



YIDA PRECISION

Humanity · Innovation · Technology



Mass production applications

- Automobile
- 3C parts
- Medium & small precision mold

# HORIZONTAL

MACHINING CENTERS

## MH Series

- Optimum structure design
- 5-axis processing
- Compact jig
- Processing time improved to be more efficient



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# HORIZONTAL MACHINING CENTER

## Features:

- T structure bed with high-quality cast-iron frame for enhanced rigidity and stability.
- Extremely rigid mobile column with linear guide ways ensures stability and cutting accuracy while allowing rapid traverse of the X, Y and Z axes.
- High Rigidity Roller type Linear Guideways, rugged massive linear guideways on X, Y and Z axes maintain precision and ensure a rapid traverse rate.



MH-400  
MH-400PLUS



**High Quality Casting Iron Frame**  
MH-400 / MH-400PLUS



**BT40 High Precision & Rigid Belt-Driven Spindle**



**High Rigidity Bed Body**  
X axis high / low guide way design.



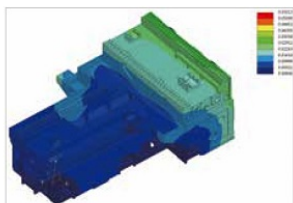
**Pallet Changer**  
The pallet is driven by servo motor.



**Auto Tool Changer (40T) – for MH-400**  
A servomotor controls the magazine to produce smooth, precise, and reliable positioning.



**Auto Tool Changer (40T) - for MH-400PLUS**  
Max. tooling length can be 450 mm, bores the hole with optimum concentricity.



**Finite Element Analysis (FEA)**  
The machine is optimized by Finite Element Analysis (FEA).



**Central Chip Removal System**



**Coolant Through Spindle**  
Extra tank of coolant through spindle mounts on coolant tank directly. (optional)



**Chip Conveyor**  
Twin scrape type chip conveyor with drum filter effectively reduces the required space (at least 1.1 m) at the rear side.

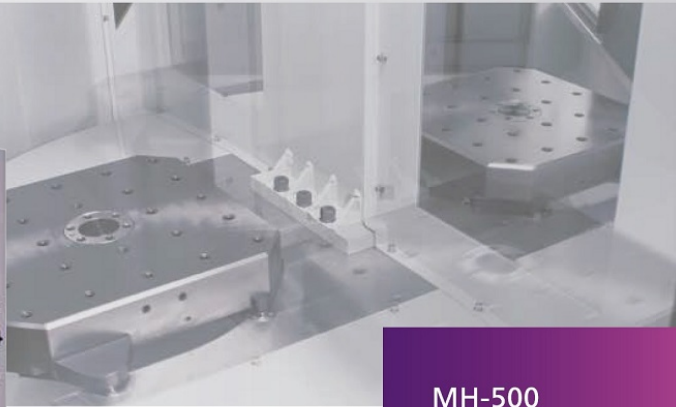


**Air Blown from Tapered Cones**  
When pallets are changed to clean any chips for ensuring accuracy and pallet positioning.

# HORIZONTAL MACHINING CENTER

## Features:

- T structure bed with high-quality cast-iron frame for enhanced rigidity and stability.
- Extremely rigid mobile column with linear guide ways ensures stability and cutting accuracy while allowing rapid traverse of the X, Y and Z axes.
- High Rigidity Ball type Linear Guideways, rugged massive linear guideways on X, Y and Z axes maintain precision and ensure a rapid traverse rate.



MH-500



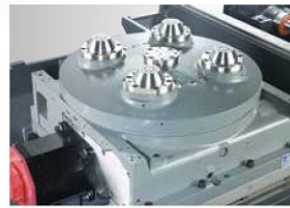
**Extremely Rigid Mobile Column Structure**



**High Quality Casting Iron Structure**

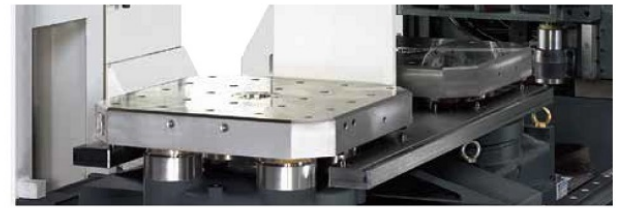


**BT40 High Precision & Belt-Driven Spindle**



**Tapered Cones Clean**

Air blown from tapered cones when pallets are changed to clean any chips for ensuring accuracy and pallet positioning.



**Pallet Changer**

The APC twin pallet system is manually indexed with standby pallet during work piece loading and unloading, and is ideal for automatic machining.



**Auto Tool Changer (40T)**

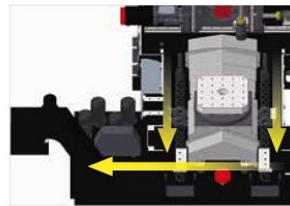
A servomotor controls the magazine to produce smooth, precise, and reliable positioning.



**Spindle Coolant Ring**



**Chip Flushing From Top**



**Chip Removal System**

Twin auger + chain type chip conveyor



**Spindle Oil Chiller**

# HORIZONTAL MACHINING CENTER

## High Performance, High Efficiency

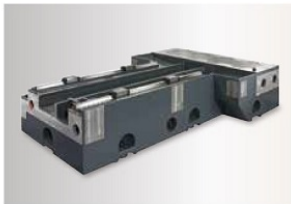
- Both ends of the saddle have a ballscrew and linear guideway to equalize the force the axes direction. Machine stability is enhanced during both a high speed feed rate and low speed machining.
- The saddle weight is only 50-60% of normal T-type structure column weight. This design is helpful in reducing the inertia caused by high speed X axis travel.
- Central chip removal design. Chips drop to a chip conveyor in the middle of the machine and are directly removed through the back of the machine.
- Employs a roller guide on each axis.



