MITSUBISHI ELECTRIC
Changes for the Better

Automating the World

M8V SERIES CONTROLS

LATHE SPECIFICATIONS

Lathe Specifications for M8V Series Controls

- Absolute/incremental command
- Alarm guidance
- Automatic backup (setup by parameter)
- Automatic support functions
  - Skip
  - Multi-step skip
  - PLC skip
  - Speed change skip
  - Torque limitation skip
  - Automatic tool length measurement
  - Manual tool length measurement
  - Workpiece coordinate offset measurement
  - Tool life management
    - 256 sets or more depending on control type
  - Programmable current limitation
- Axis detachment
- Built-in Wireless LAN (M80V/M800VS)
- Chatter suppression
- Chuck/tailstock barrier check
- Cutting feed override
- Cylindrical interpolation
- Data protection by user level
- Data protection key
- Diameter/radius designation
- Direct Robot Control (DRC)
- Drip feed through RS232, USB, SD front side memory card, or data server SD memory card
- Dwell (revolution-based designation)
- Dwell (time-based designation)
- Editing
  - Background editing
  - Buffer correction
  - Display/Edit 3 programs at once (15" screen only)
  - Editing of all memory types (Memory card front slot, data server, USB)
  - Finish Shape View Programming
  - G code guidance
  - Machining program input mistake check warning
  - Program editing
  - Special program editing display for synchronization between part systems
- Feed per minute (asynchronous feed)
- Feed per revolution (synchronous feed)
- G00 feedrate designation
- Helical Interpolation
- Inch/metric changeover
- Input/output I/F
  - Display unit-side data server I/F (Hard-drive)
  - Ethernet I/F (using FTP software)
  - Front-side USB memory I/F
  - RS-232C I/F
  - SD card I/F
    - Control unit-side SD card I/F [up to 32GB]
    - Front-side SD Card I/F [up to 32GB]
- Ladder Monitor
- Machine Accuracy Compensation
  - Backlash compensation
  - Circular error radius compensation
  - Lost motion compensation
  - Memory-type pitch error compensation
  - Smooth high-gain control
  - Two-way pitch error compensation
- Manual speed command (specify feedrate in running program by handwheel)
- Menu list
- Milling interpolation
- OMR-CC (Optimum machine response-contour control)
- Override cancel
- Parameter guidance
- Parameter lock
- Polar coordinate interpolation
- Program control/test
  - 2D graphic check
  - 3D solid program check
  - Dry run
  - Ignore M/S/T commands
  - Machine lock
  - Machining time computation
  - Optional block skip
  - Single block
- Program display lock (9000 programs)
- Program/display protection lock (9000 programs)
- Program storage
  - M80V 2500 KB/M800V 4000 KB [2000 programs]
  - Data server rear slot SD card up to 32GB (SLC memory)
  - Memory card front slot SD card up to 32GB (SLC memory)
  - USB front slot
- Program support functions
  - 8000 macro variables
  - 8 million extended variables
  - Automatic corner override
  - Balance cut
  - Control axis superimposition
  - Coordinate rotation by program
  - Corner chamfering/corner R
  - DXF import
  - Dwell/miscellaneous function time override
  - Exact stop check mode
  - Fixed cycles
    - 2D Barcode and Text Engraving
  - Geometric command
  - High-accuracy control (G61.1/G08)
  - High-speed high-accuracy control I (G05.1Q1)
    - Maximum [M800V-67.5kBPM/ M80VA-33.7kBPM]
  - High-speed high-accuracy control II (G05P10000)
    - Maximum [M800V-168kBPM/ M80VA-101kBPM]
  - High-speed machining mode II (G05P2)
    - maximum [M800V-168kBPM/ M80VA-101kBPM]
  - Interactive cycle insertion (icon based programming)
  - Linear angle command
  - Machining condition selection
  - Macro interrupt
  - Multi-part system program management
  - Parameter input by program (G10)
  - Playback
  - Programmable in-position check
  - Run mill G-code on a lathe (M800V)
  - Simple programming (NAVI LATHE conversational programming)
  - Subprogram control
  - Super Smooth Surface (SSS) control
  - Timing synchronization between part systems
  - Two-part system simultaneous thread cutting
  - Tool/Material shape input by program
  - Tolerance control
  - User macro
  - Work/tool offset change by program
- Rapid traverse override
- Remote desktop connection (Using VNC software)
- Simple screenshot capture
- Software packages
  - NC Monitor2
  - NC Explorer
  - NC Trainer2*
- Spindle functions
  - Constant surface speed control
  - Hobbing
  - Polygon turning
  - Spindle positioning (C-Axis)
  - Spindle override
  - Spindle orient
  - Spindle speed clamp
  - Spindle synchronization
  - Spindle superimposition control
- Software stroke end (over travel)
- Support for 17 languages including English, Spanish, French, Chinese, Japanese...
- Thread cutting
  - Deep-hole tapping cycle
  - Chamfering
  - Circular thread cutting
  - Pecking tapping cycle
  - Punch tapping
  - Synchronous tapping cycle
  - Thread re-cutting
  - Thread cutting override
  - Variable feed thread cutting
  - Variable lead thread cutting
- Tool compensation functions
  - 256 sets or higher (dependent on CNC type)
  - Automatic decision of nose radius compensation Direction (G46/40)
  - Tool length offset
  - Tool compensation for additional axes (other than X and Z)
  - Tool nose radius compensation (G40/41/42)
  - Tool shape/wear offset amount
- Touchscreen as standard
- User selectable menu configuration (rearrange the order of softkeys)
- Vertical axis pull-up
- Vibration cutting control*
- Zero return
  - 2nd, 3rd, 4th reference position return (G30 P2/3/4)
  - Absolute position detection
  - Automatic 1st reference position return (G28)
  - Manual reference position return
  - Reference position check (G27)
- No need to purchase options to add axis

