

VM Series – GP

Milltronics USA



Waconia, Minnesota

Milltronics USA



Headquarters in Waconia, Minnesota

Founded in 1973 with over 45 years building machines and controls

- 14,000 machines installed worldwide

Member of Hurco Machine Tool Group

- Publicly traded company on NASDAQ
- About 800 employees (250 in USA)
- Plants in Indiana, Minnesota, Italy and Taiwan

Minnesota team includes machine design, software, controls, electrical and mechanical engineering

- Also manufacturing, assembly, finance, sales, service, training and applications

VM Series

- VM Series machines are general purpose vertical machining centers designed for variety of machining applications at an attractive price
- Available in five different sizes:
 - VM2515
 - VM3018
 - VM4020
 - VM5020
 - VM5020EZ
- All feature the new Milltronics 9000 Series control



VM Series

Best Value

VM2515 – Spec Summary

- 25" x 15" x 20" travels
- 30" x 16" table, 1,500 lbs. capacity
- 15 hp (peak) – 54 ft lbs torque at 1,450 rpm
- 10,000 rpm spindle
- #40 taper BIG-PLUS® dual contact
- 945 ipm rapid traverse
- Up to 500 ipm feed rates
- 20 station electric swing arm ATC
- Brushless AC servos
- Flood coolant system
- Optional flood coolant and air gun
- Optional auger or lift up chip conveyor
- +/- .0001" positioning accuracy
- Weighs 6,200 lbs.
- Shop floor conversational or offline programming (G-code) with Milltronics 9000 control



Machine shown with options

VM3018 – Spec Summary

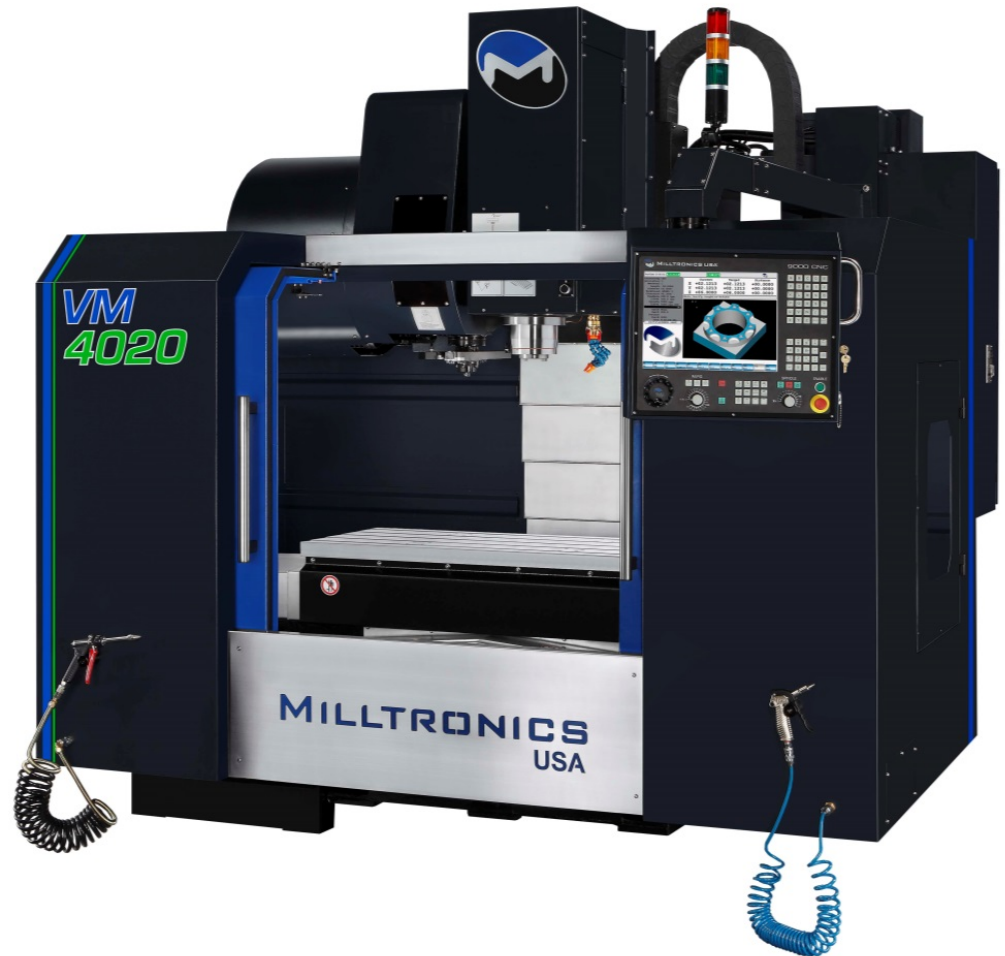
- 30" x 18" x 20" travels
- 34" x 18" table, 1,750 lbs. capacity
- 20 hp (peak) – 75 ft lbs torque at 1,450 rpm
- 10,000 rpm spindle
- #40 taper BIG-PLUS® dual contact
- 945 ipm rapid traverse
- Up to 500 ipm feed rates
- 20 station electric swing arm ATC
- Brushless AC servos
- Flood coolant system
- Optional flood coolant and air gun
- Optional auger or lift up chip conveyor
- +/- .0001" positioning accuracy
- Weighs 9,040 lbs.
- Shop floor conversational or offline programming (G-code) with Milltronics 9000 control



