

## 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.



## Linear Motor Drive Wire Cut EDM

INTELLIGENCE × FUTURE



RV Series Wire Cut EDM

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**CHING HUNG MACHINERY & ELECTRIC INDUSTRIAL CO., LTD.**

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<http://www.chmer.com>

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

WRV000Ev02



**By means of understanding customers' requirements, we know how to give you a wonderful machining experience.**

**Professional in Mind**



During the development of RV series, we pursued the highest standard. By means of understanding customers' requirements, we considered how to give the user a wonderful machining experience. With continuous research, we innovate the first intelligent wire cut EDM which combines several intelligent technologies, mobile IoT, machining simulation, diagnosis, consumables life management, and factory management. Apart from excellent operations, the innovations make it more intelligent and convenient.

We create the RV series with professional in mind, scrutinize every details, and insist the highest quality. With applying ergonomics, aesthetics, and performance, you will enjoy the machining and operations without traditional constraints.



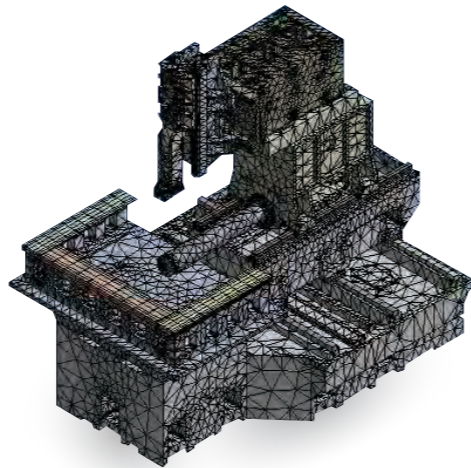
## Comprehensive Industrial Applications

Specially designed for the precision molds and parts in aerospace, automobile, energy, and home appliance industries, this wire cut EDM is equipped with self-developed high precision submerged rotation axis which can proceed high precision indexing machining so it combines precision and simplicity.

With the evolution of technology, the mold manufacturing requires state-of-the-art technology and innovations. The demand of wire cut EDM is still persistent. The RV series looks upon the details to assist the parts manufacturing in mold industry. We provide efficient and economic manufacturing processing and create unique user experience.

### High Rigid Structure Design

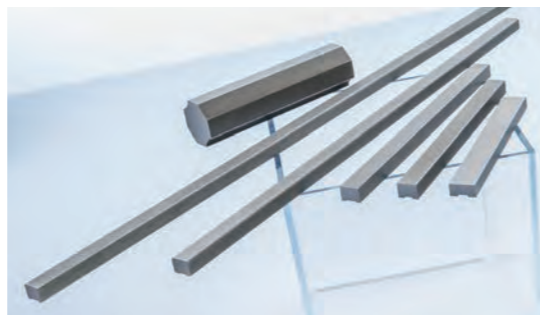
With the aid of FEM analysis, the optimized moving column structure is supported by three guideways on the base. The fixed table design can load up to 5000 kg, so when machining large and heavy workpiece, the position accuracy is maintained and high precision processing is feasible.



### High Accuracy and Roughness

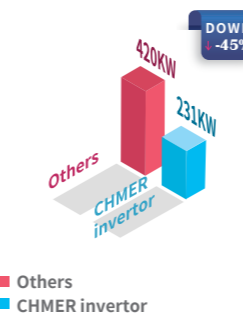
High accuracy and roughness can be achieved even in high thickness.

Thickness	Wire Diameter	Cuts	Accuracy	Roughness
30mm	0.25mm	3	3μm	Ra=0.55~0.65μm
50mm	0.25mm	3	3μm	Ra=0.55~0.65μm
100mm	0.25mm	3	5μm	Ra=0.55~0.65μm
200mm	0.25mm	3	10μm	Ra=0.60~0.65μm
300mm	0.25mm	3	15μm	Ra=1.9~2.4μm
400mm	0.30mm	4	19μm	Ra=1.9~2.4μm



