OKK

VP Series

VP400
VP500
VP600

High-speed, High-accuracy
Hyper Machining Center

Higher Speed and Higher Precision!
Hyper MCs Debut to Respond to Users' Advanced Needs.

OKK ŝ new series of hyper machining centers“ VP Series ”are the most efficient ever in the manufacturing fields of dies, jigs and tools that demand higher speed and precision along with the mass processing field that requires maximum productivity.

High-speed, High-accuracy
Hyper Machining Center

VP Series

High Response

VP500, 2APC Specification
(Direct-turn APC)
※Signal lamp (Option)

VP400, Standard Specification

VP600-5AX Specification
(Table-side Tilting & Rotary Method)

*For details of the 5-axis specification, refer to the 5AX catalog.

● Main features

▶ Seven models to choose from

Seven models consisting of two standard models, two 5-axis specification models, and three 2APC models are available to meet specific needs of users.

▶ High performance for improved productivity

The VP Series offers the spindle rotating speed of 12000 rpm, rapid traverse speed of 48 m/min (1890 ipm) for X and Y axes and 36 m/min (1418 ipm) for Z axis, and tool change time (tool-to-tool) of 1.2 seconds.

▶ New structure and new technologies for enhanced machining accuracy. Equipped with linear roller guides. Improved fine-motion feed control and circular cutting accuracy. Minimal thermal displacement.

▶ New and advanced European design

European-standard style for superb operability and workability.

●The machines in the photographs of this brochure may include optional accessories.

High-speed, High-accuracy Hyper Machining Center

VP 400
VP 600

● Standard Specification

Cutting rigidity is improved and minute feed characteristic is assured by adoption of massive main body structure, highly rigid linear roller guide and double anchoring method.

VP 600

Drastically reduced workpiece machining time

Rapid traverse rate	48 m/min(1890 ipm)(X and Y)
	36 m/min (1418 ipm)(Z)
Maximum feed acceleration	0.7 G
Spindle startup time	1.5 s (0 →12000 rpm)※
Tool changing time	1.2 s (Tool-to-Tool)
	3.8 s (Cut-to-Cut)

※With spindle motor 22/18.5kW (30/25HP), option

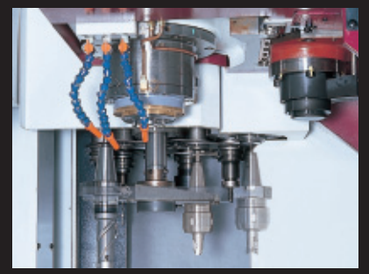
Standard provision of 12000rpm spindle

Cutting performance is largely improved by the use of the motorized spindle (MS) which integrates a motor covering a wide and high output range. Acceleration time of the spindle can be as short as only 1.5 seconds (※) from the non-operating state to the speed of 12000 rpm. High-speed spindle of 20000 rpm or 22/18.5-kW (30/25HP) high-power spindle can also be adopted optionally.

※With spindle motor 22/18.5kW (30/25HP), option

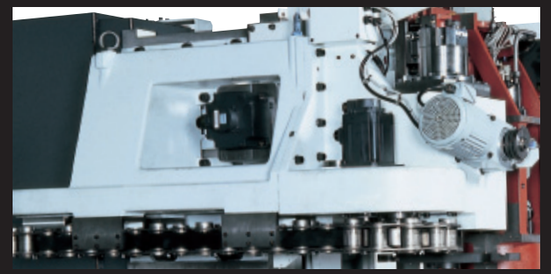
OKK's original tool changer ensures stable and high-speed operation

Tool changer adopts an OKK's original mechanism to completely synchronize between the ATC unit and the spindle and assures the stable operation and the tool changing time of 1.2 seconds (tool-to-tool) / 3.8 seconds (cut-to-cut).



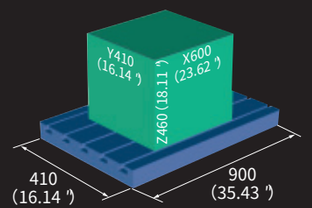
Extensive tool storage capacity

In addition to the standard provision of 20-tool magazine, optionally available are 30-tool magazine and separate type magazines for 40-tool, 60-tool, 80-tool and 120-tool storage.

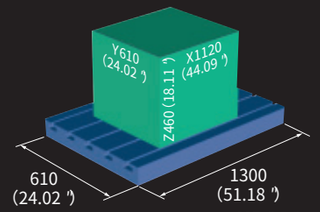


Wide machining area for versatile workpieces

VP400 table



VP400



VP600

●The machines in the photographs of this brochure may include optional accessories.

Machining with High Accuracy

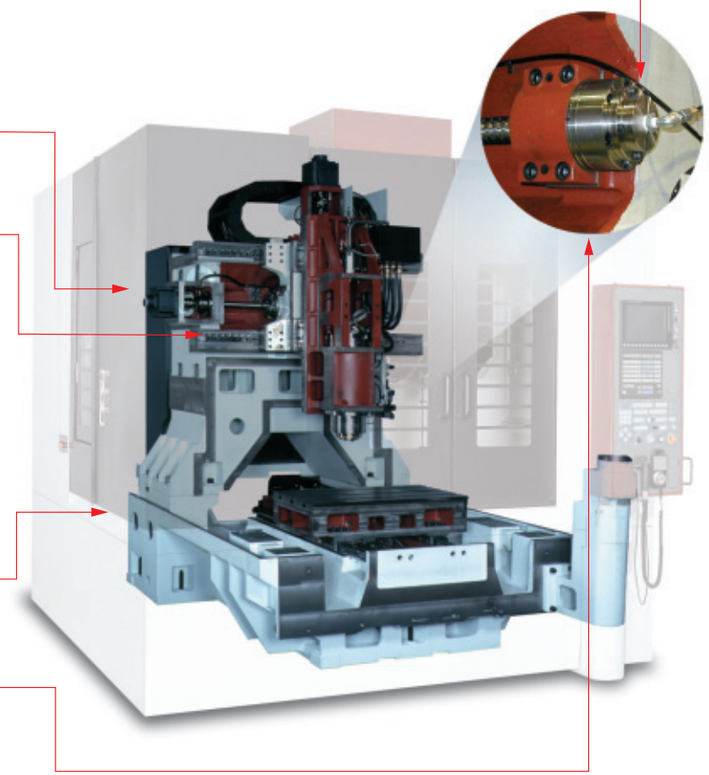
Core cooling system in the ball screw and its supports minimizes thermal displacement caused by the high-speed axis movement.

Double-anchoring method used for the ball screw support and improvement rigidity of the feed-system servo minimizes lost motion. (Chart 1)

Optimum arrangement of the spindle head and the saddle ensures improved thermal stability in the Y-axis direction and improved motion rigidity. (Fig. 1)

Use of the highly-rigid linear roller guides with minimum friction coefficient has improved the fine-motion feed control and the circular cutting accuracy. (Chart 2 + Fig. 3)

Use of the Soft Scale for compensating thermal displacement of the spindle and the HQ (High & Quick Response) control assures high and stable machining accuracy. (Fig. 2)



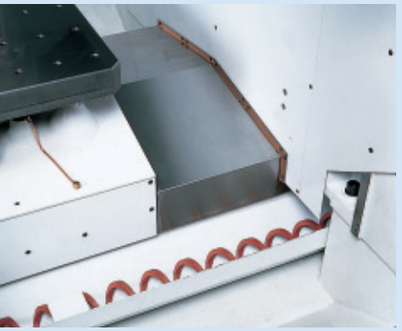
Structure with High Rigidity

Machine main body with thick-walled box-shaped structure and further improved thermal stability of the casting as a part of a thorough thermal displacement countermeasures.

Using the double-anchoring method for the ball screw support, improves the feeding rigidity four times as high as the conventional machines.

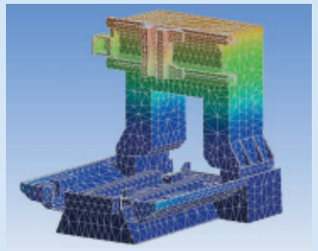
Measures for Ecology

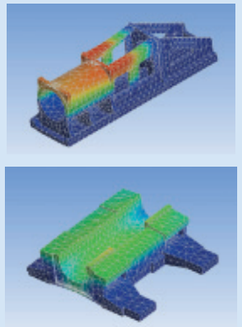
Grease lubrication is used for the spindle bearing and the ball screw feed guide sections.



