

TT – Twin Table Machining Center Pricing

The Machine That Never Stops!

Effective September 1, 2010



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

MACHINE MODEL	TT24	TT40	TT40 XP	TT60	TT80
Standard Travel of Each Table, XYZ	23 x 25 x 20"	42 x 40 x 29"	42 x 40 x 29"	60 x 60 x 28"	60 x 80 x 28"
Spindle Taper, Spindle Size, RPM	#40, 70 mm, 10,000 RPM		#50, 90 mm, 8000 RPM	#40, 70 mm, 10,000 RPM	
Spindle Drive System and Horsepower <i>1 min / 30 min</i>	In-line Spindle/Motor Assembly Two Speed 24/15 18/11 kw				
Optional Horsepower <i>1 min / 30 min</i>	Two Speed 35/25 26/18 kw				
Tool Changer	24 Pocket Double Arm (Opt 40)	40 Pocket Double Arm	32 Pocket Double Arm	24 Pocket Carousel	24 Pocket Carousel

MACHINE FEATURES	CONTROL FEATURES
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<ul style="list-style-type: none"> • Two Year Parts Warranty • Heavily Ribbed Cast Iron Construction • 35 mm Linear Ways with Metal Way Cover on X • Precision Ground High Speed Ball Screws and Table Surface • Double Tables with Dual Part Load Areas • Automatic Lubrication (X, X¹ Grease) on TT24 & TT40(XP) • High Torque Fast Ramp AC Digital Servo Drives • #40 10,000 RPM, 70mm Bearing Air Purged Spindle (Except TT40 XP) • #50 8000 RPM, 90mm Bearing Air Purged Spindle on TT40XP • Spindle Taper Blow-out with Tool Release Push Button • Chip Drawer Chip Removal System • Full Metal Enclosure with Automatic Doors on TT24 & TT40 (XP) • Two Speed 24/15 HP 18/11 kw Closed Loop WYE/Delta High Torque Vector Spindle Drive System with 35/25 HP Option • Work Lamp • Rigid Tap • End of Cycle Light • Big Plus Spindle Nose on 40 Taper 	<ul style="list-style-type: none"> • PC-based CNC includes 2 MB Parts Storage Memory • 12" LCD Active Matrix Color Display • Conversational plus G & M Code Programming • 3-D Part and Wire Frame Tool Path Graphics on Series 7200 Plus Solid Modeling Graphics on Series 8200 • 6 MB Virtual Disk / RS-232 with DNC Buffer • High Speed Processor (7200 Series 1200 block/sec, 8200 Series 2000 blocks/sec) • Optional Four & Five Axis Simultaneous Interpolation Software • High Torque AC Digital Servo Drives • High Torque Closed Loop Vector Spindle Drive System • All Axes Laser Calibrated and Ballbar Inspected • Spindle Load Meter • Dual Table Ready Switch and E-stop • Spindle Chiller Loop System (Not available on TT40 XP)
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SOFTWARE PACKAGE A	PERFORMANCE PACKAGE C
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<p>Additional 10 MB Parts Storage (Total of 12 MB)</p> <p>Coordinate Rotating, Scaling, Mirror Image, Thread Mill</p> <p>3.5" Floppy Drive</p> <p>Auto DXF File Import</p> <p>Engraving, Helical Interpolation, Auto Routines, & User definable Macros with Trig Assist, & Irregular Pocket Clearing</p> <p>Front Panel Mounted Electronic Handwheel plus Handwheel Controlled Program Execution</p> <p>24 MB Program Execution Memory with Large Program Management Software (Allows editing of 10 MB file)</p> <p>LCD Hour Meter</p> <p><i>Items may be purchased separately</i></p>	<p>Remote Handwheel</p> <p>Dual Chip Wash Down Hose</p> <p>Edit Key Lock Out Switch</p> <p>Dual Air Blast Hose</p> <p>Upgrade to 35/25 HP 26/18 kw Two Speed Spindle Motor</p> <p><i>Items may be purchased separately</i></p>
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CONVENIENCE PACKAGE B	8200 Control Package D - Includes all the following:
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<p>Off Line FastCAM Software for Programming & Training</p> <p>Two Nozzle High Volume Multi-Height Flood System with Flow Control and Flood Pan</p> <p>Dual Chip Wash Down System with Chip Conveyor on TT24 & TT40 & Dual Auger System on TT60 & TT80</p> <p>Networking Option includes 30 Days Phone Support <i>Recommend 256 MB Option</i></p> <p>Chip Bucket for Auger System</p> <p><i>Items may be purchased separately</i></p>	<p>Solid State Non-Volatile Memory Upgrade to 300 MB</p> <p>Enhanced CPU Increases Block Processing Speed from 1200 to 2000 bps</p> <p>Solid Model Graphics Functionality</p> <p>USB Connectivity in lieu of Floppy Disk Drive</p> <p>High Speed Performance with Enhanced Jerk Control and Look Ahead</p> <p>MT Connect Compliant</p>
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PREMIER PACKAGE E - For Package Pricing Package A, B, C & D is Required	TT24	TT40 (XP)	TT60	TT80
Convert Linear Ball Ways on X, Y & Z Axes to Linear Roller Ways (standard on TT40 XP)				
Thermal Control System (TCS) Thermal Ball Screw Compensation on X, X ¹ & Y Axes				
Thermal Control System (TCS) Thermal Ball Screw Compensation on Z Axes				
<i>Items may be purchased separately</i>				
SPINDLE CONFIGURATIONS				
Specify Tool Holder CT-40 or CT-50				
Optional Tool Holder BT-40 or DIN 69871 or BT50				
#40 Spindle Upgrade to 15,000 RPM Ceramic Bearing Spindle from 10,000 RPM				
Optional BIG PLUS [®] Spindle Nose on #40 Spindles				
Coolant Through Spindle – 300 PSI Low Pressure System <i>Includes drawbar assembly for ANSI retention knobs and rotary coupling.</i>				
Coolant Through Spindle – 700 PSI Complete System Not available on TT60 and TT80 <i>Includes drawbar assembly for ANSI retention knobs and rotary coupling.</i>				
Coolant Through Spindle Ready Kit - <i>Includes drawbar assembly for ANSI retention knobs and rotary coupling.</i> Does not include pumps or external coolant tank.				
Conveyor Opt Deliver Chips From Auger (Rear of Machine) to a Conveyor Which Takes Chips to the Side of the Machine (TT24 Only)				
GRAPHITE AND ABRASIVE MATERIAL ACCESSORIES				
Torit Vacuum System Model DFT2.2MILL (Consider Environmental Noise)				
Dust Collection System — Consult factory				
Programmable Air Blast				
Coolant Tank Oil Skimmer				
OPTIONAL ATC				
40 Pocket Double Arm ATC from 24 Pocket on TT24IL				
OTHER ACCESSORIES				
Upgrade to Solid State Non-Volatile Memory 256 MB Flash Card – <i>7200 Controls only</i>				
Contact Tool Offset Probing with Macros				
Work Offset Probing with Macros				
Combo Pack – Contact & Work Tool Offset Probing with Macros				
ZF Automatic Shift Gearbox for “XP” Only (Offers 3 Speed Ranges in Conjunction With 2 Speed Spindle Motor)				
Programmable Spray Mist <i>On/Off</i>				
RS-232 Cable, 50' 15 Meters				
Additional Programming Manual				
Programming Manual in Electronic Format on CD				
Additional Machine Manual				
Power Requirements 208-240 VAC, 50 – 60 hz, 3Ø				
380-480 Transformer (Reduces Voltage to 208-240) - <i>Factory recommended sizes. Consult local electrical codes for proper transformer sizing.</i>			40 kVA	
UL/CUL Compliance				
CE Code Required for European Union Countries				
International Packaging				
Two Year Parts Warranty <i>See Note</i>				
Factory Start-up and Training On Site, U.S. only <i>Does not include airfare</i>				
Training at Milltronics <i>Includes lunches, training, materials and manual</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, MN USA. Prices do not include taxes, duties, transportation, rigging or start-up.</i></p> <p><i>Milltronics reserves the right to amend or change without notice without incurring obligation; not responsible for typographical errors.</i></p> <p><i>Consult Written Warranty Statement for Details of Two Year Parts Warranty</i></p> <p><i>All sales of equipment, parts, software and service are subject to Milltronics' Standard Terms and Conditions of Sale.</i></p>				

