

Nidec
All for dreams

Double Column Type Five-Face Milling Machine

MVR-Hx

SERIES



NIDEC MACHINE TOOL CORPORATION

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

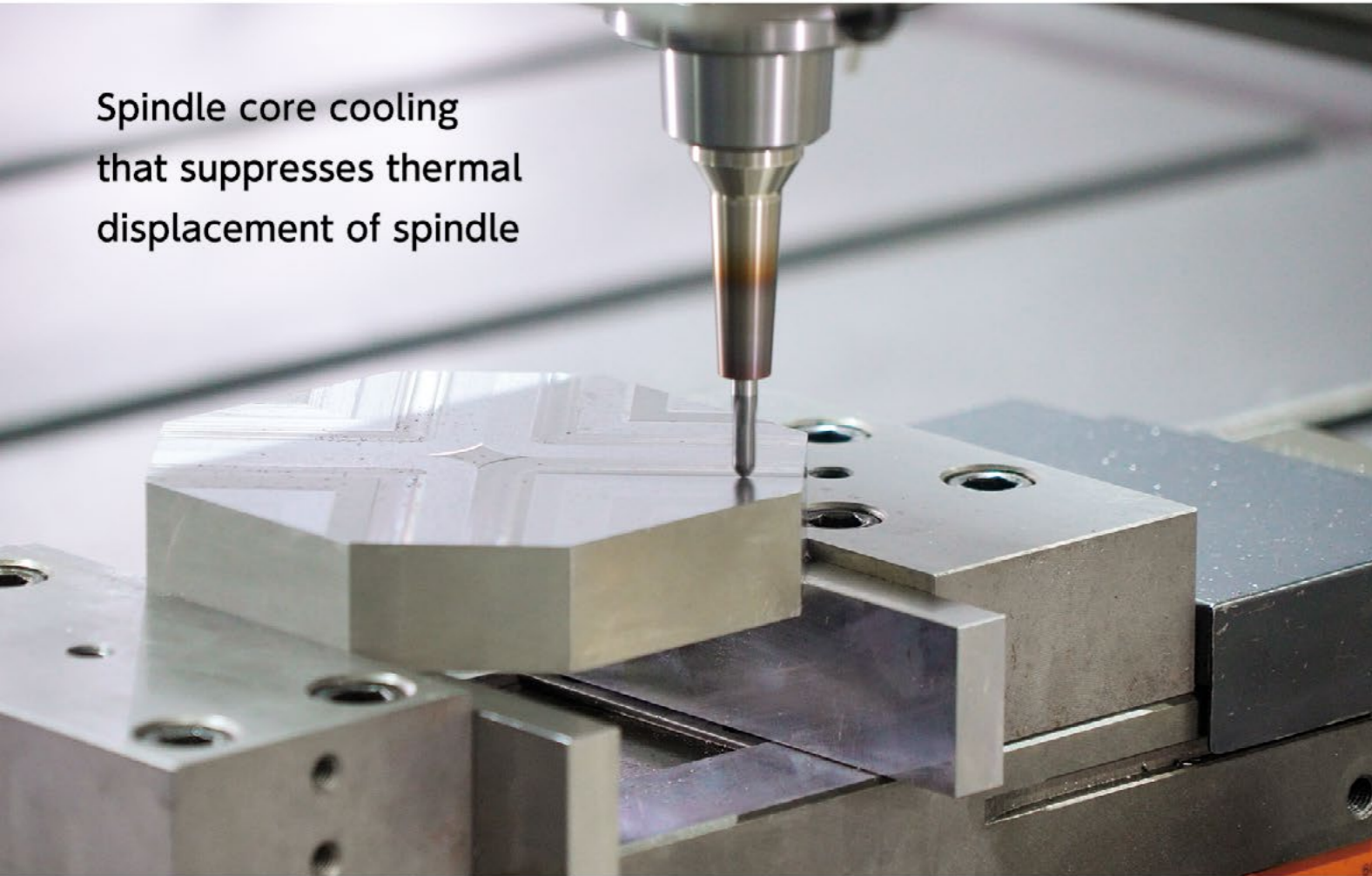
Do more with five-face milling
Added freedom for machining

- + Outstanding accuracy.
- + Advanced cutting ability.
- + Versatile performance

Precision and productivity are refined by continuous progress, and abundant specification variations. MVR-Hx supports high precision machining and heavy machining according to the customer's needs. The advanced flexibility supports a wide range of machining applications.

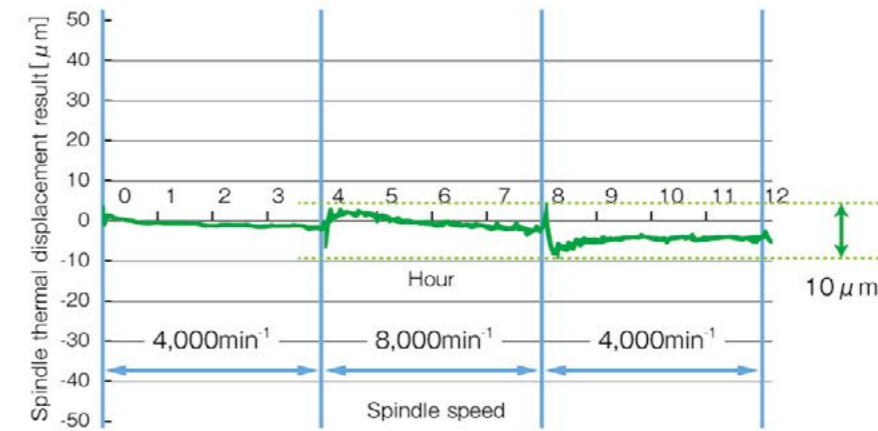


NOTE : The photo includes optional equipment



Spindle core cooling that suppresses thermal displacement of spindle

Result of Spindle Core Cooling System



Thermal displacement without correction
10 μ m
0.0004in

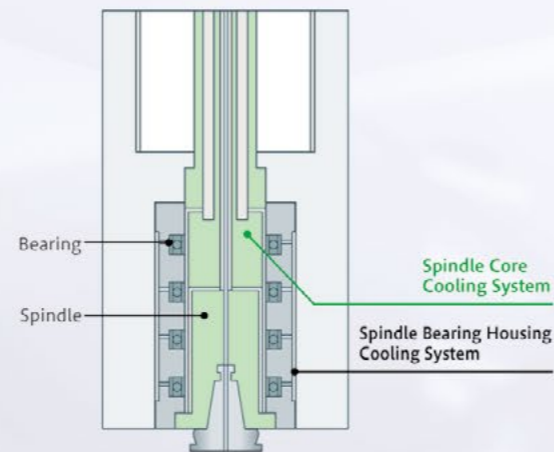
Suppresses tool steps on the machined surface

Reduces steps and bites on the machined surface

High-precision machining is possible from low-speed range to high-speed range

In addition to cooling the outer cylinder, the spindle is cooled from the inside to suppress thermal displacement of the spindle during high-speed rotation. This not only cools the spindle, but also balances the temperature of the inner and outer rings of the bearing. This stabilizes the preload inside the bearing, maintaining rigidity and reducing vibration.

Vertical Spindle Construction



Machining Area	Tool	Spindle speed
	D12 R0.5 Radius End mill	5,000min ⁻¹
	D10 R5 Ball End mill	6,000min ⁻¹
	D16 R8 Ball End mill	4,000min ⁻¹
	D6 R3 Ball End mill	7,000min ⁻¹
	D4 R2 Ball End mill	8,000min ⁻¹

The sample surface was divided into areas and machined with 5 tools. While changing the rotation speed to 4,000 to 8,000 min⁻¹ for each tool, the step at the boundary of each area is suppressed to a maximum of 3.5 μ m 0.00014in.

The maximum step at the boundary of the area is
3.5 μ m
0.00014in

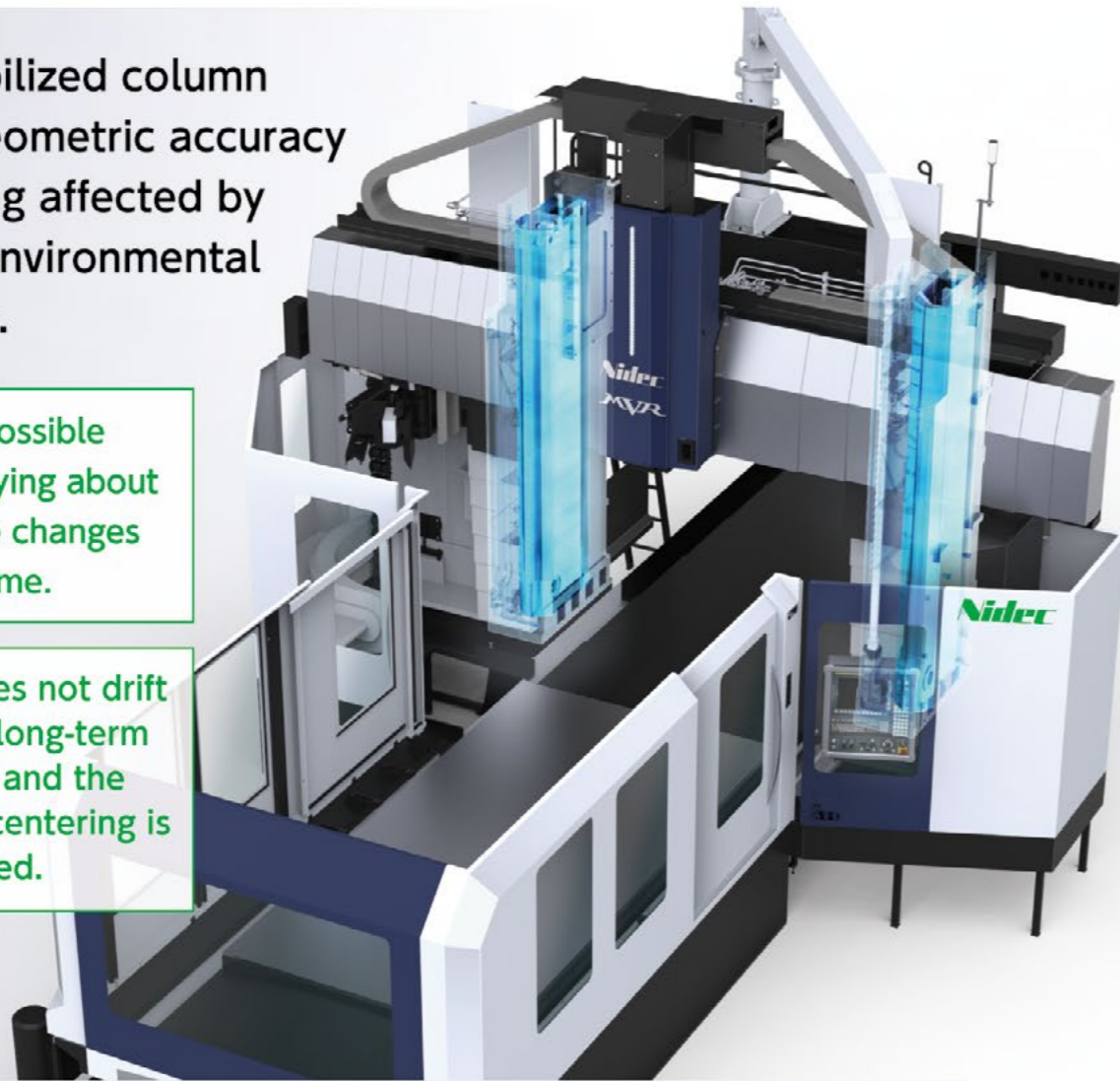
The data shown is an actual measurement value, not a guaranteed value.

