

About CHMER

Established in 1975, CHMER is the largest EDM manufacturer in Taiwan, exporting over 55 countries. Product lines include Die Sinking EDMs, Wire Cut EDMs, Small Hole Drilling EDMs, High Speed Milling Machines, and Laser Machines. A comprehensive technical support completes our services.

RQ SERIES

Gantry Type Linear Drive Wire Cut EDM



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WRQ000Ev01



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- ◎Unprecedented rigid gantry structure.
- ◎High speed, high precision linear motor system.

- ◎15% cutting speed improvement with new i8+ power supply.
- ◎Fast and less parts AWT system.

◆ Features

Unprecedented rigid gantry structure shows unparalleled rigidity and stability. Combined with UX1 made-in-house linear motors, excellent AWT, and new i8+ power supply, the RQ series delivers high precision and high performance by hardware as well as by software. Connecting with you at any time, the RQ series is your top choice.

New Automatic Wire Threading (AWT) System

The most adequate design possibly is the fastest wire threading system in the world with less parts, 2/3~1/2 less than the Japanese or Swiss design, reducing the maintenance cost and faulty rate.



Optimized Gantry Structure

With the aid of FEM analysis, the optimized gantry structure, adopting high rigid casting iron, achieves high strength, high endurance, and high machining stability.



Patented Linear Motor

Equipped with made-in-house linear motors which have high response, vibration free, no backlash, long life, and no maintenance features, enhance the machining precision, efficiency, and reduce the energy consumption.

Interference Free Lower Arm Design

Unprecedented interference free design on the lower arm, connecting the work tank, avoids the possibility of water leakage due to the interference and friction and keeps the machining precision.

Energy-saving Inverter Chiller

Active temperature detection, smart frequency conversion, fast cooling speed, accurate water temperature control in $\pm 0.3^{\circ}\text{C}$, stable and high-precision machining, 45% lower power consumption compared with other fixed frequency chillers. New double-circulation system and new three-filter device greatly reduce the cost of consumables and improve competitiveness of production.



New i8+ Power Supply

With built-in voltage stabilizer which enables the machining stability, the new i8+ power supply improves 15% cutting speed and saves 20% energy, compared with previous power supply.

Advantages of Linear Motor

RQ series is equipped with CHMER UX1 linear motors with low power consumption provides high thrust and ensures the stability and accuracy of every movement. No friction, no backlash, no energy change loss, vibration free and high response. The lifespan is substantially increased by CHMER unique design.

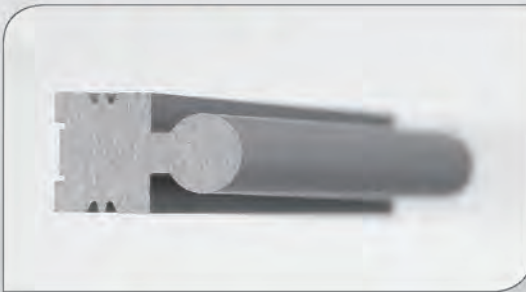
Reduction of the tolerance on shape accuracy
(Especially at the intersection of straight line to curve)

Enhancement of surface roughness

Machining condition :

Brass wire : 0.20mm/BS
Workpiece : SKD11
Thickness : 50mm Number of cuts : 3

《Cutting profile》

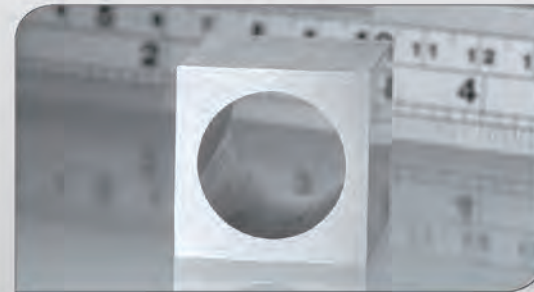


	Section A	Section B	Section A	Section B
Upper	5.999	3.999	5.999	3.998
Middle	6.000	3.998	5.998	3.995
Bottom	6.000	4.000	6.000	3.999
Tolerance	-0.001	-0.002	-0.002	-0.005

Unit:mm

Optional AC-μ refining cutting circuit, combining with linear motors, enhances fine cutting speed and uniformness on 4 facets and achieves the fine cutting surface which is not possible reached by conventional ballscrew models.

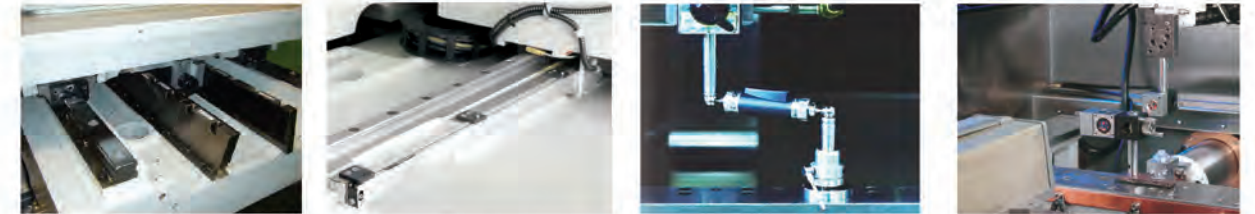
Brass wire : 0.20mm Workpiece : SKD11
Thickness : 25mm Number of cuts : 5
Surface roughness : Ra 0.23μm



RQ Series (Linear motors)	Other models (Ballscrews)
5cuts Ra0.23μm	5cuts Ra0.28μm

