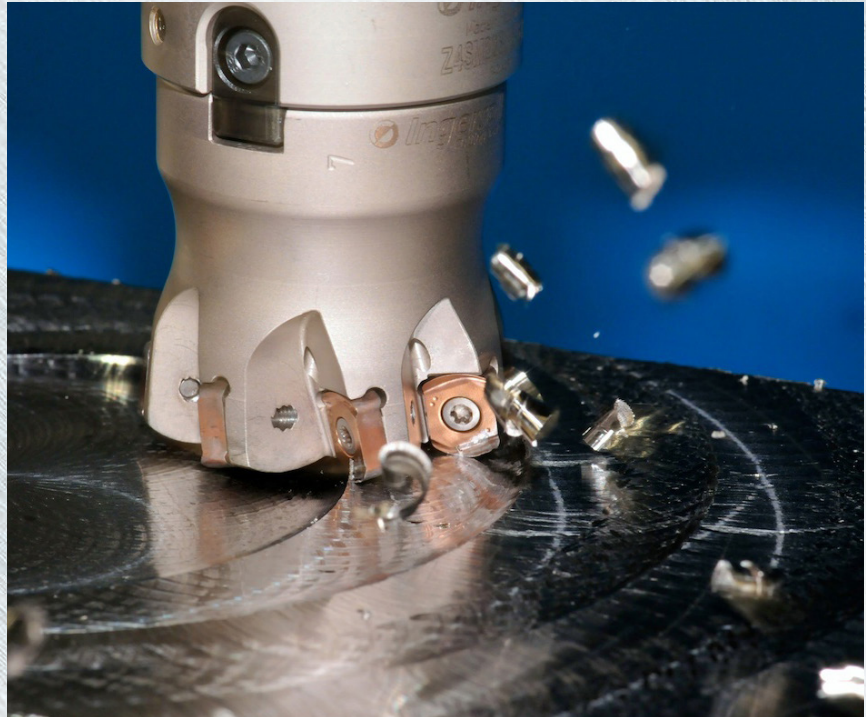




Hi-Feed Cutter 09mm IC Insert Series



Technical Supplement for:

- NEW-199-1

Insert Series:

- UNLU0904

Face Mills:

- TG1G
- TG2G

End Mills:

- 1TG1G

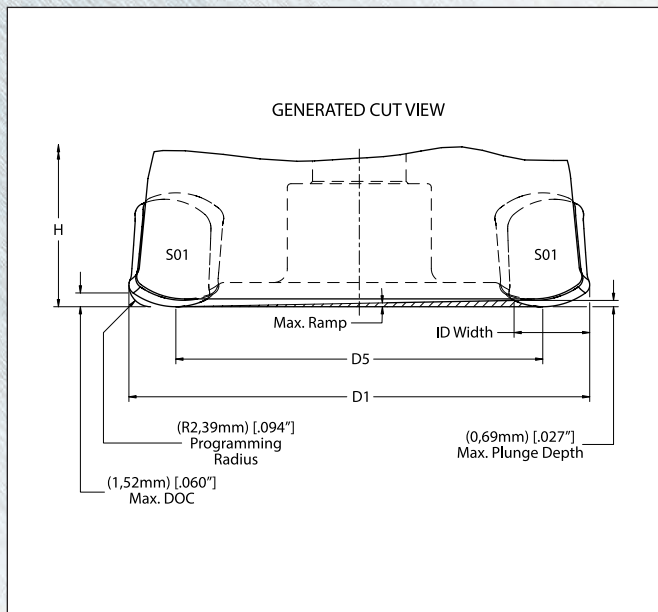
Applications:

- Ramping
- Pocketing
- Facing
- Contouring
- Channeling
- Corkscrew Milling

Programming Tips

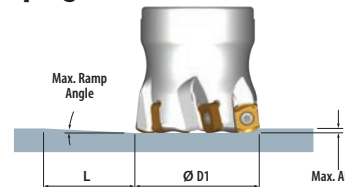
- *Use a 3X feed rate multiplier when establishing feed rates in order to compensate for chip thinning. A 2X feed rate multiplier is recommended for high temp alloys.*
- *As a general rule use 60% of the cutter diameter for determining the width of cut (WOC).*
- *Coolant or air blast, ensure optimal direction, flow and pressure*
- *Use high speed machining (HSM) programming features present in CAM system when programming.*
- *Select proper feeds and speeds for the material being machined.*