MH-500PLUS

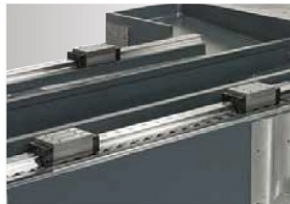


MH-630PLUS



### High Quality Casting Iron Frame

For the ultimate in rigidity and stability, The MH-500PLUS employs Meehanite, the finest alloy in the world.



### High Speed Linear Guideways

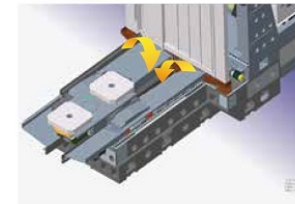
Rugged massive linear guide ways on X, Y and Z axes maintain precision and ensure rapid traverse rate.



### Extremely Rigid Mobile Column Structure



### Tool Changer System



### Central Chip Removal System

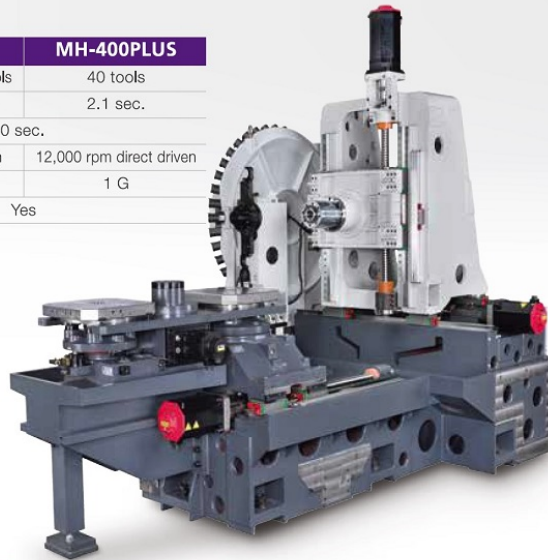


### 60T Tool Magazine

# ROBUST MACHINE STRUCTURE

## ■ MH-400 / MH-400PLUS

Item / Model	MH-400	MH-400PLUS
Tool magazine	STD: 40; OPT: 60, 120 tools	40 tools
Tool change time (T-T)	3.7 sec.	2.1 sec.
Pallet change time (P-P)	10 sec.	
BT40 spindle	10,000 rpm belt driven	12,000 rpm direct driven
Acceleration	0.6 G	1 G
Central removal system	Yes	



## ■ MH-500PLUS

1. Tool magazine 40, opt: 60, 120, 180 tools
2. Tool change time (T-T): 3.5 sec.
3. Pallet change time (P-P): 6.8 sec.
4. 1G acceleration 60 m/min rapid feedrate (opt.)
5. BT50 direct coupling spindle
6. Box-in-Box structure
7. Dual ball screw (X axis)
8. Fanuc / Heidenhain / Siemens controllers



## ■ MH-630PLUS

1. Tool magazine 60, opt: 120, 180 tools
2. Tool change time (T-T): 3.5 sec.
3. Pallet change time: 16 sec.
4. Box-in-Box solid construction.
5. BT50 direct driven spindle 10,000 rpm
6. Dual ball screw (X / Z axis) and dual motor design.
7. Fanuc / Heidenhain / Siemens controllers

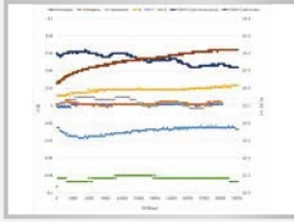


## ■ MH-500

1. Tool magazine 40, opt: 60 tools
2. Tool change time (T-T): 3.7 sec.
3. Pallet change time (P-P): 10 sec.
4. BT40 spindle speed 10,000 rpm belt driven
5. Twin screws + link type chip conveyor
6. Fanuc / Heidenhain / Siemens controllers



## AUTOMATIC MACHINING COMPENSATION



Since maintenance has a direct influence on performance, productivity and product quality, we're improving the process through recent developments in Augmented Reality technologies. A 3D model of MH-400 was showcased at TMTS 2018 and TIMTOS 2019.

The FANUC AI Thermal Displacement Compensation module was implemented on EV-860 and presented at TMTS 2018. The thermal displacement after applying AI adjustment is within 0.002 mm, compared to 0.08 mm without AI.

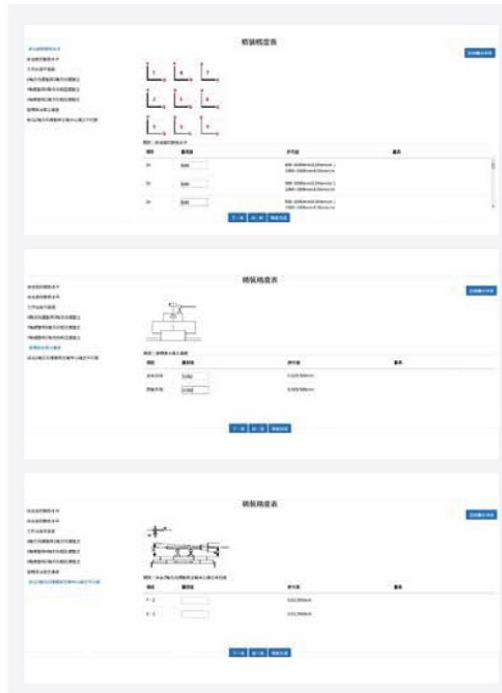
Current efforts are focused on developing AR applications for maintenance.



