

TCV Series

HIGH PERFORMANCE TRAVELING COLUMN
VERTICAL MACHINING CENTER



TCV *Series*

With the installation of dividing wall in the working area, the TCV series can implement machining and set up workpiece simultaneously. It is specially engineered for long workpiece and with its ultra high feedrate and efficiency, it is suitable for aerospace, automotive and job shop applications.



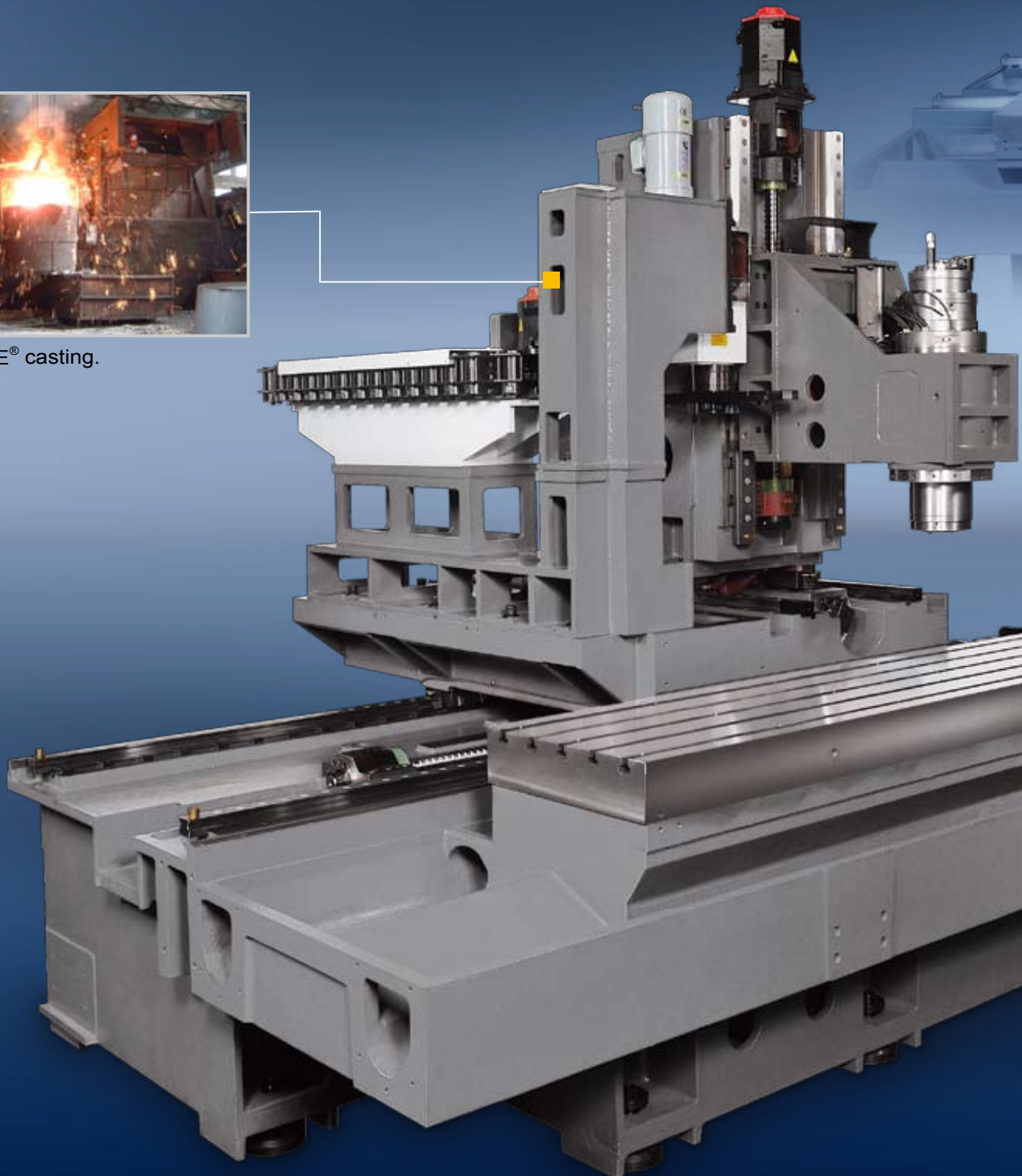


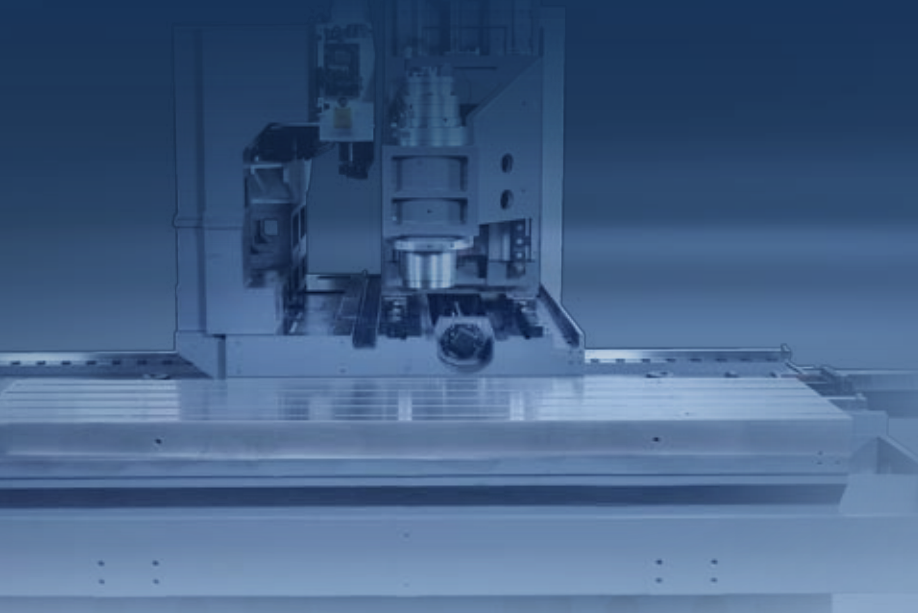
TCV2000A

With the traveling column and fixed table design, TCV2000 provides a wide machining area with minimum tool interface.



