



## M Series

Linear Way Vertical Machining Centers

### BUFFALO MACHINERY CO., LTD.

56, Lane 318, Desheng Road, Daya District,  
Taichung City 428-46, Taiwan  
P.O. Box 320, Daya, Taichung City, Taiwan  
Tel: +886-4-25 60 37 59 Fax: +886-4-25 60 37 69  
E-mail: info@mail.buffalo.com.tw  
[www.buffalo-machinery.com](http://www.buffalo-machinery.com)



### MICROCUT EUROPE

Ulica hrvatskih branitelja 3  
10430 Samobor CROATIA  
Tel. +385 1 3141 515  
Fax. +385 1 3141 516  
info@microcut-europe.eu  
[www.microcut-europe.eu](http://www.microcut-europe.eu)



# M Series

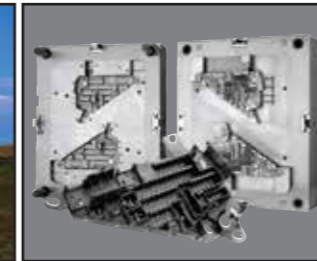
## Vertical Machining Center

MICROCUT linear way VMC is designed and built to meet the ever-increasing demands for powerful and reliable machines with high efficiency, high accuracy machining performance. MICROCUT M series uses roller type linear guideways, a high-precision main spindle with thermal expansion stability and a robust and compact structure design with high durability. Depending on machining needs, various travel lengths with great capacity satisfy all demands.

## High-performance solutions for demanding applications



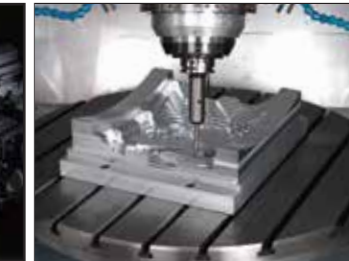
Green Energy Industry



Die & Mold Industry



Automobile Industry



Mechanical Engineering



### M760

900 x 410 mm Table  
XYZ: 760 x 440 x 460 mm  
Table load: 350 kg  
Spindle:  
10000 rpm(std);  
12000/15000 rpm(opt)



### M800

900 x 520 mm Table  
XYZ: 800 x 500 x 500 mm  
Table load: 450 kg  
Spindle: 10000 rpm(std);  
12000/15000 rpm(opt)



### M1050

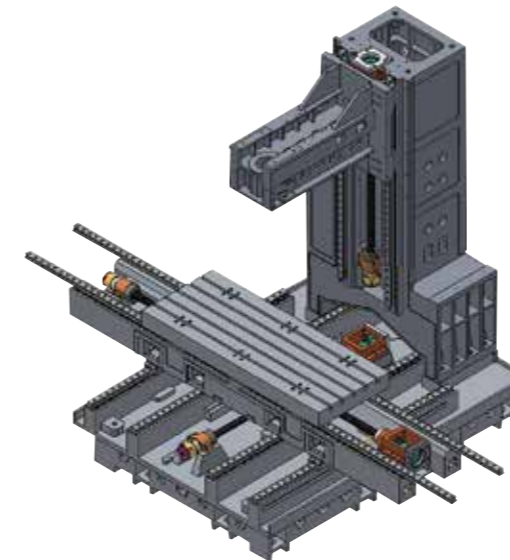
1200 x 600 mm Table  
XYZ: 1050 x 600 x 600 mm  
Table load: 800 kg  
Spindle: 10000 rpm(std);  
12000/15000 rpm(opt)

### M1200

1400 x 710 mm Table  
XYZ: 1200 x 730 x 650 mm  
Table load: 1000 kg  
Spindle: 10000 rpm(std);  
12000/15000 rpm(opt)

### M1200

1400 x 710 mm Table  
XYZ: 1200 x 730 x 650 mm  
Table load: 1000 kg  
Spindle: 10000 rpm(std);  
12000/15000 rpm(opt)



### M1400

1500 x 600 mm Table  
XYZ: 1400 x 800 x 800 mm  
Table load: 1000 kg  
Spindle: 10000 rpm(std); 12000/15000 rpm(opt)

### M1600

1700 x 600 mm Table  
XYZ: 1600 x 850 x 850 mm  
Table load: 1200 kg  
Spindle: 10000 rpm(std); 12000/15000 rpm(opt)

## Rigid Construction

The tool magazine is assembled in structural ribs that are directly supported to the ground, thus increasing tool magazine size without compromising column rigidity.



