STORM

CNC Vertical Machining Centers

COLCHESTER HARRISON
600Group

The Best Valued VMC
in the Market Today...
Take a Minute and Compare

STO

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RM

Whatever the requirement there is a Storm VMC for Every Application

Storm CNC Vertical Machining Centers are designed and built heavier with more standard features than any VMC in its size and price range...

- Starting with a heavier cast iron base and saddle to assure less vibration than VMC's with a fabricated base.
- 1.57" (40mm) double nut pre-tensioned ballscrew, directly coupled to the servo drive motor on all 610-1300 models, 1.96" on 1600, gives stronger, more precise and durable operation than machines with only 1.26" (30mm) ballscrews.
- Duplex angular contact bearings support both ends of all ballscrews, far superior to lower cost single radial bearings.
- High performance spindle fitted with 2+2 matched super precision bearings for greater long term precision and accuracy, even during heavy cutting.

Take a minute and check out the Storm VMC advantage...

Storm VMC's offer Real CNC Machining Power, Precision and Performance. Available in a full range of models, there is a machine to meet most any requirement

VMC500L

- 16 Tool Carousel ATC
- Linear Ways
- 23.6" x 12.6" Table
- 20"x16"x18" X/Y/Z Travels
- 10/7.5 hp Spindle Motor
- 8,000 rpm Spindle

VMC610L/S

- 24 Tool Dual Arm ATC
- Linear or Square Ways
- 31.5" x 17.7" Table
- 24"x18"x20" X/Y/Z Travel
- 15/10 hp Spindle Motor
- 10,000 rpm with Oil Cooler

VMC850L/S

- 24 Tool Dual Arm ATC
- Linear or Square Ways
- 39.37" x 19.68" Table
- 33.5"x20"x22" X/Y/Z Travel
- 15/10 hp Spindle Motor
- 10,000 rpm with Oil Cooler

VMC1020L/S

- 24 Tool Dual Arm ATC
- Linear or Square Ways
- 47.24" x 19.68" Table
- 40"x20"x22" X/Y/Z Travel
- 20/15 hp Spindle Motor
- 10,000 rpm with Oil Cooler

VMC1300S

- 24 Tool Dual Arm ATC
- Square Ways
- 55.23" x 23.62" Table
- 51"x27.5"x28" X/Y/Z Travel
- 20/15 hp Spindle Motor
- 10,000 rpm with Oil Cooler

VMC1600S

- 24 Tool Dual Arm ATC
- Square Ways • CAT #50
- 66.93" x 32.08" Table
- 63"x31"x27" X/Y/Z Travel
- 20/15 hp Spindle Motor
- 4,000 rpm Geared Head

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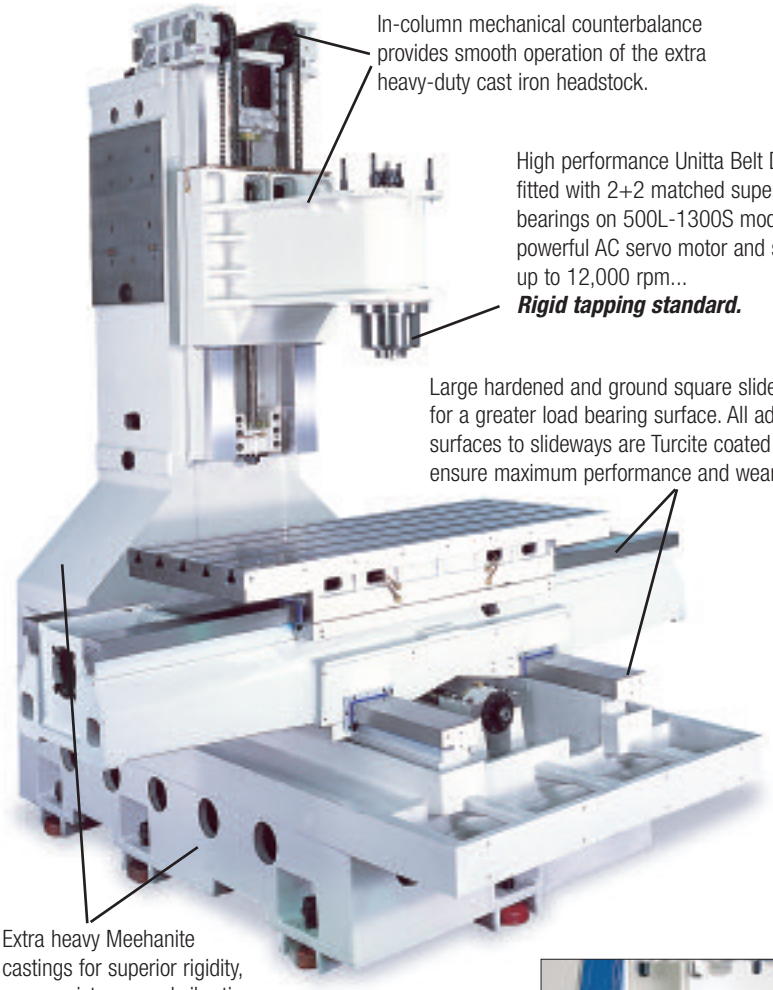
Square Ways on (S) Models for Heavy-Duty Precision Cutting



