



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

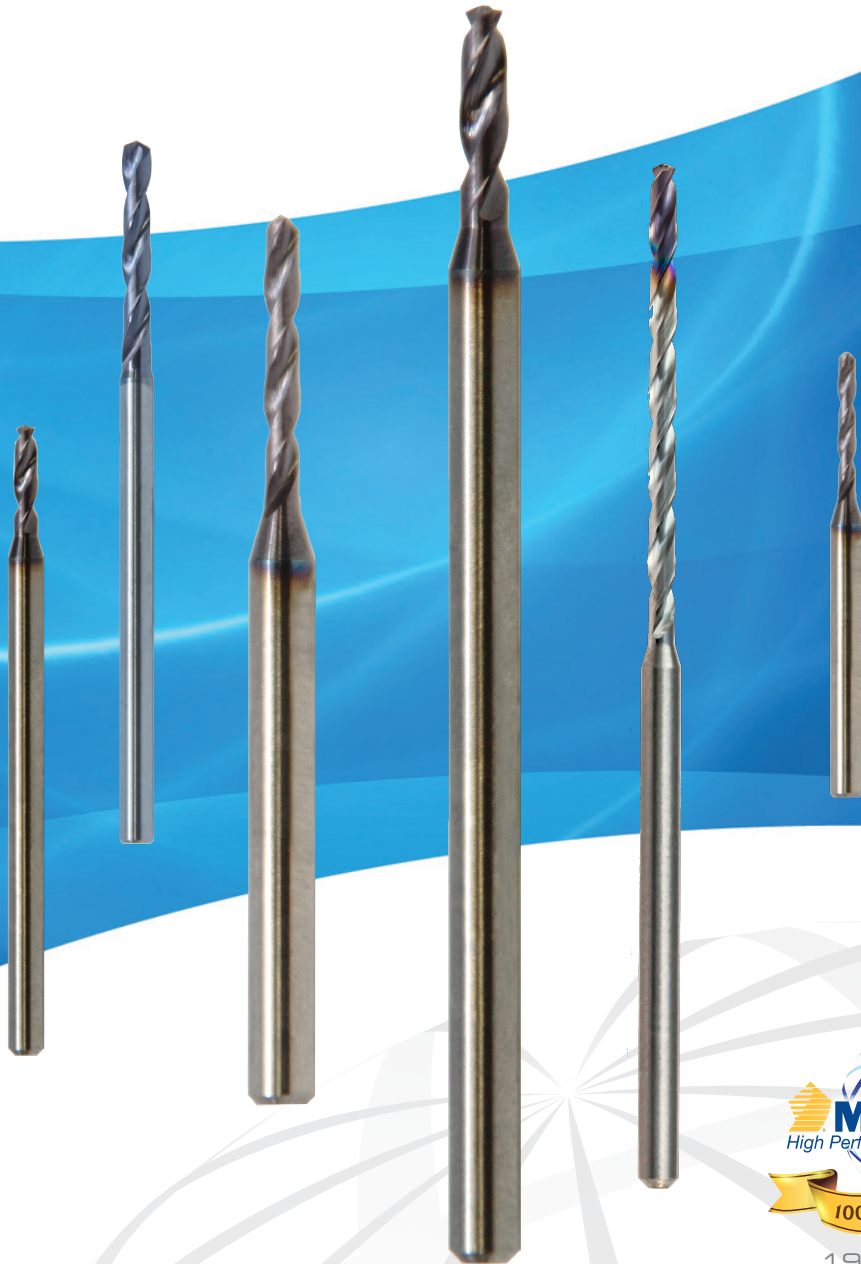
Twister® Micro XD

Series MPDCS

Series MXDSR

Series MXDCR

Series MXDCL











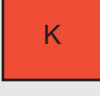



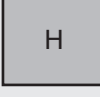

1919 - 2019

www.maford.com



Twister® Micro XD

Twister® Drill Icon Glossary

| | | | |
|---|-------------------|---|---------------------------|
|  | Solid | Workpiece Material Group | |
|  | Coolant Fed |  | |
|  | Drill Length |  | Steels |
|  | Drill Point Angle |  | Stainless Steels |
|  | Helix Angle |  | Cast Iron |
|  | Coatings |  | Special Alloys |
|  | DIN Specs |  | Hardened Steels (35-65Rc) |
| | |  | Non-Ferrous |

M.A. Ford® is a leading manufacturer of precision ground micro carbide cutting tools. Included in our product line are micro carbide drills, carbide coolant-fed drills, carbide end mills, carbide burs and carbide reamers. Our micro cutting tools are manufactured to the highest standards, so you're assured of quality and performance.