M1050

### One-piece Design Headstock

Offering high stability and capacity for heavy duty cutting

### Optimal Rigidity

The major structural component is made of Meehanite cast iron, which is heat treated to relieve stress, and to assure rigidity and accuracy

### Rib Enhancement

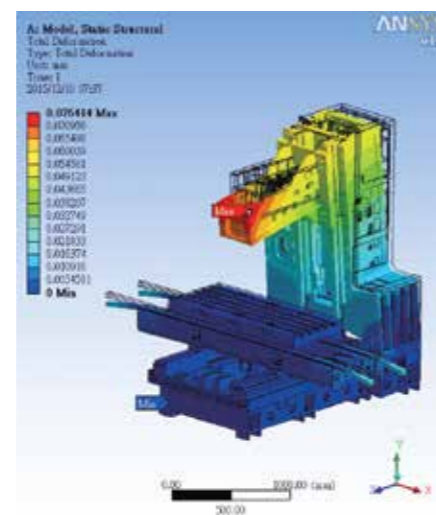
All casting is reinforced with heavy ribs to resist vibration. The base incorporates a durable ribbed box design for maximum structural loading.

### Structural Optimization

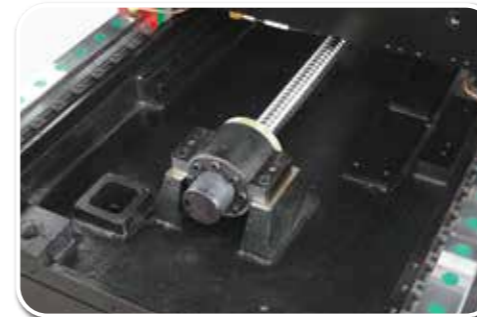
All structural components and whole machine frame of M series are analyzed by ANSYS mechanical system and Finite Element Method (FEM) to ensure structural optimization.

### Triangular Support Base

The triangular wide-distance foundation provides solid support for operation.



## Motion Control



### Ballscrew

#### C3 Class Pretensioned Ballscrew

Class C3 ballscrews are pretensioned on each axis to reduce heat deformation for high accuracy and repeatability.

#### Direct-coupled Servo Ballscrew Motor

Direct-coupled servo motor can enhance positioning accuracy and provide better contouring and threading



### Guideway

#### High Precision Linear Guideways

Installed for all axes to ensure high load carrying capacity and rigidity with high running and positional accuracy as well as low friction.



#### Ball Type linear Guideway

##### M760

The recirculation ball guideways for each axis are preloaded to provide zero clearance between the moving surfaces. This increases rigidity in all directions while providing higher accuracy and reliability

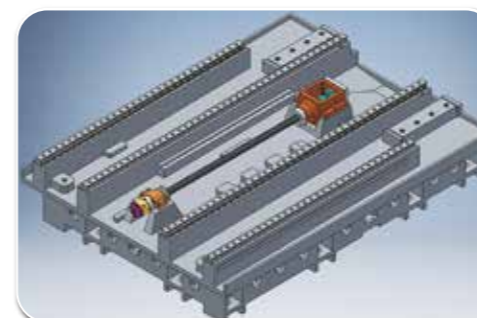
#### Roller Type Linear Guideway

##### M800/ M1050/ M1200/ M1400/ M1600

High rigidity steel on roller guideway provides high durability. Roller guideway on the three axes enables a fast feed rate of 30 m/min, ensuring smooth movement and accuracy.

##### M1400/M1600

The bigger models of M series mount 4 linear guideways in the Y axis to ensure the maximum rigidity with high loading capacity



## Spindle

M series is built with innovative machine concepts by using a wide range of high-performance spindles to present consistent precision performance and dynamic machining for various application.

Extensive options of spindle types and motor configuration are provided to meet industrial demands. The higher horsepower motors are also available to optimize the strength of machine for ultimate machining performance.



### • Belt Drive spindle

The standard 10,000 rpm belt drive spindle with ISO 40 taper.



### • In-line spindle (Opt)

The powerful direct drive of 12,000 and 15,000 rpm spindles with ISO 40 taper ensure high machining performances.

### Spindle Dynamic Balancing

The online dynamic balancing instrument offers calibration for spindle displacement, speed and acceleration of full speed range



### Spindle oil cooler (opt)

All machines are available to equip with spindle oil cooler to prevent thermal expansion effects and thermal deformation, allowing high accuracy machining, perfect finish and long lifetime of spindle as well.

### High rigidity Spindle

With preloaded angular-contact bearings throughout and with a large spacer between front bearings to improve radial thrust capacity. Cartridge spindle design makes maintenance easy.

## Tool Management



24T Arm type ATC



40T chain type ATC

### Fast and Reliable

#### Arm type ATC

*Providing stable and quicker tool selection*

It is activated by electric motor and driven by cam mechanism. The bi-direction tool selection is controlled by PLC software for quicker tool selection to reduce non-cutting time.

Standard

**Random arm type 24 Tools - all series**

Optional

**Carrousel type 16 Tools - M760**

**Random drum type 30 Tools - all series**

**Random chain type 40 Tools - M1050, M1200, M1400, M1600**

40 tool chain type magazine is accessible from back of machine for easy loading and unloading of tools while machine automatic operation.

## Coolant Through Spindle (opt)

Coolant through spindle uses high pressure pump to supply coolant through tool, cooling the cutting edge directly. This clears chips during deep-hole and tapping, increases tool life and allows higher cutting speeds.

