

kafo

HORIZONTAL MACHINING CENTER

| HMC SERIES



*Feel our Heart
that always sticks to perfection*

Kafo

SIX SENSES PERFORMANCE



Over fifty years, KAFO has become the leading brand in Die & Molds field and Machining field based on its solid foundation of superior technology. "Steady Research & Development, Quality Control, Accumulate Experience" exceed customers' expectations and think globally, act locally.

We provide you comprehensive six senses performance, including Vision, Hearing, Smell, Touch, Taste, and Heart. As a visual design master, we create innovative designs covering all aspects. We understand and meet customers' needs from every corner of the world. Additionally, we smell the market demand and offer well-thought-out plans. Through strict quality control, we pursue excellent quality to achieve high and steady performance. Moreover, our professional team offer efficient 24/7 service which is worth experiencing. Operating with our Heart, we always stick to perfection. By means of accumulating experience, intensifying the know-how, focusing on the upgrading core competency of technology, and continuously improving the manufacturing process, KAFO realizes the commitment to customers for best quality products and also being rated as the benchmark of the industry.

David Shen

KAO FONG MACHINERY CO., LTD.
President
SHEN, KUO-JUNG (DAVID SHEN)

Lin, Yen Huey

KAO FONG MACHINERY CO., LTD.
Chairman
LIN, YEN-HUEY

HMC-500 / HMC-630 / HMC-800 / HMC-1000

HMC SERIES

HORIZONTAL MACHINING CENTER

FEATURE

- Extra Heavy Loading Tables
- Special Design Base and Column Provide Superior Anti-Flex and Reinforced Performance