*Option to be purchased

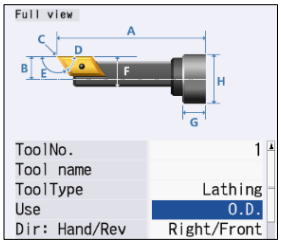
All specifications are listed for the M8V Series controls, unless specified. These specifications do not apply to M80VB or M8 Series controls. Please contact Mitsubishi Electric for further details.

Lathe Feature Explanations

Scan to watch demonstrations of these features

Tool Management

Create custom data for each tool. Displays all data for each tool in one place including tool shape, offset values, tool life data, and tool specifications. A tool icon is brought up on the monitor page during each tool change creating peace of mind for the operator indicating that the right tool data is assigned to the actual tool doing the cutting. This data is migrated over to the Navi conversation programming.



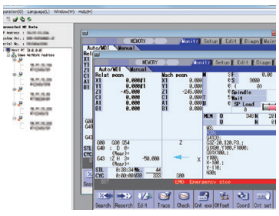
Customized Navigation

While we take pride in the setup and navigation of our control we think it's best for the operator to change the way they see things.

- Softkeys can be organized freely.
- Position displays can be organized and changed with a push of a button. Display 1, 2 or 4 position counters and customize each one freely.
- Data such as variables, tool offsets, work offsets, etc. can be viewed right on the monitor page, easily choose the one you want to see.

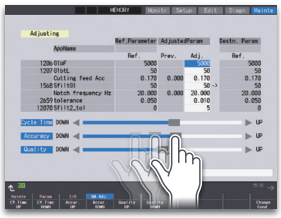
NC Monitor2

This free software allows any networked machines in a shop to be monitored from a PC in the office. Just open the software, click on the machine, and the same CNC screen can be displayed and navigated. Screen changes will not affect the machine screens so the operator can continue their job functions. Access levels can be set by parameter to View and Change Data, View Only, or No Access.



Parameter Adjustment Screen for High-Accuracy Control

The parameters for high-accuracy control can be adjusted through intuitive operation using three machining indexes (cycle time, accuracy, quality) displayed in the guidance. Optimal machining with no experience required by operators.



G-Code Compatibility

With industry standard G-code or EIA programming there will be no need to retrain operators on a new language. All the same familiar G-codes used by the top control manufacturers are implemented. Macro programming is standard on all M8V controls and many of the variables are the same as other control builders as well.

NC Explorer

This free software allows access to the memory on any networked machine. Attached to Windows® Explorer, this software will allow you to drag and drop files to the machine memory or SD memory cards just as you would do any other file inside Windows Explorer.

NC Trainer2 Plus

This software mimics the M8V, M8, or M7 CNC controls on a PC. You can navigate the control, create programs, change tool offsets, change parameters, run programs, open up ladders, and much more. Short of running and actual machine, if it can be done on our CNC it can be done on NC Trainer2 Plus.

Built-in Wireless LAN

Our industry-first* NC control unit with built-in wireless LAN frees operation from the constraints of time and space. It can be connected to software tools on a PC to exchange data using wireless communication. (M800VS/M80V only).

*As of August 2021. According to research by Mitsubishi Electric Corporation.

