MITSUBISHI ELECTRIC

Changes for the Better

for a greener tomorrow eco Changes

Wire-cut EDM Systems
MP Series

MP
series

BREAKTHROUGH INNOVATION

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

1972

Line tracer type wire-cut EDM

DWC50S-LT1

DWC50H-DNC2

Taper machining unit

DWC100H-CNC2

Max. machining speed 60mm²/min

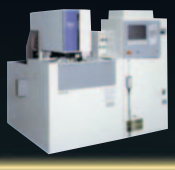
DWC90-CNC1

1980

DWC110N-CNC1

Ultrahigh accuracy wire-cut EDM (Full-cabin)

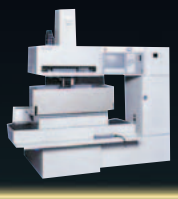
PX05



FX10

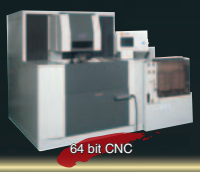
DWC90PA

CX20



SX20

FX20K



64 bit CNC

QA20

RA90AT

2000

Max. machining speed 325mm²/min
Automatic wire threading unit "AT"

FA20

FA20P

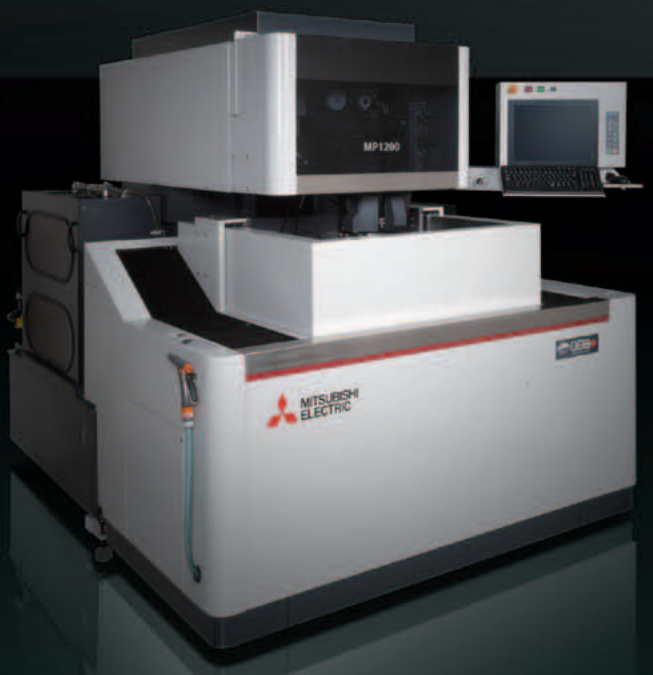
2014

Oil wire-cut EDM

MX600

PA10 ADVANCE

MV1200R



Max. machining speed 110mm²/min
Optimum surface roughness of Rz2μm

DWC90FSK-CNC1

DWC90G

Max. machining speed 250mm²/min

DWC90H

DWC90PH

DWC110PH

Automatic wire threading unit (water jet type)

DWC90C

Anti-electrolysis power supply
(AE power supply)

DWC400HA

DWC110SA

Automatic wire threading unit "AF2"

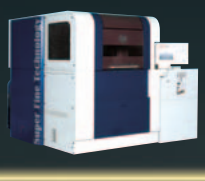
DWC110SZ

DWC90SB

32 bit CNC

DWC90HA

1990



PA20

World's fastest "V500" power supply

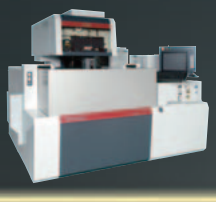
FA30V

PA05S

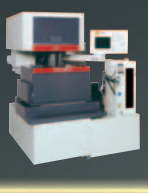
FA20S

Super fine finishing power supply "Digital-FS"

FA10PS



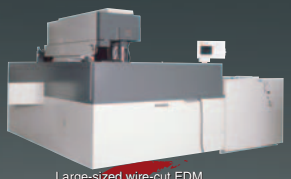
NA2400P



BA8

Digital-AE power supply

FA20S Advance



Large-sized wire-cut EDM

FA50V

MITSUBISHI ELECTRIC Wire-cut EDM Systems

MP Series

Wire-cut EDM to meet to anticipations for ultrahigh accuracy

MP Series

Wire-cut EDM Systems Line up

Model line-up covers your machining needs
from piece parts to super-accurate mold making

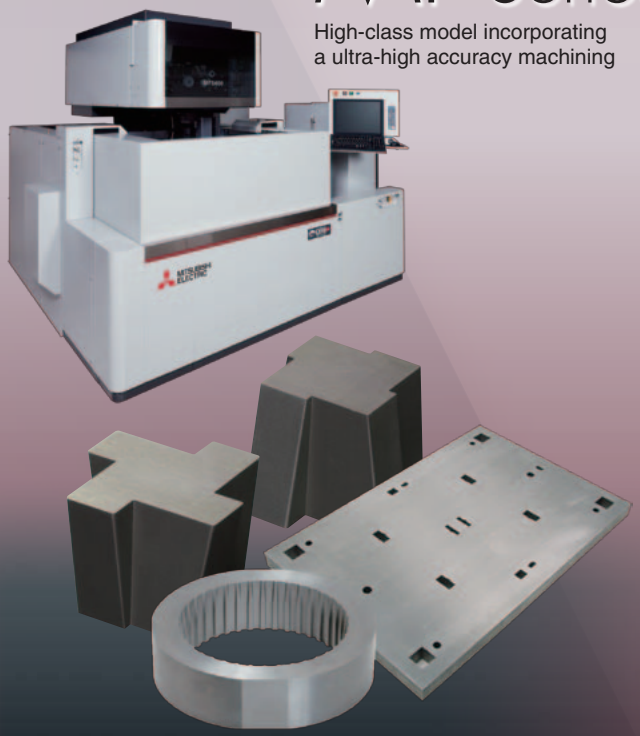
Ultrahigh accuracy machines

MX600

Flagship model incorporating
extreme precision machining

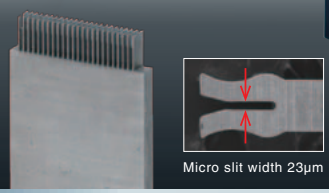
MP Series

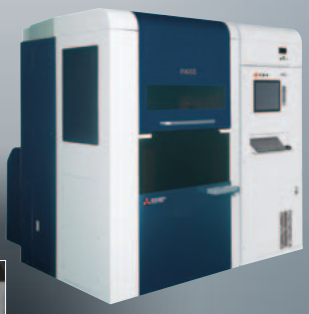
High-class model incorporating
a ultra-high accuracy machining



PA05S ADVANCE

Flagship model incorporating
extreme precision machining

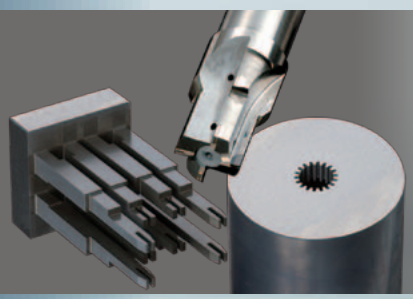




High-performance machine

MV-R Series

High-performance model innovating
next-generation high-performance machine

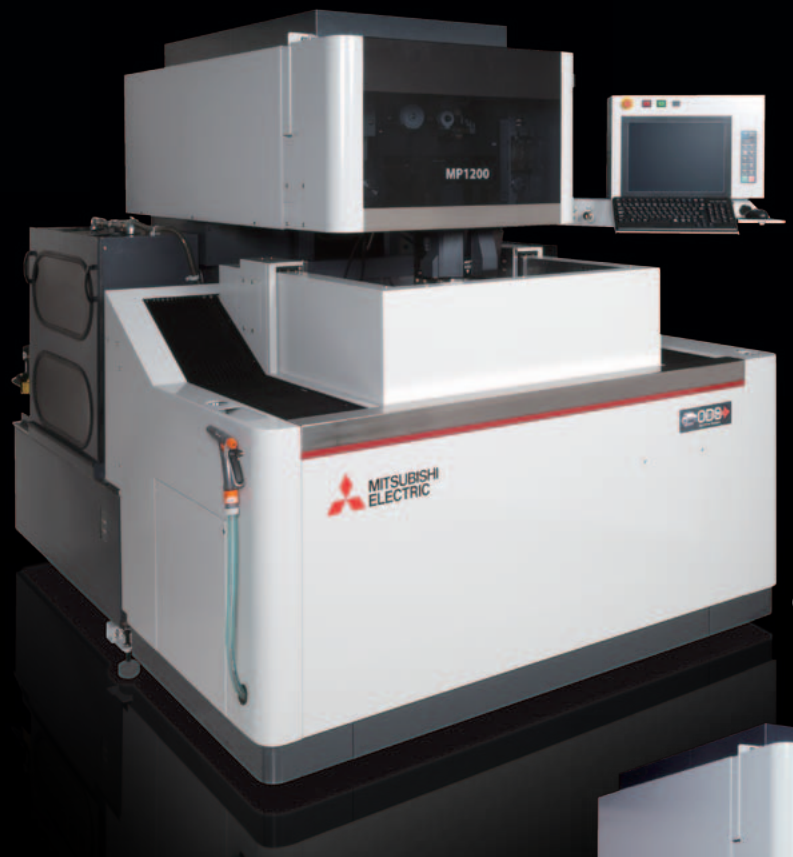


High-productivity machine

MV-S Series

Standard model pursuing
a cost performance standard machine

Product Line-up



MP1200

ADVANCE PLUS

4-axis LSM (XYUV linear shaft motor)

Four-sided hardened table

Machining accuracy ±2μm achieved (Note 1)

(Note 1) The machining accuracy follows the Mitsubishi Electric machining conditons

(Automatic elevation tank)

MP2400

ADVANCE PLUS

4-axis LSM (XYUV linear shaft motor)

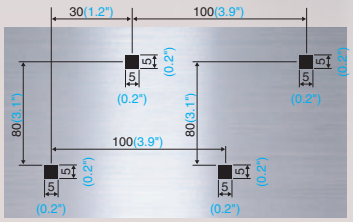
Four-sided hardened table

Machining accuracy ±2μm achieved (Note 1)

(Note 1) The machining accuracy follows the Mitsubishi Electric machining conditons

(Automatic elevation tank)

- Workpiece:
  Steel (PD613 t20mm(0.79")
  (SKD11 improved steel))
  HRC56-57 after quenching the workpiece, sub-zero treatment, high thermal tempering, stabilizing treatment and demagnetization are conducted.
- Wire electrode: ϕ0.2(.008")/BS
- Room temperature: 20°C±1°C

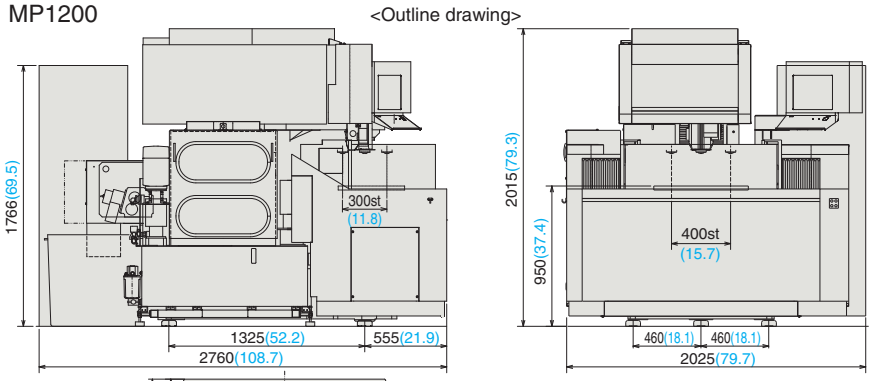


Unit : mm

Thickness : 20mm(0.79")

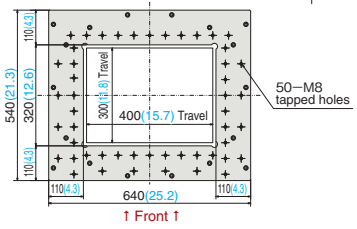
MP1200

<Outline drawing>

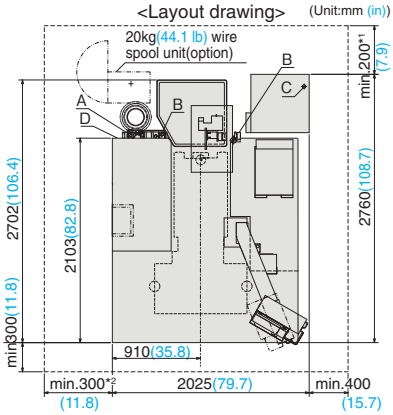


One-piece 4-sided table hardened stainless steel

<Table drawing>



<Layout drawing> (Unit:mm (in))

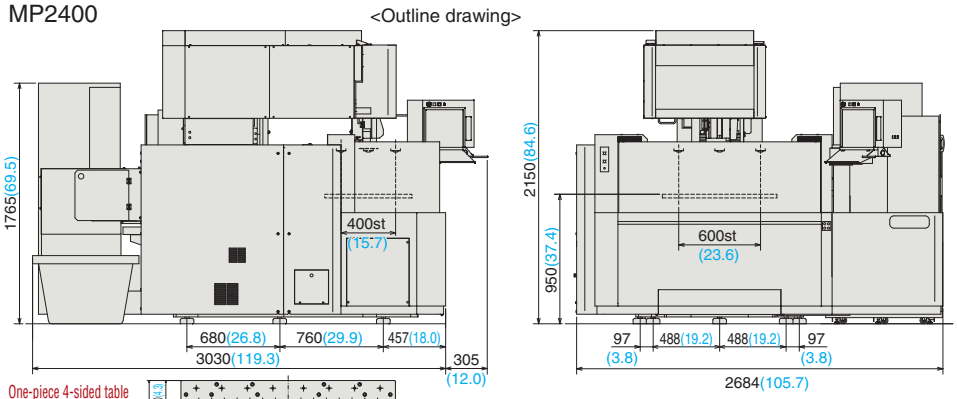


*1 is min.500(19.7) and *2 is min.700(27.6) when the 20kg(44.1lb) wire spool unit is mounted.
Machine unit dimensions
Width:1910mm(75.2) Height:2015mm(79.3)

