

ROTTLER
THE CUTTING EDGE

F69A

Multi Purpose Machining Center

*"The F69A takes us to the
highest levels of technology
in block machining!"*

Doug Yates
Roush Yates Performance
Engine Group



ROUSHYATES

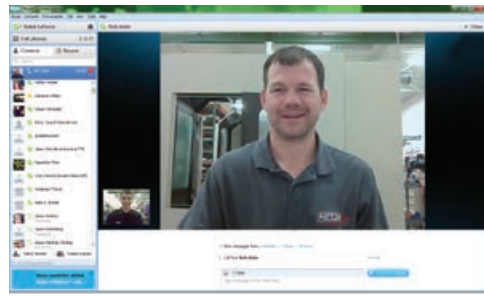


Machining Equipment
Created for Performance
Racing & Engine
Remanufacturing.

So Advanced, It's Simple.

F69A MULTI PURPOSE CNC MACHINING CENTER

Instant Internet Support



Rottler offers cutting edge internet support direct from your machine to the factory. Skype™ and a webcam are installed for video conferencing and internet support. This feature gives you instant, direct contact with Rottler right on the machine without even making a phone call. The standard webcam comes pre-installed so that Rottler Technicians can see exactly

what you are seeing, this saves a tremendous amount of time when trying to answer questions. Shop busy or too noisy for talking? The pre-installed Skype™ application gives you instant messaging capabilities with Rottler Technicians.

Spindle

Super hard finish resists wear for years of operation. 0-4000 RPM Spindle Rotation with CAT40 Taper.

Vertical Box Ways

Precision ground, hardened box way slideways are 28" (700mm) wide for increased rigidity and years of heavy duty high production machining.

T-Slot Table

Allows operator to clamp or fixture any job quickly and easily.

Ball Screws

Large diameter 40mm (1.58") precision ground direct drive ball screws for rapid feed rates, accurate positioning and repeatability.

Turcite Box Ways

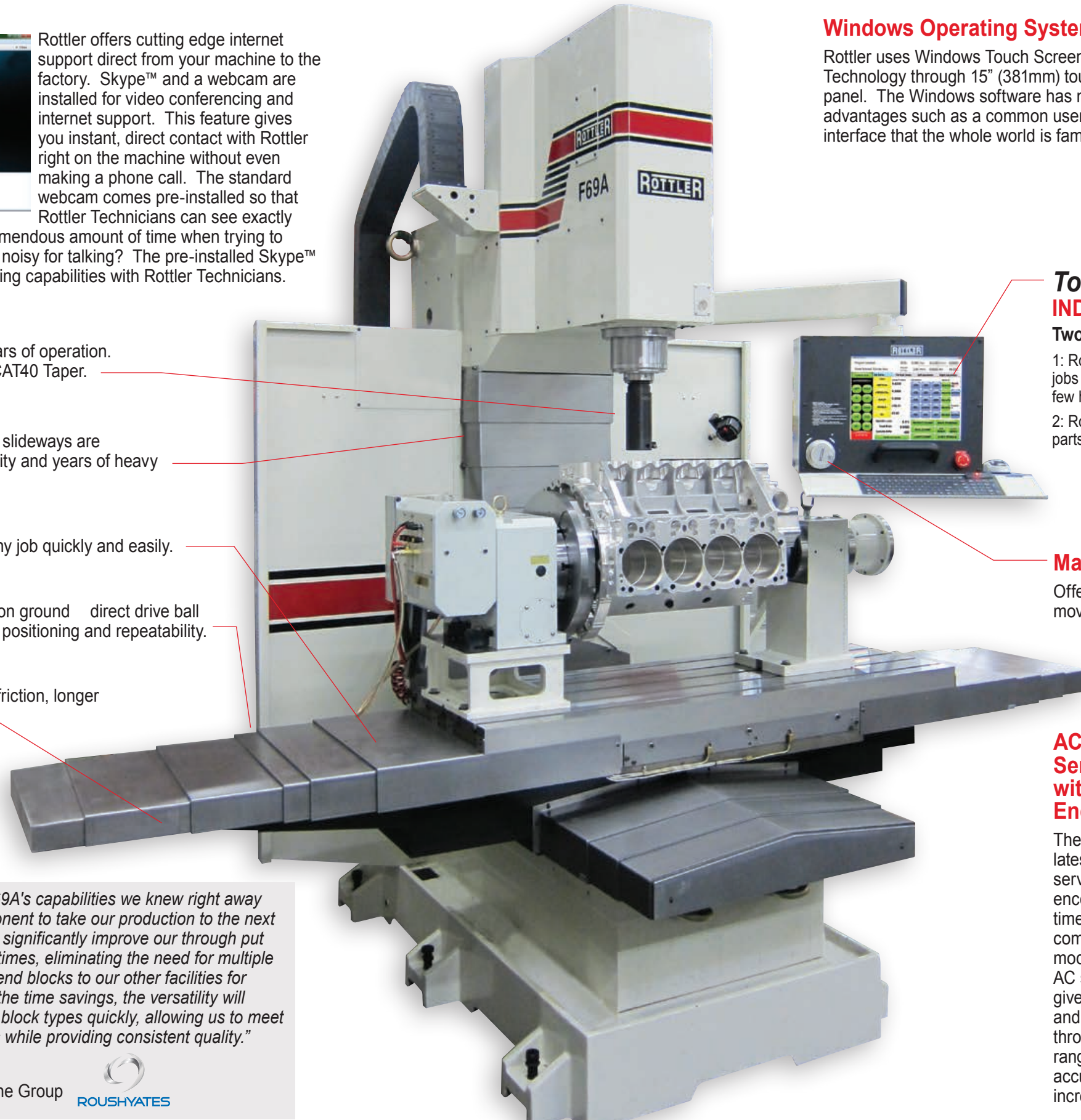
Turcite coated bedways for reduced friction, longer life and better accuracy.

