



ISO14001 CERTIFIED MANUFACTURE

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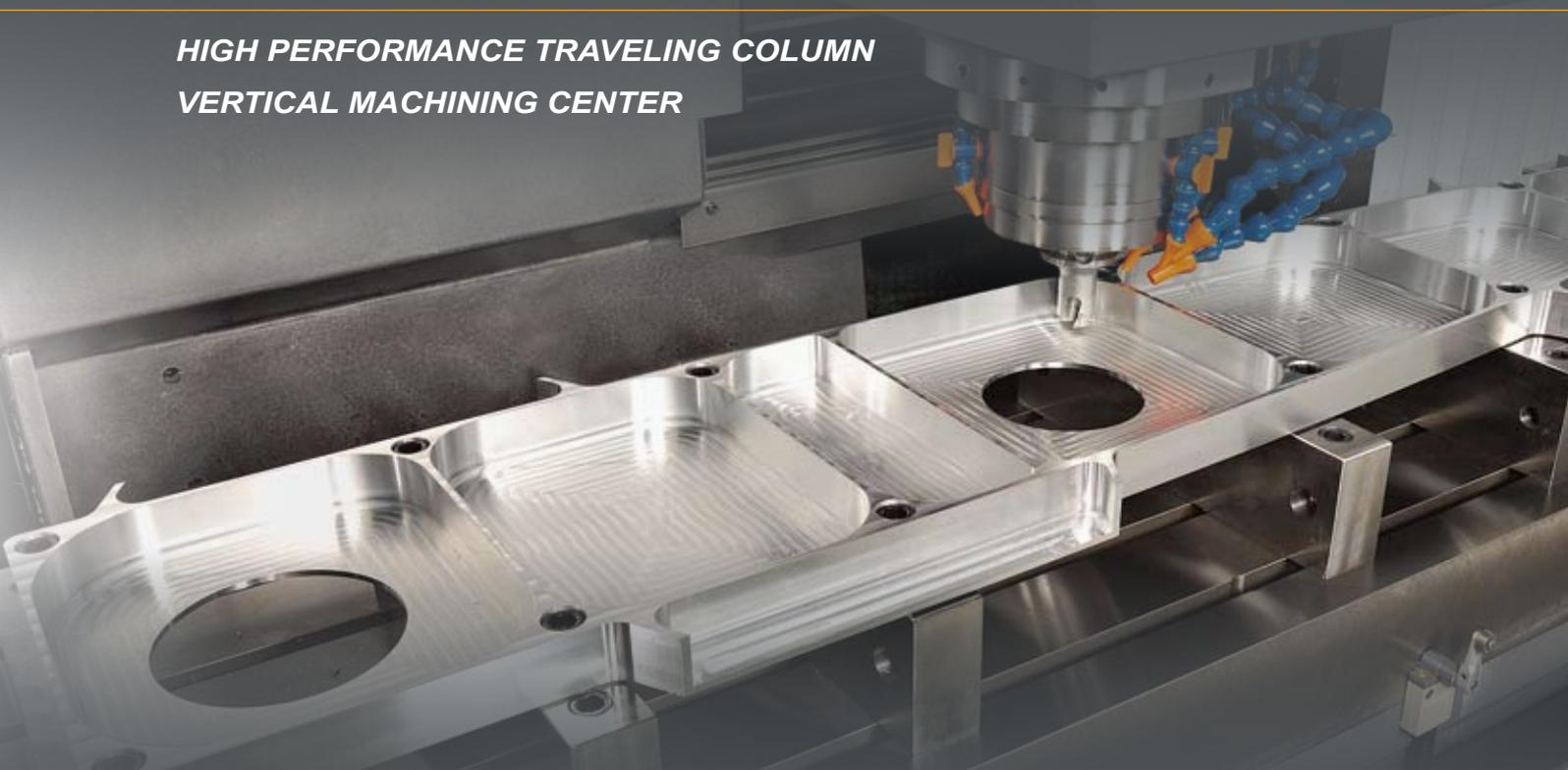
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TCV Series

HIGH PERFORMANCE TRAVELING COLUMN
VERTICAL MACHINING CENTER



TCV *Series*

All new TCV series, traveling column vertical machining center, is specially engineered for extended long parts with ultra high feedrate and efficiency to achieve all your job requirements.

Thanks to the traveling column and fixed table design, the TCV series provides a wide machining area with minimum tool interference which is extremely suitable for large and long workpieces machining.

