

Twinhorn



*HT-500*SERIES

Horizontal Machining Center

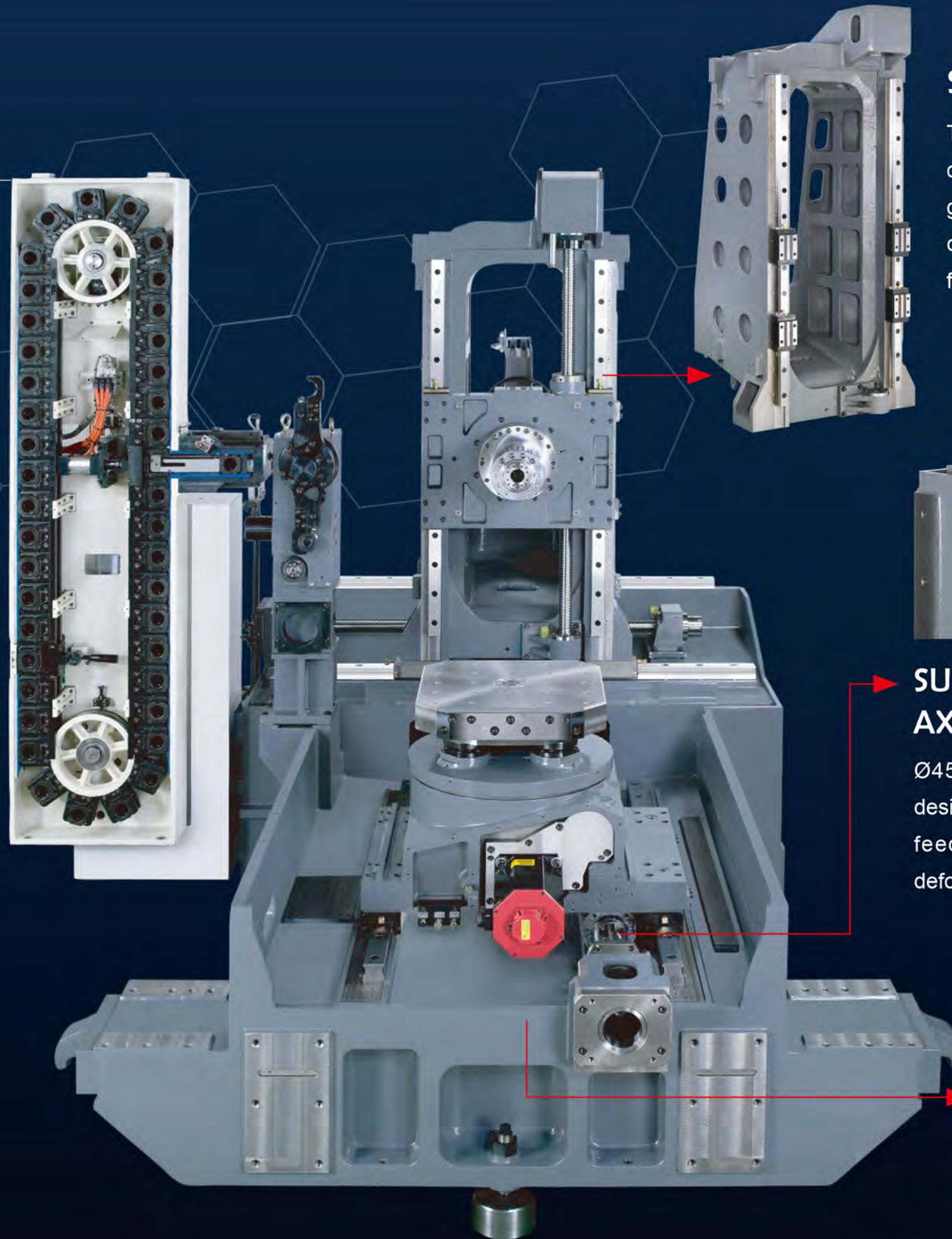


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HT-500 SERIES

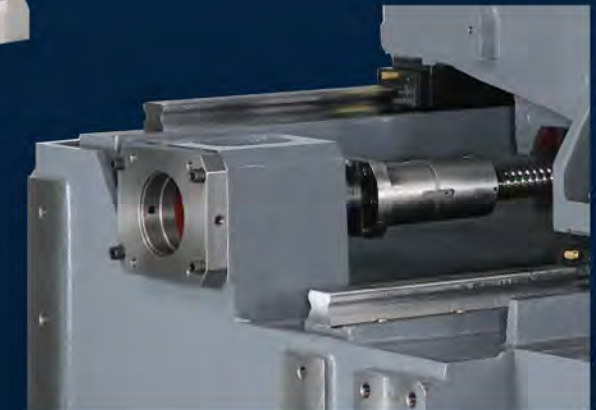
HIGH RIGIDITY MAIN STRUCTURE

- High-tensile Meehanite cast iron on all major pars, with 3 layers T shape box type one-piece base design provides best rigidity and superior accuracy stability.
- Multi-layers and enforce-rib design on base unit structure prevent any deformation and greatly reduce machining vibration during high speed operation.
- All three axes equipped with C3 degree 45 mm extra wide high accuracy linear guide way and high precision hollow coolant through ballscrew to ensure machining situation under very stable status.
- Main structure design adopts FEM technology to create a superior rigid and accuracy during high speed operation.
- This machine is suitable for car engine, also for machining needs of aerospace, transportation, communication, electron, military-engineering and textile.



STRONG COLUMN

Thick and solid double framed wall and consolidated rib of design. These make great rigidity and reduce out of shape cause of heavy cutting, ensure accuracy for using long-term.



SUPERIOR HIGH SPEED AXIAL FEEDRATE(Opt.)

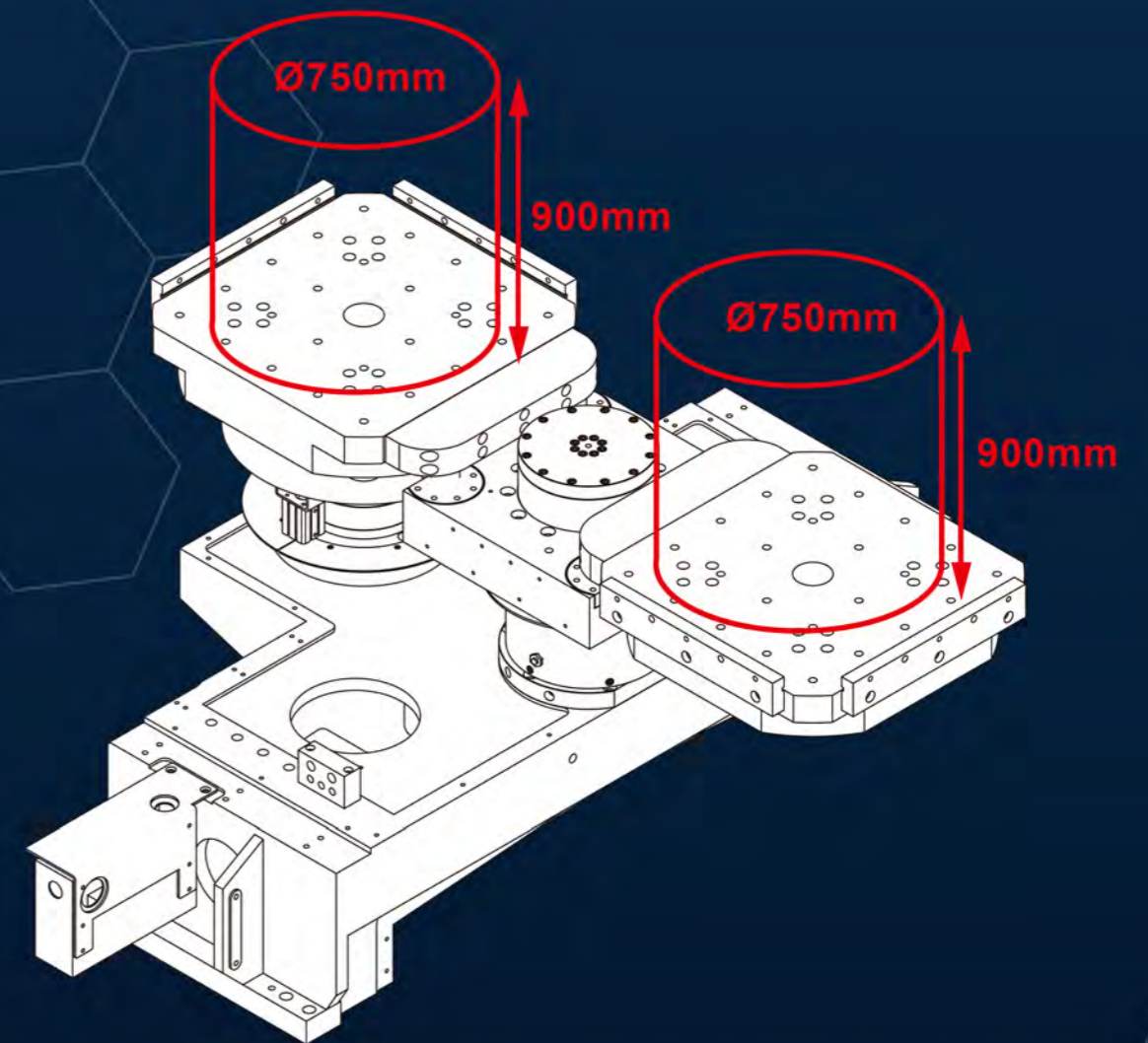
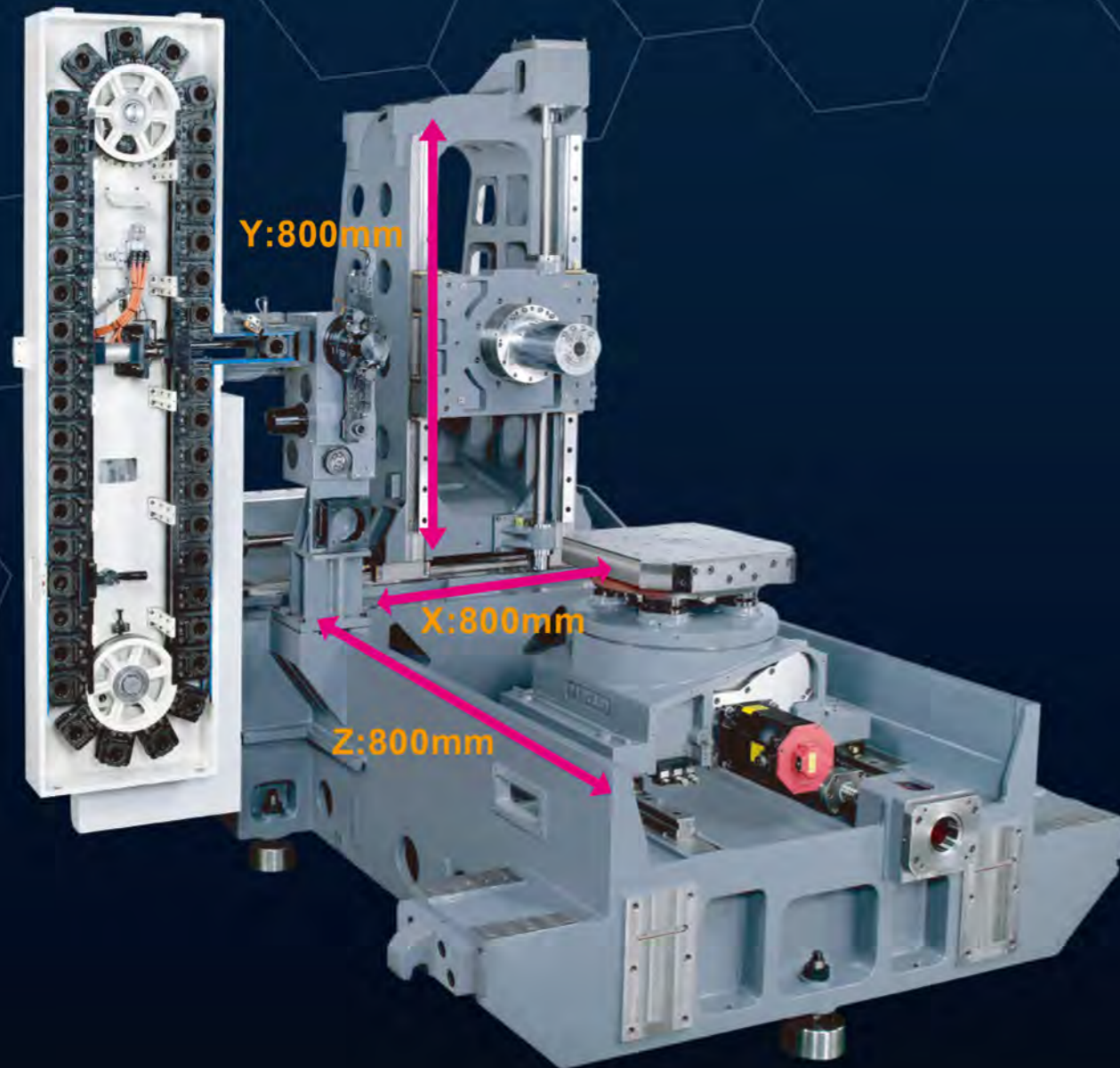
Ø45 mm P20 coolant through ballscrew design on all 3 axes provides highest rapid feedrate 60 m/min with minimum heat deformation during high speed operation.

