



# Closed Bridge Type High Speed Vertical Machining Center

The Design Leader in Bridge-Type VMCs

# QM Series

Patent No. : M270868



# A

## **ALL NEW Closed Bridge-type High Speed Vertical Machining Center**

Sure, there are many companies that manufacture bridge type vertical machining centers but there is just one, Sure First, that integrates so many exclusive or patented features into theirs.





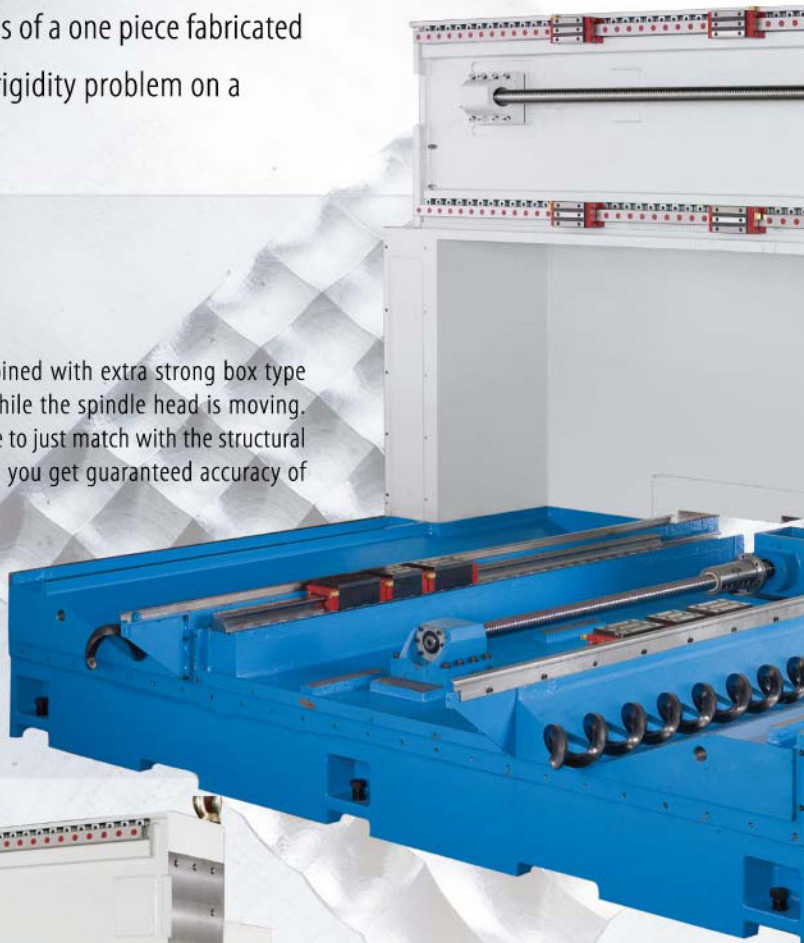
# A Revolutionary New Design Concept!

## Innovative Closed Bridge-type Construction

Now, the Sure First QM Series High Speed Vertical Machining Center, the ultimate in VMC construction, features greater rigidity and stability than that of any competitive models. Its all new closed bridge construction is of a one piece fabricated design that thoroughly solves the rigidity problem on a conventional VMC.

### No Rigidity Displacement

The closed-bridge type construction, combined with extra strong box type columns eliminate rigidity displacement while the spindle head is moving. These unique features permit the cutting line to just match with the structural rigidity center line at all times. As a result, you get guaranteed accuracy of parts or mould machining.



**5 Times the Structural Rigidity of a C-type VMC**  
**3-5 Times the Servo Rigidity of a C-type VMC**

To compare with any other competitive models feature by feature, you'll see that the Sure First QM Series VMC has no equal.

## Here's Why:

- Innovative closed bridge type construction.
- Table fully supported across the base.
- Extra heavy base weight.
- No "rigidity displacement" while the spindle head is moving.
- Uniquely designed "counter-draw" on X, Z axis to achieve the best accuracy and stability.



