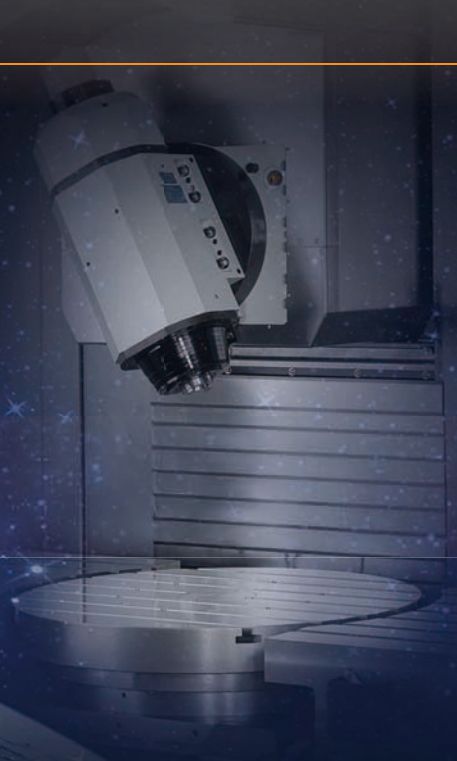


TCV Series

*HIGH PERFORMANCE TRAVELING COLUMN
VERTICAL MACHINING CENTER*



YCM®

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.



	TCV 2000A	
ACCURACY	ISO 10791-4	YCM*
Axial Travel	Full Length	
Positioning (X/Y/Z) A	0.032 / 0.025 / 0.025 mm 0.00126" / 0.00098" / 0.00098"	0.014 / 0.010 / 0.010 mm 0.00055" / 0.00039" / 0.00039"
Repeatability (X/Y/Z) R	0.018 / 0.015 / 0.015 mm 0.00071" / 0.00059" / 0.00059"	0.010 / 0.007 / 0.007 mm 0.00039" / 0.00028" / 0.00028"

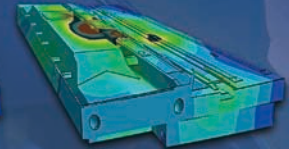
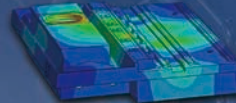
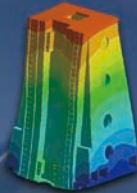
* All values shown above are measured for the machine in good air-conditioned environments.

	TCV 3000A series	
ACCURACY	ISO 10791-4	YCM*
Axial Travel	Full Length	
Positioning (X/Y/Z) A	0.042 / 0.025 / 0.025 mm 0.00165" / 0.00098" / 0.00098"	0.020 / 0.010 / 0.010 mm 0.00079" / 0.00039" / 0.00039"
Repeatability (X/Y/Z) R	0.018 / 0.015 / 0.015 mm 0.00071" / 0.00059" / 0.00059"	0.015 / 0.007 / 0.007 mm 0.00059" / 0.00028" / 0.00028"

* All values shown above are measured for the machine in good air-conditioned environments.

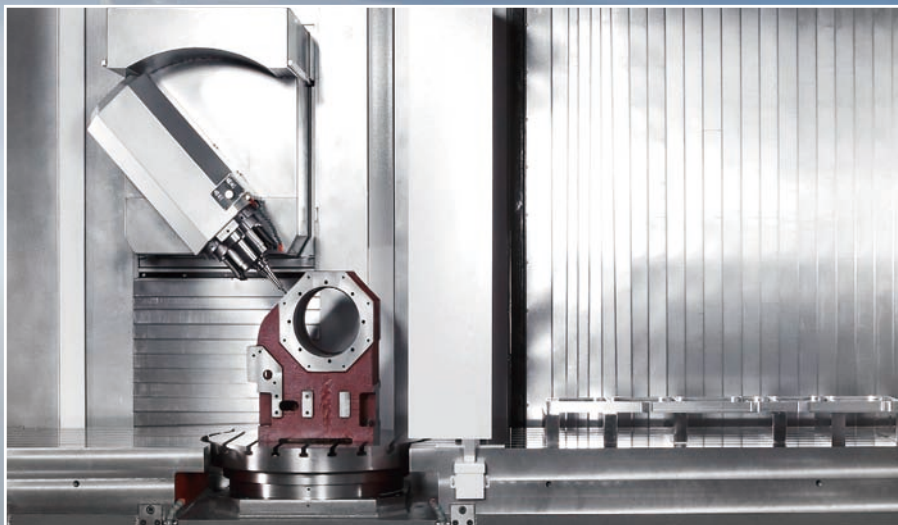
REINFORCED BODY STRUCTURE

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



HIGH PERFORMANCE

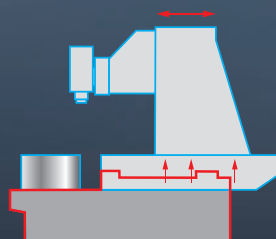
- Large working area is ideal for large and long workpieces machining.
- With the installation of dividing wall in the working area, both long and complex parts can be manufactured in the same machine.



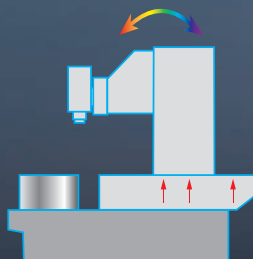
■ TCV3000A-5AF

HIGH EFFICIENCY

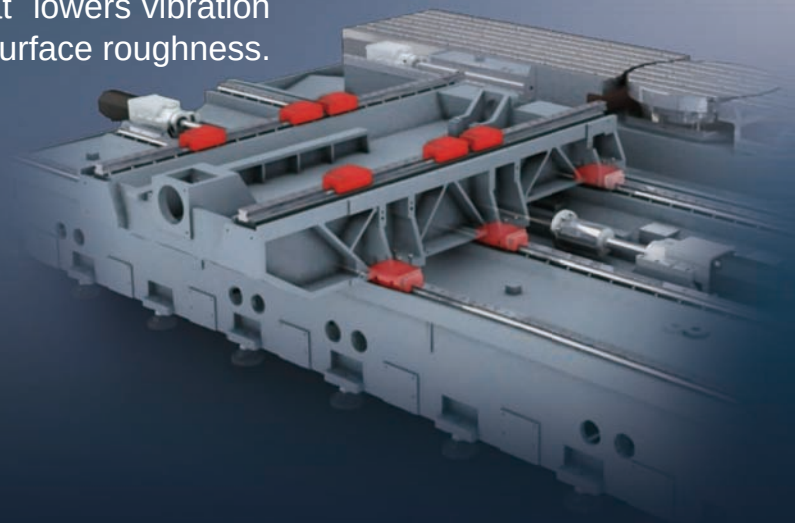
- Capable of reaching up to 40m/min. rapid feedrate.
- With step guideways and 6 slider blocks on X-axis ensure the ultra reliable axial movement.
- No counter weight design on Z-axis that lowers vibration while machining and greatly improves surface roughness.
- Wide span design of machine structure.