## SMART MACHINE ENGINE



## ELECTRIC PRODUCTION RESUME



## ACTUAL MACHINING DATA

Cutting Material : S45C



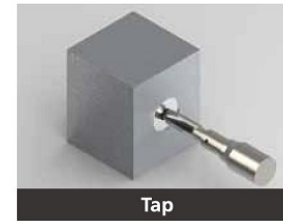
Face Mill

Description	Unit	MH-400PLUS	MH-500	MH-500PLUS	MH-630PLUS
Cutting depth	mm	6	5	8	6
Feed rate	mm/min	1,500	900	800	120
Chip removal	cc/min	585	338	704	576



Drilling

Description	Unit	MH-400PLUS	MH-500	MH-500PLUS	MH-630PLUS
Cutting depth	mm	50	65	8	6
Feed rate	mm/min	100	25	800	120
Drill diameter	mm	45 (rapid drill)	36.5 (twist drill)	47.5 (rapid drill)	54 (rapid drill)

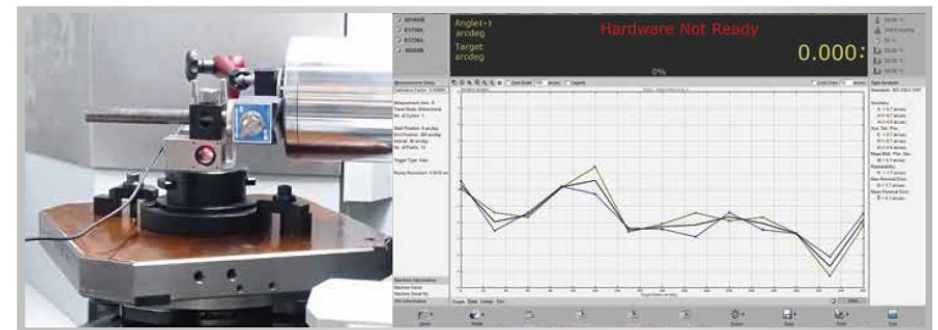


Tap

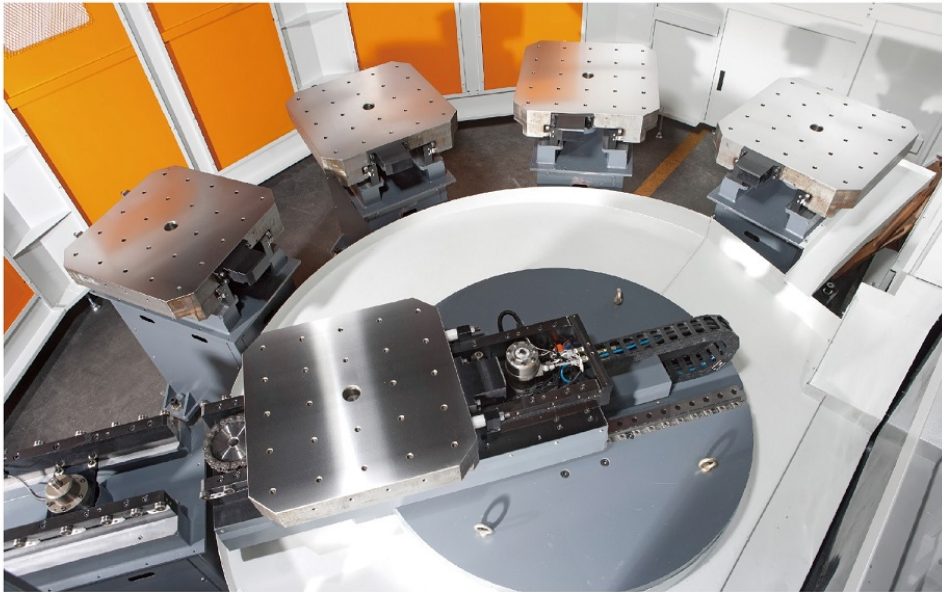
Description	Unit	MH-400PLUS	MH-500	MH-500PLUS	MH-630PLUS
Cutting depth	mm	40	40	30	30
Feed rate	mm/min	1,400	600	360	600
Tap size	mm	M30 x 3.5P	M24 x 1.5P	M42 x 4.5P	M40 x 2.0P

## QUALITY ASSURANCE

Each machine has been inspected before shipping to ensure optimal operation performance - **Laser Calibration, Ball bar Circularity Inspection and B-axis Rotation Accuracy Inspection.**

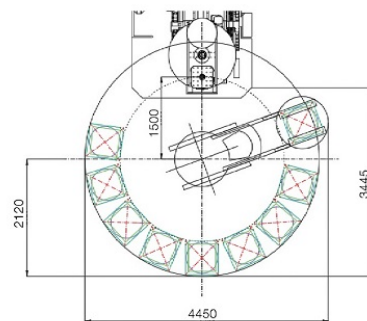
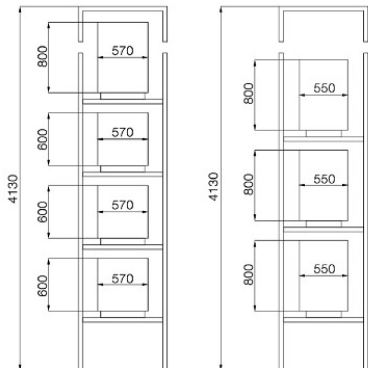
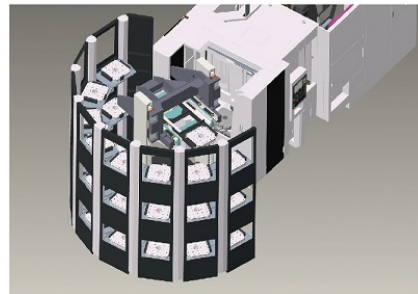


## MULTI-PALLET POOL APPLICATION



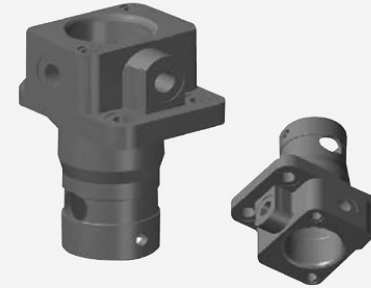
### Multi-Pallet Pool

- **Extensibility** - Module design, high extensibility.
- **Scheduling** - Independent control, upgrade management and scheduling operation.
- **Management** - Self-developed monitoring screen, easy to control pallet pool and processing status.
- **Unmanned** - Reduce labor cost, carry out unmanned production.
- **Application** - Used for a small variety of operations and for mass production.