Machine shown with options

VM4020 – Spec Summary

- 40" x 20" x 20" travels
- 46" x 20" table, 2,000 lbs. capacity
- 20 hp (peak) – 75 ft lbs torque at 1,450 rpm
- 10,000 rpm spindle
- #40 taper BIG-PLUS® dual contact
- 945 ipm rapid traverse
- Up to 500 ipm feed rates
- 20 station electric swing arm ATC
- Brushless AC servos
- Flood coolant system
- Optional flood coolant and air gun
- Optional auger or lift up chip conveyor
- +/- .0001" positioning accuracy
- Weighs 9,500 lbs.
- Shop floor conversational or offline programming (G-code) with Milltronics 9000 control



Machine shown with options

VM5020 – Spec Summary

- 50" x 20" x 20" travels
- 52" x 20" table, 2,000 lbs. capacity
- 20 hp (peak) – 75 ft lbs torque at 1,450 rpm
- 10,000 RPM spindle
- #40 taper BIG-PLUS® dual contact
- 945 ipm rapid traverse
- Up to 500 ipm feed rates
- 20 station electric swing arm ATC
- Brushless AC servos
- Flood coolant system
- Optional flood coolant and air gun
- Optional auger or lift up chip conveyor
- +/- .0001" positioning accuracy
- Weighs 10,000 lbs.
- Shop floor conversational or offline programming (G-code) with Milltronics 9000 control



Machine shown with options

VM5020EZ – Spec Summary

- 50" x 20" x 20" travels with extended spindle nose to table 9.9" – 29.9"
 - 4" - 24" on VM5020
- 52" x 20" table, 2,000 lbs. capacity
- 20 hp (peak) – 75 ft lbs torque at 1,450 rpm
- 10,000 RPM spindle
- #40 taper BIG-PLUS® dual contact
- 945 ipm rapid traverse
- Up to 500 ipm feed rates
- 20 station electric swing arm ATC
- Brushless AC servos
- Flood coolant system
- Optional flood coolant and air gun
- Optional auger or lift up chip conveyor
- +/- .0001" positioning accuracy
- Weighs 10,000 lbs.
- Shop floor conversational or offline programming (G-code) with Milltronics 9000 control



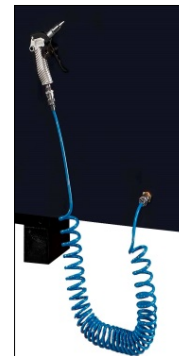
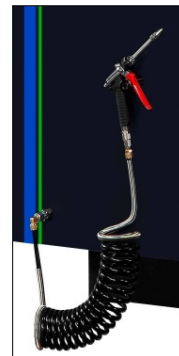
Machine shown with options