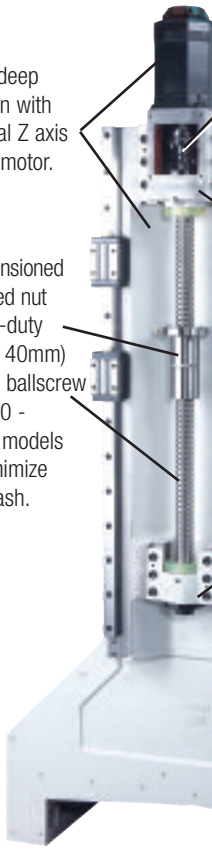
In-column mechanical counterbalance provides smooth operation of the extra heavy-duty cast iron headstock.

High performance Unitta Belt Driven Spindle fitted with 2+2 matched super precision bearings on 500L-1300S models, with a powerful AC servo motor and spindle speeds up to 12,000 rpm...
Rigid tapping standard.

Large hardened and ground square slideways for a greater load bearing surface. All adjoining surfaces to slideways are Turcite coated to ensure maximum performance and wear.

Extra heavy Meehanite castings for superior rigidity, wear resistance and vibration absorption.

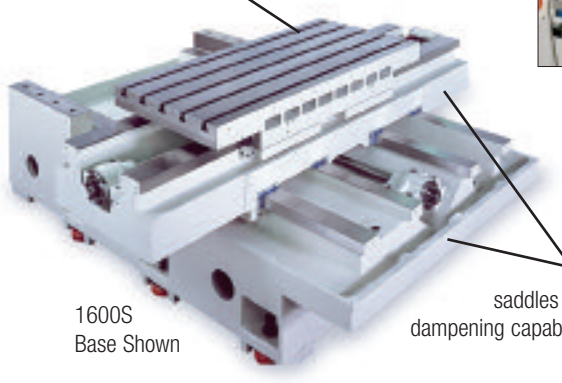
A state-of-the-art Ball Bar test ensures squareness and accuracy of micro movement. Test is computer recorded during a run in all operational directions between the spindle and table



Extra deep column with integral Z axis servo motor.

Pre-tensioned doubled nut heavy-duty 1.57" 40mm) Z axis ballscrew on 610 - 1300 models to minimize backlash.

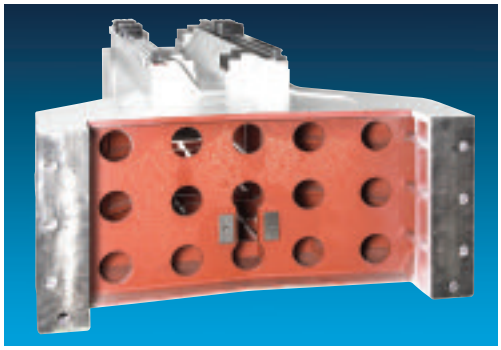
A special, high precision machining & finish process provides accurate positioning on solid and linear way models.



1600S
Base Shown

Extra heavy-duty cast iron bases, saddles and tables provide proven, superior dampening capability than cheaper fabricated frames

All 3 axes are checked by a Laser Inspection System to ensure positioning accuracy and repeatability.

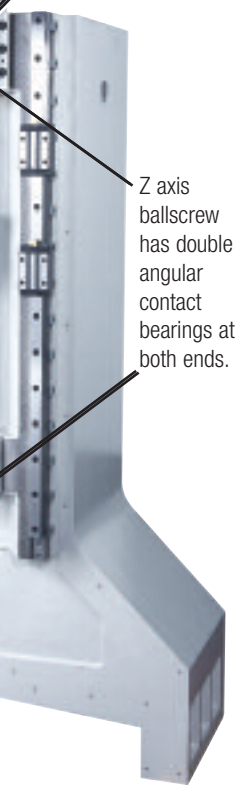


Saddle and table are driven by extra heavy-duty 1.57" (40mm) pre-tensioned double nut ballscrews to minimize backlash and ensure long term accuracy. Ballscrews are supported at both ends with double angular contact precision bearings.

