CAMPRO CPV-1100B

HIGH PERFORMANCE VERTICAL MACHINING CENTER

MACHINE FEATURES

●Constructed with high quality meehanite cast iron and heat treated to relieve stress thereby 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.

STANDARD FEATURES:

* Fanuc Oi-MF Control (Package 1)
* AI APC Contour Control
* 12,000 RPM Spindle (Belt Drive)
* Powerful 20 hp (30 min) high torque spindle motor
* High Column (20.9" + 9.8")
* Cartridge Spindle Design
* CAT40 Big Plus Spindle
* 1000 PSI Coolant Through Spindle Prep
* Spindle Air Blow
* Rigid tapping

STANDARD FEATURES (CONT'D):

* Custom Macro B (User Definable)
* Twin Arm 24 Tool ATC
* Portable Manual pulse generator
* 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
* Fast 787 IPM Rapid Traverse rate
* Full enclosure splash guard
* Flood coolant with large coolant tank
* Work light
* 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
* WARRANTY-MACHINE: One-Year
* WARRANTY-CONTROL: Two-Year Parts and Labor

SPECIFICATIONS

CAPACITY:

X axis travel	43.3"
Y axis travel	24.4"
Z axis travel	23.6"
Table loading area	47.2" x 23.6"
Allowable table load	2,425 pounds

SPINDLE:

Spindle nose to table top	4.7" – 28.3"
Column to spindle center	26.3"
Spindle taper	CAT 40 Big Plus
Spindle speed	12,000 RPM
A.C. spindle motor (30 min.)	20 HP
Spindle torque (30 min)	132 ft-lbs.
Spindle Driving Method	Belt Drive

AUTOMATIC TOOL CHANGER:

ATC Type	Twin Arm Type
Number of Tools	24
Tool Shank	CAT 40
Max. Tool Dia.	3.1"
Max tool Diameter (No Adjacent Tool)	5.9"
Max. Tool Length	9.8"
Max. Tool Weight	15.4 lbs.
Tool Selection	Random Bi-Directional

SPECIFICATIONS (CONT'D.):

MOTION:

X and Y axis rapid traverse rate	787 IPM
Z axis rapid traverse rate	787 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)	131" x 106" X 113"
Machine Weight	14,330 lbs.
Standard Power Source Requirement - Fanuc	205-235 Volts / 3 Phase/60HZ
Power Capacity	53 Amps Minimum
Air Source Requirement	85 – 115 PSI

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CONSTRUCTION:

Balanced 12,000 RPM Spindle with 6000 BTU spindle oil cooler for High Speed Machining.

Hardened and Ground C3 Double Nut Ballscrews (Ø40 mm) are pre-tensioned to minimize backlash, provide high precision movement, and reduce heat deformation on all axes.

All solid ways are coated with high grade Turcite-B. Hardened and ground slideways give an extra 40% wear resistance.

2 Solid Box Ways are on a one-piece base instead of two supporting ways connected to the main base, which provides more rigidity under heavy machining.

Main frame is made of Meehanite casting for superior rigidity

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CONSTRUCTION (CONT'D)

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 boxways 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, 12,000 RPM, 40 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 20 HP (30 min.) A.C. motor delivering an impressive 132 ft/lbs. Power is transferred through a heavy-duty cogged drive belt eliminating slippage, 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 2.5 second tool-to-tool change time, and 6 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 can not be removed and all data is available for edit.

290 PSI (20 BAR) THROUGH-SPINDLE-COOLANT SYSTEM (Option)
  A dedicated **290-PSI** positive displacement pump delivers the coolant directly to the tool tip. The immediate benefit is more aggressive feeds and speeds can be maintained throughout the cutting process. There is also no need to stop and adjust coolant nozzles increasing the in-cut time and operator safety. Protecting the spindle and the vital rotary union from contamination is a canister filter with a replaceable **10-micron** element.

CONSTRUCTION (CONT'D.)

1,000 PSI THROUGH-SPINDLE-COOLANT (OPTION)

Severe applications, holes with high length to diameter ratios or tough materials require high-pressure coolant to evacuate chips and keep the cutting edge cool. The increased coolant and chip flow improves finishes and tool life, while allowing more aggressive feeds and speeds.

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.

<u>Control Specifications - Fanuc OiM-F Control</u>

8.4" color LCD screen
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 Feedrate Direct Command)
Feedrate 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)
Helical Interpolation
Threading/Synchronous Feed
Manual Reference Point Return
1st Reference Point Return G28

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Control Specifications - Fanuc OiM-F Control (CONT'D.)

Reference Point Return Check G27
2nd Reference Point Return G30
3rd and 4th Reference Point Return
Program stop, optional stop, end of pgm 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)
Program Number O4 Digit
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 NestingCustom Macro   #100 to #199
Addition to Custom Macro Common Variables #500 to #999
Circlar 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
Reader/Puncher Interface RS232C
Memory Card input/output
Embedded Ethernet (100 Mbps)
Part Program Storage Length: 320M
Registered Programs 400 ea
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

Control Specifications - Fanuc OiM-F Control (CONT'D.)

Help Function
Run Hour / Parts Count Display
Actual Cutting Feedrate Display
Spindle / Servo Setting Screen
Multi-language display (Selection of 5 Optional Language)
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)
Fanuc Manual Guide i conversational programming
Alpha i AC digital servo system with 1,000,000 pulse encoders
Full MDI keyboard
PCMCIA data card slot on left side of LCD for program input / output – up to 2GB storage
Advanced Preview Control (Look ahead of multi-blocks – 20 blocks look ahead)
Automatic Acceleration / deceleration with Bell Shaped rapid acc / dec
3 axes simultaneous control std. (4 axis opt.)
Scaling
Custom Macro B
High speed skip signal