

TT - Twin Table Machining Center

The Machine That Never Stops!

Effective June 1, 2011



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"	41 x 40 x 29"	42 x 40 x 29"	56 x 60 x 28"	56 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 1 min / 30 min	In-line Spindle/Motor Assembly Two Speed 24/15 18/11 kw				
Optional Horsepower 1 min / 30 min	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		
<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 • 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 • Spindle Load Meter • BIG PLUS[®] Dual Contact Inline Spindle Nose on 40 Taper • Programming & Machine Manuals in Electronic Format • LCD Hour Meter • Single Spare "M" Function with CNC "Wait" Channel 			<ul style="list-style-type: none"> • PC-based 7200 CNC includes 12 MB Parts Storage Memory • 12" LCD Active Matrix Color Display • Conversational plus G & M Code Programming including Coordinate Rotating, Scaling, Mirror Image, Thread Mill Engraving, Helical Interpolation, Auto Routines, & User definable Macros with Trig Assist, & Irregular Pocket Clearing • Auto DXF File Import • 3-D Part and Wire Frame Tool Path Graphics on Series 7200 Plus Solid Modeling Graphics on Series 8200 • 3.5" Floppy Drive / RS-232 with DNC Buffer (7200 CNC Only) • High Speed Processor (7200 Series 1200 block/sec, 8200 Series 2000 blocks/sec) • Large Program Management Software (Allows Editing of 10 MB Files) • Optional Four & Five Axis Simultaneous Interpolation Software • High Torque AC Digital Servo Drives • All Axes Laser Calibrated and Ballbar Inspected • Dual Table Ready Switch and E-stop • Spindle Chiller Loop System (Not available on TT40 XP) • Front Panel Mounted Electronic Handwheel & Handwheel Controlled Program Execution 		
CONVENIENCE PACKAGE					
Off Line FastCAM Software for Programming & Training					
Two Nozzle High Volume Multi-Height Flood System with Flow Control					
Dual Chip Wash Down System with Chip Conveyor on TT24 & TT40 & Dual Auger System on TT60 & TT80					
Networking Option includes 30 Days Phone Support <i>Recommend 256 MB Option</i>					
Chip Bucket for Auger System					
<i>Items may be purchased separately</i>					
PERFORMANCE PACKAGE					
Remote Handwheel					
Dual Chip Wash Down Hose					
Edit Key Lock Out Switch					
Dual Air Blast Hose					
Upgrade to 35/25 HP 26/18 kw Two Speed Spindle Motor					
<i>Items may be purchased separately</i>					
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.					

PREMIER PACKAGE	TT24	TT40 (XP)	TT60	TT80
Convert Linear Ball Ways on X, Y & Z Axes to Linear Roller Ways	Optional	Standard	Optional	Optional
Thermal Control System (TCS) Thermal Ball Screw Compensation on X, X ¹ & Y Axis	Optional	Optional	Optional	Optional
Thermal Control System (TCS) Thermal Ball Screw Compensation on Z Axis	Optional	Optional	Optional	Optional
<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				Optional
#40 Spindle Upgrade to 15,000 RPM Ceramic Bearing Spindle from 10,000 RPM				Optional
BIG PLUS [®] Spindle Nose on #40 Spindles				Standard
Coolant Through Spindle – 300 PSI Low Pressure System <i>Includes drawbar assembly for ANSI retention knobs and rotary coupling.</i>				Optional
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>				Optional
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.				Optional
OPTIONAL ATC – TT24 only				
40 Pocket Double Arm ATC from 24 Pocket on TT24				Optional
OTHER ACCESSORIES				
Upgrade to Solid State Non-Volatile Memory 256 MB Flash Card – <i>7200 Controls only</i>				Optional
Multi Format Flash Card Reader – <i>7200 Controls only</i>				Optional
Upgrade Chip Conveyor (TT24 only) – High Volume, 10" wide belt with Air Knife				Optional
Programmable Air Blast				Optional
Contact Tool Offset Probing with Macros				Optional
Spare "M" Functions - Block of 4 <i>Maximum 2 Blocks</i>				Optional
Work Offset Probing with Macros				Optional
Combo Pack – Contact & Work Tool Offset Probing with Macros				Optional
ZF Automatic Shift Gearbox for “XP” Only (Offers 3 Speed Ranges in Conjunction With 2 Speed Spindle Motor)				Optional
Programmable Spray Mist <i>On/Off</i>				Optional
RS-232 Cable, 50' <i>15 Meters</i>				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 Compliance				Optional
CE Code <i>Required for European Union Countries</i>				Optional
Export Handling Fee				Consult Factory
Crating 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, 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.</i></p>				