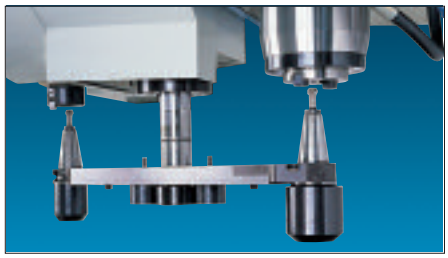
Extra Heavy-Duty Construction...

Linear Ways on (L) Models for High-speed Precision Operation

Z axis servo motor coupled directly to ballscrew.



Z axis ballscrew has double angular contact bearings at both ends.



24 tool dual arm high speed tool changer and 24 pull studs with 2.5 sec. tool to tool change time, standard on all models from VMC610 and larger.

Coolant flows thru easy adjustable nozzles so you can direct coolant exactly at the cut, at 8 gal/min. M code or manually activated. (Through spindle coolant optional)

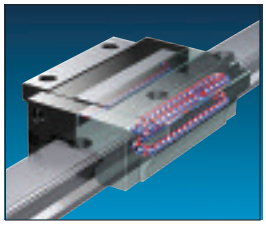
- All ways are covered by stainless steel way covers to protect ways and ball screws from dust and coolant
- Chip and coolant tray has swivel rollers for quick and easy cleaning and maintenance
- High quality electrical components and circuits. Electrical interface uses PC boards for greater reliability and easy maintenance.

High speed brushless AC servo motors, superior to brush type motors, are directly coupled to the ballscrews, resulting in sharper corner cuts, more precise circular interpolation and greater positioning accuracy.

Mechanical counterbalance inside column to offset headstock weight

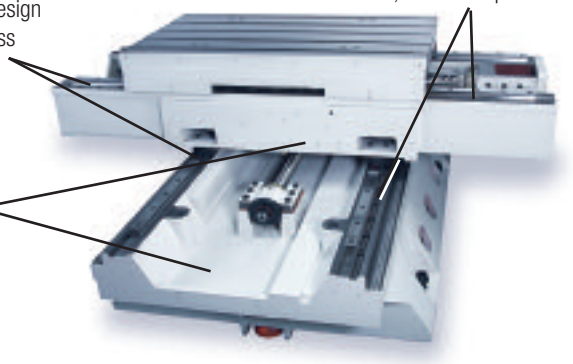
Constructed of Meehanite castings for superior rigidity, wear resistance and vibration absorption

The massive cast iron column construction, provides greater dampening capability than steel. Our extra deep column is heavily ribbed for maximum lateral stiffness, designed to maintain consistent accuracy and thermal stability while withstanding the tremendous forces required during heavy cutting.



We use the latest caged ball technology. Balls are separated by grease pockets, guided by the ball cage and are uniformly aligned in the direction of circulation, unlike conventional ball type that skew and move randomly. The unique ball cage design minimizes friction between balls, creating less generation of heat, making it possible for smooth high-speed operation.

Japanese high precision 'Tsubaki' heavy duty linear guidways, H30R on X axis, H35ER on Y/Z axes give smooth, accurate operation.



Extra heavy-duty Meehanite cast iron base and saddle ensure proven thermal and mechanical rigidity and vibration absorption, important characteristics necessary for heavy loads and high speed traverses.

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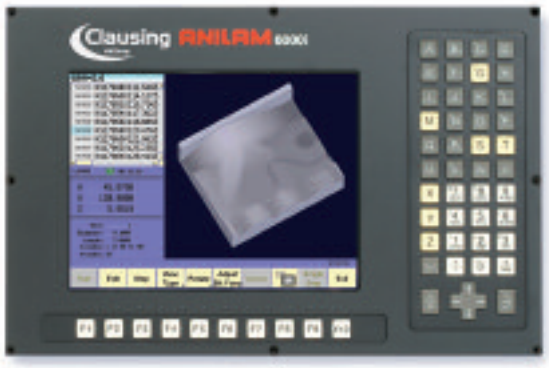
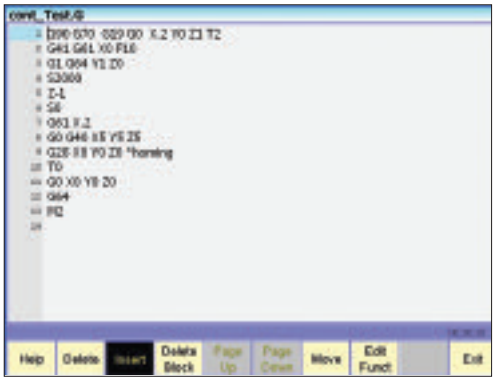
Conversational programming, standard G-Code or CAM, it's your choice...



