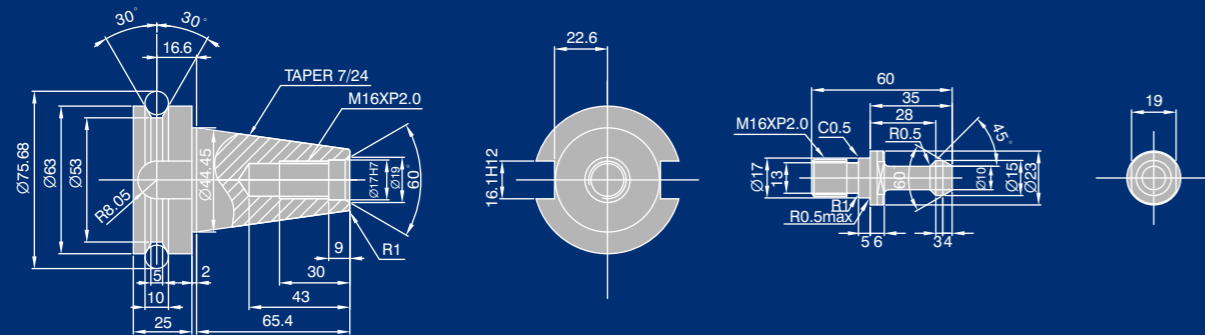


Tooling System

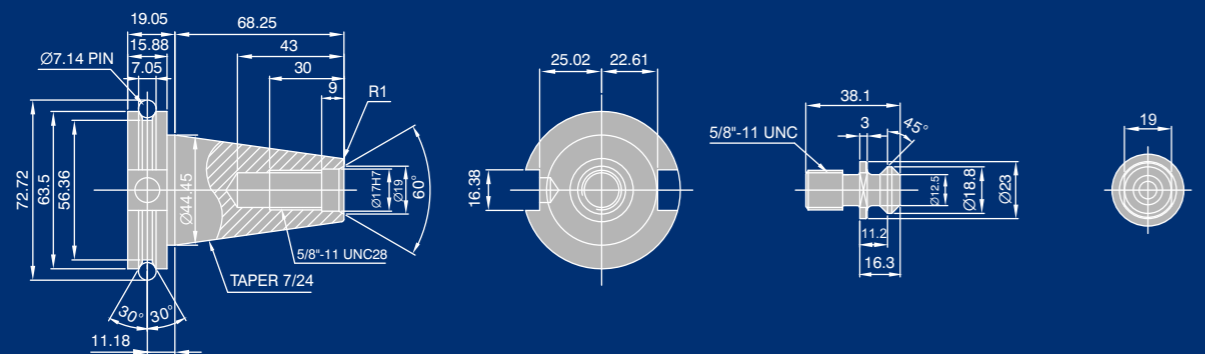


BT-40



CPV Series

CAT-40



Campro Precision Machinery Co., Ltd.



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TAICHUNG 408, TAIWAN
TEL: +886-4-23500501
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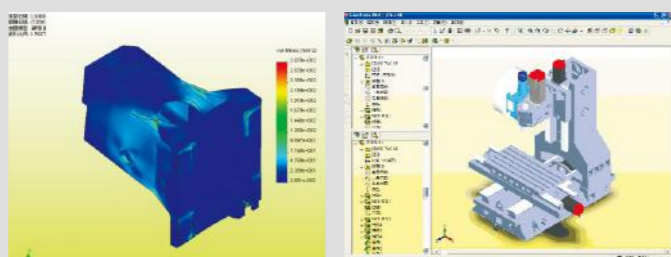
Campro Precision Machinery Co., Ltd.

www.campro.com.tw

SPEED, ACCURACY, PERFORMANCE & EFFICIENCY

Innovative Design Concepts

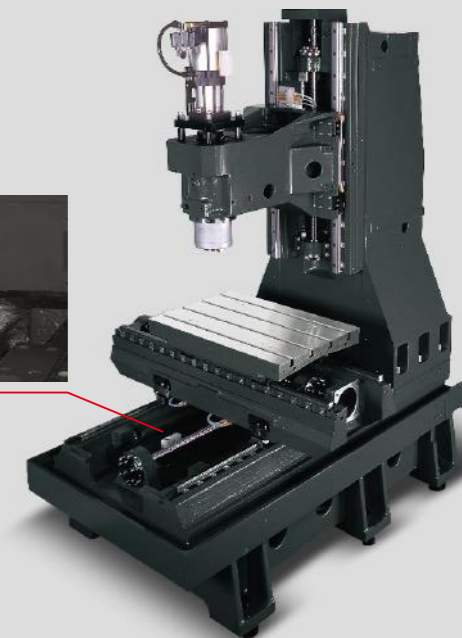
Over the years, Campro has dedicated itself to provide machining centers that fully meet customer's requirements for productivity and accuracy. The concept is to design and manufacture VMCs that not only feature maximum stability and productivity, but also to achieve environmental protection compliance and human factors engineering theorem. The CPV series is designed and manufactured based on that concept.