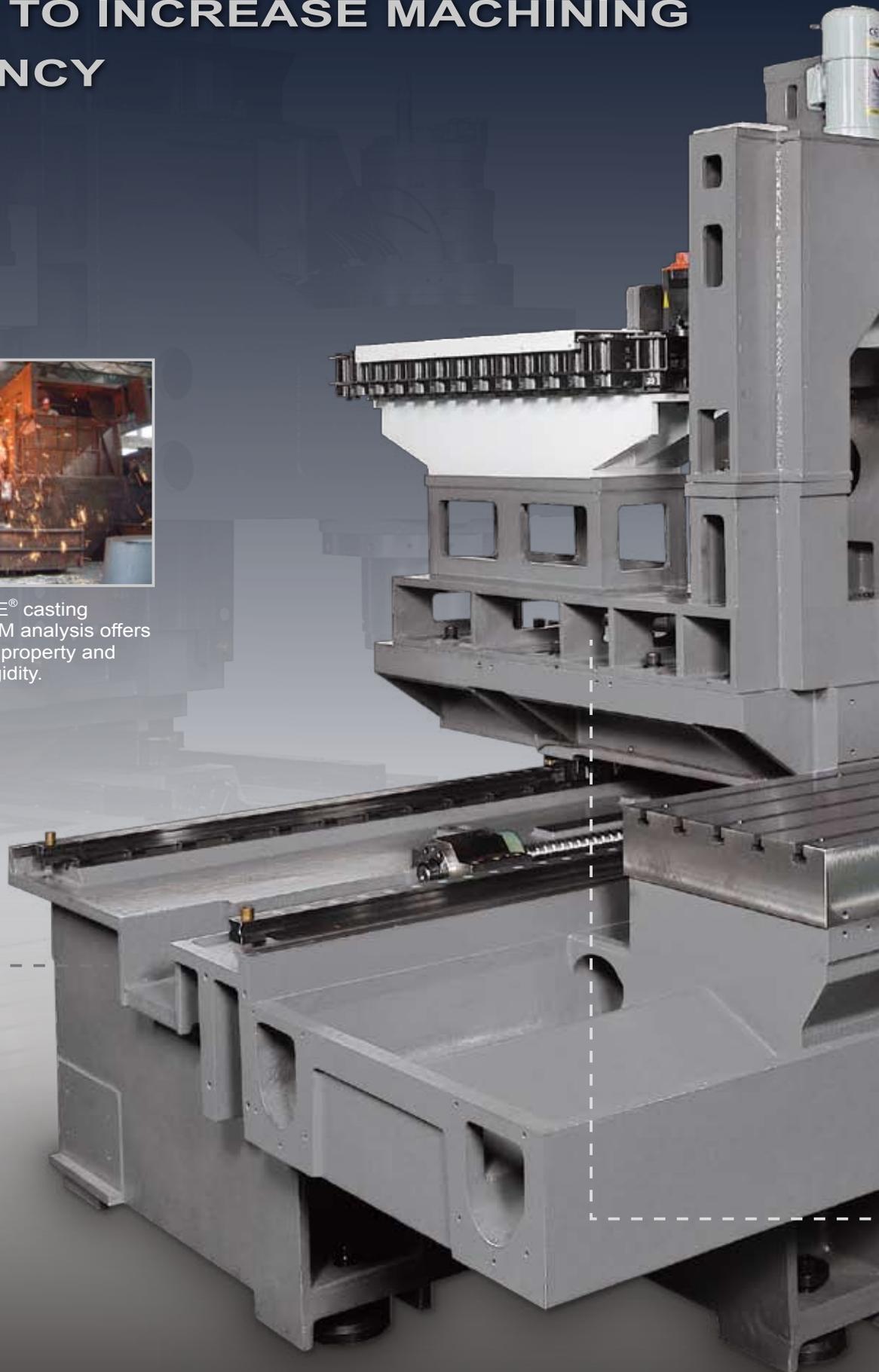




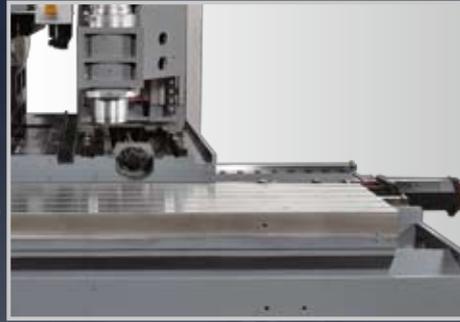
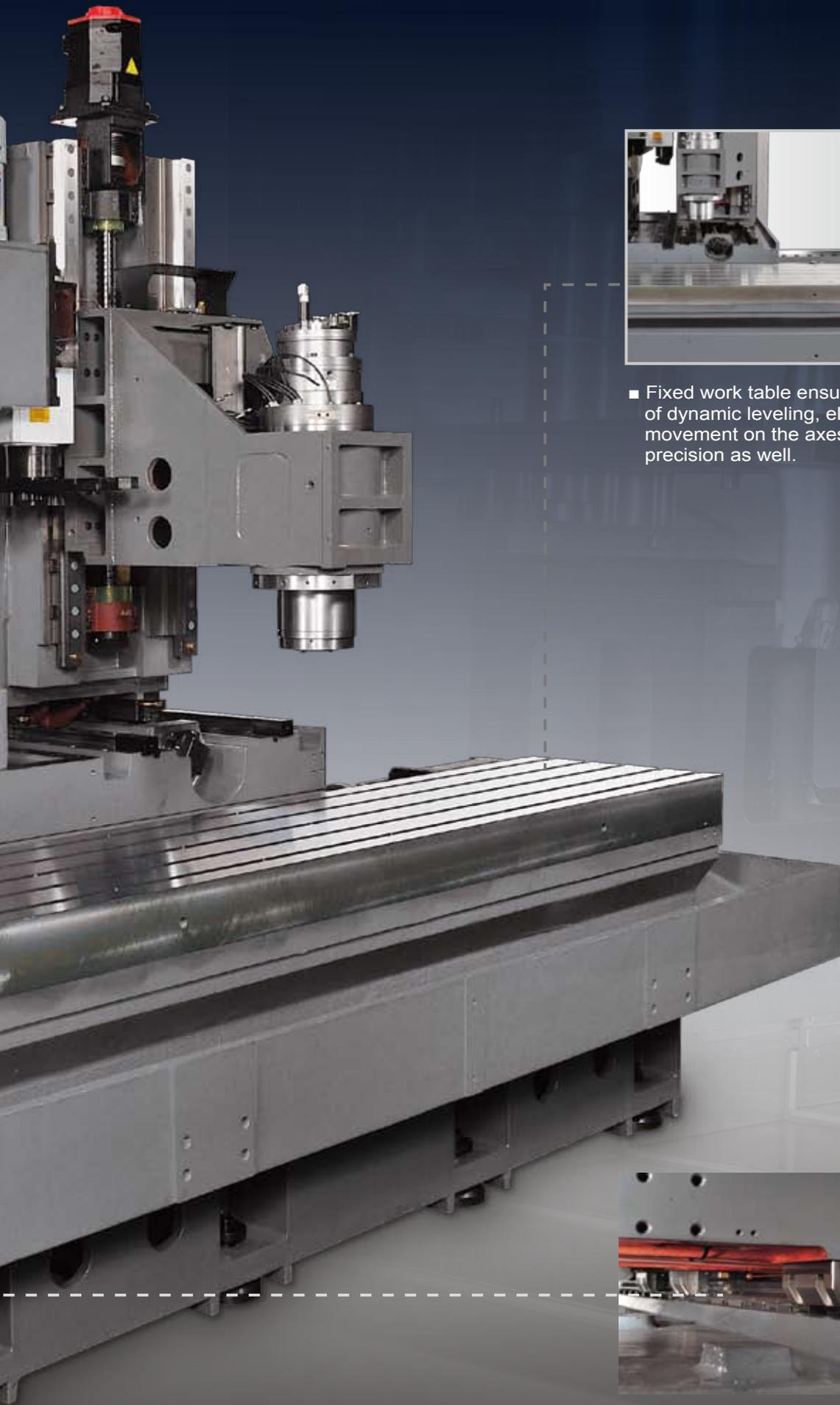
TRAVELING COLUMN STRUCTURE DESIGN TO INCREASE MACHINING EFFICIENCY



- Massive MEEHANITE® casting designed through FEM analysis offers exceptional damping property and the highest cutting rigidity.



HEIDENHAIN Linear Scales (opt.)



- Fixed work table ensures the best possibility of dynamic leveling, eliminates parts movement on the axes and greatly improves precision as well.



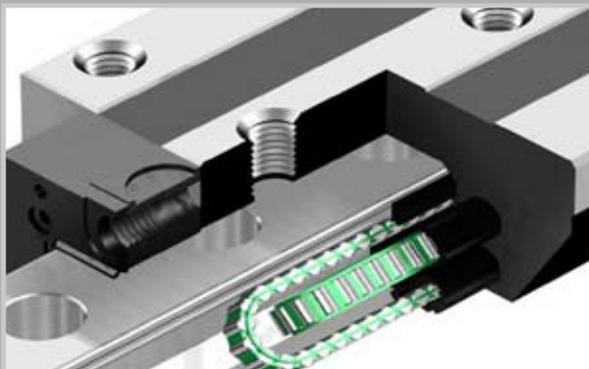
- 6 slider blocks on both X/Y axes; delivering maximum cutting rigidity.

INSTALLATION OF DIVIDING WALL IN THE WORK AREA

New TCV2000A , offering large work area is ideal for large and long workpieces machining.

With the installation of dividing wall in the work area, both long and complex parts can be manufactured in the same machine.

This machine is very suitable for aerospace, automotive and job shop applications.





- Extra large table can be divided into two working areas for easy setup and machining flexibility.
- All 3 axes are equipped with high rigidity roller type guideways, extra large diameter precision ball screws, and direct coupled axial motors to achieve ultra high speed and rigidity.
- Circulated sleeve cooling system is installed on X-axis ball screw to ensure stable temperature and retain optimal accuracy during long period of operation.

