Technology to fascinate you:

MITSUBISHI ELECTRIC

Die-Sinking EDM System
EA12-V
Uniquely productive, ultra-precise, always reliable: The EA12-V series

It can be universally applied and permanently reduces your operating costs: the EA12-V series. On account of its reliability, capability and availability, it is one of the most sought after erosion systems in the world. Its high-quality design and multifaceted technological innovations are equally as persuasive. The newly developed high performance FP80V generator provides the highest productivity and best results on the work piece.

The generator's strengths are fully utilised with regard to the processing of tungsten carbide - even with standard copper electrodes. The combination of the lowerable working tank together with the optional left/right hand placement of the generator/control cabinet, makes automation as flexible as possible. The EA12-V which is constructed with a solid, cast steel frame also has a digital direct drive as well as an absolute measuring system. In addition, the EA12-V is equipped with a direct linear way measuring system that guarantees consistent precision.
Convincing in all aspects: The superior machine concept

Solid and durable cast steel design, directly powered ball screws gives you the “Best in German mechanical engineering” made in Japan! Compact and robust mechanical engineering based on cast steel. Guarantees better rigidity and stability with respect to this machines design. Furthermore, there is the high resolution, digitally controlled direct drive system (0.1 mm) and the generously sized spindles. Both features, together with the double way measuring system in closed loop, ensure consistent precision over an extremely long period of time. The space-saving machine footprint reflects the optimal ratio of travel range and machining height. Another space-saving feature is the lowerable working tank that makes access to the workspace readily available. Optimal maintenance procedures refer to the ease in which you can exchange the Long-Life Filter as well as access the fully automatic central lubrication system during processing. Needless to say, all EA12-V machines are checked for quality via laser measurement and other extensive controls, because “precision requires perfection”.

The classic cast steel machine design guarantees a long-service life and a solid machine base.

The lowerable working case automatically carries the dielectric tank along with it. This ensures ultimate space savings and best accessibility to the working area.

Direct drive and generously sized spindles. The digital AC direct drive system, in conjunction with optimally positioned ball screws, allow for the highest accuracy over the longest period of time. The spindle is arranged exactly in the centre of the load in order to ensure a “soft” axis movement.

Thermal variation is corrected at more than 50 %.

The CNC recognizes thermally caused variations and corrects them in real time.

Thermally regulated machine body.
Why should you settle for the second best?

You work with the machine on a daily basis, therefore, the controls must be made as comfortable as possible for you. Benefit from the unmatched reliability of the world market leader for customer-specific CNC Control Systems - benefit from Mitsubishi Electric!

The Mitsubishi 64 bit CNC control is the most user-friendly control system on the market, as it was specifically designed for EDM die-sinking. The logical menu structure and the clear graphic display of the main functions allows you to navigate and operate quickly. The “Graphic Check” function allows you to perform a simulation of your program within a 2D or 3D display. The built-in “expert support”, E.S.P.E.R., automatically creates the correct generator settings from your data and provides you with valuable support, particularly with respect to difficult processing. The “Machining Monitor” shows the current processing status in order to facilitate the monitoring of the erosion process. Several evaluation and optimisation programs support you during the determination of the optimal and most economic machine settings.
The success formula for your productivity: best results even in tungsten carbide

Mitsubishi Electric’s newly developed FP80V Generator is the new standard in spark erosion. The combination of reduced electrode wear and high erosion rates, coupled with higher precision and the best possible surface quality, is sure to increase your options. The EA 12-V is the product to reference with respect to the processing of tungsten carbide, particularly for small cavities and delicate surfaces.

FP80V Generator

The EA12-V ensures the smallest edge zone impact on the work piece, increasing durability as a whole. (The picture to the left compares: Conventional results V’s results achieved with the FP80V Generator)

In spite of its increased performance, the FP80V Generator uses substantially less power than the average low-performance generator, thereby reducing the operating costs.