■ MEEHANITE® casting.





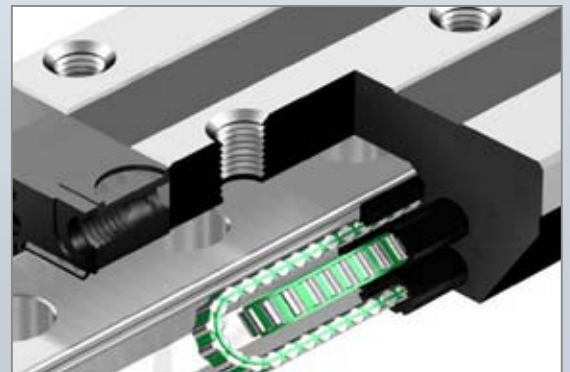
- Fixed working table ensures the best possibility of dynamic leveling, eliminating parts movement on the axes and greatly improving precision as well.



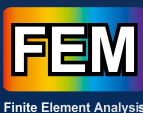
- Extra guideway blocks support ATC magazine to ensure smooth and stable movement.



- Circulated Cooling System Design on X-axis Ensures Stable Temperature and Optimal Accuracy.



- All 3 axes are equipped with high rigidity roller type guideways.
- Capable of reaching up to 40m/min. rapid feedrate and 0.8g axial acceleration.



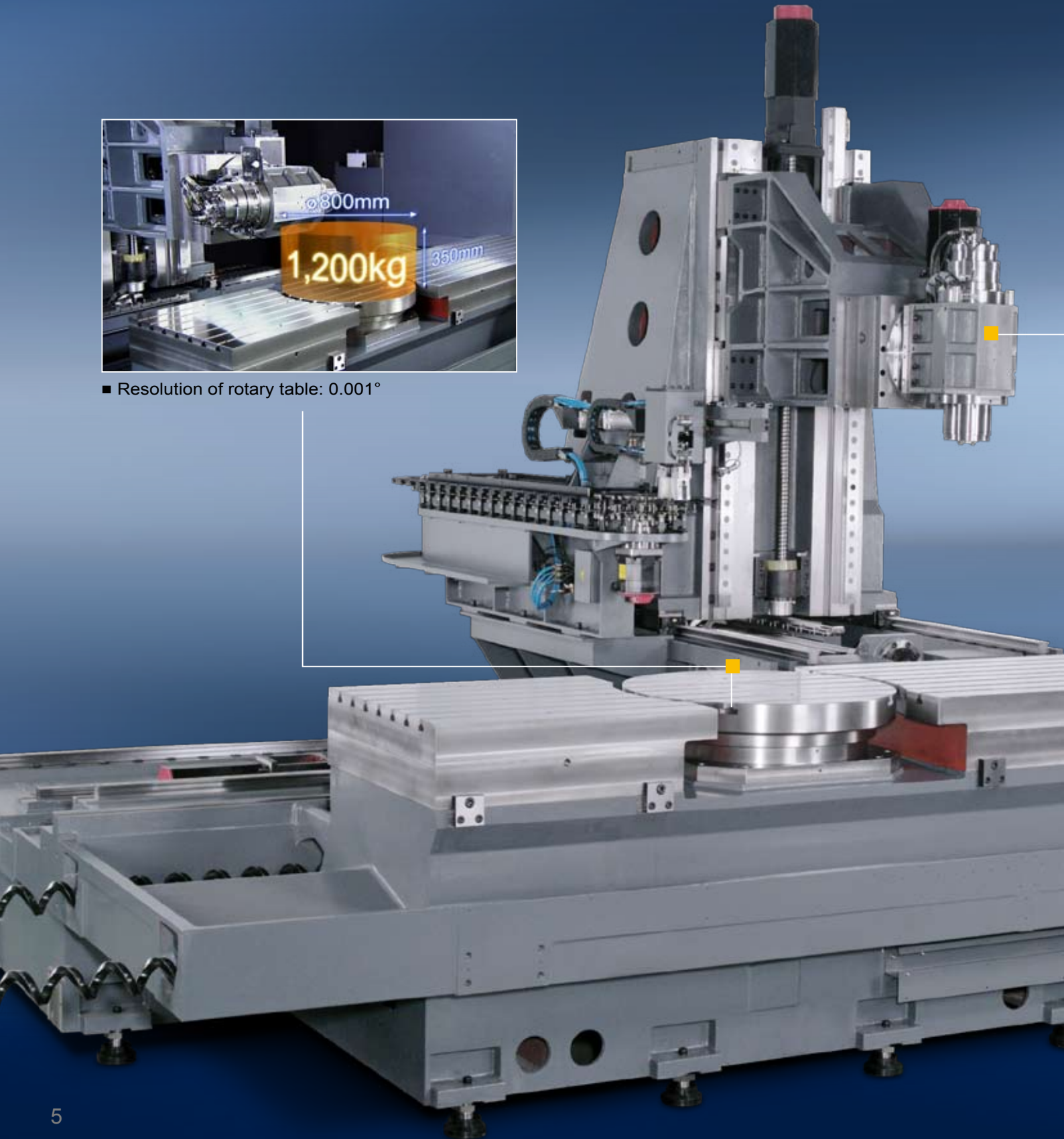
HEIDENHAIN Linear Scales (opt.)

TCV3000A-5AF

Design with low backlash swivel head and rotary table, TCV3000A-5AF achieves all of your challenging job requirements.