Machine Features

CPV-550 / 750

- CPV-550 / 750 are equipped with high precision and heavy loading series linear guideways on 3 axes. Automatic lubrication system for all linear guideways and ballscrews.
- Constructed with high quality cast iron and heat treated to relieve stress thereby assuring maximum rigidity and accuracy.
- The base is reinforced by A type rib layout to upgrade absorption capability of vibration and is constructed of a box type structure is designed via Finite Element Analysis (FEA) and advanced 3D software.



CPV-900 / 1100 / 1300

- Box ways on Z-axis, X / Y axes are equipped with precision heavy loading linear guide ways, featuring high positioning accuracy.
- The counter-balance system is equipped with a guide rail for increasing stability, avoiding vibration during high feedrate or rapid traverse and ensuring machining accuracy.
- Extra wide base provide rigid support of the machine to achieve flawless accuracy.



Three blocks on X-axis which provide max. machine rigidity and table loading capacity.



User-friendly Operation

The machine designs not only provide superior features, but also keep the concept of humanity-oriented operation in mind. Our machines are designed and engineered for maximum operational convenience and user-friendly interfaces to increase efficiency.

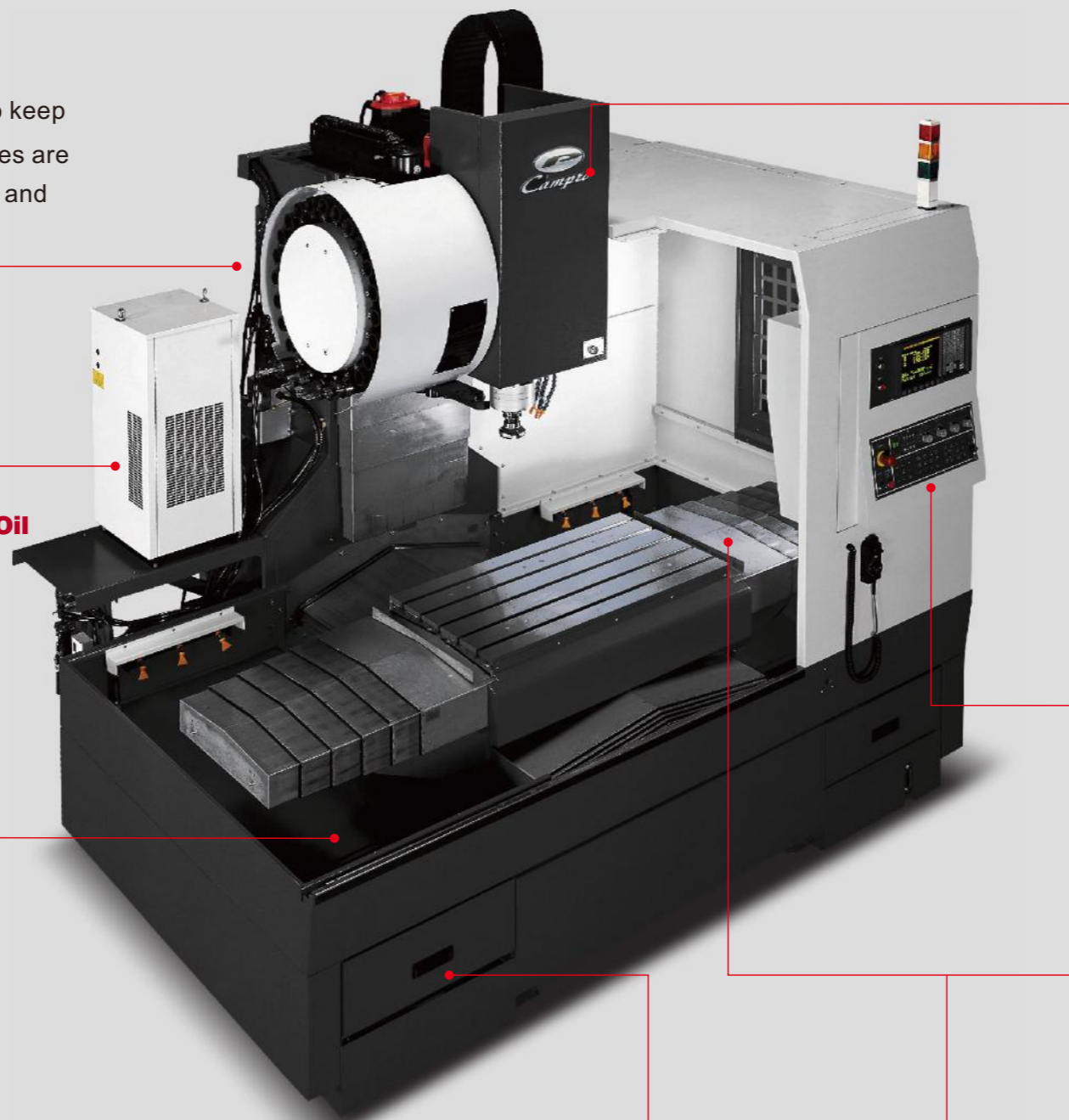


Swing Arm Type ATC Carrousel Type ATC

Swing arm type ATC with 24 tools or 30 tools capacity or carrousel type ATC with 20 tools.



Optional Spindle Oil Cooler



Coolant Through Spindle (Optional)

The coolant through spindle device gives 10 or 20 bars high pressure cooling effect. The coolant passes through the spindle and flushes through the tool edge for directly cooling the workpiece and tool edge.



