Global Partner. Local Friend.

Wire-cut EDM Systems
MV Series

MV series

Visit us on

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MITSUBISHI ELECTRIC CORPORATION HEAD OFFICE, TOKYO, JAPAN

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GLOBAL IMPACT OF MITSUBISHI ELECTRIC

Changes for the Better

We bring together the best minds to create the best technologies. At Mitsubishi Electric, we understand that technology is the driving force of change in our lives. By bringing greater comfort to daily life, maximizing the efficiency of businesses and keeping things running across society, we integrate technology and innovation to bring changes for the better.

Mitsubishi Electric is involved in many areas including the following:

Energy and Electric Systems
A wide range of power and electrical products from generators to large-scale displays.

Electronic Devices
A wide portfolio of cutting-edge semiconductor devices for systems and products.

Home Appliance
Dependable consumer products like air conditioners and home entertainment systems.

Information and Communication Systems
Commercial and consumer-centric equipment, products and systems.

Industrial Automation Systems
Maximizing productivity and efficiency with cutting-edge automation technology.

Mitsubishi Electric continues the challenge to be the only one FA machine and systems supplier delivering total customer satisfaction.

Mitsubishi Electric is a world-leading general electrical and electronic products manufacturer, with wide-ranging business reach, from appliances for the home to systems used in outer space. Global-scale business development is in five business domains: heavy electrical machinery and systems, industrial automation, information and communication systems, electronic devices, and home appliances. Producing general electrical machinery for over 90 years, as Mitsubishi Electric’s Factory Automation Systems Business Group, we have supported manufacturing in Japan, China, and Asia, and around the globe. In doing so, we have accumulated and refined technologies for FA control, drive control, automation, and manufacturing that are utilized to expand and improve the vast product lineup, such as controllers, drives, and automation and power distribution control products. In addition to product components like those listed above, we are quick to propose systems such as e-F@ctory and iQ Platform as solutions for production site innovation. As a comprehensive supplier of FA products and systems, Mitsubishi Electric will continue to respond to the voice of customers and deliver products of the utmost quality throughout the world.

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New generation makes it's mark in a continuously updated lineage.

1972
1980
1990
2000
2016

MV Series

MITSUBISHI ELECTRIC Wire-cut EDM Systems

MV Series
Innovated basic performance for Wire cut EDM

Wire-cut EDM Systems Line up
Model line-up covers your machining needs from parts production machining to super-accurate mold making

Ultra-high accuracy machines
MX 600
Flagship model incorporating extreme precision machining

MP Series
High-class model incorporating a ultra-high accuracy machining

PA05S ADVANCE
Flagship model incorporating extreme precision machining

High-performance machine
MV-R Series
High-performance model including the next-generation of high-performance machines

MV-S Series
Exhausted model pursuing a cost-performance machining system
Opening the door to IoT New type control unit
"D-CUBES"

MV series with new controller D-CUBES
By improving machining accuracy and utilizing IoT technology, we will support customer productivity improvement, with innovation technology, manufacturing will be on the next stage

**Connect**
- MTConnect (open)

**Universal**
- Multilingual support
- Rotating / lifting mechanisms
- Thin manual control box

**Brain**
- Adaptive control automatic setting
- Wire residual quantity detection function
- Consumables check

**Evolution**
- For productivity IoT compatible NC

**Smooth**
- 10inch touch screen
- Navigation
- Easy shape (CAD/CAM)
Product Line-up

High quality machining is the "MV-R" series

D-CUBES

MV1200R

Automatic vertical Front door

D-CUBES

MV2400R

Automatic vertical Front door

Standard machine specifications

- Model: 8 M120260R
- Max. workpiece weight: 1000 kg
- Max. workpiece size: 1200 x 1200 x 1000 mm
- Maximum 3-spindle: 3 spindles
- Milwaukee 3-axis: 400 x 150 x 300 (X:Y:Z)
- Milwaukee 4-axis: 400 x 400 x 400 (X:Y:Z:W)
- Milwaukee 5-axis: 400 x 350 x 350 (X:Y:Z:W:TH)
- Maximum table size: 3000 x 1500 mm
- Maximum table weight: 3000 kg
- Maximum weight: 3000 kg
- Maximum height: 3000 mm

