

## Guhring Coating and Reconditioning Services

We can restore used standard and special carbide and PCD drills, step drills, reamers, and end mills to their original factory quality, condition and performance. We also recoat in the same facility that we recondition, allowing for quicker turn-around and excellent quality control.

Utilizing the same high-precision CNC grinding machines that are used in Guhring's manufacturing plants, our Reconditioning Division is well-equipped to restore standard and special carbide and PCD tooling to its original factory quality, condition and performance.



This end mill arrived with heavy chipping on the flute end (left). Guhring Reconditioning restored a correct cutting edge (right). The result: Greatly extended tool life and significant cost savings.

Guhring's Reconditioning Division is staffed with its own customer service team, allowing for extraordinary and personalized service. Combined with our in-house coating chambers, our two U.S. locations – Brookfield, WI and New Hudson, MI – we are in a unique position to provide unmatched quality and service. Complimentary pickup and delivery is available to customers in southern WI, northern IL, and parts of MI and OH.



- High-precision CNC grinding machines
- Personalized customer service
- Reconditioning and coating at one facility
- Three U.S. locations; quick turnaround

As a cutting tool manufacturer, Guhring offers a level of coating expertise without equal in the industry. Guhring was the first to introduce TiN coating (Titanium Nitride) to cutting tools in 1980 and has remained a global leader in developing and applying new coating technology to improve both cutting tool and wear part performance. Today, Guhring offers a full range of high performance PVD (Physical Vapor Deposition) coatings to meet customers' diverse needs, including:

- **TiN** (Titanium Nitride)
- **TiCN** (Titanium Carbonitride)
- **TiAlN** (Titanium Aluminum Nitride)
- **FIREX**® (special TiN-TiAlN multilayer hard coating)
- **Super-A**™ (Aluminum Titanium Nitride)
- **MolyGlide**® (Molybdenum Disulfide-based soft coating)
- **nano FIREX**® (microlayer TiN-TiAlN multilayer hard coating)
- **nano-A**™ (microlayer AlTiN - TiAlN Multilayer)

Performance benefits include: significantly increased tool and part life, reduced friction and heat buildup, and high resistance to edge buildup, galling and fissure propagation.



# GUHRING

## The Tool Company

## Tooling for Composites and Aerospace Materials

- Diamond coated, carbide and PCD tools
- Routers, drills, taps and end mills
- Full special design capabilities

### GUHRING®

the Tool Company

[www.guhring.com](http://www.guhring.com)

ISO 9001:2000 CERTIFIED

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Item # 400001042



# Aluminum

## Stock Standard Drills



**RT150GG straight-flute carbide drills - Series 768, 769, 5513**  
Self-centering point geometry has 120° cone relief point. Rigid, straight flute design allows for aggressive feed rates while maintaining excellent hole concentricity and straightness in high silicon aluminum (>10% Si) or other short-chipping material. Bright finish, reinforced shank. Available from 0.118- 0.787" (3.0- 20.0 mm) dia.



**GS200 3-flute carbide drills - Series 1452 and 5518**  
Reamer class finish is possible with the GS200 style drill. Three flutes for aggressive material removal and added stability in the cut. This 5xD drill is also excellent for uneven entry or exit, as well as interrupted cuts. Available from 0.118-0.787" (3.0-20.0 mm) dia.



**NEW**

**RT800WP/HT800WP indexable insert drill**  
Ultra-fine grain carbide inserts feature an aggressive 140° SF point which reduces axial thrust loading and is freer cutting. The self-centering point geometry produces a narrow, easily evacuated chip. One body can be used with multiple inserts, providing flexibility and cost savings. Inserts available in dia. from 0.452-1.594" (11.5 - 40.5 mm).

## Stock Standard End Mills



**NEW**

**RF 100 A/WF variable helix roughing end mills for aluminum and aluminum alloys - Series 3468 and 3470**  
Three flute end mills designed for maximum metal removal rates. The 29°/30°/31° variable helix angles considerably reduce vibration and improve performance in roughing applications. Available in metric diameters from 6mm to 20mm, bright finish.



**GH 100 U Finish-Tech 50 multi flute end mill with corner radius - Series 3112**  
Micro-corner protection geometry combined with a reinforced and corrected minor cutting edge greatly reduces wear, and extends tool life. Corner radii options add to the versatility of this design. Available in diameters from 6mm to 20mm, bright finish.