Pneumatic Tool

The specially designed extra high pressure tool clamping device provides maximum tool clamping and unclamping stability. Synchronized tool unclamping and air blasting ensures the interior spindle is clean at all times.



Ergonomically Designed Control

Swiveling control panel enables 0~70 degrees with tilts 15 degrees upward to reduce operator fatigue and increase working efficiency.



Bright Working Space

There are three coolant nozzles equipped on both sides of the table which provide high pressure coolant flushing and efficient chip disposal.



Automatic lubrication unit with intelligent pressure failure detection function.

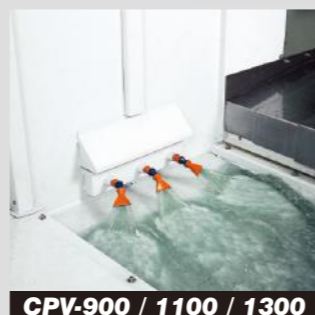


Operation manual storage cabinet. (CPV-900 / 1100 / 1300)



Chip Disposal

The chips are filtered by a 2.0mm screen, followed with a 0.5mm screen to ensure the quality of coolant circulation. The chips are easily collected through large chip disposal openings. Powerful chip flushing device with high pressure coolant pump is in the rear side of the machine. Telescopic covers on 3 axes for efficient chip disposal.



CPV-900 / 1100 / 1300

Coolant Flushing Device

Coolant flushing nozzles equipped on both sides of the table which provide high pressure coolant flushing and efficient chip disposal.



CPV-550 / 750

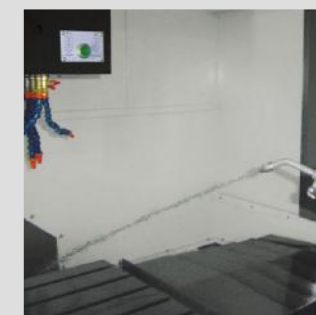


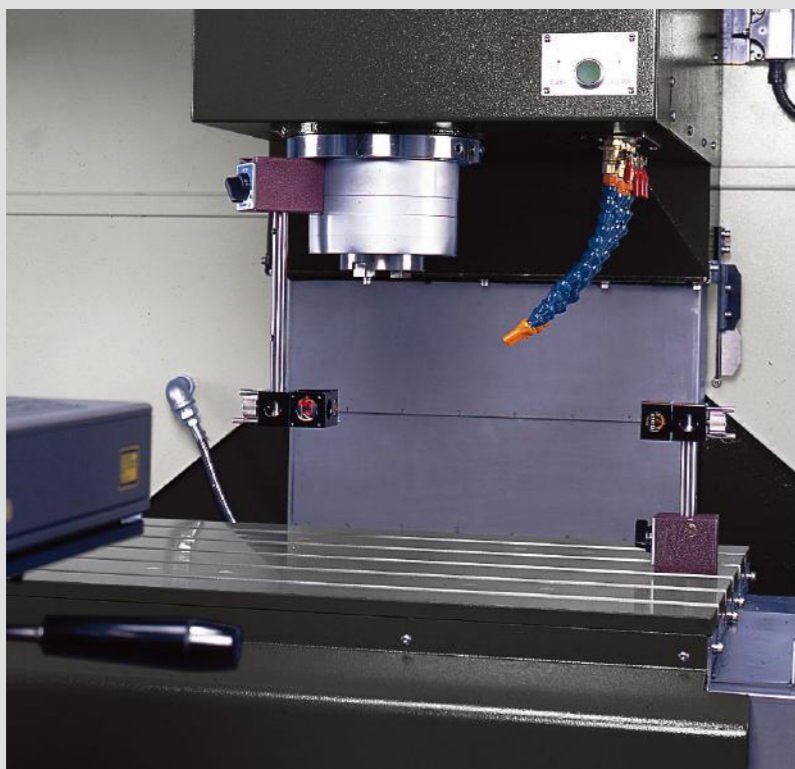
Oil-Coolant Separator Friendly Operation

Oil-coolant separator is included as a standard accessory. (CPV-550 / 750)



Shortest distance of 725mm in manual tool clamping / unclamping. The distance from table to door is 300mm and the door opening width is 950mm (model CPV-900) which offer convenient workpiece loading and unloading. Optional coolant flushing gun (2.5 bar, 60 L / min).

