



**CAMPRO CPV-1600B
HIGH PERFORMANCE VERTICAL MACHINING CENTER**

CAMPRO CPV-1600B

MACHINE FEATURES:

- Constructed with high quality meehanite cast iron and heat treated to relieve stress there by assuring maximum rigidity and accuracy.
- Box ways on all 3 axes greatly upgrades stability and dampening capability.
- Automatic lubrication unit with intelligent pressure failure detection function provides reliable supply for saving cost and for environmental protection.
- Oil-coolant separation design which meets the environment protection requirements allows centralized collection for all way oil.

The CPV-1600B is designed for heavy cutting, long-term high accuracy, and superior surface finishes. Classic manufacturing methods and ultra rigid construction are combined with advanced technological features to provide exceptional value.

Please note that features and specifications are subject to change and should be verified at the time of order.

STANDARD FEATURES:

- * Fanuc 0i-MF PLUS Control Type 1
- * AICC2+
- * 6,000 RPM Spindle
- * Powerful 35 hp (10 min) high torque spindle motor
- * CAT50 Big Plus Spindle
- * 1000 PSI Coolant Through Spindle Prep
- * Spindle Air Blow
- * Rigid tapping
- * Custom Macro B (User Definable)
- * Twin Arm 24 Tool ATC
- * Tool Change Time (Tool To Tool) 3.5 sec.
- * Tool Change Time (Chip to Chip) 7.0 sec.
- * Portable Manual pulse generator
- * Program and data protection key switch
- * Massive One-piece Meehanite cast iron bed
- * Chip Auger
- * 4th Axis Prep (no amplifier)
- * Low friction turcite mating way surfaces
- * Double Anchored, Pre-tensioned ballscrews
- * Full enclosure splash guard
- * Flood coolant with large coolant tank
- * Work light (2)
- * Operator call lamp (red, yellow, green)
- * Spindle load meter
- * Assembly and operation tools
- * Auto Power Off
- * Heat exchanger for Electrical Cabinet
- * Instruction manual, parts list, and electrical diagram
- * Fanuc operator and maintenance manuals
- * MACHINE WARRANTY: ONE YEAR Parts only
- * CONTROL WARRANTY: TWO YEARS: Parts and Labor

SPECIFICATIONS:

CAPACITY:

X axis travel	62.9"
Y axis travel	32.6"
Z axis travel	27.5"
Table loading area	70.8" X 31.4"
Allowable table load	4,409 pounds
Table T Slots - width x slot spacing	.8" x 6" x 4.9"

SPINDLE:

Spindle nose to table top	5.9" – 33.4"
Column to spindle center	33.4"
Spindle taper	CAT 50 Big Plus
Spindle speed	6,000 RPM
A.C. spindle motor (30 min.)	35 HP
Spindle torque (30 min)	390 ft-lbs.
Spindle Driving Method	Two Speed Gearbox

AUTOMATIC TOOL CHANGER:

ATC Type	Twin Arm Type
Number of Tools	24
Tool Shank	CAT 50
Max. Tool Dia.	4.3"
Max tool Diameter (No Adjacent Tool)	7.8"
Max. Tool Length	11.8"
Max. Tool Weight	33 lbs.
Tool Change Time TOOL – TOOL	3.5 sec
Tool Change Time CHIP – CHIP	7.0 sec
Tool Selection	Random Bi-Directional

MOTION:

X and Y axis rapid traverse rate	590 IPM
Z axis rapid traverse rate	472 IPM
Cutting feed rate	393 IPM
Slide Type	Box Ways
Least command increment	.001mm,
Positioning accuracy	+/- .00020" (full stroke)
Repeatability	+/- .00008"

GENERAL:

Floor Space Required (W x D X H / INCHES)	169 x 127 x 125
Machine Weight	33,069lbs.
Standard Power Source Requirement - Fanuc	205-235 Volts / 3 Phase/60HZ
Power Capacity	78 AMPS
Air Source Requirement	85 – 115 PSI (3/8 ID Supply Hose)

***Geometric accuracies are guaranteed only if machine is installed on foundation meeting the minimum requirements of the machine and local building codes.**

CONSTRUCTION:

BED, COLUMN, AND SADDLE:

The bed is a rigid one-piece casting with heavy ribbing to prevent deformation during heavy cutting. Fine grain Meehanite cast iron is used for its excellent dampening characteristics. Extra wide box ways provide excellent support for the saddle, regardless of the load distribution on the table. The table is fully supported by the saddle in all positions. There is no table overhang. The rigid box type column casting is heavily ribbed to prevent twisting or distortion.

