M.A. FORD
High Performance Cutting Tools

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


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M.A. FORDMAX
RANGE

# High Performance
# **Aluminium Drilling**

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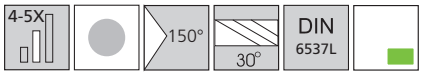
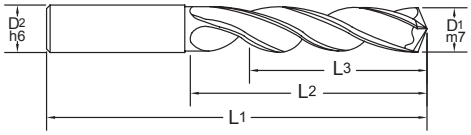
# Twister® X-AL

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




**Features**
- 3 flutes
- Special parabolic flute form

**Benefits**
- Increased feed rates
- Improved chip evacuation

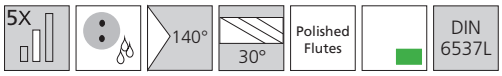
| Tool Number | Ø D1 (m7) | Ø D2 (h6) | L1 | L2 | L3 |
|---|---|---|---|---|---|
| 229 0200 | 2.0 | 2.0 | 38.0 | 16.0 | 12.0 |
| 229 0230 | 2.3 | 2.3 | 43.0 | 20.0 | 15.0 |
| 229 0250 | 2.5 | 2.5 | 43.0 | 20.0 | 15.0 |
| 229 0290 | 2.9 | 2.9 | 46.0 | 25.0 | 19.0 |
| 229 0300 | 3.0 | 6.0 | 66.0 | 28.0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

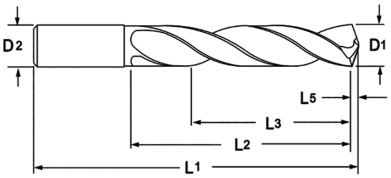
| Tool Number | Ø D1 (m7) | Ø D2 (h6) | L1 | L2 | L3 |
|---|---|---|---|---|---|
| 229 0700 | 7.0 | 8.0 | 91.0 | 53.0 | 43.0 |
| 229 0720 | 7.2 | 8.0 | 91.0 | 53.0 | 43.0 |
| 229 0730 | 7.3 | 8.0 | 91.0 | 53.0 | 43.0 |
| 229 0740 | 7.4 | 8.0 | 91.0 | 53.0 | 43.0 |
| 229 0750 | 7.5 | 8.0 | 91.0 | 53.0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


www.mafordeurope.com Tel: +44 (0) 1332 267960 Email: sales@mafordeurope.com

# 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) |
|---|---|---|---|---|---|
| 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 |

| 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 | 12.0 | 118.0 | 71.0 | 56.0 |
| 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 |

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# 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 | 0.250 |


**M.A.Ford Europe Ltd.**
650 City Gate
London Road, Derby
DE24 8WY
United Kingdom

Tel: +44 (0) 1332 267960
Fax: +44 (0) 1332 267969
Email: sales@mafordeurope.com
www.mafordeurope.com

**M.A. Ford Europe Custom Tools**
Unit 8
Royds Farm Road, Leeds
LS12 6DX
United Kingdom

Tel: +44 (0) 1332 267960
Fax: +44 (0) 1332 267969
Email: customtools@mafordeurope.com
www.mafordeurope.com


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