LARGE SPAN DESIGN

720 mm extra wide span between Z axis slides provides most stable movement and heavy machining operation support.

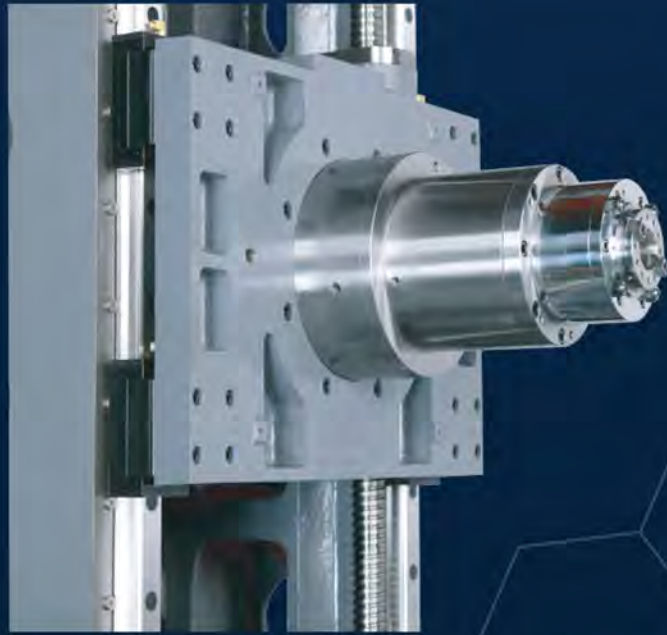
3 AXES TRAVEL 800/800/800mm

Largest 3 axes travel 800 x 800 x 800 mm in all similar level of HMC. Y axis travel 800 mm allows multi-workpiece machining per set up, greatly enhance the efficiency and control your purchase cost.



LARGER WORKING AREA

The rotary table size 500 x 500 mm with maximum working area $\text{Ø}750 \times 900$ mm high and maximum loading 600 Kg is most suitable for both heavy duty with one workpiece and light machining with several pieces.



BUILT-IN SPINDLE DESIGN

High torque built-in type spindle with P4 grade angular contact bearings in maximum loading support arrangement set up.

Standard external spindle cooling system, air lock system on spindle nose and floating tool clamp/unclamp system provide lowest noise, minimum vibration and highly stable performance in high speed operation.

- Spindle speed 200~15,000rpm
- Spindle motor power 18.5/22kW (Cont./15min)
- Spindle outer diameter ... BT40 : Ø70mm \ BT50 : Ø100mm

HIGH ACCURACY AUTOMATIC PALLET CHANGE SYSTEM (APC)



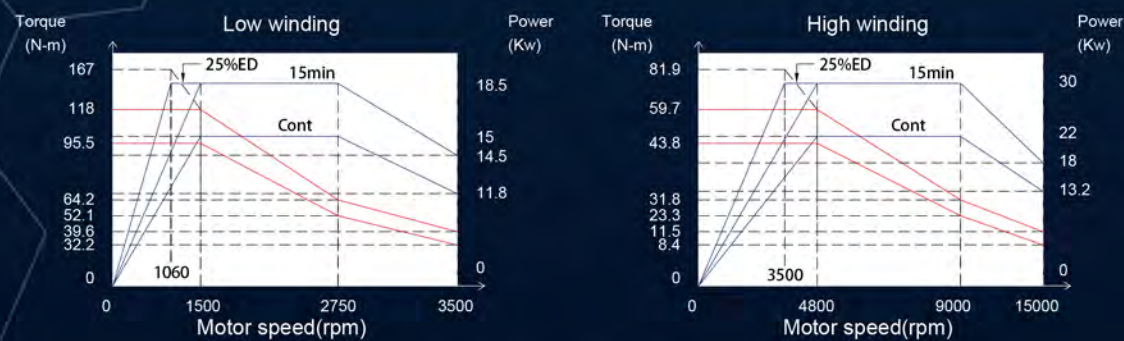
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High precision APC system adopts one-by-one table exchange way with table exchange time 11 seconds.

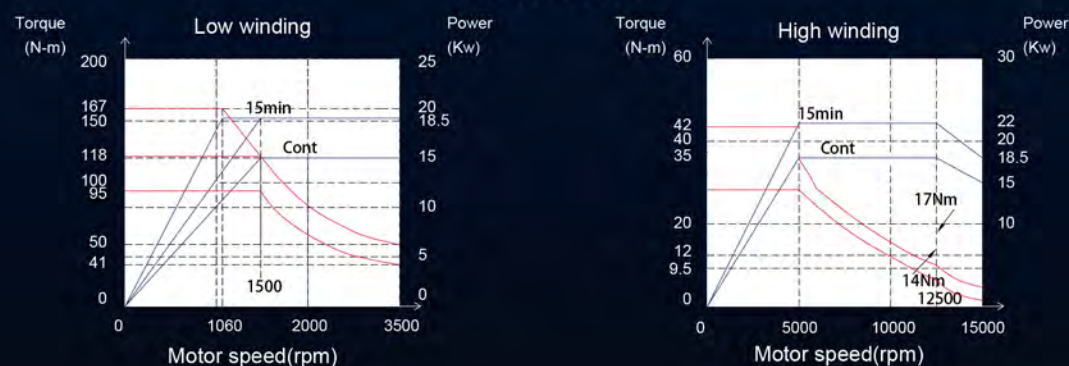
- Inner special worm design with gear gap 5~8 micron perfectly matched the gear and provided more than 5 times square measure of contacting area compared to other competitors.
- The central shaft adopts large lodged-in and pre-pressed bearings, greatly enhance high cutting rigidity and ensure the precision and smooth of table rotation.
- Hydraulic rotary table brake control system provides 2000 Kgf clamping force and 3500 Nm in B-axis lock-on power.
- Equipping with precise rotary table of 0.001 degree positioning angle, provides best positioning accuracy and most smooth revolution.
Option : Minimum indexing angle 1 degree of divided circle.
- Rotary table and pallet both use servo drive.

SPINDLE MOTOR TORSION DIAGRAM(18.5/22kW)

Motor Type : MITSUBISHI
SJ-2B4321TKH

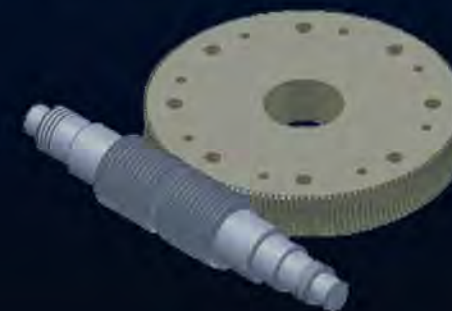


Motor Type : FANUC
αB112L/15000i



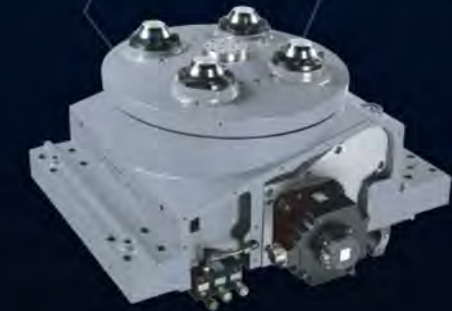
2-STEP WORM DESIGN

The 2-step worm design largely reduces the adjusting time of gear gap.



