

Honest Attitude | Perfect Quality | Permanent Service



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# Wire Cut EDM

Innovation | Quality | Service

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Honest Attitude  
 Perfect Quality  
 Permanent Service



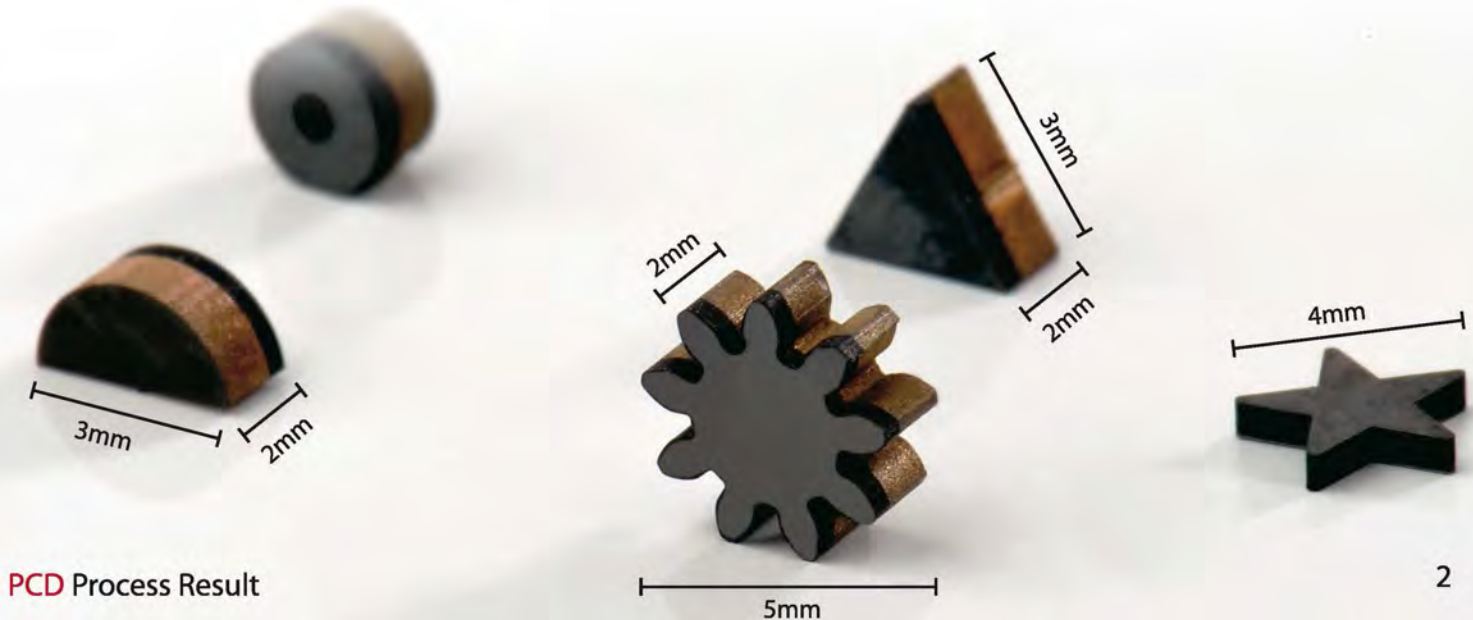
## INTRODUCTION

- 1982** Jiann Sheng Machinery & Electric Industrial Company Limited was established.
- 1983** The first manufacturer to apply DC Servo Control to EDM in Taiwan.
- 1984** Successfully promoted our EDM to overseas market.
- 1985** Developed the first Orbit Loran and obtained the patent No. 36630 of CNS.
- 1986** Purchased new land for 5,950M<sup>2</sup> in Taichung Industrial Park.
- 1987** The new factory had been built up in Taichung Industrial Park.
- 1988** For better management of JSEDM, the structure of five departments was established: Production, Quality Control, R&D, Marketing & Sales, and Administration.
- 1989** Our Orbit Loran obtained Award of Good Products Design in Taiwan.
- 1991** Upgraded our technical level to develop CNC EDM & Wire Cut EDM.
- 1994** Started to promote CNC EDM into market.
- 1996** Obtained CE certification for our CNC EDM series.
- 1997** Passed through ISO-9002 certification.
- 1998** Adopted MIS system and all documents computerized for improving the efficiency of all processes.
- 1999** Obtained CE certification for our Wire Cut EDM and the first one to complete AC Power Supply in Taiwan.

- 2001** The Submerged Type of Wire Cut EDM was completed.
- 2002** The new CNC System of control and power was completed.
- 2003** Passed through ISO-9001 certification.
- 2004** Our CNC Fine Powder EDM was successfully promoted into global market.
- 2006** AWT (Auto. Wire-Threading) system of Wire Cut EDM was completed.
- 2008** The Windows version of Wire Cut EDM was completed.
- 2011** The PCD(Polycrystalline Diamond)-Specific Wire Cut EDM was completed.



High Precision Taper  
 Mutual-Engaged Process Result



PCD Process Result

## High Precision Mold Machining

For Aerospace Technology, IC Electronics and Medical high technology applications.



