

Heavy Duty Vertical Machining Center





The TV series is designed for superb machine rigidity and performance. This series is suitable for a wide range of applications like automotive, aerospace and electronics.

The unique T-base structural design has been awarded a patent from Taiwan, China and the U.S.A. Its overhang free table movement is supported by highly rigid MEEHANITE® castings to ensure the best dynamic leveling accuracy, machining rigidity and durability.

The counterweight of Z-axis headstock is secured by guide bar to minimize machining vibration. Various spindle modules of high speed and high power output suit different kinds of machining requirements. Fast and reliable ATC system, efficient chip disposal system, humanized operation panel, and some models can work with APC for shortening the machining time thus increases efficiency. This TV series is favored and recommended by all industries.

Patent No:

 Taiwan
 NO. 101029

 U.S.A.
 NO. 5263800

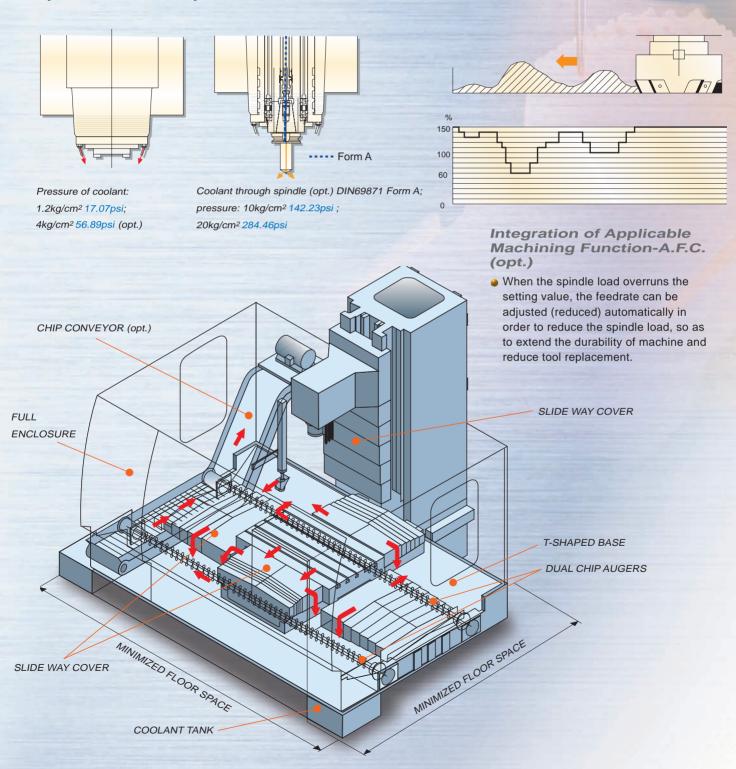
 Mainland China
 NO. ZL 93105466.4



The Most Eco-friendly and Floor-saving Machine Tool of Compact Splash Enclosure & Chips Disposal System

The long travel of X-axis lies on the top of the base, where the saddle moves along the full stroke; the cross Y-axis saddle supports the work table. This design virtually saves 20% ~ 30% of floor space.

The T-base rigid structure full stroke support guarantees the most dynamic accuracy.

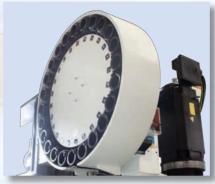




High Efficiency, High Performance, Fully Automated Production Equipment

Fast & Reliable ATC System

The arm type ATC sysstem is driven by roller gear cam to increase the work efficiency. Number of tool posts in magazine can be selected for 24T/32T/40T.





24T

32T

Reliable Automatic Pallet Changer System

- Reliable APC system with the unique design of shuttle type mechanism successfully shortens the machining time thus increases efficiency.
- Pallet change time: 2.5 sec.

