

Nidec
All for dreams

VERTICAL PRECISION MILLING MACHINE

MVR·D α SERIES



NIDEC MACHINE TOOL CORPORATION

www.nidec.com/en/nidec-machinetool/

POWERFUL AND FAST

In Response To Customer Demands for Higher Productivity and Ease of Operation.

■ Powerful and Rigid

- High spindle motor output:
VAC 37/45 kW **50/60 HP** (Std.)
VAC 45/55 kW **60/74 HP** (Opt.)

- Heavy duty spindle torque:
2,297/2,793 Nm **1,694/2,060 ft·lb** (cont./30 min.)

● Rigid construction

All main components (column, cross-rail, bed, ram and saddle) are CAST IRON.

● Y axis rapid traverse:

30,000 mm/min **1,181.1 ipm** (std.)

● High accuracy:

Twin ball screws in Z axis achieves higher cutting accuracy even under heavy cutting conditions.

■ Easy Maintenance

- Better chip collecting for a cleaner operator's work area:
 - coil type chip conveyor on both side of the table front side (Std.)
 - chip chute (oil pan) on the front of column

● Shortest operator path:

All maintenance related equipment is assembled on the operator side column.

■ User Friendly

- Various attachments cover a wide variety of cutting applications.
- Available power driven pendant control box (Option)
- Handy remote operation box with LCD monitor displaying each axis position

Powerful New □400 mm (□15.7 in) Ram Series With Outstanding Features

The new MVR-DX series, is a 5-face vertical precision milling machine designed and built based on our vast experience and high reliability.

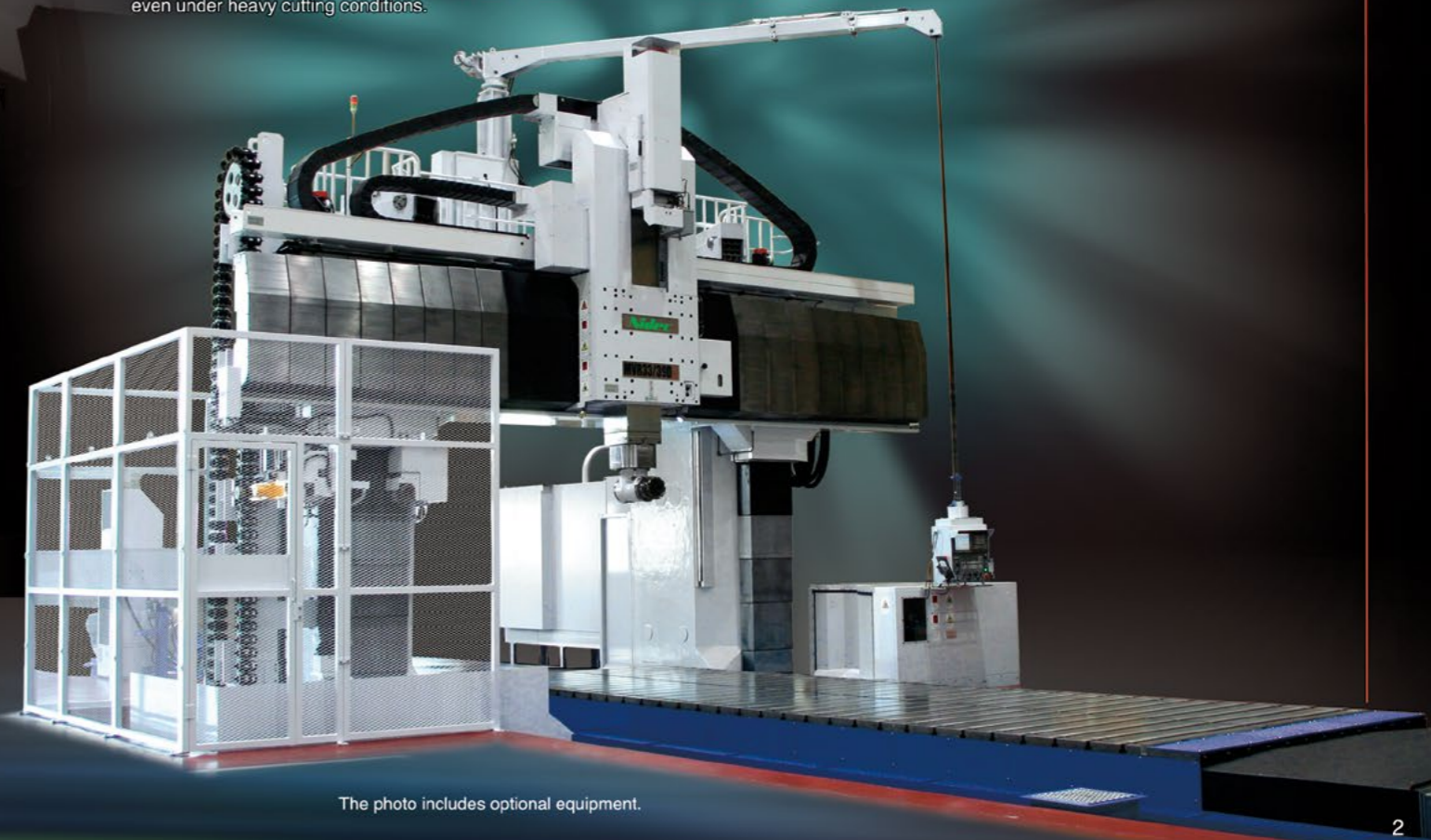
High productivity is achieved by improving the power, speed, accuracy and ease of operation.

More powerful and fast.

We introduce MVR-DX series, a superb 5-face vertical precision milling machine.

VERTICAL PRECISION MILLING MACHINE

MVR·DX SERIES



The photo includes optional equipment.

IMPROVED POWER

Greater Material Removal With Deeper Cuts

- **Fastest in Class High Speed Spindle**

Spindle speed: 4,000 min⁻¹
 Max. torque: 2,793 N·m 2,060 ft·lb
 Max. output: 45 kW 60 HP

- **Backlash-Free Helical Spindle Drive Gears**

The spindle is driven through a backlash-free helical gear drive box and drive motor located at the upper portion of the ram.

- **High Precision Cross-Rail Positioning Made Possible**

by 0.001 mm 0.00004 in Increment NC Command.

- **A Strong □400 mm □15.7 in Ram Allows Powerful Machining**

- **Heavy Duty φ130 mm φ5.1 in Main Spindle**

The main spindle is supported by double row cylindrical roller bearings. Oil mist lubrication is applied to the main spindle bearings. Cooling oil circulates the periphery of the bearing housing.

- **Self-Lock Type Tool Locking System**

Powerful locking force: 4,500 kgf

- **#50 Spindle Taper & Taper/Flange Dual Contact System**

Improves surface finish quality and allows for heavy duty milling with long tools.

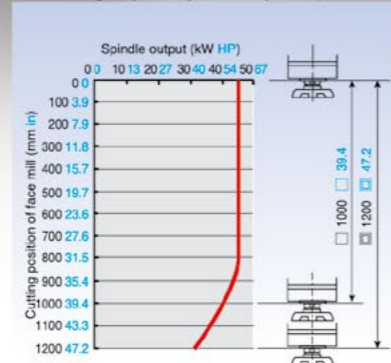
Ram spindle



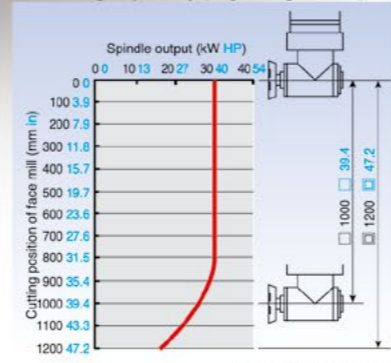
Right angle head



Machining capability (Ram spindle)

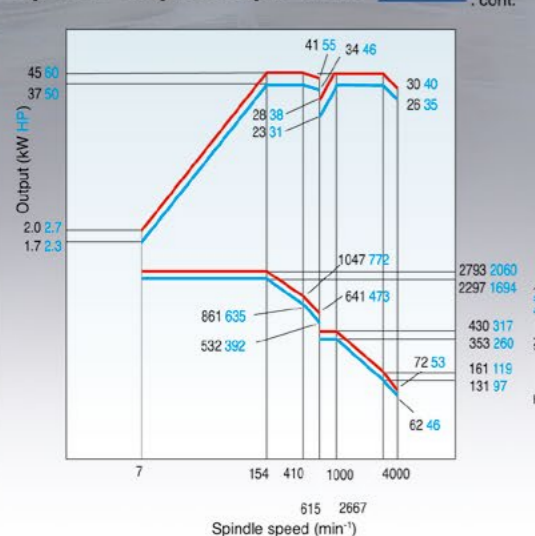


Machining capability (Right angle head)



