



Effective September 1, 2008 Rev. B

Machine Model	HM70
CNC Control	Milltronics CNC
Travel (X,Y,Z,W)	86 x 63 x 61 x 20"
Bar Diameter	4.3" 110 mm
Spindle Horsepower 1 minute / 30 minutes	35/25 26/18 kw
Tool Changer	60 Pocket Arm
MACHINE FEATURES	7200 CNC CONTROL FEATURES
<ul style="list-style-type: none"> • Two Year Warranty • Massive Heavily Ribbed Cast Iron Construction • Hardened and Ground Square Box Ways with Turcite • Precision Ground Table Surface • Heavy Duty #50 Taper Spindle with Two Speed Geared Head • Air Blast Hose and Wash Down Hose • Automatic Metered Lubrication with Low Lube Fault • Precision Ground 55 mm Double Nut Ball Screws • Double Arm 60 Pocket ATC • Conveyor/Auger Chip Removal System • Metal Way Covers • Flood Coolant System • Spindle Oil Chiller and Hydraulic System • Massive 11,000 lb Table Capacity • Factory Installation and Setup • Spindle Load Meter • Single Spare "M" Function and CNC "Wait" Channel • 3.5" Floppy Drive • Rigid Tap 	<ul style="list-style-type: none"> • PC-based CNC Includes 12 MB Parts Storage Memory • LCD Active Matrix Color Display • Conversational Plus G & M Code Programming • 3-D Part and Wire Frame Tool Path Graphics on Series 7000 Plus Solid Modeling Graphics on Series 8000 When Released • 6 MB Virtual Disk / RS-232 with DNC Buffer • High Speed Processor (7000 Series 1200 Block/Sec, 8000 Series 2000 Blocks/Sec) • Optional Four & Five Axis Simultaneous Interpolation Software & Interface • High Torque AC Digital Servo Drives • High Torque Closed Loop Vector Spindle Drive System • All Axes Laser Calibrated and Ballbar Inspected • End of Cycle Light • Off-Line FastCAM Software for Programming & Training • Edit Key Lock-Out Switch • All Axes Laser Calibrated and Ballbar Inspected • Coordinate Rotating Scaling, Mirror Image, Threat Mill Engraving, Installation, Auto Routines & User Definable Macros with Trig Assist & Irregular Pocket Clear • 24 MB Programming Execution Memory with Large Program Management Software (Allows Editing of 10 MB file)
HIGH SPEED LARGE PROGRAM PACKAGE D	
<p>Retains All Features of the 7000 Series with Integrated Dual Boot to either Series</p> <p>Solid State, Non-Volatile Memory Upgrade to 256 MB*, Multi Format Flash Memory Card Device*</p> <p>Solid Model Graphics Functionality in Addition to Wire Frame</p> <p>Enhanced High Speed CPU Required to Run 8000 Series Software*</p> <p>High Speed Performance with Enhanced Jerk Control and Look Ahead</p> <p>USB Connectivity</p> <p>MTCconnect Compliant</p> <p>Linux Operating System</p> <p>Increases Block per Second From 1200 to 2000 Blocks per Second</p> <p><i>Note: 8000 Series, Linux based software to be released early 2009</i></p> <p><i>*Immediate Release</i></p>	
ACCESSORIES	
Coolant Through Spindle – 300 PSI System <i>(A Simple Splash Shield is Included, No Full Enclosure Available. Environmental Issues Should be Considered)</i>	
Right Angle Milling Head	
Universal Milling Head	
90° Angle Plate 31" 800 mm Square	
Facing Head with Telescopic Tool Holders	
Spindle Extension Sleeve	
Chip Bucket	
Contact Tool Offset Probing with Macros <i>Consult Factory</i>	
ACCESSORIES CONTINUED	