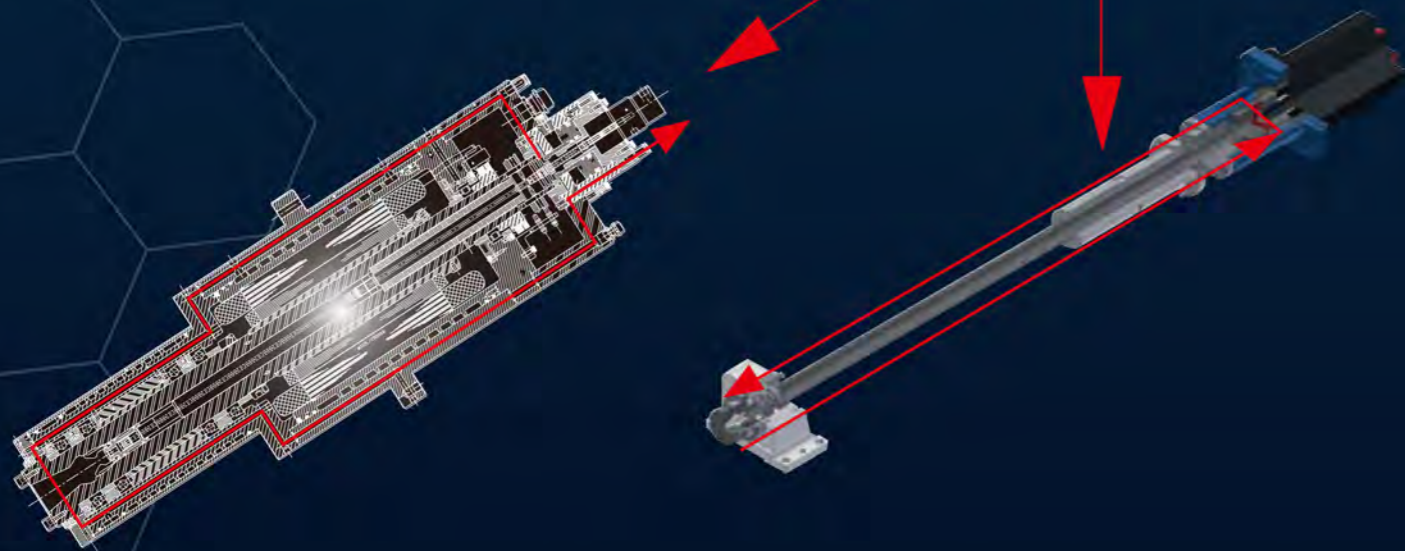
B AXIS POSITIONING PULL STUD

4-positioning-stud-design ensures both the positioning and cutting accuracy.



OUTSTANDING COOLING SYSTEM

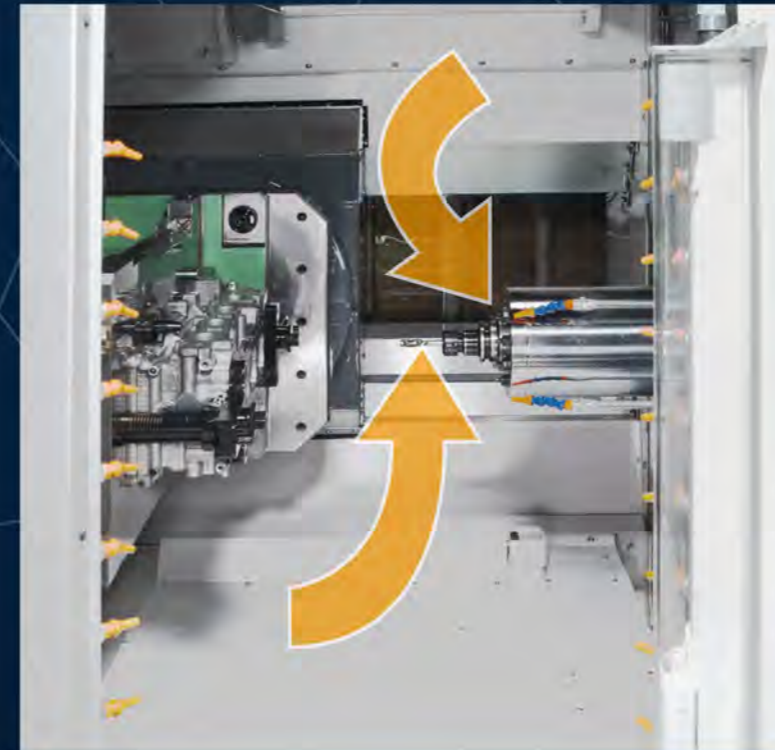
- Temperature control range: -9~+5°C
- Cooling capacity: 3750 / 4500kcal / hour
- Adapted interior temperature: 10~40°C



High efficiency spindle external cooling system keeps spindle operation within minimum thermal variation control and perfectly prevents shifting occurred from spindle center and ensures machining accuracy.

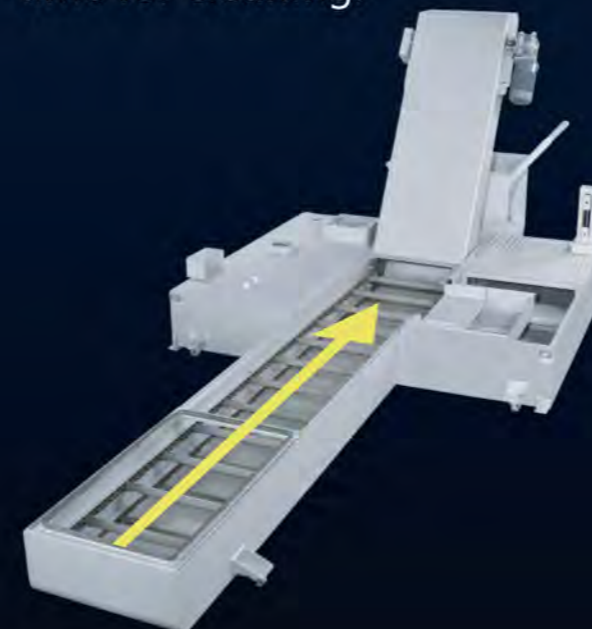
Hollow coolant through ballscrew design allows the coolant pass through the ballscrew center and efficiently lower the inner temperature generated from high speed movement of 3 axes, keeps the thermal variation in smallest way and maintains machining accuracy.(Opt.)

HIGH EFFICIENCY & LARGE CAPACITY CHIP REMOVING SYSTEM



Big slant design on bed center below Z axis efficiently collects chips to the bottom from central outlet for conveyor to remove.

Standard chain type chip conveyor will be inserted forward from machine rear side and match the central outlet perfectly to collect chips and automatically remove to specialized chip collect cart, largely save your time for cleaning.



MACHINING ACCESSORIES

LARGE VOLUME ROOFTOP FLUSHING SYSTEM

With rooftop coolant flashing design, easily flush the chips out from machine inner side.



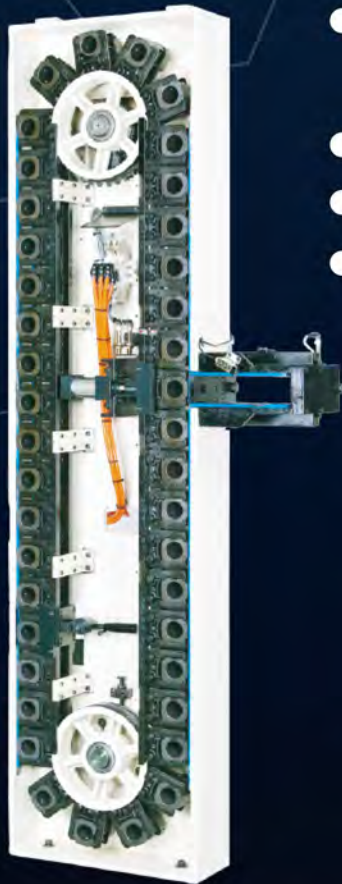
HYDRAULIC UNIT

Provide 2000kgf of clamping force and 3500Nm of B-axis lock-on power.



CHAIN TYPE ATC SYSTEM

- Tool magazine is driven by AC servo motor, features high speed and superior positioning accuracy.
- Tool to Tool: 1.5 sec
- Maximum tool length: 400 mm
- Maximum tool diameter (w/o adjacent tool): 200 mm



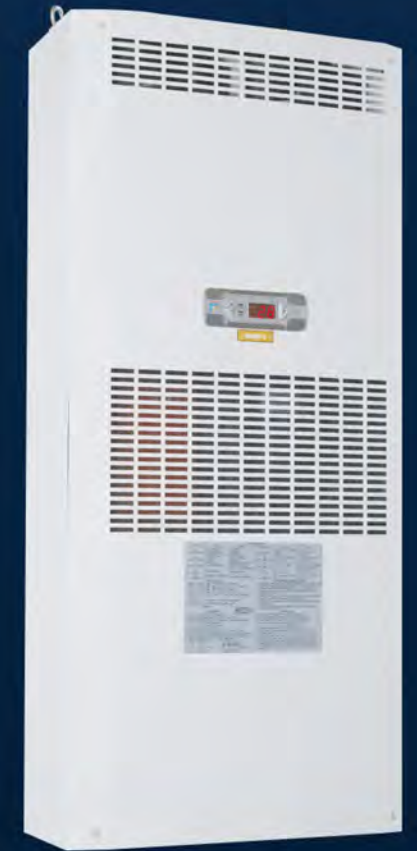
CNC CONTROL SYSTEM

- Considerable operation panel interface let users easy to handle and start your machining in no time.
- Standard: FANUC 0i-MF
Option: Mitsubishi M720VS



HEAT EXCHANGER (AIR CONDITIONER)

- Perfectly prevent the external chips from getting the electrical cabinet and injuring inner elect. units.
- Efficiently control the temperature and wet by air conditioner and largely extend the service life of elect. cabinet.



