

ML16/40

2 Axis Combination Lathe



STANDARD FEATURES

- Milltronics 8200-B series CNC control
- Solid box way bed construction
- 4000 RPM spindle
- Tailstock
- Auto lubrication
- Full enclosure w/ sliding doors
- 2.04" Spindle bore
- A2-5 Spindle nose
- 12" LCD color display
- Spindle load meter
- Flood coolant
- Solid model graphic display
- USB Port
- Gap bed design
- 8 Station $\frac{3}{4}$ " automatic turret
- LCD hour meter
- Thread chasing feature
- One year warranty

SPECIFICATIONS

CAPACITY:

X axis travel	11" (280 mm)
Z axis travel	44.5" (1130 mm)
Swing over bed (diam)	17" (440 mm)
Swing over gap (diam)	25.9" (658 mm)
Gap distance	12.75" (320 mm)
Swing over cross slide (diam)	7.48" (190 mm)

SPINDLE:

Spindle nose	A2-5
Spindle bore	2.05" (52mm)
Spindle range	100-4000 RPM
AC spindle motor	18/12 HP (13/9 kW)
Spindle torque	124 ft-lbs (168 N.m)

TAILSTOCK:

Tailstock quill travel	6" (150 mm)
Tailstock quill diameter	2.55" (65 mm)
Tailstock quill taper	MT4

AUTOMATIC TURRET:

Number of tools	8
Tooling size	.75" (20 mm)
Boring bar capacity	1.25" (32 mm)
Tool selection	Bi-directional

MOTION:

X, Z axis rapid traverse rate	500 IPM (12.7 m/min)
Max. cutting feed rate	100 IPM (2540mm/min)
X axis ball screw diameter	1.0" (25 mm)
Z axis ball screw diameter	1.57" (40 mm)
Positioning accuracy	+/- 0.00025" (+/- 0.0063 mm)
Repeatability	0.0002" (0.005mm)
Axis thrust force X,Z	1500 lbs. (680 kg)

GENERAL:

Machine Height	80" (2032 mm)
Floor Space Required (W x D)	120" x83 " (3050 x 2110 mm)
Machine Weight	6000 lbs. (2730 kg)
Power required	23 KVA /60 amps
Voltage required	208-240 Volts / 3 Phase

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CONSTRUCTION

*** BED, CROSS SLIDE AND SADDLE:**

The bed, cross slide, and saddle are composed of Meehanite cast iron, which includes very high dampening characteristics. Heavily ribbed castings provide superior dampening decreasing vibration and harmonics providing aggressive turning ability. The bed casting and saddle are stress relieved to ensure machine geometry is maintained. Spacing of the solid box bed ways create optimal support for the saddle in full travel. The gap (12.75") allows larger turning near the spindle. The "T" slotted cross slide is fully ground and hardened and allows easy mounting of custom tooling.

*** WAY SURFACES:**

The X& Z-axis way surfaces are hardened and ground with turcite. The square box ways on the Z axis provide added rigidity and strength over a conventional "V" way. Additionally the Z axis ways are widely spaced (355mm) increasing the stability of the bed and slide providing superior cutting performance. The way surfaces on both axes utilize gibs with easy adjustment to maximize rigidity and maintain geometry throughout the life of the machine tool.

*** SPINDLE AND HEADSTOCK:**

The fully balanced spindle is driven using a 18/12 HP (13/9 kw) closed loop full regen AC servo motor. Heavy exterior ribbing on the headstock allows for added rigidity and increased surface area for heat transfer. The spindle is directly driven eliminating gears, oil pumps, vibration, and noise. Five high precision, large diameter, permanently greased angular ball bearings support the spindle allowing for heavy work pieces. CSS function is standard promoting longer tooling life and improved part finish.

*** BALL SCREWS AND AXIS DRIVES:**

Each axis is driven using a high precision, fully ground ball screw. Each ball screw is supported on each end using angular contact thrust bearings to achieve high rapid traverse rates and thrust. The Z axis ball screw is directly driven using AC servo type motors minimizing backlash and vibration. The 5mm (X) and 10 mm (Z) pitch ball screws provide a high level of accuracy while maintaining adequate thrust.

*** AUTOMATIC TURRET:**

An 8 position automatic turret provides quick and reliable tool changes. Turning holders utilize .75" square shank tooling and boring bar holders can accommodate 1.25". The bi-directional turret comes standard with 1 boring bar holder and 1 axial tool holder. Additional holders are available and are interchangeable from station to station.

