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WIRE CUT EDM AW SERIES

AMStech®

Linear DRIVE

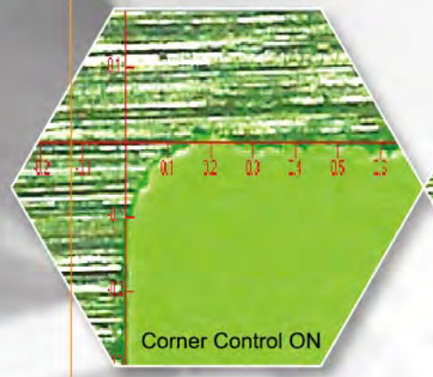
AW series

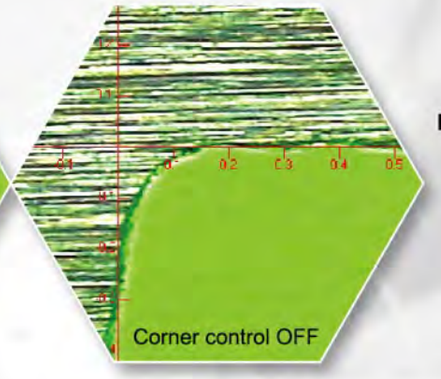
Leading quality & Innovating technology

AMStech®

Durability · Precision · Speed

AMS was founded in 2006 by an long-experienced R&D team highly proficient in the field of EDM industry. The 3 capital alphabets AMS are referred to 3 vocabularies:“A”dvanced “M”achinery”S”olution. Thus, the goal AMS pursue with passion and persistence is to develop advanced technology for EDM and offer Top of the line to customers and keep them proud of owning AMS product.





■ Multi-Functional Corner Aid

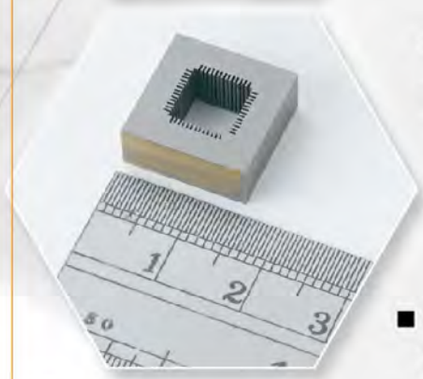
Apply auto eroding power shift when approaching inner/outer corner to obtain sharp corner and small radii.

■ AC Power

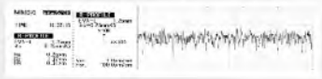
Anti-electrolysis power supply reduces the result of anode oxidation when cutting Titanium alloy Tungsten、carbide and rust on ferrous material, also let soft metallic layer down.

■ TFC circuit

Newly developed fine finishing circuit "TFC" constantly controls high frequency power to enhance the best roughness to Ra 0.18 μm at 5th cut.



Surface roughness: Ra:0.20μm

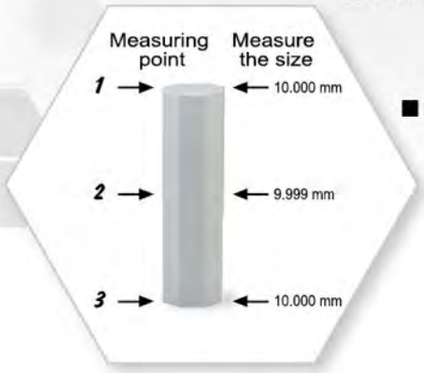


■ Roundness inspection

Test Diameter: Ø100 mm
Roundness accuracy: 5 μm

■ 01.mm wire cutting

Available to use 0.1 mm wire on IC mold and highly precious die application.



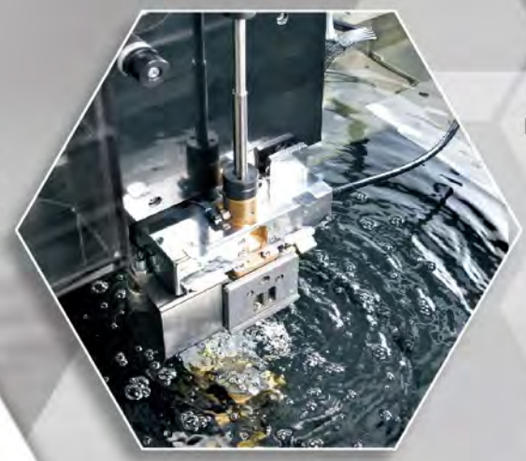
■ Straightness

Workpiece: SKD-11 Thickness: 30 mm
No. of cut: 3 cuts Accuracy: ±2 μm
Wire diameter: Ø 0.2 mm

■ Renishaw ball bar test

■ Double Air Tunnel

Double Air Tunnel design power supply enhances the efficiency of thermo convection and extends life span of electronic components.