⚠️ WARNING: This product can expose you to chemicals including nickel, cobalt, and lead, which are known to the State of California to cause cancer, and chemicals including lead which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.



www.maford.com

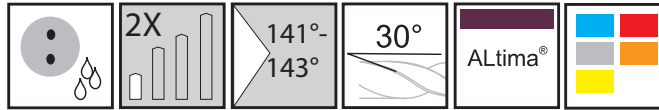


Tel: 800.553.8024

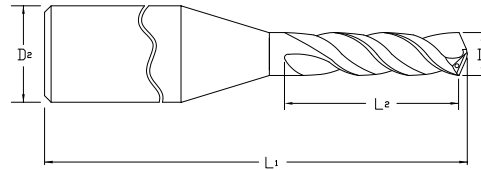


Email: sales@maford.com

Twister® Micro Pilot Drill Series MPDCS



- 2 Flute
- Pilot Drill for the MXDCL Series
- Carbide coolant fed, ALtima® coated
- Web thinned point helps to reduce cutting forces during the drilling operation
- All sizes have honed cutting edges on the point which increases the strength of the cutting edges



| ALtima® | | Diameter | | Shank | OAL | Flute Length |
|-------------|-------|----------|---------|-------|-----|--------------|
| Tool No. | EDP | D1 | | D2 | L1 | L2 |
| | | mm | Decimal | mm | mm | mm |
| MPDCSM0100A | 04874 | 1.00 | .0394 | 3 | 45 | 4 |
| MPDCSM0105A | 04875 | 1.05 | .0413 | 3 | 45 | 4 |
| MPDCSM0110A | 04876 | 1.10 | .0433 | 3 | 45 | 4 |
| MPDCSM0115A | 04877 | 1.15 | .0453 | 3 | 45 | 5 |
| MPDCSM0120A | 04878 | 1.20 | .0472 | 3 | 45 | 5 |
| MPDCSM0125A | 04879 | 1.25 | .0492 | 3 | 45 | 5 |
| MPDCSM0130A | 04880 | 1.30 | .0512 | 3 | 45 | 5 |
| MPDCSM0135A | 04881 | 1.35 | .0531 | 3 | 45 | 5 |
| MPDCSM0140A | 04882 | 1.40 | .0551 | 3 | 45 | 6 |
| MPDCSM0145A | 04883 | 1.45 | .0571 | 3 | 45 | 6 |
| MPDCSM0150A | 04884 | 1.50 | .0591 | 3 | 45 | 6 |
| MPDCSM0155A | 04885 | 1.55 | .0610 | 3 | 45 | 6 |
| MPDCSM0160A | 04886 | 1.60 | .0630 | 3 | 45 | 6 |
| MPDCSM0165A | 04887 | 1.65 | .0650 | 3 | 50 | 7 |
| MPDCSM0170A | 04888 | 1.70 | .0669 | 3 | 50 | 7 |
| MPDCSM0175A | 04889 | 1.75 | .0689 | 3 | 50 | 7 |
| MPDCSM0180A | 04890 | 1.80 | .0709 | 3 | 50 | 7 |
| MPDCSM0185A | 04891 | 1.85 | .0728 | 3 | 50 | 7 |
| MPDCSM0190A | 04892 | 1.90 | .0748 | 3 | 50 | 8 |
| MPDCSM0195A | 04893 | 1.95 | .0768 | 3 | 50 | 8 |
| MPDCSM0200A | 04894 | 2.00 | .0787 | 3 | 50 | 8 |
| MPDCSM0205A | 04895 | 2.05 | .0807 | 3 | 60 | 8 |
| MPDCSM0210A | 04896 | 2.10 | .0827 | 3 | 60 | 8 |
| MPDCSM0215A | 04897 | 2.15 | .0846 | 3 | 60 | 9 |
| MPDCSM0220A | 04898 | 2.20 | .0866 | 3 | 60 | 9 |
| MPDCSM0225A | 04899 | 2.25 | .0886 | 3 | 60 | 9 |
| MPDCSM0230A | 04900 | 2.30 | .0906 | 3 | 60 | 9 |

| ALtima® | | Diameter | | Shank | OAL | Flute Length |
|-------------|-------|----------|---------|-------|-----|--------------|
| Tool No. | EDP | D1 | | D2 | L1 | L2 |
| | | mm | Decimal | mm | mm | mm |
| MPDCSM0235A | 04901 | 2.35 | .0925 | 3 | 60 | 9 |
| MPDCSM0240A | 04902 | 2.40 | .0945 | 3 | 60 | 10 |
| MPDCSM0245A | 04903 | 2.45 | .0965 | 3 | 60 | 10 |
| MPDCSM0250A | 04904 | 2.50 | .0984 | 3 | 60 | 10 |
| MPDCSM0255A | 04905 | 2.55 | .1004 | 3 | 60 | 10 |
| MPDCSM0260A | 04906 | 2.60 | .1024 | 3 | 60 | 10 |
| MPDCSM0265A | 04907 | 2.65 | .1043 | 3 | 60 | 11 |
| MPDCSM0270A | 04908 | 2.70 | .1063 | 3 | 60 | 11 |
| MPDCSM0275A | 04909 | 2.75 | .1083 | 3 | 60 | 11 |
| MPDCSM0280A | 04910 | 2.80 | .1102 | 3 | 60 | 11 |
| MPDCSM0285A | 04911 | 2.85 | .1122 | 3 | 60 | 11 |
| MPDCSM0290A | 04912 | 2.90 | .1142 | 3 | 60 | 12 |
| MPDCSM0295A | 04913 | 2.95 | .1161 | 3 | 60 | 12 |

| Metric (mm) | |
|-------------|-------------|
| D1 | Tolerance |
| 1.00 - 2.95 | +.004/+.014 |

