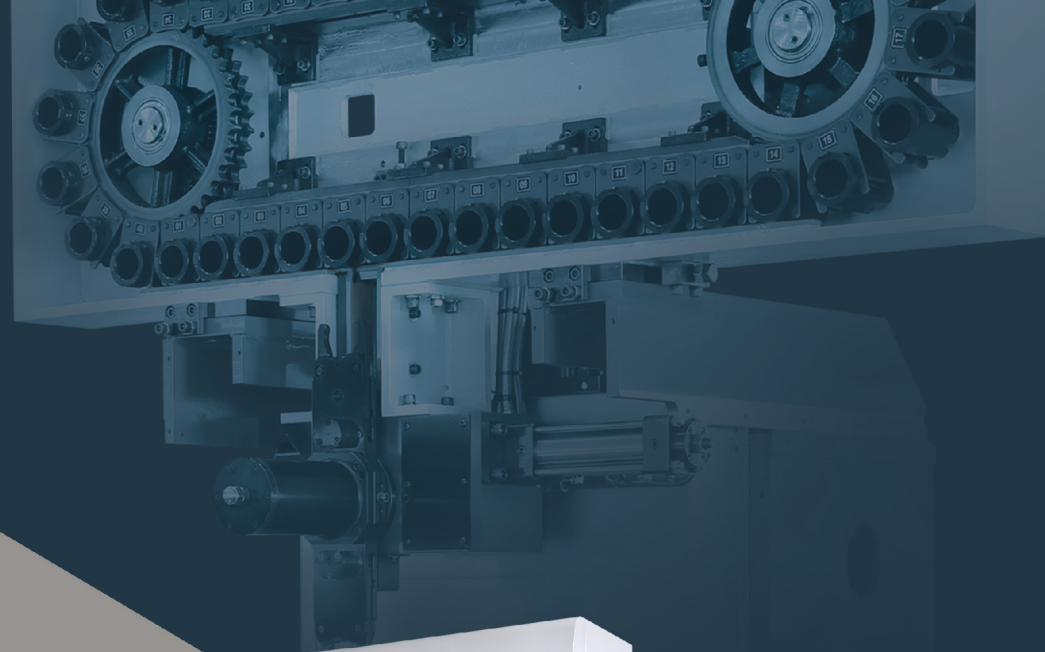
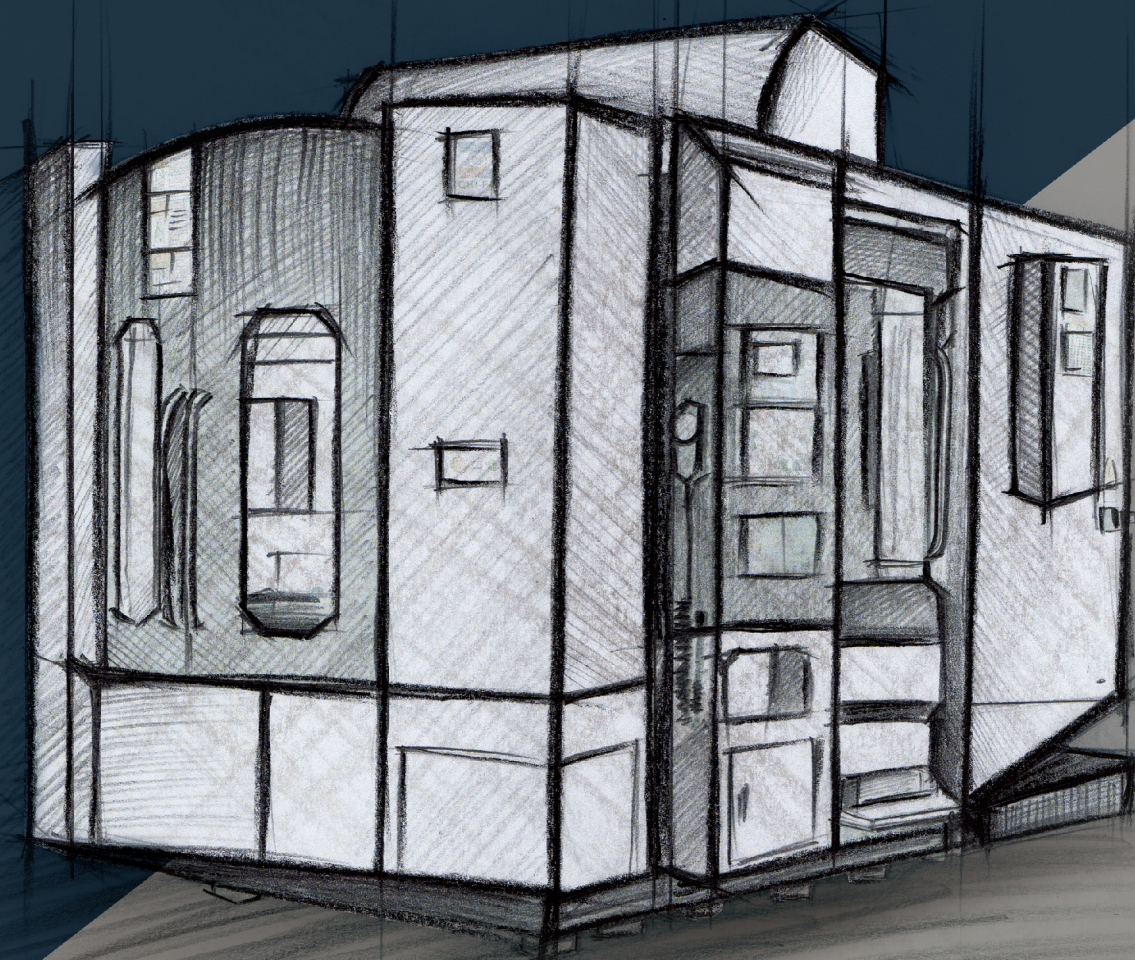


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*Pursuit technology innovation,  
Creat excellent quality*



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*Design 201811.HE Series(E2)1000P*

# HE-400

High Speed Horizontal Machining Center with 2APC



# HE-400 High Speed Horizontal Machining Center with 2APC

## Machine Specifications with Twin Pallet Change

Spindle speed	8000 rpm (Option:12000/15000 rpm)
Tool capacity	32 (Option:40/60)
Axis travel(X/Y/Z)	600x500x500 mm
Axis rapid feed(X/Y/Z)	36x36x36 m/min (Option:60x60x60)
Tool change time	T-T 2.5 sec ; C-C 3.5 sec