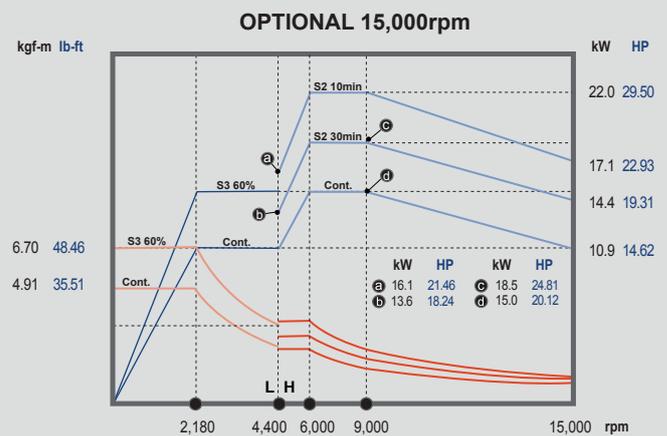
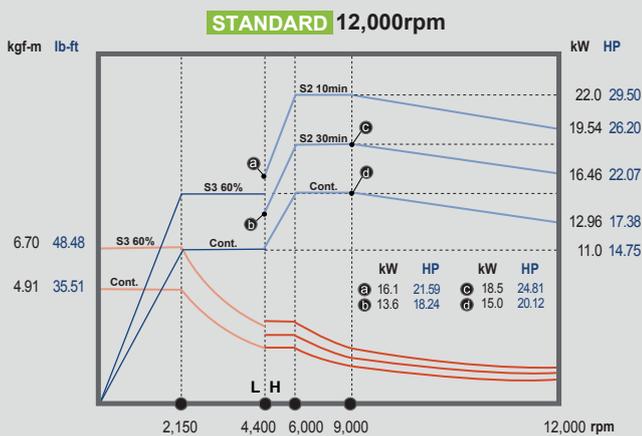
INTEGRAL SPINDLE MOTOR

Exclusively, YCM made 12,000rpm 30HP integral spindle motor which is finely tuned to offer extremely low vibration. It is optimized to produce excellent surface finish and designed to extend both spindle and tooling life under heavy milling conditions.

BBT40 with simultaneous taper and flange contact design promotes higher machining accuracy.



POWER CHART



SPINDLE SPEED (std.)

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

SPINDLE SPEED (opt.)

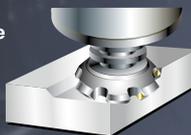
POWER ■ Low Speed ■ High Speed TORQUE ■ Low Speed ■ High Speed

HIGH CHIP REMOVAL RATE

FACE MILL S45C Steel

Material Removal Rate

608
cc/min

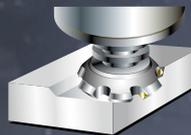


Tool $\phi 63\text{mm} \times 6\text{T}$
Spindle Speed 1,500rpm
Feedrate 2,250mm/min
Width of Cut 60mm
Depth of Cut 4.5mm

FACE MILL S45C Steel

Depth of Cut

7.5
mm



Tool $\phi 80\text{mm} \times 5\text{T}$
Spindle Speed 596rpm
Feedrate 298mm/min
Width of Cut 65mm
Material Removal Rate 145cc/min

END MILL Aluminum

Material Removal Rate

1,960
cc/min



Tool $\phi 40\text{mm} \times 4\text{T}$
Spindle Speed 12,000rpm
Feedrate 20,000mm/min
Width of Cut 28mm
Depth of Cut 3.5mm

END MILL S45C Steel

Material Removal Rate

400
cc/min



Tool $\phi 16\text{mm} \times 4\text{T}$
Spindle Speed 5,000rpm
Feedrate 2,000mm/min
Width of Cut 10mm
Depth of Cut 20mm

DRILL S45C Steel

Cutter Diameter

$\phi 44$
mm



Tool $\phi 44\text{mm} \times 2\text{T}$
Spindle Speed 1,030rpm
Feedrate 206mm/min