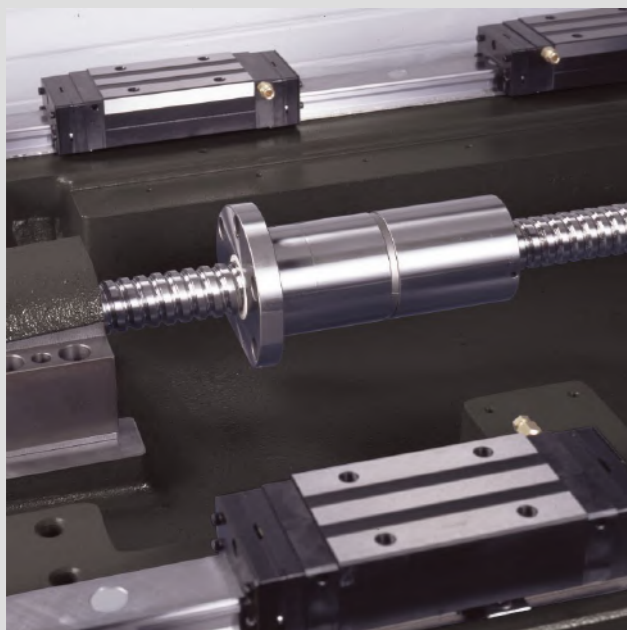




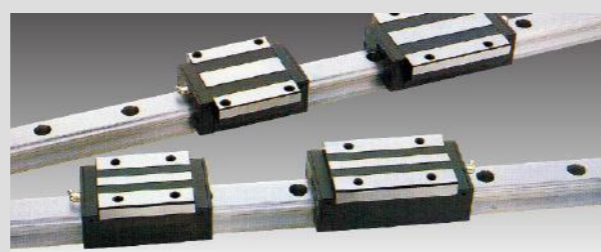
Laser Inspection

Final laser inspection and ball bar testing ensure repeatability and positioning accuracy.

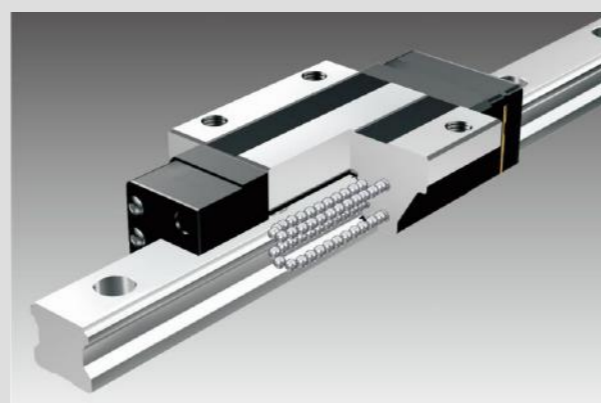
Precision Linear Guideways



Class C3 precision ball screws on 3 axes. Nuts and ball screws are pre-tensioned to increase accuracies of positioning and repeatability.

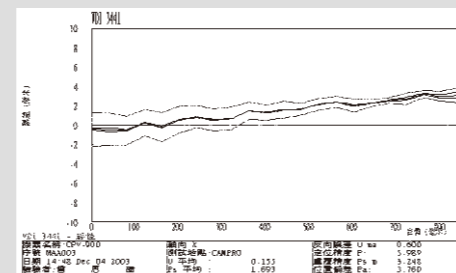


Long life with highly accurate motion linear guideways (CPV-550 / 750)

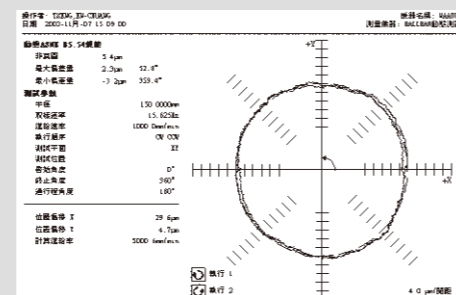


Extra heavy duty linear motion guides offer long life service high loading capacity.

