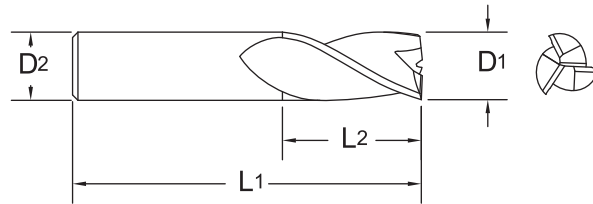
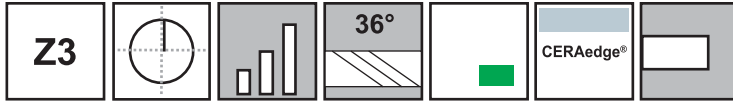


TuffCut® X-AL Series 138CE



| CERAedge® | EDP | Diameter | | | Shank | | OAL | | Flute Length | |
|------------|-------|----------|------|---------|-------|------|-------|------|--------------|------|
| | | D1 | | | D2 | | L1 | | L2 | |
| Tool No. | | Inch | mm | Decimal | Inch | mm | Inch | mm | Inch | mm |
| 13812501CE | 07988 | 1/8 | | .1250 | 1/8 | | 1-1/2 | | 1/4 | |
| 13812503CE | 07990 | 1/8 | | .1250 | 1/8 | | 1-1/2 | | 3/8 | |
| 13812504CE | 07992 | 1/8 | | .1250 | 1/8 | | 1-1/2 | | 1/2 | |
| 13812506CE | 07994 | 1/8 | | .1250 | 1/8 | | 2 | | 3/4 | |
| 13818751CE | 07996 | 3/16 | | .1875 | 3/16 | | 2 | | 3/8 | |
| 13818752CE | 07998 | 3/16 | | .1875 | 3/16 | | 2 | | 1/2 | |
| 13818753CE | 08000 | 3/16 | | .1875 | 3/16 | | 2-1/2 | | 5/8 | |
| 13818754CE | 08002 | 3/16 | | .1875 | 3/16 | | 2-1/2 | | 3/4 | |
| 13818755CE | 08004 | 3/16 | | .1875 | 3/16 | | 2-1/2 | | 1 | |
| 13823620CE | 08006 | | 6.0 | .2362 | | 6.0 | | 58.0 | | 13.0 |
| 13825000CE | 08008 | 1/4 | | .2500 | 1/4 | | 2 | | 3/8 | |
| 13825001CE | 08010 | 1/4 | | .2500 | 1/4 | | 2 | | 1/2 | |
| 13825003CE | 08012 | 1/4 | | .2500 | 1/4 | | 2 | | 5/8 | |
| 13825004CE | 08014 | 1/4 | | .2500 | 1/4 | | 2-1/2 | | 3/4 | |
| 13825005CE | 08016 | 1/4 | | .2500 | 1/4 | | 3 | | 1 | |
| 13825007CE | 08018 | 1/4 | | .2500 | 1/4 | | 3 | | 1-1/4 | |
| 13831500CE | 08020 | | 8.0 | .3150 | | 8.0 | | 64.0 | | 19.0 |
| 13837500CE | 08022 | 3/8 | | .3750 | 3/8 | | 2 | | 1/2 | |
| 13837504CE | 08024 | 3/8 | | .3750 | 3/8 | | 2-1/2 | | 3/4 | |
| 13837505CE | 08026 | 3/8 | | .3750 | 3/8 | | 2-1/2 | | 1 | |
| 13837506CE | 08028 | 3/8 | | .3750 | 3/8 | | 3 | | 1-1/4 | |
| 13837507CE | 08030 | 3/8 | | .3750 | 3/8 | | 3-1/2 | | 1-1/2 | |
| 13837508CE | 08032 | 3/8 | | .3750 | 3/8 | | 4 | | 2 | |
| 13839370CE | 08034 | | 10.0 | .3937 | | 10.0 | | 70.0 | | 22.0 |
| 13847240CE | 08036 | | 12.0 | .4724 | | 12.0 | | 84.0 | | 26.0 |
| 13850000CE | 08038 | 1/2 | | .5000 | 1/2 | | 3 | | 5/8 | |
| 13850001CE | 08040 | 1/2 | | .5000 | 1/2 | | 3 | | 3/4 | |
| 13850002CE | 08042 | 1/2 | | .5000 | 1/2 | | 3 | | 1 | |

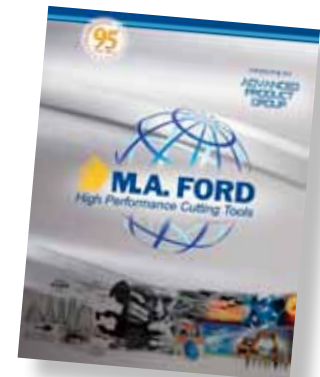
M.A. FORD® APG

CERAedge®

Hardness that makes it the 3rd hardest material when compared to industrial diamonds.

