## BR Series – Bridge 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



#### **BR Series**

- BR Series machines are high speed bridge style vertical machining centers designed for variety of machining applications
- Available in six different sizes:
  - BR5100IL (100" x 50")
  - BR6100IL (100" x 60")
  - BR6150IL (150" x 60")
  - BR8100IL (100" x 80")
  - BR8150IL (150" x 80")
  - BR8200IL (200" x 80")
- Made in Waconia, Minnesota
- All feature the Milltronics 9000 Series control



YouTube Video <u>here</u>



## In Between



- Milltronics BR Series are "in between" a fast CNC router and heavy duty cast bridge mill
- Fast rapids at 1,000 ipm minute
- Either 10,000 or 15,000 rpm inline direct drive spindle
- Great for plate work (steel or aluminum), weldments, patterns, aluminum molds, etc.



## Not Required





- No expensive and time consuming foundation required
- Most models ship in one piece – fast installation (2-4 days)







## BR Series Performance



Travels	100" x 50" x 28"
Table	50" x 100"
Table Capacity	5,000 lbs
Spindle Taper	CAT #40 Big Plus
Spindle RPM	10,000 rpm
Optional RPM	15,000 rpm

\*Table trough option only

### **BR5100IL – Spec Summary**

Horsepower	24/15 hp
Torque	85 ft lbs
Optional HP	35/25 hp
Optional Torque	122 ft lbs
ATC	24 carousel
Rapid Traverse	1,000 ipm
Ballscrew Diameter X/Y/Z	2.5"/1.5"/1.25"
Repeatability	.0003"
Chip Management System	Not Available*
Width x Depth x Height	152"x276"x131"
Power Required	48 KVA
Weight	13,000 lbs
Control	Series 9000







### **BR6100IL – Spec Summary**

Travels	100" x 60" x 28"
Table	60" x 100"
Table Capacity	5,000 lbs
Spindle Taper	CAT #40 Big Plus
Spindle RPM	10,000 rpm
Optional RPM	15,000 rpm
Horsepower	24/15 hp
Torque	85 ft lbs
Optional HP	35/25 hp
Optional Torque	122 ft lbs
ATC	24/40 opt
Rapid Traverse	1,000 ipm
Ballscrew Diameter X/Y/Z	2.5"/1.5"/1.25"



Repeatability	.0003″
Chip Management System	Optional
Width x Depth x Height	152"x315"x144"
Power Required	48 KVA
Weight	17,500 lbs
Control	Series 9000









Travels	150" x 60" x 28"
Table	60" x 150"
Table Capacity	5,000 lbs
Spindle Taper	CAT #40 Big Plus
Spindle RPM	10,000 rpm
Optional RPM	15,000 rpm

### **BR6150IL – Spec Summary**

Horsepower	24/15 hp
Torque	85 ft lbs
Optional HP	35/25 hp
Optional Torque	122 ft lbs
ATC	24/40 opt
X/Y, Z Rapid Traverse	750/1,000 ipm
Ballscrew Diameter X/Y/Z	3.15"/1.5"/1.25"
Repeatability	.0003″
Chip Management System	Optional
Width x Depth x Height	152"x379"x144"
Power Required	48 KVA
Weight	22,000 lbs
Control	Series 9000







#### **BR8100IL – Spec Summary**

Travels	100" x 80" x 28"
Table	80" x 100"
Table Capacity	5,000 lbs
Spindle Taper	CAT #40 Big Plus
Spindle RPM	10,000 rpm
Optional RPM	15,000 rpm
Horsepower	24/15 hp
Torque	85 ft lbs
Optional HP	35/25 hp
Optional Torque	122 ft lbs
ATC	24/40 opt
Rapid Traverse	1,000 ipm
Ballscrew Diameter X/Y/Z	2.5"/1.5"/1.25"



Repeatability	.0003"
Chip Management System	Optional
Width x Depth x Height	152"x280"x164"
Power Required	48 KVA
Weight	19,500 lbs
Control	Series 9000







#### **BR8150IL – Spec Summary**

Travels	150" x 80" x 28"
Table	80" x 100"
Table Capacity	5,000 lbs
Spindle Taper	CAT #40 Big Plus
Spindle RPM	10,000 rpm
Optional RPM	15 <i>,</i> 000 rpm
Horsepower	24/15 hp
Torque	85 ft lbs
Optional HP	35/25 hp
Optional Torque	122 ft lbs
ATC	24/40 opt
X/Y, Z Rapid Traverse	750/1,000 ipm
Ballscrew Diameter X/Y/Z	3.1"/1.5"/1.25"



Repeatability	.0003"
Chip Management System	Optional
Width x Depth x Height	153"x380"x162"
Power Required	48 KVA
Weight	24,500 lbs
Control	Series 9000







#### **BR8200IL – Spec Summary**

Travels	200" x 80" x 28"
Table	80" x 200"
Table Capacity	5,000 lbs
Spindle Taper	CAT #40 Big Plus
Spindle RPM	10,000 rpm
Optional RPM	15 <i>,</i> 000 rpm
Horsepower	24/15 hp
Torque	85 ft lbs
Optional HP	35/25 hp
Optional Torque	122 ft lbs
ATC	24/40 opt
X/Y, Z Rapid Traverse	750/1,000 ipm
Ballscrew Diameter X/Y/Z	2.5"/1.5"/1.25"



Repeatability	.0003″
Chip Management System	Optional
Width x Depth x Height	152"x500"x167"
Power Required	48 KVA
Weight	30,000 lbs
Control	Series 9000







