

# DUGARD

Machine Tools Since 1939

## Dugard MH Series Horizontal Machining Centres



[www.dugard.com](http://www.dugard.com)

# MH-500

## Horizontal Machining Center

- Highlights sprint 42 l 10 linear senkung der produktionskosten von kurz-und langteilen
- Durch den einsatz des swisstypekit directdrive technology fur haupt-und gegenspinde, zwei linearmotoren und torque motor fur den revolverantrieb, angetriebene werkzeuge.
- Direkte messsysteme auf den drei radialschlitten fur hochste prozesssicherheit.
- Hochste struktursteifheit und 2,2 kw leistung auf den angetriebenen werkzeugen fur linearmotoren und torque motor fur den revolverantrieb, angetriebene werkzeuge.
- Drei werkzeuge gleichzeitig im einsatz und bis zu 30 positionen fur kurzeste stueckzeiten.
- Energieeffizienz: automatisches ausschalten der maschine  
werkzeugverschleiß-uberwachung new generation fanuc steuerung serie.





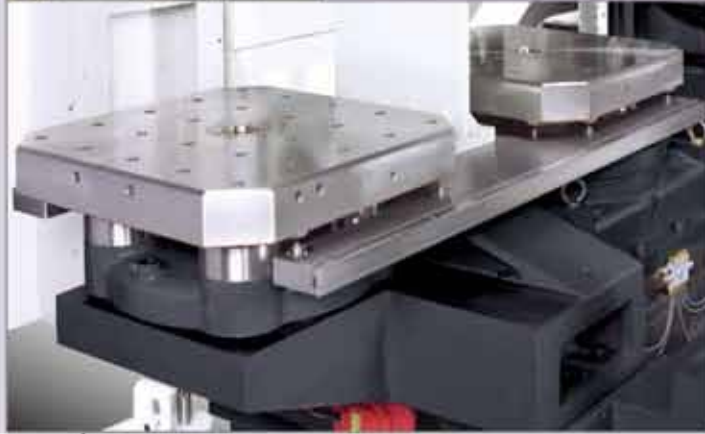
### Extremely Rigid Mobile Column Structure

Extremely rigid mobile column with linear guide ways assures stability and cutting accuracy while allowing rapid traverse of the X, Y, and Z axes.



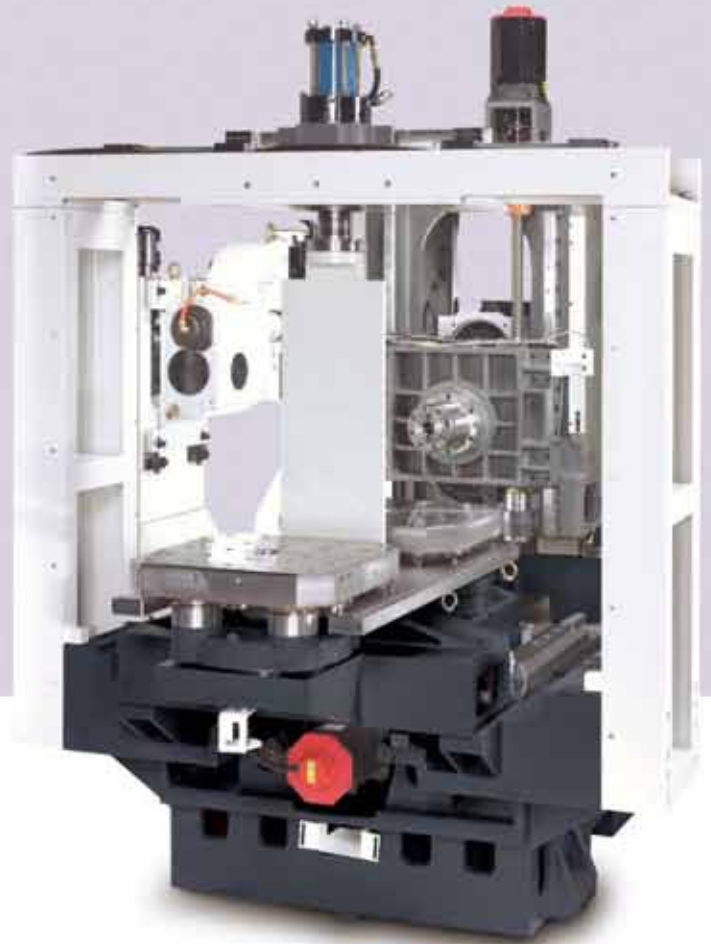
### High Speed Linear Guideways

Rugged massive linear guideways on X, Y, and Z axes maintain precision and assure a fast rapid traverse rate.



### Pallet Changer

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



### Automatic Tool Changer

The tool magazine, coupled with rapid tool change and random access selections, save time and offer high productivity. A servomotor controls the magazine to produce smooth, precise, reliable positioning.

MH-500: STD 40, OPT 60



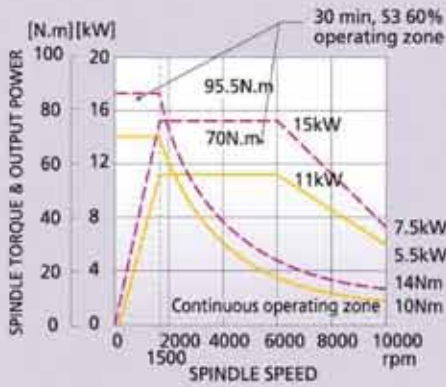
### High Precision & Rigid Spindle

Durable accurate spindle bearing and step design provide high torque, rigidity and precision. High torque spindle motor and spindle support bearing arrangement provide efficient cutting performance.

