ML Series Combo Lathes

Milltronics USA

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Waconia, Minnesota

Milltronics USA

Headquarters in Waconia, Minnesota

Founded in 1973 with over 45 years building machines and controls

- 14,000 machines installed worldwide

A member of the Hurco Companies 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

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ML Series

Combination Lathes

ML Series

Most common sizes typically in stock – larger sizes may be longer lead times

- Designed for tool room, prototype, maintenance and job shop applications
- Can be run as manual, in teach mode or as full CNC
- ML Series offers wide range of swings, spindle bores and bed lengths

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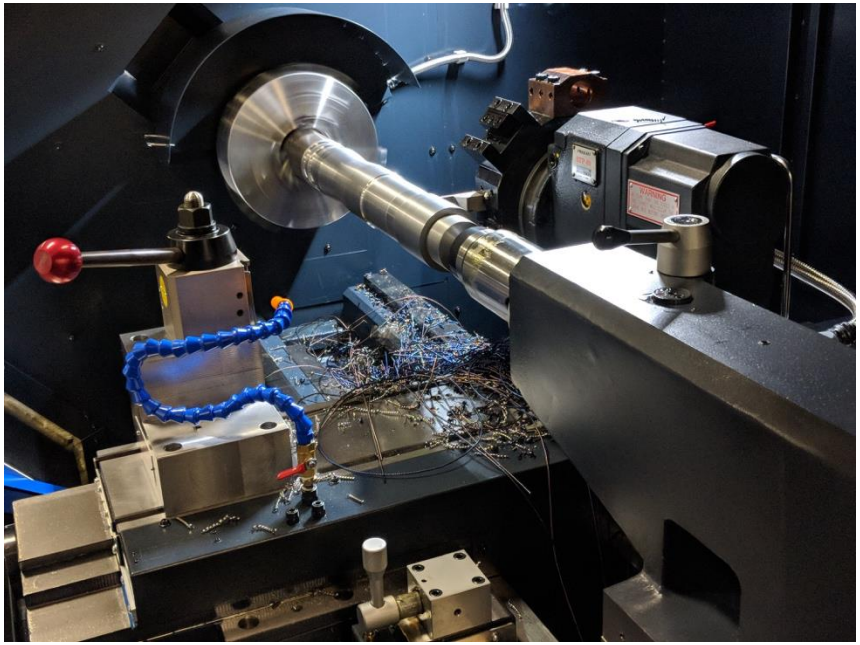
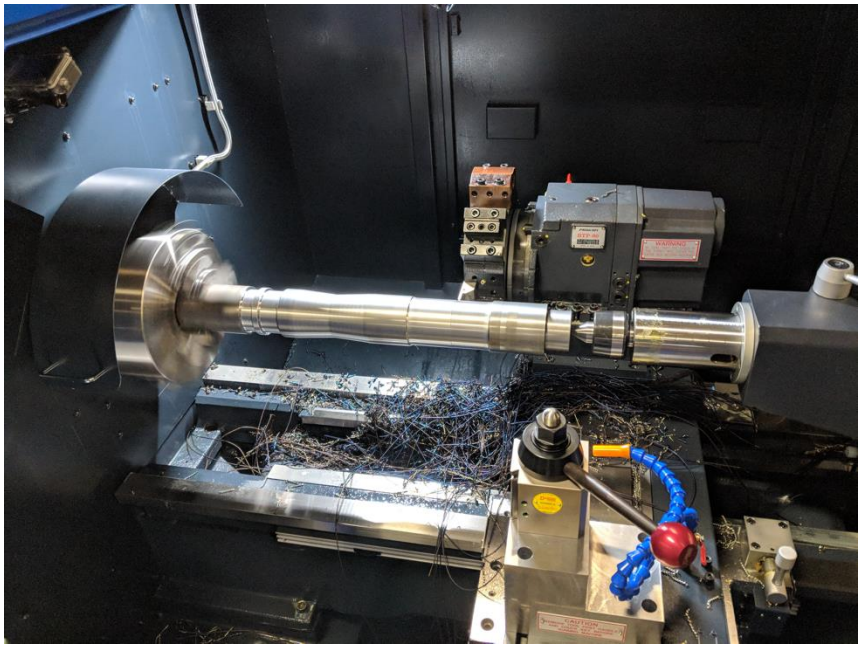
Flexibility





- Best choice for high mix, low volume work
- Not just flexible because of ways to operate (manual, CNC) but because of set-up flexibility

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Ergonomics

- Great machine ergonomics allow easy access to chuck for part loading and unloading
- ML 22 and larger control slides along with carriage
- Full enclosure with sliding front doors (extra large machines feature traveling guard) – standard chip pans or optional chip conveyor
- Dual electronic handwheels

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Machine Construction

The mating surfaces of the base, bed and headstock are hand scraped

- ML Series bed, cross slide and saddle are made from heavily ribbed Meehanite cast iron
- Feature hardened and ground box ways with turcite for rigidity (many competitors use cheaper V ways)
- Cross slide designed for turret (wrap around box ways prevent turret lift during heavy cutting) – cross slide has T-slots (gang tools)
- Turret is mounted in back for easy load/unload – also leaves front open for use of tool post