Quality Inspection



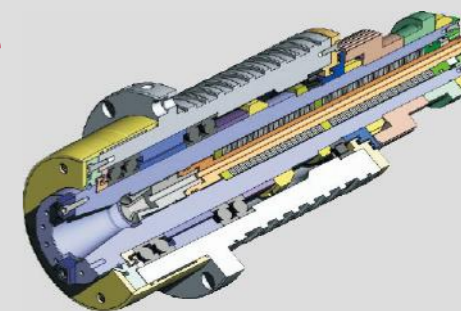
Bi-directional positioning accuracy and repeatability accuracy inspection are conducted according to VDI standards.



We guarantee ball bar testing accuracy reaches 10 μm

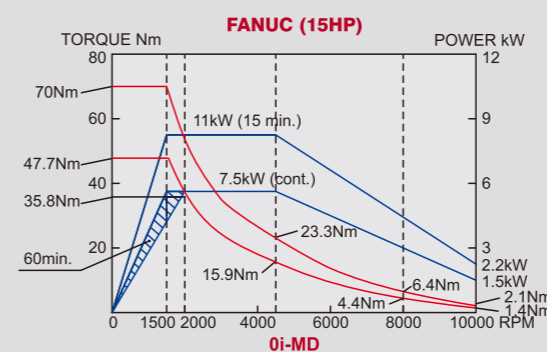
Precision And High-rigidity Spindle

- Belt type standard 8,000 rpm employs rigid class P4 angular contact ball bearings.
- 10,000 / 12,000 rpm spindles are available as options.



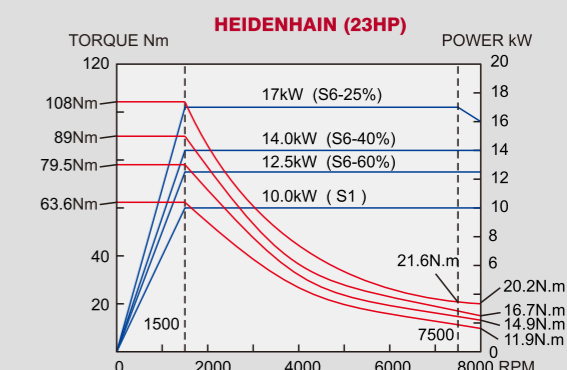
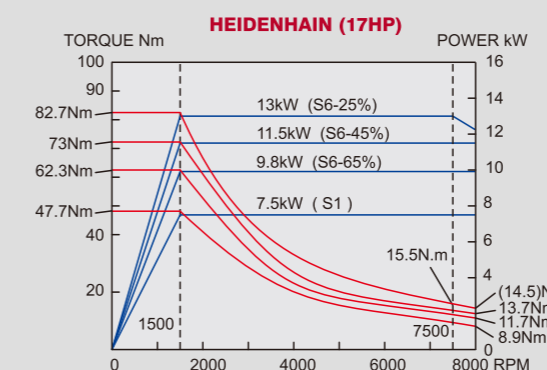
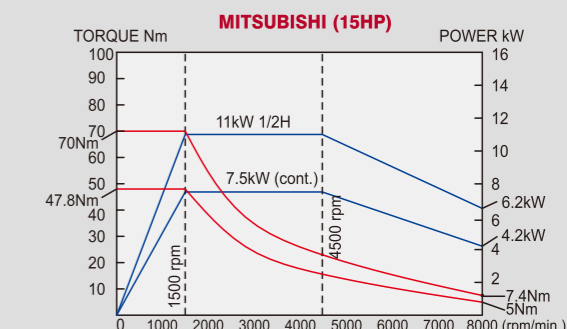
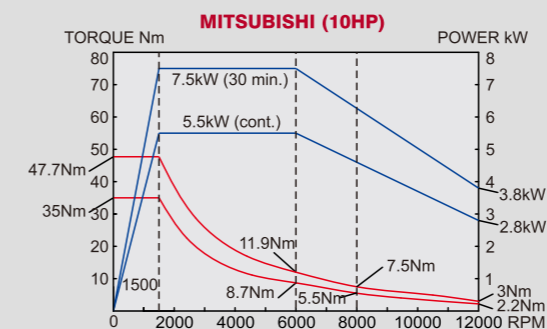
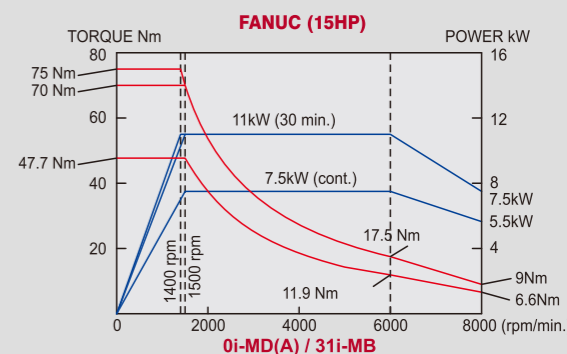
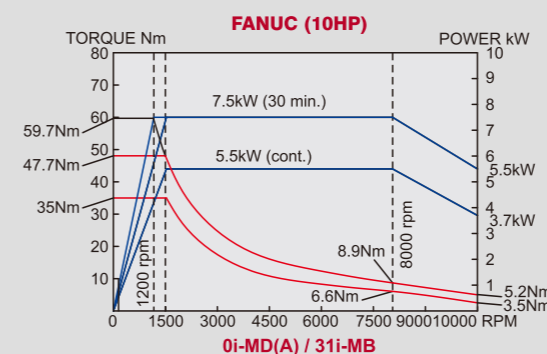
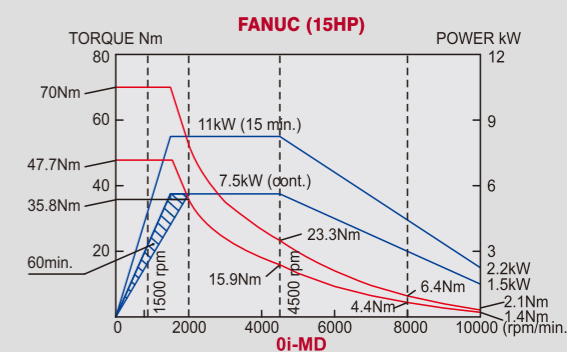
CPV-550 / 750