Options

Accessories

Options and Accessories

- Coolant thru spindle (300 psi)
- Programmable spray mist
- Programmable air blast
- Washdown gun
- Air gun
- Additional worklight (left side)
- BT tooling
- Chip augers or chip conveyors
- Spindle chiller
- Rotary tables
- Tool and part probes
- Auxiliary keyboard
- Remote jog
- Offline software

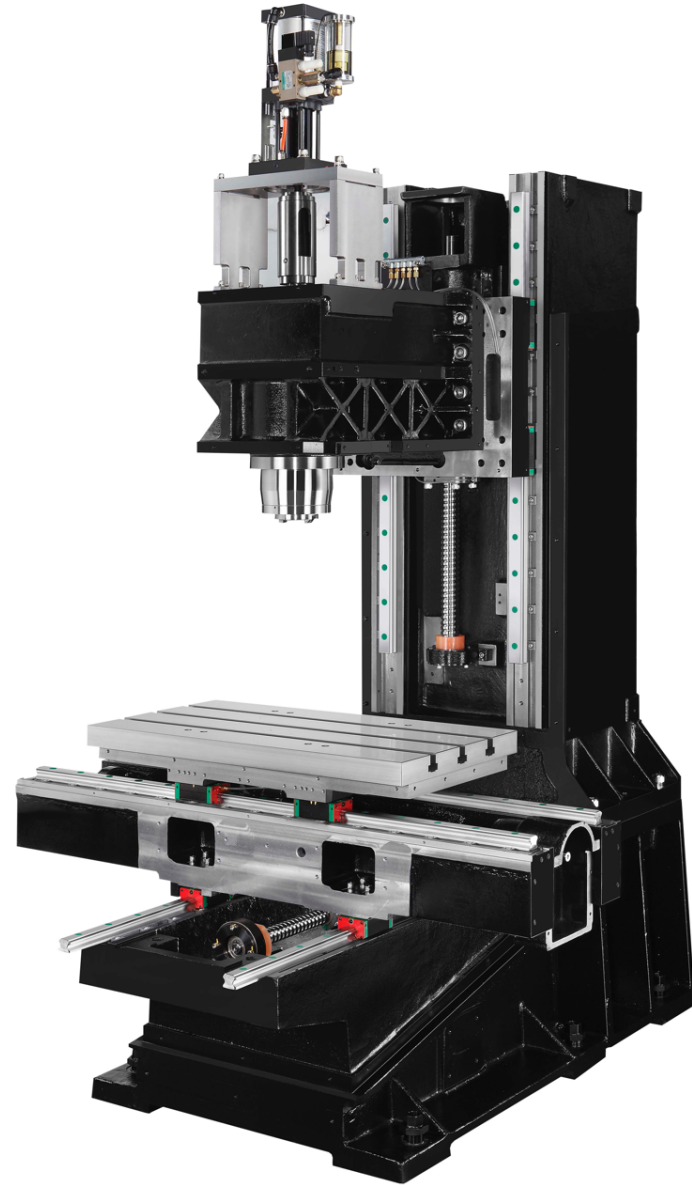


VM Series

Made Right

Made Right – VM2515

- High-grade cast iron frame optimized with Finite Element Analysis (FEA)
- Brushless Yaskawa Sigma V digital AC servos
- Direct drive Z axis – no counterbalance
- Hiwin® ballscrews doublenut pre-loaded and anchored at both ends
- 32 mm ballscrews (X/Y), 40 mm (Z)
- 30 mm Hiwin® linear motion guideways (X/Y) 35 mm (Z)
- Distance between X axis ways 9.45"
- Distance between Y axis ways 15.04"
- Distance between Z axis ways 13.15"
- AC spindle motor
- Cartridge spindle
- Spindle air purge and blast
- Electronic spindle orient (encoder)
- Electric swing arm ATC