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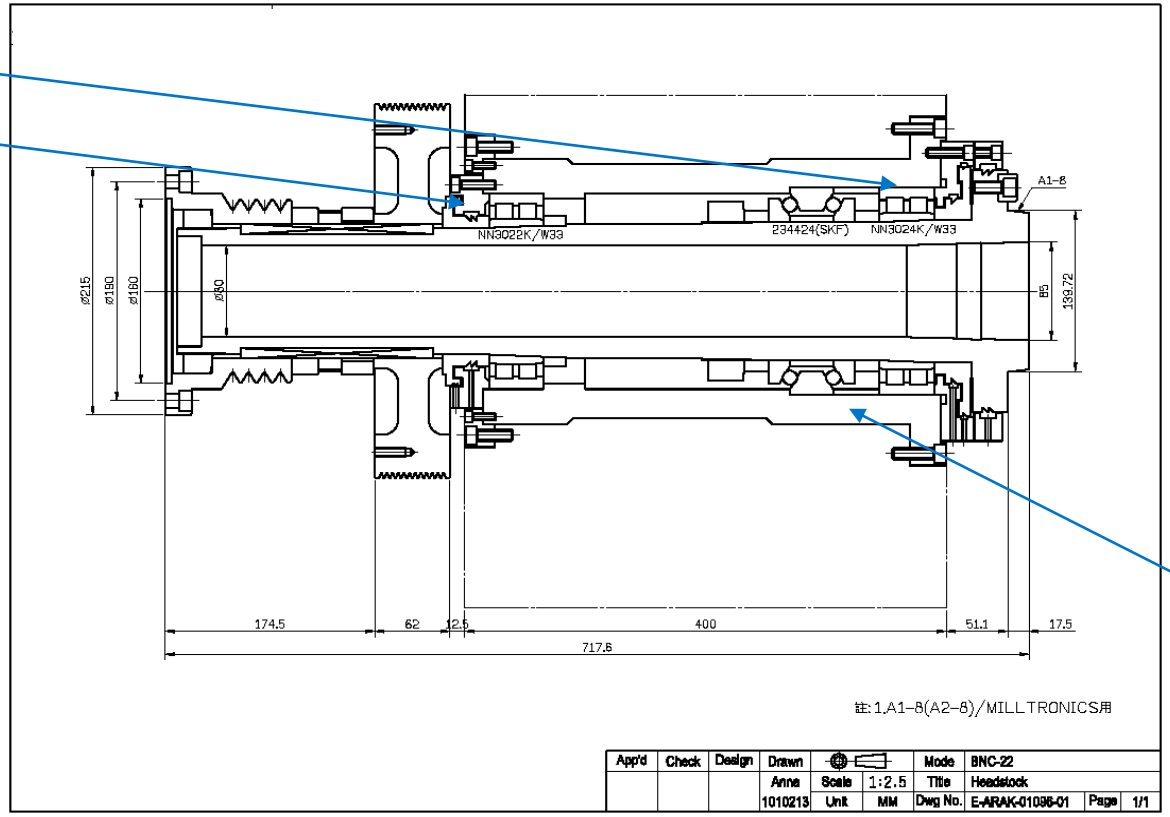
Machine Construction

- The headstock is rigid and heavily ribbed to dissipate heat
  - Fully balanced spindle is cartridge design
- Transmission is direct belt drive
- Larger models (ML 35/40) feature two-speed gearbox
- Optional C-axis and spindle brake (not available ML16)

Spindle Design

Roller bearings



Angular contact bearings

- Very rigid high precision, large diameter roller bearings, front and rear with axial thrust by angular contact bearings
- Grease lubed with independent preload for front and rear for good cold to warm performance

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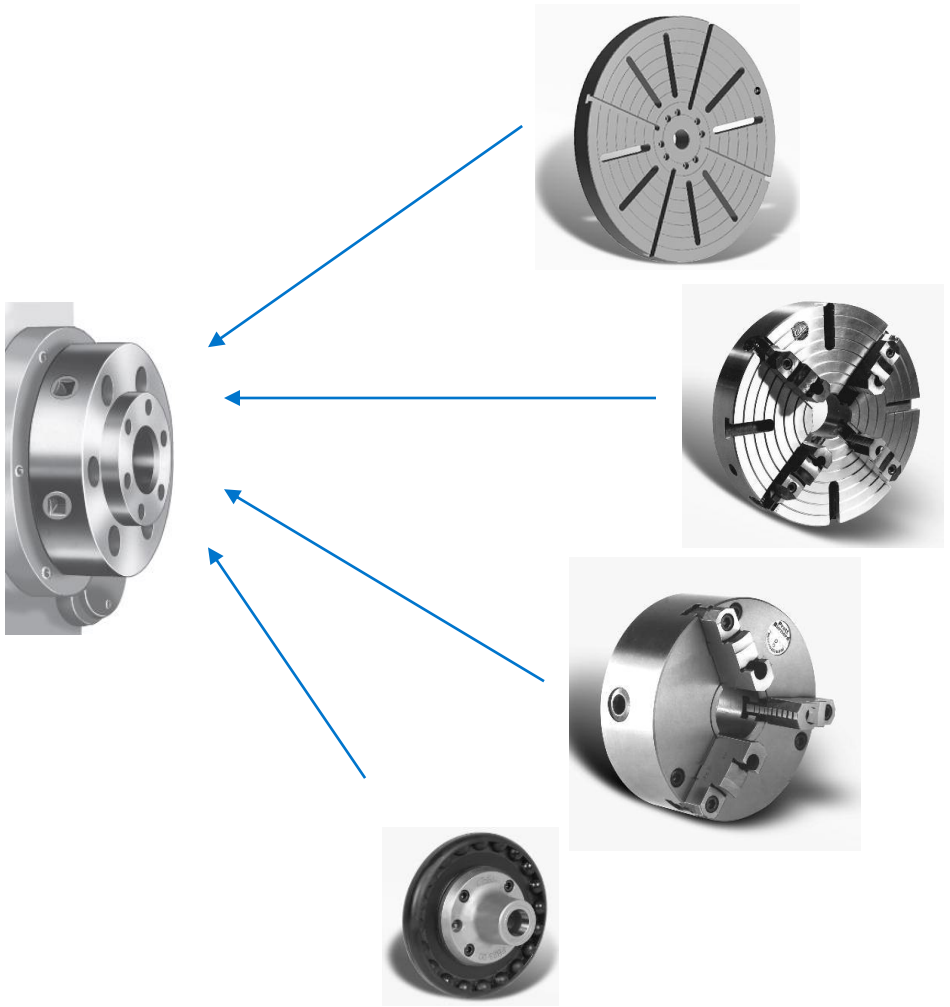
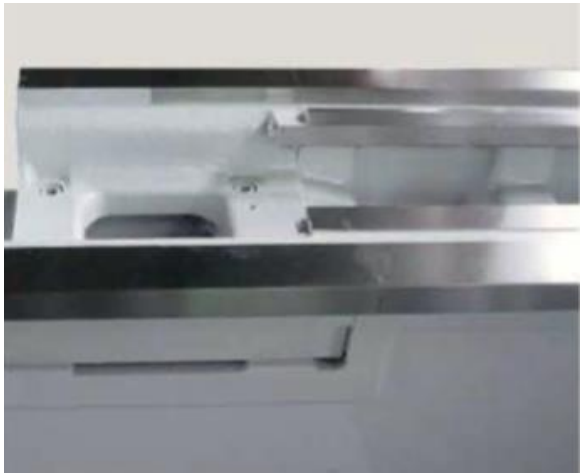
Workholding