* with VHRH-30-40-40P-AC

Spindle output/torque chart

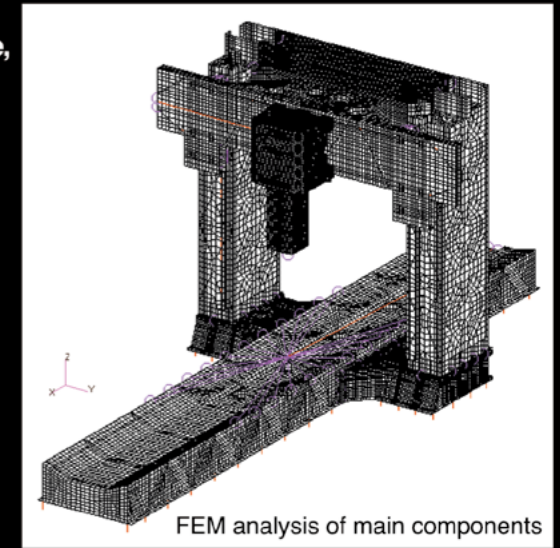


Rigid Structural Components

- All main components (column, bed, saddle, cross-rail and ram) are CAST IRON.
- Stable travel feed with wide guide ways
 - X axis: Hydrostatic bearing guide, Y axis: Linear roller guide, Z and W axis: Harden box slide way guide

Rigid Structure Allows Powerful Cutting

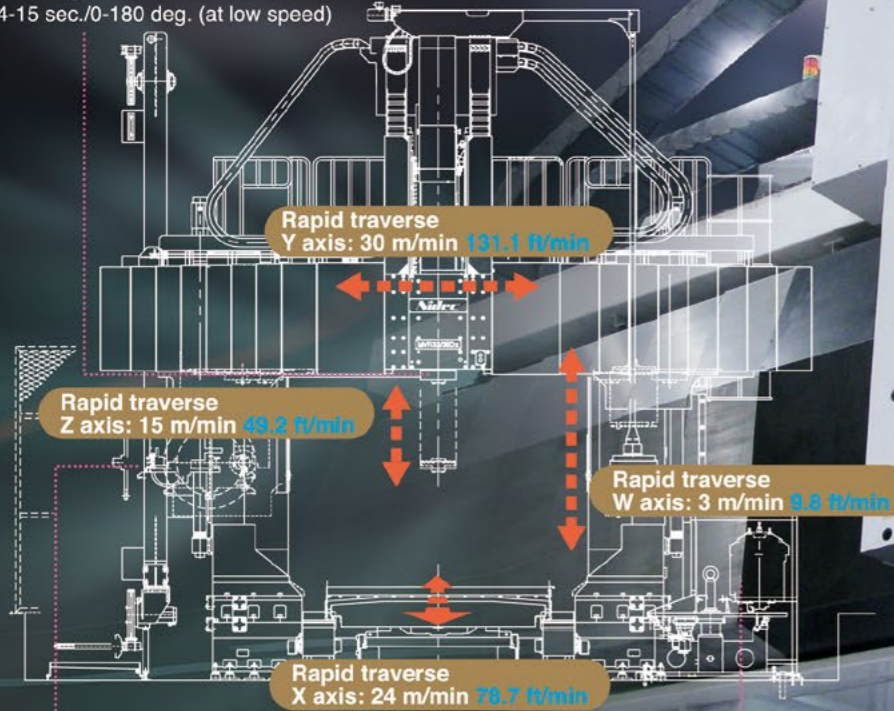
- 3-dimensional FEM analysis was utilized to calculate optimum rib arrangements. The total structure is well balanced, with high rigidity and thermal stability.
- The ram and saddle were designed to firmly support the ram against cutting forces from any direction. Stress-analysis methods were used to check the results.
- The cross-rail is fed vertically by two synchronous drive feed motors and large ball screws held in position firmly by the two servo motors.
- The optimum ram rib arrangement was designed by 3-dimensional FEM analysis and high rigidity roller guides were adopted to reduce vibrations.



IMPROVED SPEED

Maximized Machine Speed

Indexing time:
14-15 sec./0-180 deg. (at low speed)



High speed ATC
Tool to Tool 10 sec. ±2 sec.
Chip to Chip 35 sec.

ATC can be done
at any position of
the W axis

High speed AAC
Attachment to Attachment
90 sec./#2 to #4 POS

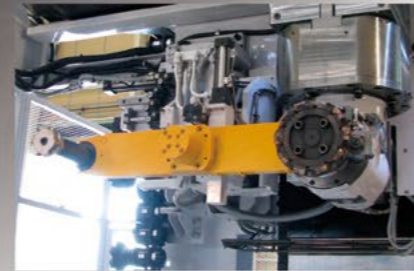
Automatic Tool Changer (ATC)

ATC operates in both vertical and horizontal orientation.

At any vertical position of the cross-rail, tool changes can be completed quickly by making only ram and saddle returns to ATC position. The machine is then ready for the next operation.



Vertical spindle



Right angle head

Machining Examples

Milling

Material: SS41P
Tool: φ250 mm
φ9.8 in (10 Insert)
Ram extension: 800 mm
31.5 in
Cutting speed: 200 m/min.
655.7 ft/min
Cutting depth: 8 mm 0.3 in
Cutting width: 200 mm
7.9 in
Feedrate:
825 mm/min. 32.5 ipm
Chip removal:
1320 cc/min. 80.5 cu.in/min



Drilling

Material: SS41P
Tool: φ75 mm φ3.0 in
Cutting speed:
24 m/min. 78.7 ft/min
Feedrate: 0.3 mm/rev
0.01 in/rev

Boring

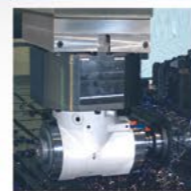
Material: SS41P
Tool: φ550mm φ21.7 in
Ram extension:
800 mm 31.5 in
Cutting speed: 100 m/min.
327.9 ft/min
Cutting depth:
5.5 mm 0.2 in (one side)
Feedrate: 0.5 mm/tooth
0.02 in/tooth
Chip removal:
275 cc/min. 16.8 cu.in/min

End Milling

Material: SS41P
Tool: φ63 mm φ2.5 in
Cutting speed:
100 m/min. 327.9 ft/min
Cutting depth:
30 mm 1.2 in
Cutting length:
50 mm 2.0 in
Feedrate: 540 mm/min.
21.3 ipm
Chip removal:
810 cc/min. 49.4 cu.in/min

Right angle head

Material: SS41P
Tool: φ200 mm
φ7.8 in (10 Insert)
Ram extension: 800 mm
31.5 in
Cutting speed:
200 m/min. 655.7 ft/min
Cutting depth: 7 mm
0.3 in
Cutting width: 170 mm
6.7 in
Feedrate: 1,040 mm/min.
40.9 ipm
Chip removal:
1,240 cc/min.
75.7 cu.in/min



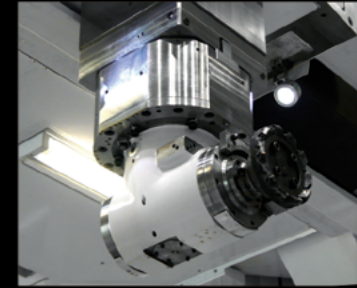
Various Attachments Available for a Variety of Cutting Conditions

Basic Attachments

Extension milling head, right angle head, universal head
Special attachments also available by request to meet customer needs



Dummy plate OH type (opt.)



Right angle head OH type (opt.)
VHRH-30-40-40P-AC



Extension milling head
VMEH-8-50-40P-AC



Small right angle head
VHRH-8-60-40P-AC



Universal head
VAUH-15-57-40P-AC



Extension milling head
VMEH-30S-35-40P-AC

Automatic Attachment Storage Rack

Capable of storing a maximum of 5 attachments including dummy plate.