TAP S45C Steel

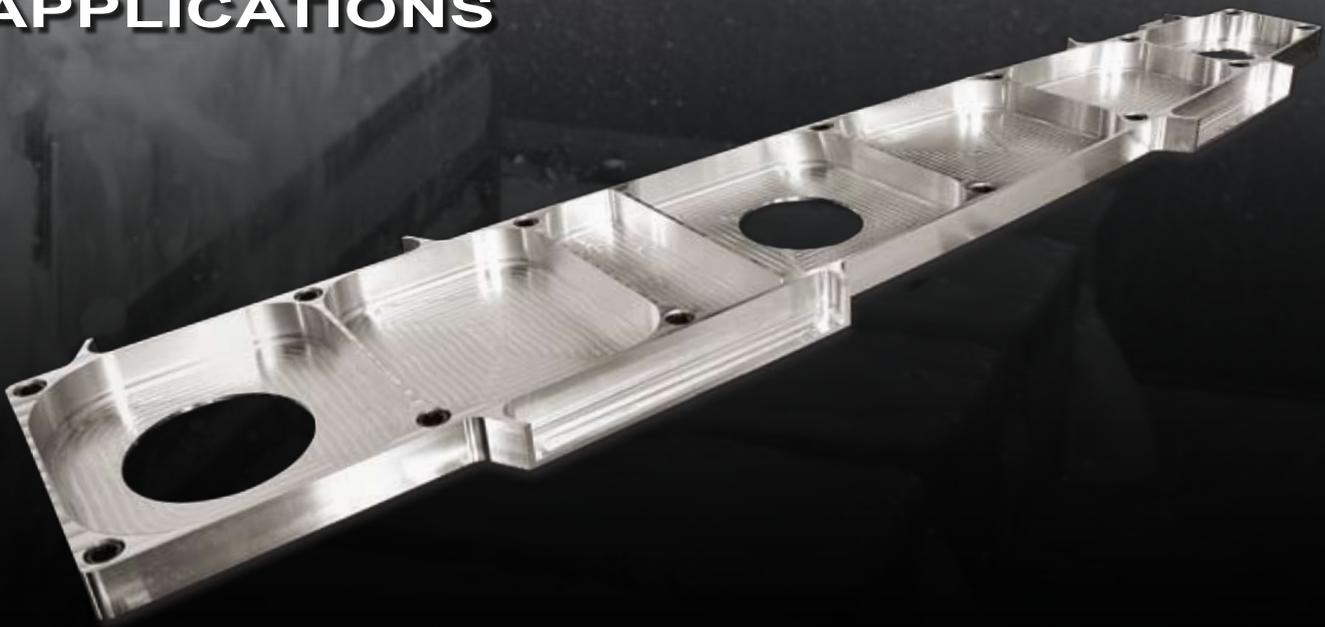
Max. Tapping

M24



Tool M24
Spindle Speed 60rpm
Feedrate 180mm/min

HIGH PERFORMANCE APPLICATIONS



ULTRA HIGH SPEED

Powerful axial servo motors directly coupled to ball screws are incorporated into TCV2000A to achieve astonishing 40m/min rapid feedrate and up to 0.8g of acceleration. Definitely, TCV2000A improves your production efficiency.