Outstanding Accuracy - Mechanical Structure -

Thermo-stabilized column maintains geometric accuracy without being affected by changes in environmental temperature.

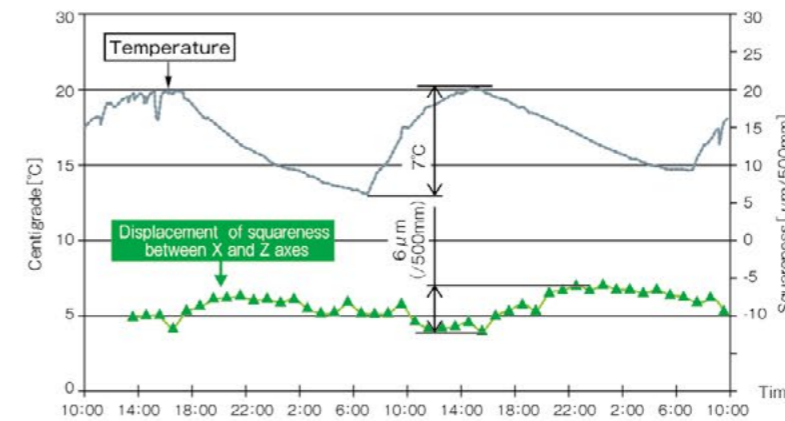
Setup is possible without worrying about temperature changes over time.

The origin does not drift even during long-term machining, and the frequency of centering is reduced.



Effect of Thermo-stabilizer

Actual value of mechanical thermal displacement due to environmental temperature change



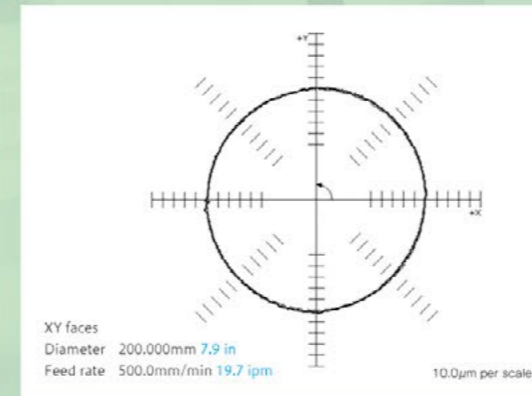
The thermal displacement of the column due to the influence of environmental temperature changes is practically eliminated.

Displacement of squareness between X and Z axes
6 μ m/500mm
 0.00024 / 19.7in

Temperature change
7°C

High-precision feed

High-speed motion performance has been improved by adopting linear guides with appropriate preload on the X and Y axes. When a large diameter hole is required, it can be machined with high roundness by contouring even if there is no boring tool that matches the dimensions. Power loss is reduced by improving axis performance, resulting in energy saving.

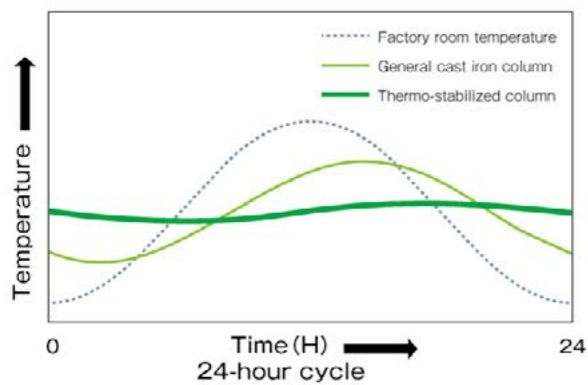


Roundness
4.9 μ m
 0.00019in

By enclosing the thermal control materials in the double column, the influence on the geometric accuracy due to changes in the environmental temperature can be greatly suppressed compared to a general cast iron column.

Heat capacity **8 times that of cast iron**
 Cast iron 0.5kJ/kg·K
 Thermal control materials 4.18kJ/kg·K
 ▶ Inensitive to changes in environmental temperature

Thermal conductivity **1/83 of cast iron**
 Cast iron 50W/m·K
 Thermal control materials 0.6W/m·K
 ▶ Extremely stable long term machining regardless of changes in the environmental temperature!

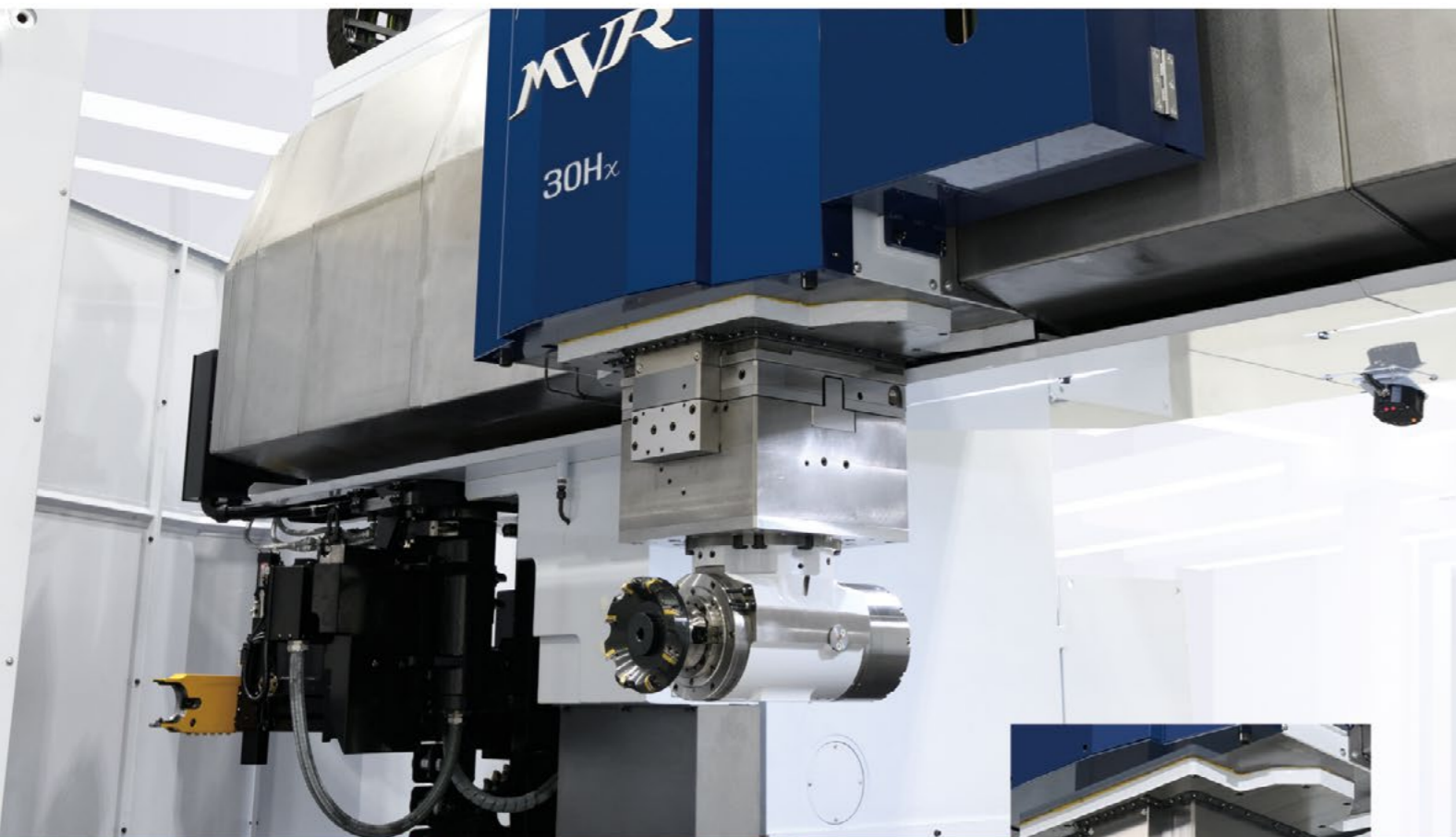


Non-contact ultra-precision linear scale (MP Scale)

MP scale is installed as standard on all axes. The X-axis scale has been redesigned from the conventional model (*) and is attached to the table side. The effect of thermal displacement is further suppressed.

* MVR-Ex

Exceptional Mechanical Rigidity and Damping



- + All main structures are cast with high damping performance
- + Advanced structural analysis technology that Nidec Machine Tool has cultivated over many years yields superior structure rigidity.
- + Large saddle and cross rail creates high rigidity for both vertical spindle and right angle head. Heavy cutting is possible even with full ram extension of 800mm 31.5in.



350mm 13.8in strong ram is made of spheroidal graphite cast iron (FCD600) with high tensile strength.