Laser Tool Setter <i>Consult Factory</i>	
Work Offset Probing with Macros <i>Consult Factory</i>	
ACCESSORIES CONT.	
RS-232 Cable, 50' 15 Meters	
Additional Programming Manual	
Additional Machine Manual	
Power Requirements 208-240 VAC, 50 – 60 hz, 3Ø	
380-480 Transformer (Reduces Voltage to 208-240) 40 kVA (<i>Factory recommended sizes. Consult local electrical codes for proper transformer sizing</i>)	
On Site Machine Installation, U.S. only	
Training On-Site (<i>Does not Include Airfare</i>)	
<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. F.O.B Waconia, Minnesota USA; Prices do not include taxes, duties, transportation, rigging or start-up. Milltronics reserves the right to amend or change without notice without incurring obligation; not responsible for typographical errors. All sales of equipment, parts, software and service are subject to Milltronics' Standard Terms and Conditions of Sale.</i></p>	

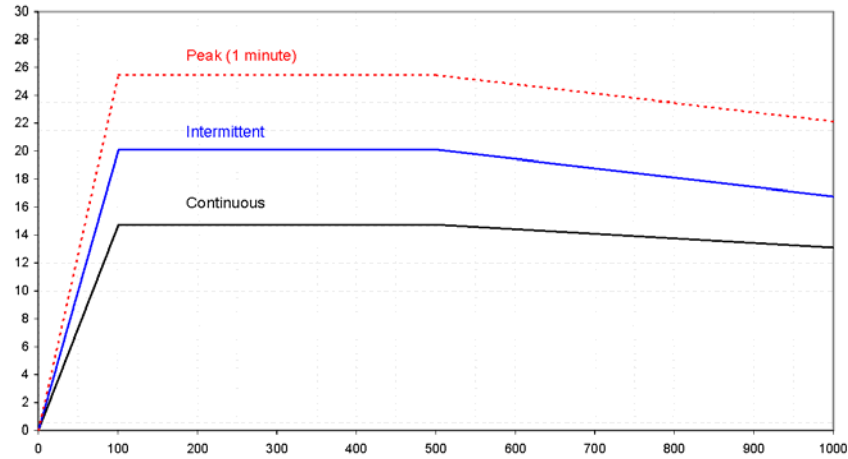
Machine Model	HM70
Configuration	Horizontal Bar with Rotary Table
Control Type	Milltronics CNC
Number of CNC Axes	5
TABLE	
Table Size	47 x 59" <i>1200 x 1500 mm</i>
Table Height	39.76" <i>1010 mm</i>
Table "T" Slots (# / width / center distance)	7 / .87" <i>22 mm / 5.91" 150 mm</i>
Table Load Capacity	11,000 lbs <i>5000 kg</i>
TRAVELS	
X Axis	86" <i>2180 mm</i>
Y Axis	63" <i>1600 mm</i>
Z Axis	61" <i>1550 mm</i>
W Axis without Spindle Extension Support Sleeve	20" <i>510 mm</i>
W Axis with Spindle Extension Support Sleeve	6" <i>150 mm</i>
Spindle Nose to Table Center	3 - 58" <i>80 - 2140 mm</i>
Spindle Center to Table Surface	0 - 60" <i>0 - 1600 mm</i>
SPINDLE	
Spindle Taper	CT or BT 50
Spindle Horsepower – <i>1 minute / 30 minutes</i>	35/25 hp <i>26/18 kw</i>
Spindle Transmission	Two Speed Geared Head
Transmission Type	Automatic Shift
Spindle Speed	35 - 3000 RPM
Gear Ratio (High) 1:2	1000 - 3000 RPM
Gear Ratio (Low) 1:6	35 - 1000 RPM
Quill Diameter	4.3" <i>110 mm</i>
Front Spindle Bearing Diameter – <i>ID / OD</i>	150 / 225 mm
Rear Spindle Bearing Diameter – <i>ID / OD</i>	140 / 210 mm
X, Y & Z AXIS TRANSMISSION	
Servo Motor Type	AC Digital
Ball Screw Diameter / Pitch, C3 Grade, Double Nut	55 / 12 mm
Transmission – 1:2	Belted
Axis Thrust X,Z/Y	3500/4700 lb <i>1600/2100 kg</i>
Front & Rear Ball Screw Bearings – <i>ID / OD</i>	45 / 75 mm
Feedback Resolution	.00004" <i>.001 mm</i>
W AXIS TRANSMISSION	
Servo Motor Type	AC Digital
Ball Screw Diameter / Pitch – C3 Grade	25 / 5 mm
Transmission – 1:2	Belted
Axis Thrust	5,800 lb <i>2600 kg</i>
Front & Rear Ball Screw Bearings – <i>ID / OD</i>	20 / 47 mm
Feedback Resolution	.00004" <i>.001 mm</i>
B AXIS TRANSMISSION - 1° Indexing <i>Contact factory for fully programmable contouring B axis</i>	
Servo Motor Type	AC Digital
Transmission – 1:180	Geared
Clamping System	500 lbs/in ² <i>35 kg/cm²</i>
Clamping Torque	32,000 lbf-ft <i>4500 kgf-m</i>
Feedback Resolution	.001° / Sec
Table Index Clamping Resolution	1°