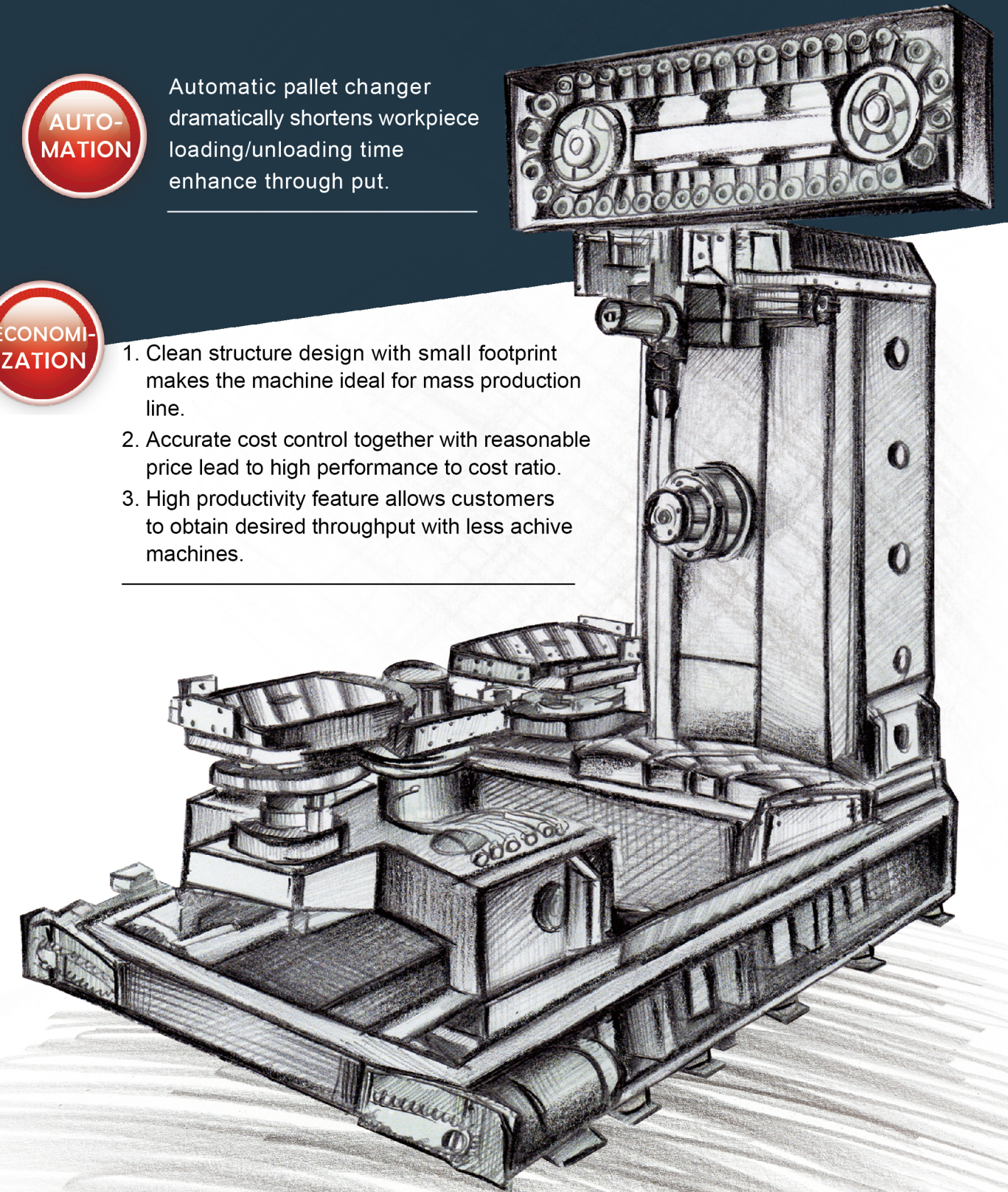
The tool magazine is driven by a servo motor providing fast tool post positioning without error. Three axes ball screws are directly driven by servo motors allowing rapid feed rate up to 60 m/min.



Automatic pallet changer dramatically shortens workpiece loading/unloading time enhance through put.



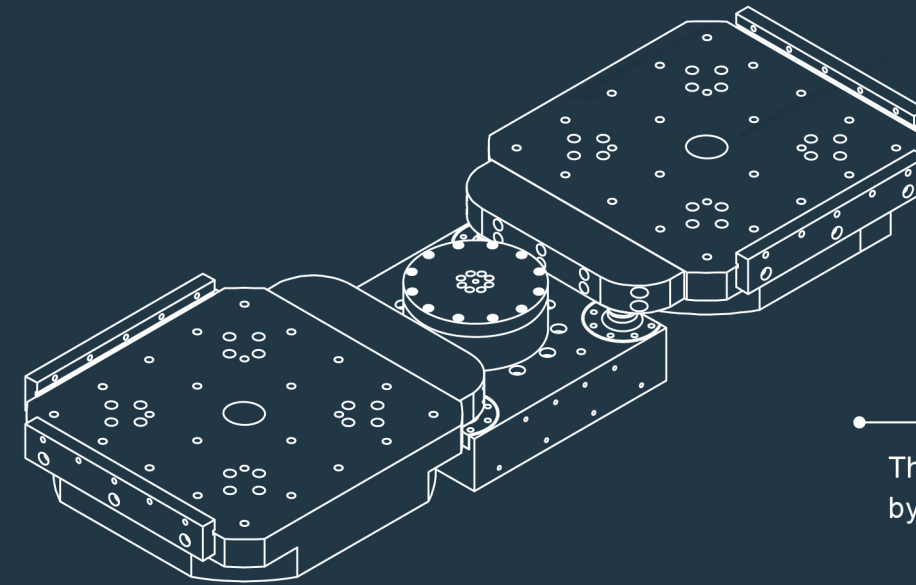
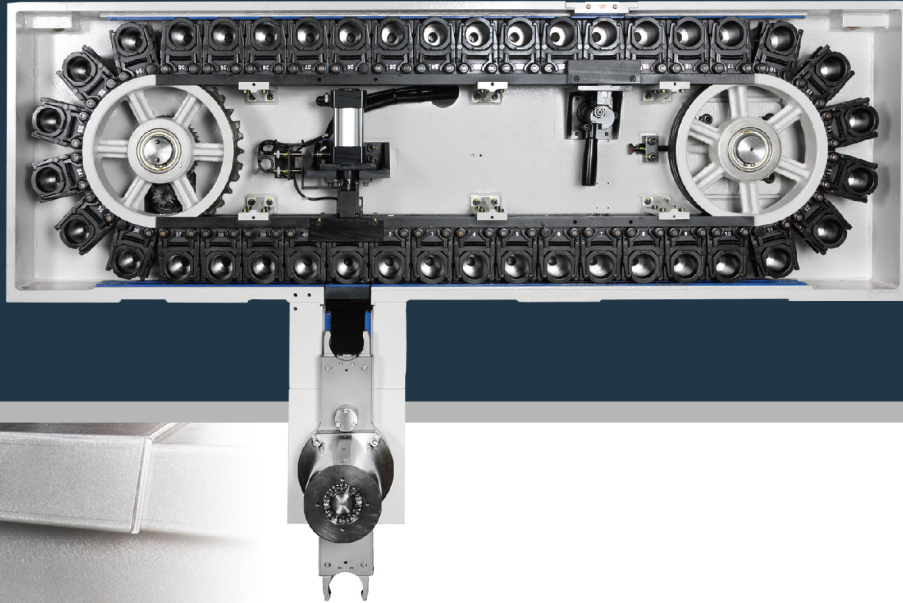
1. Clean structure design with small footprint makes the machine ideal for mass production line.
2. Accurate cost control together with reasonable price lead to high performance to cost ratio.
3. High productivity feature allows customers to obtain desired throughput with less achive machines.