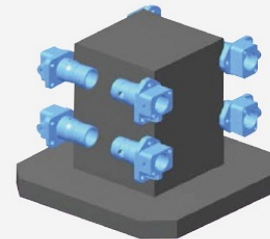


## PRODUCTION COMPARISON

Shorten Machining Cycle  
Save Labor Cost  
Reduce Investment Costs



	Vertical Machining Center	MH-400
MACHINE Q'TY		
PROGRAMMER		
TOOLING		
REFUELING	5S + 4 = 20S	5S
MANPOWER		
REQUIRE SPACE	Larger	Smaller
BENEFIT	Manpower demand and cost are higher. Floor space required is larger and refueling time cannot be saved.	It can save the manpower demand, cost, floor spaces required and refueling time.



### Excellent:

1. By adopting a 4th axis, the workpiece can be placed on multiple sides, enabling many application possibilities.
2. Save time with an APC, the workpiece can be loaded and unloaded on the additional table, while the spindle is active.

## MACHINE SPECIFICATIONS

ITEM	UNIT	MH-400	MH-400PLUS	MH-500
PALLET	Dimensions	mm	400 x 400	500 x 500; OPT: 400 x 400
	Bolt hole	mm	24-M12 x P80	24-M12 x P80 STD: 24-M16 x P100; OPT: 15-M16 x P100
	Max. loading capacity	kgs	400	400 STD: 500; OPT: 400
	B minimum indexing	°	STD: 0.001°; OPT: 1°	STD: 0.001°; OPT: 1°
	Index repeatability		±4"	±4"
	Pallet capacity	pcs	2	2
	Max. speed of B-axis	rpm	44	44
	Max diameter of workpiece	mm	Ø550	Ø550
TRAVEL RANGE	Max. height of workpiece	mm	800	640
	Max. travel range of X/Y/Z-axis	mm	550 / 510 / 630	550 / 510 / 630
	Distance from spindle nose to table center	mm	70~700	70~700
SPINDLE	Distance from spindle center to table surface	mm	80~590	80~590
	Spindle taper		ISO No. 40	ISO No. 40
	Spindle bearing inner diameter	mm	Ø70	Ø70
FEEDRATE	Spindle speed	rpm	STD: 10,000; OPT: 12,000 (belt drive)	STD: 12,000; OPT: 15,000 (direct drive)
	Cutting feedrate of X/Y/Z-axis	mm/min	1~30,000	1~30,000
	Rapid traverse speed of X/Y/Z-axis	m/min	48	60
	Minimum setting unit of X/Y/Z-axis	mm	0.001	0.001
TOOL	Feedback element		Optical scale (optional)	Optical scale (optional)
	Tool capacity	pcs	STD: 40; OPT: 60, 120	STD: 40 (radial type)
	Tool selection		Random	Random
	Max. w/o adjacent tool diameter	mm	Ø127	Ø170
	Max. tool length	mm	300	450
	Max. tool diameter	mm	Ø75	Ø80
DRIVE MOTOR	Max. tool weight	kg	7	10
	Tool shank type		STD: BT40; OPT: CAT40, BBT40, HSK63A	STD: BT40; OPT: CAT40, BBT40, HSK63A
	Spindle motor	kW	STD: α12/12,000 (11/15); OPT: α15/12,000 (15/18.5)	STD: α12/12,000 (11/15); OPT: α15/12,000 (15/18.5)
	Servo motor of X/Y/Z/B-axis	kW	α22 / α30 / α22 / αis12 (4 / 7 / 4 / 2.7 kW)	α22is / α30is / α22is / αis12is (4.5 / 5.5 / 4.5 / 2.7 kW)
	Spindle recirculating lubrication motor	W	370	370
	Centralized lubrication system	W	12	12
	Hydraulic motor	kW	2.25	2.25
	Coolant motor (for tools/chips)	kW	1.27 x 3	1.27 x 3
	Chip conveyor motor	W	200	200
	ATC motor	kW	2	2
ACCURACY	Tool arm motor	kW	0.56 / 40-tool; 0.75 / 60-tool	0.56 / 40-tool; 0.75 / 60-tool
	Positioning	mm	±0.004	±0.004
	Repeatability	mm	±0.003	±0.003
MISCELLANEOUS	Power Requirement	KVA	380-415 / 220V 40 KVA	380-415 / 220V 30 KVA
	T-T (tool to tool)	sec	3.7	2.1
	P-P (pallet to pallet)	sec	10	10
	Outline dimension (L x Wx H)	mm	6,039 x 2,318 x 2,731	6,039 x 2,318 x 2,731
	Packing size (L x Wx H)	cm	523 x 230 x 252 (machine); 242 x 230 x 177 (incl. 40-tool ATC)	523 x 230 x 252 (machine); 242 x 230 x 177 (incl. 40-tool ATC)
MISCELLANEOUS	Net weight	kgs	10,000 (40-tool)	10,280 + 770 (40-tool ATC)
	Gross weight	kgs	10,980 (40-tool)	10,665 + 1,434 (40-tool ATC)