#### CTS system options:

- CTS 20 bar built-in type
- CTS 20 bar separate type
- CTS 20 bar separate type with paper filter
- CTS 70 bar programmable separate type with paper filter



CTS 20 bar built-in type



CTS 20 bar separate type



CTS 20 bar separate type with paper filter

## Auxiliary Coolant Filter

Individual CTS tank is supplied with a re-usable 25-micron iron filter. Built-in system provides 25-micron filter. Both filters take away contamination and particles from the coolant before coolant is recycled through the coolant pump.

## Chip Removal

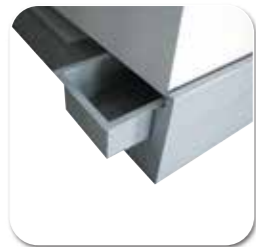
- Efficient Free-flow enclosure guard design
- Efficient chip conveyor carries out chips to save operation time(opt)
- Drainage outlet design
- Multiple chip flush solution offers easy chip clean
  - Rear wash down with high pressure pumps(opt)
  - Spindle with coolant nozzle



Multiple chip flush solution



Free-flow enclosure guard design



Chip drawer



Drainage outlet & Chip conveyor



Spindle with coolant nozzle



Coolant gun

## Control

### FANUC CONTROL



### FANUC 0iM CONTROL

- High reliable
- High-speed, high-precision and high-quality machining with AI contour control
- Machining condition selection function
- Enriched basic functions: rigid tapping, tool life management
- Advanced digital servo technology
- User friendly operation: Program editing, memory card, data server

### Excellent Operation

Integration operation & programming guidance with extremely simplified operations

#### FANUC MANUAL GUIDE 0i (std)

Integrated operation guidance for NC program

#### FANUC MANUAL GUIDE i (opt)

- Programming guidance
- With extremely simplified operations

### mitsubishi M80H CONTROL



### MITSUBISHI M80H CONTROL

- Panel-in type, a control unit with integrated display
- Windows-less display provides easy operability
- A touchscreen display as standard
- Smartphone-like intuitive touch operation
- View 3D model at any desired size for 3D graphic check, supporting both turning and milling

### FAGOR CONTROL



### FAGOR 8055i / 8065 CONTROL

- High speed machining, large look-ahead buffer and a high speed block processing time
- Graphically assisted set up user interfaces
- Preparation help on tool management
- Various programming languages provide improved operator ease & efficiency:
  - Wide range of ICON conversational cycles
  - ISO code languages

### HEIDENHAIN CONTROL



### HEIDENHAIN TNC 620

- Minimize setup times
- Graphic support in any situation
- Straight forward function keys for complex contours
- Programming contours unconventionally
- Field-proven cycles for recurring operations
- Smar T.NC the alternative operating mode
- Program off line
- Fast data transfer
- The iTNC programming station
- Setup, presetting and measuring with touch trigger

### SIEMENS CONTROL

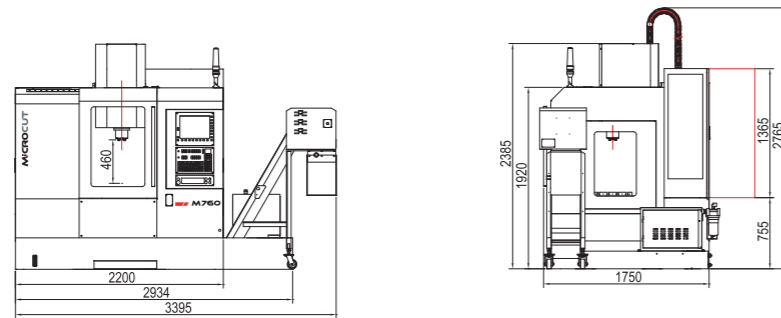


### SIEMENS SINUMERIK 828D CONTROL

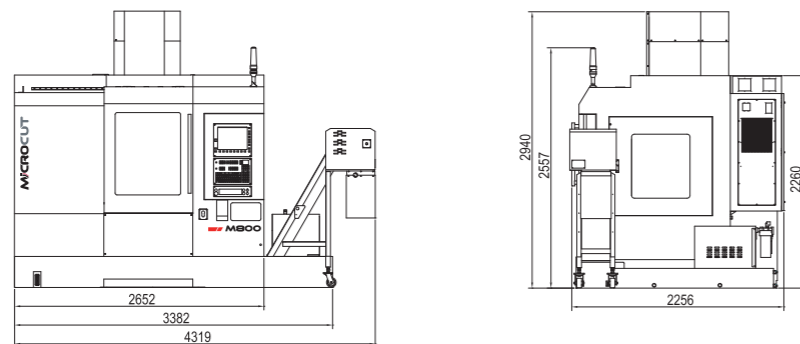
- Easy data exchange thanks to USB, CF and Ethernet interfaces on the panel
- ShopMill machining step programming
- SINUMERIK CNC programming language with high-level elements and program guide
- Online ISO dialect interpreter: maximum CNC program compatibility
- Advanced Surface: Innovative, high-performance CNC functions
- Animated Elements: Optimized operator guidance
- Easy input of pictographic languages directly via the CNC keyboard
- Easy Message: Integrated mobile radio modem for optimum process monitoring via mobile telephone.