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



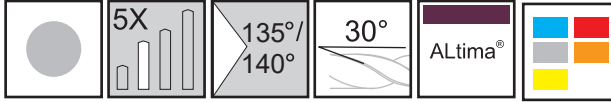
**Made In
USA**

ISO 9001:2015 Certified

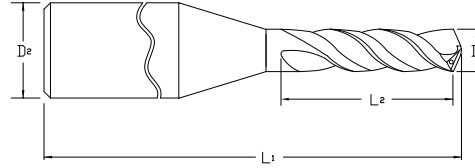


Twister® Micro XD

Twister® Micro XD Series MXDSR



- Designed for high performance drilling in a broad range of materials
- Web thinned point helps to reduce cutting forces during the drilling operation
- 0.8mm diameters and above have honed cutting edges on the point which increases the strength of the cutting edges
- All sizes have post coat polishing to improve chip evacuation
- Coated with ALtima® Coating, Solid Carbide



| ALtima® | | Diameter | | Shank | OAL | Flute Length |
|-------------|-------|----------|---------|-------|-----|--------------|
| | | D1 | | | | |
| Tool No. | EDP | mm | Decimal | mm | mm | mm |
| MXDSRM0050A | 04694 | 0.50 | .0197 | 3.0 | 57 | 4.0 |
| MXDSRM0055A | 04696 | 0.55 | .0217 | 3.0 | 57 | 4.0 |
| MXDSRM0060A | 04698 | 0.60 | .0236 | 3.0 | 57 | 5.0 |
| MXDSRM0065A | 04700 | 0.65 | .0256 | 3.0 | 57 | 5.0 |
| MXDSRM0070A | 04702 | 0.70 | .0276 | 3.0 | 57 | 5.0 |
| MXDSRM0075A | 04704 | 0.75 | .0295 | 3.0 | 57 | 6.0 |
| MXDSRM0080A | 04706 | 0.80 | .0315 | 3.0 | 57 | 6.0 |
| MXDSRM0085A | 04708 | 0.85 | .0335 | 3.0 | 57 | 7.0 |
| MXDSRM0090A | 04710 | 0.90 | .0354 | 3.0 | 57 | 7.0 |
| MXDSRM0095A | 04712 | 0.95 | .0374 | 3.0 | 57 | 7.0 |
| MXDSRM0100A | 04714 | 1.00 | .0394 | 3.0 | 57 | 8.0 |
| MXDSRM0105A | 04716 | 1.05 | .0413 | 3.0 | 57 | 8.0 |
| MXDSRM0110A | 04718 | 1.10 | .0433 | 3.0 | 57 | 8.0 |
| MXDSRM0115A | 04720 | 1.15 | .0453 | 3.0 | 57 | 9.0 |
| MXDSRM0120A | 04722 | 1.20 | .0472 | 3.0 | 57 | 9.0 |
| MXDSRM0125A | 04724 | 1.25 | .0492 | 3.0 | 57 | 9.0 |
| MXDSRM0130A | 04726 | 1.30 | .0512 | 3.0 | 57 | 10.0 |
| MXDSRM0135A | 04728 | 1.35 | .0531 | 3.0 | 57 | 10.0 |
| MXDSRM0140A | 04730 | 1.40 | .0551 | 3.0 | 57 | 10.0 |
| MXDSRM0145A | 04732 | 1.45 | .0571 | 3.0 | 57 | 11.0 |
| MXDSRM0150A | 04734 | 1.50 | .0591 | 3.0 | 57 | 11.0 |
| MXDSRM0155A | 04736 | 1.55 | .0610 | 3.0 | 57 | 12.0 |
| MXDSRM0160A | 04738 | 1.60 | .0630 | 3.0 | 57 | 12.0 |
| MXDSRM0165A | 04740 | 1.65 | .0650 | 3.0 | 57 | 12.0 |
| MXDSRM0170A | 04742 | 1.70 | .0669 | 3.0 | 57 | 13.0 |
| MXDSRM0175A | 04744 | 1.75 | .0689 | 3.0 | 57 | 13.0 |
| MXDSRM0180A | 04746 | 1.80 | .0709 | 3.0 | 57 | 13.0 |
| MXDSRM0185A | 04748 | 1.85 | .0728 | 3.0 | 57 | 14.0 |
| MXDSRM0190A | 04750 | 1.90 | .0748 | 3.0 | 57 | 14.0 |
| MXDSRM0195A | 04752 | 1.95 | .0768 | 3.0 | 57 | 14.0 |

