

LINEAR WAY MACHINING CENTERS FEATURES & DESIGN

VM15 VM16 VM20 VM22 VM25 VM30

Milltronics VM Series of machines offer the best in machining technology, holding every machine to the highest industry standards. Cable routing, chip control, component reliability, and overall serviceability are carefully scrutinized to ensure years of reliable operations and a minimal amount of future repair costs.

All VM models are designed using the latest Solid Modeling techniques and further undergo Finite Element Analysis (FEA) for cost efficiency while maintaining structural integrity. Multiple inspections during machine construction, including a comprehensive final inspection with ballbar and laser certification, ensure high value, quality machining centers.

Milltronics offers a wide variety of linear ball way or linear roller way machining centers to satisfy the simplest to the most demanding applications. While travels, spindle RPM, horsepower, and accessories vary, certain key features are constant throughout the entire VM line, regardless of size, weight, or price. All VM's are proudly built in America with high quality components to guarantee our foremost commitment to reliability. You select accessories to match your application.

Heavy Duty, 60 mm, 8000 rpm, Five Bearing Spindle Cartridge; or 15K with Ceramic Bearings. Premier Pkg offers 70 mm Cartridge. Inline Spindles and Integral HSK63 Spindles Available to 30,000 RPM

Six Nozzle Variable Height Flood Coolant with Through Head Cooling

Air Purged Spindle with Labyrinth Seal Prevents Contamination

Sealed NEMA Standard Electrical Box Prevents Contamination

Wash Down, Air Blast Hose and Work Lamp

Speed Rated Metal Way Covers for Soft Accel/Decel

Automatic Tool Changers From 16 Pocket Carousel to 40 Pocket Double Arm Type

35 or 45 mm linear ball ways with upgrade to roller ways in Premier Pkg

Oversize Precision Ground Table with Extra "T" Slots

Heavy Duty Metal Enclosure

Structurally Designed for Superior Dampening

Large Pull Out Coolant Tank with ¼ HP Pump

Air/Oil System for Milling Abrasives

Inverted Rail Design Centers Spindle Over Table Bearing Blocks At All Times - Offers Superior Table Support

Patent Pending Thermal Growth Compensation

Matched AC Digital Axis Drives and Motors Provide 1000 IPM Rapids; Premier Package offers 1600 IPM Rapids

Large Side Access Doors For Oversized Workpieces

Spindle Taper Blowout with Positive Tool Ejection

High Torque Closed Loop Vector Spindle Drive with Full Regen System

700 PSI Coolant Through Spindle

Air Regulator and Low Air Switch

User Friendly PC-based CNC

Chip Drawer, Chip Auger, or Conveyor and Wash Down

Metered Auto Lube with Low Lube Fault (Except VM15)

Electronic Spindle Orient

Rigid Tapping

Optional 4th or 5th Axis

Swivel Pendant Station

Precision Ground Double Anchored Ball Screws

Protected Wiring Throughout

All Critical Mating Surfaces Are Precision Ground

CE Certification Available



Pictured above: VM20
Some features may be optional.



VM15



VM16



VM20



VM22



VM25



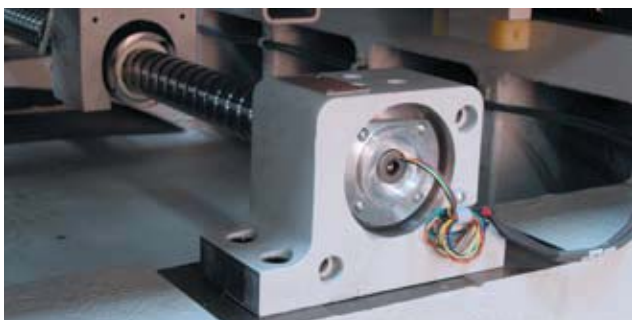
VM30

LINEAR WAY MACHINING CENTERS FEATURES AND DESIGN

Designs focus first on performance and reliability with component and assembly cost a secondary consideration.



The Milltronics unique **inverted rail between the table and the saddle** takes more time to assemble, but it offers superb performance and rigidity over other designs. Bearing blocks always remain centered under the spindle as the table traverses. Every surface where linear ways and bearing blocks are mounted is precision ground.



This true **Thermal Compensation System (TCS)** measures ball screw length continuously and dynamically compensates for thermal growth. Competitors' methods often measure temperature and guess at the growth. Our system is extremely effective, reliable and economical, and when combined with a head chiller system, does an excellent job in controlling accuracy in all applications.



Electrical enclosures are NEMA standard and sealed to keep contamination out. Cooling is accomplished by routing air under a sealed subpanel. UL electrical compliance is available.



Left to right:
40 taper 60 mm
40 taper 70 mm
40 taper 70 mm
Inline
50 taper 90 mm

Spindles up to 15,000 rpm on 60 and 70 mm direct belt drive or inline spindles, and 8000 rpm 50 taper spindles offer superior rigidity and performance. Lower rpm spindles utilize a heavy duty triplex bearing design; higher rpm spindles use a ceramic duplex design. All designs use a labyrinth seal with air purge to keep contaminants out of the cartridge.



Milltronics' coolant through spindle system uses a premier Deublin rotational coupling that can be run wet or dry. The pump system is rated for **1000 psi** or 700 psi at the tool. Competitors often use a friction type coupling with no more than 300 psi of pressure. Our system can also be adapted to an air through tool system and is available on #40 or #50 spindles, belt or inline, and any RPM.



Every machine is subjected to stringent ballbar tests and laser calibration. Compensation tables are automatically loaded into the control. These reports are sent along with the machine and archives to our network.

