

ROTTLER



Worldwide

Excellence In

Engine Rebuilding

Performance Racing

Machinery And

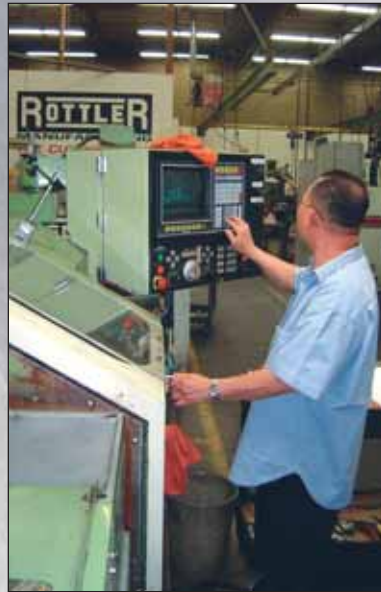
Equipment

THE CUTTING EDGE
since 1923

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since 1923

The History of ROTTLER

For nearly 85 years, the precision machinery developed by Rottler Manufacturing has given progressive engine builders the ability to move beyond their current level of expertise, to become more productive and profitable. Thanks to unmatched dedication, diversity and innovative product development, Rottler's advanced designs and equipment continue to meet the most demanding engineering needs of engine builders around the world.



Since 1923, the Rottler name has been synonymous with leading edge technology. In those early days, "high-tech" meant non-powered portable boring bars, but unsurpassed research and attention to the needs of the American engine rebuilding market has allowed the Rottler family to refine – and redefine – the standard in rebuilding equipment.

Today, Rottler Manufacturing offers a complete range of machines for every type of engine builder, whether you have a custom one-man machine shop, a diesel jobber shop or a demanding production remanufacturing facility. And when we say that Rottler has a machine designed specifically for your application, we mean it. Rottler equipment is not built to be warehoused for some potential future sale; each piece is custom-built to the exacting standards demanded by the most accurate machining companies in the world.

Located in Kent (near Seattle), Washington, U.S.A., Rottler maintains the largest domestic facility 100% dedicated to the automotive aftermarket. Rottler's manufacturing facility boasts the finest equipment available for maximizing the precision componentry used in our machines. This commitment to quality keeps Rottler Manufacturing on the cutting edge and ensures that what we sell will help you sell.

Designed and built to last using the best equipment and materials, assembled by dedicated professionals, you can be sure that your Rottler machine will meet your needs today and into the future. New 3D design systems are improving prototype development. We have installed the first Okuma seven-axis fully automated CNC machining center in the Northwest and plan to expand our facilities to continue to accommodate new equipment and bring products currently in research and development to market. And many of the processes used in the construction of our equipment are accomplished using Rottler machines – not only do we sell them, we use them!

Rottler manufactures a variety of accessory tooling designed to make jobs easier and faster. Rottler has developed tooling to allow the job shop or performance shop to quickly produce precision surfaces on odd jobs competitors must turn away. The same capability applies to the production machine shop where the increasing demand for quality now requires finishing surfaces previously left unmachined.

With the in-house capability of quality control, each part is inspected prior to shipment. This assures our customers the highest standard of quality. Having the ability to engineer, manufacture, assemble and stock machinery makes us responsive to the dynamic changes that we are constantly faced with in the industry.

Yet despite the technological leaps, it still comes down to one simple fact – the investment you make isn't only in money...it's in trust. Our dedicated team of experts can help you find the machine you need for your market. Your name is on the line with each engine you produce, so be sure that our name is on your machine.

Built To a Higher Standard

It's simple, really: at Rottler, we're not satisfied with "good enough." We are innovators and will always work diligently to be even better. We have a saying: "Strive for perfection in everything you do. Take the best that exists and make it better. When it does not exist, design it."



International

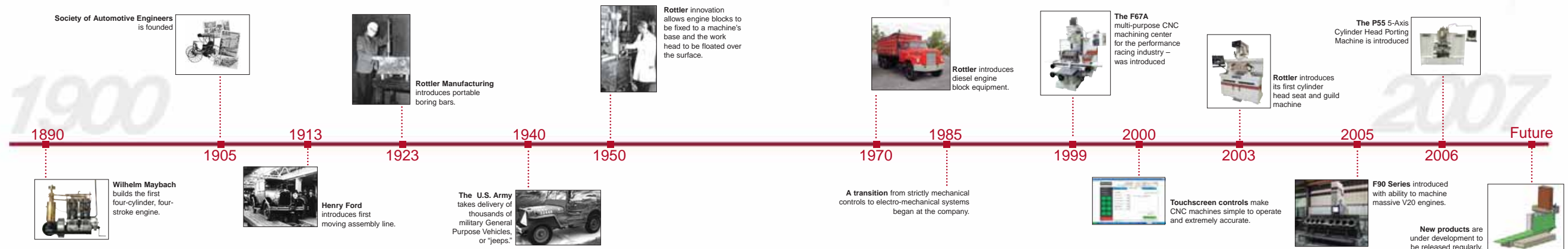
In today's economy, a company that thinks globally yet acts locally – wherever "local" happens to be – is your best partner. Rottler serves the needs of engine rebuilders all over the world, and our international presence continues to grow. Rottler offers worldwide coverage of its entire product line through a network of 50 distributors spanning the globe. These local professionals know your business conditions and are familiar with your needs, as well.