| ALtima® | | Diameter | | Shank | OAL | Flute Length |
|-------------|-------|----------|---------|-------|-----|--------------|
| | | D1 | | | | |
| Tool No. | EDP | mm | Decimal | mm | mm | mm |
| MXDSRM0200A | 04754 | 2.00 | .0787 | 3.0 | 57 | 15.0 |
| MXDSRM0205A | 04756 | 2.05 | .0807 | 3.0 | 57 | 15.0 |
| MXDSRM0210A | 04758 | 2.10 | .0827 | 3.0 | 57 | 15.0 |
| MXDSRM0215A | 04760 | 2.15 | .0846 | 3.0 | 57 | 16.0 |
| MXDSRM0220A | 04762 | 2.20 | .0866 | 3.0 | 57 | 16.0 |
| MXDSRM0225A | 04764 | 2.25 | .0886 | 3.0 | 57 | 17.0 |
| MXDSRM0230A | 04766 | 2.30 | .0906 | 3.0 | 57 | 17.0 |
| MXDSRM0235A | 04768 | 2.35 | .0925 | 3.0 | 57 | 17.0 |
| MXDSRM0240A | 04770 | 2.40 | .0945 | 3.0 | 57 | 18.0 |
| MXDSRM0245A | 04772 | 2.45 | .0965 | 3.0 | 57 | 18.0 |
| MXDSRM0250A | 04774 | 2.50 | .0984 | 3.0 | 57 | 18.0 |
| MXDSRM0255A | 04776 | 2.55 | .1004 | 3.0 | 57 | 19.0 |
| MXDSRM0260A | 04778 | 2.60 | .1024 | 3.0 | 57 | 19.0 |
| MXDSRM0265A | 04780 | 2.65 | .1043 | 3.0 | 57 | 19.0 |
| MXDSRM0270A | 04782 | 2.70 | .1063 | 3.0 | 57 | 20.0 |
| MXDSRM0275A | 04784 | 2.75 | .1083 | 3.0 | 57 | 20.0 |
| MXDSRM0280A | 04786 | 2.80 | .1102 | 3.0 | 57 | 20.0 |
| MXDSRM0285A | 04788 | 2.85 | .1122 | 3.0 | 57 | 21.0 |
| MXDSRM0290A | 04790 | 2.90 | .1142 | 3.0 | 57 | 21.0 |
| MXDSRM0295A | 04792 | 2.95 | .1161 | 3.0 | 57 | 22.0 |

| Metric (mm) | |
|-------------|----------------|
| D1 | Tolerance (h7) |
| 0.50 - 2.95 | +0/-0.010 |

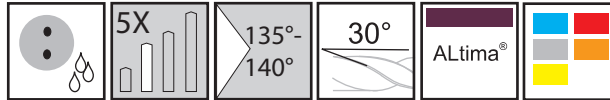
| Metric (mm) | |
|-------------|----------------|
| D2 | Tolerance (h6) |
| 3.00 | +0/-0.006 |



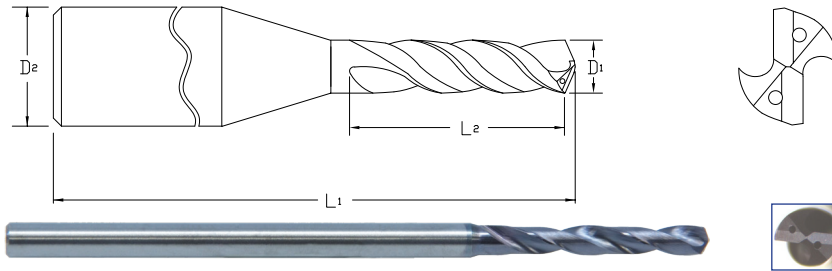
Twister® Micro XD



Twister® Micro XD Series MXDCR



- Designed for high performance drilling in a broad range of materials
- Web thinned point helps to reduce cutting forces during the drilling operation
- All sizes have honed cutting edges on the point which increases the strength of the cutting edges
- Post coat polishing to improve chip evacuation
- Coated with ALtima® Coating, Coolant Fed



