



## **CAMPRO CNV-850 VERTICAL MACHINING CENTER**

### **MACHINE FEATURES:**

- Constructed with high quality meehanite cast iron and heat treated to relieve stress thereby assuring maximum rigidity and accuracy.
- The CNV-850 is equipped with high precision and heavy loading series linear guideways on all 3 axes. Automatic lubrication system for all linear guideways and ball screws.
- The base is reinforced by "A" type rib layout to upgrade absorption capability of vibration and is constructed of a box type structure for excellent rigidity. The machine structure is designed via Finite Element Analysis (FEA) and advanced 3D software.

CAMPRO CNV-850

The CNV-850 is designed for 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
- \* Twin Arm 20 Tool Capacity ATC
- \* 12,000 RPM Spindle
- \* CAT40 Big Plus Spindle
- \* Spindle Oil Cooler
- \* Powerful 20 hp Spindle Motor
- \* Additional M-Codes
- \* Flood Coolant
- \* Spindle Coolant
- \* Coolant Through Spindle Prep
- \* Air Blow
- \* Rigid Tapping
- \* Custom Macro B
- \* Portable Manual Pulse Generator
- \* Massive One-Piece Meehanite Cast Bed
- \* 4<sup>th</sup> Axis Prep
- \* Double Anchored, Pre-tensioned Ball Screws
- \* Fast 1,181 IPM Rapid Traverse rate
- \* Full Enclosure Splash Guard
- \* Work Light
- \* Operator Call Lamp (red, yellow, green)
- \* Assembly and Operation Tools
- \* Auto Power Off
- \* Heat Exchanger for Electrical Cabinet
- \* Machine Tool Manuals
- \* Fanuc Manuals
- \* WARRANTY-MACHINE: One-Year Parts Only
- \* WARRANTY-CONTROL: Two-Years Parts and Labor

## **SPECIFICATIONS:**

### **CAPACITY:**

X Axis Travel	33.4."
Y Axis Travel	20.4"
Z Axis Travel	20.4"
Distance from Spindle Nose to Table	4.3" – 24.8"
Distance from Spindle Center to Column	24.8"

### **TABLE:**

Table Loading Area	37.4" x 20.4"
Max Table Load	1,100 lbs.
T-Slots, width x spacing x # slots	.7" X 5 X 3.9"

### **SPINDLE:**

Spindle Speed	12,000 RPM
Spindle Motor	20 HP
Spindle Taper Type	CAT 40 Big Plus
Spindle Driving Method	Belt Drive

### **AUTO TOOL CHANGER:**

ATC Type	Twin Arm Type
Tool Shank	CAT 40
Pull Stud	P – 40T (45 Deg.)
Tool Storage Capacity	20
Max. Tool Dia.	3.1"
Max Tool Dia. (Adjacent Pot Empty)	5.9"
Max Tool Length	9.8"
Max Tool Weight	15 lbs.
Tool Change Time TOOL – TOOL	2.5 sec.
Tool Change Time CHIP – CHIP	7 sec.
Tool Selection	Random Bi-Directional Type

### **FEED:**

Rapid Traverse Feed rate	1,181 IPM All Axes
Cutting feed rate	393 IPM
Least Command Increment	.001 mm,
Positioning Accuracy	.00020"
Repeatability	.00008"
Slide Type	LM Guideways

### **POWER:**

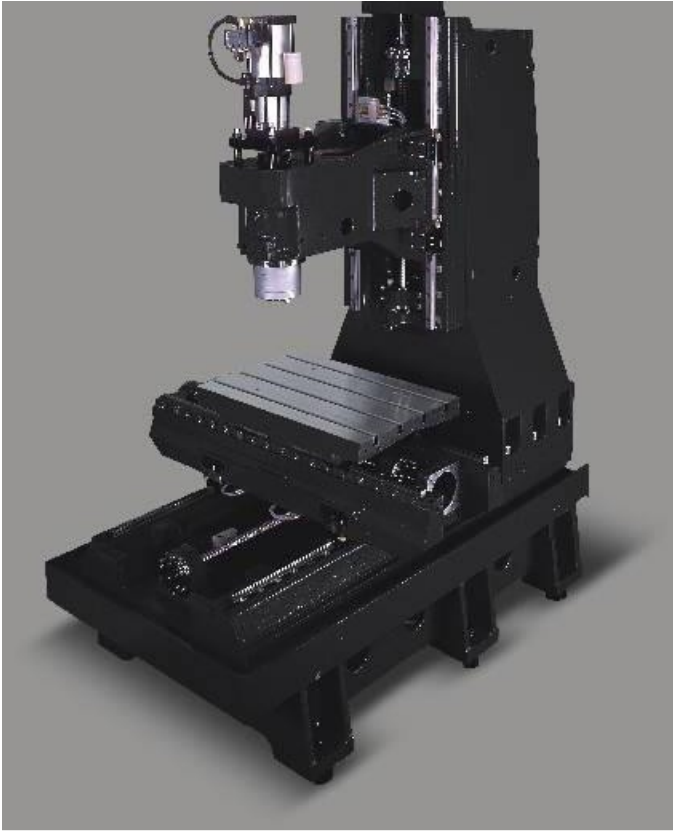
Air Source Requirement	85 – 115 PSI (3/8 ID Supply Hose)
Standard Power Source	220V, 60HZ, 3 Phase +/- 10%
Power Capacity	40 Amps Minimum

### **GENERAL:**

Floor Plan (W X D)	88" X 115"
Height	105 in.

**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. 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 15 HP (30 min.) rating A.C. motor. Power is transferred through a heavy-duty cogged drive belt eliminating slippage, promoting thermal stability, and minimizing vibration.

**BALANCED 12,000 RPM SPINDLE** with spindle oil cooler 6000 BTU for High-Speed Machining

**HARDENED AND GROUND C3 DOUBLE NUT BALL SCREWS** are Pretensioned to minimize backlash, provide high precision movement, and reduce heat deformation on all axes.

### **OIL JACKET SPINDLE CHILLER**

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 20-position tool changer uses a fast, random bi-directional twin arm with 2.5 second tool-to-tool change time, and 7 seconds chip to chip.

### **BALLSCREWS AND AXIS DRIVES**

Each axis is driven by a high precision double-nut ball screw. The ball screws are centered between the guideways. The ball screws 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 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.

## **CONSTRUCTION (Continued):**

### **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 is made of heavy gauge sheet metal to contain both chips and coolant. 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

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

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  
1<sup>st</sup> Reference Point Return G28  
Reference Point Return Check G27  
2<sup>nd</sup> Reference Point Return G30  
3<sup>rd</sup> and 4<sup>th</sup> 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

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

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)

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

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