		TV116B+APC
Pallet Size	mm inch	1,200 x 560 47.24 x 22.05
Table Load Capacity	kg lb	600 1,323
Table Surface to Floor	mm inch	958 37.99



APC



9mm Depth Face Milling (50#)



Optimal Chip Removal (50#) Face Milling



Optimal Chip Removal (50#) End Milling

The Best Force Flow T-base Design The long travel of X-axis lies on the top of the base, where the saddle moves along the full stroke; the cross Y-axis saddle supports the work table. • The T-base rigid structure has full stroke support and do not have overhang problem guarantees the most dynamic leveling accuracy. X-axis

Humanized Operation Panel

- The swivel operation panel of appropriate height and clear modular switches can be operated easily.
- Clearly display the signals and alarm messages.
- Detachable MPG handwheel is installed for operational convenience.



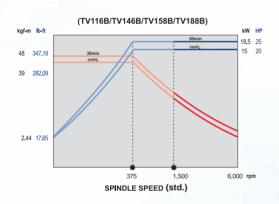


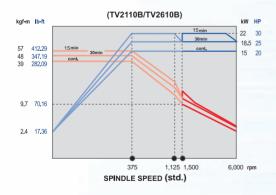


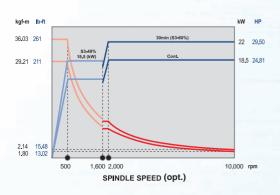
TV116B/TV146B/TV158B/TV188B/TV2110B/TV2610B

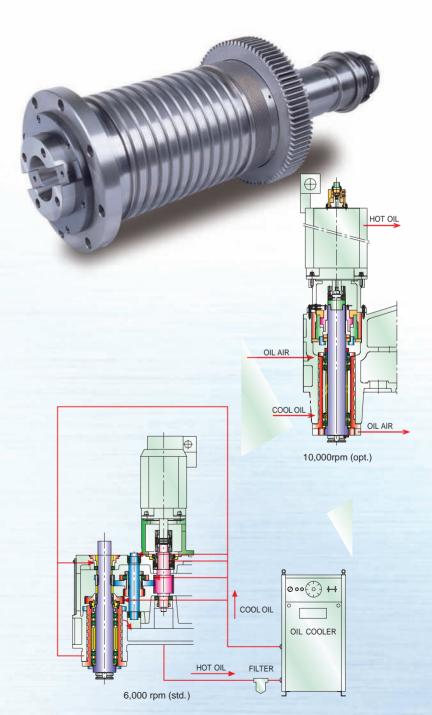
- Standard gearhead spindle of maximum of 6,000rpm high-speed with the maximum of 15kW/18.5kW 25HP/20HP power output and 48kg-m 347.19lb-ft torque.
- The maximum spindle power output at 15kW/18.5kW /22kW 20HP/24.8HP/29.5HP and torque at 57kgf-m 412 lb-ft with metal removal capacity at 600cc/min. (TV2110B/TV2610B).
- Spindle speed of up to 10,000rpm with IDD (Isolated Direct Drive) design, coupled with oil lubrication that can lower heat deviation, improve spindle accuracy and extend bearing life. Spindle power 18.5kW / 22kW 24.8HP/29.5HP without gearbox, electric speed shift with spindle motor, maximum torque of 36kgf-m. (option).
- The quill type spindle housing is with cooling system to assure the best temperature control of the spindle head, and for the best machining results.
- Deployed with precise angular contact ceramic ball bearings for extra axial and radial rigidity to fit the requirements of heavy cutting.













High Rigidity Axial Movement

 All axes are equipped with hardened and precision ground integrated square guideway with durable Turcite-B lubrication coating.

 Sophisticated scraper work guarantees the best contact and perfect surface of the components to assure flawless accuracy.

 Sufficient support areas of all guideways give the best damping capacity and gain the best cutting rigidity.

 All precise ballscrews are pre-tensioned and directly coupled with powerful servo motors to reduce backlash and ensure the best accuracy.

 The counter weight of Z-axis headstock is secured by guide bar to minimize machining vibration.