# Layout Dimension

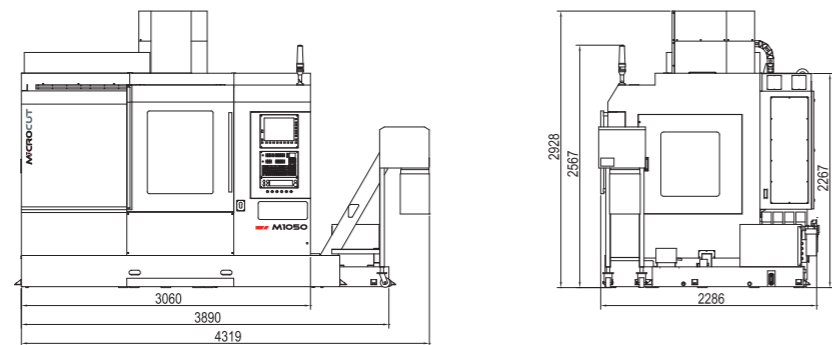
## M760



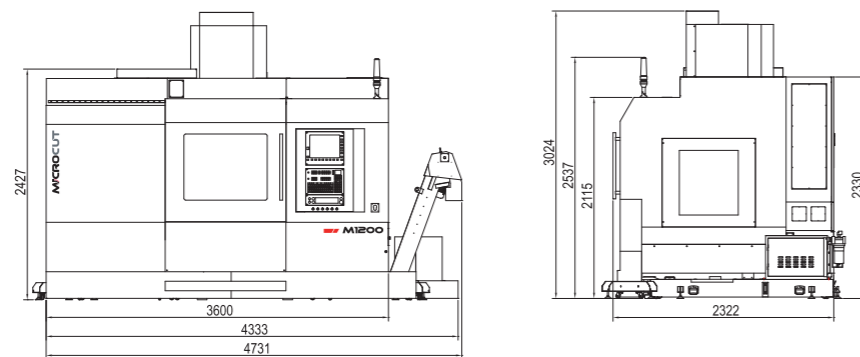
## M800



## M1050

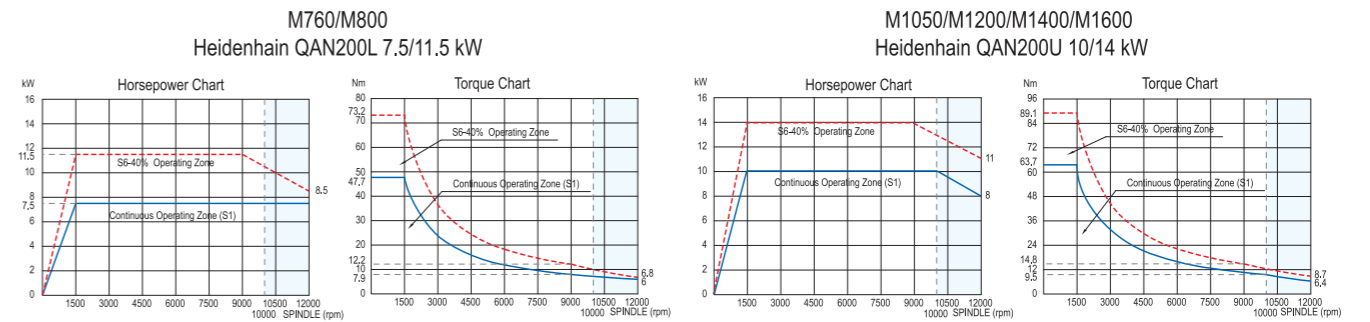


## M1200

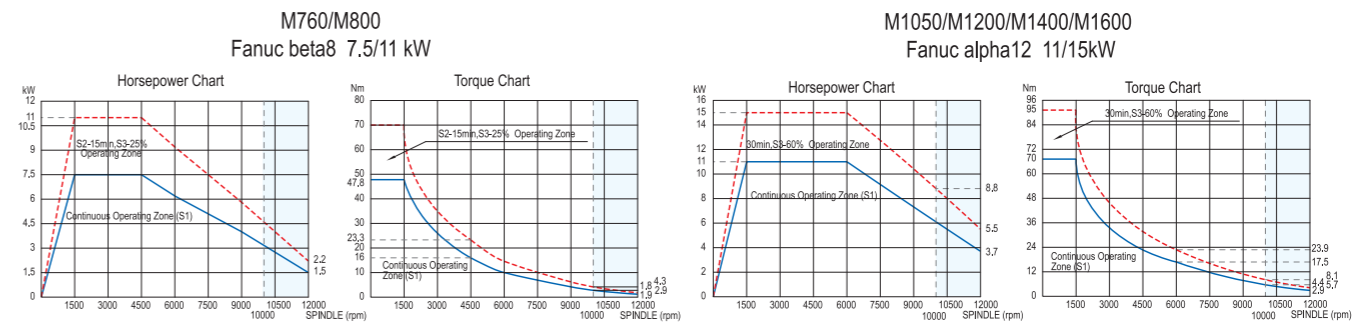


# Power & Torque Chart

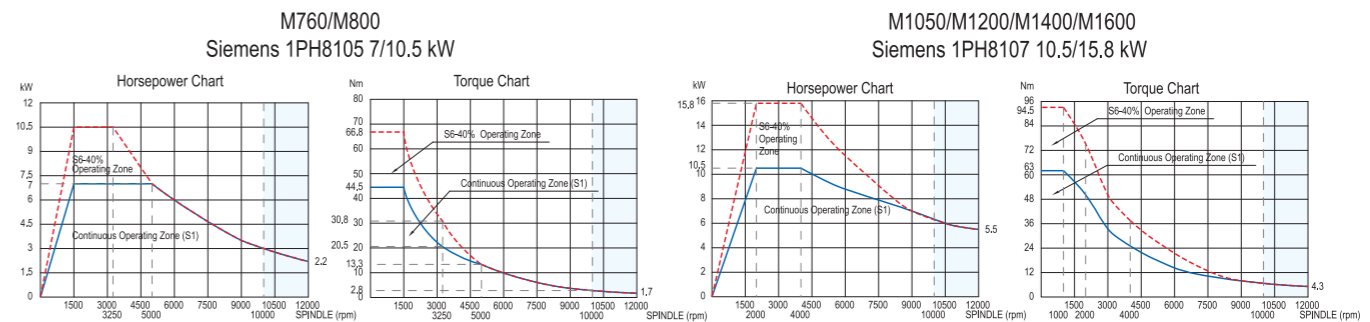
## Belt-drive Spindle 10000 rpm Heidenhain Control



