XDCLM0570A	5.7				
2XDCLM0580A	5.8				
2XDCLM0590A	5.9				
2XDCLM0600A	6.0	6.0	100.0	51.0	41.0
2XDCLM0610A	6.1	8.0	109.0	60.0	48.0
2XDCLM0620A	6.2				
2XDCLM0630A	6.3				
2XDCLM0640A	6.4				
2XDCLM0650A	6.5				
2XDCLM0660A	6.6				
2XDCLM0670A	6.7				
2XDCLM0680A	6.8				
2XDCLM0690A	6.9				
2XDCLM0700A	7.0	8.0	109.0	60.0	48.0
2XDCLM0710A	7.1	8.0	118.0	70.0	56.0
2XDCLM0720A	7.2				
2XDCLM0730A	7.3				
2XDCLM0740A	7.4				
2XDCLM0750A	7.5	8.0	118.0	70.0	56.0
2XDCLM0760A	7.6	8.0	118.0	70.0	56.0
2XDCLM0770A	7.7	8.0	118.0	70.0	56.0
2XDCLM0780A	7.8	8.0	118.0	70.0	56.0
2XDCLM0790A	7.9				
2XDCLM0800A	8.0	8.0	118.0	70.0	56.0
2XDCLM0810A	8.1	10.0	127.0	80.0	64.0
2XDCLM0820A	8.2				
2XDCLM0830A	8.3				
2XDCLM0840A	8.4				
2XDCLM0850A	8.5				
2XDCLM0860A	8.6				
2XDCLM0880A	8.8				
2XDCLM0890A	8.9				
2XDCLM0900A	9.0	10.0	127.0	80.0	64.0
2XDCLM0910A	9.1	10.0	136.0	85.0	68.0
2XDCLM0920A	9.2				
2XDCLM0925A	9.25				
2XDCLM0930A	9.3				
2XDCLM0940A	9.4				
2XDCLM0950A	9.5				
2XDCLM0960A	9.6				
2XDCLM0970A	9.7				
2XDCLM0980A	9.8				
2XDCLM0990A	9.9				
2XDCLM1000A	10.0	10.0	136.0	85.0	68.0
2XDCLM1010A	10.1	12.0	149.0	93.0	74.0
2XDCLM1020A	10.2				
2XDCLM1030A	10.3				
2XDCLM1040A	10.4				
2XDCLM1050A	10.5				

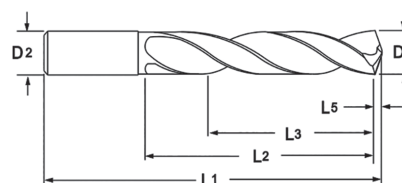
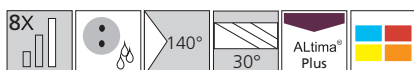
Twister[®] XD High Performance Drill - 7⁺xD Series XDCLM



Series 2XDCLM	Drill Dimensions XD CLM				
Tool No.	Ø D1 (h7)	Ø D2	L1	L2	L3
2XDCLM1060A	10.6				
2XDCLM1070A	10.7				
2XDCLM1080A	10.8				
2XDCLM1090A	10.9				
2XDCLM1100A	11.0	12.0	149.0	93.0	74.0
2XDCLM1110A	11.1	12.0	155.0	102.0	82.0
2XDCLM1120A	11.2				
2XDCLM1130A	11.3				
2XDCLM1140A	11.4				
2XDCLM1150A	11.5				
2XDCLM1160A	11.6				
2XDCLM1170A	11.7				
2XDCLM1180A	11.8				
2XDCLM1190A	11.9				
2XDCLM1200A	12.0	12.0	155.0	102.0	82.0



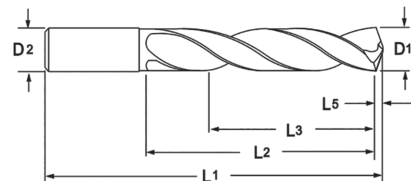
CYCLONE CXD High Performance Drill - 8xD Series CXDCLM



Tool Number	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	Ø L3	L5
CXDCLM0300AP	3.0	3.0	81.0	33.0	25.0	0.46
CXDCL1200AP	3.05	4.0	92.0	44.0	33.0	0.48
CXDCLM0310AP	3.1	4.0	92.0	44.0	33.0	0.48
CXDCL1250AP	3.18	4.0	92.0	44.0	33.0	0.48
CXDCLM0320AP	3.2	4.0	92.0	44.0	33.0	0.5
CXDCLM0325AP	3.25	4.0	92.0	44.0	33.0	0.51
CXDCL1285AP	3.26	4.0	92.0	44.0	33.0	0.51
CXDCLM0330AP	3.3	4.0	92.0	44.0	33.0	0.51
CXDCLM0340AP	3.4	4.0	92.0	44.0	33.0	0.53
CXDCL1360AP	3.45	4.0	92.0	44.0	33.0	0.53
CXDCLM0350AP	3.5	4.0	92.0	44.0	33.0	0.54
CXDCL1406AP	3.57	4.0	92.0	44.0	33.0	0.56
CXDCLM0360AP	3.6	4.0	92.0	44.0	33.0	0.56
CXDCLM0370AP	3.7	4.0	92.0	44.0	33.0	0.57
CXDCL1496AP	3.8	4.0	92.0	44.0	33.0	0.59
CXDCL1520AP	3.86	4.0	92.0	44.0	33.0	0.6
CXDCLM0390AP	3.9	4.0	92.0	44.0	33.0	0.6
CXDCL1562AP	3.97	4.0	92.0	44.0	33.0	0.61



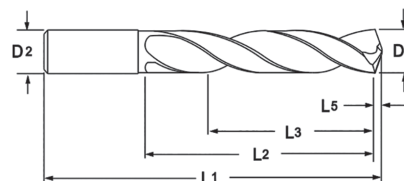
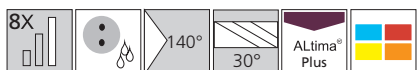
CYCLONE CXD High Performance Drill - 8xD Series CXDCLM



Tool Number	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDCLM0400AP	4.0	4.0	92.0	44.0	33.0	0.62
CXDCL1590AP	4.04	5.0	100.0	45.0	34.0	0.63
CXDCLM0410AP	4.1	5.0	100.0	45.0	34.0	0.64
CXDCLM0420AP	4.2	5.0	100.0	45.0	34.0	0.65
CXDCLM0430AP	4.3	5.0	100.0	45.0	34.0	0.67
CXDCL1719AP	4.37	5.0	100.0	45.0	34.0	0.68
CXDCLM0440AP	4.4	5.0	100.0	45.0	34.0	0.68
CXDCLM0450AP	4.5	5.0	100.0	45.0	34.0	0.7
CXDCLM0460AP	4.6	5.0	100.0	45.0	34.0	0.71
CXDCLM0465AP	4.65	5.0	100.0	45.0	34.0	0.72
CXDCLM0470AP	4.7	5.0	100.0	45.0	34.0	0.73
CXDCL1875AP	4.76	5.0	100.0	45.0	34.0	0.74
CXDCLM0480AP	4.8	5.0	100.0	45.0	34.0	0.74
CXDCLM0490AP	4.9	5.0	100.0	45.0	34.0	0.76
CXDCLM0500AP	5.0	5.0	100.0	45.0	34.0	0.77
CXDCLM0510AP	5.1	6.0	100.0	57.0	43.0	0.79
CXDCL2031AP	5.16	6.0	100.0	57.0	43.0	0.79
CXDCLM0520AP	5.2	6.0	100.0	57.0	43.0	0.81
CXDCLM0530AP	5.3	6.0	100.0	57.0	43.0	0.82
CXDCLM0540AP	5.4	6.0	100.0	57.0	43.0	0.84
CXDCLM0550AP	5.5	6.0	100.0	57.0	43.0	0.85
CXDCL2187AP	5.56	6.0	100.0	57.0	43.0	0.86
CXDCLM0560AP	5.6	6.0	100.0	57.0	43.0	0.86
CXDCL2210AP	5.61	6.0	100.0	57.0	43.0	0.86
CXDCLM0570AP	5.7	6.0	100.0	57.0	43.0	0.88
CXDCLM0580AP	5.8	6.0	100.0	57.0	43.0	0.9
CXDCLM0590AP	5.9	6.0	100.0	57.0	43.0	0.91
CXDCL2344AP	5.95	6.0	100.0	57.0	43.0	0.91
CXDCLM0600AP	6.0	6.0	100.0	57.0	43.0	0.93
CXDCLM0610AP	6.1	8.0	118.0	76.0	57.0	0.95
CXDCL2420AP	6.15	8.0	118.0	76.0	57.0	0.95
CXDCLM0620AP	6.2	8.0	118.0	76.0	57.0	0.96
CXDCL2460AP	6.25	8.0	118.0	76.0	57.0	0.97
CXDCLM0630AP	6.3	8.0	118.0	76.0	57.0	0.98
CXDCL2500AP	6.35	8.0	118.0	76.0	57.0	0.99
CXDCLM0640AP	6.4	8.0	118.0	76.0	57.0	0.99
CXDCLM0650AP	6.5	8.0	118.0	76.0	57.0	1.01
CXDCL2570AP	6.53	8.0	118.0	76.0	57.0	1.03
CXDCLM0660AP	6.6	8.0	118.0	76.0	57.0	1.03
CXDCL2610AP	6.63	8.0	118.0	76.0	57.0	1.03
CXDCLM0670AP	6.7	8.0	118.0	76.0	57.0	1.04
CXDCL2656AP	6.75	8.0	118.0	76.0	57.0	1.04
CXDCLM0680AP	6.8	8.0	118.0	76.0	57.0	1.05
CXDCLM0690AP	6.9	8.0	118.0	76.0	57.0	1.07
CXDCLM0700AP	7.0	8.0	118.0	76.0	57.0	1.08
CXDCLM0710AP	7.1	8.0	118.0	76.0	57.0	1.1



