Reconditioning Process Review
Reconditioning Process Review
On-site reconditioning process assessment

Reconditioning of cutting tools is more than just shipping a box of tools to-and-from Guhring. A professionally designed reconditioning program can reduce the cost of reground tools and increase the efficiency of the process. Guhring territory managers can provide our your company with the option of a comprehensive survey and review of your current tool reconditioning approach which we refer to as a Reconditioning Process Review. A successful Reconditioning Process Review will provide you with a comprehensive critique of current practices and a written savings proposal from Guhring.

A Guhring Reconditioning Process Review begins with a meeting between a Guhring Territory Manager and the crib attendant, tool coordinator or cell operator. Guhring provides an interactive Reconditioning Process Review form that walks you through a step-by-step analysis of their current reconditioning process and then provides alternative suggestions for process improvement and cost savings. When conducting a Reconditioning Process Review, a Guhring Territory Manager is tasked with the following:

- Advise the types of tooling that Guhring’s reconditioning program is designed to handle.
- Calculate the economical lot sizes that will save the customer money.
- Describe when to pull used tools from operation before they are excessively damaged.
- Review minimum flute and diameter specifications that the customer requires.
- Review acceptable margin wear or damage with the customer.
- Suggest alternate point grinds to help save money.
- Review corner radius blend requirements to reduce cost.
- Provide information about our scrap carbide program.
- Explain how best to properly package worn tools.
- Review shipping options such as totes, van pick-up, and priority mailing.

The Territory Manager completes a Reconditioning Process Review form and submits it electronically into Guhring’s database. A copy is provided to the customer while the original information is sent to the reconditioning customer service representatives at Guhring. The information is then reviewed internally with the Guhring Territory Manager and a service plan is developed.

Once a service plan is established, a reconditioning center service representative will contact the customer to finalize a program.
Guhring provides the same level of quality and attention to detail in reconditioning tools as we do in brand new tools. All of Guhring’s reconditioning facilities are owned and operated by Guhring using only state-of-the-art grinding, coating and inspection equipment. Many tool manufactures sub-contract their regrinds to “authorized” facilities. Guhring has made a commitment to our customers to provide Guhring quality. The same process controls that we use in manufacturing new cutting tools are incorporated into our refurbishment process. Trained reconditioning specialists take pride in providing you with the most reliable reground cutting tools to help reduce manufacturing costs and improve your productivity.

ON-LINE QUOTATION
Visit www.guhring.com/productsservices/toolreconditioning/ to receive more information or get an on-line quote.
Pre-Grind Inspection

- Tools are received and sorted by size and geometry.
- Guhring recommends that the customer supply a listing of key features that must be inspected before work is started. Features such as:
  - Minimum required flute length
  - Minimum required overall tool length
  - Maximum allowable flute/margin damage
  - Minimum allowable diameter
  - And others…
- Tools are inspected. Tools that are damaged beyond repair are segregated as scrap.
- Scrap tools are identified, grouped and returned with our ISO standard "Problem & Disposition Report" form with the reasons for not reconditioning the tools identified.
- Scrap tools are returned to the customer with the completed order.
- Scrap tools & Problem and Disposition Report are returned in a sealed plastic bag.
- Tools deemed acceptable for reconditioning continue to our computerized etching machine where a unique job number is laser etched to the shank of the tool for traceability throughout the reconditioning process.
Traceability

All tools are laser marked with the actual production order number on the shank for traceability.

- Each tool is laser etched before each reconditioning.
- Unique job number is affixed directly on the tool shank.
- Job number allows accurate data collection & tracking, and this allows the customer to identify the number of regrinds per tool.

Process Control

The same procedures and equipment that are used in the manufacturing of new tools are implemented in the reconditioning of used tools. Tools are tracked and monitored by tool number and bar coded production sheets.

- Job routings assigned by tool number
- Bar coding of each job for routing
- Data collection at each station

All processes are monitored by our SAP® computer software. Information can be shared between all Guhring reconditioning facilities, and tools can be located anywhere in the facility.

- Archived job information
- Repeatability & traceability
Precision Grinding

Worn cutting tools are reconditioned on new, state-of-the-art, 5-axis CNC grinding machines. Guhring is one of the few cutting tool manufacturers that design and build their own grinding equipment which allows us to build machines specifically designed for the specialized requirements of a reconditioning process.

Meticulous care is taken to insure quality results. Oil temperature and filtration is closely monitored and maintained throughout the process.

**Carbide Drills**

- High Penetration Rate Drills
- Straight Flute “G” Drills
- General Purpose Drills
- Spot Drills

**Carbide End Mills**

- Variable Helix
- Variable Flute Space
- Square and Ball Nose
- Corner Radius Designs
- General Purpose End Mills

**PCD Drills, Reamers, End Mills and Counterborers**

**Other types of rotary cutting tools quoted on request...**

![Image of reconditioned end mill](image.png)

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.
Verifying critical dimensions is always a part of any successful reconditioning operation. Guhring checks not only good point angles and lip relief angles, but we also have the capabilities to closely inspect all features of the cutting tool. In certain applications, applying the proper cutting lip hone width can dramatically affect the performance of a reconditioned tool. Guhring has the ability to accurately apply and then inspect cutting lip hone widths. This is just one example of how Guhring goes above and beyond when it comes to ensuring quality-reconditioned tools.

Operators follow an ISO approved, first piece inspection form to verify dimensions. Guhring also follows an “inspection control plan” to monitor critical features throughout the entire lot of tools.