Linear Motor vs Ballscrew

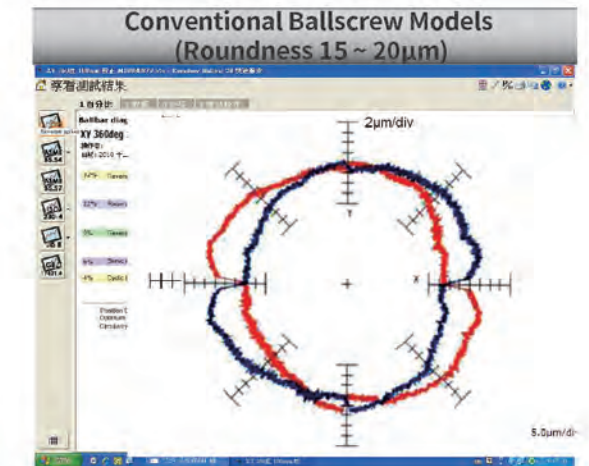
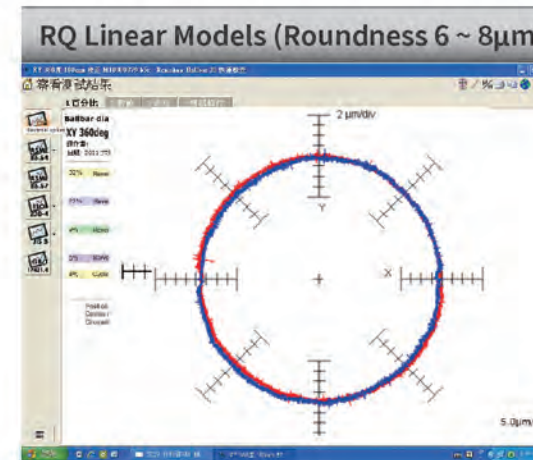
Linear motor has to tactfully partner with linear scale (0.1μm resolution) to show its merit. Every RQ series wire cut EDM machine has passed rigorous quality control, including laser testing, and ball-bar testing, before delivering to the market.



◆ Linear Motor ◆ Linear Scale ◆ Ball-bar Testing ◆ Laser Testing

Ball-bar Testing

Use after 2 years



Linear motor demonstrates its outstanding performance on corner control

Machining Condition

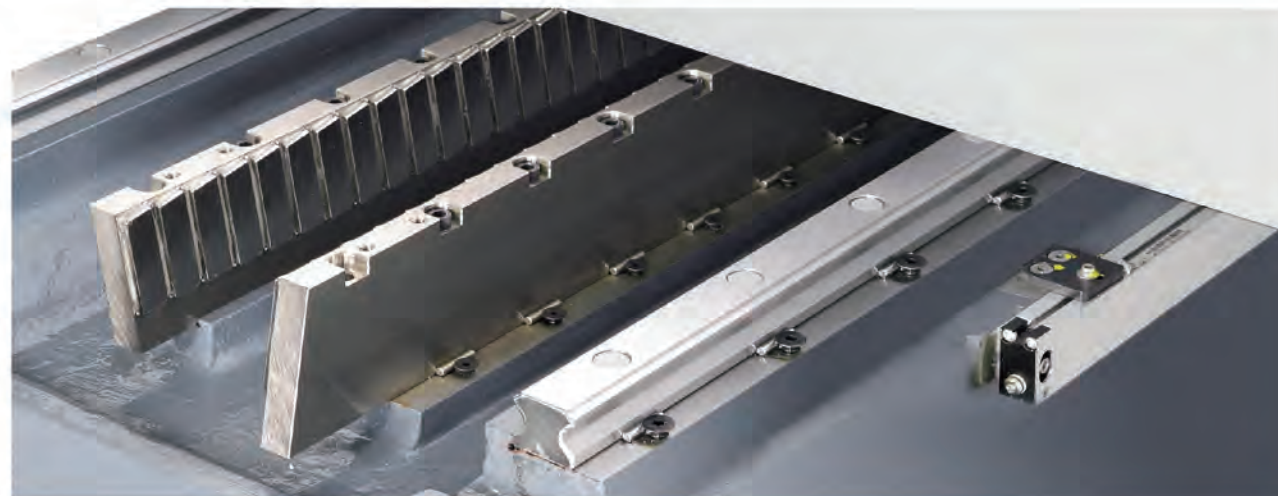
Brass wire: 0.20mm Thickness: 25mm Workpiece: SKD11
Surface roughness: Ra 0.58μm Number of cuts: 3 Acute angle: 30° Radius: 0.20mm



Linear motor models (Radius tolerance in 3μm)
Magnification: 120x



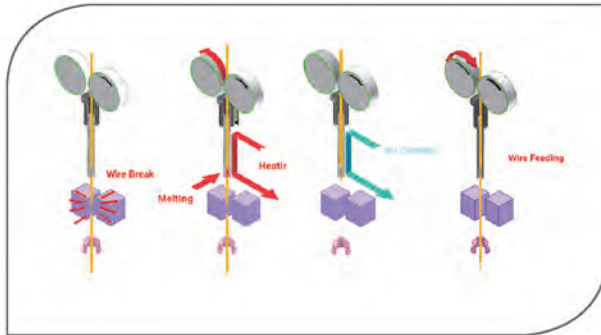
Conventional Ballscrew models (Radius tolerance in 4~5μm)
Magnification: 120x



◆ New Automatic Wire Threading (AWT) System

Day and Night Uninterrupted AWT System

The EC tension control technology delivers virtually 100% wire threading possibility. The most adequate design possibly is the fastest wire threading system in the world with less parts, 2/3~1/2 less than the Japanese or Swiss design, reducing the maintenance cost and faulty rate.