TV116B ACCURACY

ACCURACY	ISO 10791-4	YCM*		
Axial Travel	Full L	ength		
Positioning (X/Y/Z) A	0.042 / 0.025 / 0.025mm 0.0017" / 0.0010" / 0.0010"	0.014 / 0.014 / 0.014mm 0.0006" / 0.0006" / 0.0006"		
Repeatability (X/Y/Z) R	0.020 / 0.015 / 0.015mm 0.0008"/ 0.0006" / 0.0006"	0.010 / 0.010 / 0.010mm 0.0004" / 0.0004" / 0.0004"		

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

Axial Rapid Feedrate

X 16m/min. 630ipm

16m/min. 630ipm

16m/min. 630ipm





High Rigidity Axial Movement

 All axes are equipped with hardened and precision ground integrated square guideway with durable Turcite-B lubrication coating.

 Sophisticated scraper work iguarantees the best contact and perfect surface of the components to assure flawless accuracy.

 Sufficient support areas of all guideways give the best damping capacity and gain the best cutting rigidity.

 All precise ballscrews are pre-tensioned and directly coupled with powerful servo motors to reduce backlash and ensure the best accuracy.

 The counter weight of Z-axis headstock is secured by guide bar to minimize machining vibration.

• The Y-axis is equipped with 4 guideways to gain the best support and forceflow.

TV146B ACCURACY

ACCURACY	ISO 10791-4	YCM*		
Axial Travel	Full L	ength		
Positioning (X/Y/Z) A	0.042 / 0.025 / 0.025mm 0.0017" / 0.0010" / 0.0010"	0.014 / 0.014 / 0.014mm 0.0006" / 0.0006" / 0.0006"		
Repeatability (X/Y/Z) R	0.020 / 0.015 / 0.015mm 0.0008"/ 0.0006" / 0.0006"	0.010 / 0.010 / 0.010mm 0.0004" / 0.0004" / 0.0004"		