## High precision Chip Socket

Application Range: Semiconductor Chip

Work piece Material: SKD11

Brass Wire Diameter:  $\varnothing$  0.10 mm

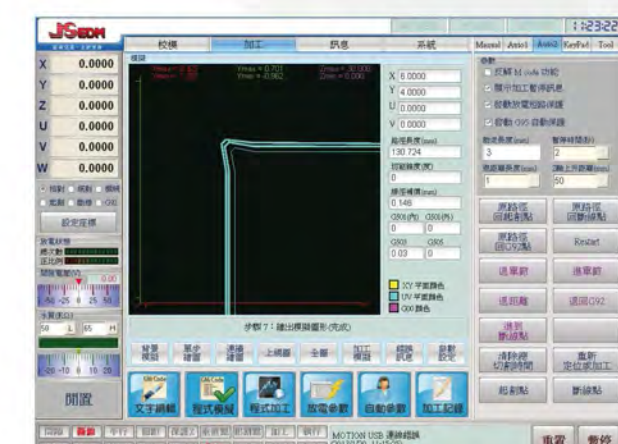
Thickness: 10 mm

Surface Roughness: Ra 0.22  $\mu$ m

## Unique Features Circular, Corner, and Vertical Control Functions

Compensation for Circular, Corner and Consumption of Wire

For raising the accuracy, the user may activate the compensation of circular, corner and wire consumption by adjusting the compensation value (D-Value) accordingly without further addition of G code.



## G code function

In addition to the standard G code functions that JSEDM's wire cut EDM controller has we have added new G code functions as follows:

**G9:** Upper & Lower various abnormality type interpolation value, program – G01, auxiliary value – G02

**G10:** Upper & Lower various abnormality type interpolation value, program – G01, auxiliary value – G03

Can accept G01 X, Y, U, V, K, L Upper & Lower various abnormality type codes.

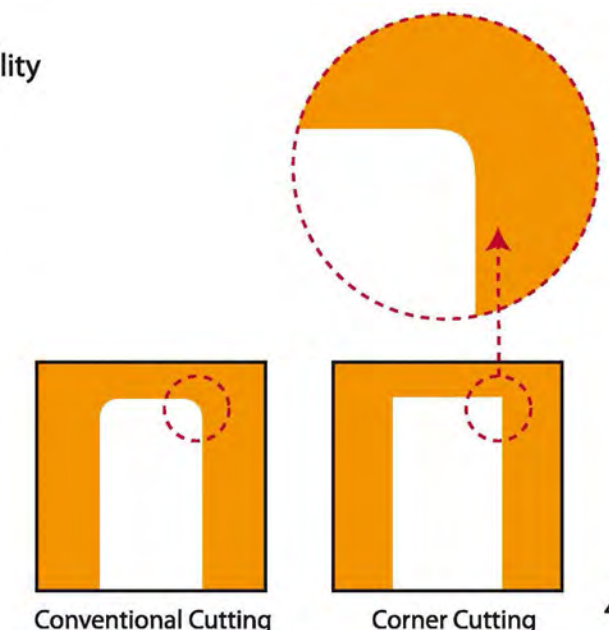
## Five Type Corner Auxiliary Wire Function

Compared to other CNC wire Cut EDM machines the JSEDM Wire cut adds more auxiliary value functions.

0 – An Intersection Point

1.  $< 90^\circ$  Tangent Line
2.  $< 90^\circ$  Circular Line
3. Tangent Line
4. Circular Line

Includes the corner estimation function to improve the corner cutting parameter situation.  
Includes inside, outside and circular estimation function to improve the circular cutting parameter situation.



## High Precision Machining Process Result

1

### Special Sixth Axis / Rotation

Application Range:

Special Medical Apparatus

Work Piece Material: SKD11

Brass Wire Diameter:  $\varnothing$  0.20 mm

Thickness: 30 mm

Surface Roughness: Ra0.33  $\mu$ m

2

### Graphite Electrode

Application Range E.D.M. Process

Work Piece Material: Graphite

Brass Wire Diameter:  $\varnothing$  0.15 mm

Thickness: 30 mm

Surface Roughness: Ra 0.50  $\mu$ m

3

### Wide Taper Angle

Application Range:

High Precision Machine Parts

Work Piece Material: SKD11

Brass Wire Diameter:  $\varnothing$  0.25 mm

Thickness: 20 mm

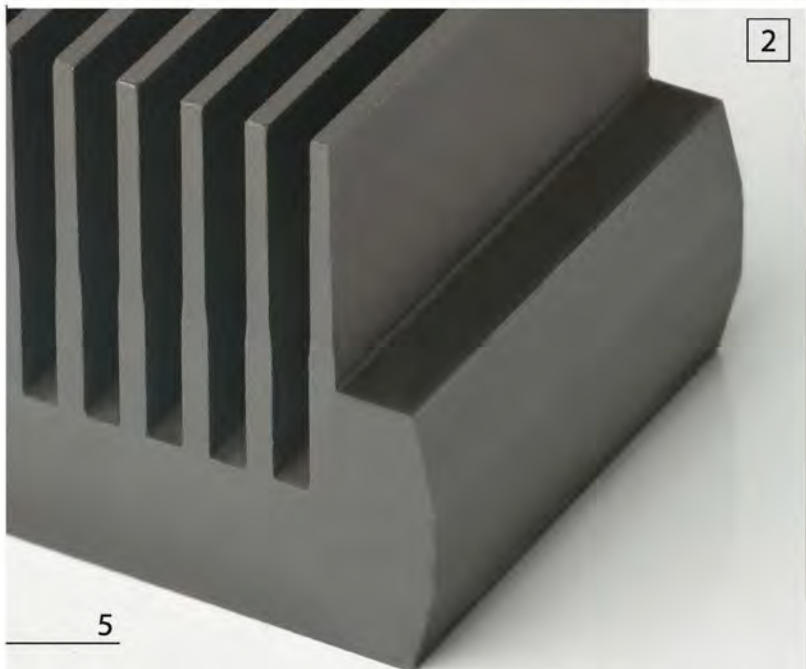
Surface Roughness: Ra 0.50  $\mu$ m



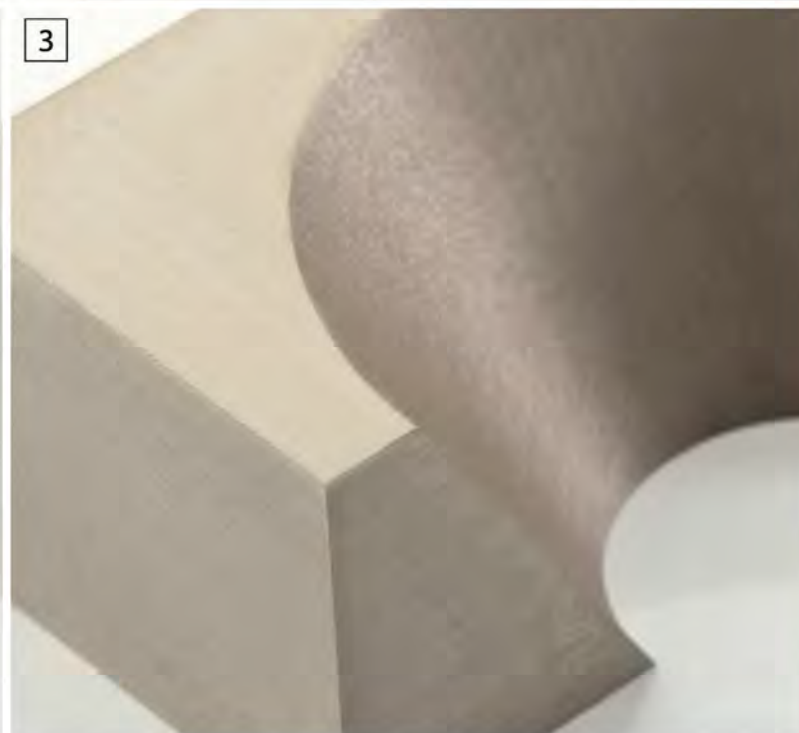
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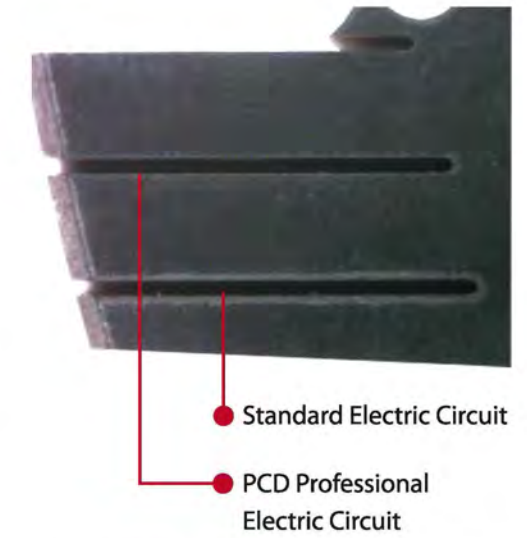
## Our Self - Developed PCD Micro Wire Professional Electric Circuit

■ Due to the domestic shortage of machines capable of cutting PCD material we have developed our own PCB micro wire ( $\varnothing$  0.05 ~ 0.10 mm) professional electrical circuit to meet industry requirements.