SUCCINCT TUBE DESIGN

All the main oil tubes are high strength copper tubes to provide machine users better protection.



INDEPENDENT COOLANT TANK FOR CTS(Opt.)

Provide plentiful coolant and sufficient hydraulic pressure for CTS function and make chip removing more efficient, most suitable for tapping application.

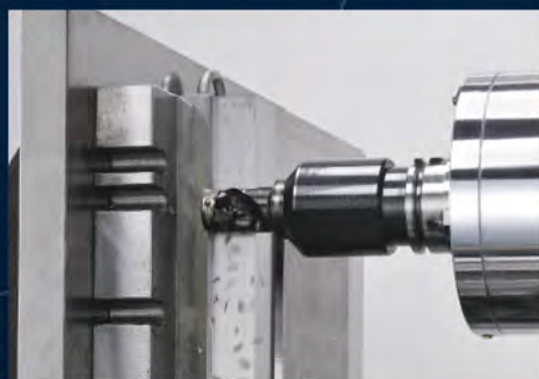


CUTTING CAPACITY



FACE MILLING

Work piece material : S45C
Spindle speed : 800 rpm
Feedrate : 1000 mm/Min
Cutting width : 80 mm
Cutting depth : 3 mm
Material elimination rate : 240 cc/Min



END MILLING

Work piece material : S45C
Spindle speed : 250 rpm
Feedrate : 150 mm/Min
Cutting width : 20 mm
Cutting depth : 25 mm
Material elimination rate : 75 cc/Min



DRILLING

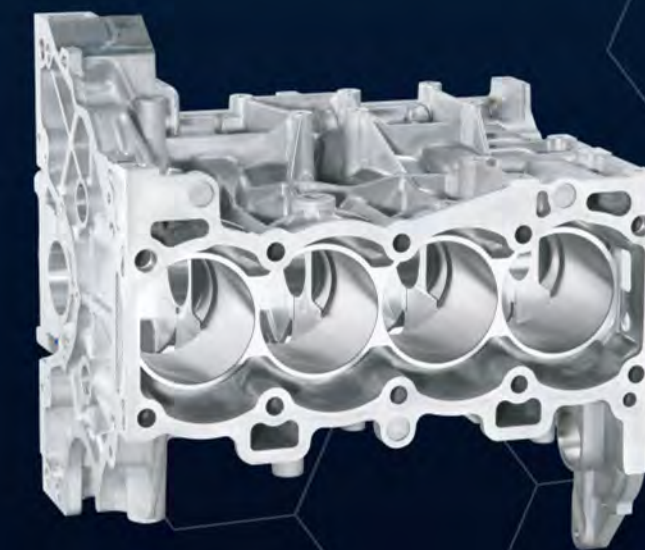
Work piece material : S45C
Spindle speed : 900 rpm
Feedrate : 180 mm/Min
Drilling diameter : 40 mm
Material elimination rate : 226 cc/Min



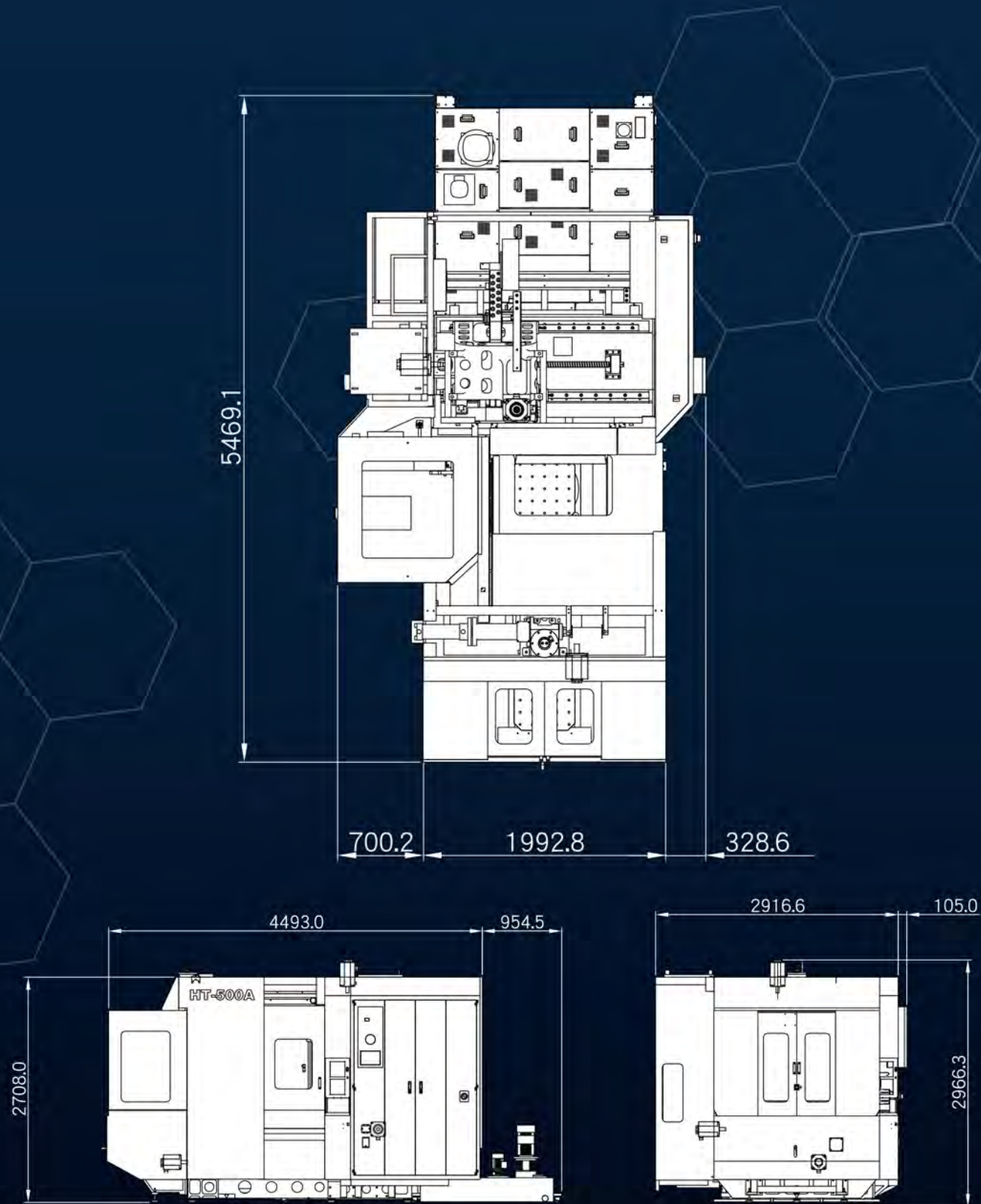
TAPPING

Work piece material : S45C
Spindle speed : 235 rpm
Feedrate : 705 mm/Min
Tap : M27 x P3.0

WORKPIECE SAMPLE



DIMENSIONAL DRAWING



MACHINE SPECIFICATION

Item	HT-500A	HT-500B
Travel		
X-axis travel	800 mm	
Y-axis travel	800 mm	
Z-axis travel	800 mm	
Rotary Table		
Working table	500 × 500 mm (Opt.500 × 630 mm)	
The maximum load of working table	600 kg	
Minimum indexing degree	0.001°(Opt. : 1°)	
Surface configuration	M16 × 2 mm × 33 mm × 100 mm	
Rotary time	3.6 sec/rev	
Cutting force resistance	250 kg-m	
Spindle		
The distance from spindle nose to working table surface	150~950 mm	135~935 mm
The distance from spindle center to table surface	120~920 mm	
Spindle nose taper	BT-40,7/24 No. 40 (Opt.HSK-A63)	BT-50,7/24 No. 50
Spindle speed	Built-in: 10,000 rpm (Opt. 12000, 15000 rpm)	Built-in: 6,000 rpm (Opt. 8000, 10000 rpm)
Spindle diameter	70 mm	100 mm
Feed		
Rapid feed (X/Y/Z)	36/36/36 m/min(Opt.60/60/60 m/min)	
Cutting speed	10~20,000 m/min	
ATC		
Tool change method	Arm	
ATC drive	servo motor	
Magazine drive	servo motor	
Tool Shank	BT-40(Opt.HSK-A63)	BT-50
Tool capacity	40T (Opt.60T)	
Tool change time	T-T 1.5 sec, C-C 4.5sec	T-T 3 sec, C-C 6 sec
Pull stud	MAS 403 P40T-1 (45°)	MAS 403 P50T-1 (45°)
Max. tool diameter (with adjacent tool)	95 mm	125 mm
Max. tool diameter (without adjacent tool)	200 mm	250 mm
Max. tool length	400 mm	
Average tool weight	5 kg	10 kg
Max. tool weight	11 kg	20 kg
Tool selection method	Fixed position	
APC		
Exchange method	Rotary pallet change	
Number of pallets	2	
Max.jig swing diameter	Ø750 mm	
Max.jig height	900 mm	
Pallet surface to floor	1150 mm	
Pallet exchange time	11 sec	
Accuracy		
Positioning	VDI 3441 P0.014 mm(JIS B6338 ±0.004/ 300 mm)	
Repeatability	VDI 3441 PS0.010(JIS B6338 ±0.003 mm)	
Motor		
Spindle motor	FANUC 18.5 / 22 kW(cont. / 15min) MITSUBISHI 18.5 / 22 kW(cont. / 15min)	
Servo motor X/Y/Z/B	FANUC X : 5.5kW, Y : 5.5kW Z : 5.5kW, B : 4kW MITSUBISHI X : 4.5kW, Y : 4.5kW Z : 4.5kW, B : 2.0kW	
Magazine motor	FANUC : Absolute, With brake MITSUBISHI : Absolute, With brake	
ATC motor	FANUC : Absolute MITSUBISHI : Absolute	
Coolant pump motor	0.37 kW	
Hydraulic unit motor	3.7 kW	
Other		
Power capacity	45 kVA	
Pressure capacity	3~4 kg/cm ² (0.3~0.4 MPa), 200 L/min	
Mechanical Dimensions(WxDxH)	310 × 610 × 300 cm	
Machine weight	13500 kg	14000 kg