| ALtima® | | Diameter | | Shank | OAL | Flute Length |
|-------------|-------|----------|---------|-------|-----|--------------|
| Tool No. | EDP | D1 | D2 | L1 | L2 | L3 |
| | | mm | Decimal | mm | mm | mm |
| MXDCRM0100A | 04794 | 1.00 | .0394 | 3 | 57 | 8 |
| MXDCRM0105A | 04795 | 1.05 | .0413 | 3 | 57 | 8 |
| MXDCRM0110A | 04796 | 1.10 | .0433 | 3 | 57 | 8 |
| MXDCRM0115A | 04797 | 1.15 | .0453 | 3 | 57 | 9 |
| MXDCRM0120A | 04798 | 1.20 | .0472 | 3 | 57 | 9 |
| MXDCRM0125A | 04799 | 1.25 | .0492 | 3 | 57 | 9 |
| MXDCRM0130A | 04800 | 1.30 | .0512 | 3 | 57 | 10 |
| MXDCRM0135A | 04801 | 1.35 | .0531 | 3 | 57 | 10 |
| MXDCRM0140A | 04802 | 1.40 | .0551 | 3 | 57 | 10 |
| MXDCRM0145A | 04803 | 1.45 | .0571 | 3 | 57 | 11 |
| MXDCRM0150A | 04804 | 1.50 | .0591 | 3 | 57 | 11 |
| MXDCRM0155A | 04805 | 1.55 | .0610 | 3 | 57 | 12 |
| MXDCRM0160A | 04806 | 1.60 | .0630 | 3 | 57 | 12 |
| MXDCRM0165A | 04807 | 1.65 | .0650 | 3 | 57 | 12 |
| MXDCRM0170A | 04808 | 1.70 | .0669 | 3 | 57 | 13 |
| MXDCRM0175A | 04809 | 1.75 | .0689 | 3 | 57 | 13 |
| MXDCRM0180A | 04810 | 1.80 | .0709 | 3 | 57 | 13 |
| MXDCRM0185A | 04811 | 1.85 | .0728 | 3 | 57 | 14 |
| MXDCRM0190A | 04812 | 1.90 | .0748 | 3 | 57 | 14 |
| MXDCRM0195A | 04813 | 1.95 | .0768 | 3 | 57 | 14 |
| MXDCRM0200A | 04814 | 2.00 | .0787 | 3 | 57 | 15 |
| MXDCRM0205A | 04815 | 2.05 | .0807 | 3 | 60 | 15 |
| MXDCRM0210A | 04816 | 2.10 | .0827 | 3 | 60 | 15 |
| MXDCRM0215A | 04817 | 2.15 | .0846 | 3 | 60 | 16 |
| MXDCRM0220A | 04818 | 2.20 | .0866 | 3 | 60 | 16 |
| MXDCRM0225A | 04819 | 2.25 | .0886 | 3 | 60 | 17 |
| MXDCRM0230A | 04820 | 2.30 | .0906 | 3 | 60 | 17 |

| ALtima® | | Diameter | | Shank | OAL | Flute Length |
|-------------|-------|----------|---------|-------|-----|--------------|
| Tool No. | EDP | D1 | D2 | L1 | L2 | L3 |
| | | mm | Decimal | mm | mm | mm |
| MXDCRM0235A | 04821 | 2.35 | .0925 | 3 | 60 | 17 |
| MXDCRM0240A | 04822 | 2.40 | .0945 | 3 | 60 | 18 |
| MXDCRM0245A | 04823 | 2.45 | .0965 | 3 | 60 | 18 |
| MXDCRM0250A | 04824 | 2.50 | .0984 | 3 | 60 | 18 |
| MXDCRM0255A | 04825 | 2.55 | .1004 | 3 | 60 | 19 |
| MXDCRM0260A | 04826 | 2.60 | .1024 | 3 | 60 | 19 |
| MXDCRM0265A | 04827 | 2.65 | .1043 | 3 | 60 | 19 |
| MXDCRM0270A | 04828 | 2.70 | .1063 | 3 | 60 | 20 |
| MXDCRM0275A | 04829 | 2.75 | .1083 | 3 | 60 | 20 |
| MXDCRM0280A | 04830 | 2.80 | .1102 | 3 | 60 | 20 |
| MXDCRM0285A | 04831 | 2.85 | .1122 | 3 | 60 | 21 |
| MXDCRM0290A | 04832 | 2.90 | .1142 | 3 | 60 | 21 |
| MXDCRM0295A | 04833 | 2.95 | .1161 | 3 | 60 | 22 |

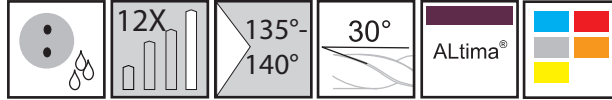
| Metric (mm) | |
|-------------|----------------|
| D1 | Tolerance (h7) |
| 1.00- 2.95 | +0/- .010 |

| Metric (mm) | |
|-------------|----------------|
| D2 | Tolerance (h6) |
| 3.00 | +0/- .006 |

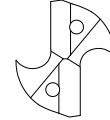
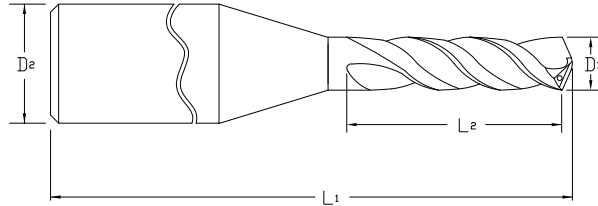