■ DTC Water Control

Temperature control is key as this affects the expansion of the mold and machine body. On this machine the temperature is controlled down to 0.3 degrees to ensure maximum thermal stability and optimum performance also enhance the overall accuracy of its finished products.

■ Water volume regulator

Water volume regulator ensures stable working condition of fine-finish by fine adjustment of water volume when finishing cut executed.

■ Interference-Free accordion lower arm

Isolated lower arm design for highest machining accuracy and avoid water leakage when sealing worn out.

■ Built-in submerged rotary B-axis (6th axis)

Let the complex 3D configurations becoming an easy job.

■ CE compliance

■ Sample

◆ Workpiece: SKD-11
Thickness: 30 mm
Cutting time: 1h10 min
Wire diameter: 0.2 mm
No. of cut: 3 uts
Accuracy: 3 µm
Roughness Ra 0.55~0.58 µm

◆ Workpiece: SKD-11
Thickness: 25 mm
Cutting time: 5h30 min
Wire diameter: 0.2 mm
No. of cut: 3 cuts
Accuracy: 3 µm
Roughness Ra 0.55~0.58 µm

◆ Workpiece: SKD-11
Thickness: 30 mm
Cutting time: 4h30 min
Wire diameter: 0.1 mm
No. of cut: 4 cuts
Accuracy: 3 µm
Roughness Ra 0.28~0.31µm

◆ Workpiece: SKD-11
Thickness: 3.5 mm
Cutting time: 1h20 min
Wire diameter: 0.15 mm
No. of cut: 3 cuts
Accuracy: 3µm
Roughness Ra 0.55~0.58µm

◆ Workpiece: SKD-11
Thickness: 10 mm
Cutting time: 3h50 min
Cutting Diameter: 27 mm
Wire diameter: 0.2 mm
No. of cut: 3 cuts
Roughness Ra 0.58~0.6µm

◆ Workpiece: PCD
Thickness: 2.5 mm
Wire diameter: 0.25 mm
Cutting Speed: 2.0 mm^2/min