✓
TCV series



✗
other brand



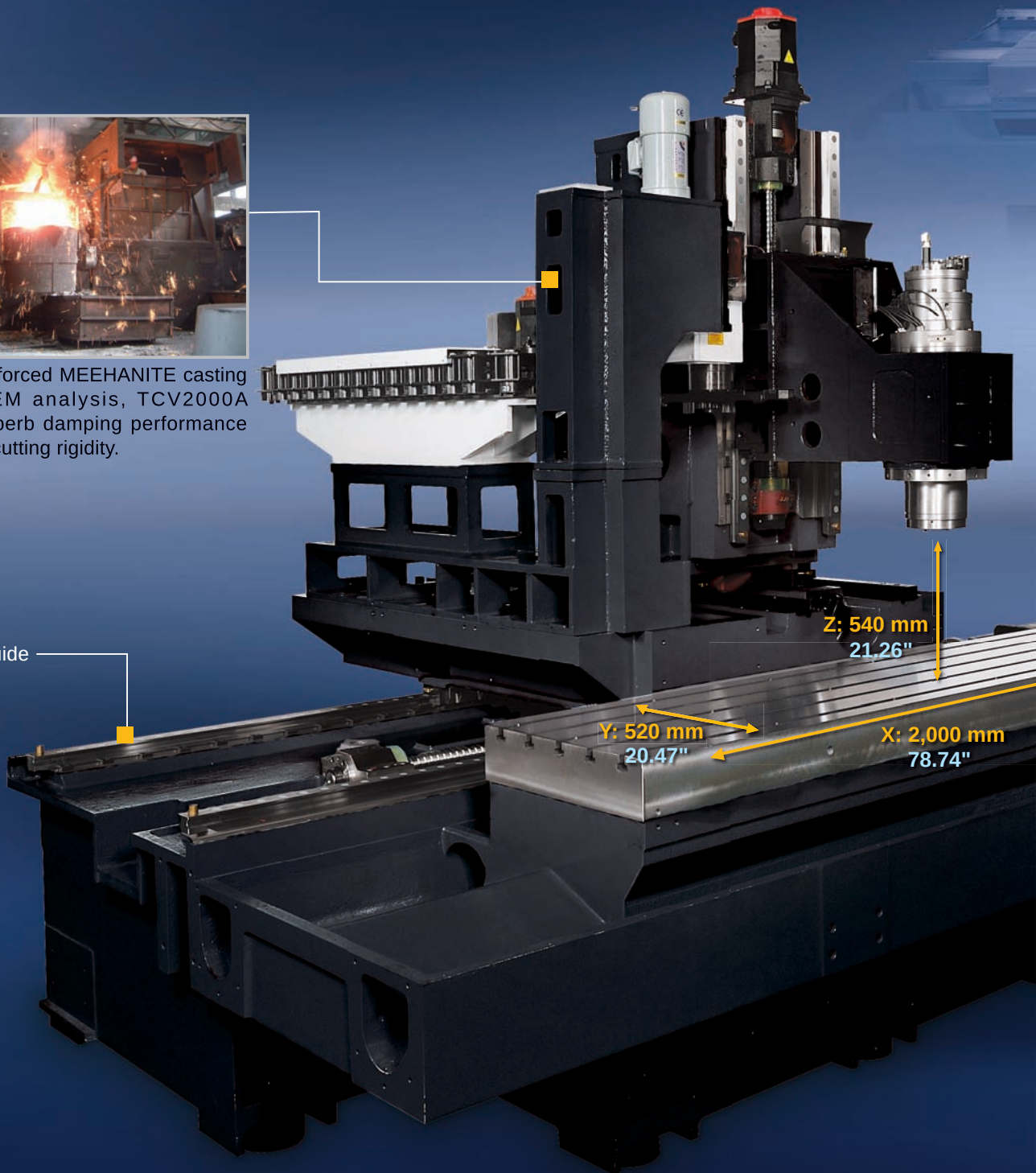
TCV_{2000A}

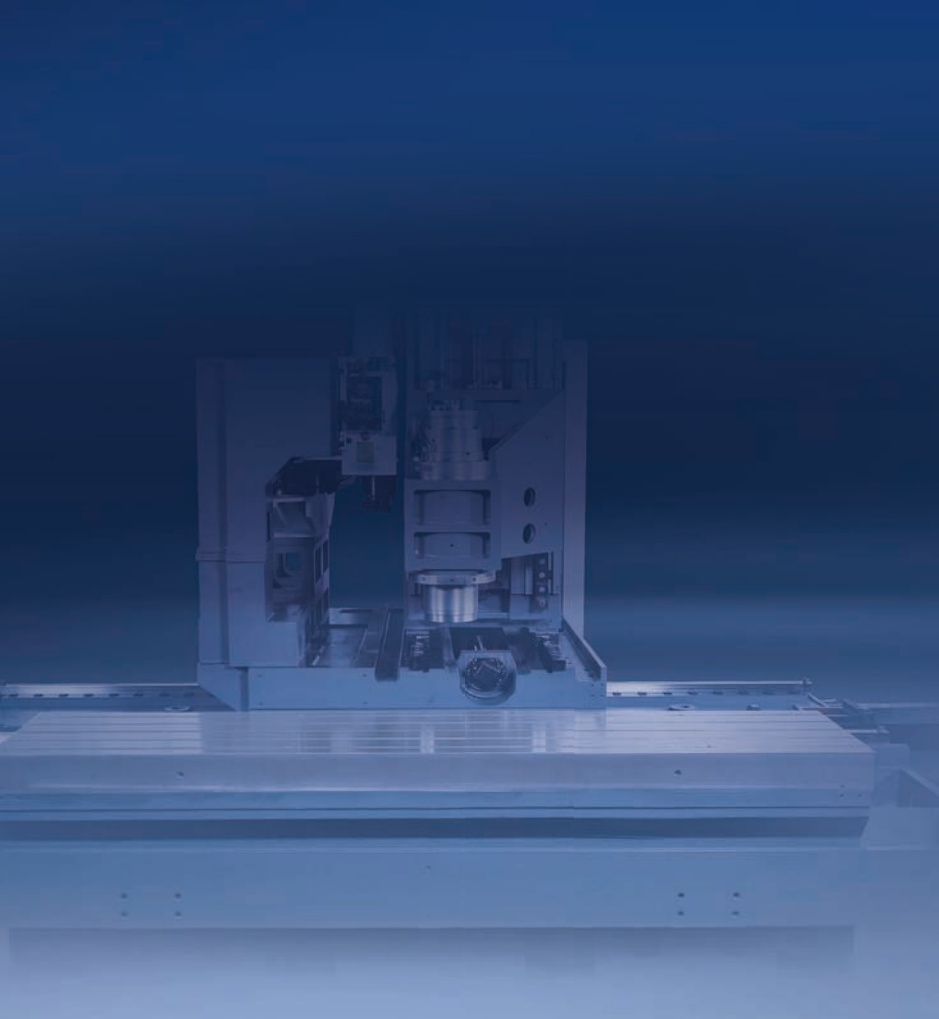
With traveling column and fixed table design, TCV2000A provides a wide machining area with minimum tool interface.