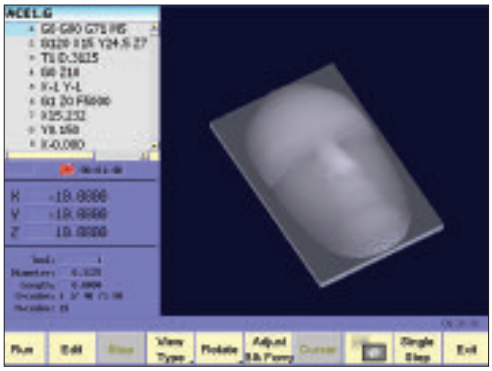
The Clausing ANILAM 6000i is a **full digital** CNC Control that offers both true Conversational and standard G-Code Programming within the same system. The simple conversational language allows the 6000i control to be easily programmed by any user. Conversational programs can be edited or executed in automatic mode without changing or converting the format.

The 6000i control has 4 axes capability and is 4th axes wired.



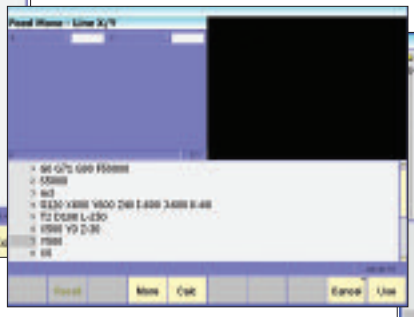
G-Code
For those who prefer it, the 6000i series control may be programmed in standard G-code language.

CAM
Programs can also be created using ANILAM's integrated CAM system. Programs created offline can also be loaded into the control by USB or via the network facility.



Standard G-code Programming Format

Full Screen Editing... Experienced G-Code programmers will appreciate the 6000i's full screen program page. Advanced editing operations such as cut, copy, find change word, etc., make program changes fast and easy.



Line Help Example

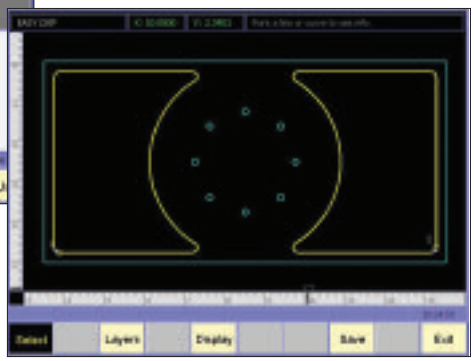
Help Menu... New users can take advantage of the Help Menu to create entire G-Code programs. Help is available for any programmable function, from a simple rapid move to more advanced pocketing cycles.

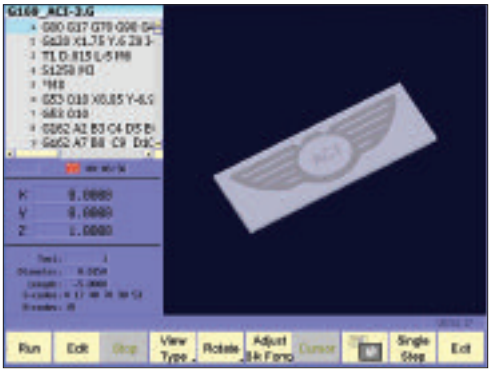
Clausing ANILAM 6000i Control

Conversational Programming Format

Using the conversational programming language, the full compliment of canned cycles and the integrated geometric calculator, complex parts can be programmed easily at the VMC.

Part programs can be viewed in the Draw Graphics screen. Graphics screens may be viewed in XY, XZ and YZ planes or isometric.





6000i DXF converter, you can view and access source CAD files saved in the DXF file format. The 6000i can save DXF files in choices of G-code, conversational or CAM shapes. The DXF converter will automatically generate the selected tool path and transfer to the desired program name. The program code is then output directly in the 6000i program language and is ready to use.

Basic drilling Canned Cycle Example...

Used for basic hole drilling. The cycle will create a drilling program with only the finish depth and start height information needed.

Basic & Advanced Canned Cycles

Pocketing	*Drill/Tap*	*Paths*
• Circular (ramp or plunge)	• Basic drilling	• Linear interpolation
• Rectangular (ramp or plunge)	• Hole patterns	• Circular profile
• Irregular profile	• Bolt hole circles	• Rectangular profile
• Draft pockets	• Pecking	• Spiral
• Hole milling	• Chip breaking	• Ellipse
• Frame milling	• Rigid tapping	• Helix
	• Counter boring	
	• Boring	

Available on request... FANUC O*i* MC *(Manual Guide i' optional)*

Loaded with features such as...