Automatic Lubrication

For years of trouble free life and reduced wear.

"When we learned of the Rottler F69A's capabilities we knew right away this was going to be a major component to take our production to the next level. The addition of the F69A will significantly improve our through put in the shop by cutting down set up times, eliminating the need for multiple machines, and the need for us to send blocks to our other facilities for separate operations. In addition to the time savings, the versatility will allow us to move between different block types quickly, allowing us to meet the varying needs of our customers while providing consistent quality."

Jon Giles, General Manager
Roush Yates Performance Engine Group



Windows Operating System

Rottler uses Windows Touch Screen Technology through 15" (381mm) touch panel. The Windows software has many advantages such as a common user interface that the whole world is familiar with.



Touch Screen Control INDUSTRY EXCLUSIVE

Two Operating Systems!

1: Rottler System for simple, fast and easy programming of common jobs such as boring, surfacing and line boring - anyone can learn in a few hours!

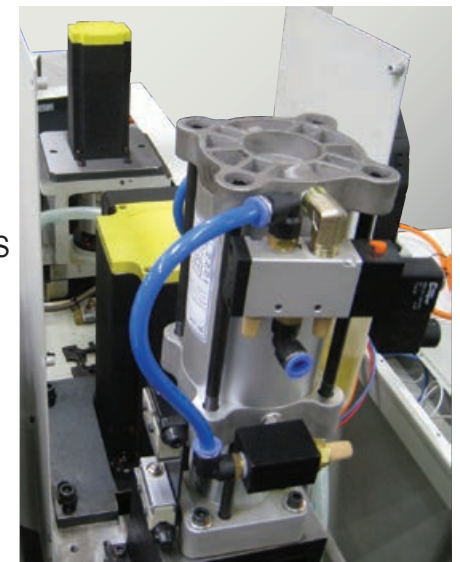
2: Rottler CAM System for advanced, CNC programming for making parts, engraving names, and much more.

Manual Hand Wheel

Offers operator infinite control of machine movement in all axes for quick and easy setup.

AC Brushless Servo Motors with BISS Encoders

The F69A has the latest technology AC servo motors with BISS encoders offering 100 times finer resolution compared to previous models. These new AC servo motors give maximum torque and performance throughout the RPM range for improved accuracy and increased productivity.



ROTLTER EXCLUSIVE TOUCH SCREEN PROGRAMMING



Mode Screen

Allows operator to select operation to perform.



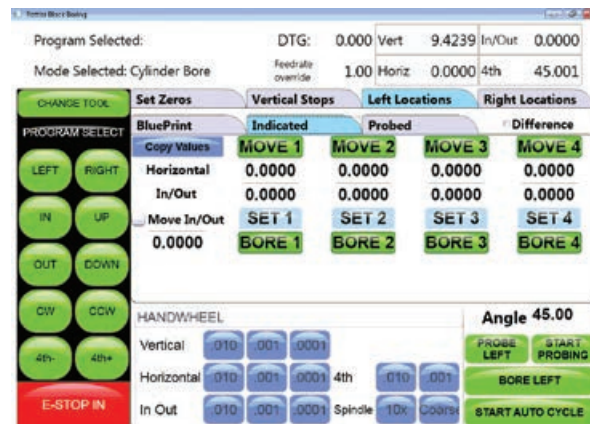
Blueprint

Type locations from blueprint into machine.



Set Zeros

Simply set zeroes to begin set-up of block.



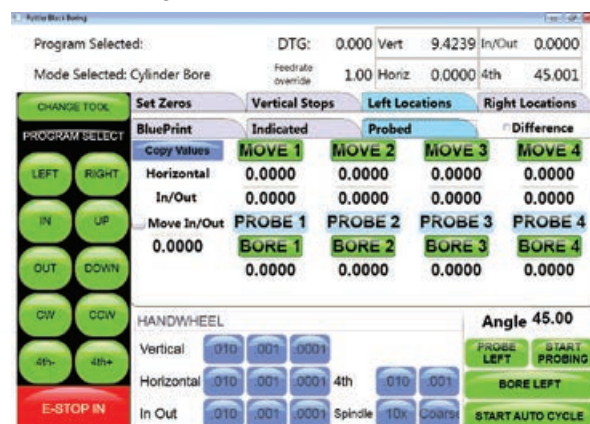
Indicate

Older blocks that may not clean-up by blueprinting. Center bore and touch set button.



Vertical Stops

Allows operator to set machine to begin/stop boring. Also allows operator to offset bore at bottom of cylinder to clearance main web for cylinder honing.