TT - Twin Table Machining Center Specifications

Effective September 1, 2010



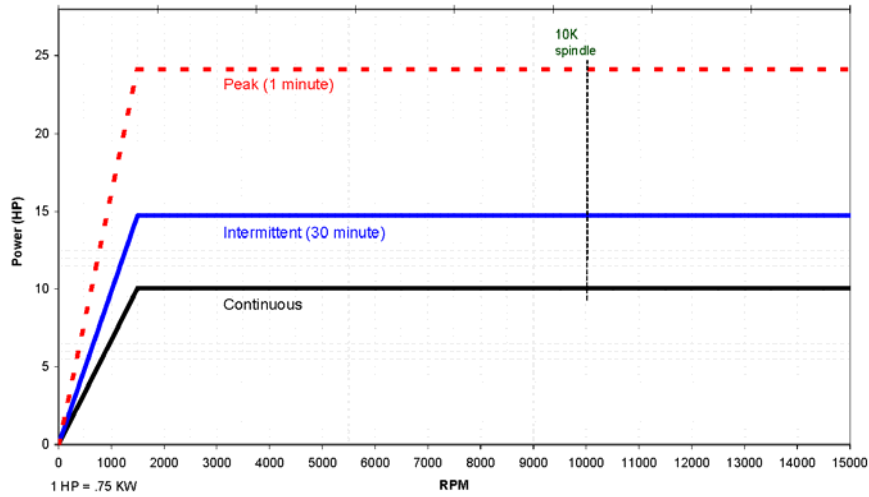
MACHINE MODEL	TT24	TT40 (XP)	TT60	TT80
Control Type	Milltronics CNC			
Software	Dual Table Control			
Number of Axes	4 (X, X ¹ , Y, Z)			
Configuration	Bridge Design with Dual Tables on One Set of Ways			
CAPACITY				
Table Size – Two Tables	22 x 26" <i>559 x 660 mm</i>	40 x 43 <i>1015 x 1100 mm</i>	56 x 60 <i>1420 x 1524</i>	56 x 80 <i>1420 x 2030 mm</i>
Table Travel in Work Zone X and X ¹ Axes	23" <i>585 mm</i>	42" <i>1066 mm</i>	60" <i>1525 mm</i>	60" <i>1525 mm</i>
Saddle Travel - Y Axis	25" <i>635 mm</i>	40" <i>1016 mm</i>	60" <i>1524</i>	80" <i>2030 mm</i>
Head Travel - Z Axis	20" <i>510 mm</i>	29" <i>735 mm</i>	28" <i>710 mm</i>	28" <i>710 mm</i>
Spindle to Table Top	4 - 24" <i>100 – 610 mm</i>	4" - 33" <i>100 – 835 mm</i>	4" - 32" <i>100 – 810 mm</i>	4" - 32" <i>100 – 810 mm</i>
Maximum Table Load	2,000 lb <i>900 kg</i>	3,000 lb <i>1,360 kg</i>	4,000 lb <i>1,800 kg</i>	4,000 lb <i>1,800 kg</i>
Machine Weight	16,000 lb <i>7250 kg</i>	40,000 lb <i>18,000 kg</i>	17000 lb <i>7730 kg</i>	18,000 lb <i>8150 kg</i>
Hole Matrix of Table Surface	T-Slots .63" <i>16mm</i>	T-Slots .63" <i>16mm</i>	6" <i>150mm</i> matrix of $\frac{1}{2}$ " <i>13 mm</i>	6" <i>150mm</i> matrix of $\frac{1}{2}$ " <i>13 mm</i>
Ball Screw Size (X/Y/Z on TT60)	1.25" <i>32 mm</i>	2" <i>50 mm</i>	3" <i>80mm</i> / 1.5" <i>40mm</i> / 1.25" <i>32mm</i>	3" <i>80mm</i> / 1.5" <i>40mm</i> / 1.25" <i>32mm</i>
Ball Screw Grade	C5 Precision Ground	C3 Precision Ground	C3 Precision Ground	C3 Precision Ground
Ball Screw Pitch (X/Y/Z on TT60)	16 mm	16 mm	40/20/10 mm	40/20/10 mm
Linear Ways	35 mm Ball (Roller Option)	45 mm Roller	45 mm Ball (Roller Option)	45 mm Ball (Roller Option)
SPINDLE – Direct Drive In-line Spindle/Motor Assembly				
