



WIRE CUT EDM MACHINES

Full CE Cover (Option)



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HIGH PERFORM ANCE WIRE CUT EDM



Model : **AWT4S**



Model : **AWT3S**



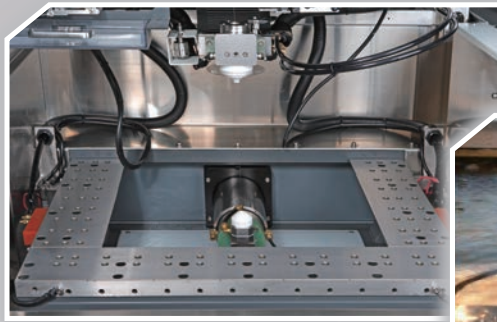
Model : **AWT6S**



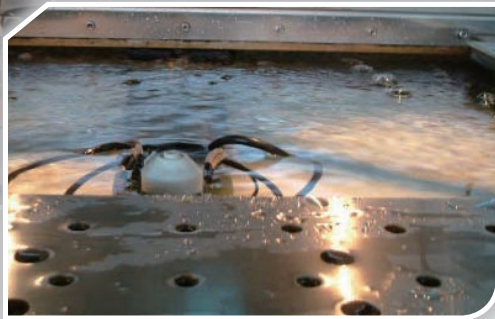
Model : **AWT5S**

Mechanical Features

- ◆ Special upper/ lower wire guide assembly, providing high-speed automatic wire threading in water and accuracy machining.
- ◆ Simple and reliable Automatic Threading Device, applies high precision accuracy and easy for operator's maintenance.
- ◆ Special anti-leaking system of low arm and work-tank, keeping axes movement smoothly.
- ◆ Special cooling system for low arm, providing high accuracy required while machining.
- ◆ Hardened Stainless work-table enhances surface rigidity and well-support for work-piece.



◆ Stainless Work Tank



◆ Work Tank

Precise Servo And Driver System

- ◆ Each axis uses high precision C1 class ball screw with grinded and sub-zero treatment with manual single shot lubrication system to control the temperature change and consume of parts. The procedures make the smoothness better and bring more accurate machining, bring a longer life time for ball screw and control the accuracy gap to happen. With high power and strong response AC servo motor, another optional can also be considered "Linear Scales" to make the total close loop circuit control. Our linear guide way adapt new generation high smoothness linear guide way, reduces the problem of friction and ensures the stability when making the machining.