Probe

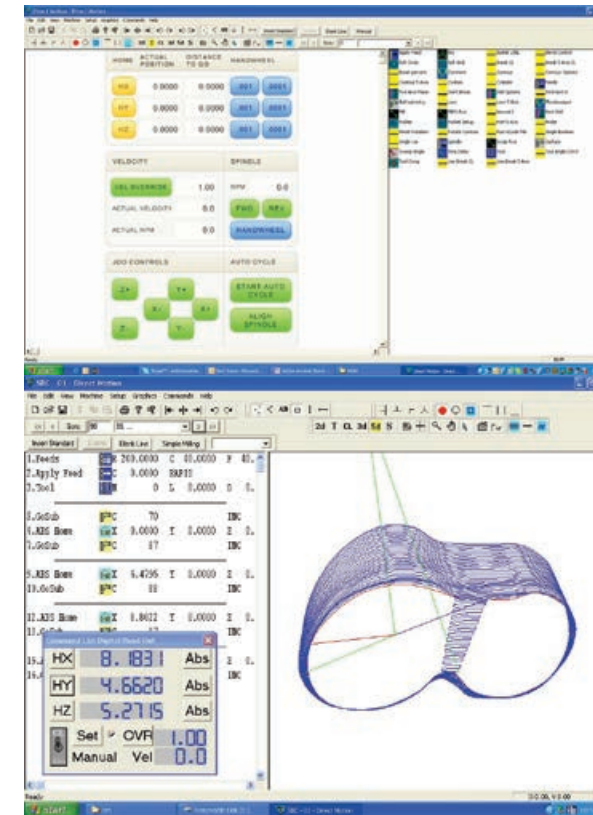
Machine will probe all eight bores and set dimensions for boring. Once finished touch "Start Auto Cycle" to begin boring.

Fully Programmable Cycles

Simple 4 axis CNC control, PC based with Windows operating system.

Dimensions input through touch screen:

- Bore Centers, Exact Depth, Speed, Feed, etc.
- Bores complete bank in Automatic Cycle.
- Lower Bore Relief, off center boring for Honing Clearance.
- Surfacing - Multiple Pass programmable for roughing and finishing - can remove any amount of material in one automatic cycle.
- Lifter Bore Machining - bore housings and bushes to exact final size.
- Automatic line bore cycle completes all main bearing housings to within .0002".
- Face main line thrust bearing faces square to crankshaft centerline.
- Machine a radius for stroker crank connecting rod and bolt clearance.
- Rottler CAM CNC program allows G code programming and file transfer with CAD/CAM programs.



Rottler Cam

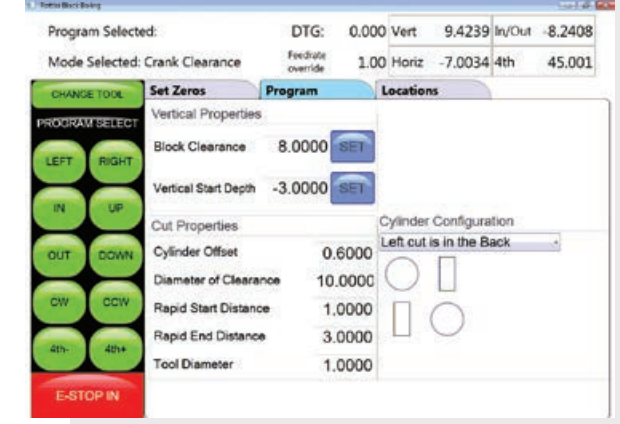
Rottler Cam software offers even more versatility, for machining parts, combustion chambers on cylinder heads, etc.

Versatility & Simplicity



Thrust Cutting

Allows operator to easily program for thrust cutting on main cap.



Crank Clearance

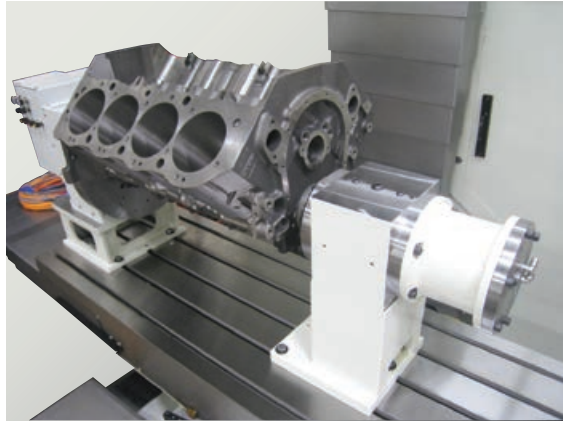
Stroker Crank & Rod Clearancing of blocks.



Lifter Bore

Operator can easily program lifter bore dimension by blueprinting, indicating or probing.