## World Class Machining Solutions

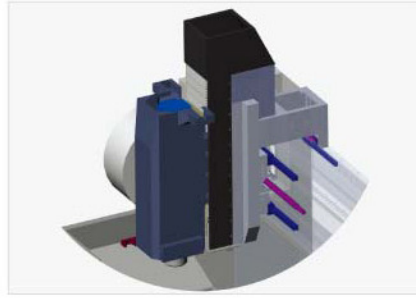
Designed by Sure First!

Manufactured for the Future!

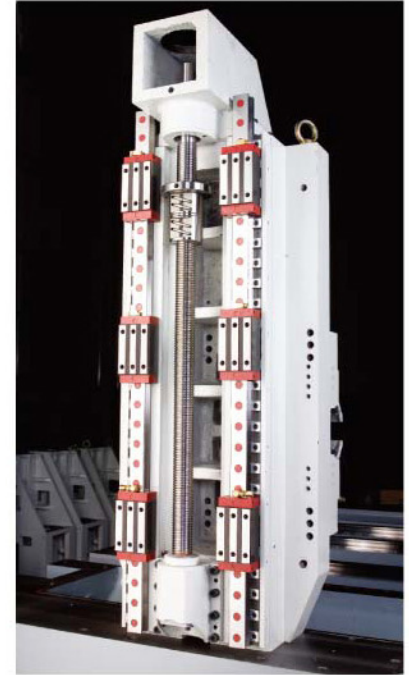
- Y-axis loading capacity **3.5-6** times up.
- 3 axes rigidity **50%** up. Vibration **50%** down.
- Axis thrust force increased by **75%**.
- Rapid traverse up to **36m/min**.
- Spindle accuracy meets German and Swiss standards.
- Innovative spindle support design to absolutely eliminate "overhang" problems.







**Special Counter-draw on X, Z-axis Stability Guaranteed**  
 The linear ways on X and Z axes are of a "counter-draw design," combined with 3 linear ways on the X-axis to achieve the best possible accuracy and stability.



**Exclusive Base Width Design Unique in the World!**

MODEL	BASE WIDTH
QM765	1310mm
QM1065	1660mm
QM1586	2260mm

**Unmatched Base Width**

Sure First HSMCs feature the widest bed width, unmatched by any competitive models in the world. It provides full support to the entire travel of the table, assuring machining accuracy for extra long parts even longer than the X-axis travel.

**3-ton Base Twice the Table loading Capacity of C-type**

The extra massive 3-ton base weight guarantees the maximum stability and rigidity for high speed precision machining. This combines with an extra strong box-type column structure for greatly increasing rigidity during cutting and twice the table loading capacity of conventional C-type VMCs.

# R

## Ruggedly Constructed Through the Optimal Structure Design Concepts from Sure First!

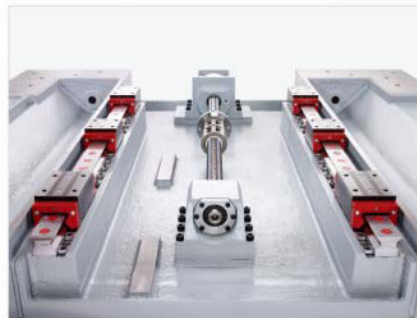


### Compact Construction with Great Working Space

- The Sure First QM series is compactly constructed for a small footprint, yet with great working space.
- Accessible table combined with shortened distance for tool loading/unloading upgrades operational convenience.