IMA Adapter and IMA Mobile

Mitsubishi Electric's Integrated Machine Analytics (IMA) adapter collects data from CNC controls for real-time monitoring and analysis, improving Overall Equipment Effectiveness (OEE) and ensuring a quick Return On Investment (ROI). The IMA Mobile solution brings these benefits to the palm of your hand, allowing manufacturers to monitor their machines anywhere.

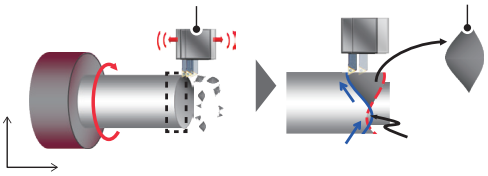
MTConnect

As more and more of the industry is using enterprise systems and looking at data collection to gather data to improve efficiencies, quality, and throughput, Mitsubishi Electric is on the forefront with adopting the MTConnect standard. With software adapters for M8V controls end users can work with the software provider of their choice for creating their dashboard but Mitsubishi Electric will be there to supply the software adapter to collect the vital data needed to move them to the next level.

Scan to watch demonstrations of these features

Vibration Cutting Control

While machining is performed the feed axis vibrates to break up chips, reducing the time it takes to remove the chips and increases machine utilization.

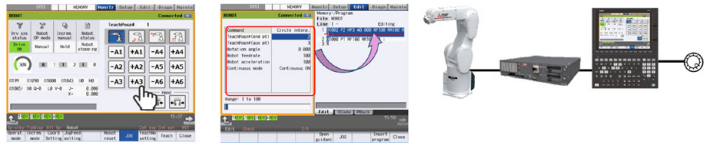


User-defined Keys

Custom user-defined character generation keys are offered as standard on the M8V control. Generally used for programming, the user can define up to 8 different commonly used string of characters with a single touch of a button improving program efficiency. *Not available on all key-panels.

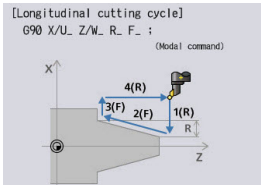
Direct Robot Control (DRC)

Screen guidance and special G codes allow easy programming and operation without requiring knowledge of robot language. For example, you can run a NC program that coordinates loading/unloading of workpieces by the robot with the machining of workpieces by the machine tool.



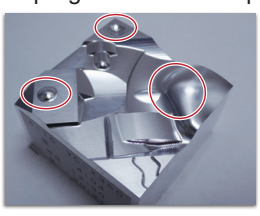
G-Code Guidance

In the EDIT screen we have given you a simple guide to all of the G-codes. Just type the G-code you desire and a diagram will appear showing you the format as well as all of the variables needed for that code. The control will also tell you if this is a modal command.



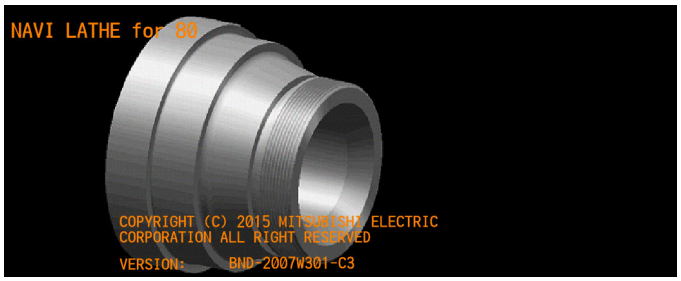
OMR-CC (Optimum Machine Response – Contour Control)

Machining is approximately 11% faster, with no loss of accuracy, compared to the existing M800 and M80 series. This is due to control processing that adjusts to the workpiece shape to correct for programmed/actual position error.



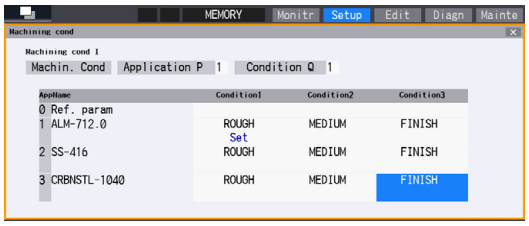
Navi Lathe

Mitsubishi Electric's conversational program can make it easier for end users that are not used to G-code programming to create simple programs for machining. With cycles for turning, groove, thread, hole, as well as live tool milling cycles for hole, keyway, and contour, easy to follow diagrams are provided for each cycle so complex parts can be machined with ease. Easy one-time setup for tools and different materials makes switching between jobs effortless.



Machining Conditions Selection

This feature gives the end user complete control over the most common parameters related to high-accuracy control and can be configured in advance for each machining application. Up to 9 different conditions can be set. Each condition is activated on the fly within a program by a simple G-code. As an example, set up stainless steel for rough cutting, medium fine cutting, and fine cutting.