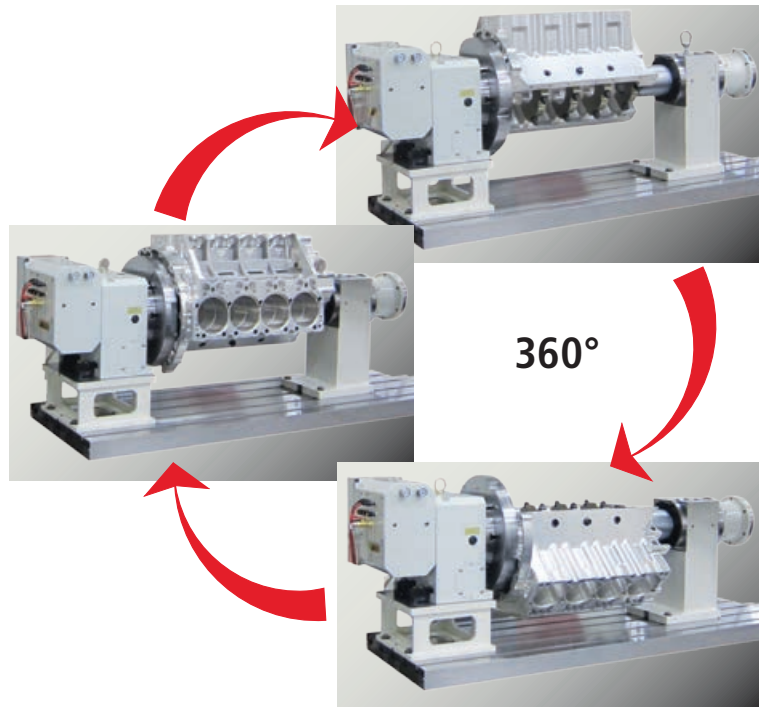
FIXTURES



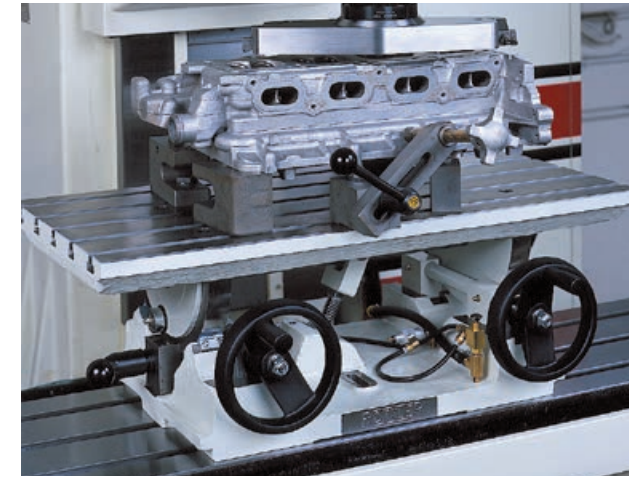
Automatic 4th Axis Block Roll Over Fixture

Rottler's Universal Quick Load/Unload Automatic Rotate 4th Axis Fixture and Software allows the control to rotate the block or cylinder head during the automatic machining cycle. Large V blocks can be rotated 360 degrees to allow special machining jobs such as stroker clearancing in same set up as boring, surfacing and lifter bore machining. The tail stock is pneumatically operated allowing easy and fast loading and unloading of heavy blocks.

Part #690-3-59



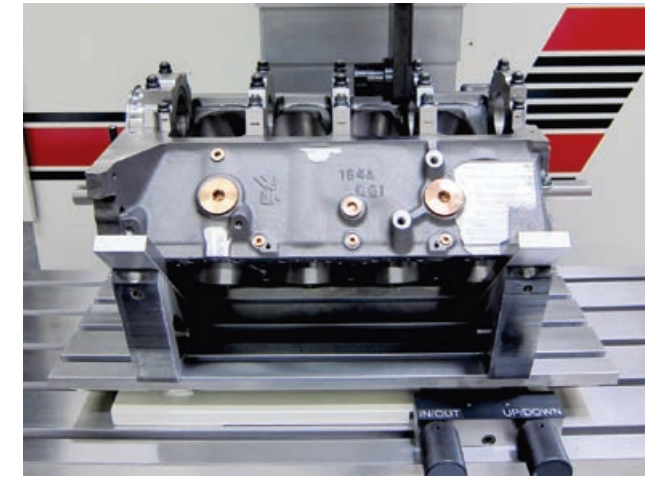
360°



Dual Axis Level Table

Rottler's patented dual axis leveling table and universal quick clamping system for surfacing/milling heads, blocks and manifolds with CBN and PCD tooling. The Rottler Dual Axis Leveling Table allows clamping of the head to be complete first, then the level adjusted in both directions simply by rotating the two hand wheels. Combined with Rottler's Dual Axis Level, any job can be clamped and leveled in seconds! This process results in minimum stock removal when surfacing.

Part #7209M

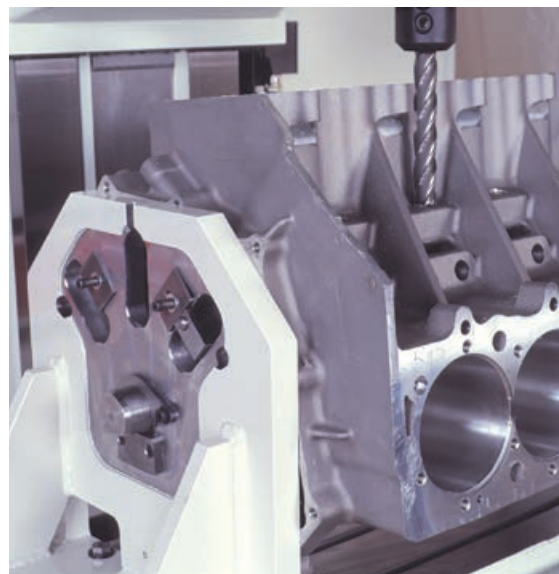
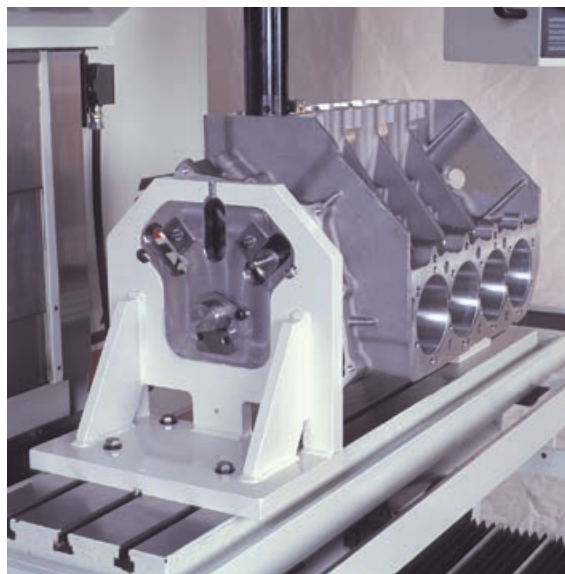


Pivot Table Fixture

Cam tunnel modifications and roller bearing conversions. Some blocks allow main and cam line to be bored in one set up with extended slim line right angle drive.

