

# **MC MACHINERY SYSTEMS, INC.**

a subsidiary of  Mitsubishi Corporation

## **MCV-800** **Multi-Purpose Milling** **VMC Quotation**



***MCV-1000 Size Machine Pictured***

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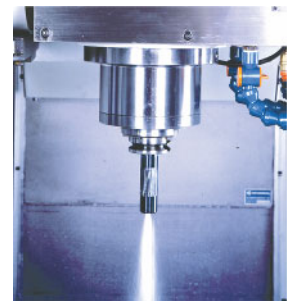
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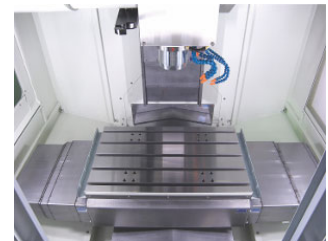
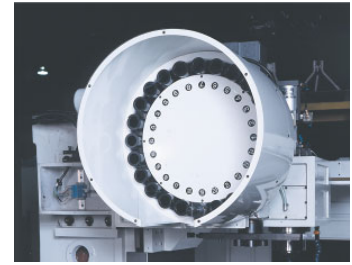
## Machine Features

- **Rigid Meehanite Base:** wide base, box-shaped column, enhanced saddle and fully supported workpiece structure all contribute to the ability for heavy duty machining.
- **Finite Element Analysis** is used to calculate the finest combination of cast iron components and rib structures of the spindle head and machine base.
- **Large-Span Base** effectively supports and evenly disperses the load force from the saddle. Short cantilever of the saddle ensures excellent dynamic precision.
- **Optimized Contacting Ratio** between the spindle head and machine column provides excellent spindle head rigidity during heavy cutting loads as well as ensuring the geometric precision of the spindle.
- **Linear Motion Ways** of the heavy duty ball guide type are used on all three axes to be able to withstand heavy loading, tolerate high acceleration with rapid movement and ensure precise positioning.
- **High-Speed High-Precision:** 3-axis direct drive motors fully eliminates backlash, achieves high-precision and provides stability during high-speed transmission.
- **High Rapid Travel Speeds** of the X & Y axes are 1,417 in/min., while the Z-axis speed is 945 in/min.
- **Coolant Thru Spindle Prep:** All the internal plumbing has been provided to easily allow for the connection of the Chip Blaster Option which provides over 1000 PSI to greatly improve tool life and machining / deep hole drilling speed.
- **Large Volume Coolant Supply:** Tank is located under the machine to conserve floor space and provides 53 gal. capacity to help remove chip heat.



## Machine Features (continued)

- **High-Speed ATC System & Magazine Unit** provides a fast, simple, reliable and long lasting tool changer system that uses a unique cam drive device which can be activated rapidly by PLC software programming.
- **Standard 24-Position Tool Changer** uses a Dual Swing Arm Type bi-directional tool exchange system reducing tool change cycle times. The cam driven tool magazine ensures rotation accuracy and smooth motion even under a full load of tools.
- **High-Efficient Chip Removal System** starts with complete covering of all the axis surfaces dropping the chips into the collection pan in the machine base providing a smooth flow of chips into the high capacity chip auger mechanism.
- **Disc-Type Oil / Coolant Separator** effectively separates the floating oil and the coolant ensuring prolonged lifespan of the coolant and high level of processing quality.
- **Automatic Lubrication System** is a centralized oiling system providing lubrication for all drive system components, LM ways and ball screws. This energy saving system will discontinue feeding after the drives sit idle for a pre-set amount of time.
- **Convenient Operation** is provided by a wide front door opening which simplifies the loading/unloading of fixtures and workpieces. Large side access doors/panels are also provided for ease of access for either the operator or automation. A high luminance internal explosion-proof work light is provided to aid in fixture and part setups.



## Mitsubishi M80A Control Features

- **CNC-dedicated CPU** – Improved cycles times due to faster program processing and more accurate machining due to a faster CNC to drive communication network.
- **Intuitive Touch Screen Operation** – Icon-based navigation improves usability for experienced and novice operators. Screen size of 10.4" allows improved visibility and include pinch, flick and scroll abilities like a smart phone or tablet.
- **Improved SSS Control** – Reduces machine vibration during high speed cutting and optimizes acceleration/deceleration times for each axis. This allows for shorter cutting times with a high degree of accuracy.
- **Large Capacity SD Card Expansion** – With 2 expansion slots or 32GB SD cards, the control can expand to 64GB of added memory. The additional memory allows for large capacity machining programs and graphic data.
- **High-speed, High-accuracy Mode** – G05 P20000 (High-speed High Accuracy III) comes standard, allowing for complex, highly precise 3D mold work without experiencing a reduction in performance. 1,350 Blocks per Minute processing capability.
- **Safety Feature Built-in** – MDS-E series drives with safety built-in the amplifiers require less hardware to provide safety features.
- **User Level Based Data Protection** – M8 series allows for multiple levels of permissions for operators depending on their role.
- **Field Network Compatibility** – Connect to peripheral equipment and devices conforming to a range of field networks including CC-Link®, PROFIBUS® DP, and EtherNet/IP™.