- Precise inspection guidelines
- Trained inspectors
- State-of-the-art inspection equipment
Guhring PVD Coatings

GUHRING is a renowned specialist for application optimized high-performance coatings. As the first tool manufacturer world-wide to provide tools with a TiN-coating in 1980 by continuous improvement we have made them considerably more wear-resistant. To date, GUHRING consistently keeps setting pioneering tooling technology trends. The extremely hard nano-Si coating or the ultra-thin nano-A coating are only a few of the many examples.

Our world-wide service centers work to uniform standards and processes to ensure that our customers’ tools can always be re-coated one hundred percent true to the original. Plus: We also coat tooling products from other suppliers as well as functional components from a wide range of industries.

The result: Increased performance and longer tool life.
You too can rely on optimal tool wear protection made by GUHRING.

<table>
<thead>
<tr>
<th></th>
<th>TIAIN A</th>
<th>ATIN Super A/nanoA A</th>
<th>TiCN C</th>
</tr>
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<tbody>
<tr>
<td>Color</td>
<td>violet</td>
<td>grey-violet</td>
<td>grey violet</td>
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<tr>
<td>Hardness</td>
<td>3200 HV</td>
<td>3400 HV</td>
<td>3000 HV</td>
</tr>
<tr>
<td>Friction coefficient</td>
<td>0.55</td>
<td>0.6</td>
<td>0.4</td>
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<tr>
<td>Max. application temperature</td>
<td>&lt; 800°</td>
<td>&lt; 900°</td>
<td>&lt; 400°</td>
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<td>7.2 * 10^-6 /K</td>
<td>6.9 * 10^-6 /K</td>
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</tr>
<tr>
<td>Brief description</td>
<td>Hard coating for abrasive applications, HPC and MQL</td>
<td>Hard coating for difficult and hard machining, HPC as well as MQL</td>
<td>Tough hard coating</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>FIREX/nano-FIREX F</th>
<th>TiN/TiN+ S+</th>
<th>nano-Si Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>violet</td>
<td>golden yellow</td>
<td>bronze-red</td>
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<tr>
<td>Hardness</td>
<td>3300 HV</td>
<td>2300 HV</td>
<td>5500 HV</td>
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<td>Friction coefficient</td>
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<td>&lt; 600°</td>
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<td>Thermal expansion</td>
<td>–</td>
<td>9.3 * 10^-6 /K</td>
<td>7.5 * 10^-6 /K</td>
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<tr>
<td>Brief description</td>
<td>Wear-resistant multi-layer coating, also for MQL</td>
<td>Cost-efficient standard coating</td>
<td>Extremely hard, heat-resistant multi-layer coating</td>
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</table>
This table provides general recommendations for optimum tool and part performance with Guhring high performance TiN, TiCN, TiAIN, FIREX®, nano-FIREX®, MolyGlide®, Super-A®, nano-A®, and nano-Si® coatings. Coatings can be applied to high speed steel, stainless steel, tool steel, carbide and other materials. You may also contact your local Territory Manager or Guhring’s Coating Division for coating recommendations. Guhring’s Coating Division coats many types of tools and wear parts, including:

- drills
- reamers
- taps
- countersinks
- end mills
- milling cutters
- hobs
- inserts
- punches
- dies
- forming tools
- gears
- pistons
- die casting molds and components
- plastic injection molds and components

<table>
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<tr>
<th>MATERIAL</th>
<th>Drilling</th>
<th>Turning</th>
<th>Milling</th>
<th>Tapping</th>
<th>Reaming</th>
<th>Broaching</th>
<th>Stamping</th>
<th>Deep Drawing</th>
<th>Forming</th>
<th>Injection Molding</th>
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<td>TiAIN</td>
<td>nano-Si®</td>
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The Complete Solution

Customers that are looking to control new and reconditioned cutting tool costs are turning to Guhring for tool management solutions. Guhring offers a tool management vending solution that is uniquely programmed to dispense and track reconditioned tooling along with new cutting tools. These vending systems allow end users to reduce their cutting tool expenditures by optimizing the use of reconditioned tooling in their manufacturing process. Guhring’s fully customizable software monitors cutting tool usage and tracks consumption.

• Reconditioned tools can be programmed to be dispensed before new tooling.
• Worn cutting tools are returned to the vending source and when economical lot sizes are reached, the customer is notified and tools are then sent to Guhring for reconditioning.
• Customizable reports track usage by department or machine.
• Reconditioning vending machines can be integrated with existing tool vending machines.

Contact Guhring for more information, or visit:

www.guhring.com/ProductsServices/ToolManagement/
Reconditioning Facilities

Brookfield Distribution Center and Reconditioning Facility
1445 Commerce Avenue
Brookfield, WI 53045
Tel (262) 784-6730 (800) 776-6170
Fax (262) 784-9096

California Distribution Center and Reconditioning Facility
15581 Computer Ln
Huntington Beach, CA 92649
Tel (714) 841-3582
Fax (800) 877-7202

Connecticut Reconditioning Facility
121 W Dudley Town Rd.
Bloomfield, CT 06002
Tel (860) 216-5948
Fax (860) 519-5819

Michigan Manufacturing and Reconditioning Facility
29550 W.K. Smith Rd. Suite B
New Hudson, MI 48165
Tel (248) 486-3783
Fax (248) 486-0046

All four Guhring Reconditioning Facilities have coating capabilities as well.