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

Axial Rapid Feedrate

X 16m/min. 630ipm

Y 16m/min. 630ipm

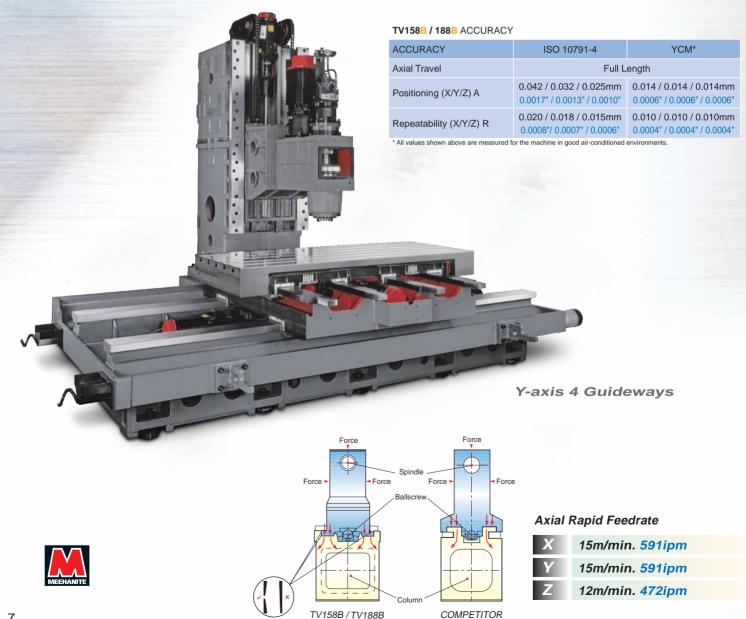
Z 16m/min. 630ipm





High Rigidity Axial Movement

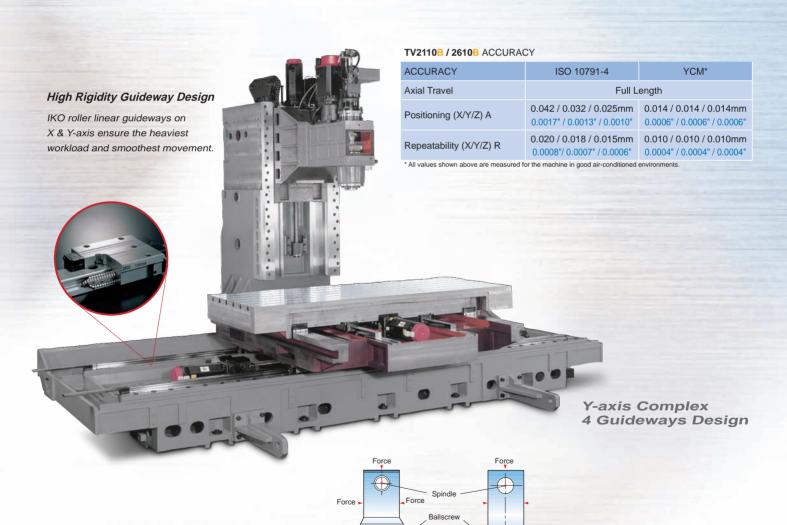
- All axes are equipped with hardened and precision ground integrated square guideway with durable Turcite-B lubrication coating.
- Sophisticated scraper work guarantees the best contact and perfect surface of the components to assure flawless accuracy.
- Sufficient support areas of all guideways give the best damping capacity and gain the best cutting rigidity.
- All precise ballscrews are pre-tensioned and directly coupled with powerful servo motors to reduce backlash and ensure the best accuracy.
- Inner-rail design on Z-axis ensures smooth movement of the headstock during heavy cutting performance. And the counter weight of Z-axis headstock is secured by guide bar to minimize machining vibration.
- The Y-axis is equipped with 4 guideways to gain the best support and forceflow.





High Rigidity Axial Movement

- X, Y, Z axis precision ball screw of JIS C3 class, with the use of precision angular contact ball bearings, adopting screw pretension way to provide the best feed accuracy and rigidity.
- Wide T-base structure design that enables X-axis travel is completely contained within the base of the slide. Overhang free while table moving that ensures stable movement during heavy cutting.
- Y-axis is equipped with 4 guideways to gain the best support and to reinforce the axial movement.
- X & Y-axis are designed with ultra heavy load IKO roller linear guideways for the max. 7,000kg
 15,432 lb work load and to ensure the smoothest axial movements.
- Inner-rail design on Z-axis ensures smooth movement of the headstock during heavy cutting
 performance. Slide surface adopted heat treatment, with Turcite-B to reduce friction. Meanwhile,
 the automatic lubrication system provides lubrication of each slide surface to ensure accuracy and
 longevity.