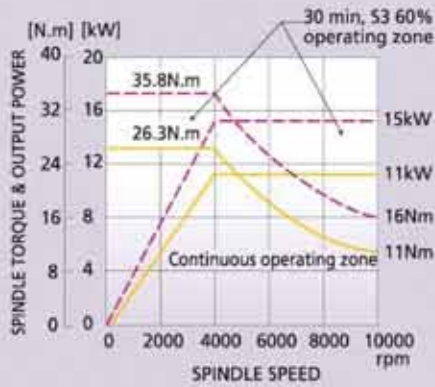
# MH-500 Machine Dimensions

## SPINDLE TORQUE DIAGRAM

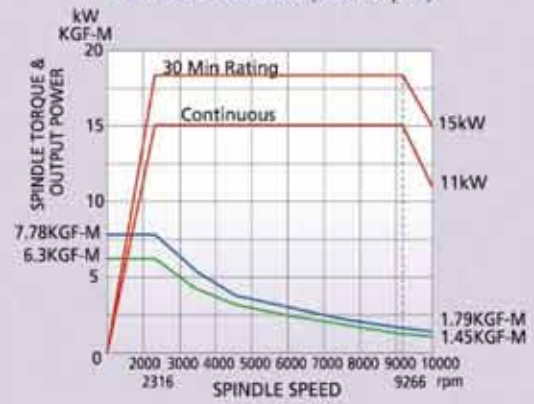
FANUC  $\alpha$  12/10000i (LOW-SPEED)



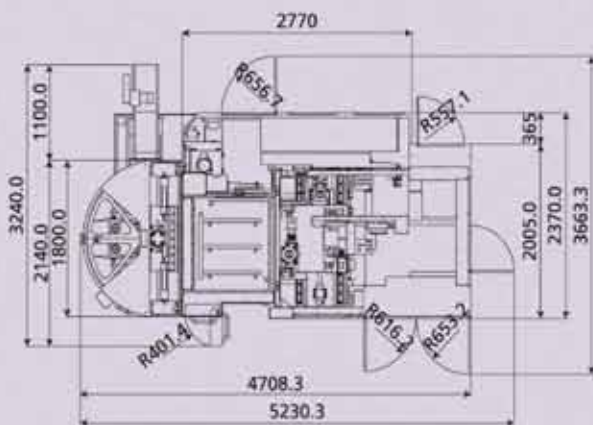
FANUC  $\alpha$  12/10000i (HIGH-SPEED)



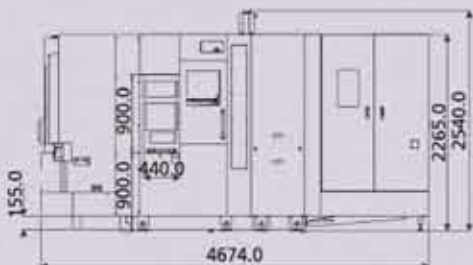
FANUC  $\alpha$  15/7000i SPINDLE MOTOR (10000rpm)