■ Resolution of rotary table: 0.001°



110°

110°

Swivel angle (B-axis)

33.3/100rpm

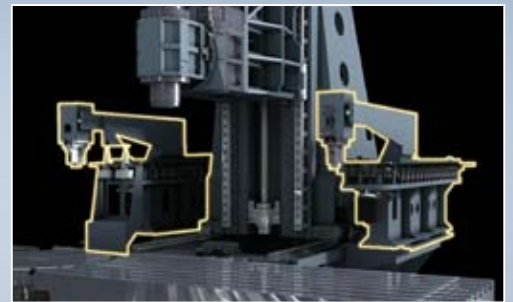
Max. speed (B/C axis)

< 10sec.

Positioning accuracy. (B/C axis)



■ Dual working areas for machine flexibility.



■ Tool magazine 80T. (opt.)



■ Dual motor design on X-axis.



■ Step X-axis guideways design with ultra high rigidity.



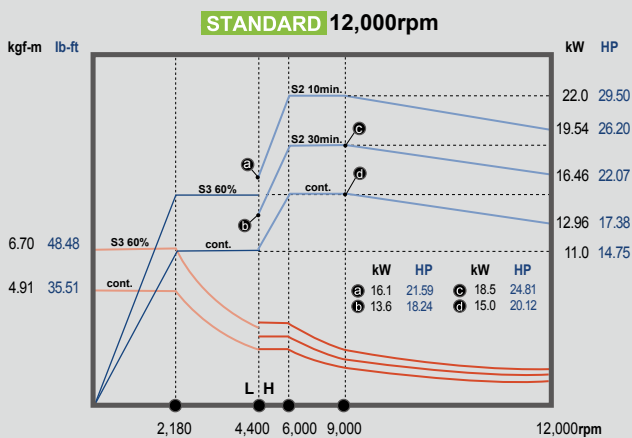
HEIDENHAIN Linear Scales (opt.)

INTEGRAL SPINDLE MOTOR

- Up to 12,000rpm spindle speed and 22kW 30HP outputs ensure extremely low vibration.
- BBT40 double contact spindle taper greatly enhances machining accuracy.

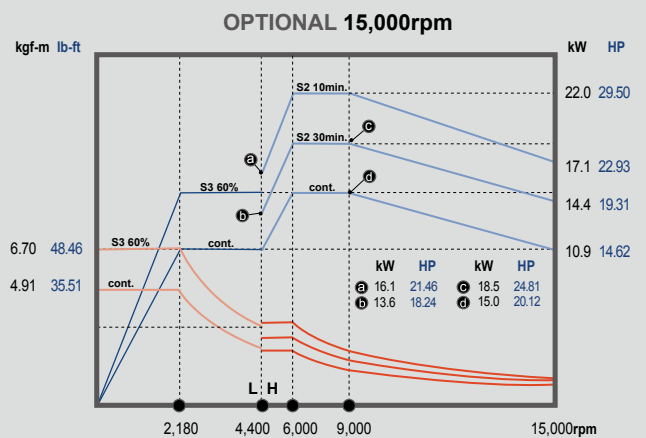


POWER CHART



SPINDLE SPEED (std.)

POWER ■ Low Speed ■ High Speed TORQUE ■ Low Speed ■ High Speed



SPINDLE SPEED (opt.)

POWER ■ Low Speed ■ High Speed TORQUE ■ Low Speed ■ High Speed

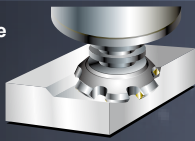
CUTTING TEXTS

TCV2000A

FACE MILL S45C Steel

Material Removal Rate

600
cc/min.

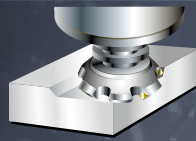


Tool $\varnothing 63\text{mm} \times 5\text{T}$
Spindle Speed 2,180rpm
Feedrate 10,000mm/min.
Width of Cut 60mm
Depth of Cut 1mm

FACE MILL S45C Steel

Depth of Cut

4
mm

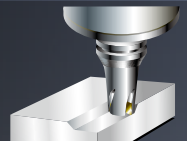


Tool $\varnothing 80\text{mm} \times 5\text{T}$
Spindle Speed 600rpm
Feedrate 450mm/min.
Width of Cut 60mm
Material Removal Rate 108cc/min.

END MILL Aluminum

Material Removal Rate

2,080
cc/min.

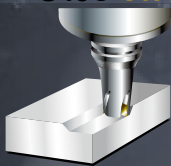


Tool $\varnothing 40\text{mm} \times 4\text{T}$
Spindle Speed 12,000rpm
Feedrate 20,000mm/min.
Width of Cut 32mm
Depth of Cut 3.25mm

END MILL S45C Steel

Depth of Cut

4
mm

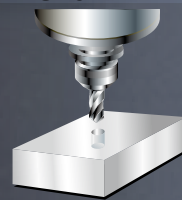


Tool $\varnothing 32\text{mm} \times 3\text{T}$
Spindle Speed 1,500rpm
Feedrate 675mm/min.
Width of Cut 25mm
Depth of Cut 4mm

U-DRILL S45C Steel

Cutter Diameter

$\varnothing 45$
mm

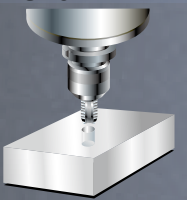


Tool $\varnothing 45\text{mm}$
Spindle Speed 2,180rpm
Feedrate 218mm/min.

TAP S45C Steel

Max. Tapping

M24



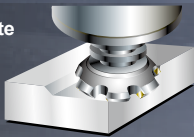
Tool M24 x 3P
Spindle Speed 60rpm
Feedrate 180mm/min.

TCV3000A-5AF

FACE MILL S45C Steel

Material Removal Rate

600
cc/min.