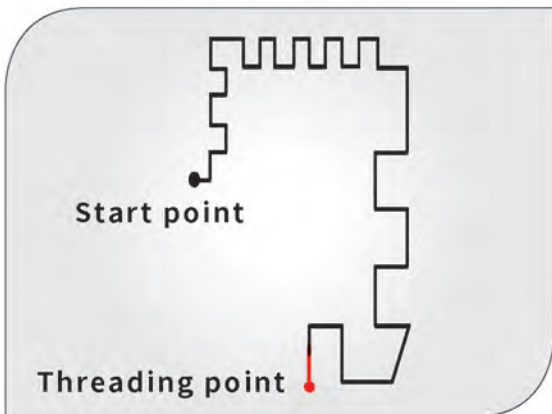


Reliable AWT System

◎Concise mechanism enables easy maintenance and service.

◎CHMER AWT system, delivering virtually 100% wire threading possibility, supports day and night unmanned operation.

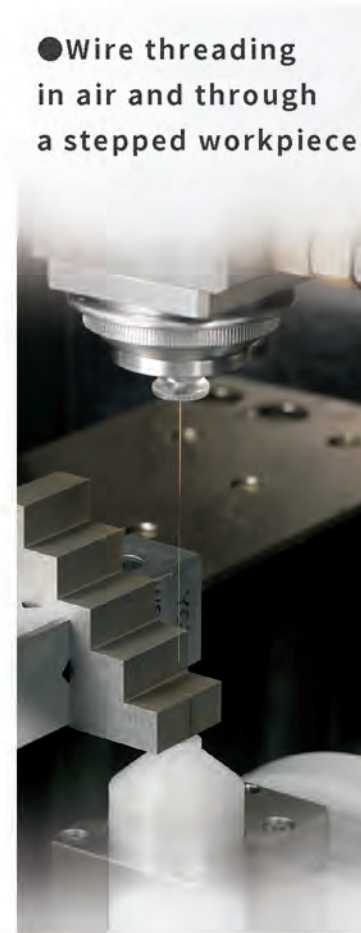
◎With stable hardware, excellent electronic control circuits, and fast message processing, the AWT will automatically judge the priority of process procedures and accomplish the setting mission.



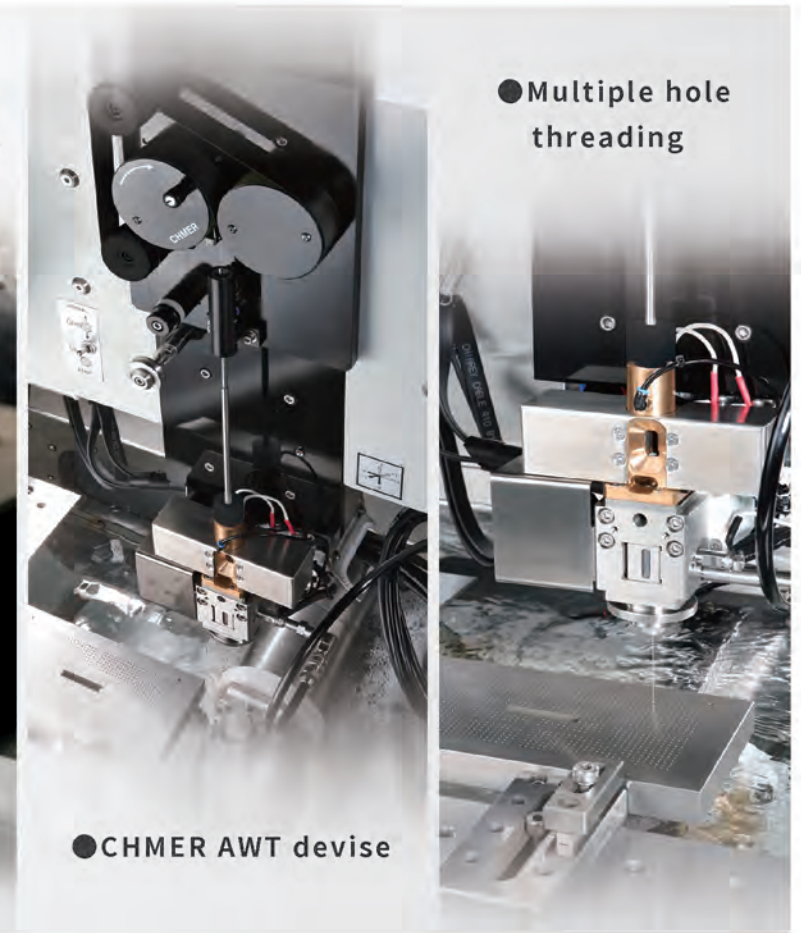
◎Automatic Wire Threading at breaking point: quickly recover the machining without any interruption.



●Wire threading in air and through a stepped workpiece

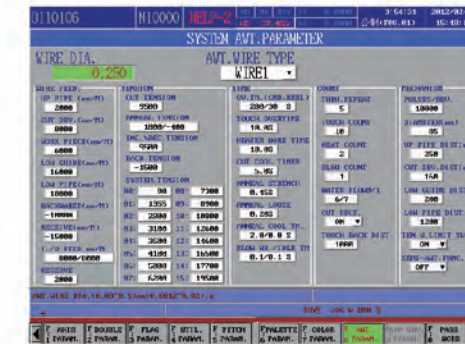


●Multiple hole threading



●CHMER AWT devise

New Servo Module AWT system



Intuitive parameter setting

Parameters can be set according to different brass wires in the market.