X AXIS GUIDE WAY	
Width	5.5" <i>140 mm</i>
Thickness	1.38" <i>35 mm</i>
Guide Distance	27.5" <i>700 mm</i>
Support Span	36.2" <i>920 mm</i>
Y AXIS GUIDE WAY	
Width	4.7" <i>120 mm</i>
Thickness	2.7" <i>70 mm</i>
Guide Distance	21.2" <i>540 mm</i>
Support Span	23.6" <i>600 mm</i>
Z AXIS GUIDE WAY	
Width	6.7" <i>170 mm</i>
Thickness	1.9" <i>50 mm</i>
Guide Distance	39.3" <i>1000 mm</i>
Support Span	31.9" <i>810 mm</i>
PERFORMANCE	
Rapid Traverse Rates X, Y, Z:	500 ipm <i>12.7 mpm</i>
W:	300 ipm <i>7.5 mpm</i>
B:	16 RPM's
Feedrates X, Y, Z, W:	200 ipm <i>5000 mm/m</i>
B:	0 - 11 RPM's
Positioning Accuracy X, Y, Z, W ^{See note}	± 0.0002" <i>.005 mm</i>
Repeatability X, Y, Z, W ^{See note}	0.0002" <i>.005 mm</i>
Positioning Accuracy B ^{See note}	± 0.25 sec
Repeatability B ^{See note}	± 0.25 sec
Positioning Accuracy B Axis with Full Contouring Option ^{See note}	± 5 sec
Repeatability B Axis with Full Contouring Option ^{See note}	± 1 sec
AUTOMATIC TOOL CHANGER	
Number of Pockets	60
Maximum Tool Diameter – <i>Occupied/Empty Adjacent Pots</i>	4.5"/10" <i>115/250 mm</i>
Maximum Tool Length	11.8" <i>300 mm</i>
Maximum Tool Weight	55 lb <i>25 kg</i>
Tool to Tool Change Time	9 seconds
MISCELLANEOUS	
Way Lubrication Pumps	2
Flood Pump	2 HP <i>1.7 kw</i>
Flood Capacity	50 Gal <i>190 L</i>
Flood Volume	17 GPM <i>65 LPM</i>
5 HP <i>3.7 kw</i> Hydraulic Pump	Standard
Hydraulic Tank Capacity	21 Gal <i>80 L</i>
Hydraulic Oil Type <i>or equivalent</i>	Mobil DTE 26
Way Lube Type <i>or equivalent</i>	Vactra #2
Warranty	Parts: Two years or 4200 hours, whichever occurs first, for normal failures. Service: One year or 2100 hours, whichever occurs first, from distributor.
MACHINE SIZE AND POWER	
Floor Occupation Overall Length	324" <i>8230 mm</i>
Overall Width	190" <i>4825 mm</i>
Overall Height	145" <i>3685 mm</i>
Machine Weight	50,000 lb <i>22,700 kg</i>
Foundation Requirements	Consult Factory For Detailed Requirements and Foundation Drawings
Power Requirements - 208-240 VAC, 50-60hz, 3Ø	100 amps 38 KVA
<p><i>Measurements performed with Renishaw laser and ballbar systems. Measurements are linear over entire travel. Temperature changes and table loads may affect tolerances. Tolerances are guaranteed over 10" sq. area. Centurion features covered under separate literature. For machine duty rating, see "Truth in Specifications" on www.milltronics.net. Milltronics reserves the right to change specifications at any time without incurring obligation.</i></p>	