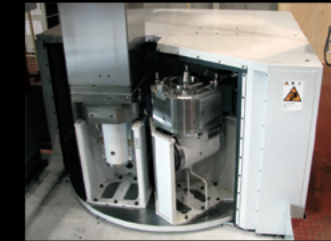
Rack door closed



Attachments in the rack



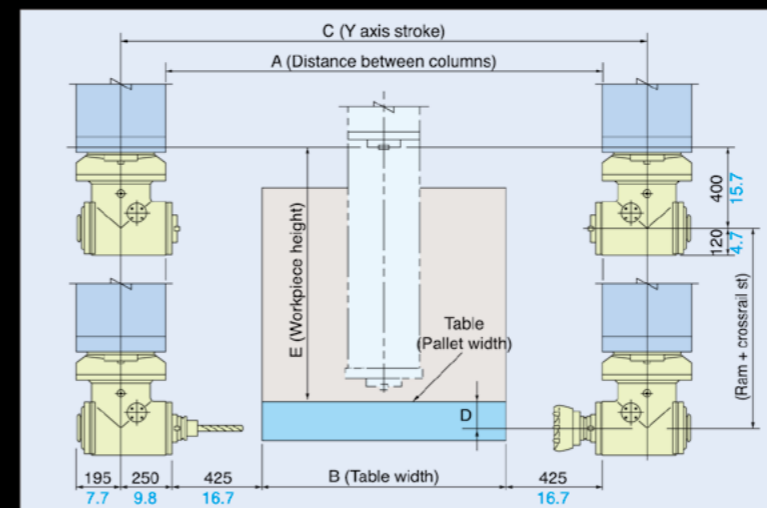
Equipping the right angle head



Equipping the extension
milling head

Wide Machining Area

- Ample Y axis travel beyond the table width.
- Both sides of workpiece can be machined with ease.



Table

Model	A	B	C	D	E
MVR28 / 34D χ	2,800	2,000	3,400	1,490	2,050
	110.2	78.7	133.9	58.7	80.7
MVR33 / 39D χ	3,300	2,500	3,900	1,990	2,550
	129.9	98.4	153.5	78.3	100.4
MVR38 / 44D χ	3,800	3,000	4,400	2,490	3,050
	149.6	118.1	173.2	98.0	120.1
MVR43 / 49D χ	4,300	3,500	4,900	2,990	3,550
	169.3	137.8	192.9	117.7	139.8
				3,490	4,050
				137.4	159.4

Pallet

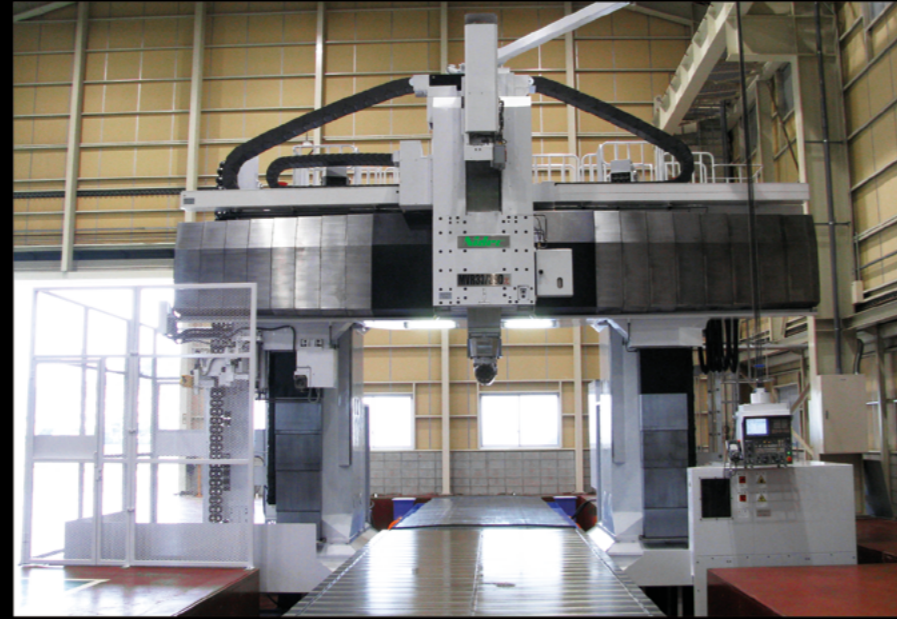
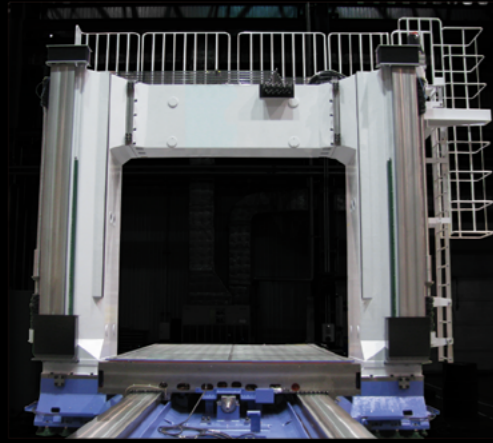
機種	A	B	C	D	E
MVR28 / 34D χ	2,800	2,000	3,400	1,240	1,800
	110.2	78.7	133.9	48.8	70.9
MVR33 / 39D χ	3,300	2,500	3,900	1,740	2,300
	129.9	98.4	153.5	68.5	90.6
MVR38 / 44D χ	3,800	3,000	4,400	2,240	2,800
	149.6	118.1	173.2	88.2	110.2
MVR43 / 49D χ	4,300	3,500	4,900	2,740	3,300
	169.3	137.8	192.9	107.9	129.9
				3,240	3,800
				127.6	149.6

IMPROVED ACCURACY

Structure Ensures Consistent High Accuracy

Perfect Thermally Symmetrical Structure

Ram, saddle and column are of a symmetrical structure design capable of consistent high accuracy over long machining cycles.

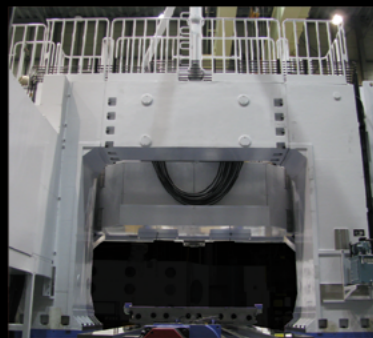


Stable Axes Feed System

X axis: Hydro-static guide to obtain stable feed even with heavy workpiece. Linear guide for higher speed is also available. (Option)
Y axis: High rigidity roller type linear guide to ensure accurate start/stop response and higher positioning accuracy.
Z & W axis: Sliding guide with high-level damping performance and automatic intermittent lubrication system is applied to prevent load caused by own weight.

Oil-mist lubrication system is applied for ball screw nuts and support bearings of X, Y, Z axes to minimize the temperature rise and provide stable and high accuracy machining.

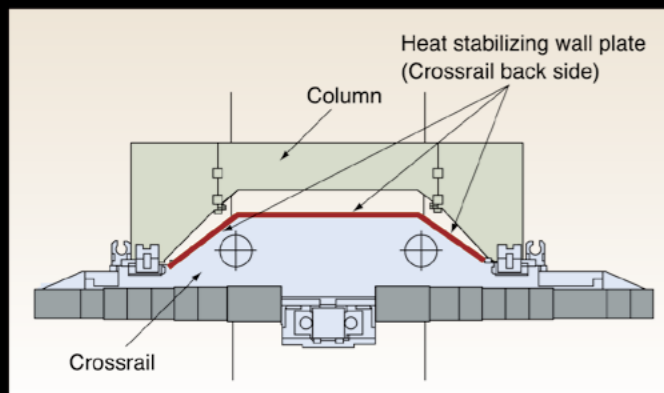
Heat Stabilizing Wall Plate (Option)



Heat stabilizing wall plate can be applied to reduce machine distortion caused by room temperature change during long machining process.

Thermal Displacement Guaranteed to ± 0.015 mm/day ± 0.0006 in/day With The Z Axis Thermal Displacement Compensation Function (Option)

Z axis thermal displacement compensation function to offset growth during the spindle rotation is available as an option. Oil-mist lubrication system is applied for ball screw nuts and support bearings of X, Y, Z axes to minimize the temperature rise and provide stable and high accuracy machining.



IMPROVED OPERATION

Designed for Ease of Operation



Easy-To-Operate Pendant Control Box

All machine functions can be controlled from the easy-to-operate pendant control box. The pendant control arm can be moved vertically and horizontally by hand. A power operated pendant control arm is also available as an option.