A: Clean tank drain port Fitted with PT1 screw valve (165mm from floor)
B: Dirty tank drain port Fitted with PT1 screw valve (165mm from floor)
C: Power supply port 200/220VAC±10% 50/60Hz, 13.5kVA
D: Primary air side 0.5 to 0.7MPa, 75 ℓ /min or more, 1/4 hose connection (hose sleeve outer diameter: ø9mm)

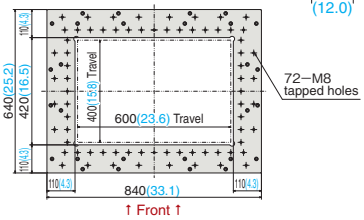
MP2400

<Outline drawing>



One-piece 4-sided table hardened stainless steel

<Table drawing>



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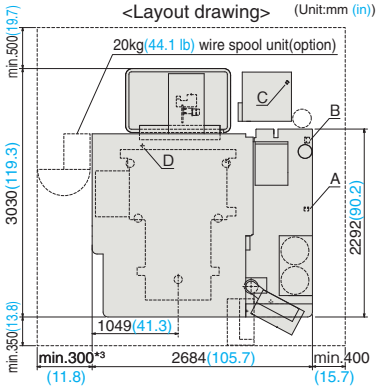


*3 is min.670(26.4) when the 20kg(44.1lb) wire spool unit is mounted.
Footprint : 3387(133.3)×3830(150.8)(including maintenance space)
Machine unit dimensions
Width:2022mm(79.6) Height:2150mm(84.6)

A: Clean tank drain port Fitted with PT1/2 screw valve (52mm from floor)
B: Dirty tank drain port Fitted with PT1 screw valve (52mm from floor)
C: Power supply port 200/220VAC±10% 50/60Hz, 13.5kVA
D: Primary air side 0.5 to 0.7MPa, 75 ℓ /min or more, 1/4 hose connection (hose sleeve outer diameter: ø9mm)

Standard machine specifications

Machine unit	Model	MP1200	MP2400
	Max. workpiece dimensions [mm](in)	810(31.9)×700(27.6)×215(8.5)	1050(41.3)×820(32.3)×305(12.0)
	Max. workpiece weight [kg](lb)	500(1102)	1500(3307)
	Table dimensions [mm](in)	640(25.2)×540(21.3)(4-sided)	840(33.1)×640(25.2) (4-sided)
	Machine travels (XxYxZ) [mm](in)	400(15.7)×300(11.8)×220(8.7)(XY axis OPT-drive specifications)	600(23.6)×400(15.7)×310(12.2)(XY axis OPT-drive specifications)
	Machine travels (UxV) [mm](in)	±60(2.4)×±60(2.4) (OPT-drive specifications)	±75(2.9)×±75(2.9) (OPT-drive specifications)
	Max. taper angle [°]	15°(max. 200mm(7.9"))	15°(max. 260mm(10.2"))
	Wire diameter [mm](in)	0.1(.004)～0.3(.012)*1	
	Weight [kg](lb)	3100(6834)(including dielectric fluid reservoir)	4100(9039)
Dielectric fluid reservoir	Tank capacity [ℓ](US gal)	550(145)	860(227)
	Filtration method	Paper filter (2)	
	Filtered particle size [μm]	3	
	Water purifier (ion exchange resin) [ℓ](cu.ft.)	10(0.35)	
	Dielectric fluid chiller unit	Unit cooler	
	Weight (dry) [kg](lb)	— (included in the machine unit weight)	350(772)

*1 ø0.2(.008") DD guides and ø1.5(.06") jet nozzle are standard equipment.

General input	[kVA]	13.5
Required air rate	Air pressure [Mpa](psi)	0.5(72.5) ~ 0.7(101.5)
	Air rate [ℓ (cu.ft.)/min]	75(2.65) or more

Standard functions

- Automatic wire threading
- Digital-AEⅡ power supply
- LAN/W
- Angle Master (S/W)
- Anti-virus protection
- Sleep mode

Options

- ø0.05(.002"),0.07(.003") automatic wire threading
- Angle Master ADVANCEⅡ (S/W)
- Super-DFS power supply
- COREHOLD
- 20kg(44.1lb) wire spool unit
- Angle Master guide kit ø0.2(0.008")
- Angle Master guide kit ø0.25(0.010")
- Advanced manual control box
- External signal output
- 3-color warning light
- Run timer
- Option box
- LED light
- 4-piece filter system

Functions and Features

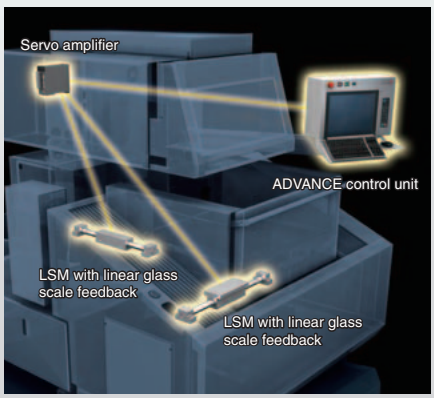
Fully equipped with useful functions for the manufacturing workplace, featuring refined style, high performance, energy savings, simple operation and vast expertise

MP1200/MP2400

Machining accuracy

ODS Opt Drive System Refer to page 9-11

- Equipped with a linear shaft motor (LSM)
- Circular accuracy within 1µm is realized using optical drive system (ODS)

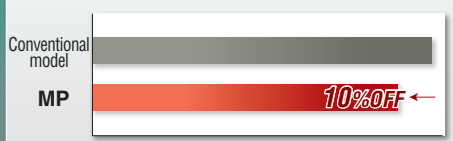


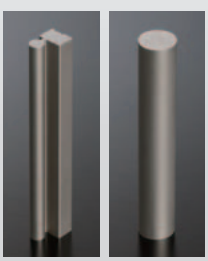
Productivity

PFC Precise Finish Circuit Refer to page 13-14

- High-speed machining is enhanced by improved power supply for fine surface finish machining

Machining time comparison for Rz1.2µm/Ra0.15µm/6µ"Ra





Wire electrode : ø0.2(.008")/BS

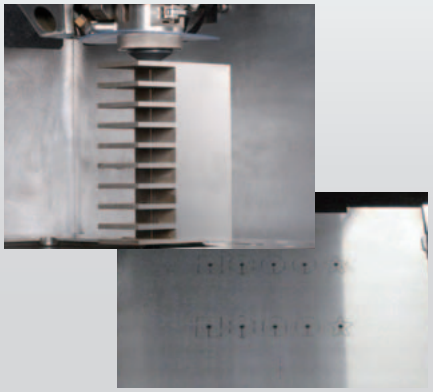
Workpiece : Steel(SKD11), t60mm(2.4")

*Compared to conventional Mitsubishi Electric Wire-cut EDM (NA Series)

Automatic wire threading

Intelligent AT Refer to page 15-16

- 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 suitable for workpiece shape (i.e., jet stream on, jet stream off and submerged break point insertion)



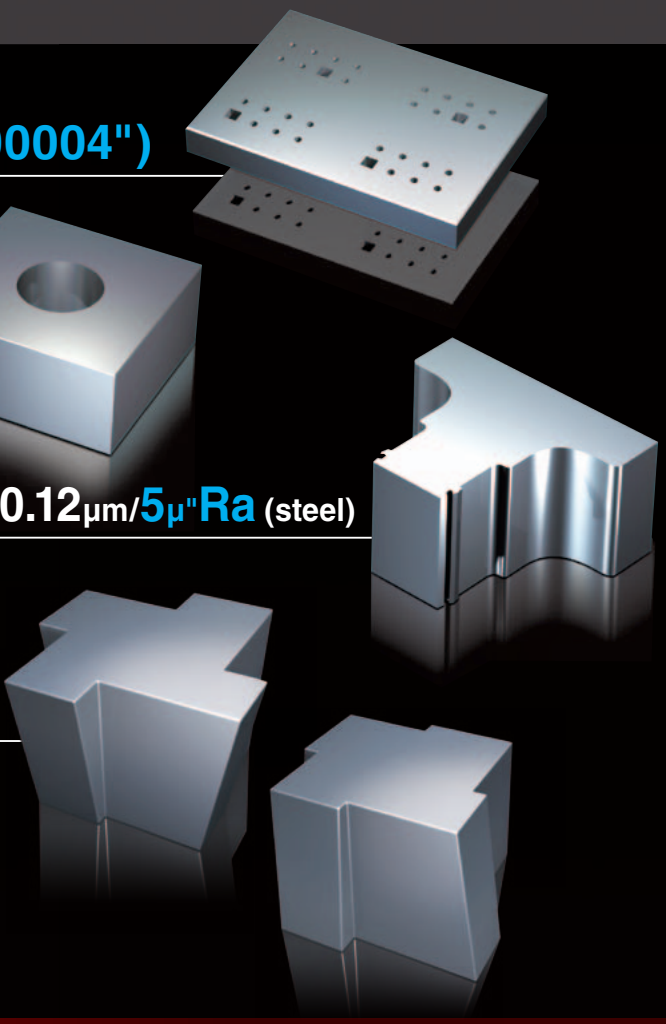
Highly accurate machining is realized

Pitch / shape accuracy ±1μm(.00004")

Circular accuracy 0.8μm(.00003")

Optimum surface Rz0.6μm/Ra0.12μm/5μ"Ra (steel)

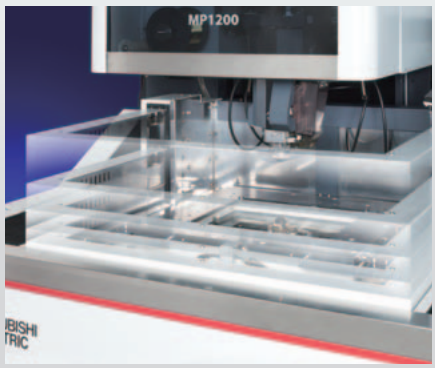
Taper accuracy ±0.01 degree



Workability

AES Auto & Easy Setup Refer to page 17-18

- 3-sided elevating work-tank
- Compatible with workpiece automatic changing using a robotic system



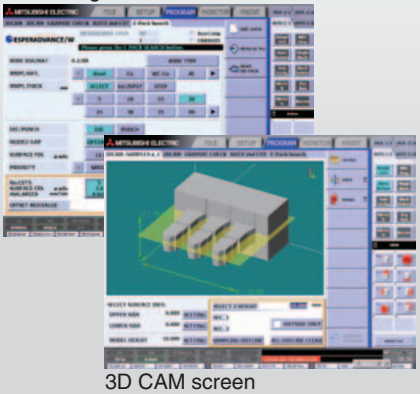
Operability

NUI Natural User Interface Refer to page 17-18

- Search function for machining conditions is improved by a narrow-down function
- Job scheduling adjustments use the schedule call back, extra job insertion and ME-pack feature

*ME-pack is a package of machining processes including offset, machining speed and adaptive control setting

Machining condition search screen

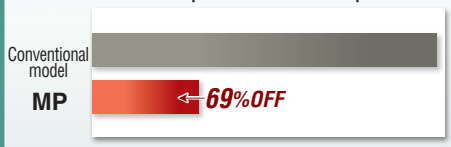


3D CAM screen

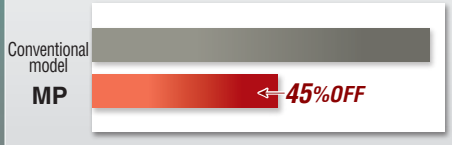
Energy savings, low running cost

LLS Long Life System Refer to page 19

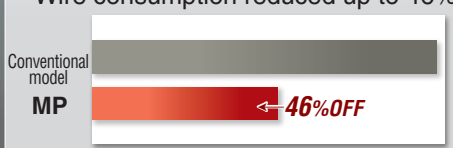
- Power consumption reduced up to 69%



- Filter cost reduced up to 45% (Automatic changing filtration flow rate)



- Wire consumption reduced up to 46%



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

Machining Accuracy

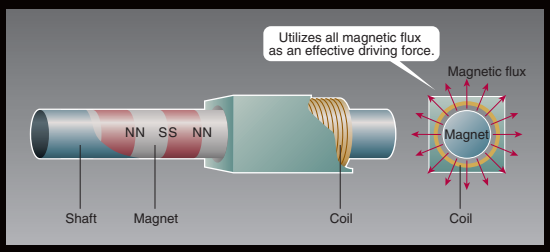
Next-generation drive system and optimum machine structure

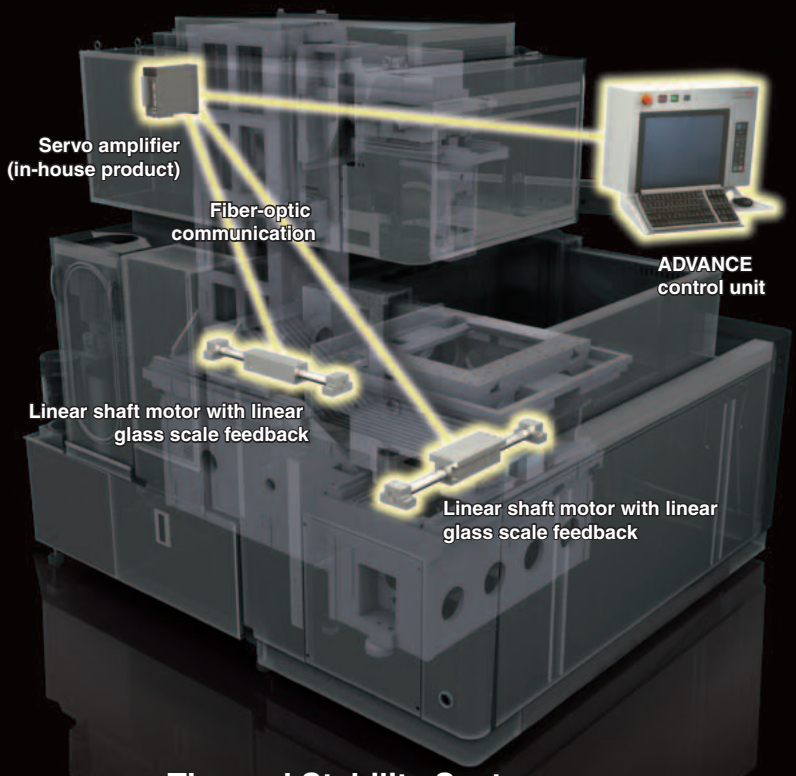
Optical Drive System

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

Linear Shaft Motor

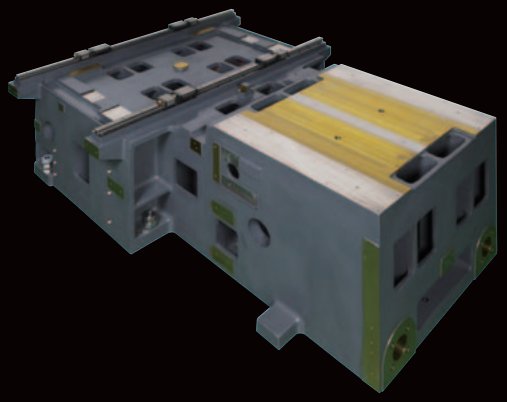
- Power consumption is reduced by utilizing a full 360° magnetic flux as the effective driving force
- Highly accurate axis movement is possible without any backlash
- Non contact power transmission ensures stable and accurate axis movement for many years





Highly rigid structure

- MP1200 employs a split X/Y-axis construction method allowing both to be directly mounted to the T-shaped base casting for optimum stability. This combination moves the table in the X-axis and the column in the Y-axis.
- MP2400 utilizes a fixed table traveling column design for improved accuracy in large heavy workpieces.