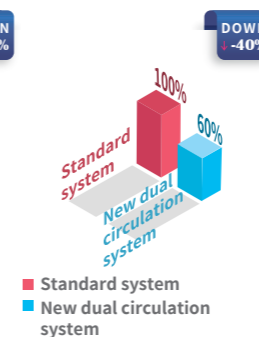
01

Power Consumption of Chiller



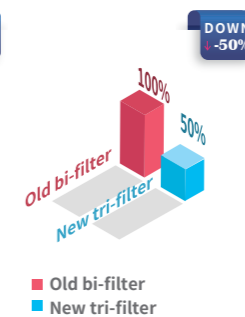
02

Resin Running Cost



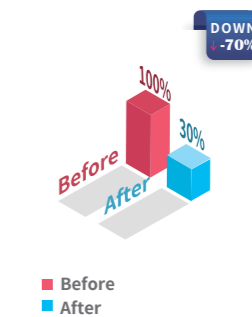
03

Filter Running Cost



04

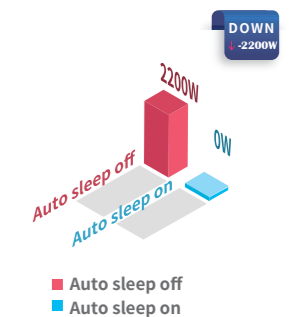
Water Filling & Drainage Speed

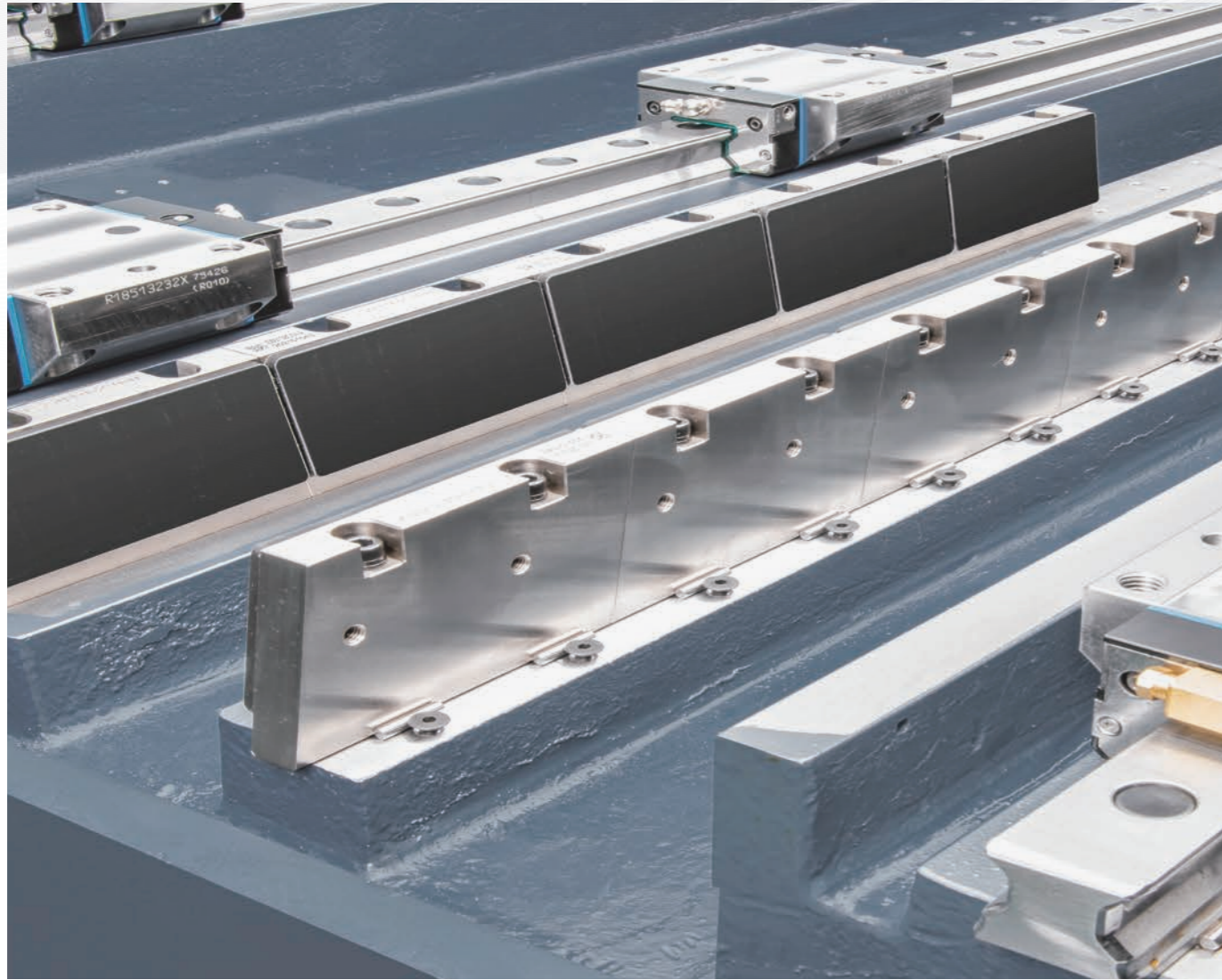


05

Power Saving During Auto Sleep

Note: water tank is still working





### Reduction of the tolerance on shape accuracy

Especially at the intersection of straight line to curve

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



#### «Cutting Profile»



	Linear Motor		Ballscrow	
	Section A	Section B	Section A	Section B
Top	5.999	3.999	5.999	3.999
Middle	6.000	3.998	5.998	5.998
Bottom	6.000	4.000	6.000	6.000
Tolerance	-0.001	-0.002	-0.002	-0.002

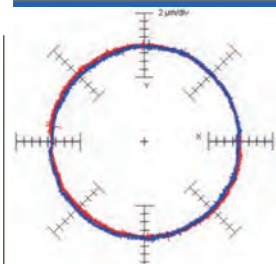
## Linear Motor

RV 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.

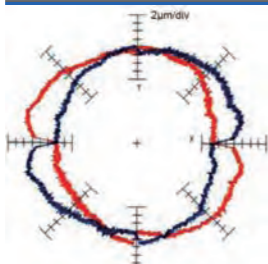
### Ball-bar Testing

Use after 5 years

RV Linear Models  
(Roundness 6 ~ 8µm)



Conventional Ballscrew Models  
(Roundness 15 ~ 20µm)



### Linear motor demonstrates its outstanding performance on corner control

Machining Condition

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



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



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

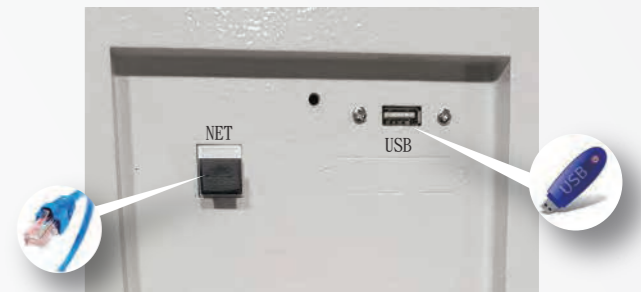
## Features of W5i controller

- 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:

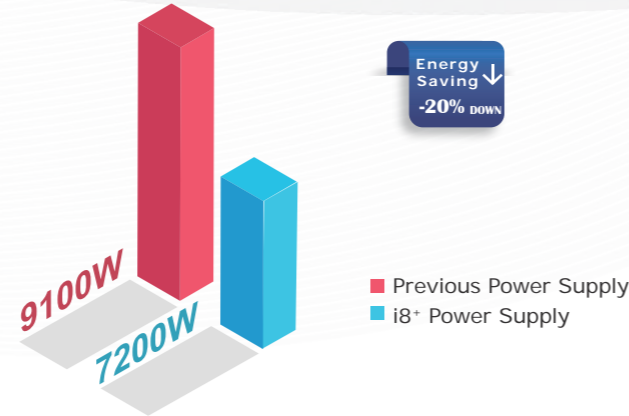
- Above mentioned W5i information is compared with W5F.
- Embedded system adopts single core processor.
- On-line measuring system is optional.



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

## i8 + Power Supply

The i8+ power supply can convert the heat emitted by resistors to recycle energy and can reduce 20% of power consumption and heat emitting, therefore save the air conditioning cost and operational cost.



The revolutionary i8+ power supply demonstrates superior machining speed (increase by 15% for 150mm workpiece), and energy saving by 20%.

Powerful wire breakage suppression significantly reduces the possibility of wire breakage and enhance machining stability and reduce the tolerance.

With improving heat dissipation and cooling performance, the heat generated by i8+ power supply components was reduced. Even running at high speed and after a long time, it can maintained at certain temperature, therefore extend the PCB service life and save maintenance cost.

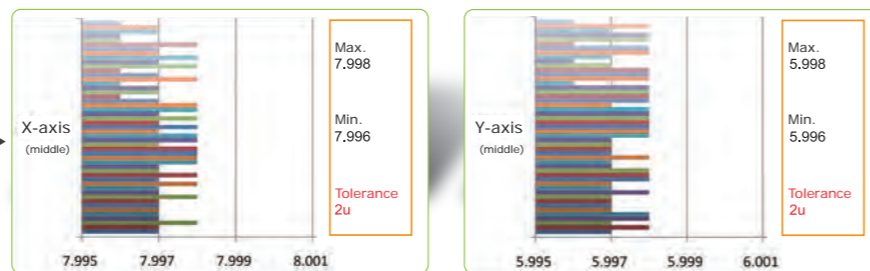
### HP-IVC Intelligent Stable Power Supply

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.