The versatility required for the diversity of today's engine configurations is provided by the wide range of machines, accessories and special fixtures offered, many of which are interchangeable across the full-line of Rottler machines.

A wide range of tooling options allow customers to develop the set-up best suited to their own special requirements, but even in such remote locations as **Colombia, Australia and South Africa**, our customers have confidence that they are not alone. They have trusted us to meet their needs for the past 80 years and they have confidence that we will be there tomorrow with service and parts support for their machines' tooling and software. Most of our essential parts are in stock and can usually be delivered to any place in the world within 48 hours.

For more than 80 years, the precision machinery developed by Rottler Manufacturing has given progressive engine builders the ability to move beyond their current level of expertise, to become more productive and profitable. Thanks to unmatched dedication, diversity and innovative product development, Rottler's advanced designs and equipment continue to meet the most demanding engineering needs of engine builders around the world.

Please contact your Rottler representative to discover how our history of innovation can make your operation's future more productive.



Touch Screen Controls

Automatic

Rottler's new **Touch Screen CNC Control** uses "Direct Motion Control Technology" with Windows XP operating system.

The **Rottler Touch Screen Control** found on Rottler's automatic machines allows simple programming for machining operations. This revolutionary system allows a non-CNC trained worker to program machining sequences for any head or block that meets the machining capacity requirements. Fully programmable cycles with simple menu transfer input to the 3-, 4- or 5-axis CNC control for unparalleled accuracy.

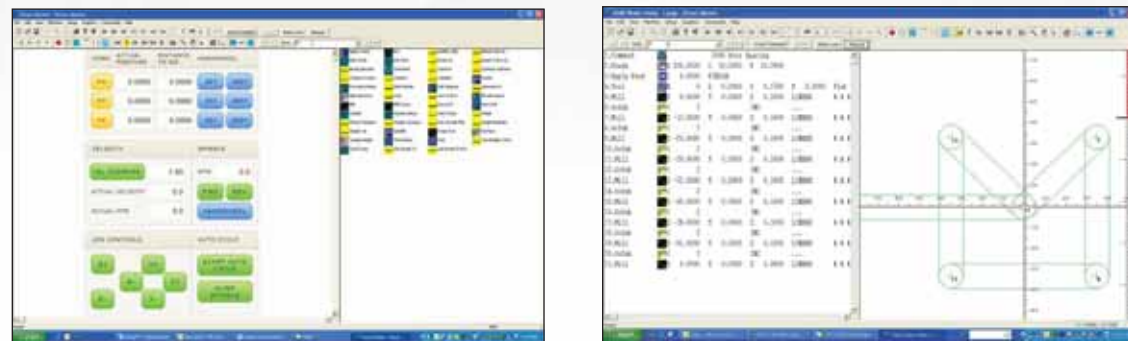
The highly advanced computer technology that powers our **Touch Screen Control** is also responsible for its simplicity. You won't be overwhelmed with options because, with Rottler programming, only the buttons and interactive menus you need for a particular machine operation are displayed on the screen. Yet all other functions are easily accessed when needed. The process is intuitive, simple to learn and operate and easily changed when needed.

Programs you can control through Rottler's Conversational Touch Screen include:

- Program bore centers, exact depth, speed, feed, etc.
- Machines complete bank or main line in automatic cycle
- Lower offset boring allows lower sleeve repair in automatic cycle
- Circular interpolation of counterbores for radius undercut or wide counterbores
- Surfacing/Milling – Multiple pass: program for rough cut and finish cut for superior surface finish
- Line boring – program the bearing bores and length of each bore and the machine automatically moves from bore to bore, completing the line unattended.
- Face main line thrust faces square to centerline of crankshaft using Rottler Circular Interpolation software.

Rottler CAD/CAM – Computer Aided Design and Manufacturing

Rottler's **CAD/CAM** system allows you to create unlimited CNC programs to do general machining such as water hole repairs on fire decks/head gasket faces, drill and tap head bolt threads, machine grooves and many other operations.



**Our sales force can demonstrate this programming capability in your shop!
Call us for details. Or visit www.rottlermfg.com for online demos of the simplicity of Rottler's Conversational Touch Screen programming.**

Rottler's Exclusive Touch Screen Programming

Offers Versatility & Simplicity



Mode Screen

Select the operation that is required. Information is saved in the computer's memory.



Set Zeroes

Simply set zeroes to begin the setup of the job and start automatic cycle.



Vertical Stops

Enter length of bore, sleeve, counterbore, etc., and the machine will bore to the exact depth. Lower Sleeve Repair allows a lower diameter that is larger than an upper diameter to be bored in one automatic cycle.

Centering – Three Methods



1. Blueprint

Enter centers of bores from blueprint drawing into touch screen and the machine will bore to exact blueprint dimensions.



2. Indicate

Center cutter head in bore using digital or dial bore then touch "Set" button. The machine memorizes the bore center.



3. Probe

Machine will automatically probe all bores and memorize dimensions of centers and measure bore diameters.

After centering is completed, touch "Auto Cycle" and the machine will automatically bore to the exact dimensions. These dimensions are saved under a block name for future use.

Cylinder Heads

With today's engines, the terms "close enough" and "almost" are unacceptable. Yesterday's equipment offers neither the speed nor accuracy required. Outdated equipment is slow to set-up, needs more operator skill, and requires too much babysitting to run. Valuable man-hours that could be better spent on other tasks are often wasted doing things the old fashioned way.