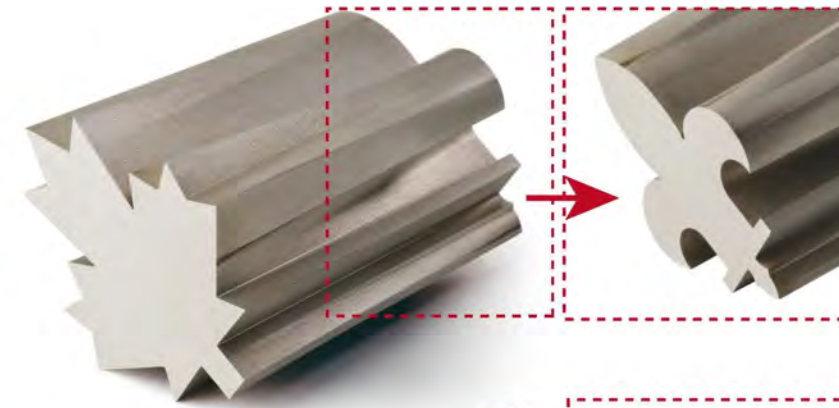
■ The applications for PCD cutting tools are extensive, especially in the high technology industry sector:

Photoelectric Energy industry, Precision machinery, Automotive, Motorcycle, Optics, 3C industry, IC Components..

■ Machined Products: Alloy Wheels, Piston Production, Optical Glass for Mold Production, LCD Glass Cutting, Cell Phone Shell CD lines, Assembly and Die Attachments, PCB Base Boards edge trimming..



Our Wire Cut EDM With Standard Electric Circuit Compared to Our machine with PCD Professional Electric Circuit situation At the 200 Multiple condition.



### Maple Leaf of Irregular Geometry

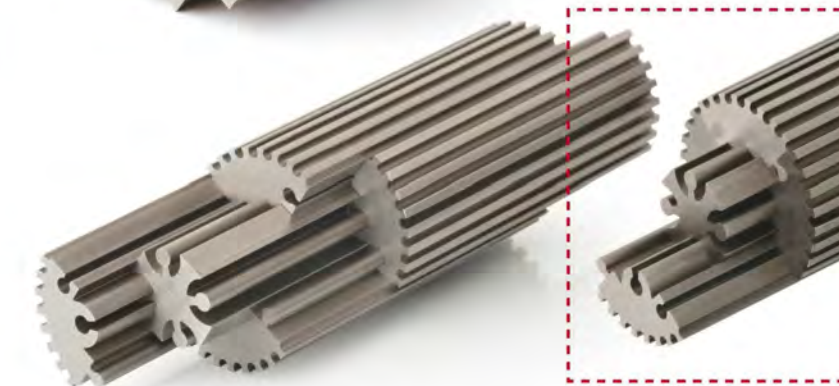
Application Range: E.D.M. Electrode

Work piece Material: SKD11

Brass wire Diameter:  $\varnothing$  0.25 mm

Thickness: 60 mm

Surface Roughness: Ra 0.42  $\mu$ m



### High Accuracy Gear Wheel Combination Process

Application Range: Precision Machinery / Car/ Motorcycle Components

Work Piece Material: SKD11

Brass Wire Diameter:  $\varnothing$  0.25 mm

Thickness: 60 mm

Surface Roughness: Ra 0.37  $\mu$ m

### Fan Type With Biggest Taper Angle Process

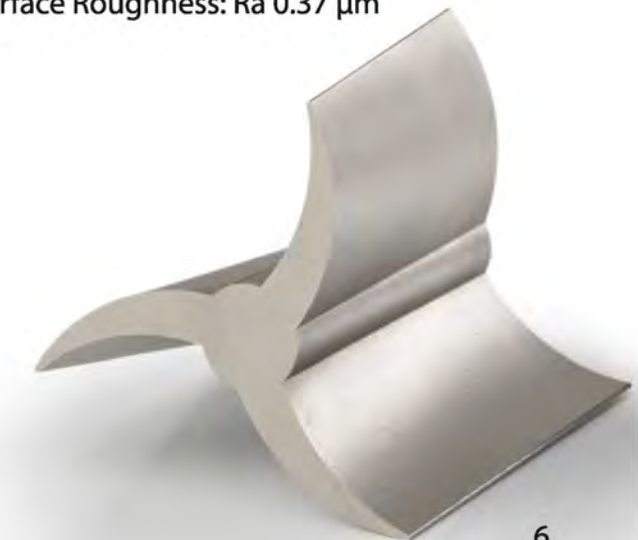
Application Range: Injection Mold Process

Work Piece Material: SKD11

Brass Wire Diameter:  $\varnothing$  0.25mm

Thickness: 70mm

Surface Roughness: Ra 0.47 $\mu$ m



6

## Wi -100SA High Precision Linear Servo Motor Micro Wire EDM



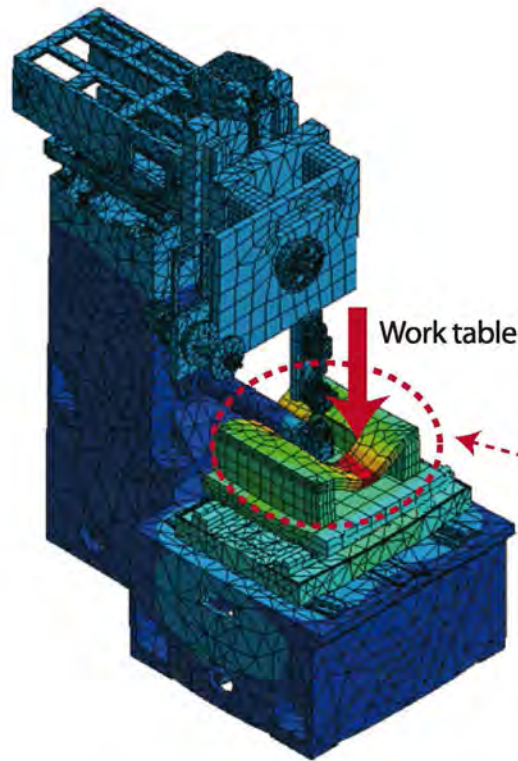
### Specifications:

- Max. Work Piece Size LxWxH (mm): 400x400x140 mm
- Max. Work Piece Weight: 50 kgs
- Drive & Servo (MITSUBISHI): 5 Axes AC Servo
- X/Y Axis Travel (Linear Servo System): 150/ 240 mm
- Max. Taper Angle:  $\pm 12^\circ$  (50 mm)
- X,Y Axis With HEIDENHAIN Linear Scale (Measurement Resolution): 0.5  $\mu\text{m}$
- X,Y Axis Repeatable Position Accuracy (mm):  $\pm 0.5\mu\text{m}$
- Best Surface Roughens (Ra):  $< 0.1\mu\text{m}$
- Automatic Wire-Threading System (Submerge Type): Standard
- Z Axis Travel: 150 mm
- U/V Axis Travel: 35/ 35 mm
- Wire Diameter :  $\varnothing 0.05\sim 0.2$  mm
- Machine Weight: 3500 kgs

## High Rigidity Structure

The machine structure is designed and analyzed with CAE system, and simulation is carried out for all axis actions in this structure. The machine body design is the high rigidity T Type structure, to reduce work table loading and thermal deformation effects maintaining the precision of the machine.

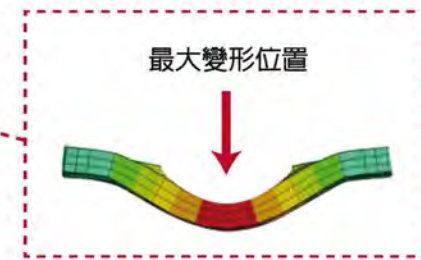
## Machine Design Analysis and Error Compensation



Work table loading 500 kg

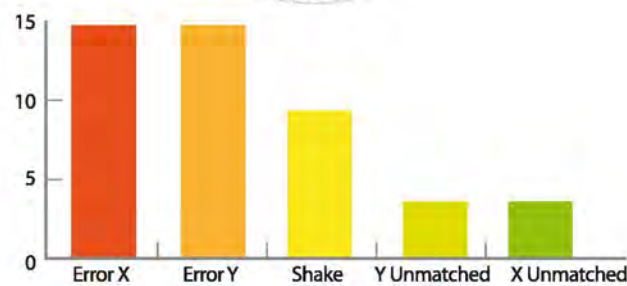
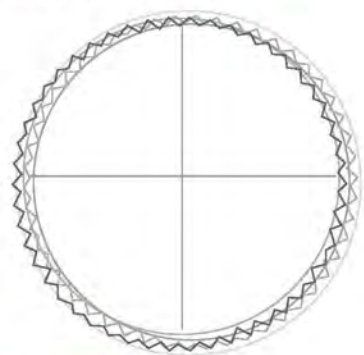
Work table loading and Speed change		
Work table loading (kg)	Max. Work table transformation (m)	
1	100	0.832e-7
2	300	2.91e-7
3	500	4.16e-7
4	1000	8.32e-7

Max. Work table loading transformation is designed at 0.42 μm



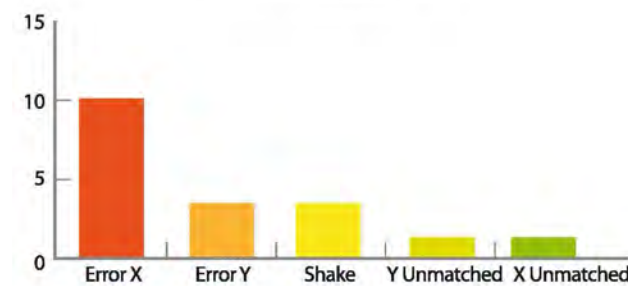
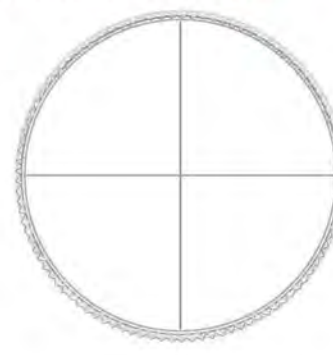
## Circuit Function Verification Result: (Diameter: 50 mm, Speed: 400 mm/ min)

Controller Offset Function OFF



Radius: 24.9977 mm Circularity Error: 0.0456

Controller Offset Function ON



Radius: 24.9991 mm Circularity Error: 0.0171 mm

## Functional U, V Axis & High Rigidity Spindle

- U, V, Z axis strategically placed on the upper column enhances rigidity and ensures stable and high precision operation.