REASONS TO CONSIDER MILLTRONICS VMs

OURS

- Heavily ribbed cast iron castings
- Capacity for heavy table loads
- Inverted saddle to table rail design
- All rails and ways are mounted on ground surfaces
- Table surface ground with extra T slots
- Swivel control station with keyboard storage option
- Removable side doors allow for large parts
- Chip drawer, auger, or conveyor
- Metal high speed way covers
- Autolube on most models
- Air/oil lube system for machining abrasives
- Roller way option
- High quality precision ground ball screws
- Patent pending Thermal Compensation System (TCS) measures true ball screw growth
- 1600 ipm high performance upgrade
- Optional inline spindle configuration with chiller
- Spindle has labyrinth air purge seal, top & bottom
- All electrical cabinets sealed from the environment
- Meticulous attention to wire routing details
- 70 mm optional spindle for high side loads
- 50 taper spindle machines standard with rollerways and dampening block
- High torque delta/wye spindle motor options
- High torque or rpm spindles driven with a Trac belt
- AC brushless type axes (direct coupled) and spindle motors
- Closed loop servo spindle motors critically balanced
- Coolant routed through head to six spigots
- Spindle deceleration regen energy returned to power line
- 700 psi coolant or air through spindle, Deublin coupling
- User-friendly PC-based conversational control and G/M code compatible
- 3-D color graphics with cutting path preview
- Countless powerful features are standard
- Full two year warranty with extension options
- Designed and **built in America!**

THEIRS

- Low cost castings with very little ribbing
- Heavy loads can damage machine
- Bearing blocks go off center
- Mounted on machined surfaces, not ground
- Table not ground or too narrow
- No provision for full keyboard
- Small doors in wrong location
- Limited choices for chip removal
- Light gauge or fabric covers
- Grease only
- No special lube system for machining abrasives
- Ball ways only
- Ball screws with low quality rolled threads
- Less accurate thermal compensation system measures temperature and guesses at growth
- 800 or 1000 ipm typical
- Offer belted spindles only
- No seals allowing spindle bearing contamination
- Dirty shop air blown into electrical boxes
- Cables/wiring exposed to chips and coolant
- Only 60 or 65 mm spindle available
- With 50 taper spindle still use ballways and no dampening blocks
- Single speed motors only
- Spindles driven by "V" belts that slip
- DC or industrial motors
- Inexpensive non-servo type induction motors
- Single or two spigots without head chilling
- Energy dumped into resistors
- Belted spindle only
- 300 psi system with pancake coupling
- Requires off-line CAD/CAM programming with no conversational prompting
- Limited graphics, non-color, limited use
- Missing many features or expensive options
- Six month or one year warranty
- Many are imported

YOU BUILD IT YOUR WAY

- | | | |
|---|---|---|
| • Choose a 60 or 70 mm spindle | • Choose thermal compensation | • Choose optional 4 or 5 axes |
| • Choose 8000, 15,000, 20,000 or higher RPM spindles | • Choose 1000 or 1600 ipm rapids | • Choose air/oil lube for abrasives |
| • Choose #40 or #50 spindle | • Choose ATC type and size | • Choose memory size and connection style |
| • Choose HP, single or dual speed | • Choose coolant through spindle | • Choose linear ball or roller ways |
| • Choose inline spindle configuration featuring "BIG-PLUS" technology | • Choose from chip drawer, conveyor, or auger | • Choose risers and extended axes travels options |
| | • Choose probes, tool setters | |

WHAT WE DO NOT DO

- Operate belted steel bearing spindles above 8000 rpm
- Offer coolant through systems without real coolant couplings
- Mismatch spindle motors and servo drive systems
- Mount linear ways or bearing blocks on machined only (non ground) surfaces
- Blow shop air directly into electrical cabinets
- Specify product performance with "peak" or "instantaneous" ratings

COMPONENT COST WILL
ALWAYS BE SECONDARY
TO COMPONENT

RELIABILITY AND QUALITY.

MILLTRONICS — THE COMPANY

- | | |
|----------------------|-------------------------------------|
| • Financially strong | • Committed to product development |
| • 35+ year history | • Committed to our customers |
| • Homespun values | • Committed to our employees |
| • Family owned | • Committed to manufacturing in USA |

More weight than most competitors with a surprisingly low price

- **Compare Weight** – Over 8000 lbs
- **Compare Price** – Our standards are often their options
- **Compare Performance** – Heavily ribbed castings provide superior dampening for high speed machining and aggressive milling
- **Compare Control** – No other CNC offers the combination of user friendliness and performance
- **Compare Companies** – Call us, visit us, count on us
- **Compare Quality** – Designed and manufactured in America, and serviced by Americans
- **Compare Accessories** – Build it your way
- **COMPARE!** When you evaluate our products against any competitor you'll determine how much value we offer!

It's Your ATC Choice –
Carousel or Arm, 16 or 24 Pocket



Carousel style ATC



Arm style ATC

All VM models are available in a variety of configurations to fit your needs:

- 4th axis rotary table
- High RPM spindles
- Heavy duty 70 mm spindle
- Chip auger or conveyor
- 1600 ipm rapids (40m/min)
- Inline spindle with "BIG-PLUS"
- 700 psi coolant through spindle
- Part probing
- Digitizing
- Increased horsepower
- Tool setter
- Roller linear ways
- ATC style and size
- Optional five axes with trunnion table

You never need to purchase what you do not need.

	VM15 & VM15XT		VM16 & VM16XT	
Table Size	40 x 16"	1015 x 405 mm	45 x 16"	1150 x 405 mm
Travel	25 x 16 x 20"	635 x 405 x 510 mm	30 x 16 x 20"	760 x 405 x 510 mm
Optional Travel	30 x 16 x 20"	760 x 405 x 510 mm	30 x 16 x 26"	760 x 405 x 660 mm
Horsepower	12/10 HP	9/7.5 kw	18/12 HP	13/9 kw
Optional HP	18/12 HP	13/9 kw	24/15 HP	18/11 kw
ATC	16 Carousel			
Optional ATC	24 Carousel or 16 or 24 Arm		24 Carousel, 16 or 24 Arm	
Weight	8600 lbs	3900 kg	9000 lbs	4000 kg



Pictured above: VM15



Pictured above: VM16

Travels of 30x16x20"
Available with 26" of extended Z travel to accommodate long tools or large parts with 30" of table travel

VM20 – OUR MOST POPULAR MODEL

VM20 VM20XT



Look inside for a full appreciation of our designs

Pictured above: VM20

	VM20 & VM20XT	
Table Size	34 x 20"	864 x 510 mm
Travel	30 x 20 x 26"	760 x 510 x 660 mm
Optional Travel	40 x 20 x 26"	1015 x 510 x 660 mm
Horsepower	24/15 HP	18/11 kw
Optional HP	2 Speed 24/15 HP	2 Speed 18/11 kw
ATC	24 Pocket Carousel	
Optional ATC	16 or 24 Pocket Arm	
Weight	10,000 lbs	4545 kg

Heavy Duty Designs

Our construction includes a wide casting footprint, massive table, true servo type spindle drive, heavy gauge metal enclosure, automatic lubrication, and much, much more.

