SG80MTS
Heavy Duty Cylinder Head Machine

Machining Equipment
Created for Performance Racing & Engine Remanufacturing.

So Advanced, It’s Simple.
The Rottler SG80MTS was specifically designed for machine shops that rebuild small to large cylinder heads found in the heavy duty engine industry. Large cylinder heads come in many shapes and sizes – from 24 valve single casting cylinder heads to huge single cylinder heads used in natural gas, mining and marine workboat engines. Rottler spent several months visiting cylinder head rebuilders around the globe and went about using our proven engine block machining technology to design a heavy duty machine that handles many operations required on a wide variety of cylinder heads.

We believed that many large cylinder heads could be “plunge cut” with fixed tooling as this process is very fast and low cost. We realized that plunge cutting would require a very rigid machine and were able to utilize many of our trusted design features such as Rottler’s exclusive spindle design. Rottler’s spindle design has proven over decades that our engine block machines are able to “plunge cut” wide counterbores found in large engine blocks with excellent results. The SG80MTS is capable of plunge cutting large valve seats very quickly and with excellent CONCEN and surface finish results.

### Proven Rottler Spindle Design

Large Diameter Precision Spindle has R40 Taper with Quick Change Self-locking Spindle Adapter System. Tooling never comes loose and no wrenches are required to change tools. Rottler’s Unique Heavy Duty Tooling allows large and wide Valve Seats to be machined to accurate Concentricity. Solid Carbide Pilots offer maximum rigidity and long life for years of precision machine work.

### Oversize Valve Seat Insert Rings

The SG80MTS is ideal for boring housings for oversize valve seat insert rings. Rottler manufactures special adjustable cutterheads with quick change driver. Water cooled valve seats require 2 diameters to be bored with accurate CONCENTRICITY to prevent any water leakage. These cutterheads can be preset and used to bore both diameters.

### UNIPILoT Tooling

The UNIPILoT tooling system allows the carbide centralizing UNIPILoT to work like a live pilot. It stays in the spindle while moving from valve guide to valve guide, but all at the same time has a fixed pilot design to give improved concen.

### Multi Angle Seat Cutting

Rottler’s Precision CNC Ground Fine Grain Carbide Seat Cutting Inserts are available in many different designs to suit customer requirements. Single angle, multi angle or curves and radius shapes are available. Cutting tools are substantially faster and less expensive than grinding, where a different grinding stone is required for each angle.

### Storage Cabinet

Three Drawers and Top Tray allow for convenient storage of wide selection of tooling available from Rottler.

### Built in Vacuum Tester

For quick checking of valve seats before removing the cylinder head.

### Optional 360 Degree Rollover Fixture

Provides quick loading and easy access to all sides of the head. Quickly levels head using the micro adjust feature. Fixture floats on an air cushion for quick, easy setup with both hands.

### Rigid Machine Construction

Heavy thick wall cast iron machine castings and precision machining during the manufacturing process give excellent chatter free valve seat cutting. Heavy duty cabinet/base extended to the rear for safe handling when machine has to be moved.

### Foot Clearance

Foot clearance under the machine for the operator’s comfort.
Unipilot
The Speed of Live and the Accuracy of Fixed

Rotlier Unipilot (patent pending) tooling loads securely into the Rotlier Automatic Quick Clamping System holding the tooling in the spindle without the need for wrenches.

The Unipilot Tooling System allows the carbide centralizing Unipilot to work like a live pilot. Unipilot Tooling stays in the spindle while moving from valve guide to valve guide. Rotlier Unipilot Tooling has a fixed pilot design to improve CONCEN eliminating clearance found in live pilots.

The lower taper on the spring loaded Unipilot easily enters the valve guide. The spring loaded upper area fixes and centers in the valve guide automatically eliminating clearance between the pilot and guide.

After cutting the valve seat, the spindle rises automatically when Manualmatic control is utilized. The Unipilot rises with the spindle ready to float over the head gasket fire decks in position to enter the next valve guide.

Unipilot, Powered By Manualmatic, creates accurate seat and guide work fast. Operators maintain Steering Wheel contact releasing only for the instant required for the floating Workhead to lock down automatically centered in the guide.

Manualmatic is designed for operators that are accustomed to standard manual equipment. Rotlier has created a Touch Screen that is easy to operate on day one. Manual controls are simply placed on the Touch Screen and operators push screen buttons that mirror manual operation. The SG80MTS can be learned quickly even if operators have little computer experience. Manualmatic Mode combines standard seat and guide machining steps for efficiency and improved accuracy. So Advanced, It’s Simple.