3999 sets of hole machining data

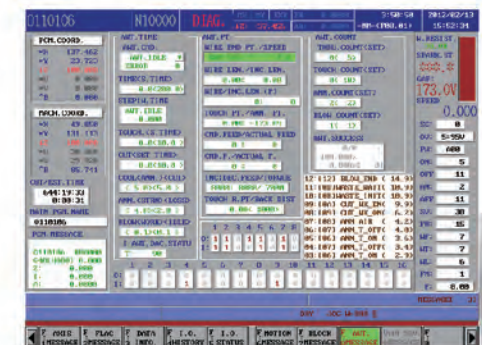
Record 3999 sets of hole machining data. User can check multiple hole machining conditions and restart the machining.



100 sets of NC machining data

Record the latest 100 sets of NC programming data. Automatically record start point, breaking point coordinates and work time.

Easy to find the machining information from the latest NC programming data.



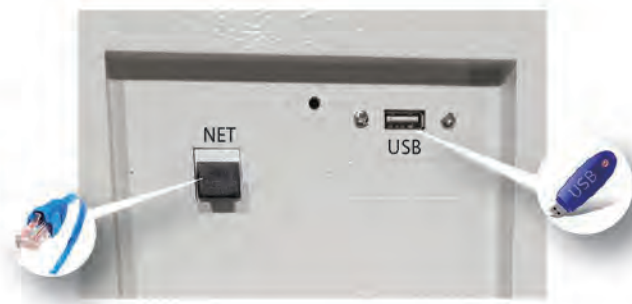
Monitoring screen

Record every motion and enhance the AWT stability and success rate.

◆ Features of W5I controller

- Up to 7-axis control, supporting on-line measuring system, capable of equipping with Windows or Linus embedded system.
- All-in-one fan-less design, eliminating complicated wiring, reducing more than 65% of volume and weight and 50% of energy consumption.
- Supporting RS422/ RS485 data transfer, enhancing anti-interference ability, and increasing serial BPS speed.
- Dual core CPU, 1 GB RAM, 1GHz calculating speed, 1/3 calculating time compared to the previous one.
- 1G high storage space, supporting touch screen and hot swapping USB.
- Optional i-connected system can remotely monitor machine condition through personal hand held devices.

Notes:
 1. Above mentioned W5I information is compared with W5F.
 2. Embedded system adopts single core processor.
 3. On-line measuring system is optional.



● USB and RS485 connector is convenient to upload and download files.

◆ Remote Monitoring Era



◆ Excellent Software Functions



User-Friendly File Management



Discharge Parameter Database



Internal corner cutting function

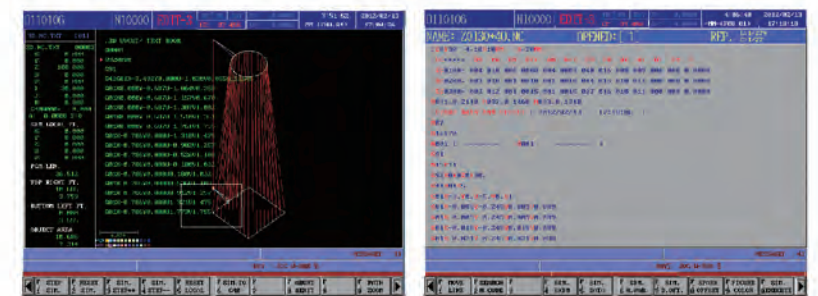


System Device Management + Parameter Optimization



Scrap Material holding function

Manual figure interface function



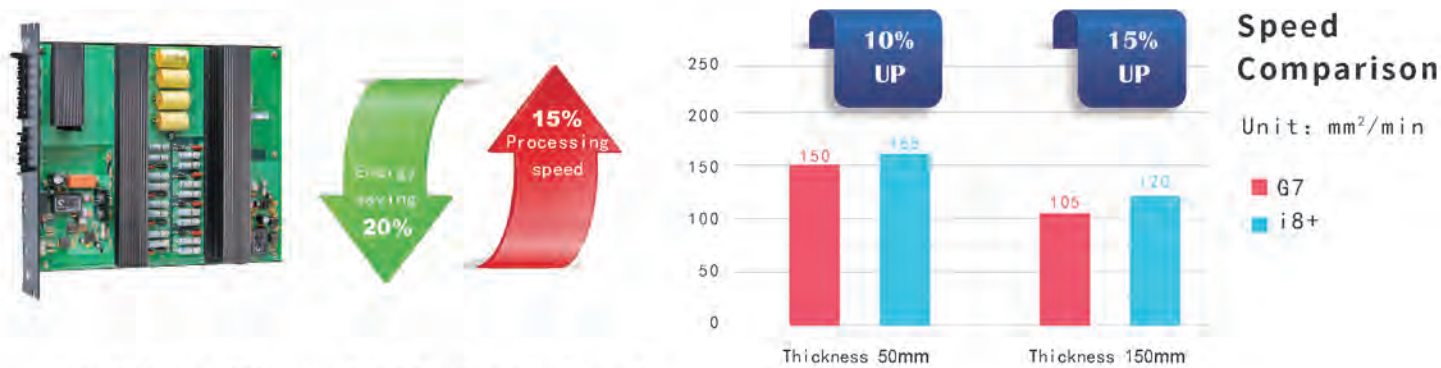
3D simulation figure + detailed route information

NC file log in

◆ i8 Power Supply System

The new i8+ power supply system increases the cutting speed by 15%, compared with the last generation, saves energy by 20%, and enhances machining stability by built-in intelligent voltage stabilizer.