TV2110B /TV2610B



Axial Rapid Feedrate

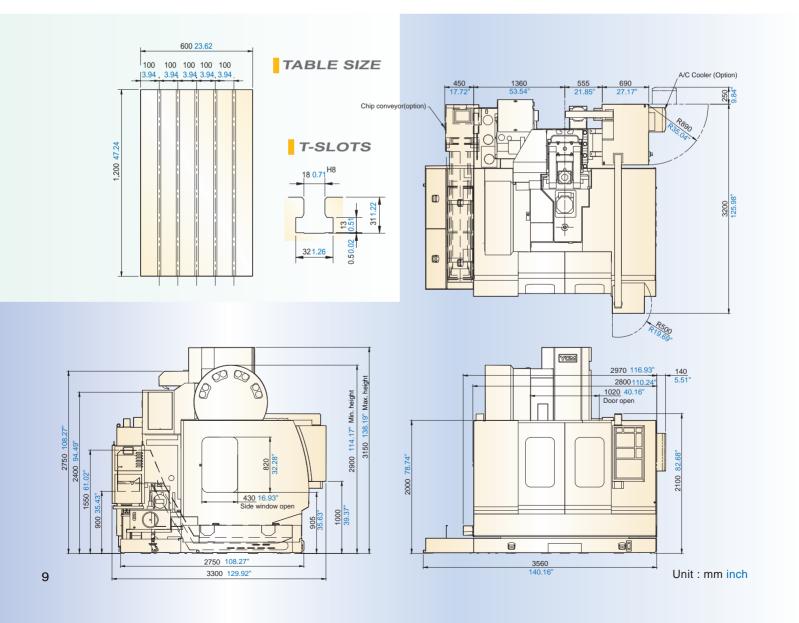
COMPETITOR

7 1711-011	
X	12m/min. 472ipm
Y	12m/min. 472ipm
Z	12m/min. 472ipm





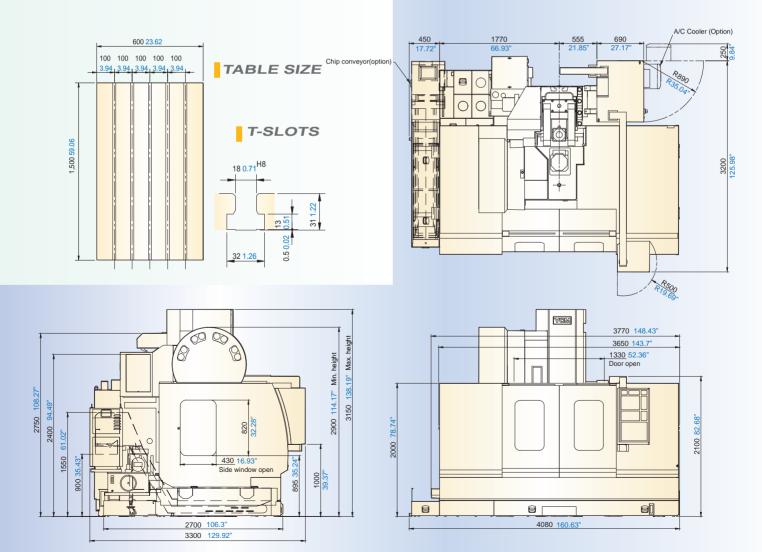
The appearance of the machines will be diverse due to different model.







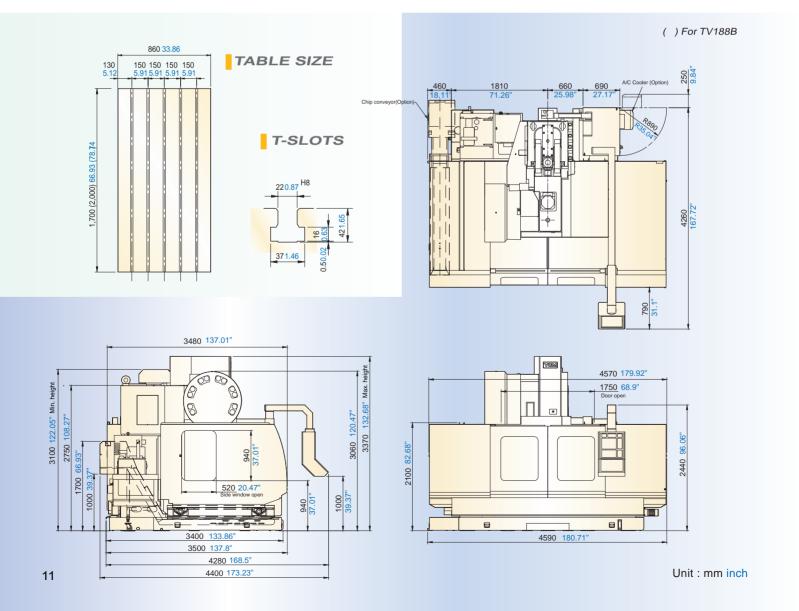
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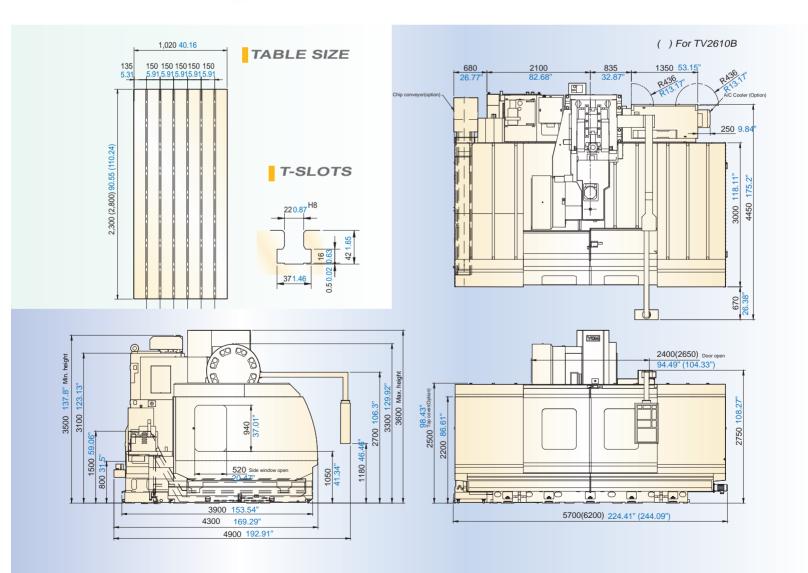