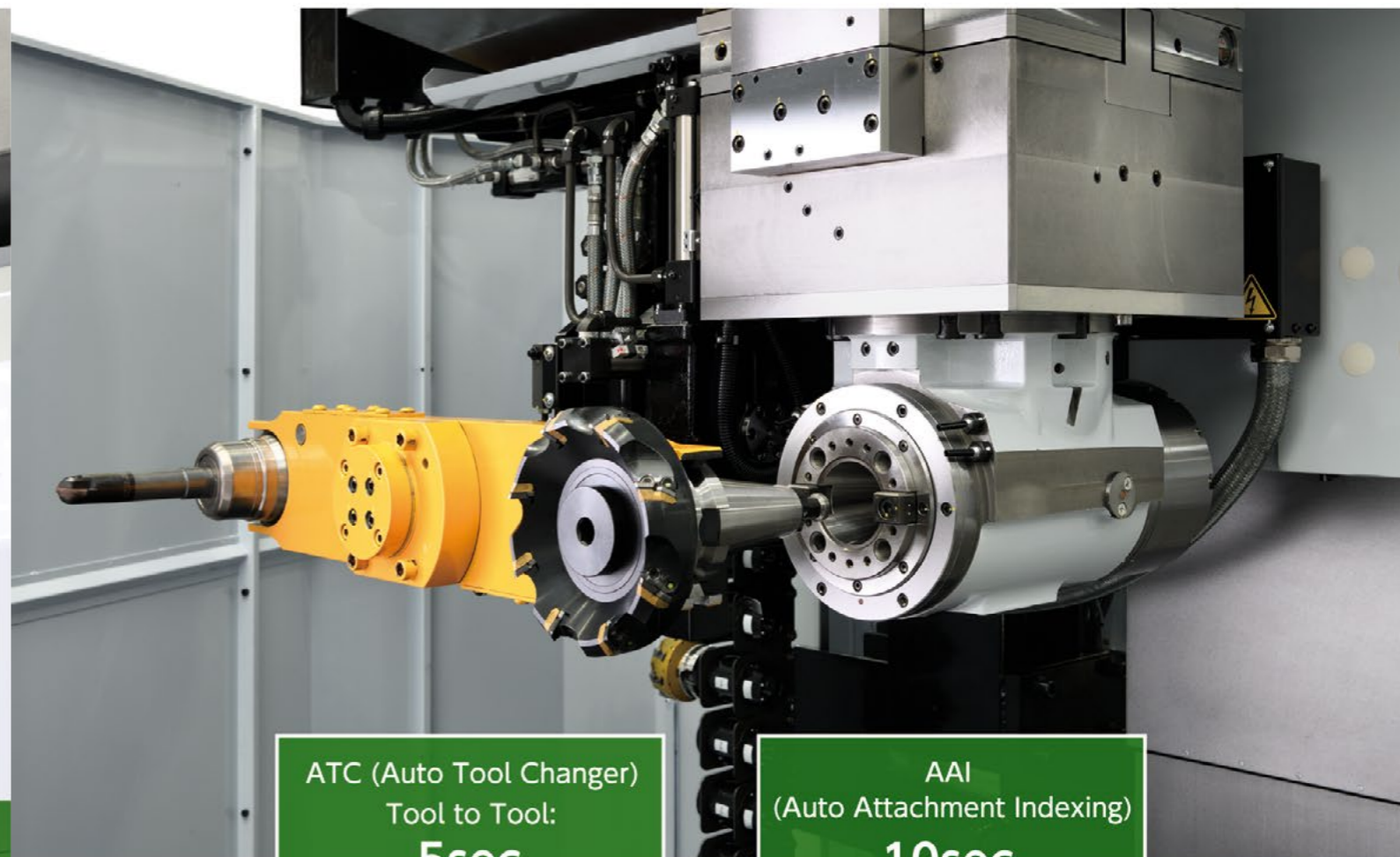
Extremely rigid right angle machining attachment

The central clamp + 4 clamps firmly connect the ram and the attachment.



Fastening part of Right angle head

High Speed and High Productivity

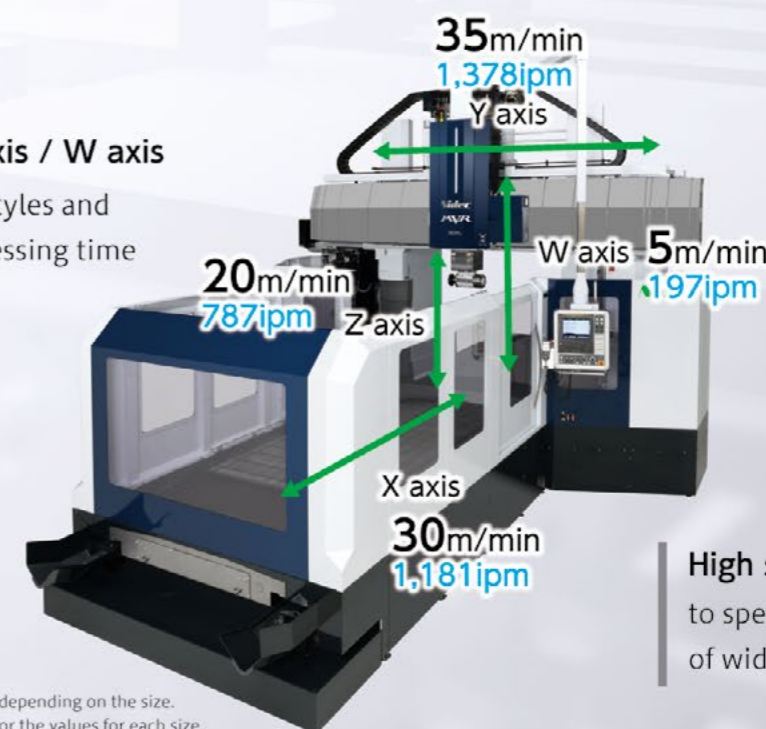


ATC (Auto Tool Changer)
Tool to Tool:
5sec

AAI (Auto Attachment Indexing)
10sec

Rapid Traverse

High speed Z axis / W axis
for faster drilling cycles and
reduction of processing time



High speed X and Y axes
to speed up positioning
of wide flat workpieces

※The Rapid Traverse speed changes depending on the size.
Please see the specifications page for the values for each size.

Advanced cutting ability

Same conditions for both vertical and horizontal axes.
Powerful heavy cutting is possible.



Milling

Material : Rolled steel for general structure (SS400)
 Tool diameter : $\phi 160\text{mm}$ 6.3in
 Cutting width : 130mm 5.1in
 Spindle speed : 420min⁻¹
 Cutting depth : 6mm 0.236in
 Feed rate : 1,182mm/min 46.5in
 Chip volume : 922cc/min 56.3cu.in/

Same conditions for both vertical and horizontal axes.
Efficient processing using large diameter taps.

M64 Tapping
Material Steel(S45C)



Spindle speed : 50mm⁻¹
Feed rate : 300mm/min 11.8in

Right angle head M64 Tapping
Material Steel(S45C)



Spindle speed : 50mm⁻¹
Feed rate : 300mm/min 11.8in

The powerful gear drive type spindle achieves fast large diameter boring.

Total mechanical rigidity withstands large-diameter boring

$\phi 563\text{ mm}$ 22.2in Large-diameter Boring

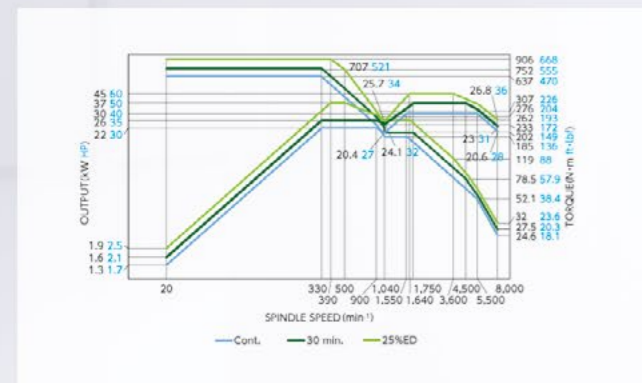
Material Steel (S45C)



Spindle speed : 85mm⁻¹
 Peripheral speed : 150m/min 5.9ipm
 Feed rate : 55mm/min 2.2ipm
 Cutting depth : each 5mm 0.2in
 Torque : 3,170N·m 2,338 ft·lbf
 Chip volume : 484cc/min 29.5cu.in/min
 Spindle Load : 87%

Spindle Output / Torque

Standard Spindle 8,000min⁻¹
Built-in motor type

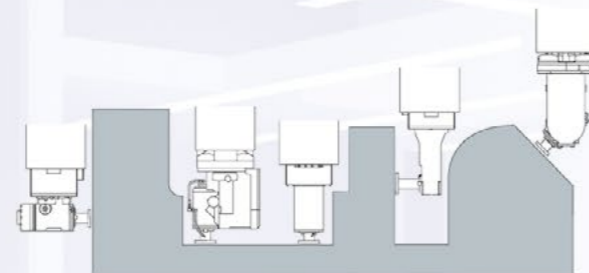


Superior versatility



Extensive lineup of attachments

Productivity can be improved by selecting an attachment according to the shape of a narrow part, inclined surface, free curved surface, high-speed machining, high-precision machining, etc.