Rottler's new pivot table allows quick set-up for line boring. Complete with Universal Work Hold System for small in line and 90 degree V blocks. Used for main line boring and stroker crank clearance.

Part #650-3-56



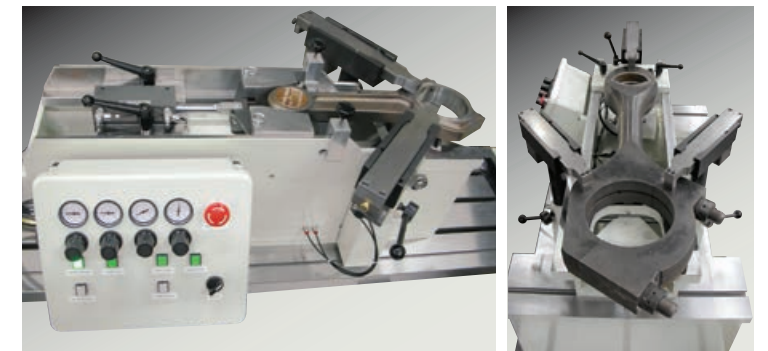
Performance Fixture

Precision Performance Fixture references from the centerlines of crankshaft and camshaft for machining operations – precise bore locations and square block deck height. Bore and surface a V8 block in less than 30 minutes. Lifter bore angles are accurately set with gage blocks in the Performance Fixture. Complete a lifter bushing job in less than one hour!

Part #650-3-1

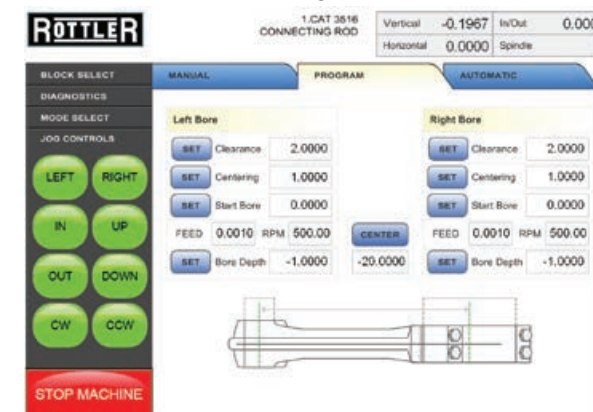
CONNECTING ROD FIXTURES

Rottler's patented Connecting Rod Fixtures allow large connecting rods to be surfaced and bored on the F69A machines. The Rottler boring fixtures allow both big end and small end to be bored in one set up resulting in perfect parallelism between big end and small end. All the rods in a set can be accurately bored for equal center to center distance, a must for today's high compression diesel engines. Special heavy duty fixtures available for boring very large, heavy connecting rods found in natural gas compressors and workboat marine engines are available.

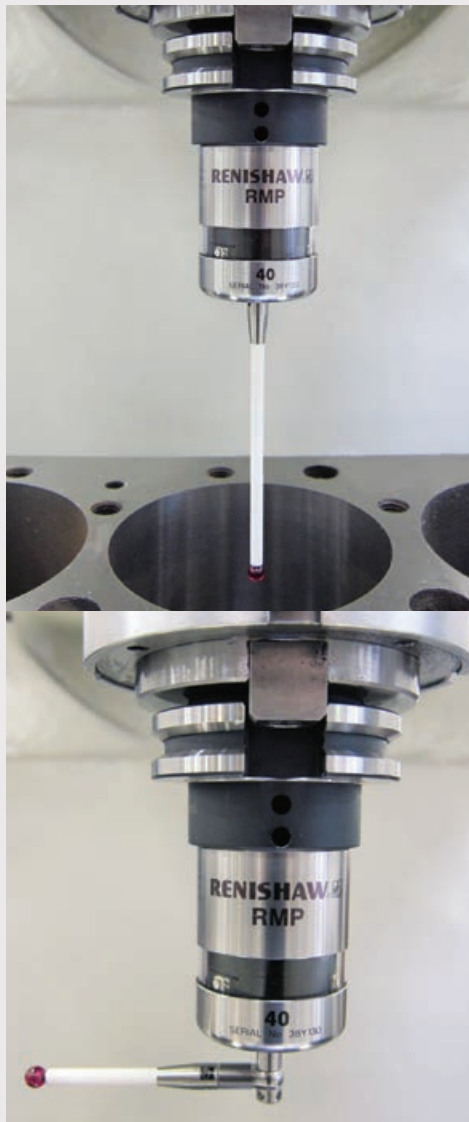


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TOOLING & CUTTERHEADS



Wireless Probe

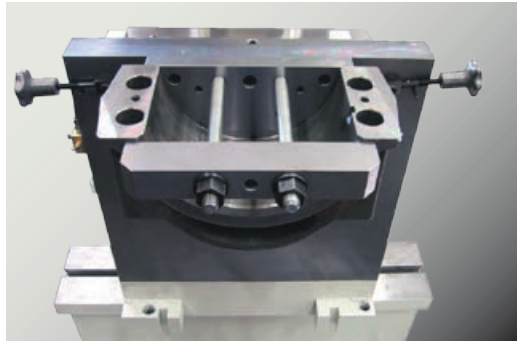
Renishaw Wireless Probe for automatic centering of cylinder and lifter bores and deck height measurement.



Dual Axis Level

Displays both axes simultaneously allowing quick leveling, eliminating any need for shimming and resulting in minimum metal removal when surfacing heads.