/ HMC-500



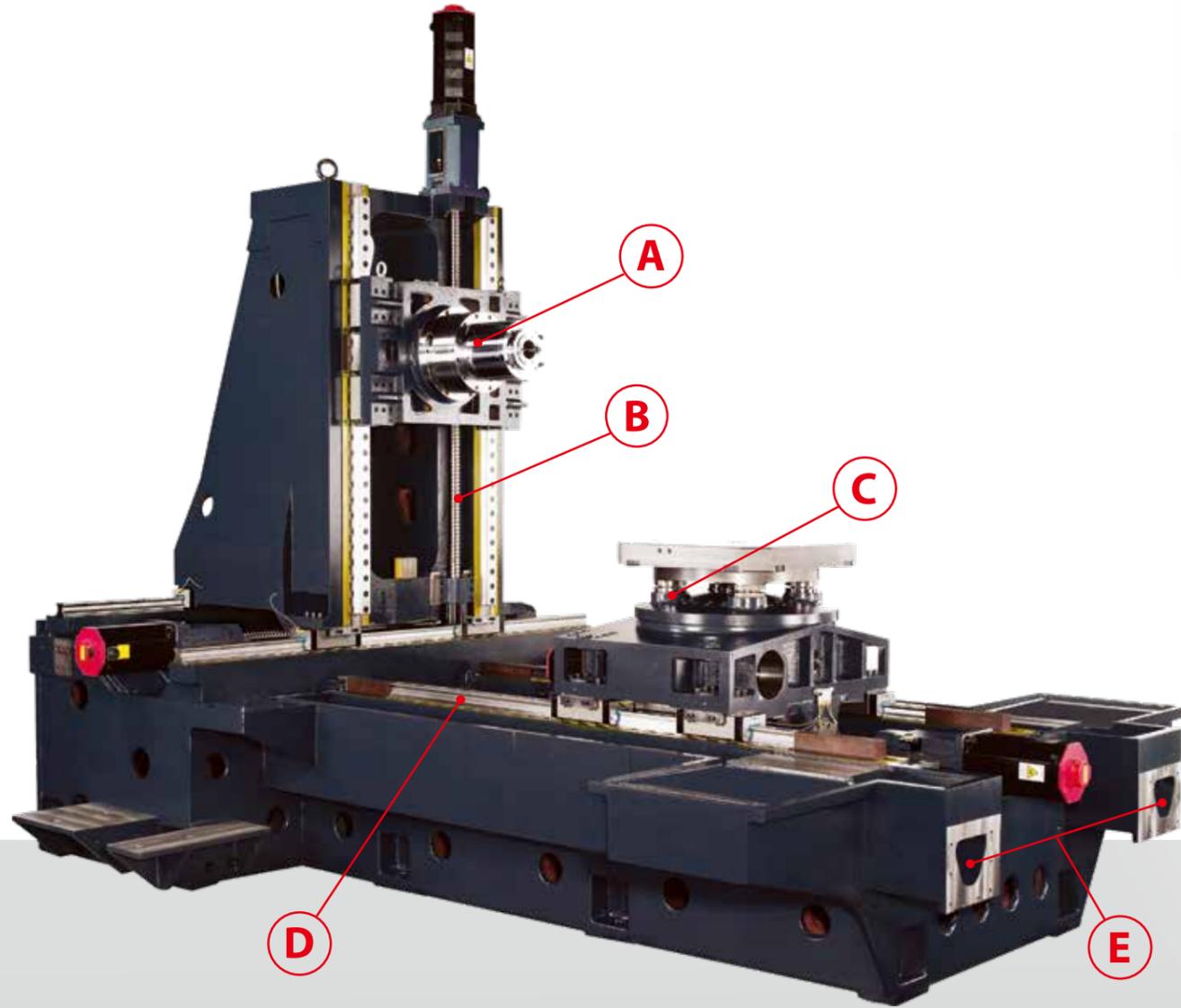
/ HMC-630



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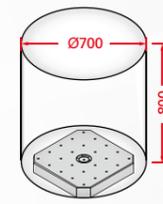
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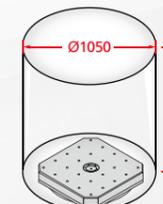
EXTREMELY RIGID STRUCTURE DESIGN

- A. Large diameter spindle bearing (Ø100 mm). High power spindle motor 25/30kW.
- B. 3 axes adopt 50mm diameter, level C3, high precision ball screws, with optional cooling system.
- C. 4 taper-shape clamping corns provide superior clamping power.
- D. Heavy-load linear guide ways.
- E. Dual-auger type chip conveyor.



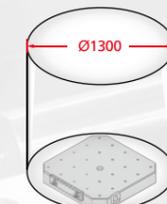
/ HMC-500

- **Axes Travel (X/Y/Z)**
720×650×650 mm
- **Maximum Pallet Load**
800 kg
- **Spindle Nose**
No.50 7/24 taper
No.40 7/24 taper (op.)



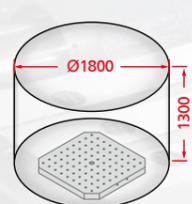
/ HMC-630

- **Axes Travel (X/Y/Z)**
1050×800×880 mm
- **Maximum Pallet Load**
1200 kg
- **Spindle Nose**
No.50 7/24 taper



/ HMC-800

- **Axes Travel (X/Y/Z)**
1400×1200×1325 mm
- **Maximum Pallet Load**
2000 kg
- **Spindle Nose**
No.50 7/24 taper



/ HMC-1000

- **Axes Travel (X/Y/Z)**
1700×1400×1525 mm
- **Maximum Pallet Load**
2500 kg
- **Spindle Nose**
NO.50 7/24 taper