High Rigidity Structure

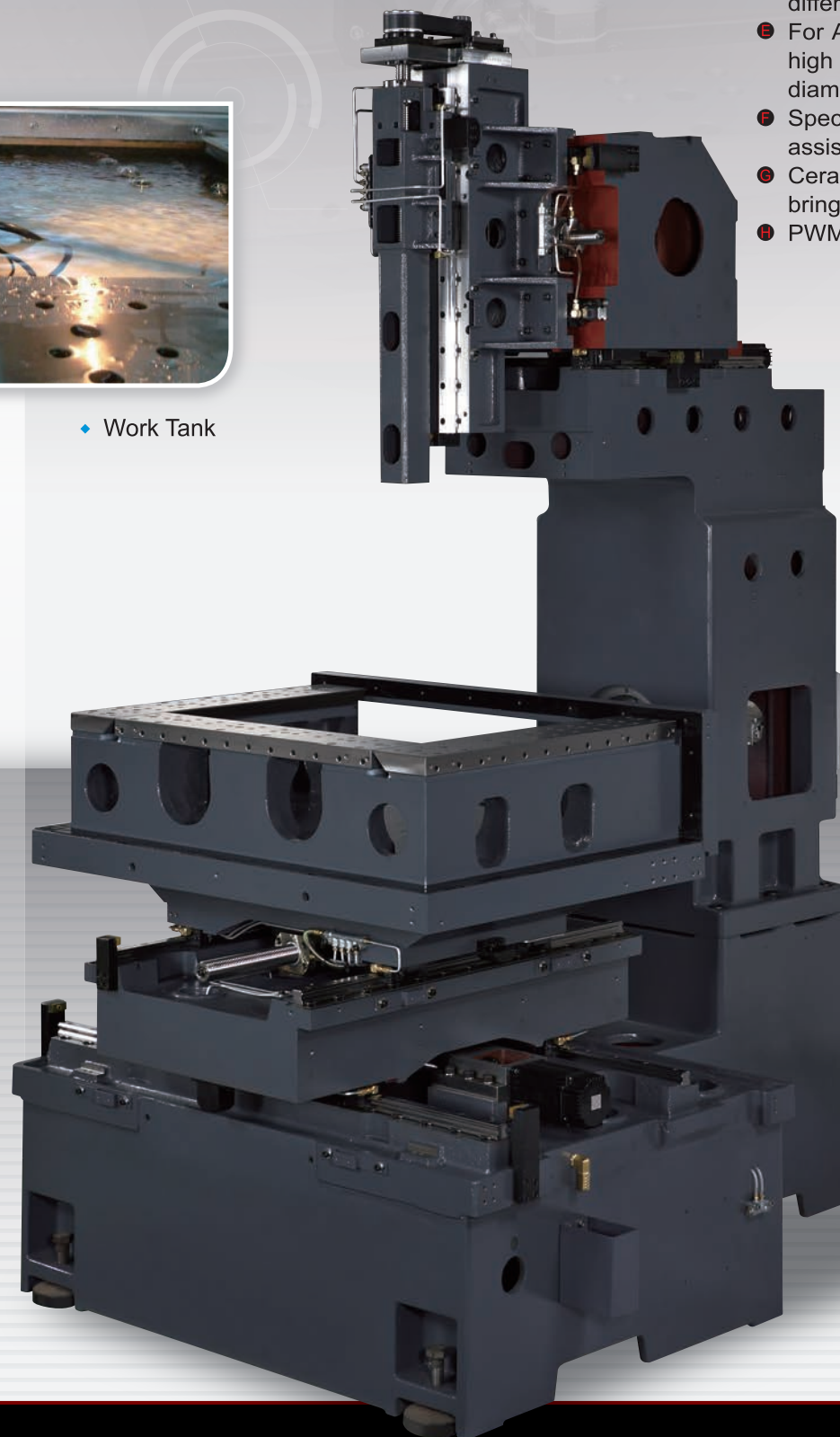
- ◆ Well-balanced, box-type design casting of machine body ensures high thermal balance stability and rigidity.
- ◆ U/V/Z axis all are located upper from the high rigidity of machine column and low arm applies with special thermal and hardened procedures, thus it does not get bend during machining with high water pressure.

Work Tank Features

- ◆ Semi-Submerged water level can be set in the work tank to cover the work table, to control the working area's water temperature in good condition.

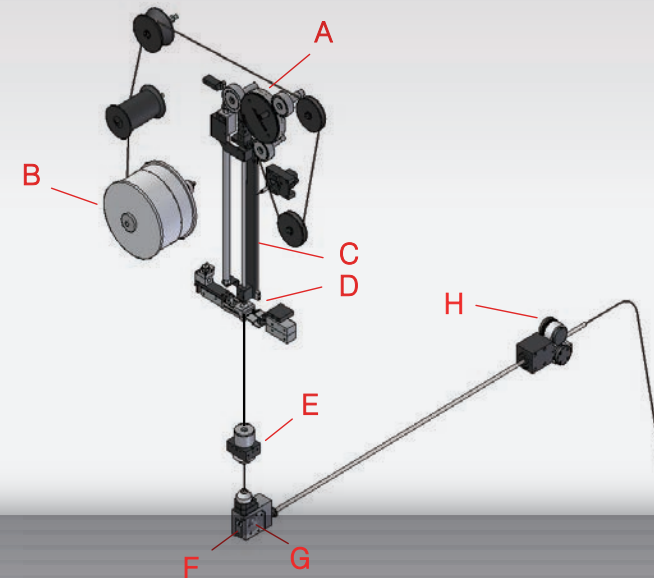
Well-balanced Thermal Design

- ◆ The well-balanced mechanical structure design, casting applies thermal treatment and heat current procedure. Low arm with water cooling circulation equipment and combine with super anti-transform alloy material, to bring the high accuracy.