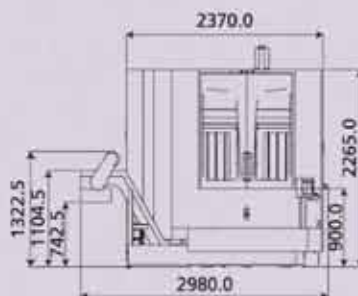
## DIMENSIONAL DRAWINGS



▲ Top View



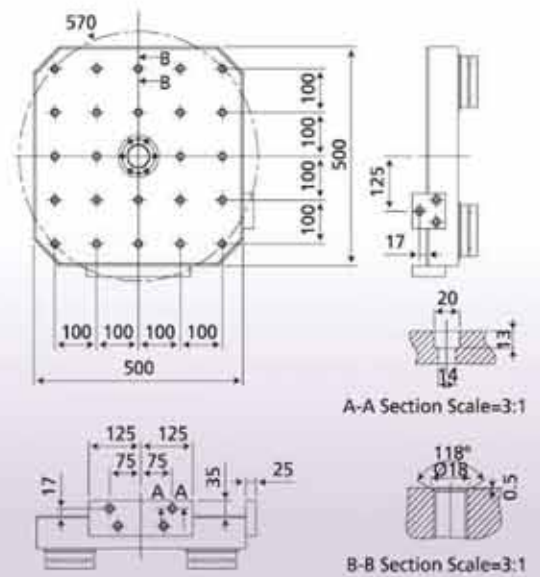
▲ Front View



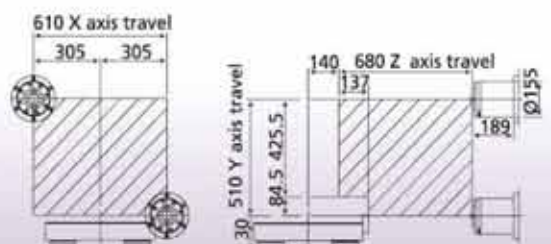
▲ Side View

Unit: mm

## WORK ENVELOPE



## WORK ENVELOPE



# Machine Specifications

Unit: mm

MH-500			Standard Accessories
PALLET	Dimensions (mm)	Std: 500 x 500; Opt: 400 x 400	<ol style="list-style-type: none"> <li>1. Fanuc 0i-MD Controller</li> <li>2. Spindle Speed: 10000 rpm</li> <li>3. MH-500: Belt Type BT40</li> <li>4. Spindle Motor: 11/15kW</li> <li>5. Spindle Lubrication Coolant System</li> <li>6. Tool Magazine Capacity MH-500: 40 Tools</li> <li>7. Coolant System</li> <li>8. Automatic Lubrication System</li> <li>9. Indexing Table 0.001"</li> <li>10. 2 Chip Augers</li> <li>11. Leveling Bolts and Pads</li> <li>12. Chain type Chip Conveyor + Chip Bucket</li> <li>13. Fully Enclosed Splash Guard</li> <li>14. 2 Pallet Shuttles, 2 Pallets (Bolted Type)</li> <li>15. Work Lamp</li> <li>16. Rigid Tapping</li> <li>17. Operator's Manual</li> <li>18. Maintenance Manual</li> <li>19. Parts List</li> <li>20. Fanuc Manual</li> </ol>
	Bolt Hole	M16 x 2	
	Max. Loading Capacity	Std: 500 kgf; Opt: 400 kgf	
	B Minimum Indexing (degree)	Std: 0.001°; Opt: 1°	
	Index Repeatability	±4"	
	Pallet Capacity	2	
	Max. Speed of B-Axis (rpm)	Std: 33.3rpm (0.001") Opt: 25rpm (1")	
	Max. Diameter of Work Piece (mm)	Ø 570	
	Max. Height of Work Piece (mm)	640	
TRAVEL RANGE	Max. Travel Range of X/ Y/ Z-Axis (mm)	610 / 510 / 680	
	Distance From Spindle Nose to Table Center (mm)	140-750	
	Distance From Spindle Center to Table Surface (mm)	30-540	
SPINDLE	Spindle Taper	ISO No. 40	
	Spindle Nose Outer Diameter (mm)	Ø 65	
	Spindle Speed (rpm)	Std: 10,000; Opt: 15,000	
FEEDRATE	Cutting Feedrate of X/ Y/ Z-Axis (mm/min)	1-24000	
	Rapid Traverse Speed of X/ Y/ Z-Axis (m/min)	48	
	Minimum Setting Unit of X/ Y/ Z-Axis	0.001	
	Feedback Element	Optical Scale (Opt)	
TOOL	Tool Capacity (pcs)	Std: 40; Opt: 60	
	Tool Selection	Shortest Path	
	Max. Adjacent Tool Diameter (mm)	Ø 127	
	Max. Tool Length (mm)	300	
	Max. Tool Diameter (mm)	Ø 76	
	Max. Tool Weight (kg)	7	
	Tool Shank Type	Std: BT40, Opt: CAT40, DIN40, HSK63	
DRIVE MOTOR	Spindle Motor (kW)	11 / 15	
	Servo Motor of X/ Y/ Z/ B-Axis (kW)	4 / 4 / 4 / 3	
	Spindle Recirculating Lubrication Motor (W)	370	
	Centralized Lubrication System (W)	12	
	Hydraulic Motor (kW)	2.25	
	Coolant Motor (for Tools/ Chips)	1.27 x 3	
	Chip Conveyor Motor (W)	200	
	Atc Motor (kW)	0.373	
	Twin-Arm Motor (kW)	0.56 / 40Tools; 0.75 / 60Tools	
	ACCURACY	Positioning	0.006
Repeatability		0.003	
MISCELLANEOUS	T-T (sec)	3	
	P-P (sec) Pallet to Pallet	7-8	
	Height (cm)	254	
	Outline Dimension (L x W x H) 1(cm)	470 x 298 x 254	
	Packing Size (L x W x H) (cm)	494 x 229 x 250 (Machine) 350 x 228 x 255 (incl. / 40Tools)	
	Net Weight (approx.) (kg)	11050 / 40Tools (incl.)	
Gross Weight (approx.) (kg)	12030 / 40Tools (incl.)		
			Options
			<ol style="list-style-type: none"> <li>1. Fanuc 18i-MB or 31i</li> <li>2. Siemens Controller</li> <li>3. Mitsubishi Controller</li> <li>4. Heidenhain Controller</li> <li>5. Tool Magazine MH-500: 60 Tools</li> <li>6. T-slot Pallet</li> <li>7. Indexing Table 1"</li> <li>8. Spindle Speed: 15,000rpm</li> <li>9. Automatic Tool Length Measurement</li> <li>10. Automatic Workpiece Measurement</li> <li>11. Sling Frame</li> <li>12. Pallet Wash</li> <li>13. Scraper Type Chip Conveyor</li> <li>14. Spin Window</li> <li>15. APC with 6 Pallets</li> <li>16. Hydraulic Fixture Interface</li> <li>17. Oil Mist Collector</li> <li>18. High Pressure Coolant Through Spindle (20 bar or 70 bar)</li> <li>19. Auto Loading / Unloading System</li> <li>20. Stabilizer</li> <li>21. Transformer</li> <li>22. CE</li> </ol>

Note: Specifications are subject to change without further notice.



# MH-500Plus

## Horizontal Machining Center

- Highlights sprint 42 | 10 linear senkung der produktionskosten von kurz-und langteilen
- Durch den einsatz des swisstypekit directdrive technology für haupt-und gegenspindel, zwei linearmotoren und torque motor für den revolverantrieb, angetriebene werkzeuge.
- Direkte messsysteme auf den drei radialschlitten für höchste prozesssicherheit.
- Höchste struktursteifheit und 2,2 kw leistung auf den angetriebenen werkzeugen für linearmotoren und torque motor für den revolverantrieb, angetriebene werkzeuge.
- Drei werkzeuge gleichzeitig im einsatz und bis zu 30 positionen für kürzeste stückzeiten.
- Energieeffizienz: automatisches ausschalten der maschine werkzeugverschleiß-überwachung new generation fanuc steuerung serie.

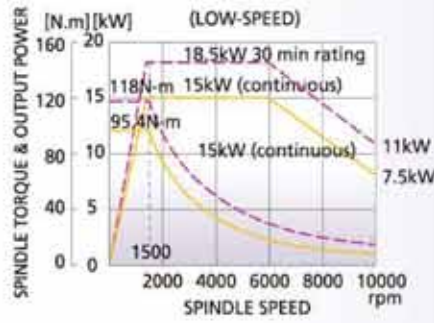


# MH-500 Plus

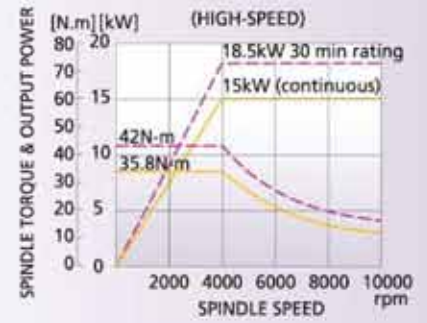
## Machine Dimensions

### E TYPE SPINDLE TORQUE DIAGRAM

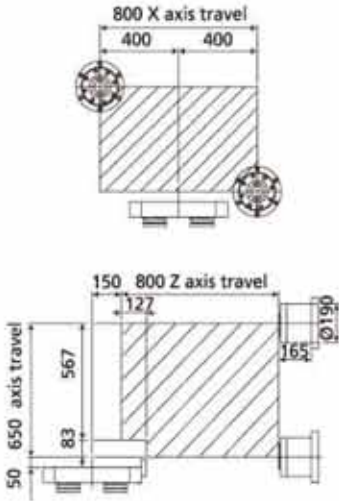
FANUC  $\alpha$  15/10000i  
SPINDLE MOTOR (10000RPM)