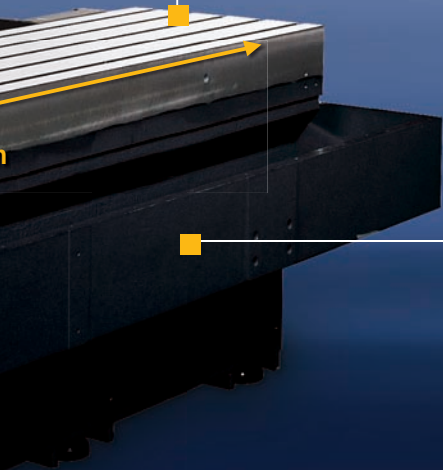
- With the reinforced MEEHANITE casting through FEM analysis, TCV2000A provides superb damping performance and perfect cutting rigidity.

- XYZ linear guide

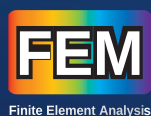




- Fixed working table ensures the best possibility of dynamic leveling, eliminating parts movement on the axes and greatly improving precision as well.



- one-piece designed base



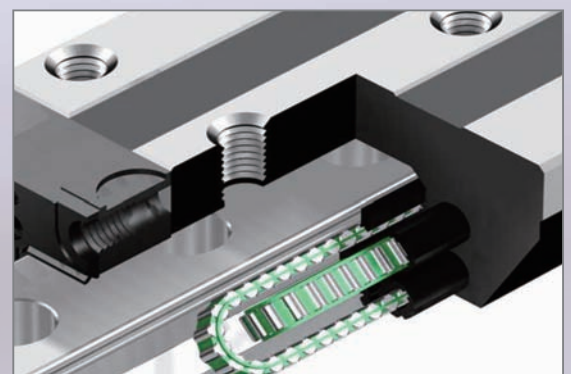
HEIDENHAIN Linear Scale (Opt.)



- 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.

TCV 3000A 3000A-5AF/5AX

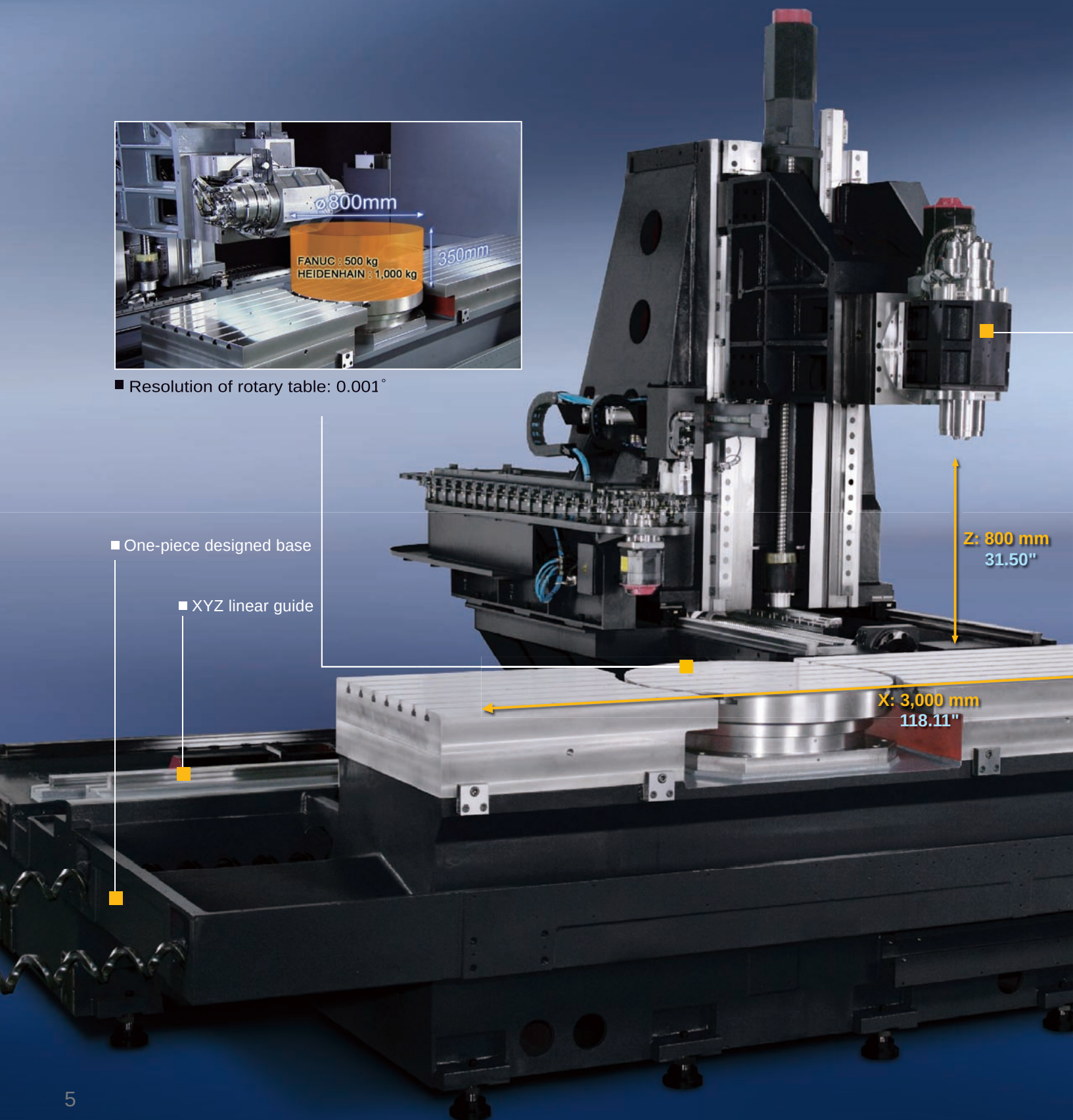
Design with low backlash swivel head and rotary table,
TCV 3000A-5AF/5AX achieves all of your challenging job requirements.