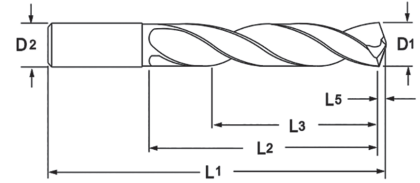
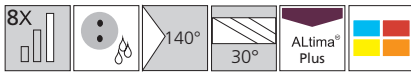
CYCLONE CXD High Performance Drill - 8xD Series CXDCLM



Tool Number	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDCL2812AP	7.14	8.0	118.0	76.0	57.0	1.12
CXDCLM0720AP	7.2	8.0	118.0	76.0	57.0	1.12
CXDCLM0730AP	7.3	8.0	118.0	76.0	57.0	1.13
CXDCLM0740AP	7.4	8.0	118.0	76.0	57.0	1.15
CXDCLM0750AP	7.5	8.0	118.0	76.0	57.0	1.16
CXDCL2969AP	7.54	8.0	118.0	76.0	57.0	1.17
CXDCLM0760AP	7.6	8.0	118.0	76.0	57.0	1.18
CXDCLM0770AP	7.7	8.0	118.0	76.0	57.0	1.19
CXDCLM0780AP	7.8	8.0	118.0	76.0	57.0	1.21
CXDCLM0790AP	7.9	8.0	118.0	76.0	57.0	1.22
CXDCL3125AP	7.94	8.0	118.0	76.0	57.0	1.22
CXDCLM0800AP	8.0	8.0	118.0	76.0	57.0	1.24
CXDCLM0810AP	8.1	10.0	139.0	87.0	65.0	1.26
CXDCLM0820AP	8.2	10.0	139.0	87.0	65.0	1.27
CXDCLM0830AP	8.3	10.0	139.0	87.0	65.0	1.29
CXDCL3281AP	8.33	10.0	139.0	87.0	65.0	1.3
CXDCLM0840AP	8.4	10.0	139.0	87.0	65.0	1.31
CXDCL3320AP	8.43	10.0	139.0	87.0	65.0	1.31
CXDCLM0850AP	8.5	10.0	139.0	87.0	65.0	1.32
CXDCLM0860AP	8.6	10.0	139.0	87.0	65.0	1.33
CXDCLM0870AP	8.7	10.0	139.0	87.0	65.0	1.35
CXDCL3438AP	8.73	10.0	139.0	87.0	65.0	1.35
CXDCLM0880AP	8.8	10.0	139.0	87.0	65.0	1.36
CXDCLM0890AP	8.9	10.0	139.0	87.0	65.0	1.38
CXDCLM0900AP	9.0	10.0	139.0	87.0	65.0	1.39
CXDCLM0910AP	9.1	10.0	139.0	95.0	71.0	1.41
CXDCL3594AP	9.13	10.0	139.0	95.0	71.0	1.42
CXDCLM0920AP	9.2	10.0	139.0	95.0	71.0	1.43
CXDCLM0925AP	9.25	10.0	139.0	95.0	71.0	1.43
CXDCLM0930AP	9.3	10.0	139.0	95.0	71.0	1.44
CXDCL3680AP	9.35	10.0	139.0	95.0	71.0	1.45
CXDCLM0940AP	9.4	10.0	139.0	95.0	71.0	1.46
CXDCLM0950AP	9.5	10.0	139.0	95.0	71.0	1.47
CXDCL3750AP	9.52	10.0	139.0	95.0	71.0	1.47
CXDCLM0960AP	9.6	10.0	139.0	95.0	71.0	1.49
CXDCLM0970AP	9.7	10.0	139.0	95.0	71.0	1.5
CXDCL3858AP	9.8	10.0	139.0	95.0	71.0	1.52
CXDCLM0990AP	9.9	10.0	139.0	95.0	71.0	1.53
CXDCL3906AP	9.92	10.0	139.0	95.0	71.0	1.55
CXDCLM1000AP	10.0	10.0	139.0	95.0	71.0	1.55
CXDCLM1010AP	10.1	12.0	155.0	106.0	80.0	1.56
CXDCLM1020AP	10.2	12.0	155.0	106.0	80.0	1.58
CXDCLM1030AP	10.3	12.0	155.0	106.0	80.0	1.6
CXDCL4062AP	10.32	12.0	155.0	106.0	80.0	1.6
CXDCLM1040AP	10.4	12.0	155.0	106.0	80.0	1.61
CXDCLM1050AP	10.5	12.0	155.0	106.0	80.0	1.63



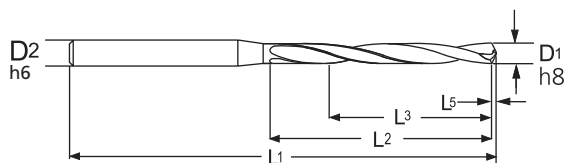
CYCLONE CXD High Performance Drill - 8xD Series CXDCLM



Tool Number	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDCLM1060AP	10.6	12.0	155.0	106.0	80.0	1.64
CXDCLM1070AP	10.7	12.0	155.0	106.0	80.0	1.66
CXDCL4219AP	10.72	12.0	155.0	106.0	80.0	1.65
CXDCLM1080AP	10.8	12.0	155.0	106.0	80.0	1.67
CXDCLM1090AP	10.9	12.0	155.0	106.0	80.0	1.69
CXDCLM1100AP	11.0	12.0	155.0	106.0	80.0	1.7
CXDCLM1110AP	11.1	12.0	163.0	114.0	86.0	1.72
CXDCL4375AP	11.11	12.0	163.0	114.0	86.0	1.73
CXDCLM1120AP	11.2	12.0	163.0	114.0	86.0	1.74
CXDCLM1130AP	11.3	12.0	163.0	114.0	86.0	1.75
CXDCLM1140AP	11.4	12.0	163.0	114.0	86.0	1.77
CXDCLM1150AP	11.5	12.0	163.0	114.0	86.0	1.78
CXDCLM1160AP	11.6	12.0	163.0	114.0	86.0	1.8
CXDCLM1170AP	11.7	12.0	163.0	114.0	86.0	1.81
CXDCLM1180AP	11.8	12.0	163.0	114.0	86.0	1.83
CXDCLM1190AP	11.9	12.0	163.0	114.0	86.0	1.84
CXDCL4688AP	11.91	12.0	163.0	114.0	86.0	1.85
CXDCLM1200AP	12.0	12.0	163.0	114.0	86.0	1.86
CXDCLM1210AP	12.1	14.0	182.0	133.0	112.0	1.87
CXDCL4844AP	12.3	14.0	182.0	133.0	100.0	1.91
CXDCLM1250AP	12.5	14.0	182.0	133.0	112.0	1.93
CXDCL5000AP	12.7	14.0	182.0	133.0	100.0	1.95
CXDCLM1280AP	12.8	14.0	182.0	133.0	112.0	1.98
CXDCLM1290AP	12.9	14.0	182.0	133.0	112.0	1.99
CXDCLM1300AP	13.0	14.0	182.0	133.0	112.0	2.01
CXDCL5156AP	13.09	14.0	182.0	133.0	112.0	2.03
CXDCL5312AP	13.49	14.0	182.0	133.0	112.0	2.08
CXDCLM1350AP	13.5	14.0	182.0	133.0	112.0	2.09
CXDCLM1370AP	13.7	14.0	182.0	133.0	112.0	2.12
CXDCL5469AP	13.89	14.0	182.0	133.0	112.0	2.16
CXDCLM1400AP	14.0	14.0	182.0	133.0	112.0	2.16
CXDCL5625AP	14.29	16.0	204.0	152.0	128.0	2.21
CXDCLM1450AP	14.5	16.0	204.0	152.0	128.0	2.24
CXDCLM1470AP	14.7	16.0	204.0	152.0	128.0	2.27
CXDCLM1500AP	15.0	16.0	204.0	152.0	128.0	2.32
CXDCL5938AP	15.08	16.0	204.0	152.0	128.0	2.33
CXDCLM1530AP	15.3	16.0	204.0	152.0	128.0	2.36
CXDCLM1550AP	15.5	16.0	204.0	152.0	128.0	2.39
CXDCLM1570AP	15.7	16.0	204.0	152.0	128.0	2.43
CXDCL6250AP	15.87	16.0	204.0	152.0	128.0	2.46
CXDCLM1600AP	16.0	16.0	204.0	152.0	128.0	2.47