## Wire-Receiving System

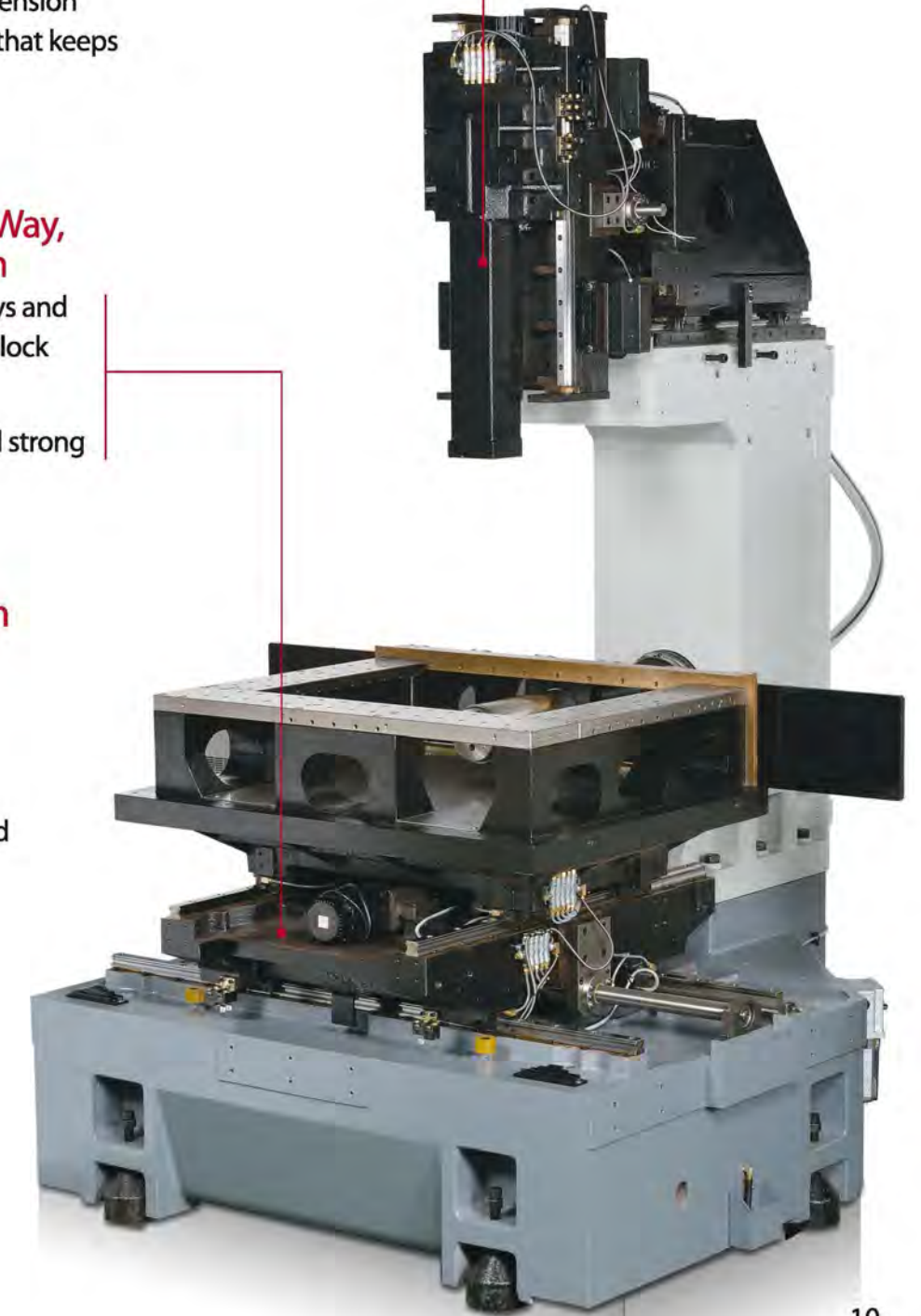
- The wire-receiving system uses Japanese brand Panasonic AC Servo motor (AWT system), magnet power clutch, retrieve wire motor and catch wire system. It can adjust for small vibrations, preventing the wire action from becoming unstable.
- The wire-sending system uses a wire tension permanent generator control system that keeps the tension of the wire stable.

## High Accurate Linear Guide Way, Servo & Transmission System

- We use high accurate linear guide ways and couple with our patented linear and block design.
- For the X, Y axis we use a spacious and strong machine structure design.

## Auto. Wire-Threading System (A. W. T)

- Our design for the Automatic Wire Threading system uses the electric current to melt the wire down.
- Our standard Wire Cut EDM can thread with Ø 0.15 mm brass wire easily.



# Outstanding Control System

User friendly design, intelligent interaction design, high tech installation.



