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.

CHMER

CHING HUNG MACHINERY & ELECTRIC INDUSTRIAL CO., LTD.

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Wire Cut•Die Sinking•Drilling•High Speed Milling•Laser Machine

WRV000Ev02

CHMER

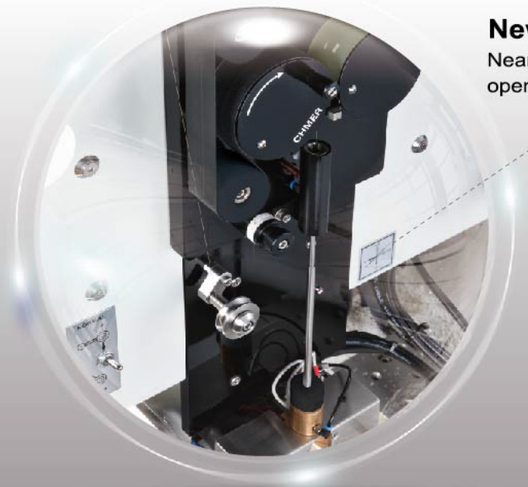
Non-traditional Machining Solution Provider

Linear Motor Drive Wire Cut EDM

GX+ SERIES

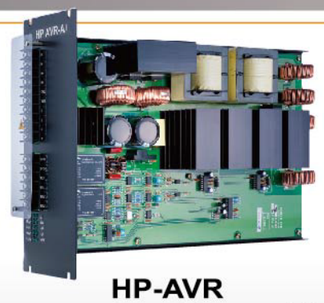
GX+ series evolutionary transformation

GX+ Series provide the newest technologies with CHMER produced Linear Motors, Power & Servo stabilizer, Energy Saving, New energy-saving Generation AWT and W5i Controller, Inverter Type Water Chiller.



New energy-saving Generation AWT

Nearly 100% Reliable Threading, open air and in the kerf.



HP-AVR

Power & Servo stabilizer.
Less Wire breaks & High Efficiency repeat cutting.

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.

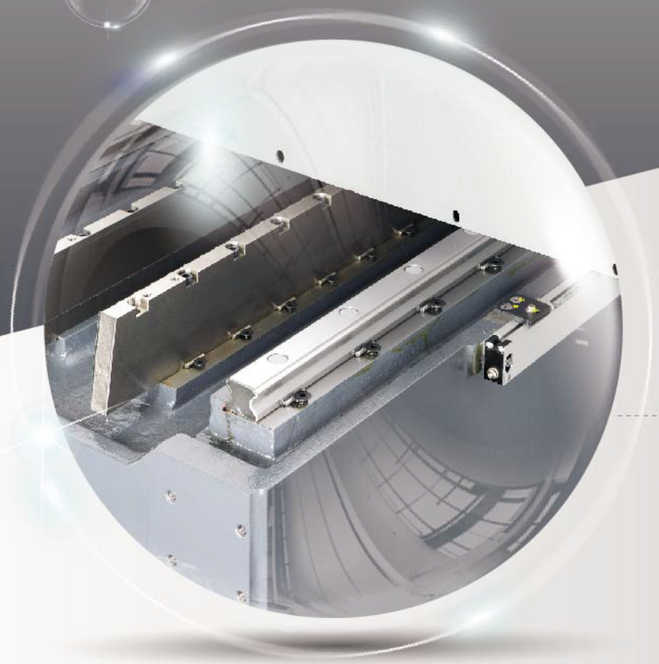
Newest W5i Control

CHMER writes their own software allowing customers upgrade at a later date.

Inverter Type Water Chiller

UPGRADE

Equipped with the newest inverter water chiller the temperature variation inside the chamber within ±0.5°C for precise machining and greatly reduces heat emission meanwhile save energy consumption of air-conditioner by 45%.



Linear Motor

CHMER built Linear Motor Precision with High resolution drivers and glass scales on X & Y axis.

Benefit of Linear Motor

In-House Linear Motor

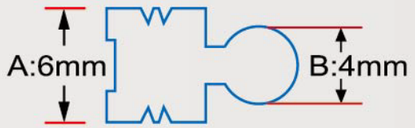
Linear Motor results a wear-free and no conversion motion to have a perfect positioning. GX+series equips X/Y In-House Linear Motor to obtain many advances features that the regular Wire Cut could not have, such as smoothly direct movement, high responsiveness, perfectly accurate positioning as well as vibration, maintenance and backlash free. So it guarantees an outstanding performance and long life span.

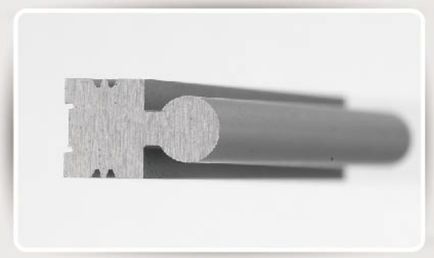
Reduce Profile Error
(Improving Linear & Circular Cross-section)

Work Conditions:

Brass Wire :Ø0.20mm Work-Piece = SKD11
Harden Steel Thickness =50mm
Cutting Pass = 1+2 Skims