Twister® XD High Performance Micro Drill - 10xD Series MDCLM



Series 2MDCLM	Drill Dimensions MD CLM				
Tool No.	Ø D1	Ø D2	L1	L2	L3
2MDCLM0200A	2.0	3.0	68.0	24.0	18.0
2MDCLM0205A	2.05	3.0	74.0	28.0	21.0
2MDCLM0210A	2.1				
2MDCLM0215A	2.15				
2MDCLM0220A	2.2				
2MDCLM0225A	2.25				
2MDCLM0230A	2.3				
2MDCLM0235A	2.35				
2MDCLM0240A	2.4				
2MDCLM0245A	2.45				
2MDCLM0250A	2.5	3.0	74.0	28.0	21.0
2MDCLM0255A	2.55	3.0	81.0	34.0	25.5
2MDCLM0260A	2.6				
2MDCLM0265A	2.65				
2MDCLM0270A	2.7				
2MDCLM0275A	2.75				
2MDCLM0280A	2.8				
2MDCLM0285A	2.85				
2MDCLM0290A	2.9				
2MDCLM0295A	2.95	3.0	81.0	34.0	25.5



Tolerances

Résistances
Toleranzen
Tolleranze
Tolerancje

Drill Dia. (h8)	Tolerance
2.0 - 2.95	+0/- .014

Shank Dia. (h6)	Tolerance
3.0	+0/- .006

Machine Requirements

High Pressure Pump System (1000 psi)
Coolant filtration of 10 microns or better
Machine runout of .0004" (.01mm) Max.

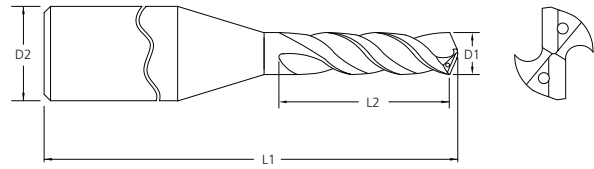
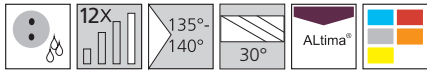
M.A. Ford® does not recommend full retraction of the body of the drill from the hole during the peck cycle. It is recommended to leave the drill point within the hole.

Estimated Peck Depths

For hole depths up to 6x diameter No pecks
For hole depths up to 10x diameter 0-2 pecks
For hole depths up to 15x diameter 2-4 pecks

For hole depths deeper than 4x the diameter, M.A. Ford® recommends using a "soft start" program that drills to .5x diameter deep at 2/3 of the speed and feed.

Twister® High Performance Micro Drill - 12xD Series MXDCL



Altima®		Drill Dimensions			
Tool No.	EDP	Ø D1	Ø D2	L1	L2
MXDCLM0100A	04834	1.00	3	60	16
MXDCLM0105A	04835	1.05	3	60	17
MXDCLM0110A	04836	1.10	3	60	18
MXDCLM0115A	04837	1.15	3	60	19
MXDCLM0120A	04838	1.20	3	65	20
MXDCLM0125A	04839	1.25	3	65	20
MXDCLM0130A	04840	1.30	3	65	21
MXDCLM0135A	04841	1.35	3	65	22
MXDCLM0140A	04842	1.40	3	65	23
MXDCLM0145A	04843	1.45	3	65	24
MXDCLM0150A	04844	1.50	3	65	24
MXDCLM0155A	04845	1.55	3	65	25
MXDCLM0160A	04846	1.60	3	70	26
MXDCLM0165A	04847	1.65	3	70	27
MXDCLM0170A	04848	1.70	3	70	28
MXDCLM0175A	04849	1.75	3	70	28
MXDCLM0180A	04850	1.80	3	70	29
MXDCLM0185A	04851	1.85	3	70	30
MXDCLM0190A	04852	1.90	3	75	31
MXDCLM0195A	04853	1.95	3	75	32

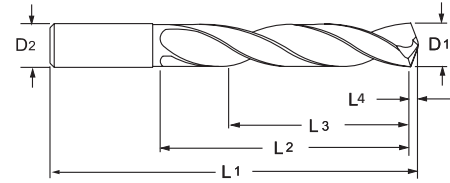
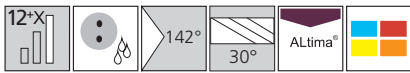
Altima®		Drill Dimensions			
Tool No.	EDP	Ø D1	Ø D2	L1	L2
MXDCLM0200A	04854	2.00	3	75	32
MXDCLM0205A	04855	2.05	3	75	33
MXDCLM0210A	04856	2.10	3	75	34
MXDCLM0215A	04857	2.15	3	75	35
MXDCLM0220A	04858	2.20	3	75	36
MXDCLM0225A	04859	2.25	3	75	36
MXDCLM0230A	04860	2.30	3	75	37
MXDCLM0235A	04861	2.35	3	75	38
MXDCLM0240A	04862	2.40	3	75	39
MXDCLM0245A	04863	2.45	3	75	40
MXDCLM0250A	04864	2.50	3	75	40
MXDCLM0255A	04865	2.55	3	80	41
MXDCLM0260A	04866	2.60	3	80	42
MXDCLM0265A	04867	2.65	3	80	43
MXDCLM0270A	04868	2.70	3	80	44
MXDCLM0275A	04869	2.75	3	80	44
MXDCLM0280A	04870	2.80	3	80	45
MXDCLM0285A	04871	2.85	3	80	46
MXDCLM0290A	04872	2.90	3	85	47
MXDCLM0295A	04873	2.95	3	85	48

Metric (mm)	
D1	Tolerance (h7)
1.00 - 2.95	+0/-0.010

Metric (mm)	
D2	Tolerance (h6)
3.0	+0/-0.006



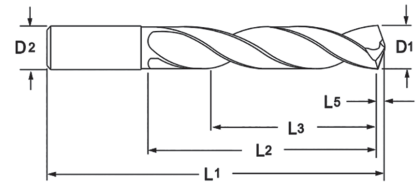
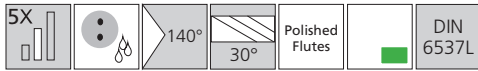
Twister[®] XD High Performance Drill - 12⁺xD Series XDCEM



Series 2XDCEM	Drill Dimensions						
Tool No.	Ø D1 (h7)	Ø D2 (h6)	L1	L2	L3	L2 / D1 (D1 x Ø)	L3 / D1 (D1 x Ø)
2XDCEM0400A	4.0	4.0	163.0	100.0	80.0	25.0	20.0
2XDCEM0500A	5.0	5.0	163.0	105.0	84.0	21.0	17.0
2XDCEM0520A	5.2	6.0	163.0	110.0	88.0	21.0	17.0
2XDCEM0540A	5.4					20.0	16.0
2XDCEM0560A	5.6					20.0	16.0
2XDCEM0580A	5.8					19.0	15.0
2XDCEM0600A	6.0	6.0	163.0	110.0	88.0	18.0	15.0
2XDCEM0620A	6.2	8.0	163.0	110.0	88.0	18.0	14.0
2XDCEM0630A	6.3					17.0	14.0
2XDCEM0635A	6.35					17.0	14.0
2XDCEM0680A	6.8					16.0	13.0
2XDCEM0700A	7.0	8.0	163.0	110.0	88.0	16.0	13.0
2XDCEM0760A	7.6	8.0	163.0	120.0	96.0	16.0	13.0
2XDCEM0780A	7.8					15.0	12.0
2XDCEM0794A	7.94					15.0	12.0
2XDCEM0800A	8.0	8.0	163.0	120.0	96.0	15.0	12.0
2XDCEM0820A	8.2	10.0	180.0	135.0	108.0	16.0	13.0
2XDCEM0850A	8.5					16.0	13.0
2XDCEM0870A	8.7					16.0	12.0
2XDCEM0900A	9.0	10.0	180.0	135.0	108.0	15.0	12.0
2XDCEM0940A	9.4	10.0	195.0	150.0	120.0	16.0	13.0
2XDCEM0953A	9.53					16.0	13.0
2XDCEM0980A	9.8					15.0	12.0
2XDCEM1000A	10.0	10.0	195.0	150.0	120.0	15.0	12.0
2XDCEM1030A	10.3	12.0	210.0	160.0	128.0	16.0	12.0
2XDCEM1050A	10.5					15.0	12.0
2XDCEM1080A	10.8					15.0	12.0
2XDCEM1100A	11.0					15.0	12.0
2XDCEM1111A	11.11					14.0	12.0
2XDCEM1150A	11.5					14.0	12.0
2XDCEM1180A	11.8					14.0	12.0
2XDCEM1200A	12.0	12.0	210.0	160.0	128.0	13.0	12.0
2XDCEM1270A	12.7	14.0	230.0	180.0	144.0	14.0	12.0