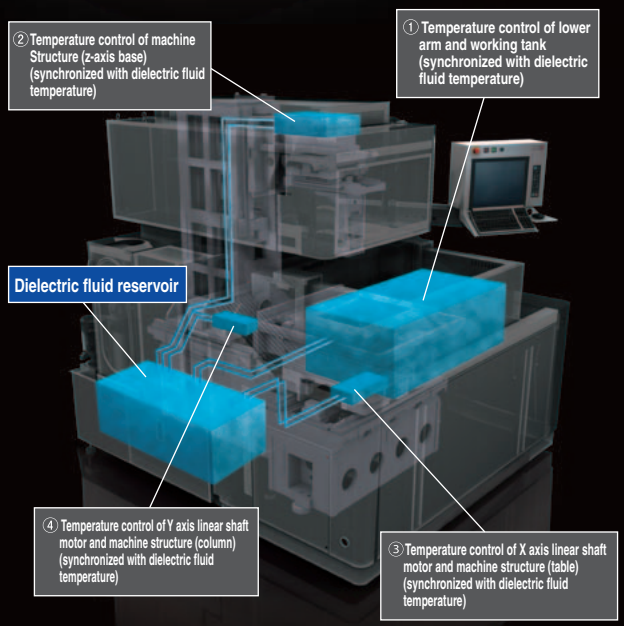


Axis movement accuracy

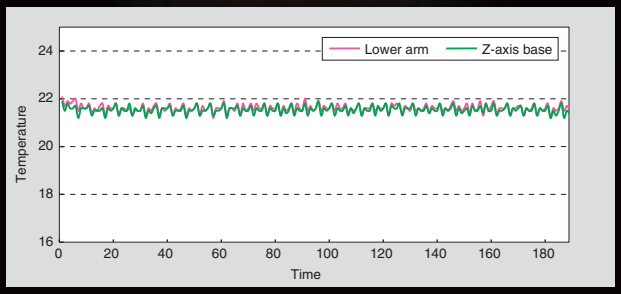
- Ultra-high accuracy linear guides are carefully installed on precisely machined mounting surfaces to provide a linear straightness of 1 - 2μm.
- This effort ensures precise linear movement by reducing waving of the linear guide.

Thermal Stability System

- A chiller system is used to cool the dielectric fluid to remove the heat generated by the EDM machining process.
- This process is synchronized through thermal sensors on the machine casting while circulating the fluid through key areas of the machine structure (Thermal buster).

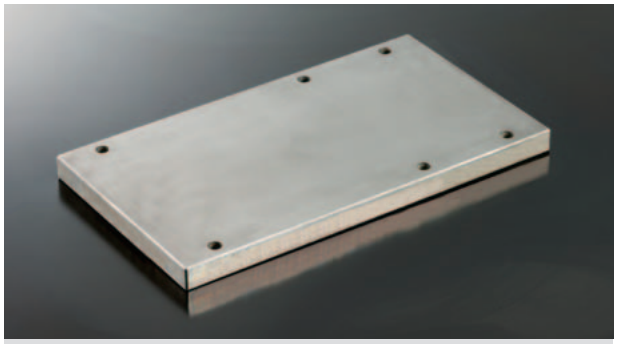


Temperature of machine structure (Z-axis base) and lower arm



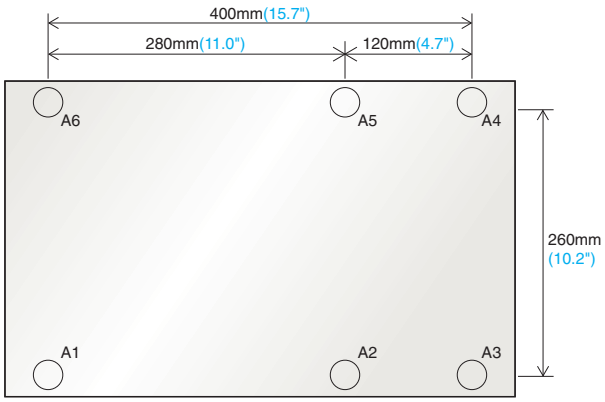
Pitch accuracy

- Ultra-high accuracy machining is realized using the Optical Drive System (ODS).
- Stable ultra-high accuracy machining is realized through improvements in axes movement and thermal stability control.

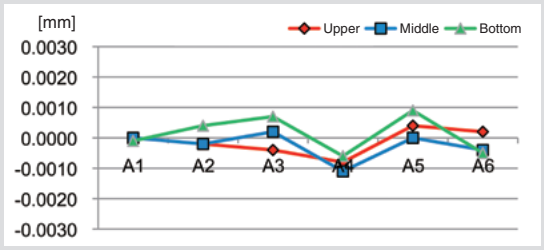


Wire electrode: ϕ0.2(.008")/BS
Workpiece: Steel (SKD11) t30mm(1.18")
After quenching the workpiece, sub-zero treatment, high thermal tempering, stabilizing treatment and demagnetization are conducted.
Surface roughness: Rz1.8μm/Ra0.22μm/9μ"Ra
Room temperature: ±0.5°C

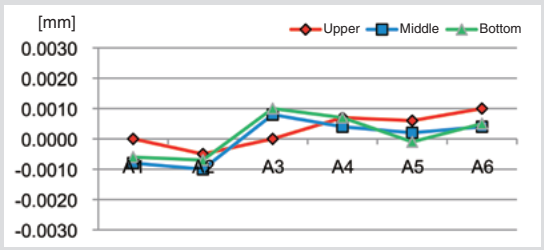
<Pitch accuracy>
x-axis ±1μm (.00004")
Y-axis ±1μm (.00004")



X-axis pitch error



Y-axis pitch error

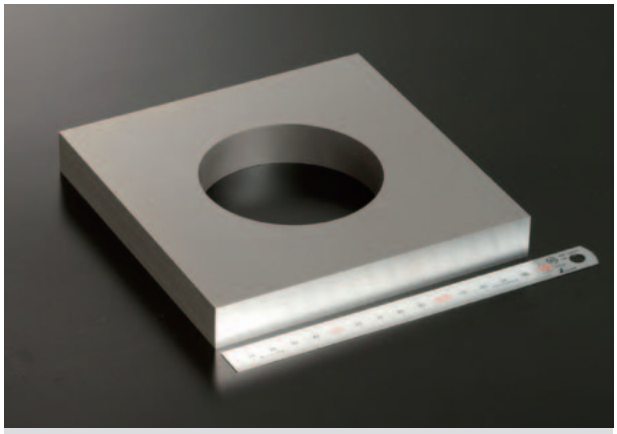


Pitch accuracy adjustment function

- Electronic pitch error compensation, measured by laser interferometer, can be entered to achieve ultra-high machining accuracy.

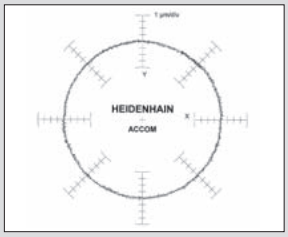
Circular accuracy

- Circular accuracy of 0.98μm(.00004") is realized for circular machining of ϕ80mm(3.1")
- Tracing accuracy is improved by servo control (AFCⅢ)



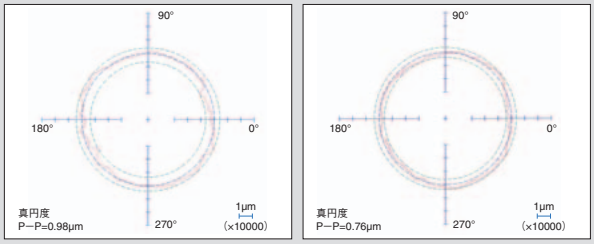
Wire electrode: ϕ0.2(.008")/BS
Workpiece: Steel (SKD11) t30mm(1.18")

Circular accuracy measurement of machine



High circular accuracy realized in entire XY stroke area

Accuracy measurement of circular machining



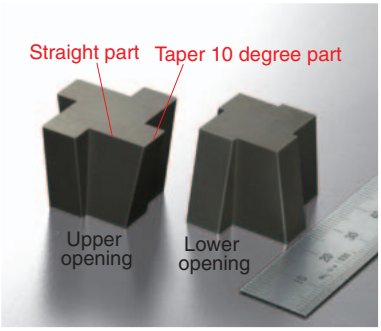
Circular machining of ϕ80mm(3.1") | Circular machining of ϕ20mm(0.79")

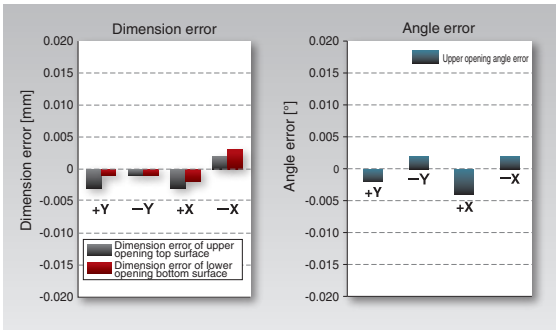
Machining Accuracy

Taper accuracy

- Taper accuracy of ±0.01° and dimensional accuracy of ±5μm are realized
- ODS provides high accuracy even when cutting a UV independent tapered shape
- Taper accuracy is improved regardless of wire angle direction using Angle Master ADVANCEⅡ

Wire electrode: ϕ0.2(.008")/BS
Workpiece: Steel (SKD11) t20mm(0.79")





Angle Master ADVANCEⅡ

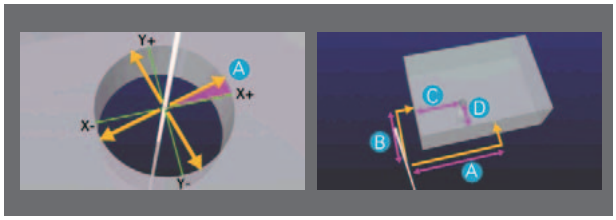
- Taper angle accuracy is more consistent in all tilt directions.

Measuring jig

Angle Master ADVANCEⅡ screen

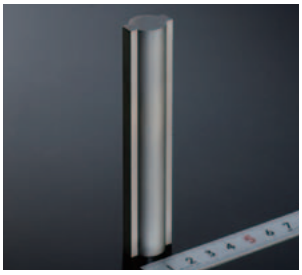
Highly accurate pick-up positioning

- Workpiece pick-up positioning error is reduced



Machining accuracy of thick workpiece

- Shape accuracy of ±2μm(.00008") is possible even with a 130mm(5.1") thick workpiece
- High straight-line accuracy is realized using shape control power supply (Digital-AEⅡ)
- Surface roughness of Rz1.5μm/Ra0.18μm/7μ"Ra is realized using Super-DFS power supply (Super Digital-FS power supply)

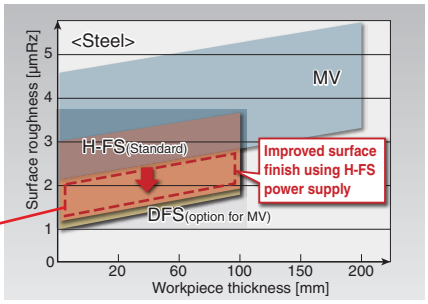


Wire electrode: ϕ0.2(.008")/BS
Workpiece: Steel (SKD11)
Surface roughness:
Rz1.5μm/Ra0.18μm/7μ"Ra

H-FS power supply (High Power FS power supply)

- Optimum surface roughness of Rz1.2μm/Ra0.15μm/6μ"Ra (steel)

Improved performance area on MP series

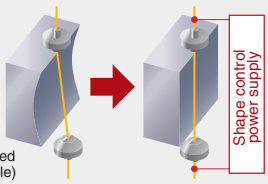


Shape control power supply (Digital-AEⅡ)

- Wire straightness is digitally controlled with electrical-discharge position control
- Straightness accuracy is improved during rough, intermediate and finishing processes

Conventional technology

- Machining conditions are optimized
- Number of cuts are increased
- Upper/lower dimension difference is compensated mechanically (taper angle)



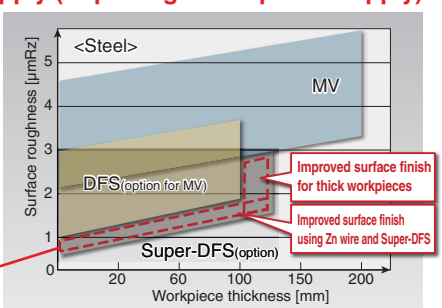
Digital-AEⅡ

Discharge rate relative to workpiece thickness is monitored by electrical-discharge position control