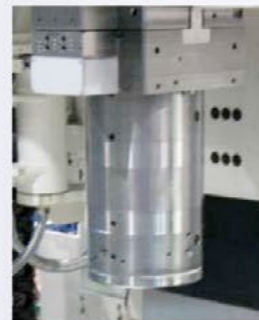
Attachment variation



Small right angle head



Long extension head



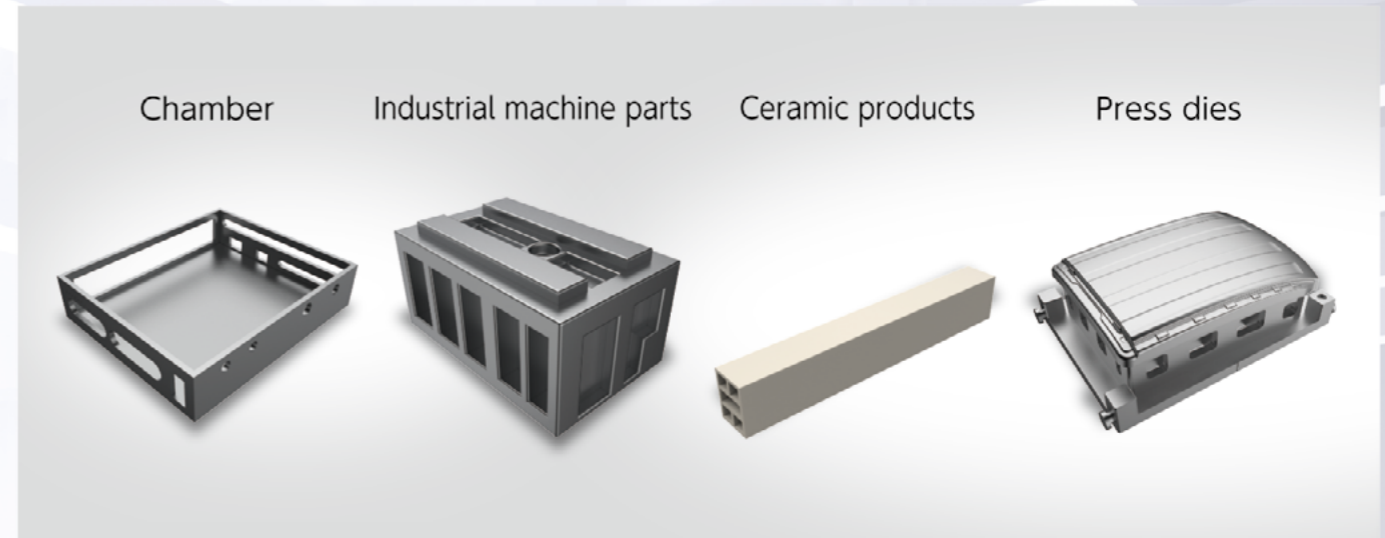
High speed extension head



Universal center head

Right angle Head	Powerful type Right angle Head	VHRH-30S-35-35P-AC	30kW 40HP, 2,056N·m 1,516ft·lbf, 3,600min ⁻¹
	High Speed type Right angle Head	VHRHH-15-35-35P-AC	15kW 20HP, 500N·m 369ft·lbf, 10,000min ⁻¹
	Small type Right angle Head	VHRH-8-52-35P-AC	8kW 11HP, 440N·m 325ft·lbf, 500min ⁻¹ , Tip thickness 160mm 6.3in
Extension Head	Extension Head (Long)	VMEH-25-50-35P-AC	25kW 34HP, 600N·m 443ft·lbf, 6,000min ⁻¹ , Length 500mm 19.7in
	Extension Head (Short)	VMEH-30-35-35P-AC	30kW 40HP, 600N·m 443ft·lbf, 8,000min ⁻¹ , Length 350mm 13.8in
	Extension Head (Outer diameter φ170mm 6.7in)	VMEH-8-50-35P-AC	8kW 11HP, 218N·m 161ft·lbf, 3,000min ⁻¹ , Tip thickness φ170mm 6.7in
	High Speed type Extension Head	VMEHH-30-35-35P-AC	30kW 20HP, 600N·m 369ft·lbf, 10,000min ⁻¹
	High Speed type Extension Head (Built-in motor type)	VMEHHS-18.5-60-35P-AC	18.5kW 25HP, 14.3N·m 10.5ft·lbf, 15,000min ⁻¹
Universal Head	Universal Head (Offset type)	VAUH-15-44-35P-AC	15kW 20HP, 400N·m 295ft·lbf, 5,000min ⁻¹
	Universal Head (Center head)	VAUH-15-54-35P-AC	15kW 20HP, 400N·m 295ft·lbf, 6,000min ⁻¹

Ideal for processing various workpieces



Available package options

General machining package

- Coolant/air supply system through the spindle Pump pressure 1MPa(142psi)
- Automatic workpiece measuring with standard measuring macro programs
- Automatic tool length measurement and compensation & Tool breakage monitoring
- Multi coolant nozzle for standard right angle head

Heavy duty machining package

- Coolant/air supply system through the spindle Pump pressure 1MPa(142psi)
- High-Torque Spindle (Opt.) 4,000min⁻¹ Gear drive type
- Automatic workpiece measuring with standard measuring macro programs
- Automatic tool length measurement and compensation & Tool breakage monitoring
- Multi coolant nozzle for standard right angle head

Semiconductor manufacturing equipment / Aluminum machining package

- Coolant/air supply system through the spindle Pump pressure 1MPa(142psi)
- High-Speed Spindle (Opt.) 12,000min⁻¹
- Automatic workpiece measuring with standard measuring macro programs
- Automatic tool length measurement and compensation & Tool breakage monitoring
- Multi coolant nozzle for standard right angle head
- Hale machining function
- Hinged steel belt chip conveyor

Die machining package

- Coolant/air supply system through the spindle Pump pressure 1MPa(142psi)
- Twin ball screw feed for Z-axis travel 800mm 31.5in
- Extension head (VMEH-30-35-35P-AC)
- Coolant/air supply system through the spindle for Extension milling head
- Universal head (VAUH-15-44-35P-AC)
- Automatic workpiece measuring with standard measuring macro programs
- Automatic tool length measurement and compensation & Tool breakage monitoring
- Multi coolant nozzle for standard right angle head

Operability that expands the possibilities



- + 15inch large screen touch screen operation panel
- + Ergonomic button layout and screen design
- + Latest NC FANUC31i--MODEL B Plus installed



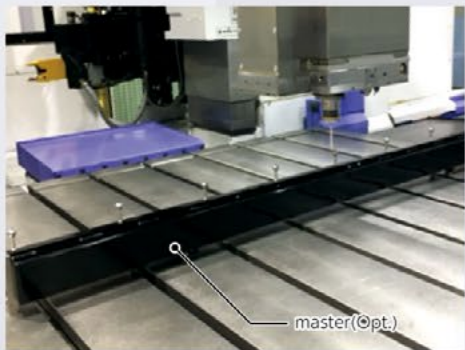
Input screen is easily operated efficiently



The tool magazine operation panel is also equipped with a touch panel. You can call pot numbers and edit tool data.

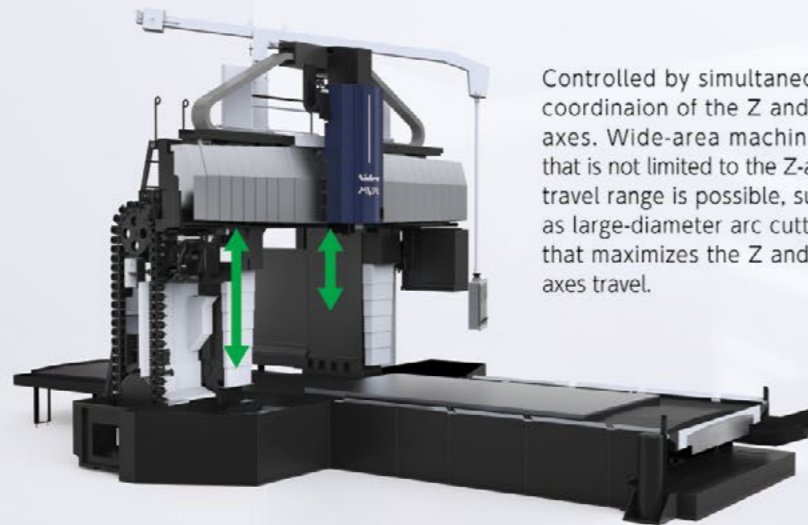
Spatial error correction (Std.)

Equipped with software that enables measurement and correction of machine accuracy errors caused by changes in the factory foundation with your own measuring instrument. Regular measurement and calibration verifies and maintains machine accuracy.



The master in the picture is optional. In addition to measuring and correcting using your own measuring instrument such as a laser measuring instrument or straight edge, you can also request us.

Z/W axis coordinated control



Controlled by simultaneous coordinaion of the Z and W axes. Wide-area machining that is not limited to the Z-axis travel range is possible, such as large-diameter arc cutting that maximizes the Z and W axes travel.



Nidec Navi Streamline the work of the operator

Programming

Machining program creation support

Simply enter the parameters with a full explanation on the screen. The machine creates the program.

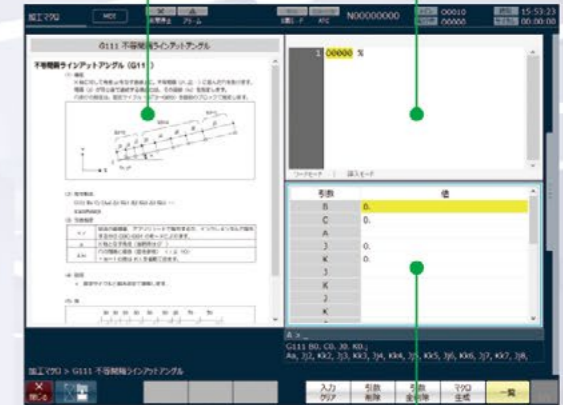
Program example that can be created

- Startup macro (*)
- Pocket processing
- Unequally spaced line at angle
- Semicircular cutting
- Bolt hole circle and more

* Startup macro
Whether you use a dummy plate or a right angle head, it will perform the specified positioning operation.

Explanation

program



Parameter input

Centering / tool measurement

Manual centering

When using a commercially available probe, the procedure guidance is displayed.



Automatic centering (Opt.)

When using the probe of the menu option, centering is possible by inputting the parameters while observing the explanation on the screen.



Tool measurement

When using the automatic tool length measurement and compensation & Tool breakage monitoring (Opt.), tool measurement is achieved by inputting parameters with reference to the explanation on the screen.



Program debugging

Simple collision prevention function

In manual operation, the system will stop the machine motion before a collision occurs.