40m/min

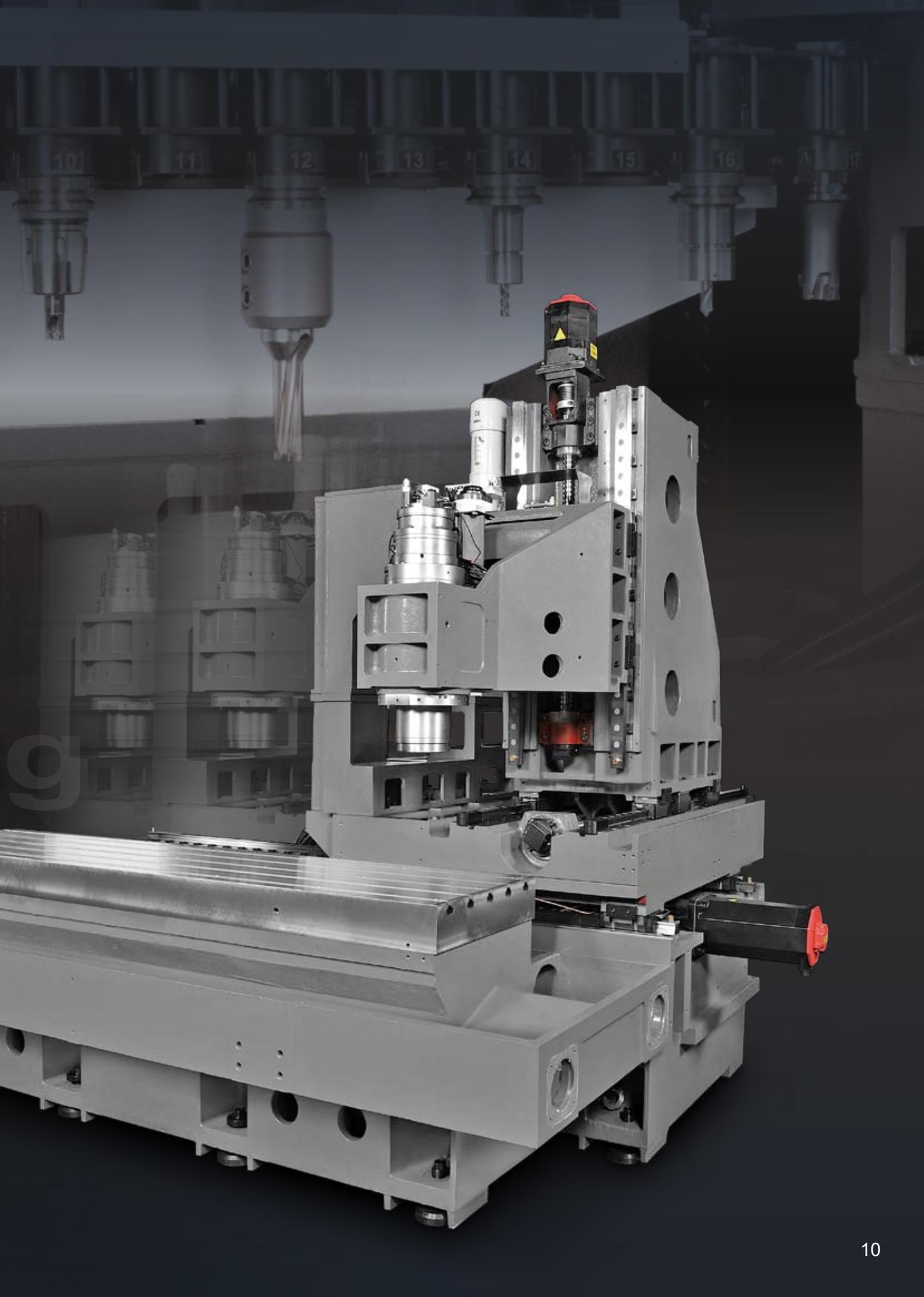
0.8

Lower center of gravity and saddle mounted servo driven tool magazine design allows ultra smooth movement and fast tool change time.

Standard 30T and optional 40T tool magazine satisfy all application requirements.

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

TCV
Series



EFFICIENT CHIP DISPOSAL SYSTEM

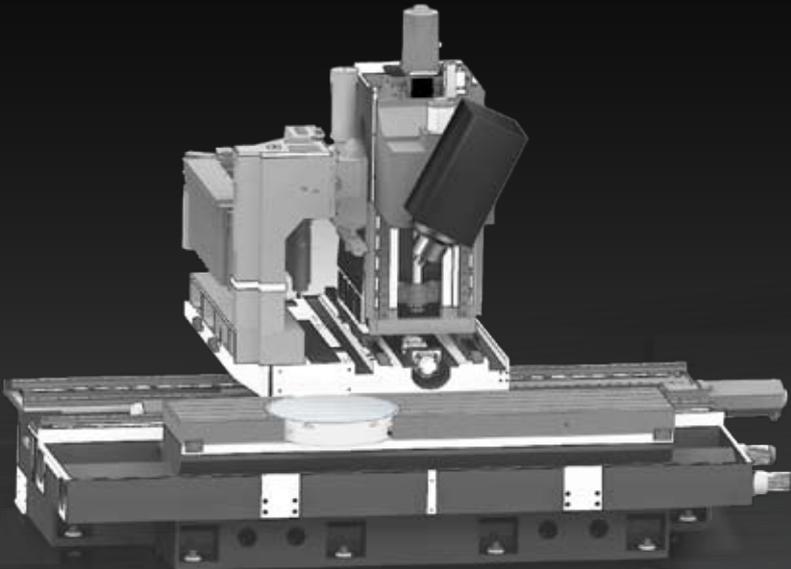
All 3 axes are cleverly designed to minimize problems associated with chip accumulations.

Optional chip coolant flush system rapidly transports chips into dual screw type chip augers.

Screw type chip augers on both side of X-axis table that dump coolant into a large 600 liter tank. Optional wide, lift-up chip conveyor can be mounted on the top of the coolant tank provides the machine with even greater chip disposal efficiency.



SWIVEL MILLING HEAD & INTEGRATED NC ROTARY TABLE FOR COMPLEX MACHINING APPLICATION

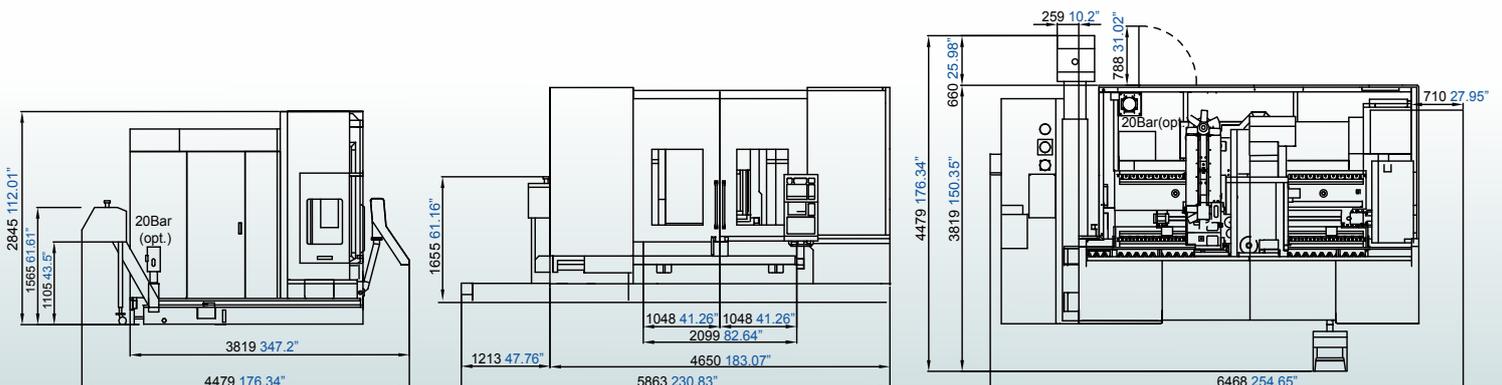


Swivel spindle offers +/-110 degree of variable machining capacity.