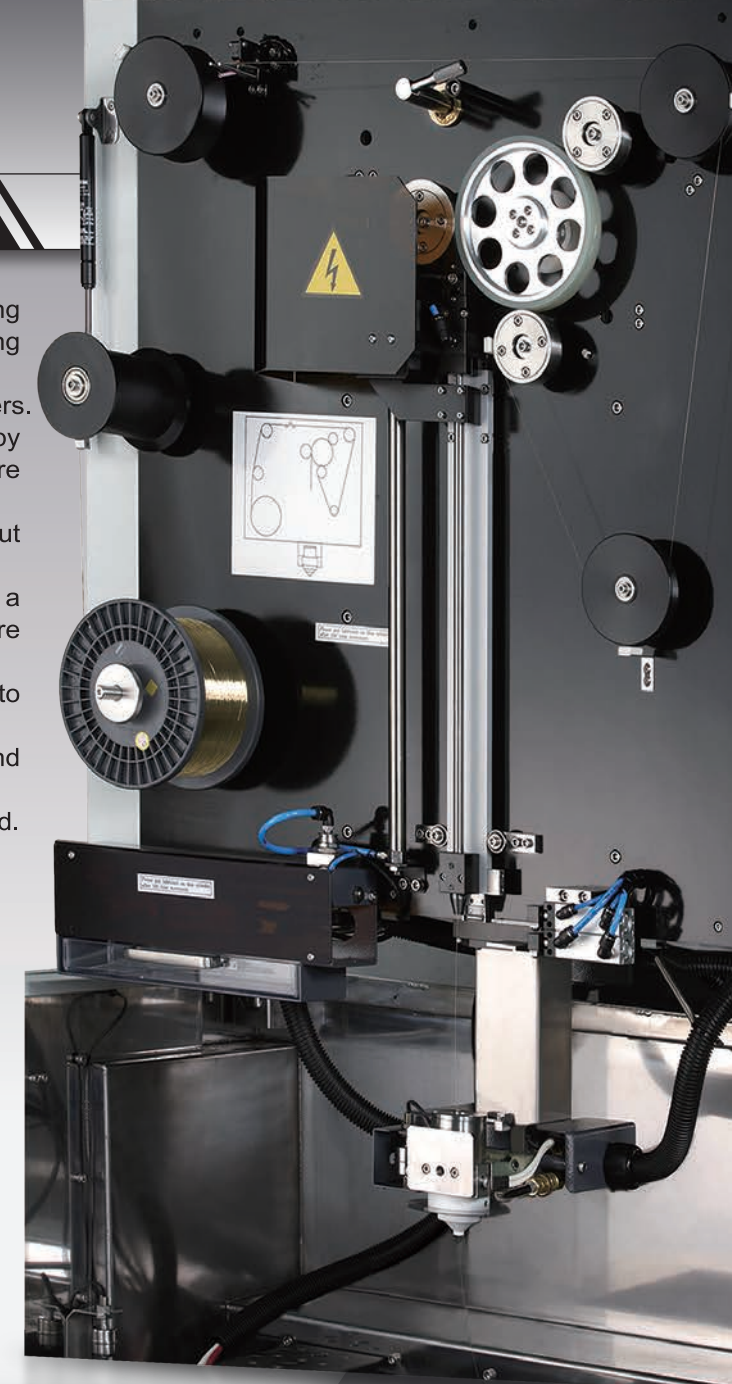
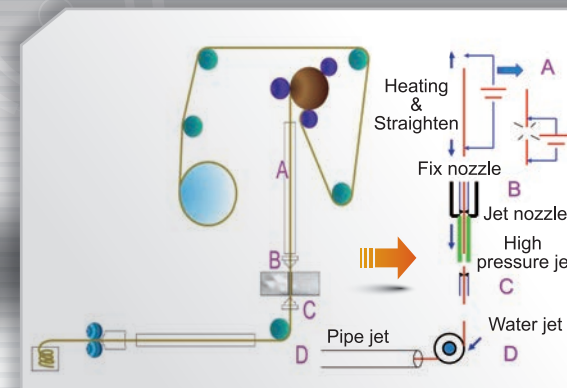