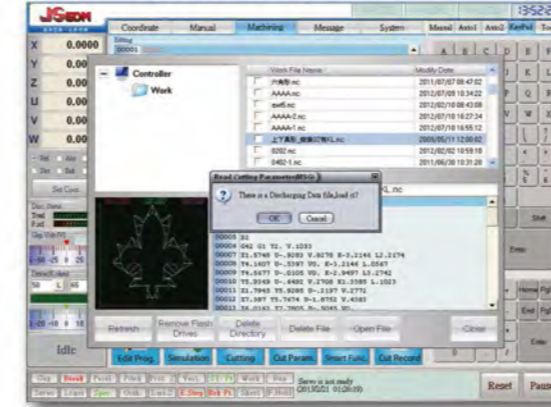
## JSEDM Development System

- |  |   |
|--|---|
| Input System: Keyboard, Mouse, Touchscreen, USB, NET | Discharge Mode: Normal / Fine / Super Fine (212 Groups) |
| LCD Display: 15 Inch LCD Touchscreen                 | Scale Magnification: 1.0 ~ 1000.0 Times                 |
| Operate System: Windows XP Embedded                  | Pattern Rotation: 0° ~ 360°                             |
| Control System: 32 Bit Dual CPU Control System       | Wire Diameter Compensation: ± 0.999 mm                  |
| Storage Unit: 4 GB CF Card                           | Graphic Simulation: 3D Drawing                          |
| Control Axes: 5 Axes (X/ Y/ Z/ U/ V)                 | Subprogram Resting Levels: 20                           |
| Min. Command Unit: 0.0001 mm                         | Discharge Power: AC Power                               |
| Max. Command Values: ± 9999.9999 mm/ 999.9999 Inch   | Open Voltage: 4 Steps (80/ 90/ 110/ 130V)               |
| Command Unit: 0.0001 mm / Inch                       | On Time: 24 Steps (50 ns / Step)                        |
| Position Command Format: Incremental, Absolute       | Off Time: 43 Steps (8 ~ 50 μs)                          |
| Feed Rate: Rapid Travels: 400 mm / min               | Best Surface Roughs: Ra 0.3 μm (Ra 0.18 μm / Optional)  |
| Manual Feed: 1, 100, 400, 800 mm/ min                | Max. Wire Speed: 300 mm / Sec                           |
| Dry Run Feed: 0 ~ 400 mm/ min                        |   |

# Friendly Operation Interface



## File Manger & Preview



## S- Code ( AI )



## Maintenance Information



## Generator Of The Temperature Control



## Controller Function

- G95 Servo Feed (Fuzzy)
- G94 Manual Feed
- Taper B Code: G5, G6, G7, G8,, G9, G10
- Taper B Code: G01 (Acceptable)
- Arc Compensation: G500, G501
- Corner Compensation: G502, G503
- Wire Consumption Compensation: G504, G505
- Auto Corner Rounding (G48, 49, 60, 61, 62)
- Interference Checking (3 Blocks)
- Interference Excluding (3 Blocks)
- Background Editing
- Protection Function Whine Crashing
- Protection Of Servo Lag
- Protected By Active Limit Switch
- Manual Data Input (MDI)
- Cutting Path Display (3D)
- Metric / British System Switch
- Chinese / English Display Switch
- Maintenance Information
- Automatic Vertical Alignment
- Parallel Compensation
- Pitch Error Compensation
- Right Angle Compensation
- Z Axis Limit Setting
- 100 Groups Of Coordinate Record
- Short Circuit Protection
- Backlash Compensation
- Optional Block Skip
- Machine Lock
- Dry Run
- AI S Code
- AI Corner Mode
- AI Curve Mode
- Fly Cut
- Start Point Return
- Hold Point Return
- Diagnostic Function
- Single Block
- Optional Stop (M01)
- Trace Start Point
- Trace Hold Point
- Retrace Function
- USB Storage
- Machining Record
- Automatic Position
- Home Position Return
- Edge Position
- Slit Position
- Hole Center Position
- Round Center Position
- Side Center Position
- Polarity Gauge
- Built -In CPU (DSP)
- Control 6 Axis
- Stored Stroke Limit
- Mirror Image
- Axis Exchange

# Specification

## Flushing Type:

Model	Wi-30E	Wi- 50E	Wi- 60E	Wi- 70E	Wi- 90E
Maximum Workpiece Size LxWxH (mm)	760x520x295	870x520x295	1100x650x340	1170x680x295	1380x760x295
Maximum Workpiece Weight	500 kgs	700 kgs	1000 kgs	1000 kgs	1300 kgs
Drive & Servo	5 axes AC Servo	5 axes AC Servo	5 axes AC Servo	5 axes AC Servo	5 axes AC Servo
Simulations Axis	X/Y/ U/V (4 axes)	X/Y/ U/V (4 axes)	X/Y/ U/V (4 axes)	X/Y/ U/V (4 axes)	X/Y/ U/V (4 axes)
X/ Y Axis Travel	400/ 300 mm	500/ 300 mm	600/ 450 mm	750/ 500 mm	900/ 500 mm
Z Axis Travel	300 mm	300 mm	350 mm	300 mm	300 mm
U/ V Axis Travel	100/ 100 mm	100/ 100 mm	100/ 100 mm	100/ 100 mm	100/ 100 mm
Wire Diameter Range	Ø 0.1~0.3 mm	Ø 0.1~0.3 mm	Ø 0.1~0.3 mm	Ø 0.15~0.3 mm	Ø 0.15~0.3 mm
Max. Taper Angle(°) Workpiece Thickness(mm)	± 22.5(100mm)	± 22.5(100 mm)	± 22.5(100 mm)	± 22.5(100 mm)	± 22.5 (100 mm)
Maximum Axes Load	10kgs	10 kgs	10 kgs	10 kgs	10 kgs
Conductivity	Automatic	Automatic	Automatic	Automatic	Automatic
Water Tank Capacity	270L	270 L	360 L	360 L	360 L
Net Weight	1950 kgs	2300 kgs	3400 kgs	4000 kgs	5200 kgs
Dimension (WxDxH)	2300x2200x2150	2600x2200x2150	3000x2650x2250	3200x2700x2250	3600x2900x2300