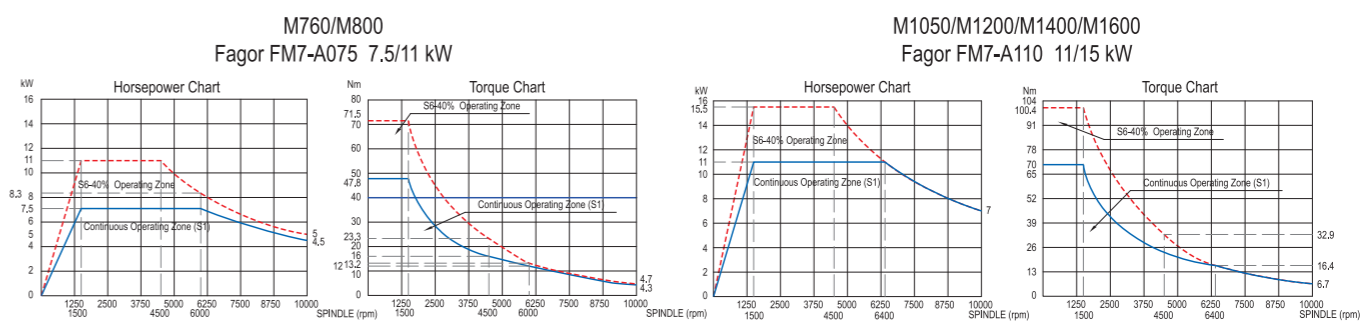
## Fanuc Control



## Siemens Control

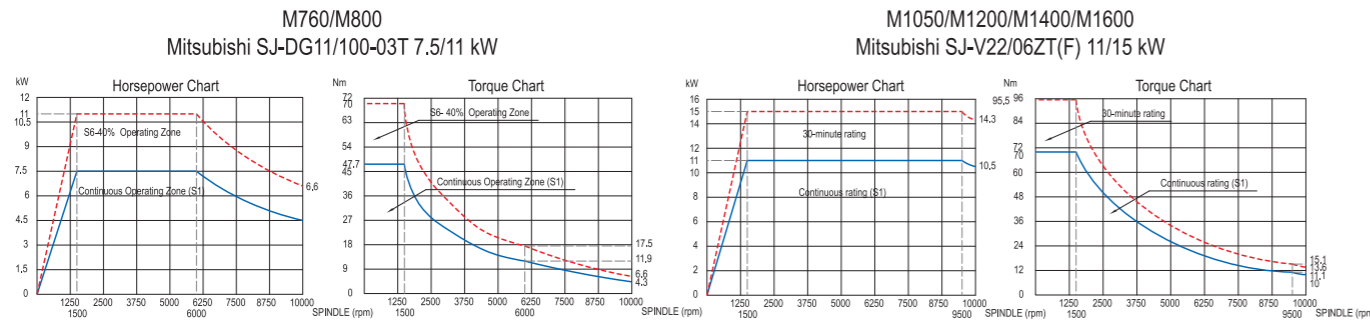


## Fagor Control

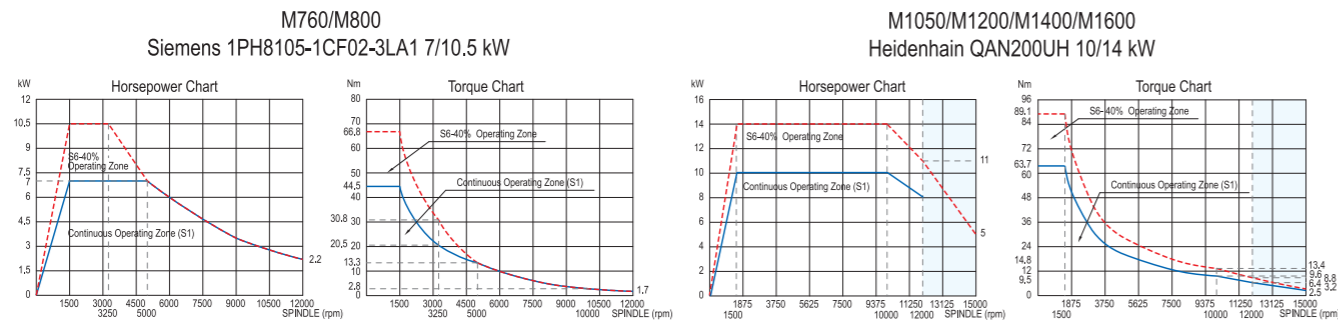


