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AW series

Advanced · Innovative · Stylish

AMStech[®]

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AMStech[®] Advanced · Innovative · Stylish

Since 2006, with a new dedicated R&D team, AMS Tech created new stylish and innovative series to meet different requests of top end customers. The AMS stands for Advanced Machining Solutions. The team keeps this philosophy in mind when developing this AW series. Therefore the AW series defines a different dimension of wire cut EDM. The rigid structure not only guarantees the high level of stability but also undertakes heavy weight workpieces. The made-in-house controllers adopt the latest technology and the power supplies provide varies discharge circuits to meet users' requirements.



AW-E Series

The AW-E series, driven by ball screws, has the basic features of wire cut EDM and meets the demands of general users. Sharing with the structure of AW series, this series has side opened tank door and overhung control panels, but and the automatic wire threading (AWT) is optional. The AW-E series has only AW4E, AW5E, and AW6E.

AW4E

X, Y, Z travel: 400 x 300 x 260 mm
U, V travel: 100 x 100 mm
Taper angle: $\pm 21^\circ/110$ mm
Max. workpiece weight: 500 kg
Max. workpiece size: L750 x W550 x H260 mm
Machine dimensions: W2300 x D2640 x H2050 mm



AW5E

X, Y, Z travel: 500 x 300 x 300 mm
U, V travel: 120 x 120 mm
Taper angle: $\pm 21^\circ/140$ mm
Max. workpiece weight: 600 kg
Max. workpiece size: L850 x W550 x H300 mm
Machine dimensions: W2400 x D2700 x H2150 mm



AW6E

X, Y, Z travel: 600 x 400 x 300 mm
U, V travel: 120 x 120 mm
Taper angle: $\pm 21^\circ/140$ mm
Max. workpiece weight: 700 kg
Max. workpiece size: L950 x W650 x H300 mm
Machine dimensions: W2675 x D2750 x H2150 mm



AW-L Series

The AW-L series, driven by linear motors and equipped with linear light scales, has the best precision and performance to meet advanced applications. For small and medium models, i.e. AW3L, AW5L, AW6L, the control panels are overhung and the front tank doors are rise-and-fall manually. (Automatic rise-and-fall front tank door is optional.) AW-L series also have AWT as standard. The AW-L series has complete range from AW3L to AW12L.

AW3L

X, Y, Z travel: 370 x 270 x 260 mm
U, V travel: 100 x 100 mm
Taper angle: $\pm 21^\circ/110$ mm
Max. workpiece weight: 500 kg
Max. workpiece size: L750 x W550 x H260 mm
Machine dimensions: W2350 x D2640 x H2050 mm



AW5L

X, Y, Z travel: 560 x 360 x 300 mm
U, V travel: 120 x 120 mm
Taper angle: $\pm 21^\circ/110$ mm
Max. workpiece weight: 600 kg
Max. workpiece size: L950 x W650 x H260 mm
Machine dimensions: W2675 x D2850 x H2110 mm



AW6L

X, Y, Z travel: 650 x 450 x 300 mm
U, V travel: 120 x 120 mm
Taper angle: $\pm 21^\circ/140$ mm
Max. workpiece weight: 800 kg
Max. workpiece size: L1050 x W750 x H300 mm
Machine dimensions: W2920 x D2995 x H2110 mm



AW-L Series

For large models, i.e. AW8L and above, the structure adopts fixed worktable design to accommodate heavier weights of work tanks and workpieces. The control panels are extended from the bottom of the machines and the work tank doors are rise-and-fall automatically.

AW8L

X, Y, Z travel: 800 x 500 x 300 mm

U, V travel: 150 x 150 mm

Taper angle: $\pm 21^\circ/80$ mm

Max. workpiece weight: 3000 kg

Max. workpiece size: L1200 x W800 x H295 mm

Machine dimensions: W3840 x D3250 x H2200 mm



AW12L

X, Y, Z travel: 1200 x 800 x 300 mm

U, V travel: 150 x 150 mm

Taper angle: $\pm 21^\circ/80$ mm

Max. workpiece weight: 5000 kg

Max. workpiece size:

L1600 x W1100 x H295 mm

Machine dimensions:

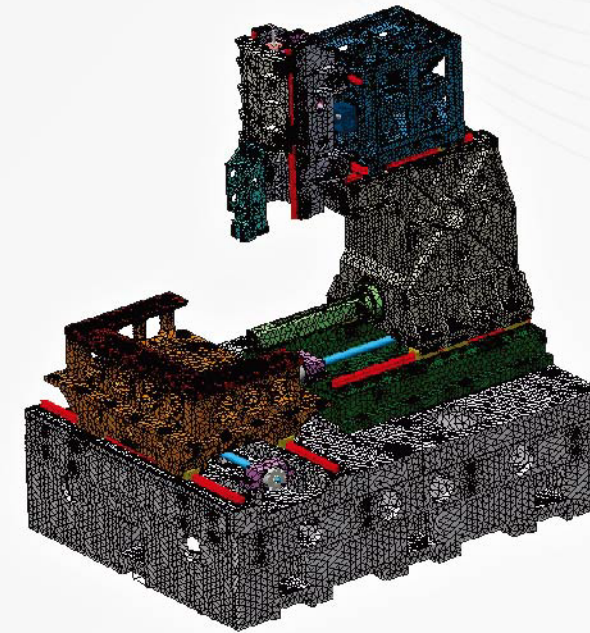
W4830 x D3835 x H2250 mm



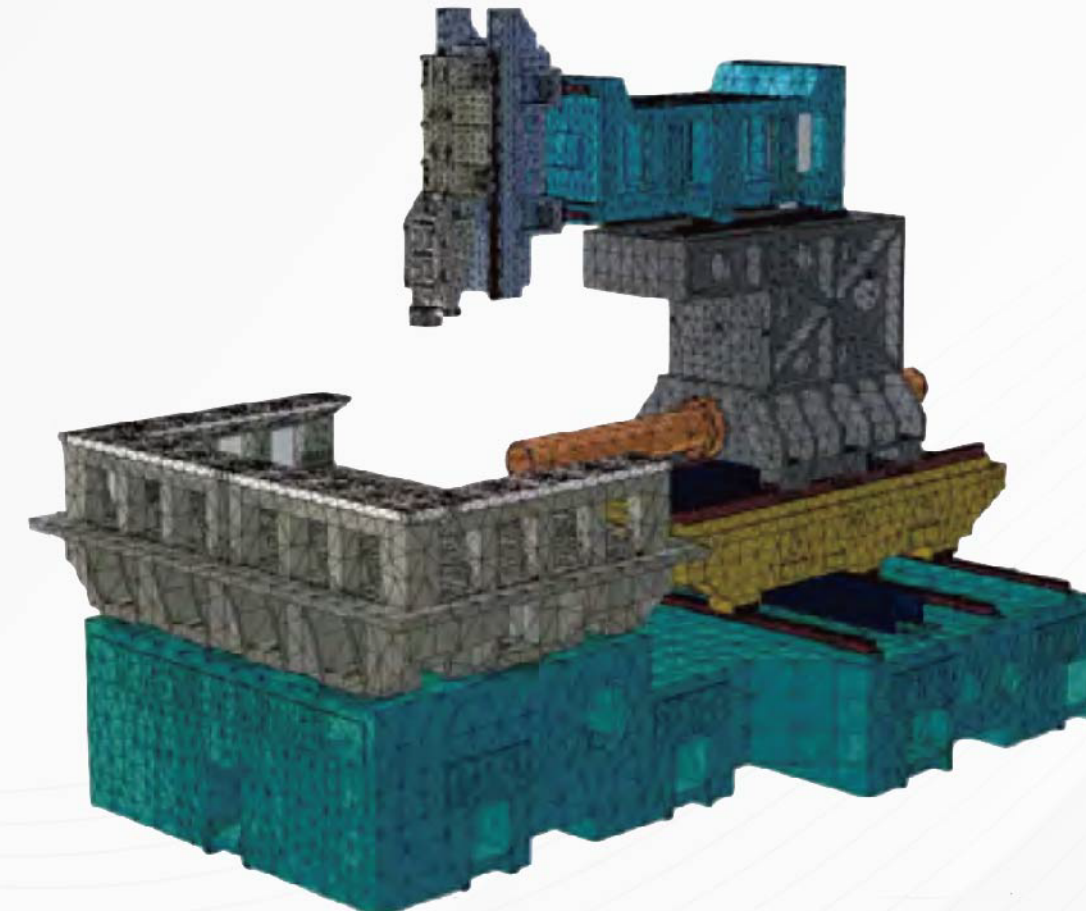
Machine Structure

The structure of small and medium models adopts T type moving column design while that of large models adopts fixed worktable design. The high rigidity achieves stability and accuracy of machining.

T Type Moving Column Design



Fixed Table Design



Driving Systems

The AW-E series are driven by ball screws while the AW-L series are driven by linear motors. AMS uses high grade C1 Taiwan made ball screws to guarantee the accuracy. Ball screws are driven by AC servo motors, and generally need to be calibrated in a few years to ensure the accuracy. The linear motors, designed and manufactured in house, adopt dual balance design to provide high thrust, quick response, very low temperature rise, no deformation due to magnetic force and maintenance free fast motion. The initial accuracy of linear motor drive system can be maintained over 10 years without the need of maintenance.