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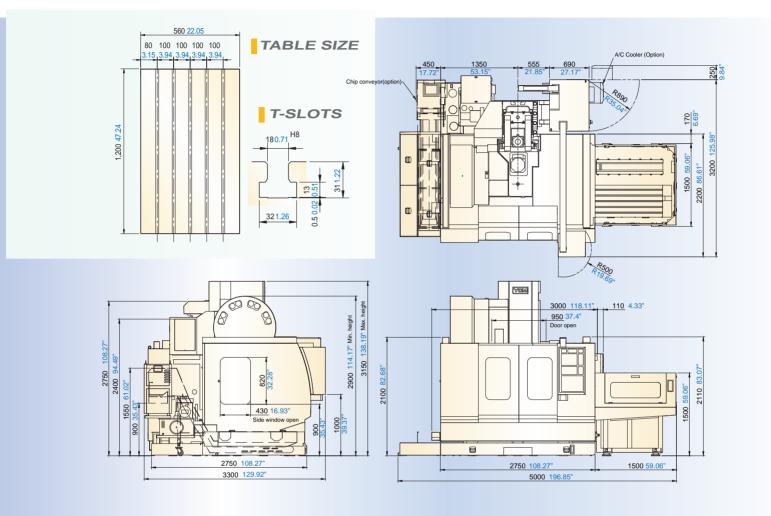