STANDARD

- Arm type ATC system 40T
- Spindle oil cooler
- Coolant tank
- Chip conveyer & cart
- Safety door interlock
- Fully enclosed splash guard
- Work lamp
- Auto lubrication system
- Hydraulic unit
- Spindle air blast
- Auto side flushing device
- Spindle air curtain
- Rigid tapping
- Heat exchanger
- Magazine operation panel
- Tools and tool box
- Leveling bolts and pads
- Mechanical manual, part lists, Operation manual, Electrical manual, Test report, operator's manual and maintenance manual of the controller
- Water gun
- Air gun

OPTION

- Pull stud
- Auto tool length measurement
- CTS, coolant through spindle
- Transformer
- Water level switch
- Arm type ATC system 60T
- Optical scale
- Oil skimmer
- Index table with 1°
- Ballscrew with hollow cooling system (When rapid feed 60 m/min is standard)

* Machine specifications, accessories and appearance dimensions are subject to change without notice by CHI-FA

SOLUTION OF WORLDWIDE SALES NETWORK



HISTORY OF CHIFA

TAIWAN

CHINA



- 1976 Established the Metal processing department at MAR.01.
- 1992 Established the Machine Center R&D department.
- 1993 Continually 4th year of Knee-type Milling machine production reached 1800 sets monthly.
- 2003 Established the US branch office & warehouse at Feb.01.
- 2005 Established China branch as Twinhorn machinery co., Ltd.
- 2008 Started constructing China manufacture & production headquarters.
- 2009 Invested in the technical cooperation with Italian 5Ax maker on Movingcolumn and Gantry types 5Ax machining centers.
- 2010 Completed the construction of China manufacture & production.
- 2012 Became the most biggest manufacturer of tapping center in greater China.
- 2013 Expanded the 4th assembly plant (factory area 4000m²) in Taiwan headquarters.
- 2014 HE-400,VTG series are marketing.
- 2015 New assembly plant been released.

Twinhorn

CHI-FA MACHINERY MANUFACTURER CO., LTD.

