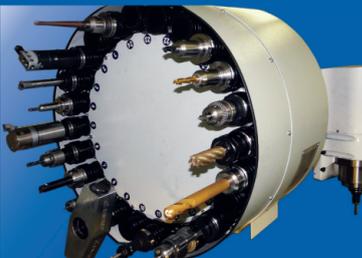


24 or 40 Tool Swing Arm ATC



Equipped with a 24 or 40 pocket Automatic Swing Arm Tool Changer the A590 holds enough tools for both cylinder head and block work. Tool changes are fully automatic, taking just a few seconds. Tool changer is located up and out of the way of the work envelope of the machine and does not take up any work space.

27 HP or 40 HP Spindle



High Torque 27HP or 40HP, 40 taper spindle delivers much more low end than the other guys. The A590 can easily machine a large variety of materials providing superior surface finishes while delivering the low end torque necessary for drilling, tapping & roughing out material. 100% duty cycle spindle operation.

Auto Tool Length Measurement



Eliminates operator error and increases accuracy. Automatic Tool Length measurement, takes the guess work and labor out of setting up tools. Menu driven, push button measurement only takes a few seconds for each tool. More accurate and much faster than setting tools by hand.

Cylinder Head Surfacing



Achieve low RA's with CENTROID's own surfacing tooling. Designed and manufactured in-house specifically for cylinder head and block surfacing. T-Slot table accepts cylinder heads for surfacing.

T-Slot Table



Bolt-on T-slot table to hold any part. Converts machine into a general machining center. Allows you to quickly switch from heads or blocks to general machining. T-Slot table accepts: parts, vises, custom fixtures, & cylinder heads with standard hardware.

All-around Machining Center



Create all kinds of Billet parts: Manifolds, injector rails, impellers, spacers, adapters, covers, crankshafts, suspension parts, exhaust parts, throttle body and carburetor parts, make anything you can imagine.

Engraving



Included Software:

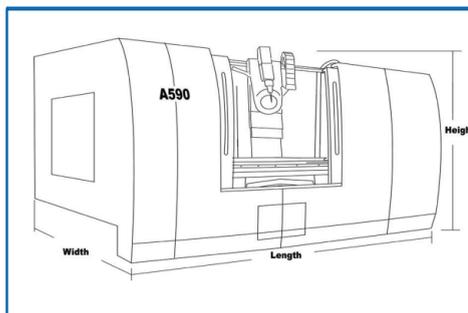
In addition to **Mastercam** Multi-Axis with Port Expert, Verify and 1st year Mastercam maintenance, the CENTROID CNC control includes: Windows OS, "Intercon" conversational part making software, CENTROID's digitizing and probing cycles, graphical part program preview, automatic tool measurement, cutter radius compensation, unlimited file size, advanced block lookahead, sub programs and macros, part scaling and mirroring, rigid tapping, compression tapping, multiple work coordinate systems, coordinate system rotation, programmable spindle speed, menu driven setup menus and extensive canned cycles including boring, pocketing, drilling & tapping cycles and threadmilling. The Block option includes all of the above plus: CENTROID's "True Block" Conversational Engine Block CNC Blueprinting and Machining software includes but not limited to: Automatic dimension probing before and after machining. Pre-programmed block operations with fill in the blank menus for common block operations. Boring, Surfacing, Four Bolt Main conversions, Chamfering, O-ring, Lifter boring. Remote diagnostics is also included and all software upgradable via the internet or USB.