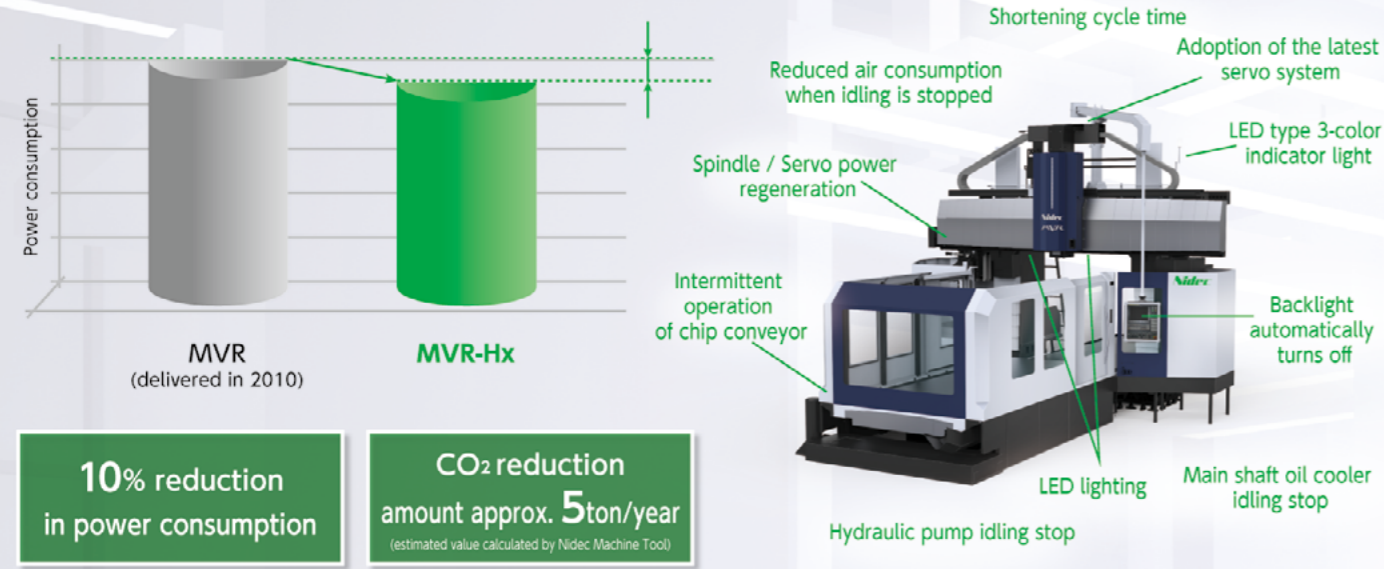
You can set the work installation range easily.



* For Manual rapid traverse, MDI mode rapid traverse and returning to origin

Global Environmental Consciousness

Power consumption



10% reduction
in power consumption

CO₂ reduction
amount approx. **5ton/year**
(estimated value calculated by Nidec Machine Tool)

"Energy saving setting" is also in Nidec Navi

Energy-saving functions for auxiliary equipment and machine operation can be set individually.

項目	設定値	備考
1 省エネモード	ON	
2 コンベア駆動 ON 時間	ON	
3 コンベア駆動 OFF 時間	0 秒	
4 コンベア駆動 OFF 時間	120 秒	
5 機内照明自動OFFタイマ	15 分 (0:機能OFF)	
6 NC画面自動OFFタイマ	10 分 (0:機能OFF)	
7 オイルクーブ省エネモード	ON	
8 運転準備OFFモード	ON	
9 油圧ポンプ省エネ運転	ON	

■ Intermittent conveyor operation

The operation of the chip conveyor has been changed from continuous operation to intermittent operation to reduce power consumption.

■ NC screen automatic OFF timer

If there is no operation within the set time, the NC screen is automatically turned off.

■ Operation preparation OFF mode

When the machine stops for a preset period of time, the operation preparation is turned off and the standby power of hydraulic pressure and servo is suppressed.

■ Energy saving mode

Switch ON/OFF of the entire energy saving function. Even if other individual functions are set to "ON", they will not work if this setting is "OFF".

■ Machine internal lighting automatic OFF timer

If there is no operation within the set time, the lights under the crossrail will be turned off automatically.

■ Oil cooler energy saving mode

When the machine stops for a certain period of time, the operation of the oil cooler is stopped to reduce power consumption.

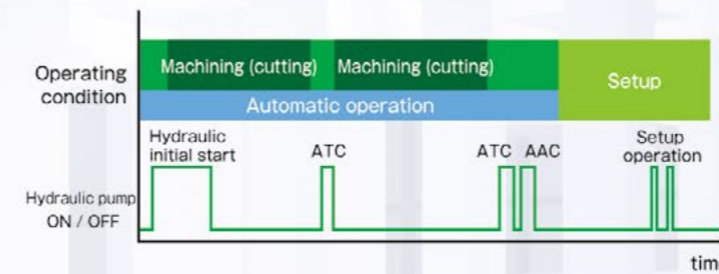
■ Hydraulic pump energy saving operation

When the machine operation with hydraulic pressure stops for a certain period of time, the hydraulic pressure is turned off. (Operation preparation is not turned off)

Hydraulic pump idling stop function

The hydraulic pump starts only when the hydraulic equipment is operating *

* When operating hydraulic equipment during ATC, AAC, APC and setup, etc.



Power to be reduced	0.54 kW	Hydraulic power consumption of MVR 0.54kW
Annual power consumption reduction	▲2,893 kWh	Assuming 24 hours a day, 310 days a year (1 day a week), and an occupancy rate of 80%. Assuming that it can be turned off for 90% of the operating time. (Note) The reduction rate varies depending on the operating rate and machining conditions.
Electricity charge reduction for one year (in Japan)	▲43,000 yen	Unit price: 15 yen/kWh
CO ₂ emission reduction for one year	▲1 ton	Unit price: 0.36 kg/kWh

Idling stop function of spindle oil cooler

Stop the spindle oil cooler when forced cooling of the spindle is not required

Intelligent energy management

The intelligent energy management system predicts heat generation by monitoring mechanical conditions such as spindle motor temperature and spindle rotation speed. When there is little heat generation, the spindle oil cooler is stopped and the workpiece is cut even while the spindle is rotating.

Synchronous operation with machine operation

The spindle oil cooler is stopped after a preset period of time after the machine stops.

* This function can be enabled / disabled at will.

Power to be reduced	2.2 kW	Hydraulic power consumption of MVR 0.54kW
Annual power consumption reduction	▲6,678 kWh	Assuming 24 hours a day, 310 days a year (1 day a week), and an occupancy rate of 80%. Assuming that the spindle operating rate is 70%, and that it will be stopped for 30% when it is not operating. Furthermore, it is assumed that cooling is not required for 30% of the spindle in operation. (Note) The reduction rate varies depending on the operating rate and machining conditions.
Electricity charge reduction for one year (in Japan)	▲100,000 yen	Unit price: 15 yen/kWh
CO ₂ emission reduction for one year	▲2.4 ton	Unit price: 0.36 kg/kWh

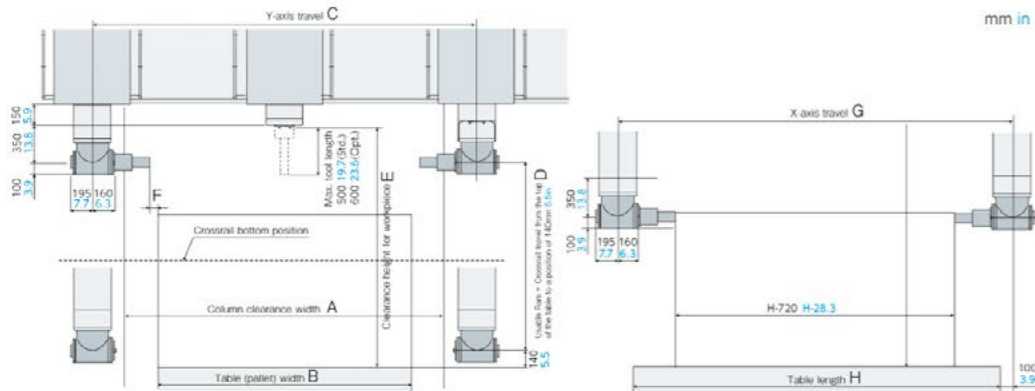
Wide range of movement of the operation panel

Ensuring visibility of objects from the ATC side during operation.



The operation panel also reaches the ATC side.

Wide machining area



* Calculated assuming that the tool length is 300mm 11.8in.

* There is no interlock at a position 140mm 5.5in from the top of the table.

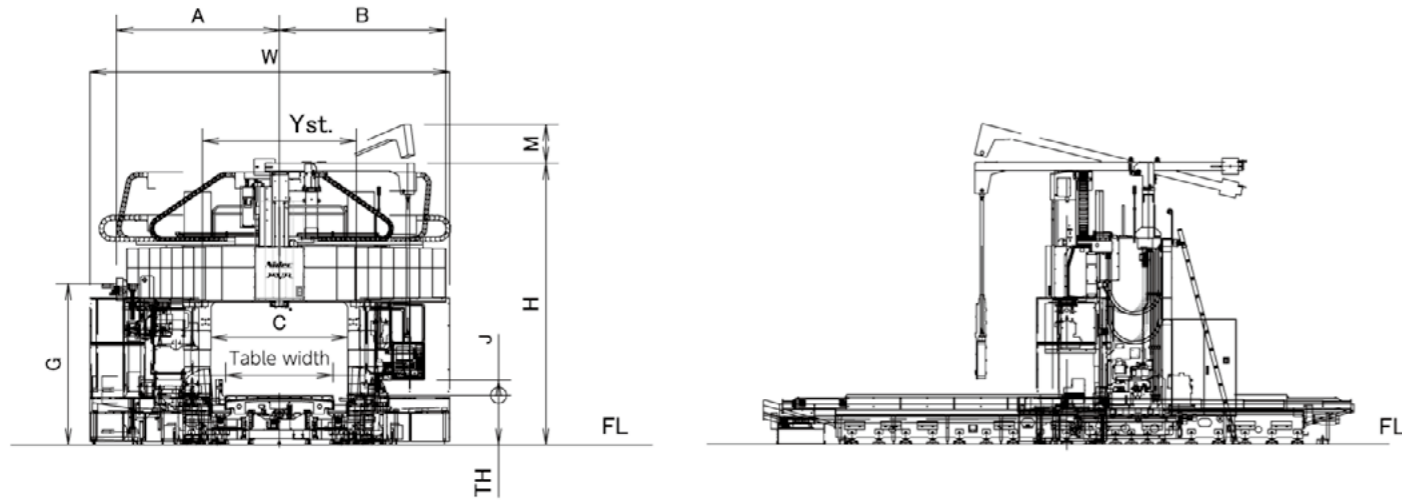
ITEM	A	B	C	D	E	F	G	H
MVR25Hx	2,050 80.7	1,500 59.1	2,500 98.4	1,160 45.7	1,650 65	40 1.6	3,200 126	3,000 118.1
				1,520 59.8	2,010 79.1		4,200 165.4	4,000 157.5
MVR30Hx	2,550 100.4	2,000 78.7	3,000 118.1	1,160 45.7	1,650 65	40 1.6	4,200 165.4	4,000 157.5
				1,520 59.8	2,010 79.1		5,200 204.7	5,000 196.9
MVR35Hx	3,250 128	2,500 98.4	3,500 137.8	1,360 53.5	1,850 72.8	40 1.6	6,200 244.1	6,000 236.2
				1,660 65.4	2,150 84.6		8,200 322.8	8,000 315
MVR40Hx	3,750 147.6	3,000 118.1	4,000 157.5	1,360 53.5	1,850 72.8	40 1.6	10,200 401.6	10,000 393.7
				1,660 65.4	2,150 84.6		4,200 165.4	4,000 157.5
MVR45Hx	4,250 167.3	3,500 137.8	4,500 177.2	1,360 53.5	1,850 72.8	40 1.6	5,200 204.7	5,000 196.9
				1,660 65.4	2,150 84.6		6,200 244.1	6,000 236.2