New 5-Face Machining Software

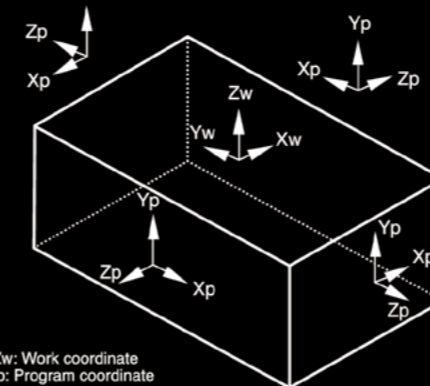
The 5-face machining software automatically performs the spindle end coordinate shift, name change of shifted coordinate axes, and other troublesome work necessitated by replacement and indexing of the dummy plate or attachment. The program can easily prepare side face machining NC tape, using the same methods as ordinary programs - that is, by taking each face as a plane defined by X and Y coordinates. Not only on 90 degree sides but also on inclined faces in 1 degree increments.

Easy Chip Disposal

Coil conveyor and simple coolant guards are equipped as standard on both sides of the table. This allows all chips to be easily gathered and transferred to front side of the machine. Chip splash prevention type, which opens/closes the shutter automatically when ATC is operated, is also available as an option.

This software includes custom macro functions and 3-dimensional coordinate rotation function, so no additional special equipment is required.

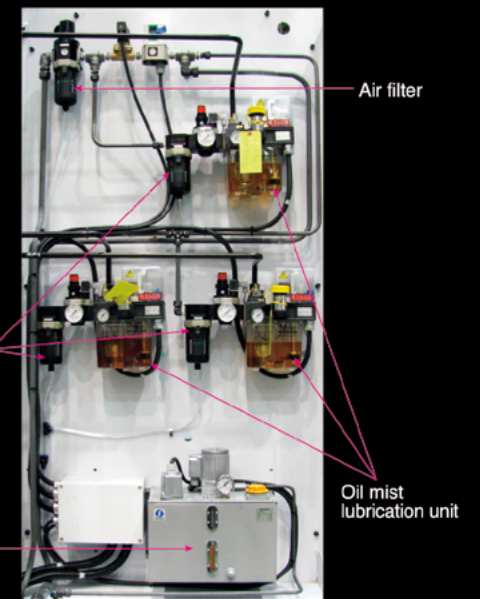
- For machining of all faces, the program treats the tool axis direction as the Z axis, the horizontal as the X axis and the vertical as the Y axis.
- Tool length must be taken into account when preparing programs. (Tool compensation function can be used.)



Xw Yw Zw: Work coordinate
Xp Yp Zp: Program coordinate

Easy Maintenance

All maintenance related equipment is assembled on the right-hand side of the column wall near the operator's position: lubrication units, air filters, air valves, oil drain pipe etc.



Saving Energy

Inverter type hydraulic unit which can save energy and reduce pump noise during machining and idle time is available. (Option)

SPECIFICATIONS

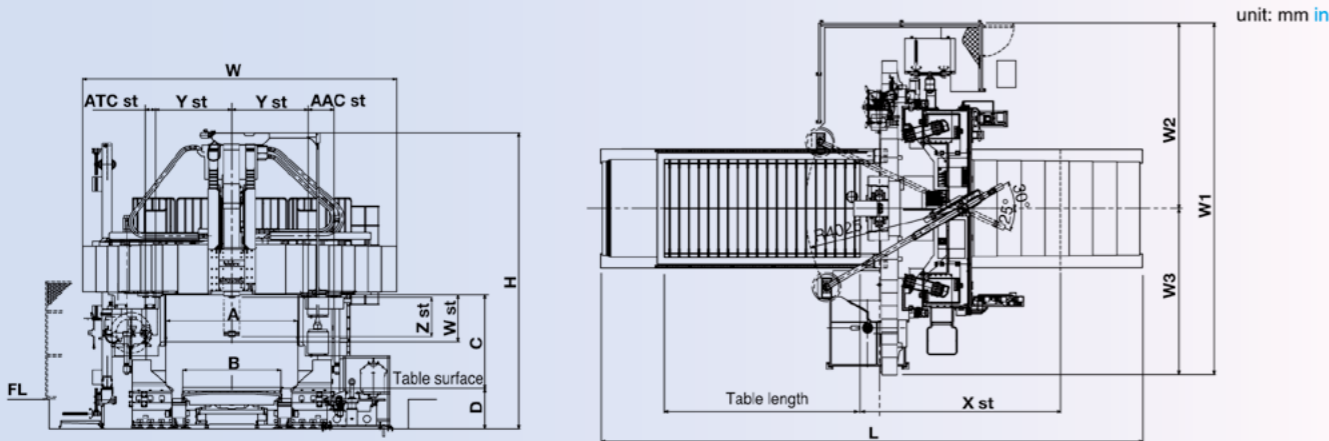
Machine Specifications

Item	Model	MVR28/34D χ	MVR33/39D χ	MVR38/44D χ	MVR43/49D χ	
Distance between columns	mm in	2,800 110.2	3,300 129.9	3,800 149.6	4,300 169.3	
Max. distance from table surface	mm in	2,050 80.7 (opt. 2,550 100.4, 3,050 120.1, 3,550 139.8, 4,050 159.4)				
Table	Dimensions	Width	2,000 78.7	2,500 98.4	3,000 118.1	3,500 137.8
		Length	4,000 157.5 (opt. 5,000 196.9, 6,000 236.2, 8,000 315.0)			
Table	Loading capacity	25/4.0 55.100/13.1 (opt. 30/5.0 66.100/16.4, 36/6.0 79.300/19.7, 48/8.0 105.800/26.2)				
Travel	Table, longitudinal *1	X	5,000 196.9 (opt. 6,000 236.2, 7,000 275.6, 9,000 354.3)	6,000 236.2 (opt. 7,000 275.6, 9,000 354.3)		
	Saddle, horizontal	Y	3,400 133.9 + AAC/ATC	3,900 153.5 + AAC/ATC	4,400 173.2 + AAC/ATC	4,900 192.9 + AAC/ATC
	Ram, vertical	Z	1,000 39.4 (opt. 1,200 47.2)			
	Crossrail, vertical	W	1,200 47.2 (opt. 1,700 66.9, 2,200 86.6, 2,700 106.3, 3,200 126.0)	2,200 86.6 (opt. 1,200 47.2, 1,700 66.9, 2,700 106.3, 3,200 126.0)	2,200 86.6 (opt. 2,700 106.3, 3,200 126.0)	
Ram	Ram size	400 x 400 15.7 x 15.7				
	Spindle taper	ISO No. 50 (taper 7/24) BIG-Plus spindle end				
	Spindle speed	7 ~ 4,000				
	Spindle motor output (Cont./30 min rating)	kW HP VAC 37/45 50/60 (opt. 45/55 60/74 *2)				
ATC	Tool storage capacity	60 (opt. 80, 100, 120, 160, 200, 240)				
Machine weight	kg/mm lb/in	107,000/4,000 235,700/157.5	110,000/4,000 242,300/157.5	118,000/5,000 260,000/196.9	121,000/5,000 266,600/196.9	

*1: X-axis is applied to Hydro-static guide as standard. Linear guide for higher speed is also available as optional.

*2: Spindle specification is limited by its maximum performance.