No.44-8, MING-CHUNG RD., SHENG-KANG DIST., TAICHUNG CITY, TAIWAN 42948

Tel: +886-4-2562-8747 (Rep.) Fax: +886-4-2561-4199

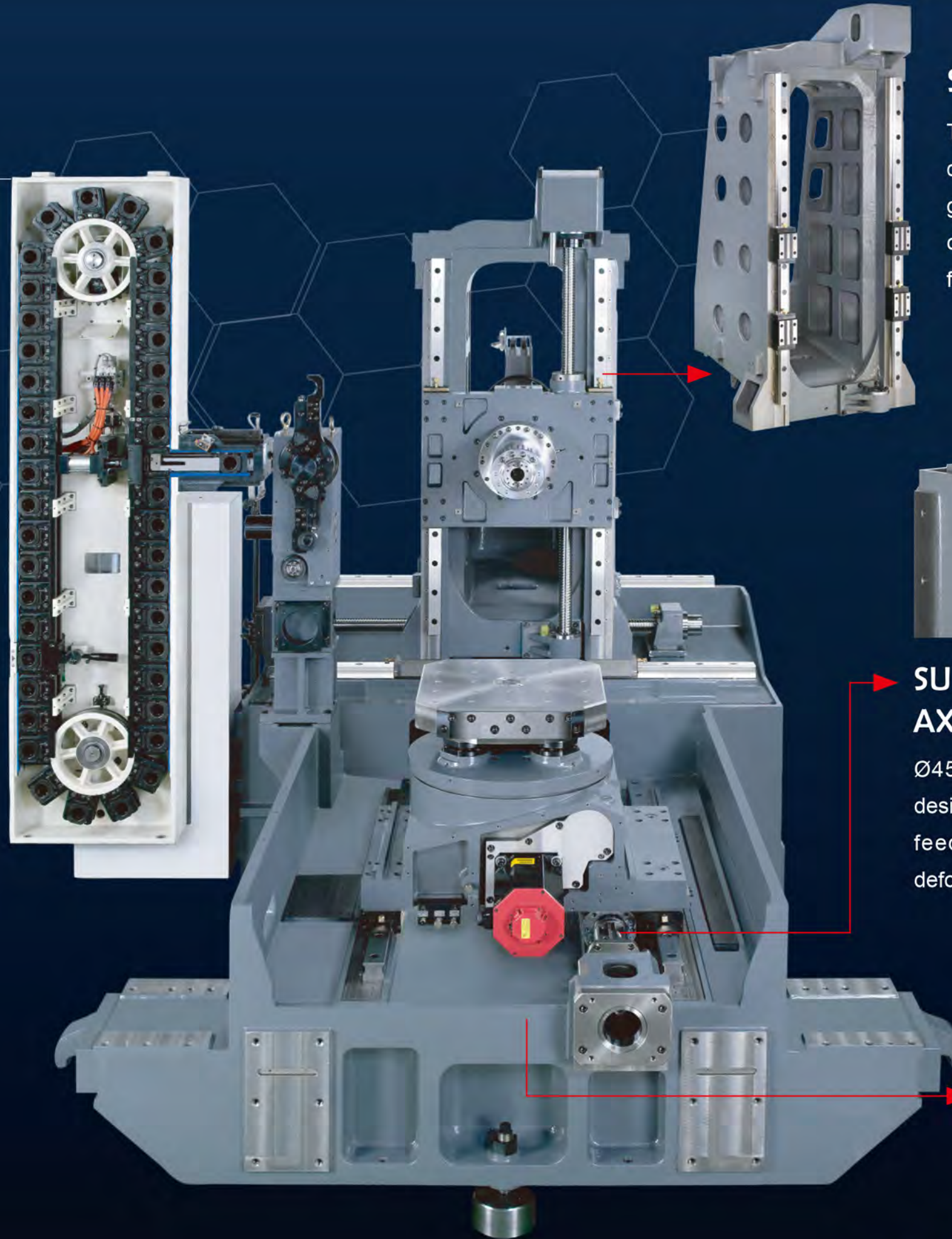
E-mail: inquiry@twinhorn.com.tw

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HT-500 SERIES

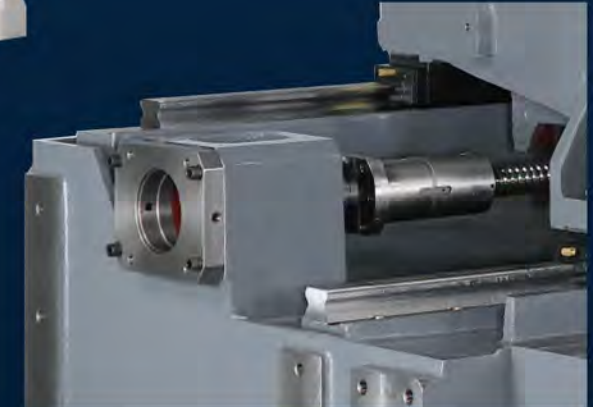
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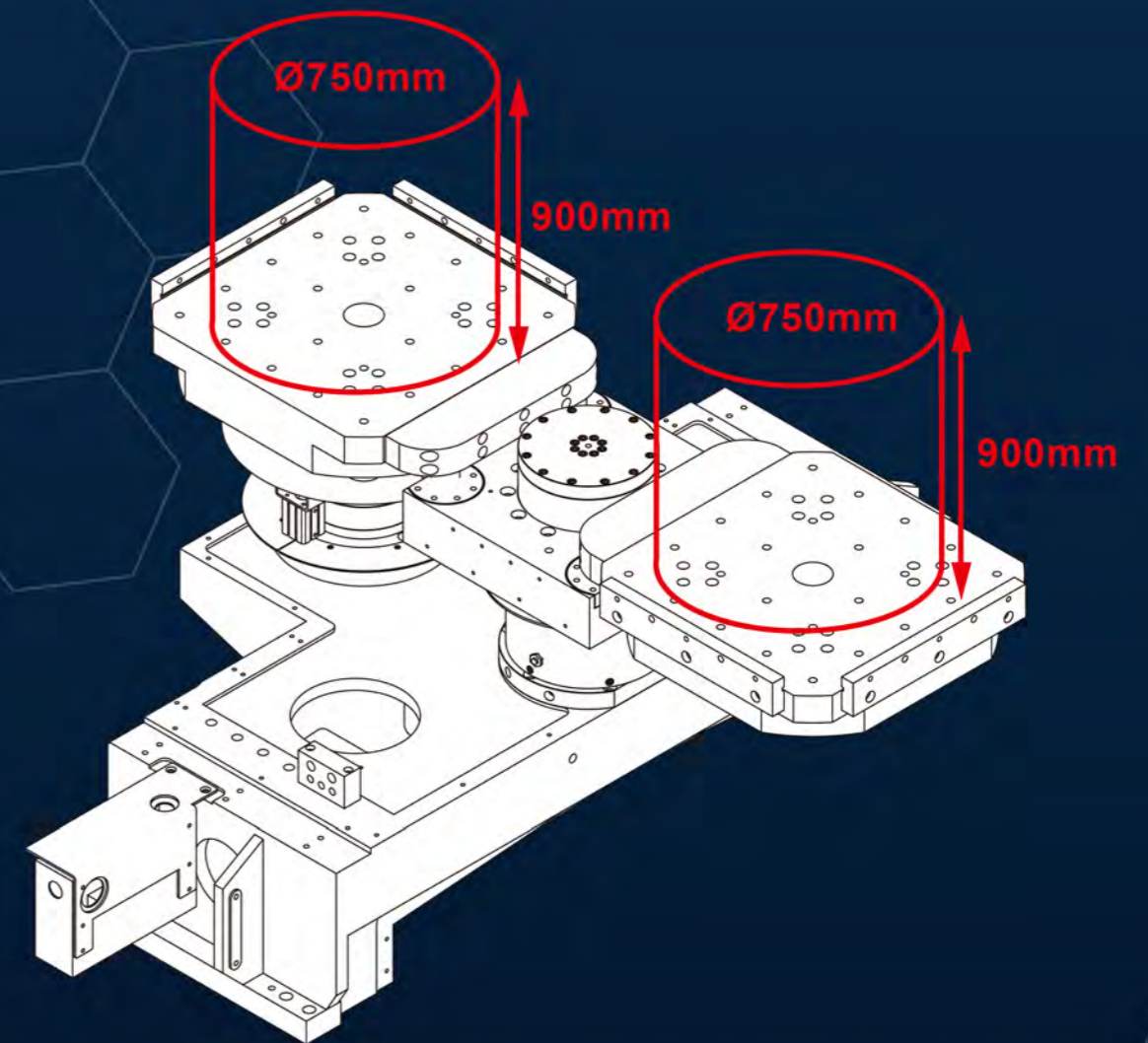
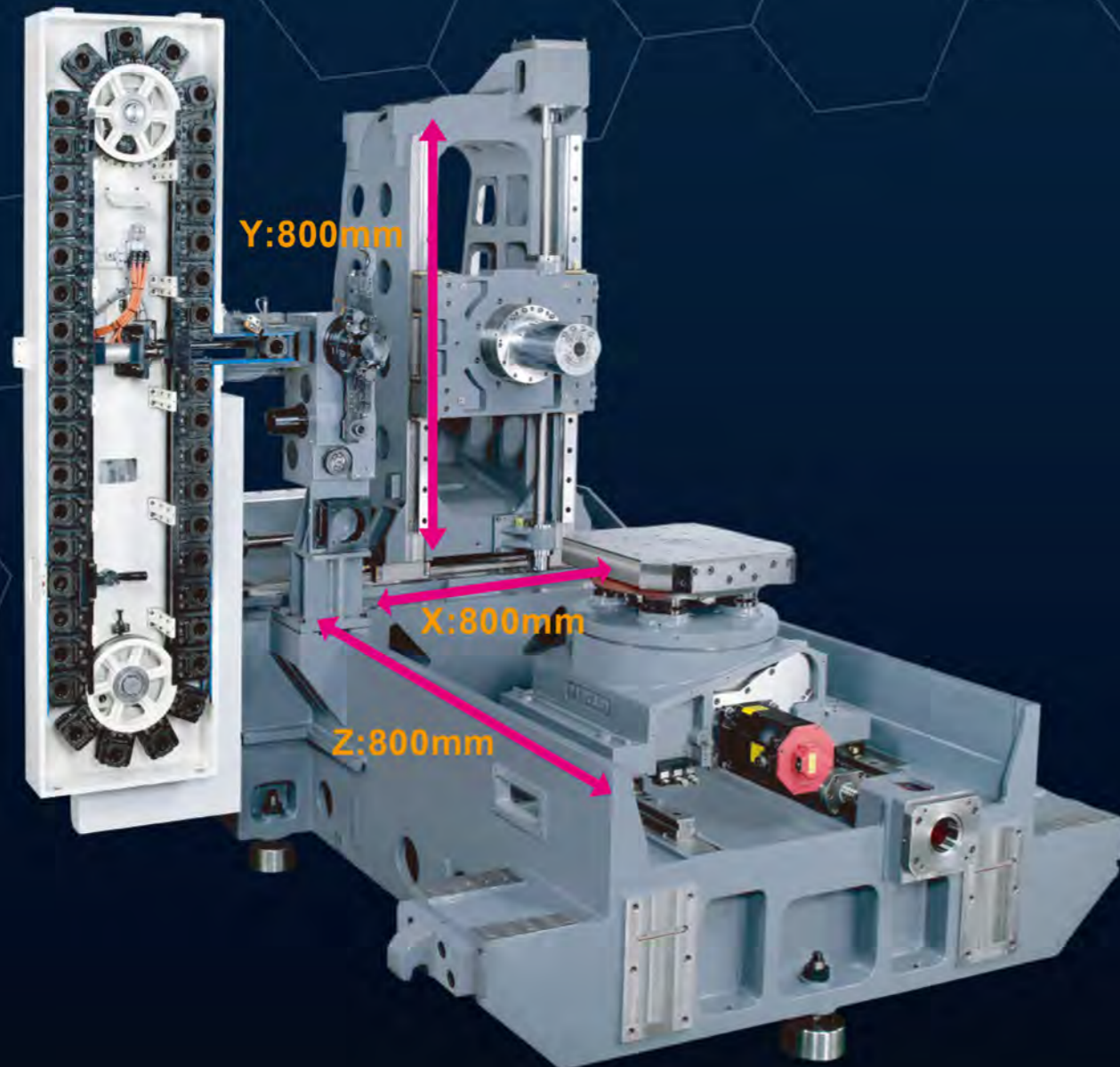
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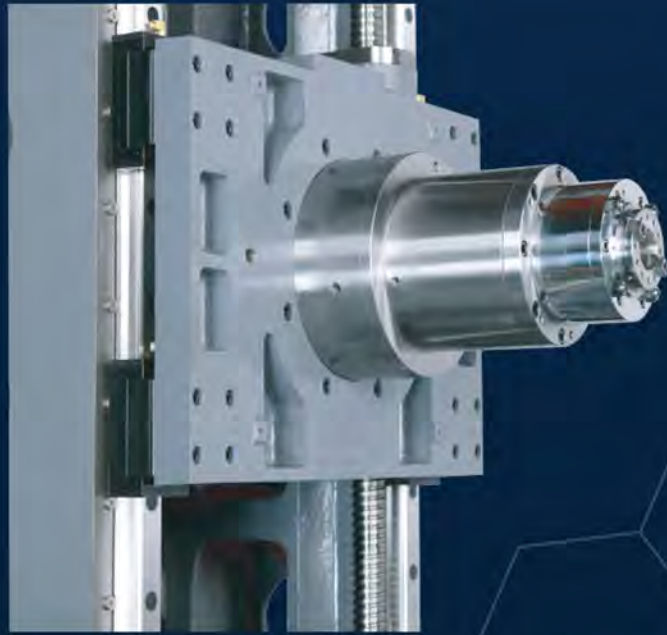
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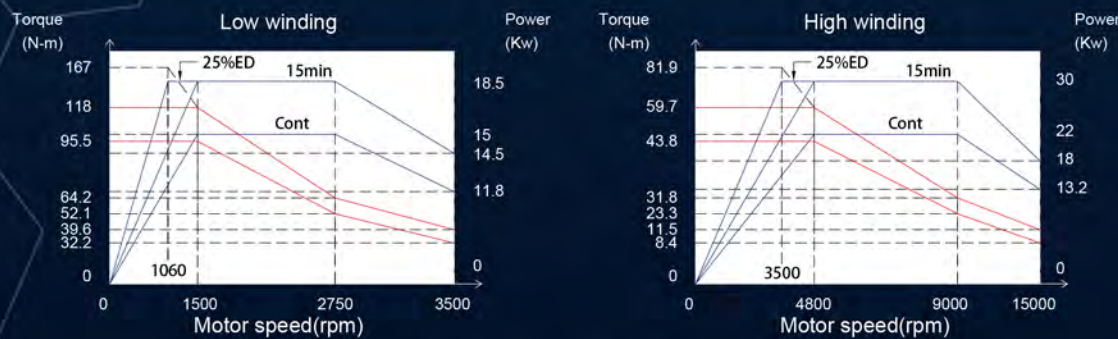
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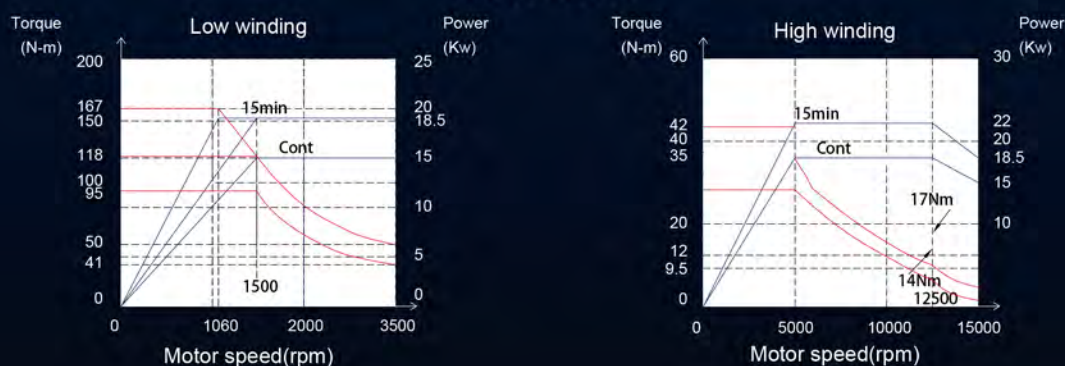
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SPINDLE MOTOR TORSION DIAGRAM(18.5/22kW)

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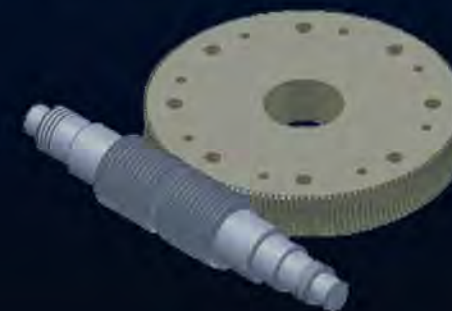