To prevent the main body structure from being exposed to coolant directly, the coolant shelter is provided as standard equipment, and all possible measures are taken against thermal displacement.

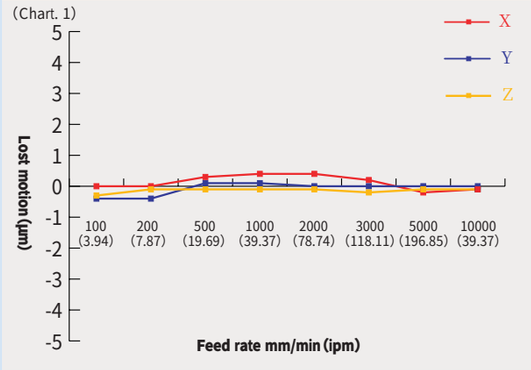
Rigidity Analysis by Finite Element Method (FEM) (Fig.1)



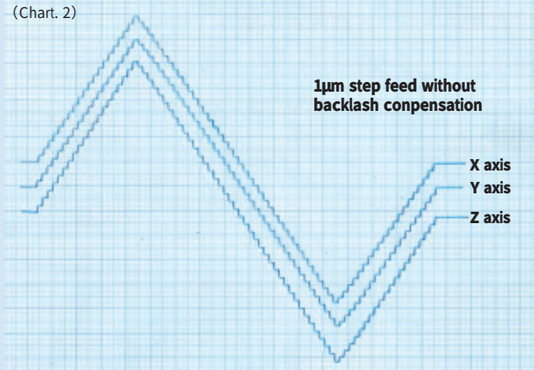


High-accuracy motion characteristic proved by the data

Lost Motion Measurement Data
(Actual Measurement Value)

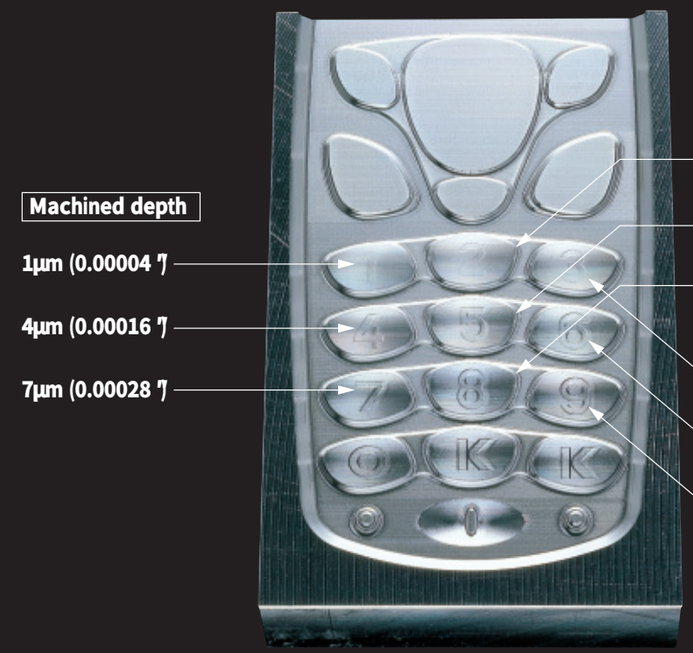


Minute Feed Measurement Data
(Actual Measurement Value)



The data obtained under the OKK's internal testing conditions are shown here. The data obtained may vary with status of the machine.

(Fig. 2)



Cellular phone
(Machining of slightly different depth)

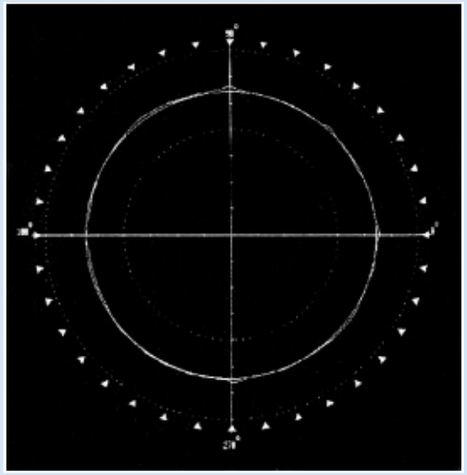
Model: VP400
Machined time: 3 hours
Workpiece size: 80 x 50 x 15 mm (3.15 "×1.97 "×0.59 ")
Spindle speed: 12000 rpm

Feed rate: 600 to 4000 mm/min (23.62 to 157.48 ipm)
Workpiece material: NAK80 (HRC40)
Type of tool used: R2 to R0.5 ball end mill

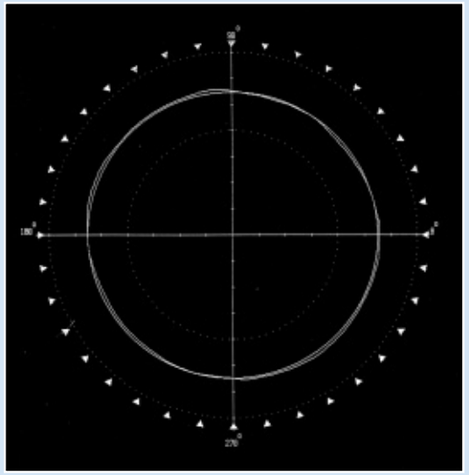
Listed data may not be attainable due to cutting conditions and other circumstances.

		Tolerance	Actual value
Straightness per full stroke :μm (inch)	X-Y	VP400:5 (0.0002 ") VP600:5 (0.0002 ")	VP400:X2 (0.00008 ") Y1 (0.00004 ") VP600:X4 (0.00016 ") Y2 (0.00008 ")
	Y-Z	5 (0.0002 ")	2 (0.00008 ")
	Z-X	5 (0.0002 ")	2 (0.00008 ")
Perpendicularity :μm (inch)	X-Y	5μm/300mm (0.0002 "/11.81 ")	2 (0.00008 ")
	Y-Z (full stroke)	8 (0.00031 ")	4 (0.00016 ")
	Z-X (full stroke)	8 (0.00031 ")	2 (0.00008 ")
Positioning accuracy per full stroke :μm (inch)	X	±2.0 (±0.00008 ")	±0.5 (±0.000020 ")
	Y	±2.0 (±0.00008 ")	±0.6 (±0.000024 ")
	Z	±2.0 (±0.00008 ")	±0.7 (±0.000028 ")
Positioning repeatability per full stroke :μm (inch)	X	±1.0 (±0.00004 ")	±0.4 (±0.000016 ")
	Y	±1.0 (±0.00004 ")	±0.3 (±0.000012 ")
	Z	±1.0 (±0.00004 ")	±0.2 (±0.000008 ")
Spindle runout on table surface (for 300mm (11.81 ") distance)	X-axis direction	8 (0.00031 ")	3 (0.00012 ")
	Y-axis direction	8 (0.00031 ")	1 (0.00004 ")
Spindle runout :μm (inch)(with a test bar mounted)	At base	3 (0.00012 ")	1 (0.00004 ")
	At 300 mm (11.81 ")	12 (0.00047 ")	8 (0.00031 ")
Circularity :μm (inch) ϕ250mm, F500 (9.84 ", 19.69 ipm)	CW	5 (0.00020 ")	2.4 (0.000094 ")
	CCW	5 (0.00020 ")	2.6 (0.000102 ")
Spindle vibration value :μm (inch)	X Y direction		3 (p-p)

Circular Cutting Accuracy (Fig. 3)



F500:2.4μm (19.69 ipm:0.000094 ")



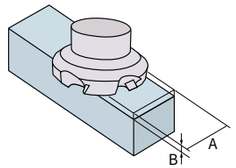
F5000:2.6μm (196.85 ipm : 0.000102 ")

NOTES
※The values indicated above are of the standard specification machine having no linear scale.
※The sample data above was obtained in the short-time processing. The results may vary in the continuous processing.
※The sample data above was obtained under the OKK 's internal cutting test conditions. The results may vary with the tools and fixtures used for processing.

Sample Cutting Data (VP600) (Workpiece material:S43C)

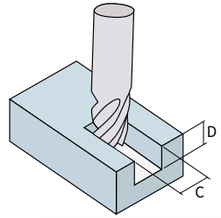
Values are for reference only.

Face milling ϕ100×5t (Standard spec.) ϕ80×4t (High power spec.)