## TOP MOUNTED ATC SYSTEM

1. The top-mount magazine requires less floor space.
2. The magazine is driven by a servo motor for fast tool positioning without error.
3. The magazine door and tool change arm operate simultaneously, and hence tool change speed is not affected by door open / close.

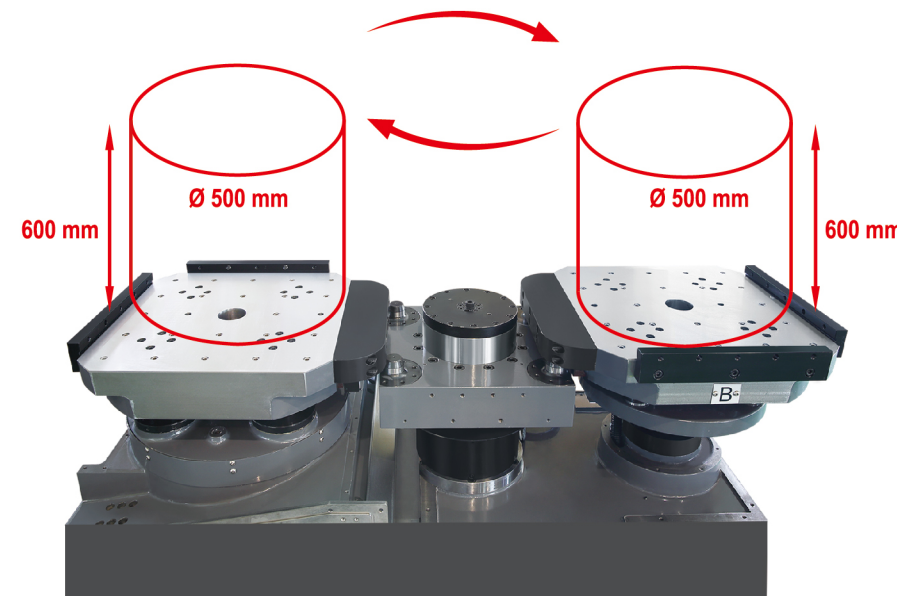
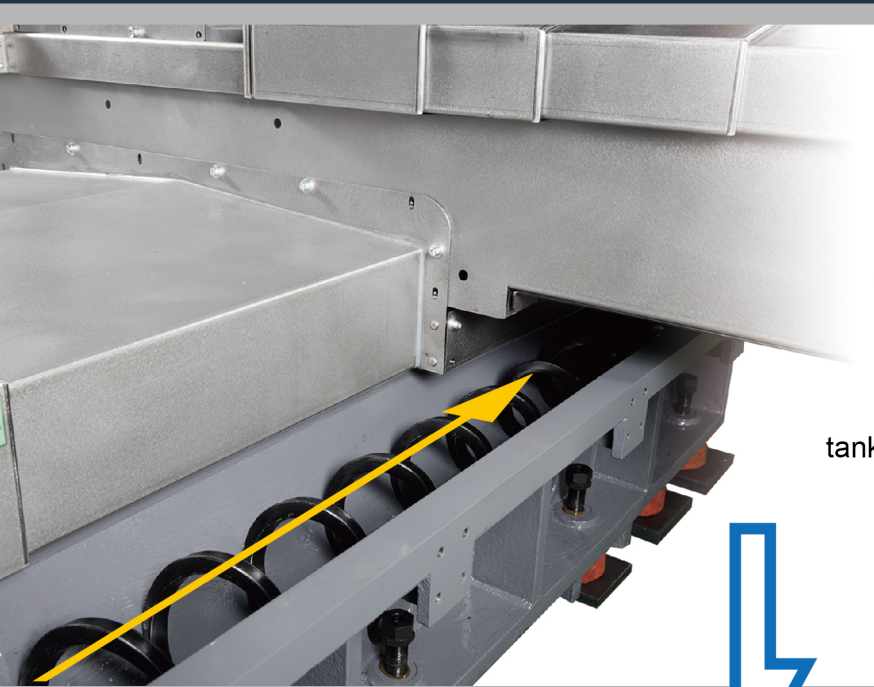


## AUTOMATIC PALLET CHANGER

The automatic pallet changer is driven by hydraulic power!

## CHIP REMOVAL SYSTEM

The machine interior is equipped with two chip augers. During machining, chips are easily evacuated through the chip augers to the coolant tank. This eliminates machine down time for removing chips while increasing production efficiency.