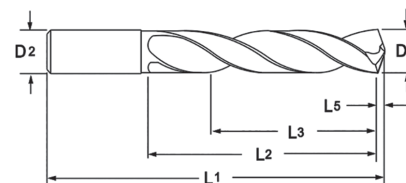
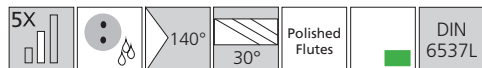


CYCLONE CDA High Performance Aluminium Drill - 5xD Series CDACRM



Tool Number	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (max)	L3 (Ref)
CDACRM0300	3.0	6.0	66.0	28.0	23.0
CDACRM0310	3.1	6.0	66.0	28.0	23.0
CDACRM0320	3.2	6.0	66.0	28.0	23.0
CDACRM0330	3.3	6.0	66.0	28.0	23.0
CDACRM0340	3.4	6.0	66.0	28.0	23.0
CDACRM0350	3.5	6.0	66.0	28.0	23.0
CDACRM0360	3.6	6.0	66.0	28.0	23.0
CDACRM0370	3.7	6.0	66.0	28.0	23.0
CDACRM0380	3.8	6.0	74.0	36.0	29.0
CDACRM0390	3.9	6.0	74.0	36.0	29.0
CDACRM0400	4.0	6.0	74.0	36.0	29.0
CDACRM0410	4.1	6.0	74.0	36.0	29.0
CDACRM0420	4.2	6.0	74.0	36.0	29.0
CDACRM0430	4.3	6.0	74.0	36.0	29.0
CDACRM0440	4.4	6.0	74.0	36.0	29.0
CDACRM0450	4.5	6.0	74.0	36.0	29.0
CDACRM0460	4.6	6.0	74.0	36.0	29.0
CDACRM0470	4.7	6.0	74.0	36.0	29.0
CDACRM0480	4.8	6.0	82.0	44.0	35.0
CDACRM0490	4.9	6.0	82.0	44.0	35.0
CDACRM0500	5.0	6.0	82.0	44.0	35.0
CDACRM0510	5.1	6.0	82.0	44.0	35.0
CDACRM0520	5.2	6.0	82.0	44.0	35.0
CDACRM0530	5.3	6.0	82.0	44.0	35.0
CDACRM0540	5.4	6.0	82.0	44.0	35.0
CDACRM0550	5.5	6.0	82.0	44.0	35.0
CDACRM0560	5.6	6.0	82.0	44.0	35.0
CDACRM0570	5.7	6.0	82.0	44.0	35.0
CDACRM0580	5.8	6.0	82.0	44.0	35.0
CDACRM0590	5.9	6.0	82.0	44.0	35.0
CDACRM0600	6.0	6.0	82.0	44.0	35.0
CDACRM0610	6.1	8.0	91.0	53.0	43.0
CDACRM0620	6.2	8.0	91.0	53.0	43.0
CDACRM0630	6.3	8.0	91.0	53.0	43.0
CDACRM0640	6.4	8.0	91.0	53.0	43.0
CDACRM0650	6.5	8.0	91.0	53.0	43.0
CDACRM0660	6.6	8.0	91.0	53.0	43.0
CDACRM0670	6.7	8.0	91.0	53.0	43.0
CDACRM0680	6.8	8.0	91.0	53.0	43.0
CDACRM0690	6.9	8.0	91.0	53.0	43.0
CDACRM0700	7.0	8.0	91.0	53.0	43.0
CDACRM0710	7.1	8.0	91.0	53.0	43.0
CDACRM0720	7.2	8.0	91.0	53.0	43.0
CDACRM0730	7.3	8.0	91.0	53.0	43.0
CDACRM0740	7.4	8.0	91.0	53.0	43.0
CDACRM0750	7.5	8.0	91.0	53.0	43.0

CYCLONE CDA High Performance Aluminium Drill - 5xD Series CDACRM



Tool Number	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (max)	L3 (Ref)
CDACRM0760	7.6	8.0	91.0	53.0	43.0
CDACRM0770	7.7	8.0	91.0	53.0	43.0
CDACRM0780	7.8	8.0	91.0	53.0	43.0
CDACRM0790	7.9	8.0	91.0	53.0	43.0
CDACRM0800	8.0	8.0	91.0	53.0	43.0
CDACRM0810	8.1	10.0	103.0	61.0	49.0
CDACRM0820	8.2	10.0	103.0	61.0	49.0
CDACRM0830	8.3	10.0	103.0	61.0	49.0
CDACRM0840	8.4	10.0	103.0	61.0	49.0
CDACRM0850	8.5	10.0	103.0	61.0	49.0
CDACRM0860	8.6	10.0	103.0	61.0	49.0
CDACRM0870	8.7	10.0	103.0	61.0	49.0
CDACRM0880	8.8	10.0	103.0	61.0	49.0
CDACRM0890	8.9	10.0	103.0	61.0	49.0
CDACRM0900	9.0	10.0	103.0	61.0	49.0
CDACRM0910	9.1	10.0	103.0	61.0	49.0
CDACRM0920	9.2	10.0	103.0	61.0	49.0
CDACRM0930	9.3	10.0	103.0	61.0	49.0
CDACRM0940	9.4	10.0	103.0	61.0	49.0
CDACRM0950	9.5	10.0	103.0	61.0	49.0
CDACRM0960	9.6	10.0	103.0	61.0	49.0
CDACRM0970	9.7	10.0	103.0	61.0	49.0
CDACRM0980	9.8	10.0	103.0	61.0	49.0
CDACRM0990	9.9	10.0	103.0	61.0	49.0
CDACRM1000	10.0	10.0	103.0	61.0	49.0
CDACRM1010	10.1	10.0	103.0	61.0	49.0
CDACRM1020	10.2	12.0	118.0	71.0	56.0
CDACRM1030	10.3	12.0	118.0	71.0	56.0
CDACRM1040	10.4	12.0	118.0	71.0	56.0
CDACRM1050	10.5	12.0	118.0	71.0	56.0
CDACRM1060	10.6	12.0	118.0	71.0	56.0
CDACRM1070	10.7	12.0	118.0	71.0	56.0
CDACRM1080	10.8	12.0	118.0	71.0	56.0
CDACRM1090	10.9	12.0	118.0	71.0	56.0
CDACRM1100	11.0	12.0	118.0	71.0	56.0
CDACRM1110	11.1	12.0	118.0	71.0	56.0
CDACRM1120	11.2	12.0	118.0	71.0	56.0
CDACRM1130	11.3	12.0	118.0	71.0	56.0
CDACRM1140	11.4	12.0	118.0	71.0	56.0
CDACRM1150	11.5	12.0	118.0	71.0	56.0
CDACRM1160	11.6	12.0	118.0	71.0	56.0
CDACRM1170	11.7	12.0	118.0	71.0	56.0
CDACRM1180	11.8	12.0	118.0	71.0	56.0
CDACRM1190	11.9	12.0	118.0	71.0	56.0
CDACRM1200	12.0	12.0	118.0	71.0	56.0
CDACRM1250	12.5	14.0	124.0	77.0	60.0



Twister® Micro-Tuff™ Drill

Series 305M 305AM Recommended cutting data

Conditions de coupe recommandées | Empfohlene Schnittdaten | Dati di taglio raccomandati | Zalecane dane o cięciu (Zalacane parametry skrawania)