HI FEED MIDI™ END MILLS - UNLU09 INSERTS

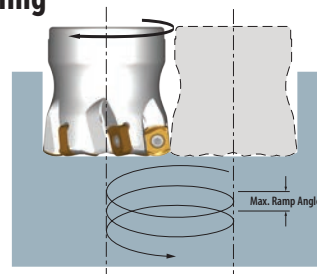


Recommended Ramping Angle

• Straight Ramping



• Helical Milling



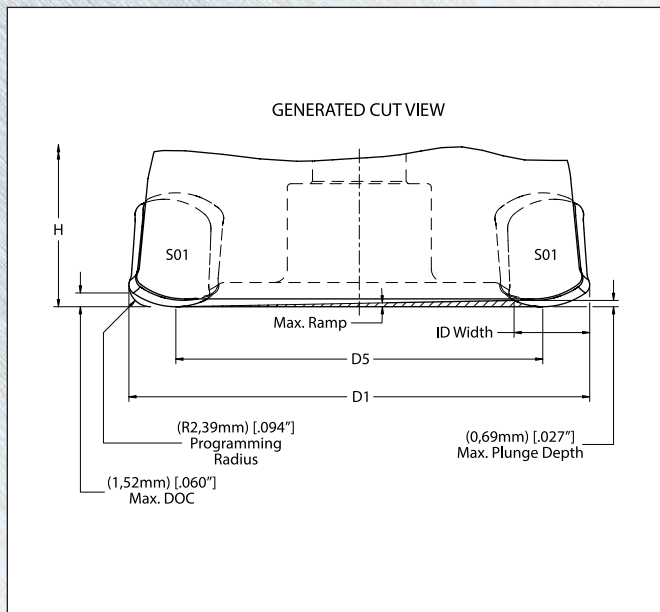
INCH

| Cutter Number | D1 Max. Dia. | Eff. Inserts | H Eff. Ext. | D5 Eff. Dia. | AP Max. DOC | Pgm Corner Radius | Max. Ramp Angle | L Min. Ramp Length | ID Width | Helical Milling (Min. & Max. Hole) | | | |
|------------------|--------------|--------------|-------------|--------------|-------------|-------------------|-----------------|--------------------|----------|------------------------------------|--------------------|------------------|--------------------|
| | | | | | | | | | | Max. Dia. w/Cusp | Max. Dia. w/o Cusp | Min. Dia. w/Cusp | Min. Dia. w/o Cusp |
| 1TG1G-10019S1R03 | 1.000 | 3 | 1.970 | 0.594 | 0.060 | 0.094 | 3.30 | 1.023 | 0.323 | 2.000 | 1.594 | 1.354 | 1.594 |
| 1TG1G-10020S1R03 | 1.250 | 3 | 2.000 | 0.594 | 0.060 | 0.094 | 3.30 | 1.023 | 0.323 | 2.000 | 1.594 | 1.354 | 1.594 |
| 1TG1G-12027E2R03 | 1.250 | 3 | 2.750 | 0.841 | 0.060 | 0.094 | 2.19 | 1.570 | 0.329 | 2.500 | 2.091 | 1.842 | 2.091 |
| 1TG1G-12027E2R04 | 1.250 | 4 | 2.750 | 0.841 | 0.060 | 0.094 | 2.19 | 1.570 | 0.329 | 2.500 | 2.091 | 1.842 | 2.091 |
| 1TG1G-12047E2R03 | 1.500 | 3 | 4.750 | 0.841 | 0.060 | 0.094 | 2.19 | 1.570 | 0.329 | 2.500 | 2.091 | 1.842 | 2.091 |
| 1TG1G-15016E2R04 | 1.500 | 4 | 1.690 | 1.090 | 0.060 | 0.094 | 1.63 | 2.100 | 0.331 | 3.000 | 2.590 | 2.338 | 2.590 |
| 1TG1G-15016E2R05 | 1.500 | 5 | 1.690 | 1.090 | 0.060 | 0.094 | 1.63 | 2.100 | 0.331 | 3.000 | 2.590 | 2.338 | 2.590 |

