

HM - Horizontal Inline Spindle #40 Taper Linear Way Machining Center

Effective June 01, 2011



Machine Model	HM20
Standard Travel (XYZ")	30 x 34 x 20"
Extended Travel Option (XYZ")	40 x 34 x 20"
Spindle Taper	#40
ATC Type	24 Arm
Flood Coolant with Tank and 6 Nozzles	Standard
Lubrication	Autolube
Standard 35 mm Linear Ways	X Z – Ball; Y - Roller
Optional 35 mm Linear Ways	X Y Z - Roller
Horsepower Standard 1 minute / 30 minutes	Two Speed 24/15 hp 18/11 kw
Horsepower Option 1 minute / 30 minutes	Two Speed 35/25 hp 26/18 kw
Standard Inline Spindle Size	70 mm
Standard Spindle RPM	10,000 RPM
Optional Spindle RPM	15,000 RPM
MACHINE FEATURES	CONTROL FEATURES
<ul style="list-style-type: none"> • Rear Access Door with Swivel Operator's Station • Massive Heavily Ribbed Machine Tool Grade Cast Iron Construction • Precision Ground Table, Rail & Rail Block Mounting Surfaces • Auger Style Chip Removal System • Inverted Rail Table Designs Keeps Bearing Blocks Centered Under Spindle • Soft Start High Speed Way Covers • Heavy Duty Enclosure with Work Light • Overhead Loading Capability • Wide Side Doors for Cleaning or Large Parts That Can Extend Through • Precision Ground Double Anchored Ball Screws with Dampening Couplings • Four Bearing Air Purged 10,000 RPM BIG PLUS[®] Dual Contact Inline Spindle Cartridge Assembly (15,000 RPM Optional) • Spindle Taper Blow-out and Tool Release Push Button • Linear Way Technology, X / Z Axis Ball Style, Y Axis Roller Style • High Speed Ball Screws • Air Blast & Chip Wash Down Hose • Edit Key Lock-Out Switch • LCD Hour Meter • Rigid Tap • Flood Coolant System with Flow Control • Spindle Chiller System • Networking option includes 30 days phone support • End of Cycle Light 	<ul style="list-style-type: none"> • PC-based 7200 CNC with 12 MB Parts Storage Memory • 12" LCD Active Matrix Color Display • 3.5" Floppy Drive / RS-232 with DNC Buffer (7200 CNC Only) • 3-D Part & Wire Frame Tool Path Graphics on Series 7200 Plus Solid Modeling Graphics on Series 8200 • High Speed Processor (7200 Series 1200 blocks/sec, 8200 Series 2000 blocks/sec) • Optional Four & Five Axis Simultaneous Interpolation Software and Interface • Conversational Plus G & M Code Programming with 3D Part and Tool Path Graphics • High Torque Two Speed Vector Spindle Drive Motors • Front Panel Electronic Handwheel with Handwheel Feed • Auxiliary Keyboard Port for PC Keyboard with Tray • Electronic Spindle Orient • High Torque AC Digital Servo Drives • All Axes Laser Calibrated and Ballbar Inspected • Spindle Load Meter • Single Spare "M" Function and CNC "Wait" Channel • Engraving, Helical Interpolation, Auto Routines, and User-definable Macros with Trig Assist • Coordinate Rotating, Scaling, Mirror Image, Thread Mill Irregular Pocket Clearing • Large Program Management Software (Allows Editing of 10 MB Files) • Programming & Machine Manuals in Electronic Format • Off-line FastCAM Software