Recommended Speeds By Material Group		Vc (m/min)		
Material Groups	Material Type	305M	305AM	
		Uncoated	Altima® Micro Coated	
Steels	P	Low Carbon	30 - 40	40 - 50
		Alloy Steel (≤ 35 Rc)	20 - 30	35 - 45
		Alloy Steel (36-45 Rc)	20 - 30	35 - 45
Stainless Steels	M	Free Machining	30 - 40	40 - 50
		Austenitic	20 - 30	35 - 45
		Ferritic/Martensitic	20 - 30	30 - 40
		PH Stainless	10 - 20	15 - 25
Cast Irons	K	Grey Cast Iron	30 - 40	40 - 50
		Ductile Cast Iron	30 - 40	40 - 50
Special Alloys	S	Titanium Alloys (Ti6AL4v)	10 - 20	15 - 25
		High Temp Alloys (Inconel, Nimonic, Hastelloy)	10 - 20	15 - 25
Hardened Steels	H	45 - 55 Rc Steel	5 - 15	10 - 20
Non-Ferrous	N	Aluminium Alloys (< 10% Si)	50 - 60	-
		Plastics		

 RPM Formula For Metric Drills Only - $RPM = (Vc \times 318.0) \div \text{Drill } \varnothing D^1$

Series 305M 305AM Recommended cutting data

Conditions de coupe recommandées | Empfohlene Schnittdaten | Dati di taglio raccomandati | Zalecane dane o cięciu (Zalacane parametry skrawania)

Recommended Feedrates By Material Group		Drill Diameter (mm)					
Material Groups	Material Type	0.5	1.0	1.5	2.0	3.0	
		Feed (mm/rev)					
Steels	P	Low Carbon	0.01	0.02	0.04	0.06	0.075
		Alloy Steel (≤ 35 Rc)					
		Alloy Steel (36-45 Rc)					
Stainless Steels	M	Free Machining	0.01	0.02	0.04	0.06	0.075
		Austenitic					
		Ferritic/Martensitic					
		PH Stainless					
Cast Irons	K	Grey Cast Iron	0.01	0.02	0.04	0.06	0.075
		Ductile Cast Iron					
Special Alloys	S	Titanium Alloys (Ti6AL4v)	0.01	0.02	0.04	0.06	0.075
		High Temp Alloys (Inconel, Nimonic, Hastelloy)					
Hardened Steels	H	45 - 55 Rc Steel	0.005	0.01	0.02	0.025	0.035
Non-Ferrous	N	Aluminium Alloys (< 10% Si)	0.015	0.025	0.05	0.075	0.10
		Plastics					

 Recommended Pecking Depths By Drill Diameter* (∅ D¹)

Diameter ∅ D ¹	Pecking Depth
0.50	0.5 x ∅ D ¹
1.00	1 x ∅ D ¹
1.50	1.5 x ∅ D ¹
2.00	2 x ∅ D ¹
3.00	3 x ∅ D ¹

* Pecking depths can vary by material type

 Feedrate Formula For Metric Drills - $\text{Feed} = RPM \times \text{mm/rev}$

Twister[®] XD High Performance Drills

Series MXDSR Recommended cutting data

Conditions de coupe recommandées | Empfohlene Schnittdaten | Dati di taglio raccomandati | Zalecane dane o cięciu (Zalacane parametry skrawania)

Material Groups	ISO	Hardness	vc - m/min	Drill Diameter (mm)					
				0.5	1.0	1.5	2.0	2.5	2.95
				Feed (mm/rev)					
Free Machining & Low Carbon Steels	P	up to 28 Rc	45	.010	.020	.030	.040	.060	.075
Medium Carbon & High Carbon Steels, Alloy Steels & Easy to Machine Tool Steels	P	28 to 38 Rc	40	.010	.020	.030	.040	.060	.075
Tool Steels & Die Steel	P	28 to 44 Rc	40	.010	.020	.030	.040	.060	.075
Free Machining Stainless	M	up to 28 Rc	45	.010	.020	.030	.040	.060	.075
Stainless Steel - Austenitic 304 / 316	M	up to 28 Rc	40	.010	.020	.030	.040	.060	.075
Stainless Steel - Ferritic / Martensitic	M	up to 28 Rc	35	.010	.020	.030	.040	.060	.075
Stainless Steel - Moderately Difficult	M	over 28 Rc	20	.010	.020	.030	.040	.060	.075
Cast Iron - Gray CG	K	up to 240 HB	45	.010	.020	.030	.040	.060	.075
Cast Iron - Ductile & Malleable CGI	K	over 240 HB	45	.010	.020	.030	.040	.060	.075
Titanium	S	up to 40 Rc	20	.010	.020	.030	.040	.060	.075
High Temp Alloys Inconel / Hastelloy / Waspeloy / Nickel Based Alloys-Monel	S		20	.005	.010	.015	.020	.025	.075
Hardened Steels	H	55 Rc	15	.005	.010	.015	.020	.025	.035
Aluminum (<10% Si)	N		55	.015	.025	.040	.050	.075	.100
Plastics	N			.015	.025	.040	.050	.075	.100

Twister[®] XD Spot Drill

Series 200S Spot Drill Recommended Feed

Avance recommandée | Empfohlener Vorschub | Avanzamento consigliato | Zalecany Posuw

Materials	Vc (m/min)	Drill Diameter (mm)				
		6	8	10	12	16
		Feed (mm/rev)				
Low Carbon Steel <0.3%C	100	0.076	0.1	0.13	0.16	0.16
Medium Carbon Steel	80	0.076	0.1	0.13	0.16	0.16
Alloy Steel ≤ 35hrc	70	0.076	0.1	0.13	0.16	0.16
Alloy Steel 36- 45hrc	45	0.076	0.1	0.13	0.16	0.16
Alloy Steel 45-50hrc	40	0.076	0.1	0.13	0.16	0.16
Grey Cast Iron	110	0.076	0.1	0.13	0.16	0.16
Ductile Cast Iron	80	0.076	0.1	0.13	0.16	0.16
Austenitic Stainless	45	0.076	0.1	0.13	0.16	0.16
Ph Stainless	30	0.076	0.1	0.13	0.16	0.16
High Temp Alloys	20	0.076	0.1	0.13	0.16	0.16
Titanium Alloys	55	0.076	0.1	0.13	0.16	0.16

RPM Formula For Metric Drills Only - $RPM = (Vc \times 318.0) \div \text{Drill } \varnothing D^1$

Feedrate Formula For Metric Drills - $\text{Feed} = RPM \times \text{mm/rev}$

Twister® XD High Performance Drills

Recommended Speed - XD/MD Drills

Vitesse Recommandée | Empfohlene Drehzahl | Velocità di taglio raccomandata | Zalecane prędkości

Materials	Vc (m/min)					
	2XDSSM 3 X D SOLID	2XDSRM 5 X D SOLID	2XDSCM 3 X D COOLANT	2XDCRM 5 X D COOLANT	2XDCLM 7 X D COOLANT	2MDCLM 10 X D COOLANT
Low Carbon Steel <0.3%C	80-120	75-100	150-200	150-200	130-145	80-90
Medium Carbon Steel	75-100	65-90	125-175	125-175	100-130	80-90
Alloy Steel ≤ 35hrc	60-75	50-70	75-105	75-105	70-90	80-90
Alloy Steel 36- 45hrc	45-60	40-55	45-70	45-70	40-55	60-80
Alloy Steel 45-50hrc	30-35	25-30	35-50	35-50	35-45	40-60
Grey Cast Iron	100-120	80-100	150-200	150-200	110-140	80-90
Ductile Cast Iron	75-90	65-80	135-150	135-150	130-145	60-80
Austenitic Stainless	30-45	25-40	80-150	80-150	45-65	60-70
Ph Stainless	20-35	15-30	50-80	50-80	30-45	40-50
High Temp Alloys	15-30	10-25	15-35	15-35	20-30	20-25
Titanium Alloys	35-45	30-40	55-70	55-70	50-65	40-50

RPM Formula For Metric Drills Only - $RPM = (Vc \times 318.0) \div \text{Drill } \varnothing D^1$

Series XD Drill - Recommended Feed 0.5 - 6mm diameter

Avance recommandée pour un diamètre de 0.5 – 6mm | Empfohlener Vorschub 0,5 – 6 mm Durchmesser

Avanzamento raccomandato per diametri 0,5 - 6mm | Zalecany posuw dla średnic 0.5-6mm