- Manual workholding and the industry standard D or A-type spindle nose makes workholding changes quick and easy
  - Face Plate
  - Four (4) jaw independent chuck
  - Three (3) jaw scroll chuck
  - Speed collet chuck – 5C
- Optional hydraulic 3-jaw chuck



Well Made

- Gap bed design allows for extra swing (removable)
- Axis ball screws are belt driven (X) and direct driven (Z) with AC servo type drive motors
- Ballscrews are supported on each end, preloaded for repeatability and are centered



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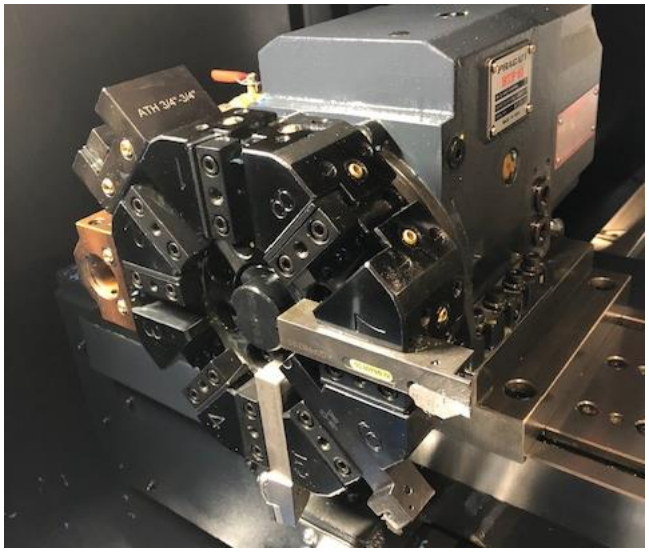
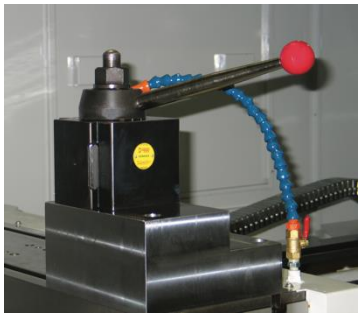
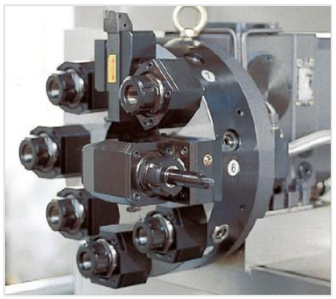
Auto Turret

- ML Series machines are standard with bi-directional 8-position electro mechanical turret
- Additional holders are available and are interchangeable station to station
- Tool post (front mount) option
- Optional Baruffaldi Live Tool Turret
  - Consult factory regarding application







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Tailstock

- Extended tailstock nose clears left edge of turret face (interference free)
- Option for programmable hydraulic quill (requires hydraulic package)
- Live centers also available

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Easy Tailstock Setup

- Tailstock is “drag and drop” for positioning
- Manually engage shot pin and position with handwheel or remote jog (Not available for ML16)

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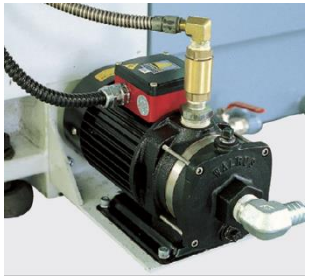
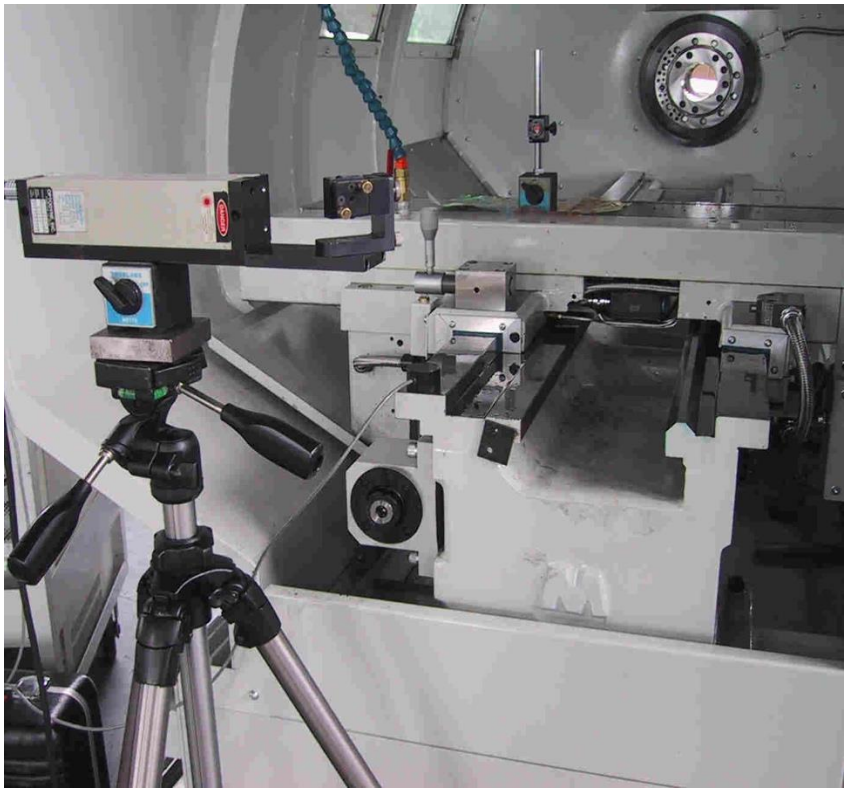
Other Features

- Standard high-pressure flood coolant pump delivers coolant to nozzles on each turret station
- High capacity (varies by model) coolant tank
- Well organized electrical cabinet – all labeled
- Autolube system
- Easy rear access for maintenance and cleaning
- Excellent English documentation



Laser Check



- Machines are assembled using strict quality control
- After assembling, ML Series machines are checked for yaw, pitch and roll error with the use of a laser interferometer