8200 CONTROL PACKAGE – Purchase as a Complete Package Only and Includes all the following:		
<ul style="list-style-type: none"> • Solid State Non-Volatile Memory Upgrade to 1 GB • Enhanced CPU Increases Block Processing Speed from 1200 to 2000 bps • Solid Model Graphics Functionality • USB Connectivity in lieu of 3.5" Floppy Disk Drive • High Speed Performance with Enhanced Jerk Control and Look Ahead • MT Connect Compliant 		
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.		
SPINDLE CONFIGURATIONS #40 Taper – Standard Spindle is CT Type		
#40 BT Type		Optional
Upgrade to Two Speed 35/25 hp 26/18 kw Spindle Motor		Optional
Upgrade to 15,000 RPM Ceramic Bearing 70 mm Spindle		Optional
Coolant Through Spindle – 300 PSI Low Pressure System Includes Drawbar Assembly for ANSI Retention Knobs & Rotary Coupling.		Optional
Coolant Through Spindle – 700 PSI High Pressure System Includes Drawbar Assembly for ANSI Retention Knobs & Rotary Coupling.		Optional
Coolant Through Spindle Ready Kit - Includes Drawbar Assembly for ANSI Retention Knobs and Rotary Coupling. Does Not Include Pumps or External Coolant Tank.		Optional
AUTOMATIC TOOL CHANGER		
Retractable 24 Pocket Double Arm Automatic Tool Changer		Standard
PERFORMANCE OPTIONS		
BIG PLUS [®] Spindle Nose (10,000 or 15,000 RPM Spindles)		Standard
Convert Linear Ball Ways on X and Z Axes to Linear Roller Ways		Optional
INDEXING / ROTARY TABLE ACCESSORIES		
18.5" Ø (470 mm) 90° Index Table Unmachined Surface for Custom Fixture Mounting (Consult factory for availability)		Optional
18.5" Sq (470 mm) 90° Index Table "T" Slotted Table		Optional
20" (500 mm) Infinitely Programmable Contouring Rotary Table		Optional
20" (500 mm) Sq. 90° Angle Plate		Optional
4 th Axis Servo Amplifier & Motor (Electrics only Included with Rotary Table Accessory)		Optional
OTHER ACCESSORIES		
Upgrade to Solid State Non-Volatile Memory 256 MB Flash Card – 7200 Controls only		Optional
Multi Format Flash Card Reader – 7200 Controls only		Optional
Auger Type Chip Removal System		Standard
Pressurized Air/Oil Purge System for Ball Screws and Bearing Blocks		Optional
Chip Wash Down System		Optional
Chip Bucket for Chip Auger		Optional
Programmable Spray Mist On/Off		Optional
Programmable Air Blast		Optional
Remote Handheld Electronic Handwheel (Not CE)		Optional
Thermal Ball Screw Compensation on X and Y Axis		Optional
Thermal Ball Screw Compensation on Z Axis		Optional
Spindle Chiller Loop		Standard
Column Riser Block	Column Riser 4" 100 mm Not Removable	Optional
	Column Riser 6" 150 mm Not Removable	Optional

OTHER ACCESSORIES CONTINUED		
Spare "M" Functions – Block of 4 (<i>Maximum 2 Blocks – Price is For Each Block</i>)		Optional
Contact Tool Offset Probing with Macros		Optional
Work Offset Probing with Macros		Optional
Combo Pack – Contact & Work Tool Offset Probing with Macros		Optional
Laser Tool Setter		Optional
<i>Digiscan</i> Digitizing 3-D Software, Probe, Manuals		Optional
RS-232 Cable, 50' 15 Meters		Optional
Printed Programming Manual (Electronic Format Standard)		Optional
Printed Machine Manual (Electronic Format Standard)		Optional
Power Requirements 208-240 VAC, 50 – 60 hz, 3Ø		Standard
380-480 Transformer (Reduces Voltage to 208-240) - <i>Factory recommended sizes. Consult local electrical codes for proper transformer sizing.</i>	40 KVA	Optional
UL/CUL Code Compliance		Optional
CE Code <i>Required for European Union Countries</i>		Optional
Export Handling Fee		Consult Factory
Crate Charge		Consult Factory
Two Year Parts Warranty ^{<i>See Note</i>}		Standard
Factory Start-up and Training On Site, U.S. only		Optional
Training at Milltronics (<i>Includes lunches, training, materials and manual</i>)		Optional
<p><i>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, MN 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.</i></p>		

