

# RH - Rigid Head Bed Mill

Effective June 1, 2011 Rev. A



**MILLTRONICS**  
C N C M A C H I N E S

Machine Model	RH20	RH30	RH33	RH33XP	
Spindle Taper / RPM / Diameter	40/8000/60 mm	40/8000/70 mm	40/8000/70 mm	50/8000/90 mm	
Spindle Horsepower 1 min / 30 min	Single Spd 18/12 HP	Single Spd 24/15 HP	Single Spd 24/15 HP	Single Spd 24/15 HP	
Optional Spindle Horsepower 1 min / 30 min	Single Spd 24/15 HP	Two Spd 24/15 HP	Two Spd 24/15 HP	Two Spd 24/15 HP	
Optional Spindle Horsepower 1 min / 30 min	Two Spd 24/15 HP	N/A	Two Spd 35/25	Two Spd 35/25	
Travel (XYZ")	40 x 20 x 24	60 x 30 x 28	78 x 33 x 28	78 x 33 x 28	
<b>MACHINE FEATURES</b>		<b>CONTROL FEATURES</b>			
<ul style="list-style-type: none"> <li>• Two Year Parts Warranty</li> <li>• Heavily Ribbed Cast Iron Construction</li> <li>• Fully Ground Solid Ways with Turcite Surfaces</li> <li>• Precision Ground Double Anchored Ball Screws</li> <li>• Precision Ground Table Surface</li> <li>• Metal Way Covers in Front and Rear of Saddle</li> <li>• Box Ways on Column and Base, 4 Box Base to Saddle on the RH33</li> <li>• Automatic Metered Lubrication with Low Lube Fault</li> <li>• #40, Five Bearing 8000 RPM Air Purged Spindle, #50 RH33XP</li> <li>• Spindle Taper Blow-out and Tool Release Push Button</li> <li>• Rigid Tap</li> <li>• Front Panel Mounted Electronic Handwheel &amp; Handwheel Controlled Program Execution</li> <li>• LCD Hour Meter</li> <li>• Programming &amp; Machine Manuals in Electronic Format</li> <li>• RH33 or RH33XP available with full enclosure</li> </ul>		<ul style="list-style-type: none"> <li>• PC-based 7200 CNC includes 12 MB Parts Storage Memory</li> <li>• 12" LCD Active Matrix Color Display</li> <li>• Conversational plus G &amp; M Code Programming including Coordinate Rotating, Scaling, Mirror Image, Thread Mill Engraving, Helical Interpolation, Auto Routines, &amp; User definable Macros with Trig Assist, &amp; Irregular Pocket Clearing</li> <li>• 3-D Part and Wire Frame Tool Path Graphics on Series 7200 Plus Solid Modeling Graphics on Series 8200</li> <li>• 3.5" Floppy Drive / RS-232 with DNC Buffer (7200 CNC Only)</li> <li>• High Speed Processor 1200 block/sec</li> <li>• Large Program Management Software (Allows Editing of 10 MB Files)</li> <li>• Optional Four &amp; Five Axis Simultaneous Interpolation Software &amp; Interface</li> <li>• Auto DXF File Import</li> <li>• High Torque AC Digital Servo Drives</li> <li>• High Torque Closed Loop Vector Spindle Drive System</li> <li>• All Axes Laser Calibrated and Ballbar Inspected</li> <li>• Spindle Load Meter</li> </ul>			
<b>CONVENIENCE PACKAGE</b>					
Remote Electronic Hand Wheel					
Six Nozzle High Volume Multi Height Flood Coolant System with Through Head Cooling and Flow Valve					
Coolant Drip Pan					
Single Spare "M" Function and CNC "Wait" Channel					
Programmable Spray Mist					
Rear Splash Guards					
Work Lamp					
Networking Option includes 30 Days Phone Support					
<i>Items may be purchased separately</i>					
<b>PERFORMANCE PACKAGE</b>					
Edit Key Lock-Out Switch					
Removable Table Chip Guard					
Upgrade to Single Speed 24/15 HP 18/11 kw Spindle Drive on RH20, 2 Speed 24/15 HP 18/11 kw Spindle Drive on RH30, RH33 & RH33XP					
Off-line FastCAM Software for Programming & Training					
<i>Items may be purchased separately</i>					
<b>8200 CONTROL PACKAGE – Purchase as a Complete Package Only and Includes all the following:</b>					
<ul style="list-style-type: none"> <li>• Solid State Non-Volatile Memory Upgrade to 1 GB</li> <li>• Enhanced CPU Increases Block Processing Speed from 1200 to 2000 bps</li> <li>• Solid Model Graphics Functionality</li> <li>• USB Connectivity in lieu of 3.5" Floppy Disk Drive</li> <li>• High Speed Performance with Enhanced Jerk Control and Look Ahead</li> <li>• MT Connect Compliant</li> </ul>					
<i>3.5" Floppy Drive is replaced by USB. Do not combine with 256 MB Program Storage and Multi Format Flash Card Reader from other accessories. FastCAM Software replaced with 8200 Software. RS-232 Data transfer not available on 8200 control.</i>					
<b>SPINDLE CONFIGURATIONS</b>		<b>RH20</b>	<b>RH30</b>	<b>RH33</b>	<b>RH33XP</b>
Specify Tool Holder: CT40, CT50 on RH33XP		Standard	Standard	Standard	Standard