ML Series

37 Different Models (swings/bores/lengths)

ML16/40 Spec Summary

Chuck Size	8” (option)
Spindle Nose	A2-5
X/Z Travels	11” x 44.5”
Swing over Bed	17”
Swing over Cross Slide	7.48”

Spindle Bore	2.05”
Spindle Range	100-4,000 rpm
Horsepower	18/12 hp
Torque	124 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1”/1.57”
Repeatability	.0002”
Turret Stations	8 (bi-directional)
Tooling/Boring Bar	.75”/1.25”
Tailstock (quill travel/dia/taper)	6”/2.55”/MT4
Width x Depth x Height	120” x 83” x 80”
Weight	6,000 lbs
Power Required	20 KVA
Control	8200-B

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ML18/60 Spec Summary

Chuck Size	10” (option)
Spindle Nose	D1-6
X/Z Travels	12” x 63.5”
Swing over Bed	19”
Swing over Cross Slide	9.25”
Spindle Bore	2.56”
Spindle Range	100-2,600 rpm
Horsepower	24/15 hp
Torque	255 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1”/1.57”
Repeatability	.0002”
Turret Stations	8 (bi-directional)

Tooling/Boring Bar	.75”/1.25”
Tailstock (quill travel/dia/taper)	6”/3.15”/MT5
Width x Depth x Height	138” x 83” x 80”
Weight	8,500 lbs
Power Required	24 KVA
Control	8200-B

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ML22/60 Spec Summary

Chuck Size	10” (option)
Spindle Nose	A1-8
X/Z Travels	13” x 63.5”
Swing over Bed	23”
Swing over Cross Slide	12.1”

Spindle Bore	3.22”
Spindle Range	40-2,000 rpm
Horsepower	24/15 hp
Torque	1,050 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.25”/1.77”
Repeatability	.0002”
Turret Stations	8 (bi-directional)
Tooling/Boring Bar	1”/1.5”
Tailstock (quill travel/dia/taper)	6”/3.94”/MT5
Width x Depth x Height	143” x 83” x 83”
Weight	10,000 lbs
Power Required	24 KVA
Control	8200-B

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ML26/40 Spec Summary

Chuck Size	12” (option)
Spindle Nose	A1-8
X/Z Travels	13” x 42”
Swing over Bed	27”
Swing over Cross Slide	16.1”
Spindle Bore	3.22”
Spindle Range	40-2,000 rpm
Horsepower	24/15 hp
Torque	1,050 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.25”/1.77”
Repeatability	.0002”
Turret Stations	8 (bi-directional)

Tooling/Boring Bar	1”/1.5”
Tailstock (quill travel/dia/taper)	6”/3.94”/MT5
Width x Depth x Height	126” x 84” x 83”
Weight	9,500 lbs
Power Required	24 KVA
Control	8200-B

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ML26/80 Spec Summary

Chuck Size	12” (option)
Spindle Nose	A1-11
X/Z Travels	13” x 84”
Swing over Bed	27”
Swing over Cross Slide	16.1”

Spindle Bore	4.17” (6” opt*)
Spindle Range	30-1,600 rpm
Horsepower	24/15 hp
Torque	1,250 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.25”/1.97”
Repeatability	.0002”
Turret Stations	8 (bi-directional)
Tooling/Boring Bar	1”/1.5”
Tailstock (quill travel/dia/taper)	6”/3.94”/MT5
Width x Depth x Height	166” x 84” x 83”
Weight	11,500 lbs
Power Required	24 KVA
Control	8200-B

*Spindle nose changes to A2-11 & rear chuck mount is standard with 6” bore option

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ML26/120 Spec Summary

Chuck Size	12” (option)
Spindle Nose	A2-11
X/Z Travels	13” x 124”
Swing over Bed	27”
Swing over Cross Slide	16.1”
Spindle Bore	6”*
Spindle Range	30-1,600 rpm
Horsepower	24/15 hp
Torque	1,250 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.25”/1.97”
Repeatability	.0002”
Turret Stations	8 (bi-directional)

Tooling/Boring Bar	1”/1.5”
Tailstock (quill travel/dia/taper)	6”/3.94”/MT5
Width x Depth x Height	206” x 84” x 83”
Weight	13,200 lbs
Power Required	24 KVA
Control	8200-B

*Rear chuck mount is standard with 6” bore

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ML26/160 Spec Summary

Chuck Size	12” (option)
Spindle Nose	A2-11
X/Z Travels	13” x 163”
Swing over Bed	27”
Swing over Cross Slide	16.1”

*Rear chuck mount is standard with 6” bore

Spindle Bore	6”*
Spindle Range	30-1,600 rpm
Horsepower	24/15 hp
Torque	1,250 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.25”/1.97”
Repeatability	.0002”
Turret Stations	8 (bi-directional)
Tooling/Boring Bar	1”/1.5”
Tailstock (quill travel/dia/taper)	6”/3.94”/MT5
Width x Depth x Height	246” x 84” x 83”
Weight	17,200 lbs
Power Required	24 KVA
Control	8200-B

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ML35/80 Spec Summary

Chuck Size	TBD
Spindle Nose	A2-11
X/Z Travels	19” x 87”
Swing over Bed	36.2”
Swing over Cross Slide	21.6”
Spindle Bore*	6” (10”/14” opt)
Spindle Range (2 sp gearbox)	10-900 rpm
Horsepower	35/25 hp
Torque	1,850 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.57”/2.48”
Repeatability	.00039”
Turret Stations	8 (bi-directional)

*Rear chuck mount is standard with 6” bore

Tooling/Boring Bar	1.5”/2”
Tailstock (quill travel/dia/taper)	8”/4.92”/MT6
Width x Depth x Height	193” x 110” x 90”
Weight	23,000 lbs
Power Required	40 KVA
Control	8200-B

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Traveling guard

ML35/120 Spec Summary

Chuck Size	TBD
Spindle Nose	A2-11
X/Z Travels	19” x 120”
Swing over Bed	36.2”
Swing over Cross Slide	21.6”
Spindle Bore*	6” (10”/14” opt)

Spindle Range (2 sp gearbox)	10-900 rpm
Horsepower	35/25 hp
Torque	1,850 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.57”/2.48”
Repeatability	.00039”
Turret Stations	8 (bi-directional)
Tooling/Boring Bar	1.5”/2”
Tailstock (quill travel/dia/taper)	8”/4.92”/MT6
Width x Depth x Height	232” x 110” x 90”
Weight	25,200 lbs
Power Required	40 KVA
Control	8200-B