■ Specifications

MODEL	AW3S(L)		AW5S(L)		AW6S(L)		AW9S(L)	
X,Y Travel	370 x 270 (mm)	14.6 x 10.6 (inch)	560 x 360 (mm)	22 x 14.2 (inch)	650 x 450 (mm)	25.6 x 17.7 (inch)	920 x 620 (mm)	36.2 x 24.4 (inch)
U, V, Z Travel	100 x 100 x 260 (mm)	3.9 x 3.9 x 10.2 (inch)	100 x 100 x 300 (mm) opt.	3.9 x 3.9 x 11.8 (inch)	120 x 120 x 300 (mm) opt.	4.7 x 4.7 x 11.8 (inch)	200 x 200 x 400 (mm)	7.9 x 7.9 x 15.7 (inch)
Max. Size of work-piece	L750 x W550 x H260 (mm)	29.5 x 21.7 x 10.2 (inch)	L950 x W650 x H300 (mm)	37.4 x 25.6 x 11.8 (inch)	L1050 x W750 x H300 (mm)	41.3 x 29.5 x 11.8 (inch)	L1300 x W1000 x H400 (mm)	54.2 x 39.3 x 15.7 (inch)
Max. weight of work-piece	400 Kg	880 lb	500 Kg	1100 lb	600 Kg	1320 lb	1000 Kg	2200 lb
Max. X,Y Rapid Traverse	800 mm/min	31.5 in/min	800 mm/min	31.5 in/min	800 mm/min	31.5 in/min	800 mm/min	31.5 in/min
Motor Drive System	AC Servo Motor / Linear Motor(Opt.) 17 bit / 130,000 pulse		AC Servo Motor / Linear Motor(Opt.) 17 bit / 130,000 pulse		AC Servo Motor / Linear Motor(Opt.) 17 bit / 130,000 pulse		AC Servo Motor / Linear Motor(Opt.) 17 bit / 130,000 pulse	
Wire Diameters	Ø 0.15~0.3 mm(Ø 0.20)	0.004~0.012 (inch)	Ø 0.15~0.3 mm(Ø 0.20)	0.004~0.012 (inch)	Ø 0.15~0.3 mm(Ø 0.20)	0.004~0.012 (inch)	Ø 0.15~0.3 mm(Ø 0.20)	0.006~0.012 (inch)
Max. Wire Feed	300 mm/sec.	11.8 in/sec	300 mm/sec.	11.8 in/sec	300 mm/sec.	11.8 in/sec	300 mm/sec.	11.8 in/sec
Wire Tension	200~2500 (gf)	0.44~5.52 lb	200~2500 (gf)	0.44~5.52 lb	200~2500 (gf)	0.44~5.52 lb	200~2500 (gf)	0.44~5.52 lb
Taper Angle	± 21° / 100 mm(wide-angled nozzle ↑ DA+DB=15mm)	±21°/4.33 inch (DA+DB=0.6 inch)	± 21° / 100 mm(wide-angled nozzle ↑ DA+DB=15mm)	±21°/4.33 inch (DA+DB=0.6inch)	± 21° / 140 mm(wide-angled nozzle ↑ DA+DB=15mm)	±21°/5.51 inch (DA+DB=0.6inch)	± 21o / 245 mm(wide-angled nozzle ↑ DA+DB=15mm)	±21°/9.64 inch (DA+DB=0.6inch)
N.W (Incl. Power Supply)	4600 Kg+280 Kg	10141+617 lb	5200 Kg+320 Kg	11464+705 lb	5400 Kg+350 Kg	11905+705 lb	8000 Kg+600 Kg	17637+1323 lb
CNC 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	IDE Card Reader + CF Card + USB (Opt.)							
Memory Capacity	128 MB							
Screen Display	15" TFT							
Measurement Resolution	0.1um							
Control System	Close Loop							
Max. Command value	±9999.999							
Dielectric Supply Unit								
Filter Material	Paper (2pcs)		Paper (3pcs)		Paper (3pcs)		Paper (4pcs)	
Conductivity Control	Auto		Auto		Auto		Auto	
Dielectric Temp. Control	Auto		Auto		Auto		Auto	
Capacity	700 (L)		900 (L)		1050 (L)		2000 (L)	
N.W	250 Kg		320 Kg		350 Kg		600 Kg	

■ Standard Accessories

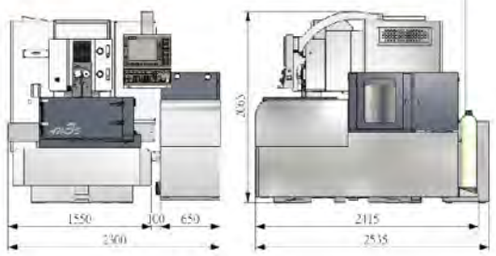
- Auto vertical alignment Jig x 1set
- AWT (Auto wire threader) x 1set
- Ethernet network transmission x 1set
- Water chiller x 1set
- AC power x 1set
- OV circuit x 1set
- USB function x 1set
- TFC circuit x 1set
- 0.1 mm wire device x 1set
- X&Y Glass scale x 1set
- 2-in-1 AVR + Transformer x 1set

■ Options

- Rotary B-axis (6th axis function)
- Sliding door
- 30 Kg jumbo wire spooler
- Granite table
- DTC water control
- Water jet assistance
- Touch screen
- Automatic Wire Chopper
- (L) XY Liner motor
- (Z) Z-axis heightening = 400mm

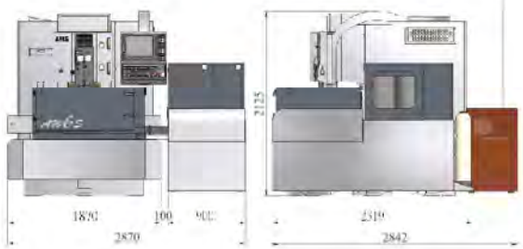
■ Floor Layout

AW3S(L)

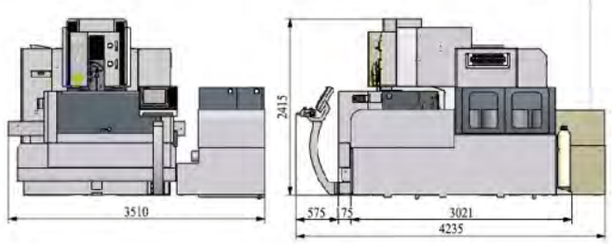


AW5S(L)

AW6S(L)



AW9S(L)



The specifications are subject to change without notice.