Designed and manufactured in the U.S.A.

VM HEAVYWEIGHTS — 40 Taper Spindle Models

VM22 VM25 VM25XT VM30 VM30XT

**SERIOUS MACHINES
FOR SERIOUS SHOPS**



Pictured above: VM25

The VM22, VM25, VM25XT, VM30, and VM30XT were all designed with heavyweight, oversize columns and bases with massive ribbing. These models can accommodate large heavy workpieces with ease. Saddles travel up to 30" and tables travel to 60". All VMs can be configured with riser blocks if you need even more room under the spindle. You must see them in person in order to really appreciate the mass of these machines.

	VM22		VM25 & VM25XT		VM30 & VM30XT	
Table Size	45 x 24"	1150 x 610 mm	56 x 24"	1420 x 610 mm	56 x 24"	1420 x 610 mm
XT Table Size	N/A	N/A	66 x 26"	1680 x 660 mm	66 x 26"	1680 x 660 mm
Travel	40 x 22 x 26"	1015 x 560 x 660 mm	50 x 25 x 24"	1270 x 635 x 610 mm	50 x 30 x 24"	1270 x 760 x 610 mm
XT Travel	N/A	N/A	60 x 25 x 24"	1524 x 635 x 610 mm	60 x 30 x 24"	1524 x 760 x 610 mm
Horsepower	24/15 HP	18/11 kw	2 Speed 24/15 HP	2 Speed 18/11 kw	2 Speed 24/15 HP	2 Speed 18/11 kw
Optional HP	2 Speed 24/15 HP	2 Speed 18/11 kw	2 Speed 35/25 HP	2 Speed 26/18 kw	2 Speed 35/25 HP	2 Speed 26/18 kw
ATC	24 Pocket Carousel		24 Pocket Carousel		24 Pocket Carousel	
Optional ATC	24 Pocket Arm		24 or 40 Pocket Double Arm		24 or 40 Pocket Double Arm	
Weight	16,000 lbs	7300 kg	19,000 lbs	8600 kg	20,000 lbs	9000 kg

VM XP MODELS — HEAVY DUTY 50 TAPER SPINDLE DESIGNS

VM22XP VM25XP VM30XP

Designed for Heavy Duty Milling

#50 Taper Models Handle The Toughest Jobs

STANDARD XP EXTRAS

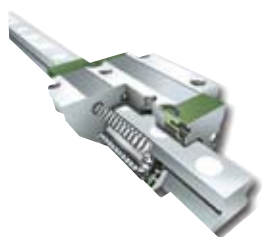
- Heavy duty **linear roller ways**
- Dampening blocks between head and column
- 90 mm #50 spindle
- 32 pocket arm ATC
- Large two speed spindle drive
- Optional gear box
- Available with extended travels, coolant through spindle and other popular accessories



VM30XP (XT)

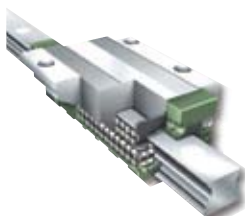
VM30XP CONSTRUCTED WITH 45 MM ROLLER STYLE LINEAR RAILS

50 TAPER • 8000 RPM • OPTIONAL TWO SPEED GEAR BOX



Technologically Advanced Roller Style Linear Rail

Only the highest quality machine tool manufacturers are building machines using roller style linear rails.



Conventional Ball Style Linear Rail

Roller ways have more surface contact between the rail and roller than typical ball ways. This increased surface contact adds **44% more rigidity** to the machine tool.



1000 ft/lbs of low RPM torque in three ranges is achieved by combining an optional two range gear box and two speed motor for optimal cutting torque at any RPM. An 8000 RPM spindle offers high speed machining capabilities for flexibility to handle any jobs that come through your door.

Unmatched performance from any machine in its class!

**SERIOUS POWER • SERIOUS PERFORMANCE
SERIOUS RIGIDITY • SERIOUS PRODUCTIVITY**

	VM22XP		VM25XP (XT)		VM30XP (XT)	
Table Size	45 x 24"	1150 x 610 mm	56 x 24"	1420 x 610 mm	56 x 24"	1420 x 610 mm
XT Table Size	N/A		66 x 26"	1680 x 660 mm	66 x 26"	1680 x 660 mm
Travel	40 x 22 x 26"	1015 x 560 x 660 mm	50 x 25 x 24"	1270 x 635 x 610 mm	50 x 30 x 24"	1270 x 760 x 610 mm
XT Travel	N/A		60 x 25 x 24"	1524 x 635 x 610 mm	60 x 30 x 24"	1524 x 760 x 610 mm
Horsepower	2 Speed 24/15 HP	2 Speed 18/11 kw	2 Speed 24/15 HP	2 Speed 18/11 kw	2 Speed 24/15 HP	2 Speed 18/11 kw
Optional HP	2 Speed 35/25 HP	2 Speed 26/18 kw	2 Speed 35/25 HP	2 Speed 26/18 kw	2 Speed 35/25 HP	2 Speed 26/18 kw
Gearbox	N/A		N/A		Optional	
ATC	32 Pocket #50 Double Arm					
Weight	18,000 lbs	8100 kg	21,000 lbs	9500 kg	22,000 lbs	10,000 kg

Inline spindles matched with high speed machine design features offer extremely high performance.

All inline spindles feature "BIG-PLUS" technology

Most VM machining centers and BR bridge mill models and all TT models are available with an inline spindle. These spindles remain a cartridge type spindle for easy maintenance. Inline spindles are available in either 10,000 or 15,000 RPM with coolant through as an option. The spindles may be powered by either a 24/15 HP (18/11 kw) or a 35/25 HP (26/18 kw) motor.

Inline spindles offer improved performance at higher RPM's by eliminating pulleys and belts. This design reduces inertia, vibration and head heating thereby improving part finish, tolerances and ramping time.

The VMs and BRs that incorporate inline spindles are packaged to include accessories for optimal high speed performance. For this reason VMIL and BRIL machines with inline spindles have their own separate price and specification sheets. These machines are referred to as the Inline and include the VM16IL, VM20IL, VM25IL and VM30IL, as well as the BR50IL, BR60IL and BR80IL which are also available with extended travel options. All IL models incorporate superior roller ways as a standard or optional feature and spindle chiller to optimize high speed performance.