Machine Dimensions



Model	A	B	Table type		Pallet type		H (Pendant)		W	W1	W2	W3
			C	D	C	D	Counter-weight	Power driven				
MVR28/34D χ	2,800 110.2	2,000 78.7	2,050 80.7	1,800 70.9	1,305 51.4	8,320 327.6	7,395 291.1	7,500 295.3	8,450 332.7	4,500 177.2	3,950 155.5	
			2,550 100.4	2,300 90.6	2,800 110.2	2,800 110.2	8,820 347.2					7,895 310.8
			3,050 120.1	3,050 120.1	1,305 51.4	9,320 366.9	8,395 330.5					
			3,550 139.8	3,300 129.9	1,305 51.4	9,820 386.6	8,895 350.2					
			4,050 159.4	3,800 149.6	1,305 51.4	10,320 406.3	9,395 369.9					
			2,050 80.7	1,800 70.9	1,305 51.4	8,320 327.6	7,395 291.1					
			2,550 100.4	2,300 90.6	1,305 51.4	8,820 347.2	7,895 310.8					
			3,050 120.1	3,050 120.1	1,305 51.4	9,320 366.9	8,395 330.5					
MVR33/39D χ	3,300 129.9	2,500 98.4	2,050 80.7	1,800 70.9	1,305 51.4	8,320 327.6	7,395 291.1	8,000 315.0	8,950 352.4	4,750 187.0	4,200 165.4	
			2,550 100.4	2,300 90.6	2,800 110.2	2,800 110.2	8,820 347.2					7,895 310.8
			3,050 120.1	3,050 120.1	1,305 51.4	9,320 366.9	8,395 330.5					
			3,550 139.8	3,300 129.9	1,305 51.4	9,820 386.6	8,895 350.2					
			4,050 159.4	3,800 149.6	1,305 51.4	10,320 406.3	9,395 369.9					
			2,050 80.7	1,800 70.9	1,305 51.4	8,320 327.6	7,395 291.1					
			2,550 100.4	2,300 90.6	1,305 51.4	8,820 347.2	7,895 310.8					
			3,050 120.1	3,050 120.1	1,305 51.4	9,320 366.9	8,395 330.5					
MVR38/44D χ	3,800 149.6	3,000 118.1	2,050 80.7	1,800 70.9	1,405 55.3	8,320 327.6	7,395 291.1	8,500 334.6	9,450 372.0	5,000 196.9	4,450 175.2	
			2,550 100.4	2,300 90.6	2,800 110.2	2,800 110.2	8,820 347.2					7,895 310.8
			3,050 120.1	3,050 120.1	1,405 55.3	9,320 366.9	8,395 330.5					
			3,550 139.8	3,300 129.9	1,405 55.3	9,820 386.6	8,895 350.2					
			4,050 159.4	3,800 149.6	1,405 55.3	10,320 406.3	9,395 369.9					
			2,050 80.7	1,800 70.9	1,405 55.3	8,320 327.6	7,395 291.1					
			2,550 100.4	2,300 90.6	1,405 55.3	8,820 347.2	7,895 310.8					
			3,050 120.1	3,050 120.1	1,405 55.3	9,320 366.9	8,395 330.5					
MVR43/49D χ	4,300 169.3	3,500 137.8	2,050 80.7	1,800 70.9	—	8,320 327.6	7,395 291.1	9,850 387.8	10,530 414.6	5,400 212.6	5,130 202.0	
			2,550 100.4	2,300 90.6	—	8,820 347.2	7,895 310.8					
			3,050 120.1	3,050 120.1	—	9,320 366.9	8,395 330.5					
			3,550 139.8	3,300 129.9	—	9,820 386.6	8,895 350.2					
			4,050 159.4	3,800 149.6	—	10,320 406.3	9,395 369.9					
			2,050 80.7	1,800 70.9	—	8,320 327.6	7,395 291.1					
			2,550 100.4	2,300 90.6	—	8,820 347.2	7,895 310.8					
			3,050 120.1	3,050 120.1	—	9,320 366.9	8,395 330.5					

L	4,000	5,000	6,000	8,000
Table	4,000	5,000	6,000	8,000
Working surface length	157.5	196.9	236.2	315.0
Standard stroke (Xst)	196.9	236.2	275.6	354.3
L	11,900	13,900	16,600	20,600
	466.5	547.2	653.5	811.0

SPECIFICATIONS

Standard Equipment

- Spindle taper air blow
- Air blow system through nozzles
- Tool locking system: with pull-stud: MAS-II type (60°)
- Automatic tool changer
 - Number of tools: 60 tools
 - Max. tool length: 500 mm 19.7 in
 - Max. tool weight: 30 kg 66 lb
- Ram face cover plate (Dummy plate)
- Right angle head VHRH-30-40P-AC
- 5-face machining software (Work surface coordinate type)
- Automatic attachment storage rack
 - Drum type, for 5 attachments (including Dummy plate)
- Note: Storable number or rack design will be changed by selected attachment size.
- Automatic attachment indexing: 5 deg each
- Telescopic steel way cover for crossrail slideway

- Column slideway covers
 - Upper half: Bellows type cover
 - Lower half: Telescopic steel type
 - Ball screw: Bellows type cover
- Telescopic steel way covers for table bed slideway
- Lubrication and cooling system for main spindle bearing and gears
 - Spindle bearings: Oil-mist lubrication system
 - Gears: Circulating cooled oil
- Lubrication oil unit
- Hydraulic unit
- Air inlet unit
- Ladder and hand rail for top beam
- Work light under the crossrail: Two 20 W fluorescent lamps
- Coil type chip conveyor on both sides of the table front side
 - Note: Grating is recommendable for operator's safety.

- Leveling blocks and anchor bolts
- Maintenance tool kit
- NC system: FANUC 31i
- Electrical panels and wiring materials
- Self diagnosis function:
 - Alarm message display
 - Self diagnosis display
 - ATC recovering procedure
 - Maintenance schedule
 - Electric diagram display & diagnosis
- W-axis MP scale feedback
- Counter-weight balanced type pendant control box
- Chip guard fence on rear side to cover 3,000 mm 118.1 in area from spindle center
- Flood coolant supply system
 - 1,000 L tank, 0.5 MPa 71 psi, 20 L/min as standard
- Standard painting color

Optional Equipment

Machine Options

- Power driven pendant control box (Instead of counter weight balanced type)
 - Up/down power, in/out manual, swing manual
 - Up/down and in/out power, swing manual
 - Up/down and in/out power, swing power (Hydraulic)
- ATC tool magazine size
 - (in case tool diameter is 110 mm 4.33 in or less)
 - Round type magazine: 80, 100, 120
 - Square type magazine: 160, 200
 - Zigzag type magazine: 240
- Max. tool length: 800 mm 31.5 in
- Automatic attachment indexing: 1 deg each (C-axis control) (5 deg is standard)
- Pull-stud type: MAS-I type (MAS-II type is standard)
- Rigid tapping
 - For Vertical spindle
 - For Vertical & Horizontal spindle
- MP scale feedback for X, Y, & Z axes (W-axis is standard)
- Z-axis thermal displacement compensation during spindle rotation
 - MP scale should be selected
- Heat stabilizing wall plate
- Air circulating fan in the machine pit to equalize ambient temperature around the machine: 4 fans
- Hydrostatic lubrication oil cooling unit
- Automatic pallet changer: 2 pallets are included
 - Cross-over type
 - In line type
 - Direct cross change type (Extra X-travel for APC is necessary)
- Flood coolant supply system
 - Coolant type: Oil soluble
 - Pump: 1 MPa, 20 L/min 3 MPa, 20 L/min
 - Tank: 2,000 L
- Flood coolant temperature control system
- Mist coolant supply system
 - Oil soluble coolant (SMC made, tank: 5L)
 - Others ()
- Coolant or air thru spindle
 - Vertical main spindle
 - Right angle head horizontal spindle
- Coolant-supply block for oil hole drill holder for Dummy plate
- Coolant-supply block for oil hole drill holder for Right angle head
- Hinged steel belt type chip conveyor: orthogonal (90 deg) to table longitudinal direction
- Hinged steel belt type chip conveyor: parallel to table longitudinal direction, on both sides of table (Instead of standard coil type conveyor)
 - Front half, carry out to front
 - Carry out to rear
 - Special chip conveyor

Chip box

- 2 pcs for parallel conveyors, 700 L ea.
 - 1 pc for orthogonal conveyor, 700 L
- ### Coolant splash guard
- Guard fence around ATC and AAC portion with oil pan
 - Guard fence around ATC and AAC portion with oil pan plus front table side fences
 - Oil pan around ATC and AAC portion
- ### Air compressor with air dryer
- Air dryer
- ### Flashing indication lamp, Yellow/Red/Green (LED type)
- Warning red light (on the top of pendant support pole)
- ### Supporting device for tool mount/dismount to or from tool magazine (Air cylinder type)
- Shaping function combined with C-axis control using flat cutting tool (NC option "Normal direction control" is necessary to be selected)
- ### Special painting color
- Annual machine check
 - Customized macro program
 - Spare parts
 - CAT-Flange tool arbor
 - DIN-Flange tool arbor

Monitoring Functions

- The following monitoring functions are available for unmanned operation.
- ### (1) Cutting condition monitoring
- Overload monitor by the soft meter method
 - Simple adaptive control
 - Overload monitoring
- ### (2) Tool monitoring
- Tool life monitor
 - Including spare tool automatic replacement
 - "Tool life management" of NC option should be selected
 - Tool breakage monitor
 - For vertical and horizontal spindles
 - Automatic tool length measurement and compensation
 - Macro programs are included
 - For vertical and horizontal spindles
 - Touch sensors are installed at table end with automatic open/close cover
- ### (3) Automatic measuring for vertical and horizontal spindles
- Manual measuring function
 - Automatic workpiece measuring function
 - Including Machining accuracy monitoring, Measuring and compensation and Automatic centering, datum plane compensation
 - Macro programs are included

(4) Production monitoring

- Operation time accumulation
 - Energization time integrating function
 - Automatic operation time integrating function
 - Cutting time integration function
 - Spindle rotation time integrating function
 - "Run hour and parts count display" of NC option should be selected.
 - Production number control
- ### (5) Automatic reset
- Automatic power OFF
 - Automatic power ON
 - Automatic power shut off because of leakage
 - Sensitivity current: 200 mA