- **Rigid tapping**
- Three axis interpolation
- Inch/metric data selection
- Programmable resolution-.00004"
- 400 tool length offsets
- Cutter diameter compensation
- Color screen
- Background editing
- Custom macro B
- Expanded part program edit
- 128K part program storage
- Helical interpolation
- Pocket milling macros
- Scaling
- Sub program nesting
- Tool life management
- 4th axis pre-wired
- Absolute/incremental (X, Y, Z and B Axis)
- Canned cycles
- Spindle speed, feed rate, rapid traverse override
- Linear and circular interpolation
- Manual reference point return
- Run time parts counter
- Sequence number search
- Single block operation
- Single direction positioning
- Tool compensation memory B and C
- Tool length compensation
- And much more

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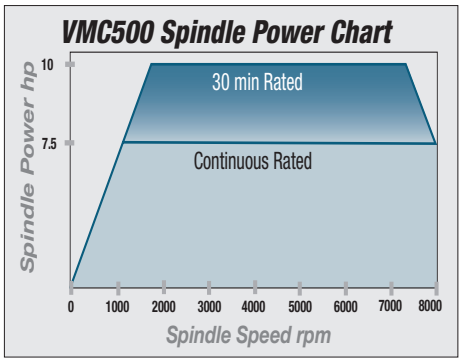
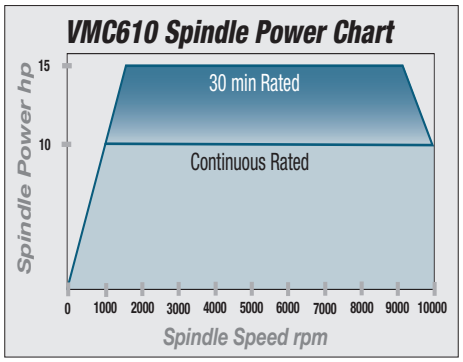
Machine Specifications