Made Right – VM3018

- High-grade cast iron frame optimized with Finite Element Analysis (FEA)
- Brushless Yaskawa Sigma V digital AC servos
- Direct drive Z axis – no counterbalance
- Hiwin® ballscrews doublenut pre-loaded and anchored at both ends
- 32 mm ballscrews (X/Y), 40 mm (Z)
- 35 mm Hiwin® linear motion guideways (X/Y) 45 mm (Z)
- Distance between X axis ways 11.81"
- Distance between Y axis ways 25.6"
- Distance between Z axis ways 14.57"
- AC spindle motor
- Cartridge spindle
- Spindle air purge and blast
- Electronic spindle orient (encoder)
- Electric swing arm ATC



Made Right – VM4020

- High-grade cast iron frame optimized with Finite Element Analysis (FEA)
- Brushless Yaskawa Sigma V digital AC servos
- Direct drive Z axis – no counterbalance
- Hiwin® ballscrews doublenut pre-loaded and anchored at both ends
- 32 mm ballscrews (X/Y), 40 mm (Z)
- 35 mm Hiwin® linear motion guideways (X/Y) 45 mm (Z)
- Distance between X axis ways 11.81"
- Distance between Y axis ways 25.6"
- Distance between Z axis ways 14.57"
- AC spindle motor
- Cartridge spindle
- Spindle air purge and blast
- Electronic spindle orient (encoder)
- Electric swing arm ATC



Made Right – VM5020 & VM5020EZ*

- High-grade cast iron frame optimized with Finite Element Analysis (FEA)
- Brushless Yaskawa Sigma V digital AC servos
- Direct drive Z axis – no counterbalance
- Hiwin® ballscrews doublenut pre-loaded and anchored at both ends
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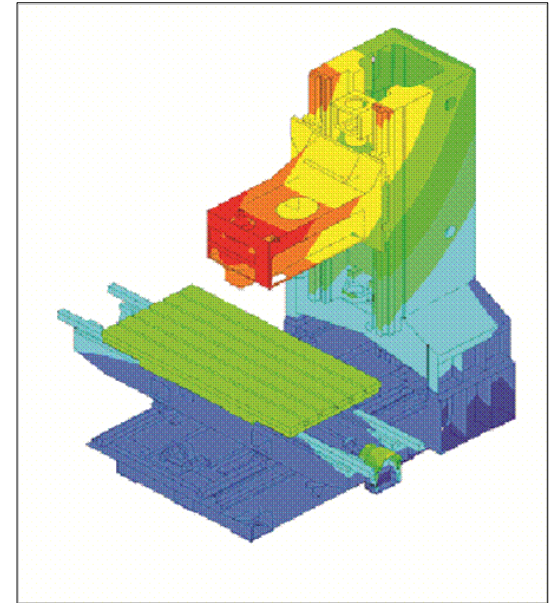
*VM5020EZ features 6" ground riser block



Finite Element Analysis

Finite Element Analysis (FEA) is used to evaluate structural rigidity, torsional stiffness, thermal characteristics and natural frequency to achieve the best frame design

- Critical with today's high velocities and accelerations - machine performance must be carefully optimized in order to maintain part quality



Laser Interferometer

After assembly, Milltronics VM machines are tested – including the use of a laser interferometer:

- The laser interferometer provides comprehensive accuracy assessment of machine alignment and any roll-pitch-yaw errors in machine



VM Spindles

VM Series spindles are designed and manufactured by Kenturn and assembled in clean room:

- BIG-PLUS® dual contact
- Larger diameter for rigidity
- Made of chrome-molly alloy for longer wear & corrosion prevention
- ABEC 7 precision class angular contact bearings
- Permanently grease packed
- Air purged top & bottom to prevent contamination
- Precision balanced for long life

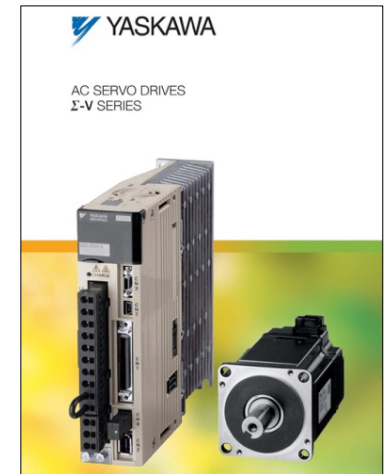


BIG-PLUS® greatly improves rigidity by simultaneous fit of taper and face – better heavy or high speed cutting, deep or large diameter boring – also longer tool life