*Rear chuck mount is standard with 6” bore

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ML35/160 Spec Summary

Chuck Size	TBD
Spindle Nose	A2-11
X/Z Travels	19” x 160”
Swing over Bed	36.2”
Swing over Cross Slide	21.6”
Spindle Bore*	6” (10”/14” opt)
Spindle Range (2 sp gearbox)	10-900 rpm
Horsepower	35/25 hp
Torque	1,850 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.57”/3.15”
Repeatability	.00039”
Turret Stations	8 (bi-directional)

*Rear chuck mount is standard with 6” bore

Tooling/Boring Bar	1.5”/2”
Tailstock (quill travel/dia/taper)	8”/4.92”/MT6
Width x Depth x Height	272” x 110” x 90”
Weight	27,400 lbs
Power Required	40 KVA
Control	8200-B

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ML35/200 Spec Summary

Chuck Size	TBD
Spindle Nose	A2-11
X/Z Travels	19” x 200”
Swing over Bed	36.2”
Swing over Cross Slide	21.6”
Spindle Bore*	6” (10”/14” opt)

Spindle Range (2 sp gearbox)	10-900 rpm
Horsepower	35/25 hp
Torque	1,850 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.57”/3.15”
Repeatability	.00039”
Turret Stations	8 (bi-directional)
Tooling/Boring Bar	1.5”/2”
Tailstock (quill travel/dia/taper)	8”/4.92”/MT6
Width x Depth x Height	311” x 110” x 90”
Weight	29,600 lbs
Power Required	50 KVA
Control	8200-B

*Rear chuck mount is standard with 6” bore

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ML35/240 Spec Summary

Chuck Size	TBD
Spindle Nose	A2-11
X/Z Travels	19” x 240”
Swing over Bed	36.2”
Swing over Cross Slide	21.6”
Spindle Bore*	6” (10”/14” opt)
Spindle Range (2 sp gearbox)	10-900 rpm
Horsepower	35/25 hp
Torque	1,850 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.57”/3.15”
Repeatability	.00039”
Turret Stations	8 (bi-directional)

*Rear chuck mount is standard with 6” bore

Tooling/Boring Bar	1.5”/2”
Tailstock (quill travel/dia/taper)	8”/4.92”/MT6
Width x Depth x Height	350” x 110” x 90”
Weight	31,800 lbs
Power Required	50 KVA
Control	8200-B

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ML40/80 Spec Summary

Chuck Size	TBD
Spindle Nose	A2-11
X/Z Travels	21” x 87”
Swing over Bed	39.7”
Swing over Cross Slide	26.6”
Spindle Bore*	6” (10”/14” opt)

*Rear chuck mount is standard with 6” bore

Spindle Range (2 sp gearbox)	10-900 rpm
Horsepower	35/25 hp
Torque	1,850 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.57”/2.48”
Repeatability	.00039”
Turret Stations	8 (bi-directional)
Tooling/Boring Bar	1.5”/2”
Tailstock (quill travel/dia/taper)	9”/4.92”/MT6
Width x Depth x Height	193” x 110” x 90”
Weight	24,500 lbs
Power Required	40 KVA
Control	8200-B

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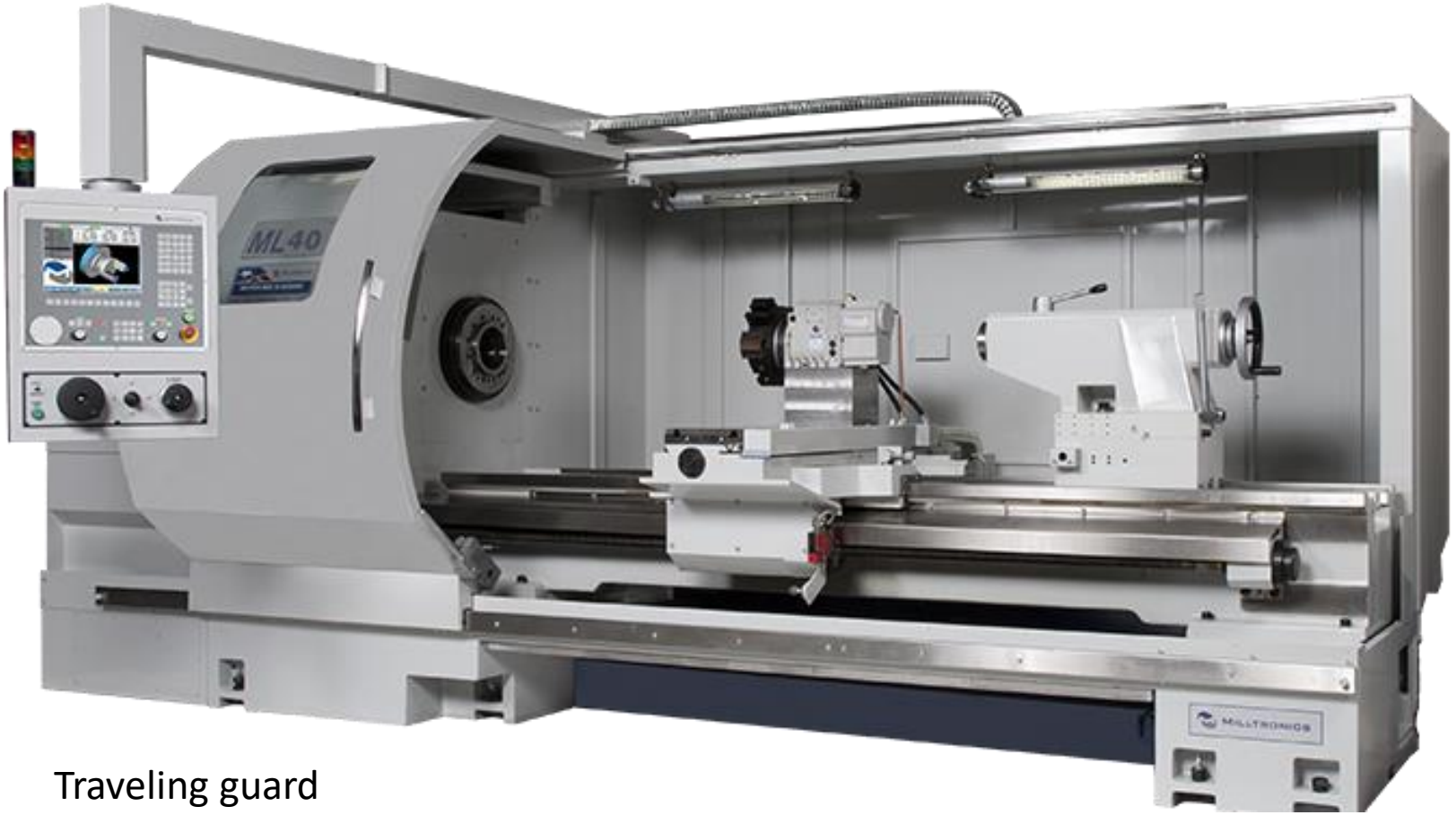