■ Resolution of rotary table: 0.001°

■ One-piece designed base

■ XYZ linear guide



110°

110°

Swivel angle (B-axis)

33.3 rpm

Max. speed (B-axis)

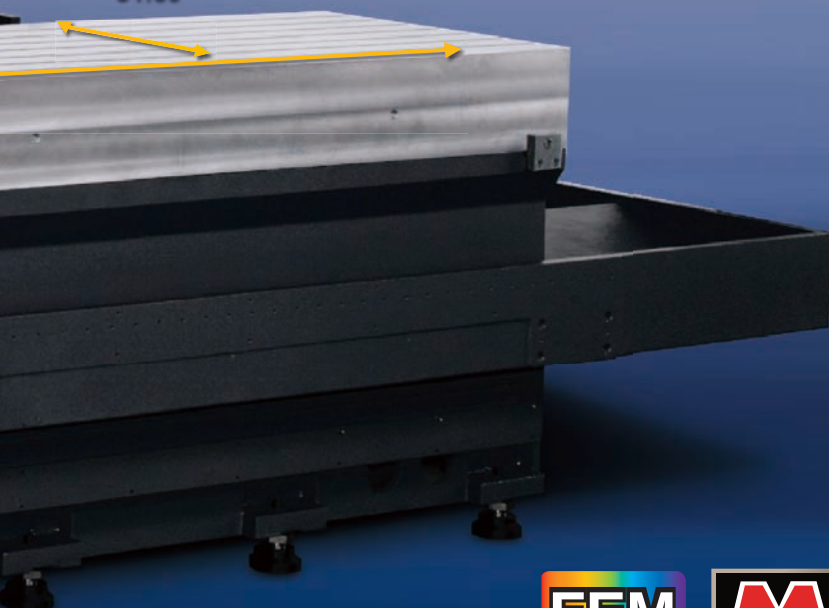
50 rpm (FANUC) /
90 rpm (HEIDENHAIN)

Max. speed (C-axis)

< 10sec.

Positioning accuracy. (B/C axis)

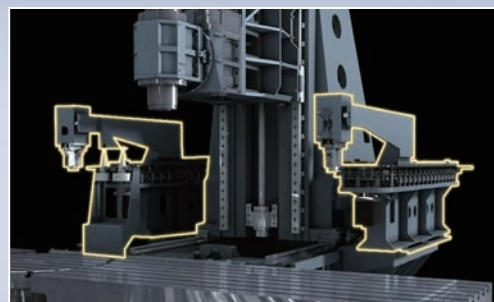
Y: 800 mm
31.50"



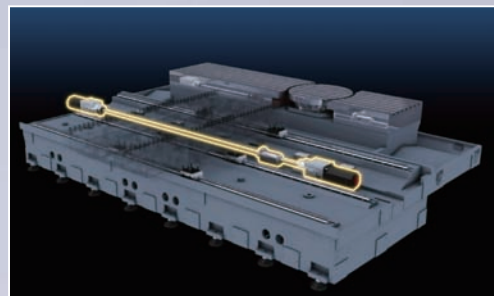
HEIDENHAIN Linear Scales (opt.)



- Big torque spindle (opt.) 50kW, Rotation speed 120° (TCV 3000A-5AX)



- Reliable ATC system: Tool magazine 80T. (opt.)



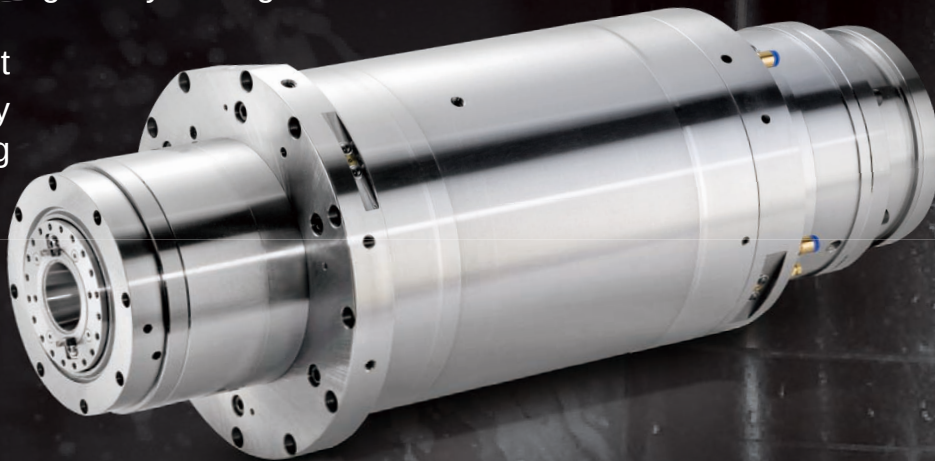
- Centroid driven on X-axis to reduce vibration during movement, ensuring axial accuracy. (TCV 3000A-5AX)



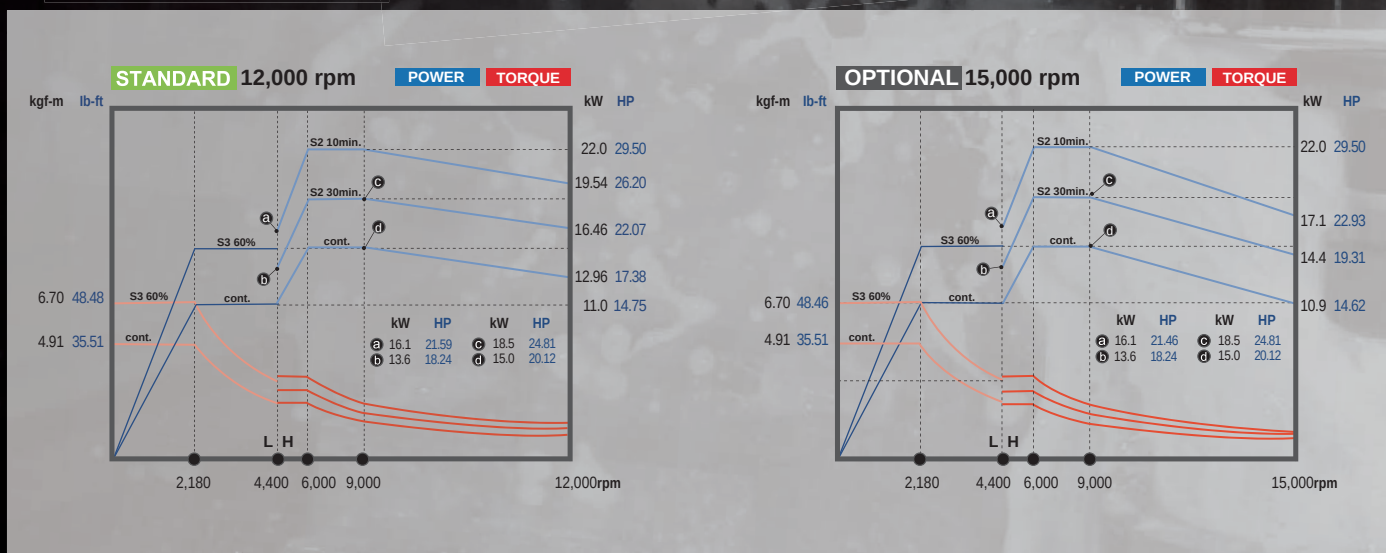
- Stepped design on X-axis ensures stability during saddle movement

YCM In-House Built-in Spindle

- The YCM in-house built-in spindle of 12,000 / 15,000 rpm effectively lowers vibration, providing the best surface performance. Meanwhile, it prolongs lifespan of spindle and tools during heavy cutting.
- BBT40 double contact spindle taper greatly enhances machining accuracy.