Additional Features & Capabilities

- Billet Heads, Blocks and parts
- Manifold digitizing and porting
- Rigid & Compression tapping
- Threadmilling
- Compound angle drilling and tapping
- Valve spring pockets
- Clean up oil returns, install screens
- Rocker arm stud conversion
- Block lightening
- 3D Digitizing and Surfacing
- Design ports by model or 100% digitally
- Auto part alignment to program
- Auto rough and finish passes
- State-of-the-art Linear Rail machine design
- Dual Auger with waterfall washdown
- Extra heavy rigid machine frame design
- Included refractometer & first coolant fill
- Remote support via internet

Machine Specifications: A590

Table Size:	23.6" x 66.9" (600mm x 1700mm)
Longitudinal travel (X):	59" (1498mm)
Cross travel (Y):	27" (685mm)
Vertical travel (Z):	36" (914mm)
A axis:	360 degree rotation
B axis:	180 degrees of motion, +/- 90 degrees of tilt
Maximum table load:	2425lbs (1100kg)
Spindle power:	27HP/ 20kW, (40 HP / 30kW *optional)
Spindle taper:	CAT40
Spindle speed:	20,000 RPM (27 HP), (16,000 RPM 40 HP *optional)
ATC	24 Position Swing Arm tool changer, (40 Tool *optional)
Rapid feed rates (X,Y,Z):	X,Y 1000 IPM, Z 800 IPM
Accuracy:	0.0005" (0.0127mm)
Repeatability:	0.0002" (0.0060mm)
Axis drive motors (X,Y,Z,A,B):	X,Y 2.9kW, Z 4.5kW, A, B 1.8kW AC Brushless
Enclosure	Enclosure w/ Chip Auger, (Chip conveyor *optional)
Guide ways	Heavy Duty Linear guideways, Twin pair on bed
Coolant pump:	55 PSI, 17 gal/min 110 gallon capacity
Auto lubrication pump:	2.5 amp 2 liter reservoir
Coolant separator	Disc type Oil/Coolant separator
Way Covers	Telescoping metal way covers
Power requirement:	208-240v 3 Phase, 27HP / 100 amps, (40HP / 200 amps)
Air requirement:	90-100 PSI, 6.2-6.8 Bar



Machine Footprint: A590	
Length:	196" (4979 mm)
Width:	138" (3506 mm)
Max Height:	119" (3023 mm)
Shipping Footprint:	
Length:	156" (3963 mm)
Width:	92" (2337 mm)
Height:	111" (2820 mm)
Weight:	
Machine:	23,000 lbs (10432 Kg)

Full Service Training and Warranty:

- Customized one-on-one training, tailored to each customer's specific needs.
- One year standard warranty on parts, labor, and technical support. Machine in-shop setup included.
- Personalized service and support. Support available outside M-F 9-5
- One number to call for every component in the system. Direct support phone numbers.
- Internet enabled with on machine remote access trouble shooting & programming assistance.

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A590 Optional Equipment

- Coolant Through the Spindle (CTS)
- 40 HP/ 16,000 RPM Spindle
- 40 Tool Swing Arm ATC
- Chip Conveyor
- T-Slot Cylinder Head Surfacing Fixture
- O-Ring Groove Tooling
- Stroker Clearance Tooling
- Main Cap Conversion Tooling
- Additional Cylinder Head Mounting Plates
- Specialized Sleeve Boring Tooling
- Cam and Crank Locator Ring Sets
- Dual Cylinder Head Plates
- Quad Cylinder Head Plates
- Head Digitizing Service
- Additional Operator Training
- CNC Programming
- Engineering Services
- On-site Service, Maintenance and Support



CENTROID™

A590
5-Axis Engine Shop CNC



Heads, Blocks and Parts
Same Machine, Same Fixture

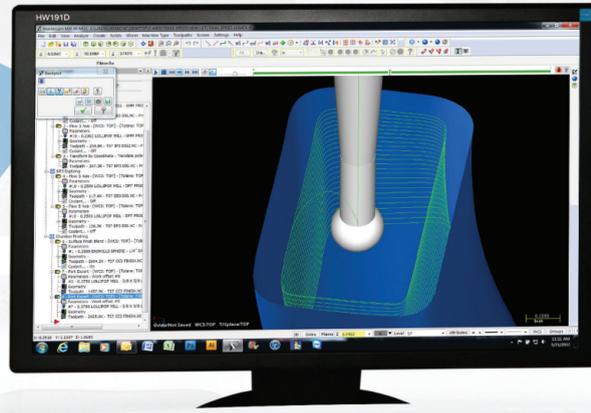
Super Duty 5-axis CNC
w/ 180° B-axis Spindle