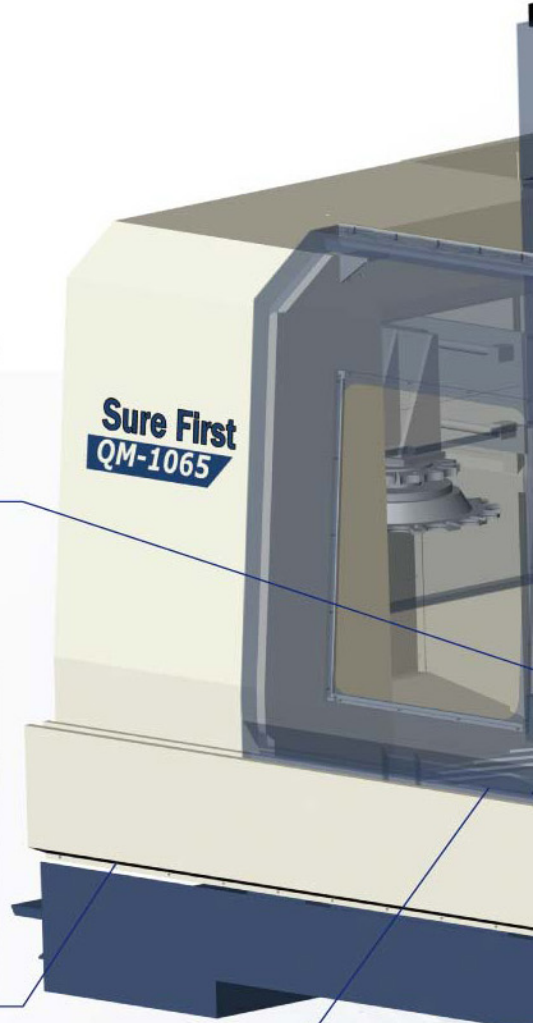
- Extra Heavy Duty SCHNEEBERGER Roller Type Linear Ways on X-Y-Z axes
- Loading Capacity 3.5~6 Times Up

The X-Y-Z axes employ Swiss SCHNEEBERGER extra heavy duty roller-type linear guideways with 3 blocks on each way. These outstanding linear ways and blocks designs provide static load COKN up to 287.0, which is 3.5-6 times more than that of the 46.8-81.5 provided by conventional VMCs. The result is maximum stability on Y-axis travel.



### Precision Ball Screws

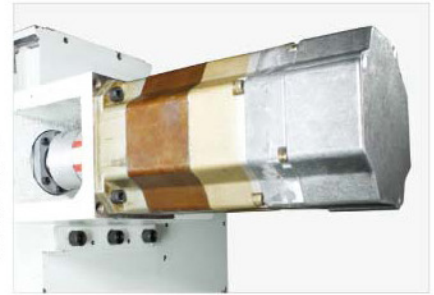
- Class C3 high precision pretensioned ball screws incorporated with double nuts assure high transmission accuracy.
- Motor end and ball screws are supported by 3 pairs of oversized bearings for extremely form support.
- Various pitches of ball screws to choose from 8mm pitch is suggested for mold machining and 12mm is suggested for part machining.





### Axis Thrust Force Up 75%

The axial servomotors are upgraded with 2.5kW~3.5kW, providing 75% higher thrust force than that of conventional models. This feature enables the machine to handle high speed precision machining and heavy cutting with ease.