Built-in rotary table (0.001°) is available for simultaneous 5-axis machining.

DIMENSIONS TCV 2000A

Unit : mm inch



Specifications

	TCV2000A	TCV3000A	TCV3000A-5AX
Spindle			
Spindle Speed (opt.)	12,000rpm (15,000rpm)		
Spindle Power [Cont./30/10/5/1min]	7.5/11/15/18.5/22kW (10/15/20/25/29.5HP)		
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 1,150mm (2 x 45.3")	
Y-axis Travel	520mm (20.5")	800mm (31.5")	
Z-axis Travel	540mm (21.3")	700mm (27.6")	800mm (31.5") (V) 850mm (33.5") (H)
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)	-		250~1,100mm (9.8"~43.3")
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")		
Max. Load on Table	2,000kg (4,409lb)	3,000kg (6,613 lb)	3,000kg (6,613 lb)
5AX			
Swivel Head Degree	-	-	±110°
Resolution of Swivel Head	-	-	0.001°
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	40/40/40m/min (1,575/1,575/1,575ipm)	30/40/40m/min (1,181/1,575/1,575ipm)	
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)		
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"))		
General			
Power Consumption	53kVA (65kVA)		
Machine Weight	13,300kg (29,321 lb)	16,000kg (35,273 lb)	16,500kg (36,375 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
- 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
- Safty Door
- Linear Scale
- Foundation Bolt
- Chip Conveyor
- Chip Flush Coolant Device
- Circula Coolant Nozzle
- Oil Skimmer
- A/C Cooler for Electrical Cabinet
- Coolant through Spindle System
- NC Rotary Table
- Heavy Duty Coolant Pump
- Workpiece Measurement System
- Tool Length & Radius Measurement
- HEIDENHAIN iTNC-530 Control



HEIDENHAIN iTNC-530 Control (opt.)

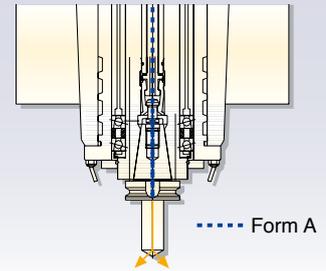
Linear Encoder

- 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



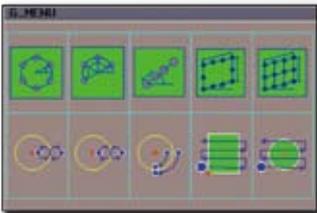


MXP-200 FB / FC

YCM CONTROL

by **FANUC**

- High performance AC digital servo & spindle drives
- Powerful servo motors with super precision absolute positioning encoders
- High resolution 10.4" LCD color monitor with dynamic graphic display
- Manual guide i conversational function greatly reduces programming and setup time.
- Built-in AICC II and high speed JERK function
- Auto switching on/off high speed high accuracy machining control function
- Program management by program folders and file names
- High speed rigid tapping, helical interpolation, custom macro B, and tool path graphics
- Large program capacity with 1,280 meters of memory
- Full alphanumeric keyboard allows easy program editing
- PCMCIA slot for easy file transfer and memory expansion
- Dynamic display language switching function
- RS-232C interface ready for fast program transfer
- Combined uses of many high performance microprocessors, high speed memory and the adoption of Multi-CPU system for super high speed control processing
- Editing and operation of a memory card and data server (opt.)
- FANUC program transfer tool (opt.)
- Tool management functions (opt.)



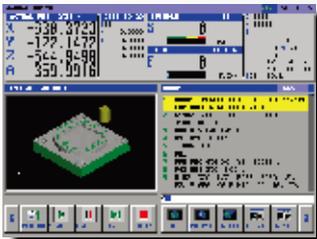
■ G-menu Function

User-friendly G-menu function provides multiple machining cycles that greatly simplifies programming steps.



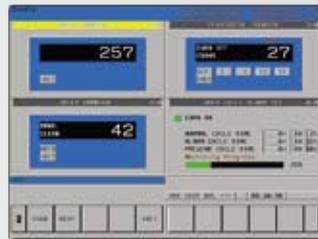
■ Calculator Function

Convenient calculator function provides fast calculation and setting of workpiece offsets.



■ Easy Shop-floor Programming Manual Guide i

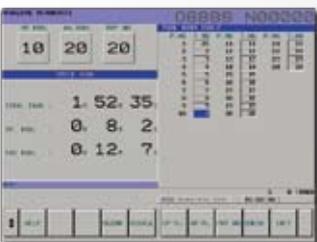
Easy to use conversational software offers convenience of part programming right on the shop-floor with 3-D graphical display and full simulation function.