Advantages of linear motors

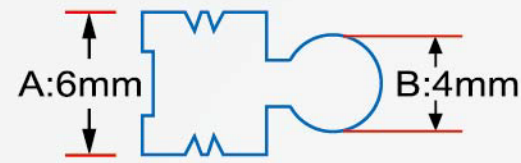
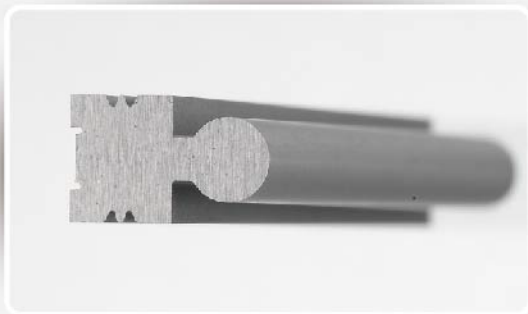
Reduce Profile Error

(Improving Linear & Circular Cross-section)

Work Conditions:

Brass Wire : \varnothing 0.20mm Work-Piece = SKD11
Harden Steel Thickness =50mm
Cutting Pass = 1+2 Skims

《Cutting Shape》



	Linear Motor		Ball Screw	
	A section	B section	A section	B section
Up	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
Error	-0.001	-0.002	-0.002	-0.005



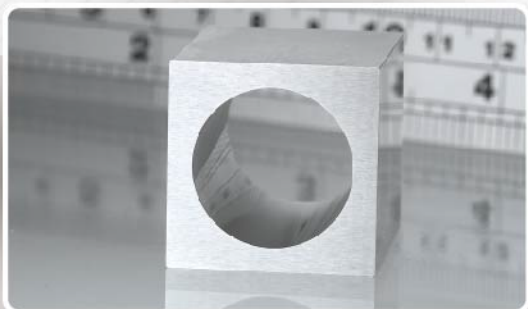
Surface Roughness Enhancement

With Function : 『AC μ Super-Finish Circuit』

Cutting Result: Improved cutting speed and surface finish with over 3 skims cuts.

Linear motor with virtually no backlash provides for even metal removal all around the work-piece , especially when skim cut is <math><0.0001''</math>(0.25 microns)

Brass Wire=0.20mm/BS Work-piece=SKD11
Cutting Pass=1+4 Skims T=25 MM
Ra=0.25 μ m

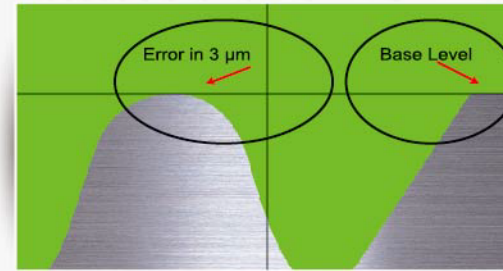


	Linear Motor	Ball-Screw
	1+4Skims=0.23~0.25 μ m/Ra	1+4Skims=0.28 μ m/Ra

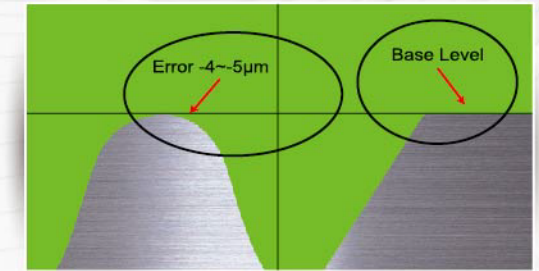
Improvement on "Corner" by Linear Motor

Work Conditions:

Brass Wire : \varnothing 0.20mm Work-Piece = SKD11 Harden Steel Thickness =50mm
Cutting Pass = 1+2 Skims Shape Corner =30° Ra = 0.58 Radius (R)=0.20mm



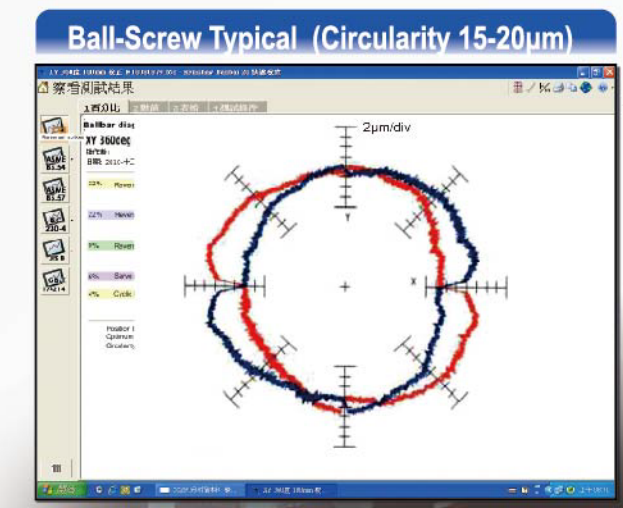
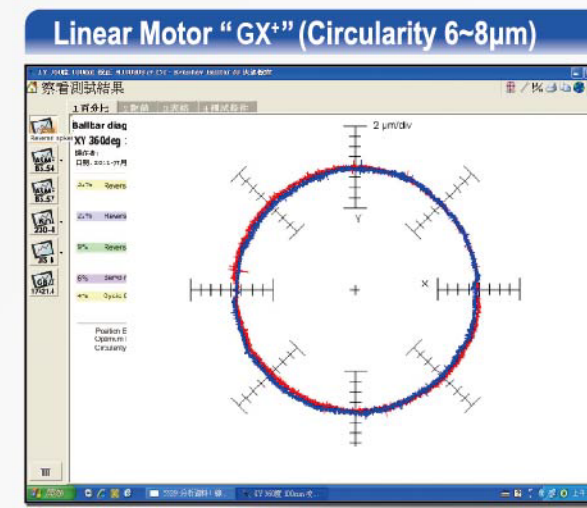
Linear Motor (Radius Error : 3 μ m)
Optical Projector Scaling: 120X