Simple And Stable Automatic Wire Threading System

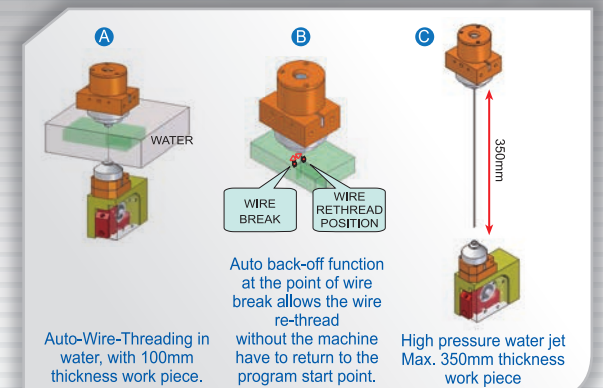
- ◆ AC servo motors are used on machine, not only providing "Positioning & Tension" control with high reliability but enhancing the stability of wire tension.
- ◆ DC motor control offers various settings for different wire diameters.
- ◆ Air cools wire during wire annealing and then wire gets broken by melting, making no burrs at wire tip to enhance the reliability of wire threading.
- ◆ Intelligent wire-cutting device, applying a proper voltage to cut different diameter of wire.
- ◆ For AWT system, unique upper wire guide structure can make a high pressure water jet which achieves wire threading of wire diameter 0.15~0.3mm.
- ◆ Special lower wire guide assembly offers high pressure water jet to assist the wire passing through the lower tube successfully.
- ◆ Ceramic lower feed roller provides a smooth wire threading and brings a longer lifetime.
- ◆ PWM DC wire collecting motor system provides a stable wire feed.



- ◆ Automatic wire threading system (wire snapped by melting)



- ◆ Directly thread wire in submerged condition, saving the time and raising the working efficiency.
- ◆ Wire threading at break point is achievable.
- ◆ Upper water jet system achieves automatic wire threading with a thick workpiece.



WINDOWS

Controller

TECHNOLOGY · CREATIVITY · QUALITY · SERVICE

We Are The Best |    **EMC ISO 9001**
CERTIFIED System Of Excellence CERTIFIED

- ◆ Standard keyboard, mouse operation and touch screen, user friendly design.
- ◆ **15" TFT-LCD screen, shows the better view of data and function needed.**
- ◆ Standard USB port, inputting NC programs quickly and conveniently.
- ◆ **Multiple language online change is available.**
- ◆ Built-in simple CAD/CAM software increases job efficiency. (Option)



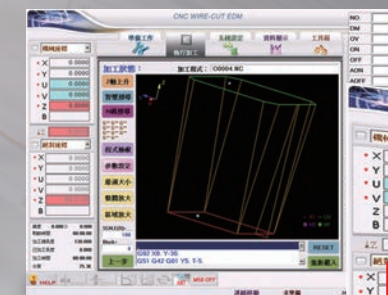
Remote Control Box (AWT series only)

- ◆ All in One 5 axis LCD coordinate remote control box, operation done in one finger.



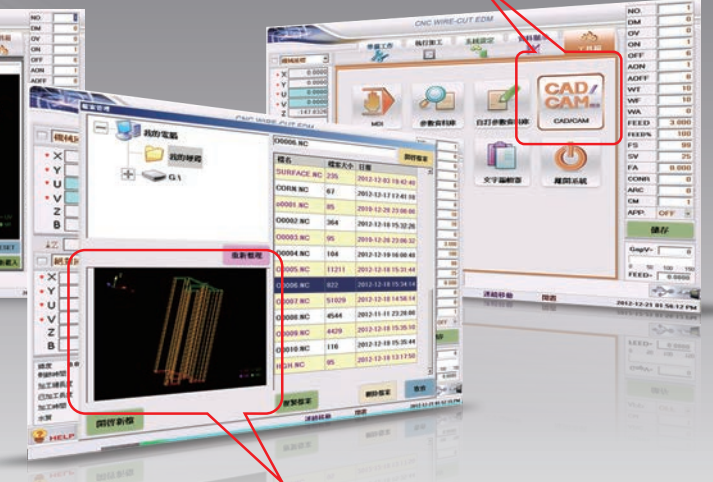
3D Graphics

- ◆ 3D graphics simulation makes operators to recognize the job shape easily and avoid mistakes.



CAD/CAM Function (option)

- ◆ From drawing to NC program, directly operate built-in CAD/CAM on machine.



Graphics pre-view function

- ◆ Online drawing pre-view functions, easily to find the old NC programs which were executed before.

NC Function

- ◆ USB transmission interface, provides efficiency and convenience for operators.
- ◆ Ethernet interface can link with PC to transmit NC programs.

Self-Guided operation interface

- ◆ User friendly interface, from calling NC programs to prepare to do cutting, is a total self-guided operation way to make the procedures easier and quicker.