POWER CHART



CUTTING CAPACITY

TCV 3000A BBT40 12,000 rpm (std.)

FACE MILL S45C Steel

Material Removal Rate

706
cc/min.

Tool ø63 mm x 5T
Spindle Speed 2,180 rpm
Feedrate 6,540 mm/min.
Width of Cut 60 mm
Depth of Cut 1.8 mm

FACE MILL S45C Steel

Depth of Cut

4
mm

Tool ø80 mm x 5T
Spindle Speed 600 rpm
Feedrate 450 mm/min.
Width of Cut 60 mm

END MILL A6061 Aluminum

Material Removal Rate

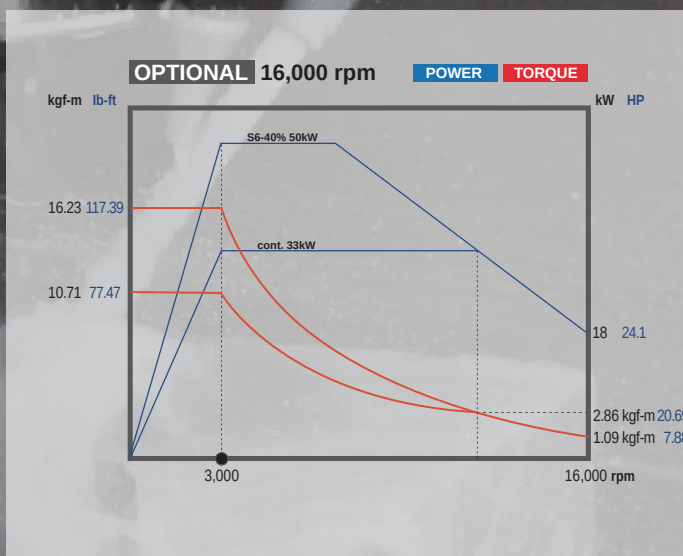
2,080
cc/min.

Tool ø40 mm x 4T
Spindle Speed 12,000 rpm
Feedrate 20,000 mm/min.
Width of Cut 32 mm
Depth of Cut 3.25 mm

Big Torque Spindle (opt.)

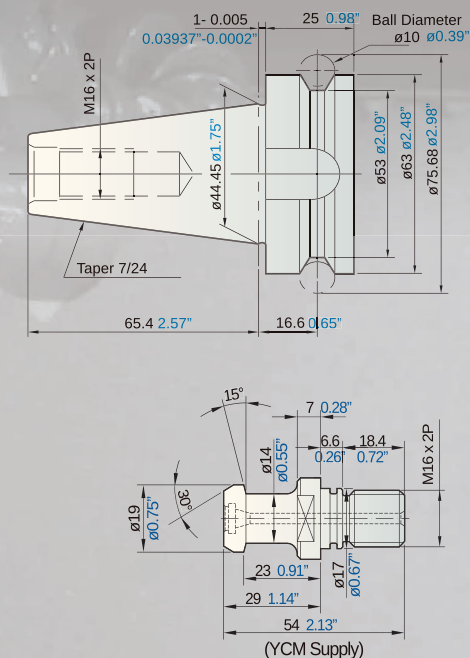
- Up to 16,000 rpm spindle and 50 kW 67 HP outputs, best for heavy cutting.
- Tool shrank: HSK A63 °

POWER CHART

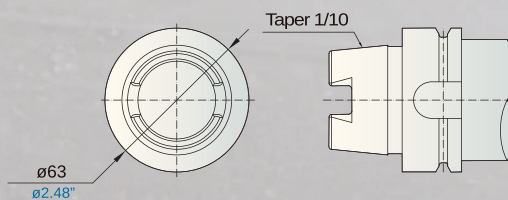


PULL STUD & SHANK

BBT40



HSK-A63

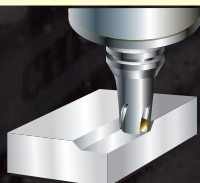


END MILL

S45C Steel

Depth of Cut

10
mm



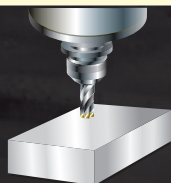
Tool ø32 mm x 3T
Spindle Speed 500 rpm
Feedrate 225 mm/min.
Width of Cut 32 mm

U-DRILL

S45C Steel

Cutter Diameter

ø44
mm



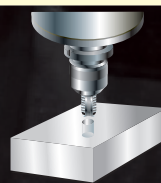
Tool ø44 mm x 1T
Spindle Speed 2,180 rpm
Feedrate 218 mm/min.
Depth of Cut 30 mm