Optional Tool Holder: BT40, BT50 or DIN69871	Optional	Optional	Optional	Optional	
Optional Spindle Upgrade from 60 mm to 70 mm ( <i>Requires purchase of Performance Pkg</i> )	Optional	Standard	Standard	90 mm	
Spindle Upgrade to 15,000 RPM 60 mm Spindle	Optional	N/A	N/A	N/A	
Spindle Upgrade to 15,000 RPM 70 mm Spindle <i>Req the purchase of 70 mm Spindle on RH20</i>	Optional	Optional	Optional	N/A	
Optional Spindle HP Upgrade to Two Speed 24/15 hp 18/11 kw Wye/delta <i>Requires purchase of Performance Package</i>	Optional	Performance Package	Performance Package	Performance Package	
<b>SPINDLE CONFIGURATIONS - Continued</b>	<b>RH20</b>	<b>RH30</b>	<b>RH33</b>	<b>RH33XP</b>	
Optional Spindle HP Upgrade to 35/25 hp 26/18 kw Two Speed Wye/delta <i>Requires purchase of Performance Package</i>	N/A	N/A	Optional	Optional	
Coolant Through Spindle – 300 PSI Low Pressure System – <b>Requires Purchase of Full Enclosure.</b> <i>Includes drawbar assembly for ANSI retention knobs and rotary coupling.</i>	N/A	N/A	Optional	Optional	
<b>ROTARY ACCESSORIES</b>					
Rotary Tables <i>Includes 4<sup>th</sup> axis amp &amp; motor Application may require riser</i>	6.5" (165 mm) Tail Stock	Optional	Optional	Optional	Optional
	9.0" (228 mm) Tail Stock	Optional	Optional	Optional	Optional
	10.0" (254 mm) Tail Stock	N/A	Optional	Optional	Optional
	5C Collet Table	Optional	Optional	Optional	Optional
4 <sup>th</sup> Axis Servo Amplifier & Motor (Electrics only 0.9 kw motor, larger tables may require a larger motor) – Contact factory for 5 axes <i>Included with Rotary Table Accessory</i>	Optional	Optional	Optional	Optional	
<i>Milltronics will charge an engineering fee to interface a customer provided rotary table with the electrics only package. Charge will depend on table and engineering requirements</i>					
<b>ATC ACCESSORIES</b>					
16 Pocket Carousel Type ATC with Electronic Orient, <i>Requires full enclosure for CE</i>	Optional	Optional	Optional	N/A	
24 Pocket Carousel Type ATC with Electronic Orient, <i>Requires full enclosure for CE</i>	Optional	Optional	Optional	N/A	
20 Pocket Carousel Type ATC (50 Taper) with Electronic Orient, <i>Requires full enclosure for CE</i>	N/A	N/A	N/A	Optional	
24 Pocket Arm Type ATC, <i>Requires purchase of full enclosure</i>	N/A	N/A	Optional	N/A	
32 Pocket Arm Type ATC for #50 Spindle, <i>Requires purchase of full enclosure</i>	N/A	N/A	N/A	Optional	
<b>OTHER ACCESSORIES</b>					
Upgrade to Solid State Non-Volatile Memory 256 MB Flash Card – 7200 Controls Only	Optional	Optional	Optional	Optional	
Multi Format Flash Card Reader – 7200 Controls Only	Optional	Optional	Optional	Optional	
Full Machine Enclosure with Chip Auger	N/A	N/A	Optional	Optional	
End of Cycle Light	Optional	Optional	Optional	Optional	
CE Table Chip Guard (Required for CE) <i>Requires purchase of Performance Package</i>	Optional	Optional	Optional	Optional	
Dual Electronic Handwheel	Optional	Optional	N/A	N/A	
4" Riser Block – <i>Not Removable</i>	Optional	Optional	Optional	Optional	
Tool Release Floor Switch	Optional	Optional	Optional	Optional	
Spare "M" Functions – Block of 4 <i>Maximum 2 blocks; price is for each block</i>	Optional	Optional	Optional	Optional	
Contact Tool Offset Probing with Macros	Optional	Optional	Optional	Optional	
Work Offset Probing with Macros	Optional	Optional	Optional	Optional	
Combo Pack – Contact & Work Tool Offset Probing with Macros	Optional	Optional	Optional	Optional	
Laser Tool Setter	Optional	Optional	Optional	Optional	
<i>Digiscan Digitizing 3-D Software, Probe, Manuals - Not available with 8200 Control Package</i>	Optional	Optional	Optional	Optional	
RS-232 Cable, 50' 15 Meters	Optional	Optional	Optional	Optional	
Printed Programming Manual (Electronic Format Standard)	Optional	Optional	Optional	Optional	
Printed Machine Manual (Electronic Format Standard)	Optional	Optional	Optional	Optional	
Power Requirements 208-240 VAC, 50 – 60 hz, 3Ø	Standard	Standard	Standard	Standard	
380-480 Transformer (Reduces Voltage to 208-240) - <i>Factory recommended sizes. Consult local electrical codes for proper transformer sizing.</i>	20 kVA	Optional	Optional	Optional	Optional
	With 35 HP 40kVA	N/A	N/A	Optional	Optional
UL/CUL Compliance	Optional	Optional	Optional	Optional	
CE Code <i>Required for European Union Countries – Also Requires CE Table Guard</i>	Optional	Optional	Optional	Optional	
Export Handling Fee	Consult Factory				
Crating Charge	Consult Factory				
Two Year Parts Warranty <small><i>See Note</i></small>	Standard	Standard	Standard	Standard	
Factory Start-up and Training On Site, U.S. only	Optional	Optional	Optional	Optional	
Training at Milltronics <i>Includes lunches, training, materials and manual</i>	Optional	Optional	Optional	Optional	