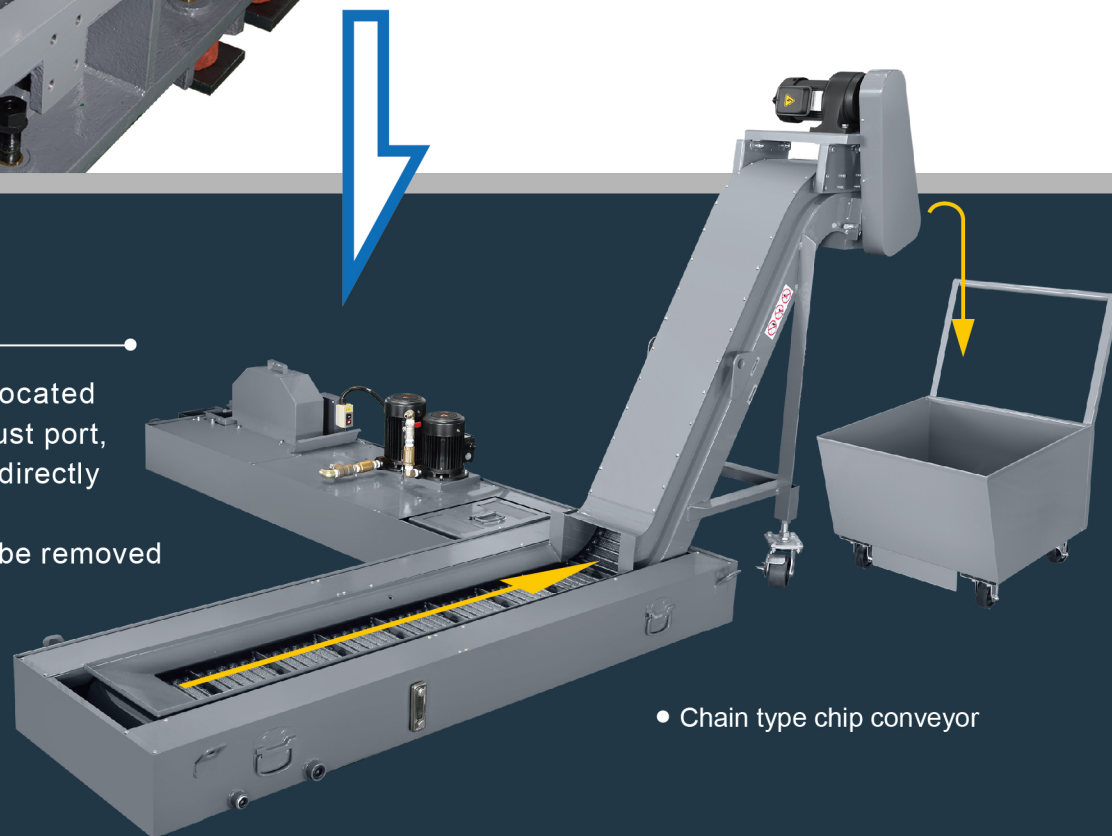


## INTERFERENCE-FREE MACHINING ROOM

The rotary table sizes are 400x400mm that permits maximum machining range up to 500mm diameter by 600mm height. The tables not only serve large workpiece, but also can be loaded with multiple small parts for machining with single set-up.

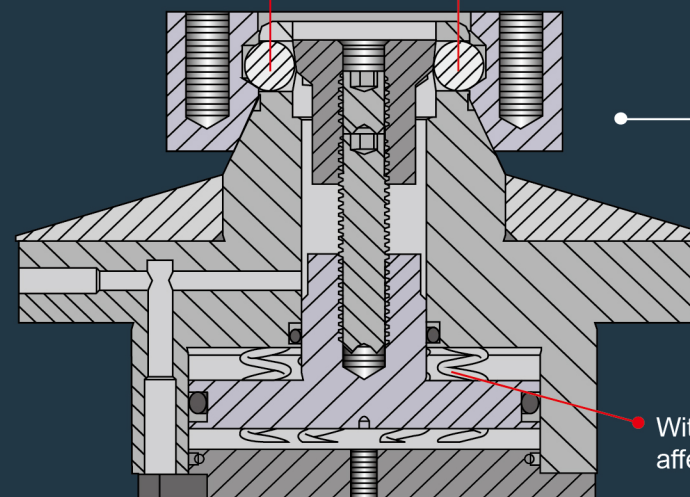
## COOLANT TANK

The coolant tank is located under the chips exhaust port, so that chips can fall directly into the conveyor. This enables chips to be removed efficiently.



• Chain type chip conveyor

Taper engagement surfaces to create force multiplying effect. Force only passes through three parts, the as steel ball, external and internal conical rings.



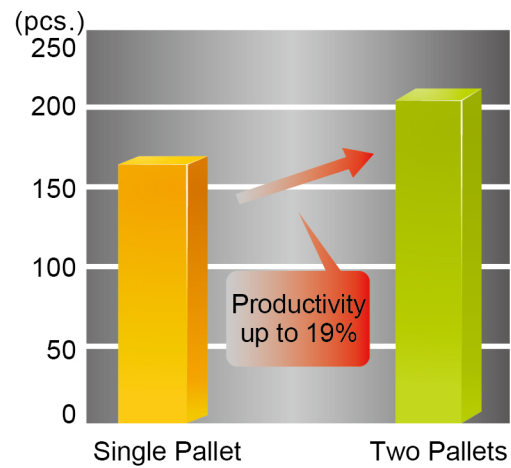
## TABLE SPRING LOCKING

Table clamping force comes from spring. The spring provides constant force output to ensure the highest clamping accuracy. Table accuracy is not affected by pressure variation of supply system.

With spring clamping force, accuracy is not affected by external pressure variation.



## EFFICIENCY COMPARISON TABLE



### Benefits of Twin Pallet :

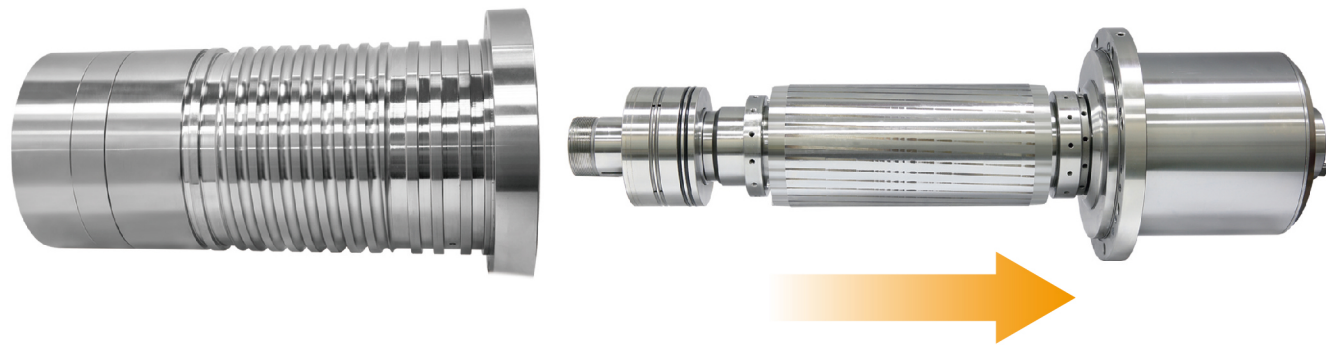
- During machining, operator can change workpiece on the ready pallet or remove chips without interruption during production process.
- High production efficiency and reliable productivity.
- A new workpiece can be changed at the ready area during machining which allows operator to cover many machines at same time easily.