SPINDLE, HEADSTOCK, AND COLUMN

The high speed, 6,000 RPM, 50 taper spindle is a true cartridge type unit supported by precision class bearings that are permanently grease lubricated. The spindle is driven by a high torque 35 HP (10 min.) A.C. motor delivering an impressive 390 ft/lbs. Power is transferred through a heavy-duty ZF gearbox, promoting thermal stability, and minimizing vibration. An encoder is attached to the spindle to allow rigid tapping.

GUIDEWAYS

Wide Box ways are used for unsurpassed long-term rigidity and accuracy. Each guideway is induction hardened and precision ground. Turcite is bonded to the mating way surfaces and then hand scraped to ensure perfect fit and tolerances. The Turcite resin with forced way lubrication provides a low friction surface and virtually eliminates guideway wear. All guideways are fully protected from chips and damage.

OIL JACKET SPINDLE CHILLER (STANDARD)

Machine accuracy is maintained by using a refrigeration system that circulates cooled oil around the spindle reducing the thermal effects of any heat generated.

AUTOMATIC TOOL CHANGER

The high quality 24-position tool changer uses a fast random bi-directional twin arm with 3.5 second tool-to-tool change time, and 7 seconds chip to chip.

BALL SCREWS AND AXIS DRIVES

Each axis is driven by a high precision double-nut ballscrew. The ballscrews are centered between the guideways. The ballscrews are supported on both ends by angular contact thrust bearings. This double anchored pretension design provides outstanding positioning repeatability with virtually no thermal growth. All axes have large diameter 40 mm ball screws that are connected directly to oversize AC servo drive motors without gears or belts, to eliminate backlash. Each axis has a flexible coupling to protect the ball screw in the event of a sudden impact. These couplings can be quickly reset.

PORTABLE MANUAL PULSE GENERATOR

The hand held "Manual Pulse Generator" lets each axis move in increments of 0.0001", 0.0010" or 0.0100" making fixture or part alignment quick and easy. The 10-foot cord gives full access to the machine.

PROGRAM AND DATA PROTECTION KEY SWITCH

The keyed switch enables the protection mode for both the program and offset data. Removing the key limits access to only authorized personnel. In the unprotected position the key cannot be removed and all data is available for edit.

FULLY ENCLOSED GUARDING

The fully enclosed guarding, including cut-out for filter mist, is made of heavy gauge sheet metal to contain both chips, coolant and coolant mist. The large dual sliding doors open to provide unrestricted overhead access for ease of lifting heavy fixtures or work pieces.

CHIP DISPOSAL AND COOLANT SYSTEM

High volume coolant system washes chips down into the front of sheet metal enclosure for chip auger evacuation and provides flood coolant through adjustable head mounted nozzles along with four flushing nozzles mounted directly to spindle nose.

CONTROL SPECIFICATIONS - Fanuc 0i-MF PLUS:

10.4" Color LCD Screen

MANUAL GUIDE i

2 MB Program Storage Size

1000 Part Program Storage

AICC2+

Fine Surface Machining:

- 200 Block Look-Ahead
- Smooth Tolerance Control
- Jerk Control
- Machining Quality Level Adjustment

Machine Condition Selecting (Programmable, G05.1 R1-10 sets accuracy level)

USB Reader

RS-232 Interface

PCMCIA Memory Card

Embedded Ethernet

Back Ground Editing

Extended Part Program Editing (Copy, Move, Change of NC Program)