Traveling guard

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ML40/120 Spec Summary

Chuck Size	TBD
Spindle Nose	A2-11
X/Z Travels	21” x 120”
Swing over Bed	39.7”
Swing over Cross Slide	26.6”
Spindle Bore*	6” (10”/14” opt)
Spindle Range (2 sp gearbox)	10-900 rpm
Horsepower	35/25 hp
Torque	1,850 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.57”/2.48”
Repeatability	.00039”
Turret Stations	8 (bi-directional)

*Rear chuck mount is standard with 6” bore

Tooling/Boring Bar	1.5”/2”
Tailstock (quill travel/dia/taper)	9”/4.92”/MT6
Width x Depth x Height	232” x 110” x 90”
Weight	26,700 lbs
Power Required	40 KVA
Control	8200-B

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ML40/160 Spec Summary

Chuck Size	TBD
Spindle Nose	A2-11
X/Z Travels	21” x 160”
Swing over Bed	39.7”
Swing over Cross Slide	26.6”
Spindle Bore*	6” (10”/14” opt)

Spindle Range (2 sp gearbox)	10-900 rpm
Horsepower	35/25 hp
Torque	1,850 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.57”/3.15”
Repeatability	.00039”
Turret Stations	8 (bi-directional)
Tooling/Boring Bar	1.5”/2”
Tailstock (quill travel/dia/taper)	9”/4.92”/MT6
Width x Depth x Height	272” x 110” x 90”
Weight	28,900 lbs
Power Required	40 KVA
Control	8200-B

*Rear chuck mount is standard with 6” bore

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ML40/200 Spec Summary

Chuck Size	TBD
Spindle Nose	A2-11
X/Z Travels	21” x 200”
Swing over Bed	39.7”
Swing over Cross Slide	26.6”
Spindle Bore*	6” (10”/14” opt)
Spindle Range (2 sp gearbox)	10-900 rpm
Horsepower	35/25 hp
Torque	1,850 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.57”/3.15”
Repeatability	.00039”
Turret Stations	8 (bi-directional)

*Rear chuck mount is standard with 6” bore

Tooling/Boring Bar	1.5”/2”
Tailstock (quill travel/dia/taper)	9”/4.92”/MT6
Width x Depth x Height	311” x 110” x 90”
Weight	31,100 lbs
Power Required	50 KVA
Control	8200-B

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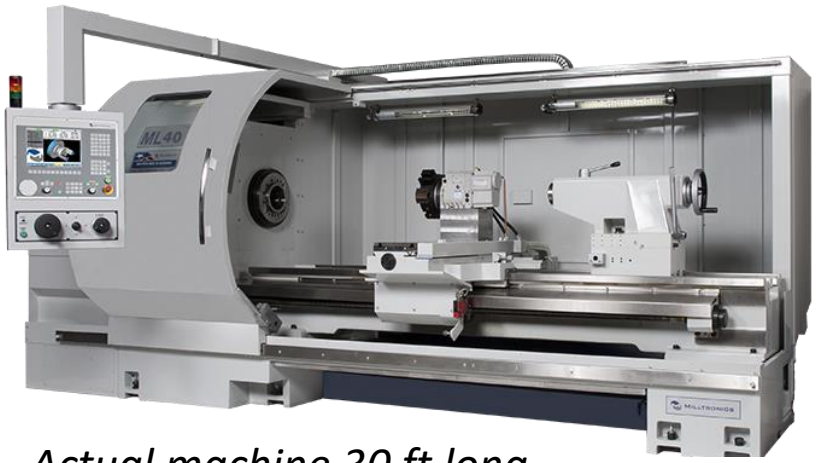
ML40/240 Spec Summary



Actual machine 30 ft long

Chuck Size	TBD
Spindle Nose	A2-11
X/Z Travels	21” x 240”
Swing over Bed	39.7”
Swing over Cross Slide	26.6”
Spindle Bore*	6” (10”/14” opt)

Spindle Range (2 sp gearbox)	10-900 rpm
Horsepower	35/25 hp
Torque	1,850 ft lbs
Rapid Traverse X/Z	500 ipm
Ballscrew Diameter X/Z	1.57”/3.15”
Repeatability	.00039”
Turret Stations	8 (bi-directional)
Tooling/Boring Bar	1.5”/2”
Tailstock (quill travel/dia/taper)	9”/4.92”/MT6
Width x Depth x Height	350” x 110” x 90”
Weight	33,300 lbs
Power Required	50 KVA
Control	8200-B

*Rear chuck mount is standard with 6” bore

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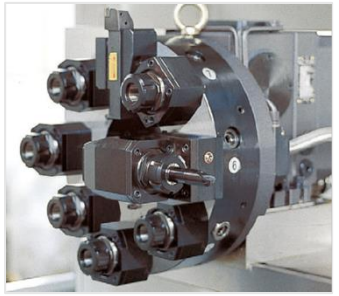
Options

Accessories

Productivity Options

- Manual 3-jaw chuck
- Hydraulic 3-jaw chuck
- 5C air operated collect chuck
- Rear chuck option
- Programable hydraulic quill
- Live tooling turret
- Steady rest
- Follow rest
- Lift-up chip conveyor
- Bar feed interface
- Renishaw tool pre-setter
- Extended warranty
- Factory installation
- Factory training
- *Parts catcher not available*