The CONCEN trademark is Rotlier’s promise of quality. CONCEN creates the most accurate and versatile seat and guide machines on the market today. The centering action of Rotlier’s Precision Carbide Unipilot System, supported on our balanced air float work head, give perfect centering in the valve guide. The Rotlier combination creates the best CONCEN of valve seat to valve guide in the industry.

Rotlier Manualmatic automates repetitive manual operations into one Manualmatic process. Unipilot Tooling, powered by Manualmatic, produces the best CONCEN in the industry.

After entering your seat or guide requirements on the user friendly Touch Screen, a quick touch off and zeroing initiates Manualmatic operation. With zero set, Manualmatic manages spindle speed transitioning to finish RPM automatically.

Unipilot Tooling works in conjunction with Manualmatic to automate CONCEN. Finish machining completes and the Workhead floats automatically. Operators move the Workhead effortlessly on a cushion of air to the next operation allowing the patented Unipilot tooling to easily center into the next guide ready for Manualmatic to accurately repeat the process.

Workhead lights illuminate heads and flash intuitively when the Digital Depth Gauge senses the entered spindle height. Buzzers are replaced by bright LED lights improving operator efficiency. Manualmatic eliminates foot pedals and combines final lowering, roughing, finishing, raising and Workhead Float into one automated Manualmatic process! Operator hands stay on the Wheel driving maximum performance.

Modular Carbide Centralizing Pilot
Rotlier offers a Modular Carbide Centralizing Pilot System for very large engine applications with valve guides larger than .875” (22.23mm) diameter. This system is versatile as it allows the use of different size sleeves which are adjustable for different lengths and diameters of valve guides.

Universal Chuck
Universal Chuck can be used for odd jobs like drilling out broken bolts and tapping threads.

Fire Ring Groove
Special cutterhead for machining fire ring groove in head gasket surface. Can also be used to bore large valve guide housings/bores.

Triangle Tool Holders
Indexable Triangular Coated Carbide Tool Holders in 10, 20, 30, 45 degrees. Ideal and economical when cutting only one seat angle and for boring our old inserts and boring new insert housings.

CBN Cutting Inserts
CBN triangular cutting inserts are now available for cutting extremely hard valve seat materials found in natural gas, biogas and alternate fuel engines.

Digital Boring Micrometer
Accurately set boring diameter to any size with single blade adjustable cutting inserts and tooling for boring valve seat housings for new seat rings.

TOOLING & ACCESSORIES
**Quick Action Air Float/Air Clamp Roll Over Fixture**

Adjusts effortlessly along parallels on air cushion and clamps with the flick of a switch. This dual purpose and can be used as 360 Degree Roll Over Fixture for smaller heads or Quick Clamp for larger single cylinder heads such as CAT3600. Digital level and fine adjustment system allow valve guides to be leveled accurately and rigidly clamped in seconds for heavy duty cutting during machining.

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**Multi Head Fixture**

Three, four, five or six single cylinder heads can be set up at once in the 360 degree roll over fixture allowing machine work on all faces of the cylinder heads. Cylinder heads are located with reference to their head gasket fire deck surface so that all valve seats are machined to equal depth automatically — every time.

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**Adjustable Air Float and Air Clamp Work Table**

The large worktable of the SG80MTS consists of two 68" (1730mm) long parallels that are mounted on an air floating and air clamping base. These extra long T-slot parallels allow a wide variety of fixtures and jobs to be set up for machining. The complete table and fixture assembly is easily adjusted in/ out with air float and locked rigidly with air clamping allowing cylinder heads with four valves per cylinders to be adjusted in/ out and machined without any resetting of the cylinder head in the fixture – just press the foot pedal to float the table, slide in or out and the table locks in position ready for machining!

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**360 Degree Rotation of Large Cylinder Heads**

Many cylinder head rebuilders asked us that they need to rotate cylinder heads 360 degrees to be able to do machine work on all sides of the cylinder head such as injector tube or spark plug work, and odd jobs such as drilling and tapping broken studs on exhaust flange surfaces. Rottler’s 360 degree roll fixture is the answer, allowing large 24 valve cylinder heads to be clamped with reference to their head gasket fire deck and rolled 360 degrees in one set up. The heavy duty clamping and fine adjust system allow quick leveling and rigid clamping for heavy cutting during machining.

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The SG80MTS can handle from the smallest diesel heads up to the largest heads from extra large engines.