- Toughness that is comparable to Titanium.
- Lubricity that approaches Teflon.
- Extreme heat tolerance.
- Non-reactive to Titanium.

See the MA Ford Full Line catalog for the complete offering of the 138 series end mills for machining Aluminum. The offering includes 7 industry standard corner radii, stub, standard, and long length as well as necked relief styles. Contact customer service for your copy or view online at www.maford.com

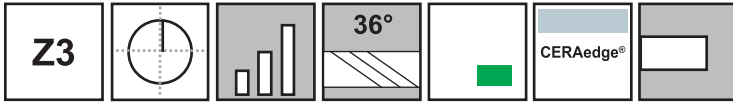


| Inch | |
|-------|----------------|
| D1 | Tolerance |
| 1/8-1 | + .000/- .0005 |

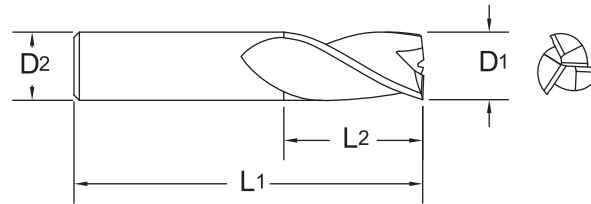
| Metric (mm) | |
|-------------|---------------|
| D1 | Tolerance |
| 6.00-20.00 | + .000/- .013 |

| CERAedge® Coating Properties | |
|------------------------------|-------------------|
| Microhardness (HV) | 3400 |
| Max. Service Temperature | 1100° C / 2012° F |
| Friction Coefficient | 0.25 |
| Coating Thickness | 2-3 microns |
| Color | Light Gray |

Series 138CE Continued



3
Flute



| CERAedge® | | Diameter | | | Shank | | OAL | | Flute Length | |
|------------|-------|----------|------|---------|-------|------|-------|-------|--------------|------|
| | | D1 | | | D2 | | L1 | | L2 | |
| Tool No. | EDP | Inch | mm | Decimal | Inch | mm | Inch | mm | Inch | mm |
| 13850003CE | 08044 | 1/2 | | .5000 | 1/2 | | 3 | | 1-1/4 | |
| 13850004CE | 08046 | 1/2 | | .5000 | 1/2 | | 4 | | 1-1/2 | |
| 13850005CE | 08048 | 1/2 | | .5000 | 1/2 | | 4 | | 2 | |
| 13850006CE | 08050 | 1/2 | | .5000 | 1/2 | | 4 | | 2-1/4 | |
| 13850007CE | 08052 | 1/2 | | .5000 | 1/2 | | 6 | | 2-1/2 | |
| 13855120CE | 08054 | | 14.0 | .5512 | | 14.0 | | 84.0 | | 26.0 |
| 13862503CE | 08056 | 5/8 | | .6250 | 5/8 | | 3-1/2 | | 1-1/4 | |
| 13862504CE | 08058 | 5/8 | | .6250 | 5/8 | | 4 | | 1-5/8 | |
| 13862506CE | 08060 | 5/8 | | .6250 | 5/8 | | 5 | | 2-1/2 | |
| 13862507CE | 08062 | 5/8 | | .6250 | 5/8 | | 6 | | 3-1/4 | |
| 13862990CE | 08064 | | 16.0 | .6299 | | 16.0 | | 89.0 | | 32.0 |
| 13875001CE | 08066 | 3/4 | | .7500 | 3/4 | | 4 | | 1 | |
| 13875004CE | 08068 | 3/4 | | .7500 | 3/4 | | 4 | | 1-5/8 | |
| 13875005CE | 08070 | 3/4 | | .7500 | 3/4 | | 5 | | 2 | |
| 13875006CE | 08072 | 3/4 | | .7500 | 3/4 | | 5 | | 2-1/4 | |
| 13875007CE | 08074 | 3/4 | | .7500 | 3/4 | | 5 | | 2-1/2 | |
| 13875008CE | 08076 | 3/4 | | .7500 | 3/4 | | 6 | | 3 | |
| 13878740CE | 08078 | | 20.0 | .7874 | | 20.0 | | 102.0 | | 38.0 |
| 13810002CE | 08080 | 1 | | 1.0000 | 1 | | 4 | | 1-1/2 | |
| 13810003CE | 08082 | 1 | | 1.0000 | 1 | | 5 | | 2 | |
| 13810005CE | 08084 | 1 | | 1.0000 | 1 | | 6 | | 3 | |
| 13810006CE | 08086 | 1 | | 1.0000 | 1 | | 6 | | 3-1/2 | |

ISO 9001:2008 Certified
Made in USA