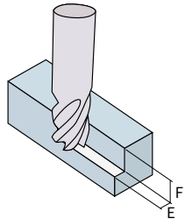
	Standard specification	High-power specification
Spindle speed	1000 rpm	1200 rpm
Cutting speed	314 m/min (8425 ipm)	300 m/min (1181 ipm)
Cutting width (A)	80 mm (3.15 ")	60 mm (2.36 ")
Cutting depth (B)	3 mm (0.12 ")	4 mm (0.16 ")
Feed rate	700 mm/min (27.56 ipm)	1450 mm/min (57.09 ipm)
Feed per tooth	0.14 mm/tooth (0.0055 "/tooth)	0.3 mm/tooth (0.012 "/tooth)
Cutting amount	168 cm³/min (10.1cu-inch/min)	348 cm³/min (20.9 cu-inch/min)
Spindle motor load	109 %	70 %

Grooving ϕ32×2t



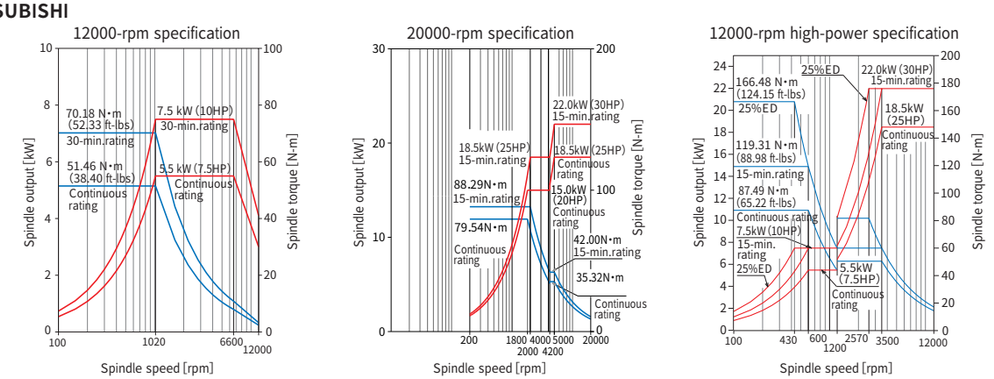
	Standard specification	High-power specification
Spindle speed	1400 rpm	1400 rpm
Cutting speed	141 m/min (5551 ipm)	141m/min (5551 ipm)
Cutting width (C)	32 mm (1.26 ")	32 mm (1.26 ")
Cutting depth (D)	5 mm (0.2 ")	5 mm (0.2 ")
Feed rate	1000 mm/min (39.37 ipm)	1200 mm/min (47.24 ipm)
Feed per tooth	0.357 mm/tooth (0.014 "/tooth)	0.4 mm/tooth (0.016 "/tooth)
Cutting amount	160 cm³/min (9.6cu-inch/min)	192 cm³/min (11.5cu-inch/min)
Spindle motor load	103 %	65 %

Side cutting ϕ16×4t

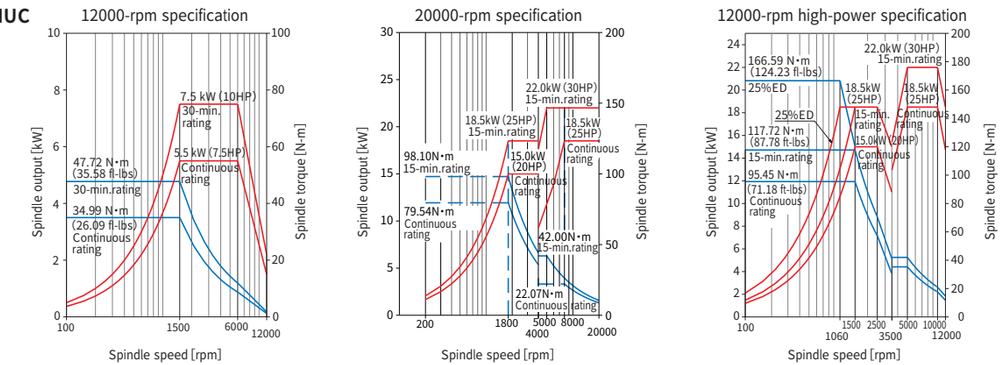


	Standard specification	High-power specification
Spindle speed	4000 rpm	6000rpm
Cutting speed	200 m/min (7874 ipm)	300 m/min (11811 ipm)
Cutting width (E)	1.5 mm (0.059 ")	2 mm (0.08 ")
Cutting depth (F)	30 mm (1.18 ")	24 mm (0.94 ")
Feed rate	2800 mm/min (110.24 ipm)	6000 mm/min (236.22 ipm)
Feed per tooth	0.175 mm/tooth (0.007 "/tooth)	0.25 mm/tooth (0.01 "/tooth)
Cutting amount	126 cm³/min (7.6cu-inch/min)	288 cm³/min (17.3cu-inch/min)
Spindle motor load	64 %	57 %

■MITSUBISHI



■FANUC



●For VP400 and VP600, the 12000-rpm specification is standard specification.
For VP500-2APC, the high-power specification is standard specification.

VP 400
VP 500
VP 600

● 2APC Specification

VP500, 2APC Specification

Realizes the pallet change in the shortest time in its class and the largely reduced non-cutting time

Pallet size

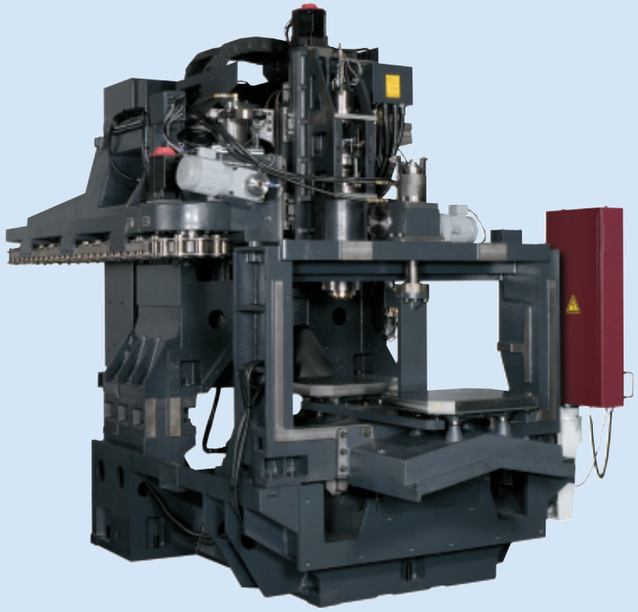
- ■VP400:500×400mm (19.69 "×15.75 ")
- ■VP500:600×500mm (23.62 "×19.69 ")
- ■VP600:800×500mm (31.50 "×19.69 ")

VP400, 2APC Specification

※Signal lamp (Option)

● Automatic Pallet Changer

OKK 's original cam-driving type pallet changer realizes the pallet exchange in the shortest time in the class i.e. 5.0 seconds on VP400, 7.0 seconds on VP500, and 8.0 seconds on VP600.



※Signal lamp (Option)

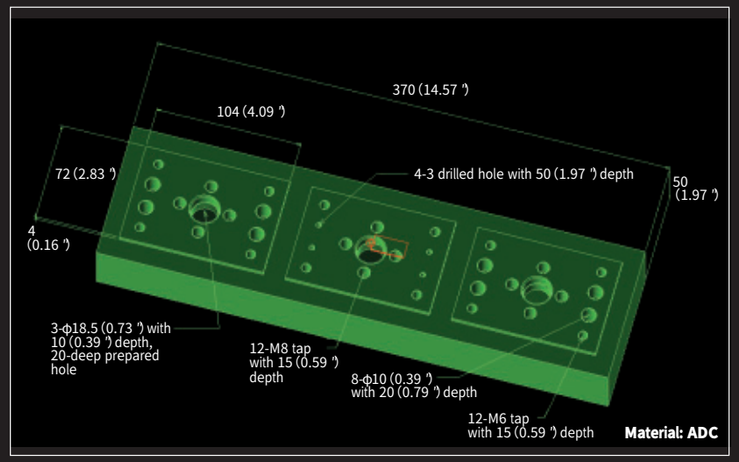
VP400, 8APC (80-tool Magazine) Specification

●The machines in the photographs of this brochure may include optional accessories.