Yaskawa

Milltronics uses state-of-the-art premium servos and drives from Yaskawa, the world's largest manufacturer of motors and drives

- Yaskawa Sigma V digital drives .625 millisecond velocity loop frequency response time (1.6 kHz)
- Encoders: 1,048,576 pulses per revolution
- Enhanced vibration suppression – delivers 5G resistance
- Higher speed acceleration and deceleration



ITX Technology

Modular design minimizes downtime as the one-piece control module can quickly and easily be swapped out in the field:

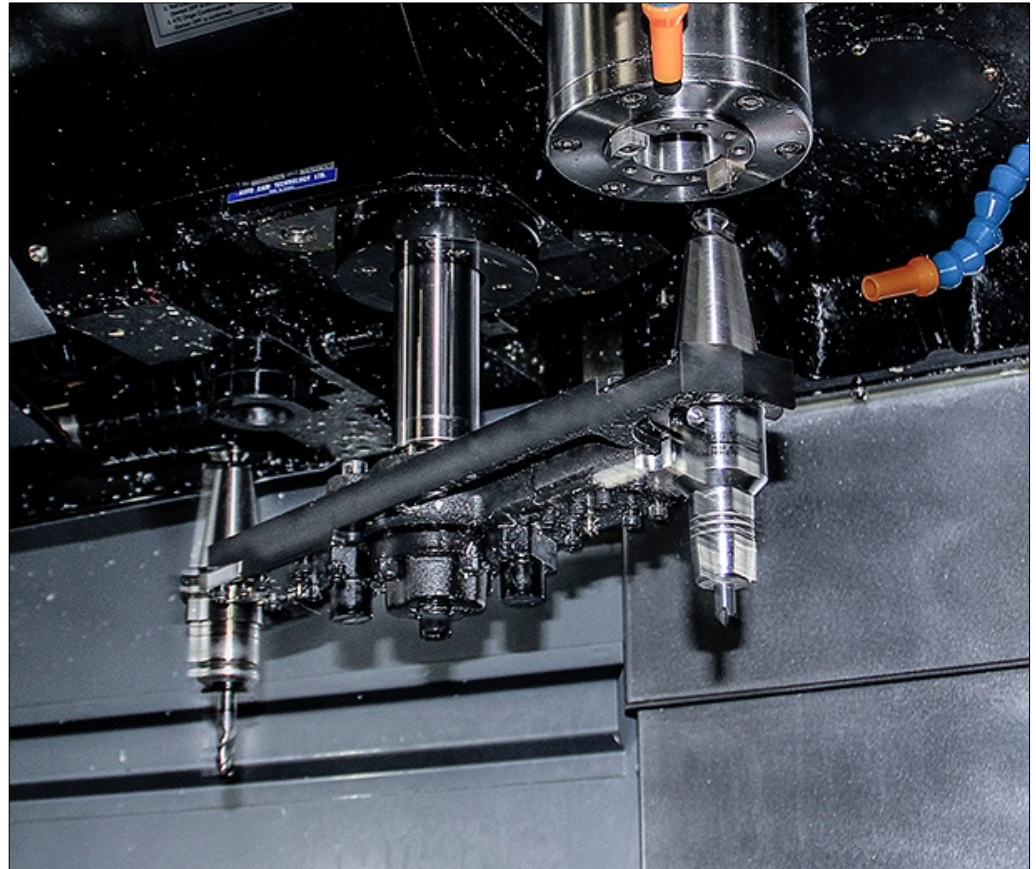
- Eliminated more than 200 plug in connections and over 100 board level parts = higher reliability



Swing Arm ATC

Milltronics uses electric swing arm automatic tool changers rather than pneumatic or carousel-style on the VM Series:

- 20 stations
- Side mounted on column
- Random pot, bi-directional
- Tool-to-tool change in 2.5 seconds