Ball-Screw (Radius Error: 4~5 μ m)
Optical Projector Scaling: 120X

Ball Bar Test

Roundness after 5 years of use



Linear Motor

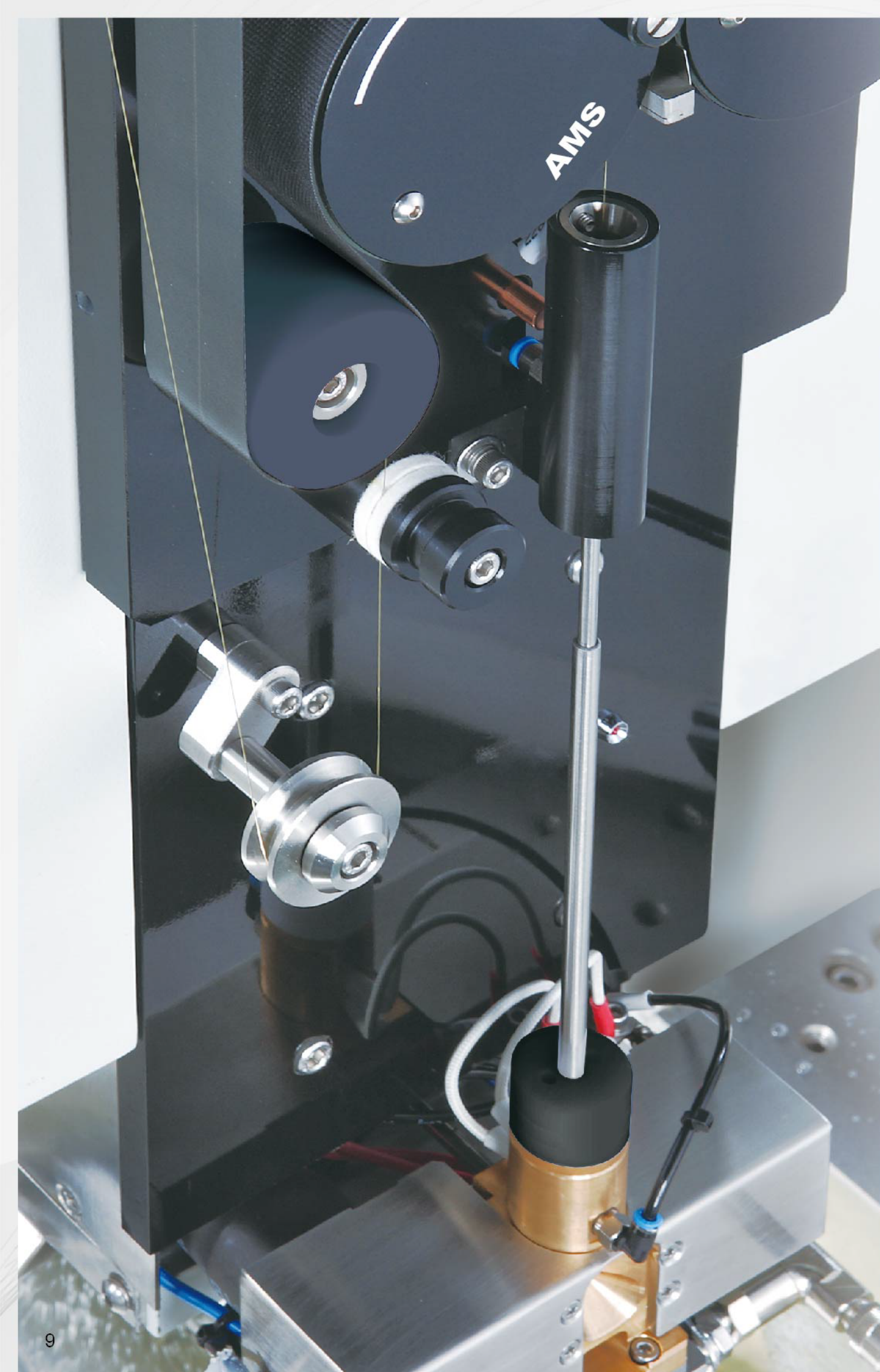


Linear Scale



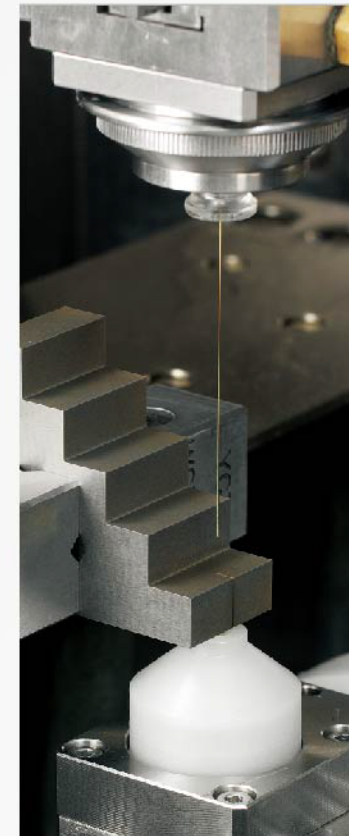
Laser Alignment

Ball-Bar Test



Automatic Wire Threading (AWT) System (Optional for AW-E series)

- Unique "EC tension control technology" delivers virtually 100% wire threading success rate and supports unmanned operation and intelligent production.
- The most adequate design possibly is the fastest wire threading system in the world with less parts, 2/3~1/2 less than other brands' design.
- Wire threading at breakpoint in the water; don't need to go back to start point and save the time of draining and filling the water.
- Easy to thread a stepped workpiece.
- The AWT servo control system can diagnose and record all procedures.



- Compact and reliable mechanism, easy to service, and low maintenance cost
- Unique "EC tension control technology" delivers virtually 100% wire threading success rate and supports unmanned operation and intelligent production
- Wire threading at breakpoint in the water; don't need to go back to start point and save the time of draining and filling the water
- Under machining condition, the wire threading can be set arbitrarily. Any wire threading problems can be resolved to achieve continuous machining.
- With optional automatic wire threading assistant device, high thickness workpiece is not a problem.
- Combined with automatic water level control function, it is possible to cut different height workpiece automatically and achieve high productivity.
- Easy to thread a stepped workpiece
- Both speed and stability are taken in multiple hole threading