## Standard Accessories:

1. Automatic Vertical Alignment Jig: 1 Set
2. Power Feed Contact: 2 Pcs
3. Filter: 2 Pcs
4. Clamping Tool: 1 Set
5. Wire Guide (Ø 0.25 mm): 1 Set
6. Brass Wire (Ø 0.25 mm): 1 Roll
7. Ion Exchange Resin (5L): 1 Pc
8. Tool Box: 1 Set

## Optional Accessories:

1. Wire Guide (Ø 0.1 ~ 0.3 mm)
2. CAD/CAM Software
3. 3R (Erowa) Clamping Tools
4. 22.5° Degree Of Water Nozzle Set
5. A. W. T. (Auto, Wire Threading) System
6. Parallel Bar (For Setting Work Piece)
7. Auto Wire Cutting System
- 8 PCD Professional Electric Circuit
9. Water Chiller
10. Power Regulator
11. Water Tension Meter
12. Wire Speed Meter
12. Wire Speed Meter
14. X, Y Axis Linear Scale  
Note: Wi-530s & Wi-640s With X, Y Linear Scale Standard



Wi-30E/ Wi-50E/ Wi-60E/ Wi-70E/ Wi-90E

## Submerge Type:

Model	Wi-200S	Wi-430S	Wi-530S	Wi-640S	Wi-860SA	Wi-1160SA
Maximum Workpiece Size LxWxH (mm)	550x470x115	700x540x295	940x570x295	1000x720x345	1330x900x395	1690x990x395
Maximum Workpiece Weight	300kgs	500kgs	1000kgs	1000kgs	4500kgs	5000kgs
Drive & Servo	5 axes AC Servo	5 axes AC Servo	5 axes AC Servo	5 axes AC Servo	5 axes AC Servo	5 axes AC Servo
Simulations Axis	X/Y/ U/V (4 axes)	X/Y/ U/V (4 axes)	X/Y/ U/V (4 axes)	X/Y/ U/V (4 axes)	X/Y/ U/V (4 axes)	X/Y/ U/V (4 axes)
X/ Y Axis Travel	210/ 200 mm	400/ 300 mm	500/ 300 mm	600/ 450 mm	800/ 600 mm	1100/ 650 mm
Z Axis Travel	120 mm	300 mm	300 mm	350 mm	400 (600) mm	400 (600) mm
U/ V Axis Travel	30/ 30 mm	100/ 100 mm	100/ 100 mm	100/ 100 mm	150/ 150 mm	150/ 150 mm
Wire Diameter Range	Ø 0.1~0.3 mm	Ø 0.1~0.3 mm	Ø 0.1~0.3 mm	Ø 0.1~0.3 mm	Ø 0.15~0.3 mm	Ø 0.15~0.3 mm
Max. Taper Angle(°) Workpiece Thickness(mm)	± 10° (60 mm)	± 22.5 (100 mm)	± 22.5 (100 mm)	± 22.5 (100 mm)	± 22.5 (160 mm)	± 22.5 (160mm)
Maximum Axes Load	6 kgs	10 kgs	10 kgs	10 kgs	16 kgs	16 kgs
Conductivity	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic
Water Tank Capacity	450 L	570 L	940 L	940 L	2600 L	2600 L
Net Weight	1700 kgs	2100 kgs	3350 kgs	3500 kgs	6500 kgs	8500 kgs
Dimension (WxDxH)	1800x1900x1850	3000x2200x2150	3550x2600x2240	3600x2600x2260	4100x3600x2750	4400x3600x2750

## Installation Requirements:

- Input Voltage: AC 380V 3 Ph / 50HZ / 60 HZ
- Power Consumption: 15KVA (Without Water Chiller)
- Environment: To insulate noise, electric wave and easy maintenance access
- Ground: Machine has to be ground to avoid abnormal inference voltage and stabilize machining condition ground of value > 10 Ω
- Temperature Control: 20 ±1°C
- Humidity Control: Under 75% RH
- Vibration: Under 0.6mm/ S2



Wi-200S ( 2 in 1 )



Wi-430S/ Wi-530S



Wi-640S