General specifications

- Spindle: 4 spindles
- Workpiece: 3 spindles
- Workpiece weight: 1000 kg
- Workpiece size: 1200 x 1200 x 1000 mm
- Weight: 3000 kg
- Height: 3000 mm

Options

- Angle table with 180° rotary axis
- Angle table with 270° rotary axis
- Enhanced coolant system
- Enhanced lubrication system
- Enhanced tool storage system
- Enhanced tool handling system
- Enhanced tool preheat system
- Enhanced tool cool system
- Enhanced tool life management system
- Enhanced tool monitoring system
- Enhanced tool failure prediction system
- Enhanced tool wear management system
- Enhanced tool condition monitoring system
- Enhanced tool life extension system
- Enhanced tool reliability management system

*All specifications are subject to change without notice.
*All figures and specifications are based on standard equipment.

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Product Line-up
Product Line-up

MV2400S column up specification

MV4800

Standard
<automatic vertical front door>

ADVANCE type 3
2-axis SLS (2-axis shaft motion)
or shaped hardened table

<automatic vertical front door>

MV4800

<automatic vertical front door>

MV2400S (column up specification)

<Outline drawing>

<Layout drawing>

One-piece 4-sided table hardened stainless steel

Three-piece U-shaped table hardened stainless steel

Standard machine specifications:

<table>
<thead>
<tr>
<th>Model</th>
<th>MV2400S (column up specification)</th>
<th>MV4800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. workpiece diam.</td>
<td>600 Ø 1200 (2400 Ø 3600)</td>
<td>600 Ø 1200 (2400 Ø 3600)</td>
</tr>
<tr>
<td>Max. workpiece weight</td>
<td>1800 kg</td>
<td>3000 kg</td>
</tr>
<tr>
<td>Max. spindle speed</td>
<td>6000 rpm</td>
<td>6000 rpm</td>
</tr>
<tr>
<td>Max. table speed</td>
<td>12000 mm/min</td>
<td>12000 mm/min</td>
</tr>
<tr>
<td>Max. table行程</td>
<td>5400 mm x 750 mm x 1300 mm (X-Y-Z)</td>
<td>5400 mm x 750 mm x 1300 mm (X-Y-Z)</td>
</tr>
<tr>
<td>Machine dimensions</td>
<td>6000 mm x 1200 mm x 1500 mm (L-W-H)</td>
<td>6000 mm x 1200 mm x 1500 mm (L-W-H)</td>
</tr>
<tr>
<td>Machine weight</td>
<td>4200 kg (6600 kg)</td>
<td>4200 kg (6600 kg)</td>
</tr>
<tr>
<td>Spindle headstock</td>
<td>300000 rpm x 7500 rpm</td>
<td>300000 rpm x 7500 rpm</td>
</tr>
<tr>
<td>Spindle taper</td>
<td>B-Taper</td>
<td>B-Taper</td>
</tr>
<tr>
<td>Coolant system</td>
<td>Flood coolant</td>
<td>Flood coolant</td>
</tr>
<tr>
<td>Coolant through the spindle</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Coolant through the tool</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Coolant through the coolant</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Coolant supply</td>
<td>150 L/min</td>
<td>150 L/min</td>
</tr>
<tr>
<td>Tool magazine</td>
<td>40 tools</td>
<td>40 tools</td>
</tr>
<tr>
<td>Tool magazine change time</td>
<td>3 sec</td>
<td>3 sec</td>
</tr>
<tr>
<td>Tool change time</td>
<td>3 sec</td>
<td>3 sec</td>
</tr>
<tr>
<td>Lubrication system</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lubrication oil tank</td>
<td>25 L</td>
<td>25 L</td>
</tr>
<tr>
<td>Coolant tank</td>
<td>200 L</td>
<td>200 L</td>
</tr>
<tr>
<td>Chip conveyor</td>
<td>No filter</td>
<td>No filter</td>
</tr>
<tr>
<td>Coolant filter</td>
<td>No filter</td>
<td>No filter</td>
</tr>
<tr>
<td>Chip conveyor filter</td>
<td>No filter</td>
<td>No filter</td>
</tr>
<tr>
<td>Additional options</td>
<td>(Contact factory)</td>
<td>(Contact factory)</td>
</tr>
</tbody>
</table>