Other models including TT Twin Table Machining Centers come standard with inline spindle technology.

All inline spindles feature the "BIG-PLUS" spindle nose as a standard feature. This offers superior stiffness when tools have high sideloads or are long in length.



Pictured above: Inline spindle with inline coupling and 35 HP spindle motor. The casting is cutaway to illustrate the coolant cavity surrounding the spindle cartridge.



Inline spindle to motor coupling

SOLID BOX WAY VERTICAL MACHINING CENTERS

RW15 RW20

Large Box Way Construction on All Axes

*Full Cast Iron Machine Construction, **No Weldments!**
Hardened and Ground Box Way Surfaces with Turcite
Offer Superior Dampening for Heavy Milling*

*For Box Way
Enthusiasts*



Pictured above: RW15

While linear way machines offer many advantages over solid way construction, smaller, lighter weight machines can benefit from the dampening that solid box way construction offers. Milltronics offers two compact box way machining centers designed to take advantage of this added dampening yet offer all the same control features as our VM linear way machining centers.

	RW15		RW20	
Table Size	30 x 14"	760 x 355 mm	30 x 18"	760 x 455 mm
Travel	25 x 15 x 20.5"	635 x 380 x 520 mm	25 x 20 x 20.5"	635 x 510 x 520 mm
Horsepower	12/10 HP	9/7.5 kw	12/10 HP	9/7.5 kw
Optional HP	18/12 HP	13/9 kw	18/12 HP	13/9 kw
ATC	16 Pocket Carousel		16 Pocket Arm	
Weight	6500 lbs	2950 kw	8500 lbs	3860 kg

Compact Yet Robust

- The RW machining centers offer incredible performance for their weight and envelope size
- Standard carousel ATC on RW15, double arm style ATC standard on RW20
- Single phase power available
- Heavily dampened with box way construction
- Accessories available to match your application

Huge travels and table surfaces put this machine right between the lightweight routers and heavyweight cast bridge machines

STANDARD FEATURES

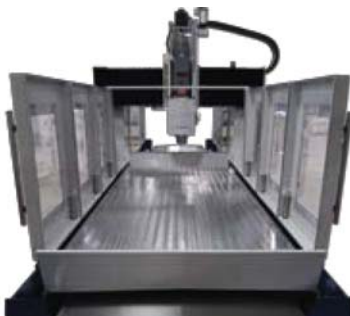
- Linear ball way construction with linear roller way option
- Precision ground ball screws
- 24/15 (18/11 kw) closed loop spindle drive and motor with full line regen
- 8000 rpm #40 spindle cartridge
- Electronic spindle orient
- High torque AC digital servos
- Metal way covers
- Same powerful CNC control
- Manufactured in the U.S.A.

OPTIONS

- Extended table travel to 150"
- 24 Pocket carousel ATC
- Flood coolant system with six nozzles and coolant trough around table perimeter
- Riser block
- 15K spindle
- Inline spindle with "BIG-PLUS"
- Dual augers
- Y and Z roller ways
- Side door enclosure
- 300 psi coolant through spindle



Pictured above: BR50



Pictured above: BR60 with enclosure

These are perfect machines for large fabricated parts, plates, aluminum molds and wood patterns.

- 50, 60 or 80" between columns with 100 or 150" table travel
- Can handle large parts with 28" Z travel and over 2' under the column (risers also available)

Need something different? Call us.

	BR50 & BR50IL*		BR60 & BR60IL*		BR80 & BR80IL*	
Table Size	96 x 48"	2440 x 1220 mm	96 x 60"	2440 x 1525 mm	96 x 80"	2440 x 2030 mm
XT Optional Table Size	150 x 48"	3800 x 1220 mm	150 x 60"	3800 x 1525 mm	150 x 80"	3800 x 2030 mm
Standard Travel	100 x 50 x 28"	2540 x 1270 x 710 mm	100 x 60 x 28"	2540 x 1525 x 710 mm	100 x 80 x 28"	2540 x 2030 x 710 mm
Optional Travel	150 x 50 x 28"	3800 x 1270 x 710 mm	150 x 60 x 28"	3800 x 1525 x 710 mm	150 x 80 x 28"	3800 x 2030 x 710 mm
Horsepower	24/15 HP	18/11 kw	24/15 HP	18/11 kw	24/15 HP	18/11 kw
Optional HP	2 Speed 24/15 or 35/25 HP	2 Speed 18/11 or 26/18 kw	2 Speed 24/15 or 35/25 HP	2 Speed 18/11 or 26/18 kw	2 Speed 24/15 or 35/25 HP	2 Speed 18/11 or 26/18 kw
ATC Option	24 Pocket Carousel		24 Pocket Carousel		24 Pocket Carousel	
Weight	13,000 lbs	6000 kg	14,000 lbs	6400 kg	16,000 lbs	7300 kg

**NOTE: IL designates inline spindle. See page 11 for inline spindle details.*

TWIN TABLE BRIDGE TYPE MACHINING CENTERS

TT24 TT40 TT60 TT80

Imagine – A Machine That Never Stops!

Standard with Inline Spindle
Featuring "BIG-PLUS" Technology



Pictured above: TT40



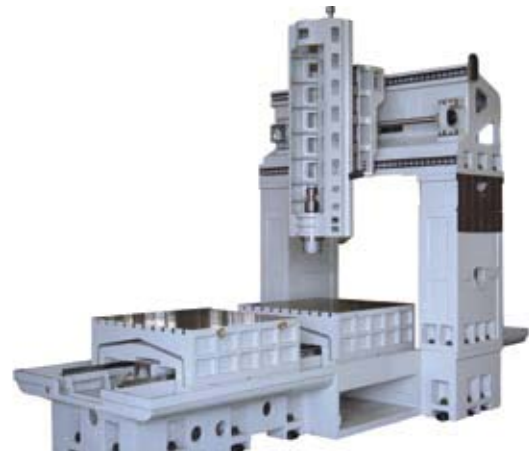
Pictured above: TT24

Twin 24x24" tables,
40 taper spindle — 10,000 or 15,000 RPM,
coolant through spindle and rollerways available

- Twin 40x40" Tables
- 40 or 50 Taper Spindle
- Coolant Through Spindle Available
- 50 Taper — 32 Pocket ATC
- 40 Taper — 40 Pocket ATC
- Rollerways on all axes

New concept machine designed to keep your CNC operator busy every moment

- No leaning into the machine!
- No doors to open and close!
- No time lost changing parts!
- Accurate time management
- Superior chip and coolant control
- Inline "BIG-PLUS" spindle standard
- Designed by American craftsmen



TT40 Frame

Two large tables provide constant productivity by keeping one under the spindle at all times.