#40 70 mm Spindle Cartridge (Excludes TT40XP)	CT or Opt BT 40	CT or Opt BT 40	CT or Opt BT 40	CT or Opt BT 40
#50 90 mm Spindle Cartridge for TT40XP	N/A	CT or Opt. BT 50	N/A	N/A
Spindle Horsepower <i>1 minute / 30 minutes</i>	Two Speed 24/15 HP <i>18/11 kw</i>	Two Speed 24/15 HP <i>18/11 kw</i>	Two Speed 24/15 HP <i>18/11 kw</i>	Two Speed 24/15 HP <i>18/11 kw</i>
Reference Torque Chart:	24/15/2/I/M	24/15/2/I/M	24/15/2/I/M	24/15/2/I/M
Optional Spindle Horsepower <i>1 minute / 30 minutes</i>	Two Speed 35/25 HP <i>26/18 kw</i>	Two Speed 35/25 HP <i>26/18 kw</i>	Two Speed 35/25 HP <i>26/18 kw</i>	Two Speed 35/25 HP <i>26/18 kw</i>
Reference Torque Chart:	35/25/2/I/M	35/25/2/I/M	35/25/2/I/M	35/25/2/I/M
Standard RPM for #40 Spindle	50 – 10,000	50 – 10,000	50 – 10,000	50 – 10,000
Standard RPM for #50 Spindle (TT40XP)	N/A	50-8000	N/A	N/A
Optional Ceramic Duplex Bearing Spindle RPM <i>Requires balanced tooling, recommend horsepower upgrade</i>	100 - 15,000	100 - 15,000	100 - 15,000	100 - 15,000
Balanced Tooling Requirements	Tools Should Be Balanced to 2.5 G's at 15,000 RPM			
PERFORMANCE				
Servo Type	AC Digital	AC Digital	AC Digital	AC Digital
Rapid Traverse X, X ¹ /Y, Z	1600/1600 ipm <i>40/40 mpm</i>	1200/1200 ipm <i>30/30 mpm</i>	750/1000 ipm <i>19/25 mpm</i>	750/1000 ipm <i>19/25 mpm</i>
Maximum Feedrate	500 ipm <i>12.7 mpm</i>	500 ipm <i>12.7 mpm</i>	500 ipm <i>12.7 mpm</i>	500 ipm <i>12.7 mpm</i>
Position Accuracy <i>See note</i>	±0.0002" <i>.005mm</i>	±0.0002" <i>.005mm</i>	±0.001" <i>.025mm</i>	±0.001" <i>.025mm</i>
Position Accuracy – Full Travel	N/A	N/A	±0.005" <i>.127mm</i>	±0.005" <i>.127mm</i>
Repeatability <i>See note</i>	.00015" <i>.0038mm</i>	.00015" <i>.0038mm</i>	.0003" <i>.0076mm</i>	.0003" <i>.0076mm</i>
Resolution	.00004" <i>.001mm</i>	.00004" <i>.001mm</i>	.00004" <i>.001mm</i>	.00004" <i>.001mm</i>
Spindle Range with Optional Gearbox	N/A	Low 0-400 Medium 400-2000 High 2000-8000	N/A	N/A