Calling NC programs

NC setup

Cycle-start

Operation function

- Software travel limit protection
- Single block run
- Machine motion lock
- Block skip
- Optional stop
- Automatic positioning of Machine, Absolute, Relative and Work coordinates
- Manual data input (MDI)
- Technology data search/transfer to on-line
- Automatic power recovery
- Start point return
- Break point return
- Home point return
- Start point retraced
- Break point traced

- Approach cut
- Backward feed for short circuit
- Z-axis low limit setting
- Automatic power off
- G54-G59 Multi-coordinate system
- Automatic wire threading
- Z-axis low limit return

NC/TAPER function

- Axis mirror image
- Axes exchange
- Vertical/Taper/ 4 axes machining
- Wire offset setting
- Corner/Arc control
- Scale/Rotation setting
- Wire path color setting
- Different color display for each pass

- Straightness correction setting
- Interference modification for Offset/Taper path

Automatic/manual positioning

- Edge finding
- Slot center finding
- Hole center finding
- Width center finding
- Arc center finding
- Home point return
- Automatic vertical alignment
- parallel compensation
- Corner finding

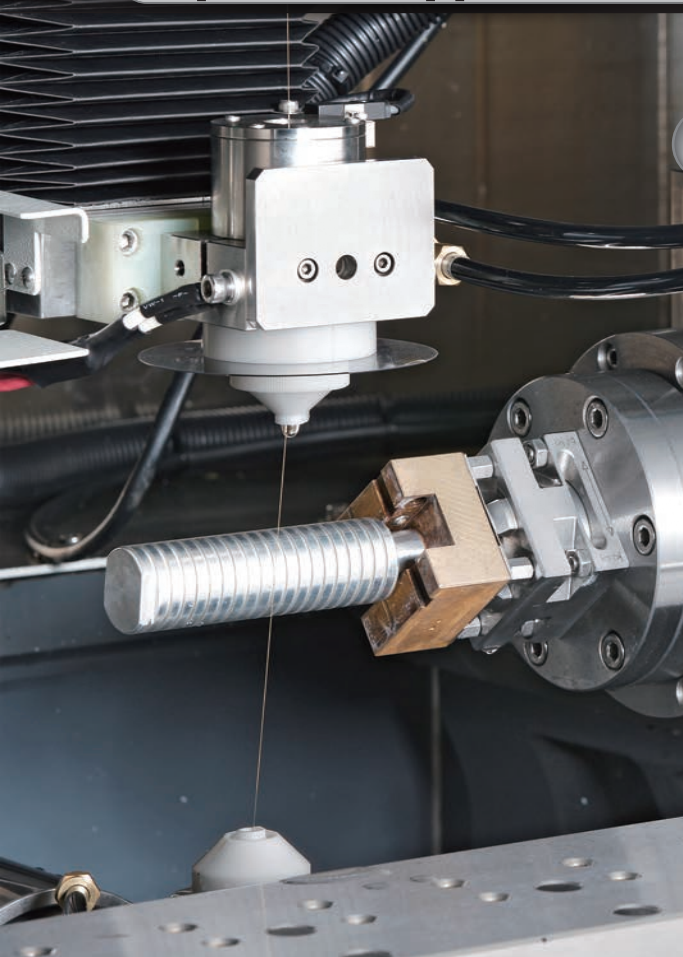
Program editing function

- Machining path display
- Graphics pre-view
- 2D/3D drawing

- 3D view selection
- Background editor
- Alphabetic string search/ replace
- Block copy
- Save as another file
- Program copy/delete
- Ethernet, USB interface/ transmission
- N code
- CAD/CAM function (option)

Auxiliary function

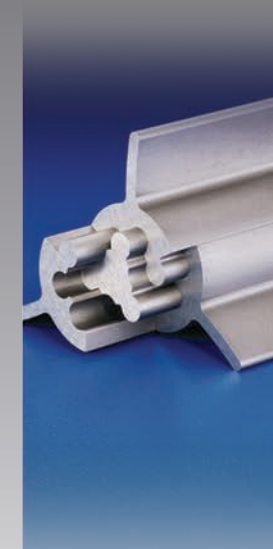
- Maintenance information
- I/O bit information
- Machining history
- User parameter setting
- Alarm page
- Key trace