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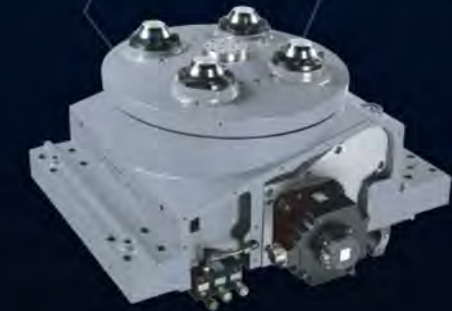
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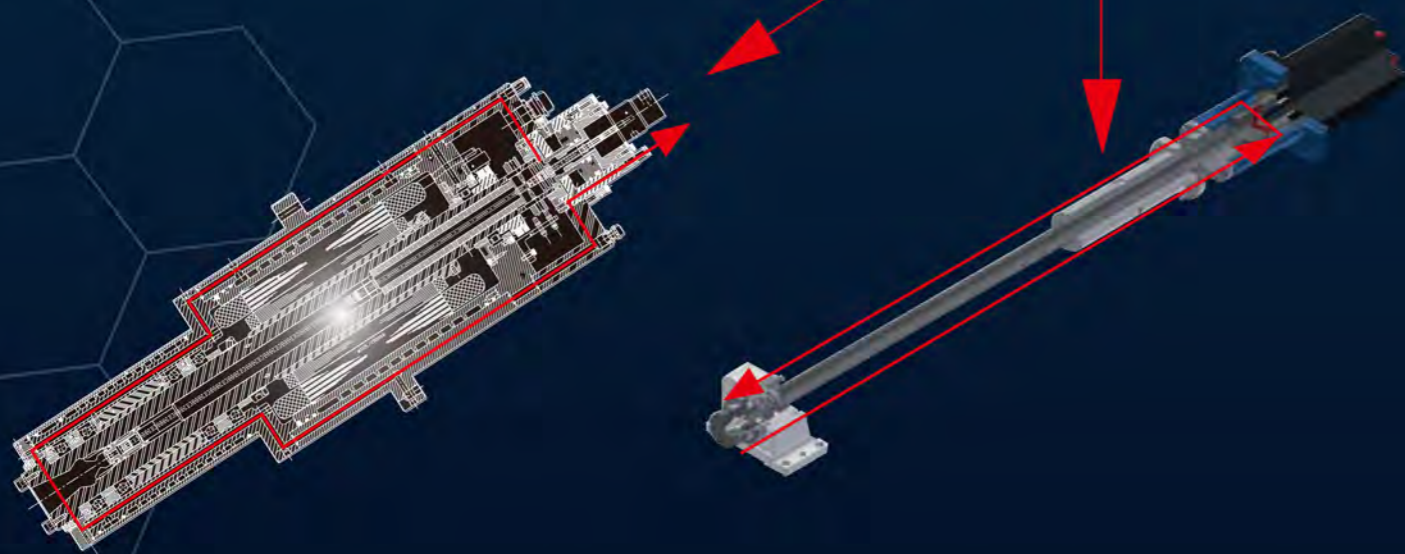
B AXIS POSITIONING PULL STUD

4-positioning-stud-design ensures both the positioning and cutting accuracy.



OUTSTANDING COOLING SYSTEM

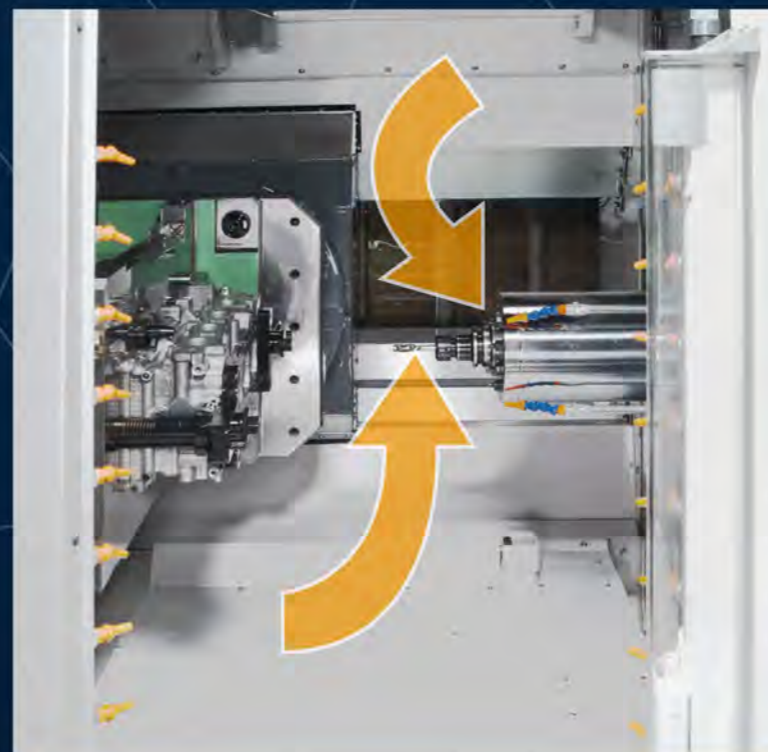
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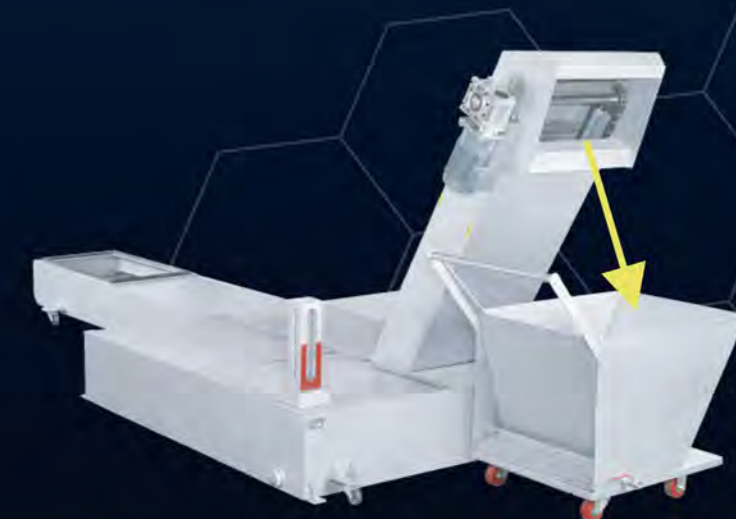
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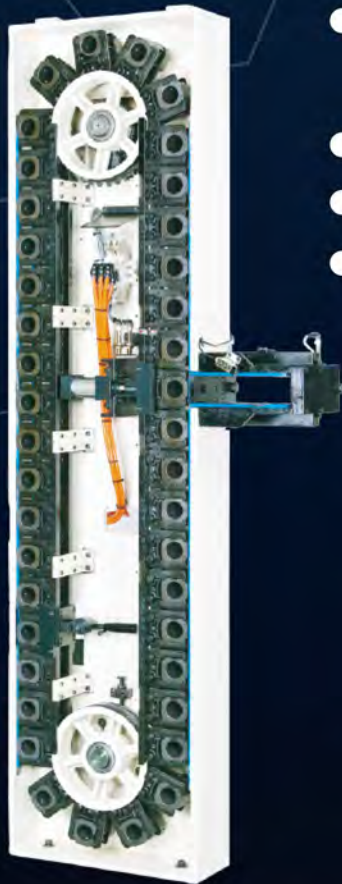
HYDRAULIC UNIT

Provide 2000kgf of clamping force and 3500Nm of B-axis lock-on power.



CHAIN TYPE ATC SYSTEM

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- Tool to Tool: 1.5 sec
- Maximum tool length: 400 mm
- Maximum tool diameter (w/o adjacent tool): 200 mm



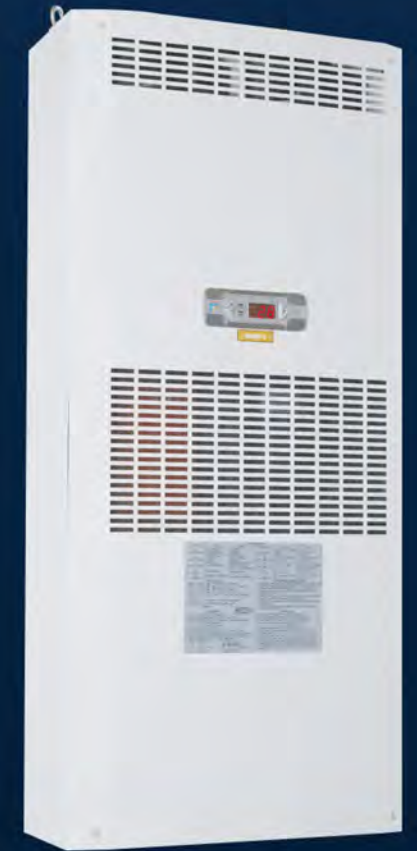
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Option: Mitsubishi M720VS



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SUCCINCT TUBE DESIGN

All the main oil tubes are high strength copper tubes to provide machine users better protection.



INDEPENDENT COOLANT TANK FOR CTS(Opt.)

Provide plentiful coolant and sufficient hydraulic pressure for CTS function and make chip removing more efficient, most suitable for tapping application.