## MACHINE SPECIFICATIONS

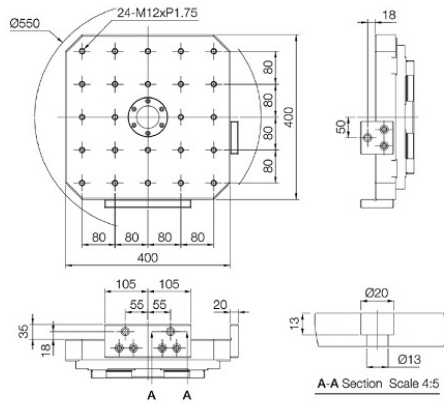
ITEM	UNIT	MH-500PLUS E type	MH-500PLUS P type	MH-630PLUS	
PALLET	Dimensions	mm	500 × 500	500 × 500	630 × 630
	Bolt hole	mm	24-M16 x P100	24-M16 x P100	24-M16 x P125
	Max. loading capacity	kgs	500	500	1,200
	B minimum indexing	°	STD: 0.001°; OPT: 1°	STD: 0.001°; OPT: 1°	STD: 1°; OPT: 0.001°
	Index repeatability		±4"	±4"	STD: ±1"; OPT: ±6"
	Pallet capacity	pcs	2	2	2
	Max. speed of B-axis	rpm	STD: 35 (0.001°); OPT: 25 (1°)	STD: 50 (0.001°); OPT: 25 (1°)	16
	Max diameter of workpiece	mm	Ø780	Ø780	Ø1,050
TRAVEL RANGE	Max height of workpiece	mm	750	750	1,300
	Max. travel range of X/Y/Z-axis	mm	800 / 650 / 800	800 / 650 / 800	1,050 / 900 / 1,050
	Distance from spindle nose to table center	mm	150-950	150-950	50-1,100
SPINDLE	Distance from spindle center to table surface	mm	50-700	50-700	100-1,000
	Spindle taper		ISO No. 50	ISO No. 50	ISO No. 50
	Spindle bearing inner diameter	mm	Ø90	Ø90	Ø100
FEEDRATE	Spindle speed	rpm	STD: 10,000; OPT: 12,000,15,000 (direct drive)	STD: 10,000; OPT: 12,000, 15,000 (direct drive)	STD: 10,000; OPT: 12,000, 15,000 (direct drive)
	Cutting feedrate of X/Y/Z-axis	mm/min	1-24,000	1-24,000	1-30,000
	Rapid traverse speed of X/Y/Z-axis	m/min	48	60	48
	Minimum setting unit of X/Y/Z-axis	mm	0.001	0.001	0.001
	Feedback element		Optical scale (optional)	Optical scale (optional)	Optical scale (optional)
TOOL	Tool capacity	pcs	STD: 40; OPT: 60, 120, 180	STD: 40; OPT: 60, 120, 180	STD: 60; OPT: 120, 180
	Tool selection		Random	Random	Fixed tool pot number
	Max. w/o adjacent tool diameter	mm	Ø250	Ø250	Ø250
	Max. tool length	mm	400	400	630
	Max. tool diameter	mm	Ø125	Ø125	Ø125
	Max. tool weight	kgs	20	20	20
DRIVE MOTOR	Tool shank type		STD: BT50; OPT: CAT50, BBT50, HSK100A	STD: BT50; OPT: CAT50, BBT50, HSK100A	STD: BT50; OPT: CAT50, BBT50, HSK100A
	Spindle motor	kW	STD: aiT15/12,000 (15/18.5); OPT: aiT18 (18/22)	STD: a22iT/12,000 (22/26)	a22iT/12,000 (22/26)
	Servo motor of X/Y/Z/B-axis	kW	α12 x 2 / α30 / α30 / α22 (3 / 7 / 7 / 4 kW)	α22is x 2 / α50is / α30is / α22 (4.5 / 5.5 / 5.5 / 4 kW)	α22is x 2 / α50is / α30is x 2 / α12 (4.5 / 5 / 5.5 / 3 kW)
	Spindle recirculating lubrication motor	W	370	370	1,350
	Centralized lubrication system	W	25	25	25
	Hydraulic motor	kW	3.7	3.7	2.3
	Coolant motor (for tools/chips)	kW	1.27 x 3	1.27 x 3	1.58
	Chip conveyor motor	W	200	200	200
	ATC motor	kW	2.5	2.5	3
	Tool arm motor	kW	2.5	2.5	3
ACCURACY	Positioning	mm	±0.004	±0.004	±0.005
	Repeatability	mm	±0.003	±0.003	±0.004
	Power Requirement	KVA	380-415 / 220V 75 KVA	380-415 / 220V 75 KVA	380-415 / 220V 100 KVA
MISCELLANEOUS	T-T (tool to tool)	sec	3.5 / 20 kg	2.1 / 20 kg, 1.9 / 10 kg	3.5
	P-P (pallet to pallet)	sec	6.8	6.8	16
	Outline dimension (L x Wx H)	mm	5,480 x 3,220 x 2,789 (40 tools)	5,480 x 3,220 x 2,789 (40 tools)	7,216 x 4,150 x 3,279
	Packing size (L x Wx H)	cm	492 x 229 x 256 (machine); 448 x 230 x 234 (incl. 40-tool ATC)	492 x 229 x 256 (machine); 448 x 230 x 234 (incl. 40-tool ATC)	638 x 295 x 347 (machine); 483 x 295 x 322 (incl. 60-tool ATC)
	Net weight	kgs	12,900 + 3,420 (40-tool ATC)	12,900 + 3,420 (40-tool ATC)	18,880 + 4,440 (60-tool ATC)
	Gross weight	kgs	13,350 + 4,350 (40-tool ATC)	13,350 + 4,350 (40-tool ATC)	21,500 + 6,200 (60-tool ATC)

