GWS TOOL GROUP

# TiFeed

## High Feed Mill for Titanium

- Solid & Coolant-through
- 5-7 Flute Design
- Ultra-Fine Edge Preparation
- Advanced HX Coating

**IDEAL FOR HIGH FEED ROUGH & FINISH MILLING OF TITANIUM, NICKEL-BASED ALLOYS & STAINLESS STEEL**

# Designed for high feed rough and finish milling of Titanium Alloys and Nickel-Based Alloys.

Ideally suited for machining of turbine blades, reducing cycle times via faster metal removal rates and reduction of excessive finishing operations.

## FEATURES

- Non-Center cutting
- Reduced neck and extended OAL for ultimate reach
- Multi-layered HX coating for heat & wear resistance in High-Temp Alloys
- Torus style radius for high-feed/high-efficiency milling
- Cutting geometry designed specifically for Titanium machining
- Available in solid & coolant-through

# ULTIMATE PERFORMANCE

High Feed Mills for Titanium

**Ti FEED**


## The 2052 Series

Solid

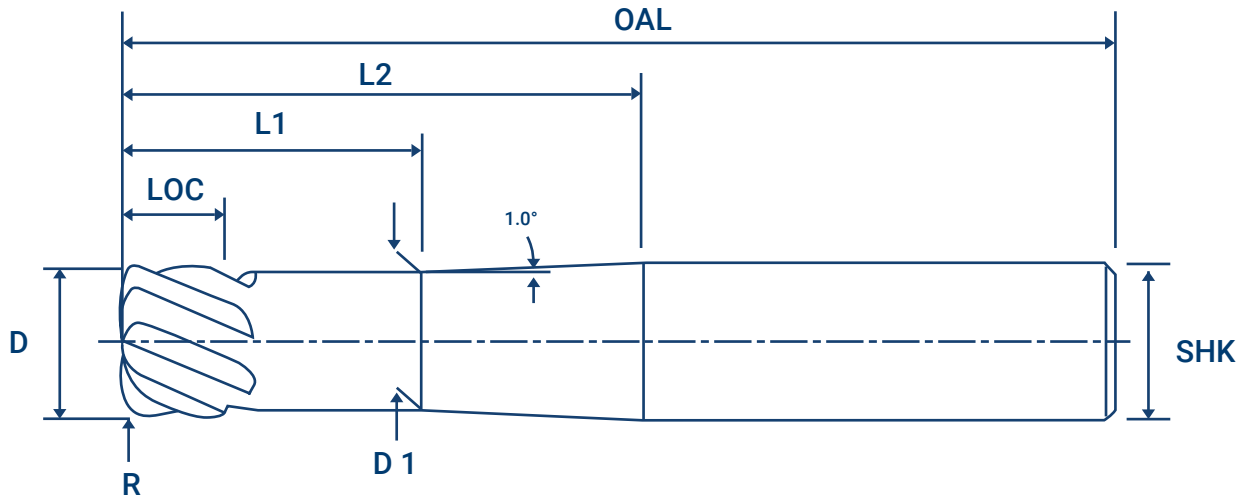
| EDP# | D | LOC | SHK | OAL | L1 | L2 | D1 | Flutes | R |
|---|---|---|---|---|---|---|---|---|---|
| 205201 | 1/4 | 1/8 | 1/4 | 3 | 0.75 | 1.75 | 0.21 | 5 | 0.015 |
| 205202 | 3/8 | 5/16 | 3/8 | 4 | 1.25 | 2.25 | 0.34 | 5 | 0.023 |
| 205203 | 1/2 | 3/8 | 1/2 | 5 | 1.50 | 2.50 | 0.46 | 7 | 0.030 |
| 205204 | 5/8 | 3/8 | 5/8 | 6 | 2.00 | 3.00 | 0.59 | 7 | 0.037 |
| 205205 | 3/4 | 7/16 | 3/4 | 6 | 2.50 | 3.50 | 0.71 | 7 | 0.040 |
| 205206 | 1 | 3/4 | 1 | 6 | 3.00 | 4.00 | 0.96 | 7 | 0.060 |

## The 2053 Series

Coolant-through

| EDP# | D | LOC | SHK | OAL | L1 | L2 | D1 | Flutes | R |
|---|---|---|---|---|---|---|---|---|---|
| 205301 | 1/4 | 1/8 | 1/4 | 3 | 0.75 | 1.75 | 0.21 | 5 | 0.015 |
| 205302 | 3/8 | 5/16 | 3/8 | 4 | 1.25 | 2.25 | 0.34 | 5 | 0.023 |
| 205303 | 1/2 | 3/8 | 1/2 | 5 | 1.50 | 2.50 | 0.46 | 7 | 0.030 |
| 205304 | 5/8 | 3/8 | 5/8 | 6 | 2.00 | 3.00 | 0.59 | 7 | 0.037 |
| 205305 | 3/4 | 7/16 | 3/4 | 6 | 2.50 | 3.50 | 0.71 | 7 | 0.040 |
| 205306 | 1 | 3/4 | 1 | 6 | 3.00 | 4.00 | 0.96 | 7 | 0.060 |