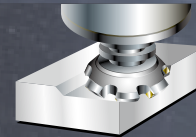


Tool $\varnothing 63\text{mm} \times 6\text{T}$
Spindle Speed 2,180rpm
Feedrate 10,000mm/min.
Width of Cut 60mm
Depth of Cut 1mm

FACE MILL S45C Steel

Depth of Cut

3.5
mm

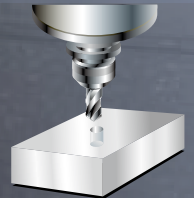


Tool $\varnothing 80\text{mm} \times 5\text{T}$
Spindle Speed 600rpm
Feedrate 450mm/min.
Width of Cut 65mm
Material Removal Rate 102cc/min.

U-DRILL S45C Steel

Cutter Diameter

$\varnothing 49$
mm

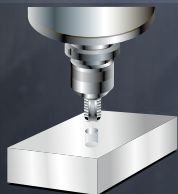


Tool $\varnothing 49\text{mm}$
Spindle Speed 2,180rpm
Feedrate 218mm/min.

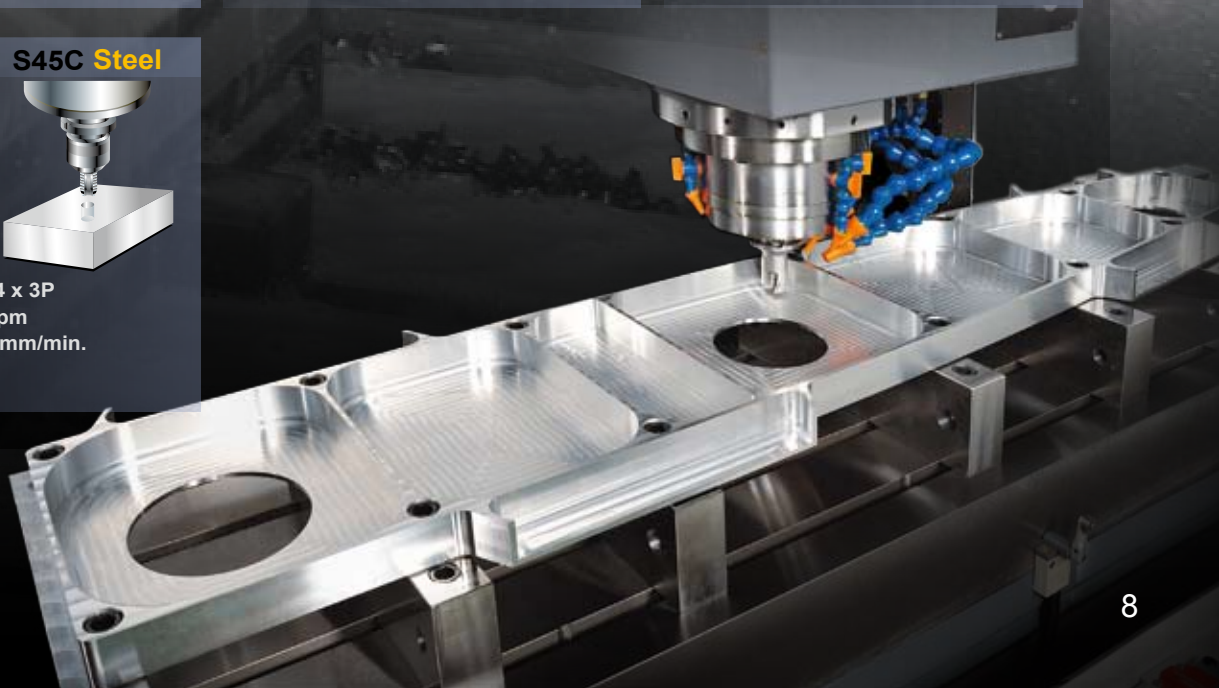
TAP S45C Steel

Max. Tapping

M24



Tool M24 x 3P
Spindle Speed 60rpm
Feedrate 180mm/min.



HIGH PERFORMANCE

- Large working area is ideal for large and long workpieces machining.
- With the installation of dividing wall in the working area, both long and complex parts can be manufactured in the same machine.



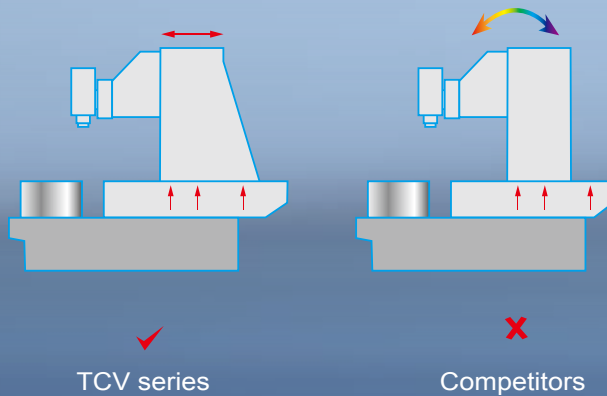
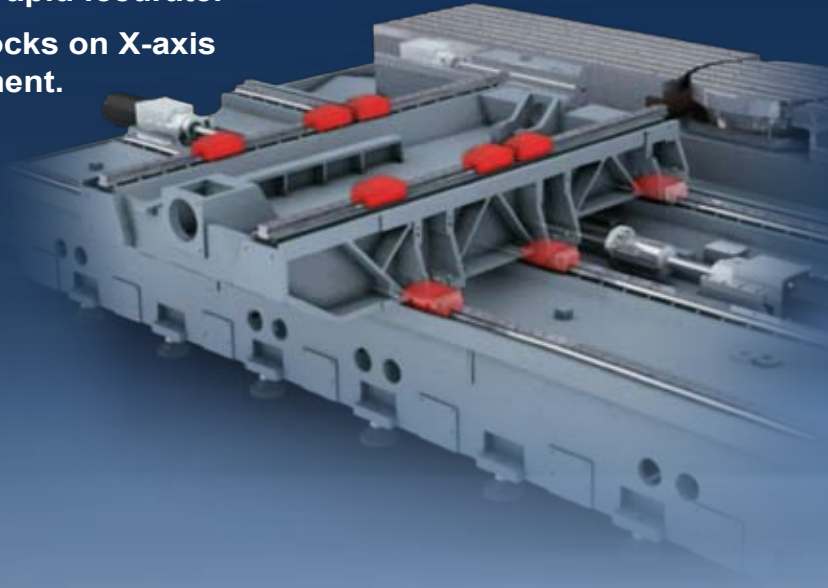
■ TCV3000A-5AF

EFFICIENT CHIP DISPOSAL SYSTEM



HIGH EFFICIENCY

- Capable of reaching up to 40m/min. rapid feedrate.
- With step guideways and 6 slider blocks on X-axis ensure the ultra reliable axial movement.
- No counter weight design on Z-axis.