Optional Applications**The 6th Axis Application (B-axis, Rotary axis)**

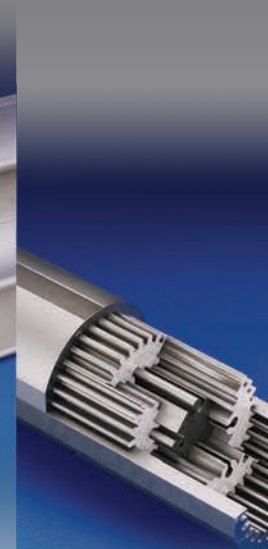
- Joemars controller is required for the 6th application.
- Maximum axes of control: 6 axes.
(X / Y / U / V / Z / B axis)
- Simultaneously machining axes: 5 axes.
(X / Y / U / V / B axis)
- Not only for single rotary, positioning and index functions but simultaneous movement with other axes.
- Joemars own designed servo index system and controller system.
- Direct drive by DDR motor, high rotary positioning accuracy.
- The 6th Axis (B-axis) with "Grade IP68" –water proof design, no rusting concern.
- Controller, rotary system, index plate and the related parts are all 100% designed and made in Taiwan!

(The device should be ordered when order confirmed.)

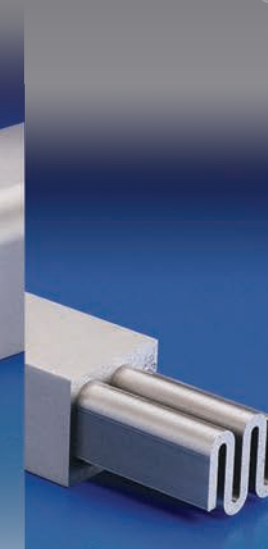
- ♦ B-axis is a separate unit and could be adopted upon request. It won't influence the original travels.

Machining Sample (mid~high thickness)*Processing examples*

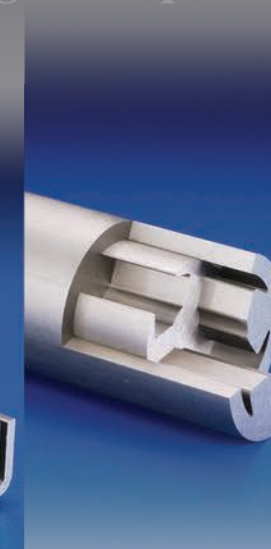
▲ Material : SKD11
Work piece thickness : 50mm
Wire diameter : 0.25mm BS
Number of cuts : 3 cuts
Surface roughness : 0.55~0.59 $\mu\text{m}/\text{Ra}$



▲ Material : SKD11
Work piece thickness : 40mm(Punch) , 20mm(Die)
Wire diameter : 0.25mm BS
Number of cuts : 3 cuts
Surface roughness : 0.55~0.59 $\mu\text{m}/\text{Ra}$

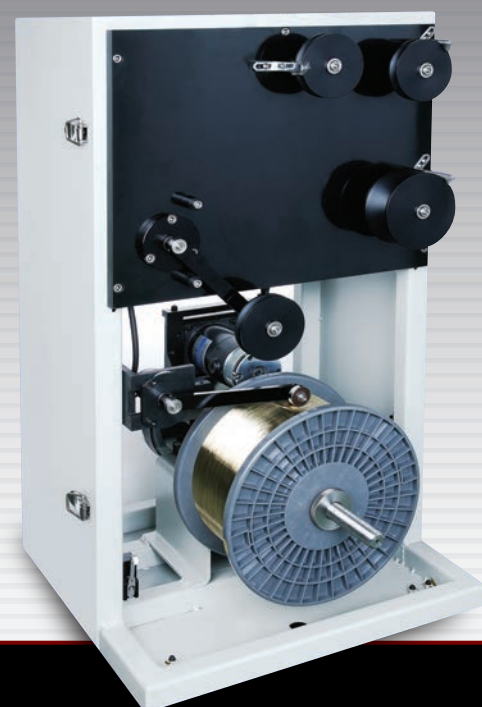


▲ Material : SKD11
Work piece thickness : 80mm
Wire diameter : 0.25mm BS
Number of cuts : 3 cuts
Surface roughness : 0.6~0.65 $\mu\text{m}/\text{Ra}$



▲ Material : SKD11
Work piece thickness : 40mm
Wire diameter : 0.2mm BS
Number of cuts : 3 cuts
Surface roughness : 0.54~0.58 $\mu\text{m}/\text{Ra}$

▲ Material : SKD11
Work piece thickness : 60mm
Wire diameter : 0.2mm BS
Number of cuts : 3 cuts
Surface roughness : 0.54~0.58 $\mu\text{m}/\text{Ra}$

20KG Wire Loading System

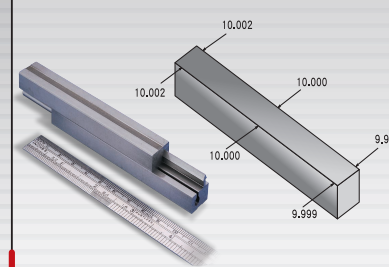
20KG Wire Bobbins
20KG Wire system offers long working hours

Wire speed = 8m/min basis
Ø0.20 167 hours
Ø0.25 117 hours
Ø0.30 75 hours

(The device should be ordered when order confirmed.)