■ Counter Function

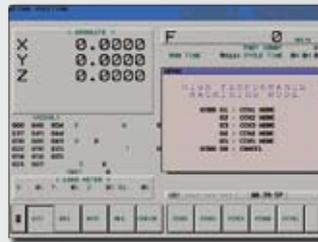
Allows user to easily keep track on number of workpieces with:

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



■ Intelligent Tool Data Management

Comprehensive tool data management function allows operators to conveniently monitor and efficiently manages all position in tool magazine.



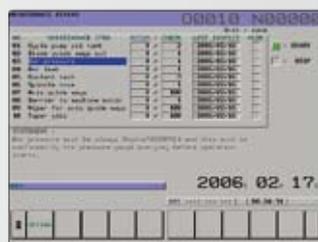
■ High Performance Machining Mode: M300

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



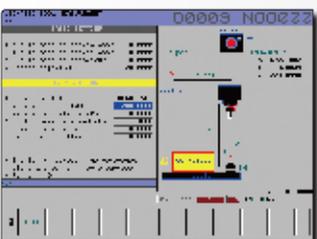
■ Pop-up Alarm Display

Detailed troubleshooting procedures are automatically displayed when machine alarm occurs that allows users to quickly restore machine status to minimize downtime.



■ Intelligent Maintenance Reminder

Pre-set maintenance schedules are programmed to remind operators to inspect periodically and to prolong machine life.



■ Automatic Tool Length Measurement

Pre-set macros and graphical procedure are provided for operation of 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 the other.

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

High Speed Machining Mode: M400

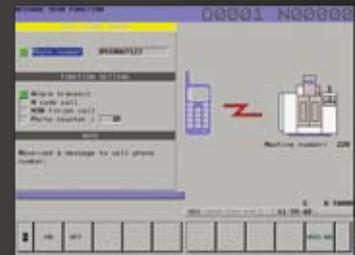
Artificially intelligent machining function that is developed from accumulation of all YCM knowledge and experience on high speed to achieve the fastest cycle time with best machining results. Machining efficiency improved by +25% without sacrificing machining accuracy.

+25%

Efficiency increased by

Wireless Message Notification (opt.)

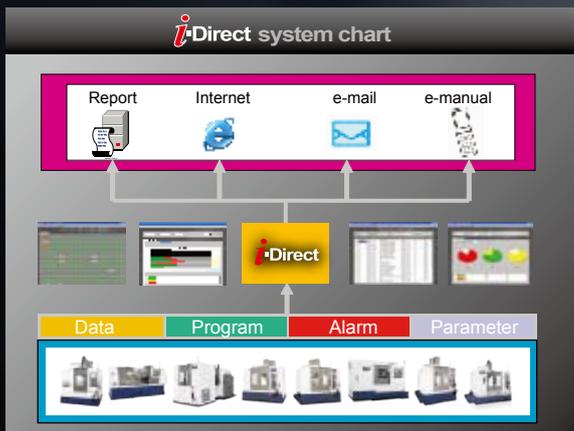
Integrating GSM communication and CNC technology, YCM developed the WMN system for wireless notification of machine and work status report.



i-Direct

a remote monitoring system

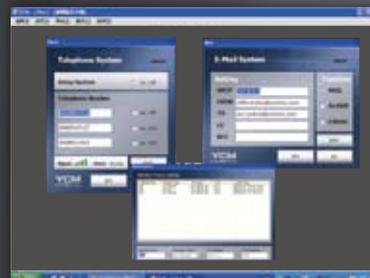
i-Direct, the latest YCM software enhancement innovation for remote factory production line monitoring system. Its powerful features include complete machine operation status, record, history, and data analysis. During alarm generated events, instant messages can be sent thru email or short message to 3 sets of cellphones. All these are done remotely thru internet with our user friendly interface, truly making unman factory management at your finger tips.



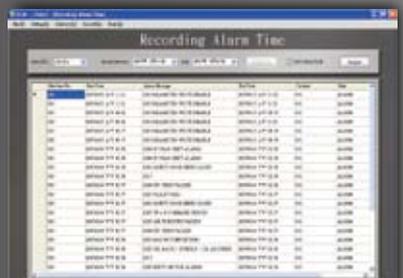
User account administration



Individual machine status display



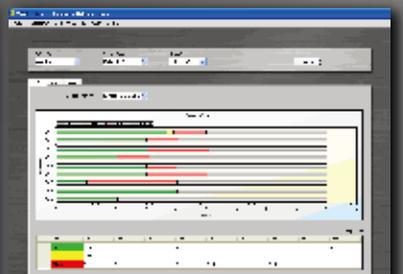
Machine model, number, email, sms and ip setup



Complete production, standby, and down time record



Over all machine status display



Production data graphical analysis