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**6 IN 1 SETTING FIXTURE**

Set seat pocket cutters to proper diameter

Set multi-angle seat cutters to exact diameter

Check pilots for bend and diameter

Check valves for run out and diameter (also allows precision setting of valve margin when setting up multi-angle cutters)

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Rottler’s 6 in 1 Setting Fixture makes precision valve work simple and fast!
**STANDARD EQUIPMENT**

- MANUALMATIC Touch Screen Control allows valve seats to be cut to equal depth without the operator looking at dials or gages. The LED lights flash when the preset depth is reached.
- Spindle adapters available for use of UNIPILOT TOOLING SYSTEM.
- Machine Work Head Floats on Air Cushion for Precision Centering - Total Travel in In/Out Direction 2.5" (678mm) and Left/Right Direction 42" 1067mm
- Spindle Diameter 3.75" (94mm) Hardened and Ground with 10" (250mm) of Hand Wheel Vertical Travel
- Steering Wheel for Rapid and Fine Feed Mechanism for Precise Spindle Down Feed
- Heavy Duty Spindle with Inner Precision Angular Contact Bearings supported in Adjustable Outer Bearings
- Spindle Rotation by 5HP (4KW) AC Motor with Vector Control - Infinitely Variable to 500RPM
- Digital Electronic Level for quick leveling of cylinder head
- Spindle Head Tilt - 10 Degrees to left and right
- Rottler Automatic Tightening and Quick Release Spindle Lock Nut System for One Hand Operation for fitting and removing tooling to and from the spindle
- Table Cross Slide operated with Air Float/Air Clamp for Easy Adjustment for In/Out Positioning of the Fixture - Total Travel 6.5" 170mm
- 2 LED Work lights - either side of the spindle giving shadowless view of valve seat area
- Tooling Storage Cabinet and Mounting Arm and swivels 360-degrees
- Removable center tray for Chip Disposal
- Built In Vacuum Tester including Hose, Hose holding Bracket, Filter and selection of pads

**SPECIFICATIONS**

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<thead>
<tr>
<th></th>
<th>INCH</th>
<th>Metric</th>
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<tbody>
<tr>
<td>Valve Seat Diameter Range</td>
<td>.550&quot; - 8.25&quot;</td>
<td>14 - 210mm</td>
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<tr>
<td>Valve Guide Diameter Range</td>
<td>.160&quot; - 1.5&quot;</td>
<td>4 - 38mm</td>
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<tr>
<td>Cylinder Head Length (with 360 degree rollover fixture)</td>
<td>49&quot;</td>
<td>125mm</td>
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<tr>
<td>Cylinder Head Width (with 360 degree rollover fixture)</td>
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<tr>
<td>Cylinder Head Height (with 360 degree rollover fixture)</td>
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<tr>
<td>Cylinder Head Length (with Tilt Fixture or Parallels)</td>
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<tr>
<td>Cylinder Head Width (with Tilt Fixture or Parallels)</td>
<td>16&quot;</td>
<td>40mm</td>
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<tr>
<td>Cylinder Head Height (with Tilt Fixture)</td>
<td>12&quot; &amp; 14.5&quot;</td>
<td>305 &amp; 370mm</td>
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<tr>
<td>Cylinder Head Height (with Parallels)</td>
<td>17&quot;</td>
<td>430mm</td>
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<tr>
<td>Spindle Diameter</td>
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<td>Spindle Taper</td>
<td>R40 Quick Change with Automatic Lock Nut</td>
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<td>Spindle Speed</td>
<td>40-500 RPM</td>
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<td>AC Vector Inverter</td>
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<td>Spindle Motor Power Maximum</td>
<td>5HP AC</td>
<td>3.75kW AC</td>
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<td>Spindle Travel/Stroke Vertical</td>
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<td>Workhead Travel Horizontal - Airfloat/Airclamp</td>
<td>44&quot;</td>
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<td>Workhead Travel In/Out - Airfloat/Airclamp</td>
<td>2.312&quot;</td>
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<td>Workhead Tilt (either side of vertical zero)</td>
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<tr>
<td>Maximum Distance from Parallels to Spindle</td>
<td>29&quot;</td>
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<td>Electrical Requirements</td>
<td>208-240V, 30A, 50/60Hz, 1Ph</td>
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<tr>
<td>Air Requirements (Pressure and Usage)</td>
<td>90psi - 15 CFM</td>
<td>6bar - 400 l/min</td>
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<tr>
<td>Working Dimensions with Sharpen and Tooling Cabinet</td>
<td>48&quot;D x 105&quot;W x 86&quot;H</td>
<td>1220 x 2670 x 2185mm</td>
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<td>Machine Dimensions</td>
<td>40&quot;D x 68&quot;W x 86&quot;H</td>
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*Specifications and design subject to change without notice.*

October 2017