TT - Twin Table Machining Center Specifications

Effective June 1, 2011



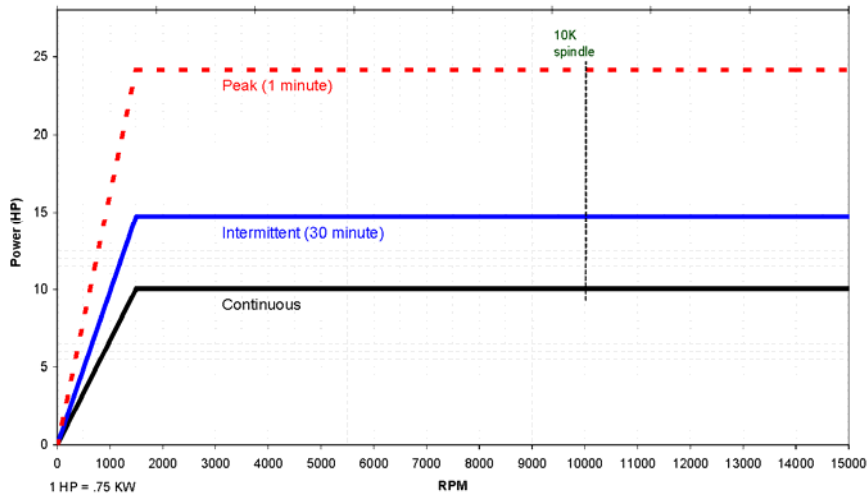
MACHINE MODEL	TT24	TT40 (XP)	TT60	TT80
Standard Control Type	Milltronics 7200 CNC			
Optional Control Type	Milltronics 8200 CNC			
Software	Dual Table Control			
Number of Axes	4 (X, X ¹ , Y, Z)			
Configuration	Bridge Design with Dual Tables on One Set of Ways			
CAPACITY				
Table Size – Two Tables	22 x 26" <i>559 x 660 mm</i>	40 x 43 <i>1016 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>	41" <i>1041 mm</i>	56" <i>1420 mm</i>	56" <i>1420 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> Reference Torque Chart:	Two Speed 24/15 HP <i>18/11 kw</i> 24/15/2/I/M	Two Speed 24/15 HP <i>18/11 kw</i> 24/15/2/I/M	Two Speed 24/15 HP <i>18/11 kw</i> 24/15/2/I/M	Two Speed 24/15 HP <i>18/11 kw</i> 24/15/2/I/M
Optional Spindle 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	Two Speed 35/25 HP <i>26/18 kw</i> 35/25/2/I/M	Two Speed 35/25 HP <i>26/18 kw</i> 35/25/2/I/M	Two Speed 35/25 HP <i>26/18 kw</i> 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(XP)	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					
ATC for #40 Spindle		Standard 24 Pocket Double Arm	N/A	N/A	N/A
Tool Change Time for #40 Spindle		3.5 Seconds	N/A	N/A	N/A
Maximum Tool Diameter for #40 Spindle		4" <i>100mm</i>	N/A	N/A	N/A
Maximum Tool Length / Weight for #40 Spindle		9" / 15 lb <i>230 mm / 7 kg</i>	N/A	N/A	N/A
ATC for #40 Spindle		Optional 40 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		11" / 15 lb <i>280 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	6" <i>150mm</i>	N/A	N/A
Maximum Tool Length / Weight for #50 Spindle		N/A	15" / 25 lb <i>380mm/ 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>Opt in Convenience Pkg</i>)		75 Gal <i>285 L</i>	75 Gal <i>285 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 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

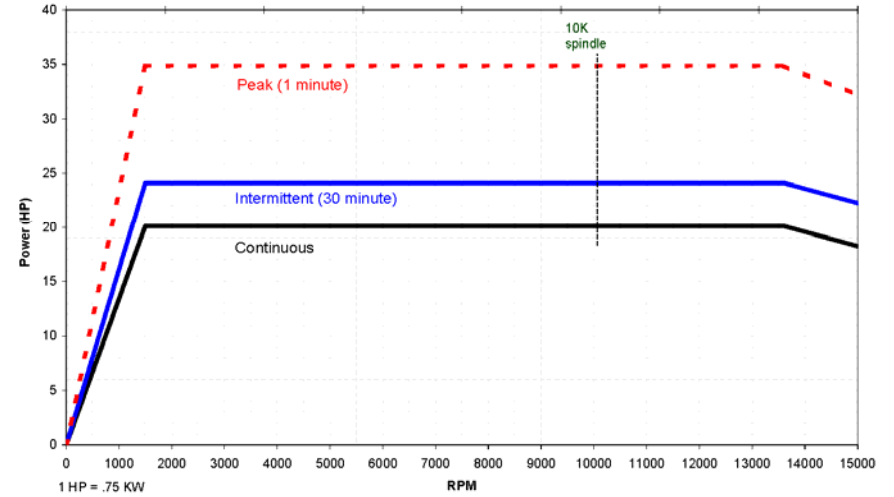
Mitsubishi VKS26-09ZM Power Characteristics of Mitsubishi 24/15 HP
15,000 RPM Hollow Shaft In-line Delta/WYE Motor



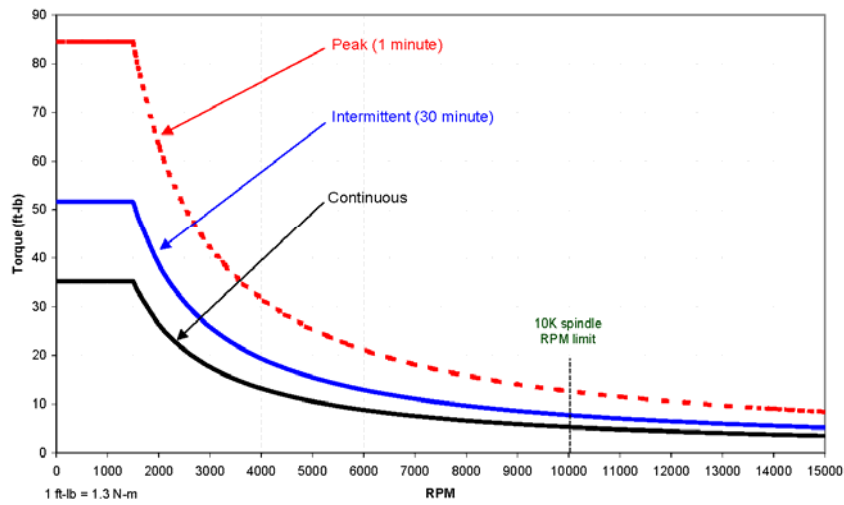
Mitsubishi Torque Chart 35/25/2/I/M – Inline Spindle

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