TCV series

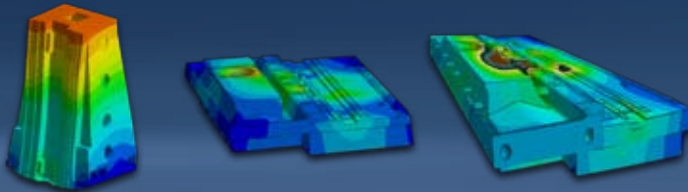
Competitors



- The Spindle is Designed with 6-nozzle Coolant Supply Device. (TCV3000A-5AF)
- Dual Chip Augers and Chip Conveyor for High Chip Removal Rate.

REINFORCED BODY STRUCTURE

- High Efficiency Traveling Column Design.
- Large delta machine column and base ensure highest stability.
- With FEM analysis.



40m/min.



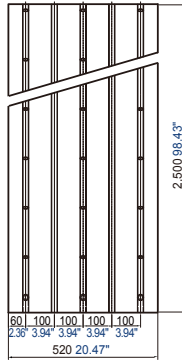
■ TCV2000A

DIMENSIONS

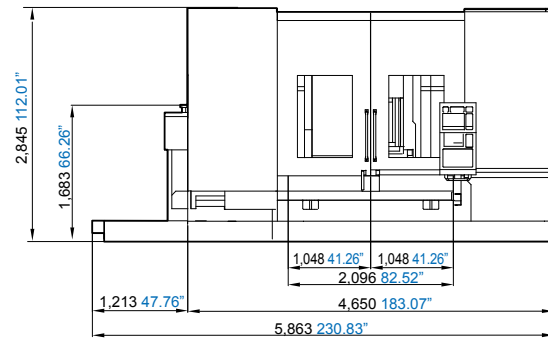
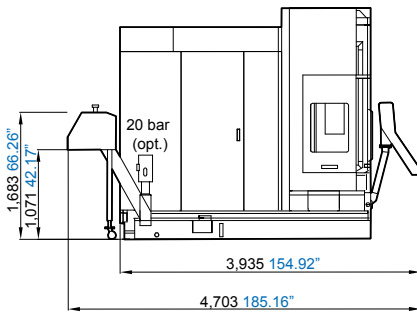
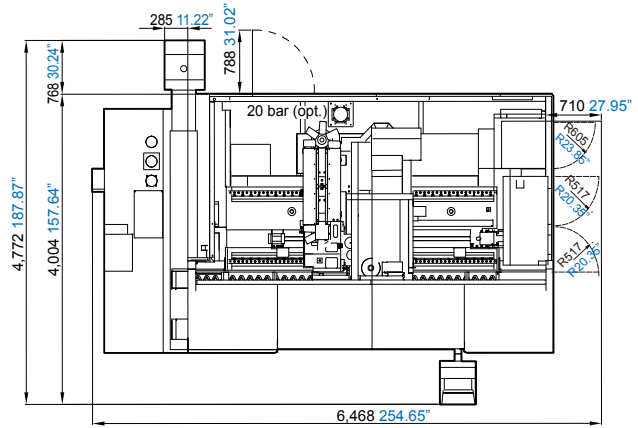
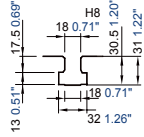
Unit : mm inch

TCV2000A

Table size

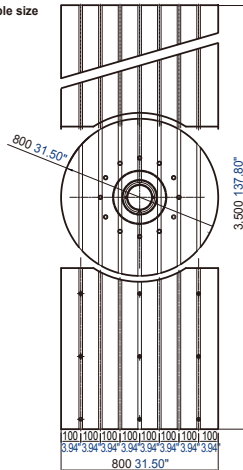


T-slots

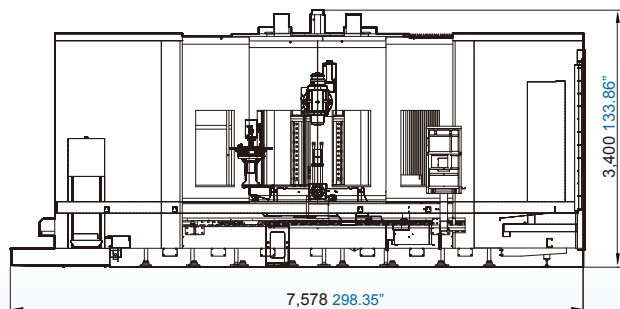
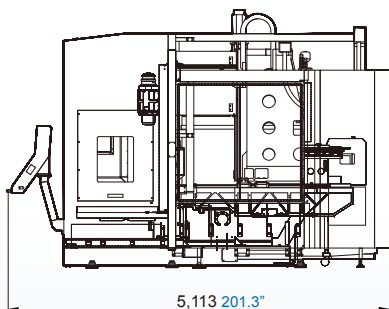
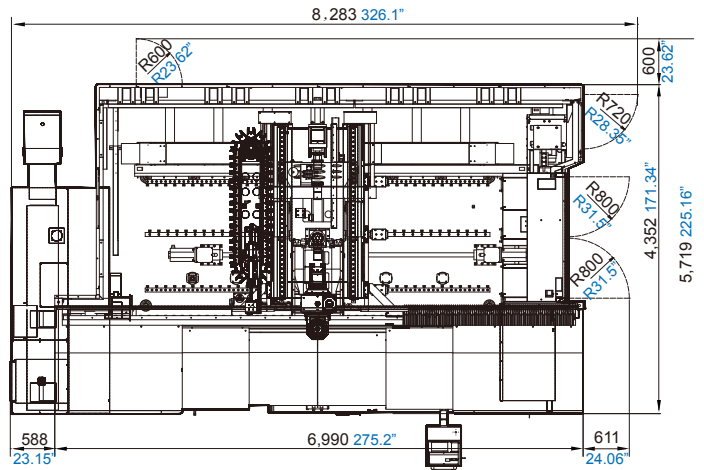
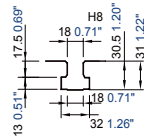