*Terms within USA: Cash or terms with approved credit; down payment due with order. Terms outside USA: Cash or approved Letter of Credit  
FCA Waconia, Minnesota USA; Prices do not include taxes, duties, transportation, insurance, rigging or start-up.  
Milltronics reserves the right to amend or change without notice without incurring obligation; not responsible for typographical errors.  
Consult Written Warranty Statement for Details of Two Year Parts Warranty  
All sales of equipment, parts, software and service are subject to Milltronics' Standard Terms and Conditions of Sale.*

# RH - Rigid Head Bed Mill Specifications



Effective June 1, 2011 Rev. A

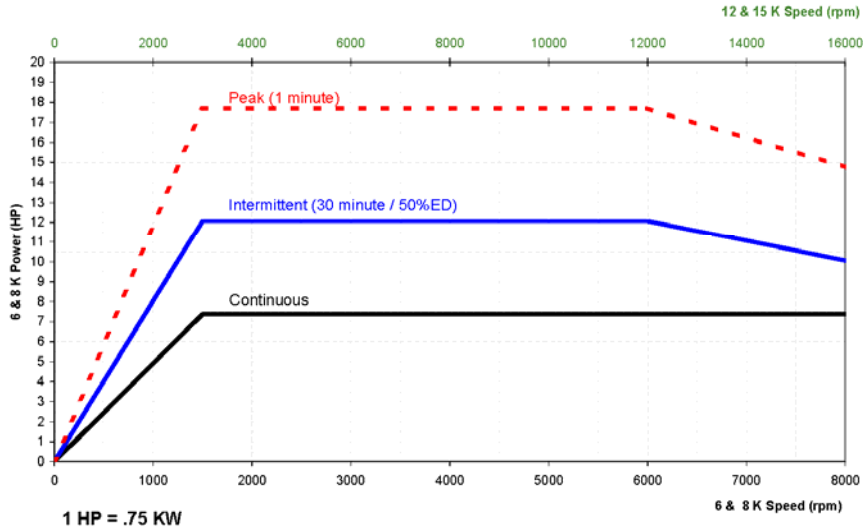
Machine Model	RH20	RH30	RH33	RH33XP
Control Type	Milltronics 7200 CNC	Milltronics 7200 CNC	Milltronics 7200 CNC	Milltronics 7200 CNC
Software	CNC or SLS	CNC or SLS	CNC or SLS	CNC or SLS
Number of Axes	3 (Opt 4 or 5)	3 (Opt 4 or 5)	3 (Opt 4 or 5)	3 (Opt 4 or 5)
Functions: <i>Automatic</i>	Auto operation of spindle start/stop, mist, flood, RPM			
<b>CAPACITY</b>				
Standard Table Size	54 x 16" <i>1370 x 405 mm</i>	73 x 24" <i>1850 x 610 mm</i>	86 x 32" <i>2185 x 810 mm</i>	86 x 32" <i>2185 x 810 mm</i>
Table Travel - X Axis	40" <i>1015 mm</i>	60" <i>1525 mm</i>	78" <i>2000 mm</i>	78" <i>2000 mm</i>
Saddle Travel - Y Axis	20" <i>510 mm</i>	30" <i>760 mm</i>	33" <i>840 mm</i>	33" <i>840 mm</i>
Head Travel - Z Axis	24" <i>610 mm</i>	28" <i>710 mm</i>	28" <i>710 mm</i>	28" <i>710 mm</i>
Throat Distance <i>Spindle to Column</i>	21" <i>530 mm</i>	30.5" <i>775 mm</i>	34" <i>860 mm</i>	34" <i>860 mm</i>
Spindle to Table Top	2 - 26" <i>50 - 660 mm</i>	3 - 31" <i>75 - 785 mm</i>	4 - 32" <i>100 - 810 mm</i>	4 - 32" <i>100 - 810 mm</i>
Maximum Table Load	2500 lb <i>1130 kg</i>	3000 lb <i>1360 kg</i>	3500 lb <i>1600 kg</i>	3500 lb <i>1600 kg</i>
Machine Weight	8000 lb <i>3628 kg</i>	11,000 lb <i>5000 kg</i>	15,000 lb <i>6800 kg</i>	15,000 lb <i>6800 kg</i>
T Slots	(5) .63" <i>16 mm</i>	(5) .71" <i>18 mm</i>	(5) .71" <i>18 mm</i>	(5) .71" <i>18 mm</i>
Saddle Width	46" <i>1160 mm</i>	70" <i>1780 mm</i>	87" <i>2220 mm</i>	87" <i>2220 mm</i>
Ball Screw Size: X,Y,Z Axis	32/40/40mm	40mm Dbl Nut	50mm Dbl Nut	50mm Dbl Nut
Ball Screw Grade	C5	C5	C5	C5
Ball Screw Pitch X,Y,Z	.2"	10 mm	10 mm	10 mm