### Example of High Production Capacity :

- No matter what in one time machining for multiple parts or multiple surfaces machining on a single part by using jigs, both parts fastening time and jig cleaning time can be reduced but productivity is increased by 19%.

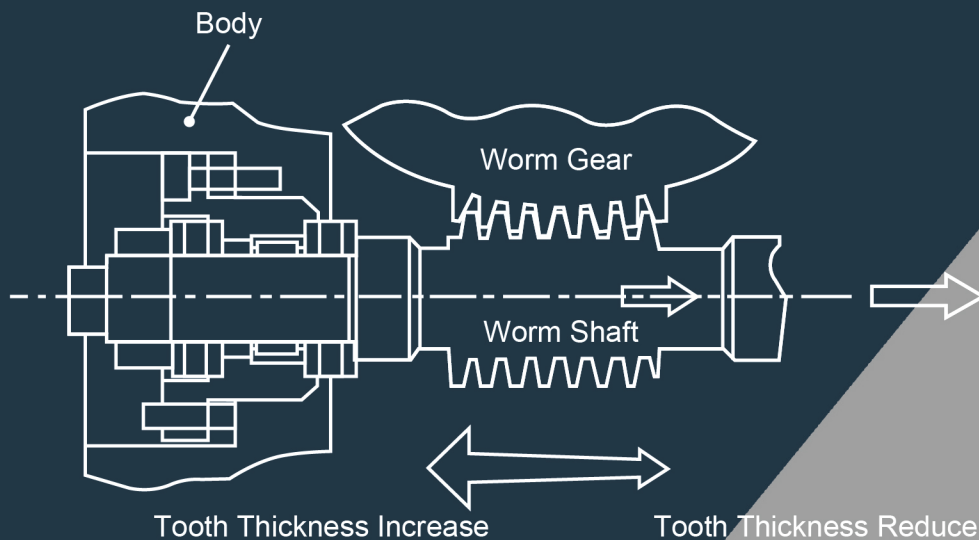
Machining time: 150 sec/piece  
Change time: 35 sec/piece (10 hours x 85% of utilization)

## QUICK MAINTENANCE SYSTEM



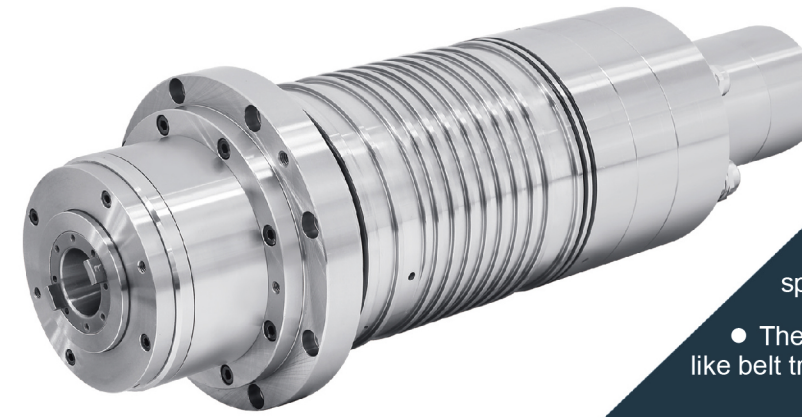
The front end of spindle can be removed quickly allowing maintenance to be accomplished in one hour. This reduces the loss of machine down times.

## HIGH PRECISION B-AXIS



B-axis worm shaft and worm gear are pre-load designed with variable tooth thickness to maintain even wearing for a long time, and also ensure high accuracy as well as long service life.

## BUILT-IN TYPE SPINDLE



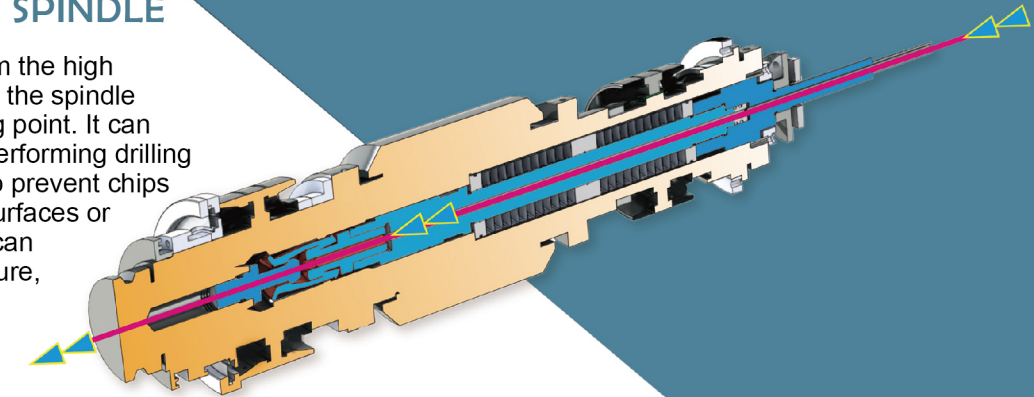
- This type of spindle features high rigidity at low running speed, and it can suppress vibration at high running speed. High machining accuracy is ensured at various running speeds.

- High acceleration / deceleration capabilities enable the spindle to reach a desired working speed in the shortest time, that reduces waiting time.