《Cutting Shape》



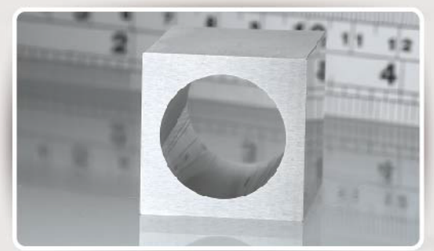


	Linear Motor		Ball Screw	
	A section	B section	A section	B section
Up	5.999	3.999	5.999	3.998
Middle	6.000	3.998	5.998	3.995
Bottom	6.000	4.000	6.000	3.999
Error	-0.001	-0.002	-0.002	-0.005

Surface Roughness Enhancement

With Funtion ：『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 <0.0001"(0.25 microns)

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

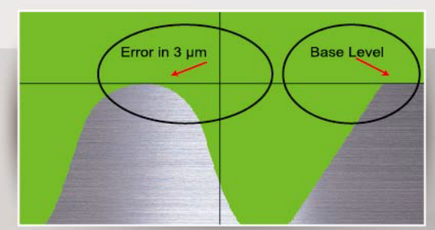


Linear Motor	Ball-Screw
1+4Skims=0.23~0.25μm/Ra	1+4Skims=0.28μm/Ra

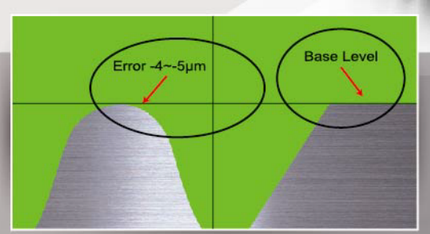
Improvement on "Corner" by Linear Motor

Work Conditions:

Brass Wire :Ø0.20mm 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 : 3μm)
Optical Projector Scaling: 120X



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

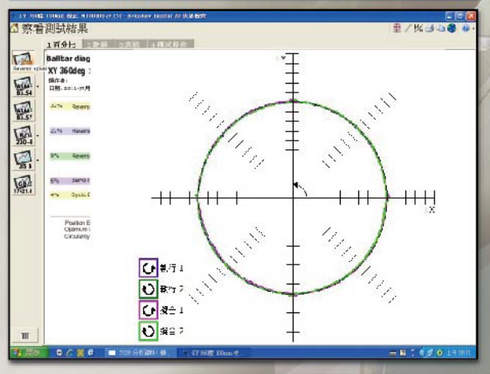
The Roundness Of Linear Motor After 10 Year Use

New hardware with Linear Motor & Glass Scale (0.5μm Resolution) are the need match。
Use Laser Interpolation & BALL-BAR Circularity Test to prove the strictly Q.C. control at CHMER, the result was satisfactory.

Ball Bar Test

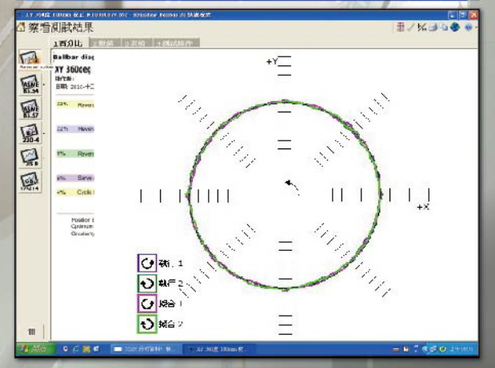
Right after installation

Linear Motor "GX+" (Circularity 6~8μm)



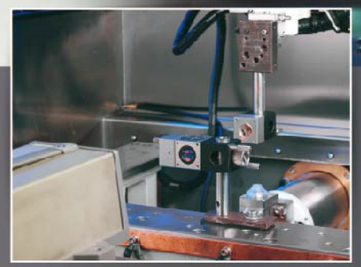
After 10 years of use

Linear Motor "GX+"(Circularity 6-8μm)