MACHINE MODEL	TT24	TT40	TT60	TT80	
Thrust, Machine Duty Rating	X, X ¹ , Y: 1000 lb <i>450 kg</i> Z: 2000 lb <i>900 kg</i>	X, X ¹ , Y: 1500 lb <i>680 kg</i> Z: 3000 lb <i>1360 kg</i>	X, X ¹ , Y, Z: 5000 lbs <i>2270 kg</i>	X, X ¹ , Y, Z: 5000 lbs <i>2270 kg</i>	
Table Shuttle Time Slide to Slide	15 Sec	15 Sec	20 Sec	20 Sec	
AUTOMATIC TOOL CHANGER					
Standard ATC for #40 Spindle	24 Pocket Double Arm	40 Pocket Double Arm	24 Pocket Carousel	24 Pocket Carousel	
Tool Change Time for #40 Spindle	3.5 Seconds	3.5 Seconds	7 Seconds	7 Seconds	
Maximum Tool Diameter for #40 Spindle	4" <i>100mm</i>	4" <i>100mm</i>	4" <i>100 mm</i>	4" <i>100 mm</i>	
Maximum Tool Length / Weight for #40 Spindle	9" / 15 lb <i>230 mm / 7 kg</i>	9" / 15 lb <i>230 mm / 7 kg</i>	11" / 15 lb <i>280 mm / 7 kg</i>	11" / 15 lb <i>280 mm / 7 kg</i>	
Standard ATC for #50 Spindle	N/A	32 Pocket Double Arm	N/A	N/A	
Tool Change Time for #50 Spindle	N/A	7.5 Seconds	N/A	N/A	
Maximum Tool Diameter for #50 Spindle	N/A	5" <i>125mm</i>	N/A	N/A	
Maximum Tool Length / Weight for #50 Spindle	N/A	11" / 25 lb <i>125mm / 11kg</i>	N/A	N/A	
COOLANT THROUGH SPINDLE					
Coolant Through Spindle Options (CTS) <i>Requires ANSI Style Retention Knobs</i>	<i>High Pressure</i>	700 psi <i>48 bar</i>	700 psi <i>48 bar</i>	N/A	N/A
	<i>Low Pressure</i>	300 psi <i>21 bar</i>	300 psi <i>21 bar</i>	300 psi <i>21 bar</i>	300 psi <i>21 bar</i>
CTS – Pump Filtration	11 Micron	11 Micron	11 Micron	11 Micron	
CTS – Additional Coolant Capacity <i>Standard flood tank capacity with 300 psi system</i>	118 gal <i>450 L</i>	118 gal <i>450 L</i>	118 gal <i>450 L</i>	118 gal <i>450 L</i>	
CTS – Flow Rate	5 gal/min <i>19 l/min</i>	5 gal/min <i>19 l/min</i>	5 gal/min <i>19 l/min</i>	5 gal/min <i>19 l/min</i>	
CTS – Pump HP	5 HP <i>3.7 kw</i>	5 HP <i>3.7 kw</i>	5 HP <i>3.7 kw</i>	5 HP <i>3.7 kw</i>	
MISCELLANEOUS					
1/4 HP Flood Pump Capacity <i>Optional in Package B</i>	40 Gal <i>150 L</i>	40 Gal <i>150 L</i>	100 Gal <i>370 L</i>	100 Gal <i>370 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 24/15 HP 18/11 kw	100 amps 38 kVA	100 amps 38 kVA	100 amps 38 kVA	100 amps 38 kVA	
Power 208-240 VAC, Single Phase	N/A	N/A	N/A	N/A	
Power 400-440 VAC	Req. Transformer	Req. Transformer	Req. Transformer	Req. Transformer	
Floor Space Requirement	140" x 128" <i>3560 x 3250 mm</i>	193" x 150" <i>4900 x 3810mm</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>					

