POLYMER COMPOSITE TECHNOLOGY

All the GTS Precision Turning Centers are constructed on a solid polymer composite castings. Polymer composite technology offers tangible improvements from traditional cast-iron or meehanite castings. Polymer castings are a composite mixture of natural and man made materials combined with a variety of mineral fillers, and a polymer-binding agent. When combined through a process of mixing, molding, and curing, an extremely powerful cross-linked bond is formed, giving the polymer materials greater modular strength and stability. This superior engineered material contains properties that insure machine tools constructed on polymer bases will be "pound-for-pound" more rigid, more vibration free, and more resistant to oxidants.

POLYMER TECHNOLOGY BENEFITS

- VIBRATION RESISTANT
- INCREASES TOOL LIFE UP TO 40%
- LOWER THERMAL ABSORPTION
- GREATER STABILITY
- IMPROVED CHIP FLOW

Solid GTS Polymer Composite Base
Weight: 5650 lbs. (2568 kgs.)
GTS-T

MACHINE PROFILE

- 5 HP Infinitely Variable Spindle And Drive
- 60 Degree Slant Bed “Fall Away Chip Design”
- 5C Collet Or 5 Inch Power Chuck
- 20 Inch Dual “T” Slot Tool Mounting Plate
- Ergonomic Design Easy Access Chassis
- Industrial Powder Coated Finish
- Safety Interlocks on Large Access Door

CNC Control

- Fagor 805T CNC Control
- 9” Monochrome Monitor
- Standard RS-232 Port
- Parametric Programming
- Background Editing
- Advanced Graphics (optional)

The GTS is designed to incorporate a 5C collet nose or a “quick change” direct mount allow five inch power chuck. Through hole capacity is 1.062 inch (27mm). Add a bar feed system to increase productivity or a multi-bar for “lights out” operation. The rigidity and power of the GTS Series lathe allows you to machine the tough materials that are common today; Iron, Titanium, In-43, 300 series stainless, and heat treated materials. Capable of high metal removal rates, the GTS is an ideal choice for small parts production.

GTS-21i

MACHINE PROFILE

- Premium Work Light Permanently Sealed
- Stainless Telescopic Way Covers
- Available “Quick Change” Tool Plates
- Cylindrical Spindle Nose “Zero Run-Out”
- Complete Coolant System
- Single or Three Phase, 220 Or 440 Volt
- Manual Pulse Generator, Lighted Buttons

CNC Control

- GE Fanuc 21i-T CNC Control
- LCD Monitor with Function Keys
- Standard Fanuc Programming
- With Advanced Capabilities
- RS232 and PCMCIA Card
- High Speed Fiber Optic Connectivity

Big things do come in small packages. Our tight footprint allows a maximum number of spindles in a minimal amount of space. Real estate is playing a significant role in the industry today. Our engineers are working daily to improve space efficiency. Polymer cost bases aid greatly in reducing the size requirements of our machines. Smaller, more compact electronics are employed to give you more punch per square foot. In most cases, two GTS Turning Centers can take the same amount of space as a single machine from our competitors.
The GTS Series Turning Centers provide superior mechanical advantages that equate to longer life, better performance, and highly accurate machining specifications. Every bearing surface is hand scraped for squarness, flatness and perpendicularity in an “old world” tradition of superior craftsmanship. The mechanical advantages are derived primarily from four key sources: our massive Polymer Composite Base with a size-to-weight ratio unequaled in its field (see page 2), our extremely rigid Cross Member Carriage where the load bearing members are always directly below the working tool, also our Superior Spindle with integrated collet system employing four pairs of precision matched bearings, and our Ultra-Precision Axis Positioning Systems.

**Rigid Cross Member Carriage**
The cross member carriage design incorporates a honeycomb structural configuration. This is the optimal combination of lighter weight, increased stability, and improved strength and rigidity. Inherent is superior thermal stability. The design essentially eliminates stress relief distortion and dramatically reduces frequency conduction. The by product of a polymer base and the Ultra-Precision Axis Positioning System is a substantial noise reduction in machining, with improved tool life.

**Superior Spindle Performance**
The high performance, advanced design, 6000 RPM spindle is standard on the GTS. The state-of-the-art, webbed, modular configuration of the spindle housing provides unsurpassed thermal stability, producing efficient heat dissipation and noise suppression. Internally, the superior design and construction continues with super precision thrust bearings sets of class 7, angle contact bearings at each end of the spindle. Lubricated for life and protected from coolant penetration or external contamination, the spindle runs nearly silent at all speeds. The pneumatic collet closer has a 22mm capacity. Spindle and collet closer are a single assembly. Each is dynamically balanced and calibrated to 2.5 g’s. Every spindle is “run in” for thirty-six hours in a simulated load environment with temperature probes and precision gages to monitor growth and temperature. The nose of the spindle is cylindrical. Standard collet designs, and “direct mount” chucks are precision adjustable to a “near zero run out”

**Precision Axis Positioning System**
The positioning system features linear technology. High pre-load, minimal friction, four circuit roller bearings and a precision ground, maximum pre-load ball screw are mounted in a super-precision thrust bearing set. This unique combination is second to none as we measure performance, reliability and accuracy. When optionally matched to our (low inertia, high output brushless motor and drive package, we achieve maximum performance. At rapid speeds over 1000 IPM, little if any perceptible excel or decel curve is apparent.
We offer a number of options and accessories for the GTS. These additions are designed to accommodate most machining requirements. We offer spindle positioning, C-axis contouring, live tooling, parts catchers, integrated sawing, independent cut-off and complete automated loading systems. We have the right combination of tooling and options to maximize the GTS's performance for your specific machining requirements.