<b>SPINDLE</b>				
Spindle Taper	#40	#40	#40	#50
Heavy Duty Spindle Cartridge Assembly with Triplex Bearing Design	60 mm Opt 70 mm	70 mm	70 mm	90 mm
Spindle Horsepower <i>1 minute / 30 minutes</i>	Single Speed 18/12 HP <i>13/9 kw</i>	Single Speed 24/15 HP <i>18/11 kw</i>	Single Speed 24/15 HP <i>18/11 kw</i>	Single Speed 24/15 HP <i>18/11 kw</i>
Reference Torque Chart:	18/12/1/B/Y	24/15/1/B/Y	24/15/1/B/Y	24/15/1/B/Y
Optional Spindle Drive System <i>1 minute / 30 minutes</i>	Single Speed 24/15 HP <i>18/11kw</i>	Two speed 24/15 HP <i>18/11kw</i>	Two speed 24/15 HP <i>18/11kw</i>	Two speed 24/15 HP <i>18/11kw</i>
Reference Torque Chart:	24/15/1/B/Y	24/15/2/B/Y	24/15/2/B/Y	24/15/2/B/Y
Optional Spindle Drive System <i>1 minute / 30 minutes</i>	Two speed 24/15 HP <i>18/11kw</i>	N/A	Two Speed 35/25 HP <i>26/18kw</i>	Two Speed 35/25 HP <i>26/18kw</i>
Reference Torque Chart:	24/15/2/B/Y	N/A	35/25/2/B/Y	35/25/2/B/Y
Standard Triplex Bearing Spindle RPM	50 - 8000	50 - 8000	50 - 8000	50 - 8000
Optional Ceramic Duplex Bearing Spindle RPM <i>Req. balanced tooling, Recommend HP Upgrade</i>	100 - 15,000	100 - 15,000	100 - 15,000	N/A
Balanced Tooling Requirements	For 15,000 RPM Spindle Tools Should Be Balanced to 2.5 G's at 15,000 RPM			
<b>PERFORMANCE</b>				
Servo Type	AC Digital	AC Digital	AC Digital	AC Digital
Rapid Traverse	X,Y: 500 ipm <i>12 mpm</i> Z: 300 ipm <i>7.6 mpm</i>	X,Y: 500 ipm <i>12 mpm</i> Z: 400 ipm <i>10 mpm</i>	X,Y: 800 ipm <i>20 mpm</i> Z: 600 ipm <i>15 mpm</i>	X,Y: 800 ipm <i>20 mpm</i> Z: 600 ipm <i>15 mpm</i>
Maximum Feedrate	300 ipm <i>7620 mmpm</i>	300 ipm <i>7620 mmpm</i>	300 ipm <i>7620 mmpm</i>	300 ipm <i>7620 mmpm</i>
Position Accuracy <i>See note</i>	±0.00039" <i>.01 mm</i>	±0.00039" <i>.01 mm</i>	±0.00039" <i>.01 mm</i>	±0.00039" <i>.01 mm</i>
Repeatability	.0002" <i>.005 mm</i>	.0002" <i>.005 mm</i>	.0002" <i>.005 mm</i>	.0002" <i>.005 mm</i>
Resolution	.00004" <i>.001 mm</i>	.00004" <i>.001 mm</i>	.00004" <i>.001 mm</i>	.00004" <i>.001 mm</i>
Thrust, Machine Duty Rating	X, Y: 3000 lb <i>1360 kg</i> Z: 4000 lbs <i>1800 kg</i>	X, Y: 3000 lb <i>1360 kg</i> Z: 4000 lb <i>1800 kg</i>	X, Y: 3000 lb <i>1360 kg</i> Z: 4000 lb <i>1800 kg</i>	X, Y: 3000 lb <i>1360 kg</i> Z: 4000 lb <i>1800 kg</i>
<b>OPTIONAL AUTOMATIC TOOL CHANGER</b>				

