



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



APG
ADVANCED PRODUCT GROUP

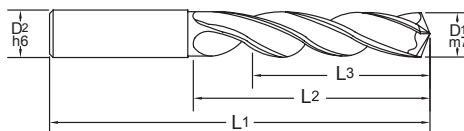
M.A. FORDMAX
RANGE

High Performance
Aluminum Drilling

www.mafordeurope.com

Twister® X-AL

3 Flute Performance Aluminium Drill - 4-5xD Series 229



Features

- 3 flutes
- Special parabolic flute form

Benefits

- Increased feed rates
- Improved chip evacuation

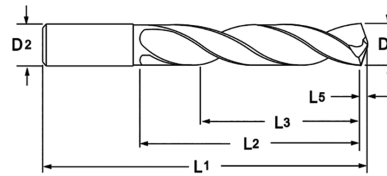
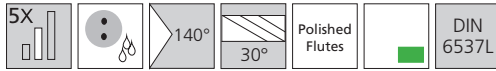


Tool Number	Ø D1 (m7)	Ø D2 (h6)	L1	L2	L3	Price
229 0200	2.0	2.0	38.0	16.0	12.0	£14.02
229 0230	2.3	2.3	43.0	20.0	15.0	£14.02
229 0250	2.5	2.5	43.0	20.0	15.0	£15.76
229 0290	2.9	2.9	46.0	25.0	19.0	£15.75
229 0300	3.0	6.0	66.0	28.0	23.0	£15.75
229 0310	3.1	6.0	66.0	28.0	23.0	£21.13
229 0320	3.2	6.0	66.0	28.0	23.0	£21.13
229 0330	3.3	6.0	66.0	28.0	23.0	£21.13
229 0340	3.4	6.0	66.0	28.0	23.0	£21.13
229 0350	3.5	6.0	66.0	28.0	23.0	£21.13
229 0360	3.6	6.0	66.0	28.0	23.0	£21.13
229 0370	3.7	6.0	66.0	28.0	23.0	£21.13
229 0380	3.8	6.0	74.0	36.0	29.0	£21.13
229 0390	3.9	6.0	74.0	36.0	29.0	£21.13
229 0400	4.0	6.0	74.0	36.0	29.0	£21.14
229 0410	4.1	6.0	74.0	36.0	29.0	£27.00
229 0420	4.2	6.0	74.0	36.0	29.0	£27.00
229 0440	4.4	6.0	74.0	36.0	29.0	£27.00
229 0450	4.5	6.0	74.0	36.0	29.0	£27.00
229 0460	4.6	6.0	74.0	36.0	29.0	£27.00
229 0480	4.8	6.0	82.0	44.0	35.0	£27.00
229 0490	4.9	6.0	82.0	44.0	35.0	£27.00
229 0500	5.0	6.0	82.0	44.0	35.0	£27.00
229 0520	5.2	6.0	82.0	44.0	35.0	£27.00
229 0550	5.5	6.0	82.0	44.0	35.0	£27.00
229 0560	5.6	6.0	82.0	44.0	35.0	£27.00
229 0600	6.0	6.0	82.0	44.0	35.0	£27.00
229 0620	6.2	8.0	91.0	53.0	43.0	£32.17
229 0650	6.5	8.0	91.0	53.0	43.0	£32.17
229 0670	6.7	8.0	91.0	53.0	43.0	£32.17
229 0680	6.8	8.0	91.0	53.0	43.0	£32.17

Tool Number	Ø D1 (m7)	Ø D2 (h6)	L1	L2	L3	Price
229 0700	7.0	8.0	91.0	53.0	43.0	£32.17
229 0720	7.2	8.0	91.0	53.0	43.0	£32.17
229 0730	7.3	8.0	91.0	53.0	43.0	£32.17
229 0740	7.4	8.0	91.0	53.0	43.0	£32.17
229 0750	7.5	8.0	91.0	53.0	43.0	£32.17
229 0780	7.8	8.0	91.0	53.0	43.0	£32.17
229 0800	8.0	8.0	91.0	53.0	43.0	£32.17
229 0810	8.1	10.0	103.0	61.0	49.0	£37.60
229 0840	8.4	10.0	103.0	61.0	49.0	£37.60
229 0850	8.5	10.0	103.0	61.0	49.0	£37.60
229 0900	9.0	10.0	103.0	61.0	49.0	£37.60
229 0950	9.5	10.0	103.0	61.0	49.0	£37.60
229 0970	9.7	10.0	103.0	61.0	49.0	£37.60
229 1000	10.0	10.0	103.0	61.0	49.0	£37.60
229 1020	10.2	12.0	118.0	71.0	56.0	£55.01
229 1040	10.4	12.0	118.0	71.0	56.0	£55.01
229 1050	10.5	12.0	118.0	71.0	56.0	£55.01
229 1060	10.6	12.0	118.0	71.0	56.0	£55.01
229 1100	11.0	12.0	118.0	71.0	56.0	£55.01
229 1150	11.5	12.0	118.0	71.0	56.0	£55.01
229 1200	12.0	12.0	118.0	71.0	56.0	£55.01
229 1250	12.5	14.0	124.0	77.0	60.0	£68.66
229 1270	12.7	14.0	124.0	77.0	60.0	£68.66
229 1300	13.0	14.0	124.0	77.0	60.0	£68.66
229 1350	13.5	14.0	124.0	77.0	60.0	£68.66
229 1400	14.0	14.0	124.0	77.0	60.0	£68.66
229 1450	14.5	16.0	133.0	83.0	63.0	£88.10
229 1500	15.0	16.0	133.0	83.0	63.0	£88.10
229 1550	15.5	16.0	133.0	83.0	63.0	£88.10
229 1580	15.8	16.0	133.0	83.0	63.0	£88.10
229 1600	16.0	16.0	133.0	83.0	63.0	£88.10