*** LUBRICATION:**

Automatic lubrication is provided to the way surfaces and ball screws with oil to eliminate wear. Way oil is delivered by metered valves, which precisely control the volume. A low oil-level alarm warns the user preventing possible damage to the way surfaces and ball screws.

*** TAILSTOCK:**

The design of the interface free tailstock allows for full cutting along the Z axis travel. The oversized tailstock is ideal for supporting heavy work pieces. The quill can be moved manually up to 6". A MT#4 dead center is provided with the tailstock.

*** COOLANT SYSTEM:**

A high volume coolant pump (3/4HP) delivers coolant to the coolant nozzle(s) on each turret station. The 20 gallon coolant tank is separate from the machine bed allowing for quick and easy maintenance. The chip drawer rests above the coolant tank filtering chips from reaching the coolant tank and pump. The coolant tank and chip drawer are easily removed from the rear of the machine to allow for chip removal.

*** EDIT KEY:**

The edit key enables protection of programs as well as parameters of the 8200-B CNC control. Removal of the key limits a user from loading programs and parameters such as work coordinates and tool offsets. With the edit key in the off position the data in the CNC control is available for editing.

STANDARD EQUIPMENT IN BASE PRICE

- Milltronics 8200-B CNC
- 12" Color LCD display
- Ethernet Connection
- USB Port
- Auxiliary Keyboard jack with keyboard
- Offline FastCAM software for programming
- User Definable Custom Macros
- Feedrate and Spindle speed overrides
- Spindle load meter
- Edit key lock-out switch
- LCD hour meter
- Tri-color end of cycle warning light
- Single spare "M" function with CNC wait channel
- Rigid Tapping
- Remote Handwheel (MPG)
- Work light
- Meehanite cast iron bed
- Gap bed design
- 4000 RPM spindle
- Cartridge spindle design
- 18/12 HP (13/9 kW) spindle motor
- 2.04" Spindle bore
- A2-5 Spindle nose
- Fully ground solid ways with turcite
- Flood coolant
- Full enclosure with sliding front doors
- Chuck guard with safety switch
- Door interlock safety switch
- AC Servo motors driven to oversized ball screws on all axes
- Double anchored ball screws
- 500 IPM Rapid Traverse rate
- Matched AC Servo Amplifiers on all axes
- CSS and Feed/rev with threading, rigid tapping, and thread chasing cycles
- Rear mounted 8 Station ¾" Automatic Turret
- Automatic Turret includes One Boring Bar Holder and One Axial Tool Holder
- Dual Electronic Handwheels for Teach, manual or automatic operation
- Automatic metered way oil lubrication
- Instruction manual, parts list, and electrical drawings
- UL certified
- Operator and maintenance manuals
- One year warranty

ML16 with 8200-B Series CNC Control

PRICE IS F.C.A. Waconia, MN USA

OPTIONAL ACCESSORIES:

Work Holding:

9506-2	8" (200 mm) Manual 3-Jaw Chuck
6993-4	8" (200 mm) Hydraulic 3-Jaw Chuck – 1.57" (39.8 mm) Bar Capacity
9504-22	5C Air operated collet closer w/Footswitch
3875-11	Programmable hydraulic quill only tailstock upgrade <i>Must be purchased with hydraulic chuck package</i>
8835	Steady Rest – Roller Type 0.75 - 7.8" (20 - 200 mm) Capacity
8836	Follow Rest – Brass Tip 0.78 - 4" (20 - 100 mm) Capacity

Tooling:

9888-2	1.25" Boring Bar Holder for ¾" Automatic Turret
9889-4	¾" Axial Tool Holder for ¾" Automatic Turret

Additional Machine Accessories:

7031-1	Spindle Brake
8909-4	Spare "M" Functions – <i>Block of 4</i>
9999-411	Printed programming manual
9999-329	Printed machine manual

Training:

9999-257	Factory machine installation including on-site training U.S. Only - <i>Includes airfare and all expenses</i>
9999-256	Training at Milltronics

Export Packaging:

9999-395	Required for machines shipping outside of North America
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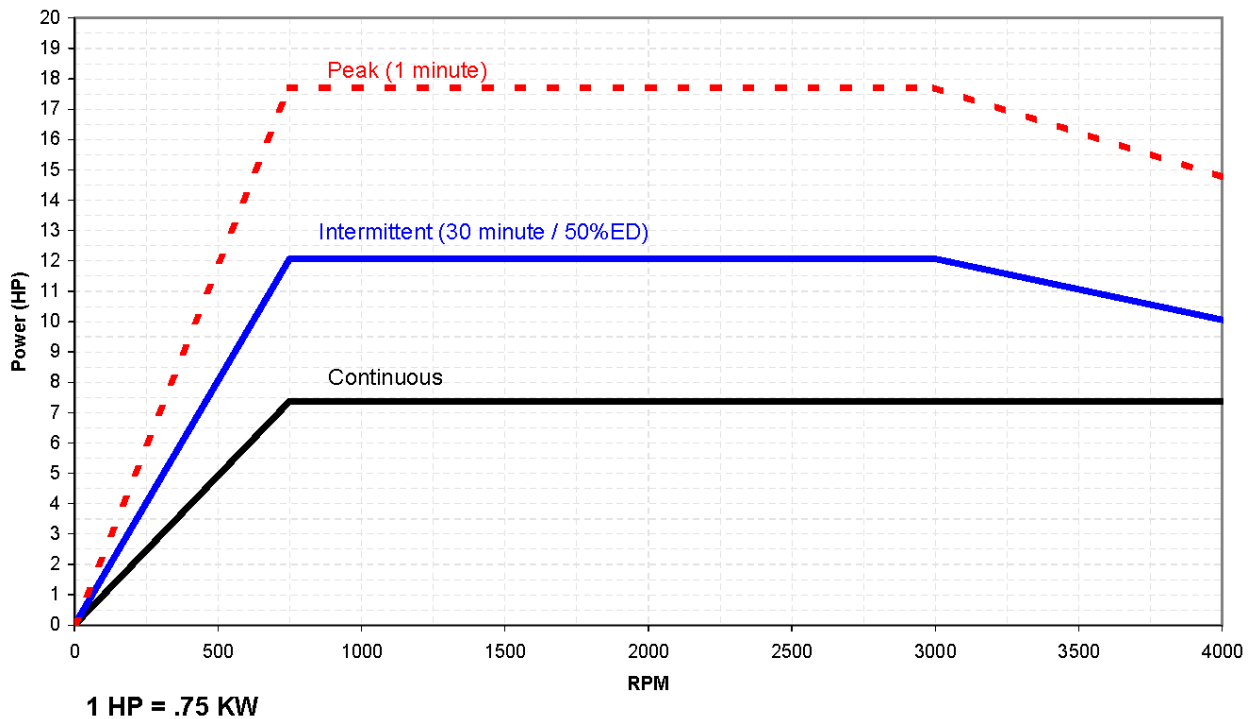
Milltronics 8200-B Series CNC Control Features

- 12" LCD color display
- 2000 blocks/second high speed processor
- Conversational programming
- Fanuc based G&M Code programming
- Inch/Metric Conversion / programming
- Manual Machine Operations
- Single Automatic Operation w/Teach Mode
- Auto routines
- User definable macros with trig assist
- Custom Macro B
- Auto DXF file import
- Part and wire frame tool path graphics
- Solid Model Graphic Display
- Onboard diagnostics
- Spindle load meter
- Part counter display
- 1 GB parts program memory
- Networking
- USB Port
- Manual pulse generator
- Coordinate rotating
- Scaling
- Mirror image
- Feedrate and Spindle Override
- Tool radius and length offsets (24 total)
- Tool Load Monitoring
- 6 Work Coordinates (G54-G59)
- G92 Coordinate system setting
- Backlash Compensation
- Ballscrew pitch error compensation
- Rigid tapping/ threading cycles
- Canned cycles including:
 - o Drilling
 - o Turning
 - o Facing
 - o Boring
 - o Tapping
 - o Grooving
 - o Threading
 - o 3D Pocket/Sweep
 - o Tangent/Circle Generate
- Subprogram Call-50 nested programs maximum
- MDI
- Background Editing
- Program/Parameter protect