# **Mitsubishi CNC M80 Series Control Specifications List**

## **CONTROL AXES**

- Basic Controlled Axes----- (3)
- Maximum Number of Axes (NC Axes + Spindles + PLC Axes) ----- (11)
- Maximum Number of NC Axes----- (8)
- Number of Simultaneous Spindle Axes----- (4)

## **OPERATION MODES**

- Tape (RS-232C Input) Mode
- Memory Mode (512kb) (1000 Programs)
- Front-side USB Memory I/F [Up to 32GB]
- MDI Mode
- High Speed Program Server Mode – Display Unit Side
- Front-Side SD Card Mode 512 Mb Included (Up to 32G Optional)

## **EDITING**

- Program Editing
- Background Editing
- Buffer Correction
- Program Search
- Sequence Number Search

## **INPUT COMMAND**

- .0001" (.001MM)
- Inch/Metric Changeover

## **DISPLAY**

- 10.4" Color Touchscreen Display (LCD TFT)

## **OPERATION MODE**

- Absolute and Incremental Values

## **POSITIONING AND INTERPOLATION**

- Unidirectional Positioning
- Linear Interpolation
- Circular Interpolation
- Helical Interpolation
- Spiral/Conical Interpolation
- Cylindrical Interpolation
- Spline Interpolation

## **FEEDRATES**

- Rapid X/Y/(Z) ----- 1,417 (945) IPM
- Cutting Feedrate ----- 0.04 ~ 787 IPM
- Inverse Time Feed
- Manual Feedrate Input
- Cutting Feedrate Override

## **ACCELERATION/DECELERATION**

- Automatic Acceleration/Deceleration After Interpolation
- Rapid Traverse Constant Inclination Accel/Decel

## **TAPPING & DRILLING CYCLES**

- Synchronous Tapping Cycles
- Pecking Tapping Cycles
- Deep Hole Tapping Cycle
- High Speed Synchronous Tapping
- Fixed Cycles for Drilling
- Small Diameter Deep Hole Drilling Cycle

## **SPINDLE FUNCTIONS**

- Digital Servo Motor Control
- S Code Output
- Spindle Override
- Spindle Orientation
- Spindle C Axis Control

# Mitsubishi CNC M80 Series Standard Specifications List (Cont.)

## **PROGRAM SUPPORT FUNCTIONS**

- Subprogram Control – 8 Layers Deep
- Macro Programming
- User Defined Macros up to 4 Layers deep
  - Macro Interruption
  - Variable Commands (700 Sets)
- Mirror Image
- Coordinate Rotation
- Polar Coordinate Command
- Multi Part System Program Management
- Optional Block Skip
- **NAVI MILL CONVERSATIONAL PROGRAMMING**

## **TOOL COMPENSATION & FEATURES**

- Tool Radius Compensation
- Number of Tool Offsets (400 Sets)
- Offset memory / Tool Shape/Wear Offset Amount
- Tool Life Management (200 Sets)

## **COORDINATE SYSTEM**

- Workpiece Coordinate System Primary (6 Sets)
- Workpiece Coordinate System Extended (48 Sets)
- Plane Selection

## **RETRACT/RETURN FUNCTIONS**

- Manual Reference Return
- Automatic Reference Return
- Tool Exchange Position Return
- Threading Retract
- Manual Retract

## **HIGH SPEED/HIGH ACCURACY MACHINING MODES**

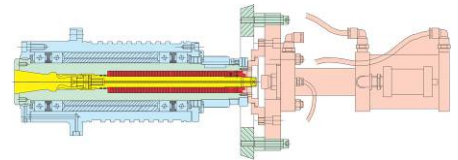
- High Speed Machining MODE I (37,000 Blocks Per Minute) (G05P1)
- High Speed Machining MODE II (65,000 Blocks Per Minute) (G05P2)
- High Accuracy Control (G61/G08)
- High Speed/High Accuracy Control I (G01Q1) (Max 37,000 BPM)
- High Speed/High Accuracy Control II (G05P10000) (Max 65,000 BPM)
- High Speed/High Accuracy Control III (G05P20000) (Max 135,000 BPM)