Specifications

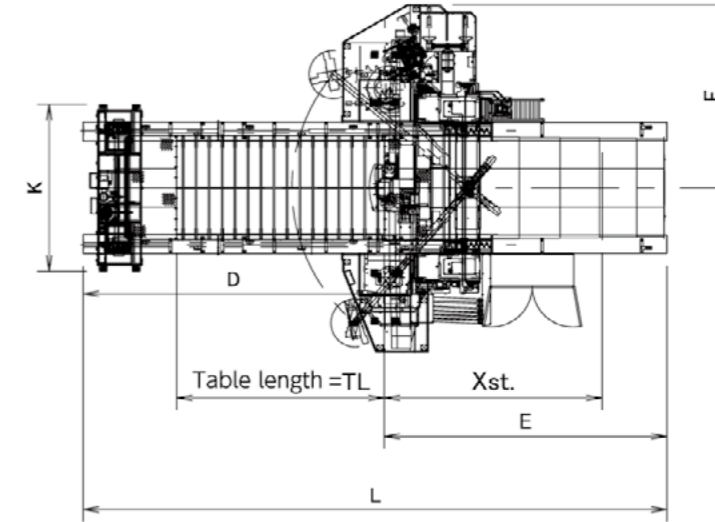
Specifications

Item	Model	MVR25Hx	MVR30Hx	MVR35Hx	MVR40Hx	MVR45Hx			
Throat clearance between columns	mm in	2,050 80.7	2,550 100.4	3,250 128.0	3,750 147.6	4,250 167.3			
Distance from spindle end to table surface	std. mm in	1,650 65.0	1,650 65.0	1,850 72.8	1,850 72.8	2,150 84.6			
	opt. mm in	2,010 79.1	2,010 79.1	2,150 84.6	2,150 84.6	—			
Working Area	Width	mm in	1,500 59.1	2,000 78.7	2,500 98.4	3,000 118.1	3,500 137.8		
		mm in	1,500 59.1	2,000 78.7	2,500 98.4	3,000 118.1	3,500 137.8		
	Length	T slots in lateral direction	std. mm in	3,000 118.1	3,000 118.1	4,000 157.5	4,000 157.5	6,000 236.2	
			opt. mm in	4,000 157.5	4,000 157.5	—	—	—	
		T slots in longitudinal direction	std. mm in	3,000 118.1	3,000 118.1	4,000 157.5	4,000 157.5	6,000 236.2	
			opt. mm in	4,000 157.5	4,000 157.5	5,000 196.9	5,000 196.9	—	
	Table	Loading Capacity/ Table length	T slots in lateral direction	std. kg/mm lb/in	12,000 / 3,000 26,400/118.1	20,000 / 3,000 44,000/118.1	25,000 / 4,000 55,100/157.5	25,000 / 4,000 55,100/157.5	35,000 / 6,000 77,100/236.2
				opt. kg/mm lb/in	15,000 / 4,000 33,000/157.5	25,000 / 4,000 55,100/157.5	—	—	—
		T slots in longitudinal direction	std. kg/mm lb/in	18,000 / 5,000 39,600/196.9	30,000 / 5,000 66,100/196.9	30,000 / 5,000 66,100/196.9	30,000 / 5,000 66,100/196.9	—	
			opt. kg/mm lb/in	20,000 / 6,000 44,000/236.2	30,000 / 6,000 66,100/236.2	30,000 / 6,000 66,100/236.2	30,000 / 6,000 66,100/236.2	—	
std. kg/mm lb/in			20,000 / 8,000 44,000/315.0	30,000 / 8,000 66,100/315.0	30,000 / 8,000 66,100/315.0	30,000 / 8,000 66,100/315.0	30,000 / 8,000 66,100/315.0		
opt. kg/mm lb/in			—	30,000 / 10,000 66,100/393.7	30,000 / 10,000 66,100/393.7	30,000 / 10,000 66,100/393.7	25,000 / 10,000 55,100/393.7		
Axis travel	Table longitudinal (X axis)	std. mm in	3,200 126.0	3,200 126.0	4,200 165.4	4,200 165.4	6,200 244.1		
		opt. mm in	4,200 165.4	4,200 165.4	—	—	—		
Spindle	Saddle crosswise (Y axis)	std. mm in	2,500 98.4	3,000 118.1	3,500 137.8	4,000 157.5	4,500 177.2		
		opt. mm in	2,650 106.3	3,150 124.0	3,900 153.5	4,400 173.2	4,900 192.9		
	Ram vertical (Z axis)	std. mm in	—	—	800 31.5	—	—		
		opt. mm in	—	—	1,000 39.4	—	—		
Crossrail vertical (W axis)	mm in	—	1,000 39.4	—	1,300 51.2	—			
	mm in	—	1,100 43.3	—	—	—			
ATC	Ram Size	mm in	□ 350 □ 13.8						
	Nose taper	mm in	ISO No.50 (Taper 7/24)						
	Diameter of spindle tip	mm in	φ110 φ4.3						
	Spindle Speed	min ⁻¹	20~8,000 (22/30 kW 30/40 HP: Cont. Low/High)						
Machine Weight/ Table length	std. kg/mm lb/in	mm in	17~6,000 (22/30 kW 30/40 HP: Cont./30 min)						
		mm in	11~4,000 (22/30 kW 30/40 HP: Cont./30 min)						
Machine Weight/ Table length	opt. kg/mm lb/in	mm in	40~12,000 (18.5/26 kW 24/35 HP: Cont. Low/High)						
		mm in	—						
Machine Weight/ Table length	std. kg/mm lb/in	mm in	60(std.), 80, 100, 120, 180(opt.)						
		mm in	φ260 φ10.2						
Machine Weight/ Table length	opt. kg/mm lb/in	mm in	500 19.7(std.), 600 23.6(opt.)						
		mm in	25 55(std.), 30 66(opt.)						
Machine Weight/ Table length	std. kg/mm lb/in	mm/min ipm	1~10,000 0.04-393.7						
		mm/min ipm	—						
Machine Weight/ Table length	opt. kg/mm lb/in	X axis (3,200mm)	30,000 1,181	30,000 1,181	—	—			
		X axis (4,200mm)	30,000 1,181	30,000 1,181	22,000 886	22,000 886			
Machine Weight/ Table length	std. kg/mm lb/in	X axis (5,200mm)	30,000 1,181	30,000 1,181	22,000 886	22,000 886			
		X axis (6,200mm)	20,000 787	20,000 787	20,000 787	20,000 787			
Machine Weight/ Table length	opt. kg/mm lb/in	X axis (8,200mm)	15,000 591	15,000 591	15,000 591	15,000 591			
		X axis (10,200mm)	—	12,000 472	12,000 472	12,000 472			
Machine Weight/ Table length	std. kg/mm lb/in	Y axis	35,000 1,378	35,000 1,378	35,000 1,378	28,000 1,102			
		Z axis	—	—	20,000 787	—			
Machine Weight/ Table length	opt. kg/mm lb/in	W axis	—	—	5,000 197	—			
		mm/min ipm	—						
Machine Weight/ Table length	std. kg/mm lb/in	mm/min ipm	—						
		mm/min ipm	—						
Machine Weight/ Table length	opt. kg/mm lb/in	mm/min ipm	—						
		mm/min ipm	—						