METRIC

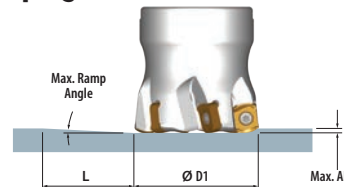
| Cutter Number | D1 Max. Dia. | Eff. Inserts | H Eff. Ext. | D5 Eff. Dia. | AP Max. DOC | Pgm Corner Radius | Max. Ramp Angle | L Min. Ramp Length | ID Width | Helical Milling (Min. & Max. Hole) | | | |
|------------------|--------------|--------------|-------------|--------------|-------------|-------------------|-----------------|--------------------|----------|------------------------------------|--------------------|------------------|--------------------|
| | | | | | | | | | | Max. Dia. w/Cusp | Max. Dia. w/o Cusp | Min. Dia. w/Cusp | Min. Dia. w/o Cusp |
| 1TG1G025070T5R00 | 25mm | 2 | 70mm | 14.6mm | 1.5mm | 0.094 | 2.2 | 5.2mm | 39mm | 50mm | n/a | 42mm | n/a |
| 1TG1G025070T5R01 | 25mm | 3 | 70mm | 14.6mm | 1.5mm | 0.094 | 2.2 | 5.2mm | 39mm | 50mm | n/a | 42mm | n/a |
| 1TG1G025110T5R02 | 25mm | 3 | 110mm | 14.6mm | 1.5mm | 0.094 | 2.2 | 5.2mm | 39mm | 50mm | n/a | 42mm | n/a |
| 1TG1G032070U7R00 | 32mm | 3 | 70mm | 21.6mm | 1.5mm | 0.094 | 2 | 5.2mm | 43mm | 64mm | n/a | 56mm | n/a |
| 1TG1G032120U7R00 | 32mm | 3 | 120mm | 21.6mm | 1.5mm | 0.094 | 2 | 5.2mm | 43mm | 64mm | n/a | 56mm | n/a |
| 1TG1G032070U7R02 | 32mm | 4 | 70mm | 21.6mm | 1.5mm | 0.094 | 2 | 5.2mm | 43mm | 64mm | n/a | 56mm | n/a |
| 1TG1G032120U7R02 | 32mm | 4 | 120mm | 21.6mm | 1.5mm | 0.094 | 2 | 5.2mm | 43mm | 64mm | n/a | 56mm | n/a |