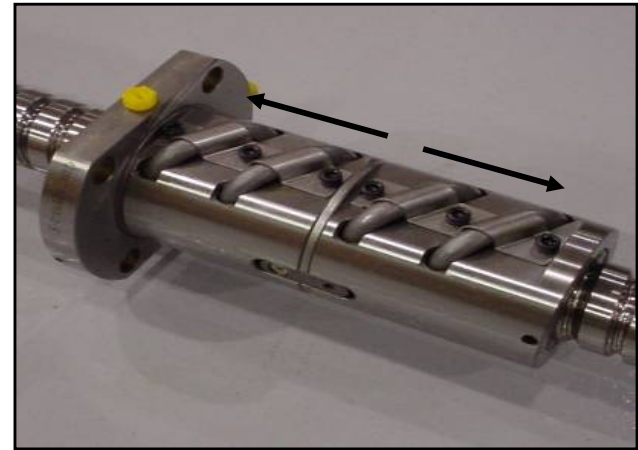


Swing-arm ATC's are standard on VM models

Ballscrews and Linear Guides

Hiwin® premium grade double-nut pre-loaded ballscrews anchored at both ends:

- Double-nut presents pressure in opposite directions to the ballscrew
- Keeps the nut under tension and prevents backlash



Hiwin® linear motion guides – provide excellent rigidity during heavy cutting with very low friction characteristics that help with the higher feed rates of 3D cutting:

- Milltronics castings are machined with slot and shoulder for rail - rail is then wedge-locked to ensure straightness and rigidity
- Some competitors just bolt rail to top of casting with no shoulder or use less wedge locks



Series 9000

Conversational or G-code

9000 Series



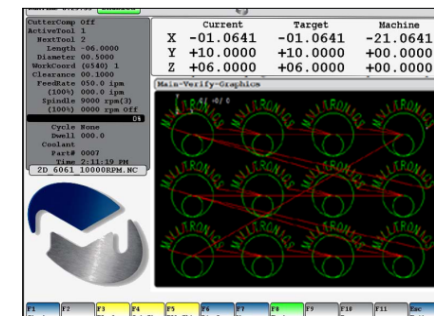
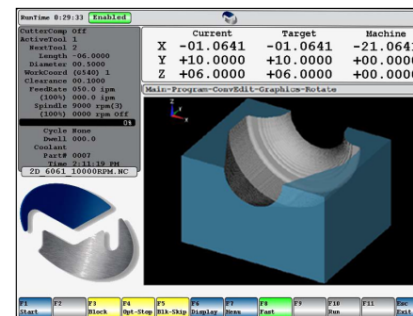
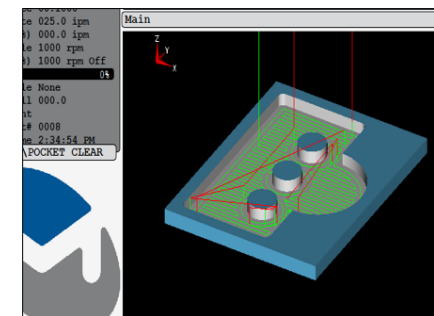
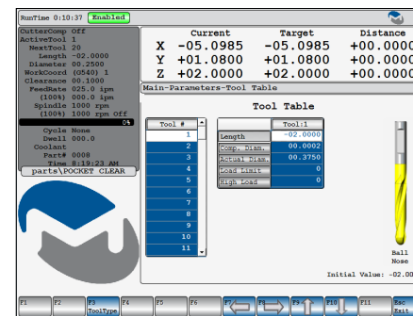
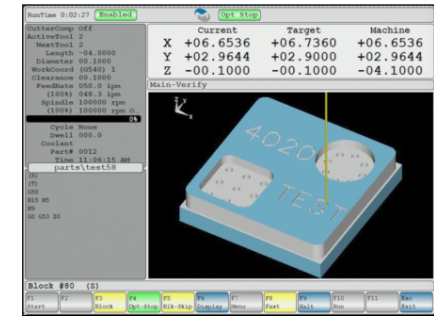
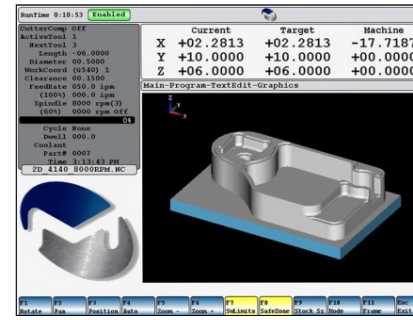
New 9000 control is Windows-based and features a 15" color LCD touch screen