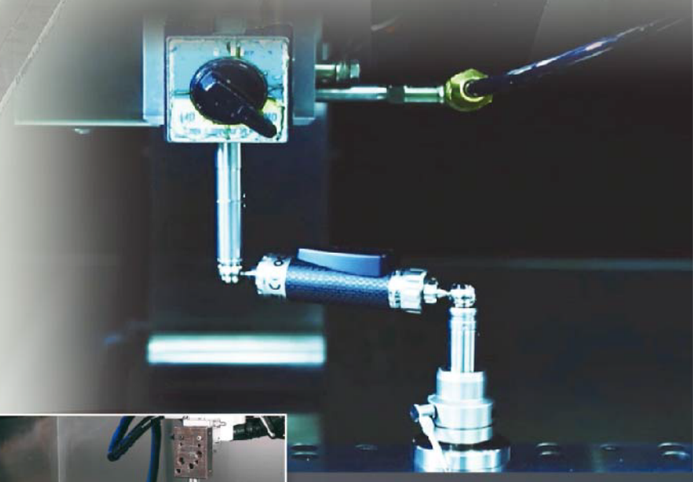


▪ Linear Motor

▪ Linear Scale



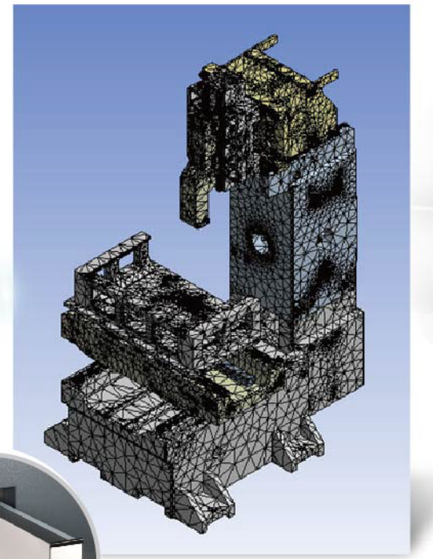
▪ Laser Alignment

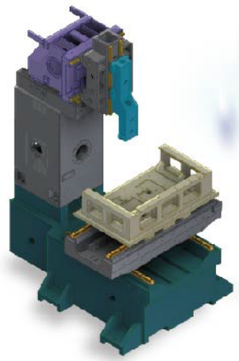


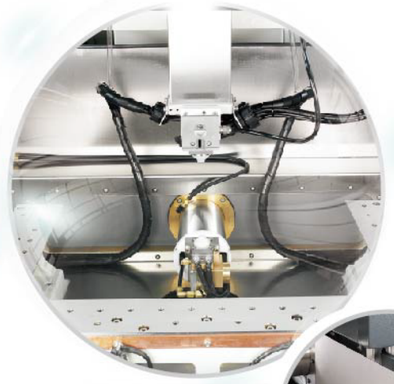
▪ Ball-Bar Test

High Rigidity and Thermal Balanced Structure

To meet machining demands, The machine has been designed from the base frame through 3D simulation to optimize stability and extend the machine life. .
Center-of-gravity position on leveling pads, maintain an enormous machine accuracy without any deformation.







Hardware Functions

In-house Rotary B-AXIS

6th Axis continuous cut or indexing (optional) with in-house submergable rotary B-Axis for turns and burns.

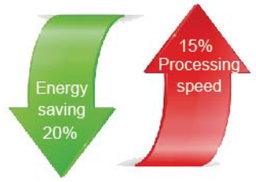
▪ Wire chopper

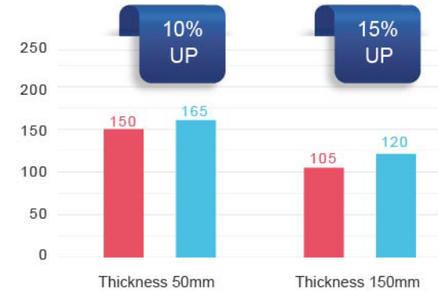
▪ 30 kg Jumbo Wire Feeder

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.

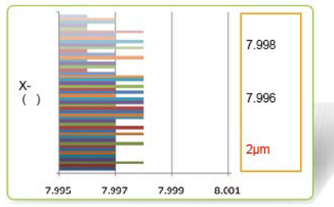
◎ Machining speed increases by 15%
◎ Wire breakage prevention function
◎ Decrease of heat generated
◎ Increase of circuit reliability

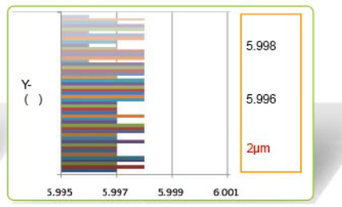




HP-IVC Intelligent Stable Power Supply

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.



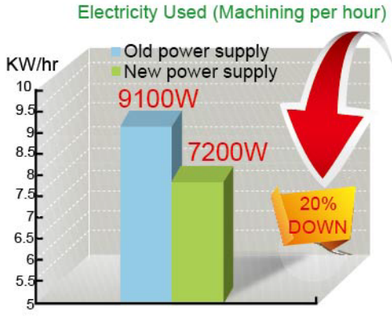


Continuous machining 50 pieces of punch

Machining size: 8x6mm T=30mm

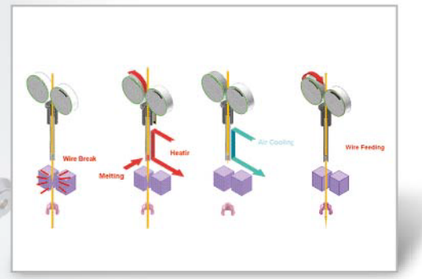
Next Generation Renewable Energy Technology

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.



CHMER The Newest Generation AWT

Unattended over night and over weekend Auto Threading



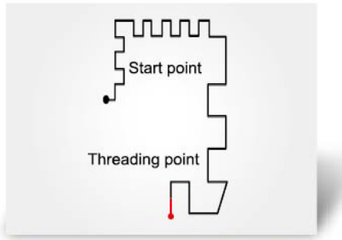
Reliable automatic wire threading system control

- Capable of threading wire under water and on location. No need to return back to start point, drain the work-tank and then dry-run to wire break point.
- Simply design to make maintenance easy and cost less.
- Can thread wire at stepped work-piece, when the upper head cannot reach the work-piece.

The Newest Generation AWT

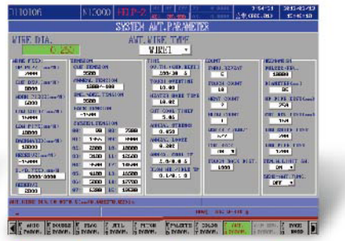
『EC』Tension Control Technology, ensures a constant tension to obtain superb threading rate, less than 10 seconds.
Patented in-house Auto Wire Threading (AWT) can thread 0.07mm Dia. Wire. Beside more simple and concise AWT mechanism can effectively reduce the building cost, failure rate so as to the frequency of maintenance.

