



ADVANCED SPINDLE REPAIR: QUALITY AND RELIABILITY

TOOL HOLDER SPINDLES FOR MANUAL CHANGE OF TOOLS - GRINDING SPINDLES

Spindles are essential for machining operations such as cutting, drilling, milling, and grinding. Mounted on rotating shafts and driven by motors, they transform raw materials like metal, wood, and composites into finished products.

These components can face challenges ranging from deflection, deviation, and instability due to inconsistent cutting forces or inadequate tool holding, resulting in imprecise and low-quality machining. Issues such as overheating, evidenced by abnormal temperature readings and fluctuations, can indicate significant deterioration. Recognizing these signs and repairing them appropriately can minimize production downtime, optimize productivity, and extend the lifespan of our tools and CNCs.



**GUARANTEES
PRECISE
OPERATION**



Visual Inspection:

Our team of experienced engineers meticulously examines all equipment for visible signs of wear, damage, or deformation. The presence of chips, cracks, excessive edge wear, and other irregularities that could affect performance is checked.

Disassembly:

This procedure is carried out by a detail-oriented team of professionals. We understand that proper disassembly techniques are crucial to ensure no components are damaged at this stage, as this could lead to excessive repair time.

Damage Report:

A thorough damage report details the issues affecting the spindle in question, highlighting the areas that require the most attention during the repair process to restore optimal functionality and performance.

Repair Quote:

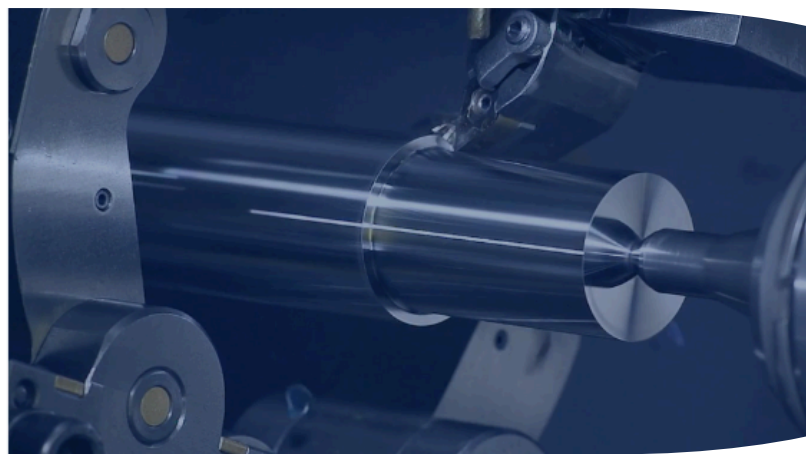
Based on the report, a quote is created based on the extent of the damage and the specific repairs needed for each spindle. Once the quote is approved, the repairs are scheduled, necessary parts are ordered, and the delivery date is estimated.

Refurbished Parts:

We carefully inspect each component of the spindle, including inserts, cutting edges, bearings, and shafts. Any damaged or worn parts are refurbished in our facility to meet quality standards. Parts that cannot be restored are replaced with new ones.

Ultrasonic Cleaning:

In machining operations, spindles are often exposed to coolant mists, airborne dust, chips, and other debris generated during cutting processes, making it essential to clean all spindle components using appropriate solvents and cleaning solutions to remove dirt, debris, and residues.



Balancing:

We use dynamic balancing equipment and detailed instructions to achieve an optimal spindle balancing tolerance, which is essential for reducing vibration and extending the life of the tool. All rotating components are pre-balanced to G1 tolerances to ensure the spindles have the lowest vibration level possible.

Finishing Process:

Our team of experts reassembles the spindle, ensuring that all components are correctly aligned. The reassembly process follows the manufacturer's specifications or assembly instructions to ensure the correct placement and orientation of parts. The exterior of the spindles is then polished to ensure they are in like-new condition.

Testing and Calibration:

After reassembly, our team of engineers tests the spindle tool to ensure proper functionality and performance. The testing and calibration steps are performed to OEM standards. All spindles are tested at maximum operating RPM and dynamically balanced to ensure the lowest possible vibration level. Drawbar position sensors are set, and pull force is measured. Radial runout of 2 microns and axial runout of 1 micron is guaranteed after repair.



Shipping and Documentation:

At the end of the repair process GMN USA produces detailed records, including inspection findings, replacement parts, maintenance procedures, and test results. This information helps track the history of the spindle tool and facilitates future maintenance and troubleshooting efforts.



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The critical importance of spindles in machining operations highlights not only their fundamental role in transforming raw materials into high-precision finished products but also the significant challenges they face, such as deflection, deviation, and instability. These problems can compromise machining quality and operational efficiency if not properly managed.

Our repair process not only addresses these challenges with meticulousness and precision but also guarantees the optimal restoration of each spindle. From the initial inspection to the final testing and detailed documentation, each step is designed to maximize reliability, prolong lifespan, and optimize the performance of CNC tools and equipment.

Discover how our specialized services can improve productivity and reduce downtime, ensuring that your machining operations reach new levels of efficiency and quality.



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