# TABLE & TOOL HOLDERS

# WORK ENVELOPE

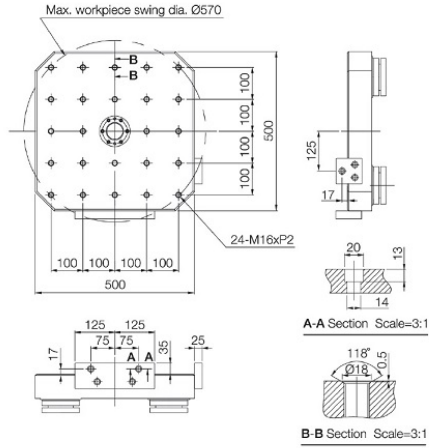
**MH-400 / MH-400PLUS**

unit: mm



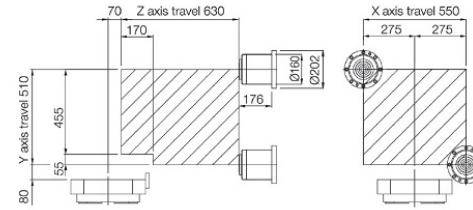
**MH-500**

unit: mm



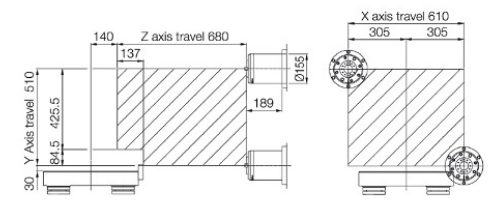
**MH-400 / MH-400PLUS**

unit: mm



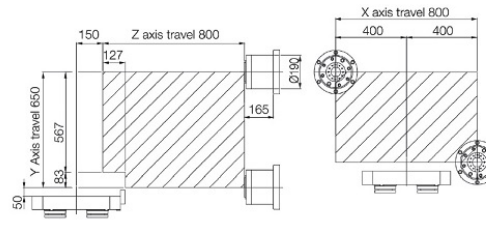
**MH-500**

unit: mm



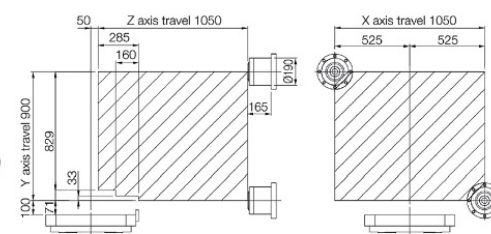
**MH-500PLUS**

unit: mm



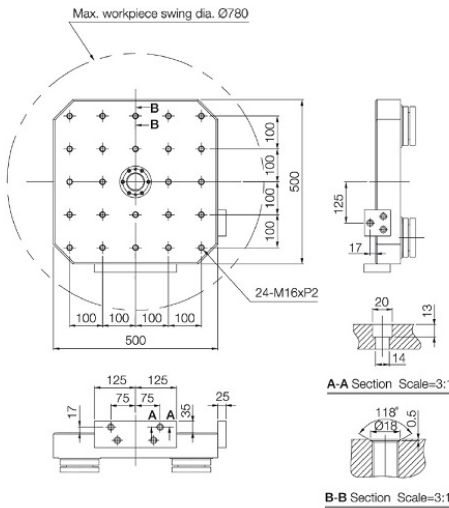
**MH-630PLUS**

unit: mm



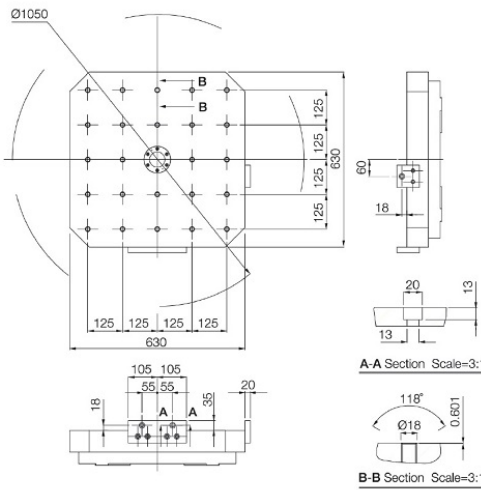
**MH-500PLUS**

unit: mm



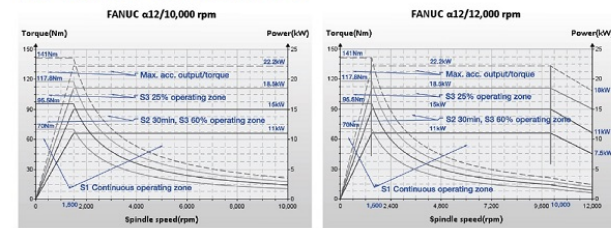
**MH-630PLUS**

unit: mm

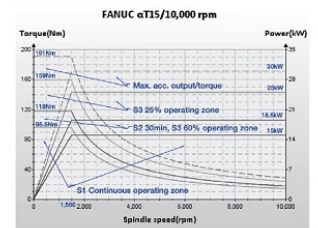


# SPINDLE POWER & TORQUE DIAGRAM

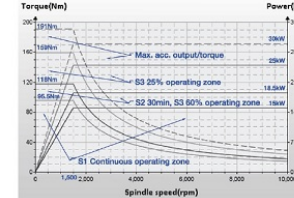
**MH-400 / MH-400PLUS / MH-500**



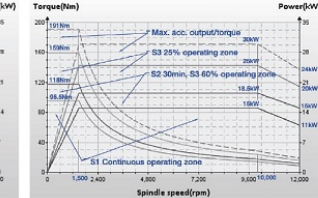
**MH-500PLUS**



**FANUC α15/10,000 rpm**

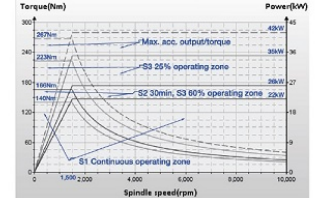


**FANUC α15/12,000 rpm**



**MH-630PLUS**

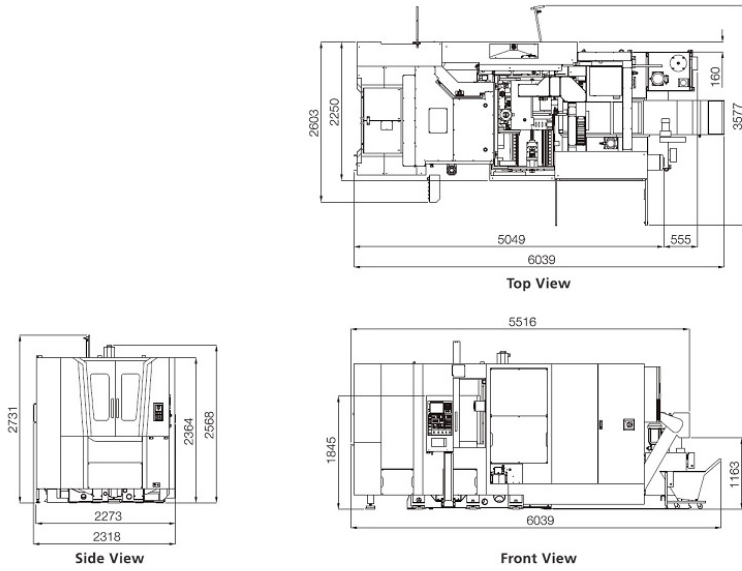
**FANUC αT22/10,000 rpm**



# DIMENSIONAL DRAWINGS

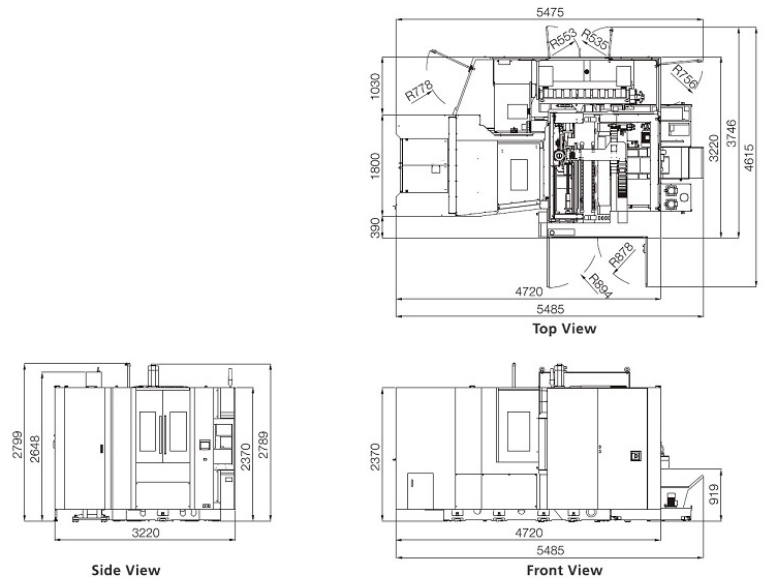
## MH-400 / MH-400PLUS

unit: mm



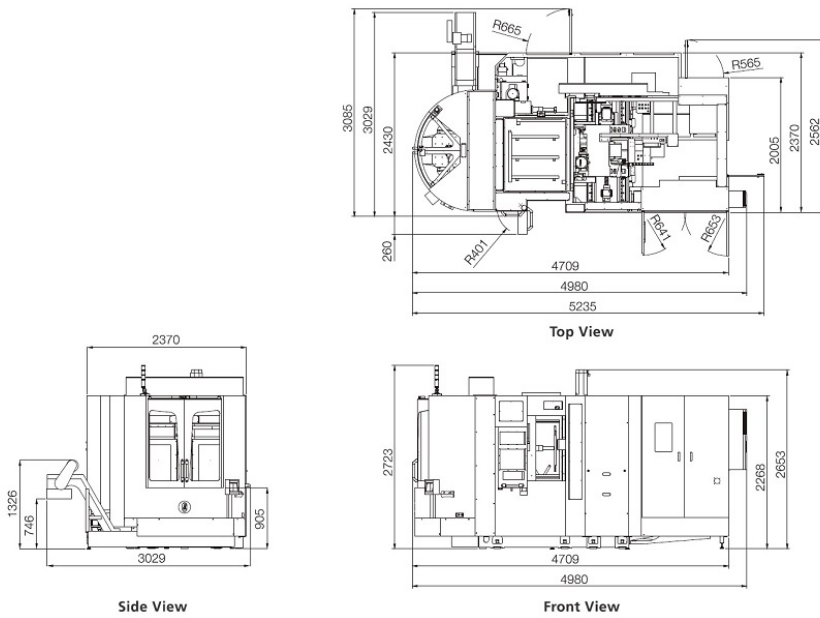
## MH-500PLUS

unit: mm



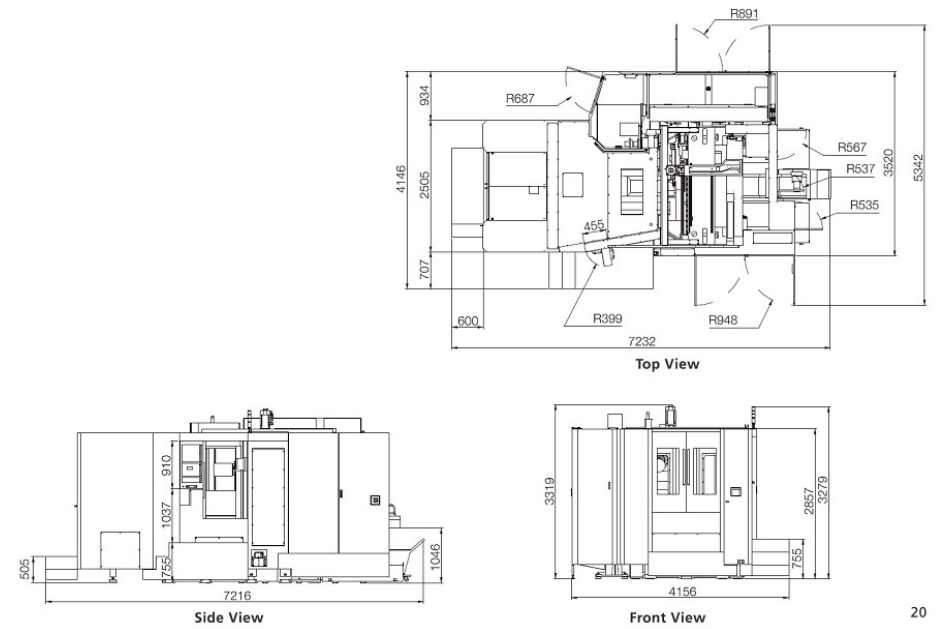
## MH-500

unit: mm



## MH-630PLUS

unit: mm



## STANDARD / OPTIONAL SPECIFICATIONS

● Standard ○ Optional