Program Restart

Restarting the program on an M8V CNC can be done a number of ways. The most common would be after a tool breakage. The control remembers exactly where it left off in the program. Do a simple M/S/T history and the user chooses which ones to run. This function also works great for power outages. You can also visually choose a spot in the program to start from by simply tapping the section and hitting INPUT.

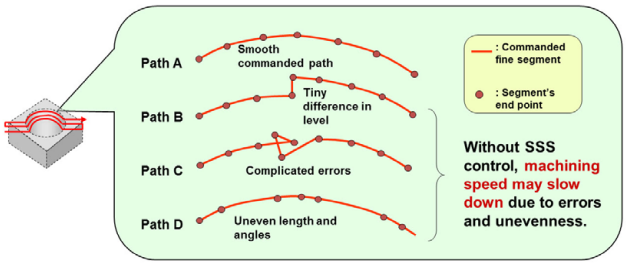
Automation Needs

The M8V control offers connectivity devices for CC-Link® (Master/Slave), PROFIBUS®-DP (Master), and EtherNet/IP™ (Scanner) for all of your automation needs. Mitsubishi Electric also offers a wide variety of automation products including Robots, PLCs, HMIs, general purpose Servos, and VFDs to meet your factory automation needs.

Scan to watch demonstrations of these features

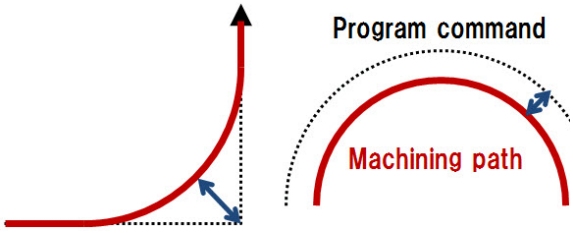
SSS (Super Smooth Surface)

With CAM software being the industry standard for creating programs for complex parts, SSS solves the problem of creating a smooth path from programs that create small straight line segments. Not only does SSS create a better finish by blending the straight lines into smooth lines and curves, but it also shortens cycle time to 10% to 20% through reducing unneeded accelerations and decelerations. Standard on all M8V controls.



Tolerance Control

Activated within a program or by parameter, this function allows the user to select the deviation amount with a simple parameter change. Set a large value during roughing to reduce the cycle time and set a smaller value during finish to get a more accurate cut. Standard on all M8V controls.

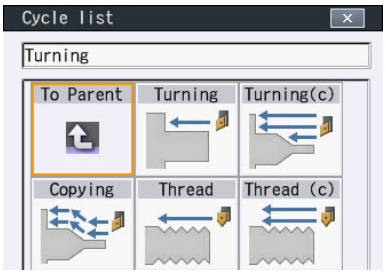


USB Running

Programs can run from the USB slot on the front of the control as well as the front or rear SD card slot (data server). Sub program calls can be made from any device to another device. Programs can be edited and created on all devices as well. No performance lag will result from running from SD or USB memory. Standard on all M8V controls.

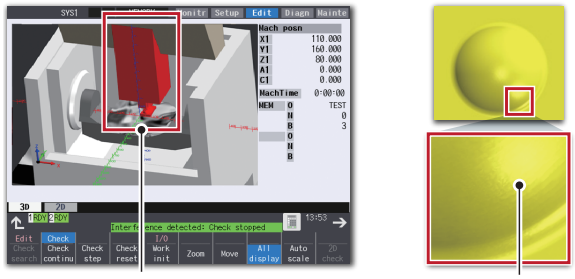
Interactive Cycle Insertion

This icon based programming method lets you choose and customize the cycles or features you want to add to your G-code program. Both turning and milling features are included to suit traditional lathe features as well as the more complicated functions that require live tooling.



3D Graphics

2D and 3D graphics are standard on all M8V controls. With today's machines producing complex parts it's important to verify the tool path is correct, finding errors before they happen and saving customers valuable time. With the addition of the touch screen the operation becomes even easier on the M8V. Intuitive functions such as pinch to zoom in and out, drag with a single finger, and rotate with two fingers.

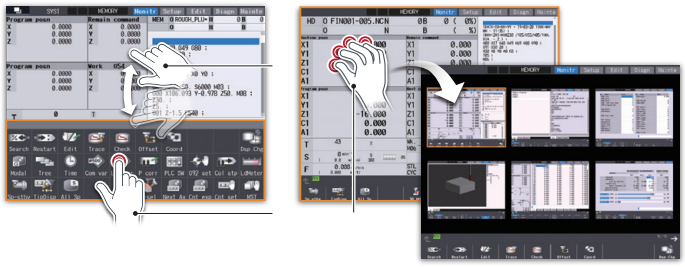


SD Card and Data Server

Don't pay for costly memory upgrades. The M8V control uses the latest technology SD memory cards. No need to obtain these cards from Mitsubishi Electric for hundreds or even thousands of dollars. A simple off the shelf SD card can be purchased from your local electronics store. Two slots are available, one in the front and one in the back of the CNC. Standard on all M8V controls.