• Thick Work Piece Cuttings

- Work piece thickness.....100mm
- Number of cuts.....3 cut
- Wire diameter.....0.20mm

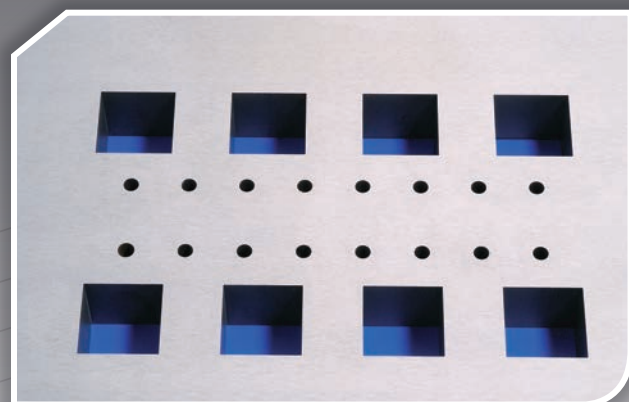
**• PCD、CBN Application****• Machining Efficiency**

New SPR circuit upgraded,
increase the cutting speed and
efficiency by
faster speed for about 40%.

Ø 0.25mm brass wire for SKD11
material work piece
Previous circuit → Increased by 40%
Upgraded circuit → Cutting speed for the first cut

Accuracy Performance

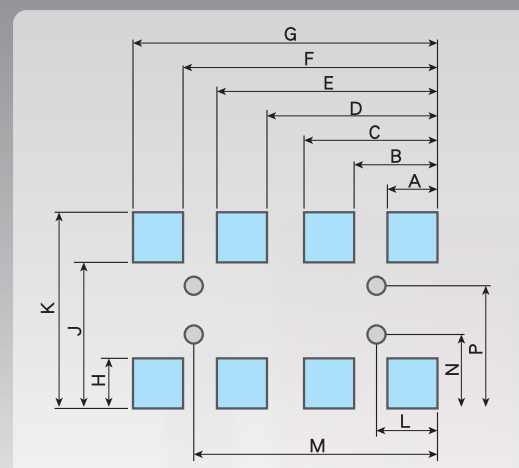
Cycle Measurement

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Precision to achieve

Positioning accuracy report : (Work piece thickness : 20mm)

	Target (mm)	Measurement (mm)	Error (mm)
A	20	20.002	0.002
B	35	35.001	0.001
C	55	55.003	0.003
D	70	69.999	-0.001
E	90	90.001	0.001
F	105	105.000	0.000
G	125	125.003	0.003
H	20	20.002	0.002
J	60	60.003	0.003
K	80	80.003	0.003
L	25	25.001	0.001
M	100	100.001	0.001
N	30	30.000	0.000
P	30	30.000	0.000



- Simultaneous axial movement is measured by Ball-bar

Positioning Accuracy

ISO 230-4:2005(E)

Bi-directional circular deviation
1101255018-AWT5S-2Operator: Administrator
Date: 2011-Jan-21 18:51:31Machine: Wire Cut EDM
QC10: H54405; Last calibrated: 2008-11-18