All new servo system feedback module of AWT



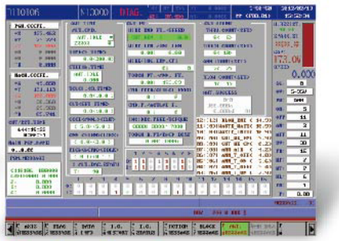
Wire Rethread at break points:

Immediately perform rethreading when wire breaks.



Visual parameter setting:

Parameters can be set for different wire diameters and types.



Monitoring Screen:

Record every step of AWT process, monitors and adjusts to enhance the stability.

3999 Sets Memory Holes:

Record the latest 3999 sets if processing holes, allow user to check the failure and then restart.

100 sets NC Program Memory:

Record the latest 100 sets NC programs, let the operator knows the processing whether be finished based on the board information.

▪ AWT Device

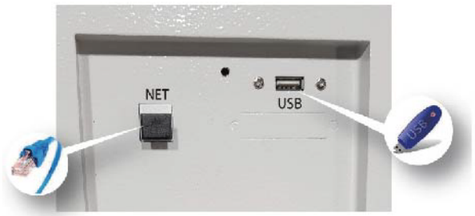
▪ Multi-cavity threading

CHMER BUILT CNC CONTROLLER

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.

▪ Friendly User Interface and Operate Console.



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

Remote Monitoring

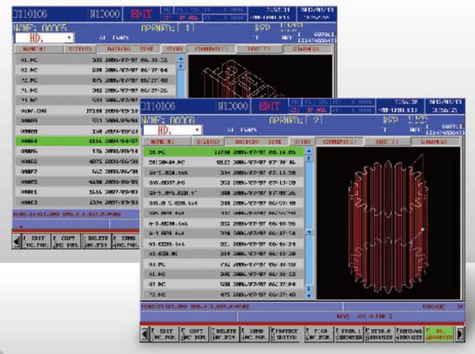
▪ WEB page to monitor Functions (PC)

▪ Team-Viewer™ (A Pay Software, not included)

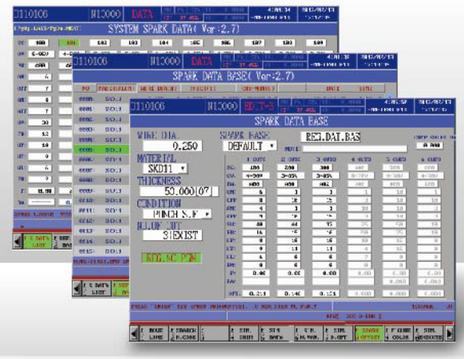
▪ Remote Monitoring Function
Install Chmer exclusive Remote Monitoring Software and authorized "Team-Viewer" for knowing real-time machine status.

Software Functions

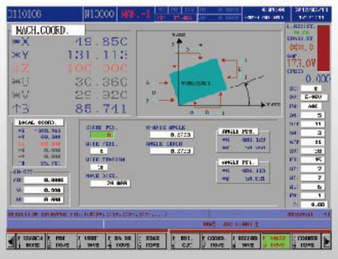
User-Friendly File Management



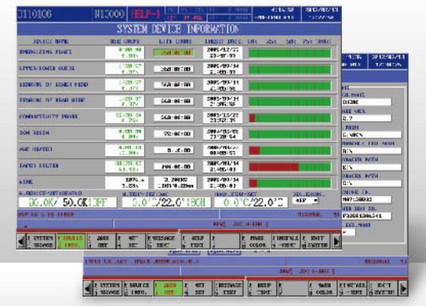
EDM Technology Database



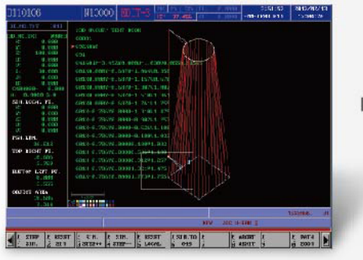
Graphic Manual Function



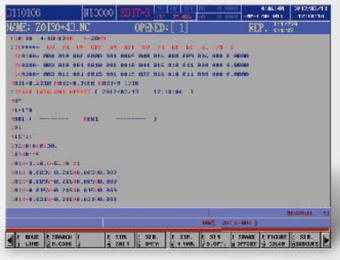
System Device Management+ Optimum system parameter

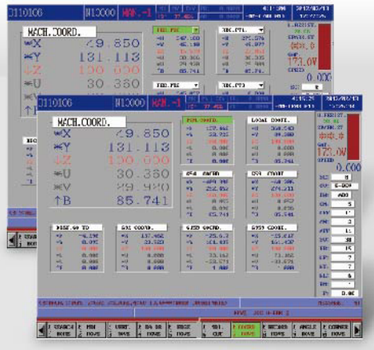


3D Graphic Simulation + NC path Info.