Continuously machining 50 punches and showing repeated accuracy at  $\pm 2\mu\text{m}$ , which is comparable to the accuracy of Japanese or Swiss middle or high level models.



Continuous machining 50 punches with one cut, workpiece dimension: 8x6mm T=30mm

## Energy Saving Technology

### Energy-saving Inverter Chiller

Active temperature detection, smart frequency conversion, fast cooling speed, accurate water temperature control in  $\pm 0.5^\circ\text{C}$ , stable and high-precision machining, 45% lower power consumption compared with other fixed frequency chillers



## Discharge Control System

The embedded computer system reduces the system workload and increases the control of the system stability. The discharge control system adopts FPGA technology which can increase the stability of overall circuit operation and enhance the discharge performance. Real time feedback of discharge status stabilizes the cutting process and enhances the cutting speed and accuracy.



## Intelligent Stepped Control (ISC) Power Supply

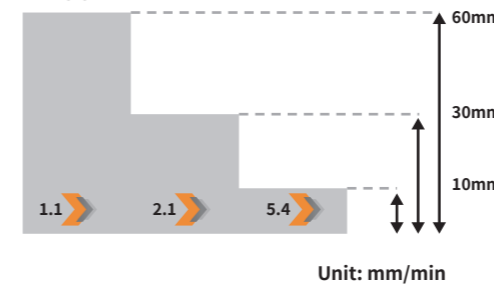
Through monitoring discharge waves, ISC can provide precise discharge control for stepped workpiece and prevents wire breakage, alleviate wire marks, achieve high speed and stable machining, and results in high quality finished products.

Conditions: Workpiece: SKD11 Wire diameter:  $\Phi 0.25\text{mm}$

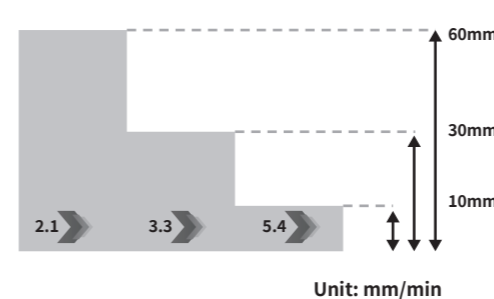
### Speed Test

35% UP

#### Stepped function Off



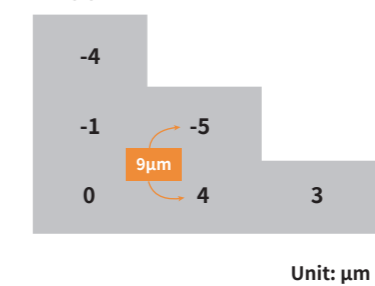
#### Stepped function On



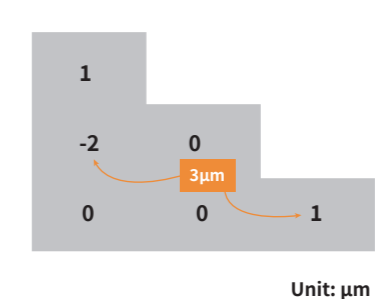
### Accuracy Test

6 μm UP

#### Stepped function Off



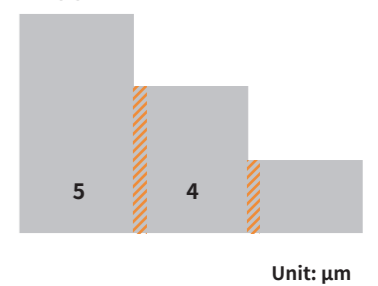
#### Stepped function On



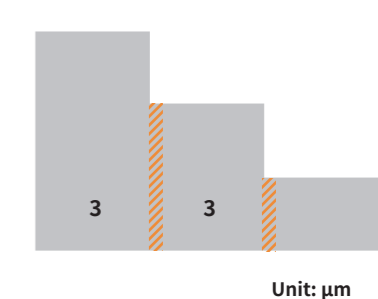
### Concave Amount

2 μm UP

#### Stepped function Off



#### Stepped function On





## Monitoring System APP

With the mobile management function, you can use mobile devices, such as mobile phone, tablet PC, with the proprietary iOS and Android APP software, to check out all information about the machine, including machine status, utilization rate, consumables life, and monitoring real-time machining.



## Data Visualization APP

It is available for Android 8 and above, iOS 10 and above system and can show the real-time machine information and receive push message and process streaming platform. The main function is for data transmission and push.

- Obtain the machine data from the machine database and transmit the data through Web Socket.
- Real time information push by Firebase (Android) or iOS Developer.



## Intelligent Information Management Center

The Kanban information can show the machine information in the factory and store the machine history through server.



## Mobile Technology and Optimal Intelligence

Without standing in front of the machine, the all new "Remote monitoring & IoT" can connect to the Cloud through various mobile devices.

The intelligent Cloud function creates a perfect mobile management platform and gives you a foreseeable future and a new era of intelligent machinery.

