

# Rebuilding

■ *Revitalizing your machinery to its original perfection*

At MTB, we look at revitalizing your machinery as an art form, not unlike restoring a classic car to its original glory. Unlike a car restoration, however, your machine is upgraded with the most current features and state-of-the-art technology, making it better than before.

## MTB offers two rebuild options.

### Option A: Rebuilt to OEM Specifications

*The machine is rebuilt to its original equipment specifications; the way the machine operates and the mechanical assemblies remain largely as they were prior to the rebuild. Obviously, there is some room for improvement, which generally occurs as a result of using more reliable, faster and modern components in the rebuild, but generally the machine is returned to its “like*



Before



After

*new” condition. For example, old relays might be replaced with a modern PLC that does the exact same job.*

### Option B: Advanced Rebuild (Remanufactured)

*The machine is rebuilt and recontrolled, replacing, as much as possible, the mechanical linkages, gearing and other driving mechanisms with new, modern servo drives and electronic controls via CNC or PLC motion cards. The reduction in the number of bearings, seals, shafts and other mechanical elements translates to fewer mechanical wear areas and a more reliable, accurate machine.*

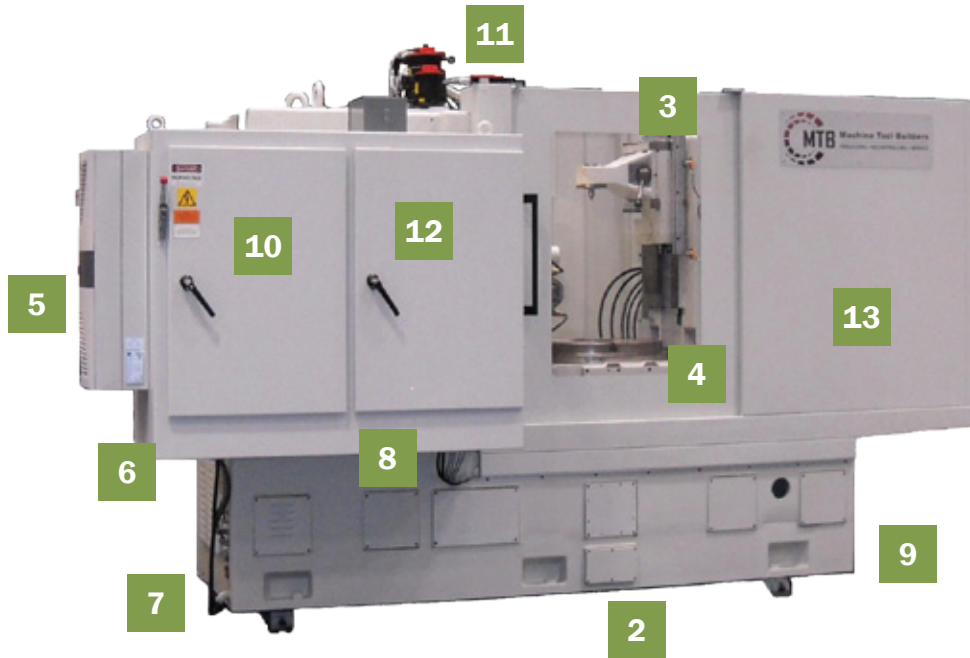
During MTB’s meticulous 16-point process, nothing is left untouched. Every active component is upgraded, every mechanical piece carefully inspected and replaced or repaired, from the hydraulics and electrical to drive trains and CNC. Even the paint is a special two-part Aliphatic Urethane Gloss Enamel from Glidden.

*Whether you choose to completely remanufacture your machine or retrofit it, MTB provides the utmost in expertise, experience and service.*



# 16-Point Process:

The Rebuilding Process Breakdown

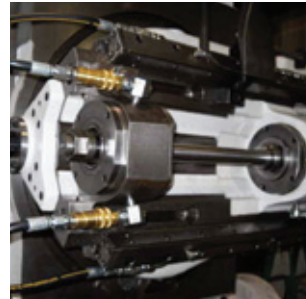


## 1 : CLEANING

First, the machine is completely disassembled and each piece thoroughly cleaned, either by hand-scraping or -grinding, or by blast-freezing with CO2 and blowing off the frozen oil, sludge and debris. This process ensures a totally clean, dry surface. Engineering is already at work, designing the mechanical and control features, utilizing 3-D modeling software.