Thanks to our pioneering use of **electronic controls** and **state of the art cutting tools and fixturing**, Rottler has overcome many of the traditional bottlenecks that slow work flow through a shop. Operation and programming of Rottler Machines is done using ergonomic keypads positioned on the front of the machine. Rottler pioneered the development of this simple method of operation and the display tells the operator exactly where the spindle is positioned at all times.

What Is 'Concen?'



Rottler's rigid precision carbide centering pilots are manufactured to less than one-tenth tolerance and, combined with the lightweight Air Float Workhead, gives perfect centering in the valve guide and the best concentricity of the valve seat to guide centerline – accuracy of .0005" per inch (.01 mm per 25 mm) is easily obtainable.

Rottler's **CONCEN** gage allows concentricity to be easily and quickly checked to ensure accuracy.

"CONCEN" is our trademarked logo that ensures you are getting the most accurate machine possible. To be certain you are able to meet all of your customers' needs, don't settle for anything less than the best. Choose Rottler.



Rottler's Patented R1 Spindle

Another Rottler innovation is our **unique "fixed pilot" tooling** that is easier and faster to set-up than that which is used on competitive fixed pilot guide and seat machines.

This one-hand automatic tightening spindle lock nut system locks the tool holder for easy locating over the pilot, yet easily releases for machining.

By redesigning the pilot and tooling, Rottler has eliminated the spring that others use over their pilot. The result is reduced time to complete the job with less runout and better concentricity. For even faster speeds, Rottler machines are available with a new **"ACTIV" spindle system**.



Rottler's New ACTIV Spindle

For even faster speeds and more precise accuracy, Rottler machines are now available with a new **"ACTIV" spindle system**, which allows the machines to be operated with live as well as fixed pilots. Live pilots offer slight improvements in speed, while fixed pilots allow more accurate **CONCEN**. The **ACTIV** spindle allows the flexibility you deserve, making Rottler machines the most versatile seat and guide machine available today.



Accuracy

Multi-valve heads, smaller diameter valves and stems, tighter guide tolerances and overhead cams have all complicated the machining processes that are needed to rebuild late model cylinder heads. Valve seat concentricity must be held as closely as possible to reduce the risk of valve fatigue and failure.

"Close enough" is not good enough with today's engines. Valves must contact seats at the precise angle and position, installed valve stem heights must be within specifications to maintain correct valvetrain geometry, and valves must be refaced with a high degree of precision to seal and cool properly. There's little margin for error when it comes to valve, seat and guide work.

Because there is such a variety of cylinder head technology in use today, from the **SG7** to the **SG80**, Rottler offers a complete line of equipment to service everything from the smallest motorcycle heads to the largest earthmoving equipment – and everything in between.

SG8

Simply the best fixed-carbide pilot machine available, the **SG8** is nearly 2,500 pounds of casting along with Rottler's heavy-duty 3.150" spindle to ensure the best surface finishes and concentricity with ease of operation. Even an inexperienced shop hand can be trained to perform perfect valve seat cutting in no time flat. Rottler's Rigid Precision Carbide Centering Pilots are manufactured to a very fine tolerance and combined with the lightweight air float work head gives perfect centering in the valve guide and the best concentricity of the valve seat to guide.



The **SG8** handles a wide variety of cylinder heads, from small multi-valve to large 6 cylinder diesels such as CAT. This versatile machine does many cylinder head machining operations such as multi angle valve seat cutting, boring out valve seat inserts/rings and boring housings for oversize valve seats, reaming valve guides and boring/reaming for oversize valve guides, cam follower boring, spring seat and valve guide machining, drilling and thread tapping, removing broken bolts and thread repairs, as well as many other operations.

Cylinder Heads

SG8A

Multi-angle seat cutting, Harley-Davidson, Formula One, NASCAR NEXTEL Cup, motorcycle, CAT 3412 and 3406E, Model A Ford as well as vintage applications are just a few of the applications that can easily be handled by the **SG series** machines.

The **SG8A** has a **Conversational Touch Screen Control** that allows the operator to program machine to cut at a certain RPM with a specific feed rate. This helps eliminate chatter on hard to cut seats by eliminating the human error when trying to machine difficult seats. The machine feeds down at a constant rate to a given depth, dwell on the seat at preset rpm and time, and then retract, all without any operator involvement. The **SG8A** is simple and fast to program – anyone who operates a seat and guide machine can do it in minutes.



SG7

Rottler's **SG7** is a compact machine competitively priced with big expensive machine features and accuracy. The machine will easily handle Jaguar six-cylinder heads and all automotive and light truck heads, but really shines with motorcycle and pleasure craft cylinder heads. The new generation of 4-stroke engines in snowmobiles, personal watercraft and all-terrain vehicles have very small valve – The **SG7** is designed to machine these valve seats to high accuracy. Great chatter-free finishes and perfect concentricity are guaranteed with the **SG7**.



VR8 Centerless Valve Facing Machine

Rottler's new **VR8** combines centerless grinding and CBN cutting technology to give excellent valve seat surface finish, concentricity and circularity.

- Rottler's **Centerless Technology** eliminates any collets and chucks and gives maximum versatility to face a large range of valve stem diameters.
- **Variable Valve Rotation Speed** and **Digital Angle Display** allow precision valve facing of different design valves used in high performance, diesel and gasoline cylinder heads.
- **Stem End Facing and Chamfering** combined with an adjustable V stop allows exact length valves.
- **Water-based synthetic coolant** and external tank allow long life and easy maintenance.