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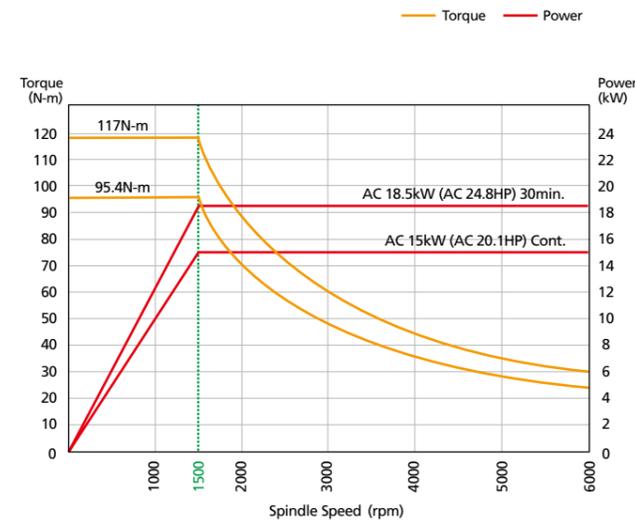
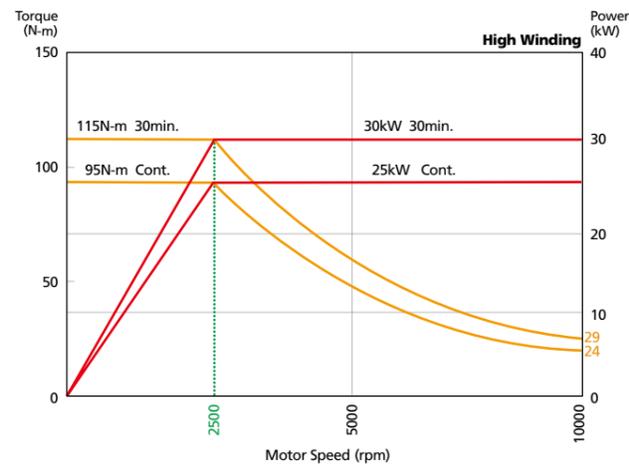
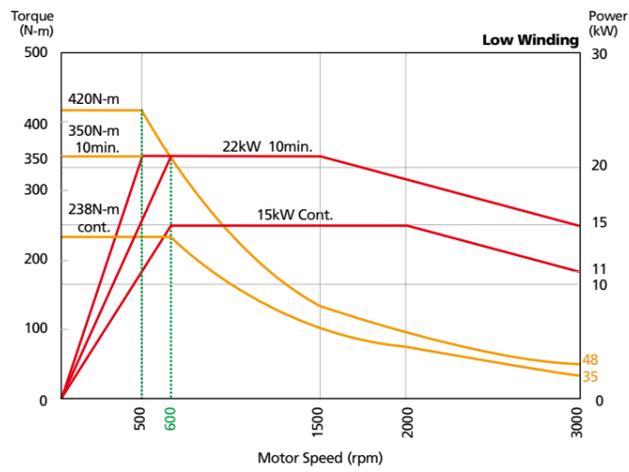
MAIN SPINDLE

- / BUILT-IN SPINDLE (OPT: GEAR / DIRECT-DRIVEN)
- / HIGH TORQUE AND POWERFUL
- / HIGH SPEED AND PRECISION

/ MOTOR AND SPINDLE SPEED

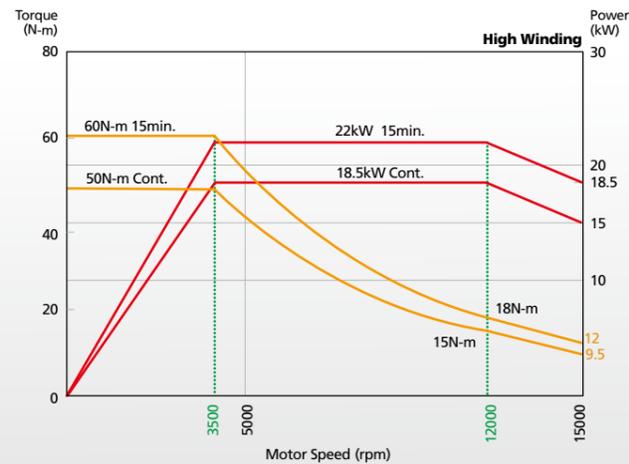
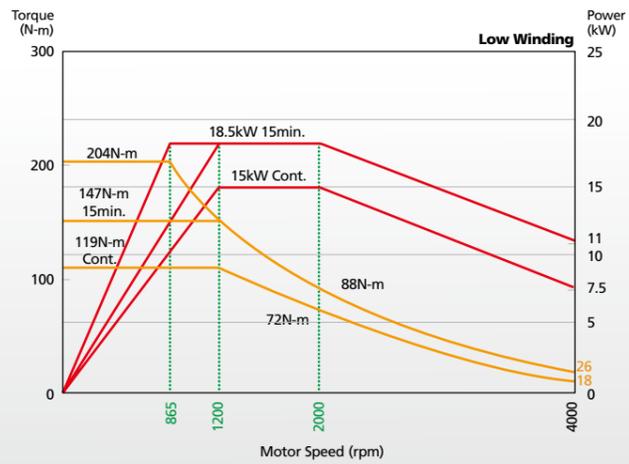
- **BT-50:** Built-In 10000 rpm, Gear 5000 rpm, Direct-driven 10000 rpm, Direct-driven 6000 rpm
- **BT-40:** Built-In 15000 rpm, Direct-driven 10000 rpm