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8200-B Series 9000

Conversational or G-Code

Series 8220-B control is Linux-based and features a 12” color LCD screen

Milltronics 8200-B

- Shops can chose either Conversational or G-code programming, whatever is most efficient to produce the required part
- 8200-B Series is the standard high-speed milling and turning control
  - PC-based control with advanced processing speeds that are imperative for high speed and multi-axis machining
  - 1GB memory, 2GB disk storage, a 12” LCD screen and membrane keys

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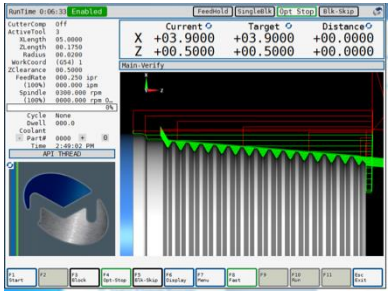
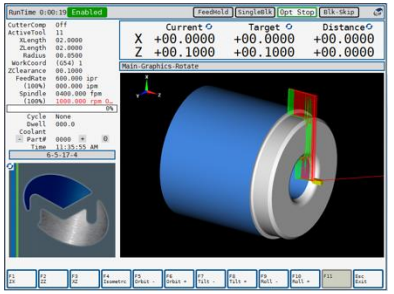
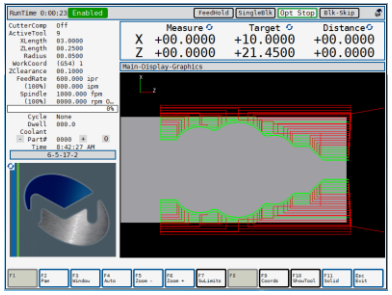
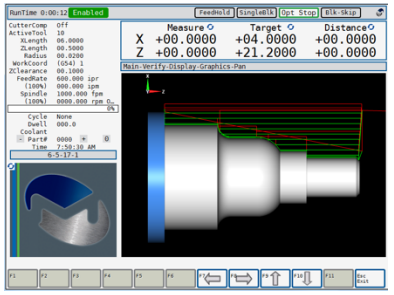
Milltronics Software

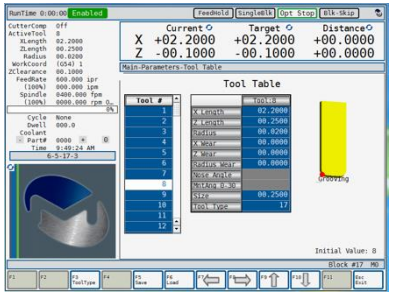
- Touch screen function keys
- Solid model graphics
- Conversational programming
- ISO based G & M code programming
- Auto trig help
- Constant Surface Speed (CSS)
- DXF import
- Tool tables
- Help screens
- On board diagnostics
- Mid-program restart
- Handwheel run
- Scaling, mirror image, rotate
- Canned cycles – drilling, turning, facing boring, tapping, grooving, threading, tangent/circle generate, auto roundcorner/chamfer

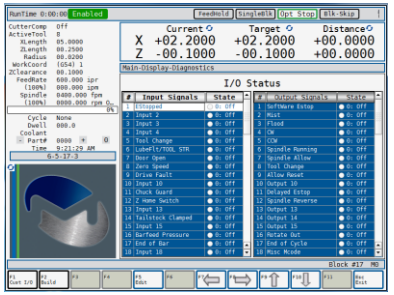












Watch control demo here

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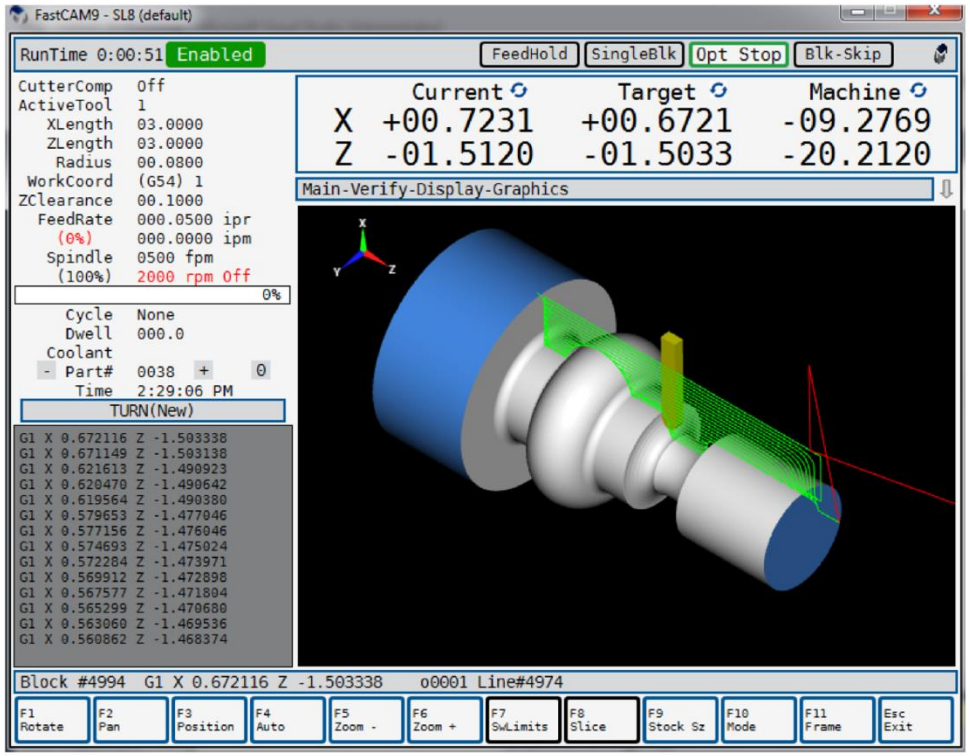
Bi-Directional Cycle (option)



Improves productivity by up to 60%

- Improve turning speed and efficiency while taking advantage of the latest insert technology allowing for cutting forward and reverse, down to and up from
  - Increased tool life
  - Improves surface finish
- Watch video here