P55 5-Axis Cylinder Head Porting Machine

Rottler's New **P55** 5-Axis CNC Cylinder Head Porting Machine offers the precision and speed needed to reproduce cylinder heads with exceptional accuracy – with no handwork needed. The **P55** also has the capability of porting intake manifolds with the same techniques used to port cylinder heads.

The **P55** Cylinder Head Porting Machine uses the exclusive **Rottler CNC Touch Screen Control**. Jog machine and all other functions are accessible on context sensitive touch screen, which allows only appropriate actions on screen. Can be changed like other elements of the software

With standard Windows user interface with animated training, training time and learning time is reduced. Operator can take full advantage of available features that will improve operator speed and efficiency

The PC-based **single processor control system** by Direct Motion is highly interactive and very responsive. It allows the machine to do complex and sophisticated functions that are only possible within the PC processor. The upgradeable software can be networked for



enhanced efficiency. The Advanced DM software tools allow manipulation of port design and minimize digitizing time. This allows an operator to pick up data once and tweak the design (including hand-ported designs) as needed.

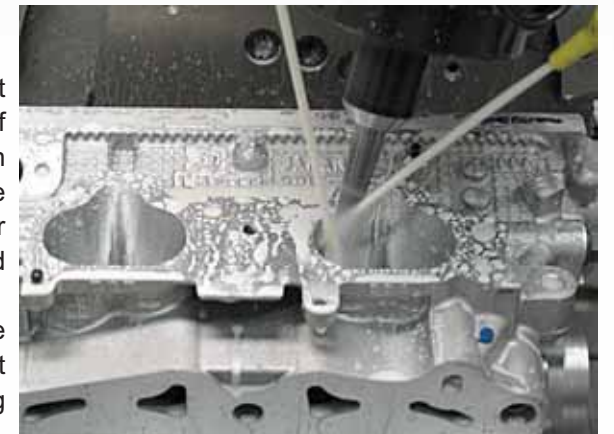
The **P55** has very fast rapid movements and cutting speed with infinite look-a-head capabilities offering fast production times. A common V8 cylinder head can be ported in about 1 hour.

Digitizing is done automatically on the machine using a **Reinshaw probe**, eliminating the need for an expensive coordinate measuring machine (CMM). All programming and operations are done directly on the Rottler **P55 Touch Screen Control Panel**.

Spindle in 5th Axis

The high speed spindle of the **P55** is built into the 5th axis of the machine with the center of the cutting tool on the same center as the 5th axis. The spindle is able to tilt 55 degrees to the left and right. This unique feature allows easier set up and faster porting time compared to fixed spindle machines.

Competitive machines have a fixed spindle and therefore have to tilt the cylinder head left and right which makes complicated programming and each port has to be programmed differently.



Surfacing

Today, surface finish is more critical than ever, thanks to such industry advancements as MLS gaskets and bimetal engine construction. A surfer must allow the right combination of cutting speed and feed rate to achieve exceptionally low Ra finish numbers. High cutting speeds, in turn, require superabrasives that can handle the heat. Rottler machines were the first surfacing machines to use CBN (cubic boron nitride) inserts to resurface cast iron blocks and heads, and PCD (polycrystalline diamond) to resurface aluminum blocks and heads.

The **S7** and **S8** series of machines are designed to cut dry, so there's no messy lubricant to deal with or dispose of. The cutter head can be used with one or two inserts, but many users prefer to use only a single bit because it eliminates the need to match the heights of the inserts.

All of Rottler's surfacing machines use the same tooling and fixturing for quick, rigid setup and versatility. Compact, one-piece castings and multi-layer slideway guards give the most compact surfacing machines available today. All Rottler machines have ball screws on both horizontal and vertical travels.

From the affordable **S7M** with Rottler's new Universal Head and Block Fixture to the top of the line automated **S8AD** capable of surfacing large heads such as the CAT 3406, Rottler has a machine to suit all of your surface finish requirements and budget. The **S7** machines have 40" (1000 mm) workhead travel and the **S8** Machines have 50" (1270 mm) workhead travel.

Manual Control



The new Rottler **SM Surfacing Machines** are the most economical surfacers available today combined with improved productivity resulting in profits for automotive and diesel machine shops looking for the lowest cost. Featuring the **M control unit** with Soft Touch Buttons with LED lights for simple operation, high rapid traverse rates to minimize cycle times, long-lasting precision ground ball screw driven by a toothed belt for smooth workhead feed, and infinitely variable speeds (up to 1,250 RPM) and feeds allow the use of a wide variety of cutting inserts for any metal to be surfaced.



Automatic Control

The **S7A/S8A** machines have computerized automatic cycles to reduce operator involvement and maximize productivity. When the workpiece and machine are set up, the operator presses the "cycle start" button and walks away. The electronic gearing found in the **SA** series surfacing machines maintain spindle rotation and workhead feed rate with digital accuracy so that the exact programmed feed per revolution is always maintained



for consistent and fine surface finish. Simply by dialing in the length of the piece to be surfaced, the Rottler **S7A/S8A** will travel that exact distance before returning home, eliminating

the time-consuming need to set end stops.