SPINDLE POWER-TORQUE OUTPUT CHART

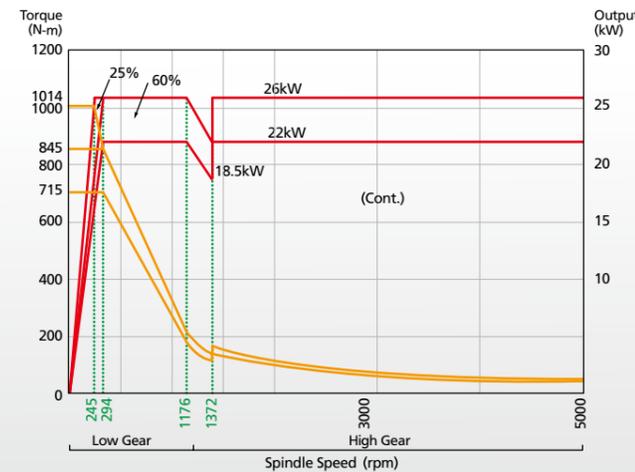


/ HMC-500 / 630 / 800 / 1000 BUILT-IN 10,000 RPM (FANUC α B160LL / 13000i) (#50)

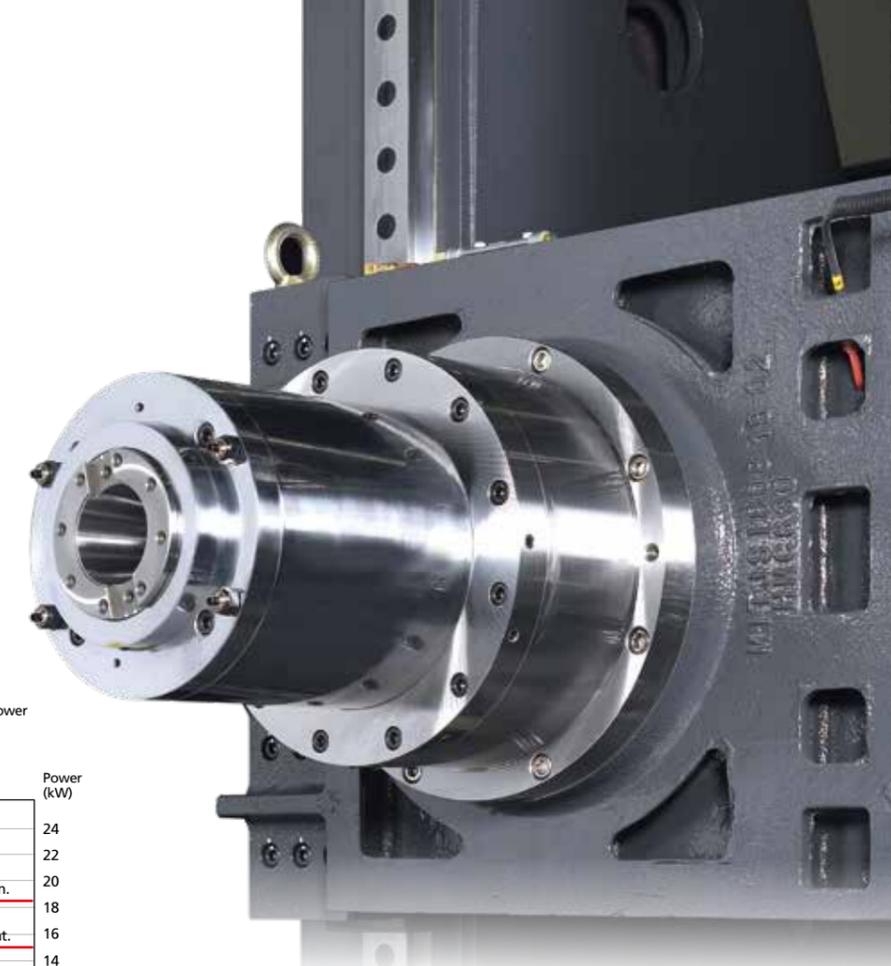
/ HMC-500 / 630 DIRECT-DRIVEN 6,000 RPM (FANUC α 15 / 8000i) (#50)



/ HMC-500 BUILT-IN 15,000 RPM (FANUC α B112LL / 15000i) (#40)



/ HMC-800 / 1000 GEAR 5,000 RPM (FANUC α 22 / 8000i) (#50)