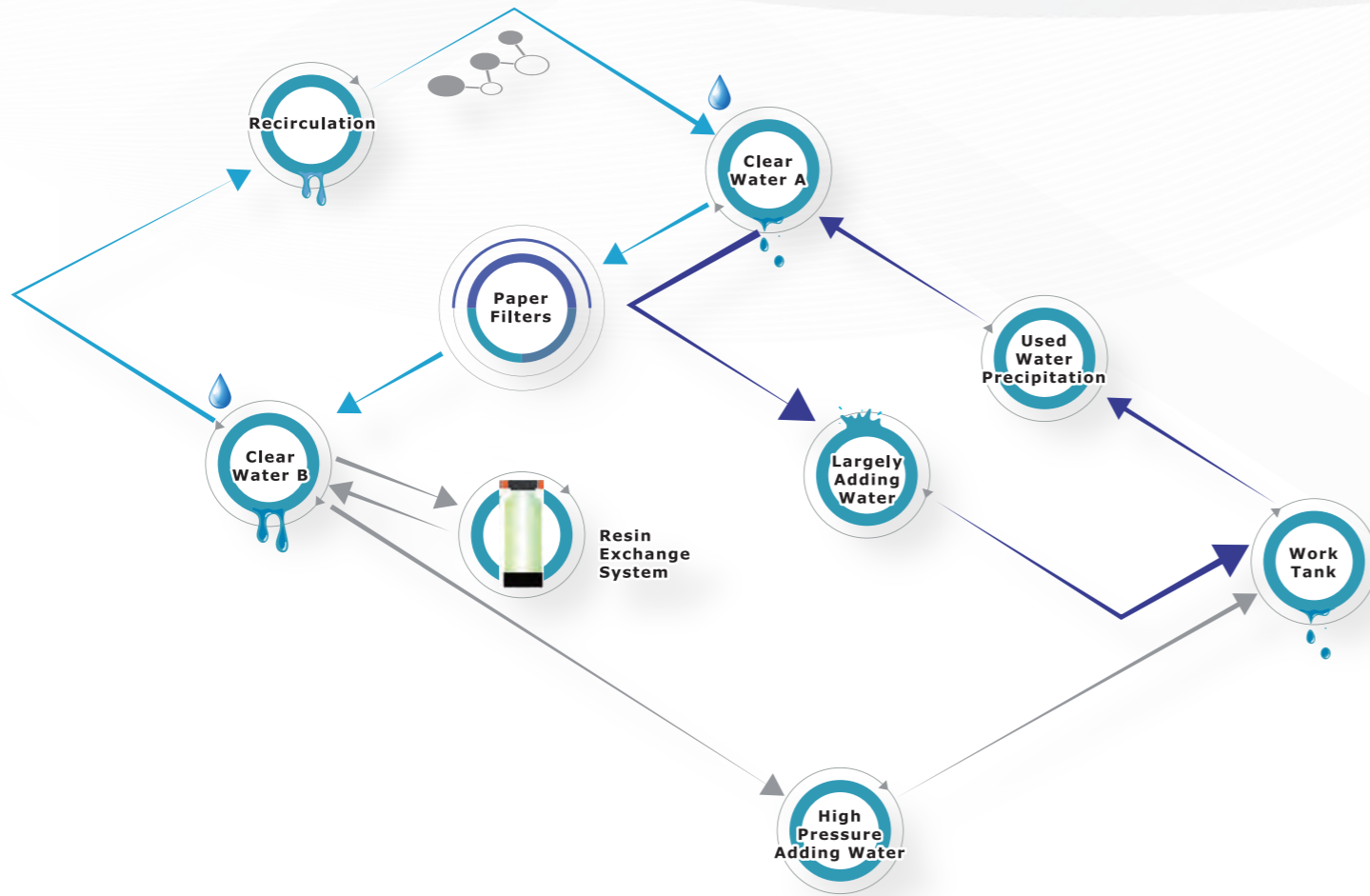
With the core technology of intelligent information management center, the IoT can collect the data and history of every machine, for instance, the relation between power, temperature, and time, and can observe the characteristic data by time. The customer can own a database of big data.

Under the intelligent information management center, we develop two kinds of software service platform for easy and convenient management system, including

- Monitoring system APP
- Information management center

You can choose the suitable platform among different service platforms

## High Efficient Water Circulation System



Water Temperature Control **±0.5°C**

Water Volume **+30%**

Filter Pump Life **+3 Years**

The new work tank has 30% more capacity than the previous one, therefore increases the machining stability. The inverter chiller can control the water temperature in  $\pm 0.5^{\circ}\text{C}$ , so the machining accuracy is increased while power consumption is improved by 45%.

## Intelligent Working Aid (IWA) System

**01 Fast Water Filling and Drainage Function**



With the intelligent water level control system and fast water filling and drainage, the processing time is only 1/3 of the previous generation. The efficiency is therefore increased significantly and the automated machining is fulfilled.

**02 Patented Automated Adding Water Function patent**



The new water circulation system, equipped with intelligent sensors, can automatically add water when the water is insufficient, so no worry about the machining situation due to insufficient water. It can save the labor of checking water level and avoid the delay of the down time due to manually adding water.

**03 Patented Intelligent Water Level Control System patent**



When machining, after setting up the workpiece and starting machining, the intelligent water level control system can automatically adjust the water level by the height of workpiece, even when machining different heights in one workpiece. This can effectively reduce the set up time.

## CHMER Self Developed Controller

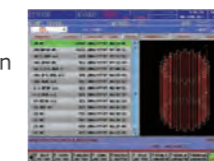
### W5F Controller

- ◆ All software and hardware are self-developed by CHMER
- ◆ Industrial IPC-586 or above motherboard
- ◆ 512MB CF card
- ◆ Optional touch screen and optical mouse
- ◆ Support 6th axis (B axis) machining (Optional)
- ◆ Support USB and Ethernet transmission



### Outstanding Software Functions

Showing machining route when choosing a file



System device management + parameter optimization



Ample and flexible discharge parameter database



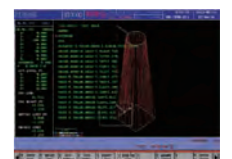
Scrapped material retention function



Real time display of temperature and trend



3D simulation figures + detailed route information



## Automatic Wire Threading (AWT) System

After years of experience in automation, CHMER has successfully created an automatic wire threading system.



- 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



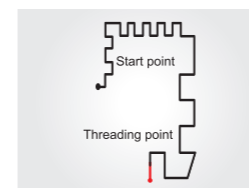
### Intuitive parameter setting

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



## Options Specification / Quantity

Standard ● Optional ○

Features & Item	Specification	Unit	RV653L	RV853L	RV855L	RV1063L	RV1065L	RV1283L	RV1285L
<b>Power Supply &amp; Control System</b>									
i8+ Power Supply	CHMER	1	●	●	●	●	●	●	●
AC/ DC Power	CHMER	1	●	●	●	●	●	●	●
Touch Screen	(19")	1	●	●	●	●	●	●	●
Interrupted Power Recovery	CHMER	1	●	●	●	●	●	●	●
USB Port	CHMER	1	●	●	●	●	●	●	●
Internet Data Transfer	CHMER	1	●	●	●	●	●	●	●
DXF File Transfer	CHMER	1	●	●	●	●	●	●	●
Remote Monitoring & Internet Connection	CHMER	1	○	○	○	○	○	○	○
<b>Mechanism &amp; Machining System</b>									
UX1 Linear Motor Drive System	CHMER X&Y Axis	1	●	●	●	●	●	●	●
Linear Scale	0.5μm Resolution (Absolute)	1	●	●	●	●	●	●	●
AWT	CHMER	1	●	●	●	●	●	●	●
AWT Auxiliary Device	CHMER	1	○	○	●	○	●	○	●
Automatic Rise-and-Fall Tank Door	CHMER	1	●	●	●	●	●	●	●
Intelligent Working Aid (IWA) System	CHMER	1	●	●	●	●	●	●	●
High efficiency Water Circulation System	CHMER	1	●	●	●	●	●	●	●
Energy Saving Inverter Chiller	20000BTU	1	●	●	●	●	●	●	●
Intelligent stepped control power supply	CHMER	1	●	●	●	●	●	●	●
<b>Additional Functions</b>									
Temperature Monitoring Device	CHMER	1	●	●	●	●	●	●	●
Digital Water Pressure Detection	CHMER	1	●	●	●	●	●	●	●
Brass Wire Weight Detection	CHMER	1	○	○	○	○	○	○	○
Transparent drop door	CHMER	1	○	○	○	○	○	○	○
CE Conformity	EC Circuit + EMC Shield	1	○	○	○	○	○	○	○
6th Axis Machining	CHMER	1	○	○	○	○	○	○	○
Jumbo Wire Feeder	3~30kg	1	○	○	○	○	○	○	○
Auto Wire Chopper	CHMER	1	○	○	○	○	○	○	○
2 in 1 Transformer and AVR		1	○	○	○	○	○	○	○
CHMER High Speed Zinc Coating Wire	CHMER	1	○	○	○	○	○	○	○