TCV3000A-5AF

Table size



T-slots



SPECIFICATIONS

	TCV2000A	TCV3000A	TCV3000A-5AF (5AX)
SPINDLE			
Spindle Speed/Power	12,000rpm 15/18.5/22kW 20/25/29.5HP (cont./30min./10min.)		
Spindle Speed/Power (opt.)	15,000rpm 15/18.5/22kW 20/25/29.5HP (cont./30min./10min.)		
Spindle Taper	BBT40		
TRAVEL			
X-axis Travel	2,000mm 78.7"	3,000mm 118.1"	
X-axis Travel Working in 2 Areas	2 x 650mm 2 x 25.6"	2 x 1,100mm 2 x 43.31"	
Y-axis Travel	520mm 20.5"	800mm 31.5"	
Z-axis Travel	540mm 21.3"	700mm 27.6"	800mm 31.5" (V)
Distance Between Spindle Nose & Table Top (V)	180~720mm 7.09"~28.35"	100~800mm 3.9"~31.5"	0~800mm 0~31.5"
Distance Between Spindle Center & Table Top (H)	-		250~1,050mm 9.8"~41.34"
TABLE			
Table Size	2,500 x 520mm 98.4" x 20.5"	3,500 x 800mm 137.8" x 31.5"	
No. T-Slots x Size x Pitch	5 x 18mm x 100mm 5 x 0.7" x 3.9"	7 x 18mm x 100mm 7 x 0.7" x 3.9"	
Max. Load on Table	2,000kg 4,409lb	3,000kg 6,613 lb	
B-axis			
Swivel Head Degree	-	-	±110°
Resolution of Swivel Head	-	-	0.001°
C-axis			
Rotary Table Size	-	-	ø800mm ø31.5"
Max. Rotary Table Load	-	-	1,200kg 2,646 lb
Max. Workpiece Size	-	-	ø800mm ø31.5"
Resolution of Rotary Table	-	-	0.001°
FEEDRATE			
Rapid Feedrate	40/40/40 m/min. 1,575/1,575/1,575ipm		
Cutting Feedrate	1~10,000mm/min. 0.04~394ipm		
ACCURACY (LINEAR)			
Positioning (ISO10791-4)	0.014mm 0.0006"	0.020mm 0.0008"	
Repeatability (ISO10791-4)	0.010mm 0.0004"	0.014mm 0.0006"	
Positioning (JIS B 6338)	0.004mm/300mm 0.0002"/11.8"		
Repeatability (JIS B 6338)	±0.003mm ±0.0001"		
ATC			
Tool Magazine Capacity (opt.)	30T (40T)		40T (80T)
Max. Tool Weight (Per Piece)	6kg 13.2 lb		
Max. Tool Dimensions (W/O Adjacent Tools)	ø76 x 300mm ø3" x 11.8" (ø110 x 300mm ø4.3" x 11.8")		ø76 x 300mm ø3" x 11.8" (ø125 x 300mm ø4.92" x 11.8")
GENERAL			
Power Consumption	58kVA (65kVA)	67kVA (80kVA)	72kVA (80kVA)
Machine Weight	13,300kg 29,321 lb	24,000kg 52,910 lb	24,700kg 54,454 lb

Note: The manufacturer reserves the right to modify the design, specifications, mechanisms, etc., to improve the performance of the machine without notice. All the specifications shown above are just for reference.

ACCESSORIES

■ : Standard ■ : Option

- Tool Kit
- Work Lamp
- Safty Door
- Pilot Lamp
- Coolant Gun
- Air Gun
- Guideway Cover on X/Y/Z
- Chip Augers
- Spindle Air Blast
- Cutting Air Blast
- Spindle Air Seal
- Spindle Cooling System
- Full Chip Enclosure
- Leveling Blocks
- Heat Exchanger for Electrical Cabinet
- Mechanical, Electrical & Operation Manuals
- Foundation Bolt (TCV3000A-5AF)
- Linear Scale(Only for TCV3000A-5AF X-axis)
- CNC Control: MXP-200FB (TCV2000A)
- CNC Control: MXP-200FC (TCV3000A-5AF)
- Linear Scale
- Foundation Bolt (TCV2000A)
- Chip Conveyor
- Chip Flush Coolant Device
- Circula Coolant Nozzle (TCV2000A)
- Oil Skimmer
- A/C Cooler for Electrical Cabinet
- Coolant through Spindle System (TCV2000A)
- NC Rotary Table
- Heavy Duty Coolant Pump (TCV2000A)
- Workpiece Measurement System
- Tool Length & Radius Measurement
- HEIDENHAIN iTNC-530 Control



HEIDENHAIN iTNC-530 Control (opt.)