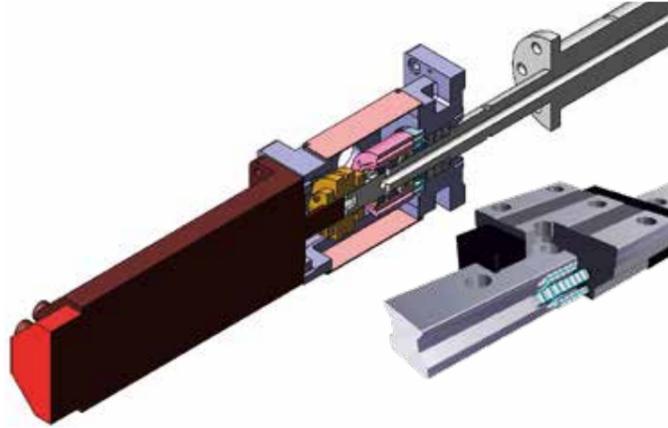
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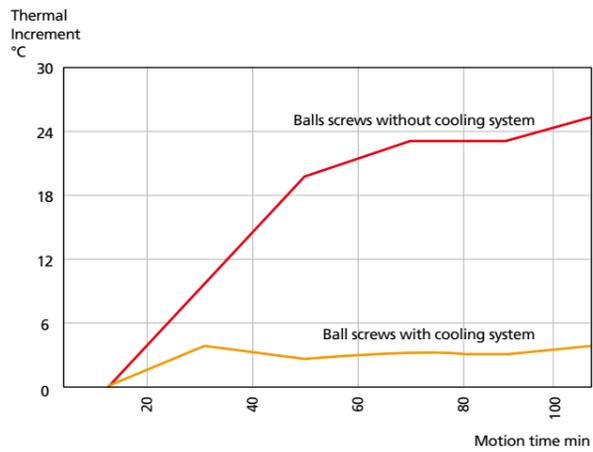
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GUIDEWAYS AND AXES DRIVES

- The feed mechanisms for 3 axes adopt heavy duty, high speed, high rigid, low noisy linear guides to provide superior acceleration/ deceleration performance and reduce non-cutting time.
- 50mm diameter ball screws connected directly to powerful A/C servo motors, with optional cooling system, provide low thermal increment and good performance without backlash and servo lag. The rapid travel rate of HMC-500 & HMC-630 can up to 48/48/48 m/min, and HMC-800 can up to 48/40/48 m/min.



/ BALL SCREWS COOLING PERFORMANCE DIAGRAM



AUTO PALLET CHANGER

- 4 taper-shape clamping system with strong clamping power to ensure the table stability, positioning accuracy, and with strong air jets discharged from the tapered cones to clean any chips from the cones and assure accurate positioning.



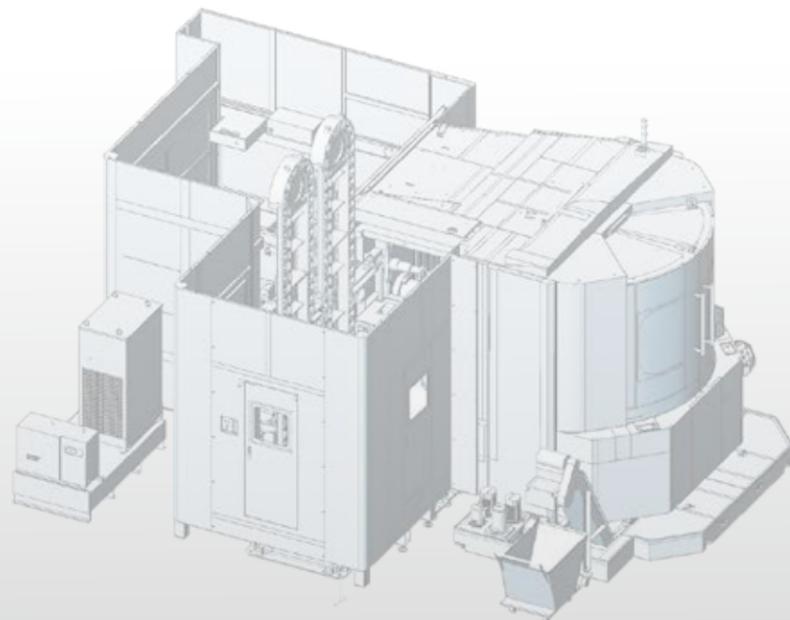
TOOL MAGAZINE

/ AUTO TOOL CHANGER

- Tool change time: 3.0 sec.(T-T)

/ TOOL CAPACITY

- Standard: 40
- Option: 60, 90, 120



/ AUTO PALLET CHANGER

- HMC-500: 11 (6 op.) sec.
- HMC-630: 15 (11 op.) sec.
- HMC-800: 18 sec.
- HMC-1000: 40 sec.