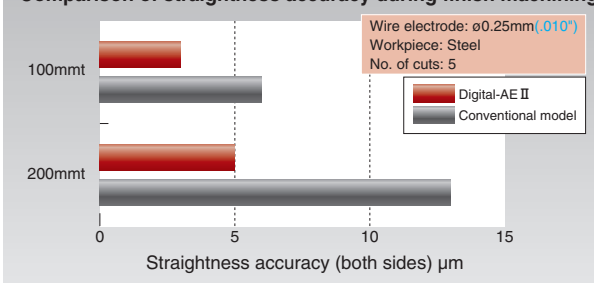
Super-DFS power supply (Super Digital-FS power supply)

- Optimum surface roughness of Rz0.6μm/Ra0.08μm/3μ"Ra (steel)
- Machining with the workpiece set directly on the table (insulation jig not required)
- Machining range not limited (entire XY stroke area)

Improved performance area on MP series



Comparison of straightness accuracy during finish machining



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

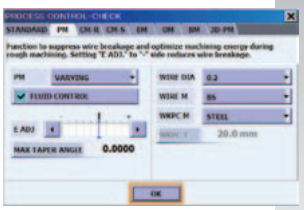
Machining Control

Fully-automatic rough machining control(PM control: Power Master)

- No need to set machining conditions or have knowledge of EDM machining
- Automatically recognizes machining conditions and makes adjustments for the optimum machining condition

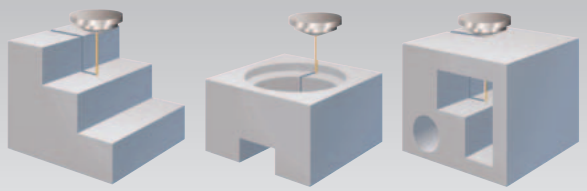
<3D-PM>

- Analyzes 3D data and recognizes shape characteristics
- Eliminates transition lines which appear easily in stepped machining areas
- Improves machining speed with nozzle closing conditions



Adaptive control setting screen

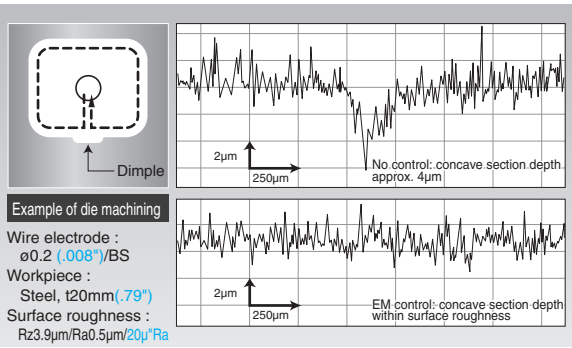
Examples of PM machining applications



Stepped shape machining | Stepped shape machining | Cross-cavity shape machining

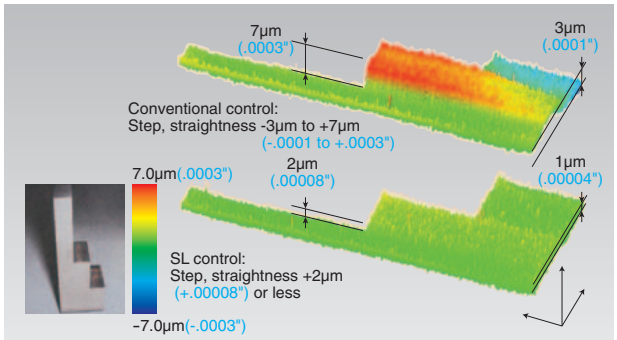
Under-cut (dimple) reduction control
(EM control: Entrance Master)

- Reduces dimples at the approach section
- Allows shape adjustment from convex to concave
- Greatly reduces polishing time



Machining surface step/straightness control
(SL control: Stepless control)

- Greatly improves the step finish and wall straightness for workpieces with varying thicknesses
- Highly accurate finishing of complicated parts



Dimensional error control
(OM control: Orbit Master)

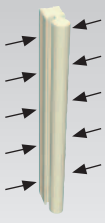
- OM control is designed to attain a uniform electrical-discharge gap regardless of the corner shape
- This improves the radial shape error and greatly improves the total part accuracy

Comparison of straightness

Wire electrode: ø0.2 (.008")/BS
Workpiece:
Steel(SKD11), t60mm (2.4")
Surface roughness : Rz2.0μm/Ra0.28μm/11μ"Ra

(Both sides)

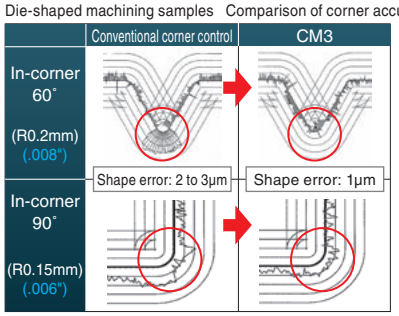
	Section A	Section B
Using OM control	3μm (.0001")	3μm (.0001")
Without OM control	3μm (.0001")	5μm (.0002")



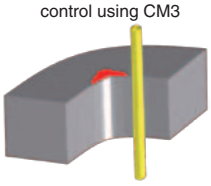
Corner machining control
(CM3 control: Corner Master3)

- Improves machining accuracy at extremely small in-corners and out-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

Die-shaped machining samples Comparison of corner accuracies

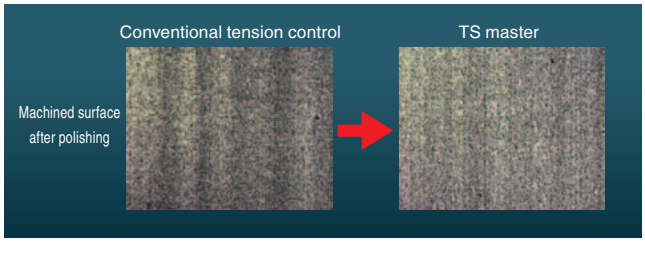


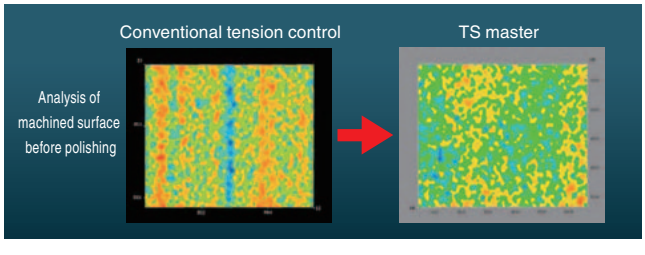
Corner machining control using CM3



Wire tension control (TS Master)

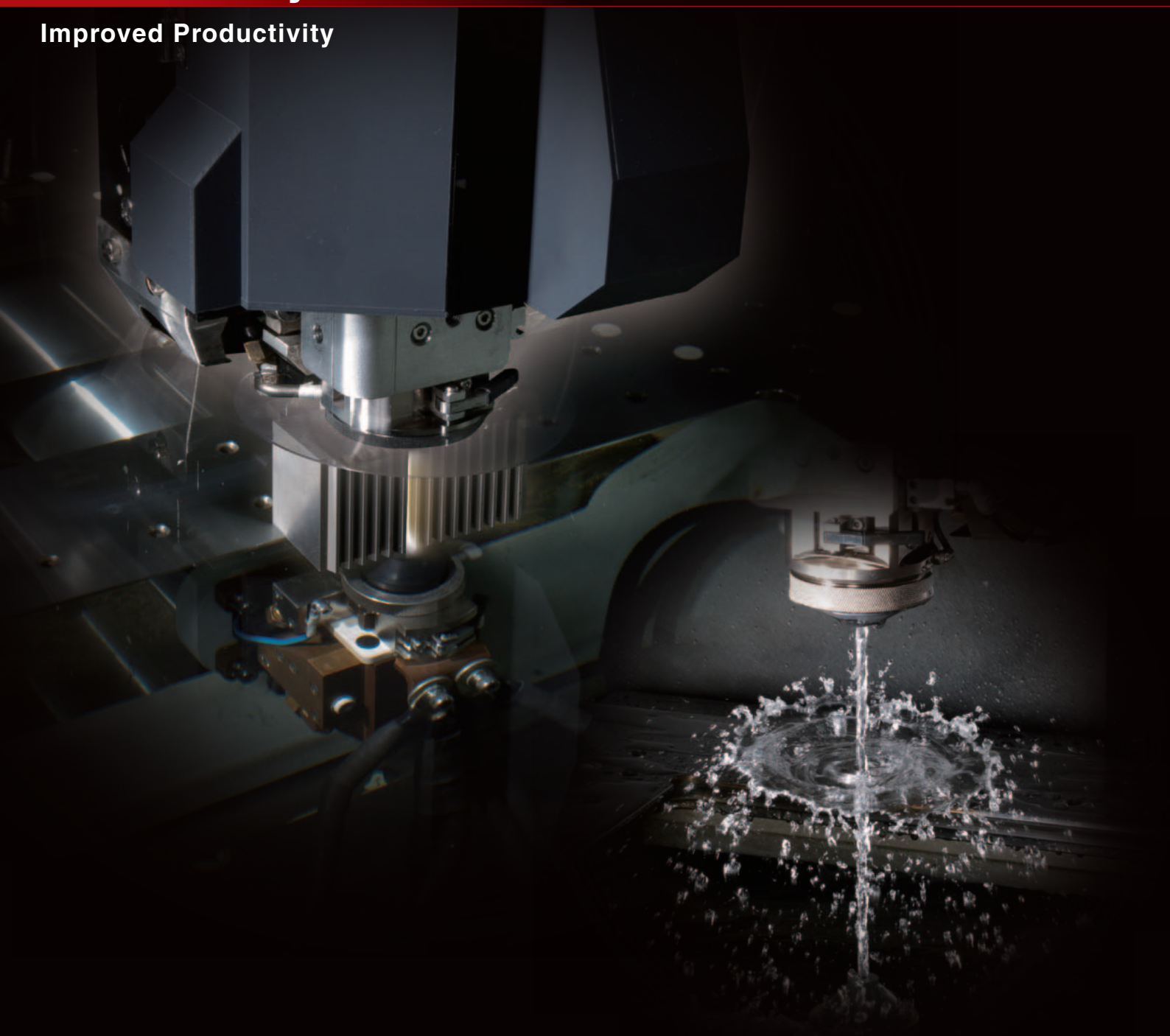
- Suppresses tension fluctuation for more stable machining
- Suppresses lines on the machined surface after polishing





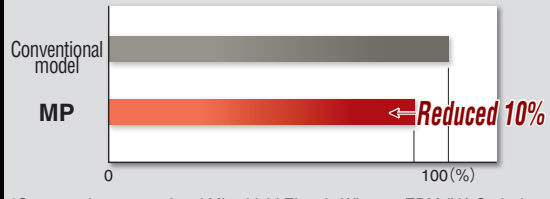
Productivity

Improved Productivity



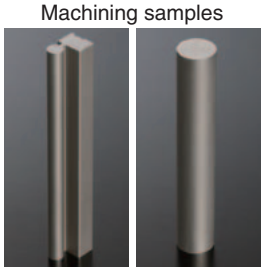
High-speed machining is enhanced by improved power supply for fine surface finish machining

Machining time comparison for
Rz1.2µm/Ra0.15µm/6µ"Ra

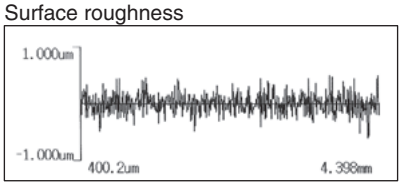


*Compared to conventional Mitsubishi Electric Wire-cut EDM (NA Series)

Machining samples



Surface roughness



Wire electrode : ø0.2(.008")/BS
Workpiece : Steel(SDK11), t60mm(2.4")

High-speed digital control

●Spark detection speed (up to twice as fast as our conventional model) provides improved discharge efficiency and suppresses wire breakage simultaneously while improving machining speed

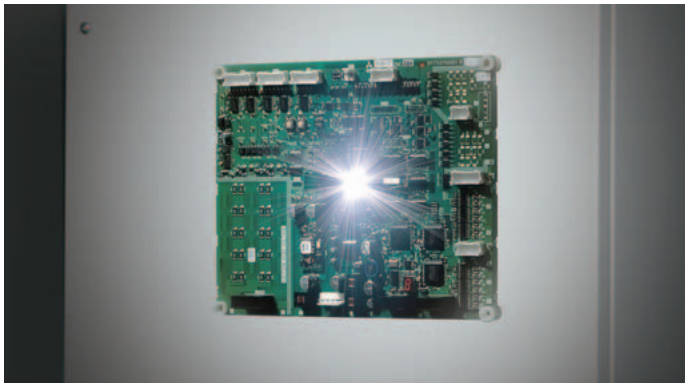
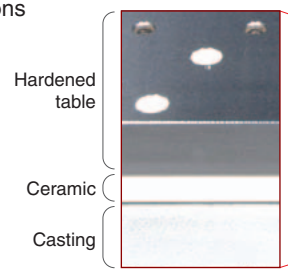
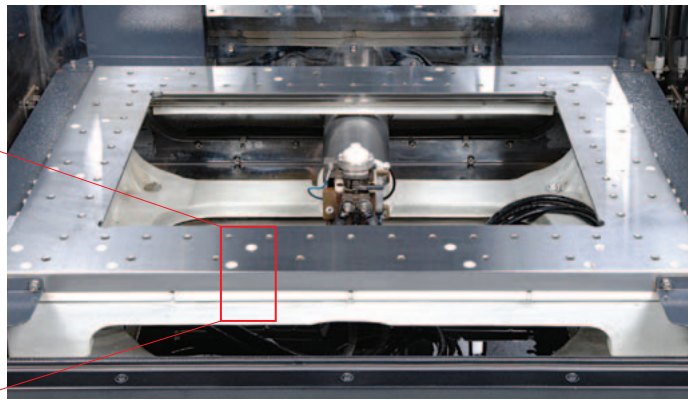