Heavily ribbed for very aggressive machining.

	TT24		TT40	
Table Size	24 x 24"	610 x 610 mm	40 x 43"	1015 x 1100 mm
Travel	23 x 25 x 20"	585 x 635 x 510 mm	42 x 40 x 29"	1066 x 1015 x 735 mm
Horsepower	2 Speed 24/15 HP	2 Speed 18/11 kw	2 Speed 24/15 HP	2 Speed 18/11 kw
Optional HP	2 Speed 35/25 HP	2 Speed 26/18 kw	2 Speed 35/25 HP	2 Speed 26/18 kw
ATC	24 Pocket Arm		40 Pocket Arm	
Weight	16,000 lbs	7250 kg	40,000 lbs	18,000 kg
Spindle Type	#40 — 10,000 or 15,000 RPM		#40 — 10,000 or 15,000 RPM	
Optional Spindle	N/A		#50 — 8000 RPM	

TWIN TABLE BRIDGE TYPE MACHINING CENTERS

TT24 TT40 TT60 TT80

Key Features of our Twin Table Machines

Run the same job, different job, or even setup while running

Ergonomics

- Maximum operator efficiency
- No lost time on part reloading
- Easy to clean and maintain
- Safe with operator loading and unloading outside the work area
- Easy setup
- No bending into the machine
- No doors to open and close
- No crane restrictions
- No multiple machine timing issues

Features

- Inline spindle design incorporates "BIG-PLUS" technology
- Superior bridge construction
- High rapid speeds
- Spindle RPM's to 15,000
- Can incorporate rotary tables
- Efficient floor space use

Advantages Over Pallet Changers

- Integrated design
- No impact on geometry
- No issues of chip control
- No loss of spindle clearance
- Lower cost
- Less maintenance

Twin Table Large Envelope Medium Duty Bridges

Large Parts Take Even Longer to Load and Unload

Affordable Medium Duty Large Envelope Twin Table

- 60x60" or 60x80" twin tables
- Customized for your application with: spindle RPM's up to 15,000, 24 or 35 HP, coolant through, enclosure, dual auger, risers, 24 pocket ATC



Pictured above: TT60

	TT60		TT80	
Table Size	56 x 60"	1420 x 1524 mm	56 x 80"	1420 x 2032 mm
Travel	60 x 60 x 28"	1524 x 1524 x 711 mm	60 x 80 x 28"	1524 x 2032 x 711 mm
Horsepower	2 Speed 24/15 HP	2 Speed 18/11 kw	2 Speed 24/15 HP	2 Speed 18/11 kw
Optional HP	2 Speed 35/25 HP	2 Speed 26/18 kw	2 Speed 35/25 HP	2 Speed 26/18 kw
ATC	24 Pocket Carousel		24 Pocket Carousel	
Weight	17,000 lbs	7700 kg	18,000 lbs	8100 kg
Spindle Type	#40 — 10,000 or 15,000 RPM		#40 — 10,000 or 15,000 RPM	

PARTNER TOOLROOM CNC KNEE MILLS

VKM4

**Simply Stated,
The Most Unique
Knee Mill in the World!**

**3 Axes
CNC Knee Mill**



*Pictured above: VKM4
Shown with options*

- Driven with AC Servos, not DC
- Single phase available

	VKM4	
Table size	53 x 12"	1350 x 305 mm
Travel	30 x 15 x 5.25"	760 x 380 x 130 mm
Horsepower	7.5 / 5 HP	5.5 / 3.7 kw
RPM	Low 60 - 500, High 500 - 4000	
Spindle	R8, #30, CT40, BT40, or NST40	
Quill Diameter	4.125"	105 mm
Quill Travel	6"	152 mm
Weight	4600 lbs	2100 kg

Patented MillSlide©



Features

- Oversize Table
- SLS "Skill Level Select" Toolroom Software that adds functions as the operator's skill improves or the job requires more
- Fully programmable spindle and coolant

Accessories

- Rigid Tap
- 4th Axis
- Manual or Electronic Handwheels



*The only mill with the patented **MillSlide©** offers a fully programmable Z axis with 5.25" of CNC travel and yet retains all manual quill features for the utmost flexibility*

Simply the BEST, because no one else offers so many features in the standard price, no one offers the MillSlide©, and no one pairs these features with the powerful MILLTRONICS CNC with SLS "Skill Level Select" software designed for the toolroom.

PARTNER VERTICAL MANUAL MILLS

VMM3012 VMM3612 VMM3417 VMM3917

Four Rugged Models In Popular Configurations

A Better Manual Mill



Pictured above: VMM3917

Features

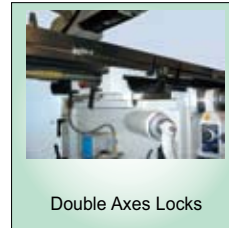
- Induction hardened spline spindle
- AC digital spindle amplifier (except 3012)
- 8:1 backgear for high torque
- Micrometer quill depth stop
- Halogen work lamp
- Precision ground table
- Automatic lubrication
- Conveniently located Operators control
- Some items includes in packages



Rigid Honeycomb Wall Construction Utilizing Stress Relieved & Annealed GA50 Meehanite Castings



Hardened & Ground Turcite Ways Dovetail on VMM3012 & VMM3612 Box on VMM3417 & VMM3917



Double Axes Locks



Chrome Plated and Ground Quill



NEMA Standard Electrical Cabinet



Internal Knee Rapid Feed Motor VMM3417 & VMM3917

Popular Accessories



Spray Mist Unit



Power Feed Unit



Newall C80 DRO



Quill Scale RO

	Table Size	Travels	Spindle Taper	Horsepower	RPM
VMM3012	42 x 9" 1065 x 225 mm	30 x 12 x 5" 760 x 305 x 125 mm	R8	3 HP 2 kw	60 - 4000 Reeves Drive
VMM3612	49 x 9" 1245 x 225 mm	36 x 12 x 5" 910 x 305 x 125 mm	R8	3 HP 2 kw	60 - 4000 Inverter Drive
VMM3417	54 x 10" 1370 x 255mm	34 x 17 x 5" 860 x 430 x 125 mm	R8	3 HP 2 kw	60 - 4000 Inverter Drive
VMM3917	59 x 12" 1500 x 305 mm	39 x 17 x 6" 990 x 430 x 150 mm	#40	5 HP 3.7 kw	60 - 4000 Inverter Drive

Spindles are driven by Yaskawa spindle amplifiers.