# Power & Torque Chart

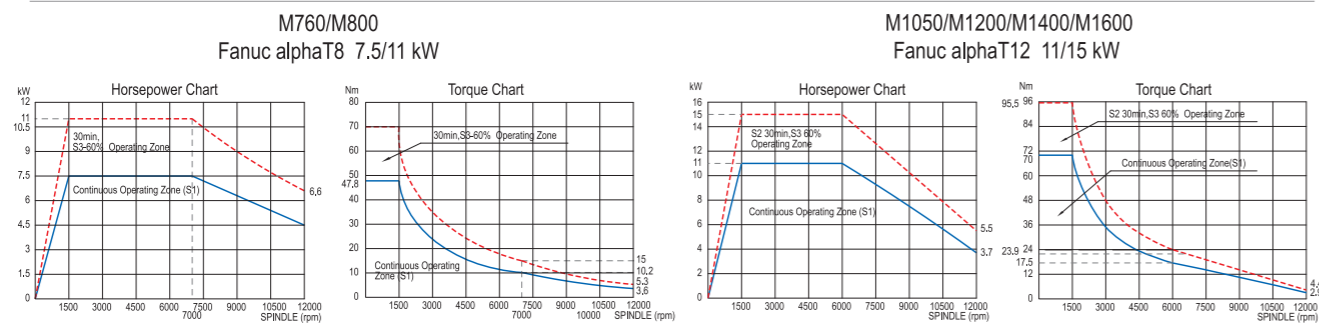
## Mitsubishi Control



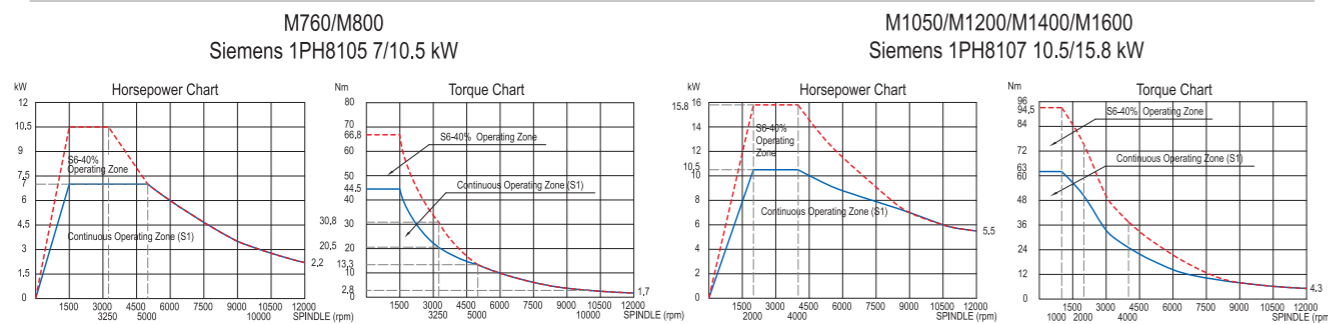
## In-line Spindle 12000 rpm Heidenhain Control