## TOOL DETAILS

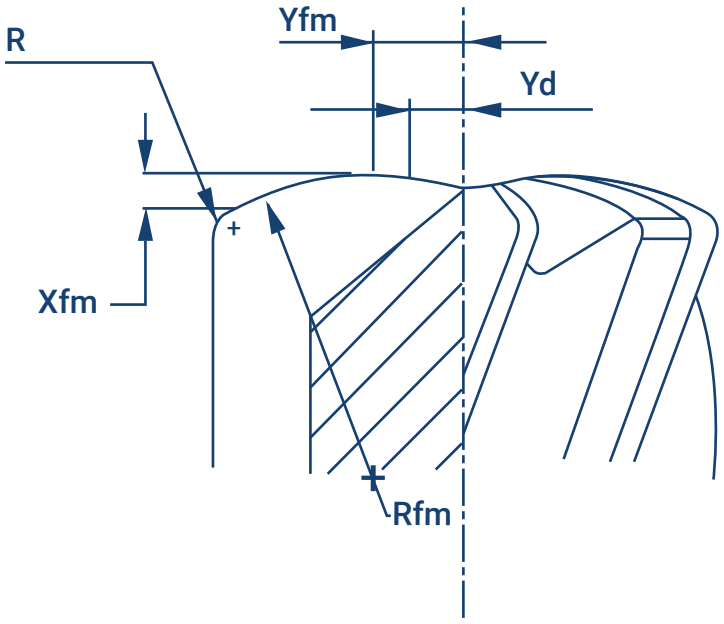


# SPEED & FEED GUIDE

Optimum Performance

**Ti Feed**

| Tool Dimensions | | |
|---|---|---|
| | Xfm: | Max depth of cut |
| | Yfm: | Distance between center line and center of Rfm |
| | Yd: | Distance between center line and start position of cutting edge |
| | Rfm: | Radius of tool tip |
| | R: | Corner radius |




## Part Entry Programming Data

| Tool Geometry | | | | | | | Part Entry Guide: Circular Interpolation | | Part Entry Guide: Linear Ramping (Length per Angle - inch) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dia. | Xfm | R | Rfm | Yfm | YD | FL | Hole Dia. (Min) | Hole Dia. (Max) | 1° | 2° | 3° | 4° | 5° |
| 1/4 | .0125 | 0.015 | .1490 | .0563 | .0195 | 5 | .3550 | .500 | .030 | .015 | .010 | .007 | .006 |
| 3/8 | .0188 | 0.023 | .2235 | .0844 | .0295 | 5 | .5325 | .750 | .045 | .022 | .015 | .011 | .009 |
| 1/2 | .0250 | 0.030 | .2981 | .1125 | .0421 | 7 | .7100 | 1.00 | .060 | .030 | .020 | .015 | .012 |
| 5/8 | .0313 | 0.037 | .3726 | .1406 | .0495 | 7 | .8875 | 1.25 | .075 | .037 | .025 | .019 | .015 |
| 3/4 | .0375 | 0.040 | .4471 | .1688 | .0595 | 7 | 1.065 | 1.50 | .090 | .045 | .030 | .022 | .018 |
| 1 | .0500 | 0.060 | .5961 | .2250 | .0795 | 7 | 1.420 | 2.00 | .120 | .060 | .040 | .030 | .024 |

Recommended Feed Rate: Reduce 10-30%
Dimensional tool drawings available upon request

# SPEED & FEED GUIDE

Optimum Performance

Ti FEED

## Contouring / Z-Level Milling

| Material | | Axial ↓ | Radial → | SFM | 1/4 IPM | 3/8 IPM | 1/2 IPM | 5/8 IPM | 3/4 IPM | 1 IPM |
|---|---|---|---|---|---|---|---|---|---|---|
| M | **SS 300 & 400 Series**<br>303, 304, 316, 420, 417 | .05 x D | ~.40D | **210 - 290** | 314 | 333 | 283 | 299 | 300 | 299 |
| M | **Precipitation SS**<br>15-5, 16-6, 17-4, 17-6 | .05 x D | ~.40D | **180 - 225** | 194 | 129 | 195 | 206 | 206 | 206 |
| S | **High Temp Alloys**<br>Inconel 718, Hastalloy, A286, Waspalloy, CoCr | .05 x D | ~.30D | **80 - 110** | 72 | 76 | 70 | 68 | 63 | 61 |
| S | **Titanium & Ti Alloys**<br>Ti-6Al4V, Grades (5-38) | .05 x D | ~.40D | **120 - 200** | 126 | 132 | 125 | 133 | 133 | 132 |

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