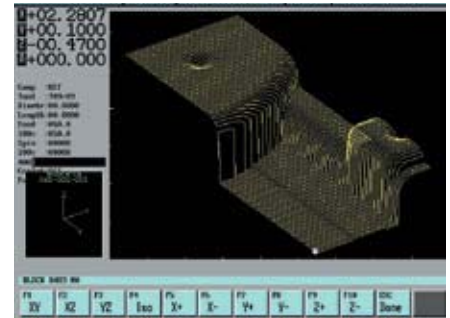
Our New 7000 Series CNC and High Speed Milling 8000 Series CNC

The Heart of Our Success

The heart of our success is our long history of control development. Amazingly, we may very well have engineered the finest, most operator-friendly CNC in the world. While that may be a daring statement, thousands of our customers will support it.

Our ingenious approach to connecting the operator to our control is recognized as a model in the industry. Though many have tried to emulate our conversational system, no one has really succeeded. This is because most other designs are developed by engineers without customer input. We keep our engineers connected to customers where we learn exactly what is really wanted. Yet we realize the control must still fit into a shop with G/M code programmers and CAD CAM systems, where conventional protocol is required. We fulfill this need while offering high speed performance, huge memory size, large program editing, and trig help. In fact, our conversational input actually develops a G/M code program which we run from and can be viewed. Even our graphics are unique showing the tool path and tool far ahead of the actual machine, so you can see where you're going.

Control development is a never-ending challenge as motion control algorithms, enhanced graphics, higher speeds, and management information continue to develop. But productivity gains through quick setup, utilization of lower skilled operators, and power programming shortcuts are still paramount in our design decisions. Have your distributor give you a demonstration.



High Speed Performance



Powerful Help Screens



Milltronics 7200 CNC Control

ABOUT THE MILLTRONICS CNC CONTROL

The other half of a CNC machine is its control. The Milltronics CNC Control meets any challenge. We've been writing and building our own software and hardware since 1973.

A Front Panel Designed For The Operator

An operator will spend thousands of hours working with the front panel of any CNC. This is why we have designed our front panel around an oversized high resolution LCD color screen, rather than the tiny monochrome monitor often found on other CNC's. The operator panel is offered in two configuration, a simple economical panel with tactile keys or an enhanced panel with larger display and enhanced keys. Be assured, however, that regardless of your preference, you will find no equal to the power and simplicity of the Milltronics CNC based control.

Full Color Graphics

Full color graphics allow verification of tool path and part profile prior to program execution. Zoom in/out, rotate or window on detail for a clearer view. Unlike graphic systems on other CNC controls, the Milltronics CNC Control graphics are intertwined with the motion control system of the machine. This provides synchronized display between the graphics and machine movement and guarantees that there will be no discrepancy between what is seen on screen and what the machine actually does. In fact, the tool on graphics is ahead of the machine so you can actually see where you are going. Solid modeling graphics are available on the 8000 Series CNC.

Conversational Programming

Conversational programming is not only quick and easy, it is extremely powerful. A menu based question and answer format prompts the operator through program creation. In most applications there is no need to memorize complex G and M codes. In fact, many operations available with conversational programming are nearly impossible to duplicate with G and M code programming. For instance, the simple task of incrementing a tool to depth with G and M codes usually involves complex looping of subprograms or many redundant commands. With conversational programming this task is reduced to a simple event where only the cut increment and depths need to be entered.

“SLS” Skill Level Select for Toolroom Machines

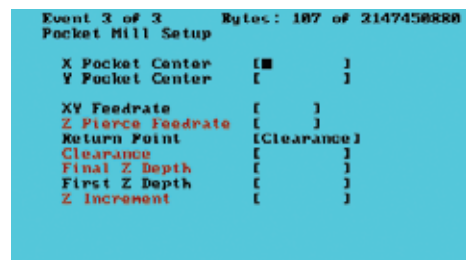
This innovative feature allows the CNC control to be configured to match the skills of the CNC operator. We have worked with a significant number of first-time CNC operators and have recognized that the more features, screens and selections a CNC control has, the more intimidating it is for the operator. Often these selections overwhelm a new operator, undermining confidence and lengthening the learning curve. Skill Level Select solves this by allowing the operator to enable/disable features to a comfortable level. SLS software incorporates “on-line help” which will pull down illustrations by the push of a button. Illustrations show all relevant parameters required to conversationally program the selected feature.

Advanced Trigonometry Assist

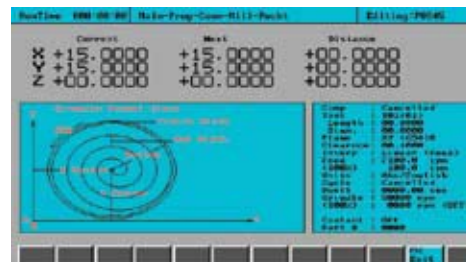
This feature is much more than the scientific calculator found on other CNC controls. “Trig Help” as we call it, is a concept where we use the CNC's computing power to calculate arc start and end points without the need for trigonometry. The programmer only needs to estimate the end point of the line or arc and the CNC connects the geometry to the nearest intersection on its own. On most other CNC controls intersection points need to be exactly calculated in order for the program to run.



Milltronics 7200 Series CNC



Conversational Input Screen



Pocket Milling Help Screen

Irregular Cavity Clear With Islands

The Milltronics CNC software contains a powerful feature which will intelligently clear out cavities that contain islands by using defined parameters and depth increments. This feature can save hundreds of hours of programming.

Concurrent Programming And More....