FANUC  $\alpha$  15/10000i  
SPINDLE MOTOR (10000RPM)

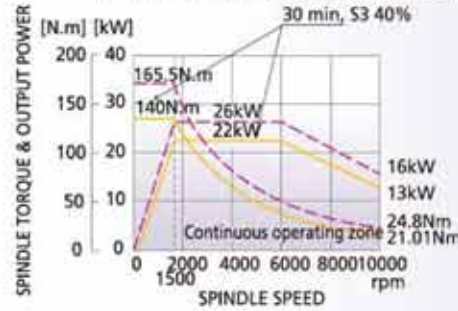


### WORK ENVELOPE

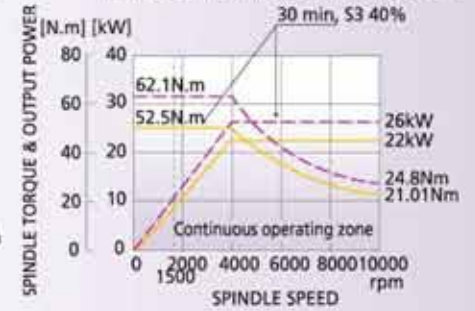


### P TYPE SPINDLE TORQUE DIAGRAM

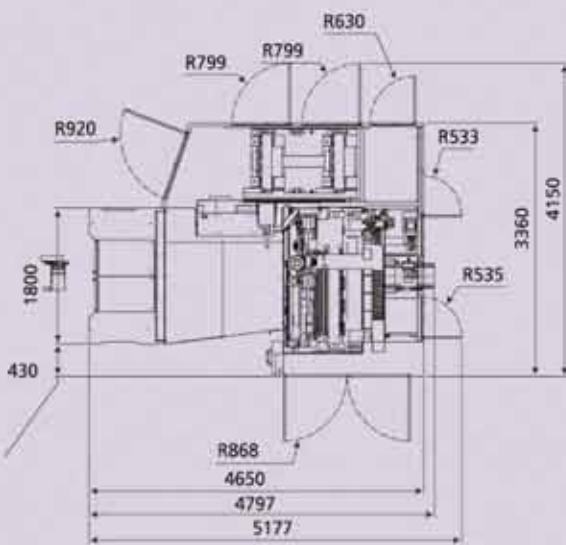
FANUC  $\alpha$  T22/10000i (LOW-SPEED)



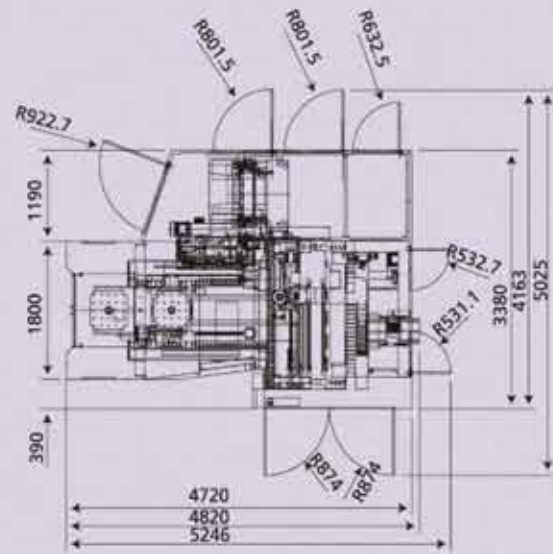
FANUC  $\alpha$  T22/10000i (HIGH-SPEED)



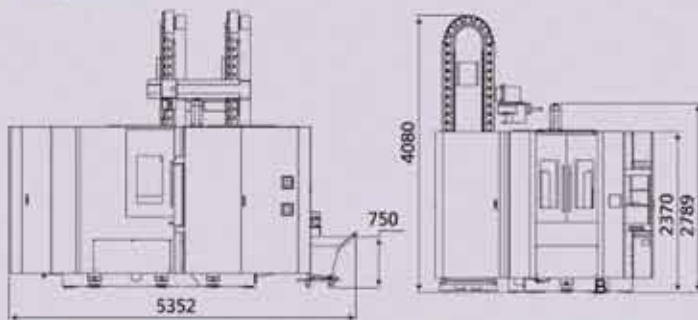
### DIMENSIONAL DRAWINGS



▲ Top View

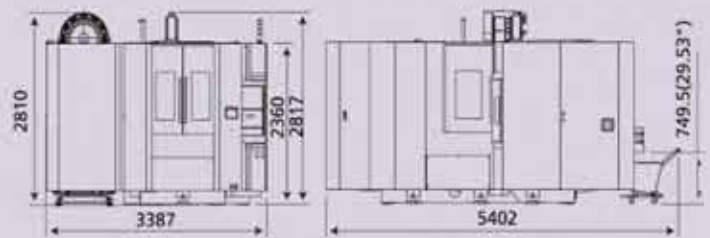


▲ Top View



▲ Front View (120Tools)

▲ Side View (60Tools)



▲ Front View (40Tools)

▲ Side View (40Tools)