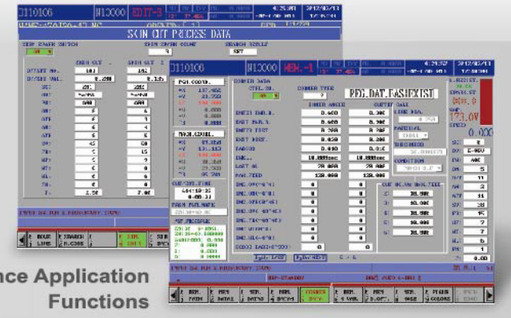


NC Register





Advance Application Functions



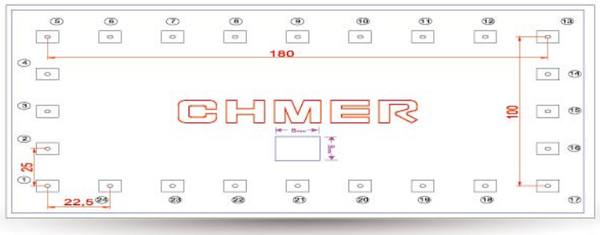
Power Record pointand CoordinateSystems

High Accurate Cutting

±4μm

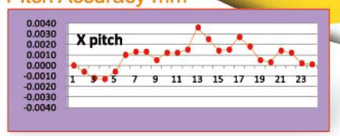
Workpiece material: SKD11 Workpiece thickness =20.00mm
Number of cuts: 4 times
Environment Condition = Temperature controlled room at 23°C~24°C

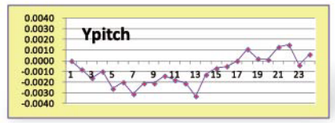
A.Real Room Temperature : 23.5°C ±0.5°C
B.Water Temperature : 22.5°C ±0.5°C
C.Real m/c body Temperature : 23.5°C ±0.5°C



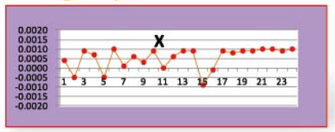
	Pitch Accuracy mm					Cutting shape mm				
	Coordinate		Measured Error			Job Size		Measured Error	
NO	X	Y	X	Y	NO	X	Y	X	Y
1	0	0	0.0000	0.0000	1	8	8	0.0004	0.0005
2	0	25	-0.0006	-0.0008	2	8	8	-0.0005	0.0004
3	0	50	-0.0012	-0.0016	3	8	8	0.0009	0.0010
4	0	75	-0.0013	-0.0010	4	8	8	0.0007	0.0009
5	0	100	-0.0006	-0.0026	5	8	8	-0.0005	0.0005
6	22.5	100	0.0010	-0.0020	6	8	8	0.0010	0.0010
7	45	100	0.0013	-0.0031	7	8	8	0.0001	0.0009
8	67.5	100	0.0013	-0.0021	8	8	8	0.0006	0.0007
9	90	100	0.0005	-0.0021	9	8	8	0.0003	0.0006
10	112.5	100	0.0012	-0.0014	10	8	8	0.0009	0.0008
11	135	100	0.0012	-0.0018	11	8	8	0.0000	0.0009
12	157.5	100	0.0015	-0.0021	12	8	8	0.0006	0.0008
13	180	100	0.0036	-0.0033	13	8	8	0.0009	0.0008
14	180	75	0.0025	-0.0013	14	8	8	0.0009	0.0008
15	180	50	0.0014	-0.0007	15	8	8	-0.0009	0.0001
16	180	25	0.0015	-0.0005	16	8	8	-0.0001	0.0009
17	180	0	0.0027	0	17	8	8	0.0009	0.0008
18	157.5	0	0.0018	0.0011	18	8	8	0.0008	0.0007
19	135	0	0.0005	0.0002	19	8	8	0.0009	0.0010
20	112.5	0	0.0003	0.0001	20	8	8	0.0009	0.0010
21	90	0	0.0014	0.0013	21	8	8	0.0010	0.0006
22	67.5	0	0.0012	0.0015	22	8	8	0.0010	0.0008
23	45	0	0.0002	-0.0004	23	8	8	0.0009	0.0004
24	22.5	0	0.0001	0.0006	24	8	8	0.0010	0.0010
Min. error mm			-0.0013	-0.0033	Min. error mm			-0.0009	0.0004
Max. error mm			0.0036	0.0015	Max. error mm			0.0010	0.0010

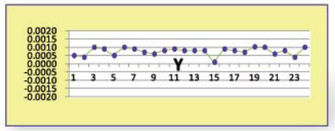
Pitch Accuracy mm



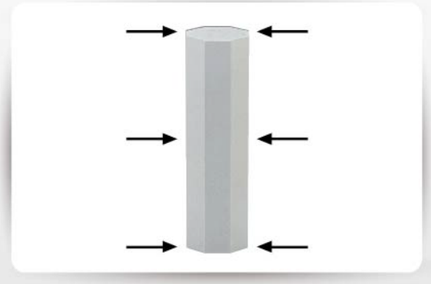


Cutting shape mm



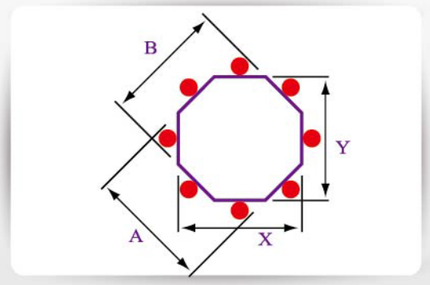


Straightness Accuracy



Straightness

Workpiece: SKD-11 Thickness: 30 mm
Wire diameter: Ø0.2mm No. of cut: 3 cuts
Accuracy: 2 μm



Measurement figure

Marked red color means the measured points.