Sample Cutting Data

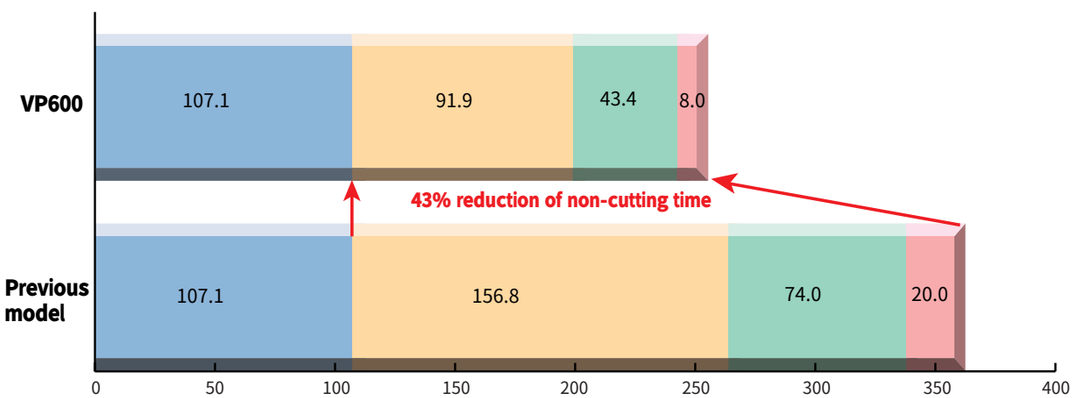
43% reduction of non-cutting time
(Comparison with our previous model)

- **Acceleration 0.6G (X)**
- **Rapid traverse rate 48 m/min (1890 ipm)**
- **ATC time 1.2 s (Tool-to-Tool)**
- **APC time 8 s (VP600)**



Unit: sec

	Actual cutting time	Positioning	ATC	APC	Total	Difference in time
VP600	107.1	91.9	43.4	8.0	250.4	
Previous model	107.1	156.8	74.0	20.0	357.9	107.5



Number of tools used : 10
Comparison is made under the same feed rate.

●The machines in the photographs of this brochure may include optional accessories.

●Main Specifications

Item		VP400	VP500-2APC	VP600
Travel on X axis (Saddle:right/left)		600mm (23.62 ")	600mm (23.62 ")	1120mm (44.09 ")
Travel on Y axis (Table:back/forth)		410mm (16.14 ")	510mm (20.08 ")	610mm (24.02 ")
Travel on Z axis (Spindle head:up/down)		460mm (18.11 ")	460mm (18.11 ")	460mm (18.11 ")
Distance from table top surface to spindle nose		150～610mm (5.91 "～24.02 ")	150～610mm (5.91 "～24.02 ")	150～610mm (5.91 "～24.02 ")
Distance from column front to spindle center		620mm (24.41 ")	620mm (24.41 ")	740mm (29.13 ")
Table work surface area (X-axis direction × Y-axisdirection)		900×410mm (35.43 "×16.14 ")	(Pallet) 600×500 (23.62 "×19.69 ")	1300×610mm (51.18 "×24.02 ")
Max. workpiece weight loadable on table		500kg (1100 lbs)	(Pallet) 400kg (880 lbs)	1200kg (2640 lbs)
Table work surface configuration (Number and nominal dimension of T slots and spacing)		Three 18-mm (0.71 ") T slots with 125-mm (4.92 ") pitch	(Pallet) 45pcs×M12 screw hole (nominal size)	Five 22-mm (0.87 ") T slots with 125-mm (4.92 ") pitch
Height from floor level to table work surface		800mm (31.5 ")	1000mm (39.37 ")	850mm (33.46 ")
Spindle speed		100～12000rpm	100～12000rpm	100～12000rpm
Number of spindle speed shift steps		Stepless	Electrical 2 speeds	Stepless
Spindle nose (nominal number)		7/24 taper No. 40	7/24 taper No. 40	7/24 taper No. 40
Spindle bearing bore diameter		φ65mm (2.56 ")	φ65mm (2.56 ")	φ65mm (2.56 ")
Rapid traverse rate		48 m/min (X and Y axes), 36 m/min (Z axis)	48 m/min (X and Y axes), 36 m/min (Z axis)	48 m/min (1890ipm), 36 m/min (1417ipm)
Cutting feed rate		1 (0.04) ～36000mm/min (1417ipm) ※1	1 (0.04) ～36000mm/min (1417ipm) ※1	1 (0.04) ～36000mm/min (1417ipm) ※1
ATC (Automatic Tool Changer)				
Type of tool shank (Nominal number)		JIS B 6339 BT40	JIS B 6339 BT40	JIS B 6339 BT40
Type of pull stud (Nominal number)		MAS 403 P40T-1	MAS 403 P40T-1	MAS 403 P40T-1
Tool storage capacity		20 tools	20 tools	20 tools
Maximum tool diameter		φ110 (4.33 ")	φ110 (4.33 ")	φ110 (4.33 ")
Maximum tool length (from the gauge line)		300mm (11.81 ")	300mm (11.81 ")	300mm (11.81 ")
Maximum tool weight		7kg (15.4 lbs)	7kg (15.4 lbs)	7kg (15.4 lbs)
Tool selection method		Memory random method	Memory random method	Memory random method
Tool changing time (tool-to-tool)		1.2 s	1.2 s	1.2 s
Tool changing time (cut-to-cut)		3.8 s	3.8 s	3.8 s
Motor				
Spindle motor (30-min rating/continuous rating)		AC 7.5/5.5kW (10/7.5HP)	AC 22/18.5kW (30/25HP) ※2	AC 7.5/5.5kW (10/7.5HP)
Feed motors	MITSUBISHI	X/Y:2.0/Z:3.5kW (2.7/4.7HP)	X/Y:2.0/Z:3.5kW (2.7/4.7HP)	X/Y:2.0/Z:3.5kW (2.7/4.7HP)
	FANUC	X/Y/Z : 4.5 kW (6.0HP)	X/Y/Z : 4.5 kW (6.0HP)	X/Y/Z : 4.5 kW (6.0HP)
Coolant pump motor		0.4kW (0.54HP)	0.4kW (0.54HP)	0.4kW (0.54HP)
Motor for spindle head oil cooler pump		0.4kW (0.54HP)	0.4kW (0.54HP)	0.4kW (0.54HP)
Motor for magazine		MITSUBISHI 1.5kW (2.0HP)	MITSUBISHI 1.5kW (2.0HP)	MITSUBISHI 1.5kW (2.0HP)
		FANUC 1.4kW (1.9HP)	FANUC 1.4kW (1.9HP)	FANUC 1.4kW (1.9HP)
Required power supply				
Power supply		MITSUBISHI 31 kVA FANUC 28 kVA	MITSUBISHI 52 kVA FANUC 50 kVA	MITSUBISHI 31 kVA FANUC 28 kVA
Supply voltage		AC200V ±10% AC220V ±10%※3	AC200V ±10% AC220V ±10%※3	AC200V ±10% AC220V ±10%※3
Supply frequency		50/60±1 60±1	50/60±1 60±1	50/60±1 60±1
Compressed air supply pressure		0.4～0.6MPa (57.1～85.7psi)	0.4～0.6MPa (57.～85.7psi)	0.4～0.6MPa (57.1～85.7psi)
Air supply flow rate (atmospheric pressure)		160 L/min (ANR) 42.3GDM	400L/min(ANR)(105.7GDM)	160 L/min (ANR)
Spindle cooling oil tank capacity		50 L (13.2gal)	50 L (13.2gal)	50 L (13.2gal)
Coolant tank capacity		280 L (74gal)	280 L (74gal)	280 L (74gal)
Machine height (from floor level)		2746mm (108.11 ")	2946mm (115.98 ")	2796mm (110.08 ")
Floor space required for operation (left-to-right × depth)		2016×2690mm (79.37 "×105.91 ")	2016×3315mm (79.37 "×130.51 ")	2516×3100mm (99.05 "×122.05 ")
Required floor space incl. maintenance area (left-to-right × depth)		3000×3300mm (118.11 "×129.92 ")	3000×3800mm (118.11 "×129.92 ")	3500×3700mm (137.80 "×145.67 ")
Machine weight		8000kg (17600 lbs)	10000kg (22000 lbs)	10500kg (23100 lbs)
Controller	MITSUBISHI	Neomatic 730	Neomatic 720 (730)	Neomatic 730
	FANUC	FANUC 180 (160) is-MB	FANUC 32 (31) i-A	FANUC 180 (160) is-MB
Environmental temperature		5～40℃	5～40℃	5～40℃

※1:Under the HQ or Hyper HQ control.
※2:High-power specification (15-min rating/continuous rating)
※3:When the supply voltage is 220VAC, 60Hz only is applicable for the supply frequency.