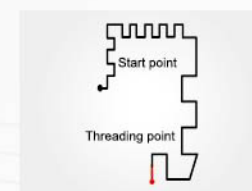
Intuitive parameter setting

50 sets of brass wire parameters can be used for different wire makes and diameters. Simply selecting a suitable set to perform a satisfying threading.



3999 sets of hole machining data

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



Wire threading at breakpoint

Immediately thread at breakpoint and resume machining in no time

Intelligent and user-friendly controller

- All software and hardware are developed in house.
- Industrial IPC-586 or above motherboard.
- 64MB DRAM.
- 512MB CF card.
- Optional touch screen and optical mouse.
- Support 6th axis (B axis) machining (Optional).
- Support USB and Ethernet transmission.



▲ Smart file management and processing data



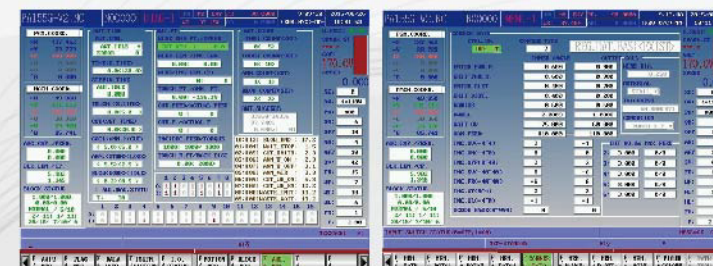
▲ Clear schematic and intuitive operation



▲ Comprehensive machine information management



▲ Cutting path display & parameter setting



▲ AWT process monitoring & corner control



Online Monitoring

Real time monitoring the machine operation through PC or mobile devices, such as mobile phones or tablet PC. NC programs made by CAD/ CAM can be downloaded to the controller. Operating and monitoring can be done at the same time. Through the intelligent internet management system, the machine status can be monitored by mobile phones. High work efficiency and convenience can be achieved.

- ▼ FTP: NC Archives remote transmission function

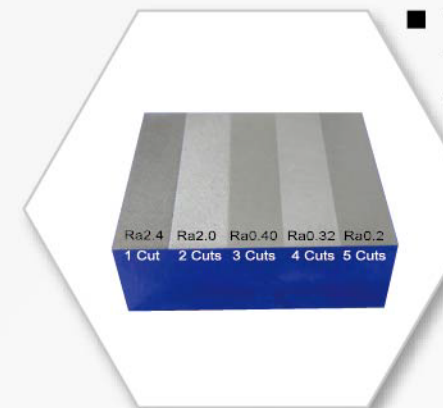


▲ Machine remote monitoring

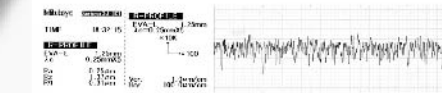
Other Features

TFC Super Fine Finish Circuit

Through high frequency electrical discharge and precision feeding system, the super fine finish (Ra 0.2μm) is easily achieved. (5 cuts)