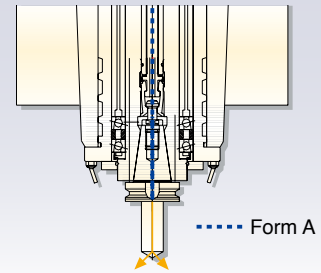
Linear Encoder

- HEIDENHAIN Linear Scales are available on axes.
- With the absolute measuring method, the position value is available from the encoder immediately upon switch-on. The absolute position information is read from the scale graduation, which is formed from a serial absolute code structure.



Coolant Through Spindle

- Form A
- 10 Bar/20 Bar/30 Bar/50 Bar/70 Bar



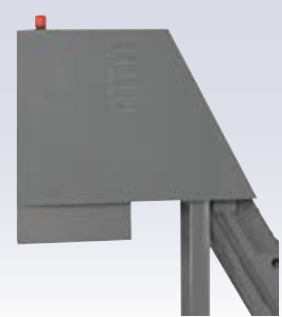
Laser Measuring System

- BLUM non-contact precise tool setting and breakage control.
- The integrated electronic system checks each individual cutting edge at full speed.



Chip Conveyor

- Hinge type
- Scraper type



Tool Length & Radius Measurement

- BLUM Z-3D tool length & radius measurement.
- Universal and economic solution for fast tool setting and breakage control.



Chip Flush Coolant

- Groundfos pump, max flow rate at 120L/min.
- Efficient chip disposal system



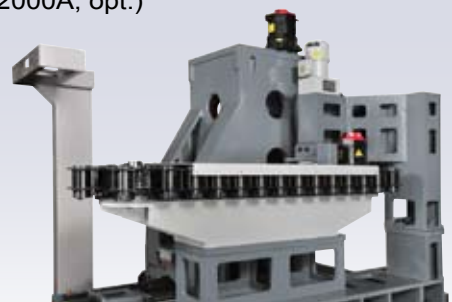
Workpiece Measurement System

- BLUM TC50 multidirectional touch probe
- Allows fast, precise, and automatic calculation of workpiece position and dimensions.



Tool Magazine

- 40T servo driven tool magazine (TCV2000A, opt.)

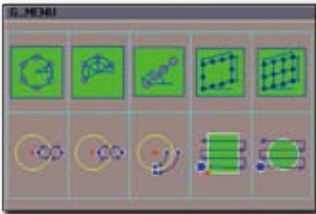




MXP-200 FB/FC

YCM CONTROL
by **FANUC**

- High Performance AC Digital Servo & Spindle Drives with Super Precision Absolute Positioning Encoders
- AI NANO CNC Controller for High Precision Operation in Nanometers and Acknowledged HRV Control
- AICC II High Speed High Accuracy JERK Function & Auto Switching on/off Machining Control Function
- High Speed High Accuracy Rigid Tapping, Helical Interpolation, Custom Marco B, and Tool Path Graphics
- Manual Guide i with Big & Double Screen Display (MXP-200FC, opt.)
- Program File Management for Easy Program Classifying
- USB Drive Port for Easy Parameters & CNC Programs Transfer
- Large Program Capacity with 1,280 Meters of Memory
- High Speed Positioning Function (MXP-200FC, opt.)
- Memory Card Program Edit & Operation (opt.)
- 3D Interference Check (opt.)
- NANO Smooth (opt.)



■ **G-menu Function**
User-friendly G-menu function provides multiple machining cycles that greatly simplifies programming steps



■ **Calculator Function**
Convenient calculator function provides fast calculation and setting of workpiece offsets



■ **Easy Shop-floor Programming Manual Guide i**
Easy to use conversational software offers convenience of part programming right on the shop-floor with 3D graphical display and full simulation function



■ **Counter Function**
Allows user to easily keep track on number of workpieces with:

- Main Counter
- Periodical Counter
- Daily Counter
- Over Cycle Alarm



■ **Intelligent Tool Data Management**
Comprehensive tool data management function allows operators to monitor and manage all positions in tool magazine



■ **High Speed Machining Mode: M400**
Combined with artificial intelligence, M400 provides users more convenient and easier ways of operation and achieves fast cycle time for the best machining result.



■ **Pop-up Alarm Display**
Detailed troubleshooting procedures will be automatically displayed when machine alarm occurs that allows users to restore machine status and minimize down time



■ **Intelligent Maintenance Reminder**
Pre-set maintenance schedules are programmed to remind operators to inspect periodically prolonging machine life



■ **Automatic Tool Length Measurement**
Pre-set macros and graphical procedure are provided for automatic tool length measurement function



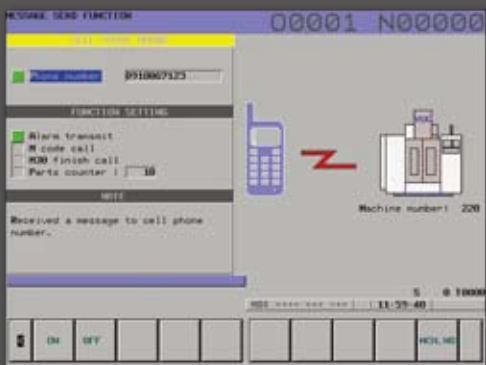
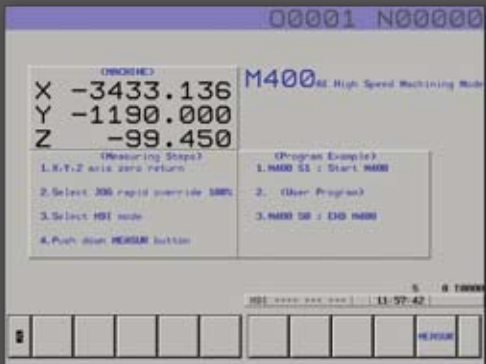
■ **Manual Tool Length Measurement**
Easy setup of tool length measurement provides convenient setting of tool offsets data from one tool to another

1. The manufacturer reserves the right to modify the design, specifications, mechanisms, etc. to improve the performance of the machine without notice.
All the specifications shown above are just for reference.
2. The functions of the controllers will be distinct due to different model and selectivity.



i OPERATION *Plus*

Software enhancement exclusively from YCM



Multi-function Display

Easily select multiple windows from the following list of display for your monitoring needs.