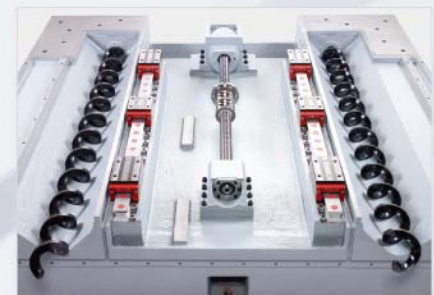
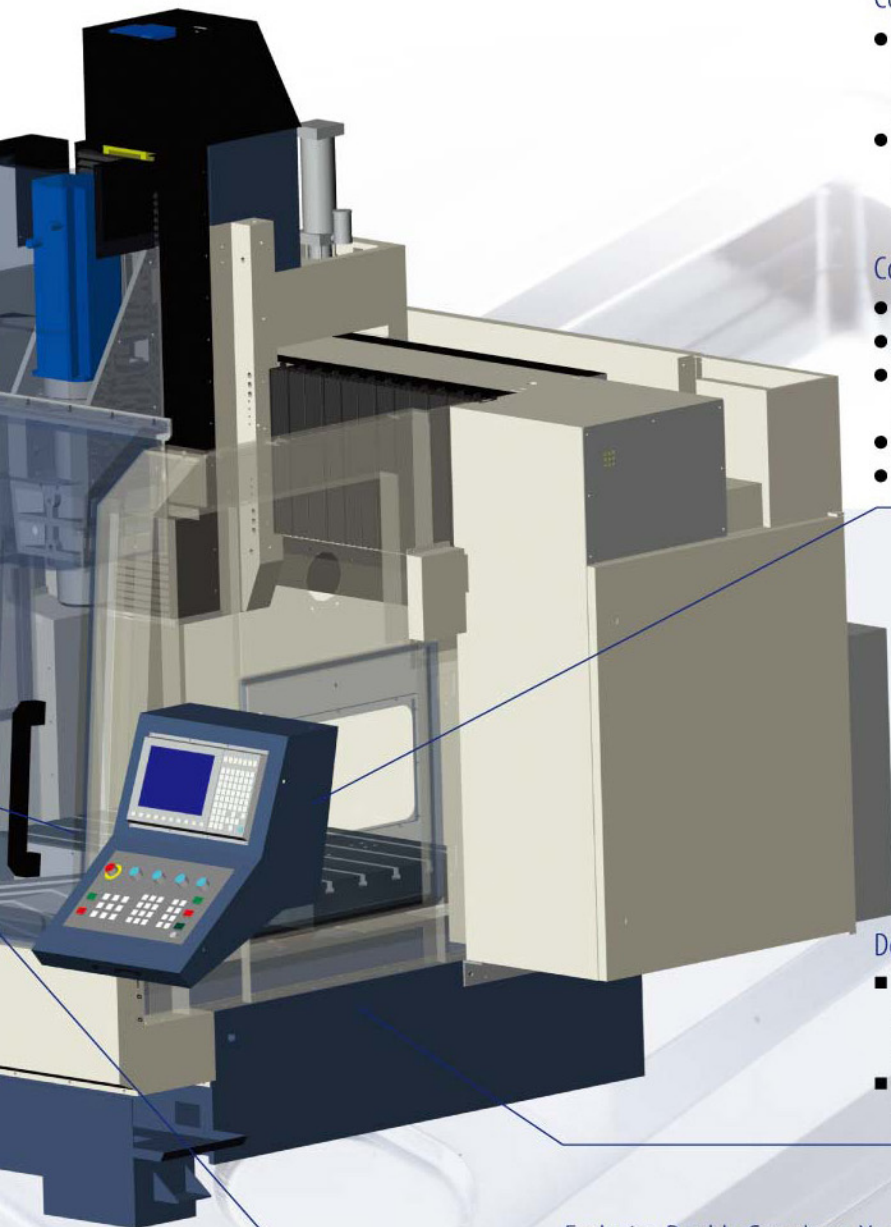


### Control Choices of Various CNC

- The control panel is of an ergonomical design and easy to access for the operator.
- A 110V socket is provided in the control box for use online with DNC.

### Controllers

- PC Based
- Mitsubishi 64S / 65M
- Siemens 810D / 840D  
Siemens 802 SL
- Fanuc 18iM / 0iM
- Heidenhain iTNC 530



### Double Chip Augers

- Two chip augers at both sides of the base deliver chips to the machine front. The chip augers are incorporated with a powerful coolant flushing device to handle chip removal efficiently.
- Chip augers and coolant flushing device are standard equipment for all models.

### Exclusive Double Guards on Y-axis

The only VMC designed with double chip guards on Y-axis. The external guard is a steel telescopic type for preventing chips from entering into the transmission system. The internal guard is a flexible bellow type, permitting oil and coolant to completely flow into base channels. It provides a thorough oil/coolant separation effect. The Y-axis transmission system is never damaged by coolant and saves on handling costs.