Materials	Feed (mm/rev)					
	0.5	1.5	3	4	5	6
Low Carbon Steel <0.3%C	0.025-0.05	0.05-0.075	0.075-0.12	0.1-0.15	0.12-0.18	0.14-0.2
Medium Carbon Steel	0.025-0.05	0.05-0.075	0.075-0.12	0.1-0.15	0.12-0.18	0.14-0.2
Alloy Steel ≤ 35hrc	0.025-0.05	0.05-0.075	0.075-0.12	0.1-0.15	0.12-0.18	0.14-0.2
Alloy Steel 36- 45hrc	0.01-0.025	0.025-0.04	0.05-0.11	0.08-0.13	0.12-0.18	0.14-0.2
Alloy Steel 45-50hrc	0.01-0.02	0.02-0.03	0.035-0.075	0.06-0.1	0.08-0.12	0.09-0.15
Grey Cast Iron	0.025-0.05	0.05-0.075	0.075-0.12	0.1-0.15	0.12-0.18	0.14-0.2
Ductile Cast Iron	0.025-0.05	0.05-0.075	0.075-0.12	0.1-0.15	0.12-0.18	0.14-0.2
Austenitic Stainless	0.025-0.05	0.05-0.075	0.075-0.12	0.1-0.15	0.12-0.18	0.14-0.2
Ph Stainless	0.01-0.03	0.025-0.05	0.05-0.085	0.06-0.09	0.07-0.11	0.08-0.12
High Temp Alloys	0.01-0.03	0.025-0.05	0.035-0.085	0.04-0.09	0.05-0.10	0.06-0.11
Titanium Alloys	0.01-0.03	0.025-0.05	0.075-0.12	0.1-0.15	0.12-0.18	0.14-0.2

Feedrate Formula For Metric Drills - $\text{Feed} = RPM \times \text{mm/rev}$

Twister® XD High Performance Drills

Series 2MDCL Micro Coolant Drills - Recommended Feed

Conditions de coupe recommandées | Empfohlene Schnittdaten | Dati di taglio raccomandati | Zalecane dane o cięciu (Zalacane parametry skrawania)

Materials	Feed (mm/rev)		
	Diameter		
	2	2.5	2.9
Low Carbon Steel <0.3%C	0.046	0.051	0.056
Medium Carbon Steel	0.046	0.051	0.056
Alloy Steel ≤ 35hrc	0.046	0.051	0.056
Alloy Steel 36- 45hrc	0.046	0.046	0.051
Alloy Steel 45-50hrc	0.025	0.033	0.046
Grey Cast Iron	0.046	0.051	0.056
Ductile Cast Iron	0.046	0.051	0.056
Austenitic Stainless	0.033	0.038	0.043
Ph Stainless	0.025	0.027	0.038
High Temp Alloys	0.025	0.027	0.036
Titanium Alloys	0.025	0.027	0.036

Feedrate Formula For Metric Drills - Feed = RPM x mm/rev

Twister® XD High Performance Drills

Series XD Drill - Recommended Feed 8 - 20mm Diameter

Avance recommandée 8 - 20mm de diamètre | Produktreihe XD-Bohrer – empfohlener Vorschub 8 – 20 mm Durchmesser
Avanzamento raccomandato per diametri 8 - 20mm | Zalecany posuw dla średnic 8 - 20mm

Materials	Feed (mm/rev)						
	8	10	12	14	16	18	20
Low Carbon Steel <0.3%C	0.16-0.24	0.18-0.27	0.2-0.3	0.22-0.35	0.25-0.36	0.28-0.38	0.3-0.4
Medium Carbon Steel	0.16-0.24	0.18-0.27	0.2-0.3	0.22-0.35	0.25-0.36	0.28-0.38	0.3-0.4
Alloy Steel ≤ 35hrc	0.16-0.24	0.18-0.27	0.2-0.3	0.22-0.35	0.25-0.36	0.28-0.38	0.3-0.4
Alloy Steel 36- 45hrc	0.16-0.24	0.18-0.27	0.2-0.3	0.22-0.35	0.25-0.36	0.28-0.38	0.3-0.4
Alloy Steel 45-50hrc	0.12-0.2	0.13-0.23	0.13-0.23	0.15-0.26	0.16-0.26	0.18-0.28	0.2-0.3
Grey Cast Iron	0.16-0.24	0.18-0.27	0.2-0.3	0.22-0.35	0.25-0.36	0.28-0.38	0.3-0.4
Ductile Cast Iron	0.16-0.24	0.18-0.27	0.2-0.3	0.22-0.35	0.25-0.36	0.28-0.38	0.3-0.4
Austenitic Stainless	0.16-0.24	0.18-0.27	0.2-0.3	0.22-0.35	0.25-0.36	0.28-0.38	0.3-0.4
Ph Stainless	0.1-0.15	0.13-0.23	0.18-0.25	0.2-0.27	0.22-0.3	0.25-0.33	0.28-0.35
High Temp Alloys	0.08-0.13	0.1-0.15	0.12-0.17	0.14-0.19	0.16-0.21	0.18-0.25	0.23-0.28
Titanium Alloys	0.16-0.24	0.18-0.27	0.2-0.3	0.22-0.35	0.25-0.36	0.28-0.38	0.3-0.4

Feedrate Formula For Metric Drills - Feed = RPM x mm/rev

Twister® Series MPDCS/MXDCR/MXDCL

Recommended cutting data | Conditions de coupe recommandées | Empfohlene Schnittdaten | Dati di taglio Raccomandati | Zalecane Parametry

Workpiece Material Group	ISO	Hardness	Tool Series	TYPE	DEPTH	vc-m/min.	Drill Diameter (mm)					
							0.5	1.0	1.5	2.0	2.5	2.95
							f - mm/Rev					
Free Machining & Low Carbon Steels, 1006, 1008, 1015, 1018, 1020, 1022, 1025, 1117, 1140, 1141, 11108, 11L14, 1213, 12L13, 12L14, 1215, 1330	P	up to 28 Rc	MXDSR		5	45	.013	.025	.038	.050	.063	.076
			MPDCS		2	90	-	.025	.038	.050	.063	.076
			MXDCR		5							
			MXDCL		12							
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 38 Rc	MXDSR		5	40	.013	.025	.038	.050	.063	.076
			MPDCS		2	90	-	.025	.038	.050	.063	.076
			MXDCR		5							
			MXDCL		12							
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 44 Rc	MXDSR		5	35	.013	.025	.038	.050	.063	.076
			MPDCS		2	75	-	.025	.038	.050	.063	.076
			MXDCR		5							
			MXDCL		12							
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430	M	up to 28 Rc	MXDSR		5	40	.013	.025	.038	.050	.063	.076
			MPDCS		2	90	-	.025	.038	.050	.063	.076
			MXDCR		5							
			MXDCL		12							
Stainless Steel - Moderately Difficult 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH	M	up to 28 Rc	MXDSR		5	38	.013	.025	.038	.050	.063	.076
			MPDCS		2	70	-	.025	.038	.050	.063	.076
			MXDCR		5							
			MXDCL		12							
Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	M	over 28 Rc	MXDSR		5	18	.005	.010	.018	.023	.028	.036
			MPDCS		2	18	-	.010	.018	.023	.028	.036
			MXDCR		5							
			MXDCL		12							
High Temp Alloys Nimonics, Inconel, Monel, Hastelloy/Waspeloy	S	up to 40 Rc	MXDSR		5	18	.005	.010	.018	.023	.028	.036
			MPDCS		2	24	-	.010	.018	.023	.028	.036
			MXDCR		5							
			MXDCL		12							
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 40 Rc	MXDSR		5	20	.013	.025	.038	.050	.063	.076
			MPDCS		2	55	-	.025	.038	.050	.063	.076
			MXDCR		5							
			MXDCL		12							

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.