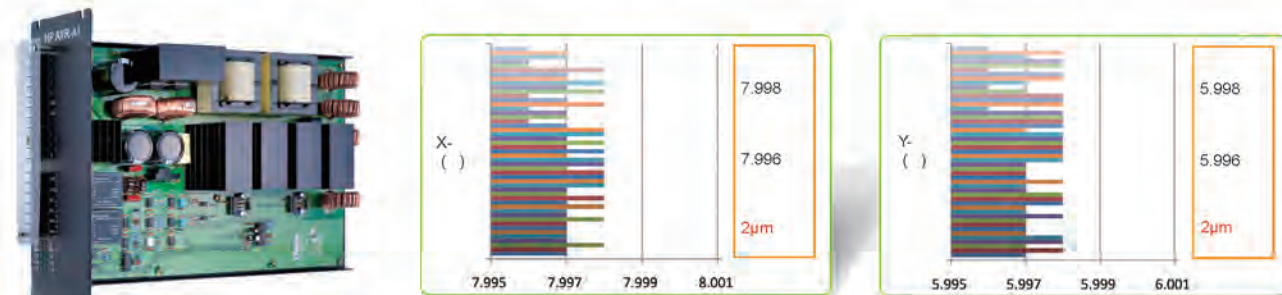
- Machining speed increases by 15%
- Wire breakage prevention function
- Decrease of heat generated
- Increase of circuit reliability



HP-IVC Intelligent Stable Power Supply

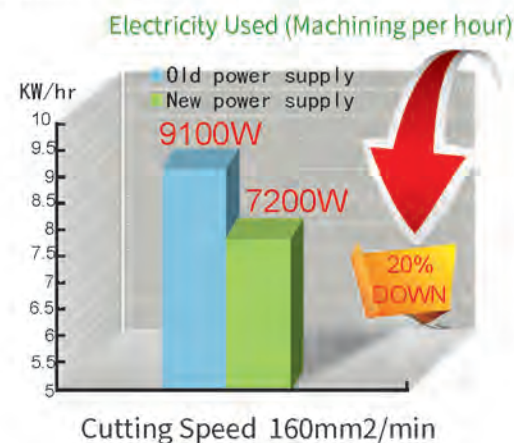
The newly developed IVC high frequency switching power supply can stabilize and regulate voltage, keep constant temperature, and separate the workload and power supply to ensure the safety of the system.

With the latest technology, it can effectively convert unstable power input to stable power for internal use. In addition, it can intelligently supply higher power for high energy consumption machining and maintain stable power supply for high precision machining.



Next Generation Renewable Energy Technology

The new i8+ power supply has the latest energy saving circuit which can convert the counter-electromotive force to power supply source for reuse. Apart from renewable energy, it eliminates the conventional heat sink circuit which generates heat and saves energy and reduces carbon emissions.



◆ Special Industrial Processor and Discharge Control System

The embedded computer system reduces the system workload and increases the control of the system stability. The ASIC chip increases the stability of overall circuit operation and enhances the discharge performance. Real time feedback of discharge status stabilizes the cutting process and enhances the cutting speed and accuracy.

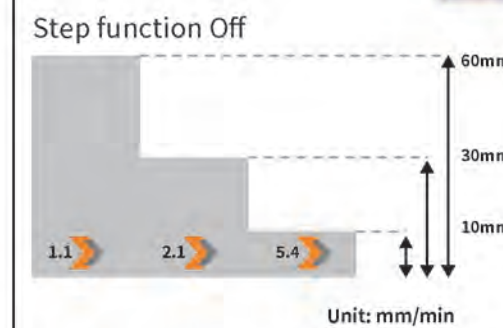


◆ Intelligent Step Control (ISC) Power Supply(opt.)

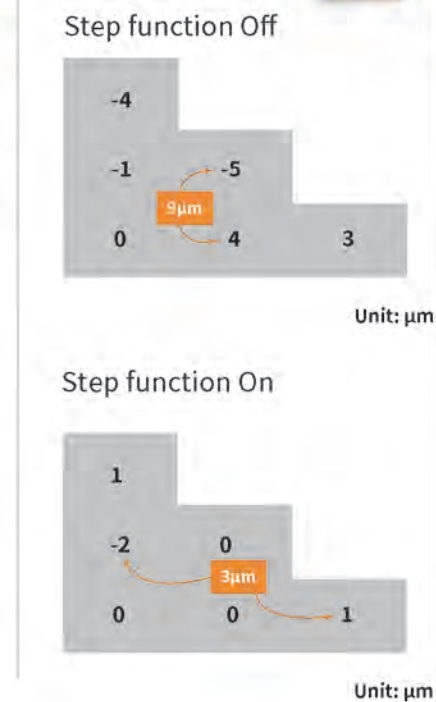
Through monitoring discharge waves, ISC can provide precise discharge control for stepped workpiece and prevents wire breakage, alleviate wire marks, achieve high speed and stable machining, and results in high quality finished products.