RIGID TAP

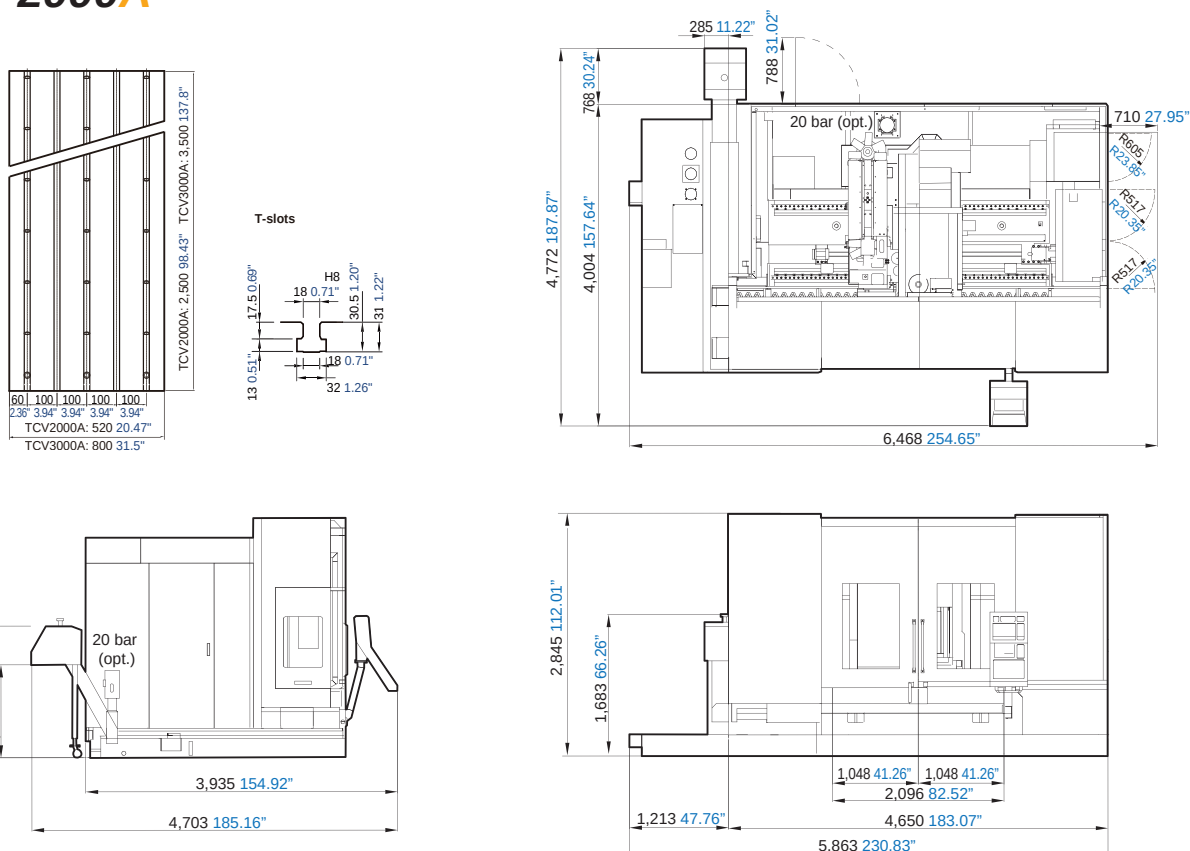
S45C Steel

Tapping

M24



Tool M24 x 3P
Spindle Speed 60 rpm
Feedrate 180 mm/min.
Depth of Cut 24 mm

Unit : mm **inch**[illegible]

SPECIFICATIONS

	TCV 2000A	TCV 3000A	TCV 3000A-5AF / 5AX
SPINDLE			
Spindle Speed / Power (std.)	12,000 rpm	15 / 18.5 / 22 kW 20 / 25 / 29.5 HP	(cont./30min./10min.)
Spindle Speed / Power (opt.)	15,000 rpm	15 / 18.5 / 22 kW 20 / 25 / 29.5 HP	(cont./30min./10min.)
Spindle Taper	BBT40		
Big Torque Spindle (opt.)	-	-	16,000 rpm 50 kW 67.1 HP(cont./S6-40%) (HSK A63)
TRAVEL			
X-axis Travel	2,000 mm 78.7"	3,000 mm 118.1"	
X-axis Travel Working in 2 Areas	2 x 650 mm 2 x 25.6"	2 x 1,100 mm 2 x 43.31"	
Y-axis Travel	520 mm 20.5"	800 mm 31.5"	
Z-axis Travel	540 mm 21.3"	800 mm 31.5"	800 mm 31.5" (V)
Distance Between Spindle Nose & Table Top (V)	180 ~ 720 mm 7.09"~28.35"	50 ~ 850 mm 1.97"~33.46"	0~800 mm 0~31.5"
Distance Between Spindle Center & Table Top (H)	-		300 ~ 1,100 mm 11.81"~43.31" 336 ~ 1,136 mm 13.23"~44.72" (Big Torque Spindle)
TABLE			
Table Size	2,500 x 520 mm 98.4" x 20.5"	3,500 x 800 mm 137.8" x 31.5"	
No. T-Slots x Size x Pitch	5 x 18 mm x 100 mm 5 x 0.7" x 3.9"	7 x 18 mm x 100 mm 7 x 0.7" x 3.9"	
Max. Load on Table	2,000 kg 4,409 lb	3,000 kg 6,614 lb	
B-axis			
Swivel Head Degree	-	-	± 110° / ± 120° (Big Torque Spindle)
Resolution of Swivel Head	-	-	0.001°
C-axis			
Rotary Table Size	-	-	ø800 mm ø31.5"
Max. Rotary Table Load	-	-	FANUC: 500 kg 1,102 lb HEIDENHAIN: 1,000 kg 2,205 lb
Max. Workpiece Size	-	-	ø800 mm ø31.5"
Resolution of Rotary Table	-	-	0.001°
FEEDRATE			
Rapid Feedrate	40 / 40 / 40 m/min. 1,575 / 1,575 / 1,575 ipm		
Cutting Feedrate	1~10,000 mm/min. 0.04~394 ipm		
ATC			
Tool Magazine Capacity (opt.)	30T	40T (80T)	
Max. Tool Weight (Per Piece)	6 kg 13.2 lb		
Max. Tool Dimensions (W/O Adjacent Tools)	ø76 x 300 mm ø3" x 11.8" (ø110 x 300 mm ø4.3" x 11.8")		ø76 x 300 mm ø3" x 11.8" (ø125 x 300 mm ø4.92" x 11.8")
GENERAL			
Power Consumption	58 kVA (65 kVA)	67 kVA (80 kVA)	72 kVA (80 kVA)
Machine Weight	13,300 kg 29,321 lb	24,000 kg 52,910 lb	24,700 kg 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.