Dimensions



Machine Layout



ITEM	L	W	H		A	B	C	D	E	F	X st	Y st	TL	TW	TH	J	K	M													
			Upper: std.	Lower: Gear drive type																											
MVR25Hx	9,250	6,200	5,250	206.7	2,910	2,850	2,050	4,900	4,350	3,335	5,200	2,500	3,000	1,500	925		3,218														
	364.2							126.0	118.1				4,200						4,000	157.5											
	11,250							521.7	206.7				2,910						2,850	2,050	6,900	6,350	3,335	5,200	2,500	5,000	1,500	925	3,218		
	442.9							206.7	114.6				112.2						80.7	271.7	250.0	131.3	204.7	196.9	236.2	244.1	6,000	236.2	244.1	6,000	236.2
	13,250							521.7	206.7				114.6						112.2	80.7	7,900	7,350	3,335	5,200	2,500	5,000	1,500	925	3,218		
15,250	600.4	244.1	232.3	114.6	112.2	80.7	311.0	289.4	131.3	244.1	236.2	244.1	6,000	236.2	244.1	6,000	236.2														
MVR30Hx	9,250	6,700	5,250	206.7	3,160	3,100	2,550	4,900	4,350	3,585	5,200	3,000	3,000	2,000	925		3,218														
	364.2							126.0	118.1				4,200						4,000	157.5											
	11,250							521.7	206.7				3,160						3,100	2,550	6,900	6,350	3,585	5,200	3,000	5,000	2,000	925	3,218		
	442.9							206.7	124.4				122.0						100.4	271.7	250.0	141.1	204.7	196.9	236.2	244.1	6,000	236.2	244.1	6,000	236.2
	13,250							521.7	206.7				124.4						122.0	100.4	7,900	7,350	3,585	5,200	3,000	5,000	2,000	925	3,218		
15,250	600.4	263.8	232.3	124.4	122.0	100.4	311.0	289.4	141.1	244.1	236.2	244.1	6,000	236.2	244.1	6,000	236.2														
MVR35Hx	9,250	7,630	5,700	224.4	3,610	3,575	3,250	4,900	4,350	4,035	5,200	3,500	3,000	2,500	1,025	600	5,218														
	364.2							126.0	118.1				4,200						4,000	157.5											
	11,250							521.7	224.4				3,610						3,575	3,250	6,900	6,350	4,035	5,200	3,500	5,000	2,500	1,025	600	5,218	
	442.9							224.4	142.1				140.7						128.0	271.7	250.0	158.9	204.7	196.9	236.2	244.1	6,000	236.2	244.1	6,000	236.2
	13,250							521.7	224.4				142.1						140.7	128.0	7,900	7,350	4,035	5,200	3,500	5,000	2,500	1,025	600	5,218	
15,250	600.4	300.4	232.3	142.1	140.7	128.0	311.0	289.4	158.9	244.1	236.2	244.1	6,000	236.2	244.1	6,000	236.2														
MVR40Hx	9,250	8,130	5,700	224.4	3,860	3,825	3,750	4,900	4,350	4,285	5,200	4,000	3,000	3,000	1,025		5,218														
	364.2							126.0	118.1				4,200						4,000	157.5											
	11,250							521.7	224.4				3,860						3,825	3,750	6,900	6,350	4,285	5,200	4,000	5,000	3,000	1,025	5,218		
	442.9							224.4	152.0				150.6						147.6	271.7	250.0	168.7	204.7	196.9	236.2	244.1	6,000	236.2	244.1	6,000	236.2
	13,250							521.7	224.4				152.0						150.6	147.6	7,900	7,350	4,285	5,200	4,000	5,000	3,000	1,025	5,218		
15,250	600.4	320.1	232.3	152.0	150.6	147.6	311.0	289.4	168.7	244.1	236.2	244.1	6,000	236.2	244.1	6,000	236.2														
MVR45Hx	9,250	8,905	6,000	236.2	4,254	4,249	4,250	4,900	4,350	4,635	5,200	4,500	3,000	3,500	1,025		5,218														
	364.2							126.0	118.1				4,200						4,000	157.5											
	11,250							521.7	236.2				4,254						4,249	4,250	6,900	6,350	4,635	5,200	4,500	5,000	3,500	1,025	5,218		
	442.9							236.2	167.5				167.3						167.3	271.7	250.0	182.5	204.7	196.9	236.2	244.1	6,000	236.2	244.1	6,000	236.2
	13,250							521.7	236.2				167.5						167.3	167.3	7,900	7,350	4,635	5,200	4,500	5,000	3,500	1,025	5,218		
15,250	600.4	350.6	261.8	167.5	167.3	167.3	311.0	289.4	182.5	244.1	236.2	244.1	6,000	236.2	244.1	6,000	236.2														

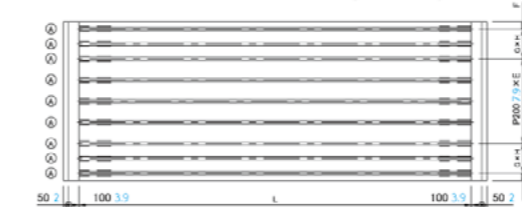
*Gear drive spindle specifications

Table Surface (Std.)



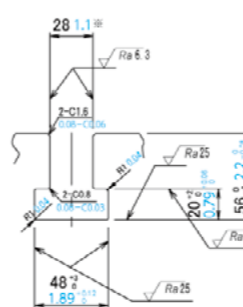
Item	Table width D mm	Table working length L mm	Number of Groove pitches N
MVR25Hx	1,500 59.1	3,000/4,000/5,000/6,000/8,000 118.1/157.5/196.9/236.2/315	11/15/19/23/31
MVR30Hx	2,000 78.7	3,000/4,000/5,000/6,000/8,000/10,000 118.1/157.5/196.9/236.2/315/393.7	11/15/19/23/31/39
MVR35Hx	2,500 98.4	4,000/5,000/6,000/8,000/10,000 157.5/196.9/236.2/315/393.7	15/19/23/31/39
MVR40Hx	3,000 118.1	4,000/5,000/6,000/8,000/10,000 157.5/196.9/236.2/315/393.7	15/19/23/31/39
MVR45Hx	3,500 137.8	6,000/8,000/10,000 236.2/315/393.7	22/31/36

Table Surface (X-axis direction groove specifications)

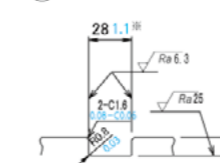


Item	Table width D mm	Table working length L mm	Number of Groove pitches			
			E	F mm	G mm	H
MVR25Hx	1,500 59.1	2,700/3,700/4,700/5,700/7,700 106.3/145.7/185/224.4/303.1	4	70 2.8	140 5.5	2
MVR30Hx	2,000 78.7	2,700/3,700/4,700/5,700/7,700 106.3/145.7/185/224.4/303.1	8	70 2.8	130 5.1	1
MVR35Hx	2,500 98.4	3,700/4,700/5,700/7,700 145.7/185/224.4/303.1	10	70 2.8	180 7.1	1
MVR40Hx	3,000 118.1	3,700/4,700/5,700/7,700 145.7/185/224.4/303.1	14	70 2.8	0 0	0

(A) detail



(B) detail



*Fixing groove standard based on JIS B 0952 (1999)

For special applications of grooves on table surface, please ask NIDEC Machine Tool (Option)

Standard Equipment

- MP scale feedback: X, Y, Z and W axis
- Spindle nose taper air blow system
- Air blow system
- Tool locking system with pull-stud MAS-II type (60°) MAS-I type (45°)
- Counter weight balanced type pendant control box (700 mm up & down)
- Manual pulse generator: Portable type/one-axis switching type
- Automatic tool changer (ATC) with 60 tools magazine
- Dummy plate
- Right Angle Head: VHRH-30-35-35P-AC
- Main operation panel and ATC operation panel
- Attachment storage rack for 2-attachment
- Crossrail way covers: Telescopic steel way covers
- Column way covers: Upper half: Steel covers, Lower half: Telescopic steel way covers
- Table bed way covers: Telescopic steel way covers
- Indication lamp (LED) (Red/Yellow/Green)
- Work light (LED) under the crossrail: 10 W × 2 pcs
- Coil type chip conveyor on both sides of the table bed in the front side
- Flood coolant supply system: Water-soluble, 0.5 MPa (71 psi), 20 L (5.3 gal)/min, MVR25Hx,30Hx: Tank capacity 600 L, MVR35Hx,40Hx,45Hx: Tank capacity 1,000 L

Optional Equipment

- Automatic pallet changer (MVR25Hx/30Hx): Short side replacement type (including 2 pallets)
- Automatic pallet changer (MVR25Hx/30Hx): Shuttle type (including 2 pallets)
- Automatic pallet changer (MVR35Hx/40Hx/45Hx): Cross-over type (including 2 pallets)
- Coolant guard around ATC and AAC portion only
- Coolant guard around ATC, AAC and front table side fences
- Coolant guard around ATC, AAC and front & rear table side fences without ceilings
- Coolant guard around ATC, AAC and front & rear table side fences with rear ceiling
- ATC shutter for Coolant guard
- Double swing-oped doors for loading / unloading workpieces
- Safety fence and safr doors around the machine
- Mortar "Non-shrink NS-GL" for fixing leveling block
- Special clumper for leveling block
- Spindle speed: 12,000 min⁻¹ (22/30 kW) with built-in motor
- Spindle speed: 4,000 min⁻¹ (22/30 kW) with gear drive
- Spindle speed: 6,000 min⁻¹ (22/30 kW) with gear drive
- Tool locking system with pull-stud: MAS-I type (45°) instead of MAS-II type (60°)
- Tool flange shape with CV type instead of BT type
- Column riser block for MVR25Hx, 30Hx: 360 mm
- Column riser block for MVR35Hx, 40Hx: 300 mm
- Extension of Y-axis stroke
- Twin ball screw feed (Z-axis stroke: 800 mm as std)
- Z-axis stroke: 1,000 mm with twin ball screw feed
- Flood coolant supply system: Oil-soluble coolant instead of water-soluble
- Coolant tank of MVR25Hx, 30Hx: 1,000 L tank instead of 600 L tank
- Coolant temperature control system
- Oil skimmer on coolant tank
- Filter stand for coolant filtration
- Hinged steel belt chip conveyor: Parallel to table longitudinal direction x2
- Addition of grating on the chip conveyor on both sides of the table bed. (full length on both sides)
- Hinged steel belt chip conveyor (Elevating type): Orthogonal to table longitudinal direction.
- Power driven pendant control box: 1,000 mm (39.4 in) up & down
- Coolant/air supply system through the spindle (Pump pressure 1.0 MPa(142 psi),20L/min)
- Coolant/air supply system through the spindle (Pump pressure 3.0 MPa(426 psi),20L/min)
- Mist coolant supply system (SMC)

Optional Attachment

- Strong type right angle head : VHRH-305-35-35P-AC (30 kW [40 HP], 4,000 min⁻¹)*1
- High speed type right angle head : VHRHH-15-35-35P-AC (15 kW [20 HP], 10,000 min⁻¹)*2
- Small type right angle head : VHRH-8-52-35P-AC (8 kW [11 HP], 500 min⁻¹)
- Extension milling head(long) : VMEH-25-50-35P-AC (25 kW [34 HP], 6,000 min⁻¹)
- Extension milling head(short) : VMEH-30-35-35P-AC (30 kW [40 HP], 8,000 min⁻¹)
- Small type extension milling head: VMEH-8-50-35P-AC (8 kW [11 HP], 3,000 min⁻¹)
- High speed extension milling head: VMEHH-30-35-35P-AC (30 kW [40 HP], 10,000 min⁻¹)*2
- High speed extension milling head : VMEHH-18.5-60-35P-AC (18.5 kW [25 HP], 15,000 min⁻¹)
- Small type extension milling head (built-in type) : VMEH-5-60-35P-AC (5 kW [6.5 HP], 3,000 min⁻¹)
- Universal head (Offset type) : VAUH-15-44-35P-AC (15 kW [20 HP], 5,000 min⁻¹)
- Universal head (Center head type) : VAUH-15-54-35P-AC (15 kW [20 HP], 6,000 min⁻¹)