Set-up Guidance

Dynamic Graphic Display

Skip Signal

Multi-Step Skip Signal

Multi-language Display

Color graphics

Simultaneous Controlled Axis

Least input Increment on X, Y, and Z is .001 mm

Least command increment on X, Y, and Z is .001mm

Inch/Metric Conversion (G20/G21)

Interlock on All Axes

Machine Lock on All Axes

Emergency Stop

Stored Stroke Check 1, 2, 3,

Mirror Image

Backlash Compensation

Unexpected disturbance torque detection

Stored pitch compensation

Automatic Operation (Memory)

MDI Operation

Search Function (Sequence, Program)

Program restart

Dry Run

Single Block

Buffer Register

Manual Handle Interrupt

Manual Jog Feed (Rapid, Jog, Handle)

Manual Handle Feed Rate (x1, x10, x100)

Feed Command (F Code Feed Rate Direct Command)

Feed rate Override 0-200% (10% Unit)

Jog feed 0-5,000 mm/min (197 ipm)

Rapid traverse override (F0, F25%, F50%, F100%)

Override Cancel

Rapid Traverse Bell-Shaped Acceleration/Deceleration

Block Skip

Exact Stop Mode / Exact Stop (G61/G09)

Dwell (G04)

Control Specifications - Fanuc 0i-MF PLUS CONT'D:

Helical Interpolation
Threading/Synchronous Feed
Manual Reference Point Return
1st Reference Point Return G28
Reference Point Return Check G27
2nd Reference Point Return G30
3rd and 4th Reference Point Return
Program stop, optional stop, end of program M00, M01, M02, M30
Tape Code EIA RS-244/ISO 840 (Automatic Recognition)
Optional Block Skip (9 ea.)
Maximum Programmable Dimensions +/- 9999.9999" (+/- 8 digits)
Absolute and Incremental Command G90/G91
Decimal Point Input
Plane Selection G17 G18 G19
Work Coordinate System Setting (G52 – G59)
Work Coordinate Preset
Additional Work Coordinate System 48 pairs
Manual Absolute "On" fixed
Programmable Data Input G10
Sub Program Call 4 Levels of Nesting Custom Macro #100 to #199
Addition to Custom Macro Common Variables #500 to #999
Circular Interpolation by radius R
Canned Cycle (G73, G74, G76, G80 ~ G89)
Optional Chamfering / Corner R
Skip Function (G31)
Automatic Coordinate System Setting
Coordinate System Rotation
Programmable Mirror Image
Single direction positioning (G60)
External Data Input (Tool Offset, message, machine zero-point shift)
Cylindrical interpolation
A1 Advance Preview Control (G5.1)
Polar Coordinate Command
Miscellaneous Function (M3 digits)
Miscellaneous Function Lock
Spindle Speed Command (S5 Digits, binary output)
Spindle Speed Override (50% ~ 120%) 10% Unit
Rigid Tapping
Cutter Compensation C (G40-G42)
Tool Length Measurement
Tool Length Compensation (G43, G44, G49)
Tool Offset Amount (+/- 6 Digits)
Tool Offset Pairs (400 Pairs)
Tool Life Management
Memory Lock
Back Ground Editing
Extended Part Program Editing (Copy, Move, Change of NC Program)
Self-Diagnosis Function
History Display of Alarm and Operator Message
Help Function
Run Hour / Parts Count Display
Actual Cutting Feed Rate Display
Spindle / Servo Setting Screen
Multi-language display (Selection of 5 Optional Language)

Control Specifications - Fanuc 0i-MF PLUS CONT'D:

Erase CRT Screen Display (Screen Saver)
Bi-Direction Pitch Error Compensation
Tool Management Function
Protection of Data at 8-Levels
Tool Monitoring Function (HWTM – Built-on Fanuc Type)
Alpha i AC digital servo system with 1,000,000 pulse encoders
Full MDI keyboard
Automatic Acceleration / deceleration with Bell Shaped rapid acc / dec
4 axes simultaneous control std.
Scaling
Custom Macro B
High speed skip signal