Table insulation

●Insulated worktable ensures improved surface finishing

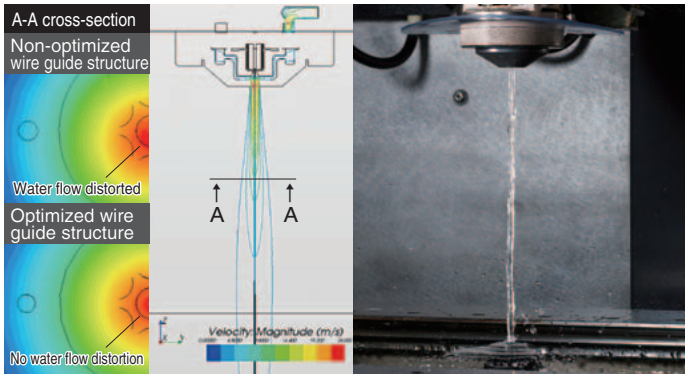
●Stable machining realized when using short-pulse and low-voltage machining conditions





Wire guide

●Flow analysis simulation has been used to optimize the water flow through the guide, enhancing cutting speed by improving sludge removal from the gap

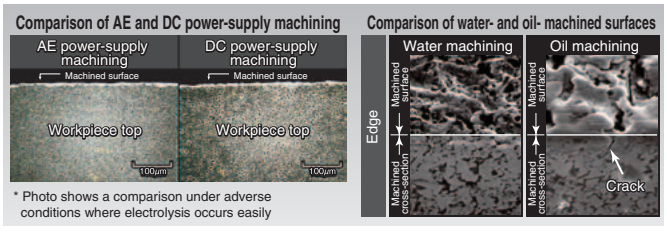


High-speed anti-electrolysis power supply (AE power supply)

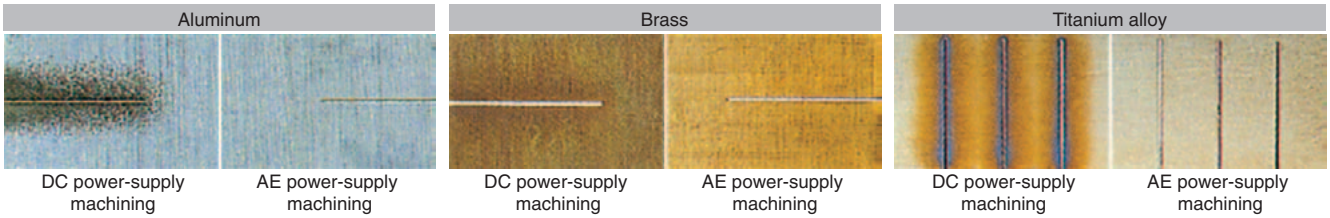
●Electrolytic corrosion is suppressed, preventing the formation of soft layers

●Compatible with all power circuits, from rough machining to finish machining

●High-speed, safe unmanned machining possible using water



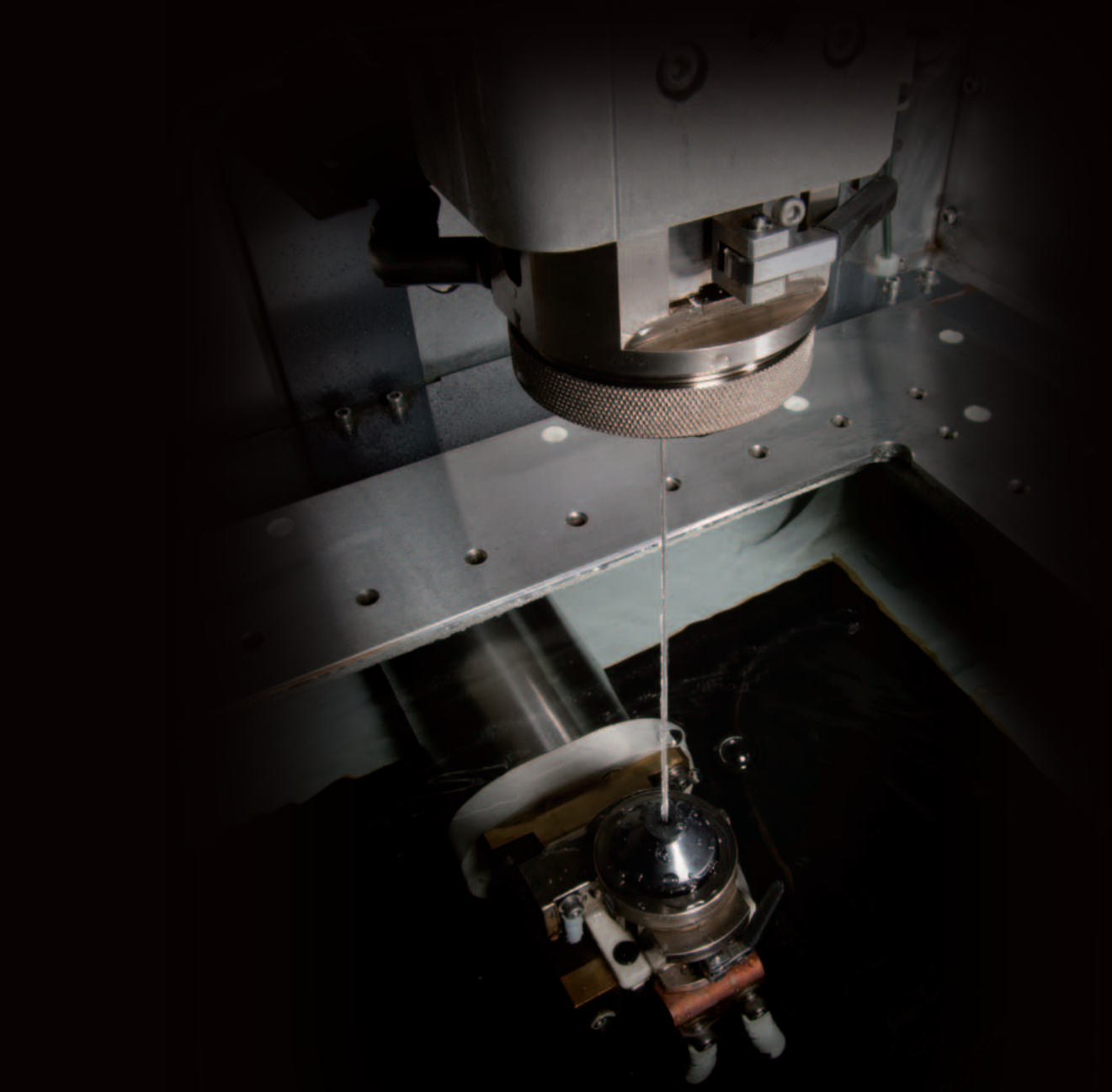
* Photo shows a comparison under adverse conditions where electrolysis occurs easily



Intelligent AT

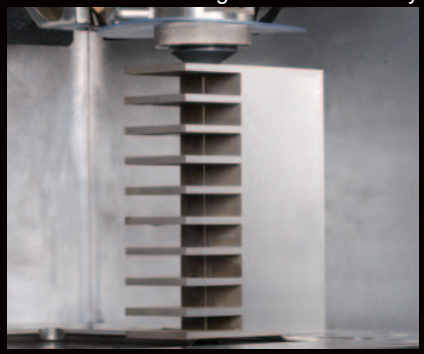
Automatic Wire Threading

Advanced technology for greatly improved productivity

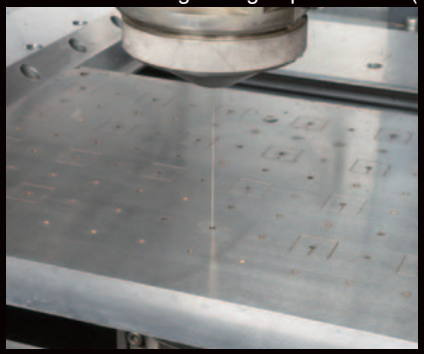


Improved automatic wire threading

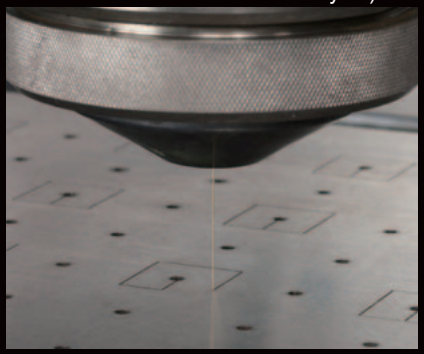
- New annealing system greatly improves wire threading with a curl ratio of less than 10%
- Wire break point insertion is greatly improved for thick workpieces
- Wire threading suitable for workpiece shape (i.e., jet stream on, jet stream off and submerged break point insertion)
- Automatic threading time is reduced by up to 35% when using AT high-speed mode (includes one wire cut and insertion cycle)



Multiple level wire threading is possible by setting the AT jet mode to off.
Highly dependable automatic threading for multi-opening applications



Stable automatic threading is realized during pitch machining

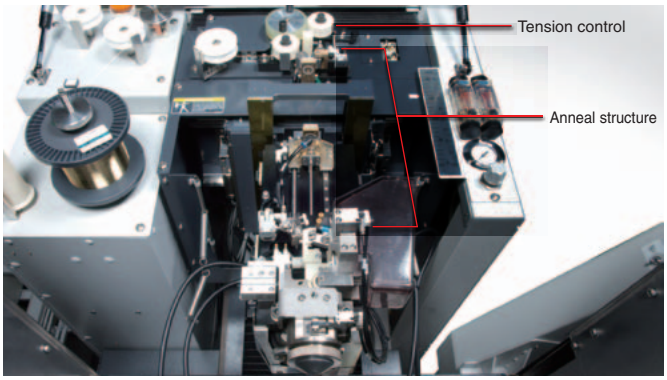


Wire break point insertion is possible

Wire electrode annealing structure

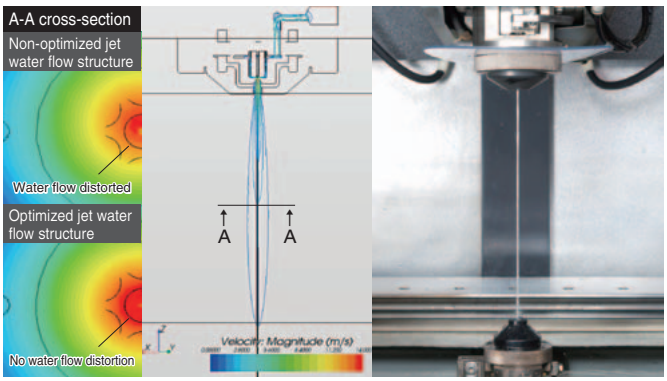
- Improved wire annealing power supply and tension control enhance wire threading (producing a curl ratio of 10% or less), which straightens the natural curl caused by spooling
- The greatly lengthened distance of annealed wire improves automatic wire threading for thick workpieces

*A curl ratio of less than 3% applied for the conventional model (FA Series)



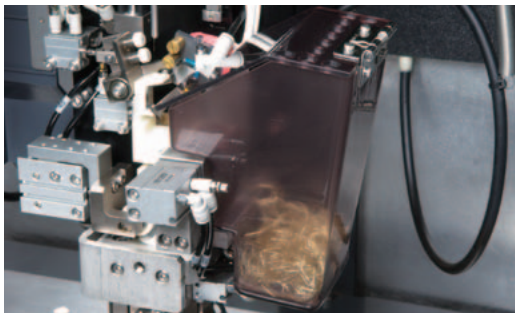
New jet water flow mechanism

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



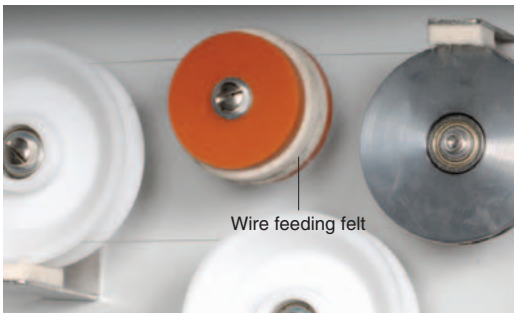
Wire collection unit

- Broken wire collection, which clears the upper guide after a wire break, has been improved so it handles even highly curled wire without hesitation



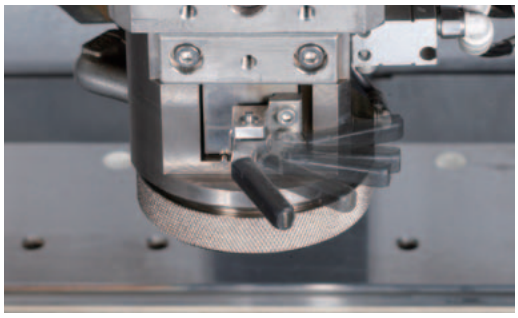
Wire feed wiper

- A felt wiper added to the wire path removes manufacturing impurities from the wire surface, which reduces slippage on the drive rollers



One-touch lever clamp mechanism

- New one-touch lever clamping system provides quick, easy and accurate power feed indexing
- The clamp lever accurately locates the power feeder with repeatable torque, unlike systems that use the set-screw 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 unscrewing the flush cups

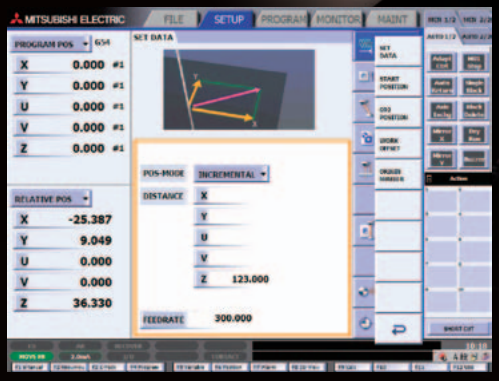
User-friendly features ensure easy operation

Ergonomic design

- User-friendly keyboard and mouse
- Easy-to-view screen (15-inch)
- Intuitive operations using touch-panel control

Set-up screen

- Outstanding graphics supporting easy operation



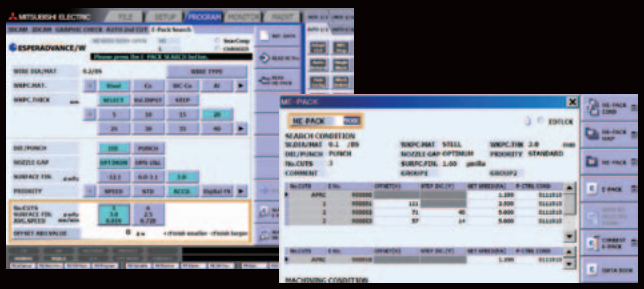
Work piece pick-up positioning

- Highly accurate workpiece pick-up positioning is possible with the water flow on or when a workpiece is submerged

Machining condition search function

- Interactive operation easily creates NC data with machining condition
- Job scheduling adjustment uses the schedule call back, extra job insertion and ME-pack feature

*ME-pack is a package of machining processes including offset, machining speed and adaptive control setting



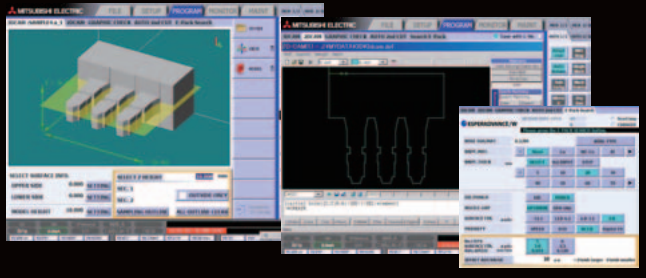
Work alignment function

- By measuring the workpiece flatness with a dial indicator, the wire tilt can be automatically compensated to match the angle of the part, further reducing set-up time

Advanced 3D data for machine control

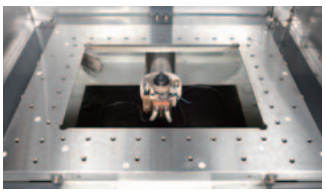
- Reads and displays 3D CAD data (Parasolid format *1) with a built-in 3D CAM
- Extracts 3D model contours with a built-in 3D CAM
- Creates NC data including machining conditions (ME-pack), through the built-in CAM system
- 3D-PM improves machining performance by (3D model shape analysis and optimum machining control)

*1 Parasolid is a registered trademark of UGS PLM Solutions Co., Ltd.