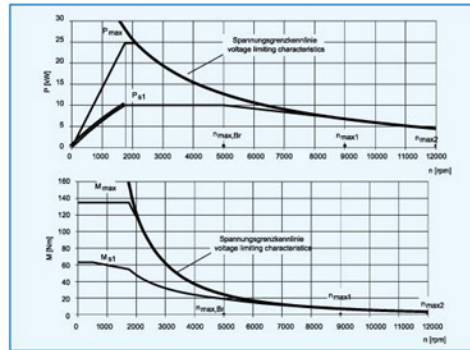


# Q

## Quality Features to Maximize Performance

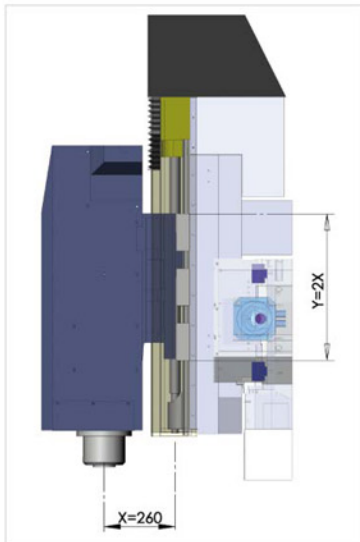
### 12000~15000 RPM

- The direct drive spindle with a wide speed range from 12,000 to 15,000 rpm make the machine ideal for versatile machining applications.
- Direct drive spindle provides full power transmission.
- Spindle accuracy meets German and Swiss standards, providing the best extension for CTS application.



### 15 HP Direct Drive Spindle (option)

All models of Sure First QM series are directly driven by a powerful motor (BT40 and HSK63A spindle).



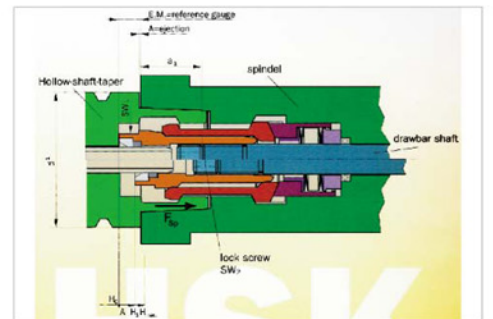
### 1.5 Spindle Support Ratio A Design Breakthrough

Sure First QM Series features a unique 1.5 spindle support ratio in Taiwan. It is specially designed to fully eliminate overhang problems during cutting. This exclusive feature permits transmission efficiency of the spindle motor to a maximum and results in superior cutting rigidity.



### 16 Tools Carousel-type Magazine (Standard)

- The carousel-type magazine provides various tool numbers to choose from.
- Choice of tool shank BT40 or BT50.(OPT)



### High Precision Tool Clamping

The high precision spindle draw bar with 4 clamping jaws (for 8,000-15,000 rpm spindle) and HSK63A spindle (for 24,000 rpm assure high accuracy of tool clamping).



### 24, 30 Tool Arm-type Magazine (Optional)

- The arm-type magazine provides 24 or 30 tools to choose from.
- Tool change is quickly accomplished in only 2.5 seconds (tool to tool).



### Coolant Jet Around Spindle

The coolant jet around spindle is designed to prevent conventional coolant nozzle from interfering with jig and fixture.



When equipped with our PATENTED coolant curtain and powerful dust suction device, the QM series is applicable for graphite machining.



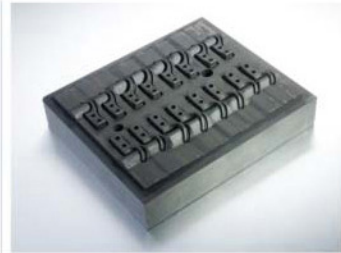
## Beautified Back Guard

The back guard is carefully designed for an elegant outlook. All models in the Sure First QM series can be loaded in a 40 feet HQ container for saving on sea freights.



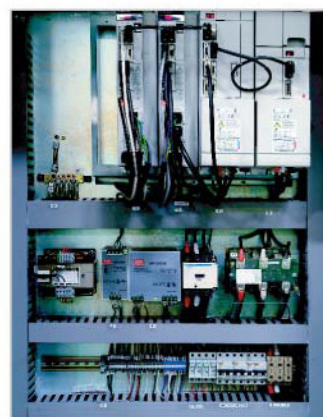
## Oversized Coolant Tank

Designed for providing sufficient coolant to cutting area and extending tool service life.