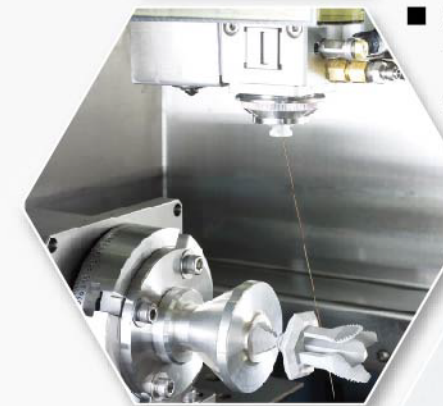


Surface roughness: Ra:0.20 μm



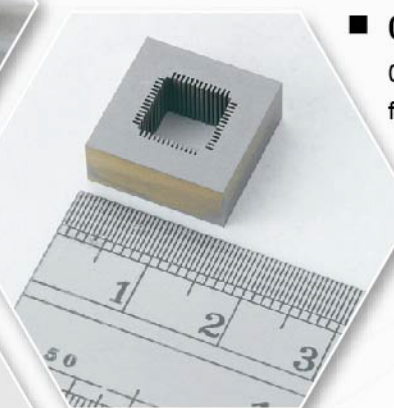
Optional 6th Axis Machining

The submerged built-in B axis can achieve rotating machining on complex and curved surfaces.



0.1mm Diameter Wire Cutting

0.1mm diameter wire can cut IC molds or other fine cut required industries.



Optional PCD Cutting Circuit

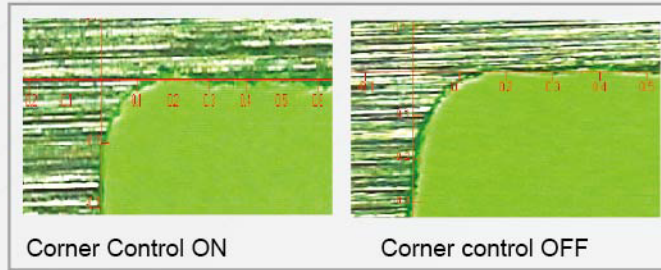
Adopting the high frequency, high voltage technology, the TPC machining circuit can easily cut PCD materials.



Performance

Multi-functional Corner Control System

With precise calculation and electrical discharge power control, the corner control can improve the shapes of inside corners and outside corners.



New Lower Arm Design

The new lower arm design avoids the traditional leaking problem of rear board and reduces the mechanical interference.



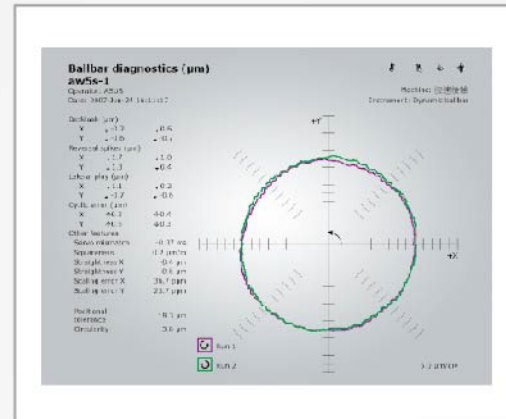
Electrolysis-less Power Supply

For titanium alloy and tungsten carbide, electrolysis-less AC Power Supply can effectively reduce the erosion of electrolysis and anode oxidation and soft layer to increase the life of molds.



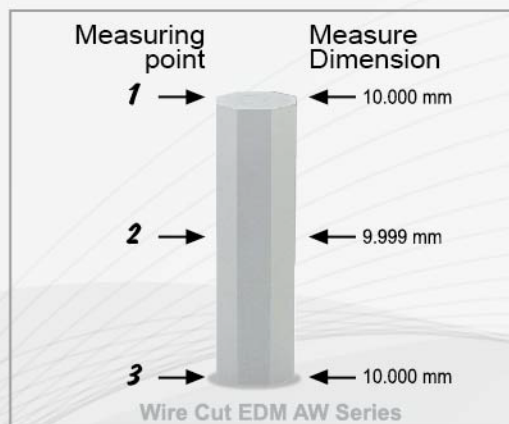
Roundness

Diameter: $\Phi 100\text{mm}$
Roundness: $5\mu\text{m}$



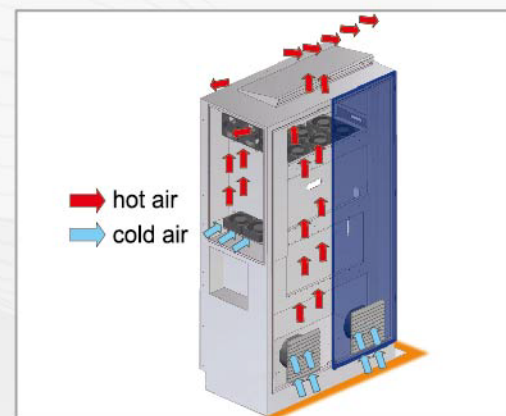
Straightness

Workpiece: SKD-11 Thickness: 30 mm
No. of cuts: 3 Accuracy: $\pm 2\mu\text{m}$
Brass wire: $\Phi 0.2\text{ mm}$



Dual Cooling System

The new dual cooling system in the power box extends the life of electronic components and increases the stability under long time operation.