Standard Series:
Top quality precision ball screws ensure outstanding performance and reliability. High quality motors and drivers with glass scale feedback assure superior positioning and cutting accuracy.

Model: **AW3S**

Model: **AW9S**

Model: **AW5S**

Model: **AW6S**

AW SERIES

Linear motor drive system features long term reliability. AMS applied the linear motor system on the rigid enable the superiority on part's cut required. free backlash, consistent precision and this cutting edge technology and build casting base of AW series Wire EDM to profile, surface quality and fewer skim

Model:**AW3SL**

Model:**AW6SL**

Model:**AW5SL**

Model:**AW9SL**

■ Advanced rigid and thermal balanced structure

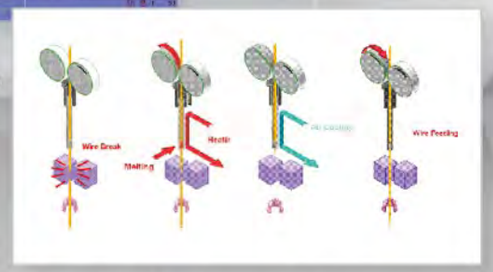
The AW series wire EDMs use a high strength T shape heavy ribbed casting that is designed with FEA "Finite Element Analysis" to assure perfect thermal balance needed for Linear Motor drive system.

■ The sliding door design is standard on AW9S and optional for the AW3,5 and 6 series. This design makes it easier to walk around the front of the machine when setting up a part, reduces the system foot print by eliminating the extra space required for the swing out door and makes the machine ready to accept peripheral devices such as robotic arm.

■ Revolutionary AWT system

- High speed auto threading in less than 8 seconds.
- Rethreading at the wire break point instead of returning to start point.
- Reliability and reduced maintenance costs are assured by only having 5 moving parts.
- The unique AWT heater coil wire cutting system eliminates the typical high maintenance required by mechanical wire cutter devices.
- The CNC monitors and displays every step of the threading process for easy system diagnostics.
- Reliable automatic wire threading control system.

■ On line Monitoring functions



■ Reliable automatic wire threding system control

■ Linear motor driving system

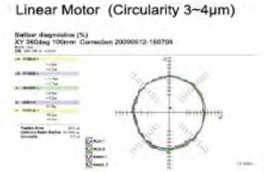
■ Linear motor drives with precision glass scales provide fully closed loop system for high accuracy positioning and part shape definition versus ball screw drives. Quick response, low vibration and virtually zero backlash results in better accuracy and finish with fewer passes. The assembly of ball-screw coupling with motor appears to create mechanical tolerance after a few years while linear motor does not, so no any accuracy loss since the beginning!

一、High-speed：

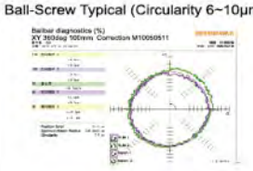
	Linear Motor	Ball-Screw
JOG(MAX)	1.8M/min	0.8M/min

二、Ballar Test

Linear Motor (Circularity 3~4μm)

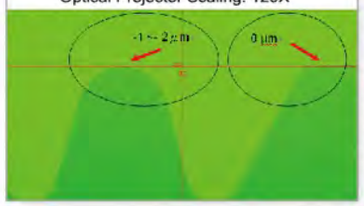


Ball-Screw Typical (Circularity 6~10μm)



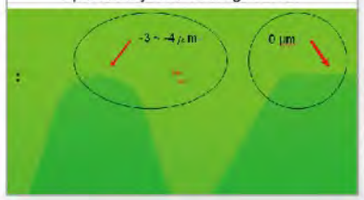
三、Precision (no backlash)

Liner Motor (Radius Error:1~2μm)
Optical Projector Scaling: 120X



※PS:
Shape Corner= 30°
R=0.20mm
《Cutting Conditions》
Wire=0.20mm/BS
Material=SKD11
T=50MM
Cutting Pass=3Skims
Ra=0.58