## Heat Exchanger for Electrical Cabinet

The electrical cabinet is equipped with a high efficiency heat exchanger that ensures a constant temperature in the electrical cabinet.



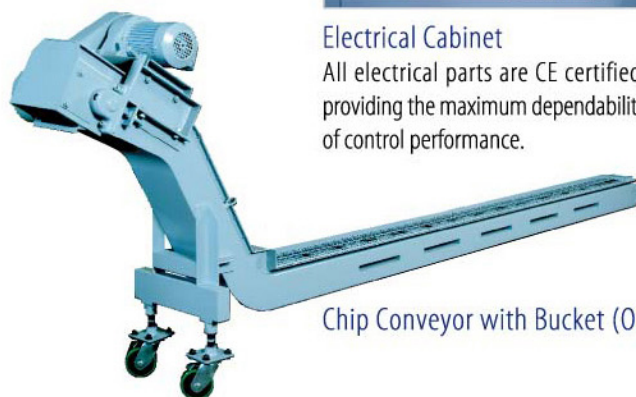
## Electrical Cabinet

All electrical parts are CE certified, providing the maximum dependability of control performance.



## Centralized Lubrication System

The pressure-type centralized lubrication system with 4-liter oil box capacity is controlled by PLC for positive lubrication effect.



Chip Conveyor with Bucket (Optional)

# QM 765 / 1065 / 1585 / 1836 / 2236 SPECIFICATIONS

MODEL	UNIT	QM-765		QM-1065	
X axis travel	mm(in)	700(27 1/2)		1000(39 3/8)	
Y axis travel	mm(in)	600(23 5/8)		600(23 5/8)	
Z axis travel	mm(in)	500(19 11/16)		500(19 11/16)	
Distance between working table & spindle nose	mm(in)	235~735(9 1/4~28 15/16)		235~735(9 1/4 x28 15/16)	
Table dimension (XxY)	mm(in)	850x600(33 3/8 x23 5/8)		1200x600(47 1/4 x23 5/8)	
T slot W1xH1xW2xH2	mm(in)	30x12x18x18		30x12 x18x18	
Taper of spindle nose		HSK-A 63	BT-40	HSK-A 63	BT-40
Spindle speeds	r.p.m.	24000	12000/15000	24000	12000/15000
Maximum tool diameter	mm(in)	60(2 3/8)	80(3 1/8)	60(2 3/8)	80(3 1/8)
Maximum tool weight	kg	4	7	4	7
Maximum table load	kg	800		1200	
Spindle motor cont. / 30min. rated	kw / HP	● HSK-A63≐15/19KW(20/25HP)			
Cutting feed rate (Repaid Travel)	mm/min(m/min)				
No. of tools (ATC)	pcs				
Power consumption	KVA				
Air source	kg/cm <sup>2</sup>				
Machine dimension (WxDxH)	mm(in)	2800x2400x3100 (110 <sup>3/16</sup> x94 <sup>7/16</sup> x122)		3150x2400x3100 (124 x94 <sup>7/16</sup> x122)	
Machine weight	≐ kgs(lbs)	≐ 7500(16500)		≐ 9000(19800)	
Controller					