Twister® Micro XD

Twister® Micro XD Series MXDCL



- Designed for high performance drilling in a broad range of materials
- Web thinned point helps to reduce cutting forces during the drilling operation
- All sizes have honed cutting edges on the point which increases the strength of the cutting edges
- Post coat polishing to improve chip evacuation
- Coated with ALtima® Coating, Coolant Fed



| ALtima® | | Diameter | | Shank | OAL | Flute Length |
|-------------|-------|----------|---------|-------|-----|--------------|
| Tool No. | EDP | D1 | | D2 | L1 | L2 |
| | | mm | Decimal | mm | mm | mm |
| MXDCLM0100A | 04834 | 1.00 | .0394 | 3 | 60 | 16 |
| MXDCLM0105A | 04835 | 1.05 | .0413 | 3 | 60 | 17 |
| MXDCLM0110A | 04836 | 1.10 | .0433 | 3 | 60 | 18 |
| MXDCLM0115A | 04837 | 1.15 | .0453 | 3 | 60 | 19 |
| MXDCLM0120A | 04838 | 1.20 | .0472 | 3 | 65 | 20 |
| MXDCLM0125A | 04839 | 1.25 | .0492 | 3 | 65 | 20 |
| MXDCLM0130A | 04840 | 1.30 | .0512 | 3 | 65 | 21 |
| MXDCLM0135A | 04841 | 1.35 | .0531 | 3 | 65 | 22 |
| MXDCLM0140A | 04842 | 1.40 | .0551 | 3 | 65 | 23 |
| MXDCLM0145A | 04843 | 1.45 | .0571 | 3 | 65 | 24 |
| MXDCLM0150A | 04844 | 1.50 | .0591 | 3 | 65 | 24 |
| MXDCLM0155A | 04845 | 1.55 | .0610 | 3 | 65 | 25 |
| MXDCLM0160A | 04846 | 1.60 | .0630 | 3 | 70 | 26 |
| MXDCLM0165A | 04847 | 1.65 | .0650 | 3 | 70 | 27 |
| MXDCLM0170A | 04848 | 1.70 | .0669 | 3 | 70 | 28 |
| MXDCLM0175A | 04849 | 1.75 | .0689 | 3 | 70 | 28 |
| MXDCLM0180A | 04850 | 1.80 | .0709 | 3 | 70 | 29 |
| MXDCLM0185A | 04851 | 1.85 | .0728 | 3 | 70 | 30 |
| MXDCLM0190A | 04852 | 1.90 | .0748 | 3 | 75 | 31 |
| MXDCLM0195A | 04853 | 1.95 | .0768 | 3 | 75 | 32 |
| MXDCLM0200A | 04854 | 2.00 | .0787 | 3 | 75 | 32 |
| MXDCLM0205A | 04855 | 2.05 | .0807 | 3 | 75 | 33 |
| MXDCLM0210A | 04856 | 2.10 | .0827 | 3 | 75 | 34 |
| MXDCLM0215A | 04857 | 2.15 | .0846 | 3 | 75 | 35 |
| MXDCLM0220A | 04858 | 2.20 | .0866 | 3 | 75 | 36 |
| MXDCLM0225A | 04859 | 2.25 | .0886 | 3 | 75 | 36 |
| MXDCLM0230A | 04860 | 2.30 | .0906 | 3 | 75 | 37 |





























| ALtima® | | Diameter | | Shank | OAL | Flute Length |
|-------------|-------|----------|---------|-------|-----|--------------|
| Tool No. | EDP | D1 | | D2 | L1 | L2 |
| | | mm | Decimal | mm | mm | mm |
| MXDCLM0235A | 04861 | 2.35 | .0925 | 3 | 75 | 38 |
| MXDCLM0240A | 04862 | 2.40 | .0945 | 3 | 75 | 39 |
| MXDCLM0245A | 04863 | 2.45 | .0965 | 3 | 75 | 40 |
| MXDCLM0250A | 04864 | 2.50 | .0984 | 3 | 75 | 40 |
| MXDCLM0255A | 04865 | 2.55 | .1004 | 3 | 80 | 41 |
| MXDCLM0260A | 04866 | 2.60 | .1024 | 3 | 80 | 42 |
| MXDCLM0265A | 04867 | 2.65 | .1043 | 3 | 80 | 43 |
| MXDCLM0270A | 04868 | 2.70 | .1063 | 3 | 80 | 44 |
| MXDCLM0275A | 04869 | 2.75 | .1083 | 3 | 80 | 44 |
| MXDCLM0280A | 04870 | 2.80 | .1102 | 3 | 80 | 45 |
| MXDCLM0285A | 04871 | 2.85 | .1122 | 3 | 80 | 46 |
| MXDCLM0290A | 04872 | 2.90 | .1142 | 3 | 85 | 47 |
| MXDCLM0295A | 04873 | 2.95 | .1161 | 3 | 85 | 48 |

| Metric (mm) | |
|-------------|----------------|
| D1 | Tolerance (h7) |
| 1.00- 2.95 | +0/- .010 |

| Metric (mm) | |
|-------------|----------------|
| D2 | Tolerance (h6) |
| 3.0 | +0/- .006 |