**Rough-Tech ALU Mills with and without coolant through Series 3364 (Series 3184 and 3884 have external coolant)**  
Three flute, center-cutting, square-end mills with a 30° right hand helix. Coolant fed for maximum coolant removal. The extra course tooth design provides superior material removal rates. Available in metric diameters from 6mm to 20mm, bright finish.

## Stock Standard Taps



Guhring premium grade cobalt taps are available for forming and cut thread applications. DIN and ANSI style designs available in UNC, UNF, and Metric thread specifications. An easy to use color ring designation system allows machinists to quickly identify the correct tap for their application. Coolant fed and STI taps are also available from stock.



Form (fluteless) taps are also available from stock. Thread forming through pressure deformation has multiple benefits; see the full-line High Performance Tap catalog for details.

# Stainless Steel, Titanium and Nickel Alloys

## Stock Standard Drills



**RT 100 VA drills, designed for stainless steels and titanium alloys - Series 8510 (3xD), 8511 (5xD)**  
Specialized facet-style self-centering point geometry promotes free cutting action, and the unique cutting edge and flute form aid in controlled chip formation. Coolant fed, and nano-A™ micro thin-film coated for extended tool life. Available from 0.118-0.787" (3.-20mm) dia.



**Coolant fed micro-precision drills - Series 60648 (8xD), 6412 (15xD)**  
Exclusive Line Micro Drills feature a precision ground hone for improved repeatability and extended tool life. The drills have a 135° 4-facet point, and are made from Guhring's own ultra-fine grain carbide. TiAlN coating increases the tool surface hardness to over 100 Rc, while providing added heat resistance. Available from 0.055-0.1188" (0.8-3.0mm) dia.



**NEW**

**RT800WP/HT800WP indexable insert drill for Aerospace alloys**  
Ultra-fine grain carbide inserts feature an aggressive 140° U point which reduces axial thrust loading and increases metal removal rates. The point geometry is self-centering and produces a narrow, easily evacuated chip. Coolant fed body can be used with multiple inserts. Inserts available in dia. from 0.452-1.594" (11.5 - 40.5 mm).

## Stock Standard End Mills



**RF 100 VA/NF variable helix rougher/finisher for stainless steels - Series 3081, 3696, 3718**  
Four flute, center-cutting end mills with a 36°/38° helix. Variable helix angles reduce vibration and allow higher feed rates. Specialized NF tooth profile greatly improves tool life and surface finish. Available in inch diameters from 1/4 to 1", and metric sizes from 6mm to 25mm, in heat-resistant nano-A™ coating.



**RF 100 VA variable helix end mills for stainless steels - Series 3080, 3804, 3805**  
Variable 36°/38° helix end mills designed specifically for the challenges of stainless steels. Micro edge protection adds to tool life, and Guhring's high-performance nano-A™ coating provides exceptional heat and wear resistance. Available in inch diameters from 3/16 to 1", and metric sizes from 4mm to 20mm.



**RF 100 Ti variable helix end mills for Titanium and Nickel Alloys with Corner Radius - Series 3876**  
Standard corner radius designs are available as stocked items in both fractional and metric sizes. Variable 35°/38° helix end mills designed for aerospace alloys; nano-A™ coating provides exceptional heat and wear resistance. Available in inch diameters from 1/4 to 1", and metric sizes from 6mm to 25mm.

## Stock Standard Taps



**NEW**

**Powdered metal cobalt taps for Titanium and Nickel Alloys - Series 2922, 2912, 2918, 2919**  
Newly redesigned cut taps excel in both nickel and titanium alloys; TiCN and TiAlN coatings provide extended tool life. Available in through hole and blind hole styles, UNC, UNF, Metric and Metric Fine series.



**Powdered metal cobalt taps for Stainless Steel - Series 3907-3911**  
Blue ring powdered metal cobalt taps are designed specifically for stainless steel, and are available in spiral point and spiral flute designs. These TiN coated taps provide superior thread quality and tool life.

# Specials

## Special Tools for Composite Materials

Guhring designs and manufactures special PCD and carbide tooling for composite and other aerospace materials in Brookfield, Wisconsin. We have the capacity to manufacture to customer specifications or we can utilize our highly experienced engineering staff to design tooling to meet customer requirements. Guhring not only manufactures new tools but also offers re-tip and recondition service for rejuvenating worn tools quickly and efficiently in our state-of-the-art manufacturing facility.