* 21/19/17/12 (21/19/or 17/12): MV4800 is our standard equipment.
Functions and Features

The MV series is fully equipped with enhanced functions that satisfy the requirements of the manufacturing site, such as sophisticated style, high performance, energy-saving, operability, abundant processing knowhow, etc.

MV1200R
MV2400R
MV1200S
MV2400S

MV2400S Column up specification
MV4800

Automatic wire threading

- New winding system greatly improves wire threading with a coil ratio of less than 10%.
- Wire break point insertion is greatly improved for three workpieces.
- Wire threading suitable for workspace shape (stream on, stream off and unmonopole stream point insertion).

Machining accuracy

- Equipped with a linear shaft motor (LSM)
- Circular accuracy within 5mm is realized using optical drive system (ODS)

Improved productivity

- Surface roughness improvements are realized through enhanced power supply performance for high-speed machining.

Operability

- Information is displayed on a large touch screen.
- Functions to be selected or used are called by one touch on the HME screen.
- The number of operations performed on the Navigator menu from setup to machining is reduced by almost 40% (compared to the past)
- Setup performance is improved by the hand pendant box with the LCD

Energy savings, low running cost

- The running cost of the machine can be monitored on the cost management screen. This is useful for budget planning.
- The remaining wire amount is accurately managed to help in the selection of wire cost (reducing wire amount detection function)
Sample
Revolutionize manufacturing with next generation high performance machining

Step
Model: MV2400R
Electrode material: (0.051) SUS
Workpiece: Steel (S45C, 1.02)
Workpiece thickness: 25.0-250mm (0.98-9.84")
Surface roughness: Ra=1.25um/5.0um
Machining accuracy: ±0.000125" ±0.00003125"

Connector
Model: MV1200R
Electrode material: (0.051) SUS
Workpiece: Steel (S45C, 1.02)
Workpiece thickness: 4-25mm (0.16-0.98")
Surface roughness: Ra=1.25um/5.0um
Machining accuracy: ±0.000125" ±0.00003125"

Gear
Model: MV1200R
Electrode material: (0.051) SUS
Workpiece: Steel (S45C, 1.02)
Workpiece thickness: 5mm (0.2")
Surface roughness: Ra=1.25um/5.0um
Machining accuracy: ±0.000125" ±0.00003125"

Taper
Model: MV2400R
Electrode material: (0.051) SUS
Workpiece: Steel (S45C, 1.02)
Workpiece thickness: 0.08-250mm (0.003-9.84")
Surface roughness: Ra=1.25um/5.0um
Machining accuracy: ±0.000125" ±0.00003125"

High thickness
Model: MV2400S
Electrode material: (0.051) SUS
Workpiece: Steel (S45C, 1.02)
Workpiece thickness: 250.0mm (9.84")
Surface roughness: Ra=1.25um/5.0um
Machining accuracy: ±0.000125" ±0.00003125"

Pitch
Model: MV2400R
Electrode material: (0.051) SUS
Workpiece: Steel (S45C, 1.02)
Workpiece thickness: 30mm (1.18")
Surface roughness: Ra=1.25um/5.0um
Machining accuracy: Pitch: ±0.00008" ±0.0000125"

*The listed machining results are all based on in-house conditions and measurements.
Innovative Automatic Wire Threading

Advanced technology for greatly improved productivity

Improved automatic wire threading

- New annealing system greatly improves wire threading with a curl ratio of less than 10%
- Wire break point insertion is greatly improved for thick workpieces
- Wire threading mode can be selected to match the workplace shape (i.e., jet stream on, jet stream off and submerged break point insertion)
- Automatic threading time is reduced by up to 30% when using AT high-speed mode (includes one wire cut and insertion cycle)