Manual Rise-and-Fall Drop Door

The rise-and-fall drop door will not affect the mobility.

Samples



Workpiece: SKD-11
Thickness: 30 mm
Cutting time: 1h10 min
Wire diameter: 0.2 mm



Workpiece: SKD-11
Thickness: 25 mm
Cutting time: 5h30 min
Wire diameter: 0.2 mm
No. of cut: 3 cuts



Workpiece: SKD-11
Thickness: 30 mm
Cutting time: 4h30 min
Wire diameter: 0.1 mm
No. of cut: 4 cuts



Workpiece: SKD-11
Thickness: 3.5 mm
Cutting time: 1h20 min
Wire diameter: 0.15 mm
No. of cut: 3 cuts



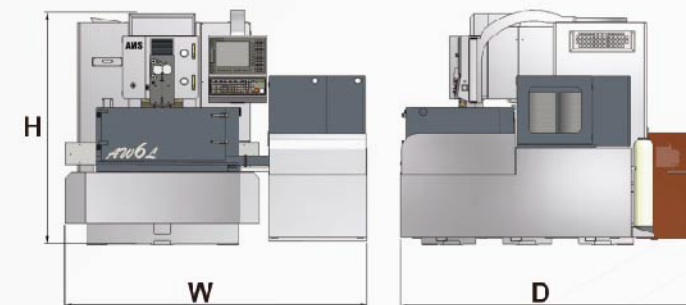
Workpiece: SKD-11
Thickness: 10 mm
Cutting time: 3h50 min
Cutting Diameter: 27 mm
Wire diameter: 0.2 mm



Workpiece: PCD
Thickness: 2.5 mm
Wire diameter: 0.25 mm

Floor Layout

AW L SERIES



	AW3L	AW5L	AW6L	AW8L
W	2350	2675	2920	4050
D	2640	2850	2995	4500
H	2050	2110	2110	2500

	AW10L	AW12L	AW13L	AW15L
W	4150	4450	4600	5000
D	4950	5000	5200	5200
H	2500	2515	2515	2515

	AW4E	AW5E	AW6E
W	2300	2400	2675
D	2640	2700	2750
H	2050	2150	2150

■ Specifications

MODEL	AW3L	AW4E	AW5L	AW5E
X,Y Travel	370 x 270 (mm)	400 x 300 (mm)	560 x 360 (mm)	500 x 300 (mm)
U, V, Z Travel	100 x 100 x 260 (mm)	100 x 100 x 260 (mm)	120 x 120 x 300 (mm)	100 x 100 x 260 (mm) opt.
Max. Size of work-piece	W750x D550 x H260 (mm)	L750 x W550 x H260 (mm)	L950 x W650 x H260 (mm)	L950 x W650 x H260 (mm)
Max. weight of work-piece	500 Kgw	500 Kgw	600 Kgw	500 Kgw
Max. X,Y Rapid Traverse	Max. 1500 mm / min	Max. 800 mm / min	Max. 1500 mm / min	Max. 1500 mm / min
Motor Drive System	XY Linear Motor	AC Servo Motor	XY Linear Motor	AC Servo Motor
Wire Diameter	Ø 0.1~0.3 mm(Ø 0.20)	Ø 0.15 mm(Ø 0.20)	Ø 0.1~0.3 mm(Ø 0.25)	Ø 0.15~0.3 mm
Max. Wire Feed	300 mm/sec.	300 mm/sec.	300 mm/sec.	300 mm/sec.
Wire Tension	200~2500 (gf)	200~2500 (gf)	200~2500 (gf)	200~2500 (gf)
Taper Angle	±21°/110mm (wide-angled nozzle · DA+DB=15mm)	± 21°/110 mm(wide-angled nozzle · DA+DB=15mm)	±21°/140mm (wide-angled nozzle · DA+DB=15mm)	± 21°/110mm(wide-angled nozzle · DA+DB=15mm)
Floor plan	2350 x 2640 x 2050	2300 x 2640 x 2050	2675 x 2850 x 2110	2400 x 2700 x 2150
N.W (Incl. Power Supply)	4600 + 280 Kgw	4600 + 280 Kgw	5200 + 320 Kgw	4800 + 300 Kgw