The machine completes the surfacing job, immediately lifts up, rapid returns to home and returns down to vertical zero, ready for the next job. These model machines come standard with digital vernier scale for precise stock removal amounts.



NEW Rottler AD Machines – Automatic Downfeed

The new **S7AD/S8AD** machines offer all the features of Rottler's **S7A/S8A** models, but take the ease of automatic operation a step further. These machines use the new **Direct Motion Touch Screen Control Technology**.

The **AD** machines are easily programmed to take multiple passes to remove large amounts of material without an operator being required to stand there simply to feed the machine down each time. The new Rottler **AD** machines can be set to automatically remove certain amounts of material, allowing the operator to walk away until machine is finished. The program allows different speeds and feeds for roughing and finishing machining to ensure the best surface finish after multiple cuts.



Leveling Table

Rottler's universal **dual-axis leveling table and head clamping tooling** allow any component to be fixed then leveled in both directions in a matter of seconds.



The Air Float and the Dual Axis Leveling Assembly ensures simple, accurate positioning of any workpiece, without the need for confusing gages or shims.

Just as there's little margin for error when it comes to valve, seat and guide work, today's computer controlled low emission engines are very sensitive to surfacing work as well. Accuracy is critical for today's engine builders, because engine blocks and cylinder heads require only the minimum metal removal when surfacing the head gasket faces.

Boring and Sleaving

Rottler's **F-Series** automatic boring and sleaving machines are the industry standard worldwide. The floating machine head and air clamping system allow quick centering and accurate machining, making them the world's fastest boring machines.

These machines represent the next generation of boring equipment, evolving from the Rottler F2 boring bar that has been the industry standard for over 80 years. With improvements in electronic motors and cutting tool technology, Rottler Boring Machines are 2 to 3 times more productive than anything else available on the market.

Automation - The **F-Series** models have programmable boring cycles and automatic centering cycles. Both models will store up to 100 different boring programs. Each program stores boring depth, spindle speeds, and feed rate. Automated cycles reduce costly errors while freeing operators to perform other tasks.

Speed - All **FA** Series machines have the same high performance AC servomotor, delivering up to 1,200 RPM. Independent feed control allows you to change the feed rate from .001" (.025mm) to .012" (.3mm) per revolution.

Accuracy - The **FA** Series uses a precision ground ball screw to control feed rate and cutter position. This allows the machines to repeat cutter position accuracy to .0002" (.005mm). The **FA** Series has digital programmable cycles. Boring depth can be programmed to .0001" (.0025mm).

The **F7A** machines can bore from 1.5" (38mm) to 5" (127mm). The **F8A** machines can bore from 1.5" (38mm) to 9" (230mm) in diameter, with optional cutter heads. Special carbide tools are available for counter boring, chamfer cutting, offset boring and O-ringing.

Strength - Rottler has increased the size of the **F8A** spindle to ensure the best possible bore geometry at high spindle speeds. The Rottler proven spindle and bearing design gives you a rigid machine capable of making heavy sleeve cuts for a lifetime. The **F7A** spindle has been reduced to allow the machining of compact engines, motorcycles, marine blocks, etc.

Reliability - The **FA** Series machines use a high-speed, cogged belt drive system. This, and the use of two independent motors to run the spindle speed and feed, entirely eliminates the gearbox. With fewer moving parts, and a superior design, the **F** Series becomes a much more reliable boring bar than other designs of equipment.

F7A

The **FA** machines are the industry standard worldwide. Designed for all automotive blocks up to big block V8s and small diesel blocks, the **F7A** will produce accurate bores for a lifetime. The **F7A** is ideal for the production shop where sleeves must be fitted. The **F7A** is the fastest, most powerful boring machine available to the jobber shop. The simple set up and manual push button controls make this a very economical machine to operate.



F8A

This heavy-duty machine was designed for standard and large capacity machine work. The spindle diameter has been increased to 3.25" (82.5mm) for extra heavy duty machining up to 9" (230mm) bore size. Large sleeve cuts can be taken at high spindle RPMs, and in many blocks, one pass sleeve cuts are possible to increase productivity. Programmable counterboring operations with the A model eliminate guesswork and provides added timesaving. The massive one piece meehanite, stress relieved, precision machined base casting allows the fixturing of large diesel blocks such as Cummins 855, Detroit 12V71, Mercedes 444V12 and odd jobs such as gear cases and connecting rods. The **F8** machines can also handle small jobs down to 1.5" (38mm) bore diameter with optional cutterheads.



Diamond Honing

HP6A Diamond Honing Machine



Rottler's **HP6A** honing machine was the first to bring high speed diamond honing to the aftermarket and continues to march at the leading edge of this technology.

- The **HP6A** has easy-to-use automated controls and uses a low-cost water based coolant.
- Cylinders can be diamond honed to final size and plateau finished with brush inserts to duplicate virtually any factory cylinder finish.
- The **HP6A** provides superior accuracy with fast hole geometry correction and minimal stock removal.
- The **HP6A** is the first automated cylinder honing machine capable of operating under **Automatic Load Sensing** – another industry first! Under high speed automatic operation the machine adjusts to a desirable load to properly finish the cylinder just before stopping. Enter the load into the computer and the machine automatically maintains this value while it finishes the cylinder.