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

| Workpiece Material Group | I S O | Hardness | Tool Series | T Y P E | D E P T H | vc-SFM | Drill Diameter (mm) | | | | | |
|---|-------|-------------|-------------|---|-----------|--------|---------------------|-------|-------|-------|-------|-------|
| | | | | | | | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 2.95 |
| | | | | | | | f - IPR | | | | | |
| 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 | MXDSR |  | 5 | 150 | .0005 | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | MPDCS |  | 2 | 300 | — | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | 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 | 130 | .0005 | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | MPDCS |  | 2 | 300 | — | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | 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 | 120 | .0005 | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | MPDCS |  | 2 | 250 | — | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | MXDCR |  | 5 | | | | | | | |
| | | | MXDCL |  | 12 | | | | | | | |
| Hardened Steels A2 / 52100 | H | 45 to 55 Rc | MXDSR |  | 5 | 50 | .0002 | .0004 | .0007 | .0009 | .0011 | .0014 |
| | | | MPDCS |  | 2 | 80 | — | .0004 | .0007 | .0009 | .0011 | .0014 |
| | | | MXDCR |  | 5 | | | | | | | |
| | | | MXDCL |  | 12 | | | | | | | |
| Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430 | M | up to 28 Rc | MXDSR |  | 5 | 140 | .0005 | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | MPDCS |  | 2 | 300 | — | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | 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 | 125 | .0005 | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | MPDCS |  | 2 | 230 | — | .0008 | .0012 | .0016 | .0020 | .0023 |
| | | | 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 | 60 | .0002 | .0004 | .0007 | .0009 | .0011 | .0014 |
| | | | MPDCS |  | 2 | 80 | — | .0004 | .0007 | .0009 | .0011 | .0014 |
| | | | 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.

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.



Twister® Micro XD

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

| Workpiece Material Group | ISO | Hardness | Tool Series | TYPE | DEPTH | vc-SFM | Drill Diameter (mm) | | | | | |
|--|-----|--------------|-------------|------|-------|--------|---------------------|-------|-------|-------|-------|-------|
| | | | | | | | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 2.95 |
| | | | | | | | f - IPR | | | | | |
| 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 | MXDSR | | 5 | 150 | .0005 | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | MPDCS | | 2 | 325 | — | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | MXDCR | | 5 | | | | | | | |
| | | | MXDCL | | 12 | | | | | | | |
| 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 | MXDSR | | 5 | 150 | .0005 | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | MPDCS | | 2 | 250 | — | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | MXDCR | | 5 | | | | | | | |
| | | | MXDCL | | 12 | | | | | | | |
| Titanium 6Al-4V | S | up to 40 Rc | MXDSR | | 5 | 70 | .0005 | .0010 | .0015 | .0020 | .0025 | .0030 |
| | | | MPDCS | | 2 | 230 | — | .0004 | .0006 | .0008 | .0010 | .0012 |
| | | | MXDCR | | 5 | | | | | | | |
| | | | MXDCL | | 12 | | | | | | | |
| High Temp Alloys Inconel / Hastelloy / Waspeloy / Nickel Based Alloys - Monel | S | up to 40 Rc | MXDSR | | 5 | 60 | .0002 | .0004 | .0007 | .0009 | .0011 | .0014 |
| | | | MPDCS | | 2 | 155 | — | .0004 | .0006 | .0008 | .0010 | .0012 |
| | | | MXDCR | | 5 | | | | | | | |
| | | | MXDCL | | 12 | | | | | | | |

Recommended Peck Depths for MXDSR (Solid) Drilling

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

*Peck depths can vary by material type.

Recommended Machine Requirements

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

For best MXDCL performance, the following steps are recommended:

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

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

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.



www.maford.com































Tel: 800.553.8024



Email: sales@maford.com

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

| 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, 11L08, 11L14, 1213, 12L13, 12L14, 1215, 1330 | P | up to 28 Rc | MXDSR |  | 5 | 45 | .013 | .025 | .038 | .051 | .064 | .076 |
| | | | MPDCS |  | 2 | 90 | — | .025 | .038 | .051 | .064 | .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 | .051 | .064 | .076 |
| | | | MPDCS |  | 2 | 90 | — | .025 | .038 | .051 | .064 | .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 | .051 | .064 | .076 |
| | | | MPDCS |  | 2 | 75 | — | .025 | .038 | .051 | .064 | .076 |
| | | | MXDCR |  | 5 | | | | | | | |
| | | | MXDCL |  | 12 | | | | | | | |
| Hardened Steels A2 / 52100 | H | 45 to 55 Rc | MXDSR |  | 5 | 15 | .005 | .010 | .018 | .023 | .028 | .036 |
| | | | MPDCS |  | 2 | 25 | — | .010 | .018 | .023 | .028 | .036 |
| | | | 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 | .051 | .064 | .076 |
| | | | MPDCS |  | 2 | 90 | — | .025 | .038 | .051 | .064 | .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 | .051 | .064 | .076 |
| | | | MPDCS |  | 2 | 70 | — | .020 | .030 | .040 | .050 | .059 |
| | | | 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 | 25 | — | .010 | .018 | .023 | .028 | .036 |
| | | | 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.