## 2 : GENERAL MECHANICAL

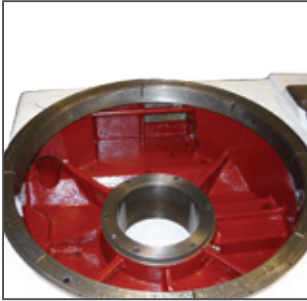
All way surfaces are refinished, either by hand scraping or grinding. Turcite material on the slide underside is used to restore proper alignment with the drive shaft and screw, plus to provide low friction slide.



## 3 : HEAD AND SPINDLE

Next, head and components are thoroughly cleaned and inspected, and spindle, outboard and internal bearings are replaced, along with seals and gaskets. Geometric alignments of spindle(s), axes, outboard bearings, and tooling are performed to ensure true square precision performance.

## The Rebuilding Process Breakdown

**4 : WORKTABLE**

Now, the table is disassembled and all parts are inspected for wear. Final drive parts are inspected for spacing errors and contact, and the table is then reassembled with the proper lash set. The column and machine base are assembled, radial/axial slide scraping is completed, and the table housing readied for reassembly.

**5 : HYDRAULICS**

Hydraulics is overhauled, including A) hydraulic pressure valves; and B) hydraulic pumps. MTB installs new or rebuilt hydraulic pumps, hoses, pressure switches, pressure reducing valves, flow controls and pressure regulators.

**6 : LUBRICATION**

New lubrication valves, pumps, meter blocks, hoses and feedback are installed.

**7 : COOLANT**

All coolant components, such as pump, motor, hoses and nozzle, are replaced or repaired.

**8 : GUARDING**

All guarding is returned to its original configuration and function. If guarding is damaged, requires modification for splash protection from coolant, or affects aesthetic, new formed panels are designed and manufactured.

**9 : CHIP EXTRACTION**

Chip conveyors of various designs and performance configurations are cleaned of swarf, chips and metal particles. Then, all parts, including upper and lower curves, belt rollers, and hinge pins are inspected for wear.

**10 : ELECTRICAL**

A new electrical cabinet is installed, with all new equipment inside: motor starters, relays, power supplies, transformers, terminal strips and more; all are tagged and identified. Since panel building and wiring practices are very critical for integrating controls, MTB is meticulous in its details for control layout and

## 16-Point Process *continued*

wiring methodology. All new machine wiring is run throughout both the main and auxiliary equipment. New feedback systems, glass scales and encoders for all axes are installed.

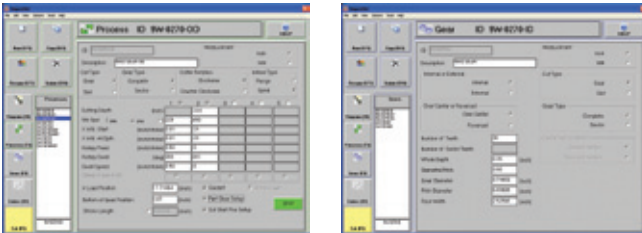


### 11 : CONTROL

MTB offers two control platforms from these manufacturers:

- Computer Numerical Controls (CNC), from Fanuc, Siemens, and NUM
- Programmable Logic Controls (PLC), from Allen-Bradley, Siemens, and Square D

A Color Monitor Display allows for easy previewing of instructions and part data. Using Digital Servo Drives and Motors, MTB transforms mechanical gear-driven machines to motorized servos with multiple axes and spindles using CNC controls. Eliminating the mechanical differential, indexing gearboxes, change gear and/or gear set to accommodate a motor configuration, allows for multi-axes execution, which provides precision accuracy in cutting.



### 12 : SOFTWARE

CNC: This platform offers two types of software, PLC and Conversational Programs. PLC programs run the machine functions, such as tailstock up/down, fault messages and safety interlocks. Conversational Program software is the operator interface for entering the gear and process data, allowing for quick and easy programming on the shop floor. MTB excels in this area, as the HMI is created for operator friendliness with practical features. M&G code format cycles are still possible to use.

### 13 : PAINTING

For withstanding industrial coolants and oils, MTB chooses a professional, two-part paint from Glidden. The EuroTherm 379UVA Aliphatic Urethane Gloss Enamel is more expensive, but provides an excellent and durable finish.

### 14 : DOCUMENTATION

MTB supplies new drawings that show the new components and how they are connected to the machine, along with new manuals and supporting documentation for the maintenance department.

### 15 : RUNOFF

MTB cycles the machine for a 24-hour period, to verify its reliability. Parts are cut and verified.

### 16 : TRAINING

MTB provides operator and maintenance training following completion of the installation. Typically, training takes two to three days, although some companies prefer one week, to ensure that all shifts are adequately trained.