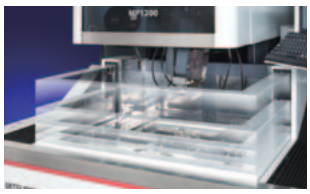
Hardened table and all stainless steel structure

- 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



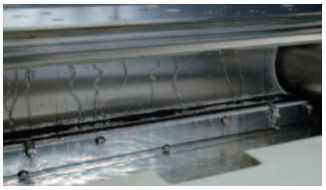
3-sided elevating work-tank

- The machine table can be reached from three sides making workpiece setups quick and easy



Cleaning mechanism <MP2400>

- A forced-flush self-cleaning mechanism prevents sludge from sticking to the stainless-steel seal plate

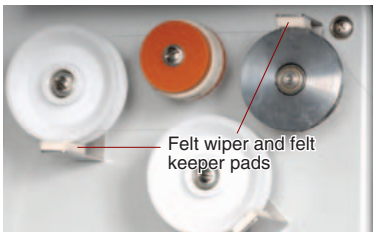


Wire alignment

- Highly accurate wire alignment is easy using the wire-alignment device (optional)
- Taper parameter set-up is simple using the wire-alignment device

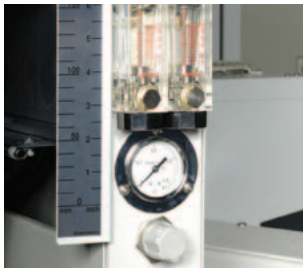
Wire travel system

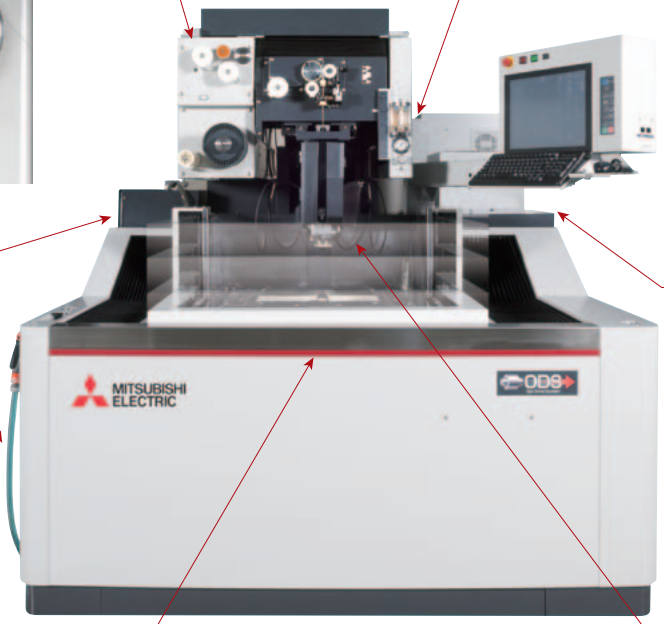
- The stability of the wire tensioning system is improved by a felt wiper and felt keeper pads that eliminate the chance of the wire jumping off the rollers



Dielectric fluid flow meter and jet flow adjustment valve

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





Dielectric fluid supply unit

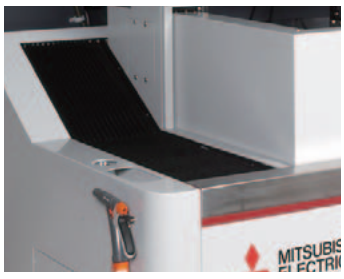
- A large access window into the fluid tank provides easy entry for cleaning

Unit cooler filter

- Chiller air filter

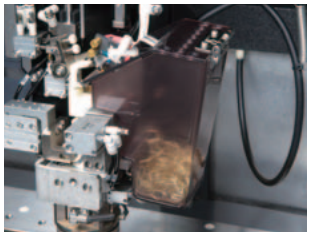
Filter pressure gauge and jet cleaning nozzle

- Easily read the filter pressure
- The convenient location of the jet cleaning nozzle makes tank clean-up easy



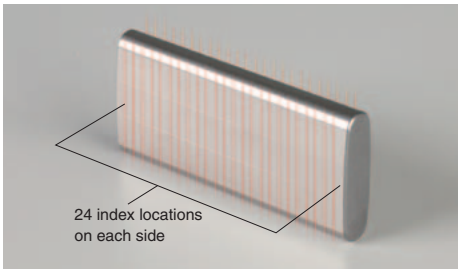
Broken wire collection box

- Conveniently located at the front for easy maintenance



Flat power feed terminal

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

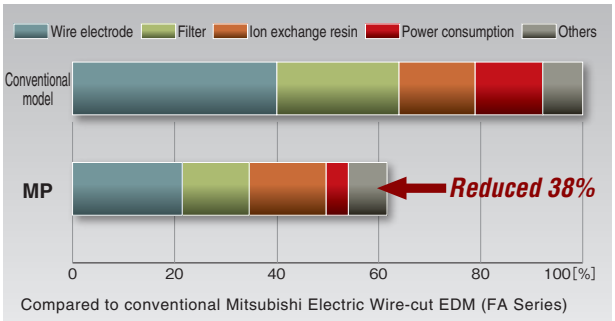


A total of 48 index locations can be used (24 on each side)

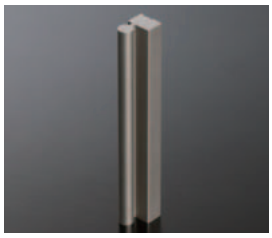
Energy Savings, Low Running Cost

Running cost

●Total running cost reduced up to 38%, which is accounted for 90% by filter, ion exchange resin and power consumption



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

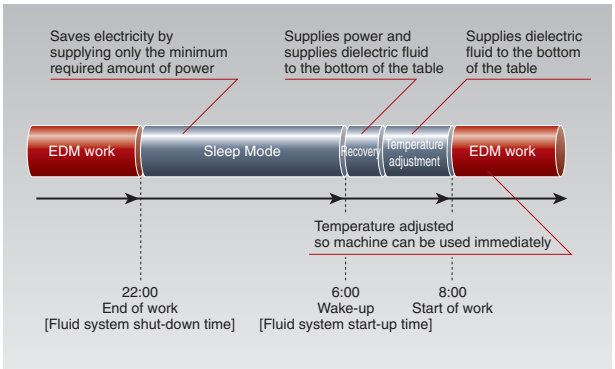


Wire electrode : ø0.2(.008")/BS
Workpiece : Steel(SKD11), t60mm(2.4")
Surface roughness : Rz3.5µm/Ra0.45µm/18µ"Ra

New energy-saving mode (Sleep Mode)

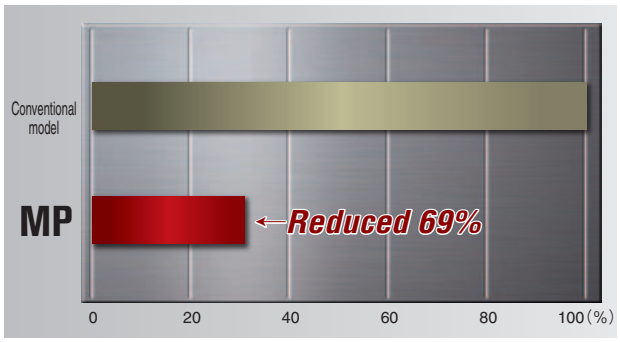
●The new energy-saving mode can be scheduled according to the current job ending time and start time the next day
●In Sleep Mode, the amount of energy consumed is greatly reduced as the result of using an automated pump-shut-off system
●Once the scheduled start time is reached, the system restarts the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

ADVANCE PLUS × ODS × PFC



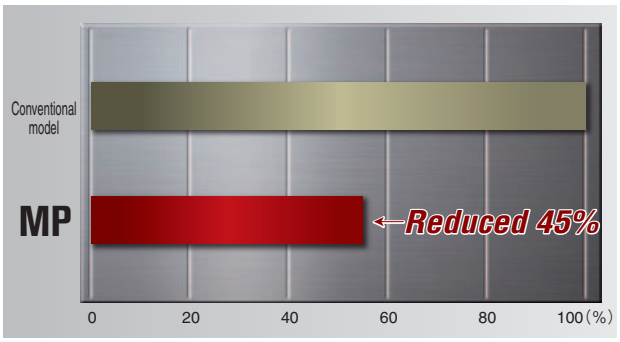
Power consumption reduced up to 69%

Power consumption reduced by ODS



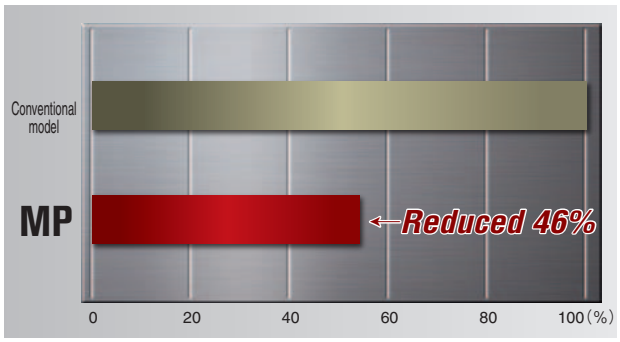
Filter cost reduced up to 45%

●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 spooling rate to be reduced by PFC

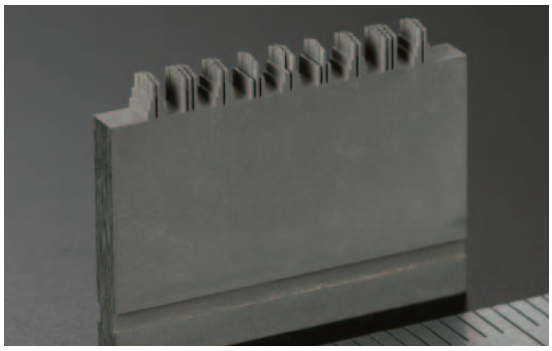


*Compared to conventional Mitsubishi Electric Wire-cut EDM (FA Series), compared to the same machining amounts

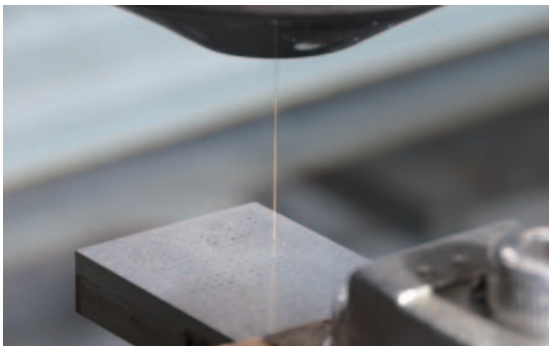
Other Functions

ø0.05(.002"), ø0.07(.003") automatic wire threading (option)

- ø0.05(.002") wire electrode available
  Minimum in-corner R 30µm (0.0012")
- Improved design reduces maintenance



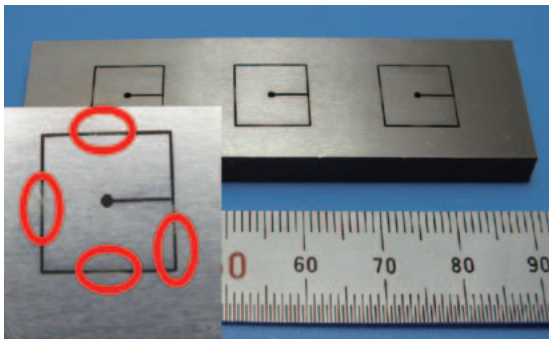
Wire electrode : ø0.05(.002")/SP
Workpiece : Steel(PD613),
Length 20mm(.79") width 2mm(.08")



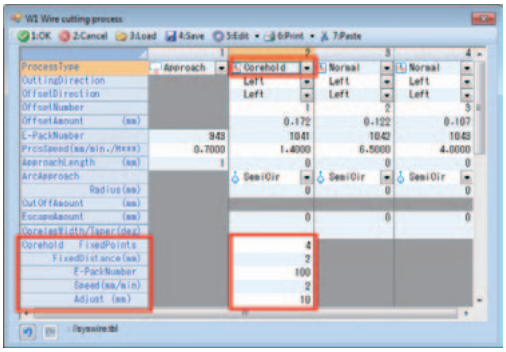
Automatic threading with ø0.05(.002")
wire electrode into a 0.15(.006") start hole

COREHOLD (Slug retention) (option)

- This function allows the Slug to be automatically held in place after the rough cut for complete unattended operation
- Slug retention positions and lengths can be set by CamMagic or the built-in CAM on the machine