Accuracy	X	A	Y	B	Error
Up	9.999	9.999	9.999	9.999	0μ
Mid.	9.997	9.999	9.999	9.999	2μ
Dn.	9.999	9.999	9.999	9.999	0μ
Error	0.002	0	0	0	

Sample Illustration

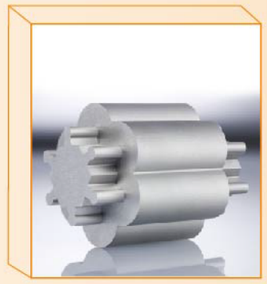
Job Material: SKD-11
Job Thickness: 30 mm
Wire diameter: Ø0.20 mm
Number Of Cut: 1+ 2 Skims
Work Hour: 1 Hour 10 Mins
Accuracy: 3μm
Surface Roughness:
Ra 0.55~0.58μm

Job Material: SKD-11
Job Thickness: 17 mm
Wire diameter: Ø0.15 mm
Number Of Cut: 1+ 2 Skims
Work Hour: 1 Hour 50 Mins
Accuracy: ±3μm
Surface Roughness:
Ra 0.55~0.58μm

Job Material: SKD-11
Job Thickness[Punch]: 50mm
Job Thickness[Die]: 20mm
Number Of Cut: 1+2 Skims
Surface Roughness:
Ra 0.58~0.63μm

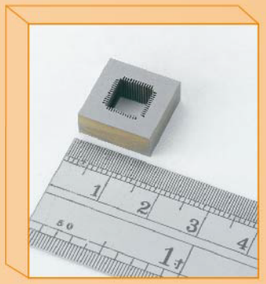
Taper Cut
Job Material: SKD-11
Job Thickness: 11.45 mm
Wire diameter: Ø0.20 mm
Number Of Cut: 1 Cut
Work Hour: 1 Hour 30 Mins
Taper Angle: 21°

Job Material: SKD-11
Job Thickness: 25 mm
Wire diameter: Ø0.20 mm
Number Of Cut: 1+ 2 Skims
Work Hour: 1 Hour 50 Mins
Accuracy: ±3μm
Surface Roughness:
Ra 0.55~0.58μm



Job Material: SKD-11
Job Thickness [Punch]: 50 mm
Job Thickness [Die]: 30 mm
Wire diameter: Ø0.20 mm
Number Of Cut: 1+ 2 Skims
Work Hour: 4 Hours 00 Mins
Accuracy: 3μm
Surface Roughness:
Ra 0.58~0.63μm

PCD formed milling cutters
Job Material: PCD
Job Thickness: 2.5 mm
Wire diameter: Ø0.20 mm
Feed rate: 2.0 mm/min



Dia.Ø0.1mm wire processing
Purpose: For the precision molds of IC industries etc.
Job Material: Carbide
Job Thickness: 5 mm
Wire diameter: Ø0.10 mm
Number Of Cut: 1+ 2 Skims
Accuracy: 3μm
Surface Roughness:
Ra 0.40μm (AC-μ circuit, opt)

Specification

MODEL	GX360L+	GX430L+	GX530L+	GX640L+
Axis Travel (XxYxZ mm)	360x250x220 (mm)	400x300x220 (mm)	500x300x220 (mm)	600x400x300 (mm)
Axis Travel (UxV mm)	60x60 (mm)	60x60 (mm)	60x60 (mm)	100x100 (mm)
Max. Size of Workpiece (mm)	W725 x D560 x H215	W725 x D600 x H215	W825 x D600 x H215	W910 x D700 x H295
Max. Weight of Workpiece (kg)	300 Kg	350 Kg	500 Kg	600 Kg
XY Feed Rate	Max. 1800 (mm/min)			
Axis Drive System	X, Y axis by Linear Motor : U, V, Z axis by AC Servo Motor			
Wire Diameter Range (Standard)	Φ0.15-0.3 (Φ0.25) (Note:Φ0.10mm optional)			
Max. Wire Feed Rate	300 mm/sec.			
Wire Tension	300-2500 (gf)			
Taper Angle	±14.5°/80 (wide-angled nozzle, DA+DB=15mm)			±21°/100(wide-angled nozzle, DA+DB=15mm)
Machine Weight kg	2500	2600	3195	3800
Working Fluid Supply Unit				
Tank Capacity	590L	650L	650L	760L
Filter Element	Paper	Paper	Paper	Paper
Ion Exchange Resins	14L	14L	14L	14L
Conductivity Control	Auto	Auto	Auto	Auto
Fluid Temperature Control	Auto	Auto	Auto	Auto
Power Supply Unit				
Circuit System	Power MOSFET Transistor			
Max. Output Current	15A			
IP Slelect	28			
Off Time System	228			
CNC Unit				
Date Input	Keyboard, USB, LAN			
Display	15-Inch Color			
Control System	32bit, 1-CPU, X&Y Closed Loop			
Control Axis	X, Y, U, V, Z (5 Axis), 6th axis optional			
Setting Unit	0.001 mm			
Max. Command Value	±9999.999 mm			
Interpolation	Linear/Circular			
Command System	ABS/INC			
Machining Feed Control	Servo/Const. Feed			
Scaling	0.001-9999.999			
Machining EDM Condition Memort	1000-9999			
Total AC Power Input	3 Phase 220 ±5%/11KVA			