Dielectric Supply Unit

Filter Material	Paper (2pcs)	Paper (2pcs)	Paper (3pcs)	Paper (3pcs)
Conductivity Control	Auto	Auto	Auto	Auto
Dielectric Temp. Control	Auto	Auto	Auto	Auto
Capacity	700 L	700 L	900 L	900 L
N.W	280 Kgw	280 Kgw	320 Kgw	320 Kgw

MODEL	AW6L	AW6E	AW8L	AW10L	AW12L
X,Y Travel	650 x 450	600x400	850 x 550	1000 x 800	1200 x 800
U, V, Z Travel	120 x 120 x 300 opt.	120 x 120 x 300 opt.	160 x 160 x 350	160 x 160 x 350	160 x 160 x 350
Max. Size of work-piece	1050 x 750 x 300	1050 x 750 x 300	1200x 1000 x 350	1500x1300x350	1700x 1300x 350
Max. weight of work-piece	800 Kgw	600 Kgw	3000 Kgw	3500 Kgw	4000 Kgw
Max. X,Y Rapid Traverse	Max. 1500 mm / min	Max. 1500 mm / min	Max. 1500 mm / min	Max. 1800 mm / min	Max. 1800 mm / min
Motor Drive System	XY Linear Motor	AC Servo Motor	XY Linear Motor	XY Linear Motor	XY Linear Motor
Wire Diameter	Ø 0.1~0.3 mm(Ø 0.25)	Ø 0.1~0.3 mm(Ø 0.25)	Ø 0.15 mm(Ø 0.20)	Ø 0.2 ~ 0.3 mm (Ø 0.25)	
Max. Wire Feed	300 mm/sec.	300 mm/sec.	300 mm/sec.	300 mm/sec.	300 mm/sec.
Wire Tension	200~2500 (gf)	200~2500 (gf)	200~2500 (gf)	200~2500 (gf)	200~2500 (gf)
Taper Angle	±21°/140mm (wide-angled nozzle · DA+DB=15mm)		±21°/190mm (wide-angled nozzle · DA+DB=15mm)		
Floor plan	2920 x 2995 x 2110	2675 x 2750 x 2150	4050 x 4500 x 2500	4150 x 4950 x 2500	4450 x 5000 x 2515
N.W (Incl. Power Supply)	5400 + 350 Kgw	5200 + 320 Kgw	8500+1500 Kgw	9400+1600 Kgw	10200+1800 Kgw

Dielectric Supply Unit

Filter Material	Paper (3pcs)	Paper (3pcs)	Paper (4pcs)	Paper (4pcs)	Paper (4pcs)
Conductivity Control	Auto	Auto	Auto	Auto	Auto
Dielectric Temp. Control	Auto	Auto	Auto	Auto	Auto
Capacity	1050 L	900 L	2500 L	2800 L	3000 L
N.W	350 Kgw	320 Kgw	1500 Kgw	1600 Kgw	1800 Kgw



3 Year Warranty

Linear Motors



10 Year Guarantee

Positioning Accuracy



■ Standard / Options

Standard ● Optional ○ Not Available —

ITEM	SPECIFICATION	Q'TY	E type	L type
Water Chiller	2 Tons/3 Tons(AW9)	1 set	●	●
2-in-1 AVR+Transformer		1 set	●	●
AWT(Auto Wire Threading Device)		1 set	○	●
AC Power		1 set	●	●
OV Circuit		1 set	●	●
TFC Circuit		1 set	○	●
USB Function		1 set	●	●
Swivel Panel		1 set	●	●
Concsole Panel		1 set	—	—
Touch Screen		1 set	○	○
Ethernet Network Transmission		1 set	●	●
Resuming Work Function		1 set	●	●
X&Y Axis Liner Motor		1 set	—	●
X&Y Axis Glass Scale	0.5 um	1 set	○	●
0.1mm Wire Device		1 set	○	○
Rotary B-Axis(6th Axis Function)	CHMER / PARKSON	1 set	○	○
3~20Kg Jumbo Wire Spooler		1 set	○	○
Automatic Wire Chopper		1 set	○	○
Sliding Door	Manual type	1 set	—	●
Aux. Water Jet Assistant for threading	H.P.Pump	1 set	○	○
DTC Water Control		1 set	○	○
Z-Axis Heigh=400mm		1 set	○	○
Window CE		1 set	○	○

The specifications are subject to change without notice.

Power Supply

Discharge Circuit System	Power MOS Transistor
Max. output current	30A
Data Input	Keyboard / Touch Screen (Opt.) / Ethernet
Power Requirement	220V ±5% / 3 Phase / 50~60 HZ
Memory	RS232+USB port
Memory Capacity	S/L:128 MB X:512 MB
Screen Display	S/L:15" TFT X:17" TFT
Measurement Resolution	0.1um
Control System	Close Loop
Max. Command value	±9999.999