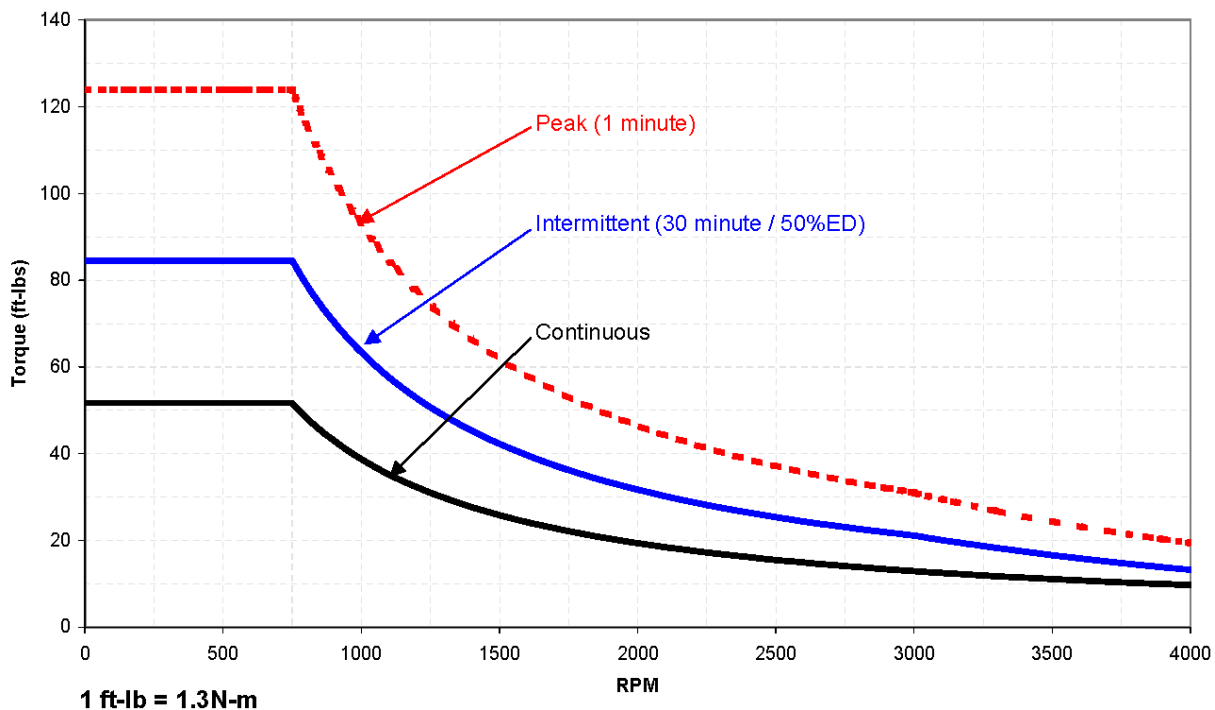
Yaskawa Torque Chart 18/12/1/L/Y – Belted Spindle

Used on: Standard ML16

Power Characteristics of ML16 With 18/12 HP Single Winding Motor



Torque Characteristics of ML16 With 18/12 HP Single Winding Motor



LIMITED WARRANTY

Subject to the terms of this Limited Warranty, Milltronics USA, Inc. ("**Milltronics**") warrants to the End User that the Milltronics Machine Tool, Replacement Part or Accessory (each, a "**Product**") for which this Limited Warranty is issued will be free from any Covered Defect during the Warranty Period for the Product.

Milltronics will replace or repair, at its option, a Product with a Covered Defect at no expense to its End User, except that:

(1) End User must pay for all shipping costs (including freight charges, taxes, and insurance), except shipping costs for repaired parts and components or a Replacement Part shipped under this Limited Warranty by Milltronics to End User or an Authorized Distributor.

End User must report to Milltronics in writing any Covered Defect as soon as practicable upon its discovery and in all events prior to the expiration of the Warranty Period for the Product. Milltronics shall have no responsibility with respect to any Covered Defect which is not reported to Milltronics by written notice prior to the expiration of the Warranty Period for the Product. End User must allow Milltronics or an Authorized Distributor to inspect and test the Product during business hours to determine if there is a Covered Defect. At the option of Milltronics, a Product with a Covered Defect will be repaired at End User's location, and should not be returned to Milltronics except upon inspection and testing by Milltronics or, with prior approval of Milltronics, an Authorized Distributor. Upon request, End User must return for repair or replacement, with shipping costs paid by End User, the Product or part(s) or component(s) of a Product with a Covered Defect to Milltronics at the following address: Milltronics USA, Inc., 1400 Mill Lane, Waconia, Minnesota 55387. All parts, components and Products replaced by Milltronics shall become the property of Milltronics.

This Limited Warranty is effective and valid only if the Authorized Distributor from which the Product is purchased (or Milltronics, if it is the seller) is paid in full for the Product, and the End User for that Product executes Milltronics-provided installation acknowledgments and forms upon completion of installation of the Product.