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

Used on: Standard TT24, TT40
Optional N/A

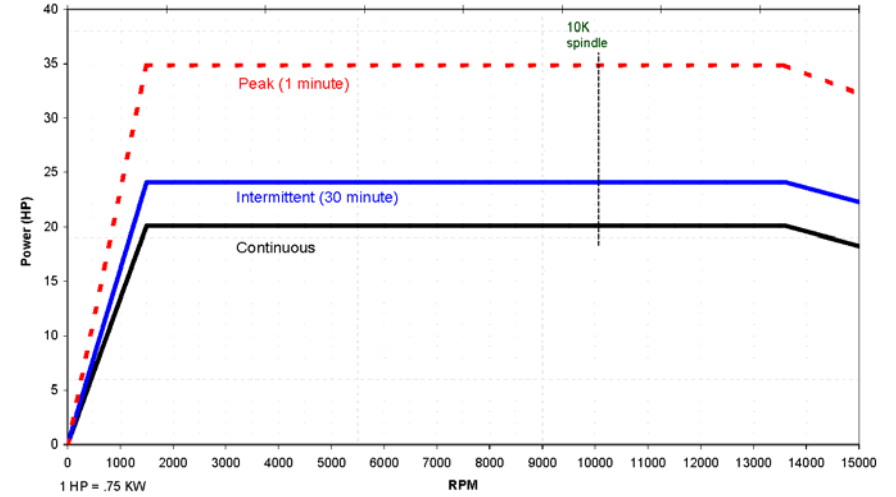
Mitsubishi VKS26-09ZM Power Characteristics of Mitsubishi 24/15 HP
15,000 RPM Hollow Shaft In-line Delta/WYE Motor



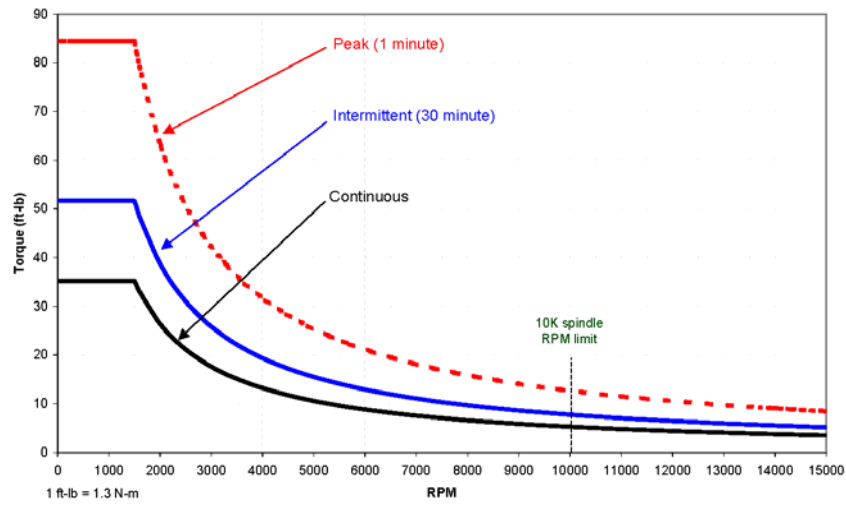
Mitsubishi Torque Chart 35/25/2/I/M – Inline Spindle

Used on: Standard N/A
Optional TT24, TT40

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