## **MAINTENANCE AND TROUBLESHOOTING**

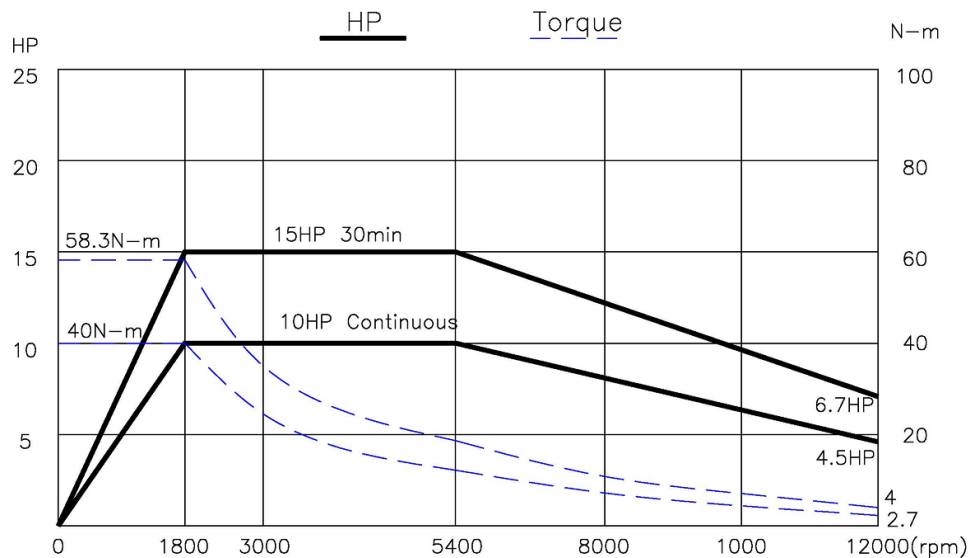
- Operation History
- Data Stamping
- NC Data Backup
- Machine Diagnostic Pages

## MCV-800 Spindle Specifications

- High-Performance 12,000 RPM Spindle** utilizes super precision angular contact ball bearing construction with a belt drive transmission in the motor/spindle connection. The spindle is free from the thermal effect of the main motor while a surrounding jacket of oil, circulated through a chiller system, further stabilizes spindle temperature. Thermal displacement is reduced guaranteeing spindle precision and long lifespan.
- Four Jaw Collet** provides reliable tool holding force, large contact area, low wear and long service life. The collet is operated by a floating draw bar mechanism which diverts the clamping force away from the spindle bearings.



Specification	Unit	MCV-800
<b>Standard 12K Spindle</b>		
Spindle Speed	RPM	12,000
Tool Shank	BIG Plus CAT	40
Spindle Lubrication		Oil mist
Spindle Chiller		Oil Cooled
<b>Motor</b>		
Spindle Motor (30min./cont.)	HP	15.0 / 10.0
Spindle Torque (30min./cont.)	ft. lb.	51.6 / 35.2



SJ-D11/100-01(RATE=6/5)  
 MCV-600 Spindle Power-Torque Chart  
 MCV-800



## MCV-800 Machine Specifications

Specification	Unit	MCV-800
<b>Travel</b>		
X x Y x Z Axis Travel	inch	31.5 x 17.7 x 21.3
Spindle nose to table	inch	3.2 ~ 24.4
<b>Spindle</b>		
Spindle speed	rpm	12,000 (8,000 Opt)
<b>Automatic tool changer</b>		
Tool number		24
Tool-to-Tool Change Time	sec	2.9
Max. tool diameter with adjacent tool / (without adjacent tool)	inch	3.1 / (4.7)
Max. tool length	inch	10.2
Max. tool weight	lb	15.4
ATC type		Dual Swing Arm Type
Tool shank	BIG Plus CAT	40
<b>Motor</b>		
Spindle motor (30 min./cont.)	HP	15.0 / 10.0
X/Y/Z servo motor	HP	2.0/2.0/2.7
<b>Table</b>		
Table size	inch	33.5 x 17.7
Max. load capacity	lb	770
T-slot (No. x Width x Distance)	inch	5 x 0.7 x 3.2
<b>Rapid speed</b>		
X/Y/(Z) rapid speed	in/min	1,417 (945)
Cutting feedrate	in/min	0.04 ~ 787
<b>Controller</b>		
Mitsubishi		M80A
<b>Miscellaneous</b>		
Positioning Accuracy (J1S B6338)	inch	0.0002 / ft.
Repeatability (J1S B6338)	inch	±0.00012
Machine weight	lb	9,900
Power requirement	V / KVA	208 ±5 / 15
Compressed Air Requirement	cu.ft./min	15.5 (30 w air blow)
Compressed Air Requirement	psi	85
Coolant capacity	gal	53
Machine Foot Print W, D, H	inch	82.7 x 63.8 x 96.6

# MCV-800 Machine Layout Drawing

MCV-800  
Foundation Drawing

Units: mm  
inch

Machine Height: 2454  
96.6