Twister® XD High Performance Drills - 12⁺xD

Series 2XDCEM Recommended cutting data

Conditions de coupe recommandées · Empfohlene Schnittdaten · Dati di taglio raccomandati · Zalecane dane o cięciu (Zalacane parametry skrawania)

Workpiece Material Groups	Vc (m/min)	Tool Diameter (mm)								
		3	4	5	6	7	8	9	10	12
		Feed (mm/rev)								
Low Carbon Steel <0.3%C	105	0.05	0.075	0.088	0.106	0.127	0.193	0.215	0.238	0.254
Structural Steel	120	0.05	0.075	0.088	0.106	0.127	0.193	0.215	0.238	0.254
Medium Carbon Steel	80	0.05	0.075	0.088	0.106	0.127	0.193	0.215	0.238	0.254
Tool & Die Steel	80	0.05	0.075	0.088	0.106	0.127	0.193	0.215	0.238	0.254
Alloy Steel	80	0.05	0.075	0.088	0.106	0.127	0.193	0.215	0.238	0.254
Grey Cast Iron	120	0.06	0.078	0.1	0.12	0.14	0.2	0.215	0.24	0.254
Ductile Cast Iron	80	0.06	0.078	0.1	0.12	0.14	0.2	0.215	0.24	0.254
Austenitic Stainless	55	0.05	0.071	0.09	0.105	0.127	0.193	0.215	0.238	0.254
Ph Stainless	40	0.05	0.071	0.09	0.105	0.127	0.193	0.215	0.238	0.254
Martensitic Stainless	40	0.05	0.071	0.09	0.105	0.127	0.193	0.215	0.238	0.254
Ferritic Stainless	75	0.05	0.071	0.09	0.105	0.127	0.193	0.215	0.238	0.254
High Temp Alloys	20-25	0.017	0.022	0.03	0.035	0.048	0.063	0.071	0.078	0.085
Titanium Alloys	45	0.03	0.04	0.05	0.06	0.071	0.12	0.127	0.14	0.152
Hardened Steel (35-45 Hrc)	35	0.012	0.015	0.02	0.022	0.027	0.048	0.053	0.06	0.066
Hardened Steel (46-55 Hrc)	25	0.012	0.015	0.02	0.022	0.027	0.048	0.053	0.06	0.066
Non Ferrous-Al<14%Si	150	0.083	0.11	0.14	0.17	0.195	0.28	0.314	0.35	0.378
Non Ferrous-Al>14%Si	105	0.083	0.11	0.14	0.17	0.195	0.28	0.314	0.35	0.378
Non Ferrous-Brass	120	0.053	0.071	0.088	0.106	0.127	0.279	0.314	0.35	0.378
Cu/Cu Alloys/Magnesium	90	0.053	0.071	0.088	0.106	0.127	0.279	0.314	0.35	0.378

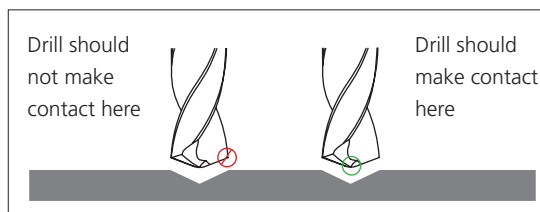
RPM Formula For Metric Drills Only - $RPM = (Vc \times 318.0) \div \text{Drill } \varnothing D^1$
 Feedrate Formula For Metric Drills - $\text{Feed} = RPM \times \text{mm/rev}$



Twister® 2XDCEM, MXDCL & CXDCLM 15X

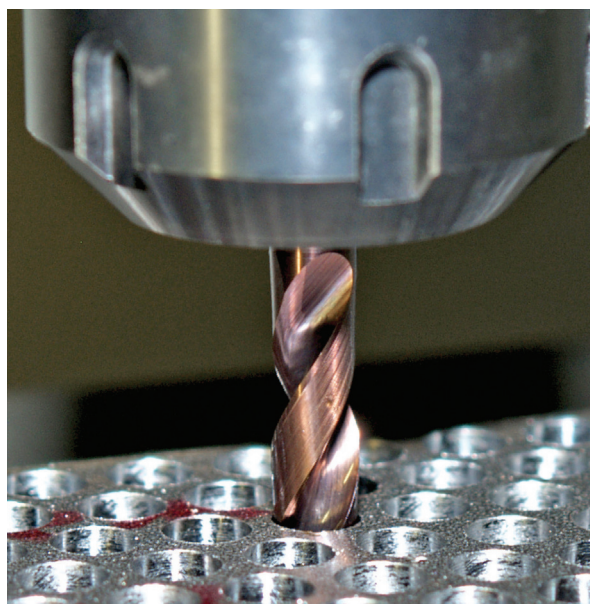
Process For Successful Deep Hole Drilling:

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.
2. Retract and tool change to the final deep hole (2XDCE MA Ford® Series) drill.
3. Rapid to clearance plane and enter the pilot hole at 25% (don't exceed 400 to 500 RPM) of the final speed and 25 - 50 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 to eliminate breakage of the drill due to drill whip. Then retract to the clearance plane.



Machine Requirements

High Pressure Pump System (70 Bar)
Machine runout of 0.008mm Max.



Due to the conditions of equipment, tool holders, and conditions beyond MA 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 +44(0) 1332 267960.

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.

CYCLONE CDA High Performance Aluminium Drill - 5xD

Series CDACRM Aluminium Drill Recommended cutting data

Conditions de coupe recommandées | Empfohlene Schnittdaten | Dati di taglio raccomandati | Zalecane dane o cięciu (Zalacane parametry skrawania)

Work piece Material Group	ISO	Hardness	vc - m/min			Drill Diameter (mm)						
			Min	Starting Value	Max	3.0	4.0	6.0	8.0	10.0	12.0	
						f - mm/Rev						
Aluminium & Aluminium Wrought Alloys	N 10	60-100 Brinell HB	120	230	450	0.13-0.25	0.14-0.29	0.17-0.35	0.21-0.42	0.27-0.50	0.33-0.57	
Cast Aluminium Alloys		75-90 Brinell HB	120	220	350	0.14-0.23	0.15-0.28	0.17-0.34	0.22-0.39	0.29-0.46	0.34-0.54	
Aluminium Alloys Cast 13-22% Si				100	180	400	0.13-0.18	0.14-0.19	0.16-0.25	0.20-0.30	0.28-0.37	0.33-0.24
Copper and Copper Alloys Brass, Bronze, Copper		40	90-110 Brinell HB	100	130	300	0.10-0.16	0.12-0.18	0.14-0.24	0.16-0.28	0.18-0.32	0.20-0.36





Recommended Cutting Data CXD ≤ 6mm - Metric

Conditions de coupe recommandées CXD ≤ 6mm - Métrique

Empfohlene Schnittdaten CXD ≤ 6 mm – metrisch

Dati di taglio raccomandati CXD ≤ 6mm - Metrici

Zalecane dane o cięciu (Zalacane parametry skrawania) CXD ≤ 6 mm – metryczne

Workpiece Material Group	ISO	Hardness	Tool Series	TYPE	DEPTH	Drill Diameter (mm)				Drill Diameter (mm)			
						3	4	5	6	3	4	5	6
						vc - m/min				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	CXDSS		3	119	116	113	110	.076-.127	.102-.152	.127-.178	.127-.203
			CXDSR		5	119	116	113	110				
			CXDSCS		3	201	198	195	192				
			CXDSCR		5	201	198	195	192				
			CXDCL		8	181	177	171	165				
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 38 Rc	CXDSS		3	101	98	94	91	.076-.127	.102-.152	.127-.178	.127-.203
			CXDSR		5	101	98	94	91				
			CXDSCS		3	175	168	165	152				
			CXDSCR		5	175	168	165	152				
			CXDCL		8	131	128	125	122				
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 44 Rc	CXDSS		3	61	58	58	56	.036-.076	.061-.102	.076-.127	.089-.152
			CXDSR		5	61	58	58	56				
			CXDSCS		3	76	73	70	67				
			CXDSCR		5	76	73	70	67				
			CXDCL		8	69	67	66	62				
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430	M	up to 28 Rc	CXDSS		3	107	104	101	98	.076-.127	.102-.152	.127-.178	.127-.203
			CXDSR		5	107	104	101	98				
			CXDSCS		3	168	152	145	137				
			CXDSCR		5	168	152	145	137				
			CXDCL		8	137	130	122	116				
Stainless Steel - Moderately Difficult 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH	M	up to 28 Rc	CXDSS		3	43	41	40	38	.076-.127	.102-.152	.127-.178	.127-.203
			CXDSR		5	43	41	40	38				
			CXDSCS		3	91	88	85	82				
			CXDSCR		5	91	88	85	82				
			CXDCL		8	85	82	79	76				
Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	M	over 28 Rc	CXDSS		3	43	40	37	34	.051-.076	.061-.089	.089-.102	.076-.127
			CXDSR		5	43	40	37	34				
			CXDSCS		3	81	76	73	70				
			CXDSCR		5	81	76	73	70				
			CXDCL		8	58	55	52	49				
High Temp Alloys Nimonic, Inconel, Monel, Hastelloy	S	up to 42 Rc	CXDSS		3	26	24	23	21	.036-.089	.036-.089	.051-.102	.061-.127
			CXDSR		5	26	24	23	21				
			CXDSCS		3	35	30	29	27				
			CXDSCR		5	35	30	29	27				
			CXDCL		8	30	30	29	29				
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	CXDSS		3	40	38	37	35	.076-.102	.102-.152	.127-.178	.140-.229
			CXDSR		5	40	38	37	35				
			CXDSCS		3	70	67	64	61				
			CXDSCR		5	70	67	64	61				
			CXDCL		8	64	58	55	52				
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	CXDSS		3	146	143	140	131	.076-.127	.102-.152	.127-.178	.127-.203
			CXDSR		5	146	143	140	131				
			CXDSCS		3	201	195	189	183				
			CXDSCR		5	201	195	189	183				
			CXDCL		8	152	149	146	143				
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	CXDSS		3	85	82	79	76	.076-.127	.102-.152	.127-.178	.127-.203
			CXDSR		5	85	82	79	76				
			CXDSCS		3	122	146	140	134				
			CXDSCR		5	122	146	140	134				
			CXDCL		8	107	104	101	98				