Wire electrode : ø0.2(.008")/BS
Workpiece : Steel(SKD11), t5mm(.2")

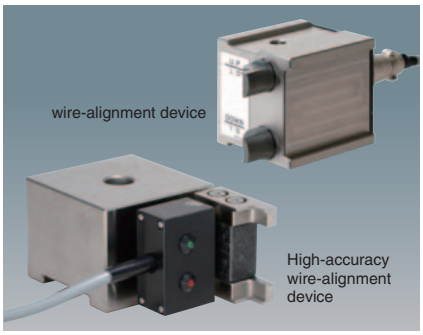


COREHOLD setting screen (CamMagic)

Options

Advanced manual control box /
Standard manual control box

The advanced manual control box has an LCD display, and can be used for positioning, zero set and AT operations



High-accuracy wire-alignment device /
wire-alignment device

This device aligns the wire electrode with the table

Angle Master ADVANCE Ⅱ (jig)

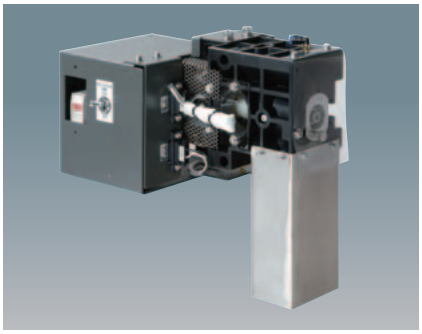
Measuring jig to be used for Angle Master ADVANCE Ⅱ (S/W)
Use for taper degree calculation in UV axis directions

Angle Master guide kit

Max. 45˚ tapered machining possible using dedicated diamond guide

20kg(44.1lb) wire spool unit

Long-time continuous machining is possible

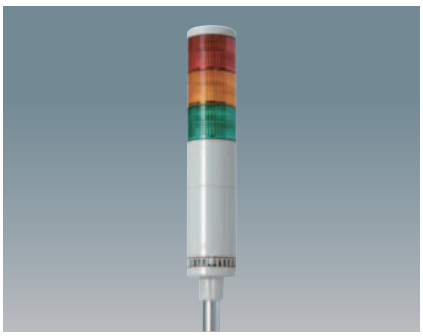


Wire processing unit

Spent wire electrode is cut at the discharge section

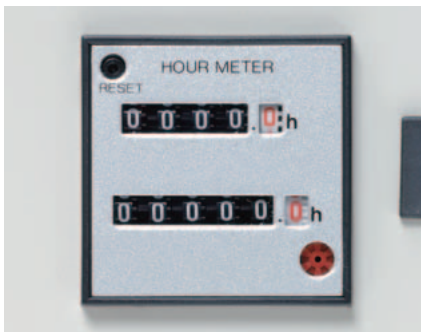
4-piece filter system

4-piece filter specifications reduce filter replacement frequency



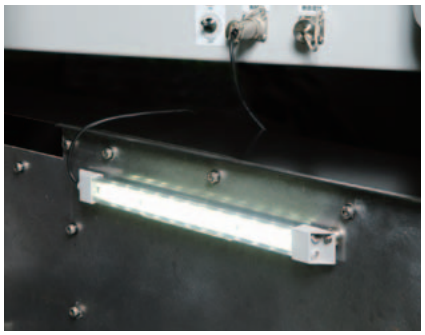
3-color warning light

Indicates machine operating status



Run timer

Indicates accumulated machining time



LED light

High-brightness LED lighting

Workpiece clamp set

Clamp jigs dedicated for use in holding workpieces

Tools (tool box)

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

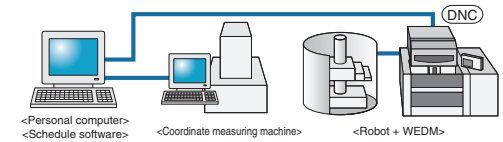
◎ : Standard equipment ○ : Can be retrofitted ● : Factory installation only × : Not available

Option name		MP1200	MP2400
Machine unit	UV OPT-drive system specifications	◎	◎
	ø0.05 (.002"), ø0.07 (.003") automatic wire threading*1	●	●
	Wire processing unit *1	○	○
	20kg (44.1lb) wire spool unit	○	○
	Advanced manual control box (with axis display)	○	○
Power supply	Ultrafine finish power supply (Super-DFS power supply)	●	●
Dielectric fluid system	Ion exchange resin 10L (0.35cu.ft.) specifications (Organo)	○	○
	Ion exchange resin 20L (0.70cu.ft.) specifications (Organo)	○	○
	4-piece filter system	○	○
Communications	External signal output*3	○	○
	LAN/W*4	◎	◎
	DNC	○	○
	FTP	○	○
Taper machining	Angle Master guide kit ø0.2 (.008") (±30°) *5	○	○
	Angle Master guide kit ø0.2 (.008") (±45°) *5	○	○
	Angle Master guide kit ø0.25 (.01") (±30°) *5	○	○
	Angle Master guide kit ø0.25 (.01") (±45°) *5	○	○
	Angle Master (S/W) *5	◎	◎
	Angle Master ADVANCE Ⅱ (S/W) *2	○	○
	Angle Master ADVANCE Ⅱ (measuring jig) *2	○	○
Software	Anti-virus protection	◎	◎
	Sleep mode	◎	◎
	COREHOLD	○	○
Display	3-color warning light*3	○	○
	Run timer*3	○	○
	Option box*6	○	○
Others	Instruction manual (paper edition)	○	○
	LED light	○	○
	Wire-alignment device	○	○
	High-accuracy wire-alignment device	○	○
	Tools (tool box)	○	○
	Workpiece clamp set	○	○

*1 The ø0.05 (.002") to ø0.15 (.006") wire electrodes cannot be used with the wire processing unit. (These sizes can be used with the continuous wire feeder after removing the wire processing unit.)
*2 Angle Master ADVANCE Ⅱ (measuring jig) is needed for using Angle Master ADVANCE Ⅱ (S/W).
*3 Option box is needed
*4 LAN cable should be all straight wiring type with shielding connector, category 5 (100BASE-TX compliant), STP (four shielded twist pair).
A switchable hub that can ground the shielded LAN cable should be used.
*5 Standard diamond guide and nozzle (ø7(.28")) is used for taper machining of 15 degrees or less. Angle Master guide kit (H/W) is needed for taper machining of 15 degrees or more (wire electrode for taper machining should be used).
*6 Necessary for mounting external signal output, 3-color warning light and run timer.

Wire-cut EDM automation system

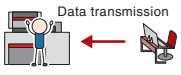
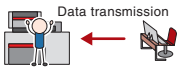
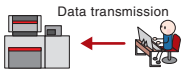
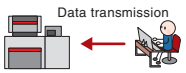
- Accumulates workpiece measurement data
  - Compatible for external set-up using a coordinate measuring machine
  - Enables automatic measurement when measuring on an EDM
- Creates processes offline
- Automatically exchanges workpieces using a robot



* Please contact a Mitsubishi Electric representative for details.

Network connection specifications (DNC, FTP Options)

Data, such as NC programs, machining conditions and variables can be exchanged between a personal computer and EDM.
The required options differ according to the models and purpose, and can be confirmed using the following table.
One IP address must be prepared for each EDM within the user's in-house network.

Required specifications	Image drawing	Required option	Supplement
Operate on the EDM side and receive data from personal computer.		LAN/W (standard)	Use EDM's Explorer and receive data in the common HDD on the EDM side. After that, data I/O operations are required.
Operate on the EDM side and send data directly to the EDM's NC data area.		FTP	Data can be received only using data I/O operation.
Operate on the personal computer side and send data to the EDM.		LAN/W (standard)	The personal computer's Explorer and the EDM's common HDD are used. After that, data I/O operations are required for the EDM.
Operate on the personal computer side and send data directly to the EDM's NC data area.		DNC	Commercially available DNC software must be installed on the personal computer side. Refer to DNC specifications operation for details.

Power Supply, Control Specifications/Machine Installation

■Power supply/Control unit specifications

Compatible model		MP1200	MP2400
Power supply unit specifications			
Power supply unit	Model	WMP	
	Power supply circuit	Regenerative transistor pulse type	
	Cooling method	Completely sealed/Indirect cooling	
	Anti-electrolytic power supply	All modes	
	Maximum output current	50A	
	Power supply mode	9 types : Anti-electrolysis power supply	
	Machine voltage selection	16 types	
	Machining setting	44 types	
	OFF time	36 types	
	Stabilization circuit A	10 types	
	Stabilization circuit B	20 types	
	Stabilization circuit C	7 types	
	Stabilization circuit E	5 types	
	FM circuit (LA, LC)	2 types	
	PM control	3 notches (changeable with M code or screen) • Workpiece material: Steel, tungsten, copper, aluminum • Applicable only for rough-cut conditions	
	AVR	Built-in	
	Unit dimensions (mm) (in)	600 × 650 × 1767 (23.6 × 25.6 × 69.6)	
	Unit weight (kg) (lb)	240 (529)	
Control unit specifications			
Control unit	Model	W31MP-2	
	NC program input method	Keyboard, USB flash memory, Ethernet	
	Pointing device	Touch panel, mouse	
	Display	15" color TFT	
	Display characters	Alphanumeric characters	
	Control method	CNC closed loop	
	Number of control axes	Max. 4 axes simultaneously	
	Setting unit	X, Y, U, V, Z … 1/0.1μm	
	Minimum driving unit (mm) (in)	50nm (0.000050mm (0.000002"))	
	Max. command value	±99999.999mm	
	Position command format	Combined use of increment/absolute values	
	Interpolation function	Linear, circular, and spiral	
	Scale magnification	0.00001 ~ 99.999999 (G code) 0.001 ~ 9999.999 (S code)	
	Optimum feed control	Automatic selection of machining speed according to gap voltage sensing	
	Path-retrace control	Reverse path retrace during short-circuit	
	Wire offset	±99999.999mm Offset numbers: 1 to 900 (intersection point calculation)	
	Basic screen menu	5 types (file, setup, machining support, monitor, maintenance)	
	Automatic 2nd cut	Interactive screen method	
	Machining condition (E-pack) storage	1 to 6999	
	Program number command	1 to 99999999	
	Sub-program	Nesting level 30	
	Sequence numbers	1 to 99999	
	Manual input positioning	Input on screen	
	Manual operation box	High-speed, medium-speed, low-speed, ultra-slow speed, inching (0.0001mm/0.0005mm/0.0001mm) Positioning function, AT function	
	Graphics	XY plane, XY-XZ plane, solid, table scaling, 3D model display, background drawing, automatic machining path drawing	
	User memory capacity	1GB	
	Maintenance function	Management of consumable parts (time display)	
	Adaptive control	SL, CM, EM, OM, PM, BM	
	External dimensions (mm) (in)	494 × 175 × 346 (19.4 × 6.9 × 13.6) (excluding keyboard and mouse pad)	
	Weight (kg) (lb)	20 (44)	

■Control unit functions

W31 (ADVANCE control unit) control unit functions					
Year, month, date display	Reference block	Program no. designation	Automatic 2nd cut	Axis exchange	Automatic taper degree calculation
Overlap window function	Single block		Machining condition search	Mirror image	Status recording
Character string replacement function	Dry run	Expanded AT function	Block delete	Circumference calculation	Data variable operation
Geometric function	Automatic return	Graphics (drawing monitor)	USB flash memory	Backlash compensation	Alarm display
Floating decimal point function	User macro	Graphics (program check)	e-manual (electronic instruction manual)	Pitch error compensation	Machining time estimate
Control command	Automatic positioning (hole center, edge)	Graphics (automatic machining shape drawing)	Repeated positioning	Soft limit (inside/outside prohibit)	Built-in 2D-CAD/CAM
Corner R	Automatic zero point return	Graphics (surface display)	Automatic power failure recovery	Wire consumption estimate	Built-in 3D-CAM
Corner chamfer	Machining start hole return	Offset	Workpiece coordinate system (106 items)	CM3 control	EM control
Linear angle command	Memory operation 1GB	Coordinate reading	PM control	OM control	3D model compatible PM control (3D-PM)
30-sec. short-circuit stop	Program edit	Time reading	SL control	3D viewer (Parasolid data display)	Digital-AE Ⅱ
Simultaneous 2-axis wire alignment	Coordinate rotation (K)	XY-axis independent scaling	3D graphic check	Sleep mode (MV-R)	
Workpiece inclination compensation	Pattern rotation (S)	Axis rotation (AR)	Workpiece alignment	Maintenance check	

Machine installation checklist

Determining the machining details

Check each item, and make sure that no item or order is overlooked.

1) Determine the workpiece	
2) Determine the machining site	
3) Determine the pre-processing site	
4) Determine the post-processing site	

Preparation of installation fixtures

1) Plan the installation fixtures	
2) Prepare or manufacture the fixtures	

Preparation of consumable parts

1) Purchase consumable parts such as wire electrodes	

Training of programmers and operators

1) Select the programmers and operators	
2) Apply for training seminars	

Confirmation of foundation and power-supply work

If there is any possibility of radio disturbance, investigate it prior to starting work.

1) Confirmation of floor area	
2) Confirmation of environment (constant-temperature dust-proof room, measure for radio disturbance, prevention of external noise)	
3) Confirmation of foundation floor	
4) Foundation work	
5) Primary wiring for power lead-in	
6) Grounding work	
7) Construction of dielectric fluid (city water) supply/drainage facilities	
8) Air piping work	

Confirmation of delivery path

Check the path inside and outside the factory to avoid any trouble during delivery.

1) Traffic restrictions to factory		
Road width		
Entry road		
2) Factory entrance and width of gate in factory	(m)	
Factory building entrance dimensions (height × width)	(m)	
3) Constant-temperature dust-proof room entrance dimensions (height × width)	(m)	

Cautions

The standard delivery entrance dimensions for standard shipment delivery are given on the product line-up page.
If the entrance is smaller than the standard delivery entrance, a machine with different dimensions can be shipped.
* Please contact a Mitsubishi Electric representative for details (a separate estimate will be issued).
Note that delivery may not be possible in some cases depending on the dimensions.