<b>Machine Model</b>	<b>RH20</b>	<b>RH30</b>	<b>RH33</b>	<b>RH33XP</b>
16 Pocket Carousel ATC 40 Taper	Optional	Optional	Optional	N/A
24 Pocket Carousel ATC 40 Taper	Optional	Optional	Optional	N/A
Maximum Diameter / Length / Weight	3.5" / 11" / 15 lb <i>80mm/280mm/ 7 kg</i>	3.5" / 11" / 15 lb <i>80mm/280mm/ 7 kg</i>	3.5" / 11" / 15 lb <i>80mm/280mm/ 7 kg</i>	N/A
Max. Length With Table Guard	6" <i>150 mm</i>	6" <i>150 mm</i>	10" <i>250 mm</i>	N/A
Tool Change Time	7 Sec.	7 Sec.	7 Sec.	N/A
20 Pocket Carousel ATC 50 Taper	N/A	N/A	N/A	Optional
Maximum Diameter / Length / Weight – <i>Dia requires empty adj pkts</i>	N/A	N/A	N/A	5" / 13" / 25 lb <i>125mm/330mm/11kg</i>
Tool Change Time	N/A	N/A	N/A	9 Sec.
24 Pocket Arm Type ATC <i>Requires purchase of full enclosure</i>	N/A	N/A	Optional	N/A
Maximum Tool Diameter <i>Requires adjacent tool pots to be empty</i>	N/A	N/A	4" or 5" <i>100mm or 125mm</i>	N/A
Max. Length / Weight	N/A	N/A	9" / 15 lb <i>230 mm / 7 kg</i>	N/A
Tool Change Time	N/A	N/A	3.5 Sec.	N/A
32 Pocket Arm Type ATC <i>Requires purchase of full enclosure</i>	N/A	N/A	N/A	Optional
Maximum Tool Diameter <i>Requires adjacent tool pots to be empty</i>	N/A	N/A	N/A	4" or 5" <i>100mm or 125mm</i>
Max. Length / Weight	N/A	N/A	N/A	16" / 25 lb <i>400 mm / 12 kg</i>
Tool Change Time	N/A	N/A	N/A	7.5 Sec.
<b>COOLANT THROUGH SPINDLE</b>				
Coolant Through Spindle Option (CTS) <i>Requires ANSI Retention Knob</i>	N/A	N/A	300 psi <i>20 bar</i>	300 psi <i>20 bar</i>
CTS – Pump Filtration	N/A	N/A	11 Micron	11 Micron
CTS – Flow Rate	N/A	N/A	5 gal/min <i>19 L/min</i>	5 gal/min <i>19 L/min</i>
CTS – Pump HP	N/A	N/A	5 HP <i>3.7 kw</i>	5 HP <i>3.7 kw</i>
<b>MISCELLANEOUS</b>				
1/4 HP Flood Pump Capacity <i>Optional in Convenience Package</i>	7.5 Gal. <i>28 L</i>	15 Gal. <i>50 L</i>	90 Gal. <i>340 L</i>	90 Gal. <i>340 L</i>
Drawbar Air Pressure Required	100 psi <i>6.8 bar</i>	100 psi <i>6.8 bar</i>	100 psi <i>6.8 bar</i>	100 psi <i>6.8 bar</i>
Power 208-240 VAC 50-60hz, 3Ø <i>Up to 24 HP</i>	50 amps 19 kVA	50 amps 19 kVA	50 amps 19 kVA	50 amps 19 kVA
Power 208-240 VAC 50-60hz, 3Ø <i>35 HP Option</i>	N/A	N/A	100 amps 38 kVA	100 amps 38 kVA
Power 400-440 VAC	Req. Transformer	Req. Transformer	Req. Transformer	Req. Transformer
Floor Space Requirement	129" x 78" <i>3280x1980 mm</i>	169" x 91" <i>4300x2310 mm</i>	222" x 130" <i>5660x3320 mm</i>	222" x 130" <i>5660x3320 mm</i>
Warranty	Parts: Two years or 4200 hours, whichever occurs first on all normal failures. Service: One year or 2100 hours (whichever occurs first) from distributor			
<p><i>Measurements performed with Renishaw laser and ballbar systems. Measurements are linear over entire travel.</i></p> <p><i>Temperature changes and table loads may affect tolerances. Tolerances are guaranteed over 10" sq. area.</i></p> <p><i>Centurion features covered under separate literature. For machine duty rating, see "Truth in Specifications" on www.milltronics.net.</i></p> <p><i>Milltronics reserves the right to change specifications at any time without incurring obligation.</i></p>				