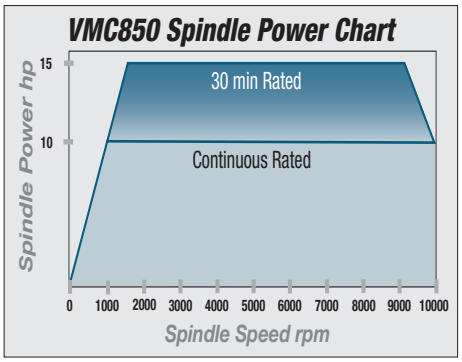
Model	VMC500L	VMC610L/S	VMC850L/S	VMC1020L/S	VMC1300S	VMC1600S
Table						
Dimensions	23.6" x 12.6" (600 x 320mm)	31.5" x 17.7" (800 x 450mm)	39.4" x 19.7" (1000 x 500mm)	47.2" x 19.7" (1200 x 500mm)	55.2" x 23.6" (1400 x 600mm)	66.9" x 32.1" (1700 x 815mm)
Number of T-slots	3	3	5	5	5	5
T-slot width	.55"(15mm)	.71" (18mm)	.71" (18mm)	.71" (18mm)	.71" (18mm)	.89" (22.5mm)
T-slots center	3.94" (100mm)	3.94" (100mm)	3.94" (100mm)	3.94" (100mm)	3.94" (100mm)	5.9" (150mm)
Table load	800 lbs. (363kg)	990 lbs. (450kg)	2,200 lbs. (1000kg)	2,200 lbs. (1000kg)	3,300lbs. (1500kg)	4,840 lbs. (2200kg)
Work Travels						
X axis (long.) Linear Ways	20" (510mm)	24" (610mm)	33.46" (850mm)	40.15" (1020mm)	-	-
X axis (long.) Square Ways	-	24" (610mm)	33.46" (850mm)	40.15" (1020mm)	51.18" (1300mm)	62.99" (1600mm)
Y axis (cross)	16.14" (410mm)	18.11" (460mm)	20" (510mm)	20" (510mm)	27.5" (700mm)	31.49" (800mm)
Z axis (vertical)	18.11" (460mm)	20" (510mm)	22" (560mm)	22" (560mm)	27.95" (710mm)	27.56" (710mm)
Spindle nose to table						
Linear Ways	5"-23.1" (130-585mm)	4.92"- 25" (125-635mm)	5.9"-27.94" (150-710mm)	5.9"-27.94" (150-710mm)	-	-
Square Ways		4.92"- 25" (125-635mm)	5.9"-27.74" (145-705mm)	5.7"-27.74" (145-705mm)	5.9"-33.86" (150-860mm)	7.87"-35.43" (200-900mm)
Spindle center to column						
Linear Ways	16.93" (430mm)	21.77" (553mm)	24.1" (608mm)	24.1" (608mm)	-	-
Square Ways		21.06" (535mm)	22.6" (575mm)	22.6" (575mm)	27.56" (700 mm)	33.46" (850mm)
Way dimensions						
Linear Ways	X-1"(25mm)/Y&Z-1.2"(30mm)	X-1.2"(30mm)/Y&Z-1.38"(35mm)	1.38" (35mm)	1.38" (35mm)	-	-
Square Way Width		3.94" (100mm)	4.33" (110mm)	4.33" (110mm)	3.94"(100mm) outer/2.95"(75mm) inner	3.94"(100mm) outer/3.54"(90mm) inner
Table center to column						
Linear Ways	8.85"(225mm)-25"(635mm)	12.72"(323mm)-30.83"(323mm)	13.89"(353mm)-33.98"(863mm)	13.89"(353mm)-33.98"(863mm)	-	-
Square Ways	-	12"(305mm)-30.12"(765mm)	12.6"(320mm)-32.7"(830mm)	12.6"(320mm)-32.7"(830mm)	14.7"(375mm)-40.3"(1025mm)	17.7"(450mm)-47.2"(1200mm)
Ballscrew dia./pitch	1.26"(32mm)/.47"(12mm)	1.57"(40mm)/.47"(12mm)	1.57"(40mm)/.47"(12mm)	1.57"(40mm)/.47"(12mm)	1.57"(40mm)/.47"(12mm)	1.96"(50mm)/.39"(10mm)
Spindle						
Spindle Motor (Cont./30 min.)	7.5/10 hp (5.5/7.5kw)	10/15 hp (7.5/11kw)	10/15 hp (7.5/11kw)	15/20 hp (11/15kw)	15/20 hp (11/15kw)	15/20 hp (11/15kw)
Spindle taper	CAT #40	CAT #40	CAT #40	CAT #40	CAT #40	CAT #50
Spindle speed	8,000 rpm	10,000 rpm	10,000 rpm	10,000 rpm	10,000 rpm	4000 rpm Geared Head
Option #1 spindle speed	12,000 rpm	12,000 rpm	12,000 rpm	12,000 rpm	12,000 rpm	6000 rpm Geared Head
Option #2 spindle speed	10,000 rpm	8000 rpm	8000 rpm	8000 rpm	8000 rpm	10,000 rpm*
Option #3 spindle speed		6000 rpm	6000 rpm	6000 rpm	-	-
Feed Rates						
Rapid traverse Linear Ways	1417 in/min (36m/min)	1417 in/min (36m/min)	1417 in/min (36m/min)	1417 in/min (36m/min)	-	-
Rapid traverse Square Ways	-	945 in/min (24m/min)	945 in/min (24m/min)	945 in/min (24m/min)	X/Y-590(15) Z-472(12)in/min(m/min)	X/Y-590(15) Z-472(12)in/min(m/min)
Cutting feed rate	.4-393 in/min(10m/min)	.4-393 in/min(10m/min)	.4-393 in/min(10m/min)	.4-393 in/min(10m/min)	.4-393 in/min(10m/min)	.4-393 in/min(10m/min)
Auto Tool Changer						
Number of tools	16 Geneva	24 Dual Arm	24 Dual Arm	24 Dual Arm	24 Dual Arm	24 Dual Arm
Tool to tool	10 sec.	2.5 sec.	2.5 sec.	2.5 sec.	2.5 sec.	2.5 sec.
Max. tool dia.	5.9" (150mm)	7.08" (180mm)	7.08" (180mm)	7.08" (180mm)	7.08" (180mm)	9.8" (250mm)
Max. tool length	7.87" (200mm)	11.81" (300mm)	11.81" (300mm)	11.81" (300mm)	11.81" (300mm)	11.81" (300mm)
Max. tool weight	13.2 lbs. (6kg)	17.6 lbs. (8kg)	17.6 lbs. (8kg)	17.6 lbs. (8kg)	17.6 lbs. (8kg)	33 lbs. (15kg)
Tool shank	CAT #40	CAT #40	CAT #40	CAT #40	CAT #40	CAT #50
Miscellaneous						
Coolant pump	1 hp (.75kw)	1 hp (.75kw)	1 hp (.75kw)	1 hp (.75kw)	1 hp (.75kw)	1 hp (.75kw)
X/Y/Z axes servo motor	2.5 hp (2kw)	2.5 hp (2kw)	2.5 hp (2kw)	4 hp (3kw)	4 hp (3kw)	6 hp (4.5kw)
Air pressure	70 psi	70 psi	85 psi	85 psi	85 psi	99.5 psi
Lubrication	Auto Oil	Auto Oil	Auto Oil	Auto Oil	Auto Oil	Auto Oil
Total KVA (3 axes/4 axes)	15/20 KVA	20/25 KVA	25/30 KVA	25/30 KVA	30/30 KVA	35/40 KVA
Machine Accuracy						
Positioning	±.0002" (.005mm)	±.0002" (.005mm)	±.0002" (.005mm)	±.0002" (.005mm)	±.0002" (.005mm)	±.0002" (.005mm)
Repeatability	±.0001" (.0025mm)	±.0001" (.0025mm)	±.0001" (.0025mm)	±.0001" (.0025mm)	±.0001" (.0025mm)	±.0001" (.0025mm)
Weight						
Weight Linear Ways	4,850 lbs (2200kg)	8,800 lbs (4000kg)	10,582 lbs (4800kg)	11,023 lbs (5000kg)	-	-
Weight Square Ways	-	8,800 lbs (4000kg)	11,023 lbs (5000kg)	11,464 lbs (5200kg)	15,873 lbs (7200kg)	30,864 (14000kg)