HM - Horizontal Inline Spindle #40 Taper Linear Way Machining Center Specifications



Effective June 01, 2011

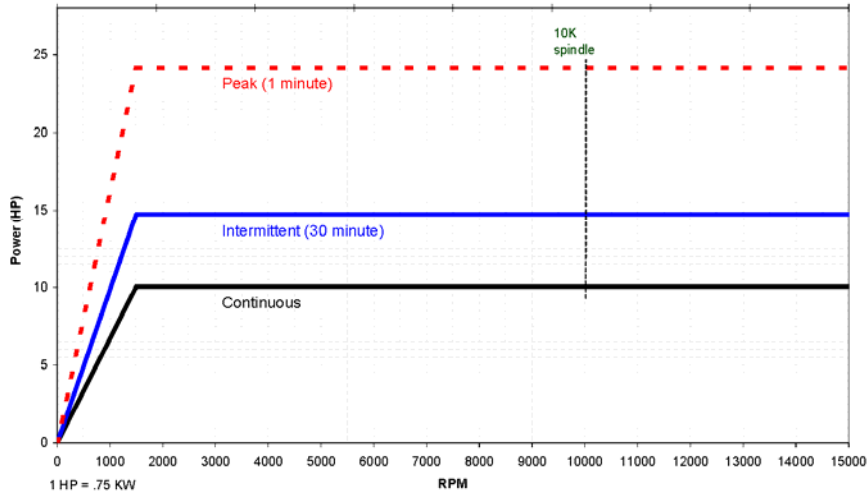
MACHINE MODEL		HM20
Standard Control Type		Milltronics 7200 CNC
Optional Control Type		Milltronics 8200 CNC
Number of Axes		3 (Opt 4 or 5)
CAPACITY		
Table Size		34" x 20" <i>864 x 510 mm</i>
Option Table Size – Extended Travel		45" x 20" <i>1150 x 510 mm</i>
Standard Table Travel – X axis		30" <i>760 mm</i>
Optional Extended Table Travel – X axis		40" <i>1015 mm</i>
Head Travel – Y axis		34" <i>860 mm</i>
Saddle Travel – Z axis		20" <i>508 mm</i>
Spindle Nose to Table Center		5 - 25" <i>125 - 635 mm</i>
Spindle Center To Table Top <i>Optional Column Risers Increase Dimensions by 4" 100 mm or 6" 150 mm</i>		4.5 – 38.5" <i>115 - 975 mm</i>
Maximum Table Load with Linear Roller Ways <i>Including Fixturing, Rotary or Indexing Tables</i>		2500 lb <i>1135 kg</i>
Machine Weight		10,000 lb <i>4545 kg</i>
T Slots		(5) .63 <i>16 mm</i>
Ball Screw Grade		C5
Ball Screw Diameter: X, Y, Z		1.25"
Ball Screw Pitch: X, Y, Z Lead		10 mm
Linear Roller Way Size		35 mm
INLINE SPINDLE		
Standard Horsepower <i>1 minute / 30 minutes</i> Reference Torque Chart:		Two Speed 24/15 HP <i>18/11 kw</i> 24/15/2/I/M
Optional Horsepower <i>1 minute / 30 minutes</i> Reference Torque Chart:		Two Speed 35/25 HP <i>26/18 kw</i> 35/25/2/I/M
Spindle Size		70 mm
Standard Spindle RPM		50 – 10,000
Optional Spindle RPM Ceramic Bearing <i>Requires Balanced Tooling</i>		100 - 15,000
Balanced Tooling Requirements		*****For 15,000 RPM Spindle Tools Should be Balanced to 2.5 G's at 15,000 RPM*****
Tool Holder Type		CT40 or BT40
COOLANT THROUGH SPINDLE		
Coolant Through Spindle Option (CTS) <i>Requires ANSI Retention Knob</i>	High Pressure	700 psi <i>48 bar</i>
	Low Pressure	300 psi <i>21 bar</i>
High Pressure CTS – Pump Filtration		11 Micron
High Pressure CTS – Additional Coolant Capacity		118 Gal <i>450 L</i>
High Pressure CTS – Flow Rate		5 gal/min <i>19 L/min</i>
High Pressure CTS – Pump HP		5 HP <i>3.7 kw</i>
AUTOMATIC TOOL CHANGER		
Standard Double Arm ATC – Number of Pockets		24
Tool Changer Time – Tool to Tool		6 Seconds
Maximum Tool Diameter – <i>Over 4" Diameter Tool Requires Adjacent Empty Pockets</i>		4" <i>100 mm</i> or 5" <i>125 mm</i>
Maximum Tool Length / Width		9" / 15 lb <i>230 mm / 7 kg</i>
PERFORMANCE		
Servo Type		Digital, AC Brushless
Rapid Traverse		1000 ipm <i>25 mpm</i>