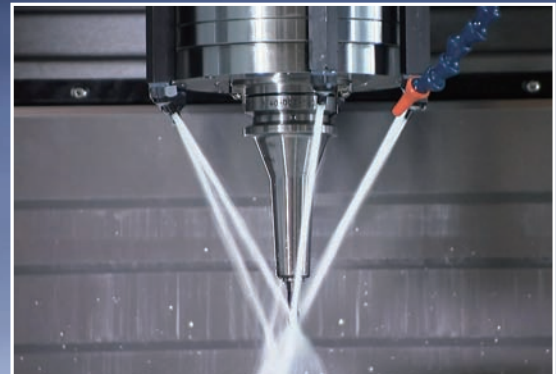
ACCESSORIES

● Standard ○ Option - N/A

	2000A	3000A	3000A -5AX / 5AF
Tool Kit	●	●	●
Work Lamp	● (x 4 Units)	● (x 4 Units)	● (x 4 Units)
Pilot Lamp	●	●	●
Full Chip Enclosure	●	●	●
Cutting Air Blast	●	●	●
Spindle Air Blast	●	●	●
Spindle Air Seal	●	●	●
Air Gun	●	●	●
Spindle Cooling System	●	●	●
Dividing Wall & Safety Device	●	●	●
Coolant Gun	●	●	●
Central Lubrication System	●	●	●
Guideway Cover	● (X, Y, Z)	● (X, Z)	● (X, Z)
Chip Augers	●	●	●
Leveling Blocks and Bolts	●	●	●
Heat Exchanger for Electrical Cabinet	●	●	●
Mechanical, Electrical & Operation Manuals	●	●	●
Safety Door	●	●	●
Heavy Duty Coolant Pump	●	●	●
Oil Skimmer	○	○	○
Linear Scale (X-axis)	○	●	●
Linear Scale (Y \ Z-axis)	○	○	○
Chip Flush Coolant Device on C-axis	-	-	●
Automatic Door	○	○	○
Foundation Bolt	○	●	●
Chips Flush Coolant Device	○	○	○
Chip Conveyor (Scraper Type)	○	○	○
Chip Conveyor (Chain Type)	○	○	○
Oil-mist Coolant System	○	○	○
Oil-mist Collector	○	○	○
Coolant Through Spindle System(Form A)	○	○	○
Rotary Table(4th-axis)	○	○	○
A/C Cooler for Electrical Cabinet	○	○	○
Heavy Duty Coolant Pump	○	○	○
Hydraulic Unit	-	○	●
Workpiece Measurement System	○	○	○
Tool Length & Radius Measurement	○	○	○
Circular Coolant Nozzle	○	○	○
CNC Control	● MXP-200FB (FANUC) ○ MXP-200FC (FANUC)		3000A-5AF ● MXP-200FC (FANUC) 3000A-5AX ● iTNC530 (HEIDENHAIN) ○ 31iMB5 (FANUC)

EFFICIENT CHIP DISPOSAL SYSTEM

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



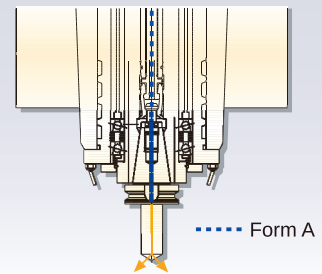
Linear Encoder

- 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
- 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



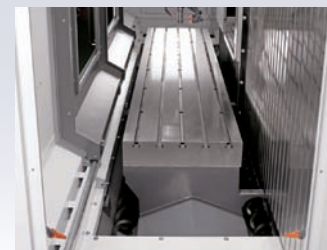
Tool Length & Radius Measurement

- 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



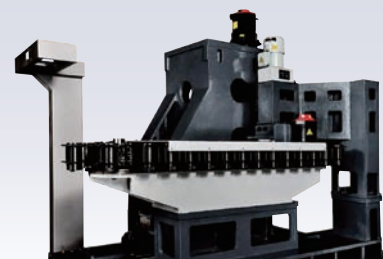
Workpiece Measurement System

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



Tool Magazine

- 30T servo driven tool magazine (TCV2000A)
- 40T servo driven tool magazine (TCV3000A series)
- 80T servo driven tool magazine (opt.) (TCV3000A series)



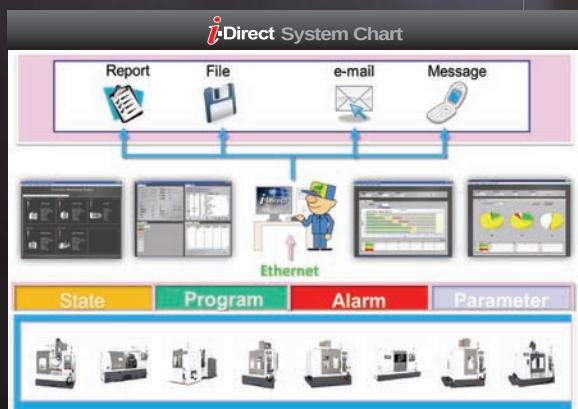
MXP-200 FB/FC

YCM CONTROL
by **FANUC**

- High Response AC Digital Servo & Spindle Drives with High Definition
- AICC II High Speed High Accuracy with Auto Switching on/off Machining
- JERK Control Function (opt.)
- High Rigidity Tapping, Helical Interpolation
- Custom Marco B and Tool Path Graphics
- Manual Guide i with large Screen Display . (MXP-200FC, opt.)
- Program File Management for Easy Program Classifying
- USB Interface for Easy Parameters & CNC Programs Transfer
- 512KB Memory
- High Speed Positioning Function (MXP-200FC, opt.)
- Memory Card Program Edit & Operation (opt.)
- 3D Interference Check (5-axis control as standard)
- NANO Smoothing Function (opt.)
- 400 pairs tool offset, 1,000 total registered programs
- 48 pairs of workpieces coordinate system
- Extended parts program editing (cut, copy, and paste. maximum 4,000 characters)

i-Direct A remote monitoring system

The YCM Production Line Monitoring System i-Direct overcomes the limitations of time and distance. This software provides plant operators with instant production status, including production value, output, standby, alarm time, status display and malfunction records of the machine. These data could be browsed online and printed. When incidents occur, i-Direct will automatically warn plant operators through e-mail or MMS message. With i-Direct Production Line Monitoring System the plant operators can easily keep track of production statuses regardless of time and distance.



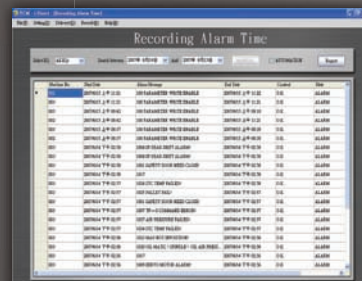
Single Machine Status Browsing Single Machine Status Browsing



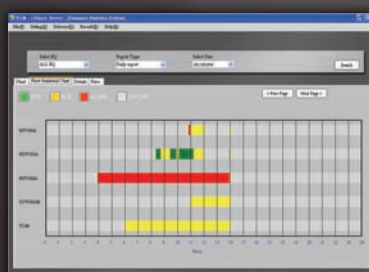
Plant Operation Status Monitoring



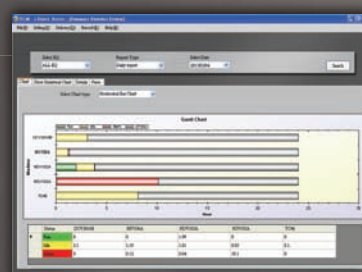
Machine connection, MMS and e-mail settings



Machine Status Time Record



Production Status Process Record



Production Management Statistics

i-OPERATION *Plus II*

Software Enhancement Exclusively from YCM



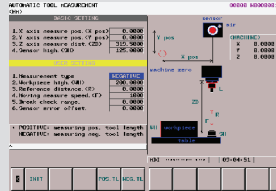
Pre-machining Preparation

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

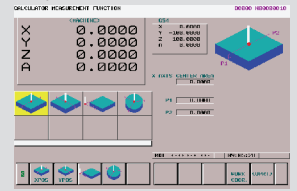
TOOL DATA TABLE

TOOL NO.	TOOL NAME	TOOL TYPE	TOOL LENGTH	TOOL COMPENSATION
121	017	017		
122	017	017		
123	017	017		
124	017	017		
125	017	017		
126	017	017		
127	017	017		
128	017	017		
129	017	017		
130	017	017		
131	017	017		
132	017	017		
133	017	017		
134	017	017		
135	017	017		
136	017	017		
137	017	017		
138	017	017		
139	017	017		
140	017	017		
141	017	017		
142	017	017		
143	017	017		
144	017	017		
145	017	017		
146	017	017		
147	017	017		
148	017	017		
149	017	017		
150	017	017		