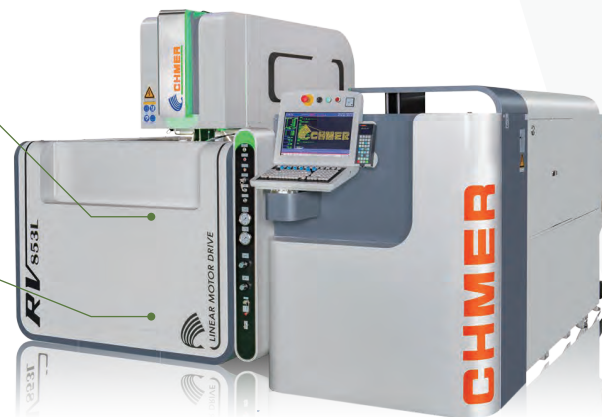
**3 Year Warranty**

Linear Motors



**10 Year Guarantee**

Positioning Accuracy



## Standard Accessories



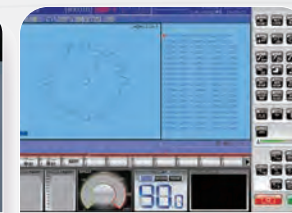
**Patented Automatic Rise and Fall Front Door**

Best protection and automatically rise and fall door to match the loading and unloading workpiece by



**CT HMI 3.0**

All new 19" touch screen and excellent HMI to meet the ergonomic and intuitive operation



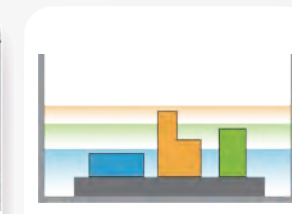
**DXF File Converter**

CHMER self-developed software can convert drawing to program



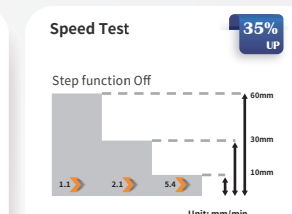
**Tri-filter Design**

Built-in tri-filter design can extend the period of changing filter



**Patented Intelligent Working Aid (IWA) system**

The Intelligent Working Aid (IWA) system can automatically and quickly adjust the water levels by the heights of workpieces.



**Intelligent Stepped Control (ISC) Power Supply**

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

## Optional Accessories



**CE Conformity**

EC Circuit + EMC Shield



**Large Wire Spool**

30 kg wire spool provides long time cutting for unmanned operation



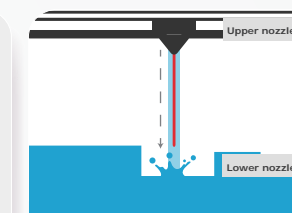
**The 6th Axis**

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

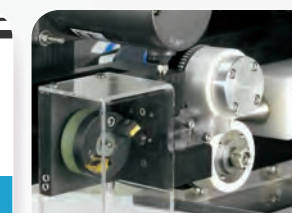


**CHMER Zinc Coated Wires**

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

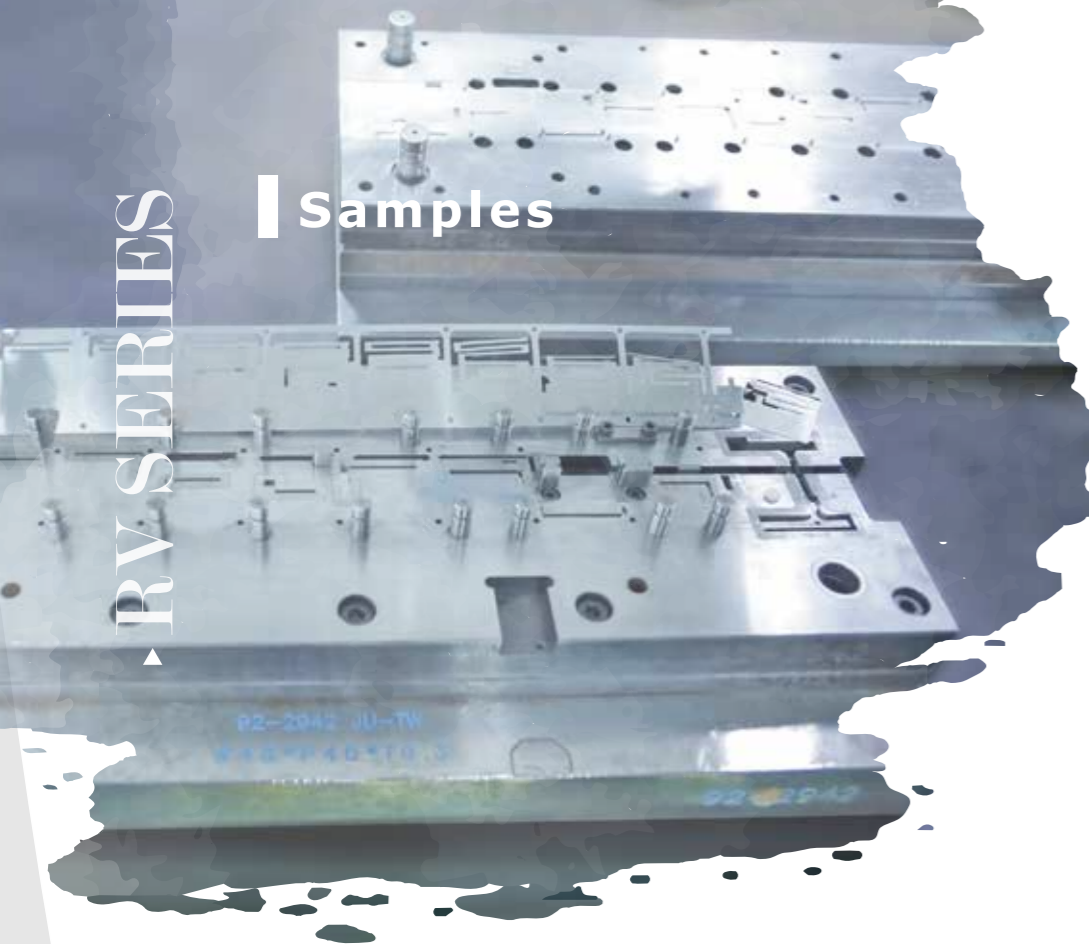


**Automatic Wire Threading Assistant Device**



**Automatic Wire Chopper**

Samples



**Large Press Mold**

- Mold Dimension: 760x400mm
- Mold Thickness: 40mm
- Brass wire:  $\Phi 0.25\text{mm}$
- Number of cuts: 3
- Pitch Accuracy:  $\pm 0.02\text{mm}$
- Surface roughness: Ra 0.68 $\mu\text{m}$