**Parts Escapement System**
A simple, quick parts escapement system is available to accommodate part catching requirements. This option is ideal for production environments and also for delicate parts. The system is pneumatically actuated and is completely programmable.

**Live Tooling**
Live Tooling is available in an assortment of both pneumatic and electric systems. These high precision units are low profile and work well with the gang tooling configuration of the GTS. They are available in 30K, 40K, and 60K RPM spindles. All units accommodate gear reduction modules that can increase torque up to 40 times. Systems are available in a broad range of angled and straight spindle modules for drilling, milling, or grinding. They are generally purchased for use on indexing and C-axis machines.

**Work Holding**
Main spindle and sub spindles have our cylindrical spindle nose design. This design allows for quick changes between 5C collets, dead length collets, and power chucks. The 5C nose adapter, with the Hardinge® “threaded nose” design, accepts all Hardinge® and Hardinge® Step Chucks and other Hardinge® style work holding systems. Dead length collets from Brown and Sharpe, and Schaublin are direct mount. The same draw tube system works to open and close any of the above.

**Additional Options**
- Bar Feeders & Multi-bar Feed Systems
- Fully Automated Loading Systems
- Programmable Vertical Axis Cut-off
- Advanced Safety Systems
- Pneumatic Chucks
- Foot Pedal
- Turn Key Automation
The GTS-55C is a high performance CNC lathe offering complete C-axis interpolation. Manufactured parts often require milling or drilling of some areas after being turned. In order to obtain flats, key ways, or cross holes, the part would have had to be moved to a secondary machine at a considerable waste of time and efficiency. The GTS-55C is the right answer, solving this problem by offering both turning and milling on the same machine with only one operation. Turning is done in the conventional method and milling and drilling is performed by converting the spindle into an interpolating rotary axis. Up to four live tools and six turning tools may be employed on parts to 1" with no tool interference. The GTS-55C is the optimal choice for machining complicated parts on a single machine, in a single operation.

C-axis allows for complete three axis simultaneous interpolation.
The GTS-FX is the flagship of our CNC turning centers. Typically a five axis configuration, the GTS-FX employs a “back working” or “pick off” spindle, a programmable vertical cut-off axis, and a secondary tooling station. These additional components allow the machining of front and back operations on a single work piece. Barfed parts are machined on the first side (including any milling, or cross drilling that may utilize the full C-axis of the main spindle). Upon completion of the first side, the main spindle and the secondary spindle synchronize. The sub spindle collet, or chuck close to grip the work piece. With both the sub and main spindle gripping the part, the independent cut-off tool advances to part the half completed component from the bar stock. The sub spindle now has control of the work piece. The secondary tool slide advances and all back working operations are completed including any cross hole drilling or milling that may be required. The compact footprint of the GTS-FX maximizes floor space efficiency.

The sub spindle has a high performance advanced design, 8000 RPM spindle and collet close. The webbed configuration of the spindle housing provides great thermal stability, with maximum load capacity. It provides heat dissipation and noise suppression. Four super precision angular loaded bearings are matched sets and lubricated for life. The sub spindle comes standard with a fully indexable axis.

The vertical cut-off axis is a servo driven system that provides maximum part off features when machining with the FX system. Programmable feed rates and spindle speed guarantee smooth operation with the best available finish. The vertical cut-off utilizes a 2.5mm pitch 12mm ball screw with a 375 Newton meter brushless motor and drive. It is completely integrated into the closed loop system with the Fagor controller.

The secondary tooling station is mounted on the main spindle side of the machine. Tools are advanced by a pneumatic cylinder and move forward when commanded by M-function from the controller. The same T-slot that exists on the main slide is incorporated on the secondary tool station. All standard holders, including live tooling, are used to perform machining to the backside of the work piece.
GT Machine Specifications

- X Axis travel .................. 15"
- Z Axis travel .................. 7.5"
- Spindle Motor .................. 5HP
- Spindle RPM (variable) ....... 0 to 6,000
- Spindle bore .................. 1.1/16"
- Maximum bar size .............. 1.1/16"
- Standard Hardinge tool holders 1/2"
- Spindle nose with cylindrical centering ........... 5C Hardinge® (optional)
- Maximum chuck size .......... 6"
- Axis thrust .................. 900 LBS.
- Feed Rates .................. 300 IPM
- Rapid Travels ................. 800 IPM, optional: 1000
- Position Repeatability ....... ±0.0005"
- Position Accuracy .......... ±0.0005"
- Collet TIR not to exceed ....... 0.002"
- Machine Weight ............. 3650 LBS
- Machine Dimensions
  (Length, depth, height) .......... 51" x 53" x 70"

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Customer Service & Support

An Important benchmark with which you can truly rate the quality of a machine tool manufacturer is realized after the sale is made. Customer Service is our primary concern at CMS. Every CMS customer benefits from:

- Extensive mechanical and electrical testing for ultimate precision, assuring smooth production start up.
- On-site training is available to get your investment producing quickly and efficiently.
- Full technical maintenance and engineering support for our customers.
- Immediate response to your questions and any other customer service needs.
- On-call technical support over the phone or fax for troubleshooting and guidance.

Customer service is a source of pride for CMS and for our distributors.

Side View (with chip flow) and Front View

Authorized Team Distributor

CMS
COMPACT MANUFACTURING SYSTEMS

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