Recommended Cutting Data CXD ≤ 8mm - Metric

Conditions de coupe recommandées CXD ≤ 8mm - Métrique

Empfohlene Schnittdaten CXD ≤ 8 mm - metrisch

Dati di taglio raccomandati CXD ≤ 8mm - Metrici

Zalecane dane o cięciu (Zalecane parametry skrawania) CXD ≤ 8 mm - metryczne

Workpiece Material Group	ISO	Hardness	Tool Series	TYPE	DEPTH	Drill Diameter (mm)							Drill Diameter (mm)							
						8	10	12	14	16	18	20	8	10	12	14	16	18	20	
						vc - m/min							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	CXDSS	●	3	107	104	98	91	84	81	77	.16-.24	.18-.27	.21-.31	.22-.35	.25-.35	.28-.38	.30-.37	
			CXDSR		5	107	104	98	91	84	81									
			CXDSC	●●	3	189	183	175	168	160	152									
			CXDRC		5	189	183	175	168	160	152	145	.16-.24	.18-.27	.21-.31	.22-.35	.25-.35	.28-.38	.30-.37	
			CXDCL		8	158	152	146	140	134										
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 38 Rc	CXDSS	●	3	88	85	82	81	79	79	75	.16-.24	.18-.27	.21-.31	.22-.35	.25-.35	.28-.38	.30-.37	
			CXDSR		5	88	85	82	81	79	79									
			CXDSC	●●	3	145	137	130	122	99	96									
			CXDRC		5	145	137	130	122	99	96	92	.16-.24	.18-.27	.21-.31	.22-.35	.25-.35	.28-.38	.30-.37	
			CXDCL		8	114	107	99	93	76										
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 44 Rc	CXDSS	●	3	56	55	55	53	53	52	49	.16-.24	.18-.27	.21-.31	.22-.35	.25-.35	.28-.38	.30-.37	
			CXDSR		5	56	55	55	53	53	52									
			CXDSC	●●	3	64	64	61	61	58	58									
			CXDRC		5	64	64	61	61	58	58	55	.16-.24	.18-.27	.21-.31	.22-.35	.25-.35	.28-.38	.30-.37	
			CXDCL		8	61	58	58	58	55										
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430	M	up to 28 Rc	CXDSS	●	3	94	91	84	76	69	61	55	.16-.24	.18-.27	.21-.31	.22-.35	.25-.36	.28-.38	.30-.37	
			CXDSR		5	94	91	84	76	69	61									
			CXDSC	●●	3	122	119	116	113	101	98									
			CXDRC		5	122	119	116	113	101	98	94	.16-.24	.18-.27	.21-.31	.22-.35	.25-.35	.28-.38	.30-.37	
			CXDCL		8	114	113	107	104	91										
Stainless Steel - Moderately Difficult 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH	M	up to 28 Rc	CXDSS	●	3	37	35	34	32	30	29	28	.16-.24	.18-.27	.21-.31	.22-.35	.25-.36	.28-.38	.30-.37	
			CXDSR		5	37	35	34	32	30	29									
			CXDSC	●●	3	79	76	73	73	70	67									
			CXDRC		5	79	76	73	73	70	67	64	.16-.24	.18-.27	.21-.31	.22-.35	.25-.35	.28-.38	.30-.37	
			CXDCL		8	73	70	67	67	64										
Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321, PH13-8Mo, Nitronics	M	over 28 Rc	CXDSS	●	3	34	32	32	30	30	29	27	.11-.15	.13-.23	.18-.25	.21-.27	.22-.31	.25-.33	.30-.37	
			CXDSR		5	34	32	32	30	30	29									
			CXDSC	●●	3	67	61	58	55	52	47									
			CXDRC		5	67	61	58	55	52	47	45	.11-.15	.13-.23	.18-.25	.21-.27	.22-.31	.25-.33	.30-.37	
			CXDCL		8	46	43	40	38	36										
High Temp Alloys Nimonic, Inconel, Monel, Hastelloy	S	up to 42 Rc	CXDSS	●	3	20	18	17	15	14	12	11	.08-.13	.11-.15	.12-.17	.14-.19	.16-.21	.18-.25	.17-.24	
			CXDSR		5	20	18	17	15	14	12									
			CXDSC	●●	3	26	26	24	24	23	23									
			CXDRC		5	26	26	24	24	23	23	22	.09-.13	.11-.15	.12-.17	.14-.19	.16-.21	.18-.25	.17-.24	
			CXDCL		8	24	24	23	23	21										
Titanium Alloys 6Al-4V, 5Al-2.5 Sn, 6Al-2 Sn-4Zr-6Mo, 3Al-8V-6Cr-4Mo-4Zr, 10V-2Fe-3Al, 13V-11Cr-3Al	S	up to 42 Rc	CXDSS	●	3	34	32	30	30	27	27	25	.16-.24	.18-.27	.21-.31	.22-.35	.25-.36	.28-.38	.30-.37	
			CXDSR		5	34	32	30	30	27	27									
			CXDSC	●●	3	55	55	52	49	46	46									
			CXDRC		5	55	55	52	49	46	46	44	.16-.24	.18-.27	.21-.31	.22-.35	.25-.36	.28-.38	.30-.37	
			CXDCL		8	49	46	43	40	38										
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	CXDSS	●	3	125	122	119	113	110	107	102	.16-.24	.18-.27	.21-.31	.22-.35	.25-.36	.28-.38	.30-.37	
			CXDSR		5	125	122	119	113	110	107									
			CXDSC	●●	3	177	171	168	168	160	152									
			CXDRC		5	177	171	168	168	160	152	145	.16-.24	.18-.27	.21-.31	.22-.35	.25-.35	.28-.38	.30-.37	
			CXDCL		8	140	137	134	134	128										
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	CXDSS	●	3	73	70	67	64	61	58	55	.16-.24	.18-.27	.21-.31	.22-.35	.25-.36	.28-.38	.30-.37	
			CXDSR		5	73	70	67	64	61	58									
			CXDSC	●●	3	122	114	107	91	84	76									
			CXDRC		5	122	114	107	91	84	76	72	.16-.24	.18-.27	.21-.31	.22-.35	.25-.35	.28-.38	.30-.37	
			CXDCL		8	91	82	76	67	61										





Drill Troubleshooting

Dépannage Foret | Fehlerbehebung Bohrer | Risoluzione dei problemi relativi alla foratura | Diagnostowanie usterek wiertel

Possible Solutions	Problem																															
	Tool Deterioration										Chip Formation			Tool Life	Workpiece					Process												
	Flank wear	Margin wear	Breakage	Flaking	Creater wear	Chisel edge wear	Corner chipping	Flute chipping	Cutting edge chipping	Cutting edge wear	Point center chipping	Rake face	Scoring on tool body	Long stringy	Varied chip form	Blue/brown chips	Tool Life	Undersized hole	Oversized hole	Poor alignment	Poor surface finish	Heavy burr breakout	Retract marks	Hole location	Hole straightness	Deflection	Point Deflection	Galling	Vibration	Abnormal noise	Chip packing	No drill penetration
Reduce feed or reduce at exit	x		x			x	x	x	x		x	x	x				x	x	x		x											x
Reduce feed at entrance			x															x		x				x								x
Consistent feed rate			x										x	x															x		x	
Increase feed	x					x							x					x	x													
Reduce speed	x	x			x		x			x							x	x										x		x	x	
Increase speed																					x											
Coolant mix		x	x	x				x				x					x	x		x	x										x	
Coolant increase flow	x		x			x	x	x								x	x	x		x	x										x	
Coolant filter	x		x	x				x									x	x		x	x										x	
Workpiece clamp rigid		x	x			x	x	x				x					x		x	x	x	x	x	x	x						x	
Collet accuracy			x					x											x						x	x				x		
Tool holder fit .0008			x					x											x					x	x					x		
Alignment			x					x											x												x	
Peck drill			x																													
Concentricity		x	x	x				x	x				x							x	x			x	x	x		x		x		
Do not extract tool during peck								x																								

Recommended Minimum Coolant Pressure

Pression minimale recommandée pour le liquide de coupe | Empfohlener Mindestdruck für Kühlmittel
 Pressione minima del refrigerante consigliata | Zalecane minimalne ciśnienie chłodziwa