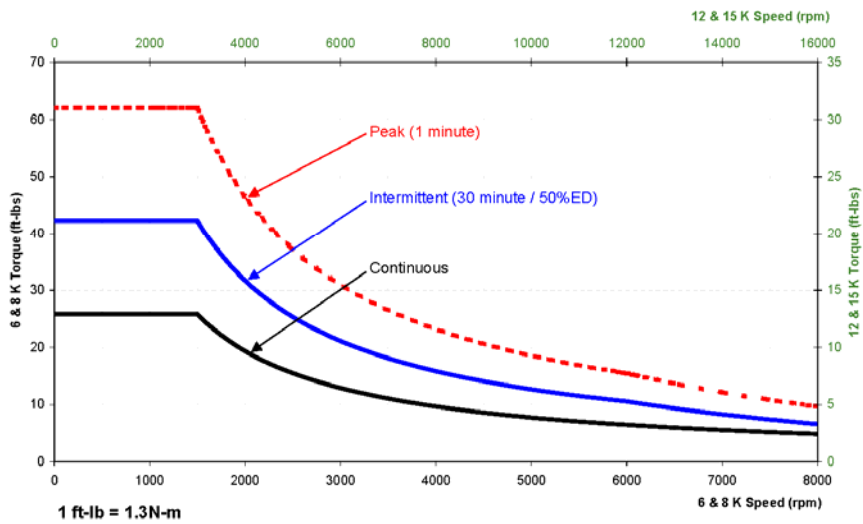
## Yaskawa Torque Chart 18/12/1/B/Y – Belted Spindle

Used on: Standard RH20  
Optional N/A

Power Characteristics of 18/12 HP Single Winding Motor  
for 6,000 and 8,000 RPM or 12,000 and 15,000 RPM