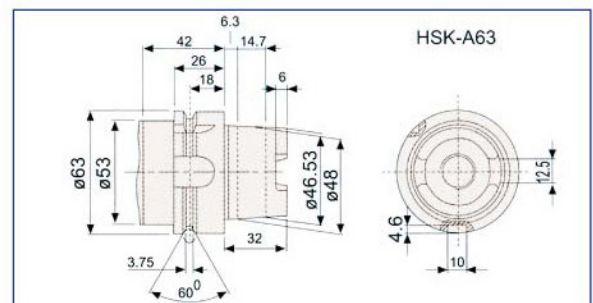
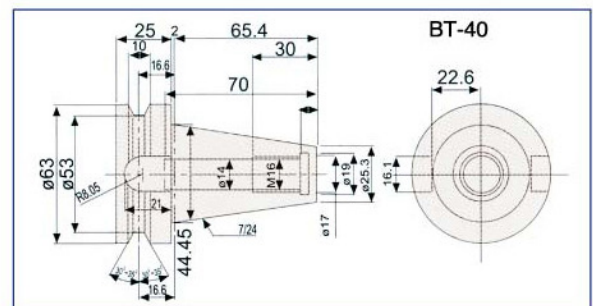
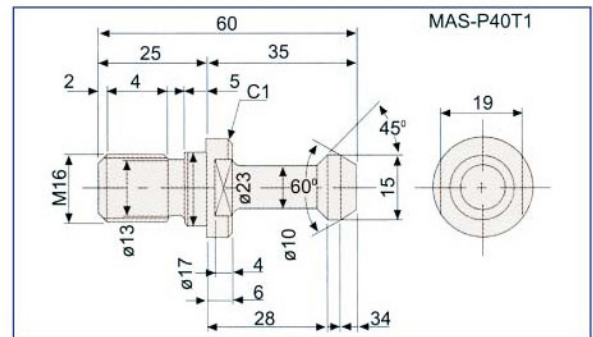
## STANDARD ACCESSORIES

- ⊙ Spindle oil cooler
- ⊙ Umbrella type 16 tools ATC
- ⊙ Safety guard
- ⊙ Heat exchanger
- ⊙ Automatic power off system
- ⊙ Spindle air blast while tool unclamping
- ⊙ Work table & T nut
- ⊙ Work lamp
- ⊙ Indicating lamp
- ⊙ Tool box & tools

## OPTIONAL ACCESSORIES

- ⊙ Swing arms ATC-24 tools (cylindrical cam & sensor type)
- ⊙ Variable spindle speed required from 10000 to 24000RPM
- ⊙ Spindle with HSK63A Interface (Spindle and standard ATC)
- ⊙ European plate& life-up type chip conveyor
- ⊙ Extra air/coolant gun connection
- ⊙ 4th axis rotary table Technology (RTT)
- ⊙ Coolant through spindle packages-20 bars (CTS system)
- ⊙ Coolant through tool adapter package for deep hole drill
- ⊙ Automatic tool length measurement
- ⊙ Digital servo motor & driver for X,Y, &Z axes enlarge
- ⊙ Optical linear encoder
- ⊙ Oil skimmer

## TOOL HOLDER SPECIFICATION





QM-1585		QM-1836		QM-2236	
1500(59 1/16)		1800(70 7/8)		2200(86 5/8)	
800(31 1/2)		1300(51 3/16)		1300(51 3/16)	
500(19 11/16)		600(23 5/8)		600(23 5/8)	
235~735(9 1/4 x 28 15/16)		200~700(7 1/4 ~ 27 1/2)		150~750(6 1/8 x 29 1/2)	
1700x800(66 7/8 x 31 1/2)		1800x1200(70 7/8 x 47 1/4)		2200x1200(86 5/8 x 47 1/4)	
30x12x18x18		30x12x18x18		30x12x18x18	
HSK-A 63	BT-40	HSK-A 63	BT-40/BT-50	HSK-A 63	BT-40/BT-50
24000	12000/15000	24000	12000/15000	24000	12000/15000
60(2 3/8)	80(3 1/8)	60(2 3/8)	80(3 1/8)	60(2 3/8)	80(3 1/8)
4	7	4	7	4	7
1500		2000		2500	

• BT-40 FANUC MITSUBISHI ≙ 7.5/11KW (10 / 14.7HP) SIEMENS ≙ 9/12KW (12/16HP) • BT-50 OPTIONAL

1~10000(24/24/15)