Standard/Optional Accessories

Standard ● Option ○ Not Available —

ITEM	SPECIFICATION	AMOUNT	GX360L+	GX430L+	GX530L+	GX640L+
Paper Filter		2 pcs	●	●	●	●
Upper/Lower Diamond Guides	0.26mm	2 pcs	●	●	●	●
Upper/Lower Flushing Nozzles		2 pcs	●	●	●	●
Energizing Carbides		2 pcs	●	●	●	●
Diamond Guide Remove Jig		1 pcs	●	●	●	●
Brass Wire	0.25mm x 5kg	1 roll	●	●	●	●
Tools		1 set	●	●	●	●
Ion Exchange Resins	14L	1 set	●	●	●	●
Alignment Jig		1 set	●	●	●	●
AC Inverter Water Chiller	20000BTU	1 set	●	●	●	●
AC Power		1 set	●	●	●	●
USB Port		1 set	●	●	●	●
X&Y Axis Linear Motor	CHMER	1 set	●	●	●	●
X&Y Axis Glass Scale	0.5μm	1 set	●	●	●	●
Resuming Work function		1 set	●	●	●	●
Remote Monitoring function		1 set	●	●	●	●
Swivel TFT Panel		1 set	●	●	●	●
Auto Wire Threading Device		1 set	○	○	○	○
AC-μ Fine finishing		1 set	○	○	—	—
30 Kg jumbo wire feeder		1 set	○	○	○	○
Wire Chopper		1 set	○	○	○	○
0.1 mm wire device		1 set	○	○	○	○
Rotary B-axis (6th axis function)	CHMER	1 set	○	○	○	○

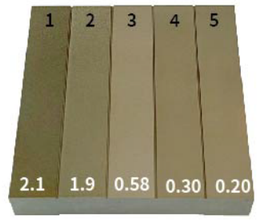
Options

Large Wire Spool

30 kg wire spool provides long time cutting for unmanned operation

The 6th Axis

Submerged type 6th axis can perform indexing and complicated curve machining

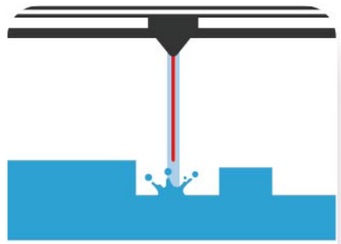


AC-μ Fine finish Circuit

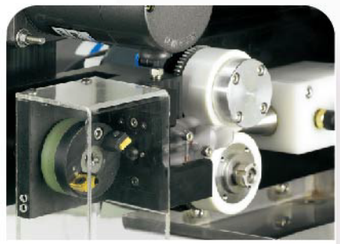
1st cut : Ra 2.1 μm
2nd cut : Ra 1.9 μm
3rd cut : Ra 0.58 μm
4th cut : Ra 0.30 μm
5th cut : Ra 0.20 μm

CHMER Zinc Coated Wires

The CHMER Chorro 10 Zinc coated wire can make the cutting speed 30% higher



Automatic Wire Threading Assistant Device



Automatic Wire Chopper

Warranties

3 Year Warranty

Linear Motors

10 Year Guarantee

Positioning Accuracy

Environment Conditions:

1. Optimum Room Temperature: 23±0.5°C Humidity: Below to 75% RH
2. Avoid being Floor Vibration.
3. Avoid being located against sunshine.
4. Avoid being located against heat-treatment or plating plant nearby.
5. Clean and low dust environment.

Space Requirement:

Take notice of the space for machine stoke to move during normal operation and daily maintenance.

Grounding:

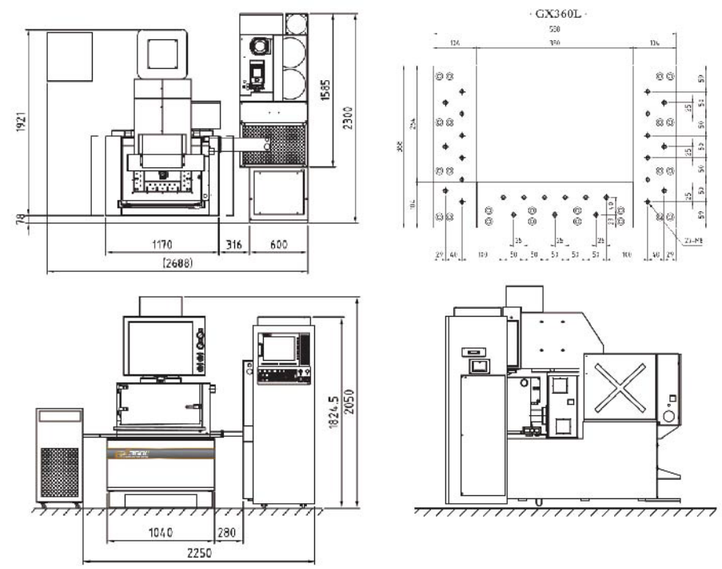
1. It's recommended to have an Earth Ground.
2. An independent ground is recommended.
3. The grounding cable should be 10 gage wire or larger.