●Standard Accessories

Item	Q'ty
Lighting unit	1 set
Coolant unit (Separate type coolant tank)	1 set
Splash guard (Overall machine cover)	1 set
X/Y axes slideway protection cover	1 set
Spindle head cooling oil temperature controller	1 set
Automatic grease supply unit	1 set
Automatic power off (at M02/M30)	1 set
Leveling block	1 set
Parts for machine transportation	1 set
Electrical spare parts (fuses)	1 set
Instruction manual	1 copy
Electrical instruction manual (operating manual,maintenance instruction manual, parts list, and hardware diagrams)	1 copy
ATC shutter (Only for VP500-2APC)	1 set
Air/oil pressure suply unit for fixtures (Only for VP500-2APC)	1 set

●Special Accessories (Option)

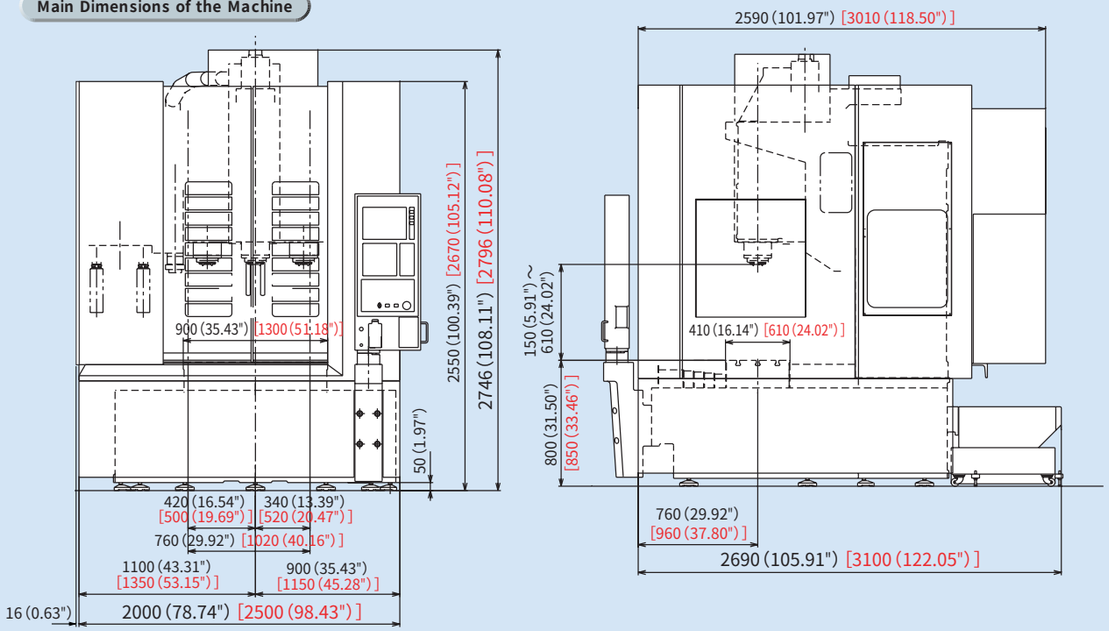
Item	Contents
High-speed spindle	20000 rpm 22/18.5kW (30/25HP)
Compatibility with two-face locking tool	
Increased spindle driving motor power (VP400/VP600)	22/18.5kW (30/25HP) (15-min rating/ continuous rating)
Tool storage capacity	30, 40, 60, 80, 120 tools [※4]
Pallet changer	Direct-turn type
Coil-type chip conveyor built in the bed	2 conveyors
Lift-up type chip conveyor	Scraper type/ Scraper type with floor magnet/ Drum type for aluminum chips
Application of oil hole holder	Nikken / BIG / Others [※5]
Application othrough-spindle	2 MPa / 7 MPa (280/1000 psi)
Cartridge for Automatic lubricating unit	
Workpiece flushing gun	
Oil mist, air blower	
Air blower	
Signal lamp	2-lamp type / 3-lamp type
Automatic splash guard operation	
NC rotary table	Rotary table type [※5]
Coolant cooler	
Mist collector	
Touch sensor system T0 (Manual)	Workpiece measurement, Tool length/diameter measurement
Touch sensor system T1 (Automatic)	Workpiece measurement, Tool length/diameter measurement Tool break detection
Tool breakage detection with limit switches	
Linear scale	0.1μm (0.000004 ") absolute positiondetection for X, Y and Z axes

[※4] : When the tool storage capacity is 40 or more, maximum diameter of the tools is restricted to 82mm and the address fixed method is used for selection of tools.
[※5] : Inform us of the desired manufacturer and model.

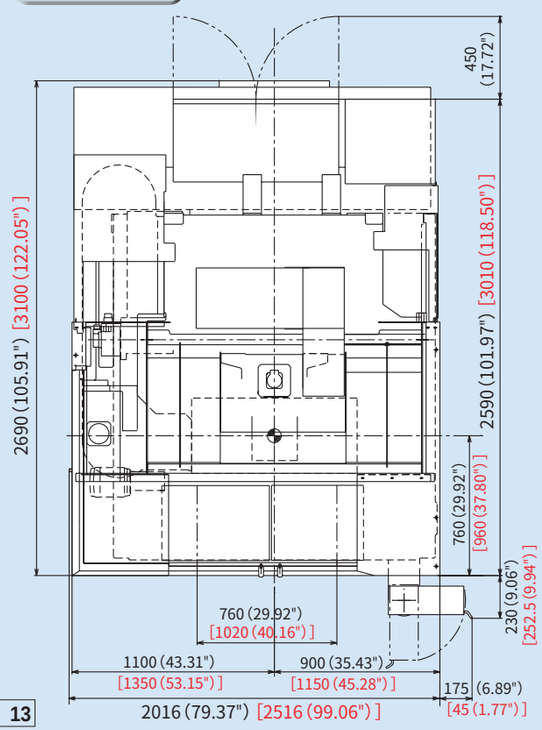
●Standard Specification (VP400/600)