Part #7152A



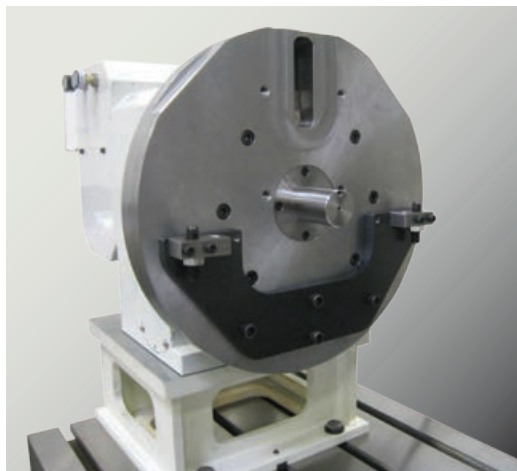
Surfacing Fixture

Heavy Duty surfacing fixture to prepare Natural Gas Compressor Rods for boring.



Leveling Table

Rottler's Dual Axis Leveling Table with two piece vice used for surfacing Connecting Rod Caps and Main Bearing Housings in preparation for main line boring.



Overhead Cam Fixture

Overhead Cam Block Fixture for V blocks on 4th Axis Fixture.

Part #650-3-84



Lifter Tooling

Single point Lifter Tooling fixture for boring, facing and finishing lifter bores and bushings.



Spindle Adapters

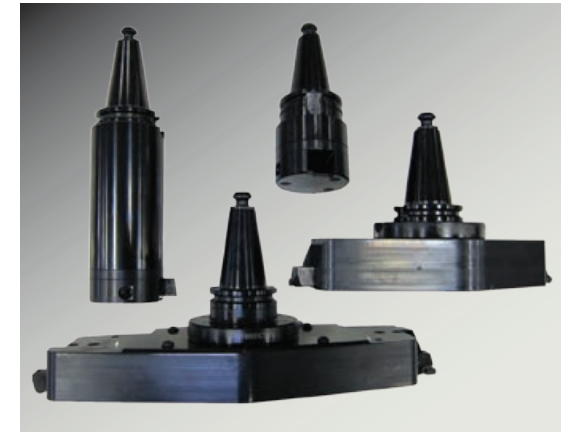
The CAT40 worldwide standard Spindle Taper allows a wide selection of spindle adapters which allows the use of a wide variety of industrial tooling. ISO 40, R8, Morse Taper #5 and 1" (25.4mm) are available. Rottler also has a blank spindle adapter to allow customers to machine and adapt special requirements.

Milling Cutter Holders

Collet Chuck Kits with CAT40 taper allow milling tools such as end mills, slot drills and reamers to be used.

Flycutters and Milling Heads

Surfacing with the F69A machine can be done during the same set up as boring. 10" (250mm) and 14" (360mm) flycutters can be used with CBN inserts for high speed dry surfacing giving excellent surface finish results. The deck of a large block such as a V12 can be surfaced in less than 10 minutes. Multi Teeth Milling Heads can be used for milling welded and spray built up surfaces. Small diameter milling heads are ideal for facing main bearing housing contact surfaces in preparation for line boring to standard diameter. Special Surfacing Software allows very wide surfaces.

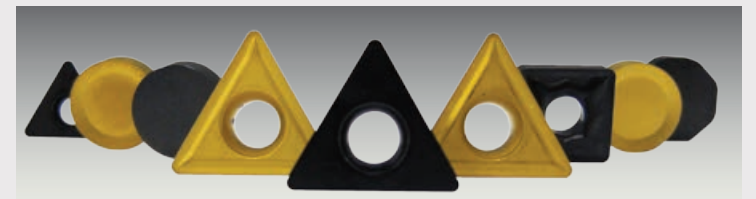


Boring Cutterheads

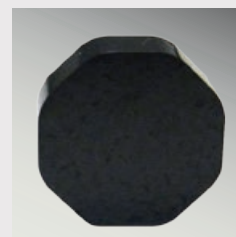
Rottler manufactures a complete range of CAT40 quick change boring cutterheads for boring and sleeving operations. The air assisted CAT40 quick change retention system minimizes down time between tooling changes. Cutterheads can be changed in seconds!

CUTTING INSERTS

Rottler's tag line is 'The Cutting Edge', and we take pride in offering many different grades of cutting inserts for dry, high speed cutting a wide variety of materials. Decades of experience machining engines worldwide allows Rottler machines to dry cut a wide variety of parts. **CBN inserts** give exceptional long life for surfacing gasket faces as well as produce fine surface finishes for reliable sealing of metal gaskets. Dry CBN surfacing eliminates the need for wet grinding and at the same time gives flatter surfaces as cutting pressure is substantially reduced compared to surface grinding. **PCD inserts** allow soft metals such as Aluminum to be surfaced at high speed without coolant.

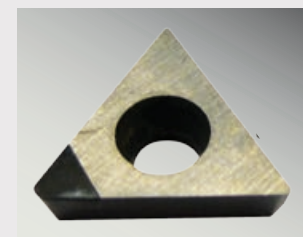


Rottler offers several different grades of **indexable carbide inserts** for cylinder boring & sleeving and main & cam line boring. **Special Black coated carbide inserts** are capable of standard to heavy sleeve cuts up to 1000rpm. **Triangle inserts** work well where cutting a bore to a square shoulder is needed, such as sleeves and counterbores. **Finishing Inserts** provide a sharper edge which results in a smoother surface finish on the cutting surface, ideal for finishing counterbores. **Carbide inserts** are available with 1/64" (0.4mm) and 1/32" (0.8mm) corner radius. Specially custom sharpened tools are available for operations such as chamfering, O-ring grooving, undercutting and blind hole boring.