No.	Description	MH-400	MH-400PLUS	MH-500	MH-500PLUS		MH-630PLUS
					E type	P type	
1	Fanuc Oi-MF Plus controller, 10,4" LCD	●	●	●	●	●	●
2	Siemens controller	○	○	○	○	○	○
3	Heidenhain controller	○	○	○	○	○	○
4	Spindle speed 10,000 rpm belt driven	●	--	●	--	--	--
5	Spindle speed 10,000 rpm direct driven	○	--	--	●	●	●
6	Spindle speed 12,000 rpm direct driven	--	●	--	○	○	○
7	Spindle speed 15,000 rpm direct driven	--	○	--	○	○	○
8	Spindle taper BT40	●	●	●	●	--	--
9	Spindle taper BT50	--	--	--	●	●	●
10	Spindle taper BBT40, DIN40, HSK63A	○	○	○	--	--	--
11	Spindle taper BBT50, DIN50, HSK100A	--	--	--	○	○	○
12	Spindle motor 11/15 kW	●	●	●	--	--	--
13	Spindle motor 15/18.5 kW	○	○	○	●	--	--
14	Spindle motor 18/22 kW	--	--	--	○	○	○
15	Spindle motor 22/26 kW	--	--	--	--	●	●
16	2 step speed gear box	○	○	○	○	○	○
					(15/18,5 kW)	(15/18,5 kW)	(15/18,5 kW)
17	Spindle oil chiller	●	●	●	●	●	●
18	Tool magazine capacity - 40 tools	●	●	●	●	●	--
19	Tool magazine capacity - 60 tools	○	○	○	○	○	●
20	Tool magazine capacity - 120 tools, 180 tools	○	○	○	○	○	○
21	Coolant system	●	●	●	●	●	●
22	Automatic lubrication system	●	●	●	●	●	●
23	Indexing table 0,001°	●	●	●	●	●	○
24	Indexing table 1°	○	○	○	○	○	●
25	Roller type linear guide way	●	●	○	●	●	●
26	Ball type linear guide way	○	○	●	--	--	--