[ ]: VP600 dimensions

Main Dimensions of the Machine

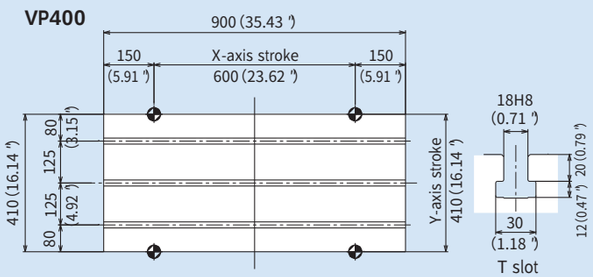


Floor Space

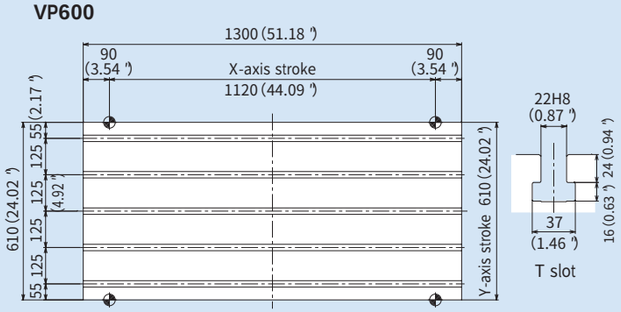


Table

VP400



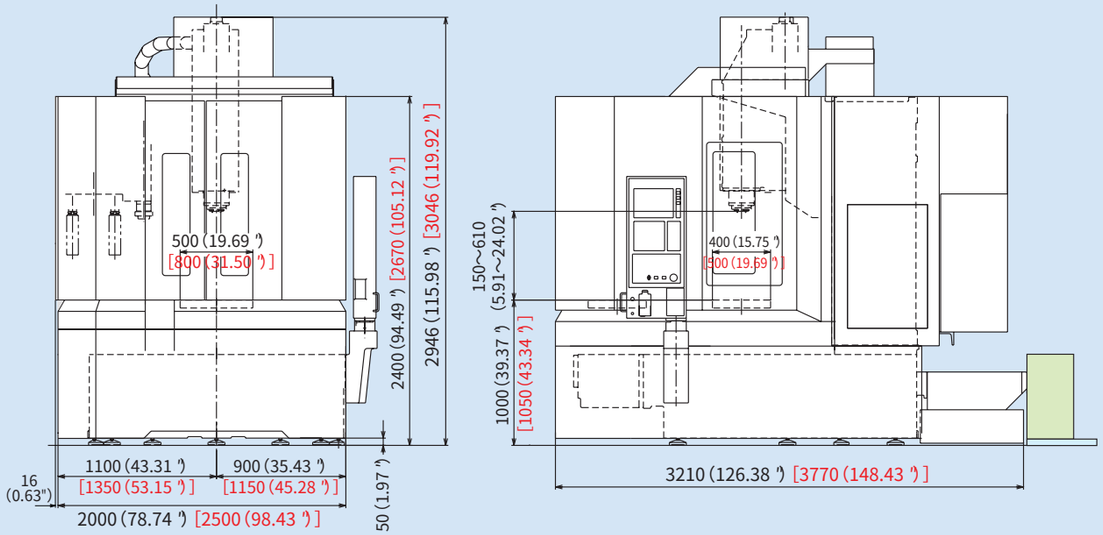
VP600



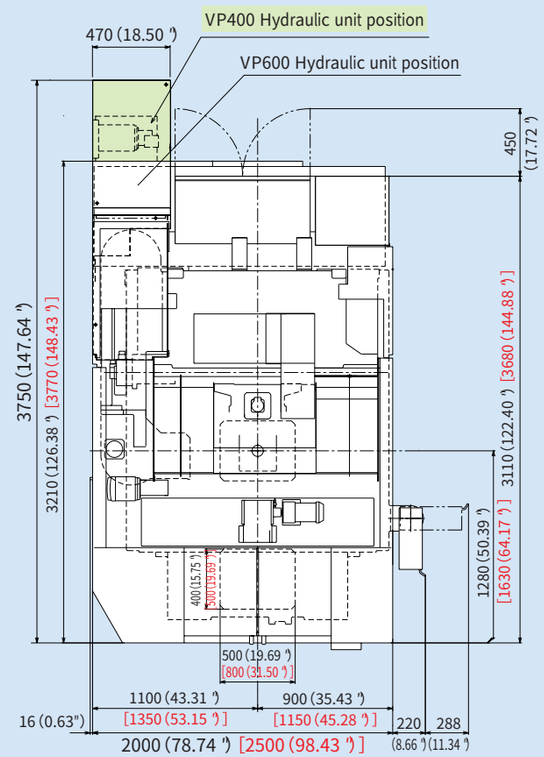
●APC Specification (VP400/600)

[ ]: VP600 dimensions

Main Dimensions of the Machine

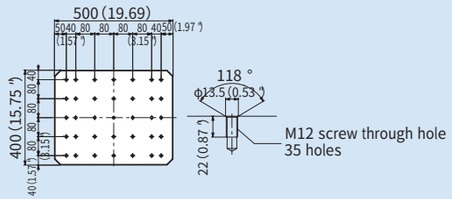


Floor Space

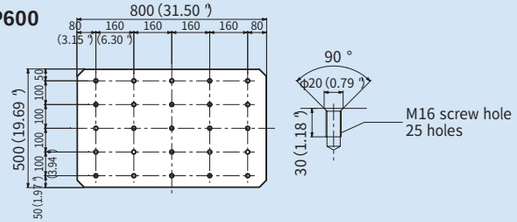


Pallet

VP400



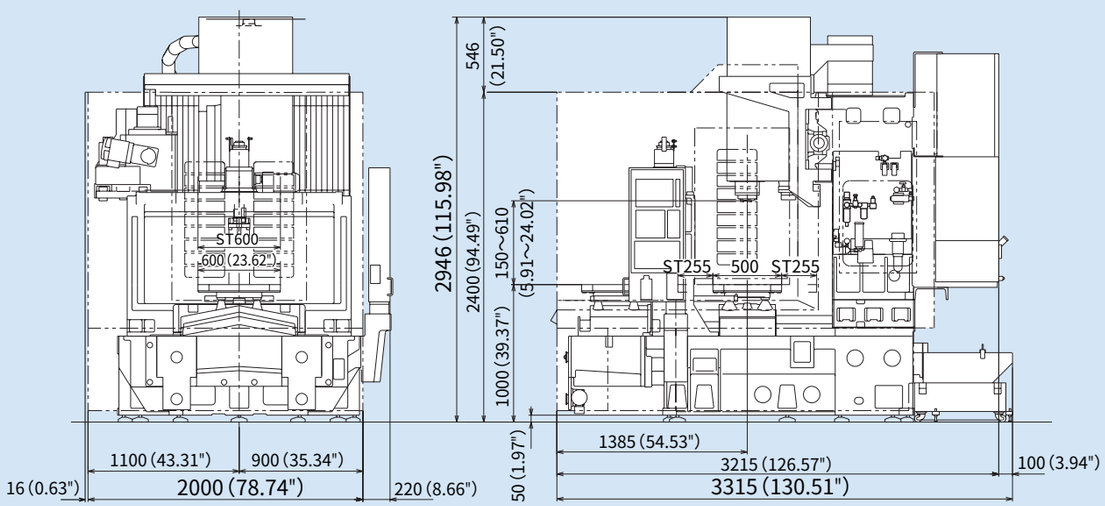
VP600



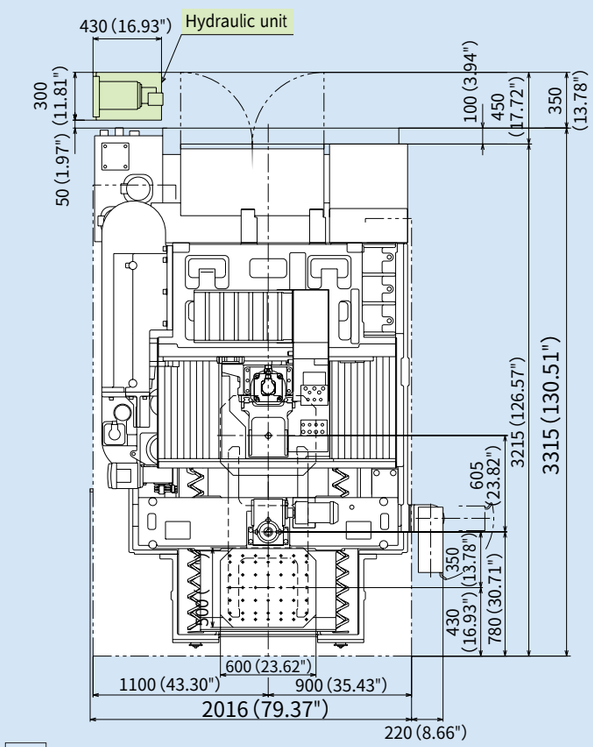
Item	VP400	VP600
Pallet changing method	Direct-turn method	
Pallet size	500mm×400mm (19.69"×15.75")	800mm×500mm (31.50"×19.69")
Pallet top surface machining	M12 taps	M16 taps
Max. weight loadable on pallet	300 kg (660 lbs)	500 kg (1100 lbs)
Pallet positioning method	4 taper cones	
Pallet changing time	5.0 s	8.0 s
Machine height	2946mm (115.98")	3046mm (119.92")
Required floor space (left-to-right × depth)	2016mm×3210mm (79.37"×126.38")	2516mm×3770mm (99.05"×148.42")
Machine weight	9500kg (20900 lbs)	12500kg (27500 lbs)

●APC Specification (VP500-2APC)

Main Dimensions of the Machine

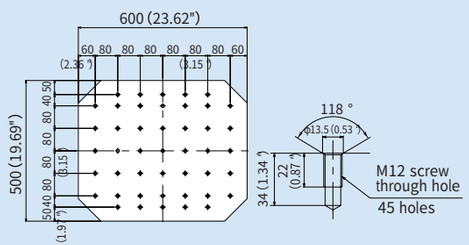


Floor Space



Pallet

VP500-2APC



Item	VP500-2APC
Pallet changing method	Direct-turn method
Pallet size	600mm×500mm (23.62"×19.69")
Pallet top surface machining	M12 taps
Max. weight loadable on pallet	400 kg (880 lbs)
Pallet positioning method	4 taper cones
Pallet changing time	7.0 s
Machine height	2946mm (115.98")
Required floor space (left-to-right × depth)	2016mm×3315mm (79.37"×130.51")
Machine weight	10000kg (22000 lbs)