Intuitive Touch Operation

Multi-touch gestures enable smarter operations, such as: Pinch-in/pinch-out in program display area to change text size, drag/flick to open menu list, and grab movement to open recent selected screens.



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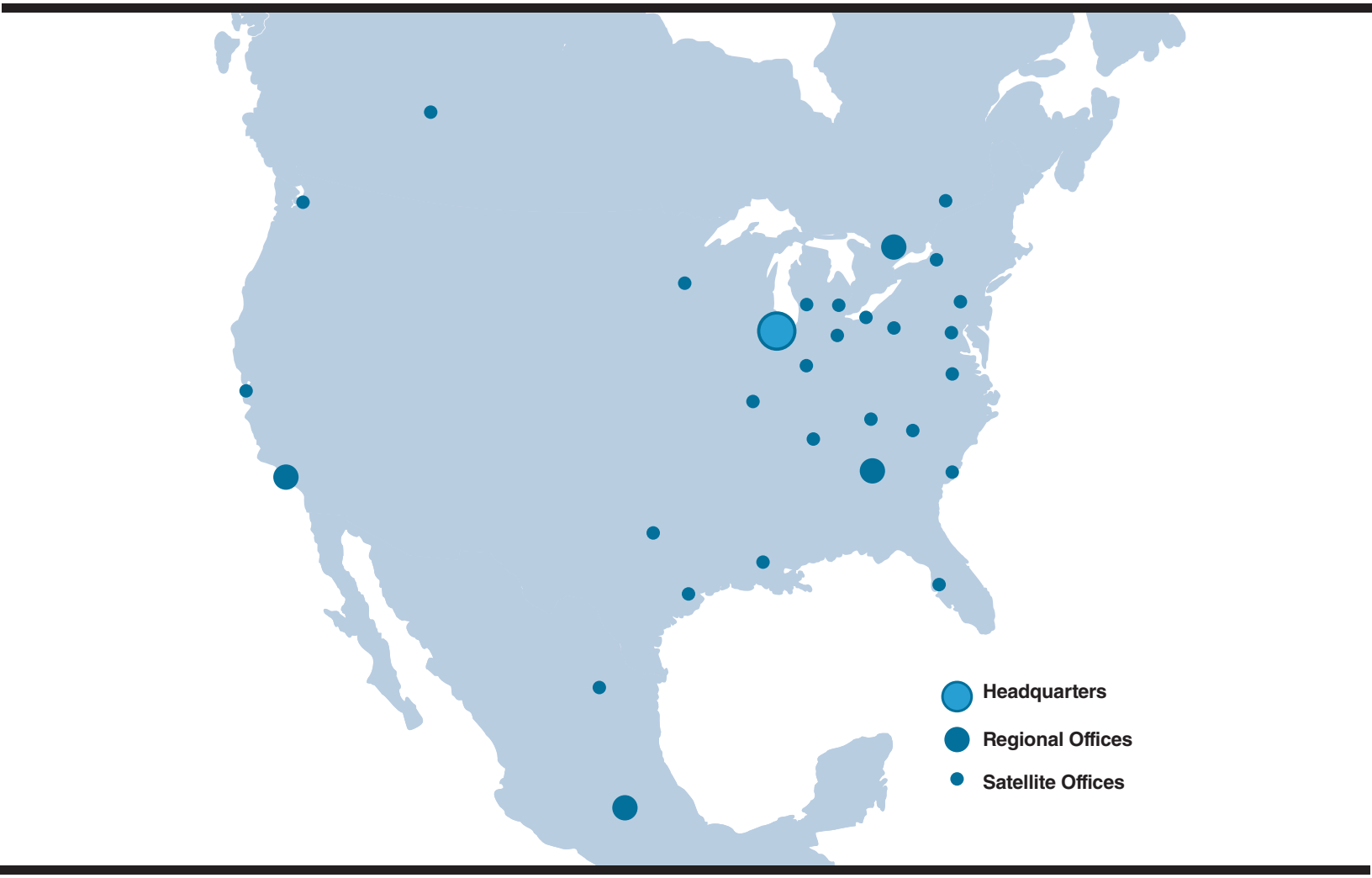

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