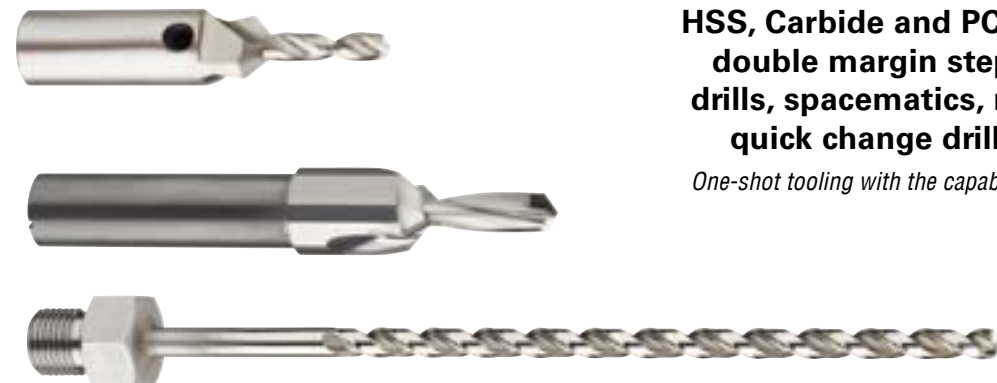
**PCD Specials - Multi-flute routers, drills, one-shot drill/countersinks, piloted countersinks, countersinks and reamers**



**Carbide Specials - Drills, step drills, FK drills, reamers and core drills one-shot hand drills, tools for one-shot drilling with air motors**

## Special Tools for Aluminum Applications

Guhring offers a complete line of stocked standard as well as specialized tool designs for aluminum applications. Many of the worlds leading aerospace manufacturers use Guhring tools including NAS styles for high volume production drilling, along with threaded and quick change shank designs. Guhring manufactures a wide range of high speed steel, M2, M35 and M42 grade cobalt drills as well as carbide tools with and without coolant holes for precision manufacturing.

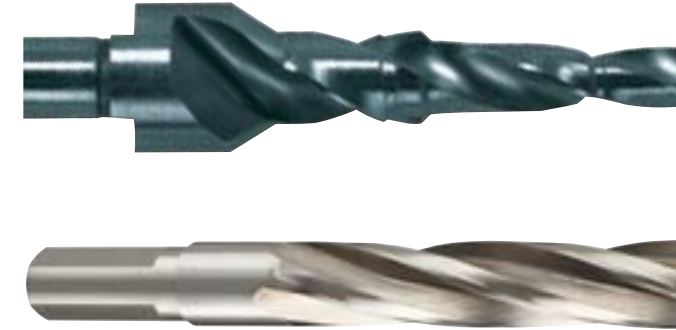


**HSS, Carbide and PCD Specials - NAS drills, double margin step drills, reamers, core drills, spacemats, nutplate, threaded and quick change drills, drill/countersinks**

*One-shot tooling with the capability of holding 0.001" hole tolerance*

## Special Tools for Stainless, Titanium or Nickel Applications

As one of the largest manufacturers of special design cutting tools in North America, Guhring has the capacity and expertise to handle all your blueprint special requirements. Production facilities in Brookfield, WI and New Hudson, MI are equipped with the most modern CNC grinding equipment, many of which are designed and built by Guhring to our unique and exacting specifications. Whether your requirements call for drills, reamers, end mills, taps, countersinks or counterbores, Guhring has the capability to meet your needs.



**HSS and Carbide specials - NAS drills, double margin step drills, reamers, core drills, spacemats, nutplate, threaded and quick change drills, drill/countersinks**

*One-shot tooling with the capability of holding 0.001" hole tolerance*

## Special Tools for Stacked Material Drilling

Guhring offers specialized tool designs for drilling stacked materials. This includes variations in layers of composite, aluminum, stainless and titanium. Guhring has developed one-shot tooling for applications that typically require reaming operations in CNC and air motor applications.

## Research and Testing Capabilities



Guhring's commitment to constantly develop and improve our tooling designs is enhanced by our in-house ability to run test cuts on equipment dedicated solely to research and to training. Customers may send in material, along with part requirements, allowing Guhring to develop and test cutting tools to best suit their needs.