Unit: mm

# Machine Specifications

Unit: mm

		MH-500Plus E TYPE	MH-500Plus P TYPE	
PALLET	Dimensions (mm)	500 x 500	500 x 500	<ol style="list-style-type: none"> <li>1. Fanuc 0i-MD Controller</li> <li>2. Spindle Speed: 10000 rpm</li> <li>3. MH-500PLUS: Direct Drive BT50</li> <li>4. Spindle Motor MH-500PLUS E Type: 15/18kW MH-500PLUS P Type: 22/26kW</li> <li>5. Spindle Lubrication Coolant System</li> <li>6. Tool Magazine Capacity MH-500PLUS: 40 Tools</li> <li>7. Coolant System</li> <li>8. Automatic Lubrication System</li> <li>9. Indexing Table 0.001°</li> <li>10. THK Linear Way (MH-500PLUS P Type)</li> <li>11. Leveling Bolts and Pads</li> <li>12. Chain type Chip Conveyor + Chip Bucket</li> <li>13. Fully Enclosed Splash Guard</li> <li>14. 2 Pallet Shuttles, 2 Pallets (Bolted Type)</li> <li>15. Work Lamp</li> <li>16. Rigid Tapping</li> <li>17. Operator's Manual</li> <li>18. Maintenance Manual</li> <li>19. Parts List</li> <li>20. Fanuc Manual</li> </ol>
	Bolt Hole	M16 x 2	M16 x 2	
	Max. Loading Capacity	500 kgf	500 kgf	
	B Minimum Indexing (degree)	Std: 0.001°, Opt: 1°	Std: 0.001°, Opt: 1°	
	Index Repeatability	±4"	±4"	
	Pallet Capacity	2	2	
	Max. Speed of B-Axis (rpm)	Std: 35rpm (0.001°); Opt: 25rpm (1°)	Std: 50rpm (0.001°); Opt: 25rpm (1°)	
	Max. Diameter of Work Piece (mm)	Ø 780	Ø 780	
	Max. Height of Work Piece (mm)	750	750	
TRAVEL RANGE	Max. Travel Range of X/ Y/ Z-Axis (mm)	800 / 650 / 800	800 / 650 / 800	
	Distance From Spindle Nose to Table Center (mm)	150-950	150-950	
	Distance From Spindle Center to Table Surface (mm)	50-700	50-700	
SPINDLE	Spindle Taper	ISO No. 50	ISO No. 50	
	Spindle Nose Outer Diameter (mm)	Ø 90	Ø 90	
	Spindle Speed (rpm)	Std: 10,000 Direct Drive; Opt: 12,000, 15,000 Direct Drive	Std: 10,000 Direct Drive	
FEEDRATE	Cutting Feedrate of X/ Y/ Z-Axis (mm/min)	1-24000	1-24000	
	Rapid Traverse Speed of X/ Y/ Z-Axis (m/min)	48	60	
	Minimum Setting Unit of X/ Y/ Z-Axis	0.001	0.001	
	Feedback Element	Optical Scale (Opt)	Optical Scale (Opt)	
TOOL	Tool Capacity (pcs)	Std: 40; Opt: 60,120,180	Std: 40; Opt: 60,120,180	
	Tool Selection	Random	Random	
	Max. Adjacent Tool Diameter (mm)	Ø 250	Ø 250	
	Max. Tool Length (mm)	400	400	
	Max. Tool Diameter (mm)	Ø 125	Ø 125	
	Max. Tool Weight (kg)	20	20	
	Tool Shank Type	Std: BT50, Opt: CAT50, BBT50, HSK100A	Std: BT50, Opt: CAT50, BBT50, HSK100A	
DRIVE MOTOR	Spindle Motor (kW)	15 / 18.5	22 / 26	
	Servo Motor of X/ Y/ Z/B-Axis (kW)	3 / 7 / 7 / 4 (4 is Motor, ABS Type)	4.5 / 5.5 / 5.5 / 4 (4 is Motor, ABS Type)	
	Spindle Recirculating Lubrication Motor (W)	370	370	
	Centralized Lubrication System (W)	12	12	
	Hydraulic Motor (kW)	3.7	3.7	
	Coolant Motor (for Tools/Chips)	1.27 x 3	1.27 x 3	
	Chip Conveyor Motor (W)	200	200	
	Atc Motor (kW)	3 (Servo Motor)	3 (Servo Motor)	
	Twin-Arm Motor (kW)	3	3	
	ACCURACY	Positioning	0.006	0.006
Repeatability		0.003	0.003	
MISCELLANEOUS	T-T (sec)	3.5 / 20	2.1 / 20, 1.9 / 10	
	P-P (sec) Pallet to Pallet	6.8	6.8	
	Height (cm)	254	407	
	Outline Dimension (L x W x H) 1 (cm)	465 x 336	465 x 336	
	Packing Size (L x W x H) (cm)	492 x 231 x 256 (Machine) 456 x 228 x 183 (incl./ 60Tools)	492 x 231 x 256 (Machine) 456 x 228 x 183 (incl./ 60Tools)	
	Net Weight (approx.) (kg)	17200 / 60Tools, 19350 / 120Tools	17200 / 60Tools; 19350 / 120Tools	
	Gross Weight (approx.) (kg)	18420 / 60Tools (incl.), 20570 / 120Tools (incl.)	18420 / 60Tools (incl.), 20570 / 120Tools (incl.)	

Note: Specifications are subject to change without further notice.



MH-630

### High Quality Cast Iron Frame

For the ultimate in rigidity and stability, the MH-500/ MH-500PLUS/MH-630/MH-800 employs Meehanite, the finest alloy in the world.