Fanuc Torque Chart 26/20/2/G/FHT – Geared, Low

Used on: Standard HMC70
Optional N/A

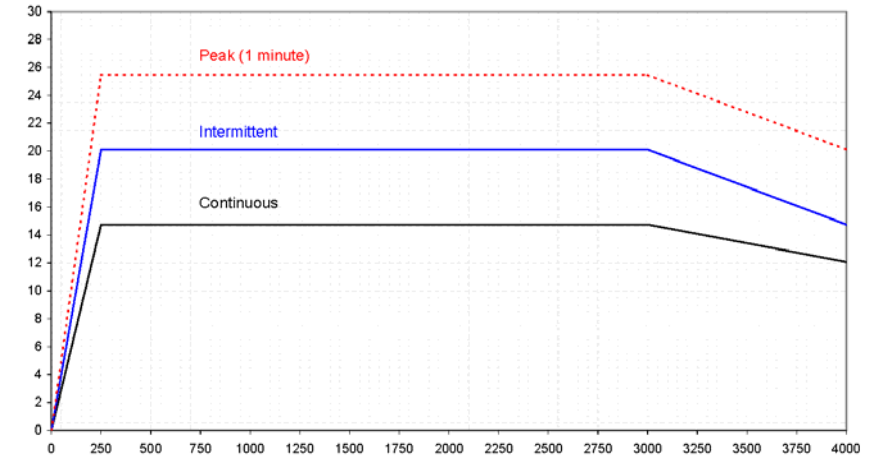
Fanuc ai22/8000p HMC70 6:1 Gearbox Low
Power Characteristics of 26/20 HP HT Dual Winding Motor for 1,000 RPM in LOW Gear



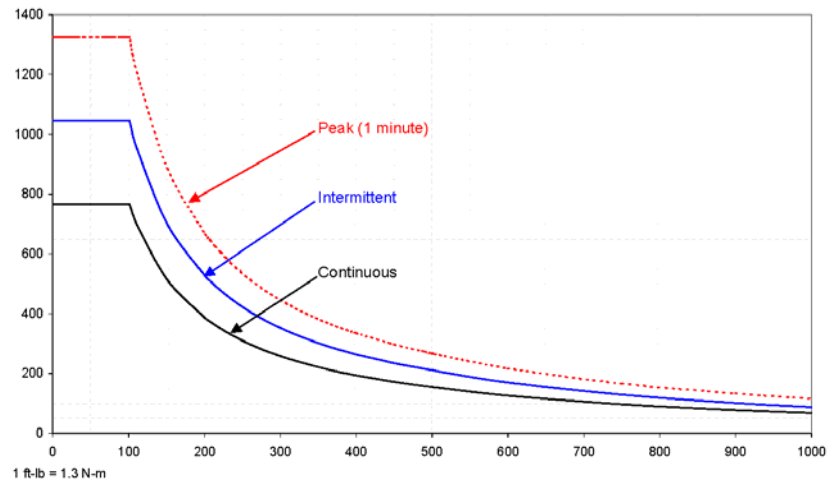
Fanuc Torque Chart 26/20/2/G/FHT – Geared, High

Used on: Standard HMC70
Optional N/A

Fanuc ai22/8000p HMC70 2:1 Gearbox High
Power Characteristics of 26/20 HP HT Dual Winding Motor for 4,000 RPM in HIGH Gear



Fanuc ai22/8000p HMC70 6:1 Gearbox Low
Torque Characteristics of 26/20 HP HT HMC70 Dual Winding Motor for 1,000 RPM in LOW Gear



Fanuc ai22/8000p HMC70 2:1 Gearbox High
Torque Characteristics of 26/20 HP HT HMC70 Dual Winding Motor for 4,000 RPM in HIGH Gear