Spindle Diagram



CPV-900 / 1100 / 1300

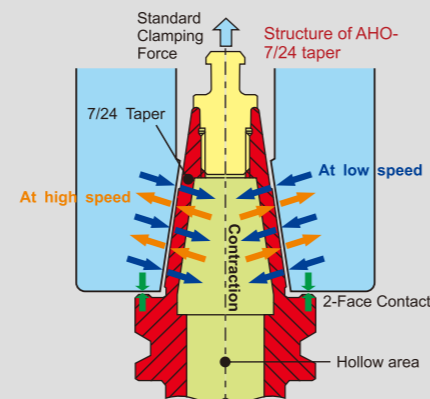
Spindle Diagram



NBT Simultaneous Contact Spindle and Tooling System (Optional)

The perfect two-face contact NBT spindle / tooling system which will follow the expanded spindle to improve the machining performance.

The NBT tooling system adopt the BT pull stud as clamping interface, which reduces the burden to the spindle bearings when working under high speed and also increase cutting efficiency and accuracy.



State-of-the-art technique The Best Performance for Quality Machine

(Material : S45C)



Face Milling

Cutting Conditions:
S=1,500 rpm / min
F=2,400 mm / min
L=2.5 mm
Q=468 c.c / min



End Milling

Cutting Conditions:
S=2,700 rpm / min
F=10,000 mm / min
Ø25 mm
Q=112 c.c / min



Drilling

Cutting Conditions:
S=1,200 rpm / min
F=152 mm / min
Ø50 mm



Tapping

Cutting Conditions:
S=341 rpm / min
F=682 mm / min
M28 x P2.0

Excellent Machining Performance

CPV series perform the max. and accurate cutting stability which offers broad range of different applications, such as aerospace industry, optical component, automobile..., etc.