Rottler Manufacturing has led the industry in the application of diamond abrasives to the automotive aftermarket. The process was engineered by experts from many fields to create an entire process to bring diamond technology into the hands of the performance racing, production rebuilder and jobbing shop. The **HP6A** combines the correct water-based coolant, the correct control, the correct hone head and the correct abrasives to ensure the most economical, consistent and acceptable bore finish possible.

Rottler diamond abrasives can last up to two times longer than other less expensive brands. Diamond abrasives do not break down like vitrified stones and require very precise, heavy duty, rigid hone heads. The Rottler Precision Hone Head was designed and is manufactured to exact tolerances. Each stone holder set is designed to operate within a 5/16" (8mm) range, which is the recommended diameter range of a diamond stone set.



The **HP6A** control was specifically designed to correctly maintain honing stone to cylinder wall pressure/load for diamond finishing. Diamond stones are capable of exerting excessive load, which results in poor finish and geometry. The **HP6A** control will automatically sense and control load to ensure light loads during finishing for accurate geometry.

The process has been developed and proven after years of in-house and in-field experience. Rottler now leads the industry with more installations of diamond honing systems for engine cylinder finishing than any other company worldwide.

Performance and race engine building has always been a very exacting science that requires considerable know-how, experience and machining savvy. One of the keys to building engines that are consistent race winners is the ability to closely control and maintain exact tolerances and machining geometry.

“Blue printing” is the cornerstone of performance engine building. It’s all about making sure blocks are square, that deck surfaces are flat and parallel to the crankshaft centerline, that bore centerlines and lifter bores are exactly where they should be. It’s demanding work that requires precise measurements and top notch equipment.

Small shops that build a limited number of engines each year may have space or budget limitations that prevent them buying separate machines for each and every task they do. For this type of customer, versatility is an absolute must.

F67A Multi-Purpose Machining Center



The **F67A** is a truly amazing machining center which has an adjustable angle workhead that allows the spindle to be tilted up to 90 degrees in both directions for maximum versatility. With its easily understood touch screen programming function, blueprinting bore, line boring, decking blocks, surfacing heads, trueing lifter bores, and automatic milling to size are all easily accomplished, all in fully automatic operational modes. The real advancement is in the Rottler Windows XP program control. All the listed functions are formatted in operations tabs on the touch screen that any shop employee can understand.

For maximum versatility, the new **F67A** has increased height to 35" (890 mm) between its spindle nose and table.

F65M Manual Machining Center

The **F65M** is the answer to manual machining methods. The XYZ digital readout allows you to blueprint performance blocks, perform sleeving operations where center distances are critical, line bore, lifter bore, head and block surfacing, stroke clearance and many other performance related operations.

This machine will enable your shop to be multi-tasking at a shop hourly rate that YOU determine...between **\$250 and \$350 per hour**. This is a true shop profit center. Update your boring and surfacing and expand into line boring, performance machining and specialty work whenever you decide, either right away or add on to the machine as the shop increases labor sales.



F68A Multi-Purpose CNC Machining Center

Rottler’s new **F68** multi-purpose boring, surfacing and line boring machine is the next generation in performance engine building equipment. Leapfrogging the competition, the F68 provides both the versatility and precision needed by today’s performance engine builders.

The **F68A** fixed-spindle machine is truly on the cutting edge of today’s high performance technology, with its touch screen programmable CNC controls.

Its easy-to-use fully programmable “CNC” (Computer Numeric Controlled) electronics allow this machine to handle conventional jobs as well as specialized tasks such as machining logos into valve covers. **No programming skills are needed** as the **F68A** comes with user-friendly programming capability that does all the coding work for you.

For maximum versatility, the new **F68A** has increased height to 35" (890mm) between its spindle nose and table.

Both the **F67A** and **F68A** give you the power to write your own programs without any CNC G code experience. **The control system is a Rottler Proprietary system available only with Rottler machines.** Rottler programming allows the operator to program custom machining programs with ease.



Our Rottler F68A has been a tremendous benefit to our shop. It allows us to use operators who aren't trained on CNC operation yet. The machine delivers 10 times the accuracy over our old method and is so much faster than conventional line boring operations. It also allows us to do things we could never do on our old-style machine.

Dennis Klink, AKA "Bullet," Brad Anderson Enterprises Ontario, California, USA
Manufacturers of 8,000 HP billet aluminum V8 blocks used in the world's fastest nitro drag race engines.

Heavy Duty

In both size of the engines and scope of the market, "heavy-duty" has taken on a new and much more important role on the world's stage. Around the globe, businesses depend on heavy-duty equipment for transportation, construction and innumerable other functions. And though they operate in some of the most severe conditions imaginable, they are usually quite efficient – yet when they are out of service, they are extremely costly. Rottler's commitment to this arena has earned a reputation among OEM remanufacturers and large engine rebuilders worldwide. Our rugged equipment and unmatched versatility make Rottler the number one choice for this kind of engine work.

Rottler's **Programmable Automatic Control** makes these machines fast and accurate. The machines work like advanced CNC machining centers but Rottler's conversational programming technology makes them very easy to operate. No programming knowledge is required and operators are trained by factory technicians in just a few days to run these machines at full speed.

The machines can be run manually and many unique jobs such as large connecting rods, gear housings and other often overlooked jobs can be performed with this versatile equipment.