MACHINE MODEL	HM20
Maximum Feedrate – Part Dependent	500 ipm <i>12.7 mpm</i>
Positioning Accuracy ^{see note}	±0.0002" <i>.005 mm</i>
Positioning Repeatability ^{see note}	.00015" <i>.0038 mm</i>
Feedback Resolution	.00004" <i>.001 mm</i>
Thrust, Machine Duty Rating	X, Z: 1500 lb <i>680 kg</i> Y: 3300 lb <i>1500 kg</i>
OPTIONAL ANGLE PLATE	
Face Plate Height	19.6" <i>500 mm</i>
Face Plate Width	19.6" <i>500 mm</i>
Face Plate Base Depth	13.7" <i>350 mm</i>
Face Plate Hole Matrix	50 mm
Matrix Hole Size	M12
Weight	375 lbs <i>170 kg</i>
OPTIONAL INDEXING TABLE - 90° LOCK	
Table Work Area – <i>Table Surface Must be Machined for Hold Down Clamps</i>	18.5" <i>470 mm</i> Dia.
Table Work Area – <i>18 mm "T" Slots</i>	18.5" <i>470 mm</i> Sq.
Table Height	9.44" <i>240 mm</i>
Table Load Capacity	1550 lbs <i>700 kg</i>
Table Clamping Force	8750 lbs <i>3970 kg</i>
Table Clamping Positions – Number / Degree	4 / 90°
Positioning Accuracy - 90° Clamping Positions	± 4 Arc-seconds
Repeatability - 90° Clamping Positions	± 1 Arc-seconds
Indexing Table Weight	550 lbs <i>250 kg</i>
OPTIONAL ROTARY TABLE – 4th AXIS CONTOURING	
Table Work Area	20" <i>500 mm</i> Sq
Table Height	8" <i>203 mm</i>
T Slots (Number) Width / Spacing	(5) .56 / 4" <i>14 / 100 mm</i>
Table Load Capacity	4,000 lbs <i>1815 kg</i>
Table Clamping Force ^{See Note 2}	800 lbs-ft <i>1085 nm</i>
Table Clamping Positions	Infinite
Positioning Accuracy	± 20 Arc-seconds
Repeatability – <i>Approach From Same Direction</i>	± 10 Arc-seconds
Rotary Table Weight	1000 lbs <i>550 kg</i>
MISCELLANEOUS	
Flood Capacity	100 gal. <i>375 L</i>
Drawbar Air Pressure Required	100 psi <i>6.8 bar</i>
Power 208-240 VAC 50-60hz, 3Ø	100 amps 38 kVA
Power 400-440 VAC	Requires Transformer
Floor Space Requirement – Standard <i>Minimum required with no options</i>	92" x 92" <i>2340 x 2340 mm</i>
Floor Space Requirement – Extended Travel <i>Minimum required with no options</i>	112" x 92" <i>2845 x 2340 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>Note 1: Measurements performed with Renishaw laser and ballbar systems. Measurements are linear over entire travel. Temperature changes and table loading may affect tolerances. Tolerances are guaranteed over 20" sq. area.</i></p> <p><i>Note 2: For maximum holding torque, load should be placed against the worm drive.</i></p> <p>Centurion features covered under separate literature. For machine duty rating, see "Truth in Specifications" on www.milltronics.net. Milltronics reserves the right to amend or change specifications at any time without notice without incurring obligation.</p>	