Control Specifications

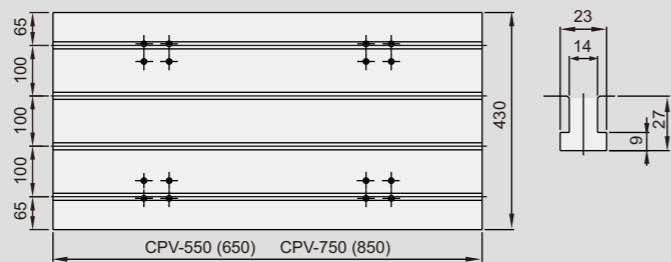
● Standard ○ Optional — No available

Functions / Control	FANUC		MITSUBISHI		HEIDENHAIN
	0i-MD (Package A)	31i-MB	M70V (Type A)	M720 VS	iTNC530 HSCI
8.4" color LCD screen	●	—	●	—	—
10.4" color LCD screen	○	●	○	●	15" TFT
Graphic function / Tool path display	●	●	●	●	●
Tool path check	○	● (MG i)	●	●	●
3D solid graphics	○	● (MG i)	—	●	●
Program storage length	1280 M	1280 M	1280 M	1280 M	21GB
Number of registerable programs	400	1000	400	400	—
Workpiece coordinate system pairs	54	54	54	54	—
Tool offset pairs	400	400	400	400	—
Manual guide 0i simple conversational programming	●	—	—	—	—
Manual guide i conversational programming (Need 10.4" LCD)	○	●	—	—	—
NAVI MILL conversational programming	—	—	●	●	●
Rigid tapping	●	●	●	●	●
Custom Macro B	●	●	●	●	—
Polar coordinate command (G15 / G16)	●	●	●	●	●
Scaling (G50 / G51)	●	●	●	●	●
Coordinate system rotation (G68 / G69)	●	●	●	●	●
Helical interpolation	●	●	●	●	●
Conical / Spiral interpolation	—	○	●	●	—
Cylindrical interpolation	●	○	●	●	○ (option 1)
AI contour control (G05.1 Q1)	● (15 M/Min.)	● (15 M/Min.)	—	—	—
AI contour control 2 (G05.1 Q1)	○ (30 M/Min.)	● (30 M/Min.)	—	—	—
High-speed processing (Need AICC2)	—	● (150 M/Min.)	—	—	—
Jerk control	○	○	—	—	●
Machining conditions selection	●	●	—	—	—
Nano smoothing (Need AICC2)	○	○	—	—	—
NURBS interpolation	—	○	—	—	○ (option 2)
Tilted working plane indexing command	○	○	—	—	○ (option 1)
High precision control (G61.1 / G08 P1)	—	—	●	●	—
High speed precision control I (G05.1 Q1)	—	—	● (16 M/Min.)	● (16 M/Min.)	●
High speed precision control II (G05 P10000)	—	—	● (33 M/Min.)	● (67 M/Min.)	○ (option 2)
SSS Super-Smooth-Surface control	—	—	—	●	—
Look ahead blocks	40 (AICC) 200 (AICC 2)	200 (AICC 2) 600 (High speed)	340 (G05 P10000)	680 (G05 P10000)	—
Data server	○	○	—	—	Hard disk
HPS high speed program server (Front CF card)	—	—	●	●	—
Front memory card DNC machining	●	●	●	●	—
USB Interface	●	●	●	●	●
1GB CF memory capacity	○	○	●	●	—
Memory card editing	○	○	●	●	—
Buffer corection	—	—	●	●	—
Workpiece position measurement	—	—	●	●	●
Ethernet interface	●	●	●	●	●
Computer link B	—	—	●	●	—

Table Dimensions

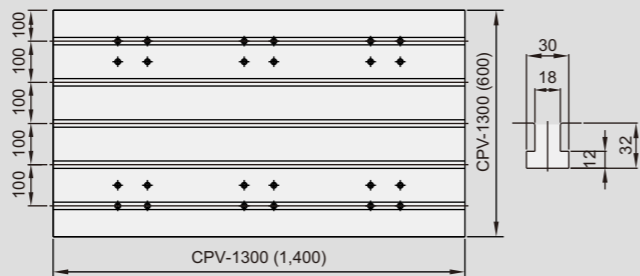
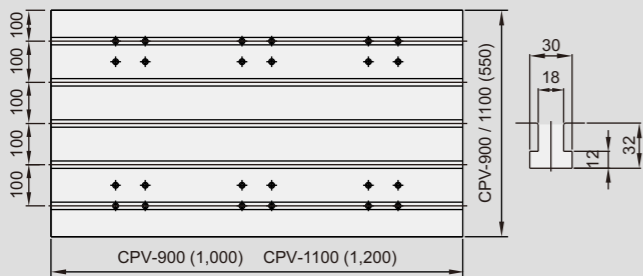
CPV-550 / 750