CYCLONE CDA

High Performance Aluminium Drill - 5xD Series CDACRM



**Aluminium
HP Drilling**



Features

- Low thrust point geometry
- Double margin design
- Through coolant
- Polished flutes

Benefits

- Reduced cutting forces for higher feed rates
- Back margin provides quicker hole engagement and less deviation through cross holes
- Increased chip evacuation and security of drilling process
- Superior hole surface finish and reduced chip sticking

Tool Number	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (max)	L3 (Ref)	Price
CDACRM0300	3.0	6.0	66.0	28.0	23.0	£42.67
CDACRM0310	3.1	6.0	66.0	28.0	23.0	£42.67
CDACRM0320	3.2	6.0	66.0	28.0	23.0	£42.67
CDACRM0330	3.3	6.0	66.0	28.0	23.0	£42.67
CDACRM0340	3.4	6.0	66.0	28.0	23.0	£42.67
CDACRM0350	3.5	6.0	66.0	28.0	23.0	£42.67
CDACRM0360	3.6	6.0	66.0	28.0	23.0	£42.67
CDACRM0370	3.7	6.0	66.0	28.0	23.0	£42.67
CDACRM0380	3.8	6.0	74.0	36.0	29.0	£42.67
CDACRM0390	3.9	6.0	74.0	36.0	29.0	£42.67
CDACRM0400	4.0	6.0	74.0	36.0	29.0	£42.67
CDACRM0410	4.1	6.0	74.0	36.0	29.0	£42.67
CDACRM0420	4.2	6.0	74.0	36.0	29.0	£42.67
CDACRM0430	4.3	6.0	74.0	36.0	29.0	£42.67
CDACRM0440	4.4	6.0	74.0	36.0	29.0	£42.67
CDACRM0450	4.5	6.0	74.0	36.0	29.0	£42.67
CDACRM0460	4.6	6.0	74.0	36.0	29.0	£42.67
CDACRM0470	4.7	6.0	74.0	36.0	29.0	£42.67
CDACRM0480	4.8	6.0	82.0	44.0	35.0	£42.67
CDACRM0490	4.9	6.0	82.0	44.0	35.0	£42.67
CDACRM0500	5.0	6.0	82.0	44.0	35.0	£42.67
CDACRM0510	5.1	6.0	82.0	44.0	35.0	£45.30
CDACRM0520	5.2	6.0	82.0	44.0	35.0	£45.30
CDACRM0530	5.3	6.0	82.0	44.0	35.0	£45.30
CDACRM0540	5.4	6.0	82.0	44.0	35.0	£45.30
CDACRM0550	5.5	6.0	82.0	44.0	35.0	£45.30
CDACRM0560	5.6	6.0	82.0	44.0	35.0	£45.30
CDACRM0570	5.7	6.0	82.0	44.0	35.0	£45.30
CDACRM0580	5.8	6.0	82.0	44.0	35.0	£45.30
CDACRM0590	5.9	6.0	82.0	44.0	35.0	£45.30
CDACRM0600	6.0	6.0	82.0	44.0	35.0	£45.30
CDACRM0610	6.1	8.0	91.0	53.0	43.0	£67.87
CDACRM0620	6.2	8.0	91.0	53.0	43.0	£67.87
CDACRM0630	6.3	8.0	91.0	53.0	43.0	£67.87
CDACRM0640	6.4	8.0	91.0	53.0	43.0	£67.87
CDACRM0650	6.5	8.0	91.0	53.0	43.0	£67.87
CDACRM0660	6.6	8.0	91.0	53.0	43.0	£67.87
CDACRM0670	6.7	8.0	91.0	53.0	43.0	£67.87
CDACRM0680	6.8	8.0	91.0	53.0	43.0	£67.87
CDACRM0690	6.9	8.0	91.0	53.0	43.0	£67.87
CDACRM0700	7.0	8.0	91.0	53.0	43.0	£67.87
CDACRM0710	7.1	8.0	91.0	53.0	43.0	£67.87
CDACRM0720	7.2	8.0	91.0	53.0	43.0	£67.87
CDACRM0730	7.3	8.0	91.0	53.0	43.0	£67.87
CDACRM0740	7.4	8.0	91.0	53.0	43.0	£67.87
CDACRM0750	7.5	8.0	91.0	53.0	43.0	£67.87