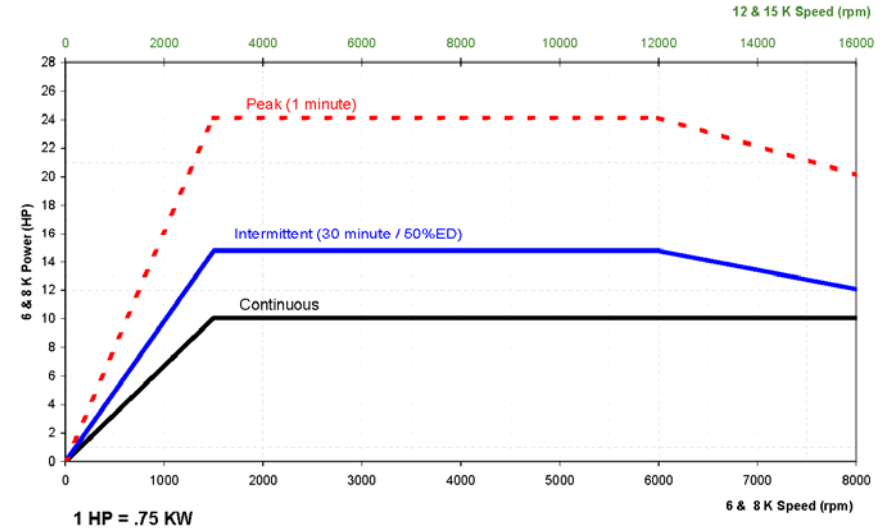
Torque Characteristics of 18/12 HP Single Winding Motor  
for 6,000 and 8,000 RPM or 12,000 and 15,000 RPM



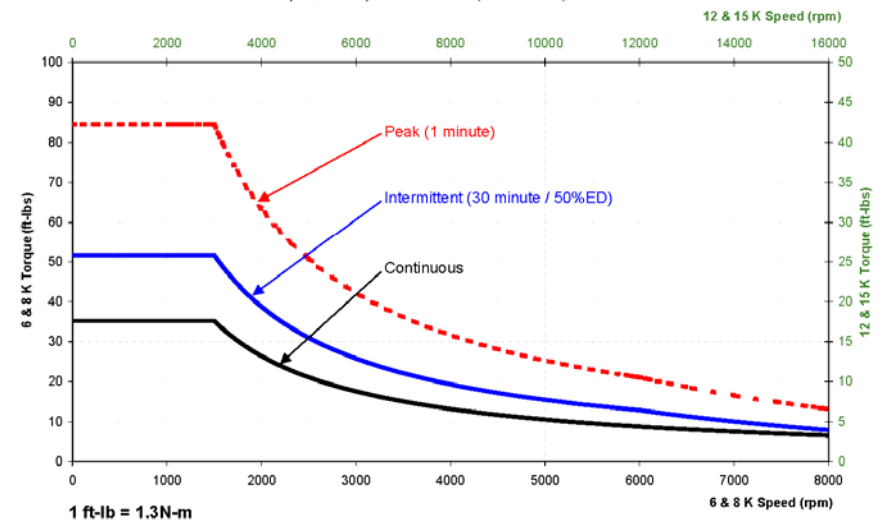
## Yaskawa Torque Chart 24/15/1/B/Y – Belted Spindle

Used on: Standard RH30, RH33, RH33XP  
Optional RH20

Power Characteristics of 24/15 HP Single Winding Motor  
for 6,000 and 8,000 RPM or 12,000 and 15,000 RPM



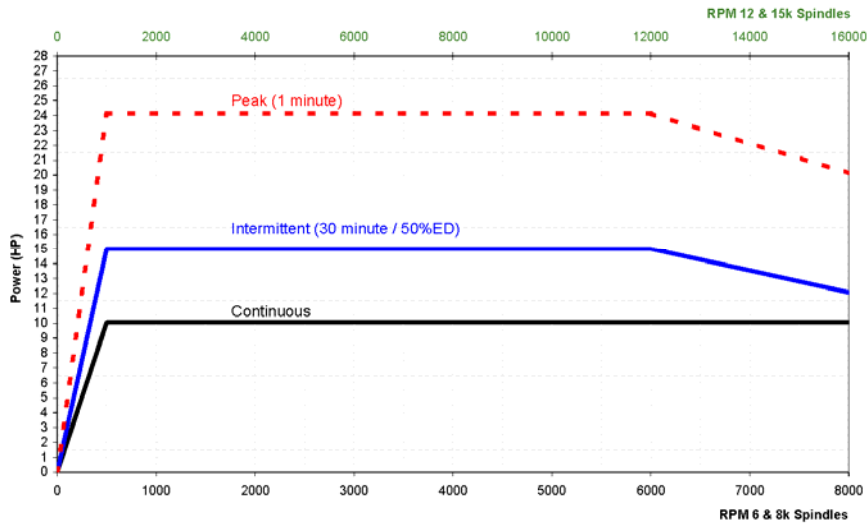
Torque Characteristics of 24/15 HP Single Winding Motor  
for 6,000 and 8,000 RPM or 12,000 and 15,000 RPM