16

20~40

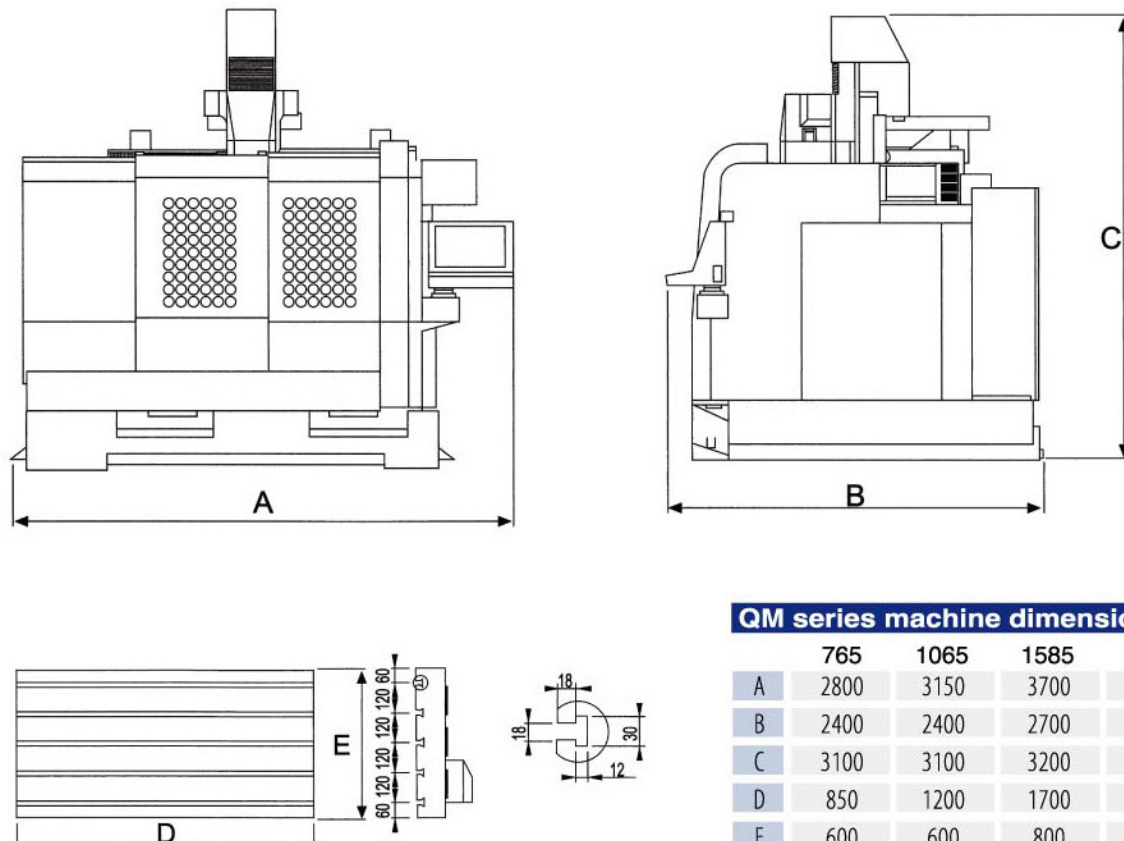
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3700x2700x3200 (145 <sup>5/8</sup> x 110 <sup>7/10</sup> x 126)	3700x3400x3300 (145 <sup>5/8</sup> x 133 <sup>7/8</sup> x 129 <sup>15/16</sup> )	4560x3400x3300 (179 <sup>1/2</sup> x 133 <sup>7/8</sup> x 129 <sup>15/16</sup> )
≙ 12500(27500)	≙ 22000(48400)	≙ 25000(55000)

Simens / Hedenhain / Mitsubishi / Fanuc / SELCA / PC-BASED

\*All specifications and design are subject to change without prior notice.

## MACHINE DIMENSION



### QM series machine dimensions

	765	1065	1585	1836	2236
A	2800	3150	3700	3700	4560
B	2400	2400	2700	3400	3400
C	3100	3100	3200	3300	3300
D	850	1200	1700	1800	2200
E	600	600	800	1200	1200



**Sure First CNC** Since 1974



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