/ MAX. PALLET LOAD CAPACITY

- HMC-500: 800 kg
- HMC-630: 1200 kg
- HMC-800: 2000 kg
- HMC-1000: 2500 kg

/ TABLE INDEXING TIME

- HMC-500 / 630 / 800: 2.5 sec. (0~90°)
- HMC-1000: 5 sec. (0~90°)

/ TABLE

- 0.001° (1°op.)



HMC SERIES HORIZONTAL MACHINING CENTER

ERGONOMIC & USER-FRIENDLY DESIGN



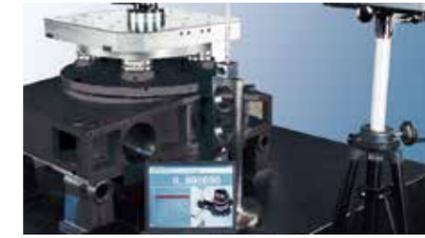
/ DOOR WIDE

- HMC-500: 950 mm
- HMC-630: 1250 mm
- HMC-800: 1350 mm
- HMC-1000: 1850 mm

FULL STRICT TEST FOR QUALITY ASSURANCE



- 3D Probe System Quality Assurance (CMM)



- Laser Inspection Before Assembly



- Laser Inspection



- Ball Bar Inspection



- Light Cutting Test-2D Circular Milling Test



- Copper Cutting Test-3D Circular Ball Milling Test

CUTTING PERFORMANCE

Spindle spec. BT-50, built-in 10000 rpm, motor fanuc αB160LL / 13000i (25/30kW)



/ FACE MILLING

- Workpiece Material S45C (SAE 1045)
- Tool Used Ø80 mm face mill
- Spindle Speed 700 rpm
- Feedrate 2,000 mm/min
- Depth/ Width of Cut 4 mm / 70 mm
- Metal Removal Rate 560 cm³/min



/ FACE MILLING

- Workpiece Material A6061 Aluminum
- Tool Used Ø80 mm face mill
- Spindle Speed 4,000 rpm
- Feedrate 10,000 mm/min
- Depth/ Width of Cut 3.5 mm / 70 mm
- Metal Removal Rate 2,450 cm³/min



/ DRILLING

- Workpiece Material S45C (SAE1045)
- Tool Used Ø50 mm insert drill
- Spindle Speed 1,500 rpm
- Feedrate 180 mm/min
- Metal Removal Rate 353 cm³/min



/ TAPPING

- Workpiece Material S45C (SAE1045)
- Tool Used M42x4.5P tap
- Spindle Speed 200 rpm
- Feedrate 900 mm/min
- Metal Removal Rate 55%