Unit : mm



CPV-900 / 1100

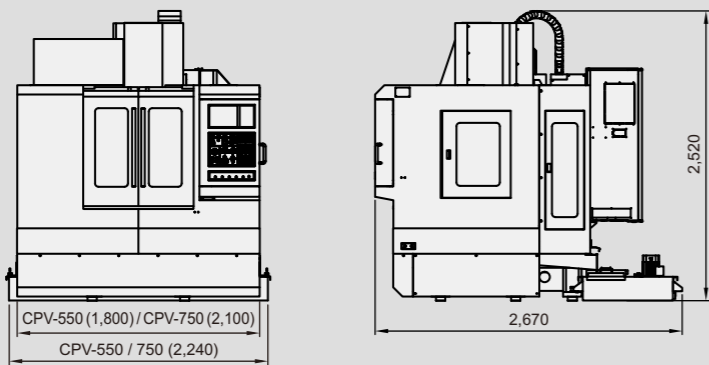
CPV-1300



Machine Dimensions

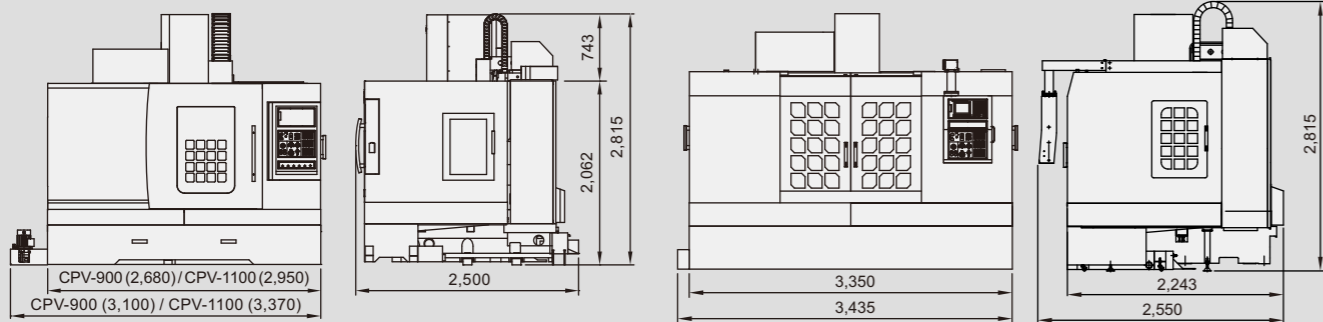
CPV-550 / 750

Unit : mm



CPV-900 / 1100

CPV-1300



Machine Specifications

MODEL	UNIT	CPV-550	CPV-750	CPV-900	CPV-1100	CPV-1300
TRAVEL						
X-axis travel	mm	550 (21.65")	750 (29.52")	900 (35.43")	1,100 (43.3")	1,300 (51.18")
Y-axis travel	mm	430 (16.92")	430 (16.92")	560 (22.04")	560 (22.04")	600 (23.62")
Z-axis travel	mm	480 (18.89")	480 (18.89")	560 (22.04")	560 (22.04")	610 (24.01")
Distance from spindle nose to table	mm	100~580 (3.93"-22.83")		110~670 (4.33"-26.37")		80~690 (3.14"-27.16")
Distance from spindle center to column	mm	485 (19.09")		630 (24.80")		670 (26.37")
TABLE						
Table dimension	mm	650 x 430 (25.59" x 16.92")	850 x 430 (33.46" x 16.92")	1,000 x 550 (39.37" x 21.65")	1,200 x 550 (47.24" x 21.65")	1,400 x 600 (55.11" x 23.62")
Max. table load	kg	300		700	800	1,000
T-slots (W x NO. x P)	mm	14 x 4 x 100 (0.55" x 4 x 3.93")		18 x 5 x 100 (0.71" x 5 x 3.93")		
SPINDLE						
Spindle speed (Optional)	rpm	8,000 (10,000 / 12,000)				
Spindle motor (Optional)	kw	5.5 / 7.5 (7.5 / 11)			7.5 / 11	
Spindle taper	type	7/24 taper No.40				
AUTO. TOOL CHANGE						
ATC type	type	Arm Type (Carrousel)				
Tool shank	type	BT-40				
Pull stud	type	P-40T(45°)				
Tool storage capacity	pcs.	20T (16T)			24T (20T / 30T)	
Max. tool diameter	mm	Ø80				
Max. tool diameter (Adjacent empty)	mm	Ø130			Ø150	
Max. tool length	mm	250				
Max. tool weight	kg	7				
Tool change time (Tool to Tool)	sec.	2.5 (7)(60HZ)				
Tool change time (Chip to Chip)	sec.	7 (11)(60HZ)				
FEEDRATE						
Rapid feedrate (X / Y / Z)	m/min	30 / 30 / 30			36 / 36 / 24	
Cutting feedrate	mm/min	10,000				
OTHER						
Floor plan (W x D)	mm	2,240 x 2,670 (88.18" x 105.11")			3,100x2,500 (122.04"x98.42")	3,370x2,500 (132.67"x98.42")
Machine weight	kg	3,000	3,300	6,700	7,000	7,800
Max. machine height	mm	2,520 (99.21")			2,815 (110.82")	
Power capacity		15 KVA			20 KVA	
Air source		6~8 kgf / cm ²				

● Machine specifications and design are subject to change without prior notice due to on-going innovation.

Standard accessories

- 8,000 rpm belt transmission
- Rigid tapping
- Auto power off
- Full-enclosed splash guard
- Spindle air blast system
- Pre-tensioned ballscrews on 3 axes
- Telescope covers on 3 axes
- Pneumatic system
- Automatic lubrication system
- Coolant flushing device
- Oil-coolant separator
- Heat exchanger for electrical cabinet

Optional accessories

- 10,000 / 12,000 rpm belt transmission spindle
- Spindle oil cooler
- Chip conveyor
- Chip screw conveyor
- Coolant through spindle
- Deep hole adaptor
- High pressure pump
- Linear scales
- 4th-axis rotary table
- Automatic tool length measurement
- Workpiece measurement
- Air condition
- CE modification
- Transformer