159 Gates Rd.
Howard, PA 16841
(814) 353-9256 ext.101
(814) 353-9265 Fax
sales@centroidcnc.com

① Digitize

With up to +/- 90° of tilt, the A590 easily reaches into the most extreme port and combustion chamber designs. Heads are digitized in 5-Axis right on the machine – no need to purchase additional equipment to digitize your race-winning designs. Centroids new for 2017 autonomous digitizing for ports and chambers allows the user to collect high quality data automatically. Simply set a start and end point and go!



② Create

The digitized data is exported to Mastercam where surfaces are created and edited. 5-axis toolpaths are created on your desktop PC or Laptop, no need to tie up the machine to program a cylinder head. The machine can be running a job while you are programming the next head in the comfort of your office, home, remotely etc.

③ CNC Port

The CNC programs are copied into the CENTROID CNC control via USB, Ethernet or Wifi. A new casting is loaded into the machine and the porting can chamber work begins. The A590 machines exact copies of your ports and chambers for the ultimate in consistency and power gains.

Turnkey System Includes

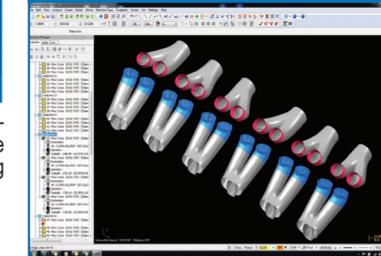
- ✓ 5-Axis machining center
- ✓ M400 5-Axis CNC control
- ✓ Patented articulating head design
- ✓ **Mastercam** CAD/CAM software
- ✓ Personalized CNC porting training
- ✓ Digitizing probe & software
- ✓ Carbide lollipop porting tool
- ✓ Auto tool length setter
- ✓ Cylinder head fixture plate
- ✓ 27Hp / 20,000RPM spindle
- ✓ CAT40 tool holders
- ✓ Air Through Spindle
- ✓ MPG electronic handwheel
- ✓ Industry's best warranty & support