Wire electrode annealing structure

- Improved wire annealing power supply and tension control enhance wire threading (reducing the curl ratio down to 10% or less), which straightens the natural curl caused by spooling
- The greatly increased length of annealed wire improves automatic wire threading for thick workpieces

New jet stream flow mechanism

- Flow analysis simulation has been used to optimize the water flow mechanism for straightening the jet stream, which improves wire threading for thick workpieces

Wire collection unit

- Broken wire collection, which drains the upper guide after a wire break, has been improved so it handles even highly outlaid wire

Maintenance Management

- The 4P maintenance screen displays each sector of the 4P unit and records any non-fluid locations. This guide eliminates errors in maintenance and reduces the referred area.

One-touch lever clamp mechanism

- New one-touch lever clamping system provides quick, easy and accurate power feed indexing
- The one-touch lever accurately includes the power feed with repeatability tolerance, unlike systems that use a dead center method

Diamond guide

- A round diamond guide is used to provide the best accuracy for both straight and taper-cutting applications
- Both upper and lower guides can be replaced by simply reattaching the flush caps
Machining Accuracy
Next-generation drive system and optimum machine structure

**Optical Drive System**
- High-speed fiber-optic communications and a linear shaft motor significantly improve machining accuracy
- A servo amplifier and control unit developed by Mitsubishi Electric contribute to system optimization

**Linear Shaft Motor (LSM)**
- Power consumption is reduced by utilizing a full 360° magnetic flux as the effective driving force
- Highly accurate axis movement is possible without backlash
- Non-contact power transmission ensures stable and accurate axis movement for many years

**Shape control power supply (Digital-AE II)**
- Wire straightness is digitally controlled with the world's only electrochemical discharge position control ( accuracies of 10°)
- Tool wear is reduced by improving straightness accuracy during rough, intermediate and finishing processes

**Fully-automatic rough machining control (D-CUBES)**
- Approach control adjustment parameters (OM level selection, EM wire path correction)
- OM-P expansion (corner control, approach control) can be set individually (control ON/OFF, parameters)
- Adaptive control switches such as LSM are set automatically by the SPC board depending on the shape (disk, punch) or workpiece thickness. The optimum machine processing values are set even if the operator forgets to enter them

**Examples of PM machining applications**
- Stepped shape machining
- Spin-filing, Face finish machining
- Corner cut machining

**Under-cut (dimple) reduction control**
- Reduces dimensional errors of the approach section
- Allows shape adjustment from correct to concave
- Greatly reduces cutting time

**Corner machining control (MR/Metalcut Custom Master II)**
- Improves machining accuracy at extremely small radii corners and side corners
- Realizes highly accurate shape machining even for complicated geometries with several types and sizes of corners
- Corner accuracy is easily controlled by the operator
- The dimensional errors of not only the corners, but also “cornes” and “impact” is improved

**Machining surface step/straightness control**
- The straightness deviation is reduced significantly in workpieces with variable thickness
- A maximum step height of 3000μm (0.001") is now possible by using the enhanced step profile conditions for large-size materials
- High-speed machining of stepped profiles is now possible
- Best suited for machining materials with a large variation in workpiece thickness
Productivity
Advanced Productivity

Table insulation (MV1200R/S, 2400R/S)
- Insulated worktable ensures improved surface finishing
- Stabilizes machining when using short pulse and low voltage machining conditions

New jet stream flow mechanism
- Flow analysis simulation has been used to optimize the water flow mechanism for straightening the plasma stream, which improves wire feeding for thick workpiece materials

High-accuracy taper machining using round dies
- Highly accurate machining of extremely small tapered sections is now possible
- Uniform die edge land cuts are possible
- Angle master function realizes highly accurate machining of large tapered sections
- Angle master guide kit is optional
- Max. taper angle is 45° (at max. 401.6mm)

Pursuit of fine surface finish with standard power supply
- New fine finish circuit (H-FS circuit)
  - Ra 0.2μm achieved without optional power supply (D-FS)