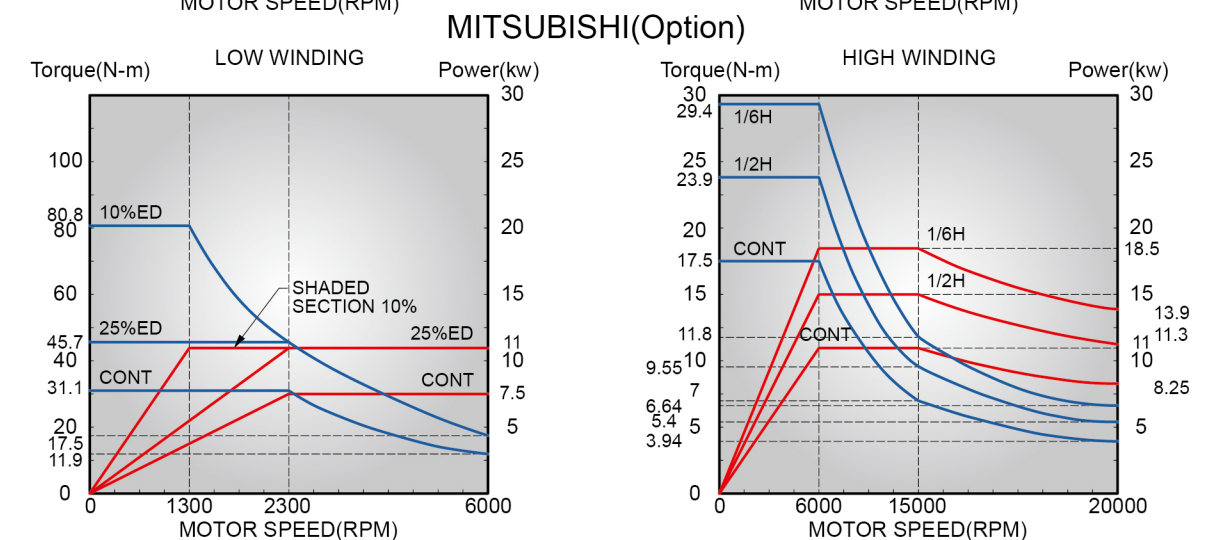
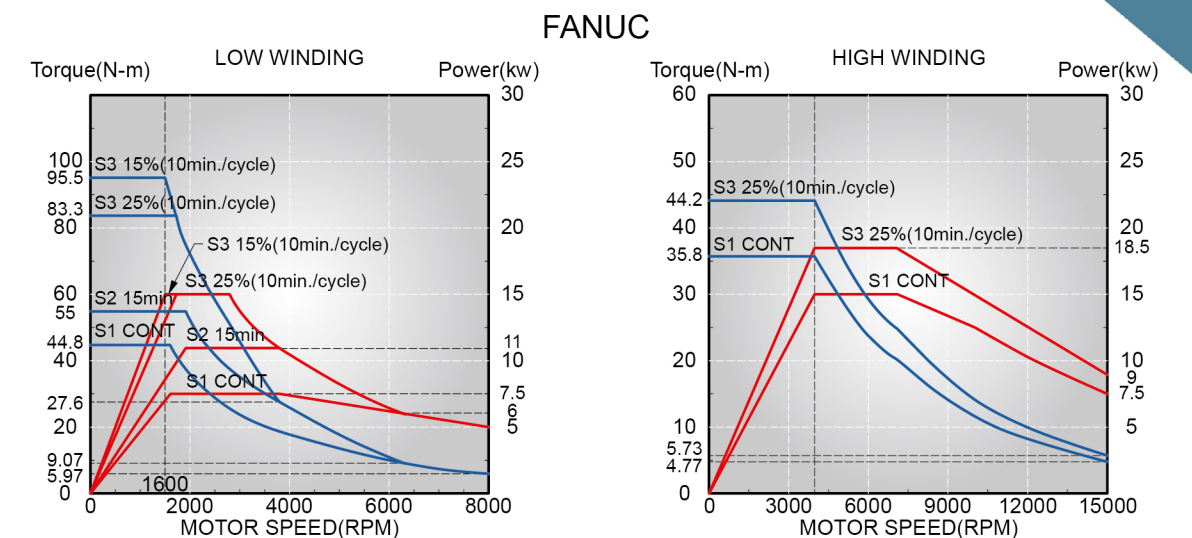
- The spindle features include high sensitivity, no noise like belt transmission, minimum vibration and no backlash.

## COOLANT THROUGH SPINDLE

The cutting fluid discharged from the high pressure pump will flow through the spindle center and the tool to the cutting point. It can efficiently remove chips when performing drilling and tapping operations, so as to prevent chips from scratching on workpiece surfaces or damage to the tool. Besides, it can effectively reduce tool temperature, extend tool life and dramatically enhance working efficiency.



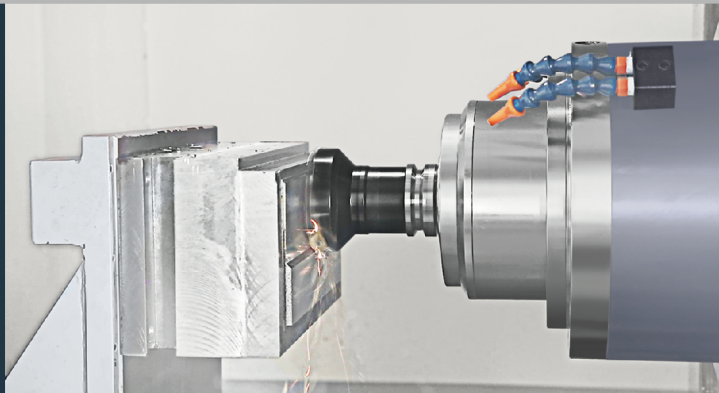
## SPINDLE MOTOR POWER/TORQUE CHART





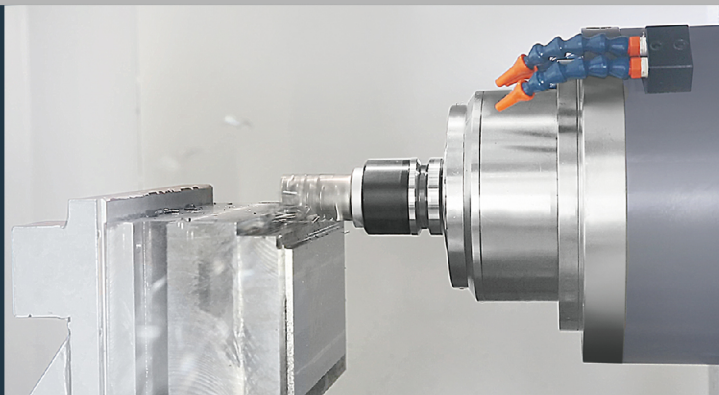
## CUTTING ABILITY

Spindle Motor Model : Mitsubishi



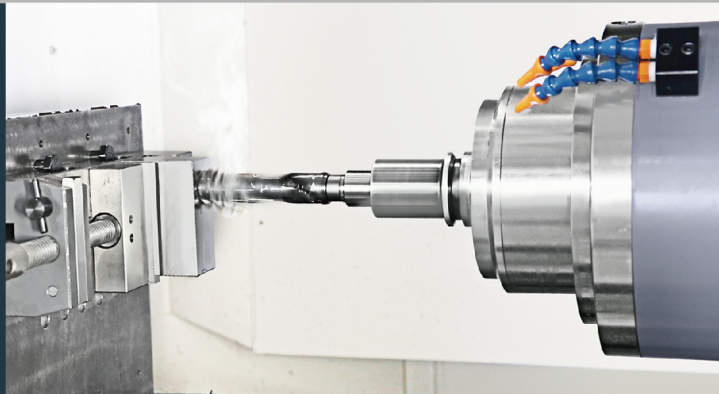
### Face Milling

Tool size : 80mm diameter  
Spindle speed : 1300 rpm  
Feed rate : 1250 mm/min  
Cutting width : 65 mm  
Cutting depth : 4 mm  
Spindle load ratio : 120%  
Material removal rate : 325 cc/min