Conditions : ■ Workpiece: SKD11 ■ diameter: Ø0.25mm

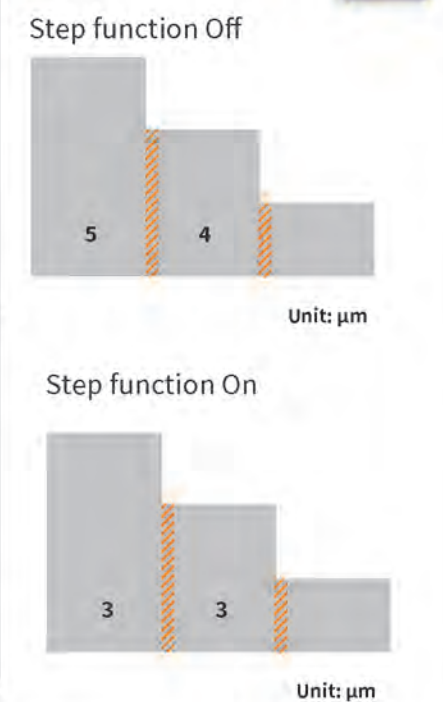
Speed Test



Precision Test



Concave Amount



◆ SAC-μ Device (Super Fine Cut Circuit) (Opt.)

Workpiece: SKD11 / Brass wire: 0.20mm / Thickness: 50mm

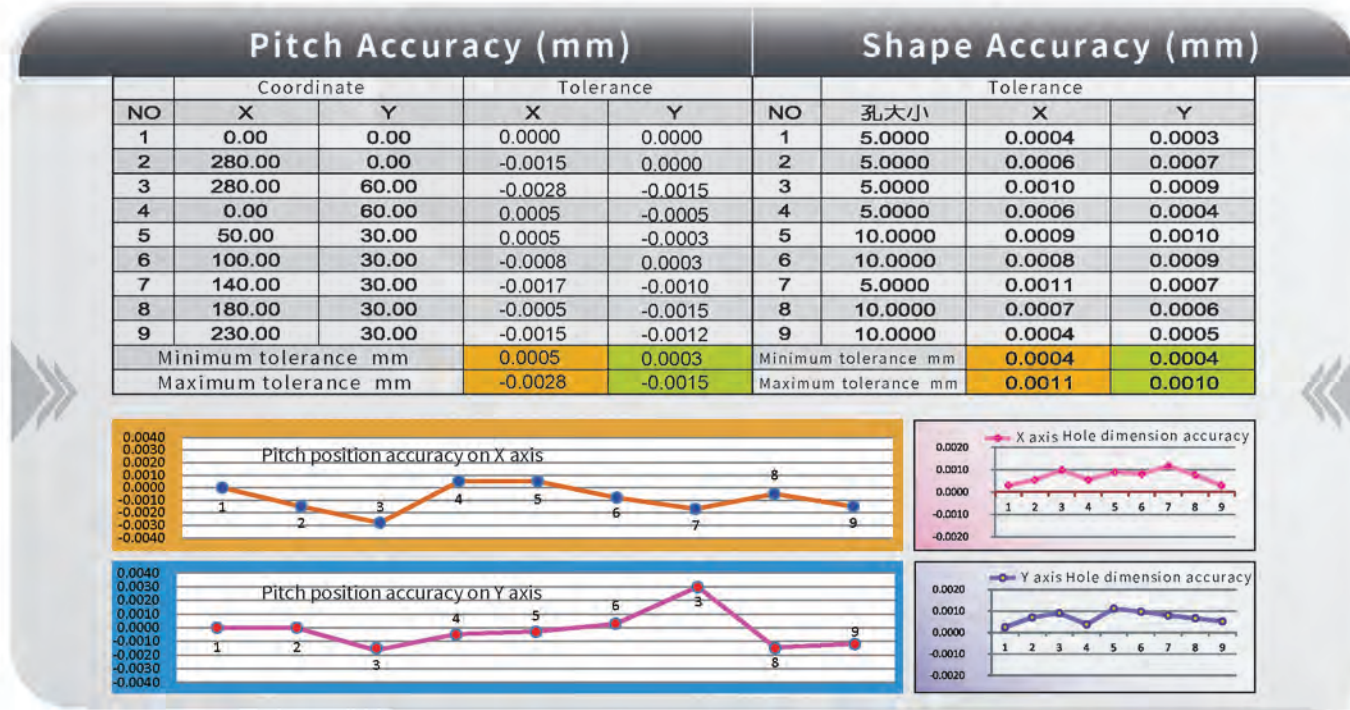
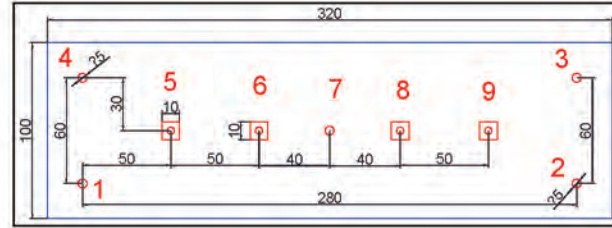
Number of cuts	6	5	4	3	2	1
Surface roughness (μm)	Ra 0.12	0.20	0.28	0.62	2.0	2.4
	Ry 1.1	1.7	2.5	5.0	13.3	14.3

Workpiece	Tungsten steel	Brass wire	0.20 mm
Thickness	20.0mm	Number of cuts	8
Machining accuracy	3μm	Machining time	58 min
Surface roughness	Ra 0.09μm		