**Automobile Industry**

Transmission System Mold

- Transmission System Mold
- Brass wire:  $\Phi 0.30\text{mm}$
- Machining accuracy (Top Middle Bottom): 0.03 $\mu\text{m}$
- Surface roughness: Ra 2.1~2.4 $\mu\text{m}$
- Mold Thickness: 398mm
- Number of cuts: 3



**Aerospace Industry** Fir Tree Machining, Nickle base material

- Machining application: combine the 6th axis (C axis) and 30° fixture
- Brass wire:  $\Phi 0.25\text{mm}$
- Workpiece Thickness: 30mm
- Surface roughness: Ra 0.60~0.68 $\mu\text{m}$
- Number of cuts: 3



**Large Home Appliance** Profile Machining

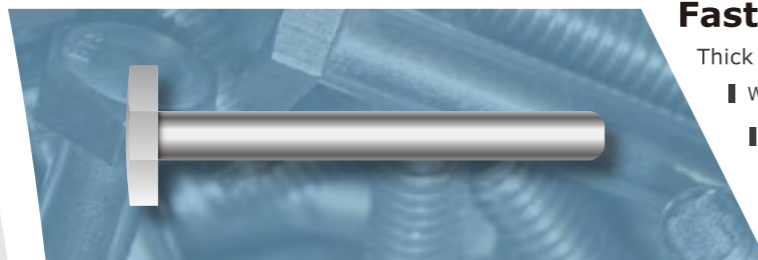
- Workpiece Thickness: 250mm
- Brass wire:  $\Phi 0.25\text{mm}$
- Machining accuracy: 3 $\mu\text{m}$
- Machining accuracy (Top Middle Bottom): 0.01 $\mu\text{m}$
- Surface roughness: Ra 1.8~2.1 $\mu\text{m}$
- Number of cuts: 3



**Fastener Industry**

Thick Fastener Machining

- Workpiece Thickness: 400mm
- Brass wire:  $\Phi 0.3\text{mm}$
- Machining accuracy (Top Middle Bottom): 0.02 $\mu\text{m}$
- Surface roughness: Ra 0.64 $\mu\text{m}$
- Surface roughness: Ra 1.6~2.1 $\mu\text{m}$
- Number of cuts: 4

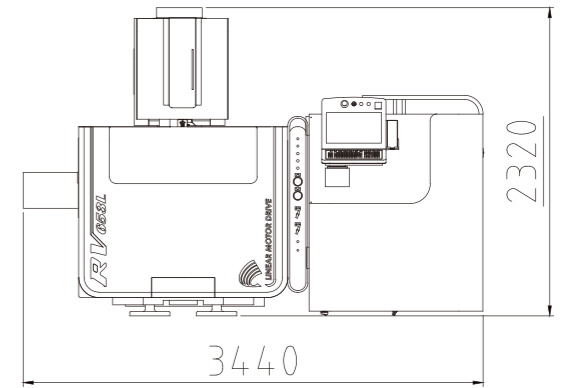
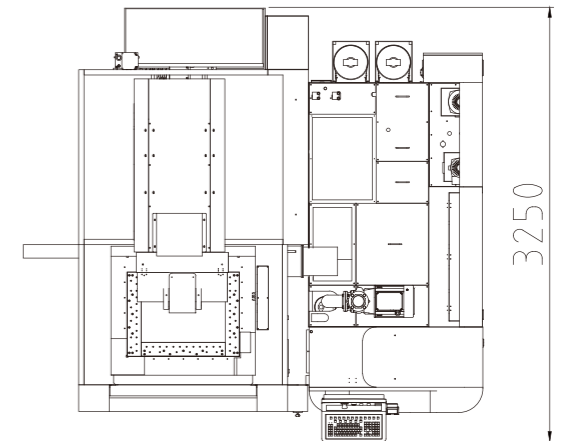


**Machine Dimensions**

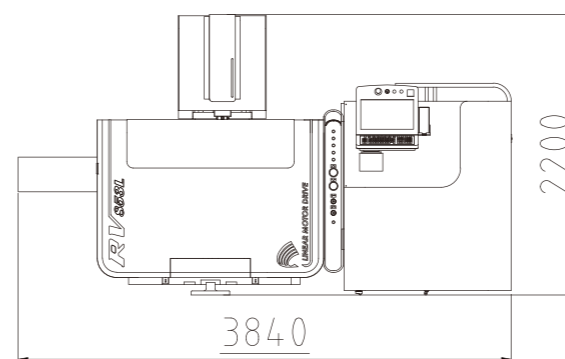
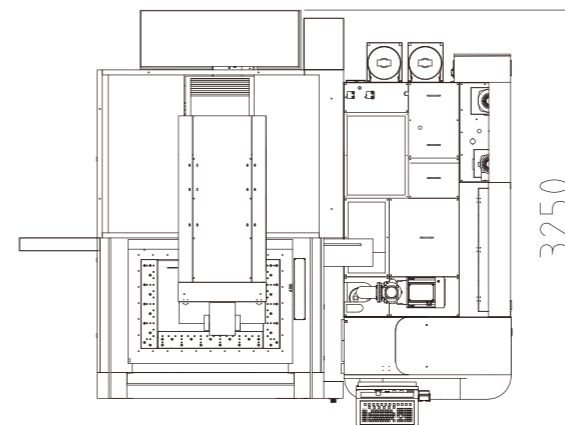
Unit: mm

Model	W	D	H
RV643L	3440	3250	2320
RV853L	3840	3250	2200
RV855L	3850	3250	2750
RV1063L	4300	3445	2250
RV1065L	4300	3445	2780
RV1283L	4830	3835	2250
RV1285L	5050	3835	2780

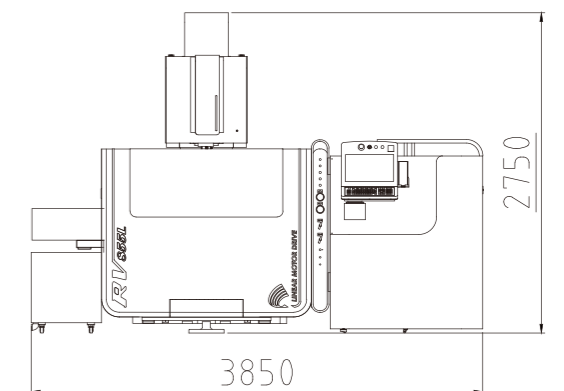
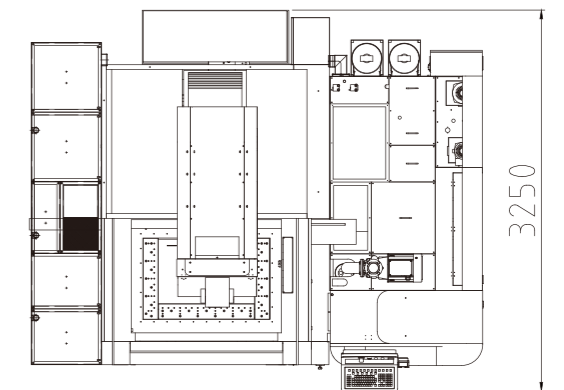
**RV643L**