Monitoring Function

- Overload monitor by the soft meter method including simple adaptive control
- Tool life monitor and Spare tool automatic replacement
- Automatic tool length measurement and compensation & Tool breakage monitoring
- Automatic workpiece measuring with standard measuring macro programs
- Manual workpiece measuring (Customer needs to prepare the probe sensor)

- Cooler unit for spindle housing and Internal spindle cooling system
- Heat stabilizing wall plate on back of the crossrail
- Hydraulic pump unit
- Intermittent lubrication and spindle oil-air lubrication units
- Leveling blocks and anchor bolts
- Wiring materials, electrical equipment, and NC system
- Standard paint colors
- Operator friendly functions (Nidec Navi)
- Tool management function
- 5-face machining software
- Earth leakage breaker: Sensitivity current 200 mA
- Monitoring system "DIASCOPE": Remote monitoring and operation monitoring
- Tool loading/Unload JIG to ATC magazine
- Thermally stabilized columns construction
- Spatial error correction function
- Coolant splash guard (Around ATC and AAC portion only)
- Coupler for coolant gun
- Coupler for air gun
- Relocation detection system

- Micro mist coolant supply system (Cooltech, Water-soluble coolant)
- Micro mist coolant supply system (Blube, Oil-soluble coolant)
- ATC (Automatic Tool Changer) tool magazine size:
 - Round type : 80, 100
 - Square type : 120
 - Zigzag type : 180
- Max tool length for ATC: 600 mm
- Max tool weight for ATC: 30 kg
- Deletion of Std. ATC magazine
- Air conditioner of NC panel
- Installation of an outlet (single-plug outlet rated at 100 VAC, 3A) to the control panel door
- Control panel illumination (LED) synchronized with the opening/closing of the door
- Yearly check
- Chip box
- Hydraulic pump unit (Inverter type)
- Preparation of the contacts for external M codes
- 3D data for machine (IGES type)
- GB standard as Chinese standard
- KCs standard as South Korea standard
- Language on NC, Machine plate and manuals: English
- Language on NC, Machine plate and manuals: Chinese
- Language on NC, Machine plate and manuals: Korean
- Standard Bar
- Red warning light.
- Ram lubrication oil recovering system.
- Air compressor (with air dryer): 1,500 NL/min
- Air dryer
- Custome macro desinated by customers
- Shaping function combined with C-axis control using flat cutting tool
- W-axis cutting feed (Std. for MVR45Hx)
- Machine layout drawing
- Addition of machine operation manuals (Hard copy)
- Addition of parts list (Hard copy)
- Spare parts for one year
- NC maintenance contract
- NAS machining accuracy verification (at the factory)
- Five-face machining accuracy verification (at the factory)
- Special color desinated by customers

- Addition of attachment rack for each attachment (Max 2 sets only)
 - For additional Right angle head
 - For Extension milling head
 - For Universal milling head
- Addition of attachment rack for additional Five attachments

*1: 4,000 min⁻¹ spindle (Opt.) should be required.
 *2: 12,000 min⁻¹ spindle (Opt.) should be required.

- Operation time accumulation
- Production number control
- Operation result output: Display/output to our original screens
- Automatic power OFF
- Automatic power ON

NC Specifications FANUC Series 31i-B Plus (For detailed specifications, refer to the NC operation manual.)

Standard Functions

Item	Description
Controlled axis	
Stored stroke check 1	
Stored stroke check 2,3	
Stroke limit check before move	
Mirror image	X,Y axis
inch/metric conversion	G20,G21

Operation	
Program / Sequence number search	
Sequence number comparison stop	
Jog feed	0~4,000mm/min. 157.5 ipm (22 step)
Manual reference position return	
Manual handle feed	Potable type manual handle, ×1, ×10, ×100
3-dimensional handle feed	Tool direction + normal direction
Manual handle interruption	One dimension

Interpolation functions	
Single direction positioning	G60
Exact stop mode / Exact stop	G61,G09
Dwell	G04
Helical interpolation	G02,G03, Circular interpolation plus max. 2 axes linear interpolation.
Reference position return / check	G28,G27
2nd reference position return	G30 (P2)
3rd/4th reference position return	G30 (P3,P4)
Tapping mode / Cutting mode	G63/G64
High speed skip	G31

Feed function	
Feed per minute	G94, mm/min ipm
Tangential speed constant control	
Cutting feedrate clamp	
Automatic acceleration / deceleration	Rapid traverse: linear, Cutinif feed:linear+exponential
Override cancel	M17 : Enable / M18 : Disable

Program input	
Optional block skip	Total 3
Decimal point programming / pocket calculator type decimal point programming	
Input unit 10 time multiply	0.01mm, 0.01deg, 0.001inch
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
Addition of workpiece coordinate system pair	G54.1, 48 pairs
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
Addition of custom macro common variables	600 (total), #100 ~ #199, #500 ~ #999
Interruption type custom macro	
Coordinate system rotation	G68, G69
3-dimensional coordinate conversion	
Canned cycles	G73, G74, G76, G80~G89
Circular interpolation by R programming	12-digit, 999999999.999mm, 99999999.999inch
Program format for FS15	For detailed specifications, refer to the NC operation manual.

Auxiliary / Spindle speed function	
2nd Auxiliary function	U5 digit
Spindle speed function	S5 digit

Tool function / Tool compensation	
Tool offset pairs	±7-digit 400
Tool offset memory C	Distinction between geometry and wear, or between cutter and tool length compensation
Tool length compensation	G43,G44,G49
Tool offset	G45,G46,G47,G48
Cutter compensation C	
Tool Management System	T8-digit
Automatic tool length measurement	

Editing operation	
Part program storage capacity	4Mbyte (10,240m)
Program editing	Number of registerable program number 500
Background editing	Extending program Editing function
Program protect	
Playback	

Standard Functions

Item	Description
Setting and display	
Status / Clock / Cutting position display	
Program display	Program name 31 characters
Self diagnosis function	Self diagnosis in NC system
Alarm display / Alarm history display	
Run hour and parts count display	
Graphic function	
Dynamic graphic display	
Actual cutting federate display	
Multi-language display	English / Japanese / Chinese / Korean version
Data protect Function	1 type
Erase CRT screen display	

Data input/output	
USB memory input/output	
Embedded Ethernet interface	100base-Tx1ch
Display	
Settings display device	15" color touch panel

Optional Functions

Item	Description
Operation	
Tool retract and recover	
Interpolation functions	
Conical / spiral interpolation	G02,G03
Polar coordinate interpolation	G12.1, G13.1
Threading, synchronous cutting	Including "Dwell in seconds" and "Feed per revolution(G95)"
Multi step skip	This function is required for Tool breakage monitor / Automatic tool length measurement
ZW axis interpolation control	
Avoiding OT area intrusion	

Feed function	
One-digit F code feed	
Feed stop	
Program input	
Polar coordinate command	G15, G16
Addition of workpiece coordinate system pair	G54.1, 300 pairs
Automatic corner override	G62
Scaling	G50, G51
Programmable mirror image	G50.1, G51.1
Figure copy	G72.1, G72.2
Retrace	Cannot select this function if interruption type custom macro is selected

Auxiliary / Spindle speed function	
Rigid tapping	Including 3D rigid tap and rigid tap return

Tool function / Tool compensation	
Tool offset pairs	±7-digit 999
3-dimensional cutter compensation	G40, G41
Tool Life Management	240 pairs, 1000 pairs, Tool Management system version

Editing operation	
Part program storage capacity	8Mbyte (20,480m)
Number of registerable program	4000 pairs
Extending the number of memory card program registrations	Number of program : 500 or 1000
Machining time stamp	

Hi-speed cutting function	
AI Contour Control I	Number of blocks read ahead : 30 blocks, designed mainly for part machining
AI Contour Control II	Number of blocks read ahead : 200 blocks, machining of successive minute straight lines
LOOK-AHEAD BLOCKS EXPANSION1	Number of blocks read ahead : 600 blos (AI Contour Control II selection required)
LOOK-AHEAD BLOCKS EXPANSION2	Number of blocks read ahead : 1000 blos (AI Contour Control II selection required)
SMOOTH TOLERANCE+ CONTOROL	AI Contour Control II selection required
AI feed forward	Suppresses vibration during acceleration / deceleration

Data input/output	
Reader/puncher interface	RS232C x 1ch
Reader/puncher interface expansion of receiving buffer	Remote Buffer Interface
Data server	Memory device : ATA FLASH CARD, I/F : 100base-T(1ch)
Program Transfer Tool	For CNC Part program storage memory, Application software for PC



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46992 Liberty Drive, Wixom, MI 48393 U.S.A.
Phone: +1-248-669-6136 Facsimile: +1-248-669-0614
<https://www.nidec-machinetoolamerica.com>

NIDEC DRIVE TECHNOLOGY DE MEXICO, S. de R.L. de C.V.
Parque Industrial NAVEX PARK, Callejón de la Evangelización #106,
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Phone: +52-442-242-3351

Nidec-Shimpo do Brazil Imp., Exp. e Com. de Equip. Ltda.
Estrada General Motors, 852 - Galpão 11 & 12, Indaiatuba - SP
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Phone: +55-11-5071-0015

Nidec-Shimpo GmbH
Ludwigstrasse 9, 80539 Munich, Germany
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Manufacturing bases

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<https://federalbroach.com/>

Southeast Broach Company - South Carolina LLC
431 S Buncombe Rd Greer, SC 29650 U.S.A.
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<https://www.sebroach.com/index-2.html>

Nidec India Precision Tools Ltd.
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Phone: +91-4172-244361

Nidec Machine Tool (Changshu) Corporation
181 Huangpujiang Road,
Changshu New & Hi-tech Industrial Development Zone,
Changshu City, Jiangsu Province 215500, P.R. China
Phone: +86-512-5230-3030



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.