## Travel Size Guide







# **Chip Management System**







- History shows about 50% of customers do not use coolant or want enclosure
- Chip Management System is an option
- Modular Enclosure
  - Enclosure includes heavyduty sheet metal base structure with unique modular removal panels
  - Allows easy access to entire table and aids in loading/unloading large or unwieldy parts
    - Load with fork lift



# **Chip Management**

- Easy access to sides of machine (doors are removable)
- Ends of machine are open





# **Chip Management System**





- Chip augers and coolant troughs
  - Double wall
  - Coolant passes through top trough and drains into lower
    - Separates chips from coolant
- Dual screw type chip augers run the length of the machine on both sides of the table
  - The chip augers effectively and reliably transit metal chips to the end of the machine
  - The metal chips are then strained and then discharged by a lift-up drag-type chip conveyor



# **Chip Management System**





- Coolant System
  - Heavy duty Loc-lines are available at the spindle to deliver coolant to the workpiece
  - Generous 100 gallon coolant tank and high capacity pump provide adequate capacity for most any applications



### **Options and Accessories**

- Chip Management System
- Coolant and trough option
- Rigid tap
- 15,000 rpm spindle
- Spindle chiller (std w/ 15k)
- Thermal head comp
- 35 hp spindle motor
- 40 station ATC (not available on BR5100IL)
- 6" riser block
- Coolant thru spindle (300 psi)
- Air thru spindle
- Programmable spray mist or air blast
- Manual grease
- Hole grid table patterns (6" or 12" centers)
- BT tooling
- Rotary tables
- Tool and part probes
- Auxiliary keyboard
- ChipBoss trochoidal milling cycles
- DGI offline software















### BR Series Well Made

# **Tubular Construction**

- Tubular construction used throughout base
- Finite Element Analysis (FEA) proves strength
  - Improved dimensional stability
- 100% stress relieved after welding











## Column





- Column is offset to allow operator greater access to spindle
- Column mounts on bottom
  - Robust mounting
  - "Manufactured" rather than "assembled" square
- 6" riser blocks are available



# Bridge and Head Mount









- Designed to be stiff and strong yet light weight for high speed
- "Triangular" construction with ten vertical stiffeners, welded in place and thicker outer frame structure
- Rail anchoring the rails are mounted against a shoulder and have anchor blocks
- Rails are offset by 4.5"



# Ballscrews and LMG

- All ground high grade ball screws, pretensioned to offset effects of thermal expansion
- 45 mm roller type linear motion guides bearings used on all axis
  - 44% more contact than ball guides
- Linear motion guides anchored against machined shoulder
- Six bearing blocks in Y & Z axes, four in X









### **Inline Spindles**

BR Series inline spindles are designed and manufactured by Kenturn and assembled in clean room. Inline spindles offer:

- Runs smooth and quiet
- Reduced heat no belt, major source of heat in belt driven machines
- Reduced vibration, better surface finish and longer tool life
- Faster spindle acceleration and deacceleration
- Larger diameter for rigidity
- Made of chrome-moly 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





Without head comp

### Thermal Head Comp (option)



UON PRECISION	File Test Time: NA 0.2.4	8 8 0
Save Load Conliguration Help Exits	THERMAL	
Display View Setup! Sc	aling	
Channel: Range	FILE: SN12154 day three 17_4_33 with comp on 1_18_	Temp (C)
1(X) Drift: 108 uin	2500-	78.0
2(Y) Drift: 353 uin	2000-	72.0
3(Z) Drift: 344 uin	<del>ි</del> 5 1500-	66.0
	- TO 1000-	60.0
Temperature: Range	500-	54.0
	and the second s	48.0
Spindle2: 21	-500	42.0
PT100HD: 8	<u><u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u></u>	36.0
	<u>0</u> -1500	30.0
Air: 1	-2000-	24.0
base: 0	-2500-	18.0
Redraw Graph	0.00 1.60 3.20 4.80 6.40 8.00 Hours	
Start End	Hours	

With head comp

Milltronics offers optional thermal head mapping compensation to dramatically reduce head casting growth

- Uses twin thermal sensors and Milltronics' proprietary algorithms to automatically offset growth in head casting
- Compensates for Y and Z growth
- Works best with linear glass scales for maximum growth reduction



## Toolchanger



- Standard with 24 station ATC
  - Carousel type
  - Bi-directional
  - Access door on side of enclosure
- Optional 40 station ATC



## Table





- FEA designed all steel table
- Available with pattern 6", 12" centers



### Series 9000 Conversational or G-code



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

#### 9000 Series

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

- Windows<sup>®</sup>-based platform that offers all the user-friendly features that Milltronics controls are known for
- Intel<sup>®</sup> 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<sup>™</sup> 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<sup>™</sup> Software (option)**



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

Watch video <u>here</u>

ChipBoss<sup>™</sup> 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



### Mitsubishi

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

- Mitsubishi Melservo J3 digital drives .476 millisecond velocity loop frequency response time (2.1 kHz)
- Encoders: 262,144 pulses per revolution
- Enhanced vibration suppression delivers 3G 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







## Why Milltronics? 10 Reasons

#### **Easy to Use Control** 1.

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

#### Made Right 2.

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 Mitsubishi, Kenturn, Hiwin<sup>®</sup> and Grundfos. You can judge a machine tool builder by the company it keeps.

#### Upgradeable 4.

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.

#### **Availability** 5.

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

#### Service Network 7.

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.

#### More for Your Money 10.

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















Thank you!

## **Possible Applications**







- Pattern shops
- Aluminum molds
- Large plate work
- Weldments
- Long or big parts that need drilling or milling





# **Steel Milling**





# **Competitive Advantages**

- High speed 1,000 ipm
- 10,000 rpm inline Big Plus spindle standard
- 28" of Z travel standard
- No dedicated foundation required
- Steel table standard
- Control features all standard
- Made in USA