Attachment

(1) Extension milling head	Max. min ¹	ATC	Rigid tapping
■ VMEH-30S-35-40P-AC	4,000	Yes	Yes
■ VMEH-8-50-40P-AC	3,000	Yes	Yes
■ VMEH-22-35H-40P-AC with heeling angle	300	No	No

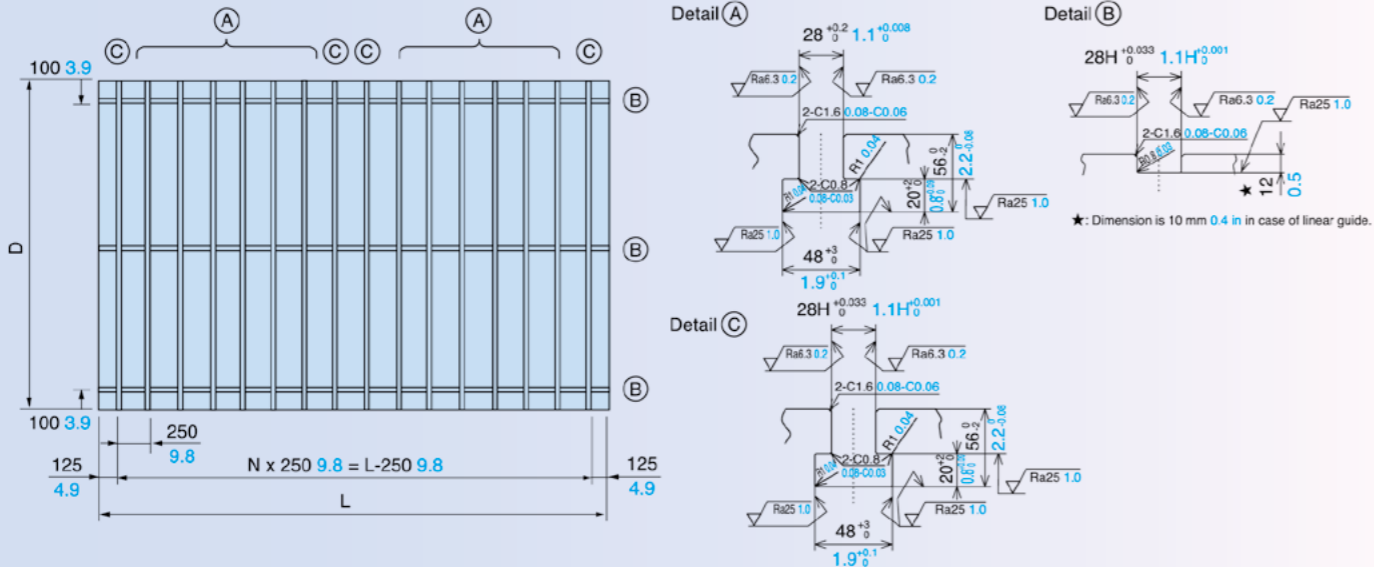
(2) Right angle head	Max. min ¹	ATC	Rigid tapping
■ VHRH-30-30-40P-AC	500	Yes	Yes
■ VHRH-8-52-40P-AC	500	No	No
■ VHRH-3.7-50-40P-AC	500	No	No
■ VHRH-8-60-40P-AC	500	No	No

(3) Universal head	Max. min ¹	ATC	Rigid tapping
■ VUH-8-50-40P-AC	2,000	No	No
■ VAUH-7.5-44.5-40P-AC	3,000	Yes	No
■ VAUH-15-57-40P-AC (*)	2,500	Yes	No

Note: (*) If this attachment selected, maximum Att. storage number would be 4 (four).

SPECIFICATIONS

Table Surface

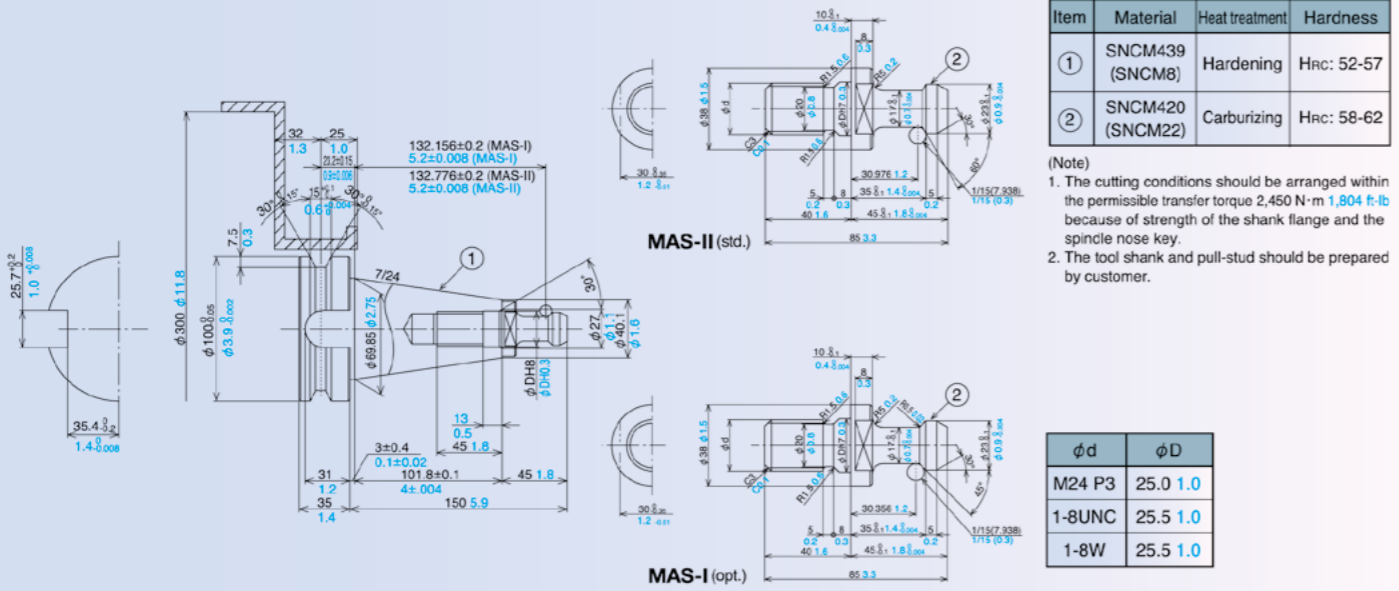


Model	Table width W: mm in	Working surface length L: mm in	Number of blocks N	Number of grooves		
				A	B	C
MVR28/34DX	2,000 78.7	4,000 157.5	15	12		
			19	16	3	4
			23	20		
			31	28		
MVR33/39DX	2,500 98.4	5,000 196.9	15	12		
			19	16	3	4
			23	20		
			31	28		
MVR38/44DX	3,000 118.1	6,000 236.2	19	16		
			23	20	3	4
			31	28		
			31	28		
MVR43/49DX	3,500 137.8	8,000 315.0	19	16		
			23	20	3	4
			31	28		
			31	28		

(Note)
 1. Additional key way depth should be less than 12mm 0.5 in.
 2. Regarding special specifications of T-slot and Key-way, please consult to Mitsubishi.