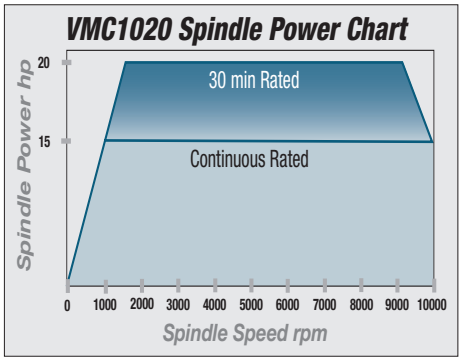
*Available with CAT #40 or BT40 belt-drive spindle. (Specifications and design are subject to change without notice or obligation.)

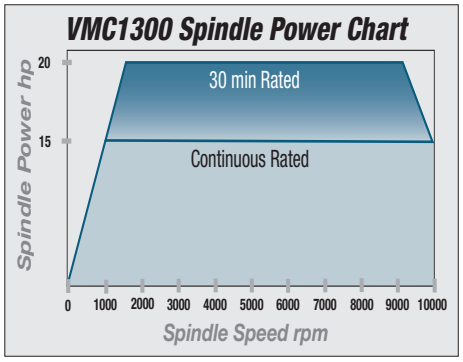
Specification & Power Charts

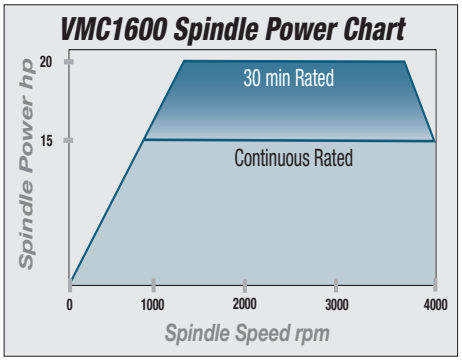










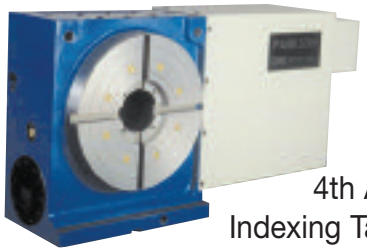


Optional Equipment

A wide range of optional equipment is available to customize your Storm VMC into the exact machine for your needs

Belt Type Chip Conveyor

Screw Type Chip Auger



4th Axis Indexing Table

- 4th Axis Interface, Motor & Drive
- Chip Flushing System (Factory Installed)
- Thru Spindle Coolant (Factory Installed)
- Spindle Oil Coolant for VNC500 & VMC1600 (Factory Installed)
- Automatic Power Off (Factory Installed)
- Electrical Cabinet Air Conditioning
- Auto Door Open and Close (Factory Installed)
- Additional Pull Studs for 12, 16 or 24 Tools ATC
- Pallet Loader
- Tooling Package
- 12,000 rpm Spindle with Oil Cooler (Factory Installed)
- ZF Gear Box, 8000 rpm Machines (Factory Installed)
- Chain Type 32 Tool ATC for VMC1020, VMC1300 & VMC1600 (Factory Installed)
- Belt Type Chip Conveyor for VMC 610 and larger
- Screw Type Chip Augor for VMC1600
- 6000 rpm Spindle for VMC1600 (Factory Installed)
- Full Guarding for VMC1600 (Factory Installed)