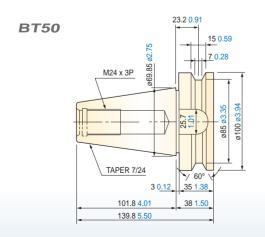




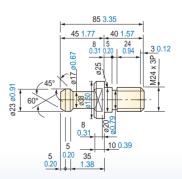




PULL STUD AND TOOL SHANK



MAS-P50T-1



Unit: mm inch

	T√116 	T√146 	T√158 	T√188 🖥	T√21108	TV26103			
SPINDLE									
Spindle Speed (opt.)			6,000rpm (10,	000rpm)					
Spindle Power		15/18.5/22kW (18.5/22kW) 20/25/30HP (25/30HP)							
Spindle Taper		BT50(BBT50)							
Front Bearing Diameter			ø100mm ø	3.94"					
TRAVEL									
X-axis Travel	1,100mm 43.31"	1,400mm 55.12"	1,500mm 59.06"	1,800mm 70.87"	2,100mm 82.68"	2,600mm 102.36			
Y-axis Travel	600mm 23.62"	620mm 24.41"	860mm 33.86"	860mm 33.86"	1,020mm 40.16"	1,020mm 40.16'			
Z-axis Travel	630mm 24.8"	630mm 24.8"	750mm 29.53"	750mm 29.53"	762mm 30"	762mm 30"			
Distance Between Spindle Nose & Table Top (APC)	168~798mm (75~705mm) 6.6"~34.4" (2.95"~27.8")	153~783mm 6.02"~30.83"	150~900mm 5.91"~35.43"	150~900mm 5.91"~35.43"	200~962mm 7.87"~37.87"	200~962mm 7.87"~37.87"			
Distance Between Center & Column Front	615mm 24.21"	615mm 24.21"	920mm 36.22"	920mm 36.22"	1,070mm 42.13"	1,070mm 42.13"			
TABLE									
Table size (APC)	1,200 × 600mm (1,200 × 560mm) 47.24" × 23.62" (47.24" × 22.05")	1,500 × 600mm 59.06" × 23.62"	1,700 × 860mm 66.93" × 33.86"	2,000 × 860mm 78.74" × 33.86"	2,300 × 1,020mm 90.55" × 40.16"	2,800 × 1,020mm 110.24" × 40.16			
Max. Load on Table (APC)	1,200kg (600kg) 2,646 lb (1,543 lb)	1,500kg 3,307 lb	2,000kg 4,409 lb	2,000kg 4,409 lb	7,000kg 15,432 lb	7,000kg 15,432 l			
The Height From Table Top o Floor (APC)	865mm (965mm) 34.06" (37.99")	875mm 34.45"	970mm 38.22"	970mm 38.22"	1.150mm 45.28"	1.150mm 45.28"			
Γ-Slots × Size × Pitch	5 x 18mm x 100mm 5 x 0.71" x 3.94" 5 x 22mm x 150mm 5 x 0.87" x 5.91"				6 × 22mm × 150mm 6 × 0.87" × 5.91"				
FEEDRATE									
Rapid Feedrate	16/16/16 m/min. 630	/630/630ipm	15/15/12 m/min.	12/12/12 m/min. 472/472/472ipm					
Cutting Feedrate			1~5,000 mm/min. 0	.04~196.9ipm					
ATC									
Tool Magazine Capacity	24T (32/40T)								
Max. Tool Dimensions	ø110 x 350mm (ø120 x 350mm) ø4.33" x 13.78" (ø4.72" x 13.78")								
Max.Tool Dimensions (Without adjacent tools)	ø190mm (ø240mm) ø7.48" (ø9.45")								
Max. Tool Weight	20kg/pc 44 lb/pc								
Tool Changer Method	Arm Type								
Tool Selection Method	Random								
GENERAL									
ubrication Pump Motor			5.5kg/cm ² 7	8.2psi					
Power Consumption	48kVA (65k)	VA)	55kVA	(65kVA)	57kVA (65kVA)				
Machine Weight (APC)	11,200kg (12,460kg) 24,692 lb (27,469 lb)	12,300kg 27,117 lb	18,000kg 39,683 lb	20,500kg 45,194 lb	25,500kg 56,217 lb	26,000kg 57,320 lb			

Macrine Weight (APC)

24,692 lb (27,469 lb)

27,117 lb

39,683 lb

45,194 lb

56,217 lb

57,320 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							
		1168	146	158	188	2110	2610
Tool Kit		•					
Work Lam	0						
Pilot Lamp							
Optical Sc	ale	0	0	0	0	0	0
Gear Box							
Foundation Bolts							
Coolant Ed	quipment System						
Oil Skimmer		0	0				
Coolant Gun							
Spindle Air	Blast						
Cutting Air	Blast						
Oil-Hole H	older Function	0	0	0	0	0	0
Automatic	Power Off System	0	0	0	0	0	0
Oil Mist Co	olant System	0	0	0	0	0	0
Chip	(w/o Top Cover)						
Enclosure	(w/ Top Cover)	0	0	0	0	0	0
APC		0	_	_	_	_	_
Leveling B	locks	•					
Central Automatic Lubrication System		•	•	•	•	•	•

	: Standard			○: Option		-: None
	116	146	158	188	2110	2610
Spindle Cooling System						
Coolant Through Spindle System	0	0	0	0	0	0
4th Axis Rotary Table	0	0	0	0	0	0
Guideway Cover (X/Y/Z)						
Rigid Tapping						
Hydraulic System						
Dual Chip Auger						
A.F.C. Adaptive Feedrate Control	0	0	0	0	0	0
Mechanical, Electrical & Operating Manuals	•	•	•	•	•	•
Heat Exchanger for Electrical Cabinet			•			•
A/C Cooler for Electrical Cabinet	0	0	0	0	0	0
Chip Conveyor	0	0	0	0	0	0
Circular Coolant Nozzle	0	0				
Heavy Duty Coolant Pump	0	0	0	0	0	0
Work Piece Measurement System	0	0	0	0	0	0
Auto Tool Length Measurement System	0	0	0	0	0	0
CNC Control: MXP-200FB						
CNC Control : MXP-200FC	0	0	0	0	0	0



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)

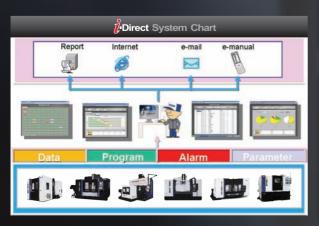


i-Direct overcomes the limitations of time and distance. This software provides plant operators with instant production status, including production value, output, standby, alarm time, status display and malfunction records of the machine. These data could be browsed online and printed. When incidents 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.