27	2 chip augers + chain type chip conveyor + cart	--	--	●	--	--	--
28	Twin scraper type chip conveyor with drum filter + cart	●	●	--	--	--	--
29	Chain type chip conveyor + cart	--	--	--	●	●	●
30	Scraper type chip conveyor + cart	--	--	--	○	○	○
31	Fully enclosed splash guard	●	●	●	●	●	●
32	2 pallets (bolted type)	●	●	●	●	●	●
33	Single pallet	○	○	○	○	○	○
34	Work lamp	●	●	●	●	●	●
35	Automatic tool length measurement	○	○	○	○	○	○
36	Automatic workpiece measurement	○	○	○	○	○	○
37	Pallet wash	○	○	○	○	○	○
38	Hydraulic jig interface	○	○	○	○	○	○
39	Oil mist collector	○	○	○	○	○	○
40	Oil Skimmer	○	○	○	○	○	○
41	Coolant through spindle	○	○	○	○	○	○
42	Oil cooling ballscrew	○	○	○	○	○	○
43	Linear scale	○	○	○	○	○	○
44	Automatic door	○	○	○	○	○	○
45	Stabilizer	○	○	○	○	○	○
46	Transformer	○	○	○	○	○	○
47	CE approval	○	○	○	○	○	○
48	Multi pallet pool (customization)	○	○	○	○	○	○

## OPTIONAL ACCESSORIES



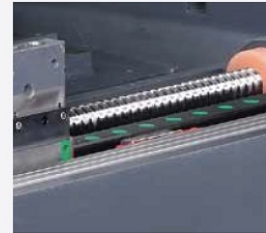
High Pressure Coolant Spindle with Filter Tank



High Pressure Coolant Spindle with Cetrifugal Separator



Oil Cooling Ballscrew



Linear Scale



Auto Tool Changer (120T / 180T)



CNC Rotary Table



Tool Measuring System



Workpiece Measuring System



2-Step Speed Gear Box



Oil Mist Collector



Oil Skimmer



Automation and TURN KEY Solutions