/ SWIVEL PANEL DESIGN

Easy for operation and adjustment



/ CEILING COOLANT SHOWER DESIGN



/ WIDE DOOR OPEN DESIGN

Easy for workpiece loading and unloading



/ VALLEY SHAPE DESIGNED TELESCOPIC COVER

HMC SERIES HORIZONTAL MACHINING CENTER

SPECIFICATION

MODEL		HMC-500(#40)	HMC-500(#50)	HMC-630(#50)	HMC-800(#50)	HMC-1000(#50)
Three Axis Travel						
X-axis Travel	mm	720	720	1050	1400	1700
Y-axis Travel	mm	650	650	800	1200	1400
Z-axis Travel	mm	650	650	880	1325	1525
Table						
Table dimension	mm	500x500	500x500	630x630	800x800	1000x1000
Number of table		2	2	2	2	2
Loading capacity	kg	800 (Uniform load)	800 (Uniform load)	1200 (Uniform load)	2000 (Uniform load)	2500 (Uniform load)
Workpiece dimension (Diameter / Height)	mm/mm	700/800	700/800	1050/1000	1300/1300	1800/1300
Table top surface configuration	type	24-M16	24-M16	24-M16	24-M16	80-M20
Minimum indexable angle	deg	0.001° (*1°)	0.001° (*1°)	0.001° (*1°)	0.001° (*1°)	0.001° (*1°)
Table indexing time (0°~90°)	sec	2.5	2.5	2.5	2.5	5
Spindle						
Spindle speed	rpm	15,000 Built-in (*10,000 Direct-driven)	10,000 Built-in (*10,000 Direct-driven / 6,000 Direct-driven)	10,000 Built-in (*5,000 Gear)	10,000 Built-in (*5,000 Gear)	10,000 Built-in (*5,000 Gear)
Number of spindle speed change steps	step	2 Steps (MS)	2 Steps (MS)	2 Steps (MS)	2 Steps (MS)	2 Steps (MS)
Spindle main bearing bore diameter	mm	Ø70	Ø100	Ø100	Ø100	Ø100
Distance from spindle center to table surface	mm	100-750	100-750	100-900	100-1300	100-1500
Distance from spindle nose to table center	mm	150-800	150-800	150-1030	150-1475	150-1675
Spindle nose		BT-40 7/24 taper	BT-50 7/24 taper	BT-50 7/24 taper	BT-50 7/24 taper	BT-50
Feed						
Rapid travel rate (X / Y / Z)	m/min	48 / 48 / 48	48 / 48 / 48	48 / 48 / 48	48 / 40 / 48	20 / 20 / 20
Cutting speed (X / Y / Z)	m/min	10	10	10	10	10
ATC						
Type of tool shank		BT-40 / CAT-40	BT-50 / CAT-50	BT-50 / CAT-50	BT-50 / CAT-50	BT-50 / CAT-50
Magazine capacity	tools	40 (*60 / 90 / 120)	40 (*60 / 90 / 120)	40 (*60 / 90 / 120)	40 (*90 / 120)	40(*60 / 90 / 120)
Max. tool diameter	mm	Ø95	Ø125	Ø125	Ø125	Ø125
Max. tool diameter (Without adjacent tools)	mm	Ø190	Ø250	Ø250	Ø250	Ø250
Max. tool length	mm	350	400	450	450	450
Max. tool weight	kg	8	20	20	20	20
Tool selection method		Shortest distance absolutely method				
Changing Time						
Tool change time (Tool to tool)	sec	2.4	3	4.7	5	5.2
Tool change time (Chip to chip)	sec	6	8	8	11	12
Pallet change method		Rotate method	Rotate method	Rotate method	Rotate method	Rotate method
Pallet change time (APC only)	sec	11	11	15	20	25
Motor						
FANUC spindle motor (30min / Contin.)	kW	(Built-in 15,000 rpm) 18.5 / 22	(Built-in 10,000 rpm) 25 / 30	(Built-in 10,000 rpm) 25 / 30	(Built-in 10,000 rpm) 25 / 30	(Built-in 10,000 rpm) 25 / 30
	kW	(*Direct-driven 10,000 rpm) 11 / 15	(*Direct-driven 6,000 rpm) 15 / 18.5	(*Direct-driven 10,000 rpm) 15 / 18.5	(*Gear 5,000 rpm) 22 / 26	(*Gear 5,000 rpm) 22 / 26
Feed motor (X / Y / Z / B)	kW	7 / 6 / 4 / 4	7 / 6 / 4 / 4	7 / 6 / 7 / 4	7 / 6 / 7 / 7	6 / 6 / 6 / 7
Hydraulic pump motor	kW	3.75	3.75	3.75	3.75	3.75
Spindle cooler motor (Compression / Discharge)	kW	2.3 / 0.75	2.3 / 0.75	2.3 / 0.75	2.3 / 0.75	2.3 / 0.75
Coolant pump motor	kW	0.2x1, 0.4x2	0.2x1, 0.4x2	0.2x1, 0.4x2	0.2x1, 0.4x2	0.2X1, 0.4X2