F90Y Series Multi-Purpose CNC Machining Centers

Large engine blocks and castings require many different repair and machining processes. The full 3-axis CNC control of the **F90Y** series allows custom programs to be written on the touch screen and saved in the memory for future use. For example, CAT 3500 blocks have water holes in the head gasket face and often rust/corrode as a result of acidic water and require to be milled out (see picture), plugs fitted and the head gasket face to be surfaced. The **F90Y** allows a simple CNC program to be written and these holes to be machined out in one automatic cycle. Plugs can then be fitted and the block surfaced – all this can be done while the block is set up for boring and surfacing work - saving hours of time and improving accuracy. Jobs can be completed in 1/3 the time of conventional machines while operators can also do other work while the **F90Y** completes automatic cycles unattended



- All **F90Y** machines incorporate the use of a large diameter hard-chromed spindle, utilizing high precision angular contact bearings and automatic lubrication.
- Machine ways are induction hardened and coated with turcite material and supplied with air pressure to reduce friction and give long service life.

- Anti-friction ball screws and AC Servo motors provide precise machine positioning and rapid feed rates.
- Air power drawbar allows cutterheads to be changed in seconds increasing productivity and reducing operator fatigue - the machine can be changed from boring to surfacing in less than 15 seconds!
- All **F90** machines incorporate the Windows XP operating system and industrial PC with Intel processor. Programming and operation is handled through a 15" touch screen.
- Versatility allows a wide range of machining, from a single cylinder to a large diesel block.

The **F90Y** Series is available in three sizes:

- **F97** (Horizontal column travel up to 84 inches or 2100mm)
- **F98** (Horizontal column travel up to 108 inches or 2750mm)
- **F99** (Horizontal column travel up to 132 inches or 3350mm)

F97Y and F98Y

Rottler designs machines to suit our customers' requirements. The **F97Y** is designed to handle up to common V8 and V12 engines and the **F98Y** is designed to accommodate the common V16 blocks from CAT, Cummins MTU and others.



Big Blocks

Common, everyday jobs such as boring, surfacing and line boring can be easily automated with the **F90Y** machines. Operator attendance is only required for set up. The machine is capable of boring along a complete cylinder bank automatically. Likewise, the machine is capable of line boring along a main line automatically.

Often when surfacing a block, more than one pass is required. The **F90Y** can be programmed for multiple passes, moving down the exact amount each pass and completing with a finish cut for the required surface finish during the final pass.



Bore centers are either measured from the block or from a blueprint, then saved in the memory. The **F90Y** machine moves automatically to the exact positions, useful when multiple boring operations are required for jobs such as resleeving. For special applications, optional **Renishaw Wireless Probing** can automatically find bore centers and measure diameters. The **F90Y** machine moves

automatically to the exact positions, useful when multiple boring operations are required for jobs such as resleeving upper and lower seal areas.

When resleeving the lower seal area of wet liner blocks, it is often required to bore a diameter larger than the upper diameter. Rottler's **Automatic Lower Sleeve Repair Software** allows the machine to offset so that the boring tool will clear the upper diameter, move down, then move back on center to bore the lower area on center with the upper bore. Once boring is complete, the machine will index the cutting tool, offset the programmed amount and retract and continue to the next cylinder – automatically.



Rottler right angle line boring tools

Special Circular Interpolation Software

Rottler software allows wide counter bores and main line thrust faces to be cut with a single-point machining system. The single point cutting tool spins in a small circle and simultaneously moves in a large circle to face counterbores and thrust faces to very accurate surface finish and geometry. Radius undercuts can be machined into the counterbore corner with special Rottler tool holders.

F99Y

The massive **F99Y** is our biggest multi-purpose machine for large diesel engines. It is built to handle even the biggest blocks, including a 20-cylinder CAT 3520. This machine can bore and sleeve cylinders, main bearing bores, cam bores and surface blocks and heads. The efficient open design and ease of operation make heavy-duty machining more profitable than ever before. This unit can reduce the time it takes to do many jobs by 75 percent compared to traditional machines.



Big Heads

SG80A

To service the very largest cylinder heads, Rottler has introduced the **SG80A** seat and guide machining center. Like its counterpart, the **F80** series boring equipment, the **SG80A** can handle all of the necessary machining operations on the biggest diesel and natural gas engines, including industrial, mining and marine workboat equipment.

The machine features a **Touch Screen CNC Operator Control Panel**. Simple conversational programming allows an operator to run the machine in completely automatic mode.

- Fine graduation reading .0001"/.002mm concentricity gage quickly confirms that the finished valve seat is concentric to the centerline of the valve guide.



the centerline of the valve guide.



Fixturing

For increased versatility, the **SG80A** has two different fixturing systems:

- Rottler's heavy duty **360 Degree Rollover fixture** allows small to large 6 cylinder diesel heads to be aligned and clamped with reference to their head gasket face. This fixture allows the heads to be rotated 360 degrees to be able to handle difficult jobs such as machining diesel injector tubes, drilling out broken bolts for thread repairs or repairing valve spring seats. Large heads such as the CAT 3406 & 3412, White Superior 825 and Waukesha 7042 can be rolled over for machine work on all faces of the head.

- Rottler's **heavy duty Tilting Fixture** allows large heads such as CAT 3600 to be set up for valve seat cutting and valve seat housing boring. Very large, heavy heads found in the marine workboat industry can be set up and clamped with the **Rottler Tower Clamping assemblies**.

At B&G Machine, Inc., our Rottler machines outperform any other piece of equipment on our shop floor. They are faster, more accurate, and more reliable...with virtually no downtime and minimal maintenance.