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.



Twister® Micro XD

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

| Workpiece Material Group | I S O | Hardness | Tool Series | T Y P E | D E P T H | vc- m/min. | Drill Diameter (mm) | | | | | |
|--|-------|--------------|-------------|---------|-----------|---------------|---------------------|------|------|------|------|------|
| | | | | | | | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 2.95 |
| | | | | | | | f - mm/Rev | | | | | |
| 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 | MXDSR | | 5 | 45 | .013 | .025 | .038 | .051 | .064 | .076 |
| | | | MPDCS | | 2 | 100 | — | .025 | .038 | .051 | .064 | .076 |
| | | | MXDCR | | 5 | | | | | | | |
| | | | MXDCL | | 12 | | | | | | | |
| 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 | MXDSR | | 5 | 45 | .013 | .025 | .038 | .051 | .064 | .076 |
| | | | MPDCS | | 2 | 75 | — | .025 | .038 | .051 | .064 | .076 |
| | | | MXDCR | | 5 | | | | | | | |
| | | | MXDCL | | 12 | | | | | | | |
| Titanium 6Al-4V | S | up to 40 Rc | MXDSR | | 5 | 20 | .013 | .025 | .038 | .051 | .064 | .076 |
| | | | MPDCS | | 2 | 70 | — | .010 | .015 | .020 | .025 | .030 |
| | | | MXDCR | | 5 | | | | | | | |
| | | | MXDCL | | 12 | | | | | | | |
| High Temp Alloys Inconel / Hastelloy / Waspeloy / Nickel Based Alloys - Monel | S | up to 40 Rc | MXDSR | | 5 | 18 | .005 | .010 | .018 | .023 | .028 | .036 |
| | | | MPDCS | | 2 | 47 | — | .010 | .015 | .020 | .025 | .030 |
| | | | MXDCR | | 5 | | | | | | | |
| | | | MXDCL | | 12 | | | | | | | |

Recommended Peck Depths For MXDSR Solid Drilling by Diameter*

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

*Peck depths can vary by material type.

Recommended Machine Requirements

High Pressure Pump System (1,000 psi / 68.9 bar)

Coolant filtration of 10 microns or better

Total runout of .0004" (.01mm) Max. at drill tip

For best MXDCL performance, the following steps are recommended:

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

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

ISO 9001:2015 Certified

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.



www.maford.com



Tel: 800.553.8024



Email: sales@maford.com

Also Available:



Twister Micro-Tuff® Series 305

- Slow helix for efficient metal removal
- Web thinned point sizes 1/32" (.8mm) and above. Below 1/32" (.8mm) 4 facet point, 135° Point
- Solid Carbide
- Diameter range 0.1mm to 3.0mm and #102 (.0039") to 1/8"
- Common Shank, 3X - 10X Drill Lengths
- Available uncoated or with ALtima® Micro coating
- Drill available with color coded depth setting rings upon request



Twister® GP Series 302

- 35° helix
- 130° Point
- Solid Carbide
- Diameter range 0.10mm to 3.15mm and #102 (.0039") to 1/8"
- Common Shank, 3 Drill Length options depending on diameter
- Uncoated
- Drill available with color coded depth setting rings upon request
- An economical micro drilling option



Twister® MD Series 2MDCL

- 15° helix for efficient metal removal
- 140° Point
- Solid Carbide, Coolant Fed
- Diameter range 2.00mm to 2.95mm
- Common Shank, 10X Drill Length
- ALtima® Coated

Also available:



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

M.A. Ford® Mfg. Co., Inc.
7737 Northwest Blvd.
Davenport, IA 52806
USA

Tel: 563-391-6220 or 800-553-8024
Fax: 563-386-7660 or 800-892-9522
e-mail: sales@maford.com
www.maford.com

WBMXD2018

M.A. Ford Europe Ltd.
650 City Gate
London Road, Derby
DE24 8WY UK
Tel: +44(0) 1332 267960
Fax: +44(0) 1332 267969
e-mail: sales@mafordeurope.com
www.mafordeurope.com

M.A. Ford®
Asia-Pacific, Limited
Room 1709, Level 17
Millennium City 2
378 Kwun Tong Road
Kowloon, Hong Kong
Tel: +852-2167-7150
Fax: +852-2167-8150
Email: sales@mafordeurope.com