As used in this Limited Warranty:

(a) "**Accessory**" means a new accessory, kit or optional equipment supplied and installed on a Milltronics Machine Tool by Milltronics or an Authorized Distributor at any time *after* the initial installation of that Milltronics Machine Tool.

(b) "**Authorized Distributor**" means a Person authorized by Milltronics to sell and service Milltronics Machine Tools.

(c) "**Covered Defect**" means a failure of a Product during the Warranty Period to conform in any substantial way during normal use with the performance specifications and standards established by Milltronics for that Product; provided that such failure is not caused by or resulting from any of the following: (i) normal wear and tear or deterioration; (ii) inadequate or improper maintenance, such as End User's failure to clean, lubricate, replenish or replace oil, fluids, coolants, lamps, fuses, belts, filters and similar items; (ii) accident, negligence, theft, weather, electrical surges or lightning, fire or any other peril, misuse, abuse, programming error, improper operation or failure to follow fully maintenance and operation instructions provided by Milltronics or a Milltronics technical specialist to End User; (iv) mishandling, improper packaging or any other act which occurs during or in connection with shipment of the Product, or during or in connection with its rigging or installation, unless caused by Milltronics or an Authorized Distributor; and (v) any repair, replacement, modification or alteration of the Product which is not authorized by Milltronics.

(d) "**End User**" means the Person who purchases for its own use directly from Milltronics or an Authorized Distributor the Product for which this Limited Warranty is issued, and, so long as any relocating and reinstallation of the Product is performed by an Authorized Distributor or Milltronics, also any Person who purchases the Product from its initial End User prior to expiration of the Warranty Period for the Product. The term does not include any Person who purchases the Product for resale, lease or other transfer to, or use by, another Person.

(e) "**Milltronics Machine Tool**" means a machine tool manufactured by or for Milltronics, bearing the name "Milltronics" and a "Milltronics" trademark and serial number, and purchased by an End User new directly from Milltronics or an Authorized Distributor, together with any accessory, component, kit or optional equipment installed on that Milltronics Machine Tool by Milltronics or an Authorized Distributor prior to or at the time of initial installation of that Milltronics Machine Tool.

(f) "**Person**" means and includes an individual, partnership, joint venture, corporation, limited liability company, trust or other legal entity.

(g) **Replacement Part** means a new or rebuilt genuine part or component bearing a "Milltronics" trademark provided by Milltronics or an Authorized Distributor under this Limited Warranty in replacement of a part or component of a Product.

(h) **Warranty Period** means:

(i) for a Milltronics Machine Tool (other than a Tool Room Milltronics Machine Tool), unless a different warranty period is expressly stated in the quotation issued by Milltronics for that Product, a period of One (1) Year Parts and Labor, and for a Milltronics Tool Room Machine Tool, unless a different warranty period is expressly stated in the quotation issued by Milltronics for that Product, a period of One (1) Year Parts, Six (6) Months Labor. These periods begin on the earlier of: (1) the date of the first use of the Milltronics Machine Tool by its initial End User; and (2) the date which is 30 days after shipment by or for Milltronics of the Milltronics Machine Tool to an Authorized Distributor or the End User. (The warranty period may be extended, on exception basis, by a separate warranty extension issued in writing by Milltronics to the End User for a Milltronics Machine Tool);

(ii) for a Replacement Part, a period which is the longer of: (i) the 90 days after the date of its shipment by or for Milltronics to an Authorized Distributor or the End User; and (ii) expiration of the Warranty Period for the Milltronics Machine Tool on which that Replacement Part is installed; and

(iii) for an Accessory, a period which is the longer of: (i) the 90 days after the date of its shipment by or for Milltronics to an Authorized Distributor or the End User; and (ii) expiration of the Warranty Period for the Milltronics Machine Tool on which the Accessory is installed.

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MILLTRONICS USA RESERVATIONS AND MACHINE SHUT DOWN DEVICE ADVISORY

Milltronics USA reserves the right to incorporate any modifications or improvements in machines and machine specifications that it considers necessary, but are not documented within this quotation. Milltronics USA may install on any machine a CNC shut-down timer which requires a password to reactivate the Machine, will cause a machining or turning center to shut down. All purchasers are advised and at purchase shall be deemed to have consented to the installation of a shut-down timer, understanding that Milltronics USA or Authorized Distributor may have or obtain access to the required password to reactivate the machine should this be required in the event of payment default. Milltronics USA is not responsible for misprints or typographical errors in this Proposal. Proposal is valid for 30 days after presentation.

For questions regarding this Limited Warranty, please contact the Authorized Distributor or:

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