◆ High Accuracy, High Repeated Machining

- ◎Workpiece Material: SKD11
- ◎Workpiece Thickness: 20.0mm
- ◎Brass wire: 0.20mm
- ◎Number of cuts: 3 (Rough cut: 1; Fine cut: 2)
- ◎Temperature: 23~24°C



Actual room temperature: 23.5±0.5°C Actual dielectric temperature: 23.5±0.5°C
 Actual machine body temperature: 23.5±0.5°C

◆ Samples



FPC Industry
High Accuracy Machining

Workpiece Material: SKD11
 Workpiece Thickness: 50 and 20mm
 Brass wire: Φ0.25mm
 Number of cuts: 3
 Machining accuracy: 3 μm
 Surface roughness: Ra 0.58~0.63 μm
 Machining time: P: 40min D: 25min
 *2 workpieces: sliding fit gap 3 μm



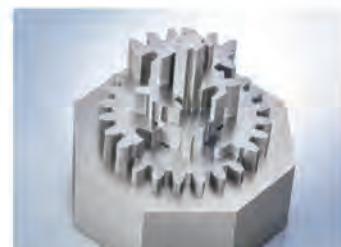
Hand Tool Industry
Thin Wire 0.10mm Machining

Workpiece Material: SKD11
 Workpiece Thickness: 3.0mm
 Brass wire: Φ0.10mm
 Number of cuts: 3
 Machining accuracy: 10 μm
 Surface roughness: Ra 0.60~0.65 μm
 Machining time: 33min
 Machining taper: -27.07°



Low Deformation
Fit Parts Machining

Workpiece Material: SKD11
 Workpiece Thickness: 50mm
 Brass wire: Φ0.25mm
 Number of cuts: 3
 Machining accuracy: 3 μm
 Surface roughness: Ra 0.68~0.70 μm
 Machining time: 5hr 33min
 *2 workpieces: sliding fit gap 4 μm



10-piece Module
High Accuracy Corner Fit Parts

Workpiece Material: SKD11
 Workpiece Thickness: 30 and 20mm
 Brass wire: Φ0.25mm
 Number of cuts: 3
 Machining accuracy: 3 μm
 Surface roughness: Ra 0.64 μm
 Machining time: 9hr 35min
 *10 workpieces: sliding fit gap 4 μm



High Accuracy
Multi-direction Module Fit Machining

Workpiece Material: SKD11
 Workpiece Thickness: 50 and 20mm
 Brass wire: Φ0.25mm
 Number of cuts: 3
 Machining accuracy: 3 μm
 Surface roughness: Ra 0.64 μm
 Machining time: 13hr 52min
 *Sliding fit gap 3 μm



Continuous Stamping Die
High Accuracy Fit Machining

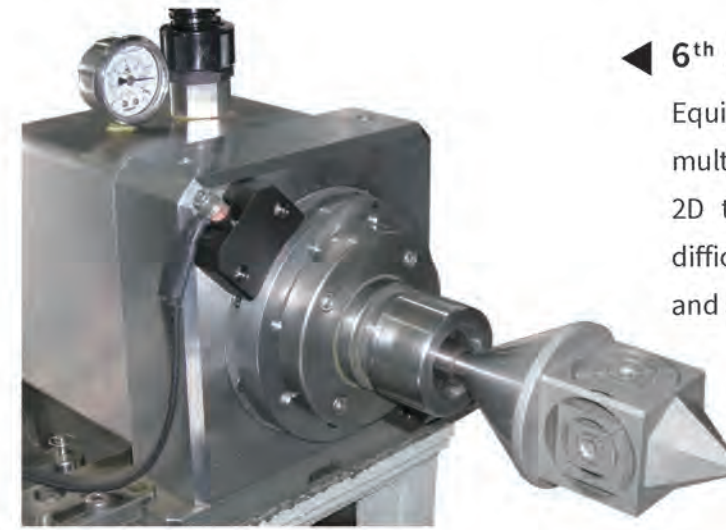
Workpiece Material: SKD11
 Workpiece Thickness: 30 and 20mm
 Brass wire: Φ0.20mm
 Number of cuts: 3
 Machining accuracy: 3 μm
 Surface roughness: Ra 0.63 μm
 Machining time: P: 15min D: 8min
 *2 workpieces: sliding fit gap 3 μm



Thin Wire 0.10mm Gear Machining
High Accuracy Fit Machining

Workpiece Material: SKD11
 Workpiece Thickness: 30 and 20mm
 Brass wire: Φ0.10mm
 Number of cuts: 4
 Machining accuracy: 3 μm
 Surface roughness: Ra 0.60 μm
 Machining time: P: 66min D: 45min
 *2 workpieces: sliding fit gap 3 μm

◆ Options

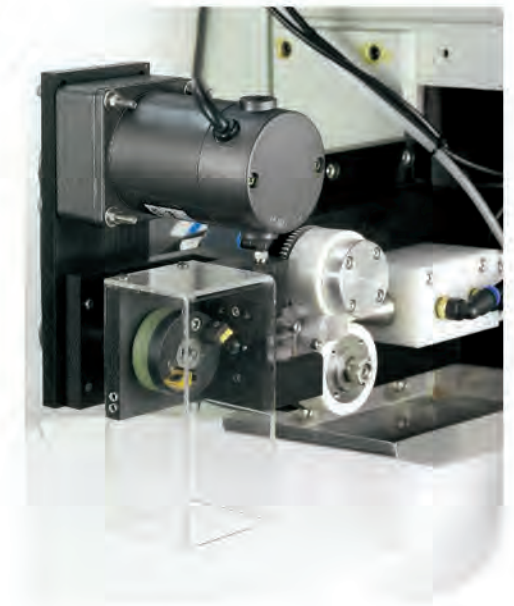


► Wire Chopper

Note: Not suitable for Φ0.10mm and thinner wires

◀ 6th Axis Machining

Equipping with the 6th axis machining device allows multiple axis simultaneous machining, elevating from 2D to 3D machining, and achieves complex and difficult success rate, expanding machining capability and making the machine more value added.