Demand of Air pressure:

1. Air pressure of 6 kg/cm²(95 PSI) for options of AWT and submerged machine is needed.

Machine Dimensions

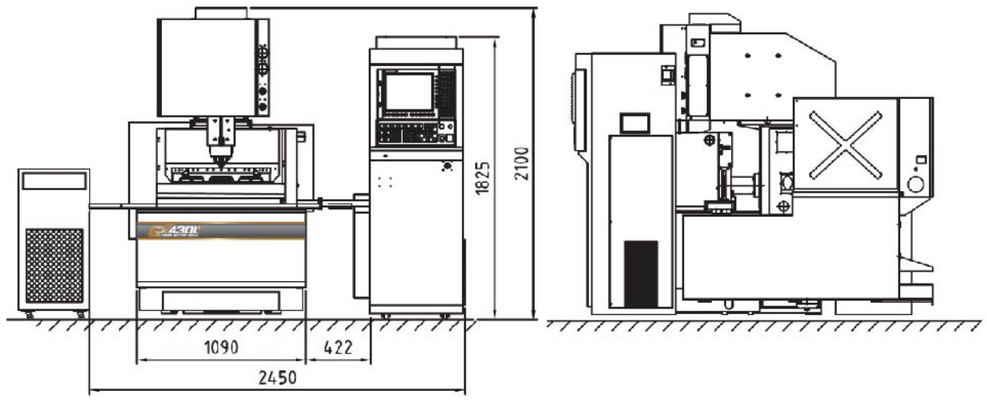
GX360L+

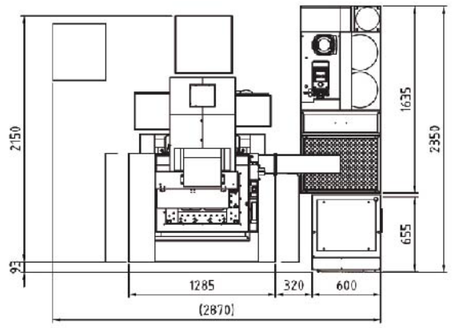


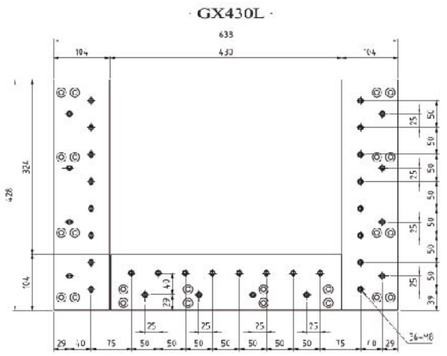
GX+ SERIES

Machine Dimensions

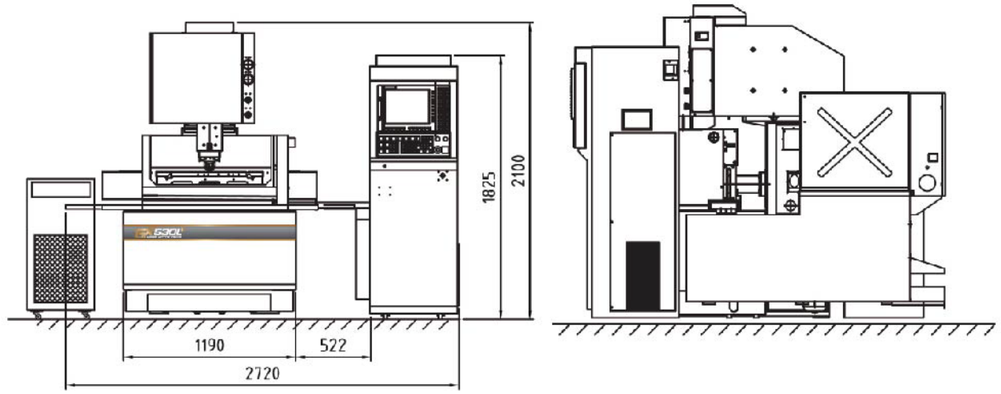
GX430L+

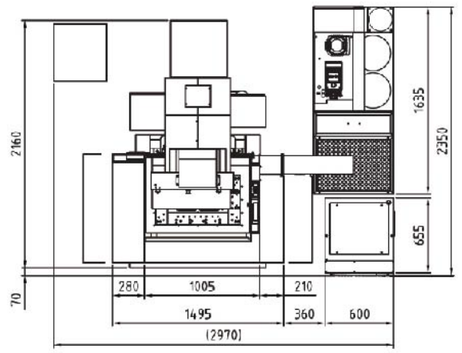


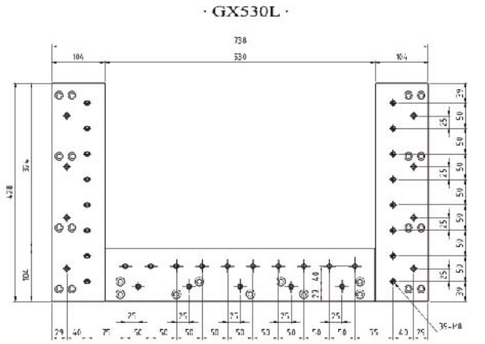




GX530L+







GX640L+