CONTROLLER

Neomatic 730 VP400, VP600 Neomatic 720 (730) VP500-2APC

Standard Specification

No.of controlled axes: 3 axes (X, Y, Z)
No.of simultaneously controlled axes: 3 axes
Least input increment: 0.001mm/0.0001"
Minimum control unit: 1nm (N730)/10nm (N720)
Max. programmable dimension: ±99999.999mm
Absolute/incremental programming: G90/G91
Decimal point input I/II
Inch/Metric conversion: G20/G21
NC tape: EIA/ISO data input format
Program format: Meldas standard format
(M2 format: Instruction needed)
Positioning: G00
Linear interpolation: G01
Circular interpolation: G02/G03 (CW/CCW)
(Radius designation on arc)
Cutting feed rate: F5.3 digits, direct command
One-digit F code feed
Dwell: G04
Manual handle feed: Manual pulse generator
1 set (0.001/0.01/0.1mm)
Rapid traverse override: 0/1/25/50/100%
Cutting feed rate override: 0 to 200% (every 10%)
Feed rate override cancel: M49/M48
Rigid tapping: G84, G74
Part program storage capacity: 160m
No. of registered programs: 200
Part program editing
Background editing
Buffer modification
10.4-inch color touch panel LCD/MDI
Integrating time display
Clock function
User definable key
MDI (Manual Data Input) operation
Program input/output interface: RS232C-1CH
Ethernet interface
IC card interface
IC card driving
Hard disc driving
S function: 4/5-digit direct command
Spindle speed override: 50 to 150% (every 5%)
T function: 4-digit direct command
ATC tool registration
M function: 3-digit programming
Multiple M-codes in 1 block: 3 codes (Max. 20 sets)
2nd auxiliary function: A, B, C
Tool length offset G43, G44
Tool offset: G45 to G48
Cutter compensation: G38 to G42
Tool offset sets: 200 sets
Tool offset memory II: tool geometry and wear offset
Manual reference position return
Automatic reference position return: G28/G29
2nd to 4th reference position return: G30 P2 to P4
Reference position return check: G27
Automatic coordinate system setting
Coordinate system setting: G92
Selection of machine coordinate system setting: G53
Selection of workpiece coordinate
system setting: G54 to G59
Local coordinate system setting: G52
Program stop: M00
Optional stop: M01
Optional block skip: /
Dry run
Machine lock
Z-axis feed cancel
Miscellaneous function lock
Program number search
Sequence number search
Program restart function
Cycle start
Auto restart
Single block
Feed hold
Manual absolute on/off
Machining time computation
Interruption of automatic operation
Manual numerical command
Sub program control
Canned cycle: G73, G74, G76, G80 to G89
Linear angle designation
Circular cutting
Mirror image function: Parameter
Mirror image function: G code
Variable command: 200 sets
Automatic corner override
Exact stop check/mode
Programmable data input: G10/G11
3D solid program check
Graphic display check
Backlash compensation
Memory pitch error compensation
Manual tool length measurement
Emergency stop
Data protection key
NC alarm display
Machine alarm message
Stored stroke limit I/II
Load monitor
Self-diagnostics
Absolute position detection

Optional Specification

Additional one axis control: name of axis
(A, B, C, U, V, W)
Additional two axes control: name of
axes (A, B, C, U, V, W) NOTE
Simultaneously controlled axes:
4 axes (N730)/5 axes (N750)
Tape format: M2/M0 format
Unidirectional positioning: G60 ***PK***
Helical interpolation ***PK***
Cylindrical interpolation
Hypothetical axis interpolation
Spiral interpolation
●NURBS interpolation
Handle feed 3 axes
(Remote control pulse handle not available)
Part program storage capacity: 320m (400)
Part program storage capacity: 600m (400) ***PK*** (N720)
●Part program storage capacity: 1280m (1000) ***PK*** (N730)
●Part program storage capacity: 2560m (1000)
●Part program storage capacity: 5120m (1000)
3.5" internal floppy disk drive: 1 drive
(1.44MB/720KB)
Computer link B: RS232C
3-dimensional cutter compensation
Tool offset sets: 400 sets
●Tool offset sets: 999 sets
Addition of workpiece coordinate system (48 sets):
G54 P1 to P48 ***PK***
●Addition of workpiece coordinate system (96 sets):
G54 P1 to P96
Optional block skip: Total 9
●Tool retract and return
Sequence number comparison and stop
Corner chamfering/corner R : Insert in straight line-
straight line, straight line-circle ***PK***
User macro and user macro interruption ***PK***
Variable memory expansion: 300 sets (total)
Variable memory expansion: 600 sets (total) ***PK***
Pattern rotation
Programmable coordinate system rotation: G68,
G69/G68.1, G69.1 ***PK***
Parameter coordinate system rotation ***PK***
Special canned cycles: G34 to G36, G37.1/G34 to G37
Scaling: G50, G51
Chopping function
Playback
Skip function: G31 ***PK***
Automatic tool length measurement: G37/G37.1
Tool life management II with tool set (100 total) ***PK***
Additional tool life management sets: 200 total ***PK***
Additional tool life management sets: 400 total
Additional tool life management sets: 600 total
Additional tool life management sets: 800 total
Additional tool life management sets: 1000 total
External search (Standard for the machine with APC)

Original OKK Software

Help guidance function ---------- STD
Tool support function ---------- STD
Program editor ---------- OP
HQ control ---------- STD
Hyper HQ control mode I 16.8m/min ---------- OP
Hyper HQ control mode II 135m/min (N730) --- OP
67.5m/min (N720) --- OP
●Die & mold machining NC kit ---------- OP
NC option package
(Items with "***PK***" are included.) ---------- OP
Win-GMC7 ---------- OP
Soft scale IIm ---------- STD
OK-NET ---------- OP

●: Neomatic 730 specification
NOTE: Neomatic 750 specification
Items with "***PK***" are included.

CONTROLLER

F180 (160) is-MB VP400, VP600

Standard Specification

No. of controlled axes: 3 axes(X, Y, Z)
No. of simultaneously controlled axes: 3 axes
Least input incremen: 0.001mm/0.0001"
Max. programmable dimension: ±99999.999mm
Absolute/Incremental programming: G90/G91
Decimal point input/Pocket calculator type decimal point input
Inch Metric conversion: G20/G21
NC tape: EIA/ISO data input format
Program format: FANUC standard format
Positioning: G00
Linear interpolation: G01
Circular interpolation: G02/G03(CW/CCW)
(Radius designation on arc.)
Cutting Feed rate: F5.3 digits , direct command
Dwell: G04
Manual handle feed: manual pulse generator 1set
(0.001, 0.01, 0.1mm)
Rapid traverse override: 0/1/25/50/100%
Cutting Feed rate override: 0～200%(per10%)
Feed rate override cancel: M49/M48
Rigid tapping: G84, G74(mode designation: M29)
Part program storage capacity: 80m
No. of registered programs: 125
Part program editing
Background editing
10.4 inch color LCD/MDI
Clock function
MDI(Manual Data Input)operation
Program input/output interface: RS232C-1CH
IC card interface
S function: 5-digit direct command
Spindle speed override: 50～150%(per 5%)
T function: 4-digit direct command
ATC tool registration
M function: 3-digit programming
Multiple M-codes in 1 block: 2
Tool length offset G43, G44/G49
Cutter compensation C: G41, G42/G40
Tool offsets 99 sets
Tool offset memory C
Manual reference position return
Automatic reference position return: G28/G29
2nd reference position return: G30
Reference position return check: G27
Automatic coordinate system setting
Coordinate system setting: G92
Selection of machine coordinate system setting: G53
Selection of workpiece coordinate system setting: G54～G59
Local coordinate system setting: G52
Program stop: M00
Optional stop: M01
Optional block skip: /
Dry run
Machine lock
Z-axis feed cancel
Miscellaneous function lock
Program number search
Sequence number search
Program restart function
Cycle start
Auto restart
Single block
Feed hold
Manual absolute on/off
Sub program control
Canned cycle: G73, G74, G76, G80～G89
Mirror image function: Parameter
Automatic corner override
Exact stop check/mode
Programmable data input: G10
Conversational programming with graphic function
Graphic display
Backlash compensation
Memory pitch error compensation
Skip function
Tool length measurement
Emergency stop
Data protection key
NC alarm display/alarm history display
External alarm message
Stored stroke limit 1
Load monitor
Self-diagnostics
Absolute position detection