Tool Number	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (max)	L3 (Ref)	Price
CDACRM0760	7.6	8.0	91.0	53.0	43.0	£67.87
CDACRM0770	7.7	8.0	91.0	53.0	43.0	£67.87
CDACRM0780	7.8	8.0	91.0	53.0	43.0	£67.87
CDACRM0790	7.9	8.0	91.0	53.0	43.0	£67.87
CDACRM0800	8.0	8.0	91.0	53.0	43.0	£67.87
CDACRM0810	8.1	10.0	103.0	61.0	49.0	£92.04
CDACRM0820	8.2	10.0	103.0	61.0	49.0	£92.04
CDACRM0830	8.3	10.0	103.0	61.0	49.0	£92.04
CDACRM0840	8.4	10.0	103.0	61.0	49.0	£92.04
CDACRM0850	8.5	10.0	103.0	61.0	49.0	£92.04
CDACRM0860	8.6	10.0	103.0	61.0	49.0	£92.04
CDACRM0870	8.7	10.0	103.0	61.0	49.0	£92.04
CDACRM0880	8.8	10.0	103.0	61.0	49.0	£92.04
CDACRM0890	8.9	10.0	103.0	61.0	49.0	£92.04
CDACRM0900	9.0	10.0	103.0	61.0	49.0	£92.04
CDACRM0910	9.1	10.0	103.0	61.0	49.0	£92.04
CDACRM0920	9.2	10.0	103.0	61.0	49.0	£92.04
CDACRM0930	9.3	10.0	103.0	61.0	49.0	£92.04
CDACRM0940	9.4	10.0	103.0	61.0	49.0	£92.04
CDACRM0950	9.5	10.0	103.0	61.0	49.0	£92.04
CDACRM0960	9.6	10.0	103.0	61.0	49.0	£92.04
CDACRM0970	9.7	10.0	103.0	61.0	49.0	£92.04
CDACRM0980	9.8	10.0	103.0	61.0	49.0	£92.04
CDACRM0990	9.9	10.0	103.0	61.0	49.0	£92.04
CDACRM1000	10.0	10.0	103.0	61.0	49.0	£92.04
CDACRM1010	10.1	12.0	118.0	71.0	56.0	£117.99
CDACRM1020	10.2	12.0	118.0	71.0	56.0	£117.99
CDACRM1030	10.3	12.0	118.0	71.0	56.0	£117.99
CDACRM1040	10.4	12.0	118.0	71.0	56.0	£117.99
CDACRM1050	10.5	12.0	118.0	71.0	56.0	£117.99
CDACRM1060	10.6	12.0	118.0	71.0	56.0	£117.99
CDACRM1070	10.7	12.0	118.0	71.0	56.0	£117.99
CDACRM1080	10.8	12.0	118.0	71.0	56.0	£117.99
CDACRM1090	10.9	12.0	118.0	71.0	56.0	£117.99
CDACRM1100	11.0	12.0	118.0	71.0	56.0	£117.99
CDACRM1110	11.1	12.0	118.0	71.0	56.0	£117.99
CDACRM1120	11.2	12.0	118.0	71.0	56.0	£117.99
CDACRM1130	11.3	12.0	118.0	71.0	56.0	£117.99
CDACRM1140	11.4	12.0	118.0	71.0	56.0	£117.99
CDACRM1150	11.5	12.0	118.0	71.0	56.0	£117.99
CDACRM1160	11.6	12.0	118.0	71.0	56.0	£117.99
CDACRM1170	11.7	12.0	118.0	71.0	56.0	£117.99
CDACRM1180	11.8	12.0	118.0	71.0	56.0	£117.99
CDACRM1190	11.9	12.0	118.0	71.0	56.0	£117.99
CDACRM1200	12.0	12.0	118.0	71.0	56.0	£117.99
CDACRM1250	12.5	14.0	124.0	77.0	60.0	£175.90



CYCLONE CDA High Performance Aluminium Drill - 5xD

Series CDACRM - Recommended cutting data

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 Alloys	N	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 <13% Si		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
Cast Aluminium Alloys 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, Brass & Bronze Alloys		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

Twister® X-AL 3 Flute Performance Aluminium Drill - 4-5xD

Series 229 - Recommended cutting data

Work piece Material Group	ISO	Hardness	vc - m/min			Drill Diameter (mm)							
			Min	Starting Value	Max	2.0	3.0	4.0	6.0	8.0	10.0	12.0	16.0
						f - mm/Rev							
Aluminium & Aluminium Alloys	N	60-100 Brinell HB	100	200	400	0.090	0.220	0.220	0.340	0.340	0.415	0.495	0.495
Cast Aluminium Alloys <13% Si		75-90 Brinell HB	100	200	300	0.080	0.200	0.200	0.310	0.310	0.375	0.450	0.450
Cast Aluminium Alloys 13-22% Si			80	130	280	0.050	0.080	0.080	0.150	0.150	0.200	0.250	0.250
Copper, Brass & Bronze Alloys			90-110 Brinell HB	80	100	220	0.050	0.080	0.080	0.150	0.150	0.200	0.250

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is the **standard**