<table>
<thead>
<tr>
<th>Power Source</th>
<th>MSC</th>
<th>Ra (μm)</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>MV-R</td>
<td>17%</td>
<td>2.0 μm</td>
<td>33% UP</td>
</tr>
<tr>
<td>Conventional</td>
<td>33%</td>
<td>3.0 μm</td>
<td></td>
</tr>
</tbody>
</table>

The finished surface roughness has been reduced by 50% with 2 cuts by using the new machining servo “D-CUBES NL Control”

<table>
<thead>
<tr>
<th>Power Source</th>
<th>WM</th>
<th>Ra (μm)</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>MV-RGS</td>
<td>17%</td>
<td>4.5 μm</td>
<td>1/2</td>
</tr>
<tr>
<td>Conventional</td>
<td>66%</td>
<td>9.0 μm</td>
<td></td>
</tr>
</tbody>
</table>

High-speed machining has been enhanced by newly improved power-supply performance for range of multiple cuts type jobs.

Machining time comparison for Ra 0.45μm/11μm/Ra with 3 cuts

<table>
<thead>
<tr>
<th>Power Source</th>
<th>MSC</th>
<th>Machining Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>MV-R</td>
<td>17%</td>
<td>Sample</td>
</tr>
<tr>
<td>Conventional</td>
<td>66%</td>
<td>Sample</td>
</tr>
</tbody>
</table>

Machining time comparison for Ra 0.30μm/11μm/Ra with 4 cuts

<table>
<thead>
<tr>
<th>Power Source</th>
<th>MSC</th>
<th>Machining Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>MV-R</td>
<td>17%</td>
<td>Sample</td>
</tr>
<tr>
<td>Conventional</td>
<td>66%</td>
<td>Sample</td>
</tr>
</tbody>
</table>

High speed machining condition
- Fastest rough machining in the industry (0.30μm/0.62μm)
- Steel 40mm (0.36μm, 0.62μm) Topaz Plus D (Berkemhoff)

<table>
<thead>
<tr>
<th>Power Source</th>
<th>Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>MV-R</td>
<td>410mm/0.36μm/0.62μm</td>
</tr>
<tr>
<td>Conventional</td>
<td>350mm/0.36μm/0.62μm</td>
</tr>
</tbody>
</table>

Increased finish machining productivity
- Using standard high speed machining conditions

High speed wire
- 80% Wire

Machining time
Workability / Operability

Control unit
- Information is displayed on a new larger 14-inch touch screen
- Keybaord and mouse are standard
- Intuitive operation is performed by gestures from a multi-touch supporting panel

Screen tilt mechanism
- The new tilt mounting system allows adjustability to fit operators of varying heights.

Thin liquid-crystal hand-held pendant box
- The new design of the thin liquid crystal manual pendant box improves workpiece setup and setup time.
- The handheld operation box is equipped with an LED flash light mounted on the back.

Hardened table and all stainless steel structure
- Equipped with a hardened table
- The working tank and dielectric supply unit are made of stainless steel
- Resistant to deterioration by dielectric fluid and sludge

Wire alignment
- Highly accurate wire alignment is easy using the wire alignment device
- Taper parameter set-up is simple using the wire alignment device

Cleaning mechanism <2400, 4800 type>
- A forced flush self-cleaning mechanism prevents sludge from attaching to the stainless-steel seal plate

High-accuracy edge positioning
- Highly accurate workpiece edge positioning is possible with water flow on or when the workpiece is in motion
- The edge positioning tolerance can be adjusted to match workpiece accuracy requirements
- Wire electrode consumption is reduced by 70% during edge positioning (wire must be ≥ inner 3/8” or larger)

Wire travel system
- The stability of the wire traveling system is improved by a belt wiper and belt keeper pads that eliminate the chance of the wire jumping off the rollers.