**RV853L**

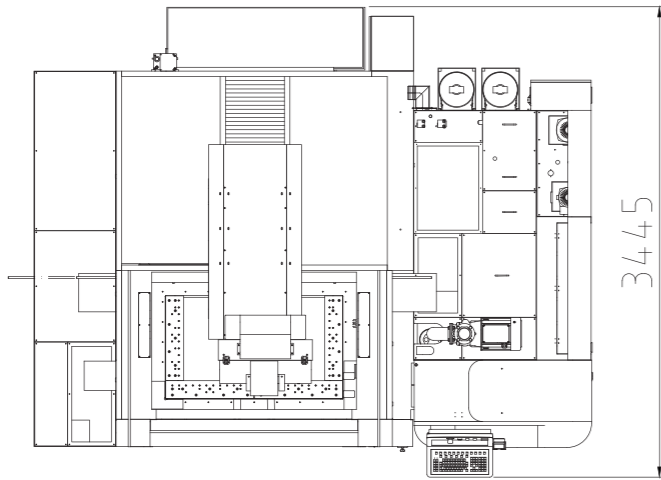


**RV855L**

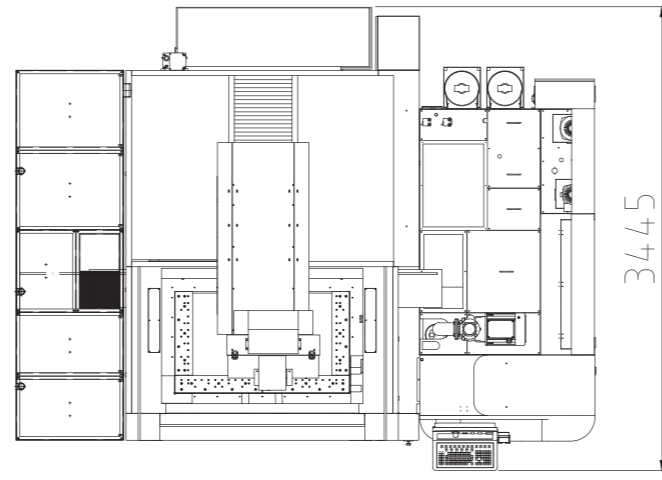


# Machine Dimensions

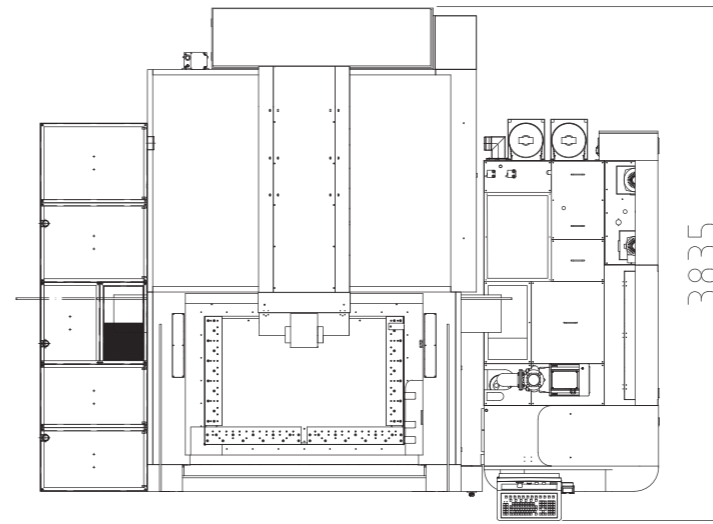
RV1063L



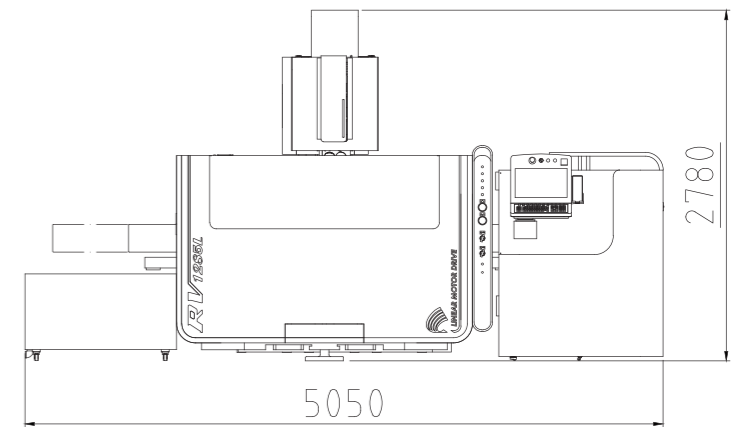
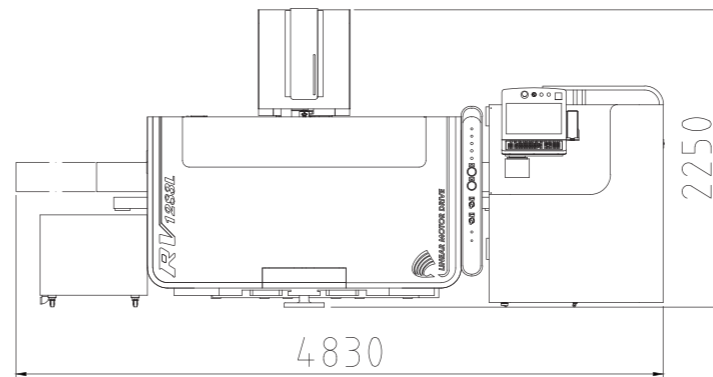
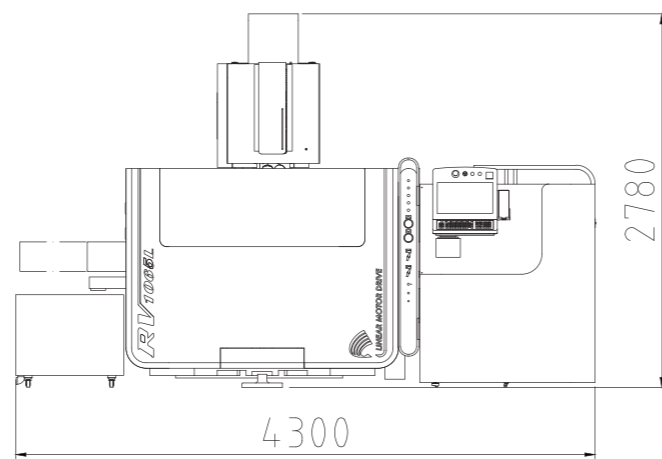
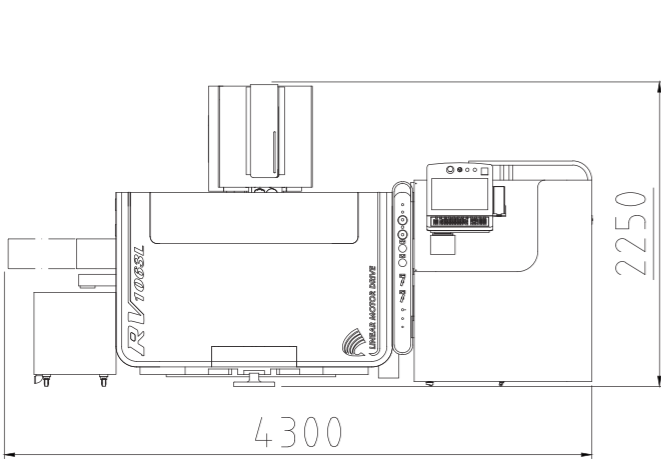
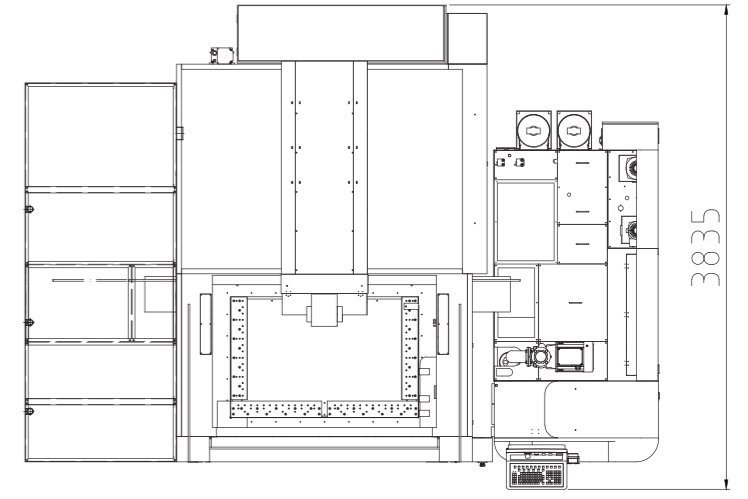
RV1065L



RV1283L



RV1285L



# Standard Specifications

Model		RV653L	RV853L	RV855L	RV1063L	RV1065L	RV1283L	RV1285L
X,Y,Z Axis	mm	600x500x350	800x500x300	800x500x500	1000x600x300	1000x600x500	1200x800x300	1200x800x500
U,V Axis	mm	150x150	150x150	150x150	150x150	160x160	150x150	160x160
Maximum Size of Workpiece	mm	1000x800x345	1200x800x295	1200x800x495	1400x900x295	1400x900x495	1600x1100x295	1600x1100x495
Maximum Weight of Workpiece	kg	2000	3000	3000	5000	5000	5000	5000
XY Axis Feed Rate	mm/min	Max.1800	Max.1800	Max.1800	Max.1800	Max.1800	Max.1800	Max.1800
Drive System	axis	XY Axes Linear Motor Drive/ UVZ Axes AC Servo Motor Drive				XY Axes Linear Motor Drive/ UVZ Axes AC Servo Motor Drive		
Wire Diameter	mm	0.15-0.3(φ0.25)	0.15-0.3(φ0.25)	0.15-0.3(φ0.25)	0.15-0.3(φ0.25)	0.15-0.3(φ0.25)	0.15-0.3(φ0.25)	0.15-0.3(φ0.25)
Maximum Wire Speed	mm/sec	300	300	300	300	300	300	300
The max. loading capacity of the wire feeder	kg	≤ 8kg	≤ 8kg	≤ 8kg	≤ 8kg	≤ 8kg	≤ 8kg	≤ 8kg
Wire Tension	gf	300~2500	300~2500	300~2500	300~2500	300~2500	300~2500	300~2500
Maximum Taper Angle	mm	±21°/80 (Wide Angle Nozzle,DA+DB=15mm)				±21°/80 (Wide Angle Nozzle,DA+DB=15mm)		