Bi-directional circular deviation

Value

6.3µm

Test parameters

Radius

100.0000mm

Feedrate

180.0mm/min

Run sequence

CCW CW

Plane under test

XY

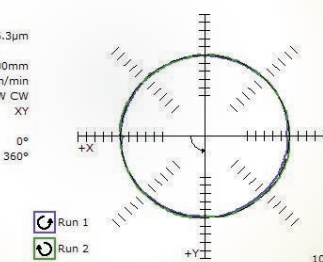
Test position

Start angle

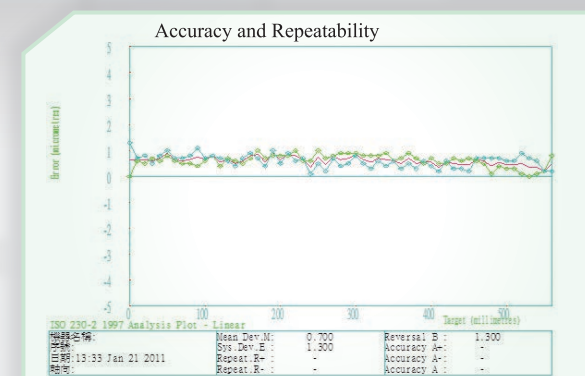
0°

End angle

360°



- Measurement report



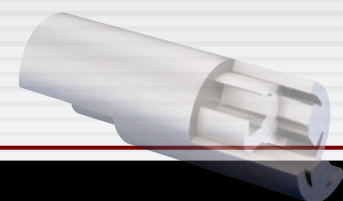
- The positioning error of the axial linear movement which is measured by a laser interferometer measurement is input into the controller to control the positioning accuracy.

CNC Unit & Processing Power Supply

CPU grade	Industrial grade Pentium 4 IPC 2.8 GHZ
Ram	1GB
Storage device	CF card
Screen display	15" TFT-LCD Touch Screen
Input means	Keyboard, USB, Ethernet
Pointing unit	Mouse, Touch Screen
Servo control mode	Fully-closed circuit AC servo control (Linear Scale is an option accessory) * 1
No. of axis control	5 axes (The 6 th axis is an option accessory) * 2
Min. input comment	0.1 µm
Max. input comment	± 9999.9999mm
Graphic rotation	0~360°

*1: Linear Scale option is for X/Y axis, need to be installed when order confirmed.

*2: B-axis is made by Joemars, need to be installed when order confirmed.



Power Unit Specification

Discharge circuit	High speed MOSFET
Discharge mode	AC non-electrolysis discharge
In gap max. average circuit	25A
Intelligent OV circuit	For thin and thick machining
Stable discharge control	SPR circuit
Max. machining speed	180mm ² /min (wire diameter 0.25mm BS)(material:SKD11)
Max. power consumption	3 phase, AC220V / AC380V / AC415V / AC440V, 13KVA

Standard Accessories

- Auto vertical alignment jig / 1 set
- Brass wire roll 0.25mm / 1 set
- Tool kit / 1 set
- Ion exchange resin / 1 set
- Wire guide 0.25mm / 1 set
- Filter element / 1 set

Optional Accessories

- Wire tension meter
- Auto voltage regular (AVR)
- Wire guide set (0.15mm/0.2mm/0.3mm)
- Linear scale (for X & Y axis)
- Dielectric cooling unit
- Special required part
- Consumable parts (wire, flushing nozzle...etc.)
- 20 kgs wire loading system
- Super fine finish circuit
- The 6th axis (The rotary B-axis)

Machine Unit & Filtration System

		AWT3S / WT3S	AWT4S / WT4S	AWT5S / WT5S	AWT6S / WT6S
Max. work piece dimension (WXDXH)	mm	710*560*205	750*650*245	950*670*295	1100*720*345
Max. work piece weight	kgs	300	450	600	700
X Travel	mm	350	450	560	650
Y Travel	mm	250	300	360	400
Z Travel	mm	210	250	300	350
U Travel	mm	80	100	100	100
V Travel	mm	80	100	100	100
Drive system		AC servo motor	AC servo motor	AC servo motor	AC servo motor
Wire diameter	mm	Ø0.15-Ø0.30 (standard)	Ø0.15-Ø0.30 (standard)	Ø0.15-Ø0.30 (standard)	Ø0.15-Ø0.30 (standard)
Max. taper angle	mm	+/-20° / 80mm	+/-24° / 80mm	+/-24° / 80mm	+/-24° / 80mm
Machine net weight	kgs	2100	2200	2700	2850
Filter system capacity	L	640	700	860	1200
Filter element		Paper filter	Paper filter	Paper filter	Paper filter
Ion exchange resin capacity	L	14	14	14	14
Water quality control		Auto	Auto	Auto	Auto
Water temperature control		Auto	Auto	Auto	Auto
Machine layout dimension (WXDXH)	mm	2036*2218*1990	2236*2308*2070	2300*2400*2190	2780*2780*2400

* All specification and design are subject to change without notices.