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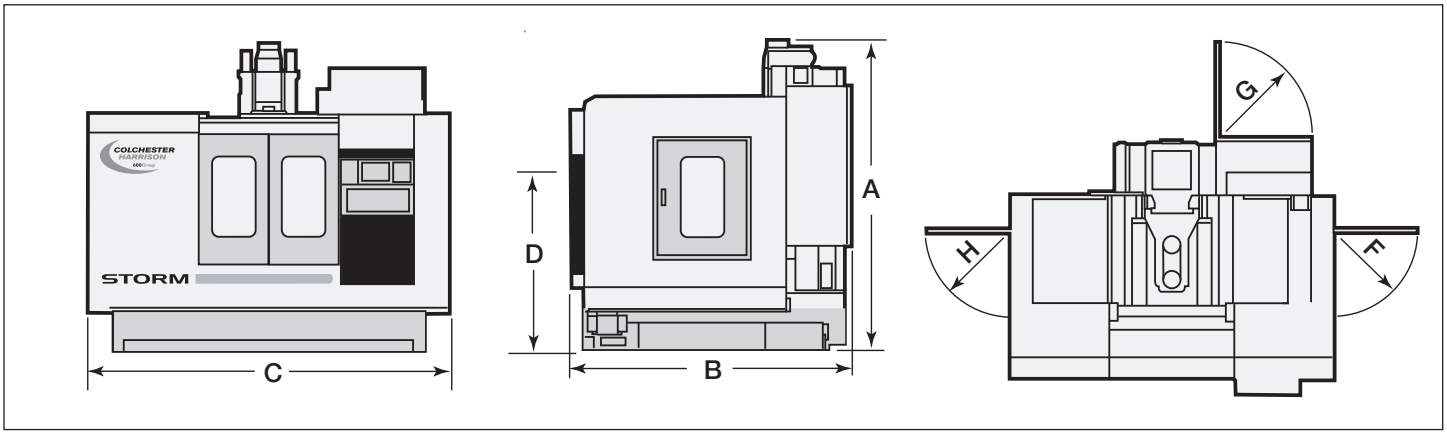
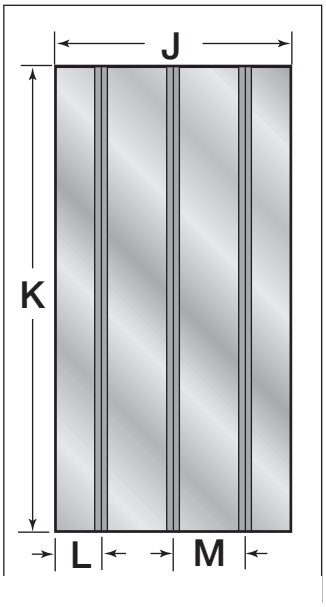
Machine Dimensions



Model	VMC500	VMC610	VMC850	VMC1020	VMC1300	VMC1600*
Height **A**	96" (2440mm)	97" (2475mm)	112" (2840mm)	112" (2840mm)	113" (2878mm)	126" (3210mm)
Width **B**	91" (2305mm)	96" (2436mm)	87" (2210mm)	87" (2210mm)	110" (2790mm)	123" (3250mm)
Length **C**	76" (2000mm)	85" (2160mm)	115" (2900mm)	115" (2900mm)	126" (3200mm)	175" (4400mm)
Control Ht. **D**	63" (1600mm)	63" (1600mm)	63" (1600mm)	63" (1600mm)	63" (1600mm)	63" (1600mm)
F	33" (831mm)	38" (851mm)	28" (708mm)	28" (708mm)	28" (708mm)	36" (913mm)
G	17" (433mm)	17" (433mm)	33" (831mm)	33" (831mm)	33" (831mm)	39 (981mm)
H	26" (653mm)	26" (653mm)	28" (708mm)	28" (708mm)	28" (708mm)	36" (913mm)
Table						
J	12.6" (320mm)	17.7" (450mm)	19.7" (500mm)	19.7" (500mm)	25.5" (650mm)	33.2" (845mm)
K	23.6" (600mm)	31.5" (800mm)	39.4" (1000mm)	47.2" (1200mm)	59" (1500mm)	70.8" (1800mm)
L	1.96" (50mm)	4.9" (125mm)	1.96 (50mm)	1.96 (50mm)	3.9" (100mm)	2.5" (65mm)
M	3.94" (100mm)	3.94" (100mm)	3.94" (100mm)	3.94" (100mm)	3.94" (100mm)	5.9" (150mm)
No. of T-slots	3	3	5	5	5	5



Specifications and design are subject to change without notice or obligation.
*Dimensions with optional guarding

Model	Guideway Type	Model	Guideway Type
VMC500L	Linear Ways	**VMC1020L**	Linear Ways
VMC610L	Linear Ways	**VMC1020S**	Square Ways
VMC610S	Square Ways	**VMC1300S**	Square Ways
VMC850L	Linear Ways	**VMC1600S**	Square Ways
VMC850S	Square Ways		

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Revised 5/2/07