Dielectric fluid flow meter and jet flow adjustment valve
- Dielectric fluid meters are easy to read
- The adjustable jet flow valve increases the range of work that can be done

Broken wire collection box
- Conveniently located at the front for convenient replacement

Chiller unit fil
- Conveniently located for easy cleaning
Operability

"Fast" and "Economical" operation

Excellent performance with "Easy operation," "human error reduction" and "connect ability" supporting productivity improvement for customers.

Operation

Pre-machining preparation
Daily inspection and workplace management
Maintenance and inspection tools
- The maintenance manuals as well as maintenance history are supported
- Reduction in machine down time from insufficient maintenance

Workpiece setup
Reference positioning, Z parameter (Z1, Z2), Z axis limit setting
- The Z-axes limit can be set easily after mounting the workpiece
- Collisions caused by erroneous operations are prevented

Program
- Simple creation of machining programs
- Standard shape library
- Simple standard shapes can be easily programmed by entering a few key dimensions into variables

Consumables check
- The remaining amount of consumables is checked in accordance with the machining settings
- Prevents machine stop caused by insufficient consumables, such as an empty coolant bottle

Dry run
- Programs can be checked by possible interference
- Override
- The dry run speed can be set at the pendant box to shorten the required run time

Check list
- All necessary operations to be performed before machining can be checked
- The pre-machining checklist is displayed
- The machine cannot be started if the checklist item has been skipped
- Errors by operators are told accustomed to using the machine are prevented

Monitoring machining
- The status of machining and the machining status can be checked
- Automatic setting of adaptive control
- Our EDM knowhow is used to optimize machining through automatic control settings

Resume machining
- A machining task that has been aborted by resetting the machine can be selected from the list and resumed

Initial setting
Most initial settings are fixed in place and do not change once machining has started
- Calculation tool (zero alignment and taper function adjustment)
- Taper Z calculations specific to the machine can be automatically performed by simply entering the angle amount
- No manual calculations are required
- Reduces operator’s labor and possible errors from manual calculations

Main menu
Basic machine setup and machine operation are grouped onto 3 simple screens
- Operate the machine without being confused by normal operating procedures or methods

History management
- The operation history, inspection and maintenance history, consumables, and cost can be managed
- Consumables management
- The consumables screen manages usage time and replacement history of all consumables

Cost management
- Cost management can be performed in a planned manner through display of each job and the time required
Energy Savings, Low Operating Cost

Consideration for the environment and cost reduction

**Power consumption reduced up to 69%**

- **New energy-saving mode (Sleep Mode)**
  - The new energy-saving mode can be scheduled according to the current job ending time and start time the next day.
  - In Sleep Mode, the amount of energy consumed is greatly reduced as a result of using an automated pump shut-off system.
  - Once the scheduled start time is reached, the system restarts the fluid system, thermally, stabilizing the machine for work the next day.

**Running cost**

- Total running cost reduced by up to 38%, which is accounted for by filter, ion exchange resin and power consumption.

**Flat power feed terminal**

The flat shape makes it easy to index to the next location.

**Ion exchange resin cost reduced up to 25%**

Enhanced power-supply conditions can be used with a lower fluid resistivity setting by PFC.

**Conventional model**

- **MV-S**
- **MV-R**

**Filter cost reduced up to 45%**

Filter cost is reduced by changing the filtration flow rate between the rough cut and finishing processes.

**Wire consumption reduced up to 46%**

Increased power-supply efficiency reduces the wear on the wire allowing the wire spacing rate to be reduced by PFC.

**Conventional model**

- **MV-S**
- **MV-R**

**Comparison to conventional Mitsubishi Electric Wire-cut EDM (FA Series)**

- Reduced 38%
- Compared to conventional Mitsubishi Electric Wire-cut EDM (FA Series), the same machining amounts.
Revolution (MV-R)
Realizing high-value-added machining with a top ranking technology

High-value-added functions are available on the MV1200R/2400R (option)

- φ0.05(0.002°), φ0.07(0.003°) automatic wire threading
  - 0.002° wire electrode available
  - Minimum increment R 30μm (0.0012"
  - Improved design reduces maintenance