Tool Dimensions

MAS-I: MAS-BT50 • MAS-P50T-1
 MAS-II: MAS-BT50 • MAS-P50T-2

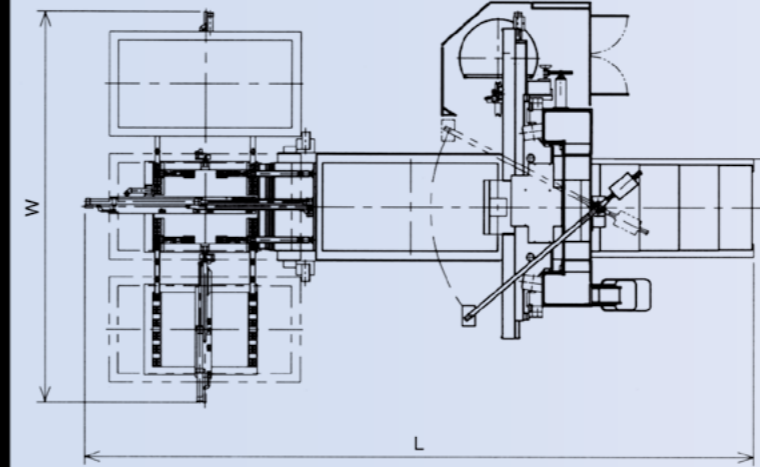


φd	φD
M24 P3	25.0 1.0
1-8UNC	25.5 1.0
1-8W	25.5 1.0

SPECIFICATIONS

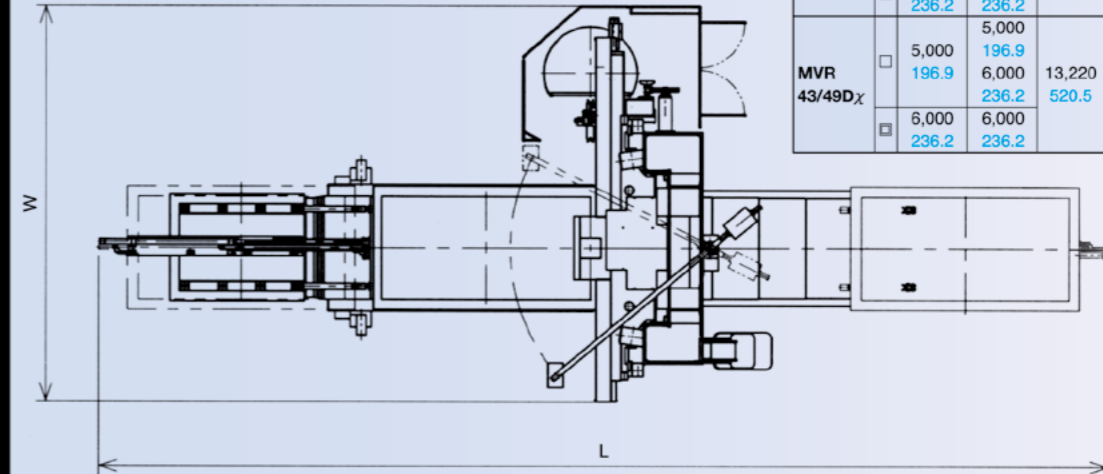
APC Machine Dimensions

Cross-over type

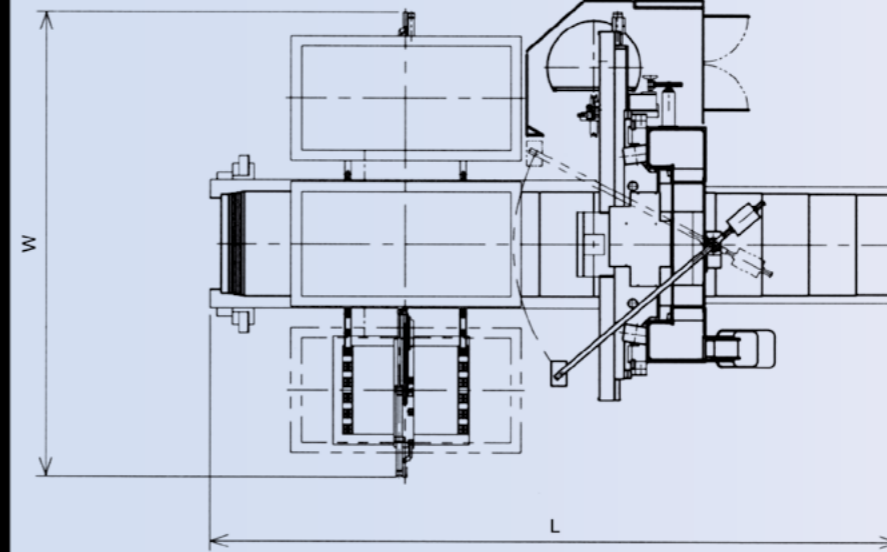


Model	Dimensions Pallet Length of working surface	Table travel	Cross-over type		In line type		
			W	L STD	L Long	W	L STD
MVR 28/34DX	4,000 157.5	4,000	14,750	15,750	18,920	19,920	
		5,000	15,750	16,750	19,920	20,920	
	5,000 196.9	8,920	17,750	18,850	22,920	23,920	
		6,000 236.2	18,850	19,850	23,920	24,920	
MVR 33/39DX	4,000 157.5	4,000	14,750	15,750	18,920	19,920	
		5,000 196.9	15,750	16,750	19,920	20,920	
	5,000 196.9	10,220	17,750	18,850	22,920	23,920	
		6,000 236.2	18,850	19,850	23,920	24,920	
MVR 38/44DX	5,000 196.9	6,000	17,750	18,850	22,920	23,920	
		6,000 236.2	18,850	19,850	23,920	24,920	
	6,000 236.2	11,920	18,850	19,850	24,920	25,920	
		6,000 236.2	20,850	21,850	26,920	27,920	
MVR 43/49DX	5,000 196.9	6,000	17,750	18,850	22,920	23,920	
		6,000 236.2	18,850	19,850	23,920	24,920	
	6,000 236.2	13,220	18,850	19,850	24,920	25,920	
		6,000 236.2	20,850	21,850	26,920	27,920	

In line type



Direct cross-change type



Model	Dimensions Pallet Length of working surface	Table travel	Direct cross-over type	
			W	L STD
MVR 28/34DX	4,000 157.5	6,000	8,920	13,200
		7,000	351.2	15,550
	5,000 196.9	275.6	612.2	
MVR 33/39DX	4,000 157.5	6,000	10,220	13,200
		7,000	402.4	15,550
	5,000 196.9	275.6	612.2	
MVR 38/44DX	5,000 196.9	7,000	11,920	15,550
		7,000	469.3	612.2
MVR 43/49DX	5,000 196.9	7,000	13,220	15,550
		7,000	520.5	612.2

L STD: Xst=Working surface length
 L Long: Xst=Working surface length+1000 mm 39.4 in

NC SPECIFICATIONS FANUC Series 31i

Basic Specifications

Name	Specifications
Control axis / feedback system	X axis: Table longitudinal travel
	Y axis: Ram head cross travel
	Z axis: Ram vertical travel
	W axis: Cross rail vertical travel
Simultaneously controlled axes	Positioning and linear interpolation
	Multiple quadrant circular interpolation
	Manual
	Manual handle
Input increment	0.001 mm/pulse

Note 1: Items marked * □ * indicated optional specifications.
Note 2: Items marked □ □ * indicated standard specifications.

Standard Specifications

Name	Specifications	Note
Controlled axes / feedback system (Absolute position detection)	X, Y, Z axis: Pulse coder W axis: Linear MP scale	X axis: Table longitudinal travel Y axis: Saddle cross travel Z axis: Ramstock axis travel W axis: Crossrail vertical travel
Controlled axes	4 axes (X, Y, Z, W)	Z axis: Ramstock axis travel
Simultaneously controlled	3 axes (X, Y, Z or W)	W axis: Crossrail vertical travel
Synchronous control	W axis	
Tandem control	Z axis	
Least input increment	0.001 mm, 0.001deg 0.0001 inch	
Machine lock	All axes / Z axis	
Emergency stop		
Overtravel		
Stored stroke check 1		
Stroke limit check before move		
Mirror image	X, Y axes	
Follow-up	Emergency stop	
Backlash compensation		0 ~ ±9999 pulse
Stored pitch error compensation		
Interpolation type pitch error compensation		

Name	Specifications	Note
Automatic operation (memory)		
DNC operation		RS-232C of reader/puncher interface, Memory card interface
MDI operation		
Program number search		
Sequence number search		
Sequence number comparison stop		
Program restart		
Buffer register		1 block
Dry run		
Single block		
Jog feed		0 ~ 4000 mm/min. (22 step)
Manual reference position return		
Manual handle feed	1 unit	Portable type manual handle
Manual handle feed rate	x1, x10, x100	
Manual handle interruption		One dimension
Cycle start / Feed hold		
Program stop / End	M00, M01, M02, M30	
Reset / Rewind	M30	

Name	Specifications	Note
Positioning	G00	
Single direction positioning	G60	
Exact stop mode	G61	
Exact stop	G09	
Linear interpolation	G01	
Circular interpolation	G02, G03	Multi-quadrant is possible
Dwell	G04	Dwell in seconds
Helical interpolation	G02, G03	Circular interpolation plus max. 2 axes linear interpolation
Skip	G31	
Reference position return	G28	
Reference position return check	G27	
2nd reference position return	G30 (P2)	
3rd/4th reference position return	G30 (P3, P4)	
Tapping mode	G63	
Cutting mode	G64	