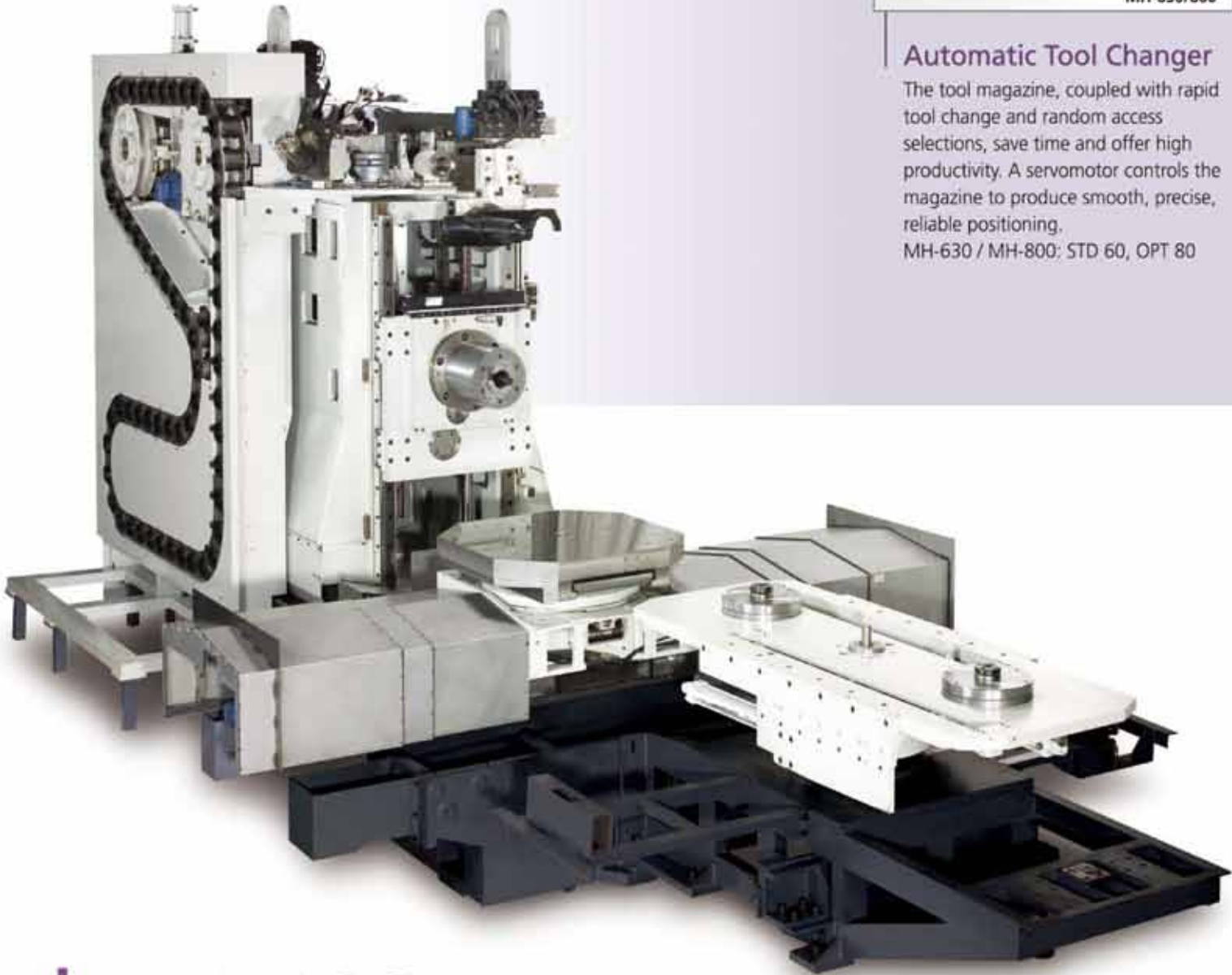


MH-630/800

### Automatic Tool Changer

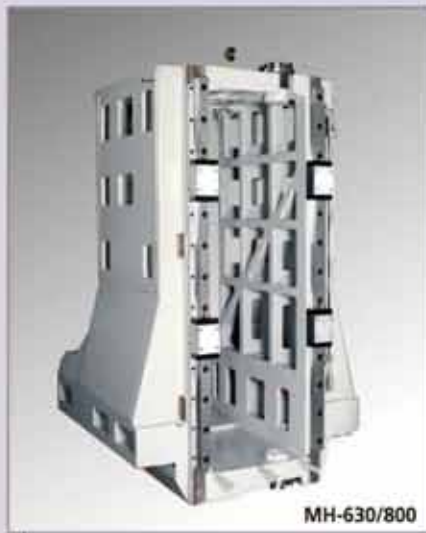
The tool magazine, coupled with rapid tool change and random access selections, save time and offer high productivity. A servomotor controls the magazine to produce smooth, precise, reliable positioning.

MH-630 / MH-800: STD 60, OPT 80



# MH-630

## Horizontal Machining Center



MH-630/800



MH-630/800

### Extremely Rigid Mobile Column Structure

Extremely rigid mobile column with linear guide ways assures stability and cutting accuracy while allowing rapid traverse of the X, Y, and Z axes.

### High Speed Linear Guideways

Rugged massive linear guideways on X, Y, and Z axes maintain precision and assure a fast rapid traverse rate.

### Tool Measuring System (Opt)

Reduce machine down time and saving machining time. By precisely tool length and diameter measuring; tool offset can be automatic compensated. Broken tool inspection can be executed under machining cycle.



### Work piece Measuring System (Opt)

Machining cycle executes work piece measurement and automatic compensate work piece offset. It can reduce the machine down time because of first work piece manual measuring. Probe operating range is 360° infra-red transmissions up to 4 M.