Gear Processing
- Function: integrated C axis
- Material: tungsten carbide
- Electrode: tungsten copper
- Surface Quality: Ra 0.3 mm
- Ultra-precise gear processing is possible as a result of the extremely rigid and integrated C axis. The programmable functions of E.S.P.E.R. II facilitate the simple programming for gear processing.

Free-Form Processing
- Function: TP circuit + PS circuit
- Material: tungsten carbide
- Electrode: tungsten copper
- Surface Quality: Ra 0.3 mm
- Reduced electrode wear with respect to tungsten carbide processing through the V Generator technology. It is also perfectly suited for free-form processing since it ensures exact transmission.

Tungsten Carbide Processing
- Function: TP Circuit
- Material: tungsten carbide G8
- Electrode: tungsten copper
- Undercut: 0.0 mm
- Depth: 12 mm
- Surface Quality: Ra 1.0 mm
- The V Generator facilitates the innovative high-speed processing of tungsten carbide.
Manufacture a piece of the future: decisive results with the EA12-V spark erosion system

Do you manufacture compound tools, plastic mouldings, graphite electrodes, gear forging dies, profiles, prototypes, and many more things? And do you think that the highest levels of productivity, flexibility, and precision are the most important?

Then you need the EA12-V from Mitsubishi, with its unlimited scope of applications. The Mitsubishi EA12-V sets new standards with a technology that will fascinate you. The results that you achieve will give you competitive advantages and economic success, particularly with respect to the processing of tungsten carbide.

Trust the guaranteed future of Mitsubishi erosion systems.
You decide how much automation you need.

The market offers many machines, robots and components in order to increase the degree of automation.

The problem: The components are not optimised to work with each other, the interface adaptation takes unplanned and unexpected capacities and budgets.

The best thing is a one-stop solution. Mitsubishi Electric provides wire erosion systems, die-sinking EDM machines, robots and handling systems. All these systems are perfectly matched to each other in order to achieve a perfect mesh.

Your advantage: You establish practice-proven manufacturing cells, safeguarding your competitive advantage.
About Us

We are looking forward to being your partner for spark erosion.

Mitsubishi Electric is known in Europe for its high-quality wire erosion machines and excellent service. It is not so widely known, that Mitsubishi Electric is also one of the world’s most successful manufacturers of die-sinking EDM machines. The research and development into the spark erosion processes had already begun in the early 1950’s. Since 1963, Mitsubishi Electric has been manufacturing erosion systems in serial production. In that time over 50,000 erosion systems have been installed for clients worldwide (as of 2006) – and this number increases every day!

We offer you a unique combination of the security provided by a worldwide, large-volume industry leader and producer of erosion systems together with individual support services.

Mitsubishi Electric is an Official Supplier of the BMW Sauber F1 Team.

Since 2005, BMW Sauber F1 Team (at that time it was still Sauber-Petronas) and Mitsubishi Electric have been cooperating in the area of spark erosion technology.

Within the framework of their partnership agreement, Mitsubishi Electric supplies the BMW Sauber F1 Team with wire and spark erosion machines and supports the racing team with the corresponding know-how concerning erosion technology, since in racing, it is especially critical for the component profiles to be flexible, fast and precise.

Mitsubishi Electric was awarded the Global Market Leadership Award for their erosion systems by the world-renowned and internationally active market research company, Frost & Sullivan.

Each year this award is given to a company that achieved its market leadership by providing an exceptional technology that has been proven to increase customer satisfaction as a result of the innovative solutions that addressed client issues.

Excerpts from the explanatory statement made by Frost & Sullivan:

“...The Mechatronics EDM division of Mitsubishi Electric owes its success to the collective drive and ambition of the company concerning technological development and its ability to quickly conquer new markets. Furthermore, the continuously increasing productivity of the customer and flexible automation solutions further facilitate the market’s acceptance of the Mechatronics EDM division of Mitsubishi Electric. The sustained growth of the company can be attributed to its involvement in increasing the productivity of its customers, as well to the continuous improvements and developments it has made to its own product line.”