Installation conditions

1. Installation site

①Constant-temperature dust-proof room
- Recommended room temperature 20±1°C (68°F±2)
- Usable temperature range 5 to 35°C (41°F to 95°F)

Temperature fluctuation will directly affect machine accuracy. To maintain performance accuracy, select a place with minimal temperature fluctuation.
Install the EDM in a constant-temperature room when performing high precision machining, even when using skim cuts.
Note that an environment where the temperature fluctuates by 3°C (5°F) or more within 24 hours, or 1°C (2°F) or more within one hour can adversely affect machining accuracy.
Make sure that the machine body is not subject to direct wind from air-conditioners or to direct sunlight.

- Dust-free location is recommended.

Install a wire-cut EDM in an environment with no corrosive gases, such as acid or salt, or mist, and with low levels of dust.
Grinding dust can adversely affect the machine's linear scales and ball screws. Pay special attention to installation location to avoid this hazard (separate from grinding machine, or install in separate room, etc.).

- Humidity Within 30 to 75%RH (with no dew condensation).
- Temperature range during transportation and storage
-25 to 55°C (-13°F to 131°F) (when power is not connected).

②Tolerable vibration of floor
- Select a floor where vibration or impact will not be conveyed.
- As a reference, the vibration level should have a max. amplitude of 2μm or less at a 10 to 20Hz frequency.

* Consult with the contractor or vibration measuring instrument manufacturer for details on the measuring method.

③Foundation
- The floor should be concrete with a thickness of 400mm (15.7") or more so it can sufficiently withstand the system's weight.
- The floor inclination (step) must be within 6/1000 (floor inclination 6mm per 1m) (MP2400 Series).

2. Machining heating value

Use the equipment capacity to calculate the wire-cut EDM's heating value required for designing a constant-temperature room.

Heating value (kW) = Equipment capacity (kVA) x 0.6
= 13.5kVA x 0.6
= 8.1kW

The above value is a guideline. Consult with the constant-temperature room manufacturer for details.

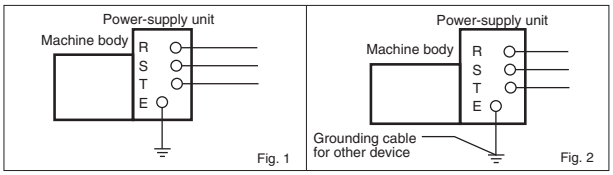
3. Power-supply equipment

- Primary wiring 3-phase 200/220VAC±10% 60Hz, 3-phase 200VAC±10% 50Hz
- Power capacity 10.0kVA (during normal use) (when using Ø0.2(.008")mm wire electrode)
13.5kVA (when using the maximum)

* Use a 14mm² or thicker cable for the primary connection.

4. Grounding work

Wire-cut EDMs must always be grounded to prevent external noise, radio disturbance and earth leakage.
Install a wire-cut EDM in an environment with no corrosive gases, such as acid or salt, or mist, and with low levels of dust.
- Common grounding can be used if noise from other devices will not enter through the common grounding; the grounding cable must be connected independently to the grounding location (Fig. 2).
- Use a 14mm² grounding wire.



5. Primary air equipment

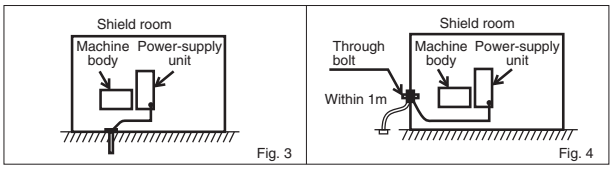
- Hose diameter : 1/4 hose (hose sleeve outer diameter: ø9.0 (0.35"))
- Pressure : 0.5 to 0.7MPa (72.5 to 101.5psi)
- Flow rate : 75ℓ/min or more (2.65cu.ft./min.)

* Air (compressed air) is used to operate the automatic wire feeder and work tank door, etc. Air supplied from a normal compressor contains various impurities that could cause operation faults if they get into the pneumatic devices such as the solenoid valve. Install an air filter with a drainage discharge mechanism, etc., in the air source (primary source) piping to prevent impurities from entering the pneumatic devices.

6. Shield room

Install a shield room if a wire-cut EDM affects televisions or other communication facilities in the area. Observe the following points when installing the wire-cut EDM in the shield room.

1. Ground the wire-cut EDM in the shield room (Fig. 3).
2. If the wire-cut EDM cannot be grounded in the shield room, connect the wire-cut EDM's grounding cable to the shield room's grounding terminal (through bolt) as shown in Fig. 4.
3. Consult with a Mitsubishi Electric representative for details on installing a shield room.



Precautions for selecting earth-leakage breaker

To prevent malfunctions caused by the external noise from control units, etc., a filter is installed for the power-supply input. By grounding one end of this filter, an earth-leakage current of approx. 30 to 40mA passes through the filter. A highly sensitive earth-leakage breaker (sensitivity current 30mA) could malfunction. Thus, a medium-sensitivity earth-leakage breaker (sensitivity current 100 to 200mA) is recommended for the wire-cut EDM. Class C grounding (grounding resistance of 10Ω or less) is recommended for the wire-cut EDM. Even if the sensitivity current is 200mA, the contact voltage will be 2V or less, and no problems will occur in preventing electric shock (application of tolerable contact current Class 2, 25V or less).

Disposal

The dielectric fluid, dielectric fluid filter, ion exchange resin, wire, etc., are industrial waste. These must be disposed of following national and local laws and ordinances.

Harmonic distortion

If there is harmonic distortion in the power supply, the machine operation could be affected even if the voltage does not fluctuate. In addition, the harmonic current could flow from the wire-cut EDM to the power system and adversely affect peripheral devices. If the effect of the harmonic distortion causes problems, install a harmonic suppression filter or take other measures.

Wire electrodes

Use the following wire electrodes

OB-PN (ø0.1/BS ~ ø0.3/BS)	Oki Electric Cable
HBZ-U(N) (ø0.1/BS ~ ø0.3/BS)	Hitachi cable
SBS-HN (ø0.1/BS ~ ø0.3/BS)	Sumiden Fine Conductors
SWP-SP (ø0.05/SP ~ ø0.07/SP)	Suzuki Metal Industry

*The wire electrodes shown above do not guarantee performance

Recommended sliding surface lubricants

Use one of the following lubricants for sliding surface As of March 2014

Manufacturer	Product name
Exxon Mobil	Mobil DTE26
Idemitsu Kosan	Super Hydro 68A
Showa Shell	Terrace Oil 68
JX Nippon Oil & Energy Corporation	Super Mulpas DX68

Terms of warranty

(1)Terms of warranty

This will differ according to country and region of sale; please contact a Mitsubishi Electric representative for details.

(2)Coverage

Parts labor and travel are included free of charge when the failure occurs during normal use for the stated Terms of the warranty (based on proper usage and maintenance as described in the operations manual and sales agreement).
Coverage exceptions:
①When a failure occurs that was caused by a machine modification that directly affects the machine's functioning or accuracy.
②When a failure occurs caused by the use of non-standard parts, consumables or lubricants.
③When a failure occurs caused by a natural disaster such as lighting, earthquake or storms and flooding.
④When the use of non-recommended consumables or aftermarket parts are used such as filters or flushing nozzles.

Please be aware that any workpiece/property damage and operation loss which may be associated with any fault of our machine are not covered by this warranty.

(3)Post Warranty / Expected Service Life

After the warranty period expires, all standard service rates and travel expenses will apply.
Normal service life expectancy is 11 years after installation, but there may be some cases where discontinued electrical parts such as semiconductors and motors will reduce this period.

FA-related Products

PLC | MELSEC-Q Series Universal Model

Introducing the high-speed QCPU (QnUDVCPU) for faster processing of large data volumes.

◎Realize high-speed, high-accuracy machine control with various iQ Platform compatible controllers and multiple CPUs.
◎Easily connect to GOTs and Programming tools using built-in Ethernet port.
◎25 models from 10 k step small capacity to 1000 k step large capacity, are available.
◎Seamless communication and flexible integration at any network level.

Product Specifications

Program capacity	10k steps to 1000k steps
Number of I/O points [X/Y], number of I/O device points [X/Y]	256 points to 4096 points/8192 points
Basic instruction processing speed (LD instruction)	120ns to 1.9ns
External connection interface	USB (all models equipped), Ethernet, RS-232, memory card, extended SRAM cassette
Function module	I/O, analog, high-speed counter, positioning, simple motion, temperature input, temperature control, network module
Module extension style	Building block type
Network	Ethernet, CC-Link IE controller network, CC-Link IE field network, CC-Link, CC-Link/LT, MELSECNET/H, SSCNETⅢ(/H), AnyWire, RS-232, RS-422

AC Servo | Mitsubishi General-Purpose AC Servo MELSERVO-J4 Series

Industry-leading level of high performance servo

◎Industry-leading level of basic performance: Speed frequency response (2.5kHz), 4,000,000 (4,194,304p/rev) encoder
◎Advanced one-touch tuning function achieves the one-touch adjustment of advanced vibration suppression control Ⅱ, etc.
◎Equipped with large capacity drive recorder and machine diagnosis function for easy maintenance.
◎2-axis and 3-axis servo amplifiers are available for energy-conservative, space-saving, and low-cost machines.

Product Specifications

Power supply specifications	1-phase/3-phase 200V AC, 1-phase 100V AC, 3-phase 400V AC
Command interface	SSCNET Ⅲ/H, SSCNET Ⅲ (compatible in J3 compatibility mode), CC-Link IE Field Network interface with Motion, pulse train, analog
Control mode	Position/Speed/Torque/Fully closed loop
Speed frequency response	2.5kHz
Tuning function	Advanced one-touch tuning, advanced vibration suppression control Ⅱ, robust filter, etc.
Safety function	STO, SS1 SS2, SOS, SLS, SBC, SSM (compatible when combined with motion controller)
Compatible servo motor	Rotary servo motor (rated output: 0.05 to 22kW), linear servo motor (continuous thrust 50 to 3000N), direct drive motor (rated torque: 2 to 240N・m)

CNC | Mitsubishi CNC M700V Series

High-grade model equipped with advanced complete nano control

◎Achieve complete nano control with the latest RISC-CPU and high-speed optical servo network.
◎Realize super-high grade processing by combining the complete nano control, state-of-the-art SSS control and OMR control, etc.
◎Display of essential information of grouped on three screens to greatly reduce processing setup time with easy operability.
◎The M700VW Series with WindowsXPe and M700VS Series with integrated control unit and display type are available.

Product Specifications

Maximum number of control axes (NC axes + spindles + PLC axes)	16 axes (M720VW/M720VS have 12 axes)
Maximum number of part systems	Machining center system: 2 systems Lathe system: 4 systems
Least command increment	1nm (M720VW/M720VS 0.1μm))
Least control increment	1nm
Maximum program capacity	2,000kB(5,120m)
Maximum PLC program capacity	128,000 steps
Main functions (for machining center)	Simultaneous 5-axis machining, SSS control, high-speed high-accuracy control, tool nose point control, tilt plane machining, etc.
Main functions (for lathe)	Milling interpolation, 2-system simultaneous thread cutting, inter-system control axis synchronization, control axis superimposition, combination control, etc.

Laser Processing Machine | CO_2 2-Dimensional Laser Processing Machine eX-Series

A global standard CO_2 2-dimensional laser processing systems.

◎Productivity has been dramatically enhanced owing to improved acceleration and the latest control technologies exclusive to Mitsubishi Electric.

◎2 Action Cutting allows for the entire process, from job setup to parts cutting, to be completed in two simple actions.

◎When not processing, the system switches to ECO mode and the resonator stops idling. Minimizes energy consumption, reducing running costs by up to 99%*1 during standby.

*1: Compared to the previous LV-Series with Mitsubishi's designated benchmark shape.

Product specifications

Model Name	ML3015eX
Drive system	Flying optic (3-axis beam movement)
Stroke (X×Y×X) [mm]	3100×1565×150
Rapid feedrate [m/min]	X,Y axes: Max. 100; Z-axis: Max. 65
Processing feedrate [m/min]	Max. 50
Positioning accuracy [mm]	0.05 / 500 (X,Y axes)
Repeat accuracy [mm]	± 0.01 (X,Y axes)
Rated output [W]	4500

Laser Processing Machine for Substrate Drilling | GTW4 Series

Ever-evolving global standard machine

◎Newly-developed super-fast galvano and 360W high-power resonator achieve industry-leading productivity.

◎Laser beam generated by unparalleled resonator enables stable high-quality copper-direct processing on various surface treatments.

◎Single machine can support variety of processing application with Mitsubishi unique powerful laser and optimum beam control.

◎Original resonator structure, which can be refreshed by replacing some parts only, realizes low operating cost.

Product specifications

Model name	ML605GTW4(-H)-5350U/ML605GTW4(-P)-5350U/ML706GTW4-5350U
Processing workpiece dimensions [mm]	620×560/815×662
XY table maximum feedrate [m/min]	50
Laser type	CO2 laser
Oscillator power [W]	360W
Oscillator set pulse frequency	10 to 10000Hz

Robot | MELFA F Series

High speed, high precision and high reliability industrial robot

◎Compact body and slim arm design, allowing operating area to be expanded and load capacity increased.

◎The fastest in its class using high performance motors and unique driver control technology.

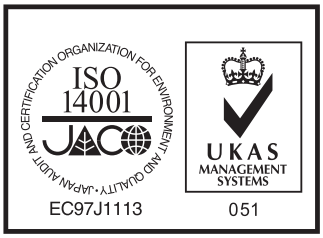
◎Improved flexibility for robot layout design considerations.

◎Optimal motor control tuning set automatically based on operating position, posture, and load conditions.

Product Specifications

Degrees of freedom	Vertical:6 Horizontal:4
Installation	Vertical:Floor-mount, ceiling mount, wall mount (Range of motion for J1 is limited) Horizontal:Floor-mount
Maximum load capacity	Vertical:2-20kg Horizontal:3-20kg
Maximum reach radius	Vertical:504-1503mm Horizontal:350-1,000mm

Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001(standards for quality assurance management systems)



MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS: 1-14, YADA-MINAMI, 5-CHOME, HIGASHI-KU, NAGOYA 461-8670, JAPAN

* Not all models are supported for all countries and regions.
* Machine specifications differ according to the country and region, so please check with your dealer.
* Processing data provided in this brochure is for reference only.

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