Tool Length Measurement
Graphic measuring interface provides automatic tool length measurement function



Workpiece Coordinate Calculation
Conversational operating window provides convenient and fast setup of workpiece coordinates



NEW RENISHAW GUI System (Conversational Graphic Operating Interface)

Tool measurement & measurement correction



Workpiece measurement

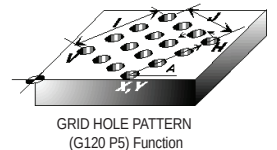
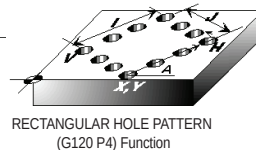
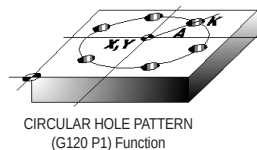


Programming

NEW PATTERN



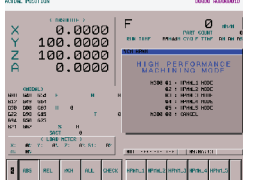
15 sets of machining cycle program
Reduces program input and memory time
Graphic interface & conversational command input



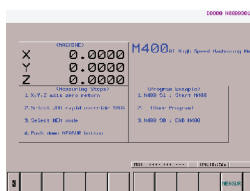
Machining

High Performance Machining Mode M300

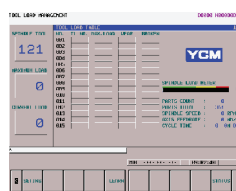
With 5 sets of parameter settings, the users choose the most suitable mode for optimum machining



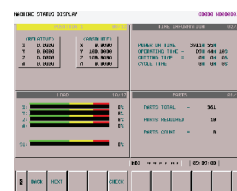
High Speed Machining Mode M400
Increases drilling and tapping speed, reduces machining time for job shop and precision mold machining



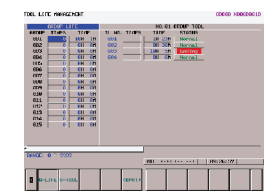
NEW Tool Load Management
Instant tool load monitoring with alarm function



Multi-display Function
Displays 4 statuses simultaneously with configurable status display



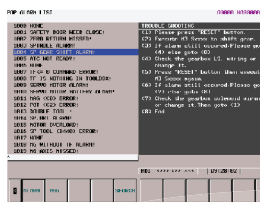
NEW Tool Life Management
Indicates tool status of each group with tool life alert



Instant Message Alert

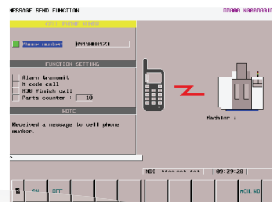
Pop-up Alarm Display

Instantly provides troubleshooting procedure
Quick response to alarm



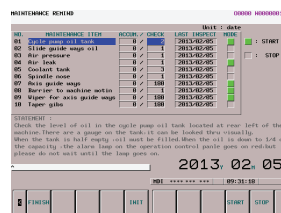
Wireless Message Notification

Machine status sent to a designated cellphone number.



Maintenance

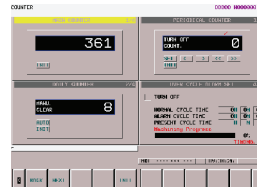
Intelligent Maintenance



Provide users with periodic maintenance options and descriptions

Instantly provide users with maintenance notifications

Counter Function



Allow users to keep count of workpieces with the function of overtime cycle alarm provides easy control over machining cycle time

1. Main Counter
2. Periodical Counter
3. Daily Counter
4. Over Cycle Alarm



VMC

Vertical Machining Center

FP Series High Precision High Performance Die Mold Vertical Machining Center
/ High Precision Graphite Vertical Machining Center
FP55LX, FP66A, FP100A / FP66G

NXV Series High Performance Vertical Machining Center
NXV560A, NXV1020A/AM, NXV1380A, NXV1680A/B

TV Series Heavy Duty Vertical Machining Center
TV116B, TV146A/B, TV158B, TV188B, TV2110B, TV2610B

NTV Series High Efficiency T-base Vertical Machining Center
NTV158A/B

NMV Series High Performance High Rigidity Vertical Machining Center
NMV76A, NMV106A

WV Series Ultra Wide High Performance Vertical Machining Center
WV108A/B

FX Series High Performance 5-axis Vertical Machining Center
FX380A

NSV Series Ultra High Performance Vertical Machining Center
NSV66A, NSV85A, NSV102A, NSV156A

NDV Series High Precision Die Mold Vertical Machining Center
NDV66A, NDV85A, NDV102A

TCV Series High Performance Traveling Column Vertical Machining Center
TCV2000A, TCV3000A, TCV3000A-5AF, TCV3000A-5AX

DCV Series Advanced Double Column Vertical Machining Center

DCV2012A/B, DCV3016B, DCV4016B, DCV3021B, DCV4021B, DCV5021B, DCV6021B, DCV3025B, DCV4025B, DCV5025B, DCV4030B, DCV5030B, DCV6030B, DCV4035B, DCV5035B, DCV6035B, DCV2018A-5AX, DCV4030B-5AX, DCV5030B-5AX, DCV6030B-5AX, DCV4030B-5AF

NDC Series High Performance Double Column Vertical Machining Center
NDC2016B, NDC3016B, NDC4016B, NDC2018B-AHC, NDC3018B-AHC, NDC4018B-AHC

HMC

Horizontal Machining Center

H Series High Production Horizontal Machining Center
H500A/B, H630B, H2612B

NH Series High Speed High Precision Horizontal Machining Center
NH450A, NH630B, NH800B

HBM

Horizontal Boring Milling Machining Center

BMP Series High Accuracy Heavy Duty Boring Machine
BMP1416B

CNC LATHES

CNC Turning Center

NT Series High Performance Mill/Turn Center
NT-2000Y/SY, NT-2500Y/SY

GT Series High Performance Geo Turning Center
GT-200A/B/MA, GT-250A/B/MA/MB, GT-300A/B/LA/LB/MA/MB/LMA/LMB, GT-380A/B/LA/LB

TC Series High Performance High Precision CNC Lathe
TC-16A/B/LA/LB/MA/MB/LMA/LMB, TC-26, TC-26L, TC-36, TC-36W, TC-46, TC-46M

INTEGRATION AND SOLUTIONS

Integrated Operation Control System **iOPERATION**

Spindle Thermal Compensation System **STCPLUS**

Remote Monitoring System **iDirect**

Automation Solutions



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