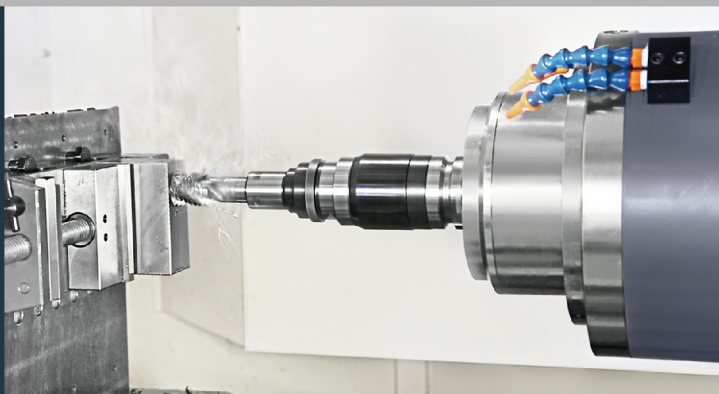
### End Milling

Tool size : 40mm diameter  
Spindle speed : 1300 rpm  
Feed rate : 2080 mm/min  
Cutting width : 5 mm  
Cutting depth : 30 mm  
Spindle load ratio : 121%  
Material removal rate : 304 cc/min



### Drilling

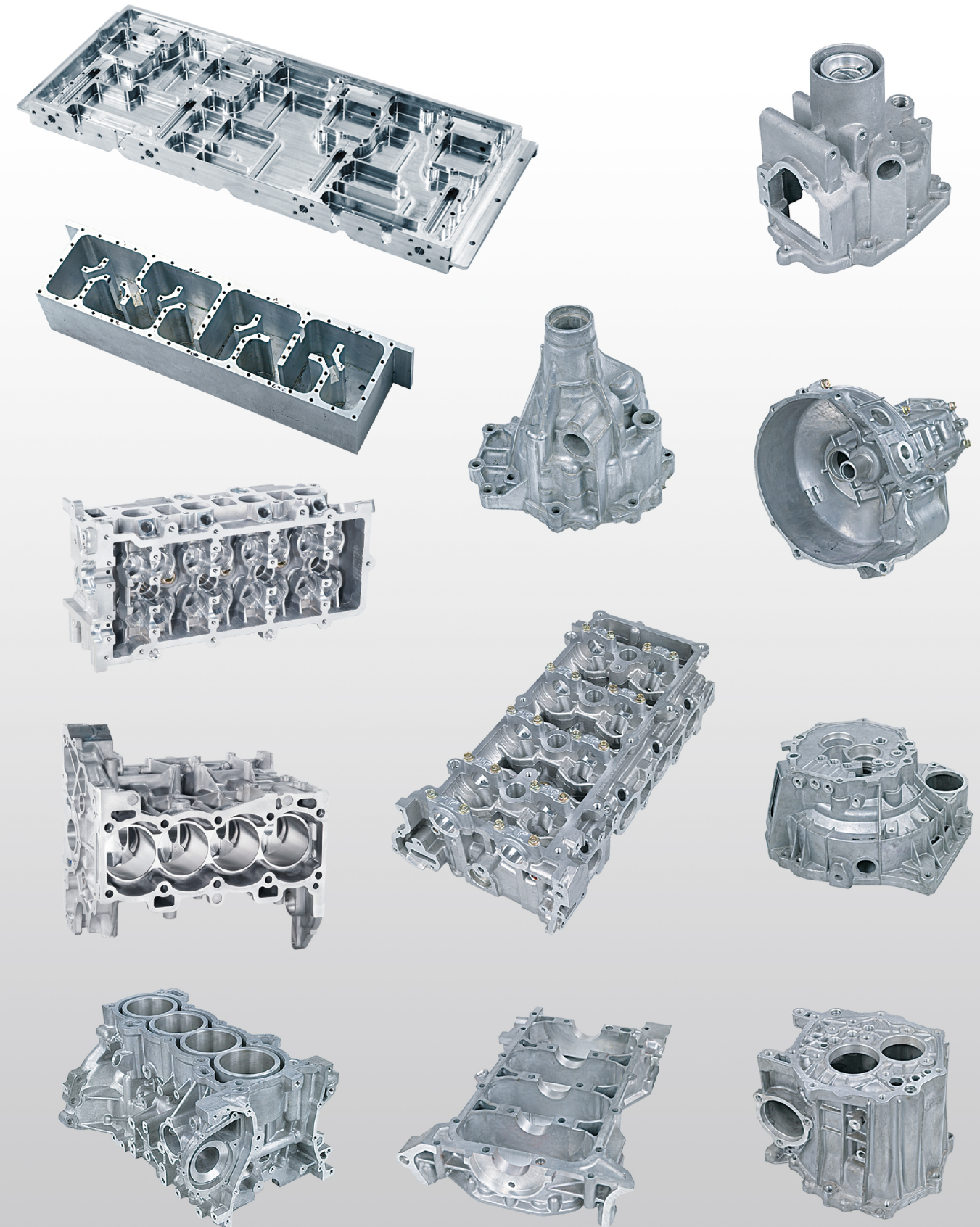
Tool size : 30mm diameter  
Spindle speed : 265 rpm  
Feed rate : 106 mm/min  
Spindle load ratio : 127%  
Material removal rate : 75 cc/min



### Tapping

Tool size : 30mm diameter  
Spindle speed : 160 rpm  
Feed rate : 560 mm/min  
Spindle load ratio : 96%