Frost & Sullivan
A look at your advantages

Exceptional erosion results – particularly with respect to tungsten carbide

Comfortable and reliable controls – the workshop-oriented CNC control for die-sinking EDM machines.

Reduced electrode wear – lower costs

Lower operating costs – less power used

Consistent, precise results through solid cast steel design and glass scales.

Thermally stabilised machine body for ultimate precision

The EA12-V requires less space – giving you best ratio of machine footprint to workspace

Automation solutions:
Standard or individual solutions for each level of automation.

"CONSUMABLE LINE"
The erosion systems that you receive from us will provide you with competitive advantages – as well as the corresponding services and support.
Furthermore, we will supply you with original parts and consumable materials, which maintain the service and reliability of your Mitsubishi Electric erosion systems.

You can find additional information on our homepage:
www.mitsubishi-edm.de.

Favourable financing concepts with Mitsubishi Finanz – no adverse effects to your liquidity or credit limits.

Additional service offers
You can find current information about our innovations as well as support for your technical questions at: www.mitsubishi-edm.de.
In the products area of the homepage, you will find different documentation items on the Mitsubishi Electric product portfolio, as well as the most current version of the present catalogue available as a download. All data is updated on an ongoing basis and is currently available in German and English.
# Machine

## Model: EA12-V

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall power consumption</td>
<td>7,0 KVA</td>
</tr>
<tr>
<td>Overall weight of the installation</td>
<td>3,700 kg</td>
</tr>
<tr>
<td>Max. Heat output</td>
<td>4,2 kW</td>
</tr>
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</table>

## Generator / Control

### Power unit
- Power unit: Transistor-controlled pulse generator
- Generator cabinet: Completely tight
- Cooling method: Indirect air cooling
- Max. Working current: 80 A

### Generator
- Model: EA12-V
- Dimensions (B x T x H): 400 x 1763 x 1135 mm
- Weight: 260 kg
- Input interfaces: Tastatur, Floppy Disk 3,5", RS232C, Ethernet
- Colour monitor: 10,4" TFT Type LCD
- Control system: CNC, closed loop
- Min. Instruction step: µm X, Y, Z ..1/0.1 µm
- Min. Axial resolution: µm 0,1
- Max. Instruction value mm ± 99999,999

### Control
- C axis with pneumatic collet chuck
- High-speed spindle instead of C axis
- 2-fold electrode changer

### Additional supplementary equipment
- Programmable wash-up
- Automation Robot
- Automation Handling
- Ethernet Interface
- Teleservice
- Telecontrol
- Telecontact

## Equipment details

<table>
<thead>
<tr>
<th>Parameter</th>
<th>EA12-V</th>
</tr>
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<tbody>
<tr>
<td>X-axis with pneumatically actuated table</td>
<td>3,000 N</td>
</tr>
<tr>
<td>Speed</td>
<td>rpm</td>
</tr>
<tr>
<td>Electrode holder type</td>
<td>3R MACRO; 3R COMBI; EROWA-ITS</td>
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<tr>
<td>Max. Electrode weight (incl. electrode holder)</td>
<td>kg 50</td>
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<tr>
<td>Distance from working table</td>
<td>181 – 481 mm</td>
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<tr>
<td>Electrode holder (mm)</td>
<td>EROWA 200,5 – 500,5</td>
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<tr>
<td></td>
<td>MACRO JR 191 – 491</td>
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## Filter / Unit

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
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<td>260 l</td>
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<tr>
<td>Weight</td>
<td>1,650 kg</td>
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</table>

## Footprint

- View: Front view
- Dimension: 2145 x 2110 mm
- Footprint: 1325 x 420 mm

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Note: All indications in mm. The dimensions may vary according to equipment.
The FA-Mechatronics EDM division of Mitsubishi Electric was awarded the Global Market Leadership Award 2005 by Frost & Sullivan for its market leadership in the erosion systems sector.

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