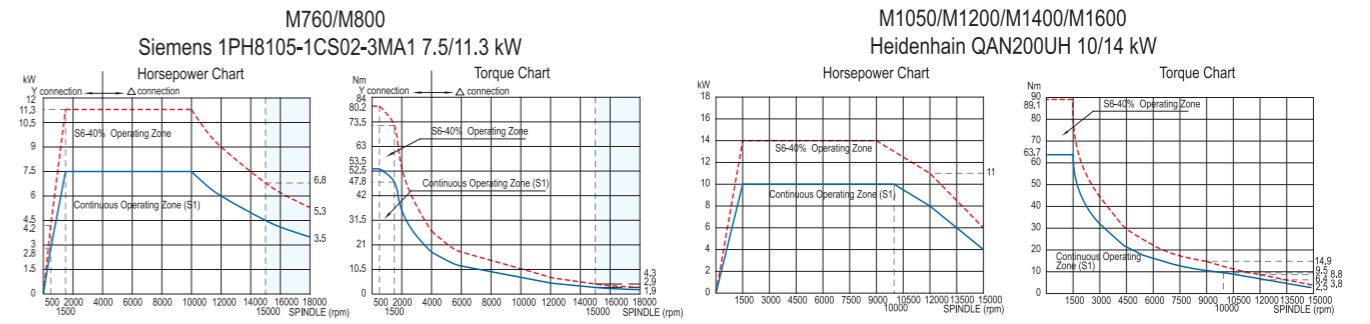
## Fanuc Control



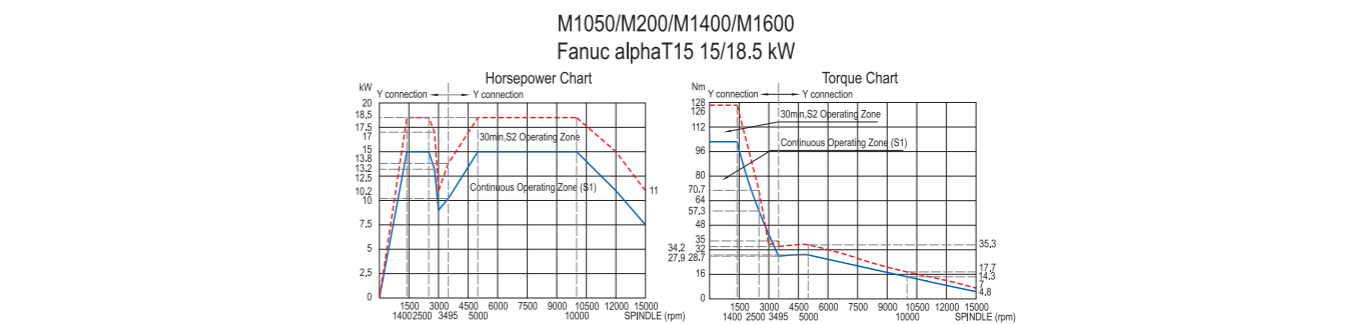
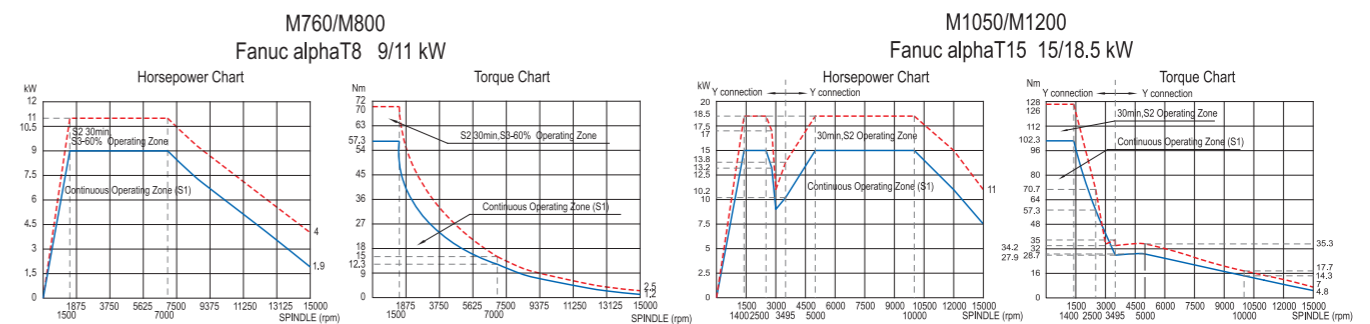
## Siemens Control