Personalized Training

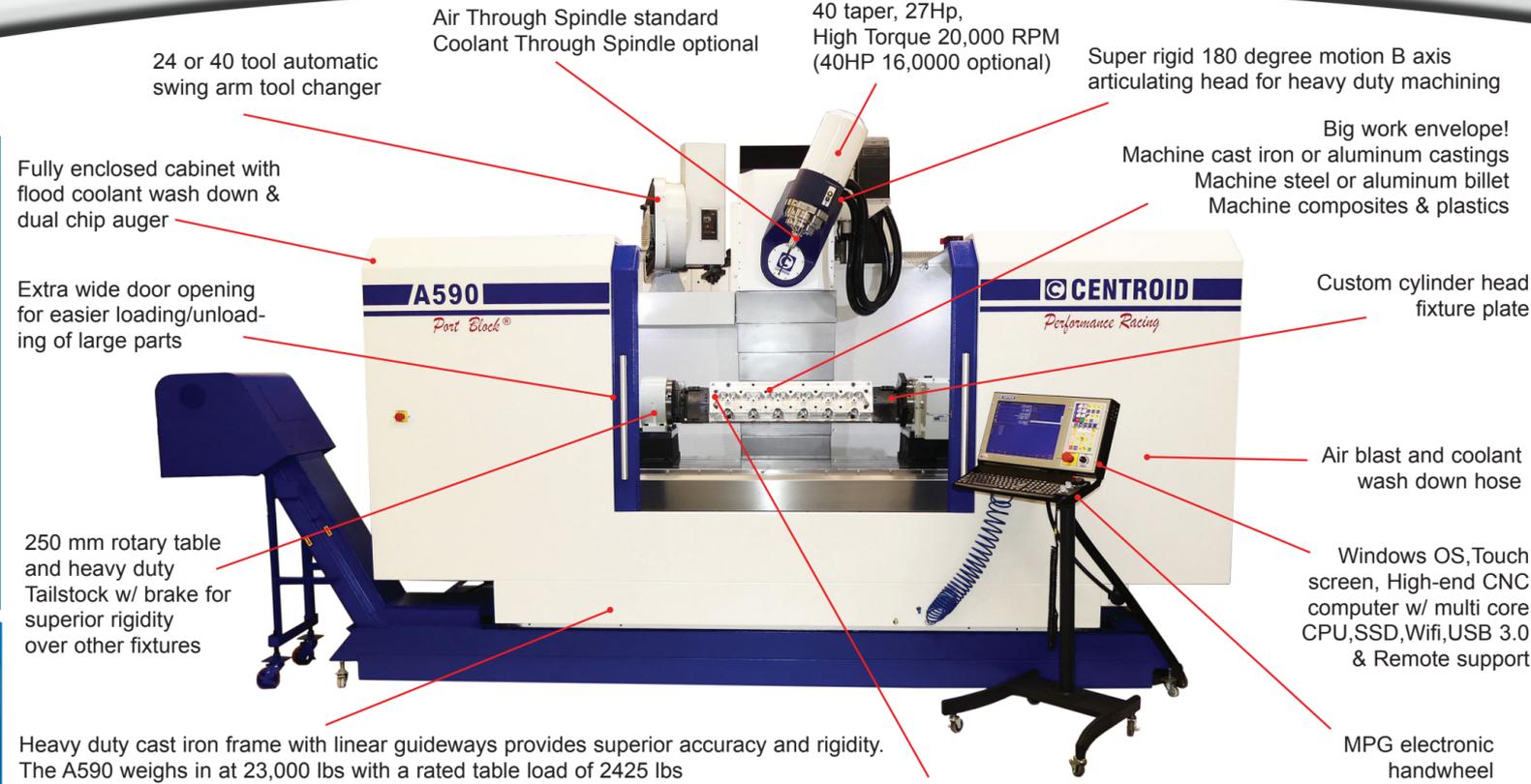


Our skilled technicians teach you how to reproduce your race winning designs with ease. The comprehensive personalized one-on-one training is tailored to your specific application.

Mastercam CAD/CAM software w/ "Port Expert"



Mastercam's "Port Expert" toolpath has special features designed specifically for cylinder head porting that simplify the process and create toolpaths with reduced run-time and superior surface finish. Mastercam allows you to quickly create accurate reproductions of your intake, exhaust and combustion chambers, or design ports from scratch based on the stock castings. Easily view, copy, analyze and modify intake ports, exhaust ports, and combustion chambers. And you have the full power of the world's #1 selling CAD/CAM package for other machining needs including custom engraving and general part machining.



24 or 40 tool automatic swing arm tool changer

Air Through Spindle standard
Coolant Through Spindle optional

40 taper, 27Hp,
High Torque 20,000 RPM
(40HP 16,000 optional)

Super rigid 180 degree motion B axis articulating head for heavy duty machining

Big work envelope!
Machine cast iron or aluminum castings
Machine steel or aluminum billet
Machine composites & plastics

Custom cylinder head fixture plate

Air blast and coolant wash down hose

Windows OS, Touch screen, High-end CNC computer w/ multi core CPU, SSD, Wifi, USB 3.0 & Remote support

MPG electronic handwheel

Extra long fixture accommodates 6-cylinder diesel heads & blocks

Starter Tooling Package



The comprehensive tooling package includes everything you'll need to go straight into production including a "MPG" jogging handwheel, 3D mouse, digitizing probe, automatic tool length setter, a custom cylinder head fixture plate, combustion chamber ball end mill and a carbide lollipop cutter specially designed by CENTROID to provide optimal chip removal and a superior surface finish.