Optional Specification

Additional one axis control: name of axis
(A, B, C, U, V, W)
Additional two axes control: name of axes(A, B, C, U, V, W)NOTE
Simultaneously controlled axes:
4 axes(F180is), 6 axes(F160is)
FS15 tape format
Unidirectional positioning: G60
Helical interpolation PK
Cylindrical interpolation
Hypothetical axis interpolation
Conical/spiral interpolation
Smooth interpolation(RISC is required)
NURBS interpolation(RISC is required)
Involute interpolation
F1-digit feed
Handle feed 3 axes(Remote control pulse handle not available)
Part program storage capacity: 160m
Part program storage capacity: 320m
Part program storage capacity: 640 m
Part program storage capacity: 1280m PK
Part program storage capacity: 2560 m
Part program storage capacity: 5120mNOTE
Registered programs: 200
Registered programs: 400 PK
Registered programs: 1000(320m or more program capacity is required)
Extended part program editing PK
Handy file
Remote buffer
High speed remote buffer B
(Remote buffer is required)
Data server: Memory card
2nd auxiliary function
Tool offset
3-dimensional cutter compensation
Tool offset sets: 200 sets PK
Tool offset sets: 400 sets
Tool offset sets: 499 sets
Tool offset sets: 999 sets
Addition of workpiece coordinate system(48 sets): G54.1 P1 to P48 PK
Addition of workpiece coordinate system(300 sets): G54.1 P1 to P300
Machining time stamp function
Optional block skip: Total 9
Tool retract and return
Sequence number comparison and stop
Manual handle interruption
Programmable mirror image PK
Directory display of floppy cassette
Optional chamfering/corner R
Custom macro PK
Interruption type custom macro
Addition of custom macro common variables: 600
Figure copy
Programmable coordinate system rotation: G68, G69
Scaling: G50, G51
Chopping function
Playback
Dynamic graphic display
Automatic tool length measurement: G37/G37.1
Tool life management: 128 pairs PK
Addition of pairs for tool life management: 512 in total
Run hour and parts count display PK

Original OKK Software

Help guidance function ----------STD
Tool support function ----------STD
Program editor ----------OP
HQ control ----------STD
Hyper HQ control A mode ----------OP
Hyper HQ control B mode(with RISC)-------OP
Die & mold machining NC kit ----------OP
NC option package
(Items with" PK "are included.)----------OP
Special canned cycles
(including circular cutting) ----------OP
Soft scale IIm ----------STD

NOTE：F160is-MB is needed.
Items with" PK "are included.

F32(31)i-A VP400(OP), VP500-2APC, VP600(OP)

Standard Specification

No.of controlled axes: 3 axes(X, Y, Z)
No.of simultaneously controlled axes: 3 axes
Least input increment: 0.001mm/0.0001 "
Max. programmable dimension: ±999999.999mm/ ±99999.9999 "
Absolute/Incremental programming: G90/G91
Decimal point / Pocket calculator type decimal point input
Inch/Metric conversion: G20/G21
NC tape: ISO/EIA data input format
Program format: FANUC standard format
Nano interpolation(Internal)
Positioning: G00
Linear interpolation: G01
Circular interpolation:
G02/G03(CW/CCW)(Radius designation on arc)
Cutting feed rate: F5.3 digits, direct command
Dwell: G04
Manual handle feed: Manual pulse generator 1 set
(0.001/0.01/0.1 mm)
Rapid traverse override: 0/1/25/50/100%
Cutting feed rate override: 0 to 200%(every 10%)
Feed rate override cancel: M49/M48
Rigid tapping: G84, G74(Mode designation: M29)
Part program storage capacity: 160m
No. of registered programs: 120
Part program editing
Background editing
10.4 inch color LCD/MDI
Clock function
MDI(manual data input)operation
Program input/output interface: RS232C-1CH
Memory card interface
S function: 5-digit direct command
Spindle speed override: 50 to 150%(every 5%)
T function: 4-digit direct command
ATC tool registration
M function: 3-digit programming
Multiple M-codes in 1 block: 3 codes(Max. 20 sets)
Tool length offset: G43, G44/G49
Cutter diameter/angle compensation: G41, G42/G40
Tool offset sets: 99 sets
Tool offset memory C
Manual reference position return
Automatic reference position return: G28/G29
2nd reference position return: G30
Reference position return check: 27
Automatic coordinate system setting
Coordinate system setting: G92
Selection of machine coordinate system setting: G53
Selection of workpiece coordinate system setting: G54 to G59
Local coordinate system setting: G52
Program stop: M00
Optional stop: M01
Optional block skip: /
Dry run
Machine lock
Z-axis feed cancel
Miscellaneous function lock
Graphic display
Program number search
Sequence number search
Program restart function
Cycle start
Auto restart
Single block
Feed hold
Manual absolute on/off
Sub program control
Canned cycle: G73, G74, G76, G80 to G89
Mirror image function parameter
Automatic corner override
Exact stop check/mode
Programmable data input: G10
Backlash compensation for each rapid traverse and cutting feed
Smooth backlash
●Memory pitch error compensation
(interpolation type)
●Memory pitch error compensation
Skip function
Tool length measurement
Emergency stop
Data protection key
NC alarm display/alarm history display
Machine alarm message
Stored stroke limit 1
Load monitor
Self-diagnostics
Absolute position detection
Manual guide i(basic)

Optional Specification

Additional one axis control: name of axis
(A, B, C, U, V, W)
Additional two axes control: name of axes(A, B, C, U, V, W)NOTE
Simultaneously controlled axes:
4 axes(F310is), 5 axes(F310is-A5)
Minimum setting unit IS-C:
0.0001mm/0.00001inch
FS15 tape format
Unidirectional positioning: G60
Helical interpolation PK
Cylindrical interpolation
●Hypothetical axis interpolation
●Conical/spiral interpolation
●Smooth interpolation
(Hyper HQ control B mode is required)
●NURBS interpolation
(Hyper HQ control B mode is required)
●Involute interpolation
F1-digit feed
Handle feed 3 axes
(Remote control pulse handle not available)
Part program storage capacity: 320m(250 in total)
Part program storage capacity: 640m(500 in total)
Part program storage capacity: 1280m(1000 in total) PK
Part program storage capacity: 2560m(1000 in total)
Part program storage capacity: 5120m(1000 in total)
●Part program storage capacity: 10240m(1000 in total)
●Part program storage capacity: 20480m(1000 in total)
Handy file
Data server: ATA card(1GB)
Spindle contour control
2nd auxiliary function
Tool offset
●3-dimensional cutter compensation
Tool offset sets: 200 sets PK
Tool offset sets: 400 sets
●Tool offset sets: 499 sets
●Tool offset sets: 999 sets
Addition of workpiece coordinate system(48 sets): G54.1 P1 to P48 PK
●Addition of workpiece coordinate system(300 sets): G54.1 P1 to P300
●Machining time stamp function
Optional block skip: Total 9
●Tool retract and return
Sequence number comparison and stop
Manual handle interruption
Programmable mirror image PK
Optional chamfering/corner R
Custom macro PK
Interruption type custom macro
Addition of custom macro common variables: 600
●Figure copy
Programmable coordinate system rotation: G68, G69
Scaling: G50, G51
Chopping function
Playback
Automatic tool length measurement: G37/G37.1
Tool life management: 256 pairs PK
Addition of pairs for tool life management: 1024 in total
High-speed skip
Run hour and parts count display PK
Manual guidei(milling cycle)

Original OKK Software

Help guidance function ----------STD
Tool support function ----------STD
Program editor ----------OP
HQ control ----------STD
Hyper HQ control A mode ----------OP
●Hyper HQ control B mode ----------OP
●Die & mold machining NC kit ----------OP
NC option package(Items with" PK "are included.)--OP
Special canned cycles(including circular cutting) --OP
Soft scale IIm ----------STD

●：F31i-A specification ●：F32i-A specification
NOTE：F31i-A5 is needed.
Items with" PK "are included.

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Technical Center


S-Plant


W-Plant

Technical center is for test cutting, demonstration and training.
S-plant is for machining and assembly of spindles and tables.
W-plant is for final assembly of large sized machining centers.
All are located at Inagawa, Itami city, Hyogo, Japan

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