## In-line Spindle 15000 rpm Heidenhain Control



## Fanuc Control



# Technical data

Table	Unit	M760	M800	M1050	M1200	M1400	M1600
Table size	mm	900 x 410	900 x 520	1200 x 600	1400 x 710	1500 x 600	1700 x 600
Table loading	kg	350	450	800	1000	1000	1200
<b>Traval</b>							
X axis	mm	760	800	1050	1200	1400	1600
Y axis	mm	440	500	600	730	800	850
Z axis	mm	460	500	600	650	800	850
<b>Belt-driven Spindle 10000rpm (Std)</b>							
Spindle taper		ISO40	ISO40	ISO40	ISO40	ISO40	ISO40
Spindle motor output	kW	Heidenhain-7.5/11.5, Siemens-7/10.5, Fanuc-7.5/11, Fagor-7.5/11, Mitsubishi-7.5/11		Heidenhain-10/14, Siemens-10.5/15.8, Fanuc-11/15, Fagor-11/15, Mitsubishi-11/15			
<b>In-line Spindle 12000rpm (Opt)</b>							
Spindle taper		ISO40	ISO40	ISO40	ISO40	ISO40	ISO40
Spindle motor output	kW	Heidenhain-7/10.5, Siemens-7/10.5, Fanuc-7.5/11, Fagor-7.5/11, Mitsubishi-7.5/11		Heidenhain-10/14, Siemens-10.5/15.8, Fanuc-11/15, Fagor-11/15, Mitsubishi-11/22			
<b>In-line Spindle 15000rpm (Opt)</b>							
Spindle taper		ISO40	ISO40	ISO40	ISO40	ISO40	ISO40
Spindle motor output	kW	Heidenhain-7/10.5, Siemens-7/10.5, Fanuc-7.5/11, Fagor-7.5/11, Mitsubishi-7.5/11		Heidenhain-10/14, Siemens-10.5/15.8, Fanuc-15/18.5, Fagor-11/15, Mitsubishi-11/22			
<b>Axes feed rate</b>							
X/Y/Z rapid feed	m/min	30/30/30	30/30/30	30/30/30	30/30/30	30/30/30	30/30/30
<b>Guideway</b>							
X/Y/Z guideway type	mm	Linear / 35 (Ball)	Linear / 35(Roller)	Linear / 45 (Roller)	Linear / 45(Roller)	Linear / 45(Roller)	Linear / 45(Roller)
Number of guides in Y axis		2	2	2	2	4	4
<b>Accuracy</b>							
Positioning accuracy	mm	0.01/300	0.01/300	0.01/300	0.01/300	0.01/300	0.01/300
Repeatability	mm	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01
<b>Automatic Tool Changer</b>							
ATC type		Random arm type 24T(std), Carrousel type 16T(opt), Random drum type 30T(opt)	Random arm type 24T(std), Random drum type 30T(opt)	Random arm type 24T(std), Random drum type 30T(opt), Random chain type 40T(opt)	Random arm type 24T(std), Random drum type 30T(opt), Random chain type 40T(opt)	Random arm type 24T(std), Random drum type 30T(opt), Random chain type 40T(opt)	Random arm type 24T(std), Random drum type 30T(opt), Random chain type 40T(opt)
Tool taper		BT / CAT / DIN 40	24 (std) / 30 (opt)	24 (std) / 30 (opt)	24 (std) / 30 (opt)	24 (std) / 30 (opt)	24 (std) / 30 (opt)
Tool changing time (T-T)	sec	1.94(50Hz) / 1.64(60Hz)	1.94(50Hz) / 1.64(60Hz)	1.94(50Hz) / 1.64(60Hz)	1.94(50Hz) / 1.64(60Hz)	1.94(50Hz) / 1.64(60Hz)	1.94(50Hz) / 1.64(60Hz)
Max. tool dia.	mm	ø75	ø75	ø75	ø75	ø75	ø75
Max. tool dia. with next tool empty	mm	ø125	ø125	ø125	ø125	ø125	ø125
Max. tool length	mm	300	300	300	300	300	300
Max. tool weight	kg	7	7	7	7	7	7
<b>Machine size</b>							
Weight	kg	4350	6250	7000	8850	-	-
Floor space (With chip conveyor)	mm	3400 x 2000	3838 x 2300	4320 x 2300	4250 x 2600	5200 x 2700	5200x2700

Specification are subject to change without notice.

## Standard Accessories

- Belt drive spindle 10000 rpm
- Roof with door opening for overhead crane
- C3 class precision ground ballscrew
- Linear guideway
- Automatic lubrication with low lubrication fault
- Coolant system
- Telescopic way covers
- Low voltage circuit system
- Chain type chip conveyor
- Rear wash down device
- CE standard electrical control system
- Fully enclosure with slide door
- Rigid tapping function
- AICC (40 block) for FANUC 0iM
- EMC and Safety module
- CE-marking declaration
- Heat exchanger

## Optional Accessories

- 4th axis preparation
- In-line spindle 12000/15000 rpm
- Chip bucket
- Air conditioner
- Coolant gun
- Oil skimmer
- 4th axis
- CTS 20 bar built-in type
- CTS 20 bar separate type
- CTS 20 bar separate type with paper filter
- CTS 70 bar programmable separate type with paper filter
- Tool setting probe
- Workpiece probe
- Three axes with linear scales
- Carrousel type 16T tool capacity - M760
- Random drum type 30T tool capacity - M760, M800, M1050, M1200, M1400, M1600
- Random chain type 40T tool capacity - M1050, M1200, M1400, M1600
- 3-color lamp of cycle finish
- Transformer for 380V~440V