Digital-FS power supply
- Optimum surface roughness of Ra≤0.3μm/2μm (Rotating ultrafine carbides)
- Optimum surface roughness of Ra≤0.8μm/1μm
- Machining with the workpiece set directly on the table (resolution: Jg not required)
- Machining range not limited (entire XY stroke area)

Angle Master ADVANCE II
- Taper accuracy of ±0.01° and dimensional accuracy of ±0.01μm are realized
- Taper angle accuracy is more consistent in all taper directions

Consumables management
- Similar to periodic inspection, the consumables are also managed by the machine
- The replacement period is recorded so as to estimate the next date of replacement. The parts list can also be updated. Updates are performed as required

Operating management
- The operating cost for each machine and the associated expenses for that period can be visualized
- The operating cost for each machine and each machining, and the expenses (stock) per period can be visualized

Security Improvement
- Anti-virus protection is provided as standard by one of the world leaders in security control
- Pattern file can be used semi-permanently without renewal

Defends machines against the threat of computer viruses (LAN, USB)

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**Options**

**Wire-cut EDM automation system**
- Compatible for external setup using a continuous measuring machine
- Enables automatic measurement when measuring on an EDM
- Can be used in processes offline
- Automatically exchanges workpieces using a robot

**Network connection specifications (DNC, FTP)**
- Data, such as NC programs, measurement conditions, and variables can be exchanged between a personal computer and EDM.
- The required software is required for the specified ED/MI upon purchase through the following table.

---

**Advanced manual control box / Standard manual control box**
- Provides manual control that enables free CAD design and can be used for programming, and natural IF operations

**Angle Master ADVANCE II (gg)**
- Measuring tool for Angle Master ADVANCE II (0.05°)
- Use for taper degree calculation in UV axis directions

**Wire processing unit**
- The wire is chopped after the collection roller

**3-color lighting**
- Indicates machine operating status

**6-piece filter system**
- Reduces filter replacement frequency

**Filter automatic switching**
- Switches filter to be used automatically according to filter pressure

**Wirepiece clamp set**
- Clamp gap (d) of workpiece holding fixture

**Run timer**
- Indicates accumulated machining time

**LED light**
- High-brightness LED lighting

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**Options and omitted specifications differ according to country and region;**
please contact a Mitsubishi Electric representative for details.

**Option name**

<table>
<thead>
<tr>
<th>Option</th>
<th>OVM</th>
<th>D-0V0ES</th>
<th>MR-S</th>
<th>MR-5050i</th>
<th>MR-6000i</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine</td>
<td>UV OTF - system specifications</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Machine</td>
<td>20 (200), 40 (400) (automatic wire threading)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Machine</td>
<td>Wire processing, etc.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Machine</td>
<td>Cutting line USB file import/export</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Machine</td>
<td>75g / (+10%, -20%) wire spool unit</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Machine</td>
<td>Taper axis automated positioning</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Machine</td>
<td>Advanced manual control box (with axis display)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Power supply**
- Digital / Analog power supply
- Digital / Analog power supply

---

**Wire-cut EDM automation system**

- Compatible for external setup using a continuous measuring machine
- Enables automatic measurement when measuring on an EDM
- Can be used in processes offline
- Automatically exchanges workpieces using a robot

**Network connection specifications (DNC, FTP)**

- Data, such as NC programs, measurement conditions, and variables can be exchanged between a personal computer and EDM.
- The required software is required for the specified ED/MI upon purchase through the following table.

---

**Options and omitted specifications differ according to country and region;**
please contact a Mitsubishi Electric representative for details.
## Power Supply, Control Specifications/Machine Installation

