



CNV-1050 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-1050 is equipped with high precision and heavy loading series linear guideways on all 3 axes. Automatic lubrication system for all linear guideways and ballscrews.
- 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.
- Our counter balance system is equipped with a guide rail for increased stability, thus avoiding vibration during high feedrates and rapid traverse, this ensures machining accuracy.

The CNV-1050 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 (Package 1)
- * AI APC Contour Control
- * 12,000 RPM Spindle (Belt Drive)
- * Powerful 25 HP high torque spindle motor
- * Cartridge Spindle Design
- * CAT40 Big Plus Spindle
- * 1000 PSI CTS Prep Only
- * 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)
- * Chip Flushing System
- * Double Anchored, Pretensioned Ballscrews
- * Fast 1,181 IPM Rapid Traverse rate
- * 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
- * WARRANTY: Machine: One Year, Parts Only
- * Control: Two Years, Parts & Labor

SPECIFICATIONS:

CAPACITY:

X Axis Travel	41.3"
Y Axis Travel	21.2"
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	45."2 X 20.4"
Max Table Load	1320 lbs.
T-Slots, width x spacing x # slots	0.7" X 3.9" X 5

SPINDLE:

Spindle Speed	12,000 RPM
Spindle Motor	25 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 BIG +
Pull Stud	P – 40T (45 Deg.)
Tool Storage Capacity	24
Max. Tool Dia.	3.15"
Max Tool Dia. (Adjacent Pot Empty)	5.9"
Max Tool Length	9.8"
Max Tool Weight	15.4 lbs.
Tool Change Time TOOL – TOOL	3.5 sec.
Tool Change Time CHIP – CHIP	7.0 sec.
Tool Selection	Random Bi-Directional Type

FEEDRATE:

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

SPECIFICATIONS (CONT,D):

POWER:

Air Source Requirement
Standard Power Source
Power Capacity

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

MACHINE:

Floor Plan (W X D)
Height
Machine Weight

132" X 89" in.
105.5" in.
12,566 lbs.

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

CONSTRUCTION:



- Balanced 12,000 RPM Spindle with spindle oil cooler 6000 BTU for High Speed Machining.
- Hardened and Ground C3 Double Nut Ballscrews are pretensioned to minimize backlash, provide high precision movement, and reduce heat deformation on all axes.

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 25 HP A.C. motor. 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.

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.

CONSTRUCTION (Cont'd)

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.

BALLSCREWS 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 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.

290 PSI (20 BAR) THROUGH-SPINDLE-COOLANT SYSTEM *(Optional)*

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.

1,000 PSI THROUGH-SPINDLE-COOLANT *(Optional)*

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 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 Conversational Control

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
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

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