Mitsubishi Torque Chart 24/15/2/I/M – Inline Spindle

Used on: Standard HM20
Optional N/A

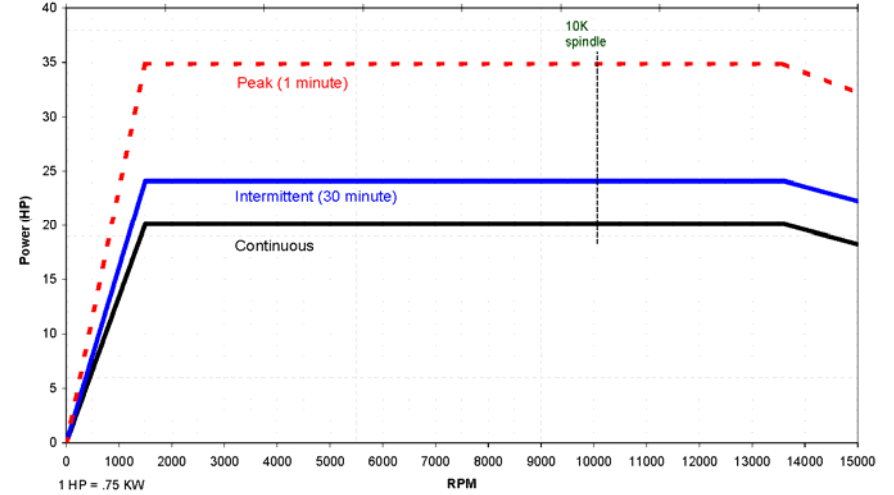
Mitsubishi VKS26-09ZM Power Characteristics of Mitsubishi 24/15 HP
15,000 RPM Hollow Shaft In-line Delta/WYE Motor



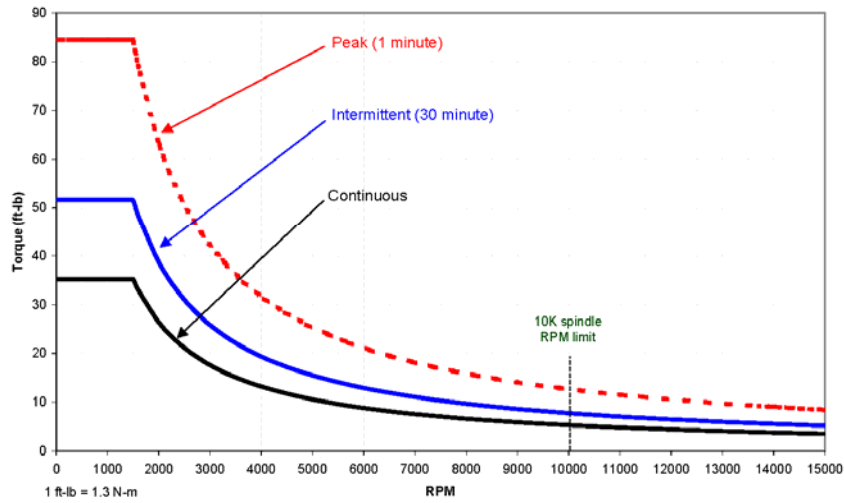
Mitsubishi Torque Chart 35/25/2/I/M – Inline Spindle

Used on: Standard N/A
Optional HM20

Mitsubishi VKS30-16ZM Power Characteristics of Mitsubishi 35/25 HP
15,000 RPM Hollow Shaft In-line Delta/WYE Motor



Mitsubishi VKS26-09ZM Torque Characteristics of Mitsubishi 24/15 HP
15,000 RPM Hollow Shaft In-line Delta/WYE Motor



Mitsubishi VKS30-16ZM Torque Characteristics of Mitsubishi 35/25 HP
15,000 RPM Hollow Shaft In-line Delta/WYE Motor