The YCM Production Line Monitoring System





Single Machine Status Browsing Single Machine Status Browsing



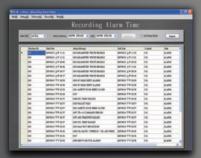
Machine connection, MMS and e-mail settings



Production Status Process Record



Plant Operation Status Monitoring



Machine Status Time Record



Production Management Statistics

OPERATION Software Enhancement Exclusively from YCM

MXP-200FB YCM

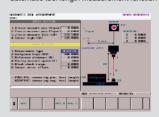
Pre-machining Preparation

Intelligent Tool Data Management Comprehensive tool data management function allows operators to monitor and

manage all positions in tool magazine | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 121 017 017 a.. a. 0. 0. a. a. ø.

Tool Length Measurement

Graphic measuring interface provides automatic tool length measurement function

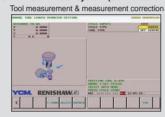


Workpiece Coordinate Calculation

Conversational operating window provides convenient and fast setup of workpiece coordinates



RENISHAW GUI System (Conversational Graphic Operating Interface)





Programming

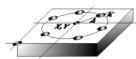


i PATTERN





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



CIRCULAR HOLE PATTERN

(G120 P1) Function





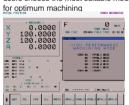
RECTANGULAR HOLE PATTERN (G120 P4) Function

GRID HOLE PATTERN (G120 P5) Function

Machining

High Performance Machining Mode M300

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



High Speed Machining Mode M400

Increases drilling and tapping speed, reduces machining time for job shop and precision mold machining



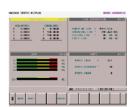
Tool Load Management

Instant tool load monitoring with



Multi-display Fuction

Displays 4 statuses simultaneously with configurable status display



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
- Daily Counter

VMC

TV Seriles Heavy Duty Vertical Machining Center

NTV158A/B

NMV Seriles High Performance High Rigidity Vertical Machining Center

WV Serriles Ultra Wide High Performance Vertical Machining Center

FX380A

NSV66A, NSV102A, NSV102AM, NSV156A

NDV66A, NDV85A, NDV102A

TCV Series High Performance Traveling Column Vertical Machining Center

DCV2012A,/B, DCV3016B, DCV4016B, DCV3021B, DCV4021B, DCV5021B, DCV5021B, DCV3025B, DCV4025B, DCV5025B, DCV4030B, DCV5030B, DCV4035B, DCV5035B, DCV5035B, DCV5035B, DCV2018A-5AX, DCV4030B-5AX, DCV5030B-5AX, DCV6030B-5AX, DCV4030B-5AF, DCV5030B-5AF, DCV5030

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

Horizontal Machining Center

H Serfles High Production Horizontal Machining Center H500A/B. H630B. H2612B

NH Semiles High Speed High Precision Horizontal Machining Center

BMP Seriles High Accuracy Heavy Duty Boring Machine

CNC CNC Turning Center

NH450A, NH630B, NH800B

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

GT Series High Performance Geo Turning Center

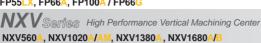
GT-200A/B/MA, GT-250A/B/MA/MB, GT-300A/B/LA/LB/MA/MB/LMA/LMB, GT-380A/B/LA/LB

TC Seriles 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

Integrated Operation Control System COPERATION Spindle Thermal Compensation System STGPLUS

Remote Monitoring System / Direct **Automation Solutions**

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



TV116B, TV146B, TV158B, TV188B, TV2110B, TV2610B

NTV Sarrias High Efficiency T-base Vertical Machining Center

NMV76A, NMV106A



FX Series High Performance 5-axis Vertical Machining Center



NDV Serijes High Precision Die Mold Vertical Machining Center

















HMC

HBM





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