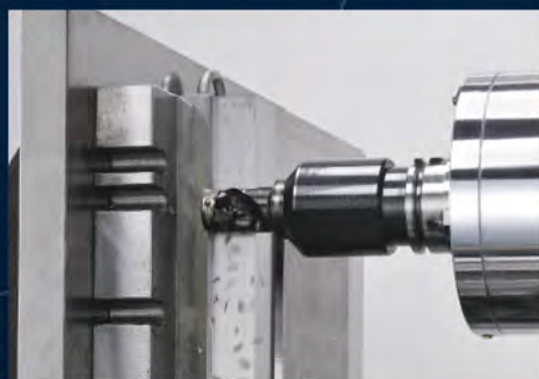


CUTTING CAPACITY



FACE MILLING

Work piece material : S45C
Spindle speed : 800 rpm
Feedrate : 1000 mm/Min
Cutting width : 80 mm
Cutting depth : 3 mm
Material elimination rate : 240 cc/Min



END MILLING

Work piece material : S45C
Spindle speed : 250 rpm
Feedrate : 150 mm/Min
Cutting width : 20 mm
Cutting depth : 25 mm
Material elimination rate : 75 cc/Min



DRILLING

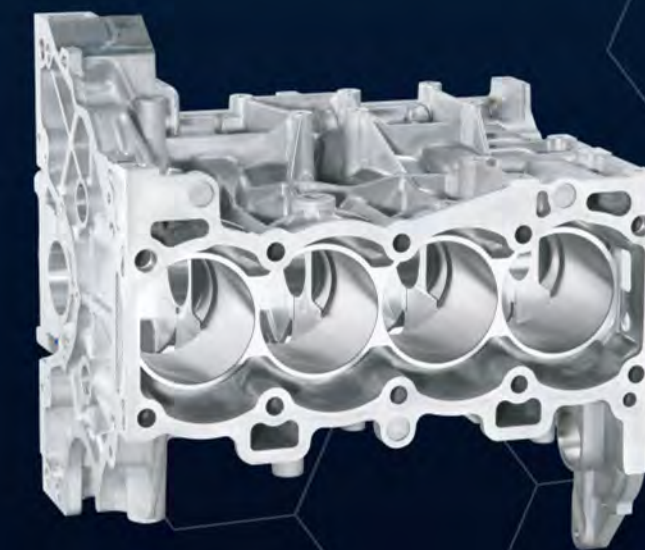
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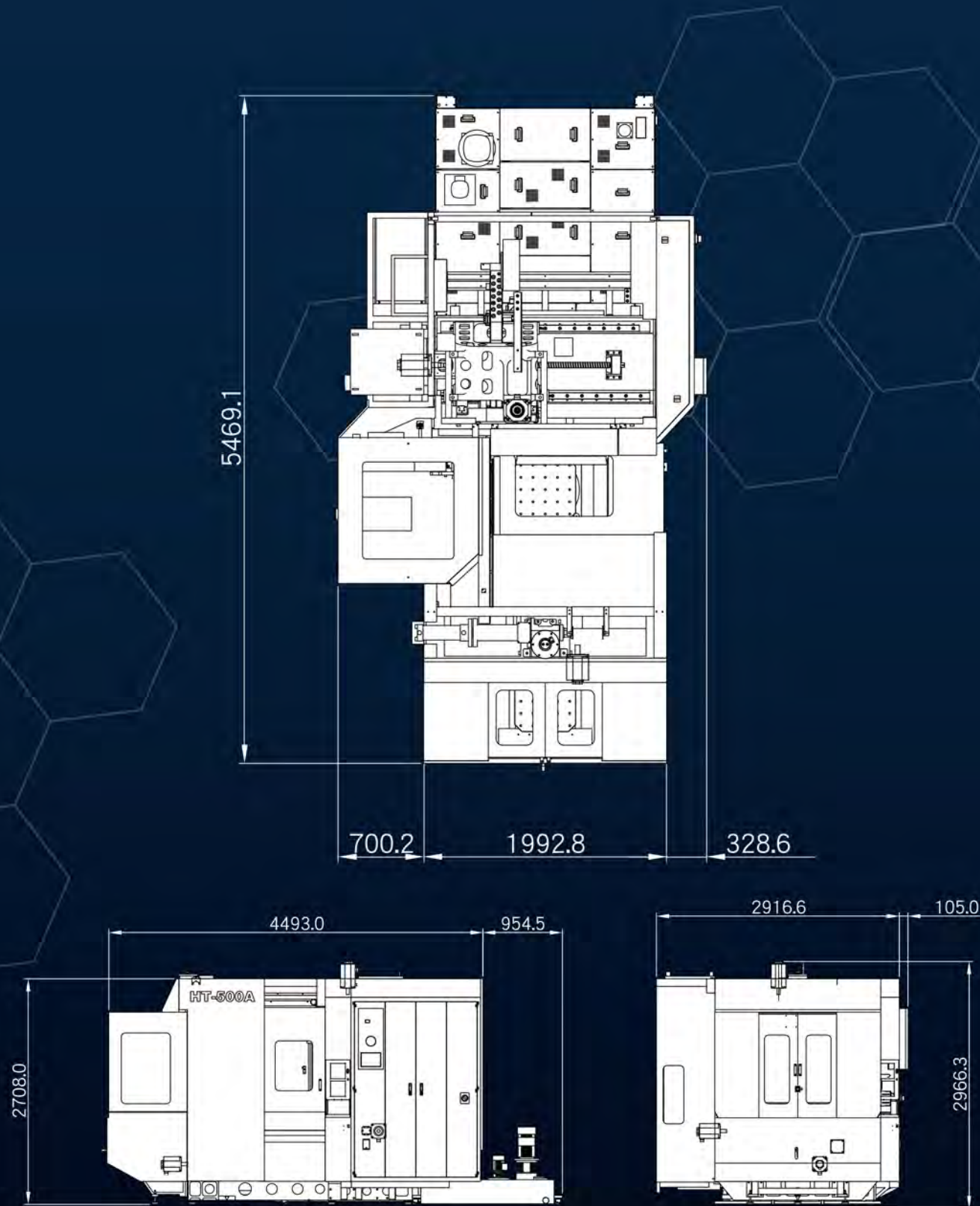
TAPPING

Work piece material : S45C
Spindle speed : 235 rpm
Feedrate : 705 mm/Min
Tap : M27 x P3.0

WORKPIECE SAMPLE



DIMENSIONAL DRAWING



MACHINE SPECIFICATION

Item	HT-500A	HT-500B
Travel		
X-axis travel	800 mm	
Y-axis travel	800 mm	
Z-axis travel	800 mm	
Rotary Table		
Working table	500 × 500 mm (Opt.500 × 630 mm)	
The maximum load of working table	600 kg	
Minimum indexing degree	0.001°(Opt. : 1°)	
Surface configuration	M16 × 2 mm × 33 mm × 100 mm	
Rotary time	3.6 sec/rev	
Cutting force resistance	250 kg-m	
Spindle		
The distance from spindle nose to working table surface	150~950 mm	135~935 mm
The distance from spindle center to table surface	120~920 mm	
Spindle nose taper	BT-40,7/24 No. 40 (Opt.HSK-A63)	BT-50,7/24 No. 50
Spindle speed	Built-in: 10,000 rpm (Opt. 12000, 15000 rpm)	Built-in: 6,000 rpm (Opt. 8000, 10000 rpm)
Spindle diameter	70 mm	100 mm
Feed		
Rapid feed (X/Y/Z)	36/36/36 m/min(Opt.60/60/60 m/min)	
Cutting speed	10~20,000 m/min	
ATC		
Tool change method	Arm	
ATC drive	servo motor	
Magazine drive	servo motor	
Tool Shank	BT-40(Opt.HSK-A63)	BT-50
Tool capacity	40T (Opt.60T)	
Tool change time	T-T 1.5 sec, C-C 4.5sec	T-T 3 sec, C-C 6 sec
Pull stud	MAS 403 P40T-1 (45°)	MAS 403 P50T-1 (45°)
Max. tool diameter (with adjacent tool)	95 mm	125 mm
Max. tool diameter (without adjacent tool)	200 mm	250 mm
Max. tool length	400 mm	
Average tool weight	5 kg	10 kg
Max. tool weight	11 kg	20 kg
Tool selection method	Fixed position	
APC		
Exchange method	Rotary pallet change	
Number of pallets	2	
Max.jig swing diameter	Ø750 mm	
Max.jig height	900 mm	
Pallet surface to floor	1150 mm	
Pallet exchange time	11 sec	
Accuracy		
Positioning	VDI 3441 P0.014 mm(JIS B6338 ±0.004/ 300 mm)	
Repeatability	VDI 3441 PS0.010(JIS B6338 ±0.003 mm)	
Motor		
Spindle motor	FANUC 18.5 / 22 kW(cont. / 15min) MITSUBISHI 18.5 / 22 kW(cont. / 15min)	
Servo motor X/Y/Z/B	FANUC X : 5.5kW, Y : 5.5kW Z : 5.5kW, B : 4kW MITSUBISHI X : 4.5kW, Y : 4.5kW Z : 4.5kW, B : 2.0kW	
Magazine motor	FANUC : Absolute, With brake MITSUBISHI : Absolute, With brake	
ATC motor	FANUC : Absolute MITSUBISHI : Absolute	
Coolant pump motor	0.37 kW	
Hydraulic unit motor	3.7 kW	
Other		
Power capacity	45 kVA	
Pressure capacity	3~4 kg/cm ² (0.3~0.4 MPa), 200 L/min	
Mechanical Dimensions(WxDxH)	310 × 610 × 300 cm	
Machine weight	13500 kg	14000 kg

STANDARD

- Arm type ATC system 40T
- Spindle oil cooler
- Coolant tank
- Chip conveyer & cart
- Safety door interlock
- Fully enclosed splash guard
- Work lamp
- Auto lubrication system
- Hydraulic unit
- Spindle air blast
- Auto side flushing device
- Spindle air curtain
- Rigid tapping
- Heat exchanger
- Magazine operation panel
- Tools and tool box
- Leveling bolts and pads
- Mechanical manual, part lists, Operation manual, Electrical manual, Test report, operator's manual and maintenance manual of the controller
- Water gun
- Air gun

OPTION

- Pull stud
- Auto tool length measurement
- CTS, coolant through spindle
- Transformer
- Water level switch
- Arm type ATC system 60T
- Optical scale
- Oil skimmer
- Index table with 1°
- Ballscrew with hollow cooling system (When rapid feed 60 m/min is standard)

* Machine specifications, accessories and appearance dimensions are subject to change without notice by CHI-FA

SOLUTION OF WORLDWIDE SALES NETWORK



HISTORY OF CHIFA

TAIWAN

CHINA



- 1976 Established the Metal processing department at MAR.01.
- 1992 Established the Machine Center R&D department.
- 1993 Continually 4th year of Knee-type Milling machine production reached 1800 sets monthly.
- 2003 Established the US branch office & warehouse at Feb.01.
- 2005 Established China branch as Twinhorn machinery co., Ltd.
- 2008 Started constructing China manufacture & production headquarters.
- 2009 Invested in the technical cooperation with Italian 5Ax maker on Movingcolumn and Gantry types 5Ax machining centers.
- 2010 Completed the construction of China manufacture & production.
- 2012 Became the most biggest manufacturer of tapping center in greater China.
- 2013 Expanded the 4th assembly plant (factory area 4000m²) in Taiwan headquarters.
- 2014 HE-400,VTG series are marketing.
- 2015 New assembly plant been released.

Twinhorn

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