### Power supply/Control unit specifications

<table>
<thead>
<tr>
<th>Compatible model</th>
<th>W1-M</th>
<th>W1-S</th>
<th>W1M2/S</th>
<th>WM2S/S</th>
<th>WM24/S</th>
<th>WM48/S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>W1M2/S</td>
<td>W1M2/S</td>
<td>W1M2/S</td>
<td>W1M2/S</td>
<td>W1M2/S</td>
<td>W1M2/S</td>
</tr>
<tr>
<td>NC program input</td>
<td>Keyboard, USB flash memory, Ethernet</td>
<td>Touch panel, mouse,</td>
<td></td>
<td></td>
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<tr>
<td>Display</td>
<td>10-inch TFT</td>
<td>12-inch TFT</td>
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<tr>
<td>Display characters</td>
<td>Monochrome characters</td>
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<tr>
<td>Control method</td>
<td>CNC by direct entry</td>
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</tr>
<tr>
<td>Number of control axes</td>
<td>4 axes simultaneously</td>
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<tr>
<td>Setting unit</td>
<td>X, Y, Z, U, V 2, 1, 10um, 15um, 50um</td>
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<tr>
<td>Minimum landing unit</td>
<td>10um</td>
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<tr>
<td>Maximum speed</td>
<td>20000 rpm</td>
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<tr>
<td>Position command format</td>
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<tr>
<td>Position command format</td>
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<tr>
<td>Deflection function</td>
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<tr>
<td>Block regeneration</td>
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<tr>
<td>Optimum feed rate</td>
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<tr>
<td>Automatic acceleration of moving speed</td>
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<tr>
<td>Position accuracy</td>
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<tr>
<td>Velocities and acceleration</td>
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<tr>
<td>Reverse motion</td>
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<tr>
<td>Acceleration and deceleration</td>
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<tr>
<td>Wire relay</td>
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<tr>
<td>Basic screen menu</td>
<td>1 to 100</td>
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<tr>
<td>Pre-set menu input</td>
<td>3-axis</td>
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<tr>
<td>User control setting</td>
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<td></td>
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</tr>
<tr>
<td>Check function</td>
<td>Daily/monthly inspection, consumable check list</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Manual input positioning</td>
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<tr>
<td>Manual operation box</td>
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<tr>
<td>Operation panel</td>
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<tr>
<td>User memory capacity</td>
<td>1048.576 bytes</td>
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<tr>
<td>Maintenance function</td>
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<tr>
<td>Maintenance function</td>
<td></td>
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<tr>
<td>Management of consumable parts (time display)</td>
<td></td>
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<tr>
<td>Automatic operation</td>
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<tr>
<td>CMM, EM, PM, BM, SC, SL</td>
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<tr>
<td>Linear dimensions (mm)</td>
<td>514.0x250.0x145.0</td>
<td>441.0x156.8x124.0</td>
<td>264.0x151.3x109.0</td>
<td>204.0x120.4x95.0</td>
<td></td>
<td></td>
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<tr>
<td>Weight (kg)</td>
<td>15.30</td>
<td>18.10</td>
<td>20.40</td>
<td>24.80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Machine installation checklist

**Determining the machining details**
- Check each machine for the work size and make sure that it is in order and is adjustable.
- Determine the type of workpiece.
- Determine the type of processing.
- Determine the type of process.

**Preparation of installation fixtures**
- Prepare the installation fixtures.

**Preparation of consumable parts**
- Prepare the consumable parts.

**Training of programmers and operators**
- Train the programmers and operators.

**Confinement of lubrication and power supply work**
- Follow any possible safety instructions, investigate plant in stoppage work.

**Installation conditions**

1. **Installation site**
   - Machine base plate surface and foundation plate shall be exposed, flush, and level. The foundation plate shall be fixed by bolts, and the machine base plate shall be fixed by screws where the machine base plate is not fixed by bolts. The foundation plate shall be firmly fixed to the machine base plate.

2. **Machine installation checklist**
   - Machine installation checklist.

3. **Power supply equipment**
   - Power supply equipment.

4. **Wiring**
   - Wiring.

5. **Precaution for selecting earth-leakage breaker**
   - Precaution for selecting earth-leakage breaker.

### Power supply, Control Specifications/Machine Installation

#### Machine installation checklist

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     - Machine installation checklist.

   - **Power supply equipment**
     - Power supply equipment.

   - **Wiring**
     - Wiring.

   - **Precaution for selecting earth-leakage breaker**
     - Precaution for selecting earth-leakage breaker.
MV Series

MEMO

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* Not all products are available in all countries.