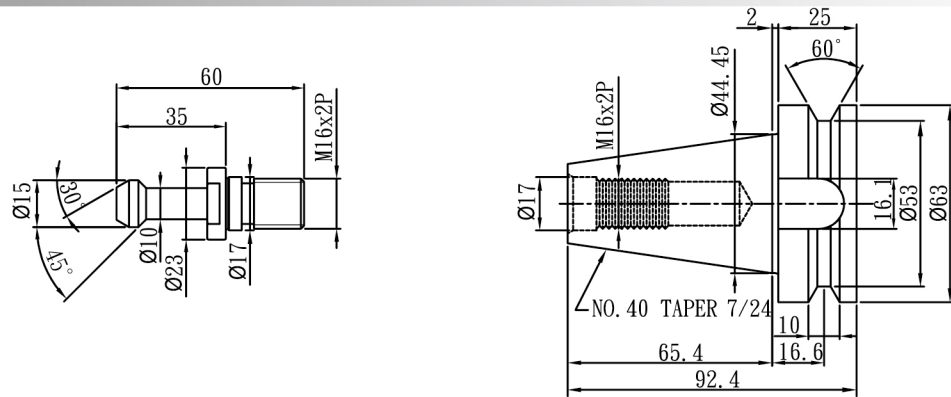
## APPLICATION SAMPLE PARTS



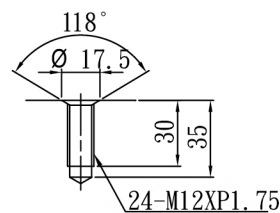
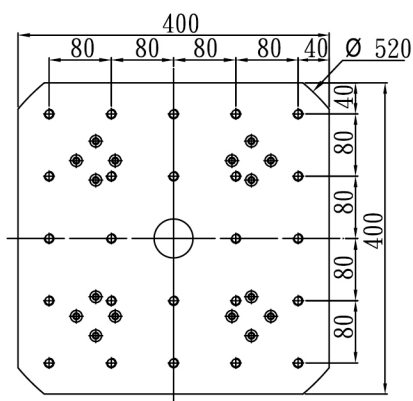


## DIMENSIONAL DRAWINGS

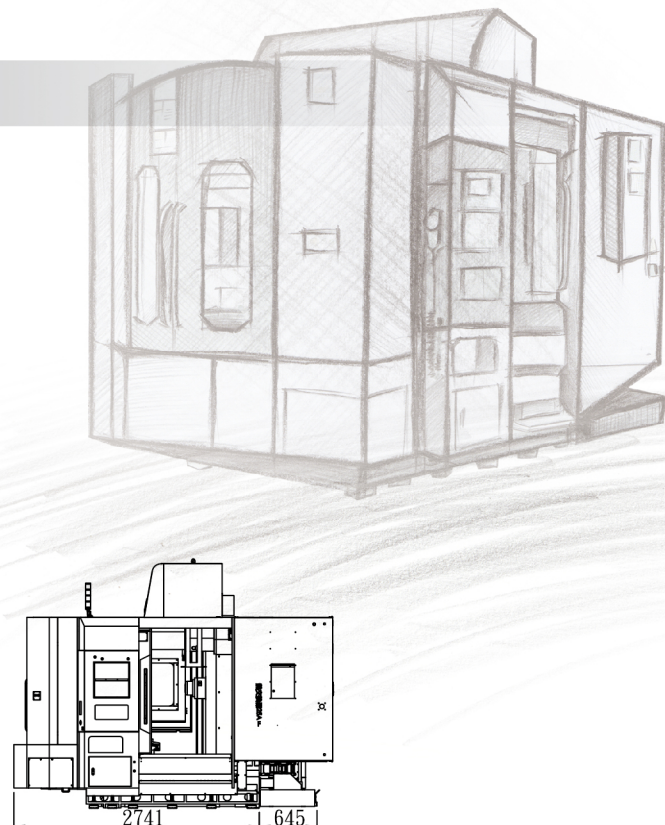
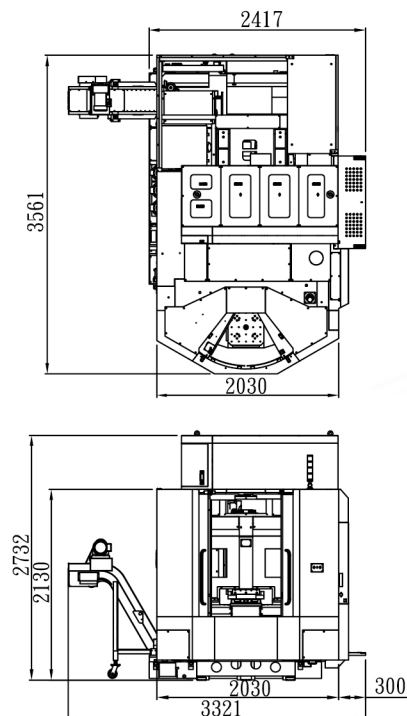
### PULL STUD AND TOOL SHANK



### TABLE SIZES



### MACHINE DIMENSIONS



## HE-400 MACHINE SPECIFICATIONS

### TRAVEL

X axis	600 mm
Y axis	500 mm
Z axis	500 mm
Min. distance from spindle nose to table center	100 mm
Min. distance from spindle center to table surface	100 mm

### TABLE

Table dimension	400 × 400 mm
Max. sizes of workpiece	Ø 500 × 600 mm
Max. swing diameter in working space	Ø 700 mm
Max. table load	400 kg

### APC

Pallet change type	Rotary type
Number of pallets	2
Distance from table to floor	987 mm
Pallet change time	12 sec

### SPINDLE

Spindle type	Built-in type BT-40(Option: HSK-A63)
Spindle speed	8000 rpm(Option: 12000/15000rpm)
Inside diameter of bearing	70
Spindle motor	11 / 18.5 kW

### FEED

Rapid feed rates (X/Y/Z)	36/36/36 m/min (Option: 60/60/60 m/min)
Cutting feed rates (X/Y/Z)	20 / 20 / 20 mm
X/Y/Z axis ball screws(dia.)	32×32×40 mm

### ATC

Tool capacity	32 (Option: 40/60)
Tool change type	Arm type
Tool shank	BT-40 (Option: HSK-A63)
Tool change time	T-T 2.5 sec ; C-C 3.5 sec
Max. tool weight	7 kg
Max. tool diameter (with/without adjacent tool)	Ø 75 / Ø 125
Max. tool length	300 mm
Tool selection method	Fixed type
Magazine drive	Servo motor

### OTHER

Machine width	2417 mm
Machine length (incl. coolant tank)	3561 mm
Machine height	2732 mm
Machine weight	6500 mm

### STANDARD Accessories

- Spindle oil cooler
- Coolant tank
- Fully enclosed splash guard
- Working lamp
- Automatic lubrication system
- Operation indication lamp
- Spindle air blast device
- Twin chip augers on base
- Automatic side flushing device
- Spindle air curtain
- Working air blast
- Cutting fluid supply device
- Rigid tapping
- Heat exchanger for electrical cabinet
- Tool box with adjustment tools
- Leveling bolts and pads
- Air gun
- Coolant gun
- Remote MPG
- Operation manual
- Safety switch
- Chain type chip conveyor

### OPTIONAL Accessories

- Automatic tool length measurement device
- Coolant through spindle device
- Oil skimmer
- Transformer
- Voltage stabilizer
- Linear scale
- Coolant level switch
- Automatic workpiece clamping on table (Hydraulic circuit)