The 9000 Series CNC is our newest and upgraded control offered on VM milling machines

- Windows®-based platform that offers all the user-friendly features that Milltronics controls are known for
- Intel® Dual Core i5-3610ME processor (64 bit)
- 4GB memory, 120 GB disk storage, 2 USB ports, mid-travel tactile keys and an enlarged 15" LCD touch screen

Milltronics Software

- Easy navigation function keys
- Solid model graphics
- Auto trig help
- 3D pocket/sweep
- DXF import
- Pockets and islands
- Tool tables
- Help screens
- Prompted tool setting routine
- Mid-program restart
- Handwheel run
- Scaling, mirror image, rotate
- Canned cycles – drilling, boring, tapping, facing, threading, bolt hole pattern, text/engraving, tangent/circle generate

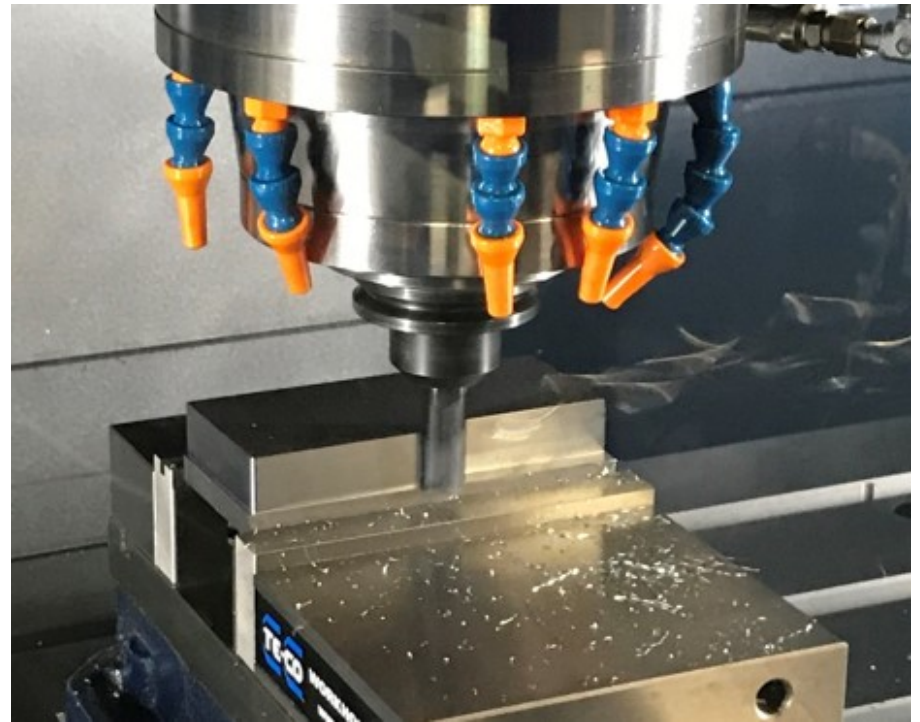


Watch control demo [here](#)

ChipBoss™ Software (option)