Name	Specifications	Note
Rapid traverse rate	0, 1, 10, 25, 50, 100%	
Feed per minute	G94	mm/min.
Tangential speed constant control		
Cutting feedrate clamp		
Automatic acceleration / deceleration	Rapid traverse: linear Cutting feed: linear + exponential	
Override cancel	M17: Enable / M18: Disable	

Name	Specifications	Note
Tape code	EIA, RS244, ISO840 automatic recognition	
Label skip		
Parity check	Horizontal and vertical parity	
Control in/out		
Optional block skip	3 (total)	
Max. programmable dimension	±99999.999 mm	±8-digit
Program number	32 characters	File name or Program number
Sequence number	N8-digit	
Absolute/incremental programming		
Decimal point programming / pocket calculator type decimal point programming		
Input unit 10 time multiply	0.01 mm, 0.01 deg, 0.001 inch	
Plane selection	G17, G18, G19	
Coordination system setting		
Automatic coordination system setting		
Workpiece coordinate system	G54 ~ G59	6 pairs
Workpiece coordinate system preset	G92.1	
Manual absolute on and off		
Optional chamfering / corner R		
Programmable data input	G10	
Sub program call	M98	10 folds nested
Custom macro	G65, G66, G66.1	5 folds nested
Custom macro common variables	82	#100 ~ #149, #500 ~ #531
Addition of custom macro common variables	600 (total)	#100 ~ #199, #500 ~ #999 (this function is required for 5-face machining software / universal head software.)
Canned cycles	G73, G74, G76, G80 ~ G89	
Circular interpolation by R programming	12-digit	
Automatic corner override	G62	
Coordinate system rotation	G68, G69	
3-dimensional coordinate conversion	G68, G69	

Name	Specifications	Note
Auxiliary function	M3-digit	
2nd auxiliary function	B3-digit	
Spindle speed function	S4-digit	
Spindle override	50 ~ 150%	

Name	Specifications	Note
Tool function	T4-digit	
Tool offset pairs	±7-digit 200	
Tool offset memory C	Distinction between geometry and wear, or between cutter and tool length compensation	
Tool length compensation	G43, G44, 49	
Tool offset	G45, G46, G47, G48	
Cutter compensation C		
Tool length measurement		

Name	Specifications	Note
Part program storage capacity	256 kbyte	640 m
Number of registerable program	Expansion 1 *1	
Program editing		
Background editing		
Extended program editing		
Memory card program operation / editing	Number of program: 63 Maximum size: 2 Gbyte	By selecting a memory card including a program storage file as a device, memory operation can be performed with the program storage file selected as the main program.
Memory card program tool		A program storage file can be created using a memory card program tool on a commercially available personal computer.
Program protect		

Setting and display

Name	Specifications	Note
Status display		
Clock display		
Cutting position display		
Program display	Program name 31 characters	
Self diagnosis function	Self diagnosis in NC system	
Alarm display		
Alarm history display		
Graphic function		
Multi-language display	English version Japanese version	
Data protection function	1 type	
Erase CRT screen display		

Optional Specifications

Name	Specifications	Note
Controlled axes / feedback system (Absolute position detection)	X, Y, Z axis: Linear MP scale	X axis: Table longitudinal travel Y axis: Saddle cross travel Z axis: Ramstock axis travel W axis: Crossrail vertical travel
Controlled axes expansion	Addition of 1 axis Addition of 2 axes	Select for the additional axes Select for the additional axes
Inch/metric conversion	G20, G21	
Stored stroke check 2, 3		

Name	Specifications	Note
Operation		
Tool retract and recover		
3D handle feed	Tool direction + normal direction	

Name	Specifications	Note
Interpolation functions		
Conical/spiral interpolation		
Polar coordinate interpolation	G12.1, G13.1	
Threading, synchronous cutting	G33	Including "Dwell in seconds" and "Feed per revolution (G95)"
High speed skip		This function is required for Tool breakage workpiece measuring / Tool breakage monitor / Automatic tool length measurement
Multi step skip	G31 (P1 ~ P4)	This function is required for Tool breakage monitor / Automatic tool length measurement
Normal direction control	G41.1, G42.1, G40.1	

Name	Specifications	Note
Feed function		
AI contour control function I	For parts machining	
One-digit F code feed		
Feed stop		

Name	Specifications	Note
Program input		
Polar coordinate command	G15, G16	
Addition of workpiece coordinate system pair (48 pairs)	G54.1 Pn	n=1 ~ 48
Addition of workpiece coordinate system pair (300 pairs)	G54.1 Pn	n=1 ~ 300
Interrupt type custom macro		
Scaling	G50, G51	
Programmable mirror image	G50.1, G51.1	
Figure copy	G72.1, G72.2	
Retrace		
Program format for FS15		

Name	Specifications	Note
Auxiliary / Spindle speed function		
Rigid tapping		

Name	Specifications	Note
Tool function / Tool compensation		
Tool offset pairs	±7-digit 400 ±7-digit 499 ±7-digit 999 ±7-digit 2000	
3-dimensional cutter compensation	G40, G41	
Tool life management	256 pairs	
Addition of tool life management pairs	1024 pairs	

Name	Specifications	Note
Editing operation		
Part program storage capacity	512 kbyte 1 Mbyte 2 Mbyte 4 Mbyte 8 Mbyte	1280 m 2560 m 5120 m 10240 m 20480 m 4196.7 ft 8393.4 ft 16786.9 ft 33573.8 ft 67147.5 ft
Number of registerable program	Expansion 2 *2	
Extending the number of memory card program registrations	Number of program: 500 or 1000	
Playback		
Machining time stamp		

Data input/output, DNC input

Name	Specifications	Note
Memory Card input/output		
Embedded Ethernet interface	I/F: 100base-T (1ch.) (Program in/out)	(Only hardware) DNC operation is impossible.
Reader/puncher interface (Number of max. ch. is total 2ch.)	RS-232C	D-sub (25 pin) connector is installed on the door of main control panel.
Compact flash card (CF)	For NC data back-up (1 piece)	Capacity: 128 Mbyte, For Fanuc NC
Adapter for CF card	For NC data back-up (1 piece)	For Fanuc NC (F30i, 31i, 32i)
Compact flash card (CF)	For NC program input/output (1 piece)	Capacity: 256 Mbyte, For Fanuc NC, For user
Adapter for CF card	For NC program input/output (1 piece)	For Fanuc NC (F30i, 31i, 32i), For user

Name	Specifications	Note
Others		
CRT character display	10.4" color LCD	

Name	Specifications	Note
Setting and display		
Run hour and parts count display		This function is required for operation time accumulation
Dynamic graphic display		
Multi-language display	Chinese version Korean version	

Name	Specifications	Note
Data input/output, DNC input		
Reader/puncher interface (Number of max. ch. is total 2ch.)	RS-232C addition of 1ch. (Program in/out, DNC operation) RS-232C addition of 1ch. (auto. measuring Data print-out)	D-sub (25 pin) connector is installed in the main control panel. D-sub (25 pin) connector is installed in the main control panel.
Data server	Memory device: ATA FLASH CARD I/F: 100base-T (1ch.) (Program in/out, DNC operation)	(Only hardware in NC) Capacity: 1 Gbyte (Program length ≈ 2500 km)
Compact flash card (CF)	For NC program input/output output ___ piece	Capacity: 256 Mbyte, For Fanuc NC, For user
Adapter for CF card	For NC program input/output output ___ piece	For Fanuc NC (F30i, 31i, 32i), For user

(Notes)

1: Expansion 1 (Standard)			
Storage capacity	Storage length	Number	
256 kbyte	640 m	2098.4 ft	500
512 kbyte	1280 m	4196.7 ft	1000
1 Mbyte	2560 m	8393.4 ft	1000
2 Mbyte	5120 m	16786.9 ft	1000
4 Mbyte	10240 m	33573.8 ft	1000
8 Mbyte	20480 m	67147.5 ft	1000

2: Expansion 2 (Optional)			
Storage capacity	Storage length	Number	
256 kbyte	640 m	2098.4 ft	500
512 kbyte	1280 m	4196.7 ft	1000
1 Mbyte	2560 m	8393.4 ft	2000
2 Mbyte	5120 m	16786.9 ft	4000
4 Mbyte	10240 m	33573.8 ft	4000
8 Mbyte	20480 m	67147.5 ft	4000



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Machine specifications such as dimensions etc., are fixed using SI units including the metric system.
In case data are shown in other units in blue, such as inches, pounds and gallons etc. they are for reference only and the formal data
in black supersedes any equivalent data given in blue when fractions caused by conversion become an issue.
Specifications are subject to change without prior notice.
The export of this product is subject to Japanese Governmental approval.