Ball-Screw (Radius Error:3~4μm)
Optical Projector Scaling: 120X

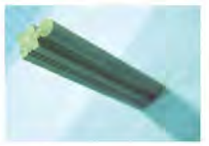


※PS:
Shape Corner= 30°
R=0.20mm
《Cutting Conditions》
Wire=0.20mm/BS
Material=SKD11
T=50MM
Cutting Pass=3Skims
Ra=0.58

四、Reduce Profile Error
(Improving Linear & Circular Cross-section)

Cutting Conditions: Wire :Ø0.20mm/BS Material = SKD11
Thickness =50mm Cutting Pass=1+2 Skims Ra=0.58
《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



五、Surface Roughness Enhancement

《Cutting Conditions》TFC Super-Finish Circuit
Increased dramatically surrounded by repair fine uniform processing speed (speed error is less than 10%) uniformity

Wire :Ø0.20mm/BS
Material = SKD11
Thickness=25mm
Cutting Pass=5 Skims
Ra=0.2μm/Ra=0.58

Liner Motor	Ball Screw
5cuts=Ra0.20μm/Ra	5cuts=Ra0.23~0.25um/Ra

■ 32-bit intelligent controller

Both hardware and software of the powerful CNC controller are entirely designed and produced for providing operators with state of the art features such as: Remote work status monitoring and control via Internet, CF Memory card, Rotary B (the 6th) axis control....etc.
Moreover, the software is handy to use and update is totally free!

▲ Unique Swing Out Panel embeded with 15" LCD can be turned to where you stand! Optional Touch Screen and Mouse make the operation a pleasure!

► The new Remote Control with embossed buttons makes it easier to operate and is more reliable.

► The USB port interface enables data loading and backup with memory stick.

■ Remote monitor function

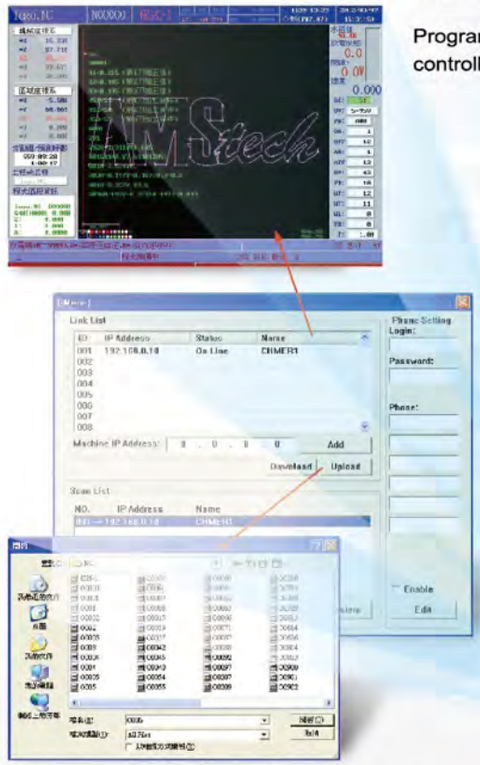
Real time monitoring of machine operation without attending to the work-shop! You see what the operator sees on the CNC controller from anywhere on your home PC or laptop. It definitely gives you more freedom!

Quick, spontaneous technical assistance or trouble-shoot through remote monitoring plus telephone conversation with your technical people reduce down time and increase your productivity!

Easy setup! Just install the software on your computer and get immediate access via existing Network.

Programming N.C file with your CAD/CAM system and up-load it to CNC controller.

► FTP: NC Archives remote transmission function



► Machine remote monitoring

■ To facilitate user-friendly operation function

Automatically generate 5 pass technology
Linear motor drives provide the precision required to use the easy to create 5 pass technology for those fine finish applications.

Auto-short circuit center find
Automatically find the center in start holes that are either not vertical or slightly out of location.

Powerful user friendly cutting database
Simply select one of the 10,000 erosion settings by defining wire diameter, part material, height and number of passes then press register to save it to your program. Operators can also define their own database with the possibility to save 2000 settings that can be called up according to the part the same as the original machine database.

NC program register
This function can preload the cutting technology and offset value in NC program beforehand.

Consumable life chart
The bar chart indicates the life status of each consumable and time for replacement to ensure machine working in ideal condition.

Friendly file management
Real-time graphic reproduction while searching files. User can select mode to look up the needed NC program which arranged by" graphic reproduction", "file size", "built data", or "text review".