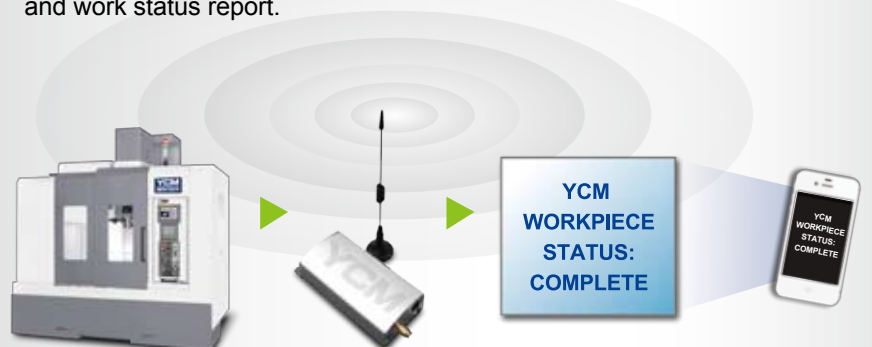
- G-code Status
- M-code Status
- Spindle Status
- Controller Running Hours
- Feedrate
- Tool Data
- Work Coordination
- Spindle Load
- Parts Count
- Machining Hours
- Date and Time
- Function Display

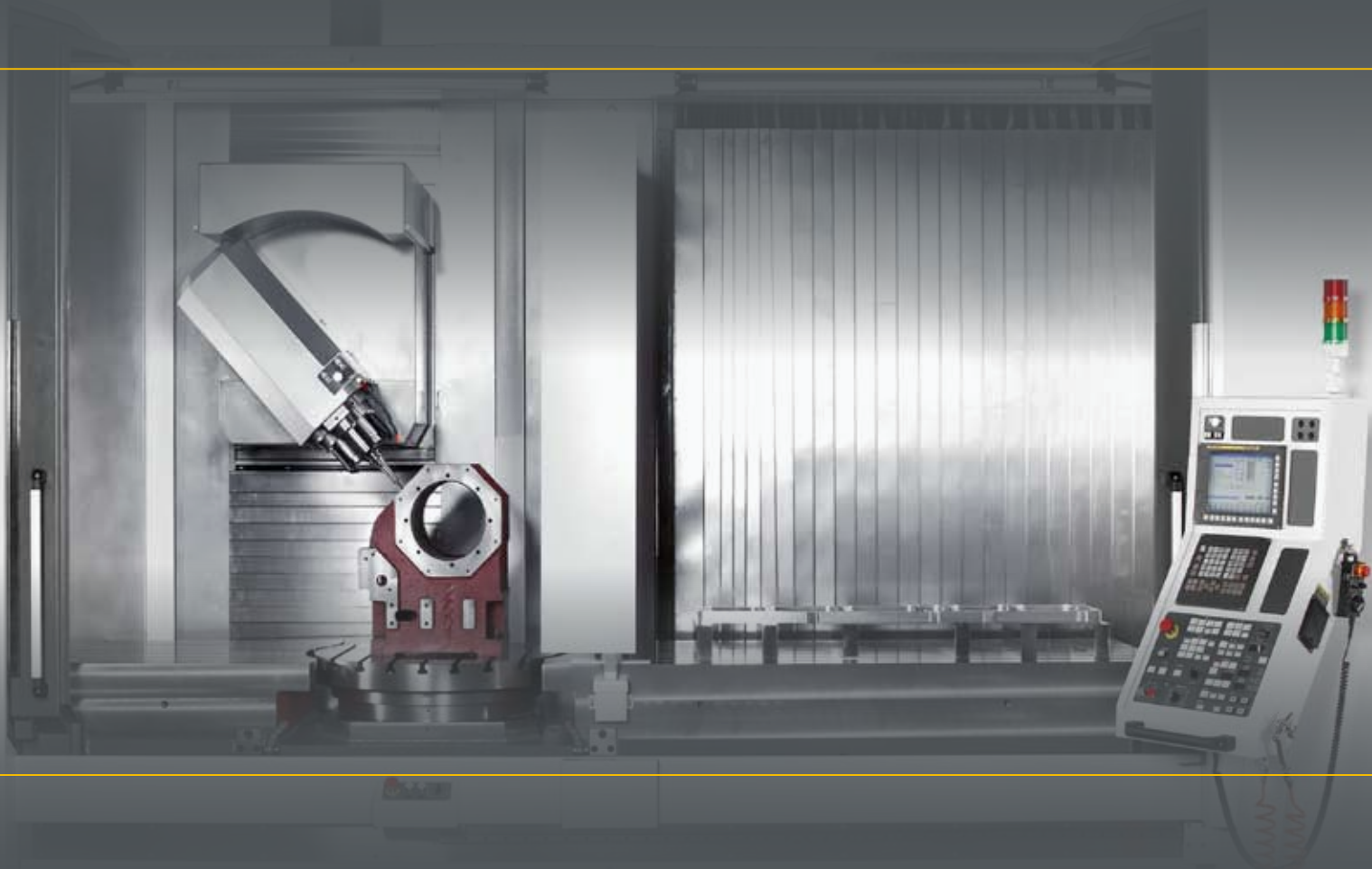
High Performance Machining Mode: M300

High performance mode with 5 settings allows users to select for the best machining results.

Wireless Message Notification (opt.)

Integrating GSM communication and CNC technology, YCM developed the WMN system for wireless notification of machine and work status report.





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Agent



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FAX : 886-4-2562-6479
886-4-2562-8399

SERVICE TEL : 886-4-2561-2965
FAX : 886-4-2561-2966