MODEL		HMC-500(#40)	HMC-500(#50)	HMC-630(#50)	HMC-800(#50)	HMC-1000(#50)
Power Supply						
Power supply AC200V / 220V (FANUC)	kVA	50	50	50	55	55
Compressed air supply	MPa, l/min	0.4 ~ 0.6, 500	0.4 ~ 0.6, 500	0.4 ~ 0.6, 500	0.4 ~ 0.6, 500	0.4 ~ 0.6, 500
Hydraulic unit tank capacity	L	120	120	120	120	120
Spindle cooler tank capacity	L	36	36	36	36	36
Coolant tank capacity	L	370	370	530	700	800
Controller system		FANUC / MITSUBISHI / SIEMENS / HEIDENHAIN				
External Dimensions						
Floor area	mm ²	4150x6611	4150x6611	4700x8243	5400x9500	6500x10000
Machine height	mm	3190	3190	3480	4000	4300
Machine net weight	kg	13000	13000	19000	28000	30000
Accuracy By Laser (Below Value Measured in Good Temp. Control Condition)						
ISO 10791 Accuracy	Positioning	mm	0.008	0.008	0.008	0.01
	Repeatability	mm	0.006	0.006	0.006	0.008
JIS 6338 Accuracy	Positioning (Within 300mm)	mm	±0.005	±0.005	±0.005	±0.007
	Repeatability (Within 300mm)	mm	±0.002	±0.002	±0.003	±0.015
Package for Transportation		20'F/R + 20'STD	20'F/R + 20'STD	40'F/R	40'F/R + 40'STD	40'F/R+40'STD

/ Standard Accessories

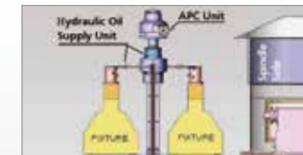
- Coolant unit pump
- 3axes lubrication unit
- Pneumatic regulator
- Hydraulic unit
- Air dryer unit
- Lighting system
- Spindle cooling oil temperature controller (Separate type)
- Signal lamp (3-levels type)
- Rotate 2 pallets APC unit
- Specification instruction
- Operation maintenance book
- Automatic power off
- X, Y, Z axes slideway protection cover
- Full enclosure / APC safety guard
- Foot pedal, tank & lift up chip conveyor
- Spindle speed 10000 rpm (Built-in)
- Embedded ceiling flush coolant shower
- Tool Magazines: 40 Tools

/ Optional Accessories

- Linear scales (X, Y, Z)
- T type slot work table
- Mist collection unit
- 6 pallets APC
- Transformer
- CE specifications
- Auto tool length measurement system
- 3 axes ball screw cooling system
- Coolant through spindle (20 bars) including filter system
- Hydraulic fixture connection joint
- Table indexing division 1 degree
- Auto workpiece measurement system
- Tool magazine 60, 90, 120 tools
- Electric leakage detection system



• Auto Workpiece Measurement System



• Hydraulic Fixture Connection Joint



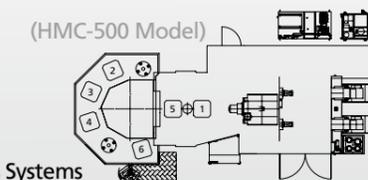
• Linear Scale



• Coolant Through Spindle



• Auto Tool Measurement



• Six Pallets Systems



1. The specification is for reference only. KAFO remains the right to modify machine specification, design or property and without prior notice.

2. The positioning accuracy inspection is only allowed to execute in KAFO's factory, may not provide inspection at other time after leaving.

3. The temperature of machine installing environment must be 5~40 degrees, the surrounding temperature difference should within 4 degrees, 0.67 degrees per hour, under 4 degrees within 6 hours.

4. As for more details, please refer to operating manual or contact with KAFO sales.



Vision



Hearing



Smell



Touch



Taste

The design idea of KAFO new catalogues is providing comprehensive six senses performance, including Vision, Hearing, Smell, Touch, Taste, and Heart.

Vision: Visual Design Master creates designs covering all aspects

We create innovative designs covering every aspect to develop perfect machines.

Hearing: Hear your needs from every corner of the world

We hear and comprehend customers' needs actively from every corner of the world, and we practice thoroughly to exceed customers' expectations.

Smell: Smell the market demand and offer well-thought-out plans

We have superior market insights and perfect strategic ability to be the strong support of customers.

Touch: Pursue excellent quality to achieve high performance

We focus on the enhancement of top core technologies and capabilities, and develop solidly to achieve excellent quality.

Taste: Taste good service by our professional and efficient team

We provide efficient, professional, and comprehensive services, and establish permanent and deep relationships with customers.

Heart: Feel our Heart that always sticks to perfection

We manage business with all our heart, and stick to perfection, to create maximum benefits for customers.



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