Standard Specifications

Model	RQ3625L	RQ4025L	RQ5030L	RQ6040L
X, Y, Z Axis mm	360x250x200	400x250x200	500x300x200	600x400x300
U, V Axis mm	60x60	60x60	60x60	100x100
Maximum Size (WxDxH) of Workpiece mm	650x450x200 (Flushing) 650x450x145 (Submerged)	750x450x200 (Flushing) 750x450x145 (Submerged)	850x500x200 (Flushing) 850x500x145 (Submerged)	910x600x300 (Flushing) 910x600x150 (Submerged)
Maximum Weight of Workpiece mm	450	550	600	1000
XY Axis Feed Rate mm/min	Max.1800	Max.1800	Max.1800	Max.1800
Drive System	XY Axes Linear Motor Drive/ UVZ Axes AC Servo Motor Drive			
Wire Diameter mm	∅ 0.15~0.3 (∅ 0.25) (0.1mm is optional)			
Maximum Wire Speed mm/min	300	300	300	300
Wire Tension gf	300~2500	300~2500	300~2500	300~2500
Maximum Taper Angle mm	±14.5°/80 (Wide Angle Nozzle, DA+DB=15mm)			±21°/80 (Wide Angle Nozzle, DA+DB=15mm)
Machine Dimension (WxDxH) mm	2400x2500x2250	2400x2500x2250	2650x2750x2060	2800x3050x2300
Net Weight kg	2750	2800	3000	4000
Dielectric Filtration System				
Dielectric Capacity	930L	930L	930L	1250L
Filter	Paper	Paper	Paper	Paper
Ion Exchange Resin Filter	14L	14L	20L	20L
Water Quality Control	Auto	Auto	Auto	Auto
Water Temperature Control	Auto	Auto	Auto	Auto
Power Supply Unit				
Circuit	Power MosFET Transistor			
Maximum Output Current	25A			
Number of Current	10			
Number of Duration	50			
CNC Unit				
Input	Keyboard · USB · LAN			
Screen	19" LCD			
Control System	32bit·1-CPU·X&Y Closed Loop			
Control Axis	X · Y · U · V · Z (5 Axis) 6th Axis optional			
Unit Setting	0.001mm			
Maximum Command Value	±9999.999mm			
Interpolation	Linear/Circular			
Command System	ABS/INC			
Machining Speed Control	Servo/ Const. Feed			
Scaling	0.001~9999.999			
Machining Condition Memory	1000~9999			
Total AC Power Input	3. Phase 220V ±5%/11kVA			

※Due to continuous improvements, the design and specifications are subject to change without prior notice.

Options Specification / Quantity

Standard ● Optional ○

Features & Item	Specification	Amount	RQ3625L	RQ4025L	RQ5030L	RQ6040L
Power Supply & Control System						
i8+ Power Supply		1 Set	●	●	●	●
AC/ DC Power		1 Set	●	●	●	●
Intelligent Step Cutting Control Power Supply		1 Set	○	○	○	○
SAC-μSuper Fine Cut Circuit		1 Set	○	○	○	○
Touch Screen	19"	1 Set	●	●	●	●
Interrupted Power Recovery		1 Set	●	●	●	●
USB Port		1 Set	●	●	●	●
Internet Data Transfer		1 Set	●	●	●	●
DXF File Transfer		1 Set	●	●	●	●
Remote Monitoring & Internet Connection		1 Set	○	○	○	○
Mechanism & Machining System						
UX1 Linear Motor Drive System	CHMER X&Y Axis	1 Set	●	●	●	●
Linear Scale	0.1μm Resolution (Absolute)	1 Set	●	●	●	●
AWT		1 Set	●	●	●	●
AWT Auxiliary Device		1 Set	○	○	○	○
0.1mm Wire Machining Device		1 Set	○	○	○	○
Manual Rise-and-Fall Tank Door		1 Set	●	●	●	●
Automatic Rise-and-Fall Tank Door		1 Set	○	○	○	○
High efficiency Water Circulation System		1 Set	●	●	●	●
Energy Saving Inverter Chiller	20000BTU	1 Set	●	●	●	●
Additional Functions						
Temperature Monitoring Device		1 Set	○	○	○	○
Digital Water Pressure Detection		1 Set	○	○	○	○
Brass Wire Weight Detection		1 Set	○	○	○	○
CE Conformity	E0 Circuit + EMG Shield	1 Set	○	○	○	○
6th Axis Machining		1 Set	○	○	○	○
Jumbo Wire Feeder	3~30kg	1 Set	○	○	○	○
Auto Wire Chopper		1 Set	○	○	○	○
2 in 1 Transformer and AVR		1 Set	○	○	○	○
CHMER High Speed Zinc Coating Wire		1 Set	○	○	○	○

Machine Layout