Octagonal Cutting Inserts

New Octagonal 16 Cutting Corner Surfacing Inserts have increased corner radius to allow faster feed rates and finer surface finish.



PCD Tipped Insert for Boring Aluminum

PCD cutting corner allows aluminum to be bored at high speed without any coolant.

This system comes complete with Rottler Cylinder Head Digitizing, Programming and Porting Software for fast, easy digitizing and porting of cylinder heads directly on the machine. Includes the same great ability to manipulate port profiles and balance cross section areas as our P69 Porting Machine. Programming can be done directly on the machine, not necessary for any stand alone computers or third party software. Factory and on-site operator training is included in the package. Cylinder head fixture plates and porting tools to suit cylinder heads to be digitized and ported must be ordered separately.



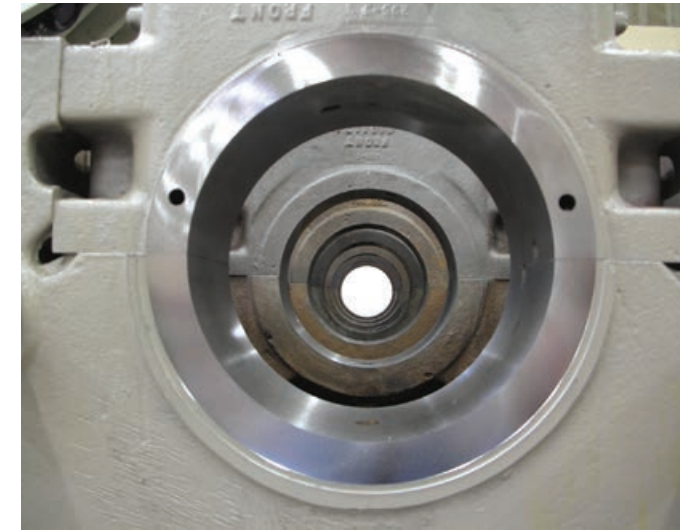
ROCK AND ROLL HEAD PORTING FIXTURE



Features

- 360 degrees on A axis
- 35 degrees of tilt in either direction on B axis
- 25" (635mm) Cylinder head length capacity (extendable for special applications)
- Overall Length of fixture 44" (1120mm), Overall depth of fixture 19" (483mm), Overall height of fixtures 20" (500mm)
- Quick disconnect electrical connections
- One piece system with alignment keys and four bolts quickly and easily attach to machine table.
- With a one piece base, alignment keys and quick disconnect electrical connections this fixture is easy and fast to set-up on any F69A or F69ATC machine.
- Exclusive to Rottler is the use of cycloidal gear drives on both A and B axes for near zero backlash of less than one arc minute.
- This system comes complete with Rottler Head Porting Software for the same fast easy digitizing of cylinder heads on the machine and the same great ability to manipulate port profiles. (Digitizer must be ordered separately).

For cast iron only.



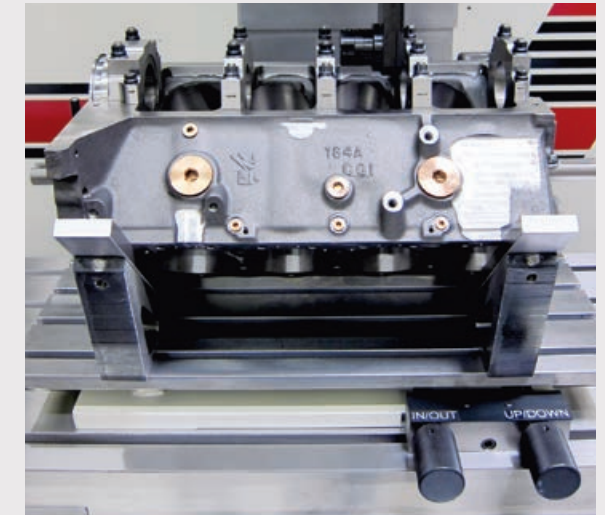
Thrust Facing

Rottler's unique circular interpolation software and thrust facing tooling allow thrust faces to be machining perfectly square to bearing centerline using the same right angle drive that is used for line boring. Single point cutting allows build up to be removed without chatter resulting in fine surface finish.



Precision Line Boring with Right Angle Drive

Precision Line Boring with Rottler's exclusive 90 degree right angle drive provides perfectly round bores and straight lines, no honing necessary! Hard steel main caps and aluminum blocks can be lined bored in one process!