HI FEED MIDI™ TOP-ON™ END MILLS - MODULAR - UNLU09 INSERTS

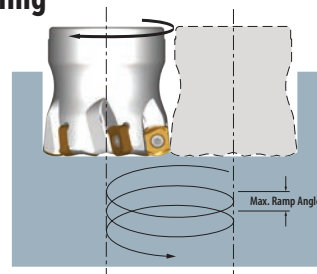


Recommended Ramping Angle

• Straight Ramping



• Helical Milling



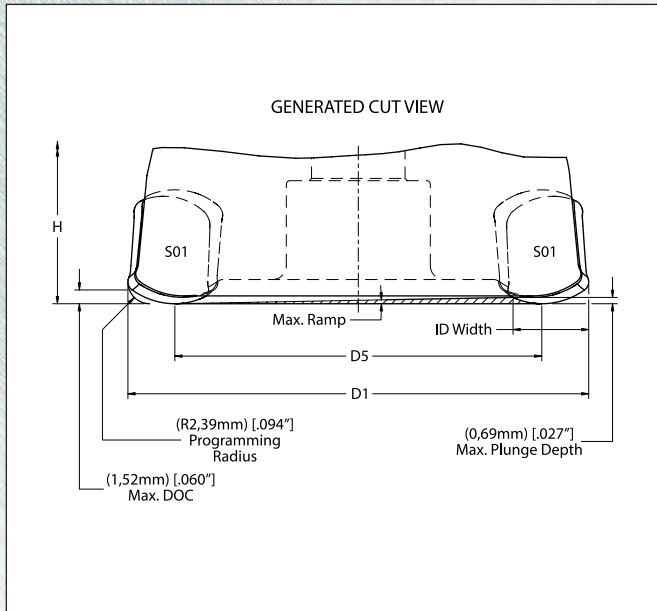
INCH

| Cutter Number | D1 Max. Dia. | Eff. Inserts | H Eff. Ext. | D5 Eff. Dia. | AP Max. DOC | Pgm Corner Radius | Max. Ramp Angle | L Min. Ramp Length | ID Width | Helical Milling (Min. & Max. Hole) | | | |
|------------------|--------------|--------------|-------------|--------------|-------------|-------------------|-----------------|--------------------|----------|------------------------------------|--------------------|------------------|--------------------|
| | | | | | | | | | | Max. Dia. w/Cusp | Max. Dia. w/o Cusp | Min. Dia. w/Cusp | Min. Dia. w/o Cusp |
| 1TG1G-10015X7R03 | 1.000 | 3 | 1.57 | 0.594 | 0.060 | 0.094 | 3.3 | 1.04 | 0.323 | 2 | 1.594 | 1.354 | 1.594 |
| 1TG1G-12015X8R04 | 1.250 | 4 | 1.57 | 0.841 | 0.060 | 0.094 | 2.2 | 1.56 | 0.329 | 2.5 | 2.091 | 1.842 | 2.091 |

METRIC

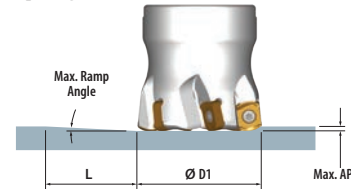
| Cutter Number | D1 Max. Dia. | Eff. Inserts | H Eff. Ext. | D5 Eff. Dia. | AP Max. DOC | Pgm Corner Radius | Max. Ramp Angle | L Min. Ramp Length | ID Width | Helical Milling (Min. & Max. Hole) | | | |
|------------------|--------------|--------------|-------------|--------------|-------------|-------------------|-----------------|--------------------|----------|------------------------------------|--------------------|------------------|--------------------|
| | | | | | | | | | | Max. Dia. w/Cusp | Max. Dia. w/o Cusp | Min. Dia. w/Cusp | Min. Dia. w/o Cusp |
| 1TG1G025035X7R00 | 25mm | 2 | 35mm | 14.6mm | 1.5mm | 2.413mm | 2.2 | 39mm | 5.2mm | 50mm | n/a | 42mm | n/a |
| 1TG1G025035X7R01 | 25mm | 3 | 35mm | 14.6mm | 1.5mm | 2.413mm | 2.2 | 39mm | 5.2mm | 50mm | n/a | 42mm | n/a |
| 1TG1G032043X8R00 | 32mm | 3 | 43mm | 21.6mm | 1.5mm | 2.413mm | 2 | 43mm | 5.2mm | 64mm | n/a | 56mm | n/a |
| 1TG1G032043X8R01 | 32mm | 4 | 43mm | 21.6mm | 1.5mm | 2.413mm | 2 | 43mm | 5.2mm | 64mm | n/a | 56mm | n/a |
| 1TG1G035043X8R00 | 35mm | 4 | 43mm | 24.6mm | 1.5mm | 2.413mm | 1 | n/a | 5.2mm | 70mm | n/a | 59mm | n/a |