Machine Dimension(WxDxH)	mm	3440x3250x2320	3840x3250x2200	3850x3250x2750	4300x3445x2250	4300x3445x2780	4830x3835x2250	5050x3835x2780
Net Weight	kg	7600	7800	8000	8000	8200	8800	9000
<b>Dielectric Filtration System</b>								
Dielectric Capacity	L	1400L	1400L	2250L	2250L	2600L	2600L	3400L
Filter		Paper	Paper	Paper	Paper	Paper	Paper	Paper
Ion Exchange Resin Filter	L	30L*2	30L*2	30L*2	30L*2	30L*2	30L*2	30L*2
Water Quality Control		Auto	Auto	Auto	Auto	Auto	Auto	Auto
Water Temperature Control		Auto	Auto	Auto	Auto	Auto	Auto	Auto
<b>Power Supply Unit</b>								
Circuit		Power MosFET Transistor	Power MosFET Transistor	Power MosFET Transistor	Power MosFET Transistor	Power MosFET Transistor	Power MosFET Transistor	Power MosFET Transistor
Maximum Output Current	A	25A	25A	25A	25A	25A	25A	25A
Number of Current		15	15	15	15	15	15	15
Number of Duration		50	50	50	50	50	50	50
<b>CNC Unit</b>								
Input		Keyboard · USB · LAN				Keyboard · USB · LAN		
Screen		19-Inch Color				19-Inch Color		
Control System		32bit · 1-CPU · X&Y Cloesd Loop				32bit · 1-CPU · X&Y Cloesd Loop		
Control Axis		X · Y · U · V · Z(5 Axis) 6th Axis optional				X · Y · U · V · Z(5 Axis) 6th Axis optional		
Unit Setting		0.001mm				0.001mm		
Maximum Commend Value		±9999.999mm				±9999.999mm		
Interpolation		Linear/Circular				Linear/Circular		
Commend System		ABS/INC				ABS/INC		
Machining Speed Control		Servo/ Const. Feed				Servo/ Const. Feed		
Scaling		0.001-9999.999				0.001-9999.999		
Machining Condition Memory		1000-9999				1000-9999		
Total AC Power Input		3 Phase 220±5%/13KVA				3 Phase 220±5%/13KVA		

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