Maximize productivity by programming while the machine is in operation. Create new programs, modify existing programs, even edit the program in operation, all while the machine is cutting. Concurrent features do not stop with programming. Editing of tool and fixture offsets, copying of programs to/from floppy disk and sending programs through the RS232 port are allowed as well.

Text Programming / Compatibility

All Milltronics CNC controls accept the G and M codes recognized as industry standard. If you currently program in code, utilize a CAD CAM system, or are considering adding a CAD CAM system in the future, you can rest assured that compatibility will not be an issue. A full word processor style editor is utilized on all Milltronics CNC controls and offers helpful features such as search, search and replace, cut, copy and move. Programs as large as 9 MB can be edited concurrent to program execution.

Macro Programming

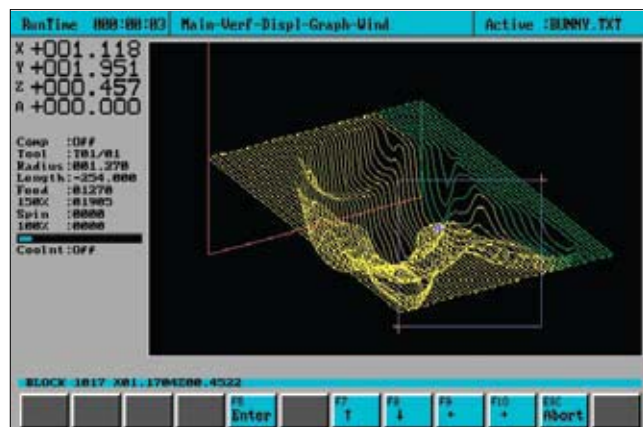
Powerful macro programming is available on all Milltronics CNC controls. Macro programming allows you to take full advantage of the CNC's capabilities and opens new doors to tool management and more.

Unique Graphics-Based Mid Program Start Feature

Starting in the middle of a program is often one of the more challenging tasks facing a CNC operator. Although this would seem to be a simple task, the fundamental nature of CNCs make it anything but. Milltronics has solved this problem with a unique process where an operator can verify a program graphically up to the desired start point and then simply switch over to the Run mode. Not only is this easier and quicker than sorting through difficult machine code, it also ensures that modal codes are executed completely and in sequence.

The Milltronics Graphics Advantage

Powerful graphics of the Milltronics CNC control show the programmer the part geometry as it will look when completed. The graphics screen shown below shows the operator exactly where the tool is relative to the workpiece at all times. This user-friendly screen shows the tool path (green), workpiece (yellow), rapid traverse (red) and the diameter of the active tool (blue). The graphic verify features show the operator the entire machining operation either in real time or in a dry run, each posting estimated runtimes including tool changes.



ABOUT THE MILLTRONICS CNC CONTROL

Large Program Execution

Programs under 10 MB can be executed conventionally without the need for DNC. This large program execution capability not only frees you from restrictive DNC methods, it also permits subprogram calls, greatly enhancing multiple cavity work.

High Speed Control

All Milltronics CNC Controls have addressed the complex dynamics required for a CNC to truly be categorized as high speed. The end result is that Milltronics CNC controls offer performance equal to the most sophisticated controls. Many Milltronics customers are mold makers for whom high speed performance is an absolute requirement. Our new 8000 Series CNC incorporates many new features for high speed milling.

Processor Speed

There are thousands of calculations required for each and every axis movement. When trying to machine complex geometry, often the microprocessor of the control creates a bottleneck restricting the attainable feedrate. To minimize processing bottlenecks, Milltronics CNC Controls utilize two processors. With these two processors working together, over 1200 blocks per second with the 7000 Series CNC's and over 2000 blocks per second with the 8000 Series CNC are attainable.

Multi Processor Control Utilizes Latest Computer Technology

Milltronics CNC Controls take advantage of the multiple processors by sharing the calculations between them for maximum throughput. A high speed PC processor is used to handle the operator interface and a robust 32 bit Motorola® processor to handle the motion control.

Feed Forward and Look-Ahead

Controlling how an axis decelerates and accelerates is one of the most crucial factors relating to machine speed. Understanding that it is impossible for a servo motor to stop and start a heavy machine slide anywhere close to 1000 times per second leaves the only hope of achieving speed through greater intelligence of the acceleration and deceleration slopes. All Milltronics CNC Controls search ahead into a program to determine the directional changes that lay ahead. Once these directional changes are known, the CNC dynamically adjusts the deceleration and acceleration slopes to minimize stopping and starting.



*Part machined on conventional
CNC control **without** Feed Forward
error correction*



*Part machined on a Milltronics
CNC control **with** Feed Forward error
correction*

Accuracy

Milltronics CNC Controls utilize a complex "Feed Forward" error correction algorithm that reduces inaccuracy without compromising speed. Until now feed forward error correction has been found only on a handful of the world's most expensive CNC controls and should in no way be confused with inferior error correction systems that rely on slowing feedrates to maintain accuracy.

Thermal Compensation

Rather than simply measuring ball screw temperature, a patent pending feature unique to Milltronics measures actual ball screw expansion and contraction using a non-contact LVDT device. This measurement is constantly updating the control to compensate for positioning change. This is a very important feature for machines requiring consistently high accuracy combined with many rapid moves or continuous contouring.

Flexible Communications

Anyone who has struggled transferring programs to a CNC will appreciate the floppy disk drive and RS232 communications port standard on Milltronics CNC controls. An optional multi format flash memory drive allows transfer from several different types of flash memory, including: CF-I, CF-II, Smart Media™, Memory Stick™, Micro Drive™, Multimedia™ Card and Secure Digital™ Card. A USB port is incorporated in the 8000 Series CNC.

ABOUT THE MILLTRONICS CNC CONTROL

Networking

With the Milltronics CNC control's PC-based architecture it is possible to connect to a Local Area Network (LAN) taking full advantage of the ability to connect computers in network environments for high speed data transfers and file sharing. Networking offers numerous advantages over RS232 communications as it provides a transparent transfer of data at extremely high speeds - more than 100 times faster than typical RS232 communications. The Milltronics control is fully compatible with all current network technologies.

Off-line Software

FastCAM and LatheCAM, our off-line software that emulates the CNC control on your desktop, allows programs to be created and graphically verified the same as they are at the machine. The software also serves as a storage library for part programs and supports communication with the CNC. An additional feature allows import of DXF or CDL CAD files which expands difficult part programming capabilities.