HI FEED MIDI™ FACE MILLS - UNLU09 INSERTS

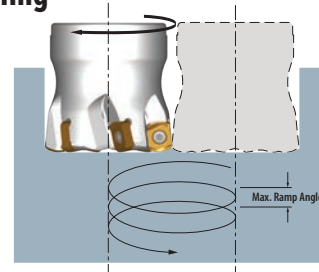


Recommended Ramping Angle

• Straight Ramping



• Helical Milling



INCH

| Cutter Number | D1 Max. Dia. | Eff. Inserts | H Eff. Ext. | D5 Eff. Dia. | AP Max. DOC | Pgm Corner Radius | Max. Ramp Angle | L Min. Ramp Length | ID Width | Helical Milling (Min. & Max. Hole) | | | |
|---------------|--------------|--------------|-------------|--------------|-------------|-------------------|-----------------|--------------------|----------|------------------------------------|--------------------|------------------|--------------------|
| | | | | | | | | | | Max. Dia. w/Cusp | Max. Dia. w/o Cusp | Min. Dia. w/Cusp | Min. Dia. w/o Cusp |
| TG2G-20R01 | 2.000 | 6 | 1.969 | 1.593 | 0.060 | 0.094 | 1.1 | 3.125 | 0.328 | 4.000 | 3.593 | 3.344 | 3.593 |
| TG1G-20R01 | 2.000 | 7 | 1.969 | 1.593 | 0.060 | 0.094 | 1.1 | 3.125 | 0.328 | 4.000 | 3.593 | 3.344 | 3.593 |
| TG2G-30R01 | 3.000 | 7 | 1.750 | 2.566 | 0.060 | 0.094 | 0.6 | 6.000 | 0.333 | 6.000 | 5.566 | 5.344 | 5.566 |
| TG1G-30R01 | 3.000 | 9 | 1.750 | 2.566 | 0.060 | 0.094 | 0.6 | 6.000 | 0.333 | 6.000 | 5.566 | 5.344 | 5.566 |

METRIC

| Cutter Number | D1 Max. Dia. | Eff. Inserts | H Eff. Ext. | D5 Eff. Dia. | AP Max. DOC | Pgm Corner Radius | Max. Ramp Angle | L Min. Ramp Length | ID Width | Helical Milling (Min. & Max. Hole) | | | |
|---------------|--------------|--------------|-------------|--------------|-------------|-------------------|-----------------|--------------------|----------|------------------------------------|--------------------|------------------|--------------------|
| | | | | | | | | | | Max. Dia. w/Cusp | Max. Dia. w/o Cusp | Min. Dia. w/Cusp | Min. Dia. w/o Cusp |
| TG3G050R00 | 50mm | 5 | 50mm | 39.6mm | 1.5mm | 2.413mm | 1 | 86mm | 5.2mm | 100mm | n/a | 92mm | n/a |
| TG2G050R00 | 50mm | 6 | 50mm | 39.6mm | 1.5mm | 2.413mm | 1 | 86mm | 5.2mm | 100mm | n/a | 92mm | n/a |
| TG1G050R00 | 50mm | 7 | 50mm | 39.6mm | 1.5mm | 2.413mm | 1 | 86mm | 5.2mm | 100mm | n/a | 92mm | n/a |
| TG2G052R00 | 52mm | 6 | 50mm | 41.6mm | 1.5mm | 2.413mm | 1 | 86mm | 5.2mm | 110mm | n/a | 96mm | n/a |
| TG1G052R00 | 52mm | 7 | 50mm | 41.6mm | 1.5mm | 2.413mm | 1 | 86mm | 5.2mm | 110mm | n/a | 96mm | n/a |
| TG3G063R00 | 63mm | 6 | 50mm | 52.6mm | 1.5mm | 2.413mm | 0.6 | 93mm | 5.2mm | 126mm | n/a | 118mm | n/a |
| TG2G063R00 | 63mm | 7 | 50mm | 52.6mm | 1.5mm | 2.413mm | 0.9 | 93mm | 5.2mm | 126mm | n/a | 118mm | n/a |
| TG1G063R00 | 63mm | 8 | 50mm | 52.6mm | 1.5mm | 2.413mm | 0.9 | 93mm | 5.2mm | 126mm | n/a | 118mm | n/a |
| TG4G080R00 | 80mm | 7 | 50mm | 69.6mm | 1.5mm | 2.413mm | 0.8 | 107mm | 5.2mm | 160mm | n/a | 152mm | n/a |
| TG3G080R00 | 80mm | 8 | 50mm | 69.6mm | 1.5mm | 2.413mm | 0.8 | 107mm | 5.2mm | 160mm | n/a | 152mm | n/a |
| TG2G080R00 | 80mm | 9 | 50mm | 69.6mm | 1.5mm | 2.413mm | 0.8 | 107mm | 5.2mm | 160mm | n/a | 152mm | n/a |
| TG1G080R00 | 80mm | 10 | 50mm | 69.6mm | 1.5mm | 2.413mm | 0.8 | 107mm | 5.2mm | 160mm | n/a | 152mm | n/a |