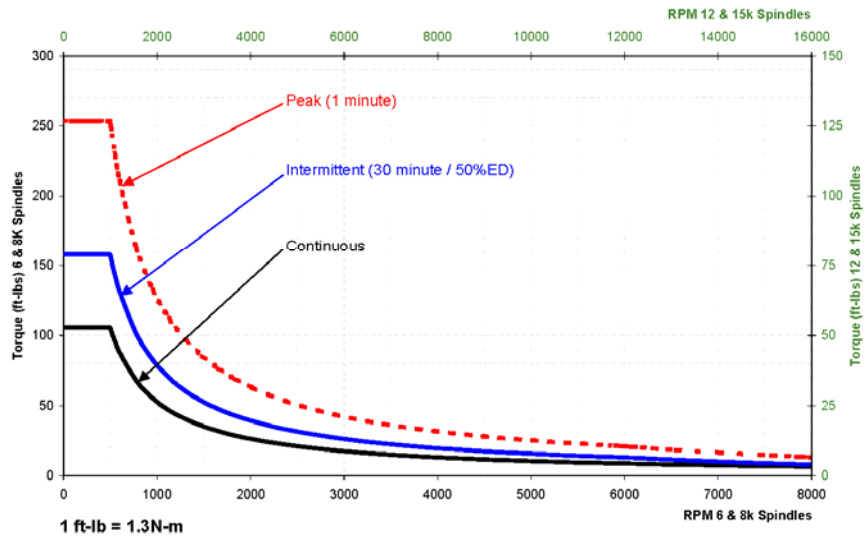
## Yaskawa Torque Chart 24/15/2/B/Y – Belted Spindle

Used on: Standard N/A  
Optional RH20, RH30, RH33, RH33XP

Power Characteristics of 24/15 HP WYE Delta Motor  
for 6,000 and 8,000 RPM or 12,000 and 15,000 RPM



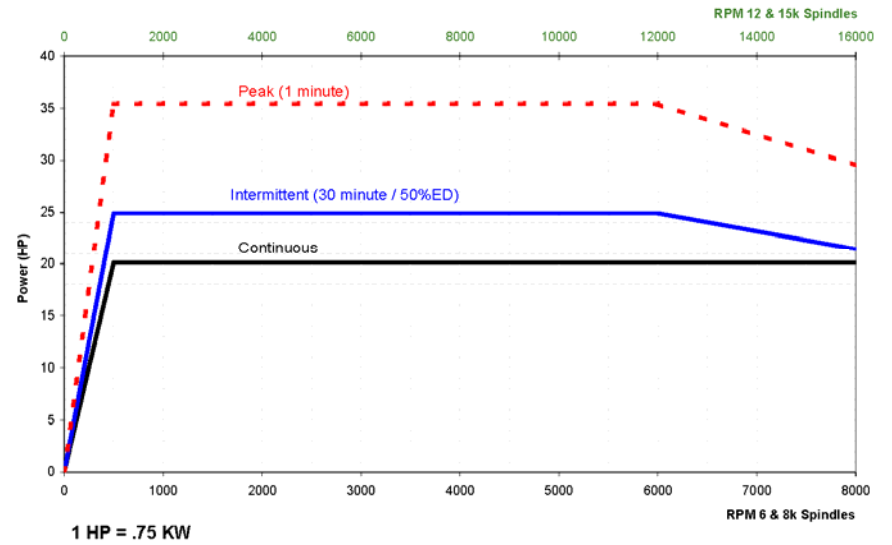
Torque Characteristics of 24/15 HP WYE Delta Motor  
for 6,000 and 8,000 RPM or 12,000 and 15,000 RPM



## Yaskawa Torque Chart 35/25/2/B/Y – Belted Spindle

Used on: Standard N/A  
Optional RH33, RH33XP

Power Characteristics of 35/25 HP WYE Delta Motor  
for 6,000 and 8,000 RPM or 12,000 and 15,000 RPM



Torque Characteristics of 35/25 HP WYE Delta Motor  
for 6,000 and 8,000 RPM or 12,000 and 15,000 RPM