Software Macros for Tool Setter Accessories

The Milltronics CNC incorporates software macros which operate with either a touch tool setter or laser tool setter. These tool setters automatically load tool diameter and tool length into the tool table as well as check for tool breakage.

Software Macros for Part Probe Accessories

A family of software macros work with the probe which can be parked in the ATC. These macros can locate edges, centers, do part verification, and much more.

Digiscan: Digitizing Probe Accessory

The Digitizing option permits quick, easy and cost effective duplication of parts with unattended operation. In lathe applications a digitized 2D part profile is ready to run at the CNC with no additional processing. In milling applications both 2D part profiles and complex 3D surfaces can be captured. With the use of the off-line Digiscan software a digitized file can be inverted (male to female), cutter compensated, scaled, rotated, mirror imaged and more. Digiscan can also translate the file into a DXF or CDL format for input into popular CAD CAM systems.



WARRANTY & TERMS

LIMITED WARRANTY ON ALL NEW MILLTRONICS MANUFACTURING COMPANY MACHINES
marketed under the commercial name of Milltronics Manufacturing Company. This warranty does not apply to equipment manufactured and sold by the International Machine Tools or Partner Machines divisions of Milltronics Manufacturing Company. Such equipment has a separate limited warranty.

United States and Canada Shipments

Milltronics Manufacturing Company ("Milltronics" or "Company") warrants all of their CNC machines ("Machines") and the Centurion CNC systems supplied with these Machines shall be free from defects in workmanship and materials under normal use and service for a period of two years or 4200 hours, whichever is shorter, from the date of delivery. This warranty is limited to all factory-supplied parts and accessories as indicated on the original purchase order as accepted by Milltronics and any parts necessary to repair such defects. Milltronics' liability for breach of warranty shall arise only upon the return of the defective parts at Buyer's expense after notice to Milltronics of claimed breach, and shall be limited to replacing or repairing, at Milltronics option, at its factory, any of said articles which shall within two (2) years after shipment be returned to Milltronics' factory of origin, transportation charges prepaid, and which are, after examination, disclosed to Milltronics' satisfaction to be defective. Notice to Milltronics of claimed defects discoverable by inspection must be given within ten (10) days after receipt of shipment. This warranty shall not apply to any of such articles which shall have been repaired or altered, except by Milltronics, or which shall have been subjected to misuse, negligence, or accident. The aforementioned provisions do not extend the original warranty period of any articles which have either been repaired or replaced by Milltronics. This warranty applies to the original purchaser only or the original end user if the equipment is financed by a third party. During the first six months the two-year warranty also includes all travel expenses incurred by a Milltronics factory representative if a problem occurs which is not repairable by the local distributor or a part exchange. For the second six months of the two-year warranty Milltronics will pay for all travel expenses except airfare. For the second year, Milltronics will not pay for any labor expense other than supplying the part. For the first year of the warranty, Milltronics will also cover any standard UPS freight charge for parts and repairs shipped from our facility. After the first year there will be a shipping and handling charge for parts and repairs shipped from Milltronics. Incoming freight for warranty items is not covered under this warranty, and Milltronics will not pay incoming freight charges unless pre-approved in writing.

Neither the Machine nor the Centurion CNC warranty will cover parts that are damaged or have failed due to abuse, improper operation, weather, act of God, terrorism or shipping. No Milltronics warranty covers damage to fixtures, tools, or parts, regardless of the cause of this damage. Accessories not supplied by Milltronics are not covered under this warranty, and any alterations to the Machine or CNC control done by other than Milltronics' authorized personnel, unless approved by Milltronics' personnel in writing, shall void any warranties.

EXCEPT AS SET FORTH IN ABOVE, THE COMPANY MAKES NO EXPRESS OR IMPLIED REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE MACHINE OR THE CENTURION CNC CONTROL, OR THEIR CONDITION, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR USE BY CUSTOMER. THE COMPANY FURNISHES THE ABOVE WARRANTIES IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

MILLTRONICS SHALL NOT BE LIABLE FOR ANY: (A) SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS, ARISING FROM OR RELATED TO THIS WARRANTY, THE BREACH OF ANY AGREEMENT OR WARRANTY OR THE OPERATION OR USE OF THE MACHINE OR CENTURION CNC CONTROL, INCLUDING WITHOUT LIMITATION, DAMAGES ARISING FROM DAMAGE TO FIXTURES, TOOLS, PARTS OR MATERIALS, LOSS OF DATA OR PROGRAMMING, DIRECT OR INDIRECT LOSS CAUSED BY THE DISTRIBUTOR OR DEALER REPRESENTATIVE, LOSS OF REVENUE OR PROFITS, FAILURE TO REALIZE SAVINGS OR OTHER BENEFITS, DAMAGE TO EQUIPMENT, FINANCING OR INTEREST CHARGES, AND CLAIMS AGAINST CUSTOMER BY ANY THIRD PERSON, EVEN IF MILLTRONICS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES; (B) DAMAGES (REGARDLESS OF THEIR NATURE) FOR ANY DELAY OR FAILURE BY THE COMPANY TO PERFORM ITS OBLIGATIONS UNDER THIS AGREEMENT DUE TO ANY CAUSE BEYOND THE COMPANY'S REASONABLE CONTROL; OR (C) CLAIMS MADE A SUBJECT OF A LEGAL PROCEEDING AGAINST THE COMPANY MORE THAN ONE (1) YEAR AFTER ANY SUCH CAUSE OF ACTION FIRST AROSE.

The validity, construction and performance of this Warranty and any sale made by Milltronics shall be governed by the laws of the State of Minnesota, without regard to conflicts of laws provisions of any jurisdiction and any action related in any way to any alleged or actual offer, acceptance or sale by Milltronics or any claim related to performance or agreement or warranty by Buyer or Milltronics shall be venued in federal or state district court in Hennepin County, Minnesota.

MILLTRONICS MANUFACTURING COMPANY
1400 Mill Lane
Waconia, MN 55387
952-442-1410
www.milltronics.net

This warranty is invalid unless the customer has signed off on and returned to Milltronics or its distributor the factory-provided installation forms and Milltronics is funded in full for the equipment.