User-Friendly 5-Axis CNC



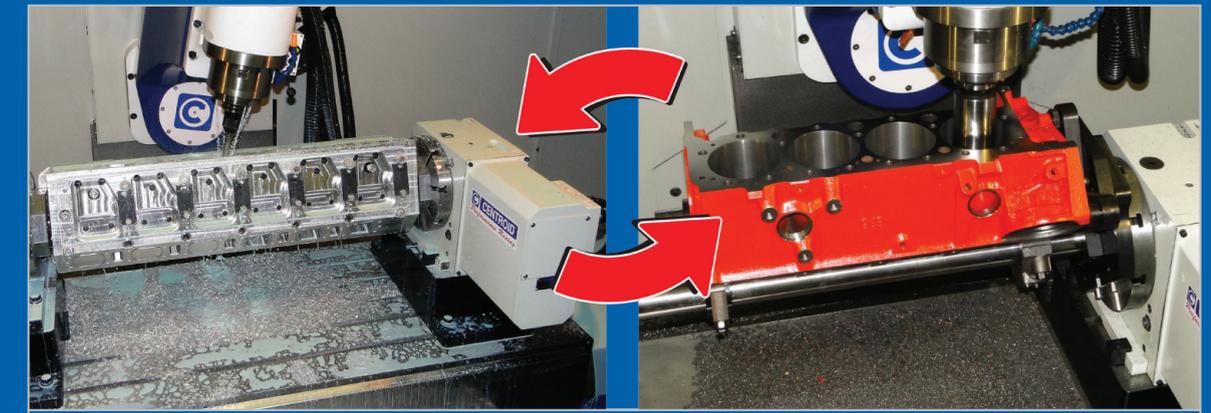
Simple to operate, the CENTROID CNC control is designed with the operator in mind. Graphically assisted part and tool setups along with straightforward menus and an easy to read display ensures every operator will be machining quality cylinder heads in no time. Windows OS, touch screen, remote assistance, internet ready, the control software is easily updated giving you access to the latest CNC technology for years to come. Made in the USA.

Combustion Chambers



Machine perfect combustion chambers every time. By combining CENTROID's smooth motion control and built-in digitizing software with Mastercam's advanced toolpaths, you can easily reproduce your hand-ported designs with results superior to other methods and machines.

Block Option: Head to Block Swap: Same Machine, Same Fixture



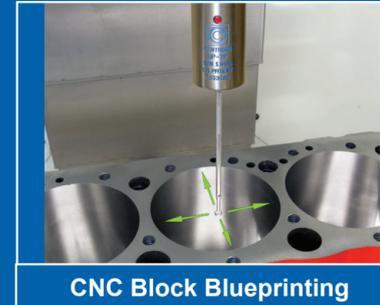
CNC machine cylinder heads, blocks and parts with the A590 Port-Block.



Cylinder Boring



Deck Surfacing



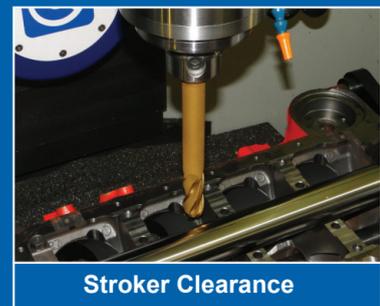
CNC Block Blueprinting



Billet Block and Heads



Head Stud Conversion



Stroker Clearance



Additional capabilities: Lifter Boring, Chamfering, O-ring groove, Spot facing, Engraving, Rigid Tapping, Threadmilling, Drilling, Four Bolt Main Conversions, Pocketing, Block Sleeving, Crankshaft machining and general part machining. See video of these operations and more on our website.