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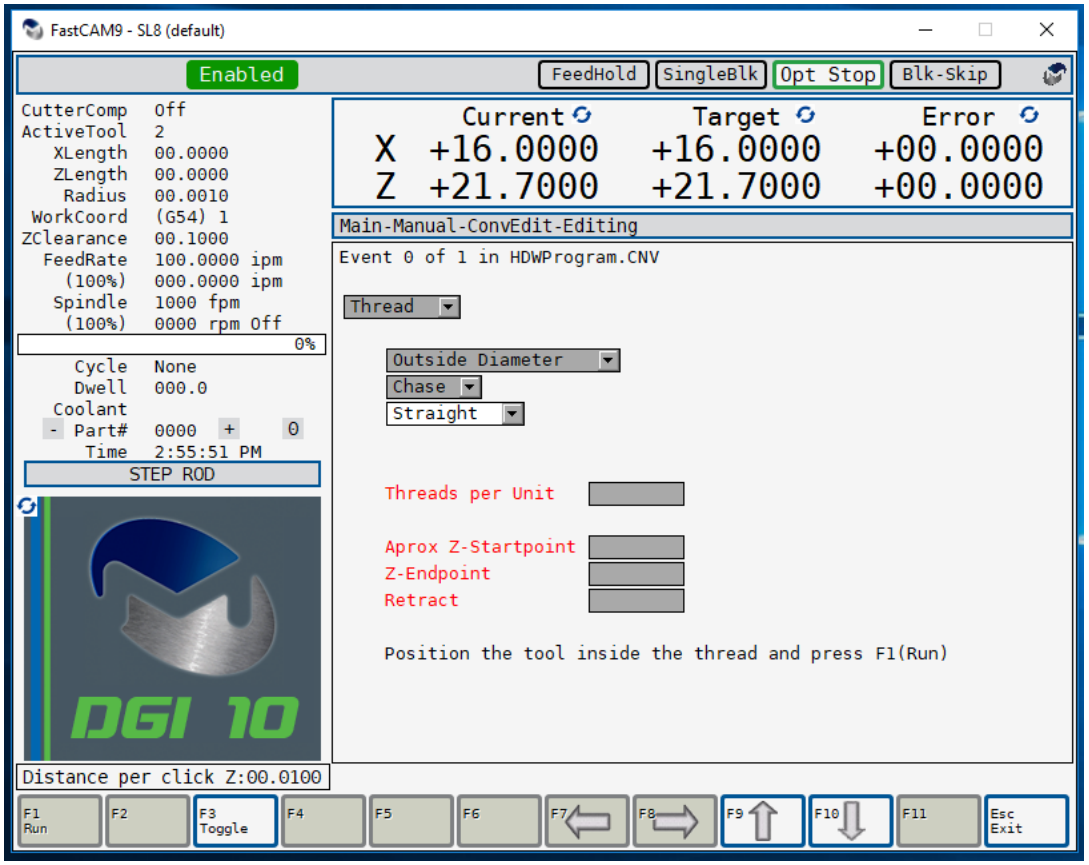
Easy Thread Repair



Watch video here

- Removes complications from finding pre-cut threads on a repair part - no need for Z axis offset hunting to find center of the thread point
- Just select thread specifications, find thread center with tool (with the spindle off)
- Mark the spot, hit Cycle Start and machine cut thread right on center
- Single screen selects outside or inside thread, straight or tapered, pitch, depth and length of the thread

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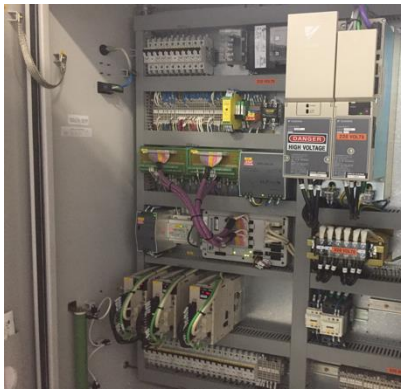
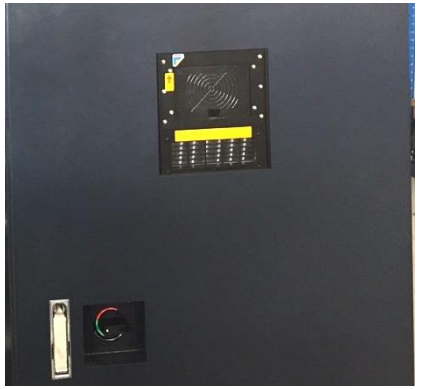
Series 8200-B Control

Specifications	
Operating System and Hardware	RT Linux – B&R PC
User Interface	Milltronics Software with Solids
Machine Control	Milltronics Hardware
Logic Control IO	Milltronics Software
Motors & Drives	Yaskawa
Processor	Pentium CPU
Memory	1 Gigabyte
Storage	2 Gigabytes
Screen	12” Color LCD
Keys	Membrane
USB	2 (1 required if keyboard)



Well organized cabinet with coded, labeled connectors and components from suppliers such as Yaskawa, Eaton, Schneider Electric, etc.



Electrical cabinet is sealed with power interlock and standard heat exchanger

Hour meter

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Why Milltronics? 10 Reasons

1. Easy to Use Control

The Milltronics control is straightforward and easy-to-use. Chose 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, Royal, 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.

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Thank you!

Live Tooling Comments

Best Applications

General Application Information

Milltronics ML series lathes are available with Live Rotating Tool Turrets. These live tool applications are limited to Spindle ("C Axis") positioning only to achieve a simple mill, drill or tap application. C Axis position resolution is available to .01° with accuracy of ±0.16°. At this time true C Axis contouring is not available.

It is important to understand the intended use of the turret to be sure the proper turret is selected for the application. All live tool turrets are rear mounted. Factory consultation is required when considering the ML18 with a live tool turret. Due to the swing over the bed on this machine, radial rotating tools are limited to 2" long cutting tools extending from the VDI tool holder.

No tooling is supplied with the live turrets, fixed or rotating. Milltronics has price listed a standard axial and radial rotating tool holder. Additional fixed or rotating tool holders should be purchased from outside sources. It is important that rotating tool holders are purchased with a clutch designed for a Baruffaldi turret. Dimensions of this clutch are outlined in this document.

Turret Recommendations

	ML16	ML18	ML22	ML26	ML35	ML40
TBMA-160 8 Station VDI-40	**N/A**	**X** Consult Factory	**X**	**X**	**X**	
TBMA-200 8 Station VDI-50	**N/A**				**X**	**X**
TBMA-250 8 Station VDI-50	**N/A**				**X**	**X**

Please let us review the application when considering this option.

Great solution for many parts but need to consider how far features are from centerline.

Let us help!

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