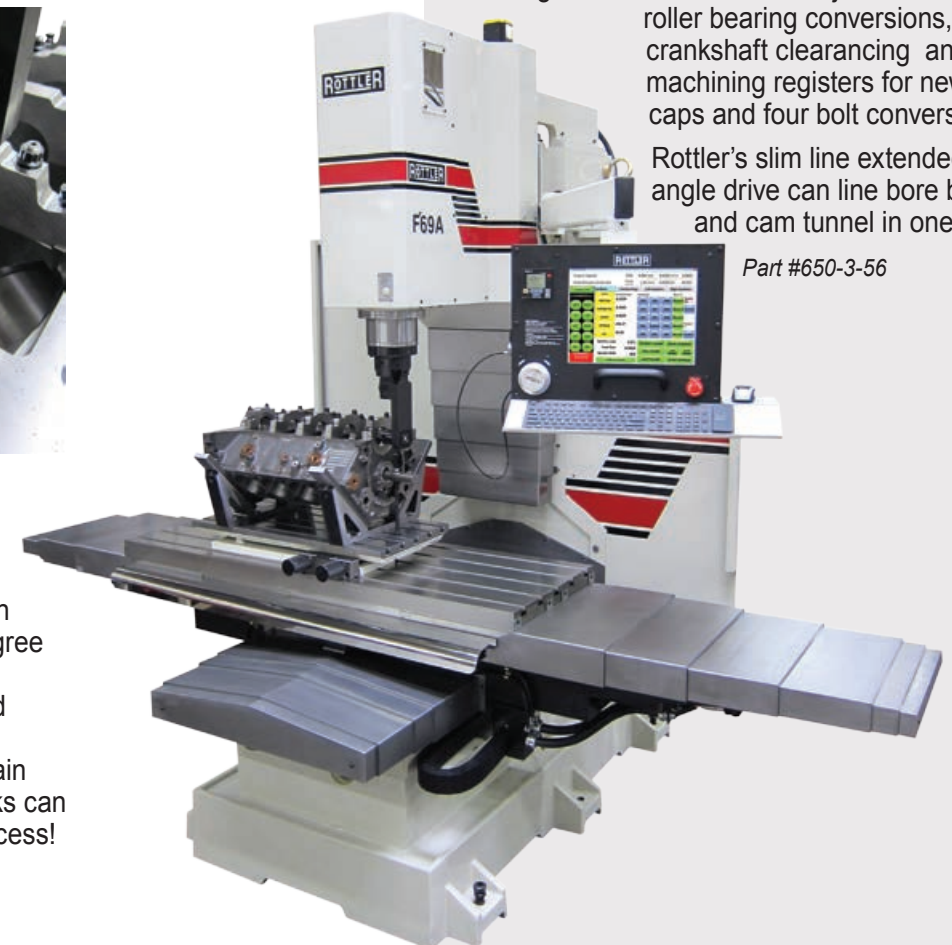


Line Bore Pivot Table

The Rottler Line Bore Pivot Table is a fast and easy system to set up blocks and heads for line boring. The table has five T-slots which allow set up of locating devices such as V-cradles. The pivot table is preloaded which allows machining without clamping.

This fixture is used for main and camshaft line boring. It can also be used for jobs such as roller bearing conversions, stroker crankshaft clearancing and machining registers for new main caps and four bolt conversions. Rottler's slim line extended right angle drive can line bore both main and cam tunnel in one set up.

Part #650-3-56



STANDARD EQUIPMENT

- CNC (Computer Numerical Control) Machine using Windows Operating System and Industrial PC with Intel Processor. Precision Programming and Control thru a 15" (381mm) Computerized Touch Screen.
- Software options available for Programmable & Automated Cycles such as Boring, Surfacing, Lower Sleeve Offset Boring, Water Hole Repairs, Porting, Main & Cam Line Boring, General CNC Machine Work
- Internet connection to the machine computer
- Electronic hand wheel for manual movement - per click: Coarse Mode .01" (.25mm) Medium Mode .001" (.01mm) Fine Mode .0001" (.002mm)
- Precision Digital Readout, .0001" (.002mm) Resolution in 3 Axis
- 3 Axis Movement by Precision Ball Screws & AC Servo Motors - Infinitely Variable
- X Travel - Horizontal Movement (Left/Right) - 40.5" (1029mm)
- Y Travel - Horizontal Movement (In/Out) - 20.5" (521mm)
- Z Travel - Vertical Movement (Up/Down) - 30.5" (775mm)
- Extra Clearance Between Spindle Nose and Machine Table - 39" (990mm)
- High Speed, Rigid Spindle for Chatter Free Cutting
- Spindle Rotation by AC Servo Motor - Infinitely Variable 100-5000RPM
- Automatic Central Lubrication System
- Power Quick Change Tool Retention System - Cat 40
- Chip Shield Assembly
- Operation and Spare Parts Manual

SPECIFICATIONS

Made in U.S.A.

	AMERICAN	METRIC
Table Size	59 x 20"	1500 x 508mm
T-Slots (no. - wid. x dis.)	5 - 0.63" x 3.94"	3 - 16mm x 100mm
Travels		
X Travel (Horizontal)	40.5"	1028mm
Y Travel (In/Out)	20.5"	521mm
Z Travel (Vertical)	30.5"	775mm
Spindle Nose to Table	10 - 40"	254 - 1016mm
Spindle Center to Column	20.9"	530mm
Spindle		
Spindle Taper		Cat 40
Spindle Diameter	5.50"	140mm
Spindle Rotation Speed		0 - 5000 rpm
Performance		
Rapid Travel - X,Y	400 IPM	10160mm/min.
Rapid Travel - Z	400 IPM	10160mm/min.
Feed Rate	.001" - .060" per rev.	.02 - 1.5mm per rev.
Repeatability	±0.0002"	±.005mm
Motors		
	AC Brushless Servo Motors with BISS Encoders	
Spindle Motor	6 HP, 168 in-lb	4.48kW, 20Nm
3 Axis Motors	69 in-lb	7.8Nm
General		
Floor Space (D x W x H)	90D x 123W x 114"H	2286D x 3124W x 2895mmH
Shipping Dimensions (D x W x H)		
Domestic	91D x 87W x 115"H	2311D x 2210W x 2921mmH
International	91D x 87W x 99"H	2311D x 2210W x 2515mmH
Machine Weight	9000lb	4091kg
Electrical Requirement	208/240V, 30 A, 50/60Hz, 1 Ph	
Air Requirement	100 psi	7 Bar
Paint Color Code	RAL9002 (Grey White)	

Specifications and design subject to change without notice.

September 2015

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