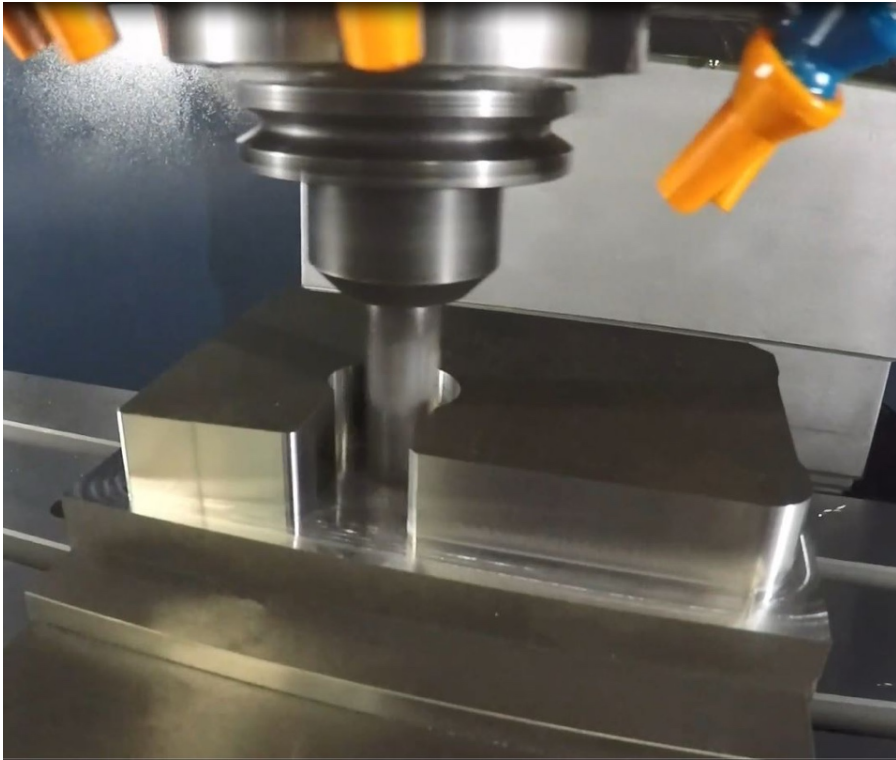
New optional software from Milltronics uses proprietary algorithms to calculate toolpaths and control the maximum allowable cutter engagement resulting in:

- Faster cycle times
- Better tool life
- More accurate parts
- Cycle times can be reduced by as much as 50% (or more) and 3-5 times better tool life



Part accuracy can improve through reduction in tool deflection

ChipBoss™ Software (option)



Automatically controls the chip load, keeping it constant and creating the optimal chip

Watch video [here](#)

ChipBoss™ uses trochoidal milling strategies with deeper depths of cut and smaller step overs:

- Feed rates can be much higher than what conversational users are used to experiencing
- Reduces the number of times a machine needs to accelerate and decelerate – “less wear and tear”
- Includes “Rest Roughing” – automatically calculates the areas to be machined and uses a smaller cutter to get just those areas that can’t be cut with larger tool, saving even more time

Why Milltronics? 10 Reasons

1. Easy to Use Control

The Milltronics control is straightforward and easy-to-use. Choose between conversational, G-code or use a CAM system – whatever is the most efficient way to program the part.



2. Made Right

Using a machine design process that is ISO 9001 certified, Milltronics starts with FEA analysis and designs accurate, rigid and reliable machines built to last. No shortcuts here.



3. Superior Components

Milltronics partners with top suppliers such as Yaskawa, Kenturn, Hiwin® and Grundfos. You can judge a machine tool builder by the company it keeps.



4. Upgradeable

Milltronics controls are designed, built and supported by Milltronics – and are designed to be upgradeable. You don't have to miss out on new software or hardware advancements as time marches on.



5. Availability

We recognize that sometimes you need a machine *fast*. We work hard to make sure we have our most popular models in stock for quick shipment.



6. Fastest Learning Curve

Because Milltronics machines are so easy to learn and use, you'll be making chips quicker. And don't confuse easy with simple – the 9000 is packed with advanced features and capabilities.



7. Service Network

According to customer surveys, Milltronics and our distributor network offer the best service and support in the industry. We do what it takes!



8. Complete Solution

A complete line – 50 different models of tool room mills and lathes, general purpose and performance VMC, CNC lathes, bridges and boring mills.



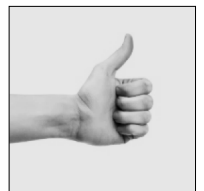
9. Global American Company

Milltronics is part of the Hurco Companies Machine Tool Group. Publically traded with solid financials, we're in it for the long haul.



10. More for Your Money

Finally, Milltronics offers better built machines with more standard features for the price. Period.



MOMENTUM



Thank you!