Rottler has responded by addressing our specific needs and turning ideas into fixturing to solve challenges that come our way. That's the benefit of working with a company that still designs, manufactures and assembles its products under one roof.

This equipment is built tough and way ahead of its time. That's our expectation from Rottler and that's what we get when we tool up with their equipment.

David Bianchi, B&G Machine, Inc., Seattle, WA
www.bandgmachine.com



Big Conrods

To remain in service under even the most demanding of conditions, heavy-duty connecting rods require precision machining. With conventional rod reconditioning equipment, the two ends are normally done in two steps on different machines. This increases the risk of non-parallel bores and incorrect center-to-center distances. Because the combustion process in a diesel engine is controlled by compression, incorrect or unequal length rods will drastically affect the performance of the engine.

Rottler's patented connecting rod fixture allows these large conrods to be bored on the Rottler F60, F80 and F90 series machines.

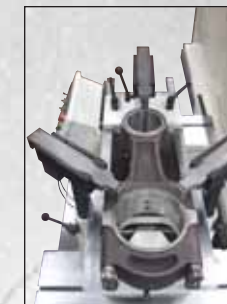
Rottler's **Conrod Fixture System** for diesel engines allows both ends of the rod to be machined without having to remove, reposition and reclamp the rod.

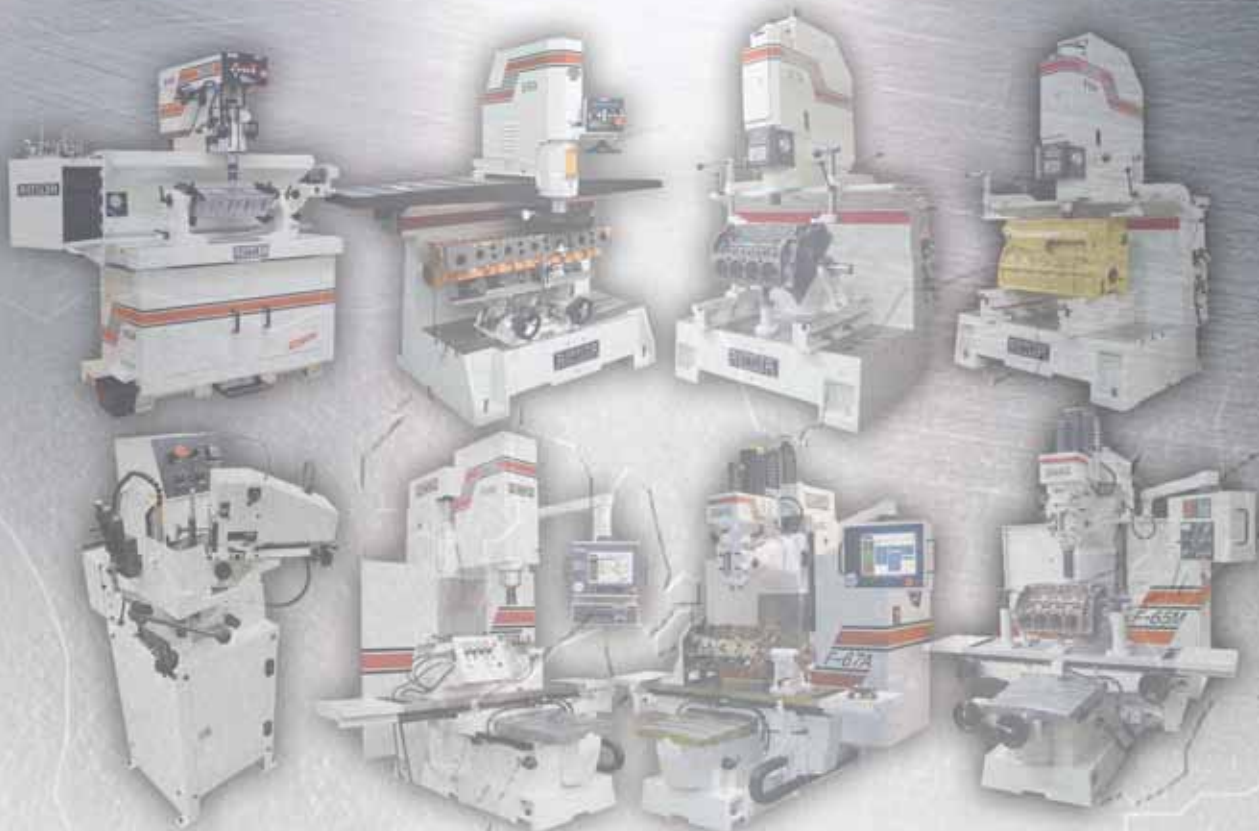
- Automatic alignment system allows quick setup with reference to the center of both ends. After clamping, the centering devices move out of the way for boring work.

- Both the big and small ends can be bored floor-to-floor in 3.5-5 minutes.

- Center-to-center distance can be easily controlled for exact same distance for each rod in a set. When used with the **F60, F80 and F90** series machines, these distances can be programmed into the machines' control memory.

- Heavy-duty fixtures for facing and boring large connecting rods found in natural gas compressor and marine workboat engines.





**Worldwide Excellence In Engine Rebuilding
Performance Racing Machinery And Equipment**

ROTTLER

For more information on any of the machines featured in this brochure, contact your local Rottler Distributor or call:

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