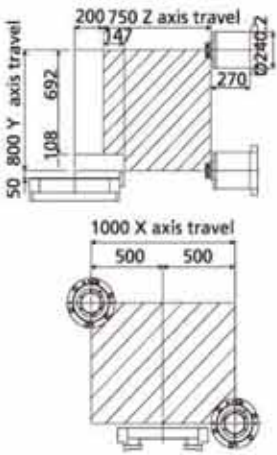
# MH-800

## Horizontal Machining Center

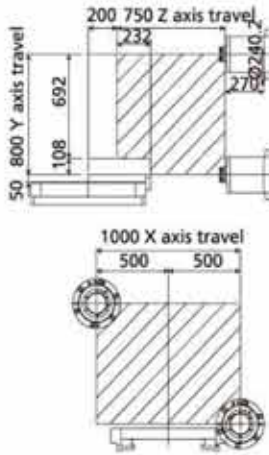


## WORK ENVELOPE

### MH-630

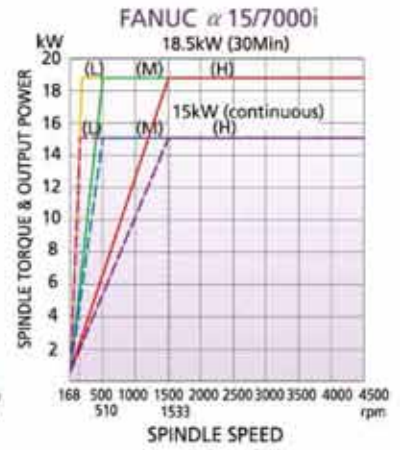
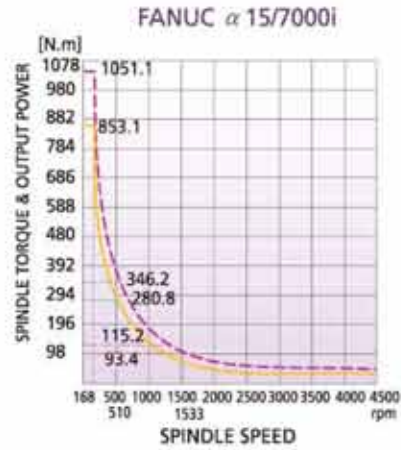


### MH-800



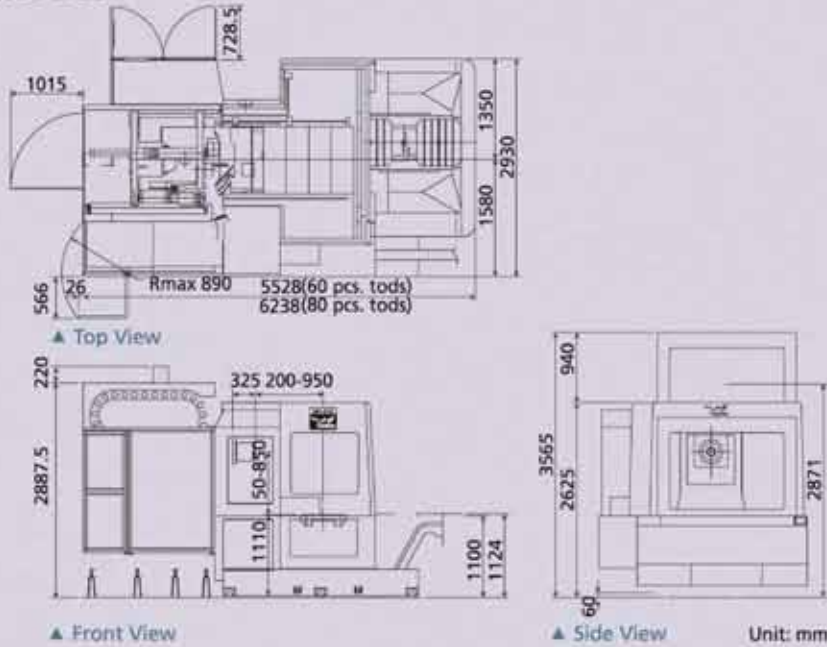
## SPINDLE TORQUE DIAGRAM

### MH-630/800



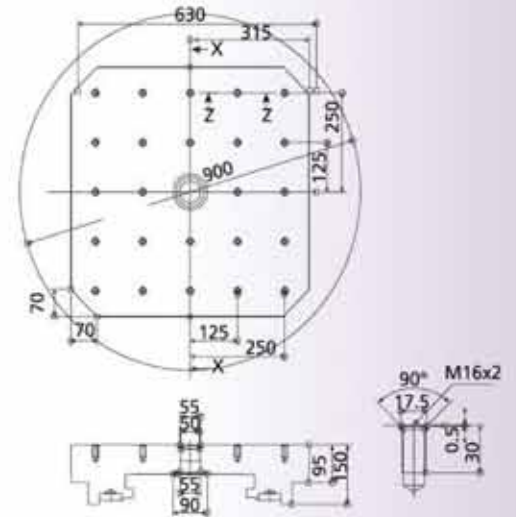
## DIMENSIONAL DRAWINGS

### MH-630

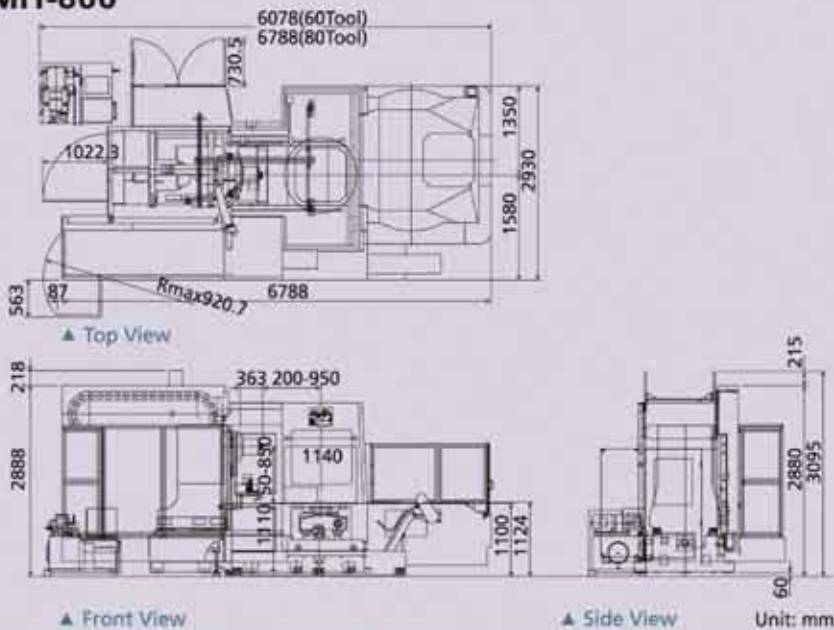


## WORK ENVELOPE

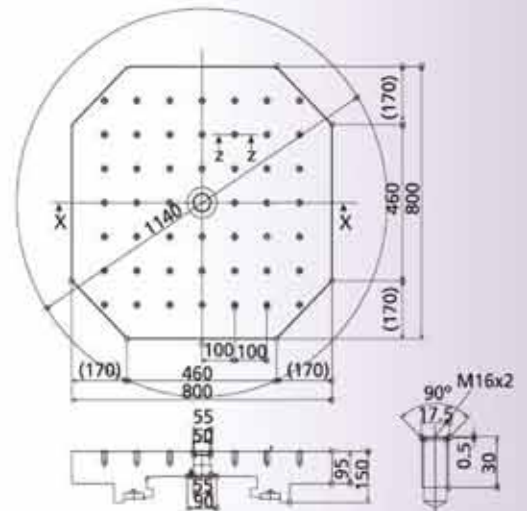
### MH-630



### MH-800



### MH-800



# Machine Specifications

Unit: mm

		MH-630	MH-800	
PALLET	Dimensions (mm)	630 x 630	800 x 800	<b>OPTIONAL EQUIPMENT</b> 1. Fanuc 0i-MD Controller 2. Spindle Speed: MH-630/800: 6000 rpm 3. MH-630/800: Gear Box BT50 4. Spindle Motor MH-630/800: 15/18.5kW 5. Spindle Lubrication Coolant System 6. Tool Magazine Capacity MH-630/800: 60 Tools 7. Coolant System 8. Automatic Lubrication System 9. Optical Scales (MH-630/800) 10. Indexing Table 1° Degree (MH-630/800) 11. 2 Chip Augers 12. Leveling Bolts and Pads 13. Chain type Chip Conveyor + Chip Bucket 14. Fully Enclosed Splash Guard 15. 2 Pallet Shuttles, 2 Pallets (Bolted Type) 16. Work Lamp 17. Rigid Tapping 18. Operator's Manual 19. Maintenance Manual 20. Parts List 21. Fanuc Manual
	Bolt Hole	M16 x 2	M16 x 2	
	Max. Loading Capacity	1200 kgf	1200 kgf	
	B Minimum indexing (degree)	Std: 1°; Opt: 0.001°	Std: 1°; Opt: 0.001°	
	Index Repeatability	±4"	±4"	
	Pallet Capacity	2	2	
	Max. Speed of B-Axis (rpm)	Std: 25rpm (1°); Opt: 16.7rpm (0.001°)	Std: 25rpm (1°); Opt: 16.7rpm (0.001°)	
	Max. Diameter of Work Piece (mm)	Ø 900	Ø 1140	
	Max. Height of Work Piece (mm)	970	970	
TRAVEL RANGE	Max. Travel Range of X/ Y/ Z-Axis (mm)	1000 / 800 / 750	1000 / 800 / 750	
	Distance From Spindle Nose to Table Center (mm)	200-950	200-950	
	Distance From Spindle Center to Table Surface (mm)	50-850	50-850	
SPINDLE	Spindle Taper	ISO No. 50	ISO No. 50	
	Spindle Nose Outer Diameter (mm)	Ø 100	Ø 100	
	Spindle Speed (rpm)	Std: 6,000; (3-Step Gear)	Std: 6,000; (3-Step Gear)	
FEEDRATE	Cutting Feedrate of X/ Y/ Z-Axis (mm/min)	1-5000	1-5000	
	Rapid Traverse Speed of X/ Y/ Z-Axis (m/min)	20	20	
	Minimum Setting Unit of X/ Y/ Z-Axis	0.001	0.001	
	Feedback Element	Optical Scale	Optical Scale	
TOOL	Tool Capacity (pcs)	Std: 60; OPT: 80	Std: 60; Opt: 80	
	Tool Selection	Shortest Path	Shortest Path	
	Max. Adjacent Tool Diameter (mm)	Ø 230	Ø 230	
	Max. Tool Length (mm)	450	450	
	Max. Tool Diameter (mm)	Ø 130	Ø 130	
	Max. Tool Weight (kg)	20	20	
	Tool Shank Type	Std: BT50 Opt: CAT50	Std: BT50 Opt: CAT50	
DRIVE MOTOR	Spindle Motor (kW)	15 / 18.5	15 / 18.5	
	Servo Motor of X/ Y/ Z/B-Axis (kW)	7 / 7 / 7 / 1.6	7 / 7 / 7 / 1.6	
	Spindle Recirculating Lubrication Motor (W)	370	370	
	Centralized Lubrication System (W)	12	12	
	Hydraulic Motor (kW)	5.5	5.5	
	Coolant Motor (for Tools/Chips)	0.75 / 1.5	0.75 / 1.5	
	Chip Conveyor Motor (W)	200	200	
	Atc Motor (kW)	2.2	2.2	
	Twin-Arm Motor (kW)	Hydraulic	Hydraulic	
	ACCURACY	Positioning	0.008	0.008
Repeatability		0.004	0.004	
MISCELLANEOUS	T-T (sec)	8	8	
	P-P (sec) Pallet to Pallet	18	18	
	Height (cm)	295 / 80Tools	295 / 80Tools	
	Outline Dimension (L x W x H) 1 (cm)	623.8 x 295 / 80 Tools	678.8 x 295 / 80Tools	
	Packing Size (L x W x H) (cm)	647 x 334 x 353 (Machine) 358 x 227 x 153 (incl. / 60Tools)	647 x 334 x 353 (Machine) 358 x 227 x 153 (incl. / 60Tools)	
	Net Weight (approx.) (kg)	15000 / 3200 / 60Tools 17200 / 3250 / 80Tools	15300 / 3500 / 60Tools 19410 / 3250 / 80Tools	
	Gross Weight (approx.) (kg)	17200 / 3650 / 60Tools 21700 / 3550 / 80Tools	17500 / 3950